



electrahertz
electrical suppliers (Pty) Ltd

2020 CATALOGUE





Welcome to our 2020 Catalogue

We at Electrahertz are committed to serving the needs of our customers in the industrial electrical industry.

Integral to the success of Electrahertz is that we bring the world's best products and solutions to Africa. With over 120 suppliers sourced from across the globe, Electrahertz are able to service the industry with innovative and complementary products.

By choosing Electrahertz as your industry partner you gain access to an exclusive basket of products with which you can achieve the best solution for your application.

Serving the industry for more than three decades, Electrahertz once again is able to introduce new products and brands to add to the existing stock range. We remain committed to embracing new technologies and pushing the boundaries of industry to ensure that we provide products that meet the highest standards of safety and compliance.

This year we have focused on energy saving LED technology for future sustainability.

We trust that you will enjoy our new catalogue and the extended range of quality products on offer.

We take this opportunity of thanking you for your past support and look forward to being of service to you, well into the future.



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WHAT'S NEW

DELTA - ME300 Drives

A

The new ME300 range of econo compact vector controlled drives offer essential built-in functionality including multi-pump control, built-in brake chopper, RS-485 (Modbus) and support both IM and PM motors.

- High-efficiency cooling and compact design
- Multi motor control for operating more than one motor from the same drive
- Built-in PID feedback control and leakage detection function
- Bottom entry power and motor terminals
- Built-in brake chopper for the entire series



See page A-19

DELTA - AS Series

C

Delta's compact modular mid-range PLC, AS series, is a high performance multi-purpose controller designed for various automation applications. Applied in diverse automated industries such as electronics, manufacturing, labelling, food packaging, and textile machines.

- Robust non-backplane design and patented DIN rail clips for vertical module installation and replacement
- New 32-bit SoC (System on Chip) CPU to enhance execution speed
- Positioning control function for up to 8-axis motion control via CANopen



See page C-9

REER - Safety Light Curtains

K

EOS series Safety Light Curtains with competitive performance and innovative features for ultimate safety and protection in industrial manufacturing environments.

Compact, robust housing, ideal for the protection of any machinery, equipment, manufacturing stations and production lines where space restrictions exist.

- LEDs for light curtain's status and diagnostics
- Master/Slave models for cascaded connection
- Minimal cross section: 28 x 30 mm
- No blind area on one side
- Start-up time: ≤ 2 sec



See page K-20

MD - Complete Sensor Range

K

Micro Detectors (MD) series of sensors offers a comprehensive range of sensors to meet demands in automation equipment and production lines, in industries such as food and beverage, packaging equipment, pharmaceuticals and other industrial automation production lines.

- Wide range of industrial sensors (inductive, capacitive proximity switches, photoelectric, ultrasonic and area sensors)



See page K1...10

LOVATO - NFC Timers

J

The TMM1NFC is a multifunction - multi-range - multi-voltage time relay, programmable with NFC (Near Field Communication) technology via the LOVATO NFC App.

- 40 integrated functions with multiple time ranges for an extremely flexible timer, suitable for several applications
- Also be configurable as a counter or hour counter
- NFC connectivity for the programming of the parameters via smartphone or tablet



See page J-17

LOVATO - Contactors

A

Upgraded contactor range with the introduction of a new frame size for motor currents 95A to 150A in a width of just 75mm. 3-pole with add-on fourth pole, greatly simplifying warehouse stock management.

Cabling is facilitated with double clamp power terminals and a 4 terminal coil facilitating wiring from both top and bottom of the contactor

Electronic coil also available, powered by a very wide voltage range in either AC or DC.



See page A1...6

SIRENA - Traffic Lights

D

TLINE traffic lights (based on MLINE philosophy) provide reliable signalling and versatile solutions for various scenarios. Engineered for signalization in building technology, mechanical engineering and access control systems.

- LED technology offers much longer product life
- Self-extinguishing polycarbonate body guarantees high impact resistance suitable for indoor or outdoor applications



See page D-21

SOCOMEK - A40 Meters

E

The DIRIS A40 panel-mounted Power Monitoring Device (PMD) designed for measuring, monitoring and reporting electrical energy. Offering a range of functions for measuring voltage, current, power, energy and quality. Permitting analysis of single-phase or three-phase loads.

- Plug and Play automatic detection addressing of measurement and metering devices
- High-resolution graphic screen
- Assisted configuration
- Smart sensors
- Connected to the Cloud



See page E-10

TER - Joystick Controllers

D

Due to public demand, TER re-introduce an entirely new industrial joystick controller - Hercules-CK, featuring switches with electrical capacity of 3A/250VAC, and Hercules with analogue Egon-AL encoders with 4-20mA/1-5V analogue output and precision of measurement guaranteed by 4096 points per revolution (12 bit resolution).

- Fibreglass nylon structural components and steel levers ensure maximum resistance with a mechanical life in excess of 5 million operations



See page D-13

CPT - PSM SAFEGROUND

B

PSM series for monitoring the earthing system from within the actual surge protection device. SAFEGROUND technology is based on loop impedance monitoring, sending current pulses to check the status of the earthing system and provide information regarding the proper wiring of the device.

- Indication of the status of the earth loop via multi-state LEDs
- Confirms the device is properly installed and how effective the surge protection is



See page B-51

CHAUVIN ARNOUX - Portable Instruments

M

CHAUVIN ARNOUX, the European leader specialized in portable Test and Measurement instruments.

We are proud to partner with a company with over 120 years experience in portable test instruments and accessories.

The initial introduction of instruments for field monitoring and analysis includes multimeters, clamp meters, network quality analysers, installation testers and thermal cameras.



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EM Webstore

- Check stock availability
- Place orders
- Download statements
- Check account balances
- View POD's (Proof of delivery)

www.em.co.za



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MOTOR CONTROL & DRIVES

A

A₁

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A₂

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BG0901A



BG09T4A



BG09T4D



BGX1020



BGX1040



BGX5000



RF12...

type	rated current (AC1) (AC3)	kW rating (AC3) 400V	control	description	auxiliary contacts
Three-pole mini contactors		(Ui 690V)			
BG0610A...	16A 6A	2.2kW	AC	3-pole mini contactor	1NO
BG0910A...	20A 9A	4.0kW	AC	3-pole mini contactor	1NO
BG0901A...	20A 9A	4.0kW	AC	3-pole mini contactor	1NC
BG1210A...	20A 12A	5.7kW	AC	3-pole mini contactor	1NO
BG1201A...	20A 12A	5.7kW	AC	3-pole mini contactor	1NC
BG0910D...	20A 9A	4.0kW	DC	3-pole mini contactor	1NO
BG0901D...	20A 9A	4.0kW	DC	3-pole mini contactor	1NC

Four-pole mini contactors		(Ui 690V)			
type	rated current (lth) (AC1)	kW (AC1) 230V 400V	control	description	main contacts
BG09T4A...	20A 20A	8 14	AC	4-pole mini contactor	4NO
BG09T2A...	20A 20A	8 14	AC	4-pole mini contactor	2NO + 2NC
BGP09T4A...	20A 20A	8 14	AC	PCB mount contactor	4NO
BG09T4D...	20A 20A	8 14	DC	4-pole mini contactor	4NO
BG09T2D...	20A 20A	8 14	DC	4-pole mini contactor	2NO + 2NC

Standard coil voltages (add to part number):

AC - 024/048/110/230/400V
DC - 012/024/048/060/110/220V

Control relays / AC control circuit					auxiliary	
BG0040A...	10A	-	-	AC	mini control relay	4NO
BG0031A...	10A	-	-	AC	mini control relay	3NO + 1NC
BG0022A...	10A	-	-	AC	mini control relay	2NO + 2NC

Standard coil voltages (add to part number):

AC - 024/048/110/230/400V

Auxiliary contact blocks for above mini contactors 10A lth / 690V Ui

BGX1020	10A	clip-on auxiliary contact	-	for BG contactors	2NO
BGX1011	10A	clip-on auxiliary contact	-	for BG contactors	1NO + 1NC
BGX1002	10A	clip-on auxiliary contact	-	for BG contactors	2NC
BGX1040	10A	clip-on auxiliary contact	-	for BG contactors	4NO
BGX1022	10A	clip-on auxiliary contact	-	for BG contactors	2NO + 2NC
BGX1004	10A	clip-on auxiliary contact	-	for BG contactors	4NC

Accessories for above mini contactors

BGX8000	shroud to fit into modular distribution boards with 45 mm cutout	for BG contactors
BGX5000	mechanical interlock	for BG contactors
G324	paralleling links (2 pole)	for BG contactors
G326	paralleling links (4 pole)	for BG contactors

Thermal overload relays for above mini BG contactors

RF12 series - Mini thermal overload relays (phase failure sensitive)

- Compensated, differential single-phase protection
- Incorporating test button facility and mechanical trip indication
- Selectable automatic or manual reset
- NO + NC auxiliary contacts

type	for contactors	description	adjustable range	motor rating AC3 (400V)
RF120016	BG6/9/12	thermal overload relay	0.10 - 0.16A	-
RF120025	BG6/9/12	thermal overload relay	0.16 - 0.25A	-
RF120040	BG6/9/12	thermal overload relay	0.25 - 0.40A	0.06kW
RF120063	BG6/9/12	thermal overload relay	0.45 - 0.63A	0.12kW
RF120080	BG6/9/12	thermal overload relay	0.55 - 0.80A	0.18kW
RF120100	BG6/9/12	thermal overload relay	0.75 - 1.00A	0.25 - 0.37kW
RF120160	BG6/9/12	thermal overload relay	1.10 - 1.60A	0.55kW
RF120250	BG6/9/12	thermal overload relay	1.80 - 2.50A	0.75kW
RF120400	BG6/9/12	thermal overload relay	2.90 - 4.00A	1.10 - 1.50kW
RF120630	BG6/9/12	thermal overload relay	4.50 - 6.30A	2.2kW
RF121000	BG6/9/12	thermal overload relay	7.20 - 10.00A	4.0kW
RF121250	BG6/9/12	thermal overload relay	9.00 - 12.50A	5.5kW



BF0910A



BF2600A



BF5000A



BF15000A

new



B25000



BF00...

type	rated current		kW rating		control	description	auxiliary contacts
	(AC1)	(AC3)	(AC3)	400V			
Three-pole contactors (Ui 690V) / AC control circuit							
BF0910A...	25A	9A	4.2kW		AC	3-pole contactor	1NO
BF0901A...	25A	9A	4.2kW		AC	3-pole contactor	1NC
BF1210A...	28A	12A	5.7kW		AC	3-pole contactor	1NO
BF1201A...	28A	12A	5.7kW		AC	3-pole contactor	1NC
BF1810A...	32A	18A	7.5kW		AC	3-pole contactor	1NO
BF1801A...	32A	18A	7.5kW		AC	3-pole contactor	1NC
BF2510A...	32A	25A	12.5kW		AC	3-pole contactor	1NO
BF2501A...	32A	25A	12.5kW		AC	3-pole contactor	1NC
BF2600A...	45A	26A	13.0kW		AC	3-pole contactor	-
BF3200A...	56A	32A	16.0kW		AC	3-pole contactor	-
BF3800A...	56A	38A	18.5kW		AC	3-pole contactor	-
Three-pole contactors (Ui 1000V) / AC control circuit							
BF4000A...	70A	40A	18.5kW		AC	3-pole contactor	-
BF5000A...	90A	50A	22kW		AC	3-pole contactor	-
BF6500A...	100A	65A	30kW		AC	3-pole contactor	-
BF8000A...	115A	80A	45kW		AC	3-pole contactor	-
BF9400A...	115A	95A	55kW		AC	3-pole contactor	-
BF9500A...	140A	95A	55kW		AC	3-pole contactor	-
BF11500A...	160A	115A	55kW		AC	3-pole contactor	-
BF15000A...	165A	150A	75kW		AC	3-pole contactor	-
B14500...	250A	150A	80kW		AC/DC	3-pole contactor	-
B18000...	275A	185A	100kW		AC/DC	3-pole contactor	-
B25000...	350A	265A	140kW		AC/DC	3-pole contactor	-
B31000...	450A	320A	170kW		AC/DC	3-pole contactor	-
B40000...	550A	420A	225kW		AC/DC	3-pole contactor	-
B50000...	700A	520A	290kW		AC/DC	3-pole contactor	-
B63000...	800A	630A	335kW		AC/DC	3-pole contactor	-
B125024...	1250A	-	(AC1) 830kW		AC/DC	3-pole contactor	2NO + 4NC
B160024...	1600A	-	(AC1) 950kW		AC/DC	3-pole contactor	2NO + 4NC
<i>Standard coil voltages (add to part number): AC - 024/048/110/230/400V others available on request</i>							
Four-pole contactors / AC control circuit							
type	rated current		kW (AC1)		control	description	main contacts
	lth (AC1)	(AC1)	230V	400V			
BF09T4A...	25A	-	9.5	16	AC	4-pole contactor	4NO
BF12T4A...	28A	-	10	18	AC	4-pole contactor	4NO
BF18T4A...	32A	-	12	21	AC	4-pole contactor	4NO
BF26T4A...	45A	-	17	30	AC	4-pole contactor	4NO
BF38T4A...	56A	-	21	36	AC	4-pole contactor	4NO
Attachable 4th pole - for above 3 pole contactors BF26 - 150							
<i>Add following attachable 4th pole to above 3 pole contactors to make up a 4 pole contactor</i>							
BFX42	56A		attachable 4th pole for 3-pole contactors			BF26/32/38A	
BFX43	115A		attachable 4th pole for 3-pole contactors			BF40...80A/E	
BFX44	165A		attachable 4th pole for 3-pole contactors			BF95...150A/E	
B145400...	250A	-	91	150	AC/DC	4-pole contactor	4NO
B180400...	275A	-	95	160	AC/DC	4-pole contactor	4NO
B250400...	350A	-	124	214	AC/DC	4-pole contactor	4NO
B310400...	450A	-	158	270	AC/DC	4-pole contactor	4NO
B400400...	550A	-	200	345	AC/DC	4-pole contactor	4NO
B500400...	700A	-	252	438	AC/DC	4-pole contactor	4NO
B630400...	800A	-	288	500	AC/DC	4-pole contactor	4NO
Special pole configurations contactors							
BF09T2A...	25A	-	9.5	16	AC	4-pole contactor	2NO + 2NC
BF18T2A...	32A	-	10	18	AC	4-pole contactor	2NO + 2NC
BF26T2A...	45A	-	12	21	AC	4-pole contactor	2NO + 2NC
BF38T2A...	56A	-	17	30	AC	4-pole contactor	2NO + 2NC
BF80T2A...	115A	-	43	76	AC/DC	4-pole contactor	2NO + 2NC
BF18T0A...	32A	-	21	36	AC	4-pole contactor	4NC
Control relays / AC control circuit							
BF0040A...	10A	-	-	-	AC	control relay	4NO
BF0031A...	10A	-	-	-	AC	control relay	3NO + 1NC
BF0022A...	10A	-	-	-	AC	control relay	2NO + 2NC
BF0004A...	10A	-	-	-	AC	control relay	4NC
<i>Standard coil voltages (add to part number): AC - 024/048/110/230/400V others available on request</i>							



BF0910D



BF2600D



BF9400E

new



BF15000E + BFX44



BF00...

type	rated current		kW rating		control	description	auxiliary contacts
	(AC1)	(AC3)	(AC3)	400V			
Three-pole contactors (Ui 690V) - DC control circuit							
Permanent magnet types (Ui 690V) - DC control circuit (low consumption coil 5.4 watt)							
BF0910D...	25A	9A	4.2kW		DC	3-pole contactor	1NO
BF1210D...	28A	12A	5.7kW		DC	3-pole contactor	1NO
BF1810D...	32A	18A	7.5kW		DC	3-pole contactor	1NO
BF2510D...	32A	25A	12.5kW		DC	3-pole contactor	1NO
BF2600D...	45A	26A	13.0kW		DC	3-pole contactor	-
BF3200D...	56A	32A	16.0kW		DC	3-pole contactor	-
BF3800D...	56A	38A	18.5kW		DC	3-pole contactor	-
Standard coil voltages (add to part number): DC - 012/024/048/060/110/220V							
Extra-low consumption coil 2.4 watt (ideal for direct PLC interfacing)							
BF0910L...*	25A	9A	4.2kW		DC	3-pole contactor	1NO
BF1210L...*	28A	12A	5.7kW		DC	3-pole contactor	1NO
BF1810L...*	32A	18A	7.5kW		DC	3-pole contactor	1NO
BF2510L...*	32A	25A	12.5kW		DC	3-pole contactor	1NO
BF3200L...*	56A	32A	16.0kW		DC	3-pole contactor	-
BF3800L...*	56A	38A	18.5kW		DC	3-pole contactor	-
* Extra low consumption DC coil voltages (add to part number): 024/048 VDC							
AC/DC electronically controlled coil (wide voltage range)							
BF4000E...	70A	40A	18.5kW		AC/DC	3-pole contactor	-
BF5000E...	90A	50A	22kW		AC/DC	3-pole contactor	-
BF6500E...	100A	65A	30kW		AC/DC	3-pole contactor	-
BF8000E...	115A	80A	45kW		AC/DC	3-pole contactor	-
BF9400E...	115A	95A	55kW		AC/DC	3-pole contactor	-
BF9500E...	140A	95A	55kW		AC/DC	3-pole contactor	-
BF11500E...	160A	115A	55kW		AC/DC	3-pole contactor	-
BF15000E...	165A	150A	75kW		AC/DC	3-pole contactor	-
"E" standard voltage coils (add to part number) - 024 =20...48V / 110 =60...110V / 230 =100...250V AC/DC Larger sizes 250...630A - see page A-2 AC/DC contactors							
Four-pole contactors (Ui 690V) - DC control circuit							
type	rated current		kW (AC1)		control	description	auxiliary contacts
	(lth)	(AC1)	230V	400V			
Permanent magnet types (Ui 690V) - DC control circuit							
BF09T4D...	25A	25A	9.5	16	DC	4-pole contactor	4NO
BF18T4D...	32A	32A	12	21	DC	4-pole contactor	4NO
Attachable 4th pole - for above 3-pole contactors BF26 - 150							
Add following attachable 4th pole to above 3 pole contactors to make up a 4 pole contactor							
BFXD42	56A		attachable 4th pole for 3-pole contactors				BF26/32/38D/L
BFX43	115A		attachable 4th pole for 3-pole contactors				BF40...80A/E
BFX44	165A		attachable 4th pole for 3-pole contactors				BF95...150A/E
Larger sizes B250...630 - see page A-2 AC/DC contactors							
Special pole configuration contactors							main cont.
BF18T2D...	32A	32A	10	18	DC	4-pole contactor	2NO + 2NC
BF26T2D...	45A	45A	12	21	DC	4-pole contactor	2NO + 2NC
BF38T2D...	56A	56A	17	30	DC	4-pole contactor	2NO + 2NC
BF80T2E...	115A	115A	43	76	AC/DC	4-pole contactor	2NO + 2NC
BF18T0D...	32A	32A	10	18	DC	4-pole contactor	4NC
BF26T0D...	45A	45A	12	21	DC	4-pole contactor	4NC
Control relays - DC control circuit (extra-low consumption coil 2.4 watt)							
BF0040L...	10A	10A	-	-	DC	control relay	4NO
BF0031L...	10A	10A	-	-	DC	control relay	3NO + 1NC
BF0022L...	10A	10A	-	-	DC	control relay	2NO + 2NC
BF0004L...	10A	10A	-	-	DC	control relay	4NC

	type	mounting	description	terminal	contacts
Clip-on auxiliary contact blocks					
For contactors BF09 - BF150 10A Ith/690V Ui					
	BFX1020	top (centre)	auxiliary contact block	screw	2NO
	BFX1011	top (centre)	auxiliary contact block	screw	1NO + 1NC
	BFX1002	top (centre)	auxiliary contact block	screw	2NC
	BFX1040	top (centre)	auxiliary contact block	screw	4NO
	BFX1031	top (centre)	auxiliary contact block	screw	3NO + 1NC
	BFX1022	top (centre)	auxiliary contact block	screw	2NO + 2NC
	BFX1004	top (centre)	auxiliary contact block	screw	4NC
	BFX1220	side (BF09-38)	auxiliary contact block	screw	2NO
	BFX1211	side (BF09-38)	auxiliary contact block	screw	1NO + 1NC
	BFX1202	side (BF09-38)	auxiliary contact block	screw	2NC
	G48430	top (centre)	auxiliary contact block	screw	3NO
	G48421	top (centre)	auxiliary contact block	screw	2NO + 1NC
	G48412	top (centre)	auxiliary contact block	screw	1NO + 2NC
	G48403	top (centre)	auxiliary contact block	screw	3NC
	G41810	top (side)	auxiliary contact block	screw	1NO
	G41810A	top (side)	auxiliary (<i>early make</i>)	screw	1NO
	G41801	top (side)	auxiliary contact block	screw	1NC
	G41801D	top (side)	auxiliary (<i>late break</i>)	screw	1NC
	G48120	top (side)	auxiliary contact block	push-on	2NO
	G48111	top (side)	auxiliary contact block	push-on	1NO + 1NC
	G48102	top (side)	auxiliary contact block	push-on	2NO
	G218	top (side)	auxiliary contact block	push-on	1NO (or) 1NC
For contactors B145 - B630 16A Ith/690V Ui					
	G354	side	auxiliary contact (<i>up to 4 per contactor</i>)		1NO + 1NC
	G350	side	auxiliary contact (<i>up to 4 per contactor</i>)		2NO + 1NC
	G370	adaptor	adaptor fast on to screw terminal for		G350/354
Accessories for above auxiliary contact blocks					
	G280	side	side mount adaptor for auxiliary		G218
	G419	side	side mount adaptor for auxiliary		G418
	G483	side	side mount adaptor for auxiliary		G481
	G358	adaptor	to fit BFX10/G484/G485 auxiliaries to		B145...B630
Pneumatic delay blocks BF09 - BF150					
	G4856		on-delay timer contact block	6sec	1NO + 1NC
	G48560		on-delay timer contact block	60sec	1NO + 1NC
	G485120		on-delay timer contact block	120sec	1NO + 1NC
	G4866		delay-on deenergisation contact block	6sec	1NO + 1NC
	G48660		delay-on deenergisation contact block	60sec	1NO + 1NC
	G486120		delay-on deenergisation contact block	120sec	1NO + 1NC
	G487		delay-on deenergisation contact block	70msec	1NO + 1NC
4th pole for contactors BF26 - 150A (fully rated)					
	BFX42	56A	attachable 4th pole for contactors		BF26...38A
	BFXD42	56A	attachable 4th pole for contactors		BF26...38D/L
	BFX43	115A	attachable 4th pole for contactors		BF40...94A/E
	BFX44	165A	attachable 4th pole for contactors		BF95...150A/E
Mechanical interlocks between two contactors					
	BFX5000	side	side mount mechanical interlock		BF09...38
	BFX5001	side	mechanical interlock with 2NC contacts		BF09...38
	BFX5002	top (side)	economy (<i>low profile</i>) mech. interlock		BF09...38
	BFX5003	top (side)	top mount mechanical interlock		BF09...38
	BFX5300	side	side mount mechanical interlock		BF40...80A/E
	BFX5301	side	mechanical interlock with 2NC contacts		BF40...80A/E
	BFX5303	top (side)	top mount mechanical interlock		BF40...80A/E
	BFX5400	side	side mount mechanical interlock		BF95...150A/E
	BFX5401	side	mechanical interlock with 2NC contacts		BF95...150A/E
	BFX5403	top (side)	top mount mechanical interlock		BF95...150A/E
	G355	horizontal	mechanical interlock		B145...630
	G3563	vertical	mechanical interlock (<i>interaxis 305 - 345 mm</i>)		B145...630
	G3564	vertical	mechanical interlock (<i>interaxis 345 - 385 mm</i>)		B145...630
	G3565	vertical	mechanical interlock (<i>interaxis 390 - 425 mm</i>)		B145...630
	G3566	vertical	mechanical interlock (<i>interaxis 470 - 500 mm</i>)		B145...630

	type	description		for contactor
Mechanical latch blocks (electric or hand reset)				
	G222...	mechanical latch mechanism (electrical/hand reset)		BF09...38
	G272...	mechanical latch mechanism (electrical/hand reset)		BF40...94
	BFX641...	mechanical latch mechanism (electrical/hand reset)		BF95...150
	G454	mechanical latch mechanism (hand set/reset)		BF09...38
	G455	mechanical latch mechanism (hand set/reset)		BF40...94
	BFX642	mechanical latch mechanism (hand set/reset)		BF95...150
Standard coil voltages (add to part number): 024/048/110/220/380 VAC				
Large frame contactors (B145...B630) are available with built-in latch facility				
Accessories for contactors BF09-150				
	BFX3101	reversing contactor rigid connecting kit	for contactors	BF09...25
	BFX3102	reversing contactor rigid connecting kit	for BFX5001	BF09...25
	BFX3201	reversing contactor rigid connecting kit	for contactors	BF26...38
	BFX3131	line-star-delta rigid connecting kit	for contactors	BF09...25
	BFX3231	line-star-delta rigid connecting kit	for contactors	BF26...38
	BFX3232	line-star-delta rigid connecting kit	line-delta BF26-38 or star	BF09...25
	BFX80	sealing cover	for contactors	BF09...38
	BFX8901	universal screw mounting base	for contactors	BF09...38
	BFX8902	screw fixing brackets (2 pcs)	for contactors	BF09...38
	BA135	2-pole paralleling links	for contactors	BF09...25
	BA235	2-pole paralleling links	for contactors	BF26...38
	BA435	3-pole paralleling links	for contactors	BF95...150
	G231	1-pole enlarged terminal (1-6 mm ²)	for contactors	BF09...25
	G232	1-pole enlarged terminal (1-16 mm ²)	for contactors	BF26...38
	BFX30	blank label for self labelling (orange)	for contactors	BF09...150
Accessories for contactors B145-B630				
	BA1595	3-pole star connecting bar	for contactors	B145...B180
	BA1721	3-pole star connection bar	for contactors	B250...B400
	BA1846	3-pole star connection bar	for contactors	B500...B630
	G371	adaptor for fast-on to screw terminal (coil)		B145...B630
Surge suppressors for contactors BF09-150 (quick connect)				
	BFX77048	≤ 48 VAC	varistor	for contactors BF09...150A
	BFX77125	48-125 VAC	varistor	for contactors BF09...150A
	BFX77240	125-240 VAC	varistor	for contactors BF09...150A
	BFX79415	240-415 VAC	resistor-capacitor	for contactors BF09...150A
Spare coils				
	BFX91A...	AC	spare coil only	for contactors BF09...25A
	BFX92A...	AC	spare coil only	for contactors BF26...38A
	BFX93A...	AC	spare coil only	for contactors BF40...94A
	BFX93E...	AC/DC	spare coil only	for contactors BF40...94E
	BFX94A...	AC	spare coil only	for contactors BF95...150A
	BFX94E...	AC/DC	spare coil only	for contactors BF95...150E
	BA1546...	AC/DC	spare coil only	for contactors B145...B180
	BA1671...	AC/DC	spare coil only	for contactors B250...B400
	BA1796...	AC/DC	spare coil only	for contactors B500...B630
Standard coil voltages (add to part number): AC - 024/048/110/230/400V DC - 012/024/048/060/110/220V				
Spare contact sets per three-pole set (fixed and moving)				
	BFX99040T	3-pole main contact replacement set	(fixed and moving)	BF40
	BFX99050T	3-pole main contact replacement set	(fixed and moving)	BF50
	BFX99065T	3-pole main contact replacement set	(fixed and moving)	BF65
	BFX99080T	3-pole main contact replacement set	(fixed and moving)	BF80
	BFX99094T	3-pole main contact replacement set	(fixed and moving)	BF94
	BFX99095T	3-pole main contact replacement set	(fixed and moving)	BF95
	BFX99115T	3-pole main contact replacement set	(fixed and moving)	BF115
	BFX99150T	3-pole main contact replacement set	(fixed and moving)	BF150
	G381	3-pole main contact replacement set	(fixed and moving)	B145
	G382	3-pole main contact replacement set	(fixed and moving)	B180
	G383	3-pole main contact replacement set	(fixed and moving)	B250
	G385	3-pole main contact replacement set	(fixed and moving)	B310
	G384	3-pole main contact replacement set	(fixed and moving)	B400
	G525	3-pole main contact replacement set	(fixed and moving)	B500
	G526	3-pole main contact replacement set	(fixed and moving)	B630



BFK1810A



BFK11500A

new



G460

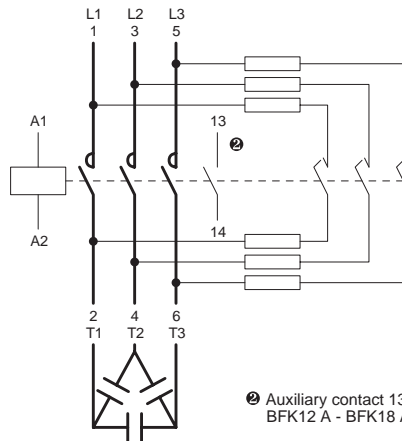
Special capacitor switching contactors are equipped with early-make limiting resistors which limit in-rush currents initially before making contact. Resistors are disconnected from the circuit when contactor closing operation is complete.

type	kvar 400V	kvar 440V	rated current	auxiliary contact	description
Capacitor switching contactors					
BFK1210A...	12.5	14	18A	1NO	capacitor switching contactor
BFK1810A...	15	17	23A	1NO	capacitor switching contactor
BFK2600A...	20	22	30A	-	capacitor switching contactor
BFK3200A...	25	27.5	36A	-	capacitor switching contactor
BFK3800A...	30	33	43A	-	capacitor switching contactor
BFK5000A...	40	45	58A	-	capacitor switching contactor
BFK8000A...	50	56	75A	-	capacitor switching contactor
BFK11500A...	75	85	115A	-	capacitor switching contactor
BFK15000A...	100	115	144A	-	capacitor switching contactor

Standard coil voltages (add to part number): **AC** - 230/400/525V

Kit to assemble BFK contactors from standard contactors

type	description	for contactor
G460	kit to assemble standard contactors for capacitor switching	BF09...38
BFX10K3	kit to assemble standard contactors for capacitor switching	BF50...80
BFX10K4	kit to assemble standard contactors for capacitor switching	BF95...150



Ⓜ Auxiliary contact 13-14 is found on BFK12 A - BFK18 A types only

Thyristor switching modules (intelligent)

DCTL series thyristor modules are ideal for dynamic correction of power factor. Zero cross switching guarantees very short switching times, reducing current peaks generated by capacitor insertion without voltage peaks on disconnection. Integrated current transformers permit complete monitoring and protection of capacitor banks.

- Suitable for dynamic (*fast*) power factor correction
- Prevents high in-rush currents at capacitor switching
- Operational voltage: 400 VAC (*440/690V available on request*)

Advanced communication functions

- NFC connectivity for programming via smart devices
- Optical port for frontal connection to a PC via USB or WiFi via **CX01** or **CX02** dongle
- Optional RS485 card (*order code EXC1042 - see page A-12*) for connection to **DCRG8F** connector

new



DCTLA...

NFC

type	kvar 400V	rated current	description	dimensions (mm)		
				(H)	(W)	(D)
DCTLA4000150	15	22A	thyristor switching module	218	75	172
DCTLA4000300	30	43A	thyristor switching module	218	75	172
DCTLA4000500	50	72A	thyristor switching module	226	95	182
DCTLA4001000	100	144A	thyristor switching module	301	212	216



type	motor rating AC3 (400V)	description	adjustment range	for contactor
RF38 series (phase failure sensitive)				
• Selectable manual or automatic reset				
RF380016	—	thermal overload	0.10 - 0.16A	BF09...38
RF380025	0.06 kW	thermal overload	0.16 - 0.25A	BF09...38
RF380040	0.09 kW	thermal overload	0.25 - 0.40A	BF09...38
RF380063	0.12/0.18 kW	thermal overload	0.40 - 0.63A	BF09...38
RF380100	0.25 kW	thermal overload	0.63 - 1.00A	BF09...38
RF380160	0.37/0.55 kW	thermal overload	1.00 - 1.60A	BF09...38
RF380250	0.75 kW	thermal overload	1.60 - 2.50A	BF09...38
RF380400	1.1/1.5 kW	thermal overload	2.50 - 4.00A	BF09...38
RF380650	2.2 kW	thermal overload	4.00 - 6.50A	BF09...38
RF381000	3.0/4.0 kW	thermal overload	6.30 - 10.0A	BF09...38
RF381400	5.5 kW	thermal overload	9.00 - 14.0A	BF09...38
RF381800	7.5 kW	thermal overload	13.0 - 18.0A	BF09...38
RF382300	11 kW	thermal overload	17.0 - 23.0A	BF09...38
RF382500	11 kW	thermal overload	20.0 - 25.0A	BF09...38
RF383200	15 kW	thermal overload	24.0 - 32.0A	BF09...38
RF383800	18.5 kW	thermal overload	32.0 - 38.0A	BF09...38
RF82 series (phase failure sensitive)				
RF824200	18.5 kW	thermal overload	28 - 42A	BF40...94
RF825000	22 kW	thermal overload	35 - 50A	BF40...94
RF826500	25-30 kW	thermal overload	46 - 65A	BF40...94
RF828200	37 kW	thermal overload	60 - 82A	BF40...94
RF829500	55 kW	thermal overload	70 - 95A	BF40...94
RF110 series (phase failure sensitive)				
RF110095	45 kW	thermal overload	70 - 95A	BF95...150
RF110110	55 kW	thermal overload	90 - 110A	BF95...150
RF200 series (phase failure sensitive)				
RF200150	51/80 kW	thermal overload	90 - 150A	B145...400
RF200200	75/100 kW	thermal overload	120 - 200A	B145...400
RF420 series (phase failure sensitive)				
RF420250	92/132 kW	thermal overload	150 - 250A	B145...400
RF420300	100/162 kW	thermal overload	180 - 300A	B145...400
RF420420	129/198 kW	thermal overload	250 - 420A	B145...400
RFE electronic overload relays (self powered by main circuit)				
RFE series electronic overload relays are characterized by a wide current adjustment range, high reliability and accuracy of tripping with selectable tripping classes: 5-10-20-30				
RFE450200	0.12-0.75 kW	electronic overload	0.4 - 2A	BF09...38
RFE450800	0.75-3.0 kW	electronic overload	1.6 - 8A	BF09...38
RFE453200	3-15 kW	electronic overload	6.4 - 32A	BF09...38
RFE454500	4-22 kW	electronic overload	9 - 45A	BF09...38
RFE110110	11-55 kW	electronic overload	22 - 110A	stand alone
Accessories for overloads				
G372	set links for mounting	RF200 overload onto contactor		B145...B180
G373	set links for mounting	RF200 overload onto contactor		B250...B400
G376	set links for mounting	RF420 overload onto contactor		B250...B400
RFX3804	separate mounting adaptor	(surface / DIN rail mount)		RF38
G270	separate mounting adaptor	(surface / DIN rail mount)		RF82/110
G228...*	electrical reset mechanism for overloads			RF82/110
RFX3801	lead sealing device for overloads			RF38/200/420
G233	lead sealing device for overloads			RF82/110
RFX3802	protection cover for RF38 on contactor assembly			BF09...25
RFX3803	protection cover for RF38 on contactor assembly			BF26...38
I...* Specify coil voltage				



Enclosed direct-on-line starters

- Supplied complete with thermal overload start and stop/reset pushbuttons

type	motor rating AC3 (400V)	overload range	description	housing
M series - Standard DOL starters with BF contactors				
• Insulated IP65 polycarbonate enclosure			M1P (H)202 x (W) 88 x (D)156 mm	
			M2P (H)234 x (W)110 x (D)162 mm	
			M3P (H)280 x (W)220 x (D)187 mm	
M1P00912A4	0.25kW	0.63 - 1.0A	direct-on-line starter	PC / IP65
M1P00912A5	0.55kW	1.0 - 1.6A	direct-on-line starter	PC / IP65
M1P00912A6	0.75kW	1.6 - 2.5A	direct-on-line starter	PC / IP65
M1P00912A7	1.5kW	2.5 - 4.0A	direct-on-line starter	PC / IP65
M1P00912A8	2.2kW	4.0 - 6.5A	direct-on-line starter	PC / IP65
M1P00912A9	4.0kW	6.3 - 10A	direct-on-line starter	PC / IP65
M1P00912B0	5.5kW	9 - 14A	direct-on-line starter	PC / IP65
M1P01812B1	7.5kW	13 - 18A	direct-on-line starter	PC / IP65
M2P02512B2	11.0kW	17 - 23A	direct-on-line starter	PC / IP65
M2P03212B4	15.0kW	24 - 32A	direct-on-line starter	PC / IP65
M2P03812B5	18.5kW	32 - 38A	direct-on-line starter	PC / IP65
M3P05012B6	22.0kW	35 - 50A	direct-on-line starter	ABS / IP65
M3P06512B7	30.0kW	45 - 65A	direct-on-line starter	ABS / IP65
M3P08012B8	37.0kW	60 - 82A	direct-on-line starter	ABS / IP65

Supplied standard with 400V coils
Specify others voltages (add to part number): 024/048/110/230

Extra charge for above, with on-load isolator

- Padlockable in OFF position, interlocked in ON position

I16*	with padlockable interlocking isolator (in M2P enclosure)	up to 7.5kW
I40*	with padlockable interlocking isolator (in M2P enclosure)	up to 18.5kW
I80*	with padlockable interlocking isolator (in M3P enclosure)	up to 37.0kW

* Add part number to end of starter part number

Accessories

M1PA	empty housing with start-stop/reset pushbuttons (IP65)	BF09...18
M2PA	empty housing with start-stop/reset pushbuttons (IP65)	BF25..38
M3PA	empty housing with start-stop/reset pushbuttons (IP65)	BF50..94
M1N	empty housing without external pushbuttons (IP65)	202 x 88 x 135 mm
M2N	empty housing without external pushbuttons (IP65)	234 x 110 x 149 mm
M3N	empty housing without external pushbuttons (IP65)	280 x 233 x 170 mm
M25N	housing no external pushbuttons (IP65) with chassis plate	210 x 175 x 149 mm
MX31	metal chassis/mounting plate	(for M25N enclosures)
MX30	metal chassis/mounting plate	(for M3N enclosures)
MX21P	fixing adaptor for pushbutton contact blocks	(for M1/2/25 enclosures)
MX11P	stop/reset button extension rod	(for M1 enclosures)
MX12P	stop/reset button extension rod	(for M2/25 enclosures)

Reversing DOL starters (enclosed) (IP65)

- Supplied complete with thermal overload and forward - stop - reverse pushbuttons

RM25 starters	motor rating	overload range	description	housing
mounted into M25N enclosure (H) 210 x (W) 175 x (D) 165 mm				
RM25P09A5	0.37kW	0.1 - 1.6A	enclosed reversing starter	PC / IP65
RM25P09A6	0.75kW	1.6 - 2.5A	enclosed reversing starter	PC / IP65
RM25P09A7	1.5kW	2.5 - 4.0A	enclosed reversing starter	PC / IP65
RM25P09A8	2.2kW	4.0 - 6.5A	enclosed reversing starter	PC / IP65
RM25P09A9	4.0kW	6.3 - 10A	enclosed reversing starter	PC / IP65
RM25P12B0	5.5kW	9 - 14A	enclosed reversing starter	PC / IP65
RM25P18B1	7.5kW	13 - 18A	enclosed reversing starter	PC / IP65
RM25P25B2	11.0kW	17 - 23A	enclosed reversing starter	PC / IP65
RM25P32B3	15.0kW	24 - 32A	enclosed reversing starter	PC / IP65
RM25P38B5	18.5kW	32 - 38A	enclosed reversing starter	PC / IP65

RM3 starters	motor rating	overload range	description	housing
mounted into M3N enclosure (H) 280 x (W) 220 x (D) 187 mm				
RM3P50B6	22.0kW	35 - 50A	enclosed reversing starter	ABS / IP65
RM3P65B7	30.0kW	45 - 65A	enclosed reversing starter	ABS / IP65
RM3P80B8	37.0kW	60 - 82A	enclosed reversing starter	ABS / IP65

With mounted on-load isolator (extra charges)

I16*	isolator	with padlockable door interlocking isolator	up to 7.5kW
I40*	isolator	with padlockable door interlocking isolator	up to 18.5kW
I80*	isolator	with padlockable door interlocking isolator	up to 37.0kW

* Add part number to end of starter part number



SM1P...



SM1R...



SM2R5000



SM3R...

SM series - Motor protection circuit breakers

(Type 2 co-ordination with contactors – see Annex 3)

- Thermal and magnetic protection
- Differential single-phase protection (phase failure sensitive)
- High fault level (type 2 coordination with contactors)
- Temperature compensation
- Trip-test facility
- Snap-on auxiliary contacts, shunt trip and undervolt release
- Rated insulation voltage Ui 690V



Scan to watch video

type	motor rating		thermal trip adj.range (A)	description	short circuit capacity Icu 400V
	230V (kW)	400V (kW)			

Motor protection circuit breakers

SM1P series Icu 100 to 10kA (H) 90 x (W) 45 x (D) 75 mm (inc. buttons)

- Pushbutton control - padlockable in OFF position

SM1P0016	–	–	0.1 - 0.16A	manual motor starter	100kA
SM1P0025	–	–	0.16 - 0.25A	manual motor starter	100kA
SM1P0040	–	–	0.25 - 0.4A	manual motor starter	100kA
SM1P0063	–	0.18	0.40 - 0.63A	manual motor starter	100kA
SM1P0100	0.12	0.25	0.63 - 1A	manual motor starter	100kA
SM1P0160	0.25	0.37/..55	1 - 1.6A	manual motor starter	100kA
SM1P0250	0.37	0.75	1.6 - 2.5A	manual motor starter	100kA
SM1P0400	0.55/..75	1.1/1.5	2.5 - 4A	manual motor starter	100kA
SM1P0650	1.1/1.5	2.2	4 - 6.5A	manual motor starter	100kA
SM1P1000	1.5/2.2	4.0	6.3 - 10A	manual motor starter	100kA
SM1P1400	3.0	5.5	9 - 14A	manual motor starter	25kA
SM1P1800	4.0	7.5	13 - 18A	manual motor starter	25kA
SM1P2500	5.5	11.0	20 - 25A	manual motor starter	15kA
SM1P3200	7.5	15.0	24 - 32A	manual motor starter	10kA
SM1P4000	11	18.5	30 - 40A	manual motor starter	10kA

SM1R series Icu 100 to 20kA (H) 90 x (W) 45 x (D) 91 mm (inc. knob)

- Rotary selector control - padlockable in OFF position
- Thermal and magnetic trip indication - (by knob position)

SM1R0016	–	–	0.1 - 0.16A	manual motor starter	100kA
SM1R0025	–	–	0.16 - 0.25A	manual motor starter	100kA
SM1R0040	–	–	0.25 - 0.4A	manual motor starter	100kA
SM1R0063	–	0.18	0.40 - 0.63A	manual motor starter	100kA
SM1R0100	0.12	0.25	0.63 - 1A	manual motor starter	100kA
SM1R0160	0.25	0.37/..55	1 - 1.6A	manual motor starter	100kA
SM1R0250	0.37	0.75	1.6 - 2.5A	manual motor starter	100kA
SM1R0400	0.55/..75	1.1/1.5	2.5 - 4A	manual motor starter	100kA
SM1R0650	1.1/1.5	2.2	4 - 6.5A	manual motor starter	100kA
SM1R1000	1.5/2.2	4.0	6.3 - 10A	manual motor starter	100kA
SM1R1400	3.0	5.5	9 - 14A	manual motor starter	100kA
SM1R1800	4.0	7.5	13 - 18A	manual motor starter	100kA
SM1R2500	5.5	11.0	20 - 25A	manual motor starter	50kA
SM1R3200	7.5	15.0	24 - 32A	manual motor starter	50kA
SM1R4000	11	18.5	30 - 40A	manual motor starter	20kA

SM2R series Icu 50kA (H) 140 x (W) 55 x (D) 145 mm (inc. knob)







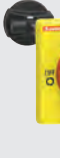







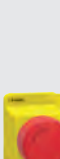

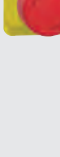

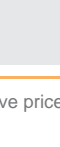




- Rotary selector control - padlockable in OFF position

SM2R5000	15.0	22.0	40 - 50A	manual motor starter	50kA
SM2R6300	18.5	30.0	45 - 63A	manual motor starter	50kA

SM3R series Icu 50kA (H) 165 x (W) 70 x (D) 165 mm (inc. knob)

- Rotary selector control - padlockable in OFF position
- Thermal and magnetic trip indication - (by knob position)

SM3R7500	22.0	37.5	55 - 75A	manual motor starter	50kA
SM3R9000	25.0	45.0	70 - 90A	manual motor starter	50kA
SM3R9900	30.0	55.0	80 - 100A	manual motor starter	50kA

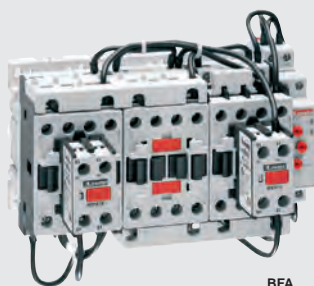
	type	config.	mount position	description	for starter
	SM1X1211	1NO + 1NC	left side	mounting auxiliary contact block	SM1P/R
	SM1X1311	2NO	left side	mounting auxiliary contact block	SM1P/R
	SM2X1211	1NO + 1NC	left side	mounting auxiliary contact block	SM2/3R
	SM2X1311	2NO	left side	mounting auxiliary contact block	SM2/3R
	SM2X16230	1NO + 1NC	front	mounting auxiliary contact block	SM2/3R
	SM2X1120	2NO	front	mounting auxiliary contact block	SM2/3R
	SM1X16024	24 VAC	right side	side mounting shunt trip release unit	SM1P/R
	SM1X16110	110 VAC	right side	side mounting shunt trip release unit	SM1P/R
	SM1X16230	230 VAC	right side	side mounting shunt trip release unit	SM1P/R
	SM1X16400	400 VAC	right side	side mounting shunt trip release unit	SM1P/R
	SM2X16024	24 VAC	right side	side mounting shunt trip release unit	SM2/3R
	SM2X16110	110 VAC	right side	side mounting shunt trip release unit	SM2/3R
	SM2X16230	230 VAC	right side	side mounting shunt trip release unit	SM2/3R
	SM2X16400	400 VAC	right side	side mounting shunt trip release unit	SM2/3R
	SM1X14230	230 VAC	right side	mounting undervoltage release	SM1P/R
	SM1X14400	400 VAC	right side	mounting undervoltage release	SM1P/R
	SM2X14230	230 VAC	right side	mounting undervoltage release	SM2/3R
	SM2X14400	400 VAC	right side	mounting undervoltage release	SM2/3R
	SM1X18200R	red/yellow		door interlock handle (IP65) +200 mm shaft	SM1R
	SM2X18200R	red/yellow		door interlock handle (IP65) +200 mm shaft	SM2/3R
	SM1X18S	support		optional shaft support for	SM1R
	SM1X18S				
	BFX8901	universal		base for screw fixing motor protection	SM1P/R
	SM1X3040P	3Ph rigid		rigid connection between SM1P and contactor	BG mini
	SM1X3141P	3Ph rigid		rigid connection between SM1P and AC contactor	BF09-25A
	SM1X3241P	3Ph rigid		rigid connection between SM1P and AC contactor	BF26-38A
	SM1X3040R	3Ph rigid		rigid connection between SM1R and contactor	BG mini
	SM1X3141R	3Ph rigid		rigid connection between SM1R and AC contactor	BF09-25A
	SM1X3241R	3Ph rigid		rigid connection between SM1R and AC contactor	BF26-38A
	SMX9032	insulated		3-phase bridge bar to connect	2 units (45 mm)
	SMX9033	insulated		3-phase bridge bar to connect	3 units (45 mm)
	SMX9034	insulated		3-phase bridge bar to connect	4 units (45 mm)
	SMX9035	insulated		3-phase bridge bar to connect	5 units (45 mm)
	SMX9042	insulated		3-phase bridge bar to connect	2 units (54 mm)
	SMX9043	insulated		3-phase bridge bar to connect	3 units (54 mm)
	SMX9044	insulated		3-phase bridge bar to connect	4 units (54 mm)
	SMX9045	insulated		3-phase bridge bar to connect	5 units (54 mm)
	SMX9030	25 mm ²		3-phase busbar supply block	(enlarged terminal)
	SM1Z1701P	surface		mount enclosure for starters	135 x 80 x 101 SM1P
	SM1Z1715R	surface		mount enclosure for starters	154 x 100 x 138 SM1R
	SM1Z1705P	flush		mount enclosure for starters	133 x 87 x 86 SM1P
	SM1X1745P			button membrane protection cover for enclosure	SM1P
	SM1X1740P			emergency stop (twist release) pushbutton assembly for enc.	SM1P



JDY25/P



JDY25/PI040



BFA...

- Supplied with:
- Start, stop/reset pushbuttons (*pilot light can be incorporated*)
 - Thermal overload relay (*phase failure sensitive*)
 - Integral control terminals for ease of wiring
 - Coil voltage **400 VAC** unless other specified (*add - 024/110/230/500V to part number*)

type	motor rating	overload range (x 0.58 of full load)	description	dimensions (mm)		
				(H)	(W)	(D)

Enclosed star-delta starters (IP65)

ABS enclosure M3N (hinged door 180° opening)

JDY09/P	7.5kW	6.3 - 10A	enclosed star-delta starter	280	270	170
JDY12/P	11.0kW	9 - 14A	enclosed star-delta starter	280	270	170
JDY18/P	15.0kW	13 - 18A	enclosed star-delta starter	280	270	170
JDY25/P	18.5kW	17 - 23A	enclosed star-delta starter	280	270	170
JDY26/P	22.0kW	24 - 32A	enclosed star-delta starter	280	270	170
JDY38/P	30.0kW	32 - 38A	enclosed star-delta starter	280	270	170

Extra charge for mounted on-load isolator (* add part number to end of starter part number)

- Padlockable in OFF position, door interlocking in ON position

I040*	isolator	with padlockable door interlocking isolator	up to	18.5kW
I063*	isolator	with padlockable door interlocking isolator	up to	30.0kW

Sheet metal enclosure - Grey (RAL7035) - Orange (RAL2000) on request (add "O" to part number)

JDY09/M2	7.5kW	6.3 - 10A	enclosed star-delta starter	450	300	220
JDY12/M2	11.0kW	9 - 14A	enclosed star-delta starter	450	300	220
JDY18/M2	15.0kW	13 - 18A	enclosed star-delta starter	450	300	220
JDY25/M2	18.5kW	17 - 23A	enclosed star-delta starter	450	300	220
JDY26/M2	22.0kW	24 - 32A	enclosed star-delta starter	450	300	220
JDY38/M2	30.0kW	32 - 38A	enclosed star-delta starter	450	300	220
JDY50/M4	37/45kW	35 - 50A	enclosed star-delta starter	650	450	270
JDY65/M4	55kW	46 - 65A	enclosed star-delta starter	650	450	270
JDY80/M4	75kW	60 - 82A	enclosed star-delta starter	650	450	270
JDY095/M4	90kW	90 - 110A	enclosed star-delta starter	650	450	270
JDY115/M4	110kW	75 - 125A	enclosed star-delta starter	650	450	270
JDY150/M4	132kW	90 - 150A	enclosed star-delta starter	650	450	270
JDY180/M5	160kW	120 - 200A	enclosed star-delta starter	750	550	270
JDY250/M7E	250kW	150 - 250A	enclosed star-delta starter	950	700	330
JDY400/M7E	375kW	250 - 420A	enclosed star-delta starter	950	700	330

Extra charge for mounted on-load isolator (* add part number to end of starter part number)

- Padlockable in OFF position, door interlocking in ON position

I040*	isolator	with padlockable door interlocking isolator	up to	18.5kW
I063*	isolator	with padlockable door interlocking isolator	up to	30kW
I125*	isolator	with padlockable door interlocking isolator	up to	55kW
I160*	isolator	with padlockable door interlocking isolator	up to	75kW
I200*	isolator	with padlockable door interlocking isolator	up to	110kW
I250*	isolator	with padlockable door interlocking isolator	up to	132kW
I315*	isolator	with padlockable door interlocking isolator	up to	160kW
I630*	isolator	with padlockable door interlocking isolator	up to	375kW

Extra charges

- pilot light "trip" or "run" indication incorporated into pushbuttons
- with ammeter mounted on enclosure door (48 x 48 direct max. 40A)
- with voltmeter mounted on enclosure door (48 x 48)

Open type pre-assembled star-delta starters (complete with thermal overload relay)

- Fully assembled and wired with mounted star-delta timer and thermal overload relay
- Integral control terminals for ease of wiring

BFA009.10	7.5kW	6.3 - 10A	open frame complete star-delta starter
BFA012.14	11.0kW	9 - 14A	open frame complete star-delta starter
BFA018.18	15.0kW	13 - 18A	open frame complete star-delta starter
BFA025.23	18.5kW	17 - 23A	open frame complete star-delta starter
BFA026.32	22.0kW	24 - 32A	open frame complete star-delta starter
BFA038.38	30.0kW	32 - 38A	open frame complete star-delta starter
BFA050.50	37.5/45kW	35 - 50A	open frame complete star-delta starter
BFA065.65	55kW	46 - 65A	open frame complete star-delta starter
BFA080.82	75kW	60 - 82A	open frame complete star-delta starter
BFA095.110	90kW	90 - 110A	open frame complete star-delta starter
BFA115.125	110kW	75 - 125A	open frame complete star-delta starter
BFA150.150	132kW	90 - 150A	open frame complete star-delta starter
BFA180.200	160kW	120 - 200A	open frame complete star-delta starter
BFA250.250	250kW	150 - 250A	open frame complete star-delta starter
BFA400.420	375kW	250 - 420A	open frame complete star-delta starter



ADXC012400



ADXC037400



ADXL0030600



ADXL0075600



ADX0640

ADXC series - Compact soft starters

- Compact, economical soft starters for motors up to 22kW with built-in bypass relay
- For three-phase 400 VAC motors (600 VAC available on request)
- Start command: 110 - 400 VAC (A1-A2 terminals)
- Adjustable parameters (via potentiometers)
 - Ramp up time 1-20 seconds – Ramp down time 0-20 seconds
 - Initial voltage: 0-85% (of the motor control power)
 - External overload protection required



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type	rated current le	rated power (400V)	description	dimensions (mm)		
				(H)	(W)	(D)
ADXC series - Compact soft starters (two-phase control)						
ADXC012400	12A	5.5kW	soft starter	125	45	110
ADXC016400	16A	7.5kW	soft starter	125	45	110
ADXC025400	25A	11.0kW	soft starter	125	45	110
ADXC032400	32A	15.0kW	soft starter	125	45	110
ADXC037400	37A	18.5kW	soft starter	132	45	154
ADXC045400	45A	22.0kW	soft starter	132	45	154

ADXL series - Industrial soft starters (two-phase control)

Control the startup and stop of three-phase asynchronous motors with built-in bypass. Ideal for simple "plug and play" applications, thanks to the installation wizard. Ideal for high-performance applications with control and protection during the motor startup and operation.

- Equipped with backlit LCD display icons and NFC connectivity, for simple configuration via smart devices
- Rated operational voltage: 208...600 VAC - auxiliary supply 100...240 VAC
- Voltage ramp startup - Torque control - Kick start - Limited maximum starting current
- Selectable default application: Centrifugal and fire pump, conveyor belt, fan, mixer and general purpose
- Sequential startup for up to 4 motors
- Programming, data download and diagnostics via incorporated optical port with USB **CX01** or WiFi **CX02**
- Optional RS485 communication (code **EXC1042**)
- Indicating: - Voltage - Current L1/L2/L3 - Torque - Active power - PF
 - Thermal status - Energy hour counter - Start counter

ADXL series (with integrated by-pass relay)

ADXL0018600	18A	7.5kW	soft starter	218	75	172
ADXL0030600	30A	15.0kW	soft starter	218	75	172
ADXL0045600	45A	22.0kW	soft starter	218	75	172
ADXL0060600	60A	30.0kW	soft starter	218	75	172
ADXL0075600	75A	37.0kW	soft starter	226	95	182
ADXL0085600	85A	45.0kW	soft starter	226	95	182
ADXL0115600	115A	55.0kW	soft starter	226	95	182
ADXL0135600	135A	75.0kW	soft starter	301	212	216
ADXL0162600	162A	90.0kW	soft starter	301	212	216
ADXL0195600	195A	110.0kW	soft starter	486	212	216
ADXL0250600	250A	132.0kW	soft starter	486	212	216
ADXL0320600	320A	160.0kW	soft starter	486	212	216

ADX... series - Industrial soft starters (three phase control)

ADX...B series - Large frame soft starters incorporate by-pass contactor

ADX0085B	85A	45.0kW	soft starter	534	157	250
ADX0110B	110A	55.0kW	soft starter	584	157	250
ADX0142B	142A	75.0kW	soft starter	600	273	285
ADX0190B	190A	90.0kW	soft starter	680	273	310
ADX0245B	245A	132.0kW	soft starter	680	273	310

ADX... series - Large frame soft starters incorporate control contacts for command of an external by-pass contactor (not supplied).




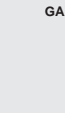
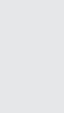


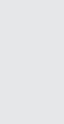
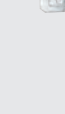
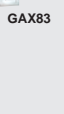


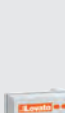
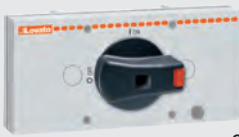
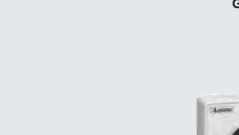






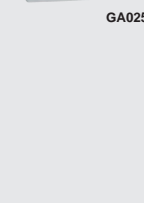
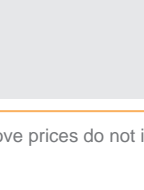
ADX0310	310A	160kW	soft starter	600	640	380
ADX0365	365A	200kW	soft starter	600	640	380
ADX0470	470A	250kW	soft starter	650	790	430
ADX0568	568A	315kW	soft starter	650	790	430
ADX0640	640A	355kW	soft starter	650	790	430
ADX0820	820A	400kW	soft starter	950	910	442
ADX1200	1200A	710kW	soft starter	950	910	442

Accessories for soft starters

- CX01** Optical USB connector and cable for programming, data download for ADXL
- CX02** Wi-Fi connection device for programming, data download for ADXL
- EXCRDU1** Remote keypad, LCD touchscreen display for ADXL... with RS-485 board
- EXC1042** RS485 communication plug-in board for ADXL...
- Xpress** Optional config. software for ADXL series available from EM (on request)



type	AC-21A ≤ 690V	AC-23A ≤ 415V	poles	description	dimensions (mm) (H) (W) (D)		
GA series - 3 pole load-break switches				16A - 160A			
<ul style="list-style-type: none"> Modular design DIN rail mountable supplied with direct mounted padlockable handle Door interlocking handle and shaft (<i>to be ordered separately</i>) Attachable 4th pole for all switches 							
GA016A	16A	7.5kW	3 pole	Isolator/load-break switch	78	36	75
GA025A	25A	11.0kW	3 pole	Isolator/load-break switch	78	36	75
GA032A	32A	15.0kW	3 pole	Isolator/load-break switch	78	36	75
GA040A	40A	18.5kW	3 pole	Isolator/load-break switch	78	36	75
GA063SA	63A	22.0kW	3 pole	Isolator/load-break switch	78	36	75
GA063A	63A	30kW	3 pole	Isolator/load-break switch	100	70	75
GA080A	80A	45kW	3 pole	Isolator/load-break switch	100	70	75
GA125A	125A	55kW	3 pole	Isolator/load-break switch	100	70	75
GA160A	160A	55kW	3 pole	Isolator/load-break switch	100	70	75
GL series - 3 pole load-break switches				160A - 315A			
<ul style="list-style-type: none"> Modular design DIN rail or chassis mountable Door interlocking handle and shaft or direct mount handle (<i>to be ordered separately</i>) Visual contacts (<i>window on individual power poles clearly indicates switch status</i>) Easy shaft mount and removal (<i>snap-on with front mounted release lever</i>) Clip-on auxiliary contact (<i>up to 8 per switch</i>) Attachable 4th pole for all switches 							
GL0160C1	160A	90kW	3 pole	Isolator/load-break switch	155	162	91
GL0200C1	200A	110kW	3 pole	Isolator/load-break switch	155	162	91
GL0250C1	250A	140kW	3 pole	Isolator/load-break switch	155	162	91
GL0315C1	315A	140kW	3 pole	Isolator/load-break switch	155	162	91
Attachable 4th pole				(for above 3 pole switches)			
GAX42040A	40A	18.5kW	1 pole	attachable 4th pole for switches	GA016...40A		
GAX42063SA	63A	22kW	1 pole	attachable 4th pole for switches	GA063SA		
GAX42063A	63A	22kW	1 pole	attachable 4th pole for switches	GA063A		
GAX42125A	125A	55kW	1 pole	attachable 4th pole for switches	GA063...125A		
GAX42160A	160A	55kW	1 pole	attachable 4th pole for switches	GA160A		
GAX41040A	40A	18.5kW	1 pole	4th pole for switches (<i>early-make</i>)	GA016...40A		
GAX41125A	125A	55kW	1 pole	4th pole for switches (<i>early-make</i>)	GA063...125A		
GLX420315	315A	132kW	1 pole	attachable 4th pole for switches	GL0160...315A		
Handles (external front operation)				(IP65)			
<ul style="list-style-type: none"> External door interlocking handles padlockable (3 padlocks) in "OFF" position 							
GAX61	red/yellow	door interlocking handle 65 mm ² (<i>screw fixing</i>)		GA016...160A			
GAX63	red/yellow	door interlocking handle 65 mm ² (<i>ring fix Ø 22 mm</i>)		GA016...160A			
GAX64	red/yellow	as above - defeatable 65 mm ² (<i>ring fix Ø 22 mm</i>)		GA016...160A			
GAX68	red/yellow	door interlocking handle 48 mm ² (<i>screw fixing</i>)		GA016...63SA			
GAX66N*	red/yellow	door interlocking pistol grip handle - (<i>defeatable</i>)		GA063...160A			
GAX66NB*	black	door interlocking pistol grip handle - (<i>defeatable</i>)		GA063...160A			
* Requires GAX60B adaptor (<i>below</i>) and 7 mm ² extension shaft							
GAX60B	adaptor to accommodate 7 mm ² shaft required	for handles		GAX66N/NB			
GLX61	red/yellow	door interlocking pistol grip handle (125 mm)		GL0160...315A			
GLX61B	black	door interlocking pistol grip handle (125 mm)		GL0160...315A			
GLX00	—	shaft alignment ring for above handles		GL0160...315A			
Direct switch mounted handle							
GLX61DB	black	snap-on direct switch mount internal handle		GL0160...315A			
GLX61D	red/yellow	snap-on direct switch mount internal handle		GL0160...315A			
Extension shafts (for above handles)							
GAX7200	200 mm	5 mm ²	extension shaft for switches	GA016...63SA			
GAX7300	300 mm	5 mm ²	extension shaft for switches	GA016...63SA			
GAX7200AN	200 mm	7 mm ²	extension shaft for handle GAX66N..	GA063...160A			
GAX7300AN	300 mm	7 mm ²	extension shaft for handle GAX66N..	GA063...160A			
GLX7200S10	200 mm	10 mm ²	extension shaft for switches	GL0160...315A			
GLX7300S10	300 mm	10 mm ²	extension shaft for switches	GL0160...315A			
GLX7400S10	400 mm	10 mm ²	extension shaft for switches	GL0160...315A			
GLX7500S10	500 mm	10 mm ²	extension shaft for switches	GL0160...315A			

	type	contact / poles		description	for switch			
Auxiliary contact blocks (Ith 10A)								
	GAX1011A	1NO + 1NC	auxiliary	contact for DIN rail mounting switches	GA016A...160A			
	GAX1110EA	1NO	auxiliary	for rail mount switches (<i>early-break</i>)	GA016A...63SA			
	GAX1210EA	1NO	auxiliary	for rail mount switches (<i>early-break</i>)	GA063A...160A			
	GLX1010EA	1NO	auxiliary	contact for GL switches (<i>early break</i>)	GL0160...315A			
	GLX1001	1NC	auxiliary	contact block for GL switches	GL0160...315A			
Terminal shrouds								
	GAX81	1 pole	terminal	protection shroud (<i>set of 2 pcs</i>)	GA016A...63SA			
	GAX82	1 pole	terminal	protection shroud (<i>set of 2 pcs</i>)	GA063A...160A			
	GAX83	3 pole	terminal	protection shroud (<i>set of 2 pcs</i>)	GA016A...63SA			
	GAX84	3 pole	terminal	protection shroud (<i>set of 2 pcs</i>)	GA063A...160A			
	GLX800	3 pole	terminal	protection shroud (<i>set of 3 pcs</i>)	GL0160...315A			
	GLX801	4 pole	terminal	protection shroud (<i>set of 4 pcs</i>)	GL0160...315A			
Phase barriers (Safe isolation between terminals, essential for use at ≥500VAC)								
	GLX900	3 pole	terminal	inter-phase barriers (<i>set of 6 pcs</i>)	GL0160...315A			
	GLX901	4 pole	terminal	protection shroud (<i>set of 8 pcs</i>)	GL0160...315A			
Changeover and parallel attachments for switches								
Changeover attachment								
• Used to combine two switches side-by-side to make up a 6/8 pole switch								
	GAX5000	ch/over		changeover mechanism/interlock for 2 switches	GA016A...63SA			
	GAX5001	ch/over		changeover mechanism/interlock for 2 switches	GA063A...160A			
	GAX67B	black		door interlocking handle (I-O-II) for above changeover mechanisms				
Parallel attachment to convert 3/4 pole switches to 6/8 pole								
• Used to combine two switches side-by-side to make up a 6/8 pole switch								
	GAX6000	parallel		attachment for combining 2 switches (6/8 pole)	GA016A...63SA			
	GAX6001*	parallel		attachment for combining 2 switches (6/8 pole)	GA063A...125A			
	GAX66NB*	black		door interlocking pistol grip handle - (<i>defeatable</i>)	GA063A-160A			
* Requires GAX60B adaptor (below) and 7 mm ² extension shaft								
	GAX60B	adaptor		to accommodate 7 mm ² shaft required for handles	GAX66NB			
3 pole fuse holder for load-break switches 16...32A								
	GAX391	10 x 38		3ph fuse holder (<i>attaches onto switches</i>)	GA016A...032A			
For cylindrical 10 x 38 mm fuses see page B-38-41								
Direct door mounting switches (rear access terminals) with shaft								
	type	AC21A ≤ 690V	AC23A ≤ 415V	poles	description	dimensions (mm) (H) (W) (D)		
	GA025C	25A	11.0kW	3 pole	direct mnt load-break switch	78	36	73
	GA040C	40A	18.5kW	3 pole	direct mnt load-break switch	78	36	73
	GA080C	80A	45.0kW	3 pole	direct mnt load-break switch	100	70	70
	GA125C	125A	55.0kW	3 pole	direct mnt load-break switch	100	70	70
Accessories for (above) direct door mounted switches								
Attachable 4th pole								
	GAX42040C	40A	18.5kW	1 pole	attachable 4th pole for switch	GA016...40C		
	GAX42125C	125A	55kW	1 pole	attachable 4th pole for switch	GA080...125C		
Handles for (above) direct door mounted switches (IP65)								
• External door interlocking handles padlockable (3 padlocks) in "OFF" position								
	GAX61	red/yellow			door interlocking handle 65 mm ² (<i>screw fixing</i>)	GA025...125C		
	GAX68	red/yellow			door interlocking handle 48 mm ² (<i>screw fixing</i>)	GA025...40C		
	GAX63	red/yellow			door interlocking handle 65 mm ² (<i>ring fix Ø 22 mm</i>)	GA025...40C		
Auxiliary contact blocks (Ith 10A) (for above door mount switches)								
	GAX1011C	1NO + 1NC	auxiliary		for direct door mount switches	GA016...125C		

new



GAZ025



GAZM016EM



GAZM160EM



GAZS016EM

G... series enclosed switch disconnectors are supplied in robust, heavy duty enclosures in an IP65 execution. The enclosures incorporate a red/yellow operating handle mechanically interlocked with cover in the "ON" position and padlockable (3 padlocks) in the "OFF" position.

type	AC21A	AC23A	poles	description	dimensions (mm)		
	≤ 690V	≤ 415V			(H)	(W)	(D)

Plastic ABS enclosed isolators (IP65)

GAZ016	16A	7.5kW	3 pole	enclosed load-break switch	160	100	120
GAZ025	25A	11.0kW	3 pole	enclosed load-break switch	160	100	120
GAZ032	32A	15.0kW	3 pole	enclosed load-break switch	160	100	120
GAZ040EM	40A	18.5kW	3 pole	enclosed load-break switch	160	100	120
GAZ063EM	63A	22.0kW	3 pole	enclosed load-break switch	160	100	120
GAZ080EM	80A	45.0kW	3 pole	enclosed load-break switch	210	175	122
GAZ125EM	125A	55.0kW	3 pole	enclosed load-break switch	210	175	122
GAZ160EM	160A	55.0kW	3 pole	enclosed load-break switch	210	175	122

For 4 pole - add attachable 4th pole (below) to above switches.

Empty ABS plastic enclosures only (with red/yellow handle and extension shaft)

GAZ1		empty enclosure with handle and extension shaft	160	100	97
GAZ2		empty enclosure with handle and extension shaft	210	175	99

Metal enclosed isolators (IP65)

GAZ series 16...160A

GAZM016EM	16A	7.5kW	3 pole	enclosed load-break switch	200	150	120
GAZM025EM	25A	11.0kW	3 pole	enclosed load-break switch	200	150	120
GAZM032EM	32A	15.0kW	3 pole	enclosed load-break switch	200	150	120
GAZM040EM	40A	18.5kW	3 pole	enclosed load-break switch	200	150	120
GAZM063EM	63A	22.0kW	3 pole	enclosed load-break switch	200	150	120
GAZM080EM	80A	45.0kW	3 pole	enclosed load-break switch	200	150	120
GAZM125EM	125A	55.0kW	3 pole	enclosed load-break switch	250	200	170
GAZM160EM	160A	55.0kW	3 pole	enclosed load-break switch	250	200	170

GLZ series 200...315A

GLZM0200EM	200A	110kW	3 pole	enclosed load-break switch	450	300	220
GLZM0250EM	250A	132kW	3 pole	enclosed load-break switch	450	300	220
GLZM0315EM	315A	140kW	3 pole	enclosed load-break switch	450	300	220

For 4 pole - add attachable 4th pole (below) to above switches.

Stainless steel (AISI 304) enclosed isolators (IP65)

GAZS016EM	16A	7.5kW	3 pole	enclosed load-break switch	200	150	120
GAZS025EM	25A	11.0kW	3 pole	enclosed load-break switch	200	150	120
GAZS032EM	32A	15.0kW	3 pole	enclosed load-break switch	200	150	120
GAZS040EM	40A	18.5kW	3 pole	enclosed load-break switch	200	150	120
GAZS063EM	63A	22.0kW	3 pole	enclosed load-break switch	200	150	120

For 4 pole - add attachable 4th pole (below) to above switches.

Attachable 4th pole for above switches

GAX42040A	40A	18.5kW	attachable 4th pole for above switches	GA016...40A
GAX42063SA	63A	22.0kW	attachable 4th pole for above switches	GA063SA
GAX42125A	125A	55.0kW	attachable 4th pole for above switches	GA063...125A
GAX42160A	160A	55.0kW	attachable 4th pole for above switches	GA160A
GAX41040A	40A	18.5kW	attachable early-make 4th pole for above	GA016...40A
GAX41125A	125A	55.0kW	attachable early-make 4th pole	GA063...125A
GLX420315	315A	132kW	attachable 4th pole for above switches	GL0160...315A



C45



GL16



OD-GL



PBM B..



PBM HE

Fanox Motor Protection Relays efficiently prevent engine burnouts saving costly repairs and prevent dreaded unnecessary downtime in any important processes. High numbers of motor faults occur on a daily basis and are mainly due to:

Overloads – Locked Rotor – Phase failure or imbalance – Heavy bursts of long duration – Overheating
Over 60% of failures are due to causes not detected by conventional protection systems, causing excessive heat in windings, leading to a drastic reduction in the electrical life of motors.

Significant technical advantages of Fanox protection devices include:

- Standards conformity : IEC 255, IEC 947, IEC 801, EN50081-2
- Identification of tripping cause, permitting instant identification and action to eliminate faults
- Built-in current detection (*motor cables pass through relay*) for ease of wiring and installation
- Immediate detection of phase loss, even with engine running at low loads, to avoid costly breakdowns
- Continuous thermal image memory of heating/cooling of the starting cycles, work overload and stoppages

type	current setting	motor rating 400V	description
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C series - Basic motor protection

Overload - Phase imbalance

Applicable to protect motor requiring dependable and accurate protection for all types of starting (*trip classes 10, 20 and 30*). Motor control centre (MCC), Pumps, Compressors, Ventilators, Centrifugal machines, Conveyors, Cranes, Valves, Air conditioning, Machine tools, etc.

- Trip Class (*selectable*): IEC 947-4-1 10 - 20 - 30

C Series motor protection relay - Control voltage: 230 VAC (*24 VAC/DC available on request*)

C9	3 - 9.3A	1.5 - 4 kW	basic electronic motor protection relay
C21	9 - 21.6A	7.5 - 12 kW	basic electronic motor protection relay
C45	20 - 45.2A	11 - 22 kW	basic electronic motor protection relay

For larger sizes, use C9 with external CTs.

GL series - Motor protection

Overload - Phase imbalance - Over temperature - Phase sequence

For motors requiring dependable and accurate protection for all types of starting for MCC's, Pumps, Compressors, Ventilators, Conveyors, Machine Tools, Industrial Refrigeration and in general for over temperature (*by means of PTC sensor*) and incorrect phase sequence protection.

- Trip Class (*selectable*) : IEC 947-4-1 5 - 10 - 15 - 20 - 25 - 30 - 35

GL series - motor protection relay - Control voltage: **230 VAC** (*24 VAC/DC available on request*)

GL16	4 - 16.7A	2.2 - 7.5 kW	complete electronic motor protection relay
GL40	15 - 40A	7.5 - 18.5 kW	complete electronic motor protection relay
GL90	40 - 91A	22 - 45 kW	complete electronic motor protection relay
GL200	60 - 200A	37 - 110 kW	complete electronic motor protection relay

For larger sizes, use GL16 with external CTs

External display modules for C and GL series (*mounts through std Ø 22 mm p/button hole*)

- To visualise relay status and reset from exterior of electrical panel

OD-C	external display/ reset control kit	C9/21/45
OD-GL	external display/ reset control kit	GL16/40/90/200

PBM series - Motor management system *RS485 ModBus RTU communication*

Overload - Phase imbalance or failure - Over temperature - Phase sequence JAM detection - Locked rotor detection - Neutral over current - Undercurrent.

PBM Motor Management System for complete protection, control and monitoring as an integral solution for Motor Control Centres (MCC's) adaptable to all requirements, providing detailed multifunctional fault reports with self-diagnosis, installation monitoring and statistics.

- Non-volatile memory stored information coherence
- Number of motor start-ups (*medium and maximum current of last start-up*)
- Operating hours counter
- Earth toroidal disconnection monitoring
- Number of faults (*since last reset*)
- PTC sensor open circuit and short circuit detection

PBM series motor management system - control voltage: **100/230 VAC/DC** (*24/48 VDC on request*)

PBM B11	0.8 - 6A	0.75 - 2.2 kW	advanced motor management system
PBM B51	4 - 25A	1.5 - 11 kW	advanced motor management system

For larger sizes, use PBM B11 with external CTs

External LCD display module (HMI) for PBM series (*optional*) *panel cutout (H) 50 x (W) 100 mm*

- To visualise/configure relay status and reset from exterior of electrical panel

PBM HE	display	external HMI LCD display and control keypad	for PBM-B
CDCN1	cable	connection cable for above HMI to PBM (<i>1 meter</i>)	for PBM-B

A₂

Series		ME300 Series											MS300 Series																
		single phase					three phase						single phase					three phase											
Model number	VFD-__ME/MS/E	1A6	2A8	4A8	7A5	11A	1A5	2A7	4A2	5A5	9A0	13A	17A	1A6	2A8	4A8	7A5	11A	1A5	2A7	4A2	5A5	9A0	13A	17A	25A	32A	38A	45A
Frame size		A	A	B	C	C	A	A	B	C	C	D	D	B	B	B	C	C	B	B	B	C	C	D	D	E	E	F	F
Max. applicable motor output	kW	0.2	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	0.2	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22
Output rating																													
Rated output capacity	NORMAL DUTY kVA	0.7	1.2	1.9	3.2	4.8	1.4	2.3	3.5	5	8	12	15.6	0.7	1.2	1.9	3.2	4.8	1.4	2.3	3.5	5	8	9.9	13	19.1	24.4	29	34.4
		A	1.8	3.2	5	8.5	12.5	1.8	3	4.6	6.5	10.5	15.7	20.5	1.8	3.2	5	8.5	12.5	1.8	3	4.6	6.5	10.5	15.7	20.5	28	36	41.5
Rated output current	HEAVY DUTY kVA	0.0 - 599Hz											0.0 - 599Hz																
Output frequency		Hz																											
Carrier frequency	HEAVY DUTY kHz	2 - 15kHz											2 - 15 kHz (default 4)																
Rated output capacity		kVA	0.6	1.1	1.8	2.9	4.2	1.1	2.1	3.2	4.2	6.9	9.9	13	0.6	1.1	1.8	2.9	4.2	1.1	2.1	3.2	4.2	6.9	9.9	13	19.1	24.4	29
Rated output current	A	1.6	2.8	4.8	7.5	11	1.5	2.7	4.2	5.5	9	13	17	1.6	2.8	4.8	7.5	11	1.5	2.7	4.2	5.5	9	13	17	25	32	38	45
Carrier frequency	kHz	2 - 15kHz											2 - 15kHz (default 4)																
Input rating																													
Input current (heavy duty)	A	3.4	5.9	10.1	15.8	23.1	1.7	3	4.6	6.1	9.9	14.3	18.7	3.4	5.9	10.1	15.8	23.1	2.1	3.7	5.8	6.1	9.9	14.3	18.7	27.5	35.2	41.8	49
Input current (normal duty)	A	3.8	6.7	10.5	17.9	26.3	2	3.3	5.1	7.2	11.6	17.3	22.6	3.8	6.7	10.5	17.9	26.35	2.5	4.2	6.4	7.2	11.6	17.3	22.6	30.8	39.6	45.7	53.9
Rated voltage	V	1-phase 200-240V (-15+10%)					3-phase AC 380V ÷ 480V (-15+10%)						1-phase 200-240V (-15+10%)					3-phase AC 380V ÷ 480V 50/60Hz											
Operating voltage range	V	170 - 265V					323 - 528V						170 - 264V					342 - 528V											
Frequency range	Hz	47 - 63Hz ± 5%											47 - 63Hz ± 5%																
Cooling method		convection		fan			convection		fan cooling				conv.	fan cooling					fan cooling										
Braking chopper		built-in											built-in																
DC reactor		optional											optional																
Control method		V/F, SVC											V/F, SVC,																
Starting torque	%	up to 150% at 3 Hz including auto-torque/slip											up to 150% at 3.0Hz including auto-torque/slip compensation																
Max. output frequency	Hz	0.00-599.00 Hz											0.00-599.00 Hz																
Frequency output accuracy		-											-																
Frequency setting resolution	Hz	0.01Hz											0.01Hz																
Overload tolerance (normal duty)		120% of rated output current for 60 seconds; 150% for 3 seconds											120% of rated output current for 60 seconds; 150% for 3 seconds																
Overload tolerance (heavy duty)		150% of rated output current for 60 seconds; 200% for 3 seconds											150% of rated output current for 60 seconds; 200% for 3 seconds																
Frequency setting signal		0 - 10V / 4(0)-20mA, PWM pulse width input (1kHz), pulse input (10kHz)											0 - +10 V / -10 V - +10 V, 4 - 20 mA / 0 - +10 V, 1 pulse input (33 kHz), 1 pulse output (33 kHz)																
Accel./decel. Time		0.1 - 600 sec. (2 settings accel/decel time)											0.1 - 600 sec. (2 independent settings accel/decel time)																
Main control functions		2 independent motor parameter settings, fast run, deceleration energy back (DEB) function, fast deceleration function, selectable master and auxiliary frequency source, momentary power loss ride through, speed search, over-torque detection, 16-step speed accel/decel timer, S-curve accel/decel, JOG frequency, upper/lower limits frequency ref, DC injection braking at start and stop, PID control, simple positioning function, Modbus integrated as standard											Multiple motor switches (max. 4 independent motor parameter settings), fast run, deceleration energy back (DEB) function, wobble frequency function, fast deceleration function, master and auxiliary frequency source selectable, momentary power loss ride thru, speed search, over-torque detection, 16-step speed (max.), accel/decel time switch, S-curve accel/decel, 3-wire sequence, JOG frequency, upper/lower limits for frequency reference, DC injection braking at start and stop, PID control, built-in PLC (2k steps), simple positioning function, MODBUS is integrated as standard																
Fan control		fan control											fan control																
Motor protection		electronic thermal relay and phase failure protection											over/under-volt/current, external fault, overload, IGBT short circuit, PTC																
Over-current protection		yes											yes																
Over-voltage protection		yes											yes																
Over-temperature protection		yes											yes																
Stall prevention		Stall prevention during acceleration, deceleration and running independently											Stall prevention during acceleration, deceleration and running independently																
Re-start after momentary power off		yes											yes																
Ground current protection		yes											yes																
EMI filter		no											no	built-in Class A (C2)															
Dimensions (H) x (W) x (D)	H	mm	128	128	142	157	128	128	142	157	207			142	157	142	157	207	250	300									
	W	mm	68	68	72	87	68	68	72	87	109			72	87	72	87	109	130	175									
	D	mm	78	107	127	136	113	127	127	136	138			159	179	159	179	187	219	244									
Weight	kg	0.4	0.5	0.8	1	0.55	0.7	0.8	1	2			1.32	1.8	1.32	1.8	2.07	3.97	6.25										
Optional accessories		DIN rail mount adaptor											DeviceNet, Ethernet/IP, Profibus DP, Modbus TCP, CANopen communication cards, external 24 VDC power supply card, DIN rail mount adaptor, cable for remote mounting of digital keypad																

E Series											C2000 Series																					
three phase											three phase																					
004	007	015	022	037	055	075	110	150	185	220	040	055	075	110	150	185	220	300	370	450	550	750	900	1100	1320	1600	1850	2200	2800	3150	3550	
A	A	A	B	B	C	C	C	D	D	D	A	A	B	B	B	C	C	C	D	D	D	D	E	E	F	F	G	G	H	H	H	H
0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	185	220	280	315	355	
1.2	2	3.3	4.4	6.8	9.9	13.7	18.3	24	29	34	8.4	10	14	19	25	30	36	48	58	73	84	114	136	167	197	235	280	348	417	466	517	
1.5	2.5	4.2	5.5	8.5	13	18	24	32	38	45	10.5	12	18	24	32	38	45	60	73	91	110	150	180	220	260	310	370	460	550	616	683	
0.10 - 599.0 Hz											normal duty: 0.1 - 600 Hz; heavy duty: 0.00 - 300 Hz																					
1 - 15 kHz											2 - 6kHz (2kHz)																					
-											7.6	9.6	14	18	24	29	34	45	55	69	84	114	136	167	197	235	280	348	417	466	517	
-											9.5	11	17	23	30	36	43	57	69	86	105	143	171	209	247	295	352	437	523	585	649	
-											2 - 15kHz						2 - 10kHz						2 - 9kHz									
1.9	3.2	4.3	7.1	11.2	14	19	26	35	41	49	14.5	16	19	25	33	38	45	60	70	96	108	149	159	197	228	285	361	380	469	527	594	
-											15.5	17	20	26	35	40	47	63	74	101	114	157	167	207	240	300	380	400	494	555	625	
3-phase AC 380V ÷ 480V 50/60Hz											3-phase AC 380V ÷ 480V (-15% ÷ +10%), 50/60Hz (also available in 500-690V versions)																					
342 - 528V											323 - 528 VAC																					
47 - 63Hz ± 5%											47 - 63 Hz																					
convection					fan cooling						fan cooling																					
built-in											built-in						optional															
optional											optional						built-in															
SPWM (V/F or sensorless vector control)											1: V/F, 2: SVC, 3: VF+PG, 4: FOC+PG, TQC+PG																					
up to 150% at 3.0Hz											up to 150% or above at 0.5Hz; under FOC+PG mode can reach up to 150% at 0Hz																					
0.1 - 599.0 Hz											Normal duty: 0.01 ÷ 600.00Hz; Heavy duty: 0.00 ÷ 300.00Hz																					
-											digital command: ± 0.01%, -10°C ÷ +40°C, analogue command: ± 0.1%, 25 ± 10°C																					
0.01Hz											digital command: 0.1Hz, analogue command: 0.03/60Hz (± 11 bits)																					
150% of rated output current for 60 seconds											120% of rated output current for 1 minute of every 5 minutes (160% for 3 seconds of every 30 seconds)																					
150% of rated current for 1 minute											150% of rated output current for 1 minute of every 5 minutes (180% for 3 seconds of every 30 seconds)																					
Potentiometer 5 kΩ / 0.5 W, 0 to +10 VDC, 4 to 20 mA, RS-485 interface											+10V ÷ -10, 0 ÷ +10V, 4-20mA, pulse input																					
0.1 - 600 sec. (2 independent settings accel/decel time)											0.00 ÷ 600.00 / 0.0 ÷ 6000.0 seconds																					
Built-in PLC, AVR, accel/decel S-Curve, over-voltage/current stall prevention, 5 fault records, reverse inhibition, momentary power loss restart, DC braking, auto torque/slip compensation, auto tuning, adjustable carrier frequency, output frequency limits, parameter lock/reset, vector control, PID control, external counter, MODBUS communication, abnormal reset/re-start, power-saving, fan control, NPN/PNP selection											torque control, speed/torque control switching, feed forward control, zero-servo control, momentary power loss ride through, speed search, over-torque detection, torque limit, 16-step speed (including master speed), accel/decel time switch, S-curve accel/decel, 3 wire sequence, auto-tuning (rotational, stationary), dwell, slip compensation, torque compensation, skip frequency, frequency upper/lower limit settings, DC injection braking at start/stop, high slip braking, PID control (with sleep function), energy saving control, MODBUS communication (RS-485 RJ45) max. 115.2kbps, fault restart and parameter copy.																					
fan control											ON/OFF switch						PWM control															
over/under-volt/current, external fault, overload, IGBT short circuit, PTC											electronic thermal relay protection																					
yes											thermal current forces 240% of the over-current protection, current clamp: normal duty 170 - 175%; heavy duty: 180 - 185%																					
yes											drive will stop when DC-BUS voltage exceeds 820V																					
yes											built-in temperature sensor																					
Setting 20 to 250% of rated current											stall prevention during acceleration, deceleration and running independently																					
yes											parameter setting can be up to 20 seconds																					
yes											ground current protection level is 50% of rated current of the AC motor drive																					
built-in											built-in						optional															
142	174	260	310	250	320	400	550	590	800	1000	1435	72	100	130	200	130	190	250	330	370	420	500	700									
152	152	169	190	170	190	210	275	300	300	397	398	1.2	1.9	4.2	7.47	2.6	5.4	9.8	27	38.5	65	87	134									
Analog I/O cards - relay cards - PG cards - USB expansion cards - Fieldbus modules - digital keypad - DIN rail adaptor - brake unit											Digital keypad and panel mount adaptor, I/O extension cards, relay extension cards, PG encoder cards, EtherNet/IP - MODBUS TCP - PROFIBUS-DP - DeviceNet - CANopen communication cards																					



new



VFD1A6ME21ANN



VFD4A8ME21ANN



VFD4A8MS21ANS



VFD32AMS43AFS

ME300/MS300 series - Vector control compact drive

The new compact **ME300** and **MS300** range of compact vector controlled drives offer standard essential built-in functionality which includes multi-pump control, built-in brake chopper, RS-485 (Modbus) and support both IM and PM motors.

Common features include:

- Easy to navigate keypad
- Bottom entry power and motor terminals
- 2x digital outputs (1x SPDT 1x transistor)
- Dual rating chart for ME/MS300 drives, see **Annex-11**
- Built-in PID feedback control and leakage detection function
- Pre-configured parameters for most commonly used applications
- High-efficiency cooling and compact design (for side-by-side installation)
- Multi motor control for operating more than one motor from the same drive
- Screwless terminals, spring clamp terminal block for fast and efficient wiring
- Overcurrent, overvoltage, overload, over-temperature and phase failure protection incorporated
- Enhanced PCB coatings (IEC 60721-3-3 class 3C2 standard) ensures drive operation in harsh environments



Scan to watch video

type	motor rating	description	frame size	dimensions (mm)		
				(H)	(W)	(D)

ME300 series - Basic ultra-compact AC motor drives (VF/SVC open-loop control)

- High starting torque (up to 200% rated starting torque at 3 Hz)
- Supports side-by-side installation, with operating temp -20 to +40°C
- Supports high speed pulse (10kHz) and PWM (1kHz) frequency input signals
- Ultra compact frame sizes, up to 60% reduction compared to previous VFD-EL
- Front fascia with 4 digit LED display, frequency adjustment knob and direction - run/stop function keys

Single - phase input 180 - 264V 50/60Hz (three phase output voltage 230 VAC)

VFD1A6ME21ANN	200W	single-phase AC motor drive	A1	128	68	78
VFD2A8ME21ANN	400W	single-phase AC motor drive	A3	128	68	107
VFD4A8ME21ANN	750W	single-phase AC motor drive	B1	142	72	127
VFD7A5ME21ANN	1.5kW	single-phase AC motor drive	C1	157	87	136
VFD11AME21ANN	2.2kW	single-phase AC motor drive	C1	157	87	136

Three - phase input 380 - 480V 50/60Hz

VFD1A5ME43ANN	400W	three-phase AC motor drive	A4	128	68	113
VFD2A7ME43ANN	750W	three-phase AC motor drive	A6	128	68	127
VFD4A2ME43ANN	1.5kW	three-phase AC motor drive	B2	142	72	127
VFD5A5ME43ANN	2.2kW	three-phase AC motor drive	C1	157	87	136
VFD9A0ME43ANN	3.7kW	three-phase AC motor drive	C1	157	87	136
VFD13AME43ANN	5.5kW	three-phase AC motor drive	D1	207	109	138
VFD17AME43ANN	7.5kW	three-phase AC motor drive	D1	207	109	138

MS300 series - Standard compact AC motor drives (VF/SVC open-loop control)

- Built-in PLC functionality (2K steps)
- Supports high speed pulse (33kHz) frequency input signal
- High starting torque (up to 200% rated starting torque at 0.5 Hz)
- Built-in slot for optional communication modules (see page A-20)
- Integrated Safe Torque Off (STO) SIL2/PLd compliance, offers high safety machine stop
- Built-in EMC filter Class A (C2) effectively reduces electromagnetic interference (for 3 - phase only)
- Removable 5 digit LED keypad with function keys and frequency adjust knob for remote operation

Single - phase input 180 - 264V 50/60Hz (three phase output voltage 230 VAC)

VFD1A6MS21ANS	200W	single-phase AC motor drive	B3	142	72	159
VFD2A8MS21ANS	400W	single-phase AC motor drive	B3	142	72	159
VFD4A8MS21ANS	750W	single-phase AC motor drive	B3	142	72	159
VFD7A5MS21ANS	1.5kW	single-phase AC motor drive	C2	157	87	179
VFD11AMS21ANS	2.2kW	single-phase AC motor drive	C2	157	87	179

Three - phase input 380 - 480V 50/60Hz

VFD1A5MS43AFS	400W	three-phase AC motor drive	B3	142	72	159
VFD2A7MS43AFS	750W	three-phase AC motor drive	B3	142	72	159
VFD4A2MS43AFS	1.5kW	three-phase AC motor drive	B3	142	72	159
VFD5A5MS43AFS	2.2kW	three-phase AC motor drive	C2	157	87	179
VFD9A0MS43AFS	3.7kW	three-phase AC motor drive	C2	157	87	179
VFD13AMS43AFS	5.5kW	three-phase AC motor drive	D2	207	109	187
VFD17AMS43AFS	7.5kW	three-phase AC motor drive	D2	207	109	187
VFD25AMS43AFS	11.0kW	three-phase AC motor drive	E2	250	130	219
VFD32AMS43AFS	15.0kW	three-phase AC motor drive	E2	250	130	219
VFD38AMS43AFS	18.5kW	three-phase AC motor drive	F2	300	175	244
VFD45AMS43AFS	22.0kW	three-phase AC motor drive	F2	300	175	244

For ME/MS300 series accessories, see page A-20



VFD004E21T



VFD110E43A



KPE-LE02



CMM...

E series - Sensorless vector control compact drive

Sensorless Vector AC Micro Drive. constant torque, IP20 rated, modular in design with flexible extension cards and built-in PLC functionality (500 steps). The E drive offers state-of-the-art technology to meet a full range of application requirements.

- Standard MODBUS protocol via RS-485
- High-efficiency cooling and compact design (for side-by-side installation)
- Built-in braking chop and EMI filter (to efficiently reduce electromagnetic interference)
- Fascia can be replaced with optional keypad **KPE-LE02** (speed change and status indication)
- Overcurrent, overvoltage, overload, over-temperature and phase failure protection incorporated
- Optional fieldbus modules for a variety of networks including PROFIBUS, DeviceNet and CANopen

type	motor rating	description	frame size	dimensions (mm)		
				(H)	(W)	(D)

Single - phase input 180 - 264V 50/60Hz (three phase output voltage 230 VAC)

VFD004E21T	400W	single-phase AC motor drive	A1	142	72	152
VFD007E21T	750W	single-phase AC motor drive	A1	142	72	152
VFD015E21A	1.5kW	single-phase AC motor drive	B	174	100	152
VFD022E21A	2.2kW	single-phase AC motor drive	B	174	100	152

Three - phase input 380 - 480V 50/60Hz

VFD004E43T	400W	three-phase AC motor drive	A1	142	72	152
VFD007E43T	750W	three-phase AC motor drive	A1	142	72	152
VFD015E43T	1.5kW	three-phase AC motor drive	A2	142	72	152
VFD022E43A	2.2kW	three-phase AC motor drive	B	174	100	152
VFD037E43A	3.7kW	three-phase AC motor drive	B	174	100	152
VFD055E43A	5.5kW	three-phase AC motor drive	C	260	130	169
VFD075E43A	7.5kW	three-phase AC motor drive	C	260	130	169
VFD110E43A	11.0kW	three-phase AC motor drive	C	260	130	169
VFD150E43A	15.0kW	three-phase AC motor drive	D	310	200	190
VFD185E43A	18.5kW	three-phase AC motor drive	D	310	200	190
VFD220E43A	22.0kW	three-phase AC motor drive	D	310	200	190

Accessories for E series drives

MKE-DRA	adaptor	DIN rail mounting frame	A	(400W - 1.5kW)		
MKE-DRB	adaptor	DIN rail mounting frame	B	(2.2 - 3.7kW)		
KPE-LE02	keypad	digital display/keypad	for speed change and status			
EG1010A	cable	to remotely mount keypad	1 met (drive to keypad)			
EG2010A	cable	to remotely mount keypad	2 met (drive to keypad)			
EG3010A	cable	to remotely mount keypad	3 met (drive to keypad)			
CME-USB01	USB card	for parameter settings and PLC programming				
EME-R2CA	I/O card	output plug-in extension card	2 relay			
EME-R3AA	I/O card	output plug-in extension card	3 relay			
EME-D33A	I/O card	3MI/3MO plug-in card	(photocoupler 3 in and 3 out)			
EME-A22A	I/O card	2 Analog in / 2 Analog out	plug-in card			
EME-A1D3A	I/O card	1 Analog in / 3 Digital out	plug-in card			
EME-PG01	PG card	5 - 24 VDC supply to encoder	open collect 50mA pulse out			
MKE-HUB01	COMMS	RS485 parallel adaptor (RJ45)	RJ-45 splitter			

Fieldbus modules for E series drives

CME-COP01	CANopen	plug-in communication card	for E series drives			
CME-DN01	devicenet	plug-in communication card	for E series drives			
CME-LW01	LonWorks	plug-in communication card	for E series drives			
CME-PD01	Profibus	plug-in communication card	for E series drives			

Accessories for ME/MS300 series drives

MKM-DRB	DIN rail	mounting kit for frame A and B	ME/MS300 drives			
MKM-DRC	DIN rail	mounting kit for frame C	ME/MS300 drives			
IFD6500	USB to RS-485	converter (no ext. power supply required)				
UC-PRG030-02A	USB (B to A)	programming cable PC-VFD	3 met	for MS300 drives		
EMM-BPS01	24 VDC	external DC power supply card	for MS300 drives			
KPC-CC01	keypad	panel mount LCD, parameter copy	(RJ-45 connection)			
EG1010A	cable	to remotely mount keypad	1 met	for MS300 drives		
EG2010A	cable	to remotely mount keypad	2 met	for MS300 drives		
EG3010A	cable	to remotely mount keypad	3 met	for MS300 drives		

Fieldbus modules for MS series drives

CMM-DN01	DeviceNet	plug-in communication card	for MS300 drives			
CMM-EIP01	Ethernet/IP	plug-in communication card	for MS300 drives			
CMM-EC01	EtherCAT	plug-in communication card	for MS300 drives			
CMM-PD01	Profibus DP	plug-in communication card	for MS300 drives			
CMM-MOD01	Modbus TCP	plug-in communication card	for MS300 drives			
CMM-COP01	CANopen	plug-in communication card	for MS300 drives			



C2000 series - High performance FOC (Field Oriented Control) AC motor drive

C2000 series AC motor drives provide most efficient solutions for all drive applications. They feature precise speed, torque and position control functions suitable for sensor or sensorless types of synchronous/asynchronous motors.

- High bandwidth control - Speed/torque/position control mode
- 4-quadrant torque control and limit for both synchronous and asynchronous motors
- Built-in DC reactor, EMC filter, brake unit, safe stop and PLC function (10K steps)
- Integrated Safe Torque Off (STO) SIL2/PLd compliance, offers high safety machine stop
- Accepts various PG (encoder), I/O extension, relay extension and communication modules
- High-speed communication interface with built-in CANopen (up to 30kW) and MODBUS (optional cards for others)
- Enhanced PCB coatings (IEC 60721-3-3 class 3C2 standard) ensures drive operation in harsh environments

type	motor rating	description	frame size	dimensions (mm)		
				(H)	(W)	(D)
Three - phase input 380 - 480V 50/60Hz						
VFD040C43E*	4.0kW	three phase AC motor drive	A	250	130	170
VFD055C43E*	5.5kW	three phase AC motor drive	A	250	130	170
VFD075C43E*	7.5kW	three phase AC motor drive	B	320	190	190
VFD110C43E*	11.0kW	three phase AC motor drive	B	320	190	190
VFD150C43E*	15.0kW	three phase AC motor drive	B	320	190	190
VFD185C43E*	18.5kW	three phase AC motor drive	C	400	250	210
VFD220C43E*	22.0kW	three phase AC motor drive	C	400	250	210
VFD300C43E*	30.0kW	three phase AC motor drive	C	400	250	210
VFD370C43S	37.0kW	three phase AC motor drive	D0	500	280	255
VFD450C43S	45.0kW	three phase AC motor drive	D0	500	280	255
VFD550C43A	55.0kW	three phase AC motor drive	D	550	330	275
VFD750C43A	75.0kW	three phase AC motor drive	D	550	330	275
VFD900C43A	90.0kW	three phase AC motor drive	E	589	370	300
VFD1100C43A	110.0kW	three phase AC motor drive	E	589	370	300
VFD1320C43A	132.0kW	three phase AC motor drive	F	800	420	300
VFD1600C43A	160.0kW	three phase AC motor drive	F	800	420	300
VFD1850C43A	185.0kW	three phase AC motor drive	G	1000	500	397
VFD2200C43A	220.0kW	three phase AC motor drive	G	1000	500	397
VFD2800C43A	280.0kW	three phase AC motor drive	H	1435	700	398
VFD3150C43A	315.0kW	three phase AC motor drive	H	1435	700	398
VFD3550C43A	355.0kW	three phase AC motor drive	H	1435	700	398
VFD4500C43A	450.0kW	three phase AC motor drive	H	1435	700	398

Three - phase input 525 - 600V (up to 15kW) - 525 - 690V (from 22kW) 50/60Hz

VFD037C53A-21*	3.7kW	three phase AC motor drive	A	250	130	170
VFD055C53A-21*	5.5kW	three phase AC motor drive	B	320	190	190
VFD075C53A-21*	7.5kW	three phase AC motor drive	B	320	190	190
VFD110C53A-21*	11.0kW	three phase AC motor drive	B	320	190	190
VFD150C53A-21*	15.0kW	three phase AC motor drive	B	320	190	190
VFD220C63B-21*	22.0kW	three phase AC motor drive	C	400	250	210
VFD300C63B-21*	30.0kW	three phase AC motor drive	C	400	250	210
VFD370C63B-21*	37.0kW	three phase AC motor drive	C	400	250	210
VFD550C63B-21	55.0kW	three phase AC motor drive	D	550	330	275
VFD750C63B-21	75.0kW	three phase AC motor drive	E	589	370	300
VFD900C63B-21	90.0kW	three phase AC motor drive	E	589	370	300
VFD1100C63B-21	110.0kW	three phase AC motor drive	E	589	370	300
VFD1320C63B-21	132.0kW	three phase AC motor drive	E	589	370	300
VFD1600C63B-21	160.0kW	three phase AC motor drive	F	800	420	300
VFD2000C63B-21	200.0kW	three phase AC motor drive	F	800	420	300
VFD2500C63B-21	250.0kW	three phase AC motor drive	G	1000	500	397
VFD3150C63B-21	315.0kW	three phase AC motor drive	G	1000	500	397

* Built-in braking chopper frame A, B, C. Larger sizes DC choke built-in
Note: Voltage/Power derating chart for 525V applications, see Annex 11

PG cards for C2000 drives 300k pulse/sec. 5 VDC 50mA pulse output with frequency divide function

EMC-PG01L	PG card	5 VDC supply to encoder, line-drive (A,B,Z)	300k pulse/sec.
EMC-PG01O	PG card	5 or 12 VDC supply to encoder, open-collect	300k pulse/sec.
EMC-PG01U	PG card	5 VDC supply to encoder, line-drive (A,B,Z,U,V,W)	300k pulse/sec.

Note: 525V drives only supports PG cards in V/F controls



CP2000 series - Fan and Pump purpose drives

CP2000 series drives for energy-saving HVAC systems, Fan and Pump applications. Pre-configured with dedicated HVAC parameters, intelligent PID control, Sensorless Vector Control (SVC) and auto-tuning functions improve motor performance in variable torque load applications. Multi-segment V/F control curve and soft start functions improve efficiency with real-time adjustment of output voltage under variable torque load environments.

- Built-in PLC 10K steps programming capacity with real-time-clock and calendar
- Skip frequency function (*avoids motor vibration at specific frequency bandwidths*)
- Built-in RS-485 (MODBUS) and BACnet MS/TP, expandable with extension cards
- Multi-pump control of up to 8 motors provide fixed amount and fixed time circulation control
- Flying start and auto restart after momentary power loss functions, suitable for fan application
- Quick setup mode with pre-configured user defined parameter management, simplify installation
- Energy saving control functions include PID control, sleep/wakeup mode and auto-energy saving mode
- Enhanced PCB coatings (IEC 60721-3-3 class 3C2 standard) ensures drive operation in harsh environments



VFD150CP4EB-21



VFD220CP4EA-21



VFD450CP43S-21

type	motor rating	description	frame size	dimensions (mm)		
				(H)	(W)	(D)

Three - phase input 380 - 480V 50/60Hz

VFD015CP4EB-21*	1.5kW	three phase AC motor drive	A	250	130	170
VFD022CP4EB-21*	2.2kW	three phase AC motor drive	A	250	130	170
VFD040CP4EA-21*	4.0kW	three phase AC motor drive	A	250	130	170
VFD055CP4EB-21*	5.5kW	three phase AC motor drive	A	250	130	170
VFD075CP4EB-21*	7.5kW	three phase AC motor drive	A	250	130	170
VFD110CP4EB-21*	11.0kW	three phase AC motor drive	B	320	190	190
VFD150CP4EB-21*	15.0kW	three phase AC motor drive	B	320	190	190
VFD185CP4EB-21*	18.5kW	three phase AC motor drive	B	320	190	190
VFD220CP4EA-21*	22.0kW	three phase AC motor drive	C	400	250	210
VFD300CP4EB-21*	30.0kW	three phase AC motor drive	C	400	250	210
VFD370CP4EB-21*	37.0kW	three phase AC motor drive	C	400	250	210
VFD450CP43S-21	45.0kW	three phase AC motor drive	D0	500	280	255
VFD550CP43S-21	55.0kW	three phase AC motor drive	D0	500	280	255
VFD750CP43B-21	75.0kW	three phase AC motor drive	D	550	330	275
VFD900CP43A-21	90.0kW	three phase AC motor drive	D	550	330	275
VFD1100CP43A-21	110.0kW	three phase AC motor drive	E	589	370	300
VFD1320CP43B-21	132.0kW	three phase AC motor drive	E	589	370	300
VFD1600CP43A-21	160.0kW	three phase AC motor drive	F	800	420	300
VFD1850CP43B-21	185.0kW	three phase AC motor drive	F	800	420	300
VFD2200CP43A-21	220.0kW	three phase AC motor drive	G	1000	500	397
VFD2800CP43A-21	280.0kW	three phase AC motor drive	G	1000	500	397

* Built-in EMC filter and braking chopper frame A, B, C up to 37kW, Larger sizes DC choke built-in

Accessories for C2000 and CP2000 series drives

KPC-CC01	keypad	with LCD display, parameters backup function	C/CP2000
MKC-KPPK	bracket	remote panel adapter, (IP66)	C/CP2000
EMC-D42A	4DI / 2DO	digital I/O extension card, selectable NPN/PNP, DC 24V	
EMC-A22A	2AI / 2AO	analog I/O extension card, selectable 0-10V/4-20mA	
EMC-R6AA	6 relay	relay output extension card	

Fieldbus modules for C2000 and CP2000 series drives (plugs into drive)

CMC-EIP01	Ethernet	plug-in communication card	supports EtherNet/IP
CMC-DN01	DeviceNet	plug-in communication card	125kbp / 250kpbs / 500kpbs
CMC-PD01	Profibus-DP	plug-in communication card	9.6kpbs - 12Mbps
EMC-COP01	CANopen	plug-in communication card	50kpbs - 1Mbps
CMC-EC01	EtherCAT	plug-in communication card	10/100 Mbps Auto-Defect

Mounting accessories

Flange mount kits to permit the chassis mounting of drives with the heat-sink section protruding from the rear of the enclosure for improved cooling/heat dissipation of drives.

MKC-AFM	flange	mount kit for rear exposure of heat sink	for drive frame A
MKC-BFM	flange	mount kit for rear exposure of heat sink	for drive frame B
MKC-CFM	flange	mount kit for rear exposure of heat sink	for drive frame C

Base mounting flange can be moved to central position to expose heat sinks for frames D, E, F.

Conduit boxes

MKC-DN1CB	frame	Conduit box kit for frame D1 (not D01)
MKC-EN1CB	frame	Conduit box kit for frame E1
MKC-FN1CB	frame	Conduit box kit for frame F1



new



VFD040FP4EA-52



VFD450FP4EA-52

CFP2000 series - Drives for Fans and Pumps (IP55)

CFP2000 series designed with an industry leading IP55 enclosure to provide effective protection from dust and other particles and to offer a good level of protection from water. In addition, it includes many outstanding features and built-in functions that reduce setup and tuning time in operation while providing higher efficiency.

The CFP2000 is equipped with a built-in EMC filter and a DC choke. This design replaces the need for an electrical distribution cabinet and saves space for other devices, while providing the benefits of harmonic suppression and better power quality to the system.

Other outstanding features include support for both IM/PM motors, a real time clock, built-in 10K steps PLC capacity and various optional extension cards. The CFP2000 series integrates all of your needs into one drive. It is the friendliest and smartest choice available in the industry.

Applications:

- Designed for HVAC, fans & pumps and water treatment applications.

Standard: IEC 60721-3-3 class 3C3

- Protects PCB from gases such as salt, SO₂, O₃, H₂S and others to extend the product life when used in a water treatment application.

General features:

- DC Choke - IEC61000-3-12 standard
- Built-in EMC filter; IEC61800-3 C2, C1 standard
- Built-in PLC functionality 10K steps and Real Time Clock (RTC)
- Built-in Safe Torque Off (STO) SIL2 function and 2 sets of PID controller functions
- Built-in RS485 (MODBUS) and BACnet MS/TP, expandable with extension cards
- Enhanced PCB coating to IEC 60721-3-3 class 3C3 ensures reliability in harsh environments

type	motor rating	description	frame size	dimensions (mm)		
				(H)	(W)	(D)
VFD015FP4EA-52*	1.5kW	three phase AC motor drive	A-1	366	161	199
VFD022FP4EA-52*	2.2kW	three phase AC motor drive	A-1	366	161	199
VFD040FP4EA-52*	4.0kW	three phase AC motor drive	A-1	366	161	199
VFD055FP4EA-52*	5.5kW	three phase AC motor drive	A-1	366	161	199
VFD075FP4EA-52*	7.5kW	three phase AC motor drive	A-1	366	161	199
VFD110FP4EA-52*	11.0kW	three phase AC motor drive	B-1	491	216	229
VFD150FP4EA-52*	15.0kW	three phase AC motor drive	B-1	491	216	229
VFD185FP4EA-52*	18.5kW	three phase AC motor drive	B-1	491	216	229
VFD220FP4EA-52*	22.0kW	three phase AC motor drive	B-1	491	216	229
VFD300FP4EA-52*	30.0kW	three phase AC motor drive	C-1	630	282	265
VFD370FP4EA-52*	37.0kW	three phase AC motor drive	C-1	630	282	265
VFD450FP4EA-52	45.0kW	three phase AC motor drive	D0-1	680	308	307
VFD550FP4EA-52	55.0kW	three phase AC motor drive	D0-1	680	308	307
VFD750FP4EA-52	75.0kW	three phase AC motor drive	D2	770	370	335
VFD900FP4EA-52	90.0kW	three phase AC motor drive	D2	770	370	335

* Built-in Braking Chopper frame A, B, C up to 37kW

Accessories for CFP2000 series drives

EMC-D42A	4DI / 2DO	digital I/O extension card, selectable NPN/PNP, DC 24V
EMC-A22A	2AI / 2AO	analog I/O extension card, selectable 0-10V/4-20mA
EMC-R6AA	6 relay	relay output extension card

Fieldbus modules for CFP2000 series drives (plugs into drive)

CMC-EIP01	Ethernet	plug-in communication card	supports EtherNet/IP
CMC-DN01	DeviceNet	plug-in communication card	125kbp / 250kbps / 500kbps
CMC-PD01	Profibus-DP	plug-in communication card	9.6kbps - 12Mbps
EMC-COP01	CANopen	plug-in communication card	50kbps - 1Mbps
CMC-EC01	EtherCAT	plug-in communication card	10/100 Mbps Auto-Defect



VFD185ED43S



EMED-PGABD-1



VFD004DD21S



ECMD-B91608MS

ED series - Elevator drives

ED series motor drives specifically designed for elevator applications, feature latest innovative control technology providing extended features with outstanding performance. UL/CE certified ensuring the best operational reliability. Excellent solution for elevator operation in critical environments providing versatile and flexible control functions and an especially smooth start and stop, critical for passenger safety and comfort.

- Auto-tuning with load attached
- Dual-output protection for reliable rides
- Built-in MODBUS/CANbus communication interface
- Supports both asynchronous and synchronous motors
- Precise time sequence for elevator motion (*start/stop*)
- Built-in USB-B port for parameter uploads and downloads
- Auto-correct start torque, load compensation with manual adjustment
- DC braking level and slip compensation enhancing the leveling accuracy providing ride comfort
- Built-in STO (*Safe Torque Off*) function (complies with EN61800-5-2 and EN61508 (SIL2) standards)
- Supports 1-phase 230 VAC UPS (*light-load direction search function triggered automatically on power failure*)

type	motor rating (kW)	description	frame size	dimensions (mm) (H) (W) (D)		
Single - phase input 200 - 240 VAC 50/60Hz						
VFD037ED21S	3.7kW	single-phase elevator drive	B	247	194	134
Three - phase input 380 - 460 VAC 50/60Hz						
VFD055ED43S	5.5kW	three phase elevator drive	C	350	235	146
VFD075ED43S	7.5kW	three phase elevator drive	C	350	235	146
VFD110ED43S	11.0kW	three phase elevator drive	C	350	235	146
VFD150ED43S	15.0kW	three phase elevator drive	C	350	235	146
VFD185ED43S	18.5kW	three phase elevator drive	C	350	235	146
VFD220ED43S	22.0kW	three phase elevator drive	D	404	255	178
VFD300ED43S	30.0kW	three phase elevator drive	D	404	255	178
VFD370ED43S	37.0kW	three phase elevator drive	E	550	330	274
VFD450ED43S	45.0kW	three phase elevator drive	E	550	330	274

Larger sizes available on request.

Note: All sizes up to 30kW have built in brake chopper.

Note: Braking units and resistors for all drives (See A-26)

PG feedback cards

- EMED-PGAB** supports open-collector or line-driver and UVW encoder signal, 5/12 VDC supply
- EMED-PGABD-1** open-collector, differential, UVW encoder signal and frequency divider output
- EMED-PGHSD-1** supports Heidenhain ERN1387/ECN1313, SICK HIPERFACE 5/8V supply

DD series - Elevator door drive

DD series AC motor drives (*specifically designed for elevator door applications*) feature door width auto-tuning with precise open and close control and smooth door open curve and blocking detection.

- User friendly design
- Door width auto-tuning
- Smooth door re-open curve
- Safety protection and blockage detection (*four steps*)
- Induction motor (*asynchronous*) and permanent magnet motor (*synchronous*)
- Multiple door control solutions: distance control / speed control / multi-step speed control modes

Single - phase input 230 VAC 50/60Hz

VFD004DD21S	0.4 kW	single-phase elevator door drive	170	215	55
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Accessories for DD series

- MEC-SG1026S** 1 meter encoder cable (*without D-SUB connector*) for DD series
- MEC-SG3026S** 3 meter encoder cable (*without D-SUB connector*) for DD series

Slimline sliding door motor DC brushless motor

- Ultra-slim design (55 mm)
- Instant torque up to 3 Nm
- Flexible installation (*front or back side installation*)

ECMD-B91608MS	80W	3.0Nm/250 RPM sliding door motor	160	160	55
DPB-N7779	dust cap	dust cover for protection of door motor terminals			

new



EM's range of **AC reactors** (*chokes*) are suited for all series Delta drives and are finely tuned to the manufacturers specifications.

Installing an AC reactor on the **input** side of an AC motor drive can increase line impedance, improve the power factor, reduce input current, and reduce harmonics generated from the motor drive.

Installing the AC reactor on the **output** side can allow the user to extend the output power cable further than otherwise possible (*actual length model dependant*). When multiple motors are installed on a single VFD which are being protected by manual motor starters it is advised to install an output choke.

General features:

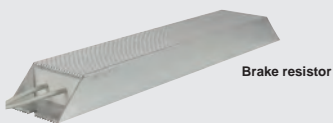
- Compact dimensions
- Insulation class H - 1000 VAC
- Rated for Delta 400V drives
- High quality grain orientated silicon steel
- High operation temperature (125 °C)
- Normal operation temperature (40 to 50 °C) above ambient

AC Reactors - Input and Output Reactors 400V

type	motor rating	amp	millihenry	(H)	(W)	(D)
VFD022R43	2.2kW	6A	2.7mH	130	110	120
VFD040R43	4.0kW	10.5A	2.315mH	140	110	145
VFD055R43	5.5kW	13A	2.025mH	140	125	155
VFD075R43	7.5kW	18A	1.174mH	150	120	175
VFD110R43	11kW	24A	0.881mH	190	125	180
VFD150R43	15kW	32A	0.66mH	200	135	200
VFD185R43	18.5kW	38A	0.639mH	220	140	200
VFD220R43	22kW	45A	0.541mH	220	130	200
VFD300R43	30kW	60A	0.405mH	240	150	200
VFD370R43	37kW	73A	0.334mH	240	150	200
VFD450R43	45kW	91A	0.276mH	255	150	220
VFD550R43	55kW	110A	0.221mH	255	155	220
VFD750R43	75kW	150A	0.162mH	320	160	265
VFD900R43	90kW	180A	0.135mH	320	160	280
VFD1100R43	110kW	220A	0.110mH	325	190	300
VFD1320R43	132kW	260A	0.098mH	325	190	325
VFD1600R43	160kW	310A	0.078mH	325	200	300
VFD1850R43	185kW	370A	0.66mH	325	200	340
VFD2200R43	220kW	460A	0.054mH	325	220	340
VFD2800R43	280kW	550A	0.044mH	340	225	325
VFD3150R43	315kW	616A	0.039mH	325	235	340
VFD3550R43	355kW	683A	0.036mH	345	250	350
VFD4500R43	450kW	866A	0.028mH	425	280	410

Note: All chokes are based on 3% impedance, 5% available on request.

Other sizes and voltages available on request.



See opposite page

Drive	Motor rating kW	Full Load torque (kg-m)	Brake unit		Braking resistor for each brake unit				Resistor value		Min Equiv Resistor Value		
			Part No.	No.	Type	No.	Series	Parallel	W	Ohm			
"ME" Series													
VFD1A6ME21ANN	230V	0.20	0.1	-	-	BR80W/750RJ	1	-	-	80	750	190	
VFD2A8ME21ANN		0.40	0.3	-	-	BR80W/200RJ	1	-	-	80	200	95	
VFD4A8ME21ANN		0.75	0.5	-	-	BR80W/200RJ	1	-	-	80	200	63.3	
VFD7A5ME21ANN		1.50	1	-	-	BR200W/91RJ	1	-	-	200	91	45.7	
VFD11AME21ANN		2.20	1.5	-	-	BR300W/70RJ	1	-	-	300	70	38	
VFD1A5ME43ANN	460V	0.40	0.3	-	-	BR80W/750RJ	1	-	-	80	750	380	
VFD2A7ME43ANN		0.75	0.5	-	-	BR80W/750RJ	1	-	-	80	750	190	
VFD4A2ME43ANN		1.50	1	-	-	BR200W/360RJ	1	-	-	200	360	126.7	
VFD5A5ME43ANN		2.20	1.5	-	-	BR300W/250RJ	1	-	-	300	250	108.6	
VFD9A0ME43ANN		3.70	2.5	-	-	BR400W/150RJ	1	-	-	400	150	84.4	
VFD13AME43ANN		5.50	3.7	-	-	BR1KW/75RJ	1	-	-	1000	75	50.7	
VFD17AME43ANN		7.50	5.1	-	-	BR1KW/75RJ	1	-	-	1000	75	40	
"MS" Series													
VFD1A6MS21ANS	230V	0.20	0.1	-	-	BR80W/750RJ	1	-	-	80	750	190	
VFD2A8MS21ANS		0.40	0.3	-	-	BR80W/200RJ	1	-	-	80	200	95	
VFD4A8MS21ANS		0.75	0.5	-	-	BR80W/200RJ	1	-	-	80	200	63.3	
VFD7A5MS21ANS		1.50	1	-	-	BR200W/91RJ	1	-	-	200	91	45.7	
VFD11AMS21ANS		2.20	1.5	-	-	BR300W/70RJ	1	-	-	300	70	38	
VFD1A5MS43AFS	460V	0.40	0.3	-	-	BR80W/750RJ	1	-	-	80	750	380	
VFD2A7MS43AFS		0.75	0.5	-	-	BR80W/750RJ	1	-	-	80	750	190	
VFD4A2MS43AFS		1.50	1	-	-	BR200W/360RJ	1	-	-	200	360	126.7	
VFD5A5MS43AFS		2.20	1.5	-	-	BR300W/250RJ	1	-	-	300	250	108.6	
VFD9A0MS43AFS		3.70	2.500	-	-	BR400W/150RJ	1	-	-	400	150	84.4	
VFD13AMS43AFS		5.50	3.700	-	-	BR1KW/75RJ	1	-	-	1000	75	50.7	
VFD17AMS43AFS		7.50	5.100	-	-	BR1KW/75RJ	1	-	-	1000	75	40	
VFD25AMS43AFS		11.00	7.400	-	-	BR1.5KW/43RJ	1	-	-	1500	43	33	
VFD32AMS43AFS		15.00	10.200	-	-	BR1KW/16RJ	2	2	-	2000	32	26.2	
VFD38AMS43AFS		18.00	12.200	-	-	BR1KW/16RJ	2	2	-	2000	32	26.2	
VFD45AMS43AFS	22.00	14.900	-	-	BR1.5KW/13RJ	2	2	-	3000	26	23		
"E" Series													
VFD004E43T	460V	0.40	0.21	-	1	BR80W/750RJ	1	-	-	80	750	422.2	
VFD007E43T		0.75	0.51	-	1	BR80W/750RJ	1	-	-	80	750	422.2	
VFD015E43T		1.50	1.02	-	1	BR200W/360RJ	1	-	-	200	360	126.7	
VFD022E43A		2.20	1.49	-	-	BR200W/250RJ	1	-	-	300	250	84.4	
VFD037E43A		3.70	2.5	-	-	BR300W/70RJ	2	2	-	600	140	84.4	
VFD055E43A		5.50	3.72	-	-	BR1KW/75RJ	1	-	-	1000	75	63.3	
VFD075E43A		7.50	5.08	-	-	BR1KW/75RJ	1	-	-	1000	75	42.2	
VFD110E43A		11.00	7.45	-	-	BR1.5KW/43RJ	1	-	-	1500	43	42.2	
VFD150E43A		15.00	10.16	-	-	BR1KW/20RJ	2	2	-	2000	40	21.1	
VFD185E43A		18.50	12.52	-	-	BR1.2KW/15RJ	2	2	-	2400	30	17.7	
VFD220E43A	22.00	14.89	-	-	BR1.5KW/13RJ	2	2	-	3000	26	17.7		
"C 2000" Series													
VFD040C43E	460V	4	2.7	-	-	BR1KW/75RJ	1	-	-	1000	75	54.3	
VFD055C43E		5.5	3.7	-	-	BR1KW/75RJ	1	-	-	1000	75	54.3	
VFD075C43E		7.5	5.1	-	-	BR1KW/75RJ	1	-	-	1000	75	47.5	
VFD110C43E		11	7.5	-	-	BR1.5KW/43RJ	1	-	-	1500	43	42.2	
VFD150C43E		15	10.2	-	-	BR1KW/16RJ	2	-	-	2000	32	26.2	
VFD185C43E		18.5	12.2	-	-	BR1KW/16RJ	2	2	-	2000	32	23	
VFD220C43E		22	14.9	-	-	BR1.5KW/13RJ	2	2	-	3000	26	23	
VFD300C43E		30	20.3	-	-	BR1KW/16RJ	4	2	2	4000	16	14.1	
VFD370C43A		37	25.1	VFDB4045	1	BR1.2KW/15RJ	4	2	2	4800	15	12.7	
VFD450C43A		45	30.5	VFDB4045	1	BR1.5KW/13RJ	4	2	2	6000	13	12.7	
VFD550C43A		55	37.2	VFDB4030	1	BR1KW/5,1RJ	4	-	4	8000	10.2	9.5	
VFD750C43A		75	50.8	VFDB4045	2	BR1.2KW/15RJ	4	2	2	9600	7.5	6.3	
VFD900C43A		90	60.9	VFDB4045	2	BR1.5KW/13RJ	4	2	2	12000	6.5	6.3	
VFD1100C43A		110	74.5	VFDB4110	2	BR1.2KW/15RJ	10	2	5	12000	6	6	
VFD1320C43A		132	89.4	VFDB4160	1	BR1.5KW/12RJ	12	2	6	18000	4	4	
VFD1600C43A		160	108.3	VFDB4160	1	BR1.5KW/12RJ	12	2	6	18000	4	4	
VFD1850C43A		185	125.3	VFDB4185	1	BR1.5KW/12RJ	14	2	7	21000	3.4	3.4	
VFD2200C43A		220	148.9	VFDB4110	2	BR1.2KW/15RJ	10	2	5	24000	3	3	
VFD2800C43A		280	189.6	VFDB4160	2	BR1.5KW/12RJ	12	2	6	36000	2	2	
VFD3150C43A		315	213.3	VFDB4160	2	BR1.5KW/12RJ	12	2	6	36000	2	2	
VFD3550C43A		355	240.3	VFDB4185	2	BR1.5KW/12RJ	14	2	7	42000	1.7	1.7	
VFD4500C43A		450	304.7	VFDB4185	3	BR1.5KW/12RJ	12	2	6	54000	1.3	1.1	
"CP 2000" Series													
VFD040CP4EA-21		460V	4	2.5	-	-	BR400W/150RJ	1	-	-	1000	75	54.3
VFD055CP4EB-21			5.5	2.7	-	-	BR1KW/75RJ	1	-	-	1000	75	54.3
VFD075CP4EB-21			7.5	3.7	-	-	BR1KW/75RJ	1	-	-	1000	75	47.5
VFD110CP4EB-21			11	5.1	-	-	BR1KW/75RJ	1	-	-	1500	43	42.2
VFD150CP4EB-21	15		7.4	-	-	BR1.5KW/43RJ	2	2	-	2000	32	26.2	
VFD185CP4EB-21	18.5		10.2	-	-	BR1KW/16RJ	2	2	-	2000	32	23	
VFD220CP4EA-21	22		12.2	-	-	BR1KW/16RJ	2	2	-	3000	26	23	
VFD300CP4EB-21	30		14.9	-	-	BR1.5KW/13RJ	4	2	2	4000	16	14.1	
VFD370CP4EB-21	37		20.3	-	-	BR1KW/16RJ	4	2	2	4800	15	12.7	
VFD450CP43S-21	45		25	VFDB4045	1	BR1.2KW/15RJ	4	2	2	6000	13	12.7	
VFD550CP43S-21	55		30.5	VFDB4030	2	BR1.5KW/13RJ	4	4	-	8000	10.2	9.5	
VFD750CP43B-21	75		37.2	VFDB4045	2	BR1KW/5,1RJ	4	2	2	9600	7.5	6.3	
VFD900CP43A-21	90		50.8	VFDB4045	2	BR1.2KW/15RJ	4	2	2	12000	6.5	6.3	
VFD1100CP43A-21	110		60.9	VFDB4110	1	BR1.5KW/13RJ	10	2	5	12000	6	6	
VFD1320CP43B-21	132		74.5	VFDB4160	1	BR1.2KW/15RJ	12	2	6	18000	4	4	
VFD1600CP43A-21	160		89.4	VFDB4160	1	BR1.5KW/12RJ	12	2	6	18000	4	4	



:hager

socomec
Innovative Power Solutions

CPT cirprotec



sdf Electric

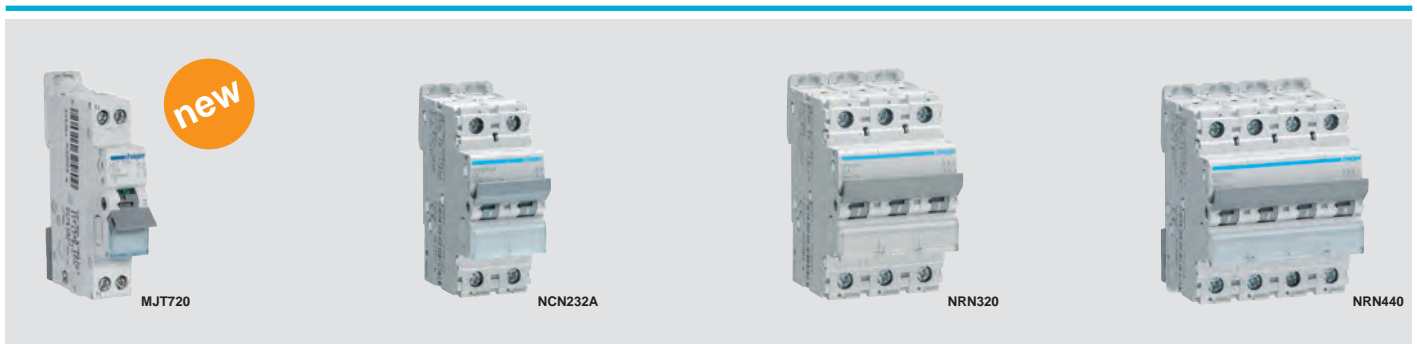
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Lovato
electric

POWER DISTRIBUTION & PROTECTION

B

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Type	MV	MJT	MA	NF/NFN	HLF	NGN	HMD	NCN	HMC	NRN	HMK	
No. Of Poles	1	1 + N	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	
Width per Pole in 17.5 mm	1	1	1	1	1.5	1	1.5	1	1.5	1	1.5	
Rated Current (A)	6 - 40A	6 - 40A	0.5 - 63A	0.5 - 63A	80 - 125A	0.5 - 63A	80 - 125A	0.5 - 63A	80 - 125A	0.5 - 63A	80 - 125A	
Breaking capacity	3kA	6kA	6kA	10kA	10kA	10kA	15kA	15kA	15kA	15 - 25kA	30kA	
Tripping Curve	C	C	C	C	C	D	D	C	C	C	C	
Rated AC Voltage (V)	230	230	230/400	230/400	230/400	230/400	230/400	230/400	230/400	230/400	230/400	
DC Application (refer Annex-9)	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Frequency (Hz)	50/60	50/60	50	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	
Add on Block (Earth Leakage)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Connecting Capacity (conductor)	Flexible (mm ²)	16 mm ²	10 mm ²	16 mm ²	25 mm ²	50 mm ²	25 mm ²	50 mm ²	25 mm ²	50 mm ²	25 mm ²	50 mm ²
	Rigid (mm ²)	25 mm ²	16 mm ²	25 mm ²	35 mm ²	70 mm ²	35 mm ²	70 mm ²	35 mm ²	70 mm ²	35 mm ²	70 mm ²
Isolation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Page	B-1	B1	B-2	B-3	B-3	B-4	B-4	B-5	B-5	B-6	B-6	



MV series C curve (5-10 In)

Protection and control of circuits against overload and short circuits. Suitable for domestic and commercial installations.

type	current rating	poles	breaking capacity	description	width in 17.5 mm
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Breaking capacity: 3 kA SANS/IEC 60947-2, SANS 556

- Does not accept clip-on accessories: auxiliaries, shunt trip, undervoltage release
- Compatible for DC voltage applications (see chart Annex 9)

Single pole

MV106Z	6A	1	3 kA	miniature circuit breaker	1
MV110Z	10A	1	3 kA	miniature circuit breaker	1
MV116Z	16A	1	3 kA	miniature circuit breaker	1
MV120Z	20A	1	3 kA	miniature circuit breaker	1
MV125Z	25A	1	3 kA	miniature circuit breaker	1
MV132Z	32A	1	3 kA	miniature circuit breaker	1
MV140Z	40A	1	3 kA	miniature circuit breaker	1

MJT series C curve (5-10 In)

Breaking capacity: 6 kA SANS/IEC 60947-2, SANS 556

- Accepts clip-on: auxiliaries, shunt trip, undervoltage and earth leakage (see page B-7/9)
- Trip indication - yellow flag on toggle indicates either "overload" or "short circuit" trip

1 Ph+N in one module

MJT702	2A	1+N	6 kA	miniature circuit breaker	1
MJT706	6A	1+N	6 kA	miniature circuit breaker	1
MJT710	10A	1+N	6 kA	miniature circuit breaker	1
MJT716	16A	1+N	6 kA	miniature circuit breaker	1
MJT720	20A	1+N	6 kA	miniature circuit breaker	1
MJT725	25A	1+N	6 kA	miniature circuit breaker	1
MJT732	32A	1+N	6 kA	miniature circuit breaker	1
MJT740	40A	1+N	6 kA	miniature circuit breaker	1



MA163Z



MA216Z



MA325Z



MA416Z

For the protection and control of circuits against overload and short circuits. Suitable for commercial and industrial installations.

- Compatible for DC voltage applications (see chart **Annex 9**)

Voltage rating: 230/400V 50-60Hz

Field fittable clip-on accessories (see page **B-7**)

- auxiliary/alarm contacts
- shunt trip device
- undervoltage release
- earth leakage (see page **B-9**)

type	current rating	poles	breaking capacity	description	width in 17.5 mm
MA series					
C curve (5-10 In)					
Breaking capacity:			6kA	SANS/IEC 60947-2, SANS 556	
Single pole					
MA100Z	0.5A	1	6kA	miniature circuit breaker	1
MA101Z	1A	1	6kA	miniature circuit breaker	1
MA102Z	2A	1	6kA	miniature circuit breaker	1
MA103Z	3A	1	6kA	miniature circuit breaker	1
MA106Z	6A	1	6kA	miniature circuit breaker	1
MA110Z	10A	1	6kA	miniature circuit breaker	1
MA116Z	16A	1	6kA	miniature circuit breaker	1
MA120Z	20A	1	6kA	miniature circuit breaker	1
MA125Z	25A	1	6kA	miniature circuit breaker	1
MA132Z	32A	1	6kA	miniature circuit breaker	1
MA140Z	40A	1	6kA	miniature circuit breaker	1
MA150Z	50A	1	6kA	miniature circuit breaker	1
MA163Z	63A	1	6kA	miniature circuit breaker	1
Two pole					
MA201Z	1A	2	6kA	miniature circuit breaker	2
MA202Z	2A	2	6kA	miniature circuit breaker	2
MA203Z	3A	2	6kA	miniature circuit breaker	2
MA206Z	6A	2	6kA	miniature circuit breaker	2
MA210Z	10A	2	6kA	miniature circuit breaker	2
MA216Z	16A	2	6kA	miniature circuit breaker	2
MA220Z	20A	2	6kA	miniature circuit breaker	2
MA225Z	25A	2	6kA	miniature circuit breaker	2
MA232Z	32A	2	6kA	miniature circuit breaker	2
MA240Z	40A	2	6kA	miniature circuit breaker	2
MA250Z	50A	2	6kA	miniature circuit breaker	2
MA263Z	63A	2	6kA	miniature circuit breaker	2
Three pole					
MA301Z	1A	3	6kA	miniature circuit breaker	3
MA302Z	2A	3	6kA	miniature circuit breaker	3
MA303Z	3A	3	6kA	miniature circuit breaker	3
MA306Z	6A	3	6kA	miniature circuit breaker	3
MA310Z	10A	3	6kA	miniature circuit breaker	3
MA316Z	16A	3	6kA	miniature circuit breaker	3
MA320Z	20A	3	6kA	miniature circuit breaker	3
MA325Z	25A	3	6kA	miniature circuit breaker	3
MA332Z	32A	3	6kA	miniature circuit breaker	3
MA340Z	40A	3	6kA	miniature circuit breaker	3
MA350Z	50A	3	6kA	miniature circuit breaker	3
MA363Z	63A	3	6kA	miniature circuit breaker	3
Four pole					
MA406Z	6A	4	6kA	miniature circuit breaker	4
MA410Z	10A	4	6kA	miniature circuit breaker	4
MA416Z	16A	4	6kA	miniature circuit breaker	4
MA420Z	20A	4	6kA	miniature circuit breaker	4
MA425Z	25A	4	6kA	miniature circuit breaker	4
MA432Z	32A	4	6kA	miniature circuit breaker	4
MA440Z	40A	4	6kA	miniature circuit breaker	4
MA450Z	50A	4	6kA	miniature circuit breaker	4
MA463Z	63A	4	6kA	miniature circuit breaker	4



NFN163



NFN263



HLF290S



NFN363

For the protection and control of circuits against overload and short circuits.

Field fittable clip-on accessories (see page B-7)

- auxiliary/alarm contacts - shunt trip device
- undervoltage release - earth leakage (see page B-9)

• Compatible for DC voltage applications (see chart Annex 9)

type	current rating	poles	breaking capacity	description	width in 17.5 mm
NF / HLF series		C curve (5-10 In)			
Breaking capacity:			10kA	SANS / IEC 60947-2, SANS 556	
Single pole					
NF100A	0.5A	1	10kA	miniature circuit breaker	1
NF101A	1A	1	10kA	miniature circuit breaker	1
NF102A	2A	1	10kA	miniature circuit breaker	1
NF103A	3A	1	10kA	miniature circuit breaker	1
NF106A	6A	1	10kA	miniature circuit breaker	1
NF110A	10A	1	10kA	miniature circuit breaker	1
NF116A	16A	1	10kA	miniature circuit breaker	1
NF120A	20A	1	10kA	miniature circuit breaker	1
NF125A	25A	1	10kA	miniature circuit breaker	1
NF132A	32A	1	10kA	miniature circuit breaker	1
NF140A	40A	1	10kA	miniature circuit breaker	1
NFN150	50A	1	10kA	miniature circuit breaker	1
NFN163	63A	1	10kA	miniature circuit breaker	1
HLF180S	80A	1	10kA	miniature circuit breaker	1.5
HLF190S	100A	1	10kA	miniature circuit breaker	1.5
HLF199S	125A	1	10kA	miniature circuit breaker	1.5
Two pole					
NF202A	2A	2	10kA	miniature circuit breaker	2
NF203A	3A	2	10kA	miniature circuit breaker	2
NF206A	6A	2	10kA	miniature circuit breaker	2
NF210A	10A	2	10kA	miniature circuit breaker	2
NF216A	16A	2	10kA	miniature circuit breaker	2
NF220A	20A	2	10kA	miniature circuit breaker	2
NF225A	25A	2	10kA	miniature circuit breaker	2
NF232A	32A	2	10kA	miniature circuit breaker	2
NF240A	40A	2	10kA	miniature circuit breaker	2
NFN250	50A	2	10kA	miniature circuit breaker	2
NFN263	63A	2	10kA	miniature circuit breaker	2
HLF280S	80A	2	10kA	miniature circuit breaker	3
HLF290S	100A	2	10kA	miniature circuit breaker	3
HLF299S	125A	2	10kA	miniature circuit breaker	3
Three pole					
NF302A	2A	3	10kA	miniature circuit breaker	3
NF303A	3A	3	10kA	miniature circuit breaker	3
NF306A	6A	3	10kA	miniature circuit breaker	3
NF310A	10A	3	10kA	miniature circuit breaker	3
NF316A	16A	3	10kA	miniature circuit breaker	3
NF320A	20A	3	10kA	miniature circuit breaker	3
NF325A	25A	3	10kA	miniature circuit breaker	3
NF332A	32A	3	10kA	miniature circuit breaker	3
NF340A	40A	3	10kA	miniature circuit breaker	3
NFN350	50A	3	10kA	miniature circuit breaker	3
NFN363	63A	3	10kA	miniature circuit breaker	3
HLF380S	80A	3	10kA	miniature circuit breaker	4.5
HLF390S	100A	3	10kA	miniature circuit breaker	4.5
HLF399S	125A	3	10kA	miniature circuit breaker	4.5
Four pole					
NF406A	6A	4	10kA	miniature circuit breaker	4
NF410A	10A	4	10kA	miniature circuit breaker	4
NF416A	16A	4	10kA	miniature circuit breaker	4
NF420A	20A	4	10kA	miniature circuit breaker	4
NF425A	25A	4	10kA	miniature circuit breaker	4
NF432A	32A	4	10kA	miniature circuit breaker	4
NF440A	40A	4	10kA	miniature circuit breaker	4
NFN450	50A	4	10kA	miniature circuit breaker	4
NFN463	63A	4	10kA	miniature circuit breaker	4
HLF480S	80A	4	10kA	miniature circuit breaker	6
HLF490S	100A	4	10kA	miniature circuit breaker	6
HLF499S	125A	4	10kA	miniature circuit breaker	6



NGN116



NGN216



NGN363



NGN410

For the protection and control of circuits against overload and short circuits. Suitable for commercial and industrial installations.

- Compatible for DC voltage applications (see chart Annex 9)

Field fittable clip-on accessories (see page B-7)

- auxiliary/alarm contacts
- shunt trip device
- undervoltage release
- earth leakage (see page B-9)

Voltage rating: 230/400V 50-60Hz

type	current rating	poles	breaking capacity	description	width in 17.5 mm
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NGN / HMD series D curve (10-20 In)

Breaking capacity: NGN:10kA / HMD: 15kA SANS/IEC 60947-2, SANS 556

Single pole

Model	Current Rating (A)	Poles	Breaking Capacity (kA)	Description	Width (mm)
NGN101	1A	1	10kA	miniature circuit breaker	1
NGN102	2A	1	10kA	miniature circuit breaker	1
NGN103	3A	1	10kA	miniature circuit breaker	1
NGN104	4A	1	10kA	miniature circuit breaker	1
NGN106	6A	1	10kA	miniature circuit breaker	1
NGN110	10A	1	10kA	miniature circuit breaker	1
NGN116	16A	1	10kA	miniature circuit breaker	1
NGN120	20A	1	10kA	miniature circuit breaker	1
NGN125	25A	1	10kA	miniature circuit breaker	1
NGN132	32A	1	10kA	miniature circuit breaker	1
NGN140	40A	1	10kA	miniature circuit breaker	1
NGN150	50A	1	10kA	miniature circuit breaker	1
NGN163	63A	1	10kA	miniature circuit breaker	1
HMD180	80A	1	15kA	miniature circuit breaker	1.5
HMD190	100A	1	15kA	miniature circuit breaker	1.5
HMD199	125A	1	15kA	miniature circuit breaker	1.5

Two pole

Model	Current Rating (A)	Poles	Breaking Capacity (kA)	Description	Width (mm)
NGN202	2A	2	10kA	miniature circuit breaker	2
NGN203	3A	2	10kA	miniature circuit breaker	2
NGN206	6A	2	10kA	miniature circuit breaker	2
NGN210	10A	2	10kA	miniature circuit breaker	2
NGN216	16A	2	10kA	miniature circuit breaker	2
NGN220	20A	2	10kA	miniature circuit breaker	2
NGN225	25A	2	10kA	miniature circuit breaker	2
NGN232	32A	2	10kA	miniature circuit breaker	2
NGN240	40A	2	10kA	miniature circuit breaker	2
NGN250	50A	2	10kA	miniature circuit breaker	2
NGN263	63A	2	10kA	miniature circuit breaker	2
HMD280	80A	2	15kA	miniature circuit breaker	3
HMD290	100A	2	15kA	miniature circuit breaker	3
HMD299	125A	2	15kA	miniature circuit breaker	3

Three pole

Model	Current Rating (A)	Poles	Breaking Capacity (kA)	Description	Width (mm)
NGN306	6A	3	10kA	miniature circuit breaker	3
NGN310	10A	3	10kA	miniature circuit breaker	3
NGN316	16A	3	10kA	miniature circuit breaker	3
NGN320	20A	3	10kA	miniature circuit breaker	3
NGN325	25A	3	10kA	miniature circuit breaker	3
NGN332	32A	3	10kA	miniature circuit breaker	3
NGN340	40A	3	10kA	miniature circuit breaker	3
NGN350	50A	3	10kA	miniature circuit breaker	3
NGN363	63A	3	10kA	miniature circuit breaker	3
HMD380	80A	3	15kA	miniature circuit breaker	4.5
HMD390	100A	3	15kA	miniature circuit breaker	4.5
HMD399	125A	3	15kA	miniature circuit breaker	4.5

Four pole

Model	Current Rating (A)	Poles	Breaking Capacity (kA)	Description	Width (mm)
NGN406	6A	4	10kA	miniature circuit breaker	4
NGN410	10A	4	10kA	miniature circuit breaker	4
NGN416	16A	4	10kA	miniature circuit breaker	4
NGN420	20A	4	10kA	miniature circuit breaker	4
NGN425	25A	4	10kA	miniature circuit breaker	4
NGN432	32A	4	10kA	miniature circuit breaker	4
NGN440	40A	4	10kA	miniature circuit breaker	4
NGN450	50A	4	10kA	miniature circuit breaker	4
NGN463	63A	4	10kA	miniature circuit breaker	4
HMD480	80A	4	15kA	miniature circuit breaker	6
HMD490	100A	4	15kA	miniature circuit breaker	6
HMD499	125A	4	15kA	miniature circuit breaker	6



NCN116A



NCN232A



NCN320A



NCN440A

For the protection and control of circuits against overload and short circuits. Suitable for commercial and industrial installations.

- Compatible for DC voltage applications (see chart Annex 9)

Voltage rating: 230/400V 50-60Hz

Field fittable clip-on accessories (see page B-7)

- auxiliary/alarm contacts
- shunt trip device
- undervoltage release
- earth leakage (see page B-9)

type	current rating	poles	breaking capacity	description	width in 17.5 mm
NCN / HMC series			C curve (5-10 In)		
Breaking capacity:			15kA	SANS/IEC 60947-2, SANS 556	
Single pole					
NCN106A	6A	1	15kA	miniature circuit breaker	1
NCN110A	10A	1	15kA	miniature circuit breaker	1
NCN116A	16A	1	15kA	miniature circuit breaker	1
NCN120A	20A	1	15kA	miniature circuit breaker	1
NCN125A	25A	1	15kA	miniature circuit breaker	1
NCN132A	32A	1	15kA	miniature circuit breaker	1
NCN140A	40A	1	15kA	miniature circuit breaker	1
NCN150A	50A	1	15kA	miniature circuit breaker	1
NCN163A	63A	1	15kA	miniature circuit breaker	1
HMC180	80A	1	15kA	miniature circuit breaker	1.5
HMC190	100A	1	15kA	miniature circuit breaker	1.5
HMC199	125A	1	15kA	miniature circuit breaker	1.5
Two pole					
NCN206A	6A	2	15kA	miniature circuit breaker	2
NCN210A	10A	2	15kA	miniature circuit breaker	2
NCN216A	16A	2	15kA	miniature circuit breaker	2
NCN220A	20A	2	15kA	miniature circuit breaker	2
NCN225A	25A	2	15kA	miniature circuit breaker	2
NCN232A	32A	2	15kA	miniature circuit breaker	2
NCN240A	40A	2	15kA	miniature circuit breaker	2
NCN250A	50A	2	15kA	miniature circuit breaker	2
NCN263A	63A	2	15kA	miniature circuit breaker	2
HMC280	80A	2	15kA	miniature circuit breaker	3
HMC290	100A	2	15kA	miniature circuit breaker	3
HMC299	125A	2	15kA	miniature circuit breaker	3
Three pole					
NCN306A	6A	3	15kA	miniature circuit breaker	3
NCN310A	10A	3	15kA	miniature circuit breaker	3
NCN316A	16A	3	15kA	miniature circuit breaker	3
NCN320A	20A	3	15kA	miniature circuit breaker	3
NCN325A	25A	3	15kA	miniature circuit breaker	3
NCN332A	32A	3	15kA	miniature circuit breaker	3
NCN340A	40A	3	15kA	miniature circuit breaker	3
NCN350A	50A	3	15kA	miniature circuit breaker	3
NCN363A	63A	3	15kA	miniature circuit breaker	3
HMC380	80A	3	15kA	miniature circuit breaker	4.5
HMC390	100A	3	15kA	miniature circuit breaker	4.5
HMC399	125A	3	15kA	miniature circuit breaker	4.5
Four pole					
NCN406A	6A	4	15kA	miniature circuit breaker	4
NCN410A	10A	4	15kA	miniature circuit breaker	4
NCN416A	16A	4	15kA	miniature circuit breaker	4
NCN420A	20A	4	15kA	miniature circuit breaker	4
NCN425A	25A	4	15kA	miniature circuit breaker	4
NCN432A	32A	4	15kA	miniature circuit breaker	4
NCN440A	40A	4	15kA	miniature circuit breaker	4
NCN450A	50A	4	15kA	miniature circuit breaker	4
NCN463A	63A	4	15kA	miniature circuit breaker	4
HMC480	80A	4	15kA	miniature circuit breaker	6
HMC490	100A	4	15kA	miniature circuit breaker	6
HMC499	125A	4	15kA	miniature circuit breaker	6

new



HMK180



NRN232



NRN320



NRN440

For the protection and control of circuits against overload and short circuits. Suitable for commercial and industrial installations.

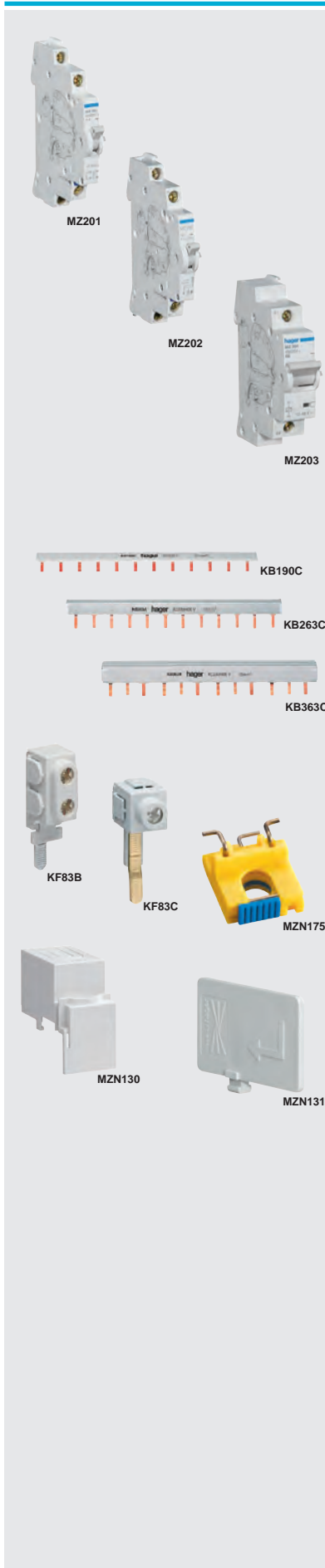
- Compatible for DC voltage applications (see chart Annex 9)

Voltage rating: 230/400V 50-60Hz

Field fittable clip-on accessories (see page B-7)

- auxiliary/alarm contacts
- shunt trip device
- undervoltage release
- earth leakage (see page B-9)

type	current rating	poles	breaking capacity	description	width in 17.5 mm
NRN / HMK series					
C curve (5-10 In)					
Breaking capacity:		6 - 25A	25kA	SANS/IEC 60947-2, SANS 556	
		32 - 40A	20kA		
		50 - 63A	15kA		
		80 - 125A	30kA		
Single pole					
NRN106	6A	1	25kA	miniature circuit breaker	1
NRN110	10A	1	25kA	miniature circuit breaker	1
NRN116	16A	1	25kA	miniature circuit breaker	1
NRN120	20A	1	25kA	miniature circuit breaker	1
NRN125	25A	1	25kA	miniature circuit breaker	1
NRN132	32A	1	20kA	miniature circuit breaker	1
NRN140	40A	1	20kA	miniature circuit breaker	1
NRN150	50A	1	15kA	miniature circuit breaker	1
NRN163	63A	1	15kA	miniature circuit breaker	1
HMK180	80A	1	30kA	miniature circuit breaker	1.5
HMK190	100A	1	30kA	miniature circuit breaker	1.5
HMK199	125A	1	30kA	miniature circuit breaker	1.5
Two pole					
NRN206	6A	2	25kA	miniature circuit breaker	2
NRN210	10A	2	25kA	miniature circuit breaker	2
NRN216	16A	2	25kA	miniature circuit breaker	2
NRN220	20A	2	25kA	miniature circuit breaker	2
NRN225	25A	2	25kA	miniature circuit breaker	2
NRN232	32A	2	20kA	miniature circuit breaker	2
NRN240	40A	2	20kA	miniature circuit breaker	2
NRN250	50A	2	15kA	miniature circuit breaker	2
NRN263	63A	2	15kA	miniature circuit breaker	2
HMK280	80A	2	30kA	miniature circuit breaker	3
HMK290	100A	2	30kA	miniature circuit breaker	3
HMK299	125A	2	30kA	miniature circuit breaker	3
Three pole					
NRN306	6A	3	25kA	miniature circuit breaker	3
NRN310	10A	3	25kA	miniature circuit breaker	3
NRN316	16A	3	25kA	miniature circuit breaker	3
NRN320	20A	3	25kA	miniature circuit breaker	3
NRN325	25A	3	25kA	miniature circuit breaker	3
NRN332	32A	3	20kA	miniature circuit breaker	3
NRN340	40A	3	20kA	miniature circuit breaker	3
NRN350	50A	3	15kA	miniature circuit breaker	3
NRN363	63A	3	15kA	miniature circuit breaker	3
HMK380	80A	3	30kA	miniature circuit breaker	4.5
HMK390	100A	3	30kA	miniature circuit breaker	4.5
HMK399	125A	3	30kA	miniature circuit breaker	4.5
Four pole					
NRN406	6A	4	25kA	miniature circuit breaker	4
NRN410	10A	4	25kA	miniature circuit breaker	4
NRN416	16A	4	25kA	miniature circuit breaker	4
NRN420	20A	4	25kA	miniature circuit breaker	4
NRN425	25A	4	25kA	miniature circuit breaker	4
NRN432	32A	4	20kA	miniature circuit breaker	4
NRN440	40A	4	20kA	miniature circuit breaker	4
NRN450	50A	4	15kA	miniature circuit breaker	4
NRN463	63A	4	15kA	miniature circuit breaker	4
HMK480	80A	4	30kA	miniature circuit breaker	6
HMK490	100A	4	30kA	miniature circuit breaker	6
HMK499	125A	4	30kA	miniature circuit breaker	6



All auxiliaries are common to both single and multi-pole circuit breakers. Auxiliaries are fitted to the left side of the protection device.

Field fittable accessories for MCB's: **MJT, MA, NF, NFN, HLF, NGN, HMD, NCN, HMC, NRN, HMK**

type	function	description		width in 17.5 mm
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Auxiliaries and tripping devices for MCB's and RCD's

Auxiliary contacts - (indication of MCB main contact status)

MZ201	auxiliary	contact block	1NO + 1NC	6A 230 VAC	0.5
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Alarm contacts - (indicates fault condition - MCB "tripped" on overload or short-circuit)

MZ202	alarm	contact block	1NO + 1NC	6A 230 VAC	0.5
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Shunt trip device - (permits remote tripping of the protection device)

MZ203	shunt	shunt trip device	110 - 130 VDC / 230 - 415 VAC		1
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MZ204	shunt	shunt trip device	12 - 48 VDC / 24 - 48VAC		1
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Under voltage release (MCB can only close when voltage is above 70% of Un) (automatically trips when voltage drops below 35% of Un)

MZ206	undervolt	under voltage release		230 VAC	1
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Over voltage release - (trips the protection device in case of overvoltage)

MZ212	overvolt	over voltage release		230 VAC	1
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Connection and MCB accessories

type	mm ²	current rating	poles	description	no. ways
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KB190C	20 mm ²	100A	1 pole	insulated busbar	24
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KB263C	10 mm ²	63A	2 pole	insulated busbar	24
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KB363C	10 mm ²	63A	3 pole	insulated busbar	24
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KB380B	16 mm ²	80A	3 pole	insulated busbar	57
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KB463C	10 mm ²	63A	4 pole	insulated busbar	24
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KZ022		end protection caps for busbar		KB263C	-
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KZ023A		end protection caps for busbar		KB363C, KB380B	-
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KZ024		end protection caps for busbar		KB463C	-
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KF84A	25 mm ²	enlarged terminal		(lateral connection)	-
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KF83B	2 x 25 mm ²	enlarged terminal		(lateral connection)	-
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KF83C	25 mm ²	enlarged terminal		(top or lateral connection)	-
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Accessories for MCBs

JP024	blinking	MCB blanking strip (with breakable sections)			24
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LZ060	dummy	module or heat dissipation insert between devices			0.5
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MZN175	padlock	attachment for locking MCB toggle in on/off position			1
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MZN130	cover	terminal cover for HLF, HMC, HMD, HMK MCBs			1.5
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MZN131	separator	phase separator for HLF, HMC, HMD, HMK MCBs			(set of 3)
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SBN132



SBN232



SBN399



SFH125



SFH225

SBN series - Modular isolators (*switch disconnectors*)

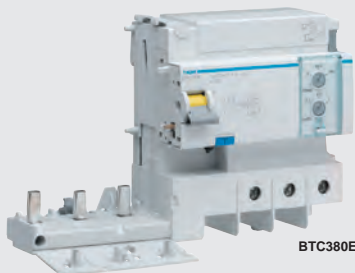
- SBN series is not suitable for DC circuits
- For use as a switch disconnector in all types of circuits
- Green/red (I/O) indication on handle provides positive contact indication

Voltage rating: 230/400 VAC
Utilisation category: AC 22A
Specification: SANS/IEC 60947-3

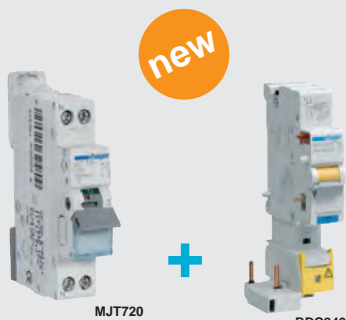
type	current rating (A)	switching	poles	description	width in 17.5 mm
Modular isolators (<i>modular DIN rail mount</i>)					
SBN132	32A	on - off	1 pole	modular isolator switch	1
SBN163	63A	on - off	1 pole	modular isolator switch	1
SBN190	100A	on - off	1 pole	modular isolator switch	1
SBN199	125A	on - off	1 pole	modular isolator switch	1
SBN232	32A	on - off	2 pole	modular isolator switch	1
SBN263	63A	on - off	2 pole	modular isolator switch	2
SBN290	100A	on - off	2 pole	modular isolator switch	2
SBN299	125A	on - off	2 pole	modular isolator switch	2
SBN332	32A	on - off	3 pole	modular isolator switch	2
SBN363	63A	on - off	3 pole	modular isolator switch	3
SBN390	100A	on - off	3 pole	modular isolator switch	3
SBN399	125A	on - off	3 pole	modular isolator switch	3
SBN432	32A	on - off	4 pole	modular isolator switch	2
SBN463	63A	on - off	4 pole	modular isolator switch	4
SBN490	100A	on - off	4 pole	modular isolator switch	4
SBN499	125A	on - off	4 pole	modular isolator switch	4
Auxiliary contact for above isolators					
ESC080	6A	1NO + 1NC		clip-on auxiliary for above switches	0.5
Changeover switches (<i>modular DIN rail mount</i>)					
SFH125	25A	on - on	1 pole	2 way changeover switch	1
SFH225	25A	on - on	2 pole	2 way changeover switch	2
SFT125	25A	on - off - on	1 pole	centre off changeover switch	1
SFT140	40A	on - off - on	1 pole	centre off changeover switch	1
SFT240	40A	on - off - on	2 pole	centre off changeover switch	2
SFT440	40A	on - off - on	4 pole	centre off changeover switch	4
SF263	63A	on - off - on	2 pole	centre off changeover switch	4
SF463	63A	on - off - on	4 pole	centre off changeover switch	8



BD264



BTC380E



MJT720

BDC240F



Add-on earth leakage devices for MCBs

For connection to all MCBs to be mounted to the right side of 2, 3, 4 pole circuit breakers. The combined unit provides effective protection against overload, short circuit as well as earth leakage faults. Features independent indication of "earth fault" or "overload" when tripped.

Description: To automatically open a circuit in the event of an earth leakage fault. Suitable for domestic, commercial and industrial installations

Nuisance Tripping: Hager earth leakage devices are protected against nuisance tripping caused by transient leakage currents

Nominal Voltage: (2 pole) 240V 50Hz
(4 pole) 400V 50Hz

type	current rating	sensitivity	poles	description	width in 17.5 mm
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Add-on earth leakage devices - for MA - NF - NFN - NGN - NCN - NRN circuit breakers

BD264	63A	30 mA	2 pole	add-on earth leakage device	2
BD364	63A	30 mA	3 pole	add-on earth leakage device	3
BD464	63A	30 mA	4 pole	add-on earth leakage device	3
BF264	63A	300 mA	2 pole	add-on earth leakage device	2
BF364	63A	300 mA	3 pole	add-on earth leakage device	3
BF464	63A	300 mA	4 pole	add-on earth leakage device	3

Add-on earth leakage devices - for HLF - HMC - HMD - HMK circuit breakers

BDC series - fixed sensitivity 30mA

BDC280E	125A	30 mA	2 pole	add-on earth leakage device	6
BDC380E	125A	30 mA	3 pole	add-on earth leakage device	6
BDC480E	125A	30 mA	4 pole	add-on earth leakage device	6

BTC series - adjustable sensitivity - 300mA - 500mA - 1A

- Adjustable trip delay: 0/60/150ms

BTC280E	125A	0.3/0.5/1A	2 pole	add-on earth leakage device	6
BTC380E	125A	0.3/0.5/1A	3 pole	add-on earth leakage device	6
BTC480E	125A	0.3/0.5/1A	4 pole	add-on earth leakage device	6

Add-on earth leakage device - for MJT series (1 module) circuit breakers only

The new **BDC240F** is a compact (1 module) earth leakage device which simply clips onto the **MJT series** (MCBs 1P+N) offering additional earth leakage protection to the attached MCB.

- Replacement for previous **AD---J** series. (only 2 modules wide)

BDC240F	40A	30mA	2 pole	add-on earth leakage device	1
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Combination MCB/RCD - earth leakage combined with overload/short circuit protection to replace previous **AD---J series, can be made by attaching **BDC240F** (above) to **MJT series** MCB's (below).**

- Provides separate indication of "e/leakage" - "overload" - short circuit" fault

1 Ph+N in one module	6 kA	SANS/IEC 60947-2		
MJT702	2A	6 kA	1+N	miniature circuit breaker 1
MJT706	6A	6 kA	1+N	miniature circuit breaker 1
MJT710	10A	6 kA	1+N	miniature circuit breaker 1
MJT716	16A	6 kA	1+N	miniature circuit breaker 1
MJT720	20A	6 kA	1+N	miniature circuit breaker 1
MJT725	25A	6 kA	1+N	miniature circuit breaker 1
MJT732	32A	6 kA	1+N	miniature circuit breaker 1
MJT740	40A	6 kA	1+N	miniature circuit breaker 1



CD241J



CD464J



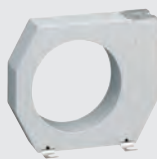
HR500



HR520



HR700



HR743

Residual current devices (RCDs) without overload protection

Compact device provides earth leakage protection (against electrical shocks by direct or indirect contact) to open automatically in the event of an earth fault between phase and earth and/or neutral and earth. Hager earth leakage devices are protected against nuisance tripping caused by transient leakage currents.

Field fittable accessories (see page B-7)

- shunt trip device
 - undervoltage release
- } Requires CZ001 interface auxiliary

Nominal voltage: (2 pole) 240V 50Hz
(4 pole) 400V 50Hz
Mechanical life: 40.000 operations

type	overload rating (A)	sensitivity (mA)	poles	description	width in 17.5 mm
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Earth leakage units (RCDs) (Type AC)

30mA sensitivity

CD226J	25A	30 mA	2 pole	earth leakage device	2
CD241J	40A	30 mA	2 pole	earth leakage device	2
CD264J	63A	30 mA	2 pole	earth leakage device	2
CD285Z	100A	30 mA	2 pole	earth leakage device	2
CD464J	63A	30 mA	4 pole	earth leakage device	4
CD485Z	100A	30 mA	4 pole	earth leakage device	4

100/300mA sensitivity (selective type)

CE264J	63A	100 mA	2 pole	earth leakage device	2
CF264J	63A	300 mA	2 pole	earth leakage device	2
CF285Z	100A	300 mA	2 pole	earth leakage device	4
CF464J	63A	300 mA	4 pole	earth leakage device	4
CF485Z	100A	300 mA	4 pole	earth leakage device	4

Auxiliaries for RCDs

CZ001	1NO + 1NC	auxiliary + alarm contact for above RCDs	2
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Industrial electronic earth leakage relay (with separate torroid)

- Incorporating "test" and "reset" buttons and LED indication

Fixed sensitivity, instantaneous trip

HR500	230V	30 mA	4 pole	entry level e/leakage relay	1
HR502	230V	300 mA	4 pole	entry level e/leakage relay	1

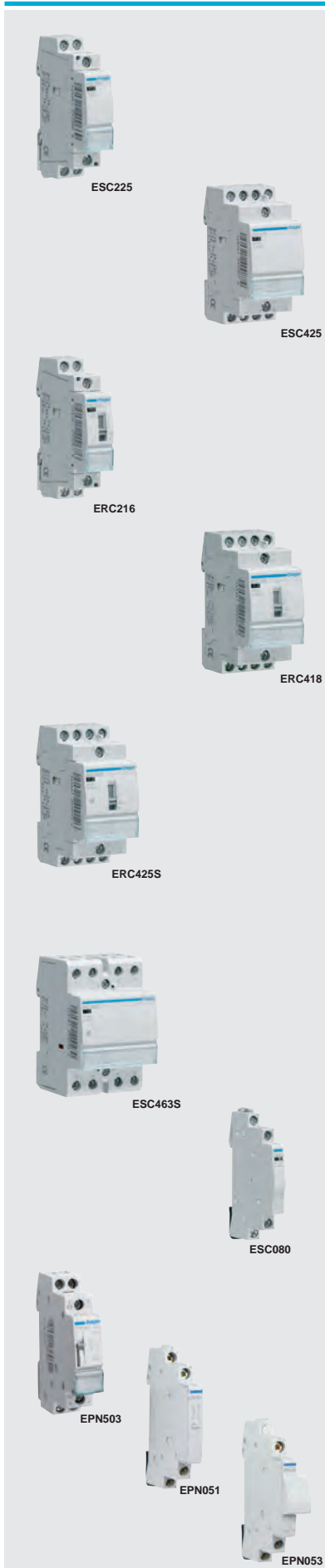
Adjustable sensitivity and trip delay

- Selectable In threshold: 0.03/0.1/0.3/0.4/0.5/1/3/10A (30mA - 10A)
- Selectable trip delay: 0/0.1/0.3/0.4/0.5/1/3sec (0-3sec)

HR510	230V	selectable	4 pole	earth leakage relay	3
HR520	as above with fault current indication and 50% pre-alarm output				3

Separate torroid sensors for electronic earth leakages

type	hole	diameter Ø (mm)		description	mount
HR700	round	30 mm	-	standard torroidal t/former	DIN rail
HR742	round	70 mm	-	standard torroidal t/former	chassis
HR743	round	105 mm	-	standard torroidal t/former	chassis
HR745	round	210 mm	-	standard torroidal t/former	chassis
HR830	rectangular	70 x 175	-	standard torroidal t/former	chassis



- Modular DIN rail mounting (*same cutout as MCBs*)
- Feature economic low consumption, low heat dissipation coils

type	contact rating	coil voltage	description	contact config.	width in 17.5 mm
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Modular contactors

Standard contactors (230 VAC 50/60 Hz)

ESC225	25A	230 VAC	modular standard contactor	2NO	1
ESC226	25A	230 VAC	modular standard contactor	2NC	1
ESC227	25A	230 VAC	modular standard contactor	1NO + 1NC	1
ESC425	25A	230 VAC	modular standard contactor	4NO	2
ESC427	25A	230 VAC	modular standard contactor	2NO + 2NC	2
ESC240	40A	230 VAC	modular standard contactor	2NO	3
ESC241	40A	230 VAC	modular standard contactor	2NC	3
ESC440	40A	230 VAC	modular standard contactor	4NO	3
ESC442	40A	230 VAC	modular standard contactor	2NO + 2NC	3
ESC263	63A	230 VAC	modular standard contactor	2NO	3
ESC463	63A	230 VAC	modular standard contactor	4NO	3
ESC464	63A	230 VAC	modular standard contactor	4NC	3
ESC465	63A	230 VAC	modular standard contactor	2NO + 2NC	3

Relays and contactors with manual override facility

ERC216	16A	230 VAC	modular rail mount relay	2NO	1
ERC218	16A	230 VAC	modular rail mount relay	1NO + 1NC	1
ERC416	16A	230 VAC	modular rail mount relay	4NO	2
ERC418	16A	230 VAC	modular rail mount relay	2NO + 2NC	2
ERC225	25A	230 VAC	modular standard contactor	2NO	1
ERC240	40A	230 VAC	modular standard contactor	2NO	3
ERC263	63A	230 VAC	modular standard contactor	2NO	3

Modular "low noise" contactors

- No humming while energised / low switching noise

ERC225S*	25A	230 VAC	low noise modular contactor	2NO	1
ERC425S*	25A	230 VAC	low noise modular contactor	4NO	2
ESC440S	40A	230 VAC	low noise modular contactor	4NO	3
ESC463S	63A	230 VAC	low noise modular contactor	4NO	3
ERL625SDC*	25A	12 VDC	low noise modular contactor	2NO	1
ERL425SDC*	25A	12 VDC	low noise modular contactor	4NO	2
ESL440S	40A	12 VDC	low noise modular contactor	4NO	3
ESL463S	63A	12 VDC	low noise modular contactor	4NO	3
ERD225SDC*	25A	24 VDC	low noise modular contactor	2NO	1
ESD425SDC*	25A	24 VDC	low noise modular contactor	4NO	2
ESD440S	40A	24 VDC	low noise modular contactor	4NO	3
ESD463S	63A	24 VDC	low noise modular contactor	4NO	3

* With manual override control

Contactors accessories

Auxiliary contact for all above contactors

Auxiliaries are not compatible with low noise contactors **ERC225S, ERL625SDC, ERD225SDC**

ESC080	1th 6A	–	clip-on auxiliary contact	1NO + 1NC	0.5
LZ060*	heat dissipation insert for mounting between contactors				0.5

* Avoid overheating when installed side by side, insert a heat dissipation module **LZ060** between contactors

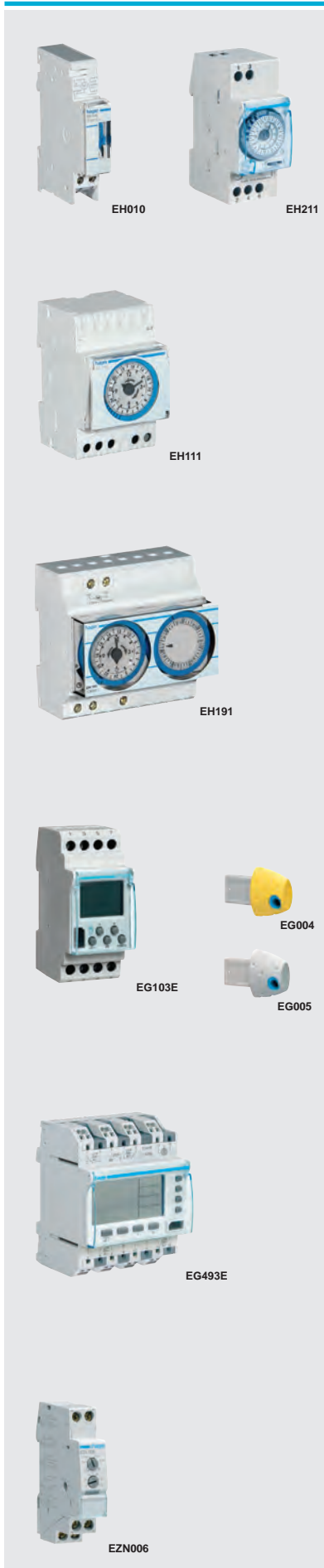
Modular latching / step relays

- Pulsing the relay changes the contact status until pulsed again
- Max. pulse duration: 1 hour
- With manual override facility

EPN515	16A	230 VAC	modular stepping relay	1NO + 1NC	1
EPN503	16A	48 VAC/24 VDC	modular stepping relay	1NO + 1NC	1
EPN518	16A	24 VAC/12 VDC	modular stepping relay	1NO + 1NC	1
EPN519	16A	12 VAC	modular stepping relay	1NO + 1NC	1
EPN521	16A	12 VAC	modular stepping relay	2NO	1

Auxiliary for above stepping relays

EPN051	1th 6A	–	clip-on auxiliary contact	1NO + 1NC	0.5
EPN053	1th 6A	–	converts maintained contact into a pulsed one	1 C/over	0.5



Time switches control lighting, heating, household appliances, shop windows and many other devices according to pre-defined programming.

- Modular DIN rail mounting

type	time range	min. setting	reserve	contact config.	description	width in 17.5 mm
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Analogue time switches (electro-mechanical) 16A 250V

Slimline 1 module wide (17.5 mm)

EH010	24 hr	15 min	no	1 NO	time switch	1
EH011	24 hr	15 min	200 hrs	1 NO	time switch	1

Standard 2/3 module wide - clock hands indicate real time (except EH109)

EH210	24 hr	30 min	no	1 c/over	time switch	2
EH211	24 hr	30 min	200 hrs	1 c/over	time switch	2
EH109	24 hr	15 min	no	1 c/over	time switch	3
EH110	24 hr	15 min	no	1 c/over	time switch	3
EH111	24 hr	15 min	200 hrs	1 c/over	time switch	3
EH171	7 day	2 hr	200 hrs	1 c/over	time switch	3

Dual dial (1 dial 7 day / 1 dial 24hr)

EH191	7 day / 24 hr	15 min / 2 hr	200 hrs	1 c/over	time switch	5
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Digital time switches (programmable via buttons or via PC programmable key)

- Up to 56 program steps
- Indicates date and time (pre-programmed at factory)
- Visualisation of daily profile via incorporated bar-graph display
- Programmable via front keypad (even without supply) or program key "EG005"

Basic version (programming key to be ordered separately) 230 VAC

EG103B	7 day	1 min	5 years	1 c/over	time switch	2
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Exclusive version (supplied with programming key) 230 VAC

Impulse time switch (suitable for school-bell ringing - lunch/tea break)

- Programmable pulses of 1 sec - 30 min duration
- "Holiday" mode programmable (between two dates)
- Backlit display (for indication in badly illuminated locations)

EG103E	7 day	1 sec	5 years	1 c/over	time switch	2
EG203E	7 day + 7 day	1 sec	5 years	2 c/over	time switch	2

12 / 24VAC/DC version (supplied with programming key)

EG103V	7 day	1 sec	5 years	1 c/over	time switch	2
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4 Channel yearly time switch (300 program steps)

EG493E	week	1 min	10 years	2 CO + 2 NO	time switch	4
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Accessories for time switches

EG004	Locking key (for disabling front keypad)	
EG005	Programming key (for down/up loading of program)	EG103/203E
EG007	Programming key (for down/up loading of program)	EG493E

Modular electronic timers - (8A 230V changeover)

- Multi-time range: 0.1s - 10h
- Multi-voltage: 12 - 230 VAC +-10% / 12 - 48 VDC +-10%
- 8A 230V changeover output
- Modular DIN rail mounting

EZN001	On-delay multi-range (modular timer)	electronic timer	1
EZN002	Delay-on de-energisation (modular timer)	electronic timer	1
EZN003	Interval/off delay (modular timer)	electronic timer	1
EZN004	Pulse controlled interval (modular timer)	electronic timer	1
EZN006	Multi-function on-delay / off-delay / interval / repeat	electronic timer	1



ST314



SU213



LSN502



SVN.....



654.0091



654.0092 +
101.6414.G

Control transformers (modular DIN rail mount)

type	supply voltage	output voltage	power (VA)		description	width in 17.5 mm
ST312	230V	12/24V	25VA		modular safety transformer	4
ST314	230V	12/24V	40VA		modular safety transformer	4
ST315	230V	12/24V	63VA		modular safety transformer	6
ST303	230V	8/12V	8VA		modular bell transformer	2
ST305	230V	8/12V	16VA		modular bell transformer	3

Audible devices (modular DIN rail mount)

SU213	230V	–	6.5VA	85 dBA	modular buzzer	1
SU214	8/12 VAC	–	4.0VA	78 dBA	modular buzzer	1
SU215	230V	–	6.5VA	78 dBA	modular buzzer	1

Fuse holders (modular DIN rail mount)

- For protection and control of circuits against overloads and short circuits
- Short-circuit resistance with 10 x 38 mm fuse link: 80kA
- For 10 x 38 mm cylindrical fuses (see page **B-38-41**)

LSN501	32A	1 pole			modular cylindrical fuse holder	1
LSN502	32A	2 pole			modular cylindrical fuse holder	2

Control and indicating devices (modular DIN rail mount)

LED indicating lights (10.000 hrs)

SVN121	230VAC	green			modular LED indicating light	1
SVN122	230 VAC	red			modular LED indicating light	1
SVN123	230 VAC	amber			modular LED indicating light	1
SVN126	230 VAC	grn+red			modular LED indicating light	1
SVN223	230 VAC	red/wht/blu			modular LED p/light for phase indication	1
SVN131	12 - 48 VAC/DC	green			modular LED indicating light	1
SVN132	12 - 48 VAC/DC	red			modular LED indicating light	1
SVN351	1NO + 1NC	green			modular momentary pushbutton	1
SVN391	1NO + 1NC	grn+red			double pushbutton (grn NO / red NC)	1
SVN411	1NO	green			modular pushbutton + green pilot light	1

SCAME DIN modular domestic sockets for distribution boards

Permits the mounting of domestic switches and/or sockets into standard DIN distribution boards to provide an electrical connection for tools, power supplies or recording instruments.

- DIN rail mounting housing/support for domestic switches or sockets
- Mounts into standard distribution boards with same dimensions and cut-out as MCB's
- Two modular widths: one module (18 mm) and two module (36 mm)

type	description	no. of modules (W) 18 mm
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DIN rail support for Evolution series

654.0091	DIN rail support for Evolution series switches or sockets	1
654.0092	DIN rail support for Evolution series switches or sockets	2

Evolution series switches and sockets for (above) supports

- Simply clips into DIN rail mount housing (above)

101.6414.G	15A	2P+E	South African std socket for housings	2
101.6403.G	16A	2P+E	European/Italian socket for housings	1
101.6303.G	16A	1 pole	switch for housings (I-O)	1
101.6311.G	16A	2 pole	changeover switch for housings (I-O-II)	1



SPN802



SPN240D



SPN440R



SPN040D



ECP180D



ECP310D



ECP300C

Modular surge protection devices

SANS/IEC 61643-11

For the protection of low voltage equipment against transient voltages and current surges from atmospheric origins (*lightning*) as well as transients produced by switching characteristics such as switching of distribution networks, transformers, motors, etc.

type	poles	Up	limp 10/350 µs	I _{max} 8/20 µs	description	width in 17.5 mm
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Class 1 and class 2 combined surge protection device

- Lightning and surge-voltage protection in one device
- Replaceable plug-in cartridges

SPN802	3ph + N	≤ 1.5kV	100kA	–	class 1+2 surge protector	8
SPN802R*	3ph + N	≤ 1.5kV	100kA	–	class 1+2 surge protector	8

* With remote signalling contact for monitoring

Class 2 surge protection (modular plug-in)

Suitable for second level protection in distribution panels where type 1 protectors are installed or areas not exposed to direct lightning strikes and with no external lightning protection system.

- Protection for domestic, industrial and commercial buildings
- Replaceable plug-in cartridges

I_{max} 40kA (8/20µs)

SPN140D	1P	≤ 1.5kV	–	40kA	class 2 surge protector	1
SPN140R*	1P	≤ 1.5kV	–	40kA	class 2 surge protector	1
SPN240D	1ph + N	≤ 1.5kV	–	40kA	class 2 surge protector	2
SPN240R*	1ph + N	≤ 1.5kV	–	40kA	class 2 surge protector	2
SPN440D	3ph + N	≤ 1.5kV	–	40kA	class 2 surge protector	4
SPN440R*	3ph + N	≤ 1.5kV	–	40kA	class 2 surge protector	4

* With remote signalling contact for monitoring

Replacement cartridges for above surge protection devices

SPN040D	phase	replacement cartridge	for protectors	SPN240/440	1
SPN040N	neutral	replacement cartridge	for protectors	SPN2/4	1

Energy meters (kWh meters) (modular DIN rail mounting)

- Accuracy: 1%
- Impulse output
- Backlit LCD display
- "Total" counter and "Partial" (*resettable*) counter
- Class 1 according to IEC 62 053-21 and EN 50470
- LED indication blinks according to consumption (1 pulse = 100wh)

type	current	operation	description	width
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Single-phase kWh meter 80A (direct reading)

- Displays consumption of active energy and instantaneous power consumption

ECP180D	80A	direct	single-phase kWh meter	2
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Three-phase kWh meters 80/125A (direct reading)

- Protected against phase/neutral inversion
- Adaptable to three phase with or without neutral, 230V or 400V between lines
- Displays consumption of active energy and instantaneous power consumption

ECP380D	80A	direct	three-phase kWh meter	4
ECP310D	125A	direct	three-phase kWh meter	6

Three-phase kWh meters up to 6000A (connection via CT)

- Displays instantaneous power consumption
- Displays consumption of active energy and reactive energy
- Adaptable to three phase with or without neutral, 230V or 400V between lines

ECP300C	6000A	CT / 5A	three-phase kWh meter	4
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* For CT's, see **Section E-Metering**

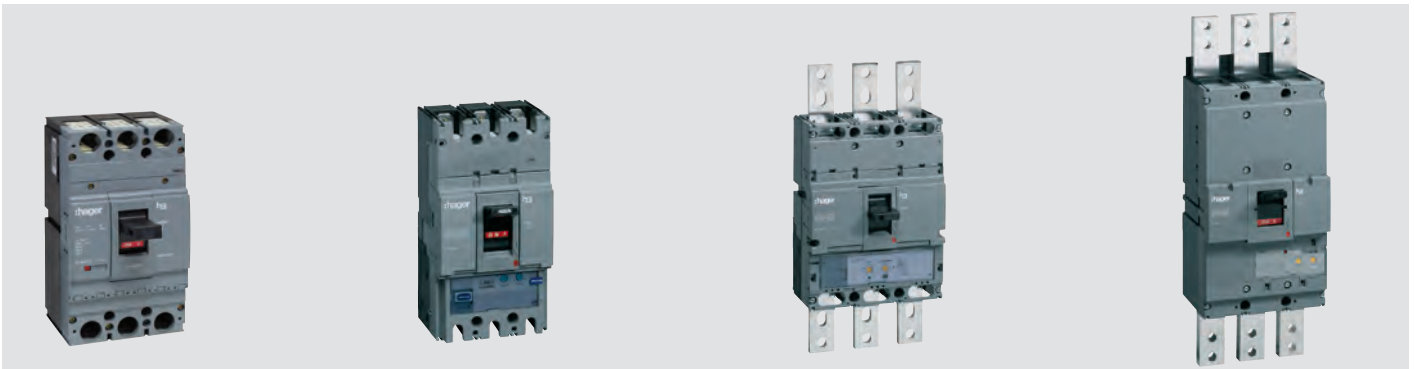
H3 circuit breakers conform to IEC/EN 60947-2 standards and to all major international standards and performance categories.

- Suitable for co-ordinated installations in all applications
- Thermal magnetic and electronic release
- Calibrated at 50°C

Cascading with MCBs (see cascading chart **Annex-10**)



Frame			x160			x250			h250 TM		
			Switch			MCCB			MCCB		
Product			HCA	HHA	HNA	HCB	HHB	HNB	HEG		
Reference											
Number of poles			[No.]			3-4			3-4		
Electrical characteristics											
Rated current	In	[A]	160			250			250		
Current rated range		[A]	125-160			16-160 (3,4P)			250		
Rated service voltage, (AC)	Ue	[V]	220-690			220-690			220-690		
Frequency	f	[Hz]	50/60			50/60			50/60		
Rated insulation voltage	Ui	[V]	690			800			800		
Rated impulse withstand voltage	Uimp	[kV]	8			8			8		
Rated ultimate short-circuit breaking capacity	(Icu)										
(AC) 50-60 Hz 220/230 V	Icu	[kA]	–	35	85	–	35	85	35	85	85
(AC) 50-60 Hz 380/415 V	Icu	[kA]	–	25	40	–	25	40	25	50	65
(AC) 50-60 Hz 480/500/525 V	Icu	[kA]	–	7.5	12.5	–	–	10	10	25	25
(AC) 50-60 Hz 660/690 V	Icu	[kA]	–	–	–	–	–	4	–	7.5	7.5
(DC) 250 V - 2 poles in series	Icu	[kA]	–	20	25	–	25	25	25	40	40
Rated service short-circuit breaking capacity,	(Ics)										
(AC) 50-60 Hz 220/230 V	Ics	[kA]	–	25	40	–	25	40	27	65	85
(AC) 50-60 Hz 380/415 V	Ics	[kA]	–	20	20	–	20	20	19	25	36
(AC) 50-60 Hz 480/500/525 V	Ics	[kA]	–	4	7.5	–	–	7.5	7.5	25	25
(AC) 50-60 Hz 660/690 V	Ics	[kA]	–	–	3	–	–	2	–	7.5	7.5
(DC) 250 V - 2 poles in series	Ics	[kA]	–	10	13	–	13	13	19	40	40
Rated short-circuit making capacity	Icm	[kA]	2.8	–	–	6	–	–	–	–	–
Rated short-time withstand current for 1s	Icw	[kA]	2	–	–	3	–	–	–	–	–
Category of use (EN 60947-2)			A			A			A		
Calibration temperature			50°C			50°C			50°C		
Derating	40°C		100%			100%			100%		
	50°C		100%			100%			100%		
	55°C		95%			94%			94%		
	60°C		93%			91%			91%		
	65°C		90%			88%			88%		
Suitability for insulation			ok			ok			ok		
Electric endurance in number of cycles			10000			10000			10000		
Mechanical endurance in number of operations			20000			20000			30000		
Operating temperature			-25 to +70°C			-25 to +70°C			-25 to +70°C		
Storage temperature			-35 to +70°C			-35 to +70°C			-35 to +70°C		
Power loss (at In for 3P)		[W]	39			60			65		
Reference standard			IEC 60947-3	IEC 60947-2		IEC 60947-3	IEC 60947-2		IEC 60947-2		
Releases: switch			ok	–		ok	–		–		
Releases: TM (thermomagnetic)			–	ok		–	ok		ok		
T fixed, M fixed			–	ok		–	ok		–		
T adjustable, M fixed			–	ok		–	–		–		
T adjustable, M adjustable			–	–		–	ok		ok		
Thermal adjustment value			–	0.63 to 1 x In		–	0.63 to 1 x In		0.63 to 1 x In		
Magnetic adjustment value			–	–		–	6-8-10-13 x In (200A) 5-7-9-11 In (250A)		6-8-10-13 x In		
Releases: LSI (electronic)			–	–		–	–		–		
Long delay			–	–		–	–		–		
Short delay			–	–		–	–		–		
Time delay			–	–		–	–		–		
Connection											
Standard terminal type			cage			lugs			lugs		
Maximum terminal capacity			95 mm ²			185 mm ² (cage)			120 mm ² (cage)		
Terminal width		mm	–			25			25		
Terminal shields			ok			ok			ok		
Cage terminal			integrated			ok			ok		
Extended connections			ok			ok			ok		
Rear connections			no			ok			ok		
Dimensions											
Height		mm	130			165			165		
Width	1P	mm	–	25	–	–	–	–	–	–	–
	2P	mm	–	50	–	–	–	–	–	–	–
	3P	mm	–	75	–	–	105	–	–	105	–
	4P	mm	–	100	–	–	140	–	–	140	–
Depth		mm	68			68			68		
Weight	1P	kg	–	0.29	–	–	–	–	–	–	–
	2P	kg	–	0.48	–	–	–	–	–	–	–
	3P	kg	–	0.715	–	–	1.3	–	–	1.5	–
	4P	kg	–	0.95	–	–	1.6	–	–	1.9	–



h400e		h800e		h400 TM		h630 LSI			h1000 LSI			h1600 LSI		
MCCB		MCCB		MCCB		Switch	MCCB		Switch	MCCB		Switch	MCCB	
HND	HNE	HND	HNE	HND	HNE	HCD	HND	HED	HCE	HNE	HEE	HCF	HNF	HEF
3	3	3-4					3-4			3-4			3-4	
320, 400	500, 630, 800	400		250-400		400-630	630			1000			1600	
415	415	220-690		220-690		220-690	250-400-630			630-800-1000			1250-1600	
50	50	50/60		50/60		50/60	220-690			220-690			220-690	
690	690	800		800		800	50/60			50/60			50/60	
8	8	8		8		8	800			800			800	
							8			8			8	
		85		–		85	100			85 (800A), 75 (1000A)	100	–	100	100
50	50	50		–		50	70			50	70	–	50	70
		30		–		30	30			30	30	–	45	65
		20		–		20	20			20	20	–	25	45
		40		–		–	–			–	–	–	–	–
		85		–		85	85			85 (800A), 75 (1000A)	100 (800A), 75 (1000A)	–	75	75
36	36	50		–		50	50			50	50	–	50	50
		30		–		30	30			30	30	–	45	50
		15		–		15	15			20	20	–	25	34
		40		–		–	–			–	–	–	–	–
		–		9		–	–		20	–	–	45	–	–
		–		5 (0.3s)		–	–		10 (0.3s)	–	–	20 (0.3s)	–	–
A	A	A		–		–	B(250-400A) - A(630A)		–	B(800A) - A(1000A)	–	–	–	B
		50°C		–		–	40/50°C		–	40/50°C	–	–	–	40/50°C
100%	100%	100%		–		–	100%		–	100%	–	–	–	100%
92%	94%	100%		–		–	95%		–	95%	–	–	–	95%
88%	86%	95%		–		–	90%		–	90%	–	–	–	90%
83%	82%	92%		–		–	80%		–	80%	–	–	–	80%
		89%		–		–	80%		–	80%	–	–	–	80%
ok	ok	ok		–		–	ok		–	ok	–	–	–	ok
2000	1500	4500		–		–	4500		–	4500	–	–	–	4500
4000	4000	15000		–		–	15000		–	15000	–	–	–	15000
-5 to +60°C	-5 to +60°C	-25 to +70°C		–		–	-25 to +70°C		–	-25 to +70°C	–	–	–	-25 to +70°C
-25 to +70°C	-25 to +70°C	-35 to +70°C		–		–	-35 to +70°C		–	-35 to +70°C	–	–	–	-35 to +70°C
		75		–		–	150		–	150	–	–	–	170
IEC 60947-2	IEC 60947-2	IEC 60947-2		IEC 60947-3		IEC 60947-2		IEC 60947-3		IEC 60947-2		IEC 60947-3		IEC 60947-2
ok	ok	ok		ok		–	–	ok		–	–	ok		–
ok	ok	–		–		–	–	–		–	–	–		–
–	–	ok		–		–	–	–		–	–	–		–
–	–	0.63 to 1 x I _n		–		–	–	–		–	–	–		–
–	–	6-8-10-12 x I _n		–		–	–	–		–	–	–		–
–	–	–		–		ok	–	–	ok	–	–	–	ok	–
–	–	–		–		0.4 to 1 x I _r	–	–	0.4 to 1 x I _r	–	–	–	0.4 to 1 x I _n	–
–	–	–		–		2.5 to 10 x I _r (250 - 400A), 2.5 to 8 x I _r (630A)	–	–	2.5 to 10 x I _r (800A), 2.5 to 8 x I _r (1000A)	–	–	–	2.5 to 10 x I _r	–
–	–	–		–		0.1 - 0.2s	–	–	0.1 - 0.2s	–	–	–	0.1 - 0.2s	–
–	–	lugs		lugs		lugs		lugs		lugs		lugs		lugs
–	–	240 mm ² (cage)		–		–	–	–		–		–		–
–	–	30		30		30		45		45		45		45
–	–	ok		ok		ok		ok		ok		ok		ok
–	–	ok		–		–		–		–		–		–
–	–	ok		integrated		integrated		integrated		integrated		integrated		integrated
ok	ok	ok		ok		ok		ok		ok		ok		ok
257	275	260		260		260		273/433		273/433		370/570		370/570
–	–	–		–		–		–		–		–		–
–	–	–		–		–		–		–		–		–
140	210	140		140		140		210		210		210		210
184	280	185		185		185		280		280		280		280
155	155	97		97		97		99.5		99.5		140		140
–	–	–		–		–		–		–		–		–
–	–	–		–		–		–		–		–		–
4.3	6.6	4.2		4.3		4.3		11		11		27		27
5.2	8.9	5.6		5.7		5.7		14.8		14.8		31		31



HHA125Z



HND400P



HNB250U



HND630H



HNE970U

- Mechanical "test" button on facia
- Integrated padlock facility on toggle
- Cascading with MCBs (see chart Annex 10)
- Lockable thermal/magnetic settings
- Standards: SANS / IEC 60947-2

"Clip-in" accessories

- Auxiliary contacts
- Alarm contacts
- Shunt trip device
- Undervoltage release

type	thermal current	rated kA 415V (Icu)	poles	description	frame
Fixed type thermal / magnetic trip 25/50 kA					
Fixed: thermal 1 x In / magnetic >10 x In					
HHA016Z	16A	25kA	3 pole	moulded case CB	x160
HHA020Z	20A	25kA	3 pole	moulded case CB	x160
HHA025Z	25A	25kA	3 pole	moulded case CB	x160
HHA032Z	32A	25kA	3 pole	moulded case CB	x160
HHA040Z	40A	25kA	3 pole	moulded case CB	x160
HHA050Z	50A	25kA	3 pole	moulded case CB	x160
HHA063Z	63A	25kA	3 pole	moulded case CB	x160
HHA080Z	80A	25kA	3 pole	moulded case CB	x160
HHA100Z	100A	25kA	3 pole	moulded case CB	x160
HHA125Z	125A	25kA	3 pole	moulded case CB	x160
HHA160Z	160A	25kA	3 pole	moulded case CB	x160
HHB200Z	200A	25kA	3 pole	moulded case CB	x250
HHB250Z	250A	25kA	3 pole	moulded case CB	x250
H3e series economical, cost-efficient (not compatible with Quadro enclosure system)					
Fixed: thermal 1.05 to 1.3 x In / magnetic >10 x In					
HND320P	320A	50kA	3 pole	moulded case CB	h400e
HND400P	400A	50kA	3 pole	moulded case CB	h400e
HNE500P	500A	50kA	3 pole	moulded case CB	h800e
HNE630P	630A	50kA	3 pole	moulded case CB	h800e
HNE800P	800A	50kA	3 pole	moulded case CB	h800e
Adjustable thermal / magnetic trip 40/50 kA					
• Window indicating presence of: - auxiliary/alarm contacts, shunt trip, UV release					
TM: adjustable thermal 0.63 - 0.8 - 1 x In / fixed magnetic >10 x In					
HNA025U	16 - 25A	40kA	3 pole	moulded case CB	x160
HNA040U	25 - 40A	40kA	3 pole	moulded case CB	x160
HNA063U	40 - 63A	40kA	3 pole	moulded case CB	x160
HNA100U	63 - 100A	40kA	3 pole	moulded case CB	x160
HNA125U	80 - 125A	40kA	3 pole	moulded case CB	x160
HNA160U	101 - 160A	40kA	3 pole	moulded case CB	x160
HNA026U	16 - 25A	40kA	4 pole	moulded case CB	x160
HNA041U	25 - 40A	40kA	4 pole	moulded case CB	x160
HNA064U	40 - 63A	40kA	4 pole	moulded case CB	x160
HNA101U	63 - 100A	40kA	4 pole	moulded case CB	x160
HNA126U	80 - 125A	40kA	4 pole	moulded case CB	x160
HNA161U	101 - 160A	40kA	4 pole	moulded case CB	x160
TM: adjustable thermal 0.63 - 0.8 - 1 x In / adjustable magnetic 5-7-9-11 x In					
HNB250U	160 - 250A	40kA	3 pole	moulded case CB	x250
HNB251U	160 - 250A	40kA	4 pole	moulded case CB	x250
TM: adjustable thermal 0.63 - 0.8 - 1 x In / adjustable magnetic 6-12 x In					
HND400U	252 - 400A	50kA	3 pole	moulded case CB	h400
HND401U	252 - 400A	50kA	4 pole	moulded case CB	h400
Adjustable electronic release (LSI) 50 kA					
LSI: adjustable thermal 0.4 - 1 x In / adjustable magnetic 2.5 - 8 x Ir / time 0.1 - 0.2sec					
HND400H	252 - 400A	50kA	3 pole	moulded case CB	h400
HND630H	252 - 630A	50kA	3 pole	moulded case CB	h630
HNE800H	320 - 800A	50kA	3 pole	moulded case CB	h1000
HNE970H	400 - 1000A	50kA	3 pole	moulded case CB	h1000
HNF980H	500 - 1250A	50kA	3 pole	moulded case CB	h1600
HNF990H	640 - 1600A	50kA	3 pole	moulded case CB	h1600
HND631H	252 - 630A	50kA	4 pole	moulded case CB	h630
HNE801H	320 - 800A	50kA	4 pole	moulded case CB	h1000
HNE971H	400 - 1000A	50kA	4 pole	moulded case CB	h1000
HNF981H	500 - 1250A	50kA	4 pole	moulded case CB	h1600
HNF991H	640 - 1600A	50kA	4 pole	moulded case CB	h1600



HEG063U



HED630H



HCF990H



HXA021H

HXA024H

HXC024H



HXC004H

- Mechanical "test" button on fascia
- Cascading with MCBs (see chart Annex 10)
- Lockable thermal/magnetic settings
- Standards: SANS / IEC 60947-2

"Clip-in" accessories

- Auxiliary contacts
- Alarm contacts
- Shunt trip device
- Undervoltage release

type	thermal current	rated kA 415V (Icu)	poles	description	frame
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Adjustable thermal / magnetic trip 65 kA

TM: adjustable thermal 0.63 - 1 x In / magnetic 6 - 8 - 11 - 13 x In

HEG063U	40 - 63A	65kA	3 pole	moulded case circuit breaker	h250
HEG100U	63 - 100A	65kA	3 pole	moulded case circuit breaker	h250
HEG160U	100 - 160A	65kA	3 pole	moulded case circuit breaker	h250
HEG250U	160 - 250A	65kA	3 pole	moulded case circuit breaker	h250

Adjustable thermal / magnetic trip 70 kA

LSI: adjustable thermal 0.4 - 1 x In / fixed magnetic 2.5 - 8 x Ir / time 0.1 - 0.2sec

HED400H	160 - 400A	70kA	3 pole	moulded case circuit breaker	h630
HED630H	252 - 630A	70kA	3 pole	moulded case circuit breaker	h630
HEE800H	320 - 800A	70kA	3 pole	moulded case circuit breaker	h1000
HEE970H	400 - 1000A	70kA	3 pole	moulded case circuit breaker	h1000
HEF980H	500 - 1250A	70kA	3 pole	moulded case circuit breaker	h1600
HEF990H	640 - 1600A	70kA	3 pole	moulded case circuit breaker	h1600

Four pole available on request.

Load break switches (switch disconnectors / isolators)

HCA125Z	125A	-	3 pole	load break switch (isolator)	x160
HCA160Z	160A	-	3 pole	load break switch (isolator)	x160
HCB250Z	250A	-	3 pole	load break switch (isolator)	x250
HCD400H	400A	-	3 pole	load break switch (isolator)	h400
HCD630H	630A	-	3 pole	load break switch (isolator)	h630
HCE800H	800A	-	3 pole	load break switch (isolator)	h1000
HCE970H	1000A	-	3 pole	load break switch (isolator)	h1000
HCF980H	1250A	-	3 pole	load break switch (isolator)	h1600
HCF990H	1600A	-	3 pole	load break switch (isolator)	h1600
HCA126Z	125A	-	4 pole	load break switch (isolator)	x160
HCA161Z	160A	-	4 pole	load break switch (isolator)	x160
HCB251Z	250A	-	4 pole	load break switch (isolator)	x250
HCD401H	400A	-	4 pole	load break switch (isolator)	h400
HCD631H	630A	-	4 pole	load break switch (isolator)	h630
HCE801H	800A	-	4 pole	load break switch (isolator)	h1000
HCE971H	1000A	-	4 pole	load break switch (isolator)	h1000
HCF981H	1250A	-	4 pole	load break switch (isolator)	h1600
HCF991H	1600A	-	4 pole	load break switch (isolator)	h1600

Accessories for MCCBs and load break switches








Auxiliary contacts

HXA021H	1NO + 1NC	auxiliary	contact	1NO+1NC for circuit breakers	x160-250
HXD022P	2NO + 2NC	auxiliary	contact	1NO+1NC for circuit breakers	h400e
HXE022P	2NO + 2NC	auxiliary	contact	1NO+1NC for circuit breakers	h800e
HXC021H	1NO + 1NC	auxiliary	contact	1NO+1NC for circuit breakers	h250-1600
HXA024H	1NO + 1NC	alarm	contact	1NO+1NC for circuit breakers	x160-250
HXD024P	1NO + 1NC	alarm	contact	1NO+1NC for circuit breakers	h400e
HXE024P	1NO + 1NC	alarm	contact	1NO+1NC for circuit breakers	h800e
HXC024H	1NO + 1NC	alarm	contact	1NO+1NC for circuit breakers	h250-1600

Shunt trip units (SH)

HXA00*H	shunt	(SH)	shunt trip device for circuit breakers	x160-250
HXD00*P	shunt	(SH)	shunt trip device for circuit breakers	h400e
HXE00*P	shunt	(SH)	shunt trip device for circuit breakers	h800e
HXC00*H	shunt	(SH)	shunt trip device for circuit breakers	h250-1600

* 1 = 24VDC, 3 = 110VAC, 4 = 230VAC, 5 = 400VAC

	type	voltage		description	frame
 <p>HXC014H</p>  <p>HXA030H</p>  <p>HXA031H</p>  <p>HXB042H</p>  <p>HYD003H</p>  <p>HYA027H</p>  <p>A48-M10/31</p>	Undervoltage release (UV)				
	HXA014H	230 VAC	(UV)	undervoltage release for circuit breakers	x160-250
	HXA015H	440 VAC	(UV)	undervoltage release for circuit breakers	x160-250
	HXD014P	230 VAC	(UV)	undervoltage release for circuit breakers	h400e
	HXD015P	380 VAC	(UV)	undervoltage release for circuit breakers	h400e
	HXC014H	230 VAC	(UV)	undervoltage release for circuit breakers	h250-630
	HXC015H	440 VAC	(UV)	undervoltage release for circuit breakers	h250-630
	HXE014P	230 VAC	(UV)	undervoltage release for circuit breakers	h800e
	HXE015P	380 VAC	(UV)	undervoltage release for circuit breakers	h800e
	HXE014H	230 VAC	(UV)	undervoltage release for circuit breakers	h1000-1600
	HXE015H	440 VAC	(UV)	undervoltage release for circuit breakers	h1000-1600
	Rotary handles (padlockable in "off" position) direct mounting				
HXA030H	direct mount		front mount rotary handle for circuit breakers	x160	
HXB030H	direct mount		front mount rotary handle for circuit breakers	x250	
HXC030H	direct mount		front mount rotary handle for circuit breakers	h250	
HXD030H	direct mount		front mount rotary handle for circuit breakers	h400/630	
HXE030H	direct mount		front mount rotary handle for circuit breakers	h1000	
HXF030H	direct mount		front mount rotary handle for circuit breakers	h1600	
Rotary handles (vari-depth door interlocking)					
HXA031H	vary-depth	200 mm	door interlocking rotary handle and shaft	x160	
HXB031H	vary-depth	200 mm	door interlocking rotary handle and shaft	x250	
HXC031H	vary-depth		door interlocking rotary handle and shaft	h250	
HXD031P	vary-depth		door interlocking rotary handle and shaft	h400e	
HXE031P	vary-depth		door interlocking rotary handle and shaft	h800e	
HXD031H	vary-depth		door interlocking rotary handle and shaft	h400/630	
HXE031H	vary-depth		door interlocking rotary handle and shaft	h1000	
HXF031H	vary-depth		door interlocking rotary handle and shaft	h1600	
Motor operators for MCCBs					
HXB042H	230 VAC		motor operator for remote operation of MCCB	x250	
HXD042H	230 VAC		motor operator for remote operation of MCCB	h400/630	
HXE042H	230 VAC		motor operator for remote operation of MCCB	h1000	
HXF042H	230 VAC		motor operator for remote operation of MCCB	h1600	
Terminals and mounting accessories					
HYA033H			DIN rail mounting adaptor	x160	
HYB033H			DIN rail mounting adaptor	x250	
HYB001H	(set of 3)	150 mm ²	collar terminals for cables	x250	
HYD003H	(set of 3)	240 mm ²	collar terminals for cables	h400/630	
HYA014H	(3 pole)		spreader link extended terminals	x160	
HYB011H	(3 pole)		spreader link extended terminals	x250	
HYC011H	(3 pole)		spreader link extended terminals	h250	
HYD014H	(3 pole)		spreader link extended terminals	h400/630	
HYA027H	(3 pole)		terminal shrouds	x160	
HYB021H	(3 pole)		extended terminal shrouds	x250	
HYC021H	(3 pole)		extended terminal shrouds	h250	
HYD021H	(3 pole)		extended terminal shrouds	h400/630	
HYE021H	(3 pole)		extended terminal shrouds	h1000	
HYA019H	(3 per set)		spare interphase barriers	x160	
HYB019H	(3 per set)		spare interphase barriers	x250	
HYC019H	(3 per set)		spare interphase barriers	h250	
Special "contained palm" cable lugs for MCCBs					
type	cable size	lug width	hole Ø	description	for MCCB
A24B-M8/19	120 mm ²	19.0 mm	M8	contained palm cable lug (ea)	x/h250
A30B-M8/19	150 mm ²	19.0 mm	M8	contained palm cable lug (ea)	x/h250
A37B-M10/24.5	185 mm ²	24.5 mm	M10	contained palm cable lug (ea)	250/400/630
A48-M10/31	240 mm ²	31.0 mm	M10	contained palm cable lug (ea)	h400/630

Hager ACBs conform to IEC/EN 60947-2 standards and to all major international standards and performance categories.

- High breaking capacity: full range Icu=Ics
- Optimised and compact panel size: same height and depth
- Terminal conversion horizontal – vertical (*up to 3200A*)
- Quick and easy mounting of accessories
- OCR: LCD display, pre-trip alarm, fault/event recording, integrated communication, remote reset, ZSI, temperature alarm
- Advanced protection: low load, unbalance voltage, reserve power, low/over voltage protection
- Advanced metering: ammeter, voltage, power, energy, demand...



Type				HWAN		HWBS				HWCP
Frame				A		B				C
Rated uninterrupted current	40°C		A	1250	1600	2000	2500	3200	4000	5000
No. of poles				3/4						
Rated operational voltage	50/60Hz	Ue	V	690						
Rated insulation voltage	50/60Hz	Ui	V	1000						
Rated impulse withstand voltage		Uimp	kV	12						
Current setting range (...x In max)			Ir	0.4 ~ 1.0						
Compliance				EN60947-2, IEC60947-2, GB14048-2						
Rated breaking capacity	415/380/220 AC	Icu	KA	65	85				100	
	550/600/690 AC			50	65				85	
Rated service breaking capacity	415/380/220 AC	Ics	(% Icu)	100%						
	550/600/690 AC									
Rated short-time capacity	1 Sec	Icw	KA	65	85				85	
	3 Sec			36	55				65	
Rated making capacity (kA peak)	415/380/220 AC	Icm	kA	143	187				220	
	550/600/690 AC			105	143				187	
Utilization category	IEC 60947-2			B						
Time										
Maximum total breaking time			ms	40						
Closing operating time		motor charging	s	10						
		max. closing time	ms	40						
Protection										
Long time overload protection LTD	Ict	In=Ictx...		0.5-0.63-0.7-0.8-0.9-1						
	current setting	Ir = In x...	A	0.8-0.83-0.85-0.88-0.9-0.93-0.95-0.98-1-non						
	time delay	tr at (6 x Ir)	sec	0.5-1.25-2-2.5-5-10-15-20-25-30						
Short time STD	current setting	I _{sd} = In x...	A	1.0-1.5-2-2.5-3-4-6-8-10-non						
				time delay at 10xIn	I ² t off	sec	0.05-0.1-0.2-0.3-0.4-0.5			
	I ² t on	sec	0.05-0.1-0.2-0.3-0.4-0.5							
	I ² t off	min. trip time	ms		20-80-160-260-360-460					
		max. trip time	ms	80-140-240-340-440-540						
Instantaneous INST	current setting	I _i = Inx...	A	2-3-4-6-8-10-12-15-non						
	trip time		ms	below 50						
Pre trip alarm PTA	current setting	I _p = Inx...	A	0.6-0.65-0.7-0.75-0.8-0.85-0.9-0.95-1-non						
	time delay	tp at (I _p x1.2)	sec	5-10-15-20-40-60-80-120-160						
Mechanical life	with maintenance	no. of cycles		30 000	20 000				20 000	
Electrical life	with maintenance	no. of cycles		10 000	10 000				5 000	
Dimensions										
Dimensions	width 3 pole	Fixed	mm	296	367				592	
	width 4 pole		mm	381	523				762	
	depth		mm	296 (without terminals)						
	height		mm	404						
	width 3 pole	Draw-out	mm	328	399				624	
	width 4 pole		mm	413	514				794	
	depth		mm	368 (without terminals)						
	height		mm	466						
Pitch	Ph-Ph		mm	85	115	115	115	152.5	190.5	
Terminal width			mm	50	75	75	90	100	125	
Weight	3 pole	Fixed	kg	34	44	44	44	61	76	
	4 pole		kg	44	55	55	55	81	81	
	3 pole	Draw-out	kg	63	87	87	87	107	145	
	4 pole		kg	80	130	130	130	161	173	

Air Circuit Breakers (ACBs)

- 3 frame sizes 500A - 5000A
- Terminals easily convert from horizontal to vertical (up to 3200A)
- Compact dimensions (*same panel cut-out for all sizes*)

Air circuit breakers are supplied standard with the following:

	fixed	draw-out
Auxiliary contacts (4NO + 4NC)	•	•
RTC (<i>ready to close</i>) contact for "spring loaded" indication	•	•
OCR - LSI Amp - microprocessor protection and control unit (<i>with LCD digital display</i>)	•	•
Internal components to easily mount mechanical interlock facility	•	•
Panel door ingress seal (<i>flange for compartment door</i>)	•	•
Cradle of draw-out circuit breaker		•
Operation (<i>racking</i>) crank handle		•
Safety shutters (<i>padlockable top and bottom</i>)		•



HWAN316EFCZ

Current setting $I_r + I_n \times \dots$	A	0.4-0.5-0.6-0.7-0.8-0.85-0.9-0.95-1
Time delay at $6 \times I_r$	s	0.5-1.25-2-2.5-5-10-15-20-25-30
Short circuit $I_s = I_n \times \dots$	A	1.0-1.5-2-2.5-3-4-6-8-10-non
Time delay $T_s 10 \times I_r - I_r^2$	ms	20-80-160-260-360-460
Instantaneous trip $I_p = I_n \times \dots$	A	2-3-4-6-8-10-12-15-non

type	thermal adjustment (A)	breaking capacity 415V (rms)	poles	mount	description	frame size
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Fixed-type air circuit breaker

Three pole

HWAN312EFCZ	500 - 1250	65kA	3 pole	(fixed)	air circuit breaker	A
HWAN316EFCZ	640 - 1600	65kA	3 pole	(fixed)	air circuit breaker	A
HWBS325EFCZ	1000 - 2500	85kA	3 pole	(fixed)	air circuit breaker	B
HWBS332EFCZ	1280 - 3200	85kA	3 pole	(fixed)	air circuit breaker	B
HWBS340EFCZ	1600 - 4000	85kA	3 pole	(fixed)	air circuit breaker	B
HWCP350EFCZ	2000 - 5000	100kA	3 pole	(fixed)	air circuit breaker	C

Four pole

HWAN416EFCZ	640 - 1600	65kA	4 pole	(fixed)	air circuit breaker	A
HWBS425EFCZ	1000 - 2500	85kA	4 pole	(fixed)	air circuit breaker	B
HWBS432EFCZ	1280 - 3200	85kA	4 pole	(fixed)	air circuit breaker	B
HWBS440EFCZ	1600 - 4000	85kA	4 pole	(fixed)	air circuit breaker	B
HWCP450EFCZ	2000 - 5000	100kA	4 pole	(fixed)	air circuit breaker	C

Draw-out air circuit breakers *supplied complete with cradle and crank handle*

Three pole

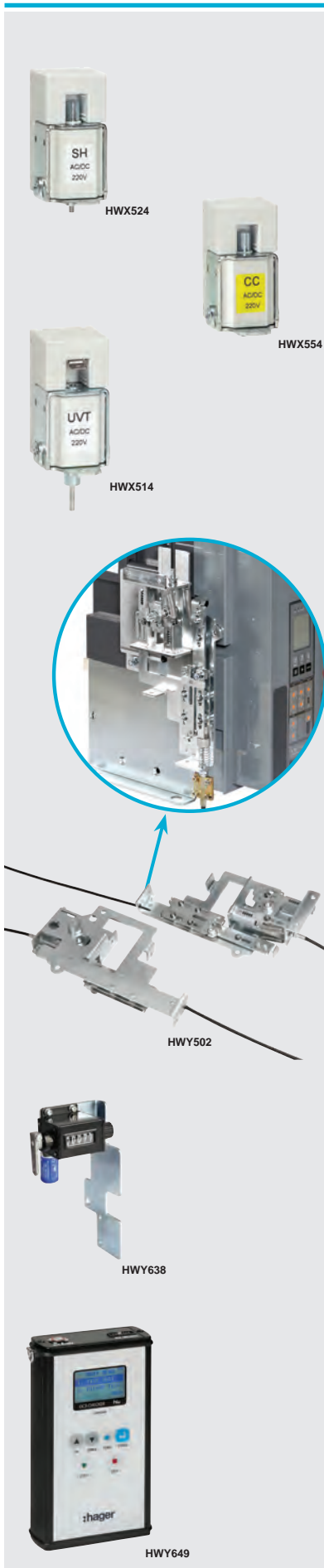
HWAN312EDCZ	500 - 1250	65kA	3 pole	(draw-out)	air circuit breaker	A
HWAN316EDCZ	640 - 1600	65kA	3 pole	(draw-out)	air circuit breaker	A
HWBS325EDCZ	1000 - 2500	85kA	3 pole	(draw-out)	air circuit breaker	B
HWBS332EDCZ	1280 - 3200	85kA	3 pole	(draw-out)	air circuit breaker	B
HWBS340EDCZ	1600 - 4000	85kA	3 pole	(draw-out)	air circuit breaker	B
HWCP350EDCZ	2000 - 5000	100kA	3 pole	(draw-out)	air circuit breaker	C

Four pole

HWAN416EDCZ	640 - 1600	65kA	4 pole	(draw-out)	air circuit breaker	A
HWBS425EDCZ	1000 - 2500	85kA	4 pole	(draw-out)	air circuit breaker	B
HWBS432EDCZ	1280 - 3200	85kA	4 pole	(draw-out)	air circuit breaker	B
HWBS440EDCZ	1600 - 4000	85kA	4 pole	(draw-out)	air circuit breaker	B
HWCP450EDCZ	2000 - 5000	100kA	4 pole	(draw-out)	air circuit breaker	C



HWAN416EDCZ



type	description		voltage
Shunt opening release SH (trip coils)			
HWX504	SH	shunt opening release for all air circuit breakers	220 VAC/DC
HWX505	SH	shunt opening release for all air circuit breakers	380 - 415 VAC
HWX501	SH	shunt opening release for all air circuit breakers	24 VDC
Secondary trip coil sSH (shunt release) <i>only if not using UV release</i>			
HWX524	sSH	shunt closing release for all air circuit breakers	220 VAC/DC
HWX525	sSH	shunt closing release for all air circuit breakers	380 - 415 VAC
HWX521	sSH	shunt closing release for all air circuit breakers	24 VDC
Closing coils (CC)			
HWX554	CC	shunt closing release for all air circuit breakers	220 VAC/DC
HWX555	CC	shunt closing release for all air circuit breakers	380 - 415 VAC
HWX551	CC	shunt closing release for all air circuit breakers	24 VDC
Under voltage release (UVT) release 70% of UV			
HWX514	UVT	undervoltage release for all air circuit breakers	220/250 VAC/DC
HWX515	UVT	undervoltage release for all air circuit breakers	380 - 415 VAC
HWX534	UVT	undervoltage release time delay controller	220/250 VAC/DC
HWX535	UVT	undervoltage release time delay controller	380 - 415 VAC
Motor operators (MO) <i>electric charging device</i>			
HWX544	MO	motor for automatic charging of closing spring	220 VAC/DC
HWX541	MO	motor for automatic charging of closing spring	24 VDC
Mechanical interlocks (MI)			
Up to three circuit breakers fixed/draw-out/mixed versions can be mechanically interlocked in horizontal or vertical configurations. <i>(Supplied standard with 2 meter cables)</i>			
HWY502	2 way	mechanical Interlock mech. with cables	fixed/drawout
HWY503	3 way	mechanical Interlock mech. with cables	fixed/drawout
HWY509	5 meter	cable for mechanical interlocks	fixed/drawout
Arc shields (for installing drawout ACB into panels with restricted space)			
HWY670	3 pole	arc shield for drawout type ACBs	1000 - 1600A
HWY671	4 pole	arc shield for drawout type ACBs	1000 - 1600A
HWY672	3 pole	arc shield for drawout type ACBs	2000 - 4000A
HWY673	4 pole	arc shield for drawout type ACBs	2000 - 4000A
HWY674	3 pole	arc shield for drawout type ACBs	5000A
HWY675	4 pole	arc shield for drawout type ACBs	5000A
Accessories			
HWY648		lifting lugs for all Air Circuit Breakers	
HWY641	(IP30)	spare panel door ingress seal (<i>flange for compartment door</i>)	
HWY642	(IP54)	hinged transparent dust cover for front door	
HWY632		ON/OFF pushbutton protection cover (<i>padlockable</i>)	
HWY637		control terminals protection cover for all ACB's	
HWY630	3 pole	(2 units) phase insulation barrier for all ACB's	
HWY631	4 pole	(3 units) phase insulation barrier for all ACB's	
HWY638		mechanical operation counter for all ACBs	
Key lock devices			
HWY701	Ronis	key lock in open position for all ACBs	Ronis 1-K1L1/12
HWY702	Ronis	key lock in open position for all ACBs	Ronis 2-K2L2/12/23
HWY703	Ronis	key lock in open position for all ACBs	Ronis 3-K3L3/23
HWY706	Castel	key lock in open position for all ACBs	Castel 1 - A
HWY707	Castel	key lock in open position for all ACBs	Castel 2 - B
HWY708	Castel	key lock in open position for all ACBs	Castel 3 - A - B
HWY697		adaptor kit for Ronis/Castell locks	
HWY633		key cylinder lock in open position	type 1
OCR portable checker instrument			
HWY649	OCR	portable OCR checker instrument	all ACB's



2200 3005



2200 3011



2200 3016



1473 1111



1474 1111



1413 2111



1407 0520



2299 0001



2299 0011

SIRCO M and MV manually operated switches

SIRCO modular switches make and break under load conditions and provide safety isolation for any low voltage circuit, particularly for machine control circuits.

Within a single product, **SIRCO M** offers front or side operation. The highly functional design enables the switch to be easily transformed from a load break switch to a changeover switch, offering a highly innovative modular solution for numerous applications.

- Modular DIN rail mounting (*fits into standard distribution board 45 mm cut-out*)
- External front (*or side*) operating handle and shaft (*to be ordered separately-see below*)
- Severe load duty categories (AC-22 and AC-23)
- Conformity to standards: IEC/EN 60947-3 / IS13947-3 / UL / KEMA / RINA

type	AC-22 A	AC-23 A	No. poles	frame size	description	dimensions (mm)		
	415V (A)	400V (kW)				(H)	(W)	(D)

SIRCO M series - Load break switches 16 - 125A

2200 3000	16A	7.5kW	3	M1	load break switch	68	45	75
2200 3002	25A	11.0kW	3	M1	load break switch	68	45	75
2200 3003	32A	15.0kW	3	M1	load break switch	68	45	75
2200 3004	40A	18.5kW	3	M1	load break switch	68	45	75
2200 3005	63A	22.0kW	3	M1	load break switch	68	45	75
2200 3006	63A	30.0kW	3	M2	load break switch	76	53	75
2200 3008	80A	37.0kW	3	M2	load break switch	76	53	75
2200 3010	100A	45.0kW	3	M3	load break switch	125	78	75
2200 3011	125A	55.0kW	3	M3	load break switch	125	78	75

SIRCO MV series load break switches 160A (visual double break contacts)

2200 3016	160A	75.0kW	3	MV	load break switch	125	109	75
2200 4016	160A	75.0kW	4	MV	load break switch	125	135	75

Operating handles and shafts for above switches (IP65)

- External front operated, door interlocking, padlockable in "off" position (up to 3 padlocks)
- Defeatable interlocking mechanism

type	colour	handle size	description	for switch frame (A)	

Handles for switches - external operation

1473 1111	black	S00	external operating handle for switches	M1/2	16 - 80A
1474 1111	red/yellow	S00	external operating handle for switches	M1/2	16 - 80A
1483 1111	black	S0	external operating handle for switches	M3	100 - 125A
1493 0111	black	S0	external operating handle for switches	MV	160A
1413 2111	black	S1	external operating handle for switches	MV	160A
141D 2911	black	S1	as above (<i>with metal connection</i>)	MV	160A

Extension shafts for switches (mm □)

1407 0520	L 200mm	S000\S00\S0	5 mm	extension shaft for switch	M1-3	16 - 125A
1407 0532	L 320mm	S000\S00\S0	5 mm	extension shaft for switch	M1-3	16 - 125A
1409 0632	L 320mm	S00\S0	6 mm	ext. shaft for (S0) handle	MV	160A
1401 0632	L 320mm	S1	6 mm	ext. shaft for (S1) handle	MV	160A
1419 0000	guide			(<i>permits engaging of misaligned shaft with handle</i>)	M1-3	16 - 125A
1429 0000	guide			(<i>permits engaging of misaligned shaft with handle</i>)	MV	160A

Direct mount handles (mounts directly onto front of switch - no shaft required)

2299 5012	blue	M00	5 mm	direct switch mount handle	M1/2	16 - 80A
2299 5032	blue	M01	5 mm	direct switch mount handle	M3	100 - 125A
2299 5042	blue	M0b	6 mm	direct switch mount handle	MV	160A

Auxiliary contacts for M/MV switches

2299 0001	1NO + 1NC	M type		side mount auxiliary contact	M/MV	16 - 160A
2299 0011	2NO	M type		side mount auxiliary contact	M/MV	16 - 160A
3999 0701	1NO	U type		internal mounting auxiliary contact	MV	160A
3999 0702	1NC	U type		internal mounting auxiliary contact	MV	160A

Door mount kit (for direct door or side panel mounting of Sirco M switches)

2299 3409		door mounting kit (<i>direct door mounting of switch</i>)	M1/2	16 - 80A
2299 3609		door mounting kit (<i>direct door mounting of switch</i>)	M3	100-125A



2209 6009



1407 0532



1473 1111



2200 1005



2200 1011



2294 3005

Conversion kits for Sirco M switches (mechanical interlock / parallel attachment)

Sirco M switches can be converted to 3 or 4 pole changeover switches with the addition of conversion kits. A mechanical interlock module simply clips onto two identical 3 pole switches to provide a changeover facility.

- 4th poles clip onto 3 pole switches for 4 pole applications.

type	info	no. of poles	description	for switch frame (A)
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Changeover mechanism (mechanically interlocks two switches)

Supplied with direct mounting operating handle. Handle and shaft to be ordered separately for externally mounted applications.

2209 6009	I-O-II	changeover mechanism between two switches	M1/2	16 - 80A
2209 6011	I-O-II	changeover mechanism between two switches	M3	100 - 125A

Handles and shafts for changeover switches

1473 1113	I-O-II	handle (S00)	for above changeover switches	M1/2	16 - 80A
1473 0113	I-O-II	handle (S00)	for above changeover switches	M3	100 - 125A
1407 0532	shaft	320 mm	5 mm extension shaft for switch	M1/2	16 - 80A
1409 0632	shaft	320 mm	6 mm extension shaft for switch	M3	100 - 125A

Bridging kit for changeover switches

2299 3005	bridge	3 pole	bridging kit for ch/over switches	M1	16 - 40A
2299 4005	bridge	4 pole	bridging kit for ch/over switches	M1	16 - 40A
2299 3009	bridge	3 pole	bridging kit for ch/over switches	M2	63 - 80A
2299 4009	bridge	4 pole	bridging kit for ch/over switches	M2	63 - 80A

Parallel attachments (used to operate two switches simultaneously)

To create 6/8 pole switches by combining two 3/4 pole switches

2269 6009	I-O	6/8 pole	conversion kit between two switches	M1/2	16 - 80A
2269 6011	I-O	6/8 pole	conversion kit between two switches	M3	100 - 125A

Handles and shafts for above parallel attachments (IP65)

1473 1111	I-O	handle	ext. operating handle for switches	M1/2	16 - 80A
1493 0111	I-O	handle	ext. operating handle for switches	M3	100 - 125A
1407 0532	shaft	320 mm	5mm extension shaft for switch	M1-3	16 - 125A
1409 0632	shaft	320 mm	6mm ext. shaft for (S00) handle	M3/V	100 - 125A

Attachable 4th pole module (clips onto either side of 3 pole switches)

2200 1004	40A	1 pole	attachable 4th pole module	M1	16 - 40A
2200 1005	63A	1 pole	attachable 4th pole module	M1	63A
2200 1008	80A	1 pole	attachable 4th pole module	M2	63 - 80A
2200 1011	125A	1 pole	attachable 4th pole module	M3	100 - 125A

Terminal shrouds top (or) bottom terminal protection (two required for total protection)

2294 1005	shroud	1 pole	t/parent terminal protection shroud	M1	16 - 63A
2294 3005	shroud	3 pole	t/parent terminal protection shroud	M1	16 - 63A
2294 1009	shroud	1 pole	t/parent terminal protection shroud	M2	63 - 80A
2294 3009	shroud	3 pole	t/parent terminal protection shroud	M2	63 - 80A
2294 1011	shroud	1 pole	t/parent terminal protection shroud	M3	100 - 125A
2294 3016	shroud	3 pole	t/parent terminal protection shroud	MV	160A
2294 3016	shroud	3 pole	t/parent terminal protection shroud	M3	100 - 125A
2294 4016	shroud	4 pole	t/parent terminal protection shroud	MV	160A



26AC 3025



26AC 3063



1423 2111



1400 1032



2699 0031

SIRCO series - Manually operated switches

SIRCO switches make and break under load conditions and provide safety isolation for any low voltage circuit.

- External front operating handle and shaft (*to be ordered separately - see below*)
- Severe load duty categories (AC-22 and AC-23)
- Position indicator located on the sliding bar mechanism, ensures visibility in all circumstances
- High thermal and dynamic withstand
- High electrical and mechanical endurance
- Conformity to standards: IEC/EN 60947-3 / IS13947-3 / UL / KEMA / RINA

type	AC-22 A	AC-23 A	No. poles	frame size	description	dimensions (mm)		
	415V (A)	400V				(H)	(W)	(D)

SIRCO AC series - Load break switches 125 - 5000A

SIRCO double break per pole achieved through its sliding bar contact system offers very high durability and short-circuit withstand.

3 pole switches

2600 3014	125A	63kW	3	B3	load break switch	135	140	115
2600 3017	160A	80kW	3	B3	load break switch	135	140	115
26AC 3020	200A	100kW	3	B4	load break switch	160	180	115
26AC 3025	250A	132kW	3	B4	load break switch	160	180	115
26AC 3031	315A	160kW	3	B4	load break switch	160	180	115
26AC 3040	400A	220kW	3	B5	load break switch	235	230	165
26AC 3050	500A	280kW	3	B5	load break switch	235	230	165
26AC 3063	630A	280kW	3	B5	load break switch	260	230	165
26AC 3080	800A	450kW	3	B6	load break switch	321	280	166
26AC 3100	1000A	560kW	3	B6	load break switch	321	280	166
26AC 3121	1250A	710kW	3	B7	load break switch	288	372	166
26AC 3160	1600A	710kW	3	B7	load break switch	288	372	166
2600 3200	2000A	710kW	3	B8	load break switch	380	372	226
2600 3250	2500A	710kW	3	B8	load break switch	380	372	226
2600 3320	3200A	710kW	3	B8	load break switch	380	372	226

4 pole switches

26AC 4025	250A	132kW	4	B4	load break switch	160	230	115
26AC 4040	400A	220kW	4	B5	load break switch	235	290	160
26AC 4063	630A	280kW	4	B5	load break switch	260	290	160
26AC 4080	800A	450kW	4	B6	load break switch	321	360	166
26AC 4121	1250A	710kW	4	B7	load break switch	288	492	166

Larger sizes (up to 5000A) available on request.

Operating handles and shafts for above switches (IP65)

type	handle	colour	description	for switch
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External front operated door interlocking, padlockable in "off" position (3 padlocks)

1423 2111	S2	black	pistol grip ext. operating handle	125 - 630A
1443 3111	S4	black	"T" grip ext. operating handle	800 - 1600A
1453 8111	S5	black	"T" grip ext. operating handle	2000 - 3200A
142D 2911	S2	black	as above (<i>with metal connection</i>)	125 - 630A
144D 3911	S4	black	as above (<i>with metal connection</i>)	800 - 1600A

1400 1032	S2	320 mm	□ 10	extension shaft	125 - 630A
1400 1050	S2	500 mm	□ 10	extension shaft	125 - 630A
1401 1532	S4	320 mm	□ 15	extension shaft	800 - 1600A
1401 1540	S4	400 mm	□ 15	extension shaft	800 - 1600A
2799 3018	S5	320 mm	□ 30	extension shaft	2000 - 3200A

1429 0000 guide (*permits engaging of misaligned shaft with handle*) (all sizes)

Direct mount handles (*mounts directly onto front of switch*)

2699 5042	B1	black	□ 10	direct switch mount handle	125 - 160A
1112 1111	J1	black	□ 10	direct switch mount handle	200 - 630A
1142 1111	J4	black	□ 15	direct switch mount handle	800 - 1600A
2799 7042	S5	black	□ 30	direct switch mount handle	2000 - 3200A

Auxiliary contacts for switches

2699 0031	1 C/Over	aux	auxiliary contact and support	125 - 3200A
2699 0032	1 C/Over	aux	additional auxiliary contact	125 - 3200A

Inter-phase barriers

Safe isolation between terminals, essential for use at 690VAC or in a polluted or dusty atmosphere.

2998 0033	barriers	-	phase barriers for switches (2pcs)	B3	125-160A
2998 0023	barriers	-	phase barriers for switches (2pcs)	B4	200- 250A
2998 0013	barriers	-	phase barriers for switches (2pcs)	B5	315 - 6300A



21PV 3722
+
2119 1012



26PV 2025



1423 2111



2119 0001



9915 3063

SIRCO PV series - Manually operated photovoltaic switches

Photovoltaic energy producers demand equipment which offer high production output together with consistent reliability and safety with low maintenance costs. Equipment has to support specific technical constraints of solar applications and their severe environment.

- Up to 1500 VDC
- Fully visualised breaking
- Patented switching technology
- Conformity to: IEC/EN 60947-3/VDE 0660-107 / IEC 60364-4-410 / IEC364-7-712

type	current	poles/ config.	volts DC	description	dimensions (mm)		
					(H)	(W)	(D)
SIRCO MC PV Load break switches for photovoltaic applications							
21PV 3722	25A	2P+, 1P-	1000 VDC	photovoltaic switch	78	52	55
21PV 4754	40A	2P+, 2P-	1000 VDC	photovoltaic switch	78	63	55

SIRCO PV Load break switches for photovoltaic applications							
26PV 2010	100A	1P+, 1P-	1000 VDC	photovoltaic switch	160	180	95
26PV 2016	160A	1P+, 1P-	1000 VDC	photovoltaic switch	160	180	95
26PV 2025	250A	1P+, 1P-	1000 VDC	photovoltaic switch	160	180	95
26PV 2031	315A	1P+, 1P-	1000 VDC	photovoltaic switch	160	180	95
26PV 4040	400A	2P+, 2P-	1000 VDC	photovoltaic switch	170	230	91
26PV 4050	500A	2P+, 2P-	1000 VDC	photovoltaic switch	170	230	91
26PV 4063	630A	2P+, 2P-	1000 VDC	photovoltaic switch	260	290	131
26PV 3026	275A	2P+, 1P-	1500 VDC	photovoltaic switch	250	230	147
26PV 3032	315A	2P+, 1P-	1500 VDC	photovoltaic switch	250	230	147
26PV 3041	400A	2P+, 1P-	1500 VDC	photovoltaic switch	250	230	147
26PV 8063	630A	2P+, 2P-	1500 VDC	photovoltaic switch	260	290	131

Available on request: - larger sizes up to 2000A
- Double switches (to switch two different PV circuits simultaneously)

Accessories for above switches

Handle - direct mount

2119 1012	MC01	direct switch mounting handle for 1000V switches	25 - 40A
1112 1111	J1	direct switch mounting handle for 1000V switches	100 - 630A
1122 1111	J2	direct switch mounting handle for 1500V switches	275 - 630A

Handles - external mount

- Door interlocking,
- External front operated,
- Padlockable in "off" position (3 padlocks)

2119 3312	MC01	external mount door interlocking handle for switches	25 - 40A
1423 2111	S2	external mount door interlocking handle for switches	100 - 630A
2107 0516	165 mm	extension shaft for externally operated switches	25 - 40A
1400 1032	320 mm	extension shaft for externally operated switches	100 - 630A
2119 0001	NO + NC	side mount auxiliary contact for switches	25 - 40A
2699 0031	1 Ch/Over	side mount auxiliary contact for switches	100 - 2000A

Motorised load-break switches

- Ideal contactor replacement for high current switching applications
- Reliable, robust AC-23A switching
- Manual override facility (handle supplied)

type	AC-22A	AC-23A	description	dimensions (mm)		
	400V	400V		(H)	(W)	(D)
9915 3016	160A	75kW	3 pole motorised load break switch	135	267	244
9915 3025	250A	132kW	3 pole motorised load break switch	160	328	244
9915 3040	400A	220kW	3 pole motorised load break switch	170	328	244
9915 3063	630A	280kW	3 pole motorised load break switch	260	377	321
9915 3080	800A	450kW	3 pole motorised load break switch	321	504	292
9915 3100	1000A	560kW	3 pole motorised load break switch	321	504	292
9915 3120	1250A	710kW	3 pole motorised load break switch	330	504	292
9915 3160	1600A	710kW	3 pole motorised load break switch	288	596	292
9915 4063	630A	280kW	4 pole motorised load break switch	260	437	321
9915 4080	800A	450kW	4 pole motorised load break switch	321	584	292
9915 4100	1000A	560kW	4 pole motorised load break switch	321	584	292
9915 4120	1250A	710kW	4 pole motorised load break switch	330	584	292
9915 4160	1600A	710kW	4 pole motorised load break switch	288	716	292



2115 3401



2115 3403



ESW3080M



Enclosed isolator switches (manually operated)

Socomec **COMO** series enclosed isolators are supplied in robust, heavy duty ABS enclosures.

- Red/yellow handle, interlocked with front cover in ON position, padlockable (3 padlocks) in OFF position

type	AC-23A	AC-23A	poles	description	dimensions (mm)		
	≤ 400V	≤ 525V			(H)	(W)	(D)

Enclosed isolator switches (manually operated) (IP65) - ABS enclosure

2115 3401	20A	7.5kW	3	enclosed load-break switch	90	64	58
2115 3403	32A	11.0kW	3	enclosed load-break switch	152	100	81
2115 3404	40A	18.5kW	3	enclosed load-break switch	152	100	81
2115 3405	50A	22.0kW	3	enclosed load-break switch	152	100	81
2115 4401	20A	7.5kW	4	enclosed load-break switch	90	64	58
2115 4404	40A	18.5kW	4	enclosed load-break switch	152	100	81
2115 4405	50A	22.0kW	4	enclosed load-break switch	152	100	81

Auxiliary contacts for above enclosed switches

2113 4001	NO + NC	auxiliary	contact for enclosed switches	32 - 50A
2113 4002	2 NO	auxiliary	contact for enclosed switches	33 - 50A

Sheet metal enclosure (IP65) Colour: BS/EN06 E53 (electric orange)

- IP65 sheet metal enclosed load-break switches
- Door interlocking in "ON" position, padlockable (3 padlocks) in "OFF" position

3 pole switches

ESW3004M	40A	18.5kW	3	enclosed load-break switch	350	250	170
ESW3006M	63A	30kW	3	enclosed load-break switch	350	250	170
ESW3012M	125A	63kW	3	enclosed load-break switch	350	250	170
ESW3016M	160A	80kW	3	enclosed load-break switch	350	250	170
ESW3025M	250A	132kW	3	enclosed load-break switch	550	400	220
ESW3040M	400A	220kW	3	enclosed load-break switch	550	400	220
ESW3063M	630A	280kW	3	enclosed load-break switch	550	400	220
ESW3080M	800A	450kW	3	enclosed load-break switch	950	700	270
ESW3100M	1000A	560kW	3	enclosed load-break switch	950	700	270
ESW3125M	1250A	710kW	3	enclosed load-break switch	950	700	270

Larger sizes available on request.

4 pole switches - 4th pole can be attached to above 40/63/125A switches (see below)

2200 1004	40A	1 pole	attachable 4th pole module	M1	40A
2200 1008	80A	1 pole	attachable 4th pole module	M2	63A
2200 1011	125A	1 pole	attachable 4th pole module	M3	125A

Safety enclosures (IP55) Colour: BS/EN06 E53 (electric orange)

Safety enclosed switches provide emergency stop and safety breaking for any low voltage electric circuit. They break "ON" and "OFF" load and provide safety isolation.

- Zinc galvanised sheet metal enclosure (1.5mm thick) chrome plated zamak hinges
- Bottom mounted gland plate and 2 internal + 1 external earthing connection
- Metallic side mounted operating handle (red colour) padlockable in "OFF" position (3 padlocks)
- Equipped with a double locking system (door can also be padlocked closed in the "OFF" position)
- Visible breaking facility provided through a triplex window (made of 2 layer 3mm thick safety glass)
- Mechanical flag indicator (visible through triplex window) for indication of switch position status
- 2 sets terminated auxiliary contacts NO + NC mounted on the double locking system internally
- Supplied with 2 hooded pushbuttons on right side of enclosure: green 1NO / red 2NC contacts

25484	15kW	25kW	3	80A	1way safety switch	400	300	160
43505	25kW	55kW	3	125A	1way safety switch	400	300	200
43506	63kW	90kW	3	200A	1way safety switch	400	300	200
43565	157kW	160kW	3	400A	1way safety switch	700	400	250
43566	250kW	270kW	3	630A	1way safety switch	900	500	300



2230 3004EM



4430 4012



1413 2113



41AC 3063



1433 3113

SIRCO series - Changeover switches

SIRCO manual changeover switches provide switching, source inversion and changeover under load for two power circuits with safety isolation double breaking per pole.

- Severe load duty categories (AC-23 AND AC-33)
- Conformity to Standards: IEC/EN 60947-3, IEC 60947-6-1, IS13947-3, UL, KEMA, RINA
- External front operating handle and shaft (*to be ordered separately*)

type	AC-23 A 415V (A)	no. of poles	frame size	description	dimensions (mm)		
					(H)	(W)	(D)

SIRCO M - Changeover switches 16A - 125A

- Modular DIN rail mounting (*fits into standard distribution board with 45 mm cut-out*)
- Supplied with internal direct mount handle for external mount handle, see accessories (*below*)

2230 3001EM	16A	3	M1	modular changeover switch	68	98	89
2230 3002EM	25A	3	M1	modular changeover switch	68	98	89
2230 3004EM	40A	3	M1	modular changeover switch	68	98	89
2230 3006EM	63A	3	M1	modular changeover switch	76	105	89
2230 3008EM	80A	3	M2	modular changeover switch	76	105	89
2230 3010EM	100A	3	M3	modular changeover switch	125	159	100
2230 3011EM	125A	3	M3	modular changeover switch	125	159	100

4th pole can be added to above switches (see page B-24)

Accessories for changeover switches

1473 1113	handle	I-O-II		external for ch/over switches	M1/2	16 - 80A	
1473 0113	handle	I-O-II		external for ch/over switches	M3	100 - 125A	
1407 0532	shaft	320 mm		(5 mm) ext. shaft for switch	M1/2	16 - 80A	
1409 0632	shaft	320 mm		(6 mm) ext. shaft for switch	M3	100 - 125A	
2299 3005	bridge	3 pole		bridging kit for ch/over switches	M1	16 - 40A	
2299 4005	bridge	4 pole		bridging kit for ch/over switches	M1	16 - 40A	
2299 3009	bridge	3 pole		bridging kit for ch/over switches	M2	63 - 80A	
2299 4009	bridge	4 pole		bridging kit for ch/over switches	M2	63 - 80A	

SIRCO VM1 - Changeover switches 100A - 125A

- DIN rail, chassis or modular panel mounting
- Double visible breaking

4430 4010	100A	4 pole		modular changeover switch	95	215	97
4430 4012	125A	4 pole		modular changeover switch	95	215	97
4499 4006	bridge	4 pole		insulated 4P bridging bar set			for VM1 switches
4439 5012	handle	I-O-II		direct switch mount handle			for VM1 switches
1413 2113	handle	I-O-II		external door interlock handle			for VM1 switches
1402 0832	shaft	320 mm		extension shaft			for VM1 switches

SIRCOVER - Manual changeover switches 125A - 3200A

- High thermal and dynamic withstand, high electrical and mechanical endurance
- Severe utilization categories (AC-22 and AC-23)
- Handles and shafts (*to be ordered separately-see below*)

41AC 3016	160A	3 pole		manual changeover switch	135	221	173
41AC 3020	200A	3 pole		manual changeover switch	135	221	173
41AC 3025	250A	3 pole		manual changeover switch	160	262	173
41AC 3040	400A	3 pole		manual changeover switch	170	262	173
41AC 3063	630A	3 pole		manual changeover switch	260	319	225
41AC 3080	800A	3 pole		manual changeover switch	321	386	298
41AC 3100	1000A	3 pole		manual changeover switch	321	386	298
41AC 3120	1250A	3 pole		manual changeover switch	330	386	298
41AC 3160	1600A	3 pole		manual changeover switch	228	478	298
41AC 4016	160A	4 pole		manual changeover switch	135	251	173
41AC 4025	250A	4 pole		manual changeover switch	160	312	173
41AC 4040	400A	4 pole		manual changeover switch	170	312	173
41AC 4063	630A	4 pole		manual changeover switch	260	379	225
41AC 4080	800A	4 pole		manual changeover switch	320	466	298
41AC 4120	1250A	4 pole		manual changeover switch	330	466	298
41AC 4160	1600A	4 pole		manual changeover switch	288	598	298

Larger sizes up to 3200A available on request.

Operating handles and shafts for above changeover switches

1423 2113	S2	black	I-O-II	ext. operating handle		160 - 630A	
1443 3113	S4	black	I-O-II	ext. operating handle		800 - 1600A	
1400 1032	shaft	320 mm	□ 10	ext. shaft for switch		160 - 630A	
1401 1532	shaft	320 mm	□ 15	ext. shaft for switch		800 - 1600A	
1122 1111	J2	black		direct switch mounting handle		160 - 630A	
1132 1111	J3	black		direct switch mounting handle		800 - 1600A	



4100 7063



1433 3113



2799 3018



4109...



2694 4051

SIRCOVER series - Manual bypass switches

SIRCOVER Bypass are a combination of three interlocked switches enabling the use with 3+6 or 4+8 poles from 160A to 1600A.

- Severe load duty categories (AC-23 AND AC-33)
- Conformity to Standards: IEC/EN 60947-3, IEC 60947-6-1, IS13947-3, UL, KEMA, RINA
- External IP65 front operating handle and shaft (*to be ordered separately*)

type	AC-23 A 415V (A)	No. poles	description	dimensions (mm)		
				(H)	(W)	(D)

3 pole manual bypass switches

4100 7016	160A	3 pole	manually operated bypass switch	135	221	268
4100 7019	200A	3 pole	manually operated bypass switch	135	221	268
4100 7025	250A	3 pole	manually operated bypass switch	160	262	268
4100 7039	400A	3 pole	manually operated bypass switch	170	262	268
4100 7063	630A	3 pole	manually operated bypass switch	260	319	387
4100 7080	800A	3 pole	manually operated bypass switch	320	386	508
4100 7120	1250A	3 pole	manually operated bypass switch	320	386	508
4100 7160	1600A	3 pole	manually operated bypass switch	288	478	508

4 pole manual bypass switches

4100 9016	160A	4 pole	manually operated bypass switch	135	251	268
4100 9025	250A	4 pole	manually operated bypass switch	160	312	268
4100 9039	400A	4 pole	manually operated bypass switch	170	312	268
4100 9063	630A	4 pole	manually operated bypass switch	260	379	387
4100 9080	800A	4 pole	manually operated bypass switch	320	466	508
4100 9120	1250A	4 pole	manually operated bypass switch	320	466	508
4100 9160	1600A	4 pole	manually operated bypass switch	288	598	508

Larger sizes available on request.

Handles and shafts for bypass switches - (door interlocking padlockable in "O" position)

1423 2113	S2	black	I-O-II	ext. operating handle	160 - 200A
1433 3113	S3	black	I-O-II	ext. operating handle	250 - 630A
4199 7146	V2	black	I-O-II	ext. operating handle	800 - 1600A
1400 1032	shaft	320 mm	□10	extension shaft for switch	160 - 200A
1401 1532	shaft	320 mm	□15	extension shaft for switch	250 - 630A
2799 3018	shaft	320 mm	□30	extension shaft for switch	800 - 1600A
1429 0000	guide	(permits engaging of misaligned shaft with handle)			(all sizes)
4199 5012	J2	black	direct switch mounting handle		160 - 200A
1132 1111	J3	black	direct switch mounting handle		250 - 630A
1142 1111	J4	black	direct switch mounting handle		800 - 1600A

Accessories for all changeover and bypass switches

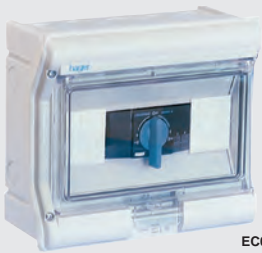
type	poles	description	for switch
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Bridging bar sets for changeover and bypass switches

4109 3019	bridge	3 pole	bridging bar for ch/over switches	160/200A
4109 3025	bridge	3 pole	bridging bar for ch/over switches	250A
4109 3039	bridge	3 pole	bridging bar for ch/over switches	400A
4109 3063	bridge	3 pole	bridging bar for ch/over switches	630A
4109 3080	bridge	3 pole	bridging bar for ch/over switches	800/1000A
4109 3120	bridge	3 pole	bridging bar for ch/over switches	1250A
4109 3160	bridge	3 pole	bridging bar for ch/over switches	1600A
4109 0019	bridge	1 pole	bridging bar for ch/over switches	160/200A
4109 0025	bridge	1 pole	bridging bar for ch/over switches	250A
4109 0039	bridge	1 pole	bridging bar for ch/over switches	400A
4109 0063	bridge	1 pole	bridging bar for ch/over switches	630A
4109 0080	bridge	1 pole	bridging bar for ch/over switches	800/1000A
4109 0120	bridge	1 pole	bridging bar for ch/over switches	1250A
4109 0160	bridge	1 pole	bridging bar for ch/over switches	1600A

Terminal shrouds for changeover and bypass switches

2694 3014	shroud	3 pole	t/parent terminal protection shroud	160/200A
2694 3021	shroud	3 pole	t/parent terminal protection shroud	250/400A
2694 3051	shroud	3 pole	t/parent terminal protection shroud	630A
2694 4014	shroud	4 pole	t/parent terminal protection shroud	160/200A
2694 4021	shroud	4 pole	t/parent terminal protection shroud	250/400A
2694 4051	shroud	4 pole	t/parent terminal protection shroud	630A
1509 3080	screen	3 pole	t/parent terminal protection screen	800/1250A
1509 4080	screen	4 pole	t/parent terminal protection screen	800/1250A
1509 3160	screen	3 pole	t/parent terminal protection screen	1600
1509 4160	screen	4 pole	t/parent terminal protection screen	1600A



ECO3009P



ECO3009M



ES-VCH-S



ES-VCH-P



ES-PLS-KD

Enclosed manual changeover switches (IP65)					dimensions (mm)		
type	AC-31 B 415V (A)	enclosure	no. poles	description	(H)	(W)	(D)

SIRCO-M - Changeover switches

Polycarbonate housing (IP65)

- Supplied with internal direct mount handle
- Distribution board style enclosure with transparent door

ECO3002P	25A	polycarb	3 pole	enclosed ch/over switch	210	237	114
ECO3004P	40A	polycarb	3 pole	enclosed ch/over switch	210	237	114
ECO3006P	63A	polycarb	3 pole	enclosed ch/over switch	210	237	114
ECO3009P	100A	polycarb	3 pole	enclosed ch/over switch	302	310	151
ECO3012P	125A	polycarb	3 pole	enclosed ch/over switch	302	310	151

Sheet metal enclosed (IP65)

- With external door interlocking padlockable handle

ECO3004M	40A	metal	3 pole	enclosed ch/over switch	350	250	170
ECO3006M	63A	metal	3 pole	enclosed ch/over switch	350	250	170
ECO3009M	100A	metal	3 pole	enclosed ch/over switch	350	250	170
ECO3012M	125A	metal	3 pole	enclosed ch/over switch	350	250	170

4 pole switches can be made by adding clip-on 4th poles (see page B-24)

SIRCOVER - Changeover switches

- With external door interlocking padlockable handle
- Supplied complete with bridge bars (output side)
- Sheet metal enclosed

ECO3016M	160A	metal	3 pole	enclosed ch/over switch	550	400	220
ECO3025M	250A	metal	3 pole	enclosed ch/over switch	550	400	220
ECO3040M	400A	metal	3 pole	enclosed ch/over switch	850	600	270
ECO3063M	630A	metal	3 pole	enclosed ch/over switch	850	600	270
ECO3080M	800A	metal	3 pole	enclosed ch/over switch	900	600	450
ECO3125M	1250A	metal	3 pole	enclosed ch/over switch	900	600	450
ECO3160M	1600A	metal	3 pole	enclosed ch/over switch	900	600	450
ECO4016M	160A	metal	4 pole	enclosed ch/over switch	550	400	220
ECO4025M	250A	metal	4 pole	enclosed ch/over switch	550	400	220
ECO4040M	400A	metal	4 pole	enclosed ch/over switch	850	600	270
ECO4063M	630A	metal	4 pole	enclosed ch/over switch	850	600	270
ECO4080M	800A	metal	4 pole	enclosed ch/over switch	900	600	450
ECO4125M	1250A	metal	4 pole	enclosed ch/over switch	900	600	450
ECO4160M	1600A	metal	4 pole	enclosed ch/over switch	900	600	450

EM Safety lockout hasps

Safety lockout hasps permit multiple padlocks to be used when isolating one energy source. The lockout hasp is placed through the isolating point and closed. Each person carrying out maintenance or service attaches their unique keyed padlock through the lockout hasp, thereby ensuring complete safety during maintenance operations. The hasp can only be removed once all padlocks have been removed.

- Scissor action hasp with Ø25 mm or 38 mm jaw size
- Accepts padlocks with a shackle diameter up to 9 mm (up to 6 padlocks can be attached)
- Manufactured from high tensile steel, electroplated to prevent rust

type	jaw size	colour	number of padlocks accepted	description
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Vinyl coated hasp

- Padlock section vinyl coated (red) for improved grip and visibility

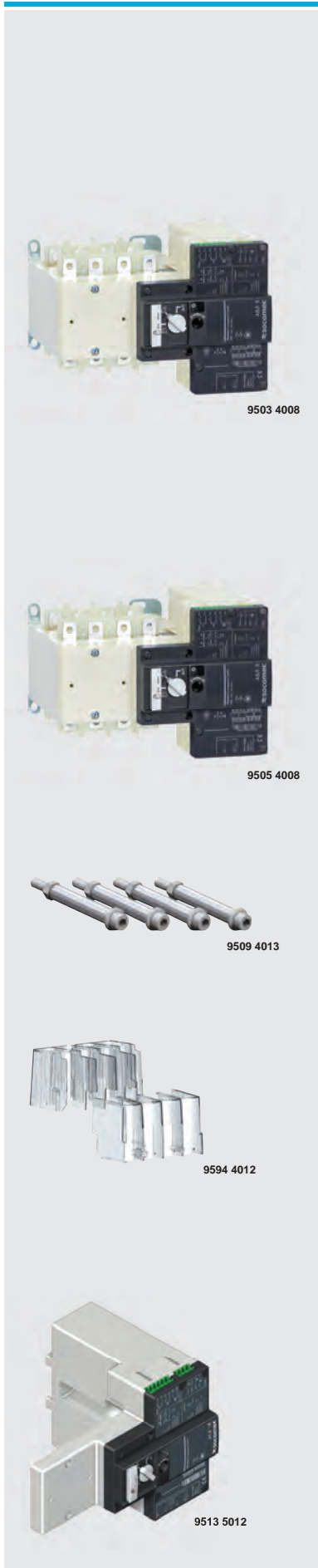
ES-VCH-S	25 mm	red	6	safety lockout hasp
ES-VCH-P	38 mm	red	6	safety lockout hasp

Lockout padlocks

Maximum security laminated padlocks made for tough lockout situations.

- Increased durability against cutting, prying and twisting
- Supplied with two keys per lock

ES-PLS-KD	padlock long shackle - different keys
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ATyS S - Motorised changeover switches (4 pole)

ATyS S is 4 pole remotely operated transfer switch with positive break indication, enabling the on-load transfer of two three-phase supplies via remote volt-free contacts, or an external automatic controller, using pulse logic, or a switch.

For use in low voltage power supply systems where a brief interruption of the load supply is acceptable during transfer. Fully integrated cost effective solution to switch between main and an alternative power supply for loads of up to 125A: <90kVA /3 phase 415 VAC.

- Two switches mounted back to back, motorised (*easily replaceable motors*)
- Fail-safe mechanical interlock
- Padlockable in the "OFF" position
- Manual override facility (*handle supplied*)
- Wide-band AC control voltage $\pm 30\%$
- Can be configured for "impulse" or "contactor" logic
- Energy efficient power consumption is minimal and only required during transfer operation
- Fully independent position auxiliary contacts one for each position (I / O / II)

AC 32B IEC 60947-6-1, GB 14048-11 (*transfer switch standards*)
 AC 22A IEC60947-3 (*load break switch standard*)

type	AC-31 B 415V (A)	poles	supply voltage	description
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ATyS S - Motorised changeover switches (H) 144 x (W) 198 x (D) 181 mm

230 VAC power supply

9503 4004	40A	4 pole	230 VAC	motorised changeover switch
9503 4006	63A	4 pole	230 VAC	motorised changeover switch
9503 4008	80A	4 pole	230 VAC	motorised changeover switch
9503 4010	100A	4 pole	230 VAC	motorised changeover switch
9503 4012	125A	4 pole	230 VAC	motorised changeover switch

12 VDC power supply

9505 4004	40A	4 pole	12 VDC	motorised changeover switch
9505 4006	63A	4 pole	12 VDC	motorised changeover switch
9505 4008	80A	4 pole	12 VDC	motorised changeover switch
9505 4010	100A	4 pole	12 VDC	motorised changeover switch
9505 4012	125A	4 pole	12 VDC	motorised changeover switch

24/48 VDC power supply

9506 4004	40A	4 pole	24/48 VDC	motorised changeover switch
9506 4006	63A	4 pole	24/48 VDC	motorised changeover switch
9506 4008	80A	4 pole	24/48 VDC	motorised changeover switch
9506 4010	100A	4 pole	24/48 VDC	motorised changeover switch
9506 4012	125A	4 pole	24/48 VDC	motorised changeover switch

ATyS d S - Dual power supply (2 x 230 VAC)

Incorporates supply redundancy without the need for additional wiring, by integrating a double supply (*2 independent supplies*) directly within the product.

9513 4004	40A	4 pole	2 x 230 VAC	motorised changeover switch
9513 4006	63A	4 pole	2 x 230 VAC	motorised changeover switch
9513 4008	80A	4 pole	2 x 230 VAC	motorised changeover switch
9513 4010	100A	4 pole	2 x 230 VAC	motorised changeover switch
9513 4012	125A	4 pole	2 x 230 VAC	motorised changeover switch

Accessories for ATyS S switches

Bridging bars (1 piece required per pole)

9509 4013	bridge	4 pole	power terminal bridging bar (<i>top or bottom</i>)
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Voltage tap

9599 4001	terminal	control voltage tapping kit (<i>from power terminals</i>)
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Terminal shroud

9594 4012	shroud	4 pole	supply side terminal protection shrouds x 2
9594 9012	shroud	4 pole	load side terminal protection shrouds x 2

Spare motor units

9503 5012	motor	230 VAC	spare motor for above switches
9505 5012	motor	12 VDC	spare motor for above switches
9506 5012	motor	24/48 VDC	spare motor for above switches
9513 5012	motor	2 x 230 VAC	spare motor for above switches



9323 4006



9323 4012



9364 4012



1309 4006



1309 1001



1399 4006

ATyS M - Motorised changeover switches

ATyS M modular motorised changeover switches with positive break indication enabling on-load changeover switching of two supply sources in automatic or manual mode.

- Modular format to easily mount into standard distribution boards
- Provide rapid switching (< 90ms) excellent dynamic withstand and long life
- Auto or manual operation (*with incorporated Allen key*) padlockable in "O" position
- Supply only active during transfer, unaffected by network voltage fluctuations
- Fully compliant with IEC 60947-6-1 (*standard governing transfer switches*)

type	AC-31 B 415V (A)	poles	supply voltage	description
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ATyS d M - Motorised changeover switches (H) 245 x (W) 2P 235/4P 340 x (D) 74 mm

9323 2006	63A	2 pole	230 VAC	motorised changeover switch
9323 2008	80A	2 pole	230 VAC	motorised changeover switch
9323 4006	63A	4 pole	230 VAC	motorised changeover switch
9323 4008	80A	4 pole	230 VAC	motorised changeover switch
9323 4010	100A	4 pole	230 VAC	motorised changeover switch
9323 4012	125A	4 pole	230 VAC	motorised changeover switch
9323 4016	160A	4 pole	230 VAC	motorised changeover switch

ATyS g M - Automatic changeover switches (H) 245 x (W) 2P 235/4P 340 x (D) 74 mm

The ATyS g M switch monitors the supply from both mains and from generator. On mains failure, the switch provides an output to start generator and once the generator voltage reaches the correct level, switches over to the generator supply until mains is restored, causing the switch to change back to the mains supply and stop the generator.

- Potentiometers for: Nominal voltage configuration
Voltage and frequency threshold configuration
Operating cycle configuration
- DIP- switches for: 50 or 60Hz, single or 3-phase
Delay in "O" position during I-O transfer cycles
- LED indication of: Supply source availability, automatic mode, fault
- External command inputs: Manual change of supply from emergency to main source
Remote test on-load (*or priority change*)
1NO output relay for generator start/stop command

9353 2006	63A	2 pole	230 VAC	automatic changeover switch
9353 2008	80A	2 pole	230 VAC	automatic changeover switch
9354 4006	63A	4 pole	230 VAC	automatic changeover switch
9354 4008	80A	4 pole	230 VAC	automatic changeover switch
9354 4010	100A	4 pole	230 VAC	automatic changeover switch
9354 4012	125A	4 pole	230 VAC	automatic changeover switch
9354 4016	160A	4 pole	231 VAC	automatic changeover switch

ATyS p M - Automatic transfer switch (digital display and settings)

As the ATyS g M above, but configurable for network/genset or network/network (*with or without priority*). Monitoring parameters configured via pushbuttons and a digital display.

- LED indicator: power on, supply status, position of switch, auto/manual/test mode, fault
- 3 configurable inputs and 3 x outputs
- 1 configurable bi-stable output relay for generator start/stop command

9364 4006	63A	4 pole	230 VAC	automatic changeover switch
9364 4008	80A	4 pole	230 VAC	automatic changeover switch
9364 4010	100A	4 pole	230 VAC	automatic changeover switch
9364 4012	125A	4 pole	230 VAC	automatic changeover switch
9364 4016	160A	4 pole	230 VAC	automatic changeover switch

Accessories for all ATyS M switches

Bridging bars (plug-in) (for incoming or outgoing side of switch)

- Provides a common connection between switches I & II on the incoming or outgoing side of the ATyS M without reducing terminal capacity.

1309 2006	63-125A	2 pole	plug-in	fully insulated plug-in bridging bar
1309 4006	63-125A	4 pole	plug-in	fully insulated plug-in bridging bar
1309 4016	160A	4 pole	plug-in	fully insulated plug-in bridging bar
1399 4006	tap	1 pole		tap-off terminal for power supply
2294 4016	shroud	2 pole		terminal protection shroud
1309 1001	auxiliary	contact	1NO+1NC	for each position (I-O-II)



9523 3120

ATyS - Motorised and automatic changeover switches

Three phase motorised changeover switches with positive break indication, enabling the on load transfer of two different three-phase supplies.

- Wide-band AC control voltage $\pm 20\%$
- Fail-safe mechanical interlock
- Padlockable in the "OFF" position
- Fully independent position auxiliary contacts one for each position (I / O / II)

type	AC-31 B 415V (A)	poles	description	dimensions (mm)		
				(H)	(W)	(D)

ATyS r - Motorised changeover switches supply: 230 VAC

Three-phase remotely operated motorised transfer switches, 3 or 4 poles, with positive break indication, enable the on load transfer of two three-phase power supplies via remote volt-free contacts, from an external automatic controller using pulse logic, or a switch.

3 pole switches

9523 3016	160A	3 pole	motorised changeover switch	135	287	244
9523 3025	250A	3 pole	motorised changeover switch	160	328	244
9523 3040	400A	3 pole	motorised changeover switch	170	328	244
9523 3063	630A	3 pole	motorised changeover switch	260	377	321
9523 3080	800A	3 pole	motorised changeover switch	370	504	440
9523 3100	1000A	3 pole	motorised changeover switch	370	504	440
9523 3120	1250A	3 pole	motorised changeover switch	370	504	440
9523 3160	1600A	3 pole	motorised changeover switch	380	596	440
9523 3200	2000A	3 pole	motorised changeover switch	380	596	569
9523 3250	2500A	3 pole	motorised changeover switch	380	596	569
9523 3320	3200A	3 pole	motorised changeover switch	380	596	569

4 pole switches

9523 4016	160A	4 pole	motorised changeover switch	135	317	244
9523 4025	250A	4 pole	motorised changeover switch	160	395	244
9523 4040	400A	4 pole	motorised changeover switch	170	395	244
9523 4063	630A	4 pole	motorised changeover switch	260	454	321
9523 4080	800A	4 pole	motorised changeover switch	321	584	440
9523 4100	1000A	4 pole	motorised changeover switch	321	584	440
9523 4120	1250A	4 pole	motorised changeover switch	330	584	440
9523 4160	1600A	4 pole	motorised changeover switch	288	716	440
9523 4200	2000A	4 pole	motorised changeover switch	380	716	569
9523 4250	2500A	4 pole	motorised changeover switch	380	716	569
9523 4320	3200A	4 pole	motorised changeover switch	380	716	569



9523 4016

ATyS g - Automatic changeover switches supply: 230 VAC

Automatic changeover switches for transformer/generator applications. An integrated controller provides all necessary functions, including monitoring the voltage and frequency of both sources, providing on-load changeover switching between two power supply sources.

- Integrated dual power supply (2 independent supplies within the switch)
- Integrated generator on-load and off-load test function

ATyS g automatic changeover switches

3 pole switches

9553 3016	160A	3 pole	automatic changeover switch	135	287	244
9553 3025	250A	3 pole	automatic changeover switch	160	328	244
9553 3040	400A	3 pole	automatic changeover switch	170	328	244
9553 3063	630A	3 pole	automatic changeover switch	260	377	321
9553 3080	800A	3 pole	automatic changeover switch	321	504	392
9553 3100	1000A	3 pole	automatic changeover switch	321	504	392
9553 3120	1250A	3 pole	automatic changeover switch	330	504	392
9553 3160	1600A	3 pole	automatic changeover switch	288	596	392

4 pole switches

9553 4016	160A	4 pole	automatic changeover switch	135	317	244
9553 4025	250A	4 pole	automatic changeover switch	160	395	244
9553 4040	400A	4 pole	automatic changeover switch	170	395	244
9553 4063	630A	4 pole	automatic changeover switch	260	454	321
9553 4080	800A	4 pole	automatic changeover switch	321	584	392
9553 4100	1000A	4 pole	automatic changeover switch	321	584	392
9553 4120	1250A	4 pole	automatic changeover switch	330	584	392
9553 4160	1600A	4 pole	automatic changeover switch	288	716	392

Larger sizes (up to 3200A) available on request.



9553 4016



4109...

Accessories for ATyS changeover switches

type	poles	description	for switch
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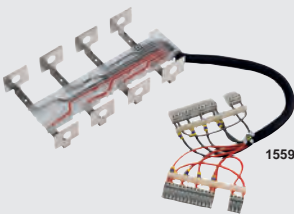
Bridging bars for switches

Supplied with all mounting accessories

4109 3019	bridge	3 pole	bridging bar set for ch/over switches	160 - 200A
4109 3025	bridge	3 pole	bridging bar set for ch/over switches	250A
4109 3039	bridge	3 pole	bridging bar set for ch/over switches	400A
4109 3063	bridge	3 pole	bridging bar set for ch/over switches	630A
4109 3080	bridge	3 pole	bridging bar set for ch/over switches	800 - 1000A
4109 3120	bridge	3 pole	bridging bar set for ch/over switches	1250A
4109 3160	bridge	3 pole	bridging bar set for ch/over switches	1600A
4109 0019	bridge	1 pole	bridging bar for ch/over switches	160A
4109 0025	bridge	1 pole	bridging bar for ch/over switches	250A
4109 0039	bridge	1 pole	bridging bar for ch/over switches	400A
4109 0063	bridge	1 pole	bridging bar for ch/over switches	630A
4109 0080	bridge	1 pole	bridging bar for ch/over switches	800 - 1000A
4109 0120	bridge	1 pole	bridging bar for ch/over switches	1250A
4109 0160	bridge	1 pole	bridging bar for ch/over switches	1600A

Voltage sensing and power supply harness

To supply controller directly from switch terminals



1559 4012

1559 3012	harness	3 pole	voltage sense and p/supply harness	160A
1559 3025	harness	3 pole	voltage sense and p/supply harness	250A
1559 3040	harness	3 pole	voltage sense and p/supply harness	400A
1559 3063	harness	3 pole	voltage sense and p/supply harness	630A
1559 3080	harness	3 pole	voltage sense and p/supply harness	800 - 1000A
1559 3120	harness	3 pole	voltage sense and p/supply harness	1250A
1559 3160	harness	3 pole	voltage sense and p/supply harness	1600A
1559 4012	N-right	4 pole	voltage sense and p/supply harness	160A
1559 4025	N-right	4 pole	voltage sense and p/supply harness	250A
1559 4040	N-right	4 pole	voltage sense and p/supply harness	400A
1559 4063	N-right	4 pole	voltage sense and p/supply harness	630A
1559 4080	N-right	4 pole	voltage sense and p/supply harness	800 - 1000A
1559 4120	N-right	4 pole	voltage sense and p/supply harness	1250A
1559 4160	N-right	4 pole	voltage sense and p/supply harness	1600A

Power supplies

1599 5112	24 VDC-230 VAC power supply to operate switches with DC	all ATyS	r/g/p
1599 4001	dual power supply permits remote transfer to any position	all ATyS	r

Terminal shrouds and mounting accessories

Terminal shrouds

2694 3014	shroud	3 pole	terminal protection shroud	160A
2694 3021	shroud	3 pole	terminal protection shroud	250 - 400A
2694 3051	shroud	3 pole	terminal protection shroud	630A
2694 4021	shroud	4 pole	terminal protection shroud	250 - 400A
2694 4051	shroud	4 pole	terminal protection shroud	630A

Door mounting frame (to permit access to controller from front panel door)

1529 0012	frame	3/4 pole	door protective frame for switches	ATyS r 160-630A
1529 0080	frame	3/4 pole	door protective frame for switches	ATyS r 800-3200A
1539 0012	frame	3/4 pole	door protective frame for switches	ATyS g 160-630A
1539 0080	frame	3/4 pole	door protective frame for switches	ATyS g 800-3200A
1509 0001	10 mm		mounting spacers (<i>stackable</i>) to raise switch	(2 per set)



2694 4051



ATyS-G - Automatic changeover panels

ATyS automatic changeover panel is a complete AMF (*Automatic Mains Failure*) switch in an enclosure. The internal ATyS g switch features an integrated controller which monitors the voltage and frequency of both the mains and generator supply. Should the monitored conditions move beyond the pre-configured parameters, the switch provides a “generator start” signal and once the generator voltage and frequency are within the preset limits, the switch changes over to the generator supply. When mains are restored, the switch changes back to the mains supply providing a “generator stop” signal.

- Easy parameter setup via four potentiometers and DIP switches
- Integrated dual power supply (*2 independent supplies within the switch*)
- Integrated generator on-load and off-load test function
- Fail-safe mechanical interlock
- Internal control circuit fuse protections
- Internal Earth bar provided
- Supplied complete with bridge bars on (*output side*), manual override key/handle
- 4 Pole - (*3 Phase + Neutral*)

type	AC-31 B 415V (A)	supply voltage	No. poles	description	dimensions (mm)		
					(H)	(W)	(D)

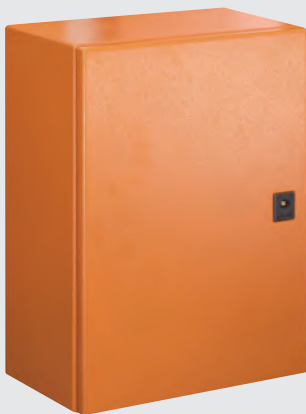
ATyS M - Automatic changeover systems 40 - 160A

Internal **ATyS p M** motorised changeover switch fully compliant with IEC 60947-6-1 (*standard governing transfer governing transfer switches*)

- Provides rapid switching (< 90ms), excellent dynamic withstand and long life
- Configurable for network/genset or network/network
- Supplied mounted into a wall mounting sheet metal enclosure (*IP65*)
- Colour: BS/EN06 E53 (*electric orange*)

4 pole switches

EAC4010M	100A	230 VAC	4 pole	automatic ch/over panel	850	600	330
EAC4016M	160A	230 VAC	4 pole	automatic ch/over panel	850	600	330



ATyS G - Automatic changeover systems 250 - 1600A

Internal **ATyS g** automatic motorised changeover switch fully compliant with IEC 60947-6-1 (*standard switches*)

- Integrated dual power supply (*2 independent supplies within the switch*)
- Integrated generator on-load and off-load test function
- Supplied mounted into a wall mounting sheet metal enclosure (*IP65*)
- Colour: BS/EN06 E53 (*electric orange*)

4 pole switches

EAC4025M	250A	230 VAC	4 pole	automatic ch/over panel	850	600	330
EAC4040M	400A	230 VAC	4 pole	automatic ch/over panel	1200	900	600
EAC4063M	630A	230 VAC	4 pole	automatic ch/over panel	1200	900	600
EAC4080M	800A	230 VAC	4 pole	automatic ch/over panel	1200	900	600
EAC4100M	1000A	230 VAC	4 pole	automatic ch/over panel	1200	900	600
EAC4125M	1250A	230 VAC	4 pole	automatic ch/over panel	1200	900	600
EAC4160M	1600A	230 VAC	4 pole	automatic ch/over panel	1200	900	600

Larger sizes (up to 3200A) available on request.





3631 3003



3841 3003



3831 3015



3821 3063



1400 1050



1443 3111



3999 0600

FUSERBLOC - Fuse combination switches

FUSERBLOC are manually operated fuse combination switches. They make and break on load and provide safety isolation and protection against overcurrent in any low voltage electrical circuit.

- Complete isolation of fuses with double breaking per pole (*top and bottom of fuse*) positive break indication
- "Test" position for testing control circuits without power (*enclosure door can be opened in "test" position*)
- External front operating handle and shaft (to be ordered separately-see below)
- IEC/EN 60947-3, IEC/EN 60269-1, IEC/EN 60269-2, VDE 0636-1, VDE 0660-107

type	AC-22 A	AC-23 A	fuse type	description	dimensions (mm)		
	415V (A)	400V			(H)	(W)	(D)

Fuse combination switches - 3 pole

NFC cylindrical fuses

3631 3003	CD32A	15kW	10 x 38	fuse combination switch	98	96	65
3831 3005	50A	25kW	14 x 51	fuse combination switch	118	121	1000
3831 3011	125A	63kW	22 x 58	fuse combination switch	162	148	135

DIN pattern fuses

3831 3006	63A	30kW	000	fuse combination switch	118	136	125
3831 3012	125A	63kW	00	fuse combination switch	162	148	135
3831 3015	160A	80kW	00	fuse combination switch	162	148	135
3831 3024	250A	132kW	1	fuse combination switch	195	234	154
3831 3038	400A	220kW	2	fuse combination switch	240	256	188
3811 3063	630A	355kW	3	fuse combination switch	300	364	265
3811 3080	800A	450kW	3	fuse combination switch	304	364	265
3811 3120	1250A	560kW	4	fuse combination switch	304	442	289

BS88 pattern fuses

3641 3001	CD32A	15kW	A1	fuse combination switch	98	96	102
3841 3003	32A	15kW	A1	fuse combination switch	118	121	100
3841 3006	63A	30kW	A2 - A3	fuse combination switch	118	136	125
3841 3010	100A	51kW	A4	fuse combination switch	162	148	135
3841 3015	160A	80kW	A4	fuse combination switch	162	190	145
3841 3021	200A	100kW	B1-B2	fuse combination switch	195	234	154
3841 3024	250A	132kW	B1-B2-B3	fuse combination switch	195	234	154
3841 3031	315A	160kW	B1-B2-B3	fuse combination switch	240	256	188
3841 3038	400A	220kW	B2-B3-B4	fuse combination switch	240	256	188
3821 3063	630A	355kW	C1-C2	fuse combination switch	300	364	265
3821 3080	800A	450kW	C1-C2-C3	fuse combination switch	300	364	265
3821 3120	1250A	560kW	D1	fuse combination switch	300	442	304

Operating handles and shafts for above switches (IP65)

- External front operated, door interlocking, padlockable (3 padlocks) in "OFF" with "TEST" position

type	handle	colour		description	for switch
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1413 2115	S1	black		pistol grip external operating handle	32 - 63A
1423 2115	S2	black		pistol grip external operating handle	100 - 400A
1433 3111	S3	black		pistol grip external operating handle	630 - 800A
1443 3111	S4	black		"T" grip external operating handle	1250A
1401 0532	S1	320 mm	□ 5	extension shaft for switch	CD32A
1401 0540	S1	400 mm	□ 5	extension shaft for switch	CD32A
1400 1020	S2	200 mm	□ 10	extension shaft for switch	32 - 400A
1400 1032	S2	320 mm	□ 10	extension shaft for switch	32 - 400A
1400 1050	S2	500 mm	□ 10	extension shaft for switch	32 - 400A
1400 1232	S3/4	320 mm	□ 12	extension shaft for switch	630-1250A
1400 1250	S3/4	500 mm	□ 12	extension shaft for switch	630-1250A
1429 0000	guide	<i>(permits engaging of misaligned shaft with handle)</i>			<i>(all sizes)</i>

Auxiliary contacts for switch fuses

3999 0701	1 NO		auxiliary contact and support for switches	CD32-1250A
3999 0702	1 NC		additional auxiliary contact fuse switches	CD32-1250A
3999 0710	holder		contact holder for additional auxiliary contacts	CD32A
3999 0600	holder		contact holder for additional auxiliary contacts	32-400A

Terminal shrouds *(also provides phase separation for switches)*

3998 3016	shroud	3 pole	terminal protection shroud for switches	100 - 160A
3998 3025	shroud	3 pole	terminal protection shroud for switches	200 - 400A
3898 3080	shroud	3 pole	terminal protection shroud for switches	630 - 800A
3898 3120	shroud	3 pole	terminal protection shroud for switches	800 - 1250A



Miniature glass fuses (20 x 5 mm)

Miniature glass fuse links with low breaking capacity, intended for small currents. Provide protection against overloads and short circuits in electronic equipment, household, telecommunications and small transformers or motors. Available with quick acting (F) characteristics. Manufactured according to IEC and EN standards with glass tube and nickel plated copper alloy contact caps.

type	rated current	rated voltage	breaking capacity	description	dimensions (mm)
Standard glass fuses 20 x 5 mm (10 pcs)					
5120025	0.25A	250V	35A	(F) fast acting cylindrical glass fuse	20 x 5
5120050	0.50A	250V	35A	(F) fast acting cylindrical glass fuse	20 x 5
5120063	0.63A	250V	35A	(F) fast acting cylindrical glass fuse	20 x 5
5120100	1.0A	250V	35A	(F) fast acting cylindrical glass fuse	20 x 5
5120125	1.25A	250V	35A	(F) fast acting cylindrical glass fuse	20 x 5
5120160	1.6A	250V	35A	(F) fast acting cylindrical glass fuse	20 x 5
5120200	2.0A	250V	35A	(F) fast acting cylindrical glass fuse	20 x 5
5120250	2.5A	250V	35A	(F) fast acting cylindrical glass fuse	20 x 5
5120315	3.15A	250V	35A	(F) fast acting cylindrical glass fuse	20 x 5
5120400	4.0A	250V	10 x In	(F) fast acting cylindrical glass fuse	20 x 5
5120500	5.0A	250V	10 x In	(F) fast acting cylindrical glass fuse	20 x 5
5120630	6.3A	250V	10 x In	(F) fast acting cylindrical glass fuse	20 x 5
5021000	10A	250V	10 x In	(F) fast acting cylindrical glass fuse	20 x 5
5021600	16A	250V	10 x In	(F) fast acting cylindrical glass fuse	20 x 5

Fuse holders for 20 x 5 mm glass fuses

- Protection against electric shock: I-II
- Impulse withstand bet. terminals: > 4.0 kV
- Admissible ambient temperature: -30°C to 85°C
- Pollution degree: 3
- Flame class rating: UL 94 VO

type	rated current	rated voltage	mounting	description	for fuse (mm)
PCB mount fuse holders					
PTF/78	6.3A	250V	PCB	PCB mount fuse holder	20 x 5
BS232VE	cover			protection cover for above PTF/78 fuse holder	
PTF/45	10A	250V	PCB	PCB vertical mounting fuse holder	20 x 5
PTF/50	10A	250V	PCB	PCB horizontal mounting fuse holder	20 x 5

Panel mount fuse holder (knurled knob) access - L 34.2 mm extends 11 mm outside panel

PTF/30	10A	250V	panel	panel mount Ø13 mm fuse holder	20 x 5
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Panel mount fuse holder (flat blade) access - L 37.5 mm extends 5.5 mm outside panel

PTF/35	10A	250V	panel	panel mount Ø12.7 mm fuse holder	20 x 5
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In-line shocksafe fuse holder

PTF/80A	6.3A	250V	in-line	in-line shocksafe fuse holder	20 x 5
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421...



4212...



422...



4222...

gG class - Cylindrical fuse links

Cylindrical fuse links with high withstand to internal pressure and thermal shock, permitting very high breaking capacities in a compact fuse design. Melting elements are designed to avoid ageing thus maintaining their electrical characteristics over time.

- Standards: IEC/EN 60269-1, IEC/EN 60269-2

type	rated current	rated voltage	breaking capacity	class	description	dimension (mm)
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gG class - Cylindrical fuse links

General protection of overloads and short circuits, protection of cables, power lines and equipment.

10 x 38 mm cylindrical fuses

420000	0.5A	500V	120kA	gG	cylindrical fuse link	10 x 38
420001	1A	500V	120kA	gG	cylindrical fuse link	10 x 38
420002	2A	500V	120kA	gG	cylindrical fuse link	10 x 38
420004	4A	500V	120kA	gG	cylindrical fuse link	10 x 38
420006	6A	500V	120kA	gG	cylindrical fuse link	10 x 38
420010	10A	500V	120kA	gG	cylindrical fuse link	10 x 38
420016	16A	500V	120kA	gG	cylindrical fuse link	10 x 38
420020	20A	500V	120kA	gG	cylindrical fuse link	10 x 38
420025	25A	500V	120kA	gG	cylindrical fuse link	10 x 38
420032	32A	400V	120kA	gG	cylindrical fuse link	10 x 38

14 x 51 mm cylindrical fuses

421010	10A	690V	80kA	gG	cylindrical fuse link	14 x 51
421016	16A	690V	80kA	gG	cylindrical fuse link	14 x 51
421020	20A	690V	80kA	gG	cylindrical fuse link	14 x 51
421025	25A	690V	80kA	gG	cylindrical fuse link	14 x 51
421032	32A	500V	120kA	gG	cylindrical fuse link	14 x 51
421040	40A	500V	120kA	gG	cylindrical fuse link	14 x 51
421050	50A	400V	120kA	gG	cylindrical fuse link	14 x 51

With striker - for use with fuse holder incorporating a micro switch for remote "fuse blown" indication

421202	2A	500V	120kA	gG	fuse link with striker	14 x 51
421204	4A	500V	120kA	gG	fuse link with striker	14 x 51
421206	6A	500V	120kA	gG	fuse link with striker	14 x 51
421210	10A	500V	120kA	gG	fuse link with striker	14 x 51
421216	16A	500V	120kA	gG	fuse link with striker	14 x 51
421220	20A	500V	120kA	gG	fuse link with striker	14 x 51
421225	25A	500V	120kA	gG	fuse link with striker	14 x 51
421232	32A	500V	120kA	gG	fuse link with striker	14 x 51
421240	40A	500V	120kA	gG	fuse link with striker	14 x 51
421250	50A	400V	120kA	gG	fuse link with striker	14 x 51

22 x 58 mm cylindrical fuses

422032	32A	690V	80kA	gG	cylindrical fuse link	22 x 58
422040	40A	690V	80kA	gG	cylindrical fuse link	22 x 58
422050	50A	690V	80kA	gG	cylindrical fuse link	22 x 58
422063	63A	690V	80kA	gG	cylindrical fuse link	22 x 58
422080	80A	500V	120kA	gG	cylindrical fuse link	22 x 58
422000	100A	500V	120kA	gG	cylindrical fuse link	22 x 58
422015	125A	400V	120kA	gG	cylindrical fuse link	22 x 58

With striker - for use with fuse holder incorporating a micro switch for remote "fuse blown" indication

422232	32A	690V	80kA	gG	fuse link with striker	22 x 58
422240	40A	690V	80kA	gG	fuse link with striker	22 x 58
422250	50A	690V	80kA	gG	fuse link with striker	22 x 58
422263	63A	690V	80kA	gG	fuse link with striker	22 x 58
422280	80A	500V	120kA	gG	fuse link with striker	22 x 58
422200	100A	500V	120kA	gG	fuse link with striker	22 x 58
422215	125A	400V	120kA	gG	fuse link with striker	22 x 58

DC application - for DF gG fuse-links

Fuses are generally suitable for both AC and DC applications, however voltage ratings will differ and therefore have to be taken into consideration.

Fuse size	rated current	maximum DC voltage	DC breaking capacity
10 x 38	0.5A...16A	250 VDC	15 kA
	20A...32A	80 VDC	
14 x 51	1A...25A	440 VDC	15 kA
	32A...40A	150 VDC	
	50A	48 VDC	
22 x 58	2A...63A	440 VDC	15 kA
	80A...100A	150 VDC	
	125A	48 VDC	



aM (motor protection) fuse links

aM fuse links for short circuit protection of motors, transformers and other loads with high inrush currents. Excellent protection of switchgear due to the effective current limiting capabilities and low I²t values.

- Standards: IEC/EN 60269-1, IEC/EN 60269-2

type	rated current	rated voltage	breaking capacity	class	description	dimension (mm)
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aM (motor protection) fuse links

10 x 38 mm cylindrical fuses

440000	0.5A	500V	120kA	aM	cylindrical fuse link	10 x 38
440001	1A	500V	120kA	aM	cylindrical fuse link	10 x 38
440002	2A	500V	120kA	aM	cylindrical fuse link	10 x 38
440004	4A	500V	120kA	aM	cylindrical fuse link	10 x 38
440006	6A	500V	120kA	aM	cylindrical fuse link	10 x 38
440010	10A	500V	120kA	aM	cylindrical fuse link	10 x 38
440016	16A	500V	120kA	aM	cylindrical fuse link	10 x 38
440020	20A	400V	120kA	aM	cylindrical fuse link	10 x 38
440025	25A	400V	120kA	aM	cylindrical fuse link	10 x 38
440032	32A	400V	120kA	aM	cylindrical fuse link	10 x 38

14 x 51 mm cylindrical fuses

441020	20A	690V	80kA	aM	cylindrical fuse link	14 x 51
441025	25A	690V	80kA	aM	cylindrical fuse link	14 x 51
441032	32A	500V	120kA	aM	cylindrical fuse link	14 x 51
441040	40A	500V	120kA	aM	cylindrical fuse link	14 x 51
441050	50A	400V	120kA	aM	cylindrical fuse link	14 x 51

22 x 58 mm cylindrical fuses

442032	32A	690V	80kA	aM	cylindrical fuse link	22 x 58
442040	40A	690V	80kA	aM	cylindrical fuse link	22 x 58
442050	50A	690V	80kA	aM	cylindrical fuse link	22 x 58
442063	63A	690V	80kA	aM	cylindrical fuse link	22 x 58
442080	80A	500V	120kA	aM	cylindrical fuse link	22 x 58
442000	100A	500V	120kA	aM	cylindrical fuse link	22 x 58
442015	125A	400V	120kA	aM	cylindrical fuse link	22 x 58

Solid neutral links (cylindrical)

431000	32A	-	-	gG/aM	solid neutral link	10 x 38
432000	50A	-	-	gG/aM	solid neutral link	14 x 51
433000	125A	-	-	gG/aM	solid neutral link	22 x 58

Medium voltage (MV) fuse links for public lighting

Public lighting systems cause voltage drops and high energy losses when lines are very long, requiring higher network voltages (*between 900V and 5500 VAC*) to protect the medium voltage network, fuse-links with adequate voltages are requested.

415010	3.15A	1500V	20kA	g	MV cylindrical fuse-link	10 x 85
415015	4A	1500V	20kA	g	MV cylindrical fuse-link	10 x 85
415020	5A	1500V	20kA	g	MV cylindrical fuse-link	10 x 85
415025	6.3A	1500V	20kA	g	MV cylindrical fuse-link	10 x 85
415030	8A	1500V	20kA	g	MV cylindrical fuse-link	10 x 85
415035	10A	1500V	20kA	g	MV cylindrical fuse-link	10 x 85
415040	12A	1500V	20kA	g	MV cylindrical fuse-link	10 x 85

Longer body fuses (150 / 180 mm) for higher voltages 2500, 3200, 5500V available on request.

PML series - MV fuse holder 1000 VAC/1500 VDC (H) 130 x (W) 24 x (D) 58 mm

10/14 x 85 mm fuse holder DIN rail mounting

485701	32A	1 pole	industrial medium voltage cylindrical fuse holder	10/14 x 85
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Accessories

480005	pin	body pins for multi-pole assembly of fuse holders	10/14 x 85
485050	ties	handle ties for multi-pole assembly of fuse holders	10/14 x 85

new



491155



491770



491835



492004



492123

Semiconductor cylindrical fuse links

Semiconductor fuse-links designed for protection of semiconductors (*diodes, thyristors, triacs, etc*) used in power rectifiers, UPS, converters, motor drives, soft starters, solid state relays, photovoltaic inverters, welding inverters and any application where semiconductor protection is required.

- Standards: IEC/EN 60269-1, IEC/EN 60269-4, UL248 standard (file Nr. E477155)

RAPIDPLUS aR high speed fuse links for semiconductors

RAPIDPLUS aR fuses are Intended for clearing short-circuits, designed and manufactured to have very low I^2t values with reduced arc voltages guaranteeing optimum semiconductor protection.

type	rated current	rated voltage	breaking capacity	class	description	dimension (mm)
10 x 38 mm aR cylindrical fuses						
491107	2A	690V	200kA	aR	semiconductor fuse link	10 x 38
491110	3A	690V	200kA	aR	semiconductor fuse link	10 x 38
491113	4A	690V	200kA	aR	semiconductor fuse link	10 x 38
491115	6A	690V	200kA	aR	semiconductor fuse link	10 x 38
491120	8A	690V	200kA	aR	semiconductor fuse link	10 x 38
491125	10A	690V	200kA	aR	semiconductor fuse link	10 x 38
491130	12A	690V	200kA	aR	semiconductor fuse link	10 x 38
491135	16A	690V	200kA	aR	semiconductor fuse link	10 x 38
491140	20A	690V	200kA	aR	semiconductor fuse link	10 x 38
491145	25A	690V	200kA	aR	semiconductor fuse link	10 x 38
491155	32A	690V	200kA	aR	semiconductor fuse link	10 x 38

14 x 51 mm aR cylindrical fuses with "striker"

- For use with fuse holder incorporating a micro switch for remote "fuse blown" indication

491730	8A	690V	200kA	aR	semiconductor fuse link	14 x 51
491735	10A	690V	200kA	aR	semiconductor fuse link	14 x 51
491737	12A	690V	200kA	aR	semiconductor fuse link	14 x 51
491741	16A	690V	200kA	aR	semiconductor fuse link	14 x 51
491745	20A	690V	200kA	aR	semiconductor fuse link	14 x 51
491750	25A	690V	200kA	aR	semiconductor fuse link	14 x 51
491760	32A	690V	200kA	aR	semiconductor fuse link	14 x 51
491765	40A	690V	200kA	aR	semiconductor fuse link	14 x 51
491770	50A	690V	200kA	aR	semiconductor fuse link	14 x 51

22 x 58 mm aR cylindrical fuses with "striker"

- For use with fuse holder incorporating a micro switch for remote "fuse blown" indication

491820	50A	690V	200kA	aR	semiconductor fuse link	22 x 58
491825	63A	690V	200kA	aR	semiconductor fuse link	22 x 58
491830	80A	690V	200kA	aR	semiconductor fuse link	22 x 58
491835	100A	690V	200kA	aR	semiconductor fuse link	22 x 58

RAPIDPLUS gR - High speed fuse links for semiconductors

RAPIDPLUS gR fuse links are capable of clearing all types of overcurrents, overloads and short-circuits, protecting semiconductors, cables and associated switchgear within the installation.

10 x 38 mm gR cylindrical fuses

492003	4A	690V	200kA	gR	semiconductor fuse link	10 x 38
492004	6A	690V	200kA	gR	semiconductor fuse link	10 x 38
492006	10A	690V	200kA	gR	semiconductor fuse link	10 x 38
492008	16A	690V	200kA	gR	semiconductor fuse link	10 x 38
492009	20A	690V	200kA	gR	semiconductor fuse link	10 x 38
492010	25A	690V	200kA	gR	semiconductor fuse link	10 x 38
492011	32A	690V	200kA	gR	semiconductor fuse link	10 x 38

14 x 51 mm gR cylindrical fuses

492022	32A	690V	200kA	gR	semiconductor fuse link	14 x 51
492023	40A	690V	200kA	gR	semiconductor fuse link	14 x 51
492024	50A	690V	200kA	gR	semiconductor fuse link	14 x 51

With "striker"

- For use with fuse holder incorporating a micro switch for remote "fuse blown" indication

492117	10A	690V	200kA	gR	SC fuse link with striker	14 x 51
492118	12A	690V	200kA	gR	SC fuse link with striker	14 x 51
492119	16A	690V	200kA	gR	SC fuse link with striker	14 x 51
492120	20A	690V	200kA	gR	SC fuse link with striker	14 x 51
492121	25A	690V	200kA	gR	SC fuse link with striker	14 x 51
492122	32A	690V	200kA	gR	SC fuse link with striker	14 x 51
492123	40A	690V	200kA	gR	SC fuse link with striker	14 x 51
492124	50A	690V	200kA	gR	SC fuse link with striker	14 x 51



492139



491610



492225



10 x 85



485...



10/14 x 85

Continued...RAPIDPLUS gR - High speed fuse links for semiconductors

RAPIDPLUS gR fuse links are capable of clearing all types of overcurrents, overloads and short-circuits, protecting semiconductors, cables and associated switchgear within the installation.

type	rated current	rated voltage	breaking capacity	class	description	dimension (mm)
22 x 58 mm gR cylindrical fuses						
492037	50A	690V	200kA	gR	semiconductor fuse link	22 x 58
492038	63A	690V	200kA	gR	semiconductor fuse link	22 x 58
492039	80A	690V	200kA	gR	semiconductor fuse link	22 x 58
492040	100A	690V	200kA	gR	semiconductor fuse link	22 x 58

With "striker"

- For use with fuse holder incorporating a micro switch for remote "fuse blown" indication

492137	50A	690V	200kA	gR	SC fuse link with striker	22 x 58
492138	63A	690V	200kA	gR	SC fuse link with striker	22 x 58
492139	80A	690V	200kA	gR	SC fuse link with striker	22 x 58
492140	100A	690V	200kA	gR	SC fuse link with striker	22 x 58

gPV - Photovoltaic fuse links

gPV photovoltaic fuse-links developed for safety and economic protection in PV installations where, due to the increase of power and technologic evolution, no-load voltages above 800V DC are achieved. Meets requirements for instruments and traction equipment auxiliary circuits. Provides effective protection against overloads as well as short-circuits.

type	rated current	rated voltage	breaking capacity	class	description	dimension (mm)
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gPV - Photovoltaic (PV) fuse links

gPV photovoltaic cylindrical fuse links

					600/1000 VDC	
491601	1A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491602	2A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491604	3A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491605	4A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491606	5A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491610	6A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491615	8A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491620	10A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491625	12A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491629	15A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491630	16A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491635	20A	1000 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491940	25A	600 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491945	32A	600 VDC	30kA	gPV	photovoltaic fuse link	10 x 38
491650	25A	1000 VDC	30kA	gPV	photovoltaic fuse link	14 x 51
491655	32A	1000 VDC	30kA	gPV	photovoltaic fuse link	14 x 51

gPV photovoltaic (PV) cylindrical fuse links

					1500 VDC	
492202	2A	1500 VDC	30kA	gPV	photovoltaic fuse link	10 x 85
492205	4A	1500 VDC	30kA	gPV	photovoltaic fuse link	10 x 85
492210	6A	1500 VDC	30kA	gPV	photovoltaic fuse link	10 x 85
492215	8A	1500 VDC	30kA	gPV	photovoltaic fuse link	10 x 85
492220	10A	1500 VDC	30kA	gPV	photovoltaic fuse link	10 x 85
492225	12A	1500 VDC	30kA	gPV	photovoltaic fuse link	10 x 85
492230	16A	1500 VDC	30kA	gPV	photovoltaic fuse link	10 x 85
492250	20A	1500 VDC	10kA	gPV	photovoltaic fuse link	10/14 x 85
492255	25A	1500 VDC	10kA	gPV	photovoltaic fuse link	10/14 x 85
492262	32A	1500 VDC	10kA	gPV	photovoltaic fuse link	10/14 x 85

Fuse holders for photovoltaic (PV) applications

					1500 VDC	
type	rated current	for fuse size (mm)	poles		description	width in 17.5 (mm)
485150	32A	10 x 38	1 pole	1000 VDC	cylindrical PV fuseholder	1
485152	32A	1000 VDC	1 pole	gPV	fuse holder with indication	10 x 38
485151	32A	1000 VDC	2 pole	gPV	photovoltaic fuse holder	10 x 38
485250	50A	14 x 51	1 pole	1100 VDC	cylindrical PV fuseholder	1.5
485701	32A	10/14 x 85	1 pole	1500 VDC	cylindrical PV fuseholder	(24 mm)



new

485120



485205



485305



485356



480005



485359



485360



483530



483534

PMX series - Modular fuse holders

- Modular, compact fuse holder DIN rail mountable for cylindrical fuses
- Incorporated, hinged transparent label holder for positive circuit identification
- Optimized ventilation zones for improved heat dissipation
- High temperature resistance, self-extinguishing-halogen free body / silver plated copper contacts
- Standards: IEC/EN 60269-1, IEC/EN 60269-2, IEC/EN 60947-3, CSA C22.2 4248-1, UL4248-1

type	rated current	for fuse	poles size (mm)	description	width in 17.5 (mm)
10 x 38 mm fuse holders			690 VAC / 750 VDC	(H) 88.8 x (D) 58 mm	
485101	32A	10 x 38	1 pole	industrial cylindrical fuse holder	1
485108	32A	10 x 38	1 pole	with 120 - 690V neon indication	1
485120	32A	10 x 38	1 pole+N	industrial cylindrical fuse holder	1
485104	32A	10 x 38	2 pole	industrial cylindrical fuse holder	2
485105	32A	10 x 38	3 pole	industrial cylindrical fuse holder	3
485107	32A	10 x 38	4 pole	industrial cylindrical fuse holder	4

Accessories for 10 x 38 mm fuse holders

480005	pin	10 x 38/85		body pins for multi-pole assembly of fuse holders	
485050	ties	10 x 38/85		handle ties for multi-pole assembly of fuse holders	
485051	lock	10 x 38/85		lock support to padlock fuse holders in "open" position	
485053	barrier	10 x 38		phase separator accessory for fuse holders	
485054	neon	10 x 38		fusing neon indicator 120 - 690V for fuse holders	

14 x 51 mm fuse holders 690 VAC (H) 110 x (D) 76 mm

485201	50A	14 x 51	1 pole	industrial cylindrical fuse holder	1.5
485208	50A	14 x 51	1 pole	with 120 - 690V neon indication	1.5
485203	50A	14 x 51	1 pole+N	industrial cylindrical fuse holder	3
485205	50A	14 x 51	3 pole	industrial cylindrical fuse holder	4.5

Accessories for 14 x 51 mm fuse holders

480005	pin	14 x 51		body pins for multi-pole assembly of fuse holders	
485356	ties	14 x 51		handle ties for multi-pole assembly of fuse holders	
485357	ties	14 x 51		handle ties for micro switch assembly of fuse holders	
485258	lock	14 x 51		lock support to padlock fuse holders in "open" position	
485259	micro	14 x 51	1 pole	micro switch for use with "striker" fuses	
485260	micro	14 x 51	3 pole	micro switch for use with "striker" fuses	
485262	micro	14 x 51	1 pole	micro sw extension for 2/4 pole requirements	
485264	neon	14 x 51		fusing neon indicator 120~690V for fuse holders	

22 x 58 mm fuse holders 690 VAC (H) 126.5 x (D) 76.5 mm

485301	125A	22 x 58	1 pole	industrial cylindrical fuse holder	2
485308	125A	22 x 58	1 pole	with 120 - 690V neon indication	2
485303	125A	22 x 58	1 pole+N	industrial cylindrical fuse holder	4
485305	125A	22 x 58	3 pole	industrial cylindrical fuse holder	6

22 x 58 fuse holders are rated at 125A, they are marked at 100A to conform to IEC/EN 60269-2 requirements

Accessories for 22 x 58 mm fuse holders

480005	pin	22 x 58		body pins for multi-pole assembly of fuse holders	
485356	ties	22 x 58		handle ties for multi-pole assembly of fuse holders	
485357	ties	22 x 58		handle ties for micro switch assembly of fuse holders	
485358	lock	22 x 58		lock support to padlock fuse holders in "open" position	
485359	micro	22 x 58	1 pole	micro switch for use with "striker" fuses	
485360	micro	22 x 58	3 pole	micro switch for use with "striker" fuses	
485362	micro	22 x 58	1 pole	micro sw extension for 2/4 pole requirements	
485364	neon	22 x 58		fusing neon indicator 120 - 690V for fuse holders	

PMC series - "Compact" modular fuse holders (H) 82.7 x (D) 38.5 mm

Compact fuse holder with shallow dimension - for installation in low profile enclosures

10 x 38 mm compact fuse holder - low profile (38.5 mm)

483530	32A	10 x 38	1 pole	compact cylindrical fuse holder	1
483534	32A	10 x 38	1 pole+N	compact cylindrical fuse holder	1

Accessories for compact 10x38 mm fuse holder

483552	kit	10 x 38		PMC multi-pole assembly kit for fuse holders	
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NH000



NH1



NH2



357010



340001

Class gG for general use with high breaking capacity for protection of cables, power lines and equipment.

- gG class for use as general protection against overloads and short circuits
- For protection of cables, power lines and equipment
- Fusing indicator on top of fuse link
- Standards: IEC/EN60269-1, IEC/EN 60269-2, VDE0636, DIN43620

type	rated current	rated voltage	breaking capacity	class size	fuse	description
gG NH HRC - Fuse links 500V <i>top indicator</i>						
381010	6A	500V	120kA	gG	NH000	DIN HRC fuse link
381015	10A	500V	120kA	gG	NH000	DIN HRC fuse link
381020	16A	500V	120kA	gG	NH000	DIN HRC fuse link
381025	20A	500V	120kA	gG	NH000	DIN HRC fuse link
381030	25A	500V	120kA	gG	NH000	DIN HRC fuse link
381035	32A	500V	120kA	gG	NH000	DIN HRC fuse link
381045	40A	500V	120kA	gG	NH000	DIN HRC fuse link
381050	50A	500V	120kA	gG	NH000	DIN HRC fuse link
381055	63A	500V	120kA	gG	NH000	DIN HRC fuse link
381060	80A	500V	120kA	gG	NH000	DIN HRC fuse link
381065	100A	500V	120kA	gG	NH000	DIN HRC fuse link
381070	125A	500V	120kA	gG	NH00	DIN HRC fuse link
381075	160A	500V	120kA	gG	NH00	DIN HRC fuse link
381255	160A	500V	120kA	gG	NHC1	DIN HRC fuse link
381260	200A	500V	120kA	gG	NH1	DIN HRC fuse link
381270	250A	500V	120kA	gG	NH1	DIN HRC fuse link
381280	315A	500V	120kA	gG	NH1	DIN HRC fuse link
381285	355A	500V	120kA	gG	NH1	DIN HRC fuse link
381370	315A	500V	120kA	gG	NH2	DIN HRC fuse link
381375	355A	500V	120kA	gG	NH2	DIN HRC fuse link
381380	400A	500V	120kA	gG	NH2	DIN HRC fuse link
381390	500A	500V	120kA	gG	NH2	DIN HRC fuse link
381465	500A	500V	120kA	gG	NH3	DIN HRC fuse link
381470	630A	500V	120kA	gG	NH3	DIN HRC fuse link
381475	800A	500V	120kA	gG	NH3	DIN HRC fuse link
381525	800A	500V	120kA	gG	NH4	DIN HRC fuse link
381530	1000A	500V	120kA	gG	NH4	DIN HRC fuse link
381535	1250A	500V	120kA	gG	NH4	DIN HRC fuse link
gG NH HRC - Fuse links 690V <i>top indicator</i>						
382010	6A	690V	80kA	gG	NH000	DIN HRC fuse link
382015	10A	690V	80kA	gG	NH000	DIN HRC fuse link
382020	16A	690V	80kA	gG	NH000	DIN HRC fuse link
382025	20A	690V	80kA	gG	NH000	DIN HRC fuse link
382030	25A	690V	80kA	gG	NH000	DIN HRC fuse link
382035	32A	690V	80kA	gG	NH000	DIN HRC fuse link
382045	40A	690V	80kA	gG	NH000	DIN HRC fuse link
382050	50A	690V	80kA	gG	NH00	DIN HRC fuse link
382055	63A	690V	80kA	gG	NH00	DIN HRC fuse link
382060	80A	690V	80kA	gG	NH00	DIN HRC fuse link
382065	100A	690V	80kA	gG	NH00	DIN HRC fuse link
382250	125A	690V	80kA	gG	NH1	DIN HRC fuse link
382255	160A	690V	80kA	gG	NH1	DIN HRC fuse link
382260	200A	690V	80kA	gG	NH1	DIN HRC fuse link
382360	250A	690V	80kA	gG	NH2	DIN HRC fuse link
382370	315A	690V	80kA	gG	NH2	DIN HRC fuse link
382450	355A	690V	80kA	gG	NH3	DIN HRC fuse link
382455	400A	690V	80kA	gG	NH3	DIN HRC fuse link
382465	500A	690V	80kA	gG	NH3	DIN HRC fuse link
382520	630A	690V	80kA	gG	NH4	DIN HRC fuse link
382525	800A	690V	80kA	gG	NH4	DIN HRC fuse link

Fuse bases and accessories for above fuse-links (see page B-46)

Accessories for NH fuse links

Microswitch for NH fuses

(mounts directly onto fuse-links)

357010	5A	250 VAC	1 pole	microswitch for all sizes NH fuses
340001	handle	universal fuse replace/removal handle		for all sizes NH fuses



384035



384065



373245



341250

aM (motor protection) - Fuse links

aM class (NH) high breaking capacity fuse links are intended for short circuit protection of motors, transformers and other loads with high inrush currents, with rated voltages up to 690 VAC. They offer excellent protection of switchgear due to the excellent current limiting capability and low I^2t values.

Standards: IEC/EN 60269-1, IEC/EN 60269-2 and VDE43620

type	rated current	rated voltage	breaking capacity	class size	fuse	description
aM class NH motor protection - Fuse links 500/690V						
					<i>top indicator</i>	
384010	6A	690V	80kA	aM	NH000	DIN HRC fuse link
384015	10A	690V	80kA	aM	NH000	DIN HRC fuse link
384020	16A	690V	80kA	aM	NH000	DIN HRC fuse link
384025	20A	690V	80kA	aM	NH000	DIN HRC fuse link
384030	25A	690V	80kA	aM	NH000	DIN HRC fuse link
384035	32A	690V	80kA	aM	NH000	DIN HRC fuse link
384045	40A	690V	80kA	aM	NH000	DIN HRC fuse link
384050	50A	690V	80kA	aM	NH00	DIN HRC fuse link
384055	63A	690V	80kA	aM	NH00	DIN HRC fuse link
384060	80A	690V	80kA	aM	NH00	DIN HRC fuse link
384065	100A	690V	80kA	aM	NH00	DIN HRC fuse link
383070	125A	500V	120kA	aM	NH00	DIN HRC fuse link
383075	160A	500V	120kA	aM	NH00	DIN HRC fuse link
384260	200A	690V	80kA	aM	NH1	DIN HRC fuse link
383270	250A	500V	120kA	aM	NH1	DIN HRC fuse link
384370	315A	690V	80kA	aM	NH2	DIN HRC fuse link
384375	355A	690V	80kA	aM	NH2	DIN HRC fuse link
383380	400A	500V	120kA	aM	NH2	DIN HRC fuse link
384465	500A	690V	80kA	aM	NH3	DIN HRC fuse link
383470	630A	500V	120kA	aM	NH3	DIN HRC fuse link
383525	800A	500V	120kA	aM	NH4	DIN HRC fuse link
383530	1000A	500V	120kA	aM	NH4	DIN HRC fuse link
383535	1250A	500V	120kA	aM	NH4	DIN HRC fuse link

gPV class NH photovoltaic - Fuse links

PV photovoltaic fuse-links designed for safety and economic protection in PV installations where, due to the increase of power and technological evolution, no-load voltages above 800 VDC are achieved. Meets requirements for instruments and traction equipment auxiliary circuits. Provides effective protection against overloads as well as short-circuits.

gPV photovoltaic cylindrical fuse links

373215	32A	1000 VDC	30kA	gPV	NH1	photovoltaic fuse link
373225	40A	1000 VDC	30kA	gPV	NH1	photovoltaic fuse link
373230	50A	1000 VDC	30kA	gPV	NH1	photovoltaic fuse link
373235	63A	1000 VDC	30kA	gPV	NH1	photovoltaic fuse link
373240	80A	1000 VDC	30kA	gPV	NH1	photovoltaic fuse link
373245	100A	1000 VDC	30kA	gPV	NH1	photovoltaic fuse link
373250	125A	1000 VDC	30kA	gPV	NH1	photovoltaic fuse link
373255	160A	1000 VDC	30kA	gPV	NH1	photovoltaic fuse link
373260	200A	1000 VDC	30kA	gPV	NH1	photovoltaic fuse link
373360	250A	1000 VDC	30kA	gPV	NH2	photovoltaic fuse link
373425	200A	1000 VDC	30kA	gPV	NH3	photovoltaic fuse link
373435	250A	1000 VDC	30kA	gPV	NH3	photovoltaic fuse link
373445	315A	1000 VDC	30kA	gPV	NH3	photovoltaic fuse link
373450	355A	1000 VDC	30kA	gPV	NH3	photovoltaic fuse link
373455	400A	1000 VDC	30kA	gPV	NH3	photovoltaic fuse link

Above NH fuses available at 1500 VDC (XL-longer body) on request.

ST fuse holders for NH PV fuse links - 1000 VDC

354172	250A	1000 VDC	1 pole	gPV	NH1	photovoltaic fuse base
354175	400A	1000 VDC	1 pole	gPV	NH2	photovoltaic fuse base
354180	630A	1000 VDC	1 pole	gPV	NH3	photovoltaic fuse base

Solid NH neutral links

341100	160A	690V	1 pole	NH000/00	neutral link blades
341250	250A	690V	1 pole	NH1	neutral link blades
341400	400A	690V	1 pole	NH2	neutral link blades
341630	630A	690V	1 pole	NH3	neutral link blades
340125	1250A	690V	1 pole	NH4	neutral link blades



Semiconductor fuse links designed for protection of semiconductors (*diodes, thyristors, triacs, etc*) used in power rectifiers, UPS, converters, motor drives, soft starters, solid state relays, photovoltaic inverters, welding inverters and any application where semiconductor protection is required.

- Standards: IEC/EN 60269-1, IEC/EN 60269-4, UL248 standard (file Nr. E477155)

type	rated current	rated voltage	breaking capacity	class size	fuse	description
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RAPIDPLUS NH aR - High speed fuse links for semiconductors

RAPIDPLUS aR fuses Intended for clearing short-circuits, specifically designed to have very low I²t values with reduced arc voltages guaranteeing optimum semiconductor protection.

365020	16A	690V	120kA	aR	NH000	semiconductor fuse link
365025	20A	690V	120kA	aR	NH000	semiconductor fuse link
365030	25A	690V	120kA	aR	NH000	semiconductor fuse link
365035	32A	690V	120kA	aR	NH000	semiconductor fuse link
365045	40A	690V	120kA	aR	NH000	semiconductor fuse link
365050	50A	690V	120kA	aR	NH000	semiconductor fuse link
365055	63A	690V	120kA	aR	NH000	semiconductor fuse link
365060	80A	690V	120kA	aR	NH000	semiconductor fuse link
365065	100A	690V	120kA	aR	NH000	semiconductor fuse link
365070	125A	690V	120kA	aR	NH000	semiconductor fuse link
365075	160A	690V	120kA	aR	NH000	semiconductor fuse link
365080	200A	690V	120kA	aR	NH000	semiconductor fuse link
365085	250A	690V	120kA	aR	NH000	semiconductor fuse link
365270	250A	690V	120kA	aR	NH1	semiconductor fuse link
365280	315A	690V	120kA	aR	NH1	semiconductor fuse link
365282	350A	690V	120kA	aR	NH1	semiconductor fuse link
365290	400A	690V	120kA	aR	NH1	semiconductor fuse link
365380	400A	690V	120kA	aR	NH2	semiconductor fuse link
365390	500A	690V	120kA	aR	NH2	semiconductor fuse link
365395	630A	690V	120kA	aR	NH2	semiconductor fuse link
365475	800A	690V	120kA	aR	NH2	semiconductor fuse link
365485	1000A	690V	120kA	aR	NH2	semiconductor fuse link

RAPIDPLUS NH gS - High-speed fuse links for semiconductors

RAPIDPLUS NH gS fuse links are capable of clearing all types of overcurrents, overloads and short-circuits, protecting semiconductors, cables and associated switchgear in the installation.

371025	20A	690V	100kA	gS	NH000	semiconductor fuse link
371030	25A	690V	100kA	gS	NH000	semiconductor fuse link
371035	32A	690V	100kA	gS	NH000	semiconductor fuse link
371045	40A	690V	100kA	gS	NH000	semiconductor fuse link
371050	50A	690V	100kA	gS	NH000	semiconductor fuse link
371055	63A	690V	100kA	gS	NH000	semiconductor fuse link
371060	80A	690V	100kA	gS	NH000	semiconductor fuse link
371065	100A	690V	100kA	gS	NH000	semiconductor fuse link
371070	125A	690V	100kA	gS	NH00	semiconductor fuse link
371075	160A	690V	100kA	gS	NH00	semiconductor fuse link
371260	200A	690V	100kA	gS	NH1	semiconductor fuse link
371270	250A	690V	100kA	gS	NH1	semiconductor fuse link
371370	315A	690V	100kA	gS	NH2	semiconductor fuse link
371375	355A	690V	100kA	gS	NH2	semiconductor fuse link
371380	400A	690V	100kA	gS	NH2	semiconductor fuse link
371465	500A	690V	100kA	gS	NH3	semiconductor fuse link
371470	630A	690V	100kA	gS	NH3	semiconductor fuse link

Fuse bases for above fuse-links (see page B-46)



354115



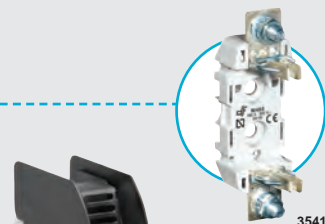
353102



326250



325250



325000



325030 + 354115

ST series - Fuse bases for NH fuse links

- Rated voltage: 690V
- Self-extinguishing polyamide body / silver plated copper contacts
- Standards: IEC/EN 60269-1, IEC/EN 60269-2, DIN43620

type	rated current	for fuse size	poles	description	qty (per pack)
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ST series - NH fuse bases

Single pole

354115	160A	NH000/00	1 pole	industrial NH fuse base	1
352115*	160A	NH000/00	1 pole	industrial NH fuse base	1
352250	250A	NH1	1 pole	industrial NH fuse base	1
352400	400A	NH2	1 pole	industrial NH fuse base	1
352630	630A	NH3	1 pole	industrial NH fuse base	1
354125	1250A	NH4	1 pole	industrial NH fuse base	1

Three pole (supplied with separating phase barriers between phases)

353102*	160A	NH000/00	3 pole	industrial NH fuse base	1
353250	250A	NH1	3 pole	industrial NH fuse base	1
353400	400A	NH2	3 pole	industrial NH fuse base	1
353630	630A	NH3	3 pole	industrial NH fuse base	1

* DIN rail or chassis mountable

Sectionable neutral NH bases

Neutral link base - (can be mounted directly onto sides of fuse base)

334103	160A	NH00	1 pole	sectionable neutral terminal	1
334160	250A	NH0	1 pole	sectionable neutral terminal	1
334251	630A	NH3	1 pole	sectionable neutral terminal	1

NH fuse holder accessories

Partition walls - (NH00/1/2/3 require connectors to mount)

326100	160A	NH00		partition walls for fuse bases	2
326250	250A	NH1/2		partition walls for fuse bases	2
326630	630A	NH3		partition walls for fuse bases	2
343125*	1250A	NH4		partition walls for fuse bases	1

* Screws directly onto chassis plate (does not mount onto fuse base)

Connectors - (to connect two bases together - accepts partition wall)

325100	160A	NH00		separators for fuse bases	2
325250	250A	NH1/2		separators for fuse bases	2
325630	630A	NH3		separators for fuse bases	2

Terminal covers - (to protect connection terminals of fuse holders)

325000	160A	NH00	1 pole	terminal cover for bases	6
325002	250A	NH1	1 pole	terminal cover for bases	6
325003	400A	NH2	1 pole	terminal cover for bases	6
325007	630A	NH3	1 pole	terminal cover for bases	6

Fuse link covers - (connects onto terminal covers)

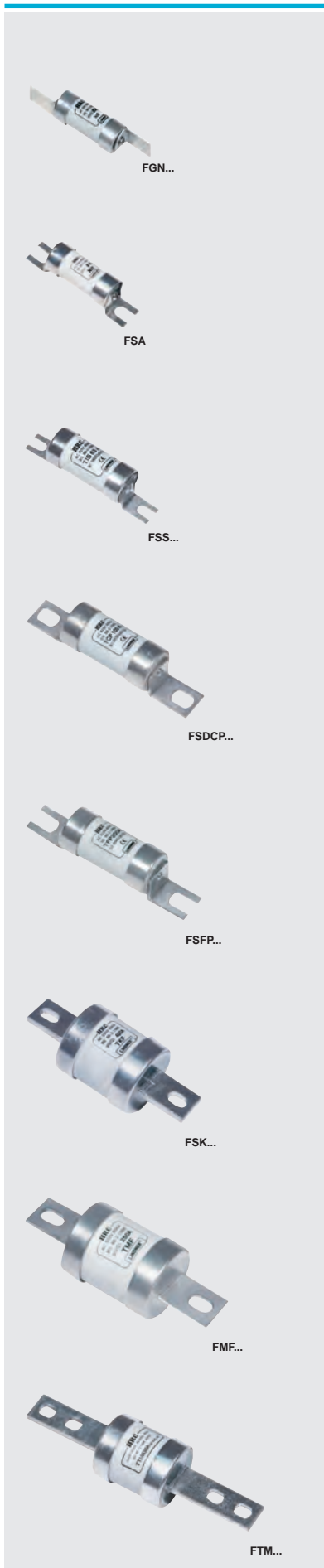
325010	160A	NH00		hinged covers for fuse link	3
325020	250A	NH1/2		hinged covers for fuse link	3
325025	630A	NH3		hinged covers for fuse link	3

Complete fuse base protection kits (for fuse and terminal insulation protection IP20)

- Comprises - partition walls - terminal cover - fuse cover

325009*	160A	NH00	3 pole	integral terminal cover	1
325030	160A	NH00	1 pole	IP20 full protection kit	1
325041	250A	NH1	3 pole	IP20 full protection kit	1
325046	400A	NH2	3 pole	IP20 full protection kit	1
325051	630A	NH3	3 pole	IP20 full protection kit	1

* Partition wall incorporated. Fuse covers 325010 to be ordered separately.



Industrial protection HRC fuses

Rated voltage: 500 VAC
 Rated breaking capacity: 80 kA
 Standards specification: BS88-2, IEC 60269-2-1
 Fuse class: gG/Q1

type	rated current	BS88 ref.	rated voltage	breaking capacity	fixing centres	body dia. (mm)	type (GEC)
Off-set blade tag fuses (F1) body length 60 mm							
FGN 02A	2A	A1/NP	500V	80kA	offset blade	14.2 mm	NS
FGN 04A	4A	A1/NP	500V	80kA	offset blade	14.2 mm	NS
FGN 06A	6A	A1/NP	500V	80kA	offset blade	14.2 mm	NS
FGN 10A	10A	A1/NP	500V	80kA	offset blade	14.2 mm	NS
FGN 16A	16A	A1/NP	500V	80kA	offset blade	14.2 mm	NS
FGN 20A	20A	A1/NP	500V	80kA	offset blade	14.2 mm	NS
FGN 25A	25A	A1/NP	500V	80kA	offset blade	14.2 mm	NS
FGN 32A	32A	A1/NP	500V	80kA	offset blade	14.2 mm	NS
Off-set bolted tag (A2) body length 86 mm							
FSA 02A	2A	A2	500V	80kA	73 mm	21.5 mm	TIA
FSA 04A	4A	A2	500V	80kA	73 mm	21.5 mm	TIA
FSA 06A	6A	A2	500V	80kA	73 mm	21.5 mm	TIA
FSA 10A	10A	A2	500V	80kA	73 mm	21.5 mm	TIA
FSA 16A	16A	A2	500V	80kA	73 mm	21.5 mm	TIA
FSA 20A	20A	A2	500V	80kA	73 mm	21.5 mm	TIA
FSA 25A	25A	A2	500V	80kA	73 mm	21.5 mm	TIA
FSA 32A	32A	A2	500V	80kA	73 mm	21.5 mm	TIA
Off-set bolted tag (A3) body length 90 mm							
FSS 40	40A	A3	500V	80kA	73 mm	21.5 mm	TIS
FSS 50	50A	A3	500V	80kA	73 mm	21.5 mm	TIS
FSS 63	63A	A3	500V	80kA	73 mm	21.5 mm	TIS
Off-set bolted tag (A4) body length 111 mm							
FSDCP 63	63A	A4	500V	80kA	94 mm	32 mm	TCP
FSDCP 80	80A	A4	500V	80kA	94 mm	32 mm	TCP
FSDCP 100	100A	A4	500V	80kA	94 mm	32 mm	TCP
Off-set bolted tag (A4) body length 111 mm							
FSFP 125	125A	A4a	500V	80kA	94 mm	39.5 mm	TFP
FSFP 160	160A	A4a	500V	80kA	94 mm	39.5 mm	TFP
FSFP 200	200A	A4a	500V	80kA	94 mm	39.5 mm	TFP
Central bolted tag (B2) body length 132 mm							
FSF 160	160A	B2	500V	80kA	111 mm	39.5 mm	TF
FSF 200	200A	B2	500V	80kA	111 mm	39.5 mm	TF
Central bolted tag (B3) body length 136 mm							
FSK 250	250A	B3	500V	120kA	111 mm	50.5 mm	TKF
FSK 315	315A	B3	500V	120kA	111 mm	50.5 mm	TKF
Central bolted tag (B4) body length 136 mm							
FMF 355	355A	B4	500V	80kA	111 mm	50.5 mm	TMF
FMF 400	400A	B4	500V	80kA	111 mm	50.5 mm	TMF
Central bolted tag (C2) body length 208 mm							
FTM 500	500A	C2	500V	80kA	133/184 mm	70.2 mm	TTM
FTM 600	600A	C2	500V	80kA	133/184 mm	70.2 mm	TTM

new



63-823191-021



63-823267-001



63-823234-041



63-001341-004

RBK series - NH-fuse switch disconnectors (for panel mounting)

RBK fuse switch disconnectors designed for distribution of electricity and protection of electrical equipment against short-circuits and overloads with industrial fuse links. They are conforming to IEC/EN 60947-1, IEC/EN 60947-3 standards
Intended for installation in low voltage distribution boards, cable and metering cabinets.

- Degree of touch protection: IP 20 - (IP30 for RBP and RBK 1 units)
- Lid lock and lid seal (with optional accessories)
- Voltage test can be performed through test holes in fuse link cover

type	model	No. poles	fuse size	max. current	cable terminal	dimensions (mm)		
						(H)	(W)	(D)

NH - fuse switch disconnectors (panel mounting)

- Rated operational voltage Un: 690 V
- Insulation voltage Ui: 1000 V
- Rated impulse withstand voltage Uimp: 8 kV

Fuse switch disconnectors for installation on chassis plate

63-823191-021	RBK 000 pro-M	3	000	160A	M8	181	89	92
63-823256-021	RBK 00 pro-M	3	00	160A	M8	182	106	81
63-811748-021	RBK 1 pro-M	3	1	250A	M10	269	180	111
63-811685-061	RBK 2 pro-M	3	2	400A	M10	298	208	130
63-811761-021	RBK 3 pro-M	3	3	630A	M12	307	250	144

Slimline (53mm wide) compact fuse switch disconnectors

63-823267-001	RBP 000 pro	3	000	125A	clamp	216	53	83
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Fuse switch disconnectors for installation on 60mm busbar system

- Rated operational voltage Un: 690 V
- Insulation voltage Ui: 1000 V
- Rated impulse withstand voltage Uimp: 8 kV

Termination: Bottom of switch (top terminals available on request)

63-823234-041	RBK 000 pro-SD-M	3	000	160A	M8	191	89	112
63-823259-141	RBK 00 pro-SD-M	3	00	160A	M8	214	106	110
63-811750-061	RBK 1 pro-SD-M	3	1	250A	M10	243	180	140
63-811686-061	RBK 2 pro-SD-M	3	2	400A	M10	298	208	154
63-028802-003	RBK 3 pro-SD-M	3	3	630A	M12	307	250	137

Slimline (53mm wide) compact fuse switch disconnectors

63-823427-002	RBP 000 pro-SD	3	000	125A	clamp	214	53	108
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Accessories for above RBK fuse switch disconnectors

1115296311T	auxiliary contact	000/00	monitoring switch for door position status
1115296316	auxiliary contact	1/2	monitoring switch for door position status
51-930160-011	extended cover	000	termination extended cover (25 mm)
51-930499-011	extended cover	00	termination extended cover (25 mm)

smartARS pro series - Vertical mounted fuse switch disconnectors

smartARS pro vertical fuse switch disconnectors designed for electrical distribution and protection against short circuits and overloads in three phase AC circuits.

Intended for direct installation on horizontal or vertical busbar systems in applications requiring reliability and safety for low voltage distribution boards in transformer substations, industrial assemblies and cable cabinets.

Fuse switch disconnectors for installation on 60mm busbar system

Switching 3 poles simultaneously (individual pole switching available on request)

63-002354-001	ARS 00/60 M-pro	3	00	160A	M8	401	50	132
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Fuse switch disconnectors for installation on 100mm busbar system

63-811628-041	ARS 00/100 M-pro	3	00	160A	M8	423	50	127
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Fuse switch disconnectors for installation on 185mm busbar system

63-001415-002	smartARS 00-3 pro	3	00	160A	M8	684	50	151
63-001341-003	smartARS 2-6-M pro	3	2	400A	M12	686	99	152
63-001341-004	smartARS 3-6-M pro	3	3	630A	M12	686	99	152

new



143017



143018



143119



106300



106538

MULTIBLOC series - NH-fuse switch disconnecter (for panel mounting)

- Parking position of the switch cover (even with inserted fuse-links)
- Modular terminal covers can be extended as required
- Lid lock and lid seal (with optional accessories)

Utilization category to IEC/EN 60947-3

00	1
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Ue: AC 400V; Ie =	160A	250A	AC 23 B
Ue: AC 500V; Ie =	160A	250A	AC 22 B
Ue: AC 690V; Ie =	125A	200A	AC 21 B
Ue: DC 220V; Ie =	160A	250A	DC 22 B

type	No. poles	fuse size	max. current	cable terminal	description	dimensions (mm) (H) (W) (D)		
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NH - Fuse switch disconnecter (panel mounting) IP30

- Rated operational voltage: 690 V
- Rated impulse withstand Uimp: 8 kV
- Insulation voltage Ui: 1000 V

NH00 - Fuse switch disconnecter

143017	1	00	160A	M8	fuse switch disconnecter	184	42	84
143018	2	00	160A	M8	fuse switch disconnecter	184	84	84

NH1 - Fuse switch disconnecter

143119	1	1	250A	M10	fuse switch disconnecter	184	71	84
143118	2	1	250A	M10	fuse switch disconnecter	184	142	84

Accessories for above switch disconnectors

140149	1/2	00	cable termination cover for NH00 switches				(2 pcs)	
140354	1/2	1	cable termination cover for NH1 switches				(2 pcs)	
140155	1/2	00/1	cover sealing set for switch disconnecter				sizes 00 & 1	
140852	1/2		monitoring switch for door position status				all sizes	

60 mm busbar system

Busbar supports for busbars (W) 12 - 30 mm x (D) 5/10 mm

106300	3	busbar support for 12 - 30 mm x 5/10 mm bars		185	17	43
106302*	1	busbar support for 12 - 30 mm x 5/10 mm bars		77	17	43

* 1 pole unit can be attached to each other for two pole or a 3 pole to make a 4 pole support

Busbar 3 phase feed-in terminals

106096	3	bar mount feed-in terminal	16...50 mm ²	201	54	44
106097	3	bar mount feed-in terminal	16...70 mm ²	201	108	80
106098	3	bar mount feed-in terminal	16...185 mm ²	201	108	80

Component adaptors for direct mounting on 60 mm system busbars

106521	3	25A	1 rail	4 mm ²	component adaptor	207	45
106523	3	25A	2 rails	4 mm ²	component adaptor	260	45
106526	3	32A	1 rail	6 mm ²	component adaptor	207	54
106528	3	32A	2 rails	6 mm ²	component adaptor	260	54
106530	3	32A	1 rail	6 mm ²	component adaptor	207	72
106531	3	32A	2 rails	6 mm ²	component adaptor	260	72
106533	3	63A	1 rail	10 mm ²	component adaptor	207	54
106535	3	63A	2 rails	10 mm ²	component adaptor	260	54
106537	3	63A	1 rail	10 mm ²	component adaptor	207	72
106538	3	63A	2 rails	10 mm ²	component adaptor	260	72
106539	3	63A	2 rails	10 mm ²	component adaptor	207	81
106544	3	80A	2 rails	16 mm ²	component adaptor	260	72

Protection cover for 60 mm system

126074	3	bar mounted cover support bracket					
126075	3	panel front cover protection 1000 mm					2met

Busbar support for 100 and 185 mm system

188100	3	100 mm	busbar support for 30 - 60 mm x 10 mm bars		324	28	50
188101	3	185 mm	busbar support for 30 - 120 mm x 10 mm bars		573	28	50
188102	1	100/185	busbar support for 30 - 120 mm x 10 mm bars		224	25	50



V-CHECK RPT

V-CHECK MR - Surge protection + POP + self reclose MCB in a single unit

Combined transient and Power-frequency Overvoltage Protection (SPD+POP), complete with automatic reclosure (motorised MCB included) Type 2 / Class II, 15 kA (8/20 μs) surges with test button for POP.

With V-CHECK MR the installation is protected against transient voltage spikes and voltage increases which last for an indefinite period. Typically, the first is associated with lightning and the second with bad connections or faulty neutral in 3-phase installations.

- Automatic recloser - ideal for installation panels requiring continuity of service and for second homes

type	surge protection device		POP	MCB		general		
	I _{max} L-N (kA)	U _p L-N (kV)	U _a (V)	C curve (In)	break capacity	poles	config.	mod. (18 mm)

V-CHECK MR - Surge protection + POP + self reclose MCB in a single unit

- Transient (*surge*) protection
- Power frequency Overvoltage Protection (POP)
- Overload and short circuit protection
- Self-reclose MCB (*automatically resets once fault is cleared*)

V-Check 2MR-10	15 kA	1.5 kV	>275 V	10A	6 kA	2	1ph+N	5
V-Check 2MR-25	15 kA	1.5 kV	>275 V	25A	6 kA	2	1ph+N	5
V-Check 2MR-40	15 kA	1.5 kV	>275 V	40A	6 kA	2	1ph+N	5
V-Check 4MR-16	20 kA	1.5 kV	>275 V	16A	10 kA	4	3ph+N	9
V-Check 4MR-32	20 kA	1.5 kV	>275 V	32A	10 kA	4	3ph+N	9
V-Check 4MR-63	20 kA	1.5 kV	>275 V	63A	10 kA	4	3ph+N	9

V-Check RPT - SPD+POP protection disconnecting the circuit via a circuit breaker + shunt trip.

V-Check 4RPT	40 kA	1.8 kV	>275 V	(without MCB)		4	3ph+N	4
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V-Check RC - SPD+POP protection disconnecting the circuit via a contactor

V-Check 4RC	40 kA	1.8 kV	>275 V	(without MCB)		4	3ph+N	4
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G-Check earthing installation monitor

G-CHECK is a device for continuous monitoring of earthing system installations in DIN rail format for panel installations. Complies with standard IEC 61010-1.

By calculating the loop resistance, **G-CHECK** checks the impedance of the actual path of an indirect contact leakage for detection of the following possible incidents, within the installation and in the transformation centre to which it is connected:

- Deterioration of earth connection due to ageing of earth rods or cable theft
- Breakage or bad connection of the neutral cable

Continuously monitoring the state of the earth connection with **G-CHECK**:

- Ensures proper operation of surge protection devices
- Ensures the protection of personnel against indirect contact
- Reduces cost of preventative maintenance

- Installed into panel, by connecting directly to earth and setting the loop resistance thresholds
- Alarm function activates if detected value exceeds a maximum preset by the user



G-CHECK 230

type	voltage	frequency	alarm activation value	max. measured value
G-CHECK 230	230 V	50/60 Hz	adjustable	500 ohms



PSM1-40/230



PSM2-40/230 TT



PSM4-40/400 TT



SAFEGROUND



PSM2-40/230 SG



PSM-40/230

Modular plug-in surge protection devices (SANS/IEC 61643-11)

For the protection of low voltage equipment against transient voltages and current surges from atmospheric origins (*lightning*) as well as transients produced by switching characteristics such as in switching of distribution networks, transformers, motors, etc.

- Provides protection for even most sensitive equipment (IEC 60634-4-443 category-1)
- Clear lifetime indication (*on front face*) and optional remote (IR) end of life signalling contact
- Meets all current international standards (*IEC 61643 / IEC 62305, etc.*)
- Plug-in cartridges for quick and easy replacement of damaged cartridges
- Suitable for all types of applications: residential, commercial and industrial

type	(8/20 μ s) L-N (Imax)	max. volts L-N (Uc)	voltage protection (Up)	poles	config.	with signal contact	width in 18 mm
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Type 2 / Class II surge protection devices

Ability to discharge induced voltage surges (8/20 μ s). Suitable for second level protection in supply distribution panels in which Type 1 protectors are installed, or first level of protection for applications not exposed to direct strikes and with no external lightning protection system. IEC 61643-11.

- High discharge capacity tested with an 8/20 μ s waveform: 20kA or 40 kA per phase
- Provides protection for most sensitive equipment (*IEC 60634-4-443 category 1*)

Imax 20kA (8/20 μ s)

PSM1-20/230	20 kA	320 V	≤ 1.4 kV	1	1ph	–	1
PSM1-20N	20 kA	265 V	≤ 1.5 kV	1	N	–	1
PSM2-20/230 TT	20 kA	320 V	≤ 1.4 kV	2	1ph+N	–	2
PSM2-20/230 TTIR	20 kA	320 V	≤ 1.4 kV	2	1ph+N	signal	2
PSM4-20/400 TT	20 kA	320 V	≤ 1.4 kV	4	3ph+N	–	4
PSM4-20/400 TTIR	20 kA	320 V	≤ 1.4 kV	4	3ph+N	signal	4

Imax 40kA (8/20 μ s)

PSM1-40/230	40 kA	275 V	≤ 1.3 kV	1	1ph	–	1
PSM1-40N	40 kA	265 V	≤ 1.5 kV	1	N	–	1
PSM2-40/230 TT	40 kA	275 V	≤ 1.3 kV	2	1ph+N	–	2
PSM2-40/230 TTIR	40 kA	275 V	≤ 1.3 kV	2	1ph+N	signal	2
PSM4-40/400 TT	40 kA	275 V	≤ 1.3 kV	4	3ph+N	–	4
PSM4-40/400 TTIR	40 kA	275 V	≤ 1.3 kV	4	3ph+N	signal	4

PSM SAFEGROUND

DIN - rail device for monitoring the earthing system from within the actual surge protection device. SAFEGROUND technology is based on the loop impedance monitoring sending current pulses to check the status of the grounding system and provide information regarding the proper wiring of the device and the existence of an adequate path to ground for the SPD itself to protect effectively.

- Confirms the device is properly installed and how effective the surge protection is
- Indication of the status of the earth loop via multi-state LEDs
- High discharge capacity with an 8/20 μ s waveform. Imax: 40 kA

PSM2-40/230 SG	40 kA	275 V	≤ 1.3 kV	2	1ph+N	–	2
PSM4-40/400 SG	40 kA	275 V	≤ 1.3 kV	4	3ph+N	–	4

Class 2 surge protection devices for higher voltage applications (500 - 690V)

- Rated varistor voltage $U_c = 750$ VAC / Imax 30kA (8/20 μ s) U_n 690 VAC

PSM1-30/750	30 kA	750 V	≤ 3.0 kV	1	1ph	–	1
PSM1-30/750 IR	30 kA	750 V	≤ 3.0 kV	1	1ph	signal	1
PSM3-30/750 TNC	30 kA	750 V	≤ 3.0 kV	3	3ph	–	1
PSM3-30/750 TNCIR	30 kA	750 V	≤ 3.0 kV	3	3ph	signal	1

Spare replacement plug-in cartridges for Type 2 surge arrestors

PSM-20/230	20 kA	320 V	< 1.4 kV	–	PSM1/2/4-20 phase
PSM-40/230	40 kA	275 V	< 1.3 kV	–	PSM1/2/4-40 phase
PSM-30/750	30 kA	750 V	< 3.0 kV	–	PSM1/3-30 phase
PSM-20N	20 kA	255 V	< 1.5 kV	–	PSM1/2/4-20 neutral
PSM-40N	40 kA	255 V	< 1.5 kV	–	PSM1/2/4-40 neutral



PSC2-12.5/230 TT



PSC4-25/400 TTIR



PSM3-40/1000 PV



PSC 12.5/230

Modular plug-in surge protection devices (SANS/IEC 61643-11)

Type 1+2 / Class I+II lightning current and surge arrester (*combined in a single device*)

Suitable for first level protection of incoming power supply panels in areas with greater exposure to lightning. For installations usually provided with external lightning protection systems. Able to discharge lightning currents (10/350 μ s) and induced voltage surges (8/20 μ s) IEC 61643-11

- Capable of protecting equipment from direct lightning strikes
- Discharges impulse currents with a 10/350 μ s waveform. Iimp: 12.5 kA or 25 kA per phase
- Clear lifetime indication (on front face) and optional remote (IR) end of life signalling contact
- Provides protection for most sensitive equipment (*IEC 60634-4-443 category 1*)

type	10/350 μ s L-N (Iimp)	(8/20 μ s) L-N (Imax)	max. volts L-N (Uc)	voltage protection (Up)	poles	config.	width in 18 mm
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Type 1+2 / Class I+II lightning current and surge arrester (*combined in a single device*)

Iimp (10/350) 12.5kA per phase, I total 25kA (2 pole) and 50kA (4 pole)

PSC2-12.5/230 TT	12.5 kA	65 kA	275 V	≤ 1.3 kV	2	1ph+N	2
PSC2-12.5/230 TTIR	12.5 kA	65 kA	275 V	≤ 1.3 kV	2	1ph+N	2
PSC4-12.5/400 TT	12.5 kA	65 kA	275 V	≤ 1.3 kV	4	3ph+N	4
PSC4-12.5/400 TTIR	12.5 kA	65 kA	275 V	≤ 1.3 kV	4	3ph+N	4

Iimp (10/350) 25kA per phase, I total 50kA (2 pole) and 100kA (4 pole)

PSC2-25/230 TT	25 kA	100 kA	275 V	≤ 1.5 kV	2	1ph+N	4
PSC2-25/230 TTIR	25 kA	100 kA	275 V	≤ 1.5 kV	2	1ph+N	4
PSC4-25/400 TT	25 kA	100 kA	275 V	≤ 1.5 kV	4	3ph+N	8
PSC4-25/400 TTIR	25 kA	100 kA	275 V	≤ 1.5 kV	4	3ph+N	8

(IR) last two digits - with signalling contacts for remote indication/monitoring of devices

Surge protection devices for photovoltaic (PV) installations 1000/1500 VDC

PSM PV is the range of devices for discharging induced transient overvoltages (Type 2 / Class II) for Photovoltaic installations, in accordance with EN 50539-11, UL 1449 certified.

Due to their location, solar panels and in many cases, the inverters they are connected to are exposed to and particularly prone to direct or indirect lightning strikes.

As PV systems are directly connected to electrical networks of buildings, surge protection is essential.

Type 2 / Class II - photovoltaic surge protection devices

Suitable for protection where no external protection is installed. Protection should be installed on the DC and AC side of an installation.

- Clear lifetime indication (*on front face*) and optional remote (IR) end of life signalling contact
- Plug-in cartridges for quick and easy replacement of damaged ones
- Suitable for PV applications: large-scale, rooftop and self-consumption (*off-grid*) DC installations.
- No back-up fuse required due to dynamic thermal disconnect system - capacity of 10kA (Iscpv)

1000/1500 VDC photovoltaic surge protection device

PSM3-40/1000 PV	–	40 kA	1060 V	≤ 4.0 kV	3	L+/PE/L-	3
PSM3-40/1000 PVIR	–	40 kA	1060 V	≤ 4.0 kV	3	L+/PE/L-	3
PSM3-40/1500 PV	–	40 kA	1500 V	≤ 5.0 kV	3	L+/PE/L-	3
PSM3-40/1500 PVIR	–	40 kA	1500 V	≤ 5.0 kV	3	L+/PE/L-	3

Type 1+2 / Class I+II photovoltaic surge protection devices (*combined in a single device*)

PSC PV is a combined device for discharging lightning currents (*Type 1 / Class I*) and protecting against induced transient overvoltages (*Type 2 / Class II*) for Photovoltaic installations, in accordance with EN 50539-11. DIN rail plug-in format.

- Protection for combiner boxes in areas with greater exposure to the atmosphere
- Exclusive device for photovoltaic systems according to EN 50539-11
- No back-up fuse required due to dynamic thermal disconnect system - capacity of 10kA (Iscpv)

1000 VDC photovoltaic surge protection device

PSC3-5/1000 PV	5 kA	40 kA	1060 V	≤ 4.0 kV	3	L+/PE/L-	3
PSC3-5/1000 PVIR	5 kA	40 kA	1060 V	≤ 4.0 kV	3	L+/PE/L-	3

(IR) last two digits - with signalling contacts for remote indication/monitoring of devices

Spare replacement plug-in cartridges for surge arrestors type

PSC 12.5/230	12.5 kA	65 kA	275 V	< 1.3 kV	1+2	PSC2/4 - 12.5 ph
PSC 25/230	25 kA	100 kA	275 V	< 1.5 kV	1+2	PSC2/4 - 25 ph
PSC 50N2	50 kA	65 kA	255 V	< 1.5 kV	1+2	PSC2 - 25 neutral
PSC 100N	100 kA	100 kA	255 V	< 1.5 kV	1+2	PSC4 - 25 neutral
PSM-40/1000 PV	–	40 kA	1170 V	< 2.0 kV	2	PSC3 - 40 PV
PSC-5/1000 PV	5 kA	40 kA	1060 V	≤ 4.0 kV	1+2	PSC3-12.5 PV



4941 3723



4941 3724



4942 3723



4950 6080

RESYS M40 - Earth leakage protection

RESYS M40 earth leakage relays associated with a remote trip breaking device (*automatic power breaking*), provide the following functions:

- Protection against indirect contact
- Limitation of leakage currents

They also preventively monitor electrical installations via a (*configurable*) pre-alarm function or when used as a signalling relay.

- Positive or negative security
- Modular DIN rail mountable (*same format as MCB's*) 44mm wide
- 2 relays with configurable function (*alarm or pre-alarm at 50% (IΔn)*)
- Adjustment of IΔn: 0.03 - 0.1 - 0.3 - 0.5 - 1 - 3 - 5 - 10 - 30A
- Time delay: 0 - 0.06 - 0.15 - 0.30 - 0.50 - 0.80 - 1 - 4 - 10 sec
- Tripping accuracy by TRMS measurement (*improves immunity to nuisance tripping*)
- LED bargraph provides real-time display of leakage currents

type	current setting IΔn	time delay (sec)	power supply	description
RESYS M40 - Type A differential relay (H)85 x (W)44 x (D)63				
4941 3723	0.03 - 30A	0 - 10	115/230 VAC	electronic earth leakage relay
4941 3740	0.03 - 30A	0 - 10	400 VAC	electronic earth leakage relay
4941 3602	0.03 - 30A	0 - 10	12 - 125 VDC	electronic earth leakage relay

RESYS M40R - With automatic reclosing

M40R relay recloses the system up to six consecutive times after preselected time intervals. If the fault is still present after the sequence of six reclosing attempts, the relay is locked in alarm mode and a manual intervention will be required.

- Time delay between two reclosings: 7.5 - 15 - 30 - 60 - 120 - 240 sec
- | | | | | |
|-----------|------------|--------|-------------|-------------------------------|
| 4941 3724 | 0.03 - 30A | 0 - 10 | 115/230 VAC | reclosing earth leakage relay |
| 4941 3741 | 0.03 - 30A | 0 - 10 | 400 VAC | reclosing earth leakage relay |

RESYS P40 - Panel mounting (48 x 48 mm)

As per RESYS M40 (*above*) but in panel mounting version

4942 3723	0.03 - 30A	0 - 10	115/230 VAC	panel mount earth leakage relay
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Core balance transformers (toroidal transformers) - type A

Active conductors pass through the aperture of the core balance transformer, providing a differential summation of vector currents, enabling detection of leakage currents.

type	aperture Ø diameter	description	dimensions (mm)		
			(H)	(W)	(D)
4950 6030	30 mm	core balance transformer for e/leakages	104	92	26
4950 6050	50 mm	core balance transformer for e/leakages	125	103	26
4950 6080	80 mm	core balance transformer for e/leakages	143	116	26
4950 6120	120 mm	core balance transformer for e/leakages	183	163	26
4950 6200	200 mm	core balance transformer for e/leakages	274	253	51

Larger aperture sizes available on request.

Accessories for above

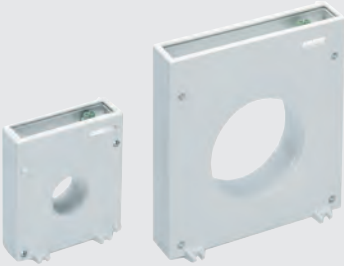
Cable locator

Enables cables passing through toroids to be centred (*for direct cable mounting*)

4950 0011	30 mm	for directly mounting transformers onto cables
4950 0012	50 mm	for directly mounting transformers onto cables
4950 0013	80 mm	for directly mounting transformers onto cables
4950 0014	120 mm	for directly mounting transformers onto cables
4950 0031		DIN-rail clip (<i>for DIN rail mounting core balance transformers</i>)



R4D 415



RT...



RC80 415

Industrial electronic earth leakage relays

- LED indication (Green – Power "ON") (Red – TRIP)
- Front "TEST" and "RESET" buttons
- Configurable automatic or manual reset
- Configurable tripping set-point ($I_{\Delta n}$): 0.025 - 0.25A / 0.25 - 2.5A / 2.5 - 25A
- Configurable tripping time delay (t): 0.02 - 0.5s / 0.2 - 5s
- Reference standards: IEC/EN 60947-2

type	supply voltage	relays	description
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Panel mount earth leakage relays - (96 x 96 mm)

Require toroidal current transformers (*listed below*)

R1D 1 operational threshold

R1D 415	110 - 240 - 415V	1	earth leakage 1 operational threshold
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R2D 2 operational thresholds (*configurable for 2 tripping or 1 + alarm*)

R2D 415	110 - 240 - 415V	2	earth leakage 2 operational threshold
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R4D 2 operational thresholds (*configurable for 2 tripping or 1 + alarm*)

- Flag indicator "trip memory"
- Digital fault current measurement and display with configurable tripping value

R4D 415	110 - 240 - 415V	2	earth leakage 2 operational threshold
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Toroidal current transformers for above earth leakage relays

type	supply voltage	hole size	description
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RT60	toroid	60 mm	toroidal transformer for above relays
RT80	toroid	80 mm	toroidal transformer for above relays
RT110	toroid	110 mm	toroidal transformer for above relays
RT210	toroid	210 mm	toroidal transformer for above relays
RTA110	toroid	110 mm	split-core toroidal transformers
RTA210	toroid	210 mm	split-core toroidal transformers

Earth leakage relay incorporating toroidal transformer

RC60 48	24 - 48 VAC/DC	60 mm	earth leakage and toroidal combinations
RC60 415	110 - 240 - 415V	60 mm	earth leakage and toroidal combinations
RC80 415	110 - 240 - 415V	80 mm	earth leakage and toroidal combinations
RC110 415	110-240-415V	110 mm	earth leakage and toroidal combinations



For the protection of low voltage equipment against transient voltage and current surges mainly from atmospheric origin (*lightning*) and transient produced by switching characteristics such as in switching of distribution networks, transformers, motors, etc.

type	DEHN type	(10/350 μ s) L-N (Iimp)	(8/20 μ s) L-N (In)	max. voltage volts L-N (Uc)	protection voltage (Up)	config	width in 18 mm
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DEHNventil Type 1+2 combined lightning and surge protection *(in a single unit)*

- Clamps voltage to less than 1500V as per SANS 10142-1:2008 table L1
- Prewired spark-gap-based type 1 and 2 combined lightning current and surge arrester

941110	shield	12.5 kA	12.5 kA	255 V	$\leq 1.5kV$	1ph+N	2
951110	ventil	25 kA	25 kA	264 V	$\leq 1.5kV$	1ph+N	4
951115*	ventil	25 kA	25 kA	264 V	$\leq 1.5kV$	1ph+N	4
941310	shield	12.5 kA	12.5 kA	255 V	$\leq 1.5kV$	3ph+N	4
951310	ventil	25 kA	25 kA	264 V	$\leq 1.5kV$	3ph+N	8
951315*	ventil	25 kA	25 kA	264 V	$\leq 1.5kV$	3ph+N	8

Type 1 combined lightning current and surge arrester with integrated backup fuse

961200	ventil CI	25 kA	–	255 V	$\leq 1.5kV$	ph	2
961205*	ventil CI	25 kA	–	255 V	$\leq 1.5kV$	ph	2
961180	gap	25 kA	–	255 V	$\leq 1.5kV$	N	2
961185*	gap	25 kA	–	255 V	$\leq 1.5kV$	N	2
961146	bloc	35 kA	–	440 V	$\leq 2.5kV$	ph	3
961176	bloc	35 kA	–	760 V	$\leq 4kV$	ph	3

* With signalling contacts for remote indication/monitoring of devices

DEHNgard basic Type 2 surge protection devices *(non-plug-in modules)*

900453	basic	–	5 kA	340 V	$\leq 1.2kV$	1ph+N	2
900454	basic	–	10 kA	340 V	$\leq 1.3kV$	1ph+N	2
900463	basic	–	10 kA	340 V	$\leq 1.3kV$	3ph+N	4

DEHNgard Type 2 surge protection devices

Minimum requirement as per SANS 10142-1:2008 annex L for use in all electrical distribution boards and sub boards. For installation in conformity with the lightning protection zone.

- Replaceable plug-in modules
- Visual fault indication
- Clamps voltage to less than 1500V as per SANS 10142-1:2008 table L1

I_{max} 40kA (8/20 μ s)

952070	guard	–	20 kA	275 V	$\leq 1.5kV$	ph	1
952090*	guard	–	20 kA	275 V	$\leq 1.5kV$	ph	1
952030	gap	12 kA	20 kA	255 V	$\leq 1.5kV$	N	1
952035*	gap	12 kA	20 kA	255 V	$\leq 1.5kV$	N	1
952110	guard	12 kA	20 kA	275 V	$\leq 1.5kV$	1ph+N	2
952115*	guard	12 kA	20 kA	275 V	$\leq 1.5kV$	1ph+N	2
952310	guard	12 kA	20 kA	275 V	$\leq 1.5kV$	3ph+N	4
952315*	guard	12 kA	20 kA	275 V	$\leq 1.5kV$	3ph+N	4

Type 2 surge protection device with backup fuse

952171	guard	12 kA	20 kA	275 V	$<1.5 kV$	1ph+N	2
952176*	guard	12 kA	20 kA	275 V	$<1.5 kV$	1ph+N	2
952322	guard	12 kA	12.5 kA	275 V	$<1.5 kV$	3ph+N	4
952327*	guard	12 kA	12.5 kA	275 V	$<1.5 kV$	3ph+N	4

* With signalling contacts for remote indication/monitoring of devices

DEHNgard S/M ACI 275 Type 2 arrester

With its new integrated switch/spark gap combination, ACI (*Advanced Circuit Interruption*) technology reduces complexity, improves system availability and saves time, space and material costs.

952341	guard	–	20 kA	275 V	$<1.5 kV$	3ph+N	4
952121	guard	–	20 kA	275 V	$<1.5 kV$	1ph+N	2
952100	guard	–	20 kA	275 V	$<1.5 kV$	ph	1

DEHNrail modular Type 3 surge protection devices

- Replaceable plug-in protection modules
- High discharge capacity due to heavy-duty oxide varistor / spark gap combination
- Energy coordination with other arrestors

953200	rail	12 kA	1 kA	30 V	$\leq 180 V$	ph	1
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950530



900070



920300



920244



929121



929221



Photovoltaic surge protection devices (SPD)

Due to their location, solar panels and the inverters they are connected to are exposed to and particularly prone to direct or indirect lightning strikes. As PV systems are directly connected to electrical networks of buildings, surge protection is essential.

type	max. PV voltage (Ucpv)	(8/20 μs) DC+/DC- (Imax)	(10/350 μs) DC+/DC- (Iimp)	voltage protection (Up)	poles	config.	width in 18 mm
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DEHNGuard Type 2 PV (SPD) with SCI (non-plug-in modules)

- Short circuit interruption (SCI) technology for maximum safety in PV systems

950530	1000 V	25 kA	–	≤ 4 kV	3	DC+/DC-	3
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DEHNGuard Type 2+3 PV (SPD) with SCI

- Plug-in cartridges for easy replacement
- Safe replacement of protection modules without arc formation due to integrated DC fuses

952516	≤ 600 V	25 kA	–	≤ 2.5 kV	3	DC+/DC-	3
952515*	≤ 1000 V	25 kA	–	≤ 4 kV	3	DC+/DC-	3
952520	≤ 1500V	12.5 kA	–	< 6 kV	3	DC+/DC-	4.5

DEHNcombo Type 1+2 PV (SPD) without SCI (non-plug-in modules)

- Combined lightning current and surge arrester for use in Photovoltaic systems

900070	≤ 1200V	20 kA	6.5 kA	< 3.8 kV	2	DC+/DC-	4
900075*	≤ 1200V	20 kA	6.5 kA	< 3.8 kV	2	DC+/DC-	4
900071	≤ 1500V	20 kA	6.5 kA	< 4.5 kV	2	DC+/DC-	4
900076*	≤ 1500V	20 kA	6.5 kA	< 4.5 kV	2	DC+/DC-	4

* With signalling contacts for remote indication/monitoring of devices

Surge protection devices for data networks

type	nominal voltage (Un)	voltage line-line (Up)	(8/20 μs) per line (In)	(10/350 μs) per line (Iimp)	poles	config.	width (mm)
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BLITZDUCTOR surge arresters are pluggable multipole DIN rail mounting arresters. Universally used for protecting Data networks, control/measuring circuits, bus or telecom systems.

- Permits easy replacement of modules (no signal interruption when protection module removed)
- Universal surge arrester for two-pole, three-pole or four-pole interfaces

920300 DIN rail mount socket to receive various protection modules for data networks

BLITZDUCTOR XT – Protection Modules

Type 2 P1 surge protection device high degree of protection for one pair

- For installation in conformity with lightning protection zone concept from 0B -2 and higher

926244	24 V	≤ 55 V	10 kA	–	4	line-PG	12 mm
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Type 1 P1 surge protection device optimal protection of one pair and the cable shield

- For installation in conformity with lightning protection zone concept from 0A -2 and higher

920244	24 V	≤ 52 V	10 kA	2.5 kA	4	line-PG	12 mm
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DEHNpatch for Ethernet applications

Universal arrester for Industrial Ethernet, Power over Ethernet (PoE+ acc. to IEEE 802.3at to 57V) and similar applications in structured cabling systems according to class E up to 250 MHz.

929121	48 V	≤ 180 V	0.5 kA	0.5 kA	4	line-PG	19 mm
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DEHNpatch outdoor type 2 (IP65) UL, CSA

Complete surge protection unit to protect surveillance camera's, PoE ++ 4PPoE and other GBit Ethernet applications from damage due to surges. The IP65 rated enclosure permits safe to use outdoor

- Easy mounting: even at great heights (universal brackets for poles and wall mounting)
- Lighting current discharge capacity (10/350 μs)

929221	24 V	≤ 52 V	10 kA	2.5 kA	4	line-PG	12 mm
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LYTE



CliQ



CliQ II



SYNC

Industrial Power Supplies

Delta - worlds leading power supply manufacturer offers state-of-the-art designs made to withstand harsh industrial environments in accordance with ATEX requirements. The rugged ultra-compact case is both shock and vibration resistant according to IEC 60068-2.

Product features:

- DIN rail mounting (RoHS compliant)
- Wide input voltage range 85 to 264 VAC (1 phase) / 320 to 600 VAC (3 phase)
- Provides - overload, overvoltage and thermal protection
- Power boost - (enables reserve power for reliable start-up of loads with high inrush currents)
- Conforms to harmonic current IEC/EN 61000-3-2, Class A
- Conformal coating on PCBAs to protect against chemical and dust pollutants
- Certification: UL508, EN 60950, cULus 60950, EN 50178, EN 60204, GS, CCS Aus

type	input voltage	output voltage	rated load		housing	dimensions (mm)		
			(W)	(A)		(H)	(W)	(D)

LYTE series *DIN rail mounting, cost effective*

LYTE - DIN rail mounting economically priced, compact Power Supplies for general applications.

- Universal AC input voltage range: 85 - 264 VAC (DC input range 120 - 375 VDC)
- Efficiency - up to 90.0% at 230 VAC
- Built-in constant current circuit for reactive loads
- Operating temperature: -20°C to +70°C

DRL-24V75W1AZ	85 - 264 VAC	24 VDC (adj)	75	3.2	plastic	124	27	102
DRL-24V120W1AA	85 - 264 VAC	24 VDC (adj)	120	5	alu.	124	40	118
DRL-24V240W1AA	85 - 264 VAC	24 VDC (adj)	240	10	alu.	124	60	118
DRL-24V480W1AA	85 - 264 VAC	24 VDC (adj)	480	20	alu.	124	86	129
DRL-48V120W1AA	85 - 264 VAC	48 VDC (adj)	120	2.5	alu.	124	40	118

CliQ series *DIN rail mounting*

- Universal AC input voltage (without power de-rating for entire input voltage range)
- Power Boost of 150% for 3 seconds
- Efficiency - up to 88.0% @ 230 VAC
- Operating temperature: -20°C to +80°C

DRP012V030W1AZ	85 - 264 VAC	12 VDC (adj)	30	2.5	plastic	100	32	101
DRP012V060W1AA	85 - 264 VAC	12 VDC (adj)	60	5	alu.	121	32	120
DRP012V100W1AA	85 - 264 VAC	12 VDC (adj)	100	8.33	alu.	121	50	119
DRP-24V48W1AZ	85 - 264 VAC	24 VDC (adj)	48	2	plastic	100	32	101
DRP024V060W1AZ	85 - 264 VAC	24 VDC (adj)	60	2.5	plastic	121	32	113

CliQ II series *DIN rail mounting, high specification series*

- High efficiency - up to 92.0% at 230 VAC
- Power Boost of 150% for 5 seconds (480W: 200% for 2 seconds)
- Operating temperature: -25°C to +80°C

DRP024V060W1BN	85 - 264 VAC	24 VDC (adj)	60	2.5	alu.	121	32	125
DRP024V120W1BN	85 - 264 VAC	24 VDC (adj)	120	5	alu.	121	50	125
DRP024V240W1BN	85 - 264 VAC	24 VDC (adj)	240	10	alu.	121	85	125
DRP024V480W1BN	85 - 264 VAC	24 VDC (adj)	480	20	alu.	121	144	119
DRP048V120W1BN	85 - 264 VAC	48 VDC (adj)	120	2.5	alu.	121	50	125
DRP048V240W1BN	85 - 264 VAC	48 VDC (adj)	240	5	alu.	121	85	125
DRP048V480W1BN	85 - 264 VAC	48 VDC (adj)	480	10	alu.	121	144	119

Three phase 320 - 575 VAC 24 VDC output

DRP024V060W3BN	320 - 575 VAC	24 VDC (adj)	60	2.5	alu.	121	50	118
DRP024V120W3BN	320 - 575 VAC	24 VDC (adj)	120	5	alu.	121	50	118
DRP024V240W3BN	320 - 575 VAC	24 VDC (adj)	240	10	alu.	121	70	118
DRP024V480W3BN	320 - 575 VAC	24 VDC (adj)	480	20	alu.	121	140	118
DRP024V960W3BN	320 - 575 VAC	24 VDC (adj)	960	40	alu.	121	255	118

SYNC series *DIN rail mounting, Slimline power supplies*

Ultra-compact, galvanic isolation, competitively priced DIN rail mount power supplies, designed for general applications requiring a highly reliable power supply with restricted dimensions.

- Universal AC input voltage
- Efficiency - up to 89.0% at 230 VAC
- Operating temperature: -20°C to +70°C

DRS-12V50W1NZ	85 - 264 VAC	12 VDC (adj)	48	4	plastic	75	30	90
DRS-24V30W1NZ	85 - 264 VAC	24 VDC (adj)	30	1.25	plastic	75	21	90
DRS-24V50W1NZ	85 - 264 VAC	24 VDC (adj)	50	2.1	plastic	75	30	90
DRS-24V100W1NZ	85 - 264 VAC	24 VDC (adj)	96	4	plastic	75	45	100



CHROME

CHROME series *DIN rail mounting, modular, Class II*

Chrome DIN rail power supply is a compact, modular unit designed for compact cabinets, they feature a universal AC input range and are certified to international safety standards ITE and ICE

- Compact modular housing (*same profile and cut-out as standard MCB's*)
- Class II double insulation (*no earth connection required*)
- Safety approval to IEC/EN/UL 60950-1 (ITE standard) and UL 508 (*industrial standard*)

type	input voltage	output voltage	rated load		housing	dimensions (mm)		
			(W)	(A)		(H)	(W)	(D)
DRC-5V10W1AZ	90 - 264 VAC	5 VDC (adj)	7.5	1.50	plastic	91	18	56
DRC-12V10W1AZ	90 - 264 VAC	12 VDC (adj)	10	0.83	plastic	91	18	56
DRC-12V30W1AZ	90 - 264 VAC	12 VDC (adj)	25.2	2.10	plastic	91	53	56
DRC-12V60W1AZ	90 - 264 VAC	12 VDC (adj)	54	4.50	plastic	91	71	56
DRC-24V10W1AZ	90 - 264 VAC	24 VDC (adj)	10	0.42	plastic	91	18	56
DRC-24V30W1AZ	90 - 264 VAC	24 VDC (adj)	30	1.25	plastic	91	53	56
DRC-24V60W1AZ	90 - 264 VAC	24 VDC (adj)	60	2.50	plastic	91	71	56
DRC-24V100W1AZ	90 - 264 VAC	24 VDC (adj)	91.2	3.80	plastic	91	90	56

DC-UPS module (*without battery*) *Suitable for 24V system up to 10A / 40A*

- High MTBF > 500 000 hours per Telcordia SR-332
- Zero switch over time from loss of DC input to battery operation
- Built-in diagnostic monitoring for DC OK, discharge and battery fail by relay contacts
- Modular design to be used in small cabinets where space is critical (*DRU-24V10ACZ*)

DRU-24V10ACZ	DC-UPS mod.	24-28 VDC	10A	plastic	91	71	56
DRU-24V40ABN	DC-UPS mod.	23-28 VDC	40A	alu.	121	50	118

Complementary modules - DIN rail mounting

Redundancy module *built-in 2 channel DC OK signal and alarm contact*

Redundancy modules provide additional protection against potential failure of the 24 VDC supply. Two power supplies are decoupled via a redundancy module which continually monitors the feeding power supply units and when one unit fails, automatically switches to the other.

DRR-20N	22 - 60 VDC	22 - 60 VDC	20A	alu.	121	50	122
DRR-40N	22 - 60 VDC	22 - 60 VDC	40A	alu.	121	50	122

Buffer module *for protection against short power failures*

- Buffering time 250ms to 10s (*depending on load current*)
- Supports parallel connection for extended buffer time

DRB-24V020ABN	23 - 28.8 VDC	22 - 28 VDC	20A	alu.	121	50	122
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PMT series - Panel mounting (*chassis type*) *enclosed power supplies (single phase)*

PMT panel mount Power Supplies with a wide operating temperature range, withstand shock and vibration according to IEC 60068-2. They offer overvoltage and over current protection and meet price competitive demand without compromising quality of components and product specifications.

- Universal AC input voltage without power de-rating
- Conforms to harmonic current IEC/EN 61000-3-2, Class A
- Short Circuit / Overvoltage / Overload / Over Temperature Protection

PMT-5V35W1AA	85 - 264 VAC	5 VDC (adj)	35	7	alu.	38	98	98
PMT-5V50W1AA	85 - 264 VAC	5 VDC (adj)	50	10	alu.	38	98	98
PMT-5V350W1AM*	180 - 264 VAC	5 VDC (adj)	300	60	alu.	50	115	215
PMT-12V35W1AA	90 - 264 VAC	12VDC (adj)	35	2.92	alu.	30	82	99
PMT-12V50W2BA	90 - 264 VAC	12VDC (adj)	50.4	4.2	alu.	30	82	99
PMT-12V100W2BA	90 - 264 VAC	12VDC (adj)	102	8.5	alu.	30	97	129
PMT-12V150W2BA*	180 - 264 VAC	12VDC (adj)	150	12.5	alu.	30	97	159
PMT-24V35W1AA	90 - 264 VAC	24 VDC (adj)	35	1.46	alu.	38	98	98
PMT-24V50W2BA	90 - 264 VAC	24 VDC (adj)	53	2.2	alu.	30	82	99
PMT-24V100W2BA	90 - 264 VAC	24 VDC (adj)	108	4.5	alu.	30	97	129
PMT-24V150W2BA*	180 - 264 VAC	24 VDC (adj)	150	6.3	alu.	30	97	159
PMT-24V200W1AM*	180 - 264 VAC	24 VDC (adj)	211	8.8	alu.	50	115	215
PMT-24V350W1AK*	180 - 264 VAC	24 VDC (adj)	350	14.6	alu.	50	115	215

* AC input voltage selectable 90 - 132 VAC (or) 180 - 264 VAC - via switch



PMT



PSL1M...



PSL1...



PSL3...

DIN rail mount power supplies

- Modular DIN rail mounting (*aligns with standard MCB's with 45 mm cut out*)
- Rated output voltage 12 VDC or 24 VDC
- High output efficiency up to 89%
- Adjustable output voltage

type	input voltage	output voltage	rated load		description	dimensions (mm)		
			(A)	(W)		(H)	(W)	(D)

Modular DIN rail mount power supplies

- Protection:
- short circuit
 - overvoltage
 - input voltage peaks

Single - phase 100 - 240 VAC (*insulated housing*)

PSL1M02412	90 - 264 VAC	12 VDC	2	24	power supply	96	35	56
PSL1M03312	90 - 264 VAC	12 VDC	2.75	33	power supply	96	53	56
PSL1M05412	90 - 264 VAC	12 VDC	4.5	54	power supply	96	72	56
PSL1M07212	90 - 264 VAC	12 VDC	6	72	power supply	96	90	56
PSL1M02424	90 - 264 VAC	24 VDC	1	24	power supply	96	35	56
PSL1M03624	90 - 264 VAC	24 VDC	1.5	36	power supply	96	53	56
PSL1M06024	90 - 264 VAC	24 VDC	2.5	60	power supply	96	72	56
PSL1M10024	90 - 264 VAC	24 VDC	4.2	100	power supply	96	90	56

DIN rail mount industrial power supplies (IEC/EN 60715)

- Rated voltage 24 VDC
- High output efficiency up to 92%
- Adjustable output voltage

Single - phase (90 - 264 VAC)

PSL112024	90 - 264 VAC	24 VDC	5	120	power supply	124	64	124
PSL124024	90 - 264 VAC	24 VDC	10	240	power supply	124	84	124
PSL130024	90 - 264 VAC	24 VDC	12.5	300	power supply	124	84	124

Three phase (340 - 575 VAC)

PSL312024	340 - 575 VAC	24 VDC	5	120	power supply	124	74	119
PSL324024	340 - 575 VAC	24 VDC	10	240	power supply	124	89	119
PSL348024	340 - 575 VAC	24 VDC	20	480	power supply	124	150	119



680100040

TR28 series - Control and safety or isolating transformers

Control and safety or isolating single-phase transformers supply high instantaneous power for the correct operation of contactors and other control and switchgear.

- DIN rail mountable (up to 400VA)
- High flexibility - several primary rated voltages (with regulation taps +20V or -20V)
- Serial-parallel secondary bridge pieces for ease of connection
- High capacity clamp terminals (10 mm² up to 400VA / 25 mm² up to 1250VA)

Primary voltages: 240V - 400V - 525V (with regulation taps + and - 20V)
 Secondary voltages: 12-24V (or) 115-230V
 Protection degree: IP20 protection (finger safe)
 Thermal class: B (130°C)
 Class: Class I
 Frequency: 50/60 Hz
 Dielectric strength: Primary - secondary > 4.5kV
 Standards: IEC/EN 61558-1, IEC/EN 61558-2-2 /-2-4 /-2-6

type	power (VA)		inrush VA	secondary voltage	dimensions (mm)			weight kg
	t _a 25°C	t _a 40°C			(H)	(W)	(D)	

TR 28 - Secondary voltage: 12 - 24V

- Primary voltage: 240V - 400V - 525V

680040040	40	25	75	12-24V	113	84	96	1.17
680063040	63	40	120	12-24V	113	84	105	1.48
680100040	100	63	150	12-24V	113	84	112	1.83
680200040	200	160	350	12-24V	113	84	131	2.73
680320040	320	250	600	12-24V	135	108	138	4.45
680400040	400	320	800	12-24V	135	108	148	5.00
680630040	630	500	1275	12-24V	152	120	156	7.08
680800040	800	630	1700	12-24V	177	150	140	8.68
681000040	1000	800	2100	12-24V	177	150	160	11.50
681250040	1250	1000	3300	12-24V	177	150	183	14.40

TR 28 - Secondary voltage: 115 - 230V

- Primary voltage: 240V - 400V - 525V

680040042	40	25	75	115-230V	113	84	96	1.17
680063042	63	40	120	115-230V	113	84	105	1.48
680100042	100	63	150	115-230V	113	84	112	1.83
680130042	130	100	230	115-230V	113	84	116	1.83
680200042	200	160	350	115-230V	113	84	131	2.73
680320042	320	250	600	115-230V	135	108	138	4.45
680400042	400	320	800	115-230V	135	108	148	5.00
680630042	630	500	1275	115-230V	152	120	156	7.08
680800042	800	630	1700	115-230V	177	150	140	8.68
681000042	1000	800	2100	115-230V	177	150	160	11.50
681250042	1250	1000	3300	115-230V	177	150	183	14.40



680320042













680630042



AUTOMATION

C

C₁

Slim type PLC		Delta	C-1...5
Block type PLC		Delta	C-7...8
Mid-range PLC		Delta	C-9...10
High performance PLC		Delta	C-11...13
Communication cables / Modules		Delta	C-14...15
Industrial PC / SCADA systems		Delta	C-16
HMI (human machine interface)		Delta	C-17
Text panels and HMI/PLC's		Delta	C-18
Industrial Ethernet switches		Delta	C-19...20
Servo drives and motors		Delta	C-21

C₂

Precision gearboxes		EM	C-22
Rotary optical encoders		Hontko	C-23
Micro PLC		Lovato	C-24
Industrial communications		Klemsan	C-25



DVP14SS...

SS2/SA2 series

Delta's high-performance, high-speed DVP series PLCs are the most efficient and incorporates communication capabilities. Advantages include numerous built-in convenient commands for easy operation access and communication function monitoring.

The module-type unit affords tremendous space-saving, allowing simple, clip-on expansion possibilities. The PLCs high performance and extensive I/O units represent a high-value solution for machine control and industrial automation.

Common characteristics

- 32-bit CPU for high-speed processing
- Compact dimensions (H) 90 mm x (D) 60 mm - DIN rail mounting
- Built-in high speed counters up to 100 kHz (model dependant)
- Clip-on extension modules - general (right side) - high speed (left side)
- Plug-in terminals for ease of wiring and maintenance
- Program language: (IL) instruction list, (LD) ladder diagram, (SFC) sequential function chart
- Supports Modbus Master. Can connect up to 16 slaves (VFD, Temp controller, PLC)

type	supply	inputs outputs		width (mm)	description	output type
		(DI)	(DO)			

SS2 series - Economic, compact ultra-slim PLC

The DVP-SS2 series slim type PLC provides basic sequential control functions with fast execution speed. Accepts - general (right side) expansion modules only.

- Max. I/O: 480 points
- Program capacity: 8 k steps
- Data register: 5 k words
- Max. execution speed of basic instructions: 0.35 µs
- Built-in RS-232 and RS-485 ports (Master/Slave)
- Supports standard MODBUS ASCII / RTU protocol and PLC Link function

High speed functions

- 4 points of 10 kHz pulse output
- 6 x 1phase counters @ 10kHz or 2 x A/B counters @ 20kHz

DVP14SS211R	24 VDC	8	6	25.2	compact ultra slim PLC	relay
DVP14SS211T	24 VDC	8	6	25.2	compact ultra slim PLC	transistor (NPN)
DVP12SS211S	24 VDC	8	4	25.2	compact ultra slim PLC	transistor (PNP)

SA2 series - Advanced compact slim PLC

DVP-SA2 series offers larger program capacity and executing efficiency, offering 100 kHz high-speed output and counting functions. Expandable with DVP-S extension modules.

DVP12SA supports general (right side) and high speed (left side) expansion modules. DVP28SA supports general expansion modules (right side) only.

- Program capacity: 16 k steps
- Data register: 10 k words
- Max. execution speed of basic instructions: 0.35 µs
- Built-in 1 RS-232 and 2 RS-485 ports (Master/Slave)
- Supports standard MODBUS ASCII / RTU protocol and PLC Link function
- No battery required; RTC function operates for up to 15 days after power off

High speed functions

- Supports 2-axis linear and arc interpolation
- 4 points of high-speed pulse output: 100 kHz / 2 points, 10 kHz / 2 points
- 8 points of high-speed pulse input: 100 kHz / 2 points, 10 kHz / 6 points, 1 set of A/B phase 50 kHz

type	supply	inputs outputs		width (mm)	description	output type
		(DI)	(DO)			

DVP12SA211R	24 VDC	8	4	37.4	advanced slim PLC	relay
DVP12SA211T	24 VDC	8	4	37.4	advanced slim PLC	transistor (NPN)
DVP28SA211R*	24 VDC	16	12	46	advanced slim PLC	relay
DVP28SA211T*	24 VDC	16	12	46	advanced slim PLC	transistor (NPN)

* Right hand side expansion only



DVP12SA2...



DVP28SA211R



DVP12SE11R



DVP26SE11R



DVP28SV...

SE/SV2 series

Common characteristics

- 32-bit CPU for high-speed processing
- Compact dimensions (H) 90 mm x (D) 60 mm - DIN rail mounting
- Built-in high speed counters up to 200 kHz (model dependant)
- Clip-on extension modules - general (right side) - high speed (left side)
- Plug-in terminals for ease of wiring and maintenance
- Program language: (IL) instruction list, (LD) ladder diagram, (SFC) sequential function chart
- Supports Modbus Master. Can connect up to 16 slaves (32 slaves for DVP-SE)

type	supply	inputs outputs		width (mm)	description	output type
		(DI)	(DO)			

SE series - Network type advanced slim PLC

The most complete network type slim PLC in the industry. Typical applications include remote device monitoring, production line monitoring, building automation, printing machine, container filler (recipe application).

DVP12SE supports "general" (right side) and "high speed" (left side) expansion modules. **DVP26SE** only supports "general" (right side) expansion modules.

- Program capacity: 16 k steps
- Data register: 12 k words
- Max. execution speed of basic instructions: 0.64 μs
- No battery required; RTC function operates for up to 15 days after power off
- IP Filter functions as firewall as first line protection against malware and network threats
- Built-in mini USB port, 2 x RS-485 and Ethernet port supports MODBUS TCP and EtherNet/IP
- Built-in Ethernet
 - DVP12SE:** MODBUS TCP/IP & Ethernet/IP (adapter mode)
 - DVP26SE:** MODBUS TCP/IP & Ethernet/IP (adapter mode)

High speed functions

- 4 points of high-speed pulse output: 100 kHz / 2 points, 10 kHz / 2 points
- 8 points of high-speed pulse input: 100 kHz / 2 points, 10 kHz / 6 points, 1 set of A/B phase 50 kHz
- Supports 2-axis linear and arc interpolation

DVP12SE11R	24 VDC	8	4	37.4	network type PLC	relay
DVP12SE11T	24 VDC	8	4	37.4	network type PLC	transistor (NPN)
DVP26SE11R*	24 VDC	14	12	46	network type PLC	relay
DVP26SE11T*	24 VDC	14	12	46	network type PLC	transistor (NPN)

* Right hand side expansion only

SV2 series - "High performance" slim PLC

SV2 series is a high-end PLC providing larger program capacities and data registers for more demanding, complex applications. Increases many motion control instructions to meet high-speed applications, high-precision positioning control for labelling, packaging and printing machines.

- Program capacity: 30 k steps
- Data register: 12 k words
- Max. execution speed of basic instructions: 0.24 μs
- 32-bit CPU + ASIC dual processors

Excellent high speed functions

- High-speed pulse output: 4 axes of 200 kHz pulse output
- Supports 4 hardware 200 kHz high speed counters
- Linear/arc interpolation motion control function
- Provides up to 16 external interrupt pointers

Complete program protection

- Auto backup function prevents program and data loss even when the battery runs out
- Secondary backup function saves an extra copy of programs and data to enhance program safety
- Up to 4 levels of password protection protects your source programs and intellectual property

type	supply	inputs outputs		width (mm)	description	output type
		(DI)	(DO)			

DVP28SV11R2	24 VDC	16	12	70	high perform PLC	relay
DVP28SV11T2	24 VDC	16	12	70	high perform PLC	transistor (NPN)
DVP28SV11S2	24 VDC	16	12	70	high perform PLC	transistor (PNP)



DVP10SX11R



DVP20SX2...



DVP10MC11T



PLC starter kit

SX2/MC series

DVP series PLCs for industrial automation applications have been devoted to delivering more innovative products satisfying customer needs while meeting requirements of a wide variety of applications. Delta PLCs offer a broad range of controllers and modules, all featuring high performance, multiple functions with efficient program editing tools. In addition to user-friendly programming software and faster execution speed, they provide complete industry-focused solutions, motion control solutions, and industrial fieldbus solutions.

type	supply	inputs		outputs		width (mm)	output type
		(DI)	(AI)	(DO)	(AO)		

SX2 series - Analog I/O slim PLC

Compact PLC with outstanding analog functions with highly efficient PID control function. Supports "general" (*right side*) and "high speed" (*left side*) expansion modules.

- 32-bit CPU for high-speed processing
- Program capacity: 16 k steps
- Data register: 10 k words
- Max. execution speed of basic instructions: 0.35 μs
- Built-in analog inputs and outputs (*12-bit resolution*)
- Built-in mini USB, RS-232 and 2x RS-485 com ports (*Master/Slave*)
- Supports standard MODBUS ASCII/RTU protocol and PLC Link function
- No battery required, maintenance free (*RTC operates for 10 days after power off*)

Motion control functions

- 4 points of high-speed pulse output: 100 kHz / 2 points, 10 kHz / 2 points
- 8 points of high-speed pulse input: 100 kHz / 2 points, 10 kHz / 6 points
- Supports 2-axis linear and arc interpolation

DVP10SX11R*	24 VDC	4	2	2	2	37.4	relay
DVP20SX211R	24 VDC	8	4	6	2	70	relay
DVP20SX211T	24 VDC	8	4	6	2	70	transistor (NPN)
DVP20SX211S	24 VDC	8	4	6	2	70	transistor (PNP)

* 2 x 7 segment display

MC series - Multi-axis motion controller

CANopen motion controller

16 axis motion controller offering highly stability multi-axis motion control solutions through high-speed CANopen communication.

Supports "general" (*right side*) and "high speed" (*left side*) expansion modules.

- Built-in CANopen and encoder interface
- High precision control with interpolation function
- Synchronization time: 4 axes in 2ms / 8 axes in 4ms
- Built-in Ethernet, RS-232 and RS-485 communication ports
- Up to 16 axes synchronous control through CANopen communication
- Supports electronic gear, E-cam (2.048 points), flying shear and rotary cut instructions
- Built-in 12 I/O points (*8 sets of high-speed inputs, 4 sets of high-speed outputs*)
- Built-in motion control instructions of electronic cam, flying shear, rotary cut for easy operation

inputs	
(DI)	(DO)

DVP10MC11T	24 VDC	8	4	motion controller	transistor (NPN)
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PLC starter kits

Each kit comes complete with programming software for the PLC and HMI products, an I/O simulator board, 24 VDC power supply, all interconnecting cables, and a printed starter kit user manual. A Delta Branded USB memory stick is also included with product user manuals, product instruction sheets, and example application programs – all designed to increase commissioning productivity of feature use and interconnected communication.

- Available as Ethernet based kit or economical serial port based kit
- For learning PLC and HMI programming
- UT-14SS2-A (*Serial Kit - DVP-14SS11R + 7" serial HMI*)
- UT-12SE-A1 (*Ethernet Kit - DVP12SE11R + 7" Ethernet HMI*)

UT-14SS2-A	starter kit for learning programming of PLC /HMI	relay
UT-12SE-A1	as above , but with hardware for Ethernet communication	relay



DVP08SM...



DVP04DA-S2



DVP04PT-S



DVPDT01-S

Extension modules for SS2/SA2/SE/SX2/SV2/MC PLC's

Extension modules simply clip onto CPU's to add many additional functions, additional digital and/or Analog I/O's, communication, temperature measurement and load cell monitoring.

General extension modules (right side mounting)

type	supply	inputs		outputs		description	output type
		(DI)	(DO)	(DI)	(DO)		

Digital Input extension modules

DVP08SM11N	24 VDC	8	–	–	–	extension module	–
DVP16SM11N	24 VDC	16	–	–	–	extension module	–
DVP32SM11N*	24 VDC	32	–	–	–	extension module	–
UB-10-ID32A	MIL con	32	–	–	–	terminal module for above	DVP32SM
UC-ET010-24A	MIL con	1 met	–	–	–	I/O connection cable for above	DVP32SM/SN

Digital Output extension modules

DVP06SN11R	24 VDC	–	6	–	–	extension module	relay (6A)
DVP08SN11R	24 VDC	–	8	–	–	extension module	relay (1.2A)
DVP08SN11T	24 VDC	–	8	–	–	extension module	transist (NPN)
DVP16SN11T	24 VDC	–	16	–	–	extension module	transist NPN)
DVP16SN11TS	24 VDC	–	16	–	–	extension module	transist (PNP)
DVP32SN11TN*	24 VDC	–	32	–	–	extension module	transist (NPN)
UB-10-OT32A	MIL con	–	32	–	–	output terminal module	DVP32SN
UC-ET010-24A	MIL con	1 met	–	–	–	I/O connection cable for above	DVP32SM/SN
UC-ET020-24D	MIL con	2 met	–	–	–	shielded cable for above	DVP32SM/SN
UC-ET030-24D	MIL con	3 met	–	–	–	shielded cable for above	DVP32SM/SN

* Pin head termination. For other cable types and lengths, see C-14

Digital I/O extension modules

DVP08SP11R	24 VDC	4	4	–	–	extension module	relay
DVP16SP11R	24 VDC	8	8	–	–	extension module	relay
DVP08SP11T	24 VDC	4	4	–	–	extension module	transist (NPN)
DVP16SP11T	24 VDC	8	8	–	–	extension module	transist (NPN)
DVP16SP11TS	24 VDC	8	8	–	–	extension module	transist (PNP)

Analog I/O extension modules

±10V / ±20mA (output: 0 to 10V / 0 to 20mA)

- Built-in RS-485 interface

	supply	inputs		outputs		description	output type
		(AI)	(AO)	(AI)	(AO)		
DVP04AD-S2	24 VDC	4	–	–	–	extension module	–
DVP06AD-S	24 VDC	6	–	–	–	extension module	–
DVP04DA-S2	24 VDC	–	4	–	–	extension module	analog
DVP06XA-S2	24 VDC	–	4	–	2	extension module	analog

Temperature measurement modules

	supply	Resolution:	inputs		outputs		sensor	
			(AI)	(AO)	(AI)	(AO)		
DVP04PT-S*	24 VDC	0.1°C	4	–	–	–	RTD temperature module	PT100/1000
DVP06PT-S	24 VDC	0.1°C	6	–	–	–	RTD temperature module	PT100/1000
DVP04TC-S*	24 VDC	0.1°C	4	–	–	–	thermocouple temp. module	(J,K,R,S,T)

* Built-in RS-485 interface

DVP02TU series temperature control modules (universal input)

- Analog inputs: 0 - 10V, 0 - 20mA, 4 - 20mA
- Resolution: Analog 16-bit, Sensor: 0.1°C
- Thermocouple: J, K, R, S, T, E, N, B, C, L, U, TXK, PLII
- Output point: Built-in PID program control/manual control
- RTD: Pt100, JPt100, Pt1000, Cu50, Cu100, Ni100, Ni1000, LG-Ni1000
- Configuration: Using TK soft (embedded in ISP soft)

DVP02TUL-S	24 VDC	2	2	–	–	analog	output voltage/current
DVP02TUN-S	24 VDC	2	4	–	–	transistor	NPN output overheat/current
DVP02TUR-S	24 VDC	2	4	–	–	relay	output overheat/overcurrent

Positioning control module (single axis, 200kHz)

DVP01PU-S	single-axis, 200kHz	–	–	–	–	–	servo position control module
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Communication modules

DVPDT01-S	DeviceNet	–	–	–	–	–	slave communication module
DVPPF01-S	PROFIBUS-DP	–	–	–	–	–	slave communication module



DVP04DA-SL



DVP202LC-SL



RTU-485



DVP08ST11N



DELTA-SW

High-speed expansion modules for SA2/SE2/SX2/SV2 PLC's (left side mount)

Extension modules simply clip onto CPU's to add many additional functions, additional analog I/O's, communication and load cell monitoring.

- Simply clips onto and derives supply from main CPU

type	supply	inputs (AI)	outputs (AO)	description	output type
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Analog I/O extension modules (left side high-speed)

- Signal range: Input: 1- 5V, 0- 5V, $\pm 5V$, 0- 10V, $\pm 10V$, 4 - 20mA, 0 - 20mA, $\pm 20mA$
Output: 0 - 10V, $\pm 10V$, 4 - 20mA, 0 - 20mA
- Resolution: 16-bit
- Conversion time: 250 μs / point

DVP04AD-SL	24 VDC	4	–	extension module	analog
DVP04DA-SL	24 VDC	–	4	extension module	analog

Load cell modules (left side high-speed)

- Resolution: 24-bit
- Measurable range: 0 - 80mV/V
- Connectable to: 4-wire / 6-wire load cell sensor
- Easy to use LC soft for configuration and monitoring load cell module (RS-232, RS-485)
- DVP211LC-SL has programmable DI/O (*tare, max etc.*) and AO (*retransmission*)

DVP201LC-SL	24 VDC	1	–	load cell input module	1 channel
DVP211LC-SL	24 VDC	1	1	load cell input mod	1 channel
DVP202LC-SL	24 VDC	2	–	load cell input module	2 channel

Communication modules (left side high-speed)

DVPEN01-SL	Ethernet			communication module	10/100Mbps
DVPDNET-SL	DeviceNet			master communication module	500kbps
DVPCOPM-SL	CANopen			master communication module	1Mbps
DVPPF02-SL	PROFIBUS-DP			slave communication module	12Mbps
DVPSCM12-SL	RS-485/RS-422			serial communication module	460kbps
DVPSCM52-SL	BACnet MS/TP			slave communication module	460kbps

Remote I/O communication modules

RTU-485	Modbus RS-485			max. 8 special modules and 128DI and 128DO
RTU-EN01	Modbus TCP/IP			max. 8 special modules and 128DI and 128DO
RTU-DNET	DeviceNET			max. 8 special modules and 128DI and 128DO
RTU-PD01	PROFIBUS-DP			max. 8 special modules and 128DI and 128DO

Accessories for S series PLC's

Power supply modules (DIN rail mounting)

DVPPS01	85-240 VAC	to 24 VDC	1A	power supply module
DVPPS02	85-240 VAC	to 24 VDC	2A	power supply module
DVPPS05	85-240 VAC	to 24 VDC	5A	power supply module

Accessories and cables

UC-PRG020-12A	8-pin mini-DIN+female DB9 connector to USB (type A) connector	2 met
UC-PRG030-01A	mini USB connector to USB (type A) connector	3 met
UC-MS030-01A	8-pin mini-DIN connector to female DB9 connector RS-232	3 met
IFD6500	RS-485 to USB (type A) converter module	
DVP08ST11N	input point switch module for DVP-S series	
DVPPCC01	program-data backup memory card for all DVP series	(64k words)

Software (windows based) easy to learn and use with provided "help" file

DELTA-SW	PLC editing software for AH500, AS200/300 and DVP series supports 5 programming languages: (LD, FBD, SFC, ST, IL) programming software for DVP-PLC (freely downloadable via internet)	(USB)
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INDUSTRIAL AUTOMATION COURSES

LEVEL 1 AND 2 PLC • VFD • SERVO

CPD ACCREDITED COURSES

Successful industrial facilities rely on personnel who have the technical understanding and capability to maintain smooth system operation.

The industrial automation training is recommended for any individual or group that requires more in-depth knowledge on the basic components, implementation and management thereof.

PLC LEVEL 1

(Own laptop required)



Course Content:

- PLC terminology
- How to wire a PLC
- Program a PLC
- Program analysis
- Basic HMI introduction

Accreditation: 1 CPD Point

Duration: 1 Day

PLC LEVEL 2

(Own laptop required)



Course Content:

- Advanced PLC function
- Analog inputs and outputs
- High-speed signal processing
- Working with real values
- Basic HMI introduction
- Integrated HMI examples

Accreditation: 1 CPD Point

Duration: 1 Day

PLC LEVEL 3

(Own laptop required)



Course Content:

- Fieldbus and communication types
- Data mapping/exchange
- Network topology
- System planning

Accreditation: 1 CPD Point

Duration: 1 Day

VFD LEVEL 1



Course Content:

- Basic motor principles
- Selecting the correct VFD
- Practical operation and wiring of VFD
- Fault finding exercises
- Application examples

Accreditation: 1 CPD Point

Duration: 1 Day

VFD LEVEL 2



Course Content:

- Theory and exercises on the different control modes namely:
Vector, Speed, Torque
- Position control modes
- Advanced drive features

Accreditation: 1 CPD Point

Duration: 1 Day

SERVO LEVEL 1 & 2

(Own laptop required)



Course Content:

- Covers all available control modes
- External position (PLC)
- Internal position (HMI)
- Speed/torque
- Electronic Cam (ECAM)

Accreditation: 2 CPD Points

Duration: 2 Day



Visit www.em.co.za or scan QR code for more information.





DVP20ES2...



Top entry Ethernet port



DVP20ES200TE



DVP16XP2...



DVP24XN...

ES2 series PLCs are compact highly efficient, functional instruments with incorporated communication capabilities, advantages such as built-in convenient commands offer easy access to operation and communication function monitoring.

Common characteristics

- 32-bit CPU for high-speed processing
- Built-in 1 x RS-232 and 2 x RS-485 ports
- Max. execution speed of basic instructions: 0.35 μ s
- Program capacity: 16 k steps / Data register: 10 k words
- Standard - 16 / 20 / 24 / 32 / 40 / 60 / 80 I/O points for a variety of applications
- Highly efficient processing ability: 1 k steps of programming can be completed within 1ms
- Up to 4 levels of password protection secures your source programs and intellectual property
- E- Ethernet CPUs have an additional Ethernet port. Supports Modbus TCP/IP & Ethernet/IP (*adapter mode*)
- Max. 100 kHz pulse control, specific motion control instructions (*mark/masking and instant frequency changing*) for multi-axis applications

type	supply	inputs (DI)	outputs (DO)	width (mm)	description	output type
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ES2 series - Standard PLC

Relay output

DVP20ES200RE*	100 - 240 VAC	12	8	125	standard PLC	relay
DVP32ES200RE*	100 - 240 VAC	16	16	165	standard PLC	relay
DVP32ES200RC*	100 - 240 VAC	16	16	145	standard PLC	relay
DVP40ES200RE*	100 - 240 VAC	24	16	194	standard PLC	relay
DVP60ES200RE*	100 - 240 VAC	36	24	255	standard PLC	relay

Transistor output

DVP20ES200TE*	100 - 240 VAC	12	8	125	standard PLC	transist (NPN)
DVP32ES200TE*	100 - 240 VAC	16	16	165	standard PLC	transist (NPN)
DVP32ES200TC*	100 - 240 VAC	16	16	145	standard PLC	transist (NPN)
DVP40ES200TE*	100 - 240 VAC	24	16	194	standard PLC	transist (NPN)
DVP60ES200TE*	100 - 240 VAC	36	24	255	standard PLC	transist (NPN)

* Last digit "E" with built-in Ethernet interface / "C" with built-in CANopen interface

EX2 series - Analog I/O PLC

- Built-in 12-bit 4 x analog inputs / 2 x analog output and 14-bit analog I/O extension modules
- Built-in PID auto tuning function, offering a complete analog control solution

		digital I	analog I	digital O	analog O	
DVP20EX200R	100 - 240 VAC	8	4	6	2	relay
DVP20EX200T	100 - 240 VAC	8	4	6	2	transist (NPN)

I/O extension modules for ES2/EX2 series

- Plugs directly into PLC - 24 VDC - supply derived from MPU (*limited to 12W*)

Digital input/output modules

DVP08XM211N	24 VDC	8	-	-	expansion module	-
DVP16XM211N	24 VDC	16	-	-	expansion module	-
DVP08XN211R	24 VDC	-	8	-	expansion module	relay
DVP16XN211R	24 VDC	-	16	-	expansion module	relay
DVP08XP211R	24 VDC	4	4	-	expansion module	relay
DVP16XP211R	24 VDC	8	8	-	expansion module	relay
DVP08XN211T	24 VDC	-	8	-	expansion module	transist (NPN)
DVP16XN211T	24 VDC	-	16	-	expansion module	transist (NPN)
DVP08XP211T	24 VDC	4	4	-	expansion module	transist (NPN)
DVP16XP211T	24 VDC	8	8	-	expansion module	transist (NPN)

I/O 24/32 point modules for ES2/EX2 series - 230 VAC power supply required

- Incorporates 24 VDC output supply 100mA (2.4W) for other modules

DVP24XN200R	100 - 240 VAC	-	24	-	expansion module	relay
DVP24XP200R	100 - 240 VAC	16	8	-	expansion module	relay
DVP32XP200R	100 - 240 VAC	16	16	-	expansion module	relay
DVP24XN200T	100 - 240 VAC	-	24	-	expansion module	transist (NPN)
DVP24XP200T	100 - 240 VAC	16	8	-	expansion module	transist (NPN)
DVP32XP200T	100 - 240 VAC	16	16	-	expansion module	transist (NPN)



DVP04AD-E2



DVP04PT-E2



DVP16EC00R3



DVPPCC01



DELTA-SW

Analog I/O extension modules for ES2/EX2 series

- Plugs directly into PLC - 24 VDC - supply derived from MPU (*limited to 12W*)

type	supply	inputs (AI)	outputs (AO)	description	output type
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Analog extension modules for ES2/EX2 series

- Analog Input: Voltage ($\pm 10V$, $\pm 5V$) / current ($\pm 20mA$, 0 - 20mA, 4 - 20mA) input
- Analog Output: Voltage ($\pm 10V$) / current (0 - 20mA, 4 - 20mA) output
- Resolution: 14-bit

		analog inputs	analog outputs		
DVP04AD-E2	24 VDC	4	–	expansion modules	analog/inputs
DVP02DA-E2	24 VDC	–	2	expansion modules	analog/outputs
DVP04DA-E2	24 VDC	–	4	expansion modules	analog/outputs
DVP06XA-E2	24 VDC	4	2	expansion modules	analog I/O

Temperature measurement modules for ES2/EX2

type	supply	description
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RTD (Pt100, Pt1000, Ni100, Ni1000) sensor input / 0 - 300Ω resistance input

- Resolution: 16-bit
- Built-in PID temperature control

DVP04PT-E2	24 VDC	4 points resistance (Pt100, Pt1000, Ni 100/1000)
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Thermocouple (J, K, R, S, T, E, N type) sensor input/-80mV - +80V voltage input

- Resolution: 16-bit
- Built-in PID temperature control

DVP04TC-E2	24 VDC	4 points of thermocouple (J, K, R, S, T, N type)
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DVP-EC3 series - Econo PLC 100 - 240 VAC

DVP-EC3 series is the most economical solution for sequential control and communication monitoring for smaller applications with simple RS-485/MODBUS communication.

- Program capacity: 4k steps
- High-speed pulse output: Max. 11kHz pulse output
- Mounting: DIN-rail or chassis mounting
- Built-in high-speed counters: 2 x 20/10kHz, 1 x 20kHz, 1 x 4kHz
- MPU I/O points: 10/16/24/32/40 points (*not expandable*)
- COM ports: Built-in RS-232 & RS-485 (*only for 16/24/32/40 points*)
- Compact: (H) 90 x (D) 45.5 mm (W) number of. I/O point dependant

type	supply	inputs (DI)	outputs (DO)	description	output type
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DVP-EC3 - Economic series PLC

DVP10EC00R3	100 - 240 VAC	6	4	standard econo PLC	relay
DVP16EC00R3	100 - 240 VAC	8	8	standard econo PLC	relay
DVP24EC00R3	100 - 240 VAC	12	8	standard econo PLC	relay
DVP32EC00R3	100 - 240 VAC	16	16	standard econo PLC	relay
DVP40EC00R3	100 - 240 VAC	24	16	standard econo PLC	relay

Accessories for DVP-ES2/EX2/EC PLC's

- DVPPCC01 program-data backup memory card for all DVP series (64k words)
- UC-PRG020-12A mini-DIN USB (type-A) programming cable PLC to PC 2 met
- UC-MS030-01A male mini-DIN female DB9 programming cable PLC to HMI 3 met
- DVPAEXT01-E2 connection kit with cable for DVP-ES2 / EX2 and exp. modules 0.7 met
- UC-PRG030-10A RS-232 program cable for above DVPAEXT01-E2
- DELTA-SW PLC editing software for AH500 and DVP series (USB)
supports 5 programming languages: (LD, FBD, SFC, ST, IL)
Programming software for DVP-PLC (*freely downloadable via internet*)





new



AS228R-A



AS08AM10N-A



AS64AN02T-A

The AS series - Compact modular mid-range PLC

The **AS series** is a high performance multi-purpose controller designed for all types of automated equipment. Featuring Delta's self-developed 32-bit SoC CPUs for enhanced execution speed (40k steps/ms) supporting up to 32 extension modules or up to 1.024 Inputs/Outputs. Providing accurate positioning control for up to 8 axes via CANopen motion network and 6 axes via pulse control (200kHz). Widely used in diverse automated equipment, electronics manufacturing, labelling, food packaging, and textile machines.

- 32-bit CPU for high-speed processing
- Max. execution speed of basic instructions: 25 ns
- Built-in mini USB, micro SD slot RS-232 / 2x RS-485 com ports (Master/Slave), Ethernet IP (Adaptor and scanner)
- Rackless design (no-backplane) direct DIN rail mounting, patented DIN rail clips for fast vertical module installation
- Compact dimensions (H) 88 mm x (D) 95 mm

type	supply	digital		analog		description	output type
		Inputs	Output	Inputs	Output		

AS200 series - CPU (64k steps / 60k words) (H) 88 x (W) 88 x (D) 95 mm

- Program capacity: 64k steps
- Data register: 60k words
- Communication: USB, Ethernet, 2 x RS-485, CANopen
- Plug-in, screwless (push-in) terminals for ease of wiring and maintenance

AS228R-A	24 VDC	16	12	—	—	AS200 CPU module	relay
AS228T-A	24 VDC	16	12	—	—	AS200 CPU module	transist(NPN)
AS228P-A	24 VDC	16	12	—	—	AS200 CPU module	transist (PNP)
AS218TX-A	24 VDC	8	6	2	2	AS200 CPU module	transist (NPN)
AS218RX-A	24 VDC	8	6	2	2	AS200 CPU module	relay
AS218PX-A	24 VDC	8	6	2	2	AS200 CPU module	transist (PNP)

AS300 series - CPU (128k steps / 60k words) (H) 88 x (W) 80 x (D) 95 mm

- Program capacity: 128k steps / Data register: 60k words
- Communication: USB, Ethernet, 2 x RS-485, (accepts 2 x AS-F function cards)
- 2 x Incorporated slots accepting AS-F communication and/or analog function cards
- Plug-in, screwless (push-in) terminals for ease of wiring and maintenance

AS300N-A	24 VDC	—	—	—	—	AS300 CPU module	—
AS320T-B	24 VDC	8	12	—	—	AS300 CPU module	transist (NPN)
AS320P-B	24 VDC	8	12	—	—	AS300 CPU module	transist (PNP)
AS332T-A*	24 VDC	16	16	—	—	AS300 CPU module	transist (NPN)
AS332P-A*	24 VDC	16	16	—	—	AS300 CPU module	transist (PNP)
AS324MT-A❖	24 VDC	12	12	—	—	AS300 CPU module	differential type

❖ 2 axes 4MHz + 4 axes 200kHz output / 2 channels 4MHz + 4 channels 200kHz input

Power supply modules (Clips onto left side of CPU)

AS-PS02	100 - 240 VAC	24 VDC	—	—	2A for internal bus	power supply
AS-PS02A	100 - 240 VAC	24 VDC	1.5A	—	1.5A internal bus 0.5A for external I/O	power supply
AS-ATXB*	—	24 VDC	—	—	to supply via bottom entry (side mount)	power adaptor

* Used with external power supplies for PLC racks which require more than 2A.

Digital I/O modules - for AS series PLC's

Input modules

- Plug-in, screwless (push-in) terminals (32 and 64 I/O modules high density MIL connector)

		(DI)	(DO)		
AS08AM10N-A	24 VDC	8	—	digital input module (DI)	—
AS16AM10N-A	24 VDC	16	—	digital input module (DI)	—
AS32AM10N-A*	24 VDC	32	—	digital input module (DI)	—
AS64AM10N-A*	24 VDC	64	—	digital input module (DI)	—

Output modules

AS08AN01R-A	24 VDC	—	8	digital output module (DO)	relay
AS08AN01T-A	24 VDC	—	8	digital output module (DO)	transist (NPN)
AS08AN01P-A	24 VDC	—	8	digital output module (DO)	transist (PNP)
AS16AN01R-A	24 VDC	—	16	digital output module (DO)	relay
AS16AN01T-A	24 VDC	—	16	digital output module (DO)	transistor (NPN)
AS16AN01P-A	24 VDC	—	16	digital output module (DO)	transist (PNP)
AS32AN02T-A*	24 VDC	—	32	digital output module (DO)	transist (NPN)
AS64AN02T-A*	24 VDC	—	64	digital output module (DO)	transist (NPN)

Mixed I/O modules

AS16AP11R-A	24 VDC	8	8	digital input/output mod. (DI/O)	relay
AS16AP11T-A	24 VDC	8	8	digital input/output mod. (DI/O)	transist (NPN)
AS16AP11P-A	24 VDC	8	8	digital input/output mod. (DI/O)	transist (PNP)

* High density MIL terminal block, see C-15



AS04AD-A



AS-FEN02



AS08TC-A



AS02LC-A

AS series - I/O modules and accessories

type	supply	analog		description
		Inputs	Output	

Analog I/O modules (W) 35 mm

- Single channel on/off setting to enhance overall conversion efficiency
- Wire break detection at 1 - 5V and 4 - 20mA
- **Voltage:** 1 - 5V, 0 - 5V, $\pm 5V$, 0 - 10V, $\pm 10V$ **Current:** 4 - 20mA, 0 - 20mA, $\pm 20mA$

Input module (analog)

		(AI)	(AO)	
AS04AD-A	24 VDC	4	-	voltage and current input
AS08AD-B	24 VDC	8	-	voltage input
AS08AD-C	24 VDC	8	-	current input

Output module (analog)

AS04DA-A	24 VDC	-	4	voltage and current output

Mixed I/O modules (analog)

AS06XA-A	24 VDC	4	2	voltage and current Input/Output

Communication modules

Comm. extension module *accepts comm. and/or analog function cards* (W) 56 mm

AS00SCM-A	24 VDC	function card module for CPU / remote I/O interface		
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Communication function cards (isolated)

- Plugs directly into **AS300** main CPU or **AS00SCM-A** module
- | | | |
|-----------|----------|---|
| AS-F232 | RS-232 | serial COM, RS-232 interface for CPU or AS00SCM-A |
| AS-F422 | RS-422 | serial COM, RS-422 interface for CPU or AS00SCM-A |
| AS-F485 | RS-485 | serial COM, RS-485 interface for CPU or AS00SCM-A |
| AS-FCOPM* | CANopen | CANopen port, support DS301, for CPU or AS00SCM-A |
| AS-FEN02* | Ethernet | MODBUS TCP, EtherNet/IP adaptor CPU modules |

Analog I/O Function cards *plugs directly into main AS300 CPU or AS00SCM-A module*

AS-F2AD	24 VDC	2	-	0 - 10V (12-bit), 4 - 20mA (11-bit)
AS-F2DA	24 VDC	-	2	0 - 10V, 4 - 20mA (12-bit)

DeviceNet communication module (W) 35 mm

AS01DNET-A*	DeviceNet	supports master / slave modes, supports RTU function		
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* Can be used as remote I/O modules

Temperature measurement modules *resolution: 0.1°C* (W) 35 mm

Pt, Ni temperature sensor *$\pm 0.1\%$ overall accuracy*

- Pt100/1000, Ni100/1000, JPt100, LG-Ni1000, Cu50/100, resistor 0~300/3000 Ω
- | | | | |
|-----------|--------|------|----------------------------------|
| AS04RTD-A | 24 VDC | 4 CH | PT, NI temperature sensor module |
| AS06RTD-A | 24 VDC | 6 CH | PT, NI temperature sensor module |

Thermocouple temperature sensor *$\pm 0.5\%$ overall accuracy*

- Thermocouple - J, K, R, S, T, E, N, B; $\pm 100mV$
- | | | | |
|----------|--------|------|--|
| AS04TC-A | 24 VDC | 4 CH | thermocouple temperature sensor module |
| AS08TC-A | 24 VDC | 8 CH | thermocouple temperature sensor module |

Load cell module *selectable signal input ranges* (W) 35 mm

- Resolution: 24-bit for hardware (ADC), 32-bit for data output
 - High speed dynamic measurement
- | | | | |
|----------|--------|------|---|
| AS02LC-A | 24 VDC | 2 CH | 16bit load cell module (for 4/6 wire load cell sensors) |
|----------|--------|------|---|



AH500 series - High performance PLC system

The new generation AH Series PLC provides automation solutions for high-level applications. The combination of modular hardware structure, advanced functions and highly integrated software provides system solutions for advanced process control. In addition to various function blocks, excellent price/performance ratio and an abundant selection of extension modules, the AH PLC also provides exceptional system expansion ability, greatly reducing system cost for a broad range of applications.

- LD/SFC/FBD/IL/ST languages
- Utilizes a dual-core multi-tasking processor
- Reliable operations of the supported modules in severe conditions
- Enhanced flexibility: Max. 100 meters between 2 local extension racks
- Hot-swapping function keeps system running for improved maintainability
- CPU built-in with fully isolated RS-232/422/485, Mini-USB, Ethernet, SD Card 1.0
- Highly integrated software ISPSOft: graphical interface with 5 programming languages IEC61131-3
- Maxl. I/O points:
 - DIO: Max. 4.352 points
 - AIO: Max. 544 channels
 - RIO: Max. 125.440 digital points / 3.920 analog channels
- Program capacity: Max. 256K steps / Data register 64K words
- Excellent program execution speed: 0.3ms / 1k steps



AHCPU500-RS2

CPU modules *internal power consumption (2W)*

type	local I/O (points)	program capacity (steps)	data register (K words)			function blocks	extension backplane
			D	L	B		

RS2 series CPU modules

- Built-in RS-232/422/485 multi-modes communication port x 2
- Built-in SD card slot, Mini-USB programming port
- Program execution speed: LD instruction @ 0.02µs / 1K steps @ 0.3ms
- MODBUS RTU/ASCII
- 2048 timers and counters
- No battery required RTC function (*max. 30 days after power off*)

AHCPU500-RS2	768	32k	16	16	512	128	0
AHCPU511-RS2	1280	96k	48	48	1024	1024	1

EN series CPU modules (*with built-in EtherNet communication port 100Mbps*)

As RS2 above, but with one less comm. port:

- WEB/E-mail/IP Filter function
- Built-in Ethernet communication port
- NTP network time correction function

AHCPU510-EN	1280	64k	32	32	1024	256	1
AHCPU511-EN	1280	96k	48	48	1024	1024	1
AHCPU521-EN	2304	192k	96	96	2048	2048	3
AHCPU531-EN	4352	384k	128	128	4096	4096	7



AHCPU521-EN

Main backplanes *internal power consumption (0.01W)*

- Built-in communication port for extension backplanes
- Slot spaces are not occupied by Power/CPU/RTU modules
- Supports CPU modules, remote I/O communication modules (RTU)

type	slots	description
AHBP04M1-5A	4	main backplane supports CPU, remote I/O modules
AHBP06M1-5A	6	main backplane supports CPU, remote I/O modules
AHBP08M1-5A	8	main backplane supports CPU, remote I/O modules
AHBP12M1-5A	12	main backplane supports CPU, remote I/O modules



AHBP06M1-5A

Extension backplanes *internal power consumption (1.41W)*

- For main backplane extension
- Built-in communication port for backplanes

AHBP06E1-5A*	6	ext. backplane supports CPU, remote I/O modules
AHBP08E1-5A*	8	ext. backplane supports CPU, remote I/O modules

Power supply modules *internal power consumption (1.41W)*

- Power supply for the modules on the racks

		supply		
AHPS05-5A	60W	100 - 240 VAC	50/60Hz	power supply module
AHPS15-5A	36W	24 VDC		power supply module

* For extension backplane cables, see C-13



AHPS05-5A



AH16AM30N-5A



AH32AN02T-5C



AH16AP11R-5A



AH04PT-5A

AH500 series - Digital I/O modules

supports hot-swapping function

type	points		signals	terminal type	description
	In	Out			
Input modules					
<ul style="list-style-type: none"> • PNP/NPN mixed mode design • Individual LED status indicator 					
AH16AM10N-5A	16	–	24 VDC 5mA	JIS removable	digital input module
AH16AM30N-5A	16	–	120 - 240 VAC	JIS removable	digital input module
AH16AR10N-5A	16	–	24 VDC 5mA	JIS removable	interruption card
AH32AM10N-5C*	32	–	24 VDC 5mA	MIL terminal	digital input module
AH64AM10N-5C*	64	–	24 VDC 3.2mA	MIL terminal	digital input module
Output modules					
<ul style="list-style-type: none"> • Supports keep-last-value function when CPU shuts down • Individual LED status indicator 					
AH16AN01R-5A	–	16	Relay 2A	JIS removable	digital output module
AH16AN01T-5A	–	16	NPN (<i>Sink</i>)	JIS removable	digital output module
AH16AN01P-5A	–	16	PNP (<i>Source</i>)	JIS removable	digital output module
AH16AN01S-5A	–	16	TRIAC	JIS removable	digital output module
AH32AN02T-5C*	–	32	NPN (<i>Sink</i>)	MIL terminal	digital output module
AH32AN02P-5C*	–	32	PNP (<i>Source</i>)	MIL terminal	digital output module
AH64AN02T-5C*	–	64	NPN (<i>Sink</i>)	MIL terminal	digital output module
AH64AN02P-5C*	–	64	PNP (<i>Source</i>)	MIL terminal	digital output module
Mixed Input/Output					
<ul style="list-style-type: none"> • PNP/NPN mixed mode design • Supports keep-last-value function when CPU shuts down • Individual LED status indicator 					
AH16AP11R-5A	8	8	Relay 2A	JIS removable	digital I/O module
AH16AP11T-5A	8	8	NPN (<i>Sink</i>)	JIS removable	digital I/O module
AH16AP11P-5A	8	8	PNP (<i>Source</i>)	JIS removable	digital I/O module

* Pin head termination. For other cable types and lengths, see **C-14**

Analog I/O modules

supports hot-swapping function

<ul style="list-style-type: none"> • Conversion time: 150 μs/channel • Diagnose function • Module status LED display • Isolated signal design • Supports interrupt function 					
Analog input modules					
<ul style="list-style-type: none"> • Accuracy (at 25°C) 					
			Voltage mode: ±0.02% (<i>full scale</i>)		
			Current mode: ±0.05% (<i>full scale</i>)		
AH04AD-5A	4	–	0/1-5V, 0-10V, 0/4-20mA	JIS removable	analog input module
AH08AD-5B	8	–	0/1-5V, 0-10V	JIS removable	analog input module
AH08AD-5C	8	–	0/4-20mA	JIS removable	analog input module
Analog Output modules					
<ul style="list-style-type: none"> • Supports keep-last-value function when CPU shuts down • Accuracy (at 25°C) 					
			Voltage mode: ±0.05% (<i>full scale</i>)		
			Current mode: ±0.1% (<i>full scale</i>)		
AH04DA-5A	–	4	0/1-5V, 0-10V, 0/4-20mA	JIS removable	analog output module
AH08DA-5B	–	8	0/1-5V, 0-10V	JIS removable	analog output module
AH08DA-5C	–	8	0/4-20mA	JIS removable	analog output module
Mixed Analog Input/Output					
<ul style="list-style-type: none"> • Accuracy: ±0.06% (<i>full scale</i>) • Diagnose function • Module status LED display • Signal isolated design • PID function • Supports disconnection detect function 					
AH06XA-5A	4	2	0/1-5V, 0-10V, 0/4-20mA	JIS removable	analog I/O module

Temperature measurement modules

Hardware resolution: 20-bit

<ul style="list-style-type: none"> • Accuracy: ±0.06% (<i>full scale</i>) • Diagnose function • Module status LED display • Signal isolated design • PID function • Supports disconnection detect function 					
2/3/4-wire RTD input					
AH04PT-5A	4	–	PT100/1000, Ni100/1000, 0-300Ω	JIS removable	temperature module
Thermocouple					
AH04TC-5A	4	–	J,K,R,S,T,E,N	JIS removable	temperature module
AH08TC-5A	8	–	J,K,R,S,T,E,N	JIS removable	temperature module



AH10EN-5A



AHRTU-DNET-5A



AHACAB06-5A



AHASP01-5A

AH500 accessories

type	signals	terminal type	description
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Network modules

- Diagnose function
- Module status LED indicator
- Supports hot-swapping function

AH10EN-5A Ethernet communication module (Master/Slave)
100Mbps comm. port x 2 / Etherlink , MODBUS TCP function / Automatic data exchange function / NTP network time correction function / SNMP/E-mail Filter function

AH10SCM-5A Serial communication module (Master/Slave)
Full isolation design / Built-in 2x RS422/485 / supports PLC Link function / MODBUS RTU/ASCII / Supports automatic data exchange function

AH10DNET-5A DeviceNet communication module (Master/Slave)
Supports max. speed of 1 Mbps / Switchable between master and slave / connects up to 63 slaves in master mode / RIO capacity in master mode: 490 words IN/OUT

AH10PFBM-5A Profibus DP communication module (Master)

AH10PFBS-5A Profibus DP communication module (Slave)

Remote I/O RTU modules

- Diagnose function
- Supports max. speed of 1Mbps
- Module status LED indicator

AHRTU-PFBS-5A Profibus DP remote Input/Output module

AHRTU-DNET-5A DeviceNet remote Input/Output module

Motion control modules

High speed counters

- Diagnose function
- UD/PD/AB/4AB modes
- Supports interrupt function
- Module status LED indicator

AH02HC-5A HDC terminal 2 high speed counter channels (200K Hz) input

AH04HC-5A HDC terminal 4 high speed counter channels (200K Hz) input

Pulse train motion control modules

- Supports G-Code
- Diagnose function
- Supports Micro SD card
- Module status LED indicator
- Supports hot-swapping function
- Built-in Ethernet communication port
- Built-in Mini USB programming communication port

AH10PM-5A HDC terminal 6-axis pulse train motion control module

AH20MC-5A HDC terminal 12-axis DMCNET communication motion control

Cables for AH500 PLC

type	std. length	for which modules
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Cables for extending main to extension backplane

AHACAB06-5A	0.6 met	AHBP06E1-5A / AHBP08E1-5A
AHACAB10-5A	1.0 met	AHBP06E1-5A / AHBP08E1-5A
AHACAB15-5A	1.5 met	AHBP06E1-5A / AHBP08E1-5A
AHACAB30-5A	3.0 met	AHBP06E1-5A / AHBP08E1-5A

Accessories

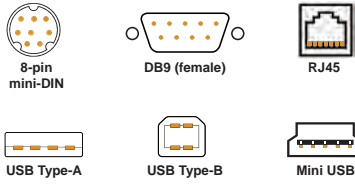
AHASP01-5A space module to protect empty backplane slots

AHADINADP1-5A DIN rail adaptor for rack installation

FMC-SD1G SD memory card capacity 1GB

HASP-20-OPC01 Delta OPC server for AH500 series

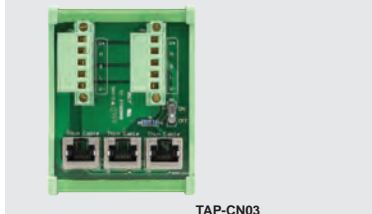
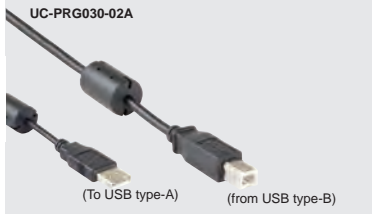
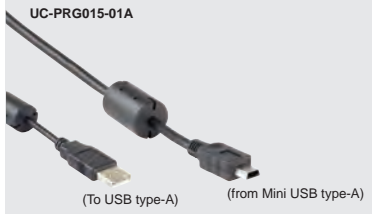
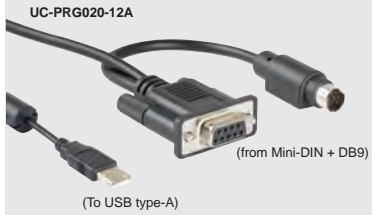
Comm. cables connector's type



Communication cables for PLC's

from	8-pin mini-DIN (male)	DB9 (female)	DB9 (male)	RS-485	RS-422	RJ45	Mini USB	USB Type-B	to	DB9 (female)	DB9 (male)	USB Type-A	RS232	RJ45	Length (met)	for PLC/HMI	DVP-SS2/SA2/SV2	DVP-ES2/EX2/EC3	DVP-SX2	DVP-SE	DVP-MC	AS200/300	AH500	TP SERIES	DOP-100	DOP-112 / DOP-115	
Programming cables																											
UC-PRG020-12A	•	•													2		•	•	•	•							
UC-PRG015-01A															1.5												
UC-PRG030-01A															3												
UC-PRG030-02A															3												
UC-PRG030-10A		•													3												
UC-PRG030-20A															3												
IFD6500																											
IFD8500																											
Communication cables																											
UC-MS010-02A*	•														1												
UC-MS020-06A	•														2												
UC-MS030-01A	•														3												
UC-MS030-03A		•													3												
UC-MS030-04A			•												3												
UC-MS030-06A	•														3												

* 90° angled connector



Programming cables PLC to PC \ HMI to PC

type	from	to	description	length
For PLC's - SS2, SA2, SV2, SX, SX2, MC, ES2, EC3, AS200/300, AH500				
UC-PRG020-12A	mini-DIN	USB (type-A)	program. cable PLC to PC	2 met
For PLC's - SE, SX2, AS200/300, AH500				
UC-PRG015-01A	mini-USB	USB (type-A)	program. cable PLC to PC	1.5 met
UC-PRG030-01A	mini-USB	USB (type-A)	program. cable PLC to PC	3 met
UC-PRG030-02A	USB (type-B)	USB (type-A)	program. cable HMI to PC	3 met
UC-PRG030-20A	RJ45	RJ45	program. cable HMI to PC	3 met
UC-PRG030-10A	DB9 (female)	DB9 (female)	RS-232 program. cable	3 met

Communication cables (RS-232) PLC to HMI

For PLC's - SS2, SA2, SV2, SX2, MC, ES2, EC3, MC

UC-MS010-02A*	male mini-DIN	female DB9	program. cable PLC to HMI	1 met
UC-MS030-01A	male mini-DIN	female DB9	program. cable PLC to HMI	3 met

* 90° mini-DIN plug (male)

Exclusive to DOP103 HMI (RS-232)

UC-MS020-06A	male mini-DIN	male DB9	program. cable PLC to HMI	2 met
UC-MS030-06A	male mini-DIN	male DB9	program. cable PLC to HMI	3 met

For PLC's - SE, MC, AS200/300, AH500 (EN)

UC-PRG030-20A	RJ45	RJ45	program. cable PLC to HMI	2 met
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Industrial network cables

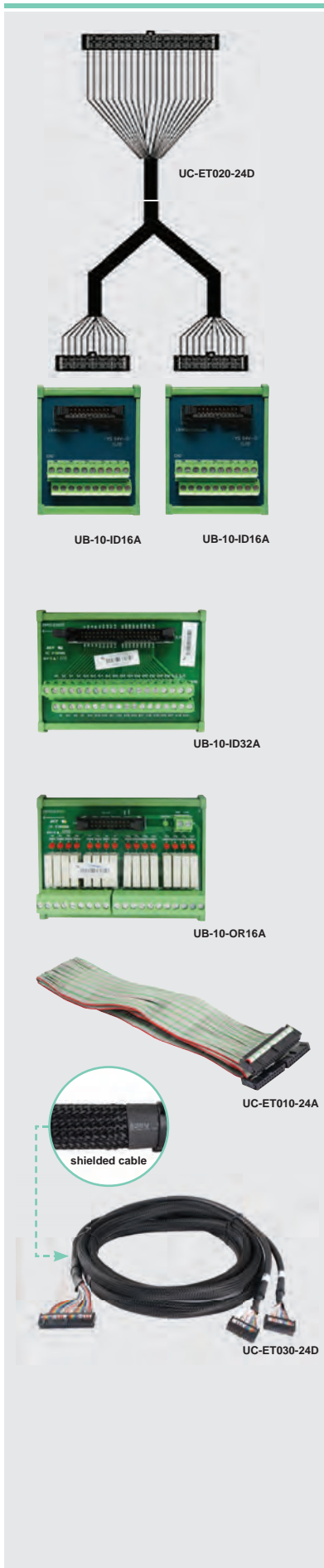
UC-CMC003-01A	RJ45	RJ45	CANopen comm. cable	0.3 m
UC-CMC005-01A	RJ45	RJ45	CANopen comm. cable	0.5 m
UC-CMC010-01A	RJ45	RJ45	CANopen comm. cable	1.0 m
UC-CMC020-01A	RJ45	RJ45	CANopen comm. cable	2.0 m
UC-CMC030-01A	RJ45	RJ45	CANopen comm. cable	3.0 m

For PLC's - AH500

UC-PRG030-10A	DB9 (female)	DB9 (female)	RS-232 program. cable	3 met
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Adaptors, splitters and terminal resistors

TAP-CN01	DeviceNet CANopen distribution box, 1 to 2 (Terminator 121Ω)
TAP-CN02	DeviceNet CANopen distribution box, 1 to 4 (Terminator 121Ω)
TAP-CN03	DeviceNet CANopen distribution box, (RJ45) 1 to 4 (Terminator 121Ω)
TAP-TR01	CANopen (Terminator, 121 W)



I/O external screw terminal module

terminal module	Input unit	Output unit	applicable module / CPU	cable
UB-10-ID16A Supports I/O cards through terminal	16 or 16	16	AS332 CPU, AS32AM, AS32AN, AS64AM, AS64AN, DVP32SN11TN, AH32AN, AH64AN	UC-ET0-0-24D UC-ET010-24C
UB-10-ID32A Supports I/O cards through terminal	32	-	AS32AM, AS64AM, DVP32SM, AH32AM10N-5C, AH64AM10N-5C	UC-ET0-0-24B UC-ET010-24A
UB-10-OR16A Supports Output Cards NPN switching	-	16 relay	AS332T-A, AS32AN02T-A, AS64AN02T-A, DVP32SN11TN, AH32AN02T-5C, AH64AN02T-5C	UC-ET0-0-24D UC-ET010-24C
UB-10-OR16B Supports Output Cards PNP switching	-	16 relay	AS332P-A, AH32AN02P-5C, AH64AN02P-5C	UC-ET0-0-24D UC-ET010-24C
UB-10-OT32A Supports I/O cards through terminal	-	32	AS32AN02T-A, AS64AN02T-A, DVP32SN11TN, AH32AN02T-5C, AH64AN02T-5C, AH64AN02P-5C	UC-ET0-0-24B UC-ET010-24A
UB-10-IO32D Supports I/O cards through terminal	16 and 16	-	AS332 CPU	Adaptor board

Note: Replace (◆) 2 (meters) or 3 (meters) to the part number

For motion control modules

type	inputs conn.	outputs conn.	output type	cable type
UB-10-IO16C	differential	MDR36	transistor	UC-ET010-13B
UB-10-IO24C	differential	MDR50	transistor	UC-ET010-15B

Cables for terminal modules PLC to terminal board

type	from	to	description	length
UC-ET010-24C	32 ID40	2 x 16 ID20	ribbon cable for terminal module	1 met
UC-ET020-24D	32 ID40	2 x 16 ID20	shielded cable for term. module	2 met
UC-ET030-24D	32 ID40	2 x 16 ID20	shielded cable for term. module	3 met
UC-ET010-24A	32 ID40	32 ID40	ribbon cable for terminal module	1 met
UC-ET020-24B	32 ID40	32 ID40	shielded cable for term. module	2 met
UC-ET030-24B	32 ID40	32 ID40	shielded cable for term. module	3 met
UC-ET010-13B	MDR36	MDR36	cable for UB-10-IO16C board	1 met
UC-ET010-15B	MDR50	MDR50	cable for UB-10-IO24C board	2 met

new



DIAVH-PPC195104



Industrial PCs

In response to the market demands for industrial information management, Delta presents the Industrial Panel PC (PPC) and Industrial box PC (BPC) which provides cost-effective and highly reliable panel computer solutions for industrial applications. It adopts a variety of specifications and supports operating systems such as Windows 7/8/10, Linux, and more.

- Applications:**
- Factory digitalization
 - Logistic applications: Transportation/stereoscopic warehouse
 - Inspection and monitoring of electronic equipment
 - Equipment monitoring systems

type	display size	hard drive SSD MSATA	(OS) system	CPU intel	dimensions (mm)		
					(H)	(W)	(D)

Industrial Panel PC (PPC)

The Industrial Panel PC (PPC), built with an aluminium case, is composed of a front panel and a rear panel with heat sink. It is slim and sealed with a fanless design, and is suitable for applications in the rubber machinery, solar photovoltaic, automotive control and other industrial fields.

- Audio: Input / output x 1
- Max capacity: 8GB(Celeron) 16GB Icore
- Serial COM: Port x 4 (RS-232 x 3, RS-422/485 x 1)
- Software: Win 10 Professional - where applicable / supports Linux
- Resolution: **10 & 15"** - 1024 x 768 pixels / **19"** - 1440 x 900 pixels
- Supports: Mini-PCIE bus for WiFi communication expansion and more
- Ports: USB 3.0 x 4 Ports/ 4GB RAM / Intel® I211 Gigabit Ethernet Controller x 2

Standard PPC

DIAVH-PPC10J103	10"	128GB	No Win	Celeron	58	198	258
DIAVH-PPC15J103	15"	128GB	No Win	Celeron	59	300	380

Advanced PPC

DIAVH-PPC153103A	15"	256GB	No Win	I3 (6 th GEN)	59	300	380
DIAVH-PPC195104	19"	512GB	Win 10	I5 (6 th GEN)	57	308	475

Industrial Box PC (BPC)

The DIAVH Industrial Box PC (BPC) is compact and robust with fanless design and aluminium case featuring cooling effects. Its rugged structure and excellent vibration resistance make it highly protective against pollution, dust, and electromagnetic interference when applied in industrial environments, such as machinery equipment, transportation, and infrastructure.

- Audio: Input / output x 1
- Max capacity: 4GB RAM (up to 16GB)
- Software: Win 7 32 bit pro / supports Linux
- Serial COM: Serial Ports x 6 (RS-232 x 5, RS-422/485 x 1)
- Ports: USB 3.0 x 6 Ports / Intel® I211 Gigabit Ethernet Controller x 2
- Supports: Supports Mini-PCIE bus for WiFi communication expansion
- Anti-Vibration, 5 - 19 Hz / 1.0 mm amplitude; 19 - 200 Hz / 1.0 g acceleration
- Antishock, 10g acceleration, 11ms duration

type	hard drive SSD MSATA	OS	CPU intel	dimensions (mm)		
				(H)	(W)	(D)

DIAVH-IPC005104	512GB SSD	Win Pro	I5 (6 th GEN)	211.5	200	67
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DIAview SCADA system

The DIAView SCADA system can be widely applied in industries such as machinery, metallurgy, water treatment, HVAC, packaging, central heating control, environmental monitoring, textiles, energy management, transportation, smart buildings and others.

- Friendly graphical demonstration
- Strong and efficient alarm system
- Easy-to-learn VBScript language
- I/O points: 64, 128, 256, 512, 1000, 1500, 3000 and unlimited
- Licensing: via USB hardware key to enable all authorizations
- Stable industrial communication, seamless integration with Delta PLC & other products

type	license type	description	No. tags
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DIAB-010640000C	64 points	DIAview SCADA license for	64 tags
DIAB-011280000C	128 points	DIAview SCADA license for	128 tags
DIAB-012560000C	256 points	DIAview SCADA license for	256 tags
DIAB-015120000C	512 points	DIAview SCADA license for	512 tags
DIAB-0101K0000C	1000 points	DIAview SCADA license for	1000 tags
DIAB-011K50000C	1500 points	DIAview SCADA license for	1500 tags
DIAB-0103K0000C	3000 points	DIAview SCADA license for	3000 tags
DIAB-0199K0000C	unlimited	DIAview SCADA license for	unlimited



DIAV...



DOP-103WQ

new



DOP-107EG



DOP-110WS



DOP-W127B



DELTA-SW

DOP-100 series - HMI (Human Machine Interface) touch screens

Delta DOP-100 series HMI's provide various touch screens in multiple dimensions and colours providing fast, convenient control functions for industrial automation machines. DOP-100 series HMI's designed for Delta specific industrial automation products, can be combined with over 30 other brands and models of PLCs or controllers for effortless communication and versatile operation.

- Full 65,536-colour, enhanced resolution for more realistic images and colourful, vivid display
- RS-232/485/422, USB disk, Ethernet, SD card are supported for various applications
- High Flash and SDRAM memory 256 MB Flash ROM 256MB
- Multitone buzzer - frequency (2K - 4K Hz) / 80dB RAM 256MB (512MB hi performance)
- Supports SD memory card - Ethernet (certain models)
- Supports VNC for remote access



DOP-B - DOP-100
Transition document

type	display size	version	Ethernet	host ports SD/USB	description
DOP-103		(H) 103 x (W) 137 x (D) 31 mm		panel cutout: 92.8 x 118.8 mm	
• Resolution: 480 x 272 pixels					
DOP-103BQ	4.3" (95 x 54)	standard	-	USB	2x COM ports
DOP-103WQ	4.3" (95 x 54)	hi performance	Yes	USB	2x COM ports
DOP-107		(H) 161 x (W) 215 x (D) 51.2 mm		panel cutout: 142.9 x 196.9 mm	
• Resolution: 800 x 480 pixels					
DOP-107BV	7" (154 x 86)	basic	-	USB	2x COM ports
DOP-107EV	7" (154 x 86)	standard	Yes	SD/USB	3x COM ports
Squared version		(H) 144 x (W) 184 x (D) 51.1 mm		panel cutout: 132.4 x 172.4 mm	
DOP-107EG*	7" (141 x 106)	standard	Yes	SD/USB	3x COM ports
Narrow border		(H) 136 x (W) 196 x (D) 32 mm		panel cutout: 126.8 x 186.8 mm	
DOP-107WW	7" (154 x 86)	hi performance	Yes	SD/USB	3x COM ports
DOP-110		(H) 200 x (W) 272 x (D) 51.9 mm		panel cutout: 189.3 x 261.3 mm	
• Resolution: 1024 x 600 pixels					
DOP-110CS	10" (226 x 128)	standard	-	-	3x COM ports
DOP-110IS*	10" (226 x 128)	standard	Yes	SD/USB	3x COM ports
Narrow border		(H) 180 x (W) 270 x (D) 47.75 mm		panel cutout: 170.5 x 255.5 mm	
DOP-110WS	10" (225 x 128)	hi performance	Yes	SD/USB	3x COM ports

DOP100-MX Multi-media type

DOP100-MX series adopts a "narrow frame", wide screen design with advanced communication capabilities (multilingual inputs) and enhanced multi-media functions to meet different applications.

- 1024 x 768 pixel 8GB ROM
- 1G RAM DDR3 1000Mhz
- Colour- 24bit
- Dual core 1GHz speed processor for higher computing performance
- Multi-media functions: Camera (analog / IP), video playback, VGA input, event trigger
- Multiple Interfaces: 4 COM ports, 2 Ethernet ports, 1 Mini USB Mini Slave 2.0, 1 USB Host 2.0

12-inch		(H) 317.4 x (W) 246.4 x (D) 52.7 mm		panel cutout: 302.7 x 228.7 mm	
DOP-112MX	12" (245 x 184)	advanced	Yes	SD/USB	4 x COM ports
15-inch		(H) 387.7 x (W) 295.7 x (D) 63.5 mm		panel cutout: 372.4 x 283.7 mm	
DOP-115MX	15" (304 x 228)	advanced	Yes	SD/USB	4 x COM ports

DOP-W Large size HMI's

The DOP-W series offers large-size HMI's with high resolution and high brightness touch screens the ultimate in industrial versatility.

- Multiple Interfaces: 2 COM ports, 2 Ethernet ports, 3 USB Host 2.0 ports, SD card

12-inch		(H) 313 x (W) 239.5 x (D) 67.5 mm		panel cutout: 302.7 x 228.7mm	
DOP-W127B*	12" (245 x 184)	advanced	Yes	SD/USB	2 x COM ports
15-inch		(H) 384.4 x (W) 295.8 x (D) 67.8 mm		panel cutout: 372.4 x 283.7 mm	
DOP-W157B*	15" (304 x 228)	advanced	Yes	SD/USB	2 x COM ports

* Incorporates audio stereo output

Accessories for above HMI's

DELTA-SW editing/design software for DOP/TP series HMI's

New upgraded configuration software provides complete functions in a very user-friendly operator interface

Note: For HMI's cables, see C-14



TP04G-AS2



TP08G-BT2



TP04P-16TP1R



TP70P-16TP1R



DELTA-SW

TP series - Text Panel HMI

Text Panel is a monochrome text and graphical panel interface between people and machines, although not a vivid and colourful graphical interface, it can still convert many program codes into text and graphics to display on the Text Panel.

Simple operation and control function, the entire series supports various communication protocols. Light weight, cost-effective and flexibility assist users to quickly control the system and improve working efficiency.

TP series - Operation interface panel (text panel)

type	display size inch / (mm)	function keys	text lines	description
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TP Text Panels offer simple operation/control functions to support various communication protocols they offer cost effective, high flexibility solutions In control systems, improving working efficiency.

- STN LCD single colour
- Built-in real time clock
- 256K Flash Memory (1M for TP08)
- RS-232/422/485 communication ports
- Numerical keys with user defined functions available

TP04G-AS2	3.0" (67 x 32)	12	4 line	operational interface panel
TP04G-AL2	4.1" (102 x 35)	10	4 line	operational interface panel
TP04G-AL-C*	4.1" (102 x 35)	10	4 line	operational interface panel
TP08G-BT2	3.8" (83 x 41)	24	8 line	operational interface panel

* With RS232 communication port only.

Text Panel with built-in PLC functionality

4.1" STN-LCD

- Built-in real time clock
- Screen Size 4.1" (102 x 35 mm)
- 2 x RS-485 communication ports
- Program capacity: 8K steps / 5K words
- Built-in USB port for program upload/download
- Integrated PLC and TP in one panel (adopts core of **SS2** series PLC)
- PLC link capable

type	Digital		Analog		function keys	description
	inputs	outputs	inputs	outputs		
TP04P-16TP1R	8	8	–	–	10	text panel/PLC
TP04P-22XA1R	8	8	4	2	10	text panel/PLC
TP04P-32TP1R	16	16	–	–	10	text panel/PLC

Touch panel HMI with built-in PLC

7" 65535 colour LCD touchscreen

TP70P HMI/PLC adopts the core of SS2 series PLC combined with a 7-inch HMI touch panel.

- Built-in real time clock
- Screen resolution 800 x 480
- Built-in USB and 2 communication ports
- Provides 2 sets of 10kHz high speed pulse input
- Adopts core of **SS2** series PLC with program of 8K steps and D devices of 5K words

type	Digital		Analog		PT100 inputs	description
	inputs	outputs	inputs	outputs		
TP70P-16TP1R	8	8	–	–	–	combination HMI/PLC
TP70P-32TP1R	16	16	–	–	–	combination HMI/PLC
TP70P-21EX1R*	8	8	2	1	2	combination HMI/PLC
TP70P-22XA1R	8	8	4	2	–	combination HMI/PLC

* Only mA analogs

Accessories

- TP-PCC01** program / data backup module
- UC-PRG020-12A** TP series program upload/download cable (RS-232)
- UC-PRG030-02A** USB type B to USB type A - programming TP-04P/70P
- DELTA-SW** editing/design software for DOP/TP series HMI's





DVS-005100



DVS-016W01



DVS-G406W01-2GF



DVS-110W02-3SFP

DVS series - Unmanaged Industrial Ethernet switches

DVS series industrial 5, 8 and 16-port Ethernet switches support IEEE 802.3/802.3u/802.3x with 10/100M, full/half-duplex, MDI/MDIX auto-sensing RJ45 ports. Specifically designed for harsh and hazardous industrial environments.

- RJ45 connector: 10/100Base-T, auto MDI/MDI-X, auto negotiation
- Std compliance: IEEE 802.3 10Base-T, 802.3u 100Base-T(X) and 100Base-FX, 802.3x flow control
- Housing: industrial DIN-rail mounting, IP40 aluminium metal case

type	No. Ports	operating temperature	alarm contact	fibre type	description
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Entry level Ethernet switches (H) 145.3 x (W) 45 x (D) 108.7 mm

- Input voltage: 12 to 48 VDC
- Dimensions: **DVS-G...** - (H) 110x (W) 28 x (D) 75 mm

DVS-G005I00C*	5	-20 to +70°C	–	–	compact Gigabit Ethernet switch
DVS-005I00	5	-10 to +60°C	–	–	entry level Ethernet switch
DVS-008I00	8	-10 to +60°C	–	–	entry level Ethernet switch
DVS-005W01*	5	-40 to +75°C	yes	–	standard Ethernet switch

* Redundant dual inputs.

Standard Ethernet switches (H) 145.3 x (W) 75 x (D) 108.7 mm

- Supports IEEE 802.1p based QoS for packet forwarding precedence
- Input Voltage: 2 sets, 12 to 48 VDC redundant terminal block input

DVS-008W01	8	-40 to +75°C	yes	–	standard Ethernet switch
DVS-016W01	16	-40 to +75°C	yes	–	standard Ethernet switch

Fibre series Ethernet switches

- Fibre Optic Ports: 1 100Base-FX (SC connector) MultiMode – 5 km

DVS-008W01-MC01	8	-40 to +75°C	yes	1 x SC	Ethernet switch with fibre port
DVS-016W01-MC01	16	-40 to +75°C	yes	1 x SC	Ethernet switch with fibre port

- Fibre Optic Ports: 1 100Base-FX (SC connector) SingleMode – 30 km

DVS-008W01-SC01	8	-40 to +75°C	yes	1 x SC	Ethernet switch with fibre port
DVS-016W01-SC01	16	-40 to +75°C	yes	1 x SC	Ethernet switch with fibre port

Gigabit Ethernet switches (H) 145.3 x (W) 45 x (D) 108.7 mm

- 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation
- Input voltage: 12 to 48 VDC (1 set)
- 10Gbps, Wired speed

DVS-G005I00A	5	-40 to +75°C	–	–	Gigabit Ethernet switch
DVS-G008I00A	8	-40 to +75°C	–	–	Gigabit Ethernet switch

PoE Gigabit Ethernet switches (H) 144.3 x (W) 26.1 x (D) 94.9 mm

- 10/100/1000Base-T PoE(PSE) ports. 2 x 100/1000Base-SFP (only DVS-G406W01-2-GF)
- Based on IEEE 802.3at standard up to 30Watts per port. Backward compatible with IEEE 802.3af
- 48 to 57 VDC redundant terminal block power input

DVS-G406W01-2GF	6	-40 to +70°C	yes	2 x SFP	PoE Gigabit Ethernet switch
DVS-G408W01	8	-40 to +70°C	yes	–	PoE Gigabit Ethernet switch

Managed Ethernet switches (H) 145.3 x (W) 75 x (D) 109 mm

High-end Layer 2 management, redundant self-healing ring and a wide-operating temperature.

- Supports EtherNet/IP and MODBUS TCP protocols for remote management by SCADA etc.
- IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3 for enhanced network security
- Compatible with most industrial protocols, including EtherNet/IP, Profinet, EtherCAT, CC-LINK IE, DNP 3.0
- RJ45 ports: 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation
- SFP Ports: 100/1000Base-SFP (2x DVP108, 3x DVP110)

DVS-108W02-2SFP	6	-40 to +75°C	yes	2 x SFP	managed Ethernet switch
DVS-110W02-3SFP	7	-40 to +75°C	yes	3 x SFP	managed Ethernet switch

1-port Gigabit Ethernet SFP fibre transceiver

type	operating temperature	interface		
		connectors	fibre type	max. link distance
LCP-1250A4FDRJ	-5°C to 70°C	duplex LC	multi mode	550 m
LCP-1250B4QDRJ	-5°C to 70°C	duplex LC	single mode	10 km



DVW-W02W2-E2



DX-2300LN-WW



DX-3001H9



IFD9507



IFD8500



IFD6500

Communication devices

type	No. Ports	operating temperature	description
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Wireless AP/WDS/Client/Gateway Industrial IEEE 802.11 a/b/g/n

The IEEE 802.11n with better data rates by Multiple-input and Multiple-output (MIMO) technology. Supporting bandwidths from 20 MHz to 40 MHz doubling the speed of transmission performance.

- Compliant with IEEE 802.11n wireless technology capable of up to 450Mbps data rate
- Multiple Wireless modes: AP, Client CPE, WDS P-T-P, WDS P-T-MP, Repeater
- Supports 2 x ports RS-232/422/485-to-Ethernet Device Server
- Built-in 2 x ports MODBUS ASCII/RTU to MODBUS TCP Gateway
- Built-in 20MB buffer memory to avoid data loss when connection is down
- SNTP (*simple network time protocol*) for network clock synchronization
- USB console interface for easy connection with laptops
- Antennas: 3 x 2dBi omnidirectional, RP-SMA(*male*) connector

DVW-W02W2-E2	2	-40 to +75°C	wireless AP/WDS/Client/Gateway
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DX-series - Industrial cloud solutions (*Industrial DIN-rail and wall mounting*)

- Data acquisition equipment connected to cloud servers.
- Supports a two-way data collection channel between the device and the cloud
- Supports MODBUS TCP and MODBUS RTU protocols
- Various peripheral interfaces include RS-485, RS-232 and LAN ports
- Built-in RTC and supports NTP time synchronization over a network
- Supports TCP/IP, UDP, ICMP, DHCP, HTTP, DNS, SSH, TCP and Modbus RTU protocols

Industrial Ethernet cloud router (*4-Port LAN FE + 1-Port WAN FE + 1 RS-232 + 1 R-S485*)

Wired industrial router with multiple application interfaces, including Ethernet, RS-232 and RS-485 serial interfaces. For mobile network interconnection, industrial automation, video surveillance. Safe, reliable data transmission, remote management/configuration, maintenance can be realized.

- Flexible connection method over WAN ports, e.g. static IP, DHCP client and more
- Customisable SMS alarm functions
- SD card for data backup and quick installation

DX-2300LN-WW	5	-20 to +70°C	cloud based Industrial VPN router
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Industrial 3G cloud router (*1-Port FE + 1-Port RS-232 + 1-Port RS-485*)

- UMTS/HSPA+ 3G technology, supports a wide range of bands
- Downward compatible with GSM / GPRS / EDGE 2G network

DX-2100RW-WW	1	-20 to +70°C	cloud based Industrial 3G router
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Industrial 3G/WAN (*1-Port FE + 1-Port RS-232 + 1-Port RS-485*)

As above but with following additions:

- Dual redundancy design : seamless switch between two 3G/VPN for continuous online

DX-3001H9	5	-20 to +70°C	cloud based industrial 3G/WAN router
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Industrial FieldBus solution

Industrial automation applications for converting communication signals of automation, servo and control devices. IFD communication modules are robust, high quality devices offering stable communication with in-built protection.

Excellent signal processing and isolation properties ensure correct, reliable data transmission.

type	from	to	description
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Ethernet to serial Modbus RS-232/485 converters (*full isolation*)

IFD9506	RS-232/485	MODBUS TCP	converter (<i>inc. power supply</i>)
IFD9507	RS-232/485	EtherNet/IP	MODBUS converter (<i>inc. power supply</i>)

Note: To configure IFD devices you need to install DCISoft

Serial to serial communication converters

IFD6500	USB	RS-485	converter (<i>no ext. power supply required</i>)
IFD6530	USB	RS-485	with 9V power supply (<i>115.2k bps Max.</i>)
IFD8500	RS-232	RS-422/485	RS-232 isolated converter
IFD8520	RS-232	RS-422/485	isolated (<i>addressable</i>) converter
IFD8510	RS-485	isolated repeater/amplifier	(<i>extends transmission to 1.2 km</i>)

Note: IFD65xx requires special driver to work with Windows OS, available on Delta website.

CAN / DeviceNet to serial converters

IFD6503	USB	CAN	CAN to serial converter
IFD9502	RS-232/485	DeviceNet	DeviceNet to serial converter
IFD9503	RS-232/485	CANopen	CANopen to serial converter



ASD-B2-0421-B



ASD-A2-0421-M



ECMA-C21010RS



ECMA-E11315RS

ASD servo drives (200W - 15kW) high precision, total control

- Speed, Torque and position modes
- Digital keypad for parameter input and operational data
- External Pulse input control , 200kpps Open Collector and 500 k / 4M kpps Line driver
- ASD-A2 and B2 servo drives can be used with 17bit (160.000ppr) or 20 bit (1.280.000 ppr) servo motors

type	input power	input power	bandwidth	description
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B2 series - Econo servo drives (Modbus communication)

- Digital - 9x Inputs 6x Outputs / Analog - 2x I/O's

ASD-B2-0221-B	200W	220V 1ph	550Hz	B2 series econo servo drives
ASD-B2-0421-B	400W	220V 1ph	550Hz	B2 series econo servo drives
ASD-B2-0721-B	700W	220V 1ph	550Hz	B2 series econo servo drives
ASD-B2-1021-B	1.0kW	220V 1ph	550Hz	B2 series econo servo drives
ASD-B2-1521-B	1.5kW	220V 1ph	550Hz	B2 series econo servo drives

A2 series - Advanced servo drives (Modbus, CANopen, USB communication)

- Flexible position register control Mode PR mode
- Digital - 9x Inputs 5x Outputs / Analog - 2x I/O's

ASD-A2-0121-M	100W	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-0221-M	200W	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-0421-M	400W	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-0721-M	750W	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-1021-M	1.0kW	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-1521-M	1.5kW	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-2043-M	2.0kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2-3043-M	3.0kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2-4543-M	4.5kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2-5543-M	5.5kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2-7543-M	7.5kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2R-1B43-M	11.0kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2R-1F43-M	15.0kW	400V 3ph	1kHz	A2 high advanced servo drives

ECMA Motors (for above servo drives)

type	rated			dimensions (mm)		
	output power	RPM	torque Nm	PCD	flange	shaft Ø

Econo servo motors - 17 bit

ECMA-C20401RS	100W	3000	0.32	46	40 x 40	8
ECMA-C20602RS	200W	3000	0.64	70	60 x 60	14
ECMA-C20604RS	400W	3000	1.27	70	60 x 60	14
ECMA-C20807RS	750W	3000	2.39	90	80 x 80	19
ECMA-C21010RS	1.0kW	3000	3.18	115	100 x 100	22
ECMA-E21315RS	1.5kW	3000	7.16	145	130 x 130	22

With built-in (24 VDC) brake

ECMA-C20401SS	100W	3000	0.32	46	40 x 40	8
ECMA-C20604SS	400W	3000	1.27	70	60 x 60	14

High resolution servo motors - 20 bit superior resolution encoder (1.280.000 pulses/revolution)

ECMA-C10604RS	400W	3000	1.27	70	60 x 60	14
ECMA-C10807RS	750W	3000	2.39	90	80 x 80	19
ECMA-C11010RS	1.0kW	3000	3.18	115	100 x 100	22
ECMA-E11315RS	1.5kW	2000	7.16	145	130 x 130	22
ECMA-K11320RS	2.0kW	2000	9.55	145	130 x 130	22
ECMA-L11830RS	3.0kW	1500	19.10	200	180 x 180	35
ECMA-L11845RS	4.5kW	1500	28.65	200	180 x 180	35
ECMA-L11855R3	5.5kW	1500	35.00	200	180 x 180	42
ECMA-L11875R3	7.5kW	1500	47.74	200	180 x 180	42
ECMA-L1221BR3	11kW	1500	70.00	235	220 x 220	42
ECMA-L1221FRS	15kW	1500	95.40	235	220 x 220	55

With built-in (24 VDC) brake

ECMA-C10807SS	750W	3000	2.36	90	80 x 80	19
ECMA-C11010SS	1.0kW	3000	3.18	115	100 x 100	22
ECMA-E11315SS	1.5kW	2000	7.16	145	130 x 130	22
ECMA-K11320SS	2.0kW	2000	9.55	145	130 x 130	22
ECMA-L11830SS	3.0kW	1500	19.10	200	180 x 180	35
ECMA-L11845SS	4.5kW	1500	28.65	200	180 x 180	35

C₂

new



WAB...



WPFR...



ASD-CAPW...



ASD-CAEN...

Gearboxes for ECMA series servo motors

- Low noise, helical gears allows for smooth and quite gear meshing
- Planetary wheel with needle design increases the contact area to improve the rigidity and output torque
- Synthetic lubricating grease and sealed IP65 design requires no maintenance during the products lifetime
- Gears are carburized and quenched to HRC62 with low carbon steel surface for optimum wear and impact toughness

type	ECMA motor	ratio	rated torque	backlash arcmin	dimensions (mm)		
					PCD	flange	shaft Ø
Straight gearboxes (helical gears)							
WAB-060-005-K-P1	200 - 400W	5:1	60	≤3	70	60 x 60	16
WAB-060-007-K-P1	200 - 400W	7:1	50	≤3	70	60 x 60	16
WAB-060-010-K-P1	200 - 400W	10:1	40	≤3	70	60 x 60	16
WAB-090-003-K-P1	750W	3:1	130	≤3	100	90 x 90	22
WAB-090-007-K-P1	750W	7:1	140	≤3	100	90 x 90	22
WAB-115-003-K-P1	1.5 - 2kW	3:1	208	≤3	130	115 x 115	32
WAB-142-003-K-P1	3 - 4.5kW	3:1	342	≤3	165	142 x 142	40
Angle gearboxes (spur gears)							
WPFR-060-005-K-P2	200 - 400W	5:1	40	≤15	70	60 x 60	14
WPFR-060-007-K-P2	200 - 400W	7:1	20	≤15	70	60 x 60	14
WPFR-060-010-K-P2	200 - 400W	10:1	12	≤15	70	60 x 60	14
WPFR-090-003-K-P2	750W	3:1	40	≤15	100	92 x 92	20
WPFR-090-007-K-P2	750 W	7:1	40	≤15	100	92 x 92	20
WPFR-120-003-K-P2	1.5 - 2kW	3:1	125	≤15	130	120 x 120	35

Note: Other ratios, frame sizes and precision options available on request.

Servo drive and motor accessories

ASD-CN5C0050	50 pin solder plug	for series	ASD-A2
ASD-IF-SC5020	20 pin adaptor, push in term.	for series	ASD-A2
ASD-BM-50A	50 pin breakout board	for series	ASD-A2
UC-CMC003-01A	CANopen comms cable RJ45 (0.3m)	for series	ASD-A2
UC-CMC010-01A	CANopen comms cable RJ45 (1m)	for series	ASD-A2
TAP-CN03	Canopen distribution box	for series	ASD-A2
UC-PRG030-02A	USB type A - USB type B	for series	ASD-A2
ASD-CARS0003	9 pin D-SUB female - Firewire	for series	ASD-A2/B2
ASD-CNIE0B06	RS-485 Splitter 2x RJ45	for series	ASD-A2/B2
ASD-CNUS0A08	USB type A - Firewire	for series	ASD-B2
ASDBCND50044	D-SUB 44 Pin solder plug	for series	ASD-B2

ASDA and ECMA connecting cables

type	ECMA range	power	encoder	brake	for drive series	cable length
		cable	cable	motor		
ASDBCAPW0000	100 - 750W	•	–	–	ASD-A2	plug
ASD-ABEN0000	100 - 750W	–	•	•	ASD-A2	plug
ASD-ABEN0003	100 - 750W	–	•	•	ASD-A2	3m
ASD-ABPW0005*	100 - 750W	•	–	–	ASD-A2	5m
ASD-ABPW1105	100 - 750W	•	–	•	ASD-A2	5m
ASD-ABEN0005*	100 - 750W	–	•	•	ASD-A2	5m
ASD-CAPW1000	1kW	•	–	•	ASD-A2	plug
ASD-CAEN1000	1 - 15kW	–	•	•	ASD-A2	plug
ASD-CAPW1005*	1kW	•	–	–	ASD-A2	5m
ASD-CAPW1105	1kW	•	–	–	ASD-A2	5m
ASD-CAEN1005*	1 - 15kW	–	•	•	ASD-A2	5m
ASD-CAPW1205	2kW	•	–	–	ASD-A2	5m
ASD-CAPW1305	2kW	•	–	•	ASD-A2	5m
ASD-CAPW2205	3 - 5.5kW	•	–	–	ASD-A2	5m
ASD-CAPW3205	7.5kW	•	–	–	ASD-A2	5m
ASD-CAPW4000	11 - 15kW	•	–	•	ASD-A2	plug
ASD-CAPW4505	11kW	•	–	–	ASD-A2	5m
ASD-CAPW4605	15kW	•	–	–	ASD-A2	5m
ASDBCAPW0000	100 - 750W	•	–	–	ASD-B2	plug
ASDCAEN0000	100 - 750W	–	•	•	ASD-B2	plug
ASDBCAPW0205*	100 - 750W	•	–	–	ASD-B2	5m
ASDCAEN0005*	100 - 750W	–	•	•	ASD-B2	5m
ASD-CAPW1000	1 - 1.5kW	•	–	•	ASD-B2	plug
ASDCAEN1000	1 - 1.5kW	–	•	•	ASD-B2	plug
ASDBCAPW1205	1 - 1.5kW	•	–	–	ASD-B2	5m
ASDCAEN1005	1 - 1.5kW	–	•	•	ASD-B2	5m

* For 3m length cables, replacement (5) with 3



HTR-3A...



HTR-5B...



HPN-6A-2500-3-PP



HTR-HN...



HJ-6X6



SCT...

HTR series - Incremental encoders

HTR series encoders, provide precise positioning and speed sensing functions. They convert rotary motion or position data to electronic pulses for speed and position detection.

Common characteristics

- Output phase: ABZ phase (*std*)
 - Output form: P: Push Pull
 - Resolution: 5 - 5000 ppr (*pulse per revolution*)
 - Protection: against polarity reversal
- HL:** Line Driver 5 - 26 VDC
model and output dependant

type	resolution (ppr)	supply voltage	detection system	description	dimensions body	Ø mm shaft
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Solid shaft type

Medium duty incremental encoders		(IP50)	push-pull type			
HTR-3A-100A-P	100	5 - 26 VDC	incremental	rotary encoder	38	6
HTR-3A-360A-P	360	5 - 26 VDC	incremental	rotary encoder	38	6
HTR-3A-500A-P	500	5 - 26 VDC	incremental	rotary encoder	38	6
HTR-3A-1024A-P	1024	5 - 26 VDC	incremental	rotary encoder	38	6
HTR-5B-360A-P	360	5 - 26 VDC	incremental	rotary encoder	50	8
HTR-5B-1024A-P	1024	5 - 26 VDC	incremental	rotary encoder	50	8
HTR-5B-2000A-P	2000	5 - 26 VDC	incremental	rotary encoder	50	8

Medium duty incremental encoders		(IP50)	line driver type			
HTR-5B-360A-H	360	5 - 26 VDC	incremental	rotary encoder	50	8
HTR-5B-1024A-H	1024	5 - 26 VDC	incremental	rotary encoder	50	8
HTR-5B-2000A-H	2000	5 - 26 VDC	incremental	rotary encoder	50	8

Other (ppr) resolution available on request.

Heavy duty incremental encoders		(IP64)	push-pull type			
• HPN square flange mount (63.5 x 63.5 mm □)						
HPN-6A-2500-3-PP	2500	8 - 26 VDC	incremental	rotary encoder	63.5 □	10

Other (ppr) resolution available on request.

Hollow shaft incremental encoders		(IP50)	push-pull type		hole	
HTR-HN-8-360A-P	360	5 - 26 VDC	incremental	rotary encoder	38	8
HTR-HN-8-500A-P	500	5 - 26 VDC	incremental	rotary encoder	38	8
HTR-HN-8-1024A-P	1024	5 - 26 VDC	incremental	rotary encoder	38	8
HTR-HM15-600-3-PP	600	8 - 26 VDC	incremental	rotary encoder	59	15
HTR-HM15-1024-3-PP	1024	8 - 26 VDC	incremental	rotary encoder	59	15
HTR-HD30-600-3-PP	600	8 - 26 VDC	incremental	rotary encoder	100	30
HTR-HD30-1024-3-PP	1024	8 - 26 VDC	incremental	rotary encoder	100	30

Other (ppr) resolution available on request.

A series - Absolute encoders		(IP50)				
• Signal output	G: Gray code					
• Output form	C: NPN open-collector					
A3-G-256-C	256	10 - 26 VDC	absolute	rotary encoder	60	8
A3-G-1024-C	1024	10 - 26 VDC	absolute	rotary encoder	60	8

Other (ppr) resolution available on request.

Encoder accessories

type	material	rated torque (N.m)	bore (mm)		wrench torque (N.m)	dimensions Ø mm	
			hole Ø1	hole Ø2		body Ø	length

Flexible couplings							
HJ-6X6	plastic	1.0	6	6	0.3	16	23
SCT-16-6X6	aluminium	0.3	6	6	0.7	16	23
SCT-20-8X8	aluminium	0.5	8	8	0.7	20	26
SCT-25-8X10	aluminium	1.0	8	10	1.7	25	31
SCT-25-10X10	aluminium	2.0	10	10	1.7	25	31



LRD10RA240



LRD20R...



LRE08R...



LRXP01

Lovato's micro PLC is a compact, flexible, easy to use and highly cost effective "intelligent relay". Base units are available with 10,12 or 20 I/O points and can be expanded up to 44 digital I/O points with plug-in expansion modules.

Programming is simple and intuitive and can be done directly with the built-in keypad/display or by personal computer with LRX SW software and LRX C03 programming USB cable.

- Two common language logics are available for programming:
- LD (*relay ladder*) up to 300 lines of four instructions each
 - FBD (*function block diagram*) up to 260 programmable blocks

Advantages:

- System control and supervision
- Contact status viewing in simple and small screen display
 - Possibility to add the micro PLC equipped with **LREP00** Modbus to systems integrated on data networks by using Synergy (*supervision and energy management software*)

- Quick control board installation
- Fewer number of components
 - Less wiring with minor number of connections

- Repetitiveness
- Less errors during panel building
 - Considerable time saving

- Flexibility
- Quick correction of abnormal conditions at final testing
 - Fast changes on control boards

type	supply	inputs	outputs	description
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Base units

LRD10RA240	100 - 240 VAC	6	4	intelligent relay
LRD20RA240	100 - 240 VAC	12	8	intelligent relay
LRD12RD024	24 VDC	8*	4	intelligent relay
LRD20RD024	24 VDC	12*	8	intelligent relay
LRD20RD012	12 VDC	12*	8	intelligent relay
LRD20RD024P1	24 VDC	12*	8	intelligent relay

- * 2/4 inputs can be analog (0-10 VDC)
- ❖ With built-in RS485 modbus port

Expansion modules (plug-in)

Inputs and outputs of the base relay unit can be increased with plug-in expansion modules. Up to three expansion modules, can be added.

LRE08RA240	100 - 240 VAC	4	4	expansion module
LRE08RD024	24 VDC	4	4	expansion module

LREP00 modbus - RTU protocol communication unit

Accessories

- LRXC03 cable: PC (USB) to LRD relay connecting cable (1.5 meter)
- LRXSW programming and supervision software (CD-ROM)
- LRXM00 plug-in program back-up memory module
- LRXP01 HMI operator panel, 24 VDC, RS232, RS485
- LRXSWP01 LRXP01 editor software (CD-ROM)
- LRXC02 cable: PC (RS232) - LRXP01 programming cable

Maximum combinations

Base relay unit
12 inputs
+
8 outputs

4 inputs + 4 outputs

4 inputs + 4 outputs

4 inputs + 4 outputs

4 PT100 temperature sensor inputs

2 outputs, 0...10V or 0...20mA

2 outputs, 0...10V or 0...20mA

4 inputs, 0...10V or 0...20mA

RS485 Modbus[®]-RTU

- 24 digital inputs (4 configurable as analog 0-10V input)
- 20 digital outputs (relay, transistor or mixed)
- 4 analog inputs for PT100 temperature sensors
- 4 analog outputs configurable as 0...10V or 0/4...20mA
- 4 analog inputs configurable as 0...10V or 0/4...20mA
- 1 RS485 slave communication module.

N.B. The sequence of the products given above must be respected for correct operation.

new



601400



601440

Micro SIM Card slot



601450



601432

Ethernet gateways

An Ethernet gateway covers data between different protocols ensuring consistent flow of information. **ETOR, WTOR** and **GTOR** gateways provide fast (up to 115Kbps) data transmission for serial devices.

- First class quality to fulfil all communication requirements with quick view of status via frontal LED's
- Bidirectional protocol converting with client and server mode
- Converting between Modbus TCP and Modbus RTU/ASCII
- Automatic or manual IP addressing and Ping blocking
- Line protection by galvanic isolation
- Compact modular (H) 90.4 x (W) 17.5 x (D) 66.5 mm (same dimensions as single pole MCB)

type	supply voltage	serial standard	connector type	No. Serial devices server	client	description
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ETOR Ethernet / Serial Gateway

- Converts between MODBUS and Ethernet protocols to permit user to control and monitor:
 - a) Serial devices in a plant over Internet or local area network in server mode
 - b) Devices which support Ethernet-based protocols, over the serial interface in client mode
- Mini USB port or WEB interface configuration
- Dual supply option: 18 - 50 VAC/DC or can be powered up through a mini USB cable

ETOR-4 Ethernet gateway (TCP/IP - RS485)

601400	18 - 50 VAC/DC	RS485	RJ45	64	1	Ethernet - Serial Gateway
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ETOR-2 Ethernet gateway (TCP/IP - RS232)

601401	18 - 50 VAC/DC	RS232	RJ45	1	1	Ethernet - Serial Gateway
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GTOR GPRS to RS485 Gateway

GTOR series products connect to serial MODBUS devices with TCP/IP based systems to remotely control and monitor devices via GPRS. **GTOR** can be easily integrated into existing MODBUS networks due to their wide range of configuration options. **GTOR** series products works as a TCP/IP server.

- Micro SIM Card slot
- Supports up to 64 devices
- APN configuration with Mini USB
- 8 facia LED's indicate: power, signal strength level, operating status

601440	11 - 30 VDC	RS485	Micro USB	32	1	GPRS - RS485 Gateway
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WTOR Wi-Fi to RS485 Gateway

WTOR series products connect to serial MODBUS devices with TCP/IP based systems to remotely control and monitor devices connected to the MODBUS network via a WI-FI service and can be easily integrated into existing MODBUS networks due to their wide range of configuration options. **WTOR** series products works as a TCP/IP server.

- RS485
- Point or station mode
- Operating with access
- Configuring via web interface

601450	11 - 30 VDC	RS485	RS485	64	1	WI-FI - RS485 Gateway
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UTOR Converters - USB to RS485, RS232 and TTL

UTOR is powered from the USB port without external power supply requirements, they incorporate an isolation barrier providing electrical isolation between the PC and serial devices.

- Removable terminal block with screw connection
- Baudrate: 300 ... 115200 bps
- Connector: USB type A













type	supply voltage	serial standard	USB	converter from	to	description
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601430	USB port	RS485	1.1 + 2.0	RS485	USB	USB/RS485 converter
601431	USB port	RS232	1.1 + 2.1	RS232	USB	USB/RS232 converter
601432	USB port	TTL(5V)	1.1 + 2.2	TTL(5V)	USB	USB/TTL (5V) converter
601433	USB port	TTL(3V)	1.1 + 2.3	TTL(3V)	USB	USB/TTL (3V) converter



CONTROL & SIGNALLING

D

Pushbuttons and selector switches		Lovato	D-1...8
Pilot lights		Lovato Sirena EM	D-3...5 D-17 D-26/28
Pushbutton stations		Lovato TER	D-6 D-11
Rotary cam switches		Lovato Baco	D-9 D-10
Pendant control stations		TER	D-11...12
Joystick controllers		TER	D-13...14
Slip ring collectors		TER	D-14
Wormgear / Rotary limit switches		TER	D-15...16
Signalling devices		Sirena	D-17...24
Signal towers/ Stack lights		Sirena Lovato	D-21...23 D-25
Sirens		Sirena	D-24
Panel signalling & pilot devices		EM	D-26...28
Panel mount accessories		EM	D-29



Scan to watch video

Platinum series Ø22 mm pushbuttons and selector switches

- Material resistant to oils, solvents and hydrocarbons
- Elegant style ergonomic design (*combining aesthetics with industrial durability*)
- IP66/IP67/IP69K degree of protection for use even in extreme temp. -25°C - +70°C

Actuators are supplied without **LPX AU120** contact block and support (to be ordered separately)

type	colour	symbol	description	action
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Pushbutton actuators

LPC B102	black	–	flush momentary pushbutton actuator	spring return
LPC B103	green	–	flush momentary pushbutton actuator	spring return
LPC B104	red	–	flush momentary pushbutton actuator	spring return
LPC B105	yellow	–	flush momentary pushbutton actuator	spring return
LPC B106	blue	–	flush momentary pushbutton actuator	spring return
LPC B202	black	–	extended head pushbutton actuator	spring return
LPC B203	green	–	extended head pushbutton actuator	spring return
LPC B204	red	–	extended head pushbutton actuator	spring return
LPC B205	yellow	–	extended head pushbutton actuator	spring return
LPC B206	blue	–	extended head pushbutton actuator	spring return

Pushbutton actuators (with symbols)

LPC B1104	red	○	flush momentary pushbutton actuator	spring return
LPC B1113	green	I	flush momentary pushbutton actuator	spring return
LPC B1134	red	STOP	flush momentary pushbutton actuator	spring return
LPC B1163	green	START	flush momentary pushbutton actuator	spring return
LPC B1142	black	←	flush momentary pushbutton actuator	spring return
LPC B1152	black	↑	flush momentary pushbutton actuator	spring return
LPC B1196	blue	RESET	flush momentary pushbutton actuator	spring return
LPC B2104	red	○	extended head pushbutton actuator	spring return

Alternate action pushbutton actuator (push on - push off)

Only use contact blocks **LXP C10A (NO)** and **LPX C01 (NC)** with push on - push off pushbuttons.

LPC Q102	black	–	flush alternate action p/button actuator	alternate
LPC Q103	green	–	flush alternate action p/button actuator	alternate
LPC Q104	red	–	flush alternate action p/button actuator	alternate
LPC Q105	yellow	–	flush alternate action p/button actuator	alternate
LPC Q106	blue	–	flush alternate action p/button actuator	alternate
LPC Q202	black	–	extended head alternate action actuator	alternate
LPC Q203	green	–	extended head alternate action actuator	alternate
LPC Q204	red	–	extended head alternate action actuator	alternate
LPC Q205	yellow	–	extended head alternate action actuator	alternate
LPC Q206	blue	–	extended head alternate action actuator	alternate

Mushroom head pushbutton actuators

LPC B6144	red	Ø40 mm	mushroom pushbutton actuator	spring return
LPC B6164	red	Ø60 mm	mushroom pushbutton actuator	spring return
LPC B6344	red	Ø40 mm	latching mushroom pushbutton actuator	twist release

Emergency stopping (ISO 13850 compliant)

LPC B6634	red	Ø30 mm	latching mushroom pushbutton actuator	twist release
LPC B6644	red	Ø40 mm	latching mushroom pushbutton actuator	twist release
LPC B6744	red	Ø40 mm	latching mushroom pushbutton actuator	pull release
LPC B6844	red	Ø40 mm	latching mushroom pushbutton actuator	key release

Multi pushbutton actuators

Double-touch pushbutton actuators

LPC B7113	grn/red	–	double touch pushbutton actuator (<i>flush</i>)	spring return
LPC B7191	blk/blk	↓ ↑	double touch pushbutton actuator (<i>flush</i>)	spring return
LPC B71S02	grn/grn	+ –	double touch pushbutton actuator (<i>flush</i>)	spring return
LPC B7223	grn/red	I-O	double touch actuator (<i>ext. red button</i>)	spring return
LPC BL7223	grn/red	I-O	double touch + indicator (<i>ext. red button</i>)	spring return

Triple-touch pushbutton actuators (red extended stop button)

LPC B7345	grn/red	I-STOP-II	triple-touch pushbutton actuator	spring return
LPC B7355	grn/red	↑-STOP-↓	triple-touch pushbutton actuator	spring return
LPC B7365	grn/red	←-STOP-→	triple-touch pushbutton actuator	spring return
LPC B7375	grn/red	↙-STOP-↘	triple-touch pushbutton actuator	spring return



LPC B103



LPC B204



LPC B2104



LPC B6144



LPC B6644



LPC B6844



LPC B7191



LPC B7223



LPC B7355



LPC S120



LPC S230



LPC S320



LPC R1196



LPC ZS...



LPC D01



LPX AU120



LPX C01



LPX C10

Platinum series Ø22 mm pushbuttons and selector switches

- IP66 - IP67 - IP69K degree of protection for use in even in extreme temperatures -25° to +70°C
- Actuators supplied without **LPX AU120** contact block and support (*to be ordered separately*)

type	colour	positions		description	spring return
------	--------	-----------	--	-------------	---------------

Selector switch actuators

LPC S120	black	2 position	O - I	selector switch actuator	–
LPC S121	black	2 position	O - I	selector switch actuator	from Right
LPC S130	black	3 position	I - O - II	selector switch actuator	I - O - II
LPC S131	black	3 position	I - O - II	selector switch actuator	from L+R
LPC S132	black	3 position	I - O - II	selector switch actuator	from Left
LPC S133	black	3 position	I - O - II	selector switch actuator	from Right

Lever selector switch actuators

LPC S220	black	2 position	O - I	lever selector actuator	O - I
LPC S221	black	2 position	O - I	lever selector actuator	from Right
LPC S230	black	3 position	I - O - II	lever selector actuator	I - O - II
LPC S231	black	3 position	I - O - II	lever selector actuator	from L+R
LPC S232	black	3 position	I - O - II	lever selector actuator	from Left
LPC S233	black	3 position	I - O - II	lever selector actuator	from Right

Key selector switch actuators

type	colour	positions	key remove	description	spring return
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LPC S320	black	2 pos (O-I)	Left	key switch actuator	–
LPC S321	black	2 pos (O-I)	L+R	key switch actuator	–
LPC S340	black	2 pos (O-I)	Left	key switch actuator	from Right
LPC S330	black	3 pos (I-O-II)	Centre	key switch actuator	–
LPC S331	black	3 pos (I-O-II)	L+C+R	key switch actuator	–
LPC S332	black	3 pos (I-O-II)	Left	key switch actuator	–
LPC S333	black	3 pos (I-O-II)	Right	key switch actuator	–
LPC S360	black	3 pos (I-O-II)	Centre	key switch actuator	from Right
LPC S370	black	3 pos (I-O-II)	Centre	key switch actuator	from L+R

Mechanical reset pushbuttons (*fine depth adjustment from face of button*)

LPC R1002	black	–	–	mechanical reset button (<i>adj. length</i>)	0-150 mm
LPC R1004	red	–	–	mechanical reset button (<i>adj. length</i>)	0-150 mm
LPC R1006	blue	–	–	mechanical reset button (<i>adj. length</i>)	0-150 mm
LPC R1196	blue	(RESET)	–	mechanical reset button (<i>adj. length</i>)	0-150 mm

Pulse-tone monoblock buzzer Ø22 mm *continuous or pulse tone (10 cm)*

LPC ZSB	black	18 - 30 VAC/DC	(IP40)	panel mount acoustic buzzer	90dB
LPC ZSM	black	185 - 265 VAC	(IP40)	panel mount acoustic buzzer	90dB
LPC ZSMIP	black	185 - 265 VAC	(IP65)	panel mount acoustic buzzer	80dB

USB and RJ45 communication interfaces Ø22 mm *IP65 (with cap closed)*

LPC D01	black	USB	–	panel mnt communication interface	A-A
LPC D03	black	USB	–	panel mnt communication interface	A-B
LPC D06	black	RJ45	–	panel mnt communication interface	Ethernet

Contact blocks and support for control devices

Contact block support max. of 9 contact blocks (*3 rows of 3*) - *actuator dependant*

LPX AU120 support contact block support / mounting adaptor for 3 contact blocks

Contact blocks *requires LPX AU120 (above) to mount onto actuators*

- Self cleaning, dual scrape/oscillating action contacts
- IEC rated insulation voltage: 690V - thermal current Ith: 10A
- Can be clipped onto the back of another contact block

LPX C10	1 x NO	standard	green	screw term. contact block for control devices
LPX C01	1 x NC	standard	red	screw term. contact block for control devices
LPX C10A	1 x NO	early make	green	screw term. contact block for control devices
LPX C01D	1 x NC	late break	red	screw term. contact block for control devices

- Push-in technology for rigid cables or with ferrules (*no screw driver required for insertion*) guaranteed retaining force over time even in presence of vibration and/or impact

LPX CS10	1 x NO	standard	–	push-in term. contact block for control devices
LPX CS01	1 x NC	standard	–	push-in term. contact block for control devices



LPL 3



LPC BL103



LPC BL204



LPC SL1215



LPC BL6644



LPX AU120

Platinum series illuminated Ø22 mm control devices

- Material resistant to oils, solvents and hydrocarbons
- Elegant style, ergonomic design (*combining aesthetics with industrial durability*)
- IP66 - IP67 - IP69K degree of protection for use in even in extreme temperatures -25° to +70°C
- Actuators are supplied without **LPX AU120** contact block support and LED modules (*to be ordered separately*)

type	colour	positions	description	action
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Pilot light heads

LPL 3	green	illuminated	Ø22 mm pilot light head only	–
LPL 4	red	illuminated	Ø22 mm pilot light head only	–
LPL 5	yellow	illuminated	Ø22 mm pilot light head only	–
LPL 6	blue	illuminated	Ø22 mm pilot light head only	–
LPL 7	t/parent	illuminated	Ø22 mm pilot light head only	–

Flush illuminated pushbutton actuators

LPC BL103	green	illuminated	flush momentary pushbutton actuator	spring return
LPC BL104	red	illuminated	flush momentary pushbutton actuator	spring return
LPC BL105	yellow	illuminated	flush momentary pushbutton actuator	spring return
LPC BL106	blue	illuminated	flush momentary pushbutton actuator	spring return

Alternate action pushbutton actuators (*push on - push off*)

LPC QL103*	green	illuminated	flush alternate action p/button actuator	alternate
LPC QL104*	red	illuminated	flush alternate action p/button actuator	alternate
LPC QL105*	yellow	illuminated	flush alternate action p/button actuator	alternate
LPC QL106*	blue	illuminated	flush alternate action p/button actuator	alternate

Extended head illuminated pushbutton actuators

LPC BL203	green	illuminated	extended head pushbutton actuator	spring return
LPC BL204	red	illuminated	extended head pushbutton actuator	spring return
LPC BL205	yellow	illuminated	extended head pushbutton actuator	spring return
LPC BL206	blue	illuminated	extended head pushbutton actuator	spring return
LPC BL207	t/parent	illuminated	extended head pushbutton actuator	spring return

Alternate action pushbutton actuators (*push on - push off*)

LPC QL203*	green	illuminated	extended head alternate action actuator	alternate
LPC QL204*	red	illuminated	extended head alternate action actuator	alternate
LPC QL205*	yellow	illuminated	extended head alternate action actuator	alternate
LPC QL206*	blue	illuminated	extended head alternate action actuator	alternate
LPC QL207*	t/parent	illuminated	extended head alternate action actuator	alternate

* Only use contact blocks **LXP C10A (NO)** and **LPX C01 (NC)** with push on - push off pushbuttons.

Illuminated selector switch actuators

				spring return
LPC SL1203	green	2 position	illuminated selector switch actuator	O - I
LPC SL1204	red	2 position	illuminated selector switch actuator	O - I
LPC SL1205	yellow	2 position	illuminated selector switch actuator	O - I
LPC SL1206	blue	2 position	illuminated selector switch actuator	O - I
LPC SL1208	white	2 position	illuminated selector switch actuator	O - I
LPC SL1213	green	2 position	illuminated selector switch actuator	from Right
LPC SL1214	red	2 position	illuminated selector switch actuator	from Right
LPC SL1215	yellow	2 position	illuminated selector switch actuator	from Right
LPC SL1216	blue	2 position	illuminated selector switch actuator	from Right
LPC SL1218	white	2 position	illuminated selector switch actuator	from Right
LPC SL1303	green	3 position	illuminated selector switch actuator	I - O - II
LPC SL1304	red	3 position	illuminated selector switch actuator	I - O - II
LPC SL1305	yellow	3 position	illuminated selector switch actuator	I - O - II
LPC SL1306	blue	3 position	illuminated selector switch actuator	I - O - II
LPC SL1308	white	3 position	illuminated selector switch actuator	I - O - II
LPC SL1313	green	3 position	illuminated selector switch actuator	from L+R
LPC SL1314	red	3 position	illuminated selector switch actuator	from L+R
LPC SL1315	yellow	3 position	illuminated selector switch actuator	from L+R
LPC SL1316	blue	3 position	illuminated selector switch actuator	from L+R
LPC SL1318	white	3 position	illuminated selector switch actuator	from L+R

Illuminated mushroom head pushbutton actuators

LPC BL6144	red	illuminated	Ø40 mm mushroom head actuator	spring return
LPC BL6644	red	illuminated	Ø40 mm latching m/room head actuator	twist release

Support for contact blocks and LED modules - clips onto control devices

LPX AU120	support	contact	block support / mounting adaptor for 3 contact blocks	
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LED modules for above (see page D-4)

Platinum series Ø22 mm control device accessories

LED indicating modules (protected) clips onto LPX AU120 support

- Over voltage protection
- Protection against stray current in wiring
- Flickering phenomenon reduction
- Electrical life: 100.000 hours

type	colour	supply	description
LED modules (steady light)		(screw type)	
LPX LPB3	green	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPB4	red	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPB5	yellow	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPB6	blue	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPB8	white	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPE*	*	85 - 140 VAC	LED integrated steady lamp module
LPX LPM3	green	185 - 265 VAC	LED integrated steady lamp module
LPX LPM4	red	185 - 265 VAC	LED integrated steady lamp module
LPX LPM5	yellow	185 - 265 VAC	LED integrated steady lamp module
LPX LPM6	blue	185 - 265 VAC	LED integrated steady lamp module
LPX LPM8	white	185 - 265 VAC	LED integrated steady lamp module

LED modules (steady light)		(push-in type)	
LPX LPSB3	green	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPSB4	red	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPSB5	yellow	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPSB6	blue	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPSB8	white	12 - 30 VAC/DC	LED integrated steady lamp module
LPX LPSM3	green	185 - 265 VAC	LED integrated steady lamp module
LPX LPSM4	red	185 - 265 VAC	LED integrated steady lamp module
LPX LPSM5	yellow	185 - 265 VAC	LED integrated steady lamp module
LPX LPSM6	blue	185 - 265 VAC	LED integrated steady lamp module
LPX LPSM8	white	185 - 265 VAC	LED integrated steady lamp module

Note: Push-in technology for rigid cables or with ferrules (no screw driver required for insertion) guaranteed retaining force over time even in presence of vibration and/or impact.

LED modules (flashing light)		(screw type)	
LPX LFB*	*	12 - 30 VAC/DC	LED integrated flashing lamp module
LPX LFE*	*	85 - 140 VAC	LED integrated flashing lamp module
LPX LFM*	*	185 - 265 VAC	LED integrated flashing lamp module

* Replace with: 3 (green) / 4 (red) / 5 (yellow) / 6 (blue) / 8 (white) - for colours

Monoblock LED pilot lights Ø22 mm mounting

- Electrical life: >30.000 hours
- Protection degree: IP66, IP67 and IP69K
- Compliant with standards: IEC/EN 60947-1, IEC/EN60947-5-1, UL508, CSA C22.2 no 14

type	colour	supply voltage	IP rating	description
LPM LB1	orange	24 VAC/DC	66/67/69K	monoblock LED pilot light
LPM LB3	green	24 VAC/DC	66/67/69K	monoblock LED pilot light
LPM LB4	red	24 VAC/DC	66/67/69K	monoblock LED pilot light
LPM LB5	yellow	24 VAC/DC	66/67/69K	monoblock LED pilot light
LPM LB6	blue	24 VAC/DC	66/67/69K	monoblock LED pilot light
LPM LB7	t/parent	24 VAC/DC	66/67/69K	monoblock LED pilot light
LPM LM1	orange	230 VAC	66/67/69K	monoblock LED pilot light
LPM LM3	green	230 VAC	66/67/69K	monoblock LED pilot light
LPM LM4	red	230 VAC	66/67/69K	monoblock LED pilot light
LPM LM5	yellow	230 VAC	66/67/69K	monoblock LED pilot light
LPM LM6	blue	230 VAC	66/67/69K	monoblock LED pilot light
LPM LM7	t/parent	230 VAC	66/67/69K	monoblock LED pilot light

Monoblock buzzer - continuous or pulse tone

LPC ZSA	black	9 - 15 VAC/DC	IP40	p/mount 90db/10 cm buzzer
LPC ZSB	black	18 - 30 VAC/DC	IP40	p/mount 90db/10 cm buzzer
LPC ZSM	black	185 - 265 VAC/DC	IP40	p/mount 90db/10 cm buzzer
LPC ZSAIP	black	9 - 15 VAC/DC	66/67/69K	p/mount 70db/10 cm buzzer
LPC ZSBIP	black	18 - 30 VAC/DC	66/67/69K	p/mount 70db/10 cm buzzer
LPC ZSMIP	black	185 - 265 VAC/DC	66/67/69K	p/mount 70db/10 cm buzzer



LPX LP...



LPX LF...



LPX LPSB...

new



LPX LPSM...



LPM LB3



LPM LB5



LPC ZSA



Accessories for Ø22 mm control devices

type	colour	description	
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Legend plates and labels for Ø22 mm actuators

For plastic series - in order to maintain the IP rating

LPX AU100	black	holder	legend holder for AU109 labels	12 mm (H)
LPX AU109	silver	engraveable	clip-in label for above holder	12 mm (H)
LPX AU109EN	silver	engraved	label (<i>provide required engraving</i>)	12 mm (H)
LPX AU105	black	holder	legend holder for AU108 labels	15 mm (H)
LPX AU108	silver	engraveable	clip-in label for above holder	15 mm (H)
LPX AU108EN	silver	engraved	label (<i>provide required engraving</i>)	15 mm (H)

Emergency labels (*to be mounted behind mushroom pushbuttons*)

LPX AU113	yellow	"emergency stop" plastic label/disc for pushbuttons	Ø90 mm
LPX AU115	yellow	"emergency stop" plastic label/disc for pushbuttons	Ø60 mm

Shrouds - to prevent inadvertent operation of pushbutton

LPX AU158	yellow	padlockable shroud for latching mushroom pushbutton
LPX AU159	yellow	half shroud to prevent inadvertent operation of pushbutton

Control device accessories

LPX A130	grey	Ø22 mm hole blanking plug (<i>threaded</i>)
LPX A140	black	action plug for using central position on actuators
LPX A150	black	spare rod (<i>150 mm</i>) for mechanical reset pushbuttons
LPX A170	silver (key No. 455)	spare (<i>key only</i>) replacement for key switches
LPX A170R*	silver	special (<i>key only</i>) for switches with different keys

* Add: 421E, 458A, 520E, 3131A, 3433E (*for different key requirement*)

LPX AU00	black	spare plastic threaded nut for actuator fixing plastic actuators
LPX AU01	silver	replacement ring (<i>steel</i>) with teeth to avoid turning when mounted
LM2T A161	black	reduction ring to mount Ø22 mm through Ø30 mm hole
LM2T A200	black	socket spanner for actuator fixing ring tightening

Rubber boots for flush pushbutton actuators

LPX AU132	black	boot	rubber protection boot for flush pushbutton actuators
LPX AU133	green	boot	rubber protection boot for flush pushbutton actuators
LPX AU134	red	boot	rubber protection boot for flush pushbutton actuators
LPX AU135	yellow	boot	rubber protection boot for flush pushbutton actuators
LPX AU136	blue	boot	rubber protection boot for flush pushbutton actuators
LPX AU137	t/parent	boot	rubber protection boot for flush pushbutton actuators
LPX AU157	t/parent	boot	rubber protection boot for double/triple p/button actuators

DIN rail mount adaptor for control devices

To mount Ø22 mm control devices on DIN rail fits into standard distribution boards (45 mm cut-out)

LPX DIN	grey	DIN rail mounting adaptor for Ø22 mm pushbuttons
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LPZ P1B502ZA



LPZ P2B801ZA



LPZ P3A8



LPX CB01



LPX CB10



LPZ M1A5



LPZ M1A5P



LPZ M5A8



LPZ M4A8



LPZ M2A8



LPZ M6E8



Polycarbonate pushbutton control stations

IP66, IP67, IP69K

- New styling with incorporated anti-rotation facility for actuators
- M16 or M20/25 cable gland knock-outs on all sides and base
- Easy wiring with internal contact identification on cover and on base
- Contact blocks and lamp modules are base mounted with screw terminals facing forward

type	button colour	contact	cover colour	description	dimensions (mm) (H) (W) (D)		
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Complete pushbutton stations

1 hole pushbutton stations

LPZ P1B801ZA	green	1 x NO	grey	flush pushbutton station	72	72	56
LPZ P1B802ZA	red	1 x NC	grey	extended pushbutton station	72	72	56
LPZ P1B501ZA	red	1 x NC	yellow	spring ret mushroom station	72	72	56
LPZ P1B502ZA	red	1 x NC	yellow	latch mushroom twist release	72	72	56

2 hole pushbutton stations

LPZ P2B801ZA	green	1 x NO	grey	flush pushbutton station	117	72	56
	red	1 x NC	grey	extended pushbutton station			

LPZ P2B802ZA*	green	1 x NO	grey	flush pushbutton	151	72	56
	red	1 x NC	grey	latch mushroom twist release			

*Taller housing (H) 151 mm to accommodate padlock shroud LPX AU158 (see page D-5)

3 hole pushbutton stations

LPZ P3B802ZA	green	1 x NO	grey	flush pushbutton	151	72	56
	red	1 x NC	grey	extended pushbutton			
	green	1 x NO	grey	flush pushbutton			

Empty enclosures (without actuators and contact blocks)

IP66, IP67, IP69K

type	holes	rows	cover	description	(H)	(W)	(D)
LPZ P1A5	1 hole	1	yellow	empty polycarb pushbutton station	72	72	56
LPZ P1A8	1 hole	1	grey	empty polycarb pushbutton station	72	72	56
LPZ P2A8	2 hole	1	grey	empty polycarb pushbutton station	117	72	56
LPZ P3A8	3 hole	1	grey	empty polycarb pushbutton station	151	72	56
LPZ P4A8	4 hole	1	grey	empty polycarb pushbutton station	186	72	56
LPZ P5A8	5 hole	1	grey	empty polycarb pushbutton station	220	72	56
LPZ P6A8	6 hole	1	grey	empty polycarb pushbutton station	256	72	56

Base mounting contact blocks and indicating modules for above stations

LPX CB10	green	1 x NO	base mount screw terminal contact block for above stations
LPX CB01	red	1 x NC	base mount screw terminal contact block for above stations

LPX LPBB*	* 12-30 VAC/DC	base mount LED integrated lamp module for above stations
LPX LPBM*	* 185-265 VAC	base mount LED integrated lamp module for above stations

* Replace with: 3 (green) / 4 (red) / 5 (yellow) / 6 (blue) / 8 (white) - for colours

Note: Base mounting contact blocks are not suitable for push on - push off actuators.

Metallic control stations (without actuators and contact blocks)

IP66, IP67

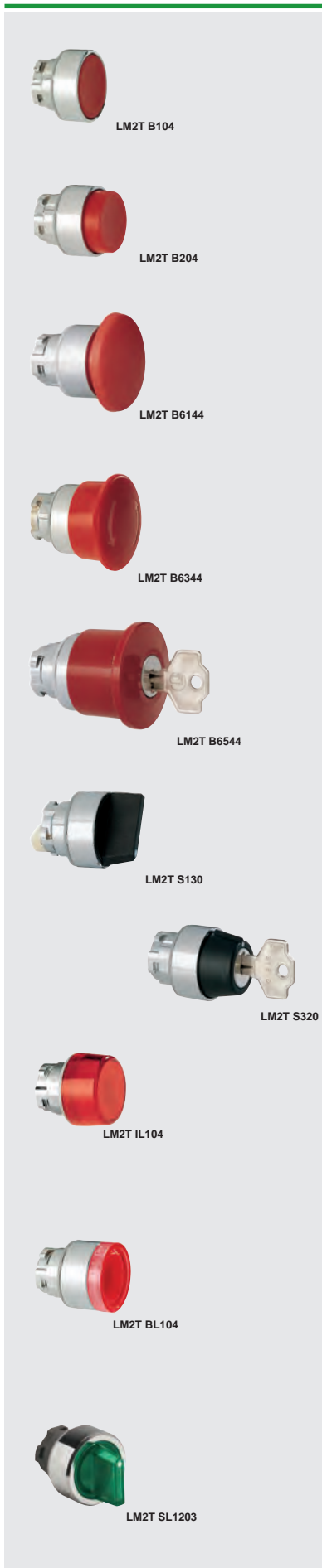
- Enclosures made of aluminium alloy suitable for pushbuttons, selector switches and pilot lights
- Cable entry Ø21 mm (for M20 or PG13.5 cable glands) - no cable entry for 8/12/16 way

LPZ M1A5	1 hole	1	yellow	industrial metal pushbutton station	80	80	73
LPZ M1A5P	1 hole	1	yellow	p/button station (with half shroud)	80	80	73
LPZ M1A8	1 hole	1	grey	industrial metal pushbutton station	80	80	73
LPZ M2A8	2 hole	1	grey	industrial metal pushbutton station	130	80	73
LPZ M3A8	3 hole	1	grey	industrial metal pushbutton station	170	80	73
LPZ M4A8	4 hole	1	grey	industrial metal pushbutton station	170	80	73
LPZ M5A8	5 hole	1	grey	industrial metal pushbutton station	230	80	73
LPZ M6A8	6 hole	1	grey	industrial metal pushbutton station	230	80	73
LPZ M8CA8	8 hole	2 x 4	grey	industrial metal pushbutton station	160	160	90
LPZ M12CA8	12 hole	3 x 4	grey	industrial metal pushbutton station	170	190	90
LPZ M16CA8	16 hole	4 x 4	grey	industrial metal pushbutton station	190	250	90

Empty metallic housings (without any holes)

IP66, IP67

LPZ M1E8	-	-	grey	empty aluminium alloy housing only	80	80	73
LPZ M2E8	-	-	grey	empty aluminium alloy housing only	130	80	73
LPZ M3E8	-	-	grey	empty aluminium alloy housing only	170	80	73
LPZ M5E8	-	-	grey	empty aluminium alloy housing only	160	160	90
LPZ M6E8	-	-	grey	empty aluminium alloy housing only	170	190	90
LPZ M7E8	-	-	grey	empty aluminium alloy housing only	190	250	90



Metallic series IP65 (contact block and support to be ordered separately)

type	colour	style	description		action
Pushbutton actuators					
LM2T B102	black	flush	momentary action pushbutton actuator		spring return
LM2T B103	green	flush	momentary action pushbutton actuator		spring return
LM2T B104	red	flush	momentary action pushbutton actuator		spring return
LM2T B105	yellow	flush	momentary action pushbutton actuator		spring return
LM2T B106	blue	flush	momentary action pushbutton actuator		spring return
LM2T B204	red	extended	momentary action pushbutton actuator		spring return
LM2T Q202*	black	extended	alternate action (<i>push on-push off</i>) actuator		alternate
LM2T Q203*	green	extended	alternate action (<i>push on-push off</i>) actuator		alternate
LM2T Q204*	red	extended	alternate action (<i>push on-push off</i>) actuator		alternate
LM2T Q205*	yellow	extended	alternate action (<i>push on-push off</i>) actuator		alternate
LM2T Q206*	blue	extended	alternate action (<i>push on-push off</i>) actuator		alternate
Mushroom head pushbutton actuators					
LM2T B6144	red	Ø40 mm	mushroom head pushbutton actuator		spring return
LM2T B6164	red	Ø60 mm	mushroom head pushbutton actuator		spring return
LM2T B6344	red	Ø40 mm	latching mushroom head p/button actuator		twist release
LM2T B6544	red	Ø40 mm	latching mushroom head p/button actuator		key release
Selector switch actuators					
LM2T S120	black	2 position	O - I	selector switch actuator	–
LM2T S121	black	2 position	O - I	selector switch actuator	from R
LM2T S130	black	3 position	I - O - II	selector switch actuator	–
LM2T S131	black	3 position	I - O - II	selector switch actuator	from L+R
LM2T S133	black	3 position	I - O - II	selector switch actuator	from R
Key switch actuators					
				key release	spring return
LM2T S320	black	2 position	(O-I) Left	key switch actuator	–
LM2T S321	black	2 position	(O-I) L+R	key switch actuator	–
LM2T S340	black	2 position	(O-I) Left	key switch actuator	from Right
LM2T S330	black	3 position	(I-O-II) Centre	key switch actuator	–
LM2T S331	black	3 position	(I-O-II) L+C+R	key switch actuator	–
LM2T S370	black	3 position	(I-O-II) Centre	key switch actuator	from L+R
Illuminated control and signalling devices					
Pilot light head					
LM2T IL103	green	illuminated	pilot light head (<i>with diffuser</i>)		pilot light
LM2T IL104	red	illuminated	pilot light head (<i>with diffuser</i>)		pilot light
LM2T IL105	yellow	illuminated	pilot light head (<i>with diffuser</i>)		pilot light
LM2T IL106	blue	illuminated	pilot light head (<i>with diffuser</i>)		pilot light
LM2T IL107	t/parent	illuminated	pilot light head (<i>with diffuser</i>)		pilot light
Illuminated pushbuttons (<i>with side visibility</i>)					
LM2T BL103	green	extended	momentary action illuminated actuator		spring return
LM2T BL104	red	extended	momentary action illuminated actuator		spring return
LM2T BL105	yellow	extended	momentary action illuminated actuator		spring return
LM2T BL106	blue	extended	momentary action illuminated actuator		spring return
LM2T BL107	t/parent	extended	momentary action illuminated actuator		spring return
Illuminated alternate action pushbutton actuators (<i>push "ON" - push "OFF"</i>)					
LM2T QL203*	green	extended	alternate action illuminated actuator		alternate
LM2T QL204*	red	extended	alternate action illuminated actuator		alternate
LM2T QL205*	yellow	extended	alternate action illuminated actuator		alternate
LM2T QL206*	blue	extended	alternate action illuminated actuator		alternate
LM2T QL207*	t/parent	extended	alternate action illuminated actuator		alternate
Illuminated selector switch actuators					
LM2T SL1203	green	2 position	illuminated selector switch actuator		O - I
LM2T SL1204	red	2 position	illuminated selector switch actuator		O - I
LM2T SL1303	green	3 position	illuminated selector switch actuator		I - O - II

* Note: Only use contact block **LM2T C10A** or **LM2T C01**



LM2T AU120



LM2T C10



LM2T C01



LM2T LB...



LM2T AU113



LM2T J200



LM2T J400

Metallic series IP65 (contact block and support to be ordered separately)

type	colour	supply	description	for
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Contact elements and supports for metallic series control devices

Contact block support for metal series LM2T... only (can support up to 6 contact blocks)

LM2T AU120 – 3-way contact block support for metal series actuators LM2T...

Contact elements (screw terminal) - clip-on to **LM2T AU120** support (above)

	contact				
LM2T C10	1 x NO	standard	green	contact block for control devices	LM2T...
LM2T C10A	1 x NO	early make	green	contact block for control devices	LM2T...
LM2T C01	1 x NC	standard	red	contact block for control devices	LM2T...
LM2T C01D	1 x NC	late break	red	contact block for control devices	LM2T...
LPX A140		action plug	black	using central pos. on actuators	LM2T...

Note: Only use **LM2T C10A** or **LM2T C01** for push on - push off actuators

LED integrated lamp holder (100.000 hour life)

LM2T LB3	green	12 - 30 VAC/DC	LED integrated steady lamp module	LM2T...
LM2T LB4	red	12 - 30 VAC/DC	LED integrated steady lamp module	LM2T...
LM2T LB5	yellow	12 - 30 VAC/DC	LED integrated steady lamp module	LM2T...
LM2T LB6	blue	12 - 30 VAC/DC	LED integrated steady lamp module	LM2T...
LM2T LB8	white	12 - 30 VAC/DC	LED integrated steady lamp module	LM2T...
LM2T LM3	green	185 - 265 VAC	LED integrated steady lamp module	LM2T...
LM2T LM4	red	185 - 265 VAC	LED integrated steady lamp module	LM2T...
LM2T LM5	yellow	185 - 265 VAC	LED integrated steady lamp module	LM2T...
LM2T LM6	blue	185 - 265 VAC	LED integrated steady lamp module	LM2T...
LM2T LM8	white	185 - 265 VAC	LED integrated steady lamp module	LM2T...

Legend plates and labels for Ø22 mm LM2T metallic actuators

For metallic series - in order to maintain the IP rating

LM2T AU100	black	holder	legend holder for LM2TAU206 labels	12 mm (H)
LM2T AU206	silver	engraveable	adhesive label insert for above holder	12 mm (H)
LM2T AU206EN	silver	engraved	label (provide required engraving)	12 mm (H)
34102/PS	black	holder	legend holder for LM2TAU108 labels	15 mm (H)
LM2T AU108	silver	engraveable	clip-in label insert for above holder	15 mm (H)
LM2T AU108EN	silver	engraved	label (provide required engraving)	15 mm (H)

Emergency labels (to be mounted behind mushroom pushbuttons)

LM2T AU113	yellow	"emergency stop" plastic label/disc for pushbuttons	Ø90 mm
LM2T AU115	yellow	"emergency stop" plastic label/disc for pushbuttons	Ø60 mm

Joystick controllers

type	contacts	direction	description	action
LM2T J200	2 NO	2	(up/down) joystick actuator	spring return
LM2T J201	2 NO	2	(up/down) joystick actuator	stay put
LM2T J400	4 NO	4	(up/down/left/right) joystick actuator	spring return
LM2T J401	4 NO	4	(up/down/left/right) joystick actuator	stay put

For above joystick controllers

LM2T AU101	black	2/4 direction	legend holder for joystick controllers	
LM2T AU206	silver	engraveable	adhesive label insert for above holder	12 mm (H)
LM2T AU206EN	silver	engraved	label (provide required engraving)	12 mm (H)



GX16...



GX32...U25



GX16 52U

new



GXM6

GX series - Rotary cam switches

type	poles	contact rating		description	action
		AC1 (A)	AC23A (kW at 400V)		
<p>• 16A/20A switches (std. 48 x 48 mm), 32A/40A switches (std. 65 x 65 mm) front plate</p>					
ON/OFF switches					
GX16 90U	1 pole	16 A	5.5 kW	on-off switch	(O-I)
GX16 91U	2 pole	16 A	5.5 kW	on-off switch	(O-I)
GX16 10U	3 pole	16 A	5.5 kW	on-off switch	(O-I)
GX16 92U	4 pole	16 A	5.5 kW	on-off switch	(O-I)
GX20 90U	1 pole	20 A	7.5 kW	on-off switch	(O-I)
GX20 91U	2 pole	20 A	7.5 kW	on-off switch	(O-I)
GX20 10U	3 pole	20 A	7.5 kW	on-off switch	(O-I)
GX20 92U	4 pole	20 A	7.5 kW	on-off switch	(O-I)
GX32 90U	1 pole	32 A	15 kW	on-off switch	(O-I)
GX32 91U	2 pole	32 A	15 kW	on-off switch	(O-I)
GX32 10U	3 pole	32 A	15 kW	on-off switch	(O-I)
GX32 92U	4 pole	32 A	15 kW	on-off switch	(O-I)
GX40 90U	1 pole	40 A	18.5 kW	on-off switch	(O-I)
GX40 91U	2 pole	40 A	18.5 kW	on-off switch	(O-I)
GX40 10U	3 pole	40 A	18.5 kW	on-off switch	(O-I)
GX40 92U	4 pole	40 A	18.5 kW	on-off switch	(O-I)
ON/OFF isolators with padlockable red/yellow operating handle					
GX16 10U25	3 pole	16A	5.5kW	main isolator	(O-I)
GX16 92U25	4 pole	16A	5.5kW	main isolator	(O-I)
GX32 10U25	3 pole	32A	15kW	main isolator	(O-I)
GX32 92U25	4 pole	32A	15kW	main isolator	(O-I)
Changeover switches with "OFF" position					
GX16 51U	1 pole	16 A	5.5 kW	changeover switch	(I-O-II)
GX16 52U	2 pole	16 A	5.5 kW	changeover switch	(I-O-II)
GX16 53U	3 pole	16 A	5.5 kW	changeover switch	(I-O-II)
GX16 75U	4 pole	16 A	5.5 kW	changeover switch	(I-O-II)
GX20 51U	1 pole	20 A	7.5 kW	changeover switch	(I-O-II)
GX20 52U	2 pole	20 A	7.5 kW	changeover switch	(I-O-II)
GX20 53U	3 pole	20 A	7.5 kW	changeover switch	(I-O-II)
GX20 75U	4 pole	20 A	7.5 kW	changeover switch	(I-O-II)
GX32 51U	1 pole	32 A	15 kW	changeover switch	(I-O-II)
GX32 52U	2 pole	32 A	15 kW	changeover switch	(I-O-II)
GX32 53U	3 pole	32 A	15 kW	changeover switch	(I-O-II)
GX32 75U	4 pole	32 A	15 kW	changeover switch	(I-O-II)
GX40 51U	1 pole	40 A	18.5 kW	changeover switch	(I-O-II)
GX40 52U	2 pole	40 A	18.5 kW	changeover switch	(I-O-II)
GX40 53U	3 pole	40 A	18.5 kW	changeover switch	(I-O-II)
GX40 75U	4 pole	40 A	18.5 kW	changeover switch	(I-O-II)
Changeover switches without "OFF" position					
GX16 54U	1 pole	16 A	5.5 kW	changeover switch	(I-II)
GX16 55U	2 pole	16 A	5.5 kW	changeover switch	(I-II)
GX16 56U	3 pole	16 A	5.5 kW	changeover switch	(I-II)
GX16 69U	4 pole	16 A	5.5 kW	changeover switch	(I-II)
GX20 54U	1 pole	20 A	7.5 kW	changeover switch	(I-II)
GX20 55U	2 pole	20 A	7.5 kW	changeover switch	(I-II)
GX20 56U	3 pole	20 A	7.5 kW	changeover switch	(I-II)
GX20 69U	4 pole	20 A	7.5 kW	changeover switch	(I-II)
GX32 54U	1 pole	32 A	15 kW	changeover switch	(I-II)
GX32 55U	2 pole	32 A	15 kW	changeover switch	(I-II)
GX32 56U	3 pole	32 A	15 kW	changeover switch	(I-II)
GX32 69U	4 pole	32 A	15 kW	changeover switch	(I-II)
Voltmeter selector switches					
GX16 67U	–	16 A		voltmeter selector switch	ph-ph + off
GX16 66U	–	16 A		voltmeter selector switch	ph-ph/ph-n + off
Ammeter selector switches					
GX16 97U	–	16 A		ammeter selector switch	direct reading
GX16 98U	–	16 A		ammeter selector switch	for 3 CT's
Accessories for GX series cam switches					
GXM5	48 x 60 mm			front plate with legend for GX switches	16/20A
GXM6	65 x 80 mm			front plate with legend for GX switches	32/40A



227603



227622



227636

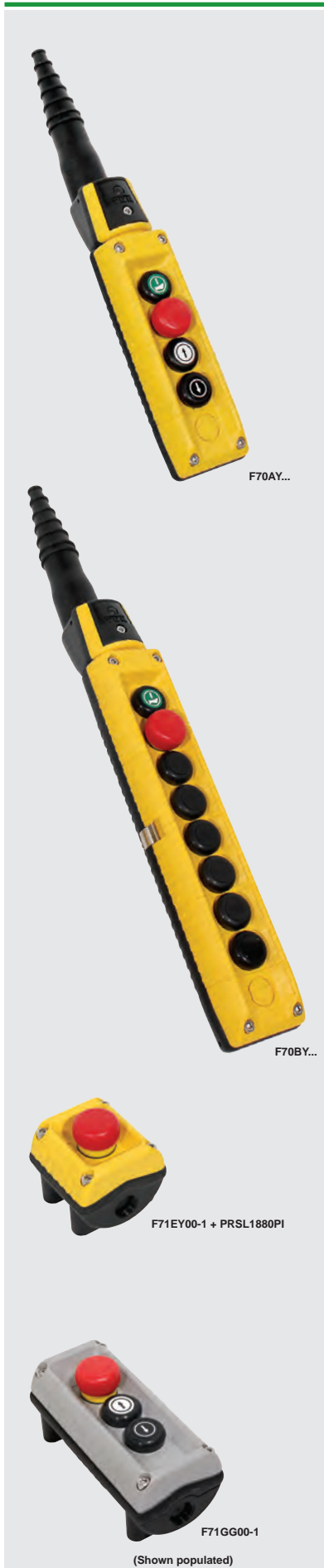


WE40

PR ONE series - Rotary cam switches

- 45° switching angle
- Forced opened contacts
- IP40 front protection, IP20 rear terminal (*finger protection*)
- Fulfills load break requirements up to 690V
- Operating temperature limits: -20°C to 70°C
- Front bezel: 48 mm □ - engraved aluminium plate with black handle
- Standards: IEC EN 60947-1, 60947-3, UL508, UL-CSA

type	contact rating		poles	description	action
	AC-21	(AC-23 at 400V)			
ON-OFF switches					
227600	16A	7.5 kW	1 pole	on-off rotary cam switch	(O-I)
227601	16A	7.5 kW	2 pole	on-off rotary cam switch	(O-I)
227602	16A	7.5 kW	3 pole	on-off rotary cam switch	(O-I)
227603	25A	11 kW	1 pole	on-off rotary cam switch	(O-I)
227604	25A	11 kW	2 pole	on-off rotary cam switch	(O-I)
227605	25A	11 kW	3 pole	on-off rotary cam switch	(O-I)
227606	32A	11 kW	1 pole	on-off rotary cam switch	(O-I)
227608	32A	11 kW	3 pole	on-off rotary cam switch	(O-I)
Change-over switches (with "OFF" position)					
227609	16A	7.5 kW	1 pole	changeover rotary cam switch	(I-O-II)
227610	16A	7.5 kW	2 pole	changeover rotary cam switch	(I-O-II)
227611	16A	7.5 kW	3 pole	changeover rotary cam switch	(I-O-II)
227612	25A	11 kW	1 pole	changeover rotary cam switch	(I-O-II)
227613	25A	11 kW	2 pole	changeover rotary cam switch	(I-O-II)
227614	25A	11 kW	3 pole	changeover rotary cam switch	(I-O-II)
227615	32A	11 kW	1 pole	changeover rotary cam switch	(I-O-II)
227616	32A	11 kW	2 pole	changeover rotary cam switch	(I-O-II)
227617	32A	11 kW	3 pole	changeover rotary cam switch	(I-O-II)
2 to 5 way switches with (with "OFF" position)					
2-way switches with OFF					
227618	16A	7.5 kW	1 pole	2-contact rotary cam switch	(O-I-II)
227619	16A	7.5 kW	2 pole	4-contact rotary cam switch	(O-I-II)
227620	16A	7.5 kW	3 pole	6-contact rotary cam switch	(O-I-II)
227624	25A	11 kW	1 pole	2-contact rotary cam switch	(O-I-II)
227625	25A	11 kW	2 pole	4-contact rotary cam switch	(O-I-II)
227626	25A	11 kW	3 pole	6-contact rotary cam switch	(O-I-II)
227630	32A	11 kW	1 pole	2-contact rotary cam switch	(O-I-II)
227631	32A	11 kW	2 pole	4-contact rotary cam switch	(O-I-II)
227632	32A	11 kW	3 pole	6-contact rotary cam switch	(O-I-II)
3-way switches with OFF					
227621	16A	7.5 kW	1 pole	3-contact rotary cam switch	O-I-2-3
227627	25A	11 kW	1 pole	3-contact rotary cam switch	O-I-2-3
4-way switches with OFF					
227622	16A	7.5 kW	1 pole	4-contact rotary cam switch	O-I-2-3-4
5-way switches with OFF					
227623	16A	7.5 kW	1 pole	5-contact rotary cam switch	O-I-2-3-4-5
Binary code switches (Ideal for VSD panels up to 11 preset positions) (set point)					
N62338A	-	-	4 pole	binary cam switch	(0-3)
N13484A	-	-	4 pole	binary cam switch	(0-5)
NR56EQ10A	-	-	4 pole	binary cam switch	(0-7)
NR51UQ10A	-	-	4 pole	binary cam switch	(0-11)
Instrument switches					
Voltmeter switch, with neutral					
227636	16A	7.5 kW	1 pole	voltmeter selector switch (ph-ph/ph-N+off)	
Ammeter switch, 3 CTs with common point					
227637	16A	7.5 kW	1 pole	ammeter selector switch (for 3 CTs)	
Accessories for above cam switches					
WE40	□ 48 mm		aluminium	engraversable blank legend plate insert	
Q048	□ 48 mm		aluminium	engraversable duty label for legend	
IF9	-		aluminium	insert for above duty label	



MIKE series - Pendant control stations

MIKE pendant stations are designed for heavy duty applications. Rubber pushbuttons guarantee total protection from dust and liquid penetration, moulded two colour button discs offer permanent, clear symbols and text. The ergonomic design, compact dimensions with antislip grooves reduce fatigue improving ease of use under any working conditions. Wiring is improved by separating the actuators (*mounted on top cover*) from the contact blocks (*fixed to the base*) with the cable inlet.

- Weather resistant materials with guaranteed protection against penetration of water and dust
- Additional actuator with up to 3 contacts can be mounted to the pendant station (*front or bottom base*)
- Operational ambient temperature limits: -40°C - +80°C
- Protection degree: IP66 / IP67 / IP69K
- Mechanical life: 10x10⁶ operations
- Insulation category: Class II
- Conformity to standards: IEC/EN 60204-1, 60947-1, 60947-5-1/5, 60529, EN418, CSA-C22.2 No 14-13, UL 508

type	no. of ways	description	reset/ alarm 2NO	Mushroom E/stop 1NC	1 speed button 1NO	2 speed button 1NO+1NO
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MIKE series single row pendant control station (IP66)

F70AY120200-2	4 way	pendant station	1	1	2	-
F70AY120002-2	4 way	pendant station	1	1	-	2
F70AY000400-1	4 way	pendant station	-	-	4	-
F70AY000202-5	4 way	pendant station	-	-	2	2
F70AY000004-1	4 way	pendant station	-	-	-	4
F70EY120400-1	6 way	pendant station	1	1	4	-
F70EY120004-1	6 way	pendant station	1	1	-	4
F70EY120202-2	6 way	pendant station	1	1	2	2
F70BY120600-2	8 way	pendant station	1	1	6	-
F70BY120006-2	8 way	pendant station	1	1	-	6
F70CY121000-2	12 way	pendant station	1	1	10	-
F70DY121200-2	14 way	pendant station	1	1	12	-

Extra charges on request, standard elements can be replaced by others (see below)

- 1/2 SPD double depression 2 speed button and contact instead of 1 speed
- 1/2 MSRM double depression 2 speed button and contact instead of mushroom + reset
- 1/1 MSRM single depression 1 speed button and contact instead of mushroom + reset

Accessories for MIKE pendants stations (above) (W) 84.5 x (D) 59.5 x (H) ↓ mm

F70AY00-1	4 way	black/yellow	empty pendant housing only	427
F70EY00-1	6 way	black/yellow	empty pendant housing only	487
F70BY00-1	8 way	black/yellow	empty pendant housing only	547
F70CY00-1	12 way	black/yellow	empty pendant housing only	667
F70DY00-1	14 way	black/yellow	empty pendant housing only	727

Also available in all black colour on request.

Victor series - Wall mounted control stations (empty housings)

Victor has been designed to facilitate wiring and maintenance. Contact blocks are installed in the base together with the cable inlet and are separated from the actuators installed on the cover, reducing time, cost of installation and maintenance down time.

- Protection degree: IP66/IP67/IP69K
- Operational ambient temp: -40°C - +80°C
- Insulation category: Class II
- Cable entry: cable clamp M20 x 1.5

type	holes	colour (top cover)	description	(W) 72.7 x (D) 61.9 x (H) ↓ mm
F71EY00-1	1 hole	yellow	empty surface mnt control station	73
F71EG00-1	1 hole	grey	empty surface mnt control station	73
F71FG00-1	2 hole	grey	empty surface mnt control station	122
F71GG00-1	3 hole	grey	empty surface mnt control station	152
F71HG00-1	4 hole	grey	empty surface mnt control station	182
F71IG00-1	6 hole	grey	empty surface mnt control station	242
F71JG00-1	8 hole	grey	empty surface mnt control station	302

Actuators - pushbuttons, selector switches on (page D-12) contact blocks (below)

Contact blocks for pendant and control stations (screw termination)

- Rated operational current 3A (AC15) / voltage 250V
 - Thermal current: 10A
 - NC contact blocks are of positive operating type
- | | | | |
|------------|------|---------------|-----------------------------|
| PRSL1800PI | 1 NO | contact block | for above control stations |
| PRSL1801PI | 1 NC | contact block | for above control stations |
| PRSL1820PI | LED | 24/48 VAC/DC | LED indicating lamp element |
| PRSL1821PI | LED | 110/230 VAC | LED indicating lamp element |

type	colour return	positions remove	description	spring return	key remove
Actuators for MIKE and VICTOR pendant stations					
PRSL1811PI	black	–	pushbutton actuator (<i>no disc</i>)	1 speed	–
PRSL1810PI	black	–	pushbutton actuator (<i>no disc</i>)	2 speed	–
PRSL1880PI	red	–	latch mushroom actuator	twist rel	–
PRSL1890PI	red	–	latch mushroom actuator	key rel	–
PRSL1885ROC	red	–	impulse mushroom actuator	–	–
PRSL1840PI	red	–	pilot light head only	–	–
PRSL1841PI	green	–	pilot light head only	–	–
PRSL1842PI	yellow	–	pilot light head only	–	–
PRSL1846PI	blue	–	pilot light head only	–	–
PRSL1856BIC	blk/wht	2 (0-1)	selector switch actuator	–	–
PRSL1862BIC	blk/wht	2 (1-2)	selector switch actuator	–	–
PRSL1858BIC	blk/wht	3 (1-0-2)	selector switch actuator	–	–
PRSL1868PI	–	2 (0-1)	key switch actuator	–	0 pos
PRSL1870PI	–	3 (1-0-2)	key switch actuator	–	0 pos
Accessories for control stations					
PRSL1850PI	interlock	mechanical interlock between two pushbuttons for pendant stations			
PRSL8512PI	spacer	pushbutton to contact block spacer (<i>required for single pushbuttons</i>)			
PRSL8750PI	support	contact block support (<i>3 contacts</i>) for additional pushbutton			
PRSL1830PI	cover	shallow protection cover for bottom mounted actuators			
PRSL1831PI	cover	deep protection cover for bottom mounted actuators			
PRTR1035PE	clip	stainless steel pendant case securing spring clip			
PRSL0145PE	sleeve	spare rubber cable sleeve for Mike pendants Ø 14 - 26 mm			
PRGA0012PE	hook	pendant hanging hook (<i>top or bottom mounting</i>)			
PRET0215PE	label	label sheet with selection of pendant symbols			
PRSL1845PI	black	blinking plug (<i>blind pushbutton</i>)			
Colour discs with symbols for control station pushbuttons					
type	background colour	symbol	description		
PRTA001MPI	green	start	symbol disc insert for control stations		
PRTA002MPI	red	stop	symbol disc insert for control stations		
PRTA003MPI	yellow	alarm	symbol disc insert for control stations		
PRTA004MPI	green	start alarm	symbol disc insert for control stations		
PRTA005MPI	white	arrow	symbol disc insert for control stations		
PRTA006MPI	black	arrow	symbol disc insert for control stations		
PRTA007MPI	white	arrow-fast	symbol disc insert for control stations		
PRTA008MPI	black	arrow-fast	symbol disc insert for control stations		
PRTA011MPI	white	arrow-2 spd	symbol disc insert for control stations		
PRTA012MPI	black	arrow-2 spd	symbol disc insert for control stations		
PRTA018MPI	black	spin left	symbol disc insert for control stations		
PRTA019MPI	white	spin right	symbol disc insert for control stations		
PRTA022MPI	black	spin left-fast	symbol disc insert for control stations		
PRTA023MPI	white	spin right-fast	symbol disc insert for control stations		
PRTA026MPI	black	spin left-2 spd	symbol disc insert for control stations		
PRTA027MPI	white	spin right-2 spd	symbol disc insert for control stations		
PRTA095MPI*	red	plain colour	symbol disc insert for control stations		
* Replace the 5 with: 6-green / 7-yellow / 9-black					
Charlie pendant control stations (IP65) double row pistol grip pendant					
type	description	m/room 1NC	reset/ alarm 2NO	1 speed 1NO+1NO + common	2 speed 1NO+1NO 1NO+com
PF39020001	2 way pendant station	–	–	2	–
PF39020002	2 way pendant station	–	–	–	2
PF39030001	3 way pendant station	1	–	2	–
PF39030002	3 way pendant station	1	–	–	2
Spares and accessories for Charlie pendants					
PRSL1000PI	contact	1 x NO	1 NO single contact element		
PRSL1001PI	contact	1 x NC	1 NC single contact element		
PRSL1002PI	contact	1 speed	1 speed double interlocked contact element		
PRSL1003PI	contact	2 speed	2 speed double interlocked contact element		
PRSL1009PI	stop		E/stop mushroom (<i>latching - twist release</i>)		

new



F661...



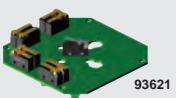
F662AL...



PRVV9035PE



PRTA0152PE



93621



PRSL0191PI

New **HERCULES** joystick controller, completely new design for applications in harsh environments. Attention to design, ergonomics, operation accuracy ensure reliability and extended mechanical life. Available with up to 5 speeds in each direction with cross or 360° movement.

- IP protection degree: IP65 (*enclosure dependant*)
- Ambient temperature: Operational -25°C/+70°C
- Mechanical life: 5 x 10⁶ operations
- Connections: Screw type terminals • Utilisation category: AC 15
- Conformity to standards: IEC/EN 60204-1, 60947-1, 60947-5-1, 61000-6-2/3

type	no. steps		movement			description
	↑ ↓	↔	360°	cross	mech. interlock	

Hercules - Version with micro switch-board (rated thermal current 8A)

- Standard version with switch board and mounted high reliability micro switches
- Knob type lever with **dead man safety** mechanically interlocked and 1CO contact
- Inductive loads: 1A 125 VAC, 0.5A 250 VAC, 1A 30 VDC
- Resistive loads: 3A 125 VAC, 2A 250 VAC, 3A 30 VDC

F661AC0110	1	0		x	x	industrial joystick controller
F661AL0111	1	1	x		x	industrial joystick controller
F661AC0220	2	0		x	x	industrial joystick controller
F661AL0222	2	2	x		x	industrial joystick controller
F661AC0330	3	0		x	x	industrial joystick controller
F661AL0331	3	1	x		x	industrial joystick controller
F661AL0332	3	2	x		x	industrial joystick controller
F661AL0333	3	3	x		x	industrial joystick controller
F661AC0440	4	0		x	x	industrial joystick controller
F661AL0441	4	1	x		x	industrial joystick controller
F661AL0442	4	2	x		x	industrial joystick controller
F661AL0443	4	3	x		x	industrial joystick controller
F661AL0444	4	4	x		x	industrial joystick controller
F661AC0550	5	0		x	x	industrial joystick controller
F661AC0551	5	1	x		x	industrial joystick controller
F661AC0552	5	2	x		x	industrial joystick controller
F661AL0553	5	3	x		x	industrial joystick controller
F661AL0555	5	5	x		x	industrial joystick controller

Hercules-CK - Version with independent switches (rated thermal current 10A)

- Knob type lever mechanically interlock and 2 x NC contacts
- Rated current: 3A 250 VAC

F662AC0220	2	0		x	x	industrial joystick controller
F662AL0333	3	3	x		x	industrial joystick controller
F662AL0444	4	4	x		x	industrial joystick controller
F662AL0551	5	1		x	x	industrial joystick controller
F662AL0555	5	5	x		x	industrial joystick controller

Accessories for Hercules joysticks (above)

PA66301	mount kit	for 1 potentiometer onto Hercules joystick controller
PA66302	mount kit	for 2 potentiometer onto Hercules joystick controller
PA66303	mount kit	for 1 potentiometer onto Hercules-CK joystick controller
PA66304	mount kit	for 2 potentiometer onto Hercules-CK joystick controller
PRVV9035PE	2.2 kΩ	Megatron potentiometer for joystick controller
PRVV9020PE	4.7 kΩ	Megatron potentiometer for joystick controller
PRVV9025PE	10 kΩ	Megatron potentiometer for joystick controller
PRTA0150PE	label	blank label/legend plate for joystick controller
PRTA0151PE	label	"lifting-traverse" label/legend plate for joystick controller
PRTA0152PE	label	"trolley-rotation" label/legend plate for joystick controller

Spares for above Hercules joystick switches

93621	switch board	3 speed (8 switches)	for Hercules joystick controller
93625	switch board	5 speed (12 switches)	for Hercules joystick controller
PRSL4540PI	switch	2 x NC	for Hercules-CK joystick controller
PRSL4541PI	2 x switches	2 x NC	for Hercules-CK joystick controller
PRSL0191PI	switch	2 x NC	interlock for Hercules-CK joystick controller
PRGU6050PE	bellows	spare rubber bellows for Hercules joystick controller	
PRSL9890PI	half guide	half cross guide for lever of joysticks (2 x required)	

Stepless proportional joystick with built-in analog actuator (resolution: 10 bit)

- Supply voltage: 12 - 48 VAC/DC
- Proportional outputs: 2 x Current 4 - 20mA (or) 2 x Voltage 0 - 5 VDC
- Directional switches: 4 x directional switches

F661EC25555002	stepless	proportional output joystick controller
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Juliet - Small sized, compact joystick for control of industrial machinery. Controllers with different configurations are made up by using standard 3 or 5 step 4 direction units with lever guides which define final movement steps. Available with up to 5 speeds in each direction with cross or 360° movement.

- Ambient temperature: Operational -25°C to +70°C
- Mechanical life: 5x 10⁶ operations
- Utilisation category: AC 15
- Rated operational current: 2 A • Thermal current: 8A
- Rated operational voltage: 48 VAC
- Conformity to standards: EN 60204-1, 60947-1, 60947-5-1



PF34...

type	no. steps		movement			description
	↕	↔	360°	cross	lever guide	

Juliet series - Joystick control switches IP65 (enclosure dependant)

PF34021004	1	0		x	9872PI	Juliet joystick controller
PF34021101	1	1	x		9871PI	Juliet joystick controller
PF34022004	2	0		x	9880PI	Juliet joystick controller
PF34022201	2	2	x		9876PI	Juliet joystick controller
PF34023004	3	0		x	9824PI	Juliet joystick controller
PF34023301	3	3	x		9826PI	Juliet joystick controller
PF34024004	4	0		x	9835PI	Juliet joystick controller
PF34023501	3	5	x		9842PI	Juliet joystick controller
PF34025501	5	5	x		9830PI	Juliet joystick controller

Replacement lever guides for other switching configurations

PRSL9873PI	2	1	lever guide	for Juliet joystick controllers
PRSL9838PI	3	1	lever guide	for Juliet joystick controllers
PRSL9841PI	3	2	lever guide	for Juliet joystick controllers
PRSL9844PI	4	1	lever guide	for Juliet joystick controllers
PRSL9845PI	4	3	lever guide	for Juliet joystick controllers
PRSL9849PI	4	4	lever guide	for Juliet joystick controllers
PRSL9839PI	5	1	lever guide	for Juliet joystick controllers
PRSL9828PI	5	2	lever guide	for Juliet joystick controllers
PRSL9825PI	5	4	lever guide	for Juliet joystick controllers

PRTR0160PE cross cross lever guide for Juliet joystick controllers

Spares for Juliet joystick controllers

93558	switch board	3 speed (8 switches)	for Juliet joystick controller
93547	switch board	5 speed (12 switches)	for Juliet joystick controller
PRSL0173PI	bellows	spare rubber bellows for Juliet joystick controllers	

Slip ring collectors Suitable for AC currents only

Slip ring collectors are sets of rings coupled with brushes designed to allow current to pass from a fixed to a rotating part. Used to supply crane motors and cable winders.

- Rated operational voltage: 400 V • Insulation voltage: 660 V
- Conformity to standards: EN 60204-1, EN60309-1, EN60529

type	current	No. of rings		description
		30A	10A	

10A series - Slip ring collectors

6.6 mm faston connections

PF21270100	10A	-	4	slip ring collector with driving slot
PF21270101	10A	-	4	slip ring collector without driving slot

30A series - Slip ring collectors

(or combined with 10A auxiliary contacts)

The 30A slip ring collectors can be supplied with additional 10A auxiliary rings. Shock resistant thermoplastic protection preventing accidental contact of live parts.

PF2304B001	30A	4	-	30A line slip ring collector
PF2306B002	30A	6	-	30A line slip ring collector
PF2309B002	30A	9	-	30A line slip ring collector

Combined 30A and 10A auxiliary rings

PF2306B003	30A	4	2	combined 30/10A slip ring collector
PF2308B001	30A	4	4	combined 30/10A slip ring collector
PF2310B001	30A	4	6	combined 30/10A slip ring collector

Additional 30A rings (up to a max. of 20 rings) price per ring (on request only)
 Additional 10A rings (up to a max. of 40 rings) price per ring (on request only)

Larger sizes 50A - 300A - 500A available on request.



PF21270100



PF21270101



PF23...



Rotary limit switches are used to control and measure movement of industrial machinery by reading the rotation angle and/or counting the number of revolutions of a shaft. They operate as an auxiliary controller for electric motors through a power interface. The switch shaft can be connected to a motor and after a preset number of revolutions the cams operate a switch.

Each cam can be set with a high accuracy due to precision cam adjusting screws.

- Utilisation category: AC 15
- Rated operational voltage: 250 V
- Operational temperature: -40°C/+80°C
- Rated current: 3A operational / 10A thermal
- Conformity to standards: EN 60204-1/35, 60947-1/5-1, 60529, CSA-C22.2 No 14-13, UL 508

type	ratio	no. micro's	description
Base series - Wormgear limit switches 1 x CO (H) 84.5 x (W) 70 x (D) 106 mm			

- Protection degree: IP42
- Mechanical life: 1x10⁶ operations
- Connections: Faston 6.3 mm

PFA9142A0015001	1:15	2	Base miniature wormgear limit switch
PFA9142A0025001	1:25	2	Base miniature wormgear limit switch
PFA9142A0050001	1:50	2	Base miniature wormgear limit switch
PFA9142A0075001	1:75	2	Base miniature wormgear limit switch
PFA9142A0103001	1:100	2	Base miniature wormgear limit switch
PFA9142A0158001	1:150	2	Base miniature wormgear limit switch

Fox / Oscar series - Wormgear limit switches 1NO + 1NC			
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- Protection degree: IP66, IP67, IP69K
- Mechanical life: 10x10⁶ operations
- Connections: Screw-type terminals with self-raising clamps

Fox series - Wormgear limit switches (H) 117 x (W) 75 x (D) 141 mm			
--	--	--	--

PFB9067L0016010	1:15	2	Fox industrial wormgear limit switch
PFB9067L0027007	1:25	2	Fox industrial wormgear limit switch
PFB9067L0062033	1:50	2	Fox industrial wormgear limit switch
PFB9067L0103037	1:100	2	Fox industrial wormgear limit switch
PFB9067L0162007	1:150	2	Fox industrial wormgear limit switch
PFB9067L0222011	1:200	2	Fox industrial wormgear limit switch
PFB9067L0254019	1:250	2	Fox industrial wormgear limit switch

Cam set and switches can be replaced with a potentiometer or encoder (below) on Fox switches/

Oscar series - Wormgear limit switches (H) 134.5 x (W) 119 x (D) 146.5 mm			
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Can be equipped with up to two cam sets (*up to 10 switches*) with potentiometers (*alone or on top of cam sets with up to 3 switches*) and Yankee absolute encoders (*on top of cam sets with up to 4 switches*)

PFC9067L0031032	1:25	2	Oscar industrial wormgear limit switch
PFC9067L0062004	1:50	2	Oscar industrial wormgear limit switch
PFC9067L0107014	1:100	2	Oscar industrial wormgear limit switch
PFC9067L0156004	1:150	2	Oscar industrial wormgear limit switch
PFC9067L0214004	1:200	2	Oscar industrial wormgear limit switch
PFC9067L0254004	1:250	2	Oscar industrial wormgear limit switch
PFC9067L0313023	1:300	2	Oscar industrial wormgear limit switch

Accessories for above Fox and Oscar switches			
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Standard cam set and switches <i>for Fox and Oscar switches</i>			
FCL20001	cam set	2	std. cam set with switches for Fox/Oscar
FCL40003	cam set	4	std. cam set with switches for Fox/Oscar

Potentiometer 10kΩ - others available on request			
PA020001	10	kΩ	potentiometer with support for Fox/Oscar

Incremental encoders Push - Pull output			
PA030001	36	pulses/rev	4.5 - 30 VDC Encoder with support
PA030002	150	pulses/rev	4.5 - 30 VDC Encoder with support

Yankee Absolute encoders 12 bit <i>4096 points per revolution</i>			
PA01AA01	current	4 - 20mA	12 - 48 VDC/AC Absolute Encoder
PA01AB01	voltage	0 - 10V	12 - 48 VDC/AC Absolute Encoder
PA01AC01	PWM	0 - 100%	12 - 48 VDC/AC Absolute Encoder

Mounting accessories for Base, Fox, Oscar limit switches			
PRSL0356PI	flange	mounting flange + screws and pins for Base/Fox/Oscar	
PRSL0981PI	coupling	coupling with pin for Base/Fox/Oscar	
PRSL0920PI	coupling	female coupling with pin for Base/Fox/Oscar	
PRSL0919PI	coupling	male coupling with pin for Base/Fox/Oscar	

new



F201120001



F202210001



PF48...



PF26755100

Position limit switches

Cross position limit switches designed to control the movement of overhead travelling cranes, hoists and complex machine tools. Choice of materials and technical solutions adopted and heads with different types of rods and movements enable use in harsh operating conditions.

- Utilisation category: AC 15
- Rated operational voltage: 250V
- Insulation voltage: 500 VAC
- Conformity to Standards: EN 60421-1, EN 60947-1, EN60947-5-1, EN60529

type	actuators	positions	micro sw	description
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Arke series - Position limit switches IP65, IP66, IP67 Class II

- Particularly suitable for use in harsh operating conditions with extreme temperature resistance.
 - Cross rods with 4 maintained positions every 90° or single rod with 65° spring return movement.
 - Enclosure and head in thermoplastic material (*Nylon reinforced with fibreglass*)

- Thermal current: 10A
- Rated operational current: 6A
- Operating temperature: -40°C to +80°C
- Mechanical life: 5 x 10⁶ operations
- Cable entry: Bottom or side (L or R) (*supplied with M20 cable gland*)
- Supplied with: 2 x (6 x 8 mm) aluminium rods (200 mm)

• Positive opening NC contacts for safety functions

F201110001	X-rod	4 (<i>fixed</i>) 90°	2NC (<i>1 staggered</i>)	stop at 180°
F201120001	X-rod	4 (<i>fixed</i>) 90°	2NC (<i>1 staggered</i>)	free rotation
F201110002	X-rod	3 (<i>fixed</i>) 90°	1NO + 1NC	position limit switch
F202210001	rod-roller	spring ret 65°	1NO + 1NC	position limit switch

Tango series - Position limit switches IP65 Class II

3 Rods with 4 maintained positions every 60° with 1NC double break slow action switches

- Thermal current: 10A
- Rated operational current: 3A
- Operating temperature: -25°C to +70°C
- Mechanical life: 1 x 10⁶ operations
- Cable entry: Bottom (*supplied with M20 cable gland*)
- Supplied with: Three 6 x 6 mm aluminium rods (300 mm)

PF48020001	X-rod	4 (<i>fixed</i>) 60°	2NC	position limit switch
PF48030001	X-rod	4 (<i>fixed</i>) 60°	3NC	position limit switch
PF48040001	X-rod	4 (<i>fixed</i>) 60°	4NC	position limit switch

X-FSC series - Position limit switches IP65 Class II

Equipped with 2 x 1NO + 1NC snap action switches
 Enclosure and head in thermoplastic material (*Nylon reinforced with fibreglass*)

- Thermal current: 10A
- Rated operational current: 3A
- Operating temperature: -25°C to +70°C
- Mechanical life: 1 x 10⁶ operations

PF33710100	T-rod	3 (<i>fixed</i>) 90°	1NO+1NC	position limit switch
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7551 series - Position limit switches IP65 Class I

Designed for the control of complex operating equipment. The choice of materials, technical solutions and ample dimensions make these switches ideal for use in strongly aggressive environments when exposed to severe operating conditions.
 Die-cast aluminium enclosure with Zama head to resist any violent impact

- Thermal current: 10A
- Rated operational current: 3A
- Operating temperature: -40°C to +70°C
- Mechanical life: 1 x 10⁶ operations

PF26755100	X-rod	4 (<i>fixed</i>) 90°	2 x 1NO+1NC	position limit switch
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P40 series - Panel mount Ø41 mm signalling devices - (mounts through Ø30 mm hole)

With multifunctional technology, permitting different selectable signalling levels via independent electric contacts.

- 4 bright LEDs, Ø41 mm domed lens 360° light diffusion with maximized frontal performance
- Mounts through Ø30 mm hole - screw terminals (*internal depth max. 37 mm*)

type	lens colour	dB @ 1m max	supply	description	dimensions (mm)	
					Ø	ext.

P40 S - Multifunctional LED signalling panel beacon (IP65)

3 alarm levels: Steady - flashing - strobe (*selectable via electrical contacts*)

91132	amber	–	12 - 24 VAC/DC	panel mnt signalling device	41	46
91133	red	–	12 - 24 VAC/DC	panel mnt signalling device	41	46
91134	green	–	12 - 24 VAC/DC	panel mnt signalling device	41	46
91152	amber	–	48 - 240 VAC	panel mnt signalling device	41	46
91153	red	–	48 - 240 VAC	panel mnt signalling device	41	46
91154	green	–	48 - 240 VAC	panel mnt signalling device	41	46

P40 A - Piezoelectric acoustic sounder - selectable continuous - intermittent sound

91177	grey	85dB	12 - 24 VAC/DC	panel mnt audible sounder	41	34
91179	grey	85dB	48 - 240 VAC	panel mnt audible sounder	41	34

P40 A LED - Combination sounder and signal beacon (IP65)

3 alarm levels : Flashing only / flashing + intermittent sound / steady light + continuous sound

91182	amber	85dB	12 - 24 VAC/DC	panel mnt sounder/beacon	41	34
91183	red	85dB	12 - 24 VAC/DC	panel mnt sounder/beacon	41	34
91202	amber	85dB	48 - 240 VAC	panel mnt sounder/beacon	41	34
91203	red	85dB	48 - 240 VAC	panel mnt sounder/beacon	41	34

OVOLUX LED - Multifunctional LED signalling beacon (IP66)

- 4 light effects: Steady - single - double - triple flash (*selectable via dip-switches*)
- Bright LEDs, Ø76 mm domed lens 360° light diffusion with maximized frontal performance
- "R" version panel mount - through 1/2" NPT (22 mm) hole with (*provided*) lock ring

38782	amber	–	12 - 24 VAC/DC	panel mount signalling device	76	69
38783	red	–	12 - 24 VAC/DC	panel mount signalling device	76	69
38784	green	–	12 - 24 VAC/DC	panel mount signalling device	76	69
38792	amber	–	90 - 240 VAC	panel mount signalling device	76	69
38793	red	–	90 - 240 VAC	panel mount signalling device	76	69
38794	green	–	90 - 240 VAC	panel mount signalling device	76	69

OVOLUX RGB - Multicolor steady light - LED beacon

- Multi-coloured: White, amber, red, yellow, green, magenta, blue (*7 colours in one beacon*)

30107	multi	–	12 - 24 VAC/DC	panel mount signalling device	76	69
30108	multi	–	90 - 240 VAC	panel mount signalling device	76	69

OVOLUX mounting accessories

27697	adaptor	for mounting Ovolux beacons onto a foot or wall mount base				
27762		surface mounting wall bracket for Ovolux (<i>requires 27697 adaptor</i>)				
27764		surface mount base with extended foot (100 mm) (<i>requires 27697 adaptor</i>)				

new

P50 series - Panel mount Ø50 mm LED signalling devices (IP68)

Multifunctional technology, permitting different selectable alarm levels via independent electric contacts. Illuminated dome (Ø50 mm) provides easy-to-see operator guidance and indication.

- Mounts through Ø22 mm standard pushbutton hole secured with (*provided*) locking ring
- 6 bright LEDs. Polycarbonate dome with 360° light-diffusion design
- **M12** 4 PIN connector (*See page K-27/28 for cable and connectors*)

P50 S - Multifunctional LED signalling panel beacon

- 7 different light effects (*steady, slow/fast flashing, double/triple flash, strobe, random flash*)

91362	amber	–	12 - 24 VAC/DC	panel mnt signalling device	50	26.5
91363	red	–	12 - 24 VAC/DC	panel mnt signalling device	50	26.5
91364	green	–	12 - 24 VAC/DC	panel mnt signalling device	50	26.5

P50 RGB - Multicolour LED panel beacon - Steady light with 7 different selectable colours

91378	multi	–	12 - 24 VAC/DC	multicoloured LED beacon	50	26.5
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P50 A - Panel mount piezoelectric acoustic sounder

- 7 different types of alarm controllable via independent electric contacts.

91367	grey	88dB	12 - 24 VAC/DC	panel mnt audible sounder	50	27.5
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P50 A LED - Combination sounder and signal beacon

91382	amber	88dB	12 - 24 VAC/DC	panel mnt sounder/beacon	50	27.5
91383	red	88dB	12 - 24 VAC/DC	panel mnt sounder/beacon	50	27.5



38603



38654



38802



90063

LED luminous devices engineered for industrial applications and machinery

type	lens colour	dB @ 1m max	supply voltage	description	dimensions (mm)	
					Ø	ext.

MICROLAMP LED - Multifunctional LED signalling beacon (IP54)

- Multi-voltage: 12/24 VAC/DC (or) 90 - 240 VAC
- 2 light effects: Steady - flashing (*selectable via terminals*)
- Surface mount **M16** cable gland entry (*excluding gland*)

38602	amber	-	12 - 24 VAC/DC	surface mnt signalling device	86	90
38603	red	-	12 - 24 VAC/DC	surface mnt signalling device	86	90
38604	green	-	12 - 24 VAC/DC	surface mnt signalling device	86	90
38622	amber	-	90 - 240 VAC	surface mnt signalling device	86	90
38623	red	-	90 - 240 VAC	surface mnt signalling device	86	90
38624	green	-	90 - 240 VAC	surface mnt signalling device	86	90

MICROLAMP LED and ACOUSTIC - LED signalling beacon (IP30)

- 2 alarm levels: Continuous sound with steady light (or) intermittent sound with flashing light

38632	amber	72	12 - 24 VAC/DC	surface mnt signalling device	86	111
38633	red	72	12 - 24 VAC/DC	surface mnt signalling device	86	111
38634	green	72	12 - 24 VAC/DC	surface mnt signalling device	86	111
38652	amber	72	90 - 240 VAC	surface mnt signalling device	86	111
38653	red	72	90 - 240 VAC	surface mnt signalling device	86	111
38654	green	72	90 - 240 VAC	surface mnt signalling device	86	111

Other colours available on request.

OVOLUX LED - Multifunctional LED signalling beacon (IP65)

- Multi-voltage: 12/24 VAC/DC (or) 90 - 240 VAC
- 4 light effects: Steady - single flash - double flash - triple flash (*selectable via dip-switches*)
- "M" version surface mount **M16** cable gland entry (*gland supplied*)
- Bright LED with maximised performance (*CDmax 35*)

38802	amber	-	12 - 24 VAC/DC	panel mount signalling device	76	69
38803	red	-	12 - 24 VAC/DC	panel mount signalling device	76	69
38812	amber	-	90 - 240 VAC	panel mount signalling device	76	69
38813	red	-	90 - 240 VAC	panel mount signalling device	76	69

Other colours available on request.

ROTALLARM S LED - Multifunctional rotating beacon (IP65)

ROTALLARM LED features a powerful multi-voltage and multifunction SMD LED electronic circuit offering outstanding performances together with the highest life expectancy in todays market. The structure guarantees high impact and vibration resistance as well as a high IP grade

- 3 light effects - **Steady light**
Flashing
Rotating (*simulates traditional rotating beacon*)

- 32 x 5050 Bright LEDs for improved visibility
- PC/ABS base with self-extinguishing polycarbonate dome
- Base mount **M20** cable gland entry (*gland supplied*)

Rotallarm LED rotating beacons (H) 212 x Ø142 mm

90061	blue	-	12 - 24 VAC/DC	multifunctional LED beacon	142	212
90062	amber	-	12 - 24 VAC/DC	multifunctional LED beacon	142	212
90063	red	-	12 - 24 VAC/DC	multifunctional LED beacon	142	212
90064	green	-	12 - 24 VAC/DC	multifunctional LED beacon	142	212
90081	blue	-	90 - 240 VAC	multifunctional LED beacon	142	212
90082	amber	-	90 - 240 VAC	multifunctional LED beacon	142	212
90083	red	-	90 - 240 VAC	multifunctional LED beacon	142	212
90084	green	-	90 - 240 VAC	multifunctional LED beacon	142	212

72692 grey - wall mounting bracket for above Rotallarm beacon

**MLINE - Multivoltage - Multifunction - Modular - Multichannel**

MLINE is a unique flexible, modular concept permitting different audio and signalling devices to be combined with facilities to mount them in the most practical way.

Different Domes (*audio, visual or both*) can be mounted on any of six different **Bases** which determine the supply voltage of the unit - **12 - 24 VAC/DC or 120 - 240 VAC**

- **LED technology** - zero maintenance built-in LED guaranteeing up to 100.000 hours of productive life



Scan to watch video

DOMES - beacons or sounders or combinations of both - require a **Base** (*see overleaf*) to complete device

type	lens colour	dB @ 1m max	description	dimensions	
				Ø	H

XLF S - Low profile beacon multifunctional LED signalling (IP66, IP68K)

- 3 selectable light effects:**
- Steady light
 - Flashing (*single-flash*)
 - Strobe effect (*5 x flash*)

Directional - Fresnel lens - (*for long distance signalisation*)

90821	blue	-	multifunctional low profile LED beacon	92	42.5
90822	amber	-	multifunctional low profile LED beacon	92	42.5
90823	red	-	multifunctional low profile LED beacon	92	42.5
90824	green	-	multifunctional low profile LED beacon	92	42.5
90826	clear	-	multifunctional low profile LED beacon	92	42.5

Proximity - Opaline lens - (*for close proximity signalisation*)

90502	amber	-	multifunctional low profile LED beacon	92	42.5
90503	red	-	multifunctional low profile LED beacon	92	42.5
90504	green	-	multifunctional low profile LED beacon	92	42.5

FLR S - Tall beacon high optical performance LED signalling (IP66)

- 24 bright LEDs permit 3 selectable luminous effects

- 3 selectable light effects:**
- Steady light
 - Flashing (*triple flash strobe effect*)
 - Rotating light (*simulates traditional rotating beacon*)

90351	blue	-	multifunctional tall LED beacon	92	108
90352	amber	-	multifunctional tall LED beacon	92	108
90353	red	-	multifunctional tall LED beacon	92	108
90354	green	-	multifunctional tall LED beacon	92	108

SIR-E - Multi-functional electronic sounder (IP65)

- High acoustic performance - adjustable volume (75 - 105 dB)
- Multi-tone 64 different sounds available (*selectable via internal dip switches*)
- 2 separate functions: pre-alarm - alarm (*controllable via separate electric contacts*)

90360	grey	105 dB	multifunction sounder (<i>64 sounds</i>)	92	62
90358	red	105 dB	multifunction sounder (<i>64 sounds</i>)	92	62

SIR-E LED S - Combination beacon and sounder (IP65)

- 3 separate functions: alert - pre-alarm - alarm (*selectable via independent electric contacts*)
- Multi-tone 64 different sounds available (*selectable via internal dip switches*)

90362	amber	105 dB	beacon and sounder (<i>64 sounds</i>)	92	62
90363	red	105 dB	beacon and sounder (<i>64 sounds</i>)	92	62

SIR-E LED MAX - Combination beacon and power sounder

90563	red	115 dB	beacon and sounder (<i>64 sounds</i>)	92	88
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SIR-E LED JUNIOR - Econo combination beacon/sounder

- 2 lighting effects: Steady - flashing

90402	amber	100 dB	beacon and sounder (<i>16 sounds</i>)	92	62
90403	red	100 dB	beacon and sounder (<i>16 sounds</i>)	92	62
90404	green	100 dB	beacon and sounder (<i>16 sounds</i>)	92	62



MLINE - Multi-voltage - Multifunction - Modular - Multichannel

BASES - for **MLINE** beacons or sounders or combinations of both, provide a number of mounting options. on any of six different **BASES** which determine the supply voltage of the unit **12 - 24 VAC/DC** or **120 - 240 VAC**

type	base		supply voltage	description	dimensions (mm)	
	colour				Ø	height
SHALLOW compact low profile surface mount bottom cable entry						
90367	grey	LT	12 - 24 VAC/DC	shallow base for MLine domes	92	21
90343	red	LT	12 - 24 VAC/DC	shallow base for MLine domes	92	21
DEEP surface mount base with 2 x M20 side knockouts and compression glands						
90368	grey	LT	12 - 24 VAC/DC	deep base for MLine domes	92	46
90345	red	LT	12 - 24 VAC/DC	deep base for MLine domes	92	46
90369	grey	HT	120 - 240 VAC/DC	deep base for MLine domes	92	46
90827*	grey	HT	120 - 240 VAC/DC	deep base for MLine domes	92	46
WALL lateral wall mount base with 2 x M20 knockouts						
90370	grey	LT	12 - 24 VAC/DC	wall base for MLine domes	115	61
90347	red	LT	12 - 24 VAC/DC	wall base for MLine domes	115	61
90371	grey	HT	120 - 240 VAC/DC	wall base for MLine domes	115	61
90828*	grey	HT	120 - 240 VAC/DC	wall base for MLine domes	115	61
POLE pole mount base for 1" or 1/2" NPT threaded pole						
90610	grey	LT	12 - 24 VAC/DC	pole mnt base for MLine domes	92	66
90612	grey	HT	120 - 240 VAC/DC	pole mnt base for MLine domes	92	66
90623*	grey	HT	120 - 240 VAC/DC	pole mnt base for MLine domes	92	66
FLUSH flush mount base for applications requiring low visual, discrete aesthetics						
90375	white	LT	12 - 24 VAC/DC	flush base for MLine domes	146	71
90376	white	HT	120 - 240 VAC/DC	flush base for MLine domes	146	71
DOUBLE wall mount base accommodates 2 x warning and/or signalling devices						
90372	grey	LT	12 - 24 VAC/DC	double base for MLine domes	120	97
90373	red	LT	12 - 24 VAC/DC	double base for MLine domes	120	97
90512	grey	HT	120 - 240 VAC/DC	double base for MLine domes	120	97

* Junior economical base only permits one function to be selected

Stainless steel protection grids (heavy duty) for MLINE beacons and sounders

type	size	SHALLOW Base		DEEP Base	
		12 - 24 VAC/DC		12 - 24 VAC/DC ; 120 - 240 VAC/DC	
90557	size 0 for	XLF S		-	
90551	size 1 for	SIR-E / SIR-E LED		XLF S	
90552	size 2 for	SIR-E MAX/ SIR-E LED MAX		SIR-E / SIR-E LED	
90553	size 3 for	FLR / SLR		SIR-E MAX/ SIR-E LED MAX	
90554	size 4 for	-		FLR S / SLR S	



TLINE LED series - Industrial traffic lights

TLINE traffic lights (*based on MLINE philosophy*) provide reliable signalling and versatile solutions for parking and access control. LED technology offers much longer product life and the self-extinguishing polycarbonate body guarantees high impact resistance suitable for indoor or outdoor applications.

- 3 luminous effects: steady light, flashing light, strobe effect (*controllable via separate contacts*)

type	body	supply	colours	description
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TLINE LED series - Industrial traffic lights (IP66)

TLINE 2 XLF 2 light - traffic signal (green/red) (H) 231 x (W) 120 x (D) 133 mm

69786	grey	12 - 24 VAC/DC	red/green	2 way industrial LED traffic light
69787	grey	120 - 240 VAC/DC	red/green	2 way industrial LED traffic light

TLINE 3 XLF 3 light - traffic signal (green/amber/red) (H) 342 x (W) 120 x (D) 133 mm

69788	grey	12 - 24 VAC/DC	red/amber/green	3 way industrial LED traffic light
69789	grey	120 - 240 VAC/DC	red/amber/green	3 way industrial LED traffic light

Accessories for above traffic lights

69784	silver	wall bracket	swivel type wall mount bracket for TLINE traffic lights	
69785	1/2"	NPT adaptor	adaptor (<i>required for pole mounting of traffic light</i>)	
27765	grey	pole mount	base with stainless steel pole	(L) 424 mm
27766	grey	pole mount	base with stainless steel pole	(L) 1240 mm

E-LITE LED series - Economic steady light beacon Ø70 mm (IP66)

Basic economical signal light with LED steady light indication. Opaline dome is illuminated in the colour of internal LED's.

- Opaline (*no colour dome*)
- **M12** - 4pin plug connection
- Mounting: 3 hole in-base (*excluding screws*)
- Integrated mounting base (*3 mounting holes 120°*)
- Integrated LED steady light modules (*other luminous effects via PLC*)

28241	grey	24 VDC	blue	econo LED steady signal light
28242	grey	24 VDC	amber	econo LED steady signal light
28243	grey	24 VDC	red	econo LED steady signal light
28244	grey	24 VDC	green	econo LED steady signal light
28246	grey	24 VDC	clear	econo LED steady signal light

Accessories for above E-LITE

type	gender	pins	term.	plug angle	nominal current	voltage AC/DC	description
120104-02-022	female	4	screw	straight	4A	250V	M12 connector
120104-02-024	female	4	screw	90°	4A	250V	M12 connector
				colour	cable length		
120104-06-053	female	4	black	straight	2 met.	250V.	M12 sensor cable
120104-06-061	female	4	black	straight	5 met.	250V	M12 sensor cable
120104-06-017	female	4	black	90°	2 met.	250V	M12 sensor cable
120104-06-010	female	4	black	90°	5 met.	250V	M12 sensor cable

For more connectors with cable see page K-27-28

EOS series - Modular pre-assembled stacklight Ø70 mm (IP66, IP69K)

Basic economical stacklight in versions with 2 or 3 steady light modules. Offers virtually zero maintenance thanks to built-in LED technology guaranteeing up to 100.000 hours of product life.

- Integrated LED steady light modules (*other luminous effects via PLC*)
- Opaline clear lens with coloured light source permits perfect light distribution over 360°

type	body	supply	colours	description
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2 module stacklight (green/red) Ø70 x 208 mm

36901	grey	24 VDC	green/red	econo LED steady light stacklight
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3 module stacklight (green/amber/red) Ø70 x 248 mm

36900	grey	24 VDC	green/amber/red	econo LED steady light stacklight
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**Signal Towers / Stacklights (LED)**

Up to 5 light modules or 4 light modules plus 1 x acoustic module can be combined with various colours permitting a number of signalling functions with multiple installation mounting options.

type	colour	dB @ 1m max	supply voltage	description
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TWS SMD LED series - Signal towers Ø70 mm (IP66)

- Low power consumption, high vibration resistance, 100.000 hour lifetime
- Multi-functionality, excellent optical definition, improved light output (12 LED'S)

TWS BASE - Wiring base + top cover for TWS towers (H) 48 mm

27700* grey - wiring base + top cover for TWS towers

* Essential for assembly of TWS tower

TWS LED MULTI - integrated LED light module (H) 59 mm

- 4 light functions (selectable by dip switch on each module)
steady - single flash - double flash - triple flash

36501	blue	-	24 VAC/DC	multi-functional LED light module
36502	amber	-	24 VAC/DC	multi-functional LED light module
36503	red	-	24 VAC/DC	multi-functional LED light module
36504	green	-	24 VAC/DC	multi-functional LED light module
36505	yellow	-	24 VAC/DC	multi-functional LED light module
36506	white	-	24 VAC/DC	multi-functional LED light module
36521	blue	-	240 VAC	multi-functional LED light module
36522	amber	-	240 VAC	multi-functional LED light module
36523	red	-	240 VAC	multi-functional LED light module
36524	green	-	240 VAC	multi-functional LED light module
36525	yellow	-	240 VAC	multi-functional LED light module
36526	white	-	240 VAC	multi-functional LED light module

Acoustic module for above TWS towers (IP54) (H) 104 mm**TWS PZO - Piezoelectric sounder (6 tones selectable via internal dip-switch)**

27718	grey	85 dB	12 - 48 VAC/DC	acoustic module (6 sounds)
27719	grey	85 dB	110 - 240 VAC	acoustic module (6 sounds)

TWS MDA - magnetodynamic sounder (32 tones selectable via internal dip-switch)

27790	grey	105 dB	12 - 24 VAC/DC	acoustic module (32 sounds)
27793	grey	105 dB	240 VAC	acoustic module (32 sounds)

miniTWS LED series - Signal towers Ø50 mm IP66 (IP54 with sounder)

- Pre-assembled ready to install stacklights in 2 or 3 modules
- Low power consumption, high vibration resistance, 100.000 hour lifetime
- Multi-functionality two light effects: steady, flashing

Two light stacklight (green/red) (H) 221 mm

31594	grn/red	-	24 VAC/DC	LED signal tower complete
31595	grn/red	77 dB	24 VAC/DC	LED signal tower + acoustic sounder

Three light stacklight (green/amber/red) (H) 271 mm

31596	grn/amb/red	-	24 VAC/DC	LED signal tower complete
31597	grn/amb/red	77 dB	24 VAC/DC	LED signal tower + acoustic sounder

babyTWS LED series - Signal towers Ø36 mm IP65 (IP54 with sounder)

- Pre-assembled ready to install stacklights in 2 or 3 modules
- Low power consumption, high vibration resistance, 100.000 hour lifetime
- Multi-functionality, excellent optical definition

Two light stacklight (green/red) (H) 142 mm

36566	grn/red	-	24 VAC/DC	LED signal tower complete
36567	grn/red	72 dB	24 VAC/DC	LED signal tower + acoustic sounder

Three light stacklight (green/amber/red) (H) 176 mm

36568	grn/amb/red	-	24 VAC/DC	LED signal tower complete
36569	grn/amb/red	72 dB	24 VAC/DC	LED signal tower + acoustic sounder

Accessories for TWS, miniTWS and babyTWS towers

27760	mount			mounting foot for TWS (Ø88 mm)
27761	ext. post			100 mm extension stem for TWS towers
27762	bracket			wall mounting bracket for TWS towers
27763	double			wall mount bracket (double entry) for TWS towers
27777	-			mounting foot with junction box for TWS towers



ELYPS signal tower/stacklight system features modules which plug-in to each other to form specific functions, unique **oval shape (50 - 70 mm)** diameter variance depending on the viewing angle. Latest generation LED technology for highly effective indication with exceptional life. (+100.000 hours)

- Supply voltage 12/24 VDC or 120 – 240 VAC/DC (*determined by the wiring module*)
- IP65 protection (*suitable for indoor or outdoor use*)
- Light modules configurable for "steady" or various modes of "flashing"

Modular stacklights - made up from four groups of modules

- Mounting base - Wiring module - Light modules - Acoustic modules

type	colour	supply voltage	mode	description
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ELYPS WM Wiring modules *for all common wiring (determines supply voltage)*

- Permits connection of up to 7 modules - steady, flashing or sound
- Supply voltage of the system is determined by the Wiring module

LT	12 - 24 VDC	modules (<i>direct connected</i>)
HT	120 - 240 VAC/DC	modules (<i>with built-in 12/24V transformer</i>)

WM wiring module - *basic type without built-in flashing facility (includes top cover)*

32457	grey	LT	12 - 24 VAC/DC	steady	standard wiring module/base
32320	grey	HT	120 - 240 VAC	steady	standard wiring module/base

WM MULTI wiring module - *with built-in flashing facility (includes top cover)*

- Multi-functional flashing facility of each connected independent light module
- Configurable for "steady" or Single flash - Double flash - Triple flash - Strobe mode

32467	grey	LT	12 - 24 VAC/DC	flashing	multi LT wiring module/base
32326	grey	HT	120 - 240 VAC	flashing	multi LT wiring module/base

ELYPS Light modules *steady light or individual selectable flashing*

LM light module - economic, entry level LED light module with steady light

32331	blue	WM LT wiring module (24V ACDC only)	steady	plug-in steady light module
32332	amber		steady	plug-in steady light module
32333	red		steady	plug-in steady light module
32334	green		steady	plug-in steady light module
32335	yellow		steady	plug-in steady light module
32336	white		steady	plug-in steady light module

LM S - MULTI light modules - multifunctional 4 selectable light effects (*via dip-switches*)

- 2x FLASH - 3x FLASH - 5x FLASH - RANDOM (*uneven flashing pattern*)

32391	blue	according to selected wiring module	flashing	plug-in multi light module
32392	amber		flashing	plug-in multi light module
32393	red		flashing	plug-in multi light module
32394	green		flashing	plug-in multi light module
32395	yellow		flashing	plug-in multi light module
32396	white		flashing	plug-in multi light module

LM X - MULTI light modules - superbright multi-functional LED light module

- With superbright LED simulating traditional Xenon discharge lamps

32351	blue	according to selected wiring module	flashing	plug-in super brite light module
32352	amber		flashing	plug-in super brite light module
32353	red		flashing	plug-in super brite light module
32354	green		flashing	plug-in super brite light module
32355	yellow		flashing	plug-in super brite light module
32356	white		flashing	plug-in super brite light module

ELYPS Acoustic modules *to add acoustic signalisation to luminous sectors*

AM series Piezoelectric- 2 sound modes (*intermittent or continuous*)

32337	grey	acc. to wiring module	87 dB	plug-in acoustic module
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AM S series Magnetodynamic - 16 different sounds modes - adjustable volume 60 - 90 dB

32347	grey	acc. to wiring module	90 dB	plug-in acoustic module
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Mounting bases for signal towers

32357	grey	foot mounting base	for ELYPS signal towers
32377	grey	foot mount base with 10 cm ext.	for ELYPS signal towers
32367	grey	wall mounting base	for ELYPS signal towers
32387	grey	pole mounting base	for ELYPS signal towers



Industrial motor driven sirens

type	supply voltage	dB @ 1m	description	IP	run duration on	run duration off	dimensions (Ø) (H)
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MICRO W10 series - Motor driven sirens

Ideal choice for industrial applications, from general-purpose signalization to warning.

- Can be installed vertically or horizontally

42200	12 VDC	93	motor driven siren	IP42	(continuous)		84 80
42202	24 VDC	93	motor driven siren	IP42	(continuous)		84 80
42212	240 VAC	93	motor driven siren	IP42	(continuous)		90 129

CELERE series - Motor driven sirens

- Self-extinguishing PC body with high impact resistance
- Motor protection thermal circuit breaker installed on CELERE and superCELERE versions.
- Easy installation by means of the integrated fixing bracket - **M12** cable gland

mini-CELERE miniature electro-mechanical siren (300m)

42006	12 VDC	101	motor driven siren	IP43	(continuous)		91 115
42001	24 VAC/DC	101	motor driven siren	IP43	1 min. 10 min.		91 115
42005	240 VAC/DC	101	motor driven siren	IP43	1 min. 10 min.		91 115

CELERE mid sized electro-mechanical siren (500m)

42026	12 VDC	110	motor driven siren	IP43	(continuous)		118 167
42021	24 VAC/DC	110	motor driven siren	IP43	1 min. 10 min.		118 167
42025	240 VAC/DC	110	motor driven siren	IP43	1 min. 10 min.		118 167

super-CELERE large size electro-mechanical siren (1000m)

42046	12 VDC	114	motor driven siren	IP43	(continuous)		140 186
42047	24 VAC/DC	114	motor driven siren	IP43	(continuous)		140 186
42045	240 VAC/DC	114	motor driven siren	IP43	1 min. 10 min.		140 186

Electronic sirens

SE4/29 series - Modular base mount sirens

- Adjustable volume regulation and sound progression regulation
- 5 selectable sound tones
 - Continuous 1000 Hz
 - Bi-tone 600/700 Hz
 - Multi-tone 1000-1700 Hz
 - Modulated 1000-1700 Hz
 - Two-tone 440/560 Hz *for evacuation*

50415	12 - 24 VAC/DC	97	electronic siren	IP30	(selectable)		100 90
50418	240 VAC	97	electronic siren	IP30	(selectable)		100 90

SE12 series - Electronic sirens (hinged mounting bracket)

- Adjustable volume regulation and sound progression regulation
- 32 different tones (selectable via dip-switches) frequency ranges 300/2850 Hz

50424	12 - 24 VAC/DC	114	electronic siren	IP43	(selectable)		102 108
50427	240 VAC	113	electronic siren	IP43	(selectable)		130 108

SIR-TOUCH - Electronic siren super loud 120dB (IP68, IP69K)

- Unique touch programming
- 120 dB super load siren (6 programmable volume levels)
- 64 different programmable sounds
- **M12** plug-in termination
- Available with built-in LED light

SIR-TOUCH Siren only

90750	24 VDC	120	electronic siren	IP68	(selectable)		180 207
90751	85 - 265 VAC	120	electronic siren	IP68	(selectable)		180 207

SIR-TOUCH LED Siren and LED beacon (programmable for steady light, flashing light or off)

90752	24 VDC	120	electronic siren	IP68	(selectable)		180 207
90753	85 - 265 VAC	120	electronic siren	IP68	(selectable)		180 207

Accessories for SIR-TOUCH siren

90754	mount						swivel wall mount bracket for above siren
90755	mount		SE 12				swivel base mount bracket for above siren
120104-06-053	4 Pin female						M12 PUR cable for SIR-TOUCH termination 2 meter
120104-06-061	4 Pin female						M12 PUR cable for SIR-TOUCH termination 5 meter



Signal beacons Ø62 mm

Signal beacons are fundamental elements for visual and audible signalling of system status in manufacturing processes.

- IP30 with base
- IP54 without base
- Bases for various mounting solutions are supplied separately

type	colour	voltage	description
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Steady light modules BA15d fitting, direct supply (lamp not included) Ø62 mm

LB6EL* * 24V AC/DC or 230VAC direct supply steady light module

Blinking or steady light modules BA15d fitting (lamp not supplied)

LB6GLB* * 12 - 48 VAC/DC blinking light module (no lamp)

LB6GLM* * 24 - 230 VAC blinking light module (no lamp)

* Replace with: 1= orange / 3= green / 4= red / 5= yellow / 6= blue / 8= white

Bases for above signal beacons

LB6BP03 horizontal surface mount base

LB6BP05 through hole mounting Ø22 mm with locknut

LB6BP07 for extended tube connection

Signal towers Ø70 mm

(IP65)

Signal towers can be assembled by stacking up to seven modules of:

1. Up to 7 light modules (steady or blinking) less one, if a sound module is required
2. Add connection module for terminating
3. Add mounting accessories if required

- Light modules: steady light / blinking light
- Sound modules: continuous or pulsed sound

Steady light modules standard BA15d lamp filament or LED (not included)

LT7EL* * 12 - 260 VAC/DC steady light stackable module

Blinking light modules standard BA15d lamp filament or LED (not included)

LT7GLB* * 24 VAC/DC blinking light module (no lamp)

LT7GLM* * 230 VAC blinking light module (no lamp)

* Replace with: 1= orange / 3= green / 4= red / 5= yellow / 6= blue / 8= white

Sound modules (pulsed or continuous)

LT7S2B - 24 VAC/DC pulsed or continuous IP65

LT7S2M - 230 VAC pulsed or continuous IP65

Connection modules (complete with cover)

LT7CP01 black bottom entry connection module (for plastic tubes)

Accessories for beacons and signal towers (above)

LT7BP01 horizontal surface mount base with tube extension

LT7BP02 vertical wall mount base with tube extension

LT7TP0100 100 mm extension tube for base (stackable sections)

Super bright LED signal lamps BA15d (360° illumination) up to 25 000 hours

type	colour	voltage	description
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LT7ALLB4 red 24 VAC/DC BA15d LED lamp for towers

LT7ALLB3 green 24 VAC/DC BA15d LED lamp for towers

LT7ALLB5 amber 24 VAC/DC BA15d LED lamp for towers

LT7ALLB6 blue 24 VAC/DC BA15d LED lamp for towers

LT7ALLB8 white 24 VAC/DC BA15d LED lamp for towers

LT7ALLM4 red 230 VAC BA15d LED lamp for towers

LT7ALLM3 green 230 VAC BA15d LED lamp for towers

LT7ALLM5 amber 230 VAC BA15d LED lamp for towers

LT7ALLM6 blue 230 VAC BA15d LED lamp for towers

LT7ALLM8 white 230 VAC BA15d LED lamp for towers



AD16-16DSR02



AD16-16DSY22



AD16-16DSG22



AD16-16MR22



AD22-22DSR01



AD22-22DSG02



AD22-22DSB38



AD22-22DRG11

LED pilot lights (multi-chip)

- Super bright multi-chip LED pilot lights (with diffuser/legend insert)
- Shock resistant, low power consumption $\leq 20\text{mA}$
- Long life ≥ 30.000 hrs

type	lens colour	voltage $\pm 20\%$	mounting hole \varnothing	description
Ø16 mm LED pilot lights (high brightness)				<i>Lens: Ø19 x 10 - Body: L 24 mm</i>
• (IP63) (IP20 terminal protection)				
AD16-16DSR02	red	24 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSG02	green	24 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSY02	yellow	24 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSB02	blue	24 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSW02	white	24 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSR11	red	110 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSG11	green	110 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSY11	yellow	110 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSB11	blue	110 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSW11	white	110 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSR22	red	220 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSG22	green	220 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSY22	yellow	220 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSB22	blue	220 VAC/DC	Ø16 mm	panel mount LED pilot light
AD16-16DSW22	white	220 VAC/DC	Ø16 mm	panel mount LED pilot light

Self-flashing LED pilot light and electronic buzzer *Lens: Ø19 x 10 - Body: L 41.5 mm*

AD16-16MR02	red	24 VAC/DC	Ø16 mm	self-flash LED p/light + buzzer
AD16-16MR22	red	220 VAC	Ø16 mm	self-flash LED p/light + buzzer

Ø22 mm LED pilot lights (high brightness) - 4 LEDs *Lens: Ø29 x 13 mm - Body: L 39 mm*

- (IP63) (IP20 terminal protection)

AD22-22DSR01	red	12 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSG01	green	12 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSY01	yellow	12 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSB01	blue	12 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSW01	white	12 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSR02	red	24 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSG02	green	24 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSY02	yellow	24 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSB02	blue	24 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSW02	white	24 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSR11	red	110 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSG11	green	110 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSY11	yellow	110 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSB11	blue	110 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSW11	white	110 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSR22	red	220 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSG22	green	220 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSY22	yellow	220 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSB22	blue	220 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSW22	white	220 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DSR38	red	380 VAC	Ø22 mm	panel mount LED pilot light
AD22-22DSG38	green	380 VAC	Ø22 mm	panel mount LED pilot light
AD22-22DSY38	yellow	380 VAC	Ø22 mm	panel mount LED pilot light
AD22-22DSB38	blue	380 VAC	Ø22 mm	panel mount LED pilot light
AD22-22DSW38	white	380 VAC	Ø22 mm	panel mount LED pilot light

Ø22 mm Dual colour LED pilot light (IP63) *Lens: Ø29 x 13 mm - Body: L 54 mm*

- Dual light - red or green LED indication on one pilot light (white lens)

AD22-22DRG02	red/grn	24 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DRG11	red/grn	110 VAC/DC	Ø22 mm	panel mount LED pilot light
AD22-22DRG22	red/grn	220 VAC	Ø22 mm	panel mount LED pilot light

Self-flashing LED pilot light

intermittent flashing (2 Hz)

AD22-22SR02	red	24 VAC/DC	Ø22 mm	self-flashing LED pilot light
AD22-22SR22	red	220 VAC	Ø22 mm	self-flashing LED pilot light

new



AD22-22MK02



AD22-22MR02



AD22-22VMG



AD22-22VAM...



AD30-30DSG22



AD30-30MR02



RZ3A1A60S3

Panel mount control/indicating devices Ø22 mm

type	colour	voltage ± 20%	mounting hole Ø	description
Ø22 mm panel mount buzzer (IP40) Lens: Ø30 x 13 - Body: L 49 mm				
• Continuous sound buzzer (80dB 10 cm)				
AD22-22MK02	black	24 VAC/DC	Ø22 mm	panel mount buzzer
AD22-22MK22	black	220 VAC	Ø22 mm	panel mount buzzer

Combination buzzer/flushing LED pilot light

• Intermittant sound and flashing pilot light				
AD22-22MR02	red	24 VAC/DC	Ø22 mm	self-flash LED p/light + buzzer
AD22-22MR22	red	220 VAC	Ø22 mm	self-flash LED p/light + buzzer

Ø22 mm panel mount volt/amp/Hz indicators (IP63) Lens: Ø30 x 15 mm - Body: L 31 mm

AC voltmeter	20 - 500 VAC			
AD22-22VMR	red	20 - 500 VAC	Ø22 mm	voltmeter panel indicator light
AD22-22VMG	green	20 - 500 VAC	Ø22 mm	voltmeter panel indicator light
AD22-22VMY	yellow	20 - 500 VAC	Ø22 mm	voltmeter panel indicator light
AD22-22VMB	blue	20 - 500 VAC	Ø22 mm	voltmeter panel indicator light
AD22-22VMW	white	20 - 500 VAC	Ø22 mm	voltmeter panel indicator light
DC voltmeter	5 - 60 VDC			
AD22-22VBR	red	5 - 60 VDC	Ø22 mm	voltmeter panel indicator light
AD22-22VBG	green	5 - 60 VDC	Ø22 mm	voltmeter panel indicator light
AD22-22VBY	yellow	5 - 60 VDC	Ø22 mm	voltmeter panel indicator light
AD22-22VBB	blue	5 - 60 VDC	Ø22 mm	voltmeter panel indicator light
AD22-22VBW	white	5 - 60 VDC	Ø22 mm	voltmeter panel indicator light

AC ammeter	0 - 100A (with Current Transformer)			
AD22-22AM*	*	0 - 100A	Ø22 mm	ammeter panel indicator light

Combination AC volt/ammeter 20 - 500 VAC / 0 - 100A AC (with Current Transformer)

AD22-22VAM*	*	20-500 / 0-100A	Ø22 mm	volt/ammeter panel indicator light
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* Add: R (red) / G (green) / Y (yellow) / B (blue) W (white) - for colour

Ø30 mm LED pilot lights (high brightness) (IP63) Lens: Ø36.2 x 15 - Body: L 40 mm

AD30-30DSR02	red	24 VAC/DC	Ø30 mm	panel mount LED pilot light
AD30-30DSG02	green	24 VAC/DC	Ø30 mm	panel mount LED pilot light
AD30-30DSY02	yellow	24 VAC/DC	Ø30 mm	panel mount LED pilot light
AD30-30DSB02	blue	24 VAC/DC	Ø30 mm	panel mount LED pilot light
AD30-30DSW02	white	24 VAC/DC	Ø30 mm	panel mount LED pilot light
AD30-30DSR22	red	220 VAC/DC	Ø30 mm	panel mount LED pilot light
AD30-30DSG22	green	220 VAC/DC	Ø30 mm	panel mount LED pilot light
AD30-30DSY22	yellow	220 VAC/DC	Ø30 mm	panel mount LED pilot light
AD30-30DSB22	blue	220 VAC/DC	Ø30 mm	panel mount LED pilot light
AD30-30DSR38	red	380 VAC	Ø30 mm	panel mount LED pilot light
AD30-30DSG38	green	380 VAC	Ø30 mm	panel mount LED pilot light
AD30-30DSY38	yellow	380 VAC	Ø30 mm	panel mount LED pilot light
AD30-30DSB38	blue	380 VAC	Ø30 mm	panel mount LED pilot light
AD30-30DSW38	white	380 VAC	Ø30 mm	panel mount LED pilot light

Ø30 mm panel mount buzzer (IP40) Lens: Ø36.2 x 15 - Body: L 40 mm

Combination buzzer/flushing LED pilot light				
• Intermittant sound and flashing				
AD30-30MR02	red	24 VAC/DC	Ø30 mm	self-flash LED p/light + buzzer
AD30-30MR22	red	220 VAC/DC	Ø30 mm	self-flash LED p/light + buzzer

Panel mount electronic timer Ø22 mm (IP65)

Function:	On-Delay timer	Range:	0 - 60 seconds	
Mounting:	Mounts through standard Ø22.5 mm pushbutton hole			
Supply Voltage:	24 VDC			
Switching current:	200 mA			
Indication:	Facia illuminates - green during timing / red - at time lapse			
Operating temp:	-5 - +55°C			
RZ3A1A60S3	0 - 60 sec	10 - 30 VDC	Ø22 mm	on-delay panel mount analog timer



Indicator lights (panel mounting) IP67

- Body material: Nickel-plated brass
- Operating temp: -25 - +55°C

type	colour	voltage	mounting hole Ø	description
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Metallic LED panel mount pilot lights - Ø10/12/16/22 mm Panel thickness: 1 – 6 mm

Ø10 mm mounting hole *solder / push-on terminal 2.8 x 0.5 mm* **depth 29.5 mm**

GQ10T-DR24VN	red	24 VAC/DC	Ø10 mm	panel mount LED pilot light
GQ10T-DG24VN	green	24 VAC/DC	Ø10 mm	panel mount LED pilot light
GQ10T-DY24VN	yellow	24 VAC/DC	Ø10 mm	panel mount LED pilot light
GQ10T-DB24VN	blue	24 VAC/DC	Ø10 mm	panel mount LED pilot light
GQ10T-DW24VN	white	24 VAC/DC	Ø10 mm	panel mount LED pilot light
GQ10T-DR220VN	red	220 VAC/DC	Ø10 mm	panel mount LED pilot light
GQ10T-DG220VN	green	220 VAC/DC	Ø10 mm	panel mount LED pilot light
GQ10T-DY220VN	yellow	220 VAC/DC	Ø10 mm	panel mount LED pilot light
GQ10T-DB220VN	blue	220 VAC/DC	Ø10 mm	panel mount LED pilot light
GQ10T-DW220VN	white	220 VAC/DC	Ø10 mm	panel mount LED pilot light

Ø12 mm mounting hole *solder / push-on terminal 2.8 x 0.5 mm* **depth 33.2 mm**

GQ12T-DR24VN	red	24 VAC/DC	Ø12 mm	panel mount LED pilot light
GQ12T-DG24VN	green	24 VAC/DC	Ø12 mm	panel mount LED pilot light
GQ12T-DY24VN	yellow	24 VAC/DC	Ø12 mm	panel mount LED pilot light
GQ12T-DB24VN	blue	24 VAC/DC	Ø12 mm	panel mount LED pilot light
GQ12T-DW24VN	white	24 VAC/DC	Ø12 mm	panel mount LED pilot light
GQ12T-DR220VN	red	220 VAC/DC	Ø12 mm	panel mount LED pilot light
GQ12T-DG220VN	green	220 VAC/DC	Ø12 mm	panel mount LED pilot light
GQ12T-DY220VN	yellow	220 VAC/DC	Ø12 mm	panel mount LED pilot light
GQ12T-DB220VN	blue	220 VAC/DC	Ø12 mm	panel mount LED pilot light
GQ12T-DW220VN	white	220 VAC/DC	Ø12 mm	panel mount LED pilot light

Ø16 mm mounting hole *screw terminal* **depth 34 mm**

GQ16T-DLR24VN	red	24 VAC/DC	Ø16 mm	panel mount LED pilot light
GQ16T-DLG24VN	green	24 VAC/DC	Ø16 mm	panel mount LED pilot light
GQ16T-DLY24VN	yellow	24 VAC/DC	Ø16 mm	panel mount LED pilot light
GQ16T-DLB24VN	blue	24 VAC/DC	Ø16 mm	panel mount LED pilot light
GQ16T-DLW24VN	white	24 VAC/DC	Ø16 mm	panel mount LED pilot light
GQ16T-DLR220VN	red	220 VAC/DC	Ø16 mm	panel mount LED pilot light
GQ16T-DLG220VN	green	220 VAC/DC	Ø16 mm	panel mount LED pilot light
GQ16T-DLY220VN	yellow	220 VAC/DC	Ø16 mm	panel mount LED pilot light
GQ16T-DLB220VN	blue	220 VAC/DC	Ø16 mm	panel mount LED pilot light
GQ16T-DLW220VN	white	220 VAC/DC	Ø16 mm	panel mount LED pilot light

Ø22 mm mounting hole *screw terminal* **lens: Ø25 x 2.5 mm - body: L 32 mm**

GQ22T-DLR024VN	red	24 VAC/DC	Ø22 mm	panel mount LED pilot light
GQ22T-DLG024VN	green	24 VAC/DC	Ø22 mm	panel mount LED pilot light
GQ22T-DLY024VN	yellow	24 VAC/DC	Ø22 mm	panel mount LED pilot light
GQ22T-DLB024VN	blue	24 VAC/DC	Ø22 mm	panel mount LED pilot light
GQ22T-DLW024VN	white	24 VAC/DC	Ø22 mm	panel mount LED pilot light
GQ22T-DLR220VN	red	220 VAC/DC	Ø22 mm	panel mount LED pilot light
GQ22T-DLG220VN	green	220 VAC/DC	Ø22 mm	panel mount LED pilot light
GQ22T-DLY220VN	yellow	220 VAC/DC	Ø22 mm	panel mount LED pilot light
GQ22T-DLB220VN	blue	220 VAC/DC	Ø22 mm	panel mount LED pilot light
GQ22T-DLW220VN	white	220 VAC/DC	Ø22 mm	panel mount LED pilot light

Vandal-proof stainless steel pushbuttons (IP67) 5A 250 VAC

Vandal proof stainless steel pushbuttons, aesthetically pleasing, mount Ø22 mm illuminated versions feature a LED ring type illumination with clear visibility for a distance.

Termination:	Solder terminals	illumination:	LED (ring indication)
TY22C-P11M	silver momentary	Ø22 mm	1NO + 1NC pushbutton only
TY22C-P11A	silver alternate	Ø22 mm	1NO + 1NC pushbutton only

Illuminated pushbuttons (ring type LED) (momentary action)

TY22C-P11ER-02	red	24 VAC/DC	Ø22 mm	1NO + 1NC	illuminated p/button
TY22C-P11EG-02	green	24 VAC/DC	Ø22 mm	1NO + 1NC	illuminated p/button
TY22C-P11EY-02	yellow	24 VAC/DC	Ø22 mm	1NO + 1NC	illuminated p/button
TY22C-P11EB-02	blue	24 VAC/DC	Ø22 mm	1NO + 1NC	illuminated p/button
TY22C-P11EW-02	white	24 VAC/DC	Ø22 mm	1NO + 1NC	illuminated p/button
TY22C-P11ER-22	red	220 VAC	Ø22 mm	1NO + 1NC	illuminated p/button
TY22C-P11EG-22	green	220 VAC	Ø22 mm	1NO + 1NC	illuminated p/button
TY22C-P11EY-22	yellow	220 VAC	Ø22 mm	1NO + 1NC	illuminated p/button
TY22C-P11EB-22	blue	220 VAC	Ø22 mm	1NO + 1NC	illuminated p/button
TY22C-P11EW-22	white	220 VAC	Ø22 mm	1NO + 1NC	illuminated p/button

new



KN3C-1R021



KN3C-R1221



MTS-102



DS-12



AD22-POT05K



SB7-CA45R



SDL-012Y

Toggle switches

type	current lth	pos.	config	mount hole Ø	switch	description
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KN3C series - Standard toggle switches

- Rating: 20A 125 VAC / 15A 250 VAC
- Termination: 6.3 mm tab terminals
(accepts 6.3 m std power toggle switch m push-on lugs)
- Mounting: **M12** x P1.0 mm threaded collar *(mounts through Ø12.2 mm panel hole)*
- Dielectric strength: 1500 VAC *(1 minute)*
- Legend: Supplied with ON/OFF legend plate

Single pole toggle switches

KN3C-R1021	15A	2 pos	on-off	12.7 mm	SPST	std power toggle switch
KN3C-R1121	15A	2 pos	on-on	12.7 mm	SPDT	std power toggle switch
KN3C-R1122	15A	3 pos	on-off-on	12.7 mm	SPDT	std power toggle switch

Double pole toggle switches

KN3C-R1221	15A	2 pos	on-off	12.7 mm	DPST	std power toggle switch
KN3C-R1321	15A	2 pos	on-on	12.7 mm	DPDT	std power toggle switch
KN3C-R1322	15A	3 pos	on-off-on	12.7 mm	DPDT	std power toggle switch

Accessories - for above toggle switches

WP-02	boot	rubber protection boot M12 for KN3C toggle switches
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MTS series - Miniature toggle switches

- Rating: 6A 125 VAC / 3A 250 VAC
- Termination: Solder terminals (W) 2.05 mm
- Mounting: **M6** x 0.75 threaded collar *(mounts through Ø6 mm panel hole)*
- Dielectric strength: 1000 VAC *(1 minute)*
- Operating temp: -25 to +85°C

Single pole miniature toggle switches

MTS-102	3A	2 pos	on-on	6.5 mm	SPDT	miniature toggle switch
MTS-102T	3A	2 pos	on-(on)	6.5 mm	SPDT	spring return from R
MTS-103	3A	3 pos	on-off-on	6.5 mm	SPDT	centre off
MTS-103D	3A	3 pos	(on)-off-(on)	6.5 mm	SPDT	spring return from L+R
MTS-103T	3A	3 pos	on-off-(on)	6.5 mm	SPDT	spring return from R

Double pole miniature toggle switches

MTS-202	3A	2 pos	on-on	6.5 mm	SPDT	miniature toggle switch
MTS-203	3A	3 pos	on-off-on	6.5 mm	SPDT	centre off

Miniature pushbutton switch - black button

DS-12	3A	2 pos	on-(on)	6.5 mm	SPDT	spring return (<i>blk button</i>)
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Accessories - for above miniature switches

WP-01	boot	rubber protection boot for MTS miniature toggle switch
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Panel mount potentiometer Ø22 mm (IP65)

Potentiometer - (1 turn)

AD22-POT01K	black	-	0 - 1kΩ	Ø22 mm	-	panel mnt potentiometer
AD22-POT05K	black	-	0 - 5kΩ	Ø22 mm	-	panel mnt potentiometer

Econo one-piece pushbuttons Ø22 mm (IP40)

type	colour	contact	mounting hole Ø	description
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SB7-CA45R	red	1NO+1NC	Ø22 mm	one-piece flush pushbutton
SB7-CA35G	green	1NO+1NC	Ø22 mm	one-piece flush pushbutton
SB7-CA25B	black	1NO+1NC	Ø22 mm	one-piece flush pushbutton
SB7-CD25B	black	1NO+1NC	Ø22 mm	two position selector switch

Neon indicating pilot lights Ø10 mm (IP65) 6.3 mm push-on tab terminals

		voltage		
SDL-012R	red	230 VAC	Ø10 mm	panel mount neon indicator light
SDL-012G	green	230 VAC	Ø10 mm	panel mount neon indicator light
SDL-012Y	yellow	230 VAC	Ø10 mm	panel mount neon indicator light

For "push-on" female disconnect terminals for above **SDL / GQ** series (metallic pilot light- see page **D-28**) - see page **L-20**



METERING

Modular energy (kWh) meters		Lovato Socomec	E-1 E-7
Modular multimeters		Lovato Socomec	E-2 E-8
Panel mount network analysers		Lovato Socomec	E-3/4 E-9...10
Digital panel meters		Lovato	E-5...6
Digiware power monitoring systems		Socomec	E-11...15
Current transformers (CT's)		MBS EM	E-17...21 E-22
Split core current transformers (CT's)		MBS	E-21
Analog panel meters		EM	E-23
Energy management software		Lovato	E-24
Datalogger		Socomec	E-15



DMED110T1



DME120T1



DMED300T2



DMECD



EXM1001

Digital meters with LCD screen

DMED series of energy meters are digital instruments for the measurement of electrical energy consumption in single and three phase systems with direct connection or via current transformer (CT). Expandable versions of the DMED models are available with a range of expansion modules for communication and I/O etc. Typical applications include energy monitoring of individual units in shopping centres, apartments, marinas and factories.



Scan to watch video

type	input current	description	static pulse output	module width x 18 mm
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Single phase direct connection 40/63A *(modular design DIN rail mountable)*

- Rated supply voltage: 220 - 240 VAC -20...+15%
- Input current: 40/63A (*direct connection*)
- Active energy: Class 1 (IEC/EN 62053-21)
- Reactive energy: Class 2 (IEC/EN 62053-23)

DMED100T1	40A	direct connection digital energy meter	1	1
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Multi-measurements: Total and partial active, reactive energy, active, reactive power, voltage, current and power factor, hour counter

DMED110T1	40A	direct connection digital energy meter	1	1
DMED111	40A	as above with RS485 interface	-	1
DMED120T1	63A	direct connection digital energy meter	1	2
DMED121	63A	as above with RS485 interface	-	2
DMED130	63A	expandable with EXM1001 module	-	2

Three phase direct connection 80A *(modular design DIN rail mountable)*

Multi-measurements: Total and partial active, reactive energy, active, reactive power, voltage, current and power factor, hour counter.

- Graphic backlit LCD screen with 6+1 digits
- Tariff selection (*2 tariffs*)

DMED300T2	80A	3ph+N digital energy meter	2	4
DMED301	80A	3ph+N digital energy meter (RS485)	-	4

Three phase CT connection .../5A *(modular design DIN rail mountable)*

Multi-measurements: Total and partial active, reactive energy, active, reactive power, voltage, current and power factor.

- Backlit LCD screen (*128 x 80 pixels*)

DMED310T2*	/5A	3ph digital energy meter	2	4
DMED330	1/5A	3ph digital energy meter (RS485)	-	4

* Accepts **EXM...** (up to 3) plug-in optic expansion modules

Data concentrator *(modular design DIN rail mountable)*

DMECD data concentrator designed in combination with energy meters, permitting connection to (*up to 8*) devices. The concentrator is able to count static pulse outputs from the connected energy meters, storing data for viewing on its display or directly on a PC through the built-in RS485 port, using Xpress software.

- Graphic backlit LCD screen (*128 x 80 pixels*)
- 8 inputs for pulse count, expandable up to 14 using **EXM...** type expansion modules
- 8 total and 8 partial energy meters
- Built-in RS485 interface (Modbus-RTU or ASCII)
- Expandable with **EXM...** (*up to 3*) plug-in optic expansion modules (*below*)

DMECD	data concentrator for up to 8 connected energy meters	-	4
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Expansion modules for DMED310T2 and DMECD *(modular design DIN rail mountable)*

EXM1001	2 opto-isolated digital inputs and 2 relay outputs (<i>5A 250 VAC</i>)	2
EXM1010	opto-isolated USB interface	2
EXM1012	opto-isolated RS485 interface	2
EXM1013	opto-isolated Ethernet interface	2
EXM1020	opto-isolated RS485 interface and 2 relay outputs (<i>5A 250 VAC</i>)	2
EXM1030	data storage, clock-calendar (RTC) with backup for data logging	2



DMG100



DMG200



DMG300



EXM1001



EXM1010

DMG series digital multimeters and power analysers are equipped with a digital LCD display providing extremely clear, intuitive and flexible viewing of all electrical parameters in an installation. DMG digital multimeters in a modular housing (4 modules wide).

- Modular DIN rail mounting (*aligns with standard MCB 45 mm cutout*)
- Accuracy:

Voltage/Current:	±0.5%	(<i>True RMS measurements</i>)
Power:	±1% f.s.	
Frequency:	±0.05%	
Active energy:	Class 1 (IEC/EN 62053-21)	
Reactive energy:	Class 2 (IEC/EN 62053-23)	

Main measurements:

- Voltage: phase, line and system values
- Current: phase values (*neutral current calculated*)
- Power: apparent, active and reactive phase and total values
- Power Factor (PF) per phase and total
- Frequency of measured voltage value
- HIGH-LOW-AVERAGE value functions of all measurements
- Maximum demand of power and current values
- Asymmetric voltage and current
- Energy meters for active, reactive and apparent values
- Bidirectional (*import and export of active reactive energy*)

type	description	module width x 18 mm								
DMG100 series - LCD multimeters <i>economical with icon LCD display</i>										
	<ul style="list-style-type: none"> • Auxiliary power supply: 100 - 240 VAC / 120 - 250 VDC • Input current: CT - 1A or 5A • Voltage measurement: 50 - 720 VAC L-L • Harmonic analysis of V and I up to the 15th order 									
DMG100	modular power analyser	4								
DMG110	modular power analyser with RS485 interface	4								
DMG200 series - LCD multimeters <i>with graphic backlight LCD display</i>										
	<p><i>As above DMG 100 but with following additional features:</i></p> <ul style="list-style-type: none"> • Input current: CT - 5A • Voltage measurement: 20 - 830 VAC L-L 									
DMG200	modular power analyser	4								
DMG210	modular power analyser with RS485 interface	4								
DMG300 series (expandable) <i>with graphic backlight LCD display</i>										
	<p><i>As above DMG 200 but with following additional features:</i></p> <ul style="list-style-type: none"> • Input current: CT - 1A or 5A • Voltage measurement: 20 - 830 VAC L-L / 10-480 VAC L-N • Optional communication ports: USB, RS232, RS485, Ethernet • Harmonic analysis of voltage and current up to the 31° order • Energy meters for active, reactive, apparent power with programmable tariff function <table style="display: inline-table; vertical-align: top; margin-left: 20px;"> <tr> <td>Accuracy: Voltage/current</td> <td>±0.2%</td> </tr> <tr> <td>Power/power factor</td> <td>±0.5%</td> </tr> <tr> <td>Frequency</td> <td>±0.05%</td> </tr> <tr> <td>Active energy</td> <td>class 0.5S (IEC/EN 62053-22)</td> </tr> </table>	Accuracy: Voltage/current	±0.2%	Power/power factor	±0.5%	Frequency	±0.05%	Active energy	class 0.5S (IEC/EN 62053-22)	
Accuracy: Voltage/current	±0.2%									
Power/power factor	±0.5%									
Frequency	±0.05%									
Active energy	class 0.5S (IEC/EN 62053-22)									
DMG300*	modular power analyser	4								
	<i>* Accepts EXM...(up to 3) plug-in optic expansion modules</i>									
Expansion modules and accessories for DMG300										
EXM8004	sealable terminal cover for DMG100/110/200/210/300	2								
EXM1001	2 opto-isolated digital inputs and 2 relay outputs (5A 250 VAC)	2								
EXM1010	opto-isolated USB interface	2								
EXM1012	opto-isolated RS485 interface	2								
EXM1013	opto-isolated Ethernet interface	2								
EXM1020	opto-isolated RS485 interface and 2 relay outputs (5A 250 VAC)	2								
EXM1030	data storage, clock-calendar (RTC) with backup for event logging	2								

new



DMG500

new



DMG611...



DMG700



DMG800

Flush mounting digital metering instruments (96 x 96 mm)

The **DMG range** of digital multimeters are capable of viewing electrical measurements with high accuracy permitting complete control of distribution networks. The meters feature an extended power supply voltage range, high measurement accuracy, expendability and a graphic interactive interface for simple use.

Main measurement functions include: True RMS measurements of voltage and current values

- HIGH-LOW-AVERAGE value functions for all measurements
- Maximum demand of power and current values
- Energy meters for active, reactive, apparent partial and total values
- Hour counter for programmable total and partial hours
- Current input : CT - 1A or 5A
- Power: apparent/active/reactive: ±1% f.s. - phase and total values
- Frequency measurement range 45...66Hz: ±0.05%
- Harmonic distortion (THD) Voltage and Current: Up to the 15^o order
- Active energy: Class 1 (IEC/EN 62053-21)
- Reactive energy: Class 2 (IEC/EN 62053-23)
- P.F. Power Factor (*per phase and total*): ±0.5%

type	RS485 serial port	optical port	description	expansion slots
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DMG500 - "Econo" multi measurement instrument with backlit LCD icon display

Auxiliary power supply: 100...240 VAC
Voltage measurement range: 480 VAC (50/60 Hz)

DMG500	no	no	"econo" digital p/mount power analyser	-
DMG510	yes	no	"econo" digital p/mount power analyser	-

DMG600 - Multi measurement instrument with backlit LCD icon display

As above **DMG 500** but with following additional features:

Auxiliary power supply: 100...440 VAC / 110...250 VDC
Voltage measurement: 50...720 VAC L-L
Active energy: **DMG600\610** - Class 1 \ **DMG615** - Class 0.5

DMG600	no	yes	digital panel mount power analyser	1
DMG610	yes	yes	digital panel mount power analyser	1
DMG615	yes	yes	digital panel mount power analyser	1

DMG611 - supplied with calibrated Rogowski coils

- Current reading through 3 Rogowski coils (*included*)
- Measurement range: 5...100% I_{max}

DMG611R0500*	yes	yes	25...500A power analyser with Rogowski coils	1
DMG611R3000*	yes	yes	100...3000A power analyser with Rogowski coils	1

* Accepts **EXP...** (up to 1) plug-in expansion modules

DMG700 - "Mid-range" multi measurement instrument with backlit LCD icon display

As above **DMG 600** but with following additional features:

Wide graphic LCD display
Auxiliary power supply: 100...440 VAC / 110...250 VDC
Voltage measurement: 20 - 830 VAC L-L
Pulse counter for general use: consumption pulse counting for water, gas, etc., (*with expansion module*)

DMG700*	no	no	digital panel mount power analyser	4
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* Accepts **EXP...** (up to 4) plug-in expansion modules

DMG800 - "High accuracy" multi measurement instrument with backlit LCD icon display

As above **DMG 700** but with following additional features:

Auxiliary power supply: 100...440 VAC/110...250 VDC (12-24-48 VDC for **DMG800D048**)
Harmonic analysis Up to the 31^o order (*voltage and current*)

Accuracy:	Voltage:	±0.2% (50...830 VAC)
	Current:	±0.2% (0.1...1.1In)
	Power:	±0.5% f.s.
	Power factor:	±0.5%
	Frequency:	±0.05%
	Active energy:	Class 0.5s (IEC/EN 62053-22)
	Reactive energy:	Class 2 (IEC/EN 62053-23)

DMG800	no	no	digital panel mount power analyser	4
DMG800D048	no	no	(as above but with 9 - 70 VDC supply)	4



DMG900



DMG900T



DMG900RD



EXP1004



EXP1015

Flush mounting expandable digital multimeters (96 x 96 mm)

- Graphic touch-screen LCD display for extremely simple interaction
- Rear expansion slots accept plug-in modules suitable for numerous applications
- True RMS measurements of voltage and current values

Main measurements and functions :

- Voltage: phase, phase-neutral and ground neutral-earth
- Current: phase values
- Neutral current calculated and true values
- Power: apparent, active and reactive phase and total values
- P.F. Power Factor per phase and total
- Cosφ per phase
- Frequency of measured voltage value
- Voltage and current asymmetry
- Total harmonic distortion (THD) of voltage and current
- Harmonic analysis of voltage and current up to the 63rd order
- HIGH-LOW-AVERAGE value functions for all measurements
- Maximum demand of power and current values
- Energy meters with programmable tariff functions
- Hour counter for programmable total and partial hours
- Pulse counter for consumption of water, gas, etc. (only with expansion module)
- Energy quality analysis to EN 50160 (only with expansion module)

type	description	expansion slots
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DMG900 series *Graphic touch-screen LCD display*

- Auxiliary power supply: 100 - 440 VAC /110 - 250 VDC
- Input current: CT - 1A or 5A
- Voltage measurement: 20 - 830 VAC L-L / 10 - 480 VAC L-N
- Accuracy:
 - voltage/current ±0.2%
 - power/power factor ±0.5% f.s.
 - frequency ±0.05%
 - active energy Class 0.5S (IEC/EN 62053-22)
 - reactive energy: Class 2 (IEC/EN 62053-23)

DMG900	panel mount power analyser	4
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DMG900T series *DIN rail mount measurement transducer (expandable)*

DIN rail mounting measurement transducer for chassis mounting, incorporating 4 expansion slots to accommodate expansion modules for added I/O's or communication requirements.

DMG900T	panel mount power analyser (without screen)	4
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DMG900RD	remote panel mount (96 x 96 mm) touch screen display for above DMG900T	
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Expansion modules and accessories for DMG600/700/800/900

Inputs and outputs

EXP1000	4 digital opto-isolated inputs	
EXP1001	4 static opto-isolated outputs	
EXP1002	2 digital inputs and 2 static outputs, opto-isolated	
EXP1003	2 output relays (5A 250 VAC)	
EXP1004	2 analog opto-isolated inputs	0/4 -20mA or 0-5/10V (only for DMG800/900)
EXP1005	2 analog opto-isolated outputs	0/4 -20mA or 0-5/10V (only for DMG800/900)

Communication ports

EXP1010	opto-isolated USB interface	
EXP1011	opto-isolated RS232 interface	
EXP1012	opto-isolated RS485 interface	
EXP1013	opto-isolated Ethernet interface	
EXP1014	opto-isolated Profibus-DP interface	(only for DMG800/900)
EXP1015	GPRS/GSM modem without antenna	(only for DMG900)
EXP1030	data storage, clock-calendar \ backup for data logging	(only for DMG800/900)
EXP1031	as above with energy quality (EN 50160)	(only for DMG900/900T)

Software and accessories for DMG300/700/800/900

C2	PC - RS232 connecting cable	(1.8m)
CX03	GSM Quad-band antenna for EXP1015 (850/900/1800/1900/2100MHz)	



DMK80R1



DMK81R1



DMK83R1



DMK75R1

DMK series - Modular digital monitoring devices

- Modular DIN rail mounting (3 modules – 54 mm wide)
- Auxiliary supply: 220 - 240 VAC
- Memorises minimum and maximum measured values (since last reset)
- Instantaneous or preset trip delays (0 - 900sec)
- 1 changeover relay output (8A 250 VAC)

type	description	monitored range
Voltage monitors (measures and displays single and three phase voltages)		
Overvoltage range:	Off / 102 - 120% (delay 0 - 900sec)	
Undervoltage range:	Off / 70 - 98% (delay 0 - 900sec)	
Voltage/phase loss or failure:	Off / 5 - 85% (delay 0 - 900sec)	
Programmable VT ratio :	1.00 - 500.00 (accuracy: ±0.25% f.s. ±1digit)	
DMK80R1	1-phase over/under voltage meter/monitor	15 - 660 VAC
DMK70R1	3-phase over/under voltage meter/monitor	15 - 660 VAC
DMK70	3-phase voltage meter/monitor	15 - 660 VAC
Current monitors (measures and displays single and three phase currents)		
Measurement range:	0.05A - 5.75A (CT ratio: 5 - 10.000A) ±0.5%	
Overcurrent range:	Off / 102 - 200% (delay 0 - 900sec)	
Undercurrent range:	Off / 5 - 98% (delay 0 - 900sec)	
Instantaneous tripping:	Off / 110-600%	
DMK81R1	1-phase over/under current meter/monitor	0.05A - 5.75A
DMK71R1	3-phase over/under current meter/monitor	0.05A - 5.75A
Frequency monitors (measures and displays line frequency)		
Measurement range:	15...660V / 50...60 Hz (±10%)	
DMK83R1	frequency meter/monitor	45 - 65Hz
Three-phase multi-measurement instrument		
Measurement range:		
– Voltage	Phase loss or failure: Off / 5 - 85%	35 - 660 VAC
	Maximum voltage: Off / 102 - 120%	
	Minimum voltage: Off / 70 - 98%	
	Asymmetry: Off / 2 - 20%	
	Phase sequence: Off / L1-L2-L3 / L3-L2-L1	
– Current	Current loss: Off / 2 - 100%	0.05 - 5.75A
	Maximum current: Off / 102 - 200%	
	Minimum current: Off / 5 - 98%	
	Maximum current instantaneous trip: Off / 110 - 600%	
– Power	Rated power: 1 - 10.000 kW	
	Maximum power: Off / 101 - 200%	
	Max power instantaneous trip: Off / 110 - 600%	
	Minimum power: Off / 10 - 99%	
– Frequency	Maximum frequency: Off / 101 - 110%	45 - 66Hz
	Minimum frequency: Off / 90 - 99%	
DMK75R1	3-phase multi measurement digital meter/monitor	



DMK00R1



DMK10R1



DMK01R1



DMK03R1



DMK11R1

Digital panel meters *Panel mount (H) 48 x (W) 96 mm*

- Auxiliary supply 220 - 240 VAC (others on request)
- True RMS measurements
- 0.5 current / 0.25 voltage
- Memory storage of maximum and minimum values
- Flush 96 x 48 mm panel mounting
- Programmable time delay for max, min or voltage/current loss (0 - 900 sec)

type	description	output	monitored range
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Voltmeters *(panel mounting 48 x 96 mm)*

Voltage measurement range: 15 - 660 VAC
 Operating frequency range: 45 - 65Hz
 Programmable VT ratio: 1.00 - 500.0
 Accuracy: ±0.25% f.s. ±1 digit

DMK00	single phase digital voltmeter	meter only	15-660 VAC
DMK10	three phase digital voltmeter	meter only	15-660 VAC

Voltmeter / monitor *1 c/o relay output (8A - 250VAC)* time delay

Settings	- Voltage loss or failure:	102 - 120% Ue	(0 - 900sec)
	- Maximum voltage:	5 - 85% Ue	(0 - 900sec)
	- Minimum voltage:	70 - 98Ue	(0 - 900sec)

DMK00R1	single phase digital voltage monitor	relay out	15-660 VAC
DMK10R1	three phase digital voltage monitor	relay out	15-660 VAC

Ammeters *accuracy: ± 0.5% full scale ± 1 digit*

Current measurement range: 0.05 - 5.75A
 Operating frequency range: 45 - 65Hz
 Programmable CT ratio: 5 - 10.000
 Accuracy: ±0.5% f.s. ±1 digit

DMK01	single phase digital ammeter only	meter only	0.05 - 5.75A
DMK11	three phase digital ammeter only	meter only	0.05 - 5.75A

Ammeter / monitor *1 changeover relay output* time delay

Settings	- Current loss:	Off / 2 - 100%	(0 - 900sec)
	- Maximum current:	Off / 102 - 200%	(0 - 900sec)
	- Instantaneous trip::	Off / 110 - 600%	
	- Minimum current:	Off / 5 - 98%	(0 - 900sec)

DMK01R1	single phase digital current monitor	relay out	0.05 - 5.75A
DMK11R1	three phase digital current monitor	relay out	0.05 - 5.75A

Frequency meter *accuracy: ± 1 digit*

Measurement input: 15 - 660 VAC
 Frequency measure range: 15 - 65Hz
 Accuracy: ±1 digit

DMK03	digital frequency meter only	meter only	15 - 65Hz
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Frequency meter / monitor *1 changeover relay output* time delay

Settings:	- Maximum frequency:	Off / 101 - 110%	(0.5 - 900sec)
	- Minimum frequency:	Off / 90 - 99%	(0.5 - 900sec)

DMK03R1	digital frequency monitor	relay output	15 - 65Hz
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Multi-meter *combination voltage, current, power factor*

- Voltage: ph-to-ph and ph-to-neutral values
- Current: 3 phase
- Active, reactive, apparent power and energy
- Power factor
- Frequency
- Hour counter

Voltage measurement range: 35 - 660 VAC
 Current measurement range: 0.05 - 5.75A
 Operating frequency range: 45 - 65Hz
 Programmable VT ratio: 1.00 - 500.0
 Programmable CT ratio: 5 - 10.000

DMK16	three-phase multi-meter only	meter only	multi-meter
DMK16R1	three-phase multi-meter and monitor	relay out	multi-meter



COUNTIS series - Active energy meters (kWh meters)

Energy meters are digital instruments for the measurement of electrical energy consumption in single and three phase systems with direct connection or via a current transformer (CT).

type	current	reading	RS485 modbus	dual tariff	description	width in 17.5 mm
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Single phase direct connection kWh meters (modular design DIN rail mounting)

- LCD display
- Bidirectional (*energy consumption and production*)
- Measurement accuracy: 1 %
- Rated supply voltage: 230 VAC
- Pulse output: 100Wh
- Active energy: Class 1 (IEC/EN 62053-21) Class B (EN 50470)

4850 3058	E00	40A	direct	no	no	single phase kwh meter	1
4850 3039	E03	40A	direct	yes	yes	single phase kwh meter	1
4850 3060	E11	80A	direct	no	yes	single phase kwh meter	2
4850 3043	E13	80A	direct	yes	yes	single phase kwh meter	2
4850 3047*	E17	80A	direct	no	yes	single phase kwh meter	2

* Ethernet web server embedded

Three phase direct connection kWh meters (modular design DIN rail mounting)

- Backlit LCD display
- Rated supply voltage: 230 - 400 VAC
- Pulse output: 100Wh
- Measurement accuracy: 1 %
- Bi-directional (*energy consumption and production*)
- Active energy: Class 1 (IEC/EN 62053-21) class B (EN 50470)

4850 3003	E20	63A	direct	no	no	three phase kwh meter	4
4850 3062	E21	80A	direct	no	yes	three phase kwh meter	4
4850 3050	E23	80A	direct	yes	yes	three phase kwh meter	4
4850 3054*	E27	80A	direct	no	yes	three phase kwh meter	4
4850 3005	E30	100A	direct	no	no	three phase kwh meter	7
4850 3006	E31	100A	direct	no	yes	three phase kwh meter	7
4850 3012	E33	100A	direct	yes	via com	three phase kwh meter	7

* Ethernet web server embedded

Note MID compliant devices available on request.

CT operated ...1/5A

4850 3063	E41	..1/5A	CT	no	no	three phase kwh meter	4
4850 3065	E43	..1/5A	CT	yes	via com	three phase kwh meter	4
4850 3027*	E45	..1/5A	CT	yes	via com	three phase kwh meter	4

* Mbus

Pulse concentrator (modular design DIN rail mounting)

COUNTIS ECi2 multi-utility pulse concentrator allows for up to 7 pulse inputs from water, gas, compressed air and electricity meters to be registered and stored. All data can be centralised via RS485 communication using MODBUS protocol.

- Load curves are available for each of the 7 logical inputs
- Partial, total, daily, weekly or monthly kWh or other types of data (*litres, m³...*)
- Customisation by selection of the measuring unit: kWh, m³, litres
- Generate event alarms (*1 dedicated relay output*)
- 230 - 400 VAC supply

4853 0000	ECi2			yes		pulse concentrator for up to 7 inputs	4
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DIRIS series - Multifunction meters

Compact and ergonomic, the **DIRIS** multifunction meter specially adapted for monitoring and managing electrical energy. Its communication function allows the analysis of data collected via a PLC or energy management software.

- Compact: Panel or Din rail mount options enables easy integration into any type of electrical cabinet
- Compliant: **IEC61557-12** high-level standard for all PMD's (*Performance Monitoring Devices*)
- RS485: Communication permits the extraction of data and device configuration remotely
- Ease of use: Permits easy navigation via direct keys and easy to read backlit LCD screen display
- Advanced: Programmable input and output as standard including pulse metering, alarm report and pulse output

Multi-measurement (model dependant)

- Frequency - 45 - 65 Hz
- Current - Instantaneous and maximum average I1, I2, I3, In
- Voltage and frequency - Instantaneous V1, V2, V3, U12, U23, U31, F
- Power - Instantaneous and maximum average 3P, ΣP, 3Q, ΣQ, 3S, ΣS
- Power factor - Instantaneous 3PF, ΣPF and maximum average
- Energy - Active energy: +/- kWh Reactive energy: +/- kvarh - hours
- Harmonic analysis - THD Current, voltage, phase-to-phase voltage
- Events - Alarms on all electrical values
- Energy accuracy - Active energy class 0.55 (IEC 62053-23)

type	auxiliary power supply	width in	description
		17.5 mm	

DIRIS A10 - Multifunction meter

DIN rail mount

The **DIRIS A10** is a modular multifunction meter for measuring electrical values in low voltage networks. It allows all electrical parameters to be displayed and utilised for communication and/ or output functions.

- Navigation is via 5 direct access keys and easy to read screen display
- Harmonic analysis up to (*level 51*)
- Integrated temperature sensor
- Detects wiring errors to automatically correct CT installation errors
- Dual tariff selection
- Dimensions: 72 x 90 mm x 64 mm deep

4825 0400	110 - 277 VAC	4	A10	72 x 90 mm DIN rail mount multifunction meter
4825 0401	110 - 277 VAC	4	A10	as above with RS485 MODBUS comms



4825 0400

DIRIS A14 - Multifunction meter

DIN rail mount

DIRIS A14 with MID certification provide the guaranteed accuracy required for applications in which sub-billing of the electrical energy consumed is necessary. With Bi-directional metering (*four quadrants*) function, allowing for measurement of energy production or consumption.

- Auxiliary power supply : Self supply
- Display of electrical values (I,U,V, ΣP, ΣQ, ΣQ, ΣS, PF) and P + load curve Over a 7 day period via communication
- Total and partial metering +/- Kwh +/- Kvarh
- Harmonic analysis (*via comm*) up to level 63
- Multi traffic functions (*via comm.*) selection of one our of four billing tariffs
- Dimensions: 72 x 90 mm x 64 mm deep

4825 0020	50 to 460 VAC +/- 15%	4	A14	72 x 90 mm MID + RS485 MODBUS comm.
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4825 0020



4825 0402



4825 0403



4825 0094

type	auxiliary power supply	number plug-in modules	description
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DIRIS A20 - Multifunction meter *panel mount*

DIRIS A20 multifunction meters are panel mounted measurement units which ensure the user has access to all the measurements required for successfully carrying out energy efficiency projects and ensuring the electric distribution is monitored.

- Detects wiring errors to automatically correct CT installation errors
- Hours metering
- Harmonic analysis up to (level 51)
- Accepts 1 x functional plug-in module for output or RS485 MODBUS communication
- Dimensions: 96 x 96 mm x 60 mm deep

4825 0402	110 - 400 VAC	A20	96 x 96 mm panel mount multifunction meter
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DIRIS A30/41 - Multifunction meter *96 x 96 mm panel mount 60 mm deep*

The DIRIS A30/41 series provides access to all measurements required for successfully carrying out energy efficiency projects for electrical distribution monitoring, the units are easily customisable or upgradeable through optional plug-in modules (up to 4)

- A41 has CT current input for measuring neutral current as well
- Provides accurate instantaneous, average and maximum levels of most important measurements
- Metering active, reactive and apparent energy with hours
- Harmonic analysis up to (level 53)
- Provide load curves of Active/Reactive power with voltages and frequency
- Accepts 4 x functional plug-in modules
- Dimensions: 72 x 90 mm panel mount 64 mm deep

4825 0403	110 - 400 VAC	4	A30	96 x 96 mm panel mount multifunction meter
4825 0404	110 - 400 VAC	4	A41	as above with neutral monitoring
4825 0405	12 - 48 VDC	4	A30	96 x 96 mm panel mount multifunction meter

Accessories for DIRIS meters

type	function	description	for model
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Plug-modules *(for customisation or upgrading of meters)*

4825 0080	1 x output	plug-in optional modules	A20
4825 0082	RS485 MODBUS comms	plug-in optional modules	A20
4825 0090	2 configurable pulse outputs	plug-in optional modules	A30/41
4825 0092	RS485 MODBUS comms	plug-in optional modules	A30/41
4825 0093	2 Analog outputs	plug-in optional modules	A30/41
4825 0094	2 inputs / 2 outputs	plug-in optional modules	A30/41
4825 0205	Sub D9 PROFIBUS DP comm	plug-in optional modules	A30/41
4825 0097	Memory	plug-in optional modules	A30/41
4825 0203	Ethernet communication	plug-in optional modules	A30/41
4825 0204	Ethernet + RS485 MODBUS	plug-in optional modules	A30/41
4825 0089	IP65 protection	IP65 protection cover for DIRIS meters	A30/41



A40 +TE+TR+TF

DIRIS A40 is a Panel Mounted Monitoring Device (PMD). It offers a range of functions for measuring voltage, current, power, energy and quality. It is designed for measuring, monitoring and reporting historical data and allows analysis of a single phase or three phase load.

Multi-measurement:

- Current - Instantaneous and maximum average I1, I2, I3, In
- Voltage and frequency - Instantaneous V1, V2, V3, U12, U23, U31, Ussystem
- Frequency - 45-65 Hz
- Power - Instantaneous and maximum average 3P, ΣP, 3Q, ΣQ, 3S, ΣS
- Power factor - Instantaneous 3PF, ΣPF
- Energy - Active energy: +/- kWh Reactive energy: +/- kvarh - hours
- Harmonic analysis - THD Current, voltage, phase-to-phase voltage
- Events - Alarms on all electrical values
- Inputs - 3 digital inputs (*pulse metering, status checking*)
- Outputs - 2 outputs (*alarms or pulses*)

Power and energy measurement:

- Accuracy - 0.2 DIRIS A-40 Class only
- Active energy and active power - Class 0.5 with TE, TF or iTR sensors - Class 1 with TR sensors
- Accuracy of reactive energy - Class 2 with TE, TR or TF sensors

Voltage measurement:

- Characteristics of the network measured - 50-300 VAC (Ph/N) - 87-520 VAC (Ph/Ph) - CAT III
- Frequency accuracy - Class 0.02



new

4825 ...

TE...

TR...

TF...

type	Aux. power supply	inputs	outputs	description
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DIRIS A40 - Multifunction meter		92 x 92 mm panel mount 68 mm deep		
4825 0500	110 - 400 VAC	3	2	panel mount meter with RS485 Modbus
4825 0501*	110 - 400 VAC	3	2	as above with Ethernet Modbus

* Modbus TCP, Modbus RTU, BackNet, SMTP, SNMP

Current sensors for above A40 multifunctional meter

Various types of current sensors can be connected to the DIRIS A40: solid-core (TE), split-core (TR / iTR) or Rogowski (TF). This range of sensors is suitable for all types of new or existing installations. A quick RJ12 connection makes wiring easy and reliable and prevents wiring errors. The A40 automatically recognizes the sensor size and type. This guarantees the overall accuracy of the A40 + current sensor measurement chain.

type	model	actual range current (A)	description	pitch (mm)	hole size (mm)
------	-------	--------------------------	-------------	------------	----------------

TE - Solid current sensors class 0.5

4829 0500	TE-18	0.1...24	solid current sensor	18	Ø 8.6
4829 0501	TE-18	0.5...75	solid current sensor	18	Ø 8.6
4829 0502	TE-25	0.8...192	solid current sensor	25	13.5 ■
4829 0503	TE-35	1.26...300	solid current sensor	35	21 ■
4829 0504	TE-45	3.2...756	solid current sensor	45	31 ■
4829 0505	TE-55	8...1200	solid current sensor	55	41 ■
4829 0506	TE-90	12...2400	solid current sensor	90	64 ■

TR - Split-core current sensors class I

4829 0555	TR-10	0.5...90	split-core current sensors	-	Ø 10
4829 0556	TR-14	0.8...192	split-core current sensors	-	Ø 14
4829 0552	TR-16	0.64...120	split-core current sensors	-	Ø 16
4829 0557	TR-21	1.26...300	split-core current sensors	-	Ø 21
4829 0553	TR-24	1.26...200	split-core current sensors	-	Ø 24
4829 0558	TR-32	3.2...720	split-core current sensors	-	Ø 32
4829 0554	TR-36	4...720	split-core current sensors	-	Ø 36

iTR - Split-core current sensors class 0.5 (intelligent)

4829 0655	iTR-10	0.5...75	split-core current sensors	-	Ø 10
4829 0656	iTR-14	0.8...192	split-core current sensors	-	Ø 14
4829 0657	iTR-21	1.26...300	split-core current sensors	-	Ø 21
4829 0658	iTR-32	3.2...720	split-core current sensors	-	Ø 32

TF - Flexible current sensors (Rogowski coil)

4829 0570	TF-55	3...720	flexible current sensors	-	Ø 55
4829 0571	TF-120	10...2400	flexible current sensors	-	Ø 120
4829 0572	TF-300	32...7200	flexible current sensors	-	Ø 300

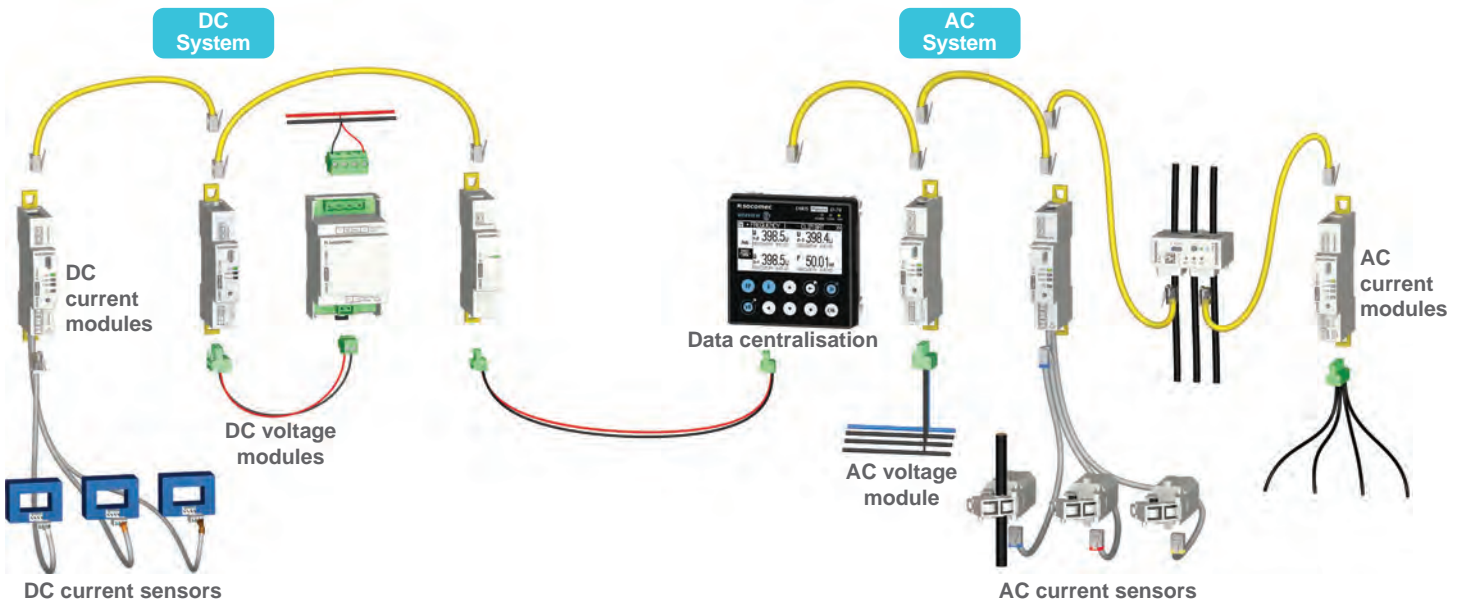
The **DIRIS Digiware** is a multi-circuit AC or DC power monitoring device that is the most effective solution for metering consumption. Measuring and monitoring the quality of electrical energy in industrial and commercial data centre applications.

- Accuracy as per standard IEC 61557-12 (Class 0.5)
- Implementation in a quarter of the time vs existing metering technologies
- Installation of measurement modules and current sensors at the closest point to the load
- Can monitor several circuits via a single current measurement module thanks to independent current inputs
- Compact and flexible design: suitable for new and existing installations including panels with space restrictions
- The system is composed of several modules: control interface, voltage acquisition module, current acquisition modules but also closed, split-core or flexible current sensors.



Scan to watch video

Build your system :



type	description	module width
Control and power supply interface		
<ul style="list-style-type: none"> • Power supply 24 VDC (required, see page B-59) • Communication via RS485 Modbus and Digiware BUS 		
C-31 Data centralisation only (no display)		
<ul style="list-style-type: none"> • Centralises all of the Digiware systems data unto MODBUS RS485 		
4829 0101	modular centralisation unit	18 mm
D-40/50/70 centralisation and display of data		panel mount 96 mm ²
<ul style="list-style-type: none"> • High-resolution LCD display • Local view of data from the Digiware Bus • Keys on the front face for direct access to measurement data, device configuration etc. • Can display electrical measurements from both AC and DC systems simultaneously via Webview 		
D-40		
4829 0199	centralisation unit with multi-point display + Modbus RS485 output	
D-50		
4829 0204	centralisation unit with multi-point display + Modbus TCP	
D-70 (see page E-15 for more information)		
4829 0203	centralisation unit with multi-point display + Ethernet comm / embedded webserver	
C-32 Range extending repeater		
<ul style="list-style-type: none"> • Required when Digiware bus length exceeds 100m • Maximum bus length 300m (2 repeaters) • Power supply 24 VDC (required see page B-59) 		
4829 0103	range extending repeater	18 mm
Note: For RJ45 connecting cables for above see E-13		



4829 0106

AC voltage measurement modules – single voltage measurement point for the entire system.

- 3 phase voltage and frequency monitoring
- RJ45 bus allows you measurement of voltage as well as supply power to all connected devices
- A complete, dedicated solution for: metering, voltage monitoring and quality analysis of the AC voltage

type	description	module width
U-10 Metering module		
4829 0105	modular AC voltage measurement metering module	18 mm
U-20 Monitoring module (as above but with additional 3ph THDu monitoring)		
4829 0106	modular AC voltage measurement monitoring module	18 mm
U-30 Analysis module (all electrical parameters including history of average values)		
4829 0102	modular AC voltage measurement analysis module	18 mm

AC current measurement modules

Allocates the load to be measured or to monitor independent current inputs i.e three-phase load and 3 single-phase loads.

- Metering: \pm kWh, \pm kvarh, kVAh
- Multi-measurement: I1, I2, I3, In, Σ P, Σ Q, Σ S, Σ PF
- Wiring errors are also prevented and implementation is simplified
- **RJ45** and **RJ12** rapid connection and automatically configures connected current sensors

type	description	current Inputs	module width
I-30/60 metering modules			
4829 0110	I-30 modular current measurement metering module	3	18 mm
4829 0112	I-60 modular current measurement metering module	6	36 mm
I-31/61 metering and load curve modules			
4829 0111	I-31 modular current measurement metering module	3	18 mm
4829 0113	I-61 modular current measurement metering module	6	36 mm
I-35/45 analysis module (all electrical parameters including history of average values)			
4829 0130	I-35 modular current measurement analysis module	3	18 mm
4829 0131	I-45 modular current measurement analysis module	4	27 mm



4829 0112

DIRIS Digiware S - Current measurement modules

DIRIS Digiware S is a power metering and monitoring service with 3 integrated current sensors enabling the measurement of one three-phase or three single-phase circuits up to 63 A.

- Metering: \pm kWh, \pm kvarh, kVAh
- Can be mounted upstream or downstream of the protective device
- Advanced monitoring via **VirtualMonitor** (position, trip etc. without using auxiliary)
- Matching the pitch of protective devices up to 63 A, solving issues of space constraints

4829 0160	S-130 modular current measurement metering module	3	–
4829 0161	S-135 modular current measurement analysis module	3	–
4829 0162	S-Datacenter modular 3 x single phase monitoring	3	–

DIRIS Digiware S - Accessories

4829 0195	Mounting clip for above Digiware S modules	pack	(x 10)
4829 0196	Holding clip for above Digiware S modules	pack	(x 10)
4829 0189	Flat RJ45 Digiware bus connection cable		0.06 m

Note: For longer length connecting cables refer to **E- 13**

DIRIS Digiware I/O (input/output modules)

The **DIRIS Digiware I/O (input/output)** modules can be easily added anywhere within the measurement system thanks to a quick **RJ45** connection I/O modules.

The **I/O-10** modules have 4 digital inputs and 2 digital outputs, which can be used:

- To monitor changes of status of an input or to collect pulses from multi-fluid meters (water, gas...)
- To remotely command devices by sending a digital output signal
- Inputs/Connection: 12 VDC 3mA, Outputs: 12 - 48 VDC, 12 - 24 VAC 50mA / screw terminal blocks

The **I/O-20** modules have 2 analogue inputs allowing:

- To collect data from analogue sensors, e.g. pressure, humidity, temperature, levels (fuel...)
- To monitor levels by setting up alarms on chosen thresholds
- Inputs/Connection: 0/4-20 mA, 200 ohm / screw terminal blocks

	DI	DO	AI		
4829 0140	4	2	–	input/output modules	(18 mm)
4829 0145	–	–	2	input/output modules	(18 mm)



4829 0160



4829 0161



Current sensors

Current sensors can be connected to the DIRIS Digiware system via a rapid RJ12 connection various accessories are available, permitting installation in all panel configurations.

- Plug and play RJ12 connections (*for ease of wiring preventing wiring errors*)
- Automatic detection of sensor type and current rating
- Class 0.5 from 2% to 120% of nominal current (*as per standard IEC 61557-12*)

type	model	actual range current (A)	description	pitch (mm)	hole size (mm)
TE - Solid current sensors			class 0.5		
4829 0500	TE-18	0.1...24	solid current sensor	18	Ø 8.6
4829 0501	TE-18	0.5...75	solid current sensor	18	Ø 8.6
4829 0502	TE-25	0.8...192	solid current sensor	25	13.5 ■
4829 0503	TE-35	1.26...300	solid current sensor	35	21 ■
4829 0504	TE-45	3.2...756	solid current sensor	45	31 ■
4829 0505	TE-55	8...1200	solid current sensor	55	41 ■
4829 0506	TE-90	12...2400	solid current sensor	90	64 ■
TR - Split-core current sensors			class I		
4829 0555	TR-10	0.5...90	split-core current sensors	–	Ø 10
4829 0556	TR-14	0.8...192	split-core current sensors	–	Ø 14
4829 0552	TR-16	0.64...120	split-core current sensors	–	Ø 16
4829 0557	TR-21	1.26...300	split-core current sensors	–	Ø 21
4829 0553	TR-24	1.26...200	split-core current sensors	–	Ø 24
4829 0558	TR-32	3.2...720	split-core current sensors	–	Ø 32
4829 0554	TR-36	4...720	split-core current sensors	–	Ø 36
iTR - Split-core current sensors			class 0.5 (<i>intelligent</i>)		
4829 0655	iTR-10	0.5...75	split-core current sensors	–	Ø 10
4829 0656	iTR-14	0.8...192	split-core current sensors	–	Ø 14
4829 0657	iTR-21	1.26...300	split-core current sensors	–	Ø 21
4829 0658	iTR-32	3.2...720	split-core current sensors	–	Ø 32
TF - Flexible current sensors (<i>Rogowski coil</i>)					
4829 0570	TF-55	3...720	flexible current sensors	–	Ø 55
4829 0571	TF-120	10...2400	flexible current sensors	–	Ø 120
4829 0572	TF-300	32...7200	flexible current sensors	–	Ø 300

Cables and accessories for current sensors

type	model	description	cable length (mm)	pack size (mm)
RJ12 current sensor connection cables (<i>inter connection</i>)				
<ul style="list-style-type: none"> • Automatic detection of current sensor ratings • Identification of cables by colour-coding • Disconnection of the current sensor secondary under load 				
4829 0581	RJ12	AC current sensor connection cable	0.2 m	3 x cables
4829 0595	RJ12	AC current sensor connection cable	0.5 m	3 x cables
4829 0583	RJ12	AC current sensor connection cable	1.0 m	3 x cables
4829 0584	RJ12	AC current sensor connection cable	2.0 m	3 x cables
4829 0593	RJ12	AC current sensor connection cable	1.0 m	6 x cables
4829 0594	RJ12	AC current sensor connection cable	2.0 m	6 x cables
4829 0782	RJ12	DC molex current sensor conn. cable	0.3 m	3 x cables
4829 0783	RJ12	DC molex current sensor conn. cable	0.5 m	3 x cables
4829 0784	RJ12	DC molex current sensor conn. cable	1.0 m	3 x cables
4829 0785	RJ12	DC molex current sensor conn. cable	2.0 m	3 x cables
4829 0786	RJ12	DC molex current sensor conn. cable	5.0 m	1 x cable

RJ45 current sensor connection cables (*bus connection*)

• Interconnection of I and U modules via Digiware Bus				
4829 0181	RJ45	Digiware bus AC connection cable	0.1 m	–
4829 0182	RJ45	Digiware bus AC connection cable	0.5 m	–
4829 0183	RJ45	Digiware bus AC connection cable	1.0 m	–
4829 0184	RJ45	Digiware bus AC connection cable	2.0 m	–
4829 0185*	RJ45	AC current sensor cable + 50 connectors	50 m	(<i>cable roll</i>)
* <i>Maximum cable distance between current measurement modules and current sensors is 10 m</i>				
4829 0599	5A/CT adapter (<i>measurement >1000 A</i>)			
4829 0598	coupling link for interconnecting sensors staggered or linear mounted			(30pcs)
4829 0600	sealable cover (<i>guarantees the immunity of sensor connection</i>)			(20pcs)



new



DC voltage measurement modules

DIRIS Digiware U-31/32dc module measures DC voltage for the entire system. It measures up to 180 VDC with a direct connection and is therefore compatible with typical nominal voltages (24 VDC, 48 VDC..)

- Voltage measurement accuracy: Class 0.5
- 1 single voltage measurement point for the entire system
- Voltage adaptors makes the system compatible with all voltage levels up to 1650 VDC
- RJ45 bus allows you measurement of voltage as well as supply power to all connected devices

type	range	voltage	description	module width
U-31dc Metering module				
4829 0150	19...60 VDC		modular voltage measurement metering module	18 mm
U-32dc Metering module				
4829 0151	38...180 VDC		modular voltage measurement metering module	18 mm
DC voltage adaptor				
4829 0153	200..600 VDC		U500DC modular voltage adaptor metering module	53 mm
4829 0154	400..1200 VDC		U1000DC modular voltage adaptor metering module	53 mm
4829 0155	1200..1650 VDC		U1500DC modular voltage adaptor metering module	53 mm

DC measurement modules

Allocates the load to be measured or to monitor independent current inputs. Measurement of up to 3 DC circuit per Idc modules.

- Metering: ± kWh
- Accuracy of current measurement: Class 0.5
- Multi-measurement: Idc, Udc, Iripple, Irms
- Quick RJ45 connection between modules and RJ12-Molex to current sensors

type	description	current Inputs	module width
I-30dc metering modules			
4829 0156	I-30dc modular current measurement metering module	3	18 mm
I-35dc metering and analysis module			
4829 0157	I-35dc modular current measurement analysis module	3	18 mm

DC current sensors

The DC current sensors measure the DC load currents of an electrical installation and transmit information to the Idc measurement modules via an RJ12 to Molex cable on the sensor side. The range comprises solid-core and split-core sensors (*Open-loop Hall effect*) ranging from 50 to 5000A in various sizes allowing them to be used in new or existing electrical installations.

- Automatic detection of sensor type and current rating
- Up to 3 different DC sensors can be connected to the same Idc module
- Accuracy of current measurement <1%
- Plug and play RJ12 molex cables (*for ease of wiring - preventing wiring errors*) see page E-13

type	frame size	nominal current (A)	description	pitch (mm)	hole size (mm)
DC solid-core current sensors (frame size 1)					
4829 0700	1	50A	DC solid-core current sensor	18	■ 10.4 x 20.4
4829 0701	1	100A	DC solid-core current sensor	25	■ 10.4 x 20.4
4829 0702	1	200A	DC solid-core current sensor	35	■ 10.4 x 20.4
4829 0703	1	300A	DC solid-core current sensor	45	■ 10.4 x 20.4
<i>Up to 5000A available on special request.</i>					
DC split-core current sensors (frame size 1)					
4829 0750	1	50A	DC split-core current sensor	0	∅ 21
4829 0751	1	100A	DC split-core current sensor	0	∅ 21
4829 0752	1	200A	DC split-core current sensor	0	∅ 21
<i>Up to 2000A available on special request.</i>					



4829 0000

DIRIS B-30

The **DIRIS B-30** is a PMD in modular format that communicates wirelessly or via RS485. The 4 x RJ independent current inputs allows it to manage several types and number of circuits i.e 4 single-phase loads or 1 three phase load + 1 single-phase load (*compatible G-50/60*).

type	description	module width (mm)
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4829 0000	B-30 RS RS485 MODBUS communication	54
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Accessories

4829 0200	D-30 single point display for B-30	(panel mount)	96 x 96
4829 0280	RJ9 cable for above D-30 display unit		1.5 m
4829 0281	RJ9 cable for above D-30 display unit		3.0 m

DIRIS D-70M-70 *communication gateway*

DIRIS D-70M-70 acts as a gateway, centralising measurements from DIRIS Digiware, DIRIS A, DIRIS B and COUNTIS E devices and making them available over Ethernet. Data can be visualized on Webview, the "Power & Energy monitoring" embedded web server. Permits real time monitoring of electrical values and analysis of consumption data.

- Plug and Play automatic detection and addressing of measurement and metering devices
- Automatic recording and storage of measurements and consumption data, sending of alarms
- Ethernet/RS485 Modbus communication with embedded WEBVIEW power monitoring
- Inputs: Digiware/RS485
- Outputs: Ethernet
- Protocols: Modbus TCP, BACnet, IPSNMP v1, v2, v3
- Webserver: Embedded web server WEBVIEW-M (32 devices)
- Screen: High-resolution graphic screen (**D-70**)
- Voltage: 24 VDC SELV (*Safety Extra Low Voltage*) power supply elimination of hazardous voltage on cabinet doors.
- Ergonomic and easy to use with 10 direct access buttons for:
 - Measurement information
 - Output selection
 - Equipment configuration
- Centralising measurement points:
 - Circuit selection
 - Displaying data



4829 0203

type	description	mounting (mm) (H) (W) (D)
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4829 0203	D-70 multi-point display, Ethernet com. + web server	panel 97 97 -
4829 0222	M-70 as above without display	DIN 90 89 65

WEBVIEW Datalogger

- DATALOG H80** provides the ability to create a smart energy data communication network in order to:
- Pool, secure, store and provide the data to a computer application.
 - Connect your meters and multi-function measurement units in an Ethernet network
 - Quick installation on DIN rail or door mounting
 - Remotely and automatically read multi-fluid energy meters and multi-function meters, isolated or not

Function: Reliable collection and transmission

- Configurable collection frequency for each energy and multi-function meter
- Multiple communication protocols (Modbus RTU/TCP, HTTP(s), FTP(s))
- Collection and transmission interfaces: Ethernet

Advanced functions: Reports and extended data storage

- Extended data storage capacity (1 year for index data and 2 months for load curves)
- Auto-detects meters and measuring equipment
- Sends regular activity reports
- Event alerts (*communication errors, data quality, remote server connection*)



4854 0020

type	LAN Ethernet ports	device licenses	description
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4854 0020	4	up to 100	data logger with webview
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Automation for a Changing World

Basic Compact Drive ME300 Series

Compact and Intelligent

- Compact design; power range up to 7.5kW
- Open loop control for IM and PM motors
- EMC filter (optional model)
- STO (Safe Torque Off) SIL2 (optional model)
- Supports PWM/pulse input for frequency setting
- Built-in PID control for single and multi-pumps

For more on the **ME300** range see page **A-19**





ASR 20.3



ASK 41.4



ASK 51.4



ASK 61.4

Current transformers

Class 1

General specifications:

- Nominal frequency: 50Hz (others on request)
- Isolation class: E
- Nominal thermal short-time current: $I_{th} = 60 \times I_N$
- Maximum operating voltage: $U_m \leq 0.72 \text{ kV}$
- Over-current limiting factor: FS 5 up to 1500 A nominal current

MBS AG current transformers conform fully to: DIN VDE 0414/1 - DIN 42600 - IEC 61869/1+2 - VBG 4

type	ratio	class	Burden (VA)	description	max. hole diameter (mm)		
					round	B/bar 1	B/bar 2

Tube/ring type current transformers 5A secondary - class 1

ASR 20.3 tube current transformers (H) 65 x (W) 45 x (D) 30 mm

26027	50/5A	1	1	tube current transformer	<table border="1"> <tr> <td>Ø21</td> <td>-</td> <td>-</td> </tr> </table>	Ø21	-	-
Ø21	-	-						
26029	60/5A	1	1.25	tube current transformer				
26031	75/5A	1	1.5	tube current transformer				
26035	100/5A	1	2.5	tube current transformer				
26041	150/5A	1	3.75	tube current transformer				
26051	200/5A	1	3.75	tube current transformer				
26046	250/5A	1	5	tube current transformer				

Busbar mounted current transformers 5A secondary - class 1

ASK 31.3 current transformers (H) 76 x (W) 61 x (D) 48 mm

7038	50/5A	1	1	std current transformer	<table border="1"> <tr> <td>Ø26</td> <td>30x10</td> <td>20x20</td> </tr> </table>	Ø26	30x10	20x20
Ø26	30x10	20x20						
7039	60/5A	1	1	std current transformer				
7041	75/5A	1	1.5	std current transformer				
7045	100/5A	1	2.5	std current transformer				
7047	150/5A	1	2.5	std current transformer				
7050	200/5A	1	5	std current transformer				
7053	250/5A	1	5	std current transformer				

ASK 41.4 current transformers (H) 85.5 x (W) 71 x (D) 58 mm

13044	100/5A	1	2.5	std current transformer	<table border="1"> <tr> <td>Ø32</td> <td>40x10</td> <td>30x15</td> </tr> </table>	Ø32	40x10	30x15
Ø32	40x10	30x15						
13048	150/5A	1	5	std current transformer				
13050	200/5A	1	5	std current transformer				
13054	250/5A	1	10	std current transformer				
13057	300/5A	1	10	std current transformer				
13062	400/5A	1	15	std current transformer				
13066	500/5A	1	15	std current transformer				
13070	600/5A	1	15	std current transformer				
13073	750/5A	1	15	std current transformer				
13077	800/5A	1	15	std current transformer				

ASK 51.4 current transformers (H) 98.5 x (W) 86 x (D) 58 mm

16055	400/5A	1	10	std current transformer	<table border="1"> <tr> <td>Ø44</td> <td>50x10</td> <td>40x20</td> </tr> </table>	Ø44	50x10	40x20
Ø44	50x10	40x20						
16060	500/5A	1	15	std current transformer				
16064	600/5A	1	15	std current transformer				
16068	750/5A	1	15	std current transformer				
16071	800/5A	1	15	std current transformer				
16075	1000/5A	1	15	std current transformer				

ASK 61.4 current transformers (H) 105.5 x (W) 96 x (D) 58 mm

19065	600/5A	1	15	std current transformer	<table border="1"> <tr> <td>Ø44</td> <td>60x10</td> <td>50x30</td> </tr> </table>	Ø44	60x10	50x30
Ø44	60x10	50x30						
19069	750/5A	1	15	std current transformer				
19073	800/5A	1	15	std current transformer				
19076	1000/5A	1	15	std current transformer				
19085	1250/5A	1	30	std current transformer				

ASK 81.4 current transformers (H) 123.5 x (W) 120 x (D) 58 mm

21045	600/5A	1	10	std current transformer	<table border="1"> <tr> <td>Ø55</td> <td>80x10</td> <td>60x30</td> </tr> </table>	Ø55	80x10	60x30
Ø55	80x10	60x30						
21049	750/5A	1	15	std current transformer				
21053	800/5A	1	15	std current transformer				
21056	1000/5A	1	15	std current transformer				
21064	1250/5A	1	15	std current transformer				
21072	1600/5A	1	30	std current transformer				



ASK 103.3



ASK 103.41

Current transformers

Class 1

General specifications:

- Nominal frequency: 50Hz (*others on request*)
- Isolation class: E
- Nominal thermal short-time current: $I_{th} = 60 \times I_N$
- Maximum operating voltage: $U_m \leq 0.72 \text{ kV}$
- Over-current limiting factor: FS 5 up to 1500 A nominal current

MBS AG current transformers conform fully to: DIN VDE 0414/1 - DIN 42600 - IEC 61869/1+2 - VBG 4

type	ratio	class	Burden (VA)	description	max. hole diameter (mm)		
					round	B/bar 1	B/bar 2

Busbar mounted current transformers 5A secondary - class 1

ASK 101.4		current transformers			<i>(H) 144 x (W) 130 x (D) 58 mm</i>		
22055	1250/5A	1	30	std current transformer	Ø70	100x10	80x30
22062	1600/5A	1	30	std current transformer			
22070	2000/5A	1	30	std current transformer			
ASK 103.3		current transformers			<i>(H) 187.5 x (W) 172 x (D) 52 mm</i>		
23058	1600/5A	1	30	std current transformer	Ø85	100x30	80x50
23062	2000/5A	1	30	std current transformer			
23066	2500/5A	1	30	std current transformer			
23070	3000/5A	1	30	std current transformer			

Rectangular hole for vertically mounted busbars

ASK 103.41		current transformers			<i>(H) 150 x (W) 98.5 x (D) 58 mm</i>		
97054	500/5A	1	5	std current transformer	Ø40	100x40	-
97056	600/5A	1	5	std current transformer			
97058	750/5A	1	5	std current transformer			
97060	800/5A	1	10	std current transformer			
97062	1000/5A	1	15	std current transformer			
97066	1250/5A	1	15	std current transformer			
ASK 128.4		current transformers			<i>(H) 150 x (W) 98.5 x (D) 58 mm</i>		
94056	1250/5A	1	15	std current transformer	Ø38	128x38	-
94058	1500/5A	1	30	std current transformer			
94060	2000/5A	1	30	std current transformer			
94062	2500/5A	1	30	std current transformer			

Accessories for current transformers

55013	DIN clip	DIN rail mounting clip for current transformers	ASR 20.3
55011	DIN clip	DIN rail mounting clip for current transformers	ASK 30.3
55012	DIN clip	DIN rail mounting clip for current transformers	ASK 41.4



ASK 41.4



ASK 61.4



ASK 103.3



ASK 51.4

Current transformers .../5A Class 0.2 and 0.5

Modern meters and network analysers provide higher accuracy levels requiring more accurate current transformers. We introduce a range of high accuracy and reliability Class 0.2s and 0.5 Current Transformers.

MBS AG current transformers conform fully to: IEC 60044 / DIN VDE 0414/1 - DIN 42600-2

type	ratio	class	Burden (VA)	description	max. hole diameter (mm)			
					round	B/bar 1	B/bar 2	
Busbar mounted current transformers 5A secondary - Class 0.5								
ASK 41.4 current transformers				<i>(H) 85.5 x (W) 71 x (D) 58 mm</i>				
13085	200/5A	0.5	5	std current transformer	<table border="1"> <tr><td>Ø32</td><td>40x10</td><td>30x15</td></tr> </table>	Ø32	40x10	30x15
Ø32	40x10	30x15						
13086	250/5A	0.5	5	std current transformer				
13087	300/5A	0.5	10	std current transformer				
13088	400/5A	0.5	10	std current transformer				
13089	500/5A	0.5	15	std current transformer				
13090	600/5A	0.5	15	std current transformer				
13031	800/5A	0.5	10	std current transformer				
ASK 51.4 current transformers				<i>(H) 101.5 x (W) 86 x (D) 58 mm</i>				
16154	600/5A	0.5	15	std current transformer	<table border="1"> <tr><td>Ø44</td><td>50x12</td><td>40x20</td></tr> </table>	Ø44	50x12	40x20
Ø44	50x12	40x20						
16203	750/5A	0.5	15	std current transformer				
16033	800/5A	0.5	15	std current transformer				
16036	1000/5A	0.5	15	std current transformer				
ASK 61.4 current transformers				<i>(H) 108.5 x (W) 96 x (D) 58 mm</i>				
19031	800/5A	0.5	15	std current transformer	<table border="1"> <tr><td>Ø44</td><td>63x10</td><td>50x20</td></tr> </table>	Ø44	63x10	50x20
Ø44	63x10	50x20						
19034	1000/5A	0.5	15	std current transformer				
19101	1250/5A	0.5	30	std current transformer				
ASK 81.4 current transformers				<i>(H) 126.5 x (W) 120 x (D) 58 mm</i>				
21023	1000/5A	0.5	15	std current transformer	<table border="1"> <tr><td>Ø55</td><td>80x10</td><td>50x30</td></tr> </table>	Ø55	80x10	50x30
Ø55	80x10	50x30						
21029	1250/5A	0.5	15	std current transformer				
21035	1600/5A	0.5	15	std current transformer				
ASK 103.3 current transformers				<i>(H) 187.5 x (W) 172 x (D) 52 mm</i>				
23026	1600/5A	0.5	15	std current transformer	<table border="1"> <tr><td>Ø85</td><td>100x30</td><td>80x50</td></tr> </table>	Ø85	100x30	80x50
Ø85	100x30	80x50						
23029	2000/5A	0.5	30	std current transformer				
23032	2500/5A	0.5	30	std current transformer				
23035	3000/5A	0.5	30	std current transformer				
Busbar mounted current transformers 5A secondary - Class 0.2s								
ASK 41.4 current transformers				<i>(H) 85.5 x (W) 71 x (D) 58 mm</i>				
V24-1704D	200/5A	0.2s	2.5	std current transformer	<table border="1"> <tr><td>Ø32</td><td>40x10</td><td>30x15</td></tr> </table>	Ø32	40x10	30x15
Ø32	40x10	30x15						
V24-1804F	250/5A	0.2s	5	std current transformer				
V24-1904F	300/5A	0.2s	5	std current transformer				
V24-2004H	400/5A	0.2s	10	std current transformer				
V24-2104H	500/5A	0.2s	10	std current transformer				
V24-2204F	600/5A	0.2s	5	std current transformer				
ASK 51.4 current transformers				<i>(H) 98.5 x (W) 86 x (D) 58 mm</i>				
V34-2404H	800/5A	0.2s	10	std current transformer	<table border="1"> <tr><td>Ø44</td><td>50x12</td><td>40x20</td></tr> </table>	Ø44	50x12	40x20
Ø44	50x12	40x20						
V34-2504J	1000/5A	0.2s	15	std current transformer				
ASK 61.4 current transformers				<i>(H) 105.5 x (W) 96 x (D) 58 mm</i>				
V41-2704J	1250/5A	0.2s	15	std current transformer	<table border="1"> <tr><td>Ø44</td><td>60x10</td><td>50x20</td></tr> </table>	Ø44	60x10	50x20
Ø44	60x10	50x20						
V41-2804J	1600/5A	0.2s	15	std current transformer				
ASK 123.3 current transformers				<i>(H) 184.8 x (W) 172 x (D) 52 mm</i>				
V56-2704F	1250/5A	0.2s	5	std current transformer	<table border="1"> <tr><td>Ø100</td><td>120x30</td><td>100x50</td></tr> </table>	Ø100	120x30	100x50
Ø100	120x30	100x50						
V56-2904J	1600/5A	0.2s	15	std current transformer				
V56-3004J	2000/5A	0.2s	15	std current transformer				
V56-3204J	2500/5A	0.2s	15	std current transformer				
V56-3304J	3000/5A	0.2s	15	std current transformer				



WSK 40



SUSK 4



ASK 41.4



ASK 61.4



ASK 103.3

type	ratio	class	Burden (VA)	description	dimensions (mm)					
					(H)	(W)	(D)			
Primary wound current transformers 5A secondary - class 1										
WSK 30 primary wound current transformers										
30022	5/5A	1	5	wound current transformer	79	61	35			
30024	10/5A	1	5	wound current transformer	79	61	35			
30026	15/5A	1	5	wound current transformer	79	61	35			
30028	20/5A	1	5	wound current transformer	79	61	35			
WSK 40 primary wound current transformers										
31070	25/5A	1	10	wound current transformer	89	71	45			
31074	30/5A	1	10	wound current transformer	89	71	45			
Summation current transformers 5A secondary - class 1										
KSU 2/3 summation current transformers										
41015	5+5/5A	1	10	summation transformer	94	127	57			
41031	5+5+5/5A	1	10	summation transformer	94	127	57			
SUSK 4 summation current transformers										
40027	5+5+5+5/5A	1	10	summation transformer	137	156	65			
1A secondary - class 1 Busbar mounted current transformers										
type	ratio	class	Burden (VA)	description	max. hole diameter (mm)					
					round	B/bar 1	B/bar 2			
ASK 41.4 current transformers (H) 85.5 x (W) 71 x (D) 58 mm										
13239	75/1A	1	1.5	std current transformer	Ø32	40x10	30x15			
13244	100/1A	1	2.5	std current transformer						
13248	150/1A	1	5	std current transformer						
13250	200/1A	1	5	std current transformer						
13254	250/1A	1	10	std current transformer						
13257	300/1A	1	10	std current transformer						
13262	400/1A	1	15	std current transformer						
13266	500/1A	1	15	std current transformer						
13270	600/1A	1	15	std current transformer						
13273	750/1A	1	15	std current transformer						
13277	800/1A	1	15	std current transformer						
ASK 51.4 current transformers (H) 85.5 x (W) 71 x (D) 58 mm										
16260	500/1A	1	15	std current transformer				Ø44	50x10	40x30
16264	600/1A	1	15	std current transformer						
16268	750/1A	1	15	std current transformer						
16271	800/1A	1	15	std current transformer						
16275	1000/1A	1	15	std current transformer						
ASK 61.4 current transformers (H) 105.5 x (W) 96 x (D) 58 mm										
19265	600/1A	1	15	std current transformer	Ø44	60x10	50x30			
19269	750/1A	1	15	std current transformer						
19273	800/1A	1	15	std current transformer						
19285	1250/1A	1	30	std current transformer						
ASK 81.4 current transformers (H) 123.5 x (W) 120 x (D) 58 mm										
21253	800/1A	1	15	std current transformer	Ø55	80x10	60x30			
21256	1000/1A	1	15	std current transformer						
21264	1250/1A	1	15	std current transformer						
21272	1600/1A	1	30	std current transformer						
ASK 103.3 current transformers (H) 185 x (W) 172 x (D) 52 mm										
23251	1250/1A	1	30	std current transformer	Ø85	100x30	80x50			
23258	1600/1A	1	30	std current transformer						
23262	2000/1A	1	30	std current transformer						
23266	2500/1A	1	30	std current transformer						
23270	3000/1A	1	30	std current transformer						

new



KBR 28



KBU 23



KBU 816

Split-core current transformers

The split measuring system facilitates simple installation into existing panel boards without additional mounting requirements. Simply open the locking mechanism of the current transformer place around the primary conductor and lock ensuring that the circuit is closed. Once secondary conductors are connected the unit is ready for operation.

MBS AG current transformers conform fully to: DIN VDE 0414/1 - DIN 42600 - IEC 61869/1+2 - VBG 4

type	ratio	class	Burden (VA)	description	hole diameter (mm) round	B/bar
KBR series - Split-core CT's						
				5A secondary - class 1		
• Delivered with 0.5m connection cable 2 x 1.5 mm ²						
KBR 18L	split-core current transformers			<i>(H) 80.1 x (W) 49 x (D) 59 mm</i>		
18L-5001	150/5A	1	1	split-core current transformer	Ø18.4	-
18L-5002	200/5A	1	1.5	split-core current transformer		
18L-5004	250/5A	1	2	split-core current transformer		
KBR 28	split-core current transformers			<i>(H) 79.5 x (W) 49 x (D) 59 mm</i>		
28-5002	300/5A	1	1.5	split-core current transformer	Ø26	-
28-5003	400/5A	1	2.5	split-core current transformer		
28-5005	500/5A	1	3.0	split-core current transformer		
KBR 42	split-core current transformers			<i>(H) 96 x (W) 67 x (D) 69 mm</i>		
42-5003	500/5A	1	5	split-core current transformer	Ø42.4	-
42-5005	600/5A	1	5	split-core current transformer		
42-5009	800/5A	1	5	split-core current transformer		
42-5011	1000/5A	1	5	split-core current transformer		
KBU series - Split-core CT's						
				5A secondary - class 3 / 1 / 0.5		
KBU 23	split-core current transformers			<i>(H) 106 x (W) 93 x (D) 58 mm</i>		
80048	100/5A	3	1.25	split-core current transformer	Ø20	20x30
80030	150/5A	3	1.50	split-core current transformer		
80031	200/5A	3	2.50	split-core current transformer		
80044	250/5A	1	3.75	split-core current transformer		
KBU 58	split-core current transformers			<i>(H) 158 x (W) 125 x (D) 58 mm</i>		
80061	250/5A	1	1.5	split-core current transformer	Ø 50	50x80
80062	300/5A	1	2.5	split-core current transformer		
80063	400/5A	1	2.5	split-core current transformer		
80038	400/5A	0.5	2.5	split-core current transformer		
80064	500/5A	1	5.0	split-core current transformer		
80054	500/5A	0.5	2.5	split-core current transformer		
80065	600/5A	1	5.0	split-core current transformer		
80055	600/5A	0.5	2.5	split-core current transformer		
80067	800/5A	1	7.5	split-core current transformer		
80057	800/5A	0.5	2.5	split-core current transformer		
80068	1000/5A	1	10	split-core current transformer		
80058	1000/5A	0.5	5	split-core current transformer		
KBU 812	split-core current transformers			<i>(H) 198 x (W) 155 x (D) 58 mm</i>		
80098	1000/5A	1	10	split-core current transformer	Ø80	120x80
80100	1250/5A	1	15	split-core current transformer		
80080	1250/5A	0.5	7.5	split-core current transformer		
KBU 816	split-core current transformers			<i>(H) 243 x (W) 195 x (D) 79 mm</i>		
80147	1600/5A	1	15	split-core current transformer	Ø 80	160x80
80115	1600/5A	0.5	15	split-core current transformer		
80149	2000/5A	1	15	split-core current transformer		
80117	2000/5A	0.5	15	split-core current transformer		
80151	2500/5A	1	15	split-core current transformer		
80120	2500/5A	0.5	15	split-core current transformer		
80153	3000/5A	1	30	split-core current transformer		
80122	3000/5A	0.5	15	split-core current transformer		
80155	4000/5A	1	30	split-core current transformer		
80157	5000/5A	1	30	split-core current transformer		

Note: Available with 1A secondary on request.



IMN1...



IBR1...



IBR3...



ACN30-5



ACN60-5

type	ratio	description	class	VA	dimensions (mm)		
					(H)	(W)	(D)
IMN1 ring type transformers			<i>∅ round conductor: 32 mm</i>				
IMN1/05	50/5A	ring current transformer	3	1.3	87	64	42
IMN1/06	60/5A	ring current transformer	3	1.3	87	64	42
IMN1/07	75/5A	ring current transformer	3	1.3	87	64	42
IMN1/10	100/5A	ring current transformer	1	2.5	87	64	42
IMN1/12	125/5A	ring current transformer	1	2.5	87	64	42
IMN1/15	150/5A	ring current transformer	1	3.8	87	64	42
IMN1/16	160/5A	ring current transformer	1	3.8	87	64	42
IMN1/20	200/5A	ring current transformer	1	5	87	64	42
IMN1/25	250/5A	ring current transformer	1	7.5	87	64	42

IMN2 current transformers			<i>∅ round conductor: 38 mm</i>				
Primary bar conductor: 40 x 12.5 mm							
IMN2/16	160/5A	ring current transformer	1	10	99	75	42
IMN2/20	200/5A	ring current transformer	1	10	99	75	42
IMN2/25	250/5A	ring current transformer	1	10	99	75	42
IMN2/30	300/5A	ring current transformer	1	15	99	75	42
IMN2/40	400/5A	ring current transformer	1	25	99	75	42
IMN2/50	500/5A	ring current transformer	1	30	99	75	42
IMN2/60	600/5A	ring current transformer	1	30	99	75	42







IBR1 current transformers			<i>∅ round conductor: 60 mm</i>				
Primary bar conductor: 60 x 20 mm							
IBR1/06	600/5A	ring current transformer	0.5	7.5	115	104	45
IBR1/08	800/5A	ring current transformer	0.5	15	115	104	45
IBR1/10	1000/5A	ring current transformer	0.5	30	115	104	45
IBR1/12	1250/5A	ring current transformer	0.5	30	115	104	45

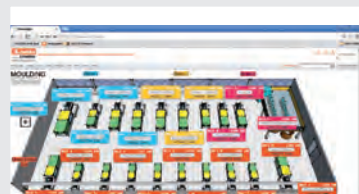
IBR3 current transformers			<i>∅ round conductor: 110 mm</i>				
Primary bar conductor: 100 x 30 mm							
IBR3/12	1250/5A	ring current transformer	0.5	15	170	152	45
IBR3/16	1600/5A	ring current transformer	0.5	30	170	152	45
IBR3/20	2000/5A	ring current transformer	0.5	30	170	152	45
IBR3/25	2500/5A	ring current transformer	0.5	30	170	152	45
IBR3/30	3000/5A	ring current transformer	0.5	30	170	152	45

IBNP primary wound current transformers							
IBNP/05	5/5A	primary wound CT	0.5	5	111	68	43
IBNP/10	10/5A	primary wound CT	0.5	5	111	68	43
IBNP/15	15/5A	primary wound CT	0.5	5	111	68	43
IBNP/20	20/5A	primary wound CT	0.5	5	111	68	43
IBNP/25	25/5A	primary wound CT	0.5	5	111	68	43
IBNP/30	30/5A	primary wound CT	0.5	5	111	68	43
IBNP/40	40/5A	primary wound CT	0.5	5	111	68	43

DC shunts			50mV output				
– Accuracy:			0.5%				
– Overload:			120% continuously, 1000% for 5 seconds				
			dimensions (mm)				
			A	B	C	D	E
ACN01-5	10A	50mV	105	25	35	14.3	5.5
ACN02-5	20A	50mV	105	25	35	14.3	5.5
ACN03-5	30A	50mV	105	25	35	14.3	5.5
ACN04-5	40A	50mV	105	25	35	14.3	5.5
ACN05-5	50A	50mV	105	25	35	19	9.5
ACN06-5	60A	50mV	105	25	35	19	9.5
ACN08-5	80A	50mV	105	25	35	19	9.5
ACN10-5	100A	50mV	105	25	35	19	9.5
ACN15-5	150A	50mV	105	25	35	19	14.3
ACN20-5	200A	50mV	105	25	35	24.5	16
ACN25-5	250A	50mV	135	40	50	50.8	12.7
ACN30-5	300A	50mV	135	40	50	50.8	12.7
ACN40-5	400A	50mV	135	50	50	38	31.5
ACN50-5	500A	50mV	135	50	50	38	31.5
ACN60-5	600A	50mV	135	65	50	38	31.5
ACN75-5	750A	50mV	135	65	50	38	31.5
ACN80-5	800A	50mV	135	75	50	38	31.5
ACN100-5	1000A	50mV	135	105	50	38	31.5

Intermediate and larger sizes up to 10.000A available on request.

	type	range	description	48 mm ²	72 mm ²	96 mm ²
	BEA40A					
	BEV40A					
	BEF50AP					
	BEF50AR					
	BEHCD					
	BEHCA4					
Ammeters (AC) moving iron (overscale 2 x I_n) (90° movement)						
	BEA01A*	1A	direct reading AC ammeter			
	BEA05A*	5A	direct reading AC ammeter			
	BEA10A*	10A	direct reading AC ammeter			
	BEA15A*	15A	direct reading AC ammeter			
	BEA25A*	25A	direct reading AC ammeter			
	BEA40A*	40A	direct reading AC ammeter			
	BEA01AT**	/1A	CT operated AC ammeter			
	BEA05AT**	/5A	CT operated AC ammeter			
Voltmeters (AC) moving iron (90° movement)						
	BEV25A*	250V	direct reading AC voltmeter			
	BEV40A*	400V	direct reading AC voltmeter			
	BEV50A*	500V	direct reading AC voltmeter			
	BEV60A*	600V	direct reading AC voltmeter			
Frequency meters (90° movement)						
	BEF50AP*	45 - 55Hz	frequency (pointer type) 110 - 380V			
	BEF50AR*	47 - 53Hz	frequency (vibrating reed) 110 - 230V			
	BEF50AR*3	47 - 53Hz	frequency (vibrating reed) 380 - 500V			
Maximum demand ammeters (90° movement) delay time: 15 min (standard)						
	ERB01A**	/1A	maximum demand ammeters			
	ERB05A**	/5A	maximum demand ammeters			
Combination maximum demand ammeters						
	ERBC01A**	/1A	com. Max. demand ammeters			
	ERBC05A**	/5A	com. Max. demand ammeters			
Note: ** For scale change, add /... (scale value) to the end of the part number e.g. ERBC05A7/100 = (100 / 5A AC, 72 mm ²) Standard ranges: 50/75/100/150/200/250/300/400/500/600...2000A						
Ammeters (DC) moving coil (90° movement)						
	BEA05D*	5A	direct reading DC ammeter			
	BEA10D*	10A	direct reading DC ammeter			
	BEA15D*	15A	direct reading DC ammeter			
	BEA20D*	20A	direct reading DC ammeter			
	BEA25D*	25A	direct reading DC ammeter			
	BEA30D*	30A	direct reading DC ammeter			
	BEV50MVD**	50mV	shunt operated ammeter			
	BEA01MAD*	1mA	DC (low current) ammeter			
	BEA20MAD*	4 - 20mA	DC (low current) ammeter			
** For DC shunts please refer to page E-22						
Voltmeter (DC) (90° movement)						
	BEV03D*	0 - 30V	DC voltmeter			
	BEV15D*	1 - 150V	DC voltmeter			
	BEV60D*	150 - 600V	DC voltmeter			
Running hour meters						
	BEHCA*	AC	running hour meter 24/110/230/380 VAC			
	BEHCD*	DC	running hour meter 10 - 80 VDC			
* 4 = 48 x 48 mm² / 7 = 72 x 72 mm² / 9 = 96 x 96 mm²						



EXC M4G 01



EXC GL A01



EXC GL AX1

Synergy is a supervision and energy management web-based software that provides the monitoring and control of the electrical installation. In addition to electrical quantities, it allows to check all environmental and process information (*operating status, alarms, etc.*), acquired from LOVATO Electric products, equipped with communication port.

Key software features:

- Structure and applications based on MS SQL relational database management system
- Server with Multi Client capability
- Client view through web-browsers, compatible with various platforms and operating systems.
- Communication with all LOVATO Electric measurement and control devices, via serial ports, Ethernet or modem
- Automatic reports of consumption periods (*e.g. time bands*) in both analytical and graphic format
- Energy consumption reports, Graphic display of trends, Database of instantaneous values
- Alarm management, both locally and via e-mail
- Access level management of users

type	description
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Synergy customer server hosted software

SYN1 SET	Licence for single host server install, includes 1 device licence
SYN1 SLL	Licence for single LOVATO Electric device via Modbus-RTU
SYN1 SLX	Licence for single 3rd party device via Modbus-RTU
SYN1 SDLWS	Licence for WEB API to access Synergy SQL database
SYN1 SLM	Licence for single device to access software updates

Synergy cloud hosted software

The Synergy cloud solution is specifically designed to make the software functions described previously available and accessible via PC or tablet on the LovatoElectric.com Internet portal. With Cloud, it is possible to collect and view production and consumption data with the management software without installing software and without a physical server. This saves on server purchasing, configuration and maintenance costs.

Key software features:

- Specific design for client requirements (*selection of measurement scenarios*)
- Low data traffic thanks to the extreme economy of the protocol used (Modbus)
- Instantaneous data acquisition from various devices that can even be located in different sites
- Simple and clear reporting of all energy data
- Limited subscription cost, yearly renewal required

SYN1 CLL	Cloud Licence for single LOVATO Electric device
SYN1 CLX	Cloud Licence for single 3rd party device via Modbus-RTU

Synergy compatible hardware

Hardware expansion modules to enable Lovato product to communicate to **Synergy** or **Synergy cloud**

Compatible on DMG6XX/700/800/900, RGK610/750/800/900, ATL610/800/900, DCRG8x

EXP1012	opto-isolated RS-485 interface	
EXP1013	opto-isolated Ethernet interface	(only for DMG800/900)
EXP1015	GPRS/GSM modem without antenna	(only for DMG800/900)
CX03	GSM Quad-band antenna for EXP1015 modem (800/900/1800/1900MHz)	

Compatible on DMED310T2, DMG300

EXM1012	opto-isolated RS-485 interface
EXM1013	opto-isolated Ethernet interface with Web server function
EXM1020	opto-isolated RS-485 interface and 2 relay outputs (5A 250 VAC)

Compatible on Lovato devices with RS485 port

EXC M4G 01	RS485 Gateway/4G modem, including antenna and programming cable (9.5-27 VAC / 9.5-35 VDC)
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Synergy data logger

EXC GL A01 gateway is able to collect data from devices which are connected through Ethernet or RS485 port. Modbus RTU, ASCII and TCP protocols are supported. The data can be reviewed by a connection to Synergy Cloud service or to Ethernet local web server and a browser. Access to Internet for data sending can be achieved with Ethernet port or by adding **EXC GL AX1** 2G/3G modem.

- CPU ARM 1 GHz, with local memory
- 2 Ethernet port
- 1 RS232 / RS422/RS485 serial port
- 24 VDC (10...32 VDC) power supply
- Operating temperature -20...+60°C
- Simplified connection to Lovato Electric devices, up to 32 devices

EXC GL A01	Gateway data logger for data collecting via Modbus from the devices in the field
EXC GL AX1	2G/3G modem communication module for EXC GL A01



POWER QUALITY

F

Generator controllers		Lovato	F-1...2
Automatic transfer controllers		Lovato	F-3
Battery chargers		Lovato	F-4
Power factor controllers		Lovato	F-5
Capacitor switching contactors / Thyristor modules		Lovato	F-6
Expansion modules		Lovato	F-7
Power capacitors for PF correction		Electronicon	F-8
Power factor racks and systems		EM	F-9...12
Static var generators		Delta	F-13
Active / Passive harmonic filters		Delta Schaffner	F-14 F-15
Portable network analyser		Chauvin Arnoux	F-16



Scan to watch video



RGK600



RGK750



RGK900

Automatic mains failure (AMF) gen-set controllers

- Engine protection
- Programmable inputs and outputs / alarm properties
- Automatic starting of generator and load switching to stand-by emergency source in case of mains failure
- Supervision in “open transition” for contactors, motorised circuit breakers and changeover switches

type	digital inputs	digital outputs	description
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RGK600 series (IP40) 144 x 144 mm panel mounting

- Universal supply: 12/24 VDC
- Display: Graphic LCD 128 x 80 pixels with backlight
- Measurement voltage: 50...576 VAC / Rated voltage: 480 VAC L-L
- Current Input: 3PH, /5A or /1A
- Single, two and three phase voltage control - L1-L2-L3-N
- IR programming port on front panel for communication with PC
- 3 analog resistance input for oil pressure, engine temperature or fuel level control
- Customisable alarm text (8 alarms)
- Non-volatile memory for event storage
- Modbus-RTU and Modbus-ASCII protocols (RGK610)

RGK600	4	6	AMF gen-set controller with “W” or magnetic “pickup” for engine speed reading (no CANbus)
RGK601	4	6	AMF gen-set controller with CANbus-J11939 (no “W” or magnetic “pickup”)
RGK610*	4	6	AMF gen-set controller with “W” or magnetic “pickup” for engine speed reading (no CANbus)

* 1 slot to accept plug-in expansion modules EXP1010/1011/1012, see page F-7

RGK700 series (IP65) 180 x 240 mm panel mounting

As above RGK600 but with following additional features:

- Measurement voltage: 50...720 VAC / Rated voltage: 480 VAC L-L
- Rated voltage: RGK700 - 600 VAC L-L / RGK750 - 480 VAC L-L
- IR programming port on front panel for communication with PC
- PLC logic for inputs, outputs and internal status
- Expansion bus with 2 slots for EXP... series expansion modules (RGK 750 only)
- Calendar-clock (RTC) with backup reserve energy

RGK700	6	7	AMF grey gen-set controller
RGK750	6	7	AMF black gen-set controller

RGK800 series (IP65) 180 x 240 mm panel mounting

As above RGK750 but with following additional features:

- RS485 communication (+ CANBUS)
- Neutral current measurement range: 0.050...6A or 1.2A
- 400Hz frequency support
- 1 programmable analog input
- Current leakage control
- Expandable with rear plug-in expansion (up to 3) modules (see page F-7)

RGK800	8	10	full featured AMF gen-set controller
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Paralleling controllers for mains - mains and generator - generator

- Engine protection
- Mains-generator “closed transition” synchronising
- Mains-generator load sharing with source peak demand control
- Generator paralleling supervision (island mode with load sharing)

RGK900 series (IP65) 180 x 240 mm panel mounting

As above RGK800 but with following additional features:

- Voltage measurement range: 50-720 VAC / Rated voltage: 480 VAC L-L
- Frequency measurement range: 45...65Hz or 360...440Hz
- Display: Graphic LCD 128 x 112 pixels with backlight
- Customisable alarm text (16 alarms)
- Modbus-RTU, Modbus-ASCII and Modbus-TCP communication protocols
- 2 analog outputs for engine speed control (governor) / voltage regulator (AVR)
- Built-in buzzer, multi-level passwords, sleep function

RGK900SA	13	10	full featured stand alone gen-set controller
RGK900	13	10	mains-generator paralleling control

Control of mains, automatic transfer switching and paralleling on multiple generators controlled by RGK900SA

RGK900MC	13	10	Mains-ATS (Automatic Transfer Switching) controller
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RGK400SA



RGK420SA



RGK600SA

Stand alone gen-set controllers

- Generator voltage and current control
- Engine protection
- Programmable inputs and outputs
- Programmable alarm properties

type	digital inputs	digital outputs	description
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RGK400SA series (IP40) 96 x 96 mm panel mounting

- Universal supply: 12 / 24 VDC
- Display: LCD icon display
- Measurement voltage: 50 - 576 VAC
- Rated voltage: 480 VAC L-L
- Current Input: 1PH, /5A or /1A
- Engine protection: With "W" or magnetic "pickup" for engine speed reading
- 1 analog resistance input for oil pressure / engine temperature or fuel level control
- Single, two and three phase voltage control - L1-L2-L3-N
- Customisable alarm text (2 alarms)
- IR programming port on front panel for communication with PC (CX01, see page F-7)
- NFC technology for parameter setup via smartphone or tablet

RGK400SA	5+1 (E/stop)	5	stand alone gen-set controller
RGK420SA*	5+1 (E/stop)	5	stand alone gen-set controller

* Incorporates 3 position key switch (OFF, local start, remote start)

RGK400SA accessories

Expansion modules (rear plug-in)

EXP1040	additional - 2 digital / resistance inputs, 2 static outputs
EXP1041	additional - 2 thermocouple inputs, 2 static outputs
EXP8005	housing gasket to increase protection to IP65

RGK600SA series (IP40) 144 x 144 mm panel mounting

As above RGK400SA but with following additional features:

- Display: Graphic LCD 128 x 80 pixels with backlight
- Measurement voltage: 50 - 576 VAC
- Rated voltage: 480 VAC L-L
- Current Input: 3PH, /5A or /1A
- Operating temperature: -30 - +70°C
- 3 analog resistance input for oil pressure, engine temperature or fuel level control
- Customisable alarm text (8 alarms)
- No NFC technology
- Non-volatile memory for event storage
- Modbus-RTU and Modbus-ASCII protocols

RGK600SA	4	6	stand alone gen-set controller with "W" or magnetic "pickup" for engine speed reading (no CANbus)
RGK601SA	4	6	stand alone gen-set controller with CANbus-J11939 (no "W" or magnetic "pickup")



Scan to watch video

Automatic Transfer Switch (ATS) controllers

- Tie-breaker management
- Automatic non-priority load management
- Remote control and supervision / Event logging
- Supervision of two or three three-phase power sources
- Emergency demand supervision for stand-by generating sets
- Modbus-RTU, Modbus-ASCII and Modbus-TCP communication protocols
- IR programming port on front panel for communication with PC (*NFC on some models*)



ATL100

new



ATL500

NFC

new



ATL601

NFC



ATL900

type	digital inputs	relay outputs	description
ATL100 series (econo) IP40 (no display) 54 mm DIN mounting			
<p>ATL100 with its modular housing is suitable for monitoring two independent power sources and to manage switching between the two sources with single phase control.</p> <ul style="list-style-type: none"> • Supply voltage: 230 VAC • Rated voltage: 230 VAC L-L • 2 single phase inputs and outputs L+N • Response thresholds of min and max voltage: 80% and 120% of nominal setting • LED indication: 2 x (green) presence of both input voltages, 1 x presence of output voltage 1 x (red) indicates presence voltage out of limits on inputs 			
ATL100	2	3	single phase automatic transfer switch controller
ATL500 series (econo) IP40 (no display) 144 x 144 mm panel mounting			
<p>ATL500 is an automatic transfer switch that allows load commutation between two different source line, a main line (LINE 1) and a stand-by or emergency secondary line (LINE 2).</p> <ul style="list-style-type: none"> • Supply voltage: Self seeking power supply - 110...240 VAC LN • Measurement inputs: 3-ph+N (suitable for 1 and 2 phase lines) • Supported switching devices: Contactors and motorised changeovers • Output relay: 2 NO for contactors / 1 NC to start genset • Parameter setup: Via built-in NFC technology (smartphone or tablet) • Monitoring functions: Overvoltage, Undervoltage Phase failure Wrong phase sequence, Symmetry, Overfrequency Under frequency 			
ATL500	2	3	3-ph+N automatic transfer switch controller
ATL600 series IP40 (with LCD display) 144 x 144 mm panel mounting			
<ul style="list-style-type: none"> - AC power supply 110...240 VAC - Management of two power sources - Measurement inputs for 3-ph+N voltage values (suitable for 1 and 2 phase lines) - 128 x 80 backlit graphic LCD to view measurements, events and alarms 			
ATL600	6	7	automatic transfer switch controller for 2 sources
ATL601*	6	7	automatic transfer switch controller for 2 sources
* With 12/24DC supply			
ATL610 series			
As above ATL600 but with following additional features:			
<ul style="list-style-type: none"> - Real time clock RTC - Dual power supply (110 - 240 VAC line and 12-24 VDC battery supply) - Expandable with I/O and communication modules 			
ATL610*	6	7	automatic transfer switch controller for 2 sources
* 2 slot to accept plug-in expansion modules EXP1010/1011/1012/1013/1014 , see page F-7			
ATL800 series IP65 (with backlit graphic LCD display) 180 x 240 mm panel mounting			
As above ATL610 but with following additional features:			
<ul style="list-style-type: none"> - Management of 2 energy sources and 1 tie breaker - 6 preconfigured system layouts - Built-in NFC technology for parameter setup via smartphone or tablet - Built-in RS485 communication / Built-in programmable PLC logic - Expandable with up to 3 rear plug-in expansion modules EXP... (see page F-7) 			
ATL800	8	7	automatic transfer switch controller for 2 sources
ATL900 series IP40 180 x 240 mm panel mounting			
As above ATL800 but with following additional features:			
<ul style="list-style-type: none"> - Management of 3 energy power sources and 2 tie breakers - 4 current inputs for the three phases and neutral - 14 preconfigured system layouts - 128 x 112 backlit graphic LCD to view measurements, events and alarms 			
ATL900	12	10	automatic transfer switch controller for 3 sources



BCF...

Switching battery chargers

- Switching technology
- Automatic reset at end of alarm conditions
- Charging cycle in accordance with DIN 41773 standards

type	output voltage	output current	max. power consumption		description	dimensions (mm)		
			VA	W		(H)	(W)	(D)

BCF series Modular automatic switching battery chargers

- Alarm output relay (3A 250 VAC) AC1 duty
- Modular DIN rail mounting (*aligns with standard MCB's*) or chassis mount
- Wide auxiliary supply range 100 - 240 VAC ($\pm 10\%$) 50/60Hz
- Protection:
 - Mains input fuse (*non replaceable*)
 - Battery output fuse
 - Electronic lock in case of short circuit on battery terminals, reverse battery polarity and output overload
- LED indication of:
 - Correct output voltage
 - Reverse battery polarity

BCF025012	12V	2.5A	80	40	auto battery charger	96	90	56
BCF045012	12V	4.5A	150	70	auto battery charger	96	90	56
BCF012524	24V	1.25A	80	39	auto battery charger	96	90	56
BCF025024	24V	2.5A	150	77	auto battery charger	96	90	56

BCG series Rail mount switching battery chargers

- High efficiency
- Alarm output relay (5A 30 VDC duty)
- Wide auxiliary supply range 110 - 240 VAC ($\pm 10\%$) 50/60Hz
- DIN rail or chassis mounting (*can be mounted vertically with adaptor*)
- Boost signal controlled by external contact
- Hiccup function for battery recharging when its voltage is lower than 50% rated value
- Maximum charging current limiting trimmer 20 - 100% (*adjustable from front*)
- Protection:
 - Mains input fuse
 - Electronic lock in case of short circuit on battery terminals, reverse battery polarity and output overload
- LED indication of:
 - Power ON
 - Charging operation $I > 30\% I_c$
 - Overload or short circuit condition
 - Reverse battery polarity

BCG0612	12V	6A	230	97	auto battery charger	150	162	63
BCG1212	12V	12A	284	290	auto battery charger	150	213	63
BCG0524	24V	5A	364	158	auto battery charger	150	162	63
BCG1024	24V	10A	630	311	auto battery charger	150	213	63

Accessories for above BCG battery chargers

BCGX00 vertical side mount adaptor (*for space saving*) for **BCG0612** and **BCG0524**

BCE series Linear battery chargers

- Linear technology
- Auxiliary supply voltage: 220 - 240 VAC ($\pm 10\%$) 50/60Hz
- Charging current: 30 - 100% I_c (*adjustable*)
- Protection:
 - Mains input fuse (*except BCE2V524 and BCE0312*)
 - Battery output fuse
 - Electronic lock in case of short circuit on battery terminals, reverse Battery polarity output overload ($< 0.5 U_e$) and disconnected battery
- LED indication of:
 - Power ON
 - Charge ($I > 0.2 I_c$)
 - Alarm for protection tripping
- Alarm output: Static NPN transistor BCE2V5 and BCE03 - others relay (5A 250 VAC)

BCE0312	12V	3	117	-	auto battery charger	93	134	100
BCE0612	12V	6	222	-	auto battery charger	130	192	140
BCE1212	12V	12	400	-	auto battery charger	230	192	140
BCE2V524	24V	2.5	166	-	auto battery charger	93	134	100
BCE0524	24V	5	317	-	auto battery charger	130	192	140
BCE1024	24V	10	610	-	auto battery charger	230	192	140



BCG ...



BCE...



DCRL...



DCRG 8



DCRG 8F



EXP...

DCRL / DCRG Power Factor Controllers incorporate latest technological advanced monitoring to provide accurate measurement and control of network parameters in power factor correction applications, providing total protection of capacitors and systems.

- Configurable 1A or 5A current input
- Suitable for medium voltage systems (with VT's)
- High accuracy (TRMS) measurements with configurable alarms
- Wide voltage measurement range: 50-720VAC L-L, 50-415VAC L-N
- Expandable through clip-in expansion modules (*I/Os, Comm ports etc.*)
- Front mounted optic interface port for programming, data download, diagnostics

type	number of steps	expand to:	description	dimensions (mm)		
				(H)	(W)	(D)

DCRL controllers 3, 5 and 8 step single phase CT connection

DCRL series power factor controllers with advanced functionality in a dedicated ultra compact housing, combine modern front design with ease of mounting and expendability.

- Reactive power measurement per step installed
- 3, 5 or 8 steps (*expandable with expansion module*)
- Voltage and current THD with single harmonic analysis up to 15° order
- Backlit icon LCD display (*alarm codes with scrolling text*) 128 x 80 pixels

3 and 5 step controllers

1 expansion slot

DCRL 3	3 step	6 step	panel mount power factor controller	96	96	65
DCRL 5	5 step	8 step	panel mount power factor controller	96	96	65

8 step controllers

2 expansion slots

DCRL 8	8 step	14 step	panel mount power factor controller	144	144	44
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DCRG controllers 8 step

single and three-phase CT connection

DCRG series power factor controllers are designed to satisfy technical characteristics of modern electrical installation requirements in all industries and working conditions, to detect critical operating conditions and offer total protection of power factor systems.

- Recording of number of connections per step
- Capacitor over-current protection on all three phases
- Voltage and current THD with single harmonic analysis up to 31° order.
- 8 steps (*expandable by up to another 8 steps with plug-in expansion modules*)
- Backlit graphic LCD display (*permits reading in bar-graph and wave form format*)
- Configurable for fast dynamic (*thyristor*) switching or a combination of static and relay
- Quick CT programming function / Automatic identification of direction of CT current flow
- Calendar-clock (RTC) with backup reserve for event logging: Alarms, setup changes, etc.
- Connection to 1/3 ph lines, 3 ph + N and co-generation systems with 4 quadrant operation
- Three current inputs permit per phase analysis of all electrical parameters in the installation

8 relay step controller

4 expansion slots

DCRG 8	8 step	18 step	panel mount power factor controller	144	144	44
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8 thyristor static step controller (*expandable up to 24 steps with expansion modules*)

DCRG 8F	8 step	24 step	static step power factor controller	144	144	44
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Expansion modules for controllers

EXP series expansion modules add extra functionality to following panel mount products:

DMG 600/700/800/900	- Digital milometers and power analysers
DCRL and DCRG	- Automatic power factor controllers
ATL 600/800/900	- Automatic transfer controllers
RGK 400/600/750/800/900	- Generator controllers

type	inputs	outputs	description
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EXP expansion modules (*plug into rear of controller to add more functionality*)

Inputs/Outputs

EXP1006	-	2 relay	to increase number of capacitor steps
EXP1007	-	3 relay	to increase number of capacitor steps
EXP1000	4 digital	-	opto-isolated digital inputs

Note: For more expansion modules options, see **F-7**

A - Motor control & drives

Special capacitor switching contactors are equipped with early-make limiting resistors which limit in-rush currents initially before making contact. Resistors are disconnected from the circuit when contactor closing operation is complete.

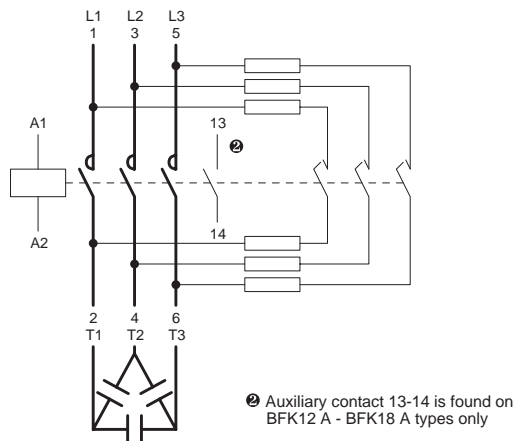


type	kvar 400V	kvar 440V	rated current	auxiliary contact	description
Capacitor switching contactors					
BFK1210A...	12.5	14	18A	1NO	capacitor switching contactor
BFK1810A...	15	17	23A	1NO	capacitor switching contactor
BFK2600A...	20	22	30A	-	capacitor switching contactor
BFK3200A...	25	27.5	36A	-	capacitor switching contactor
BFK3800A...	30	33	43A	-	capacitor switching contactor
BFK5000A...	40	45	58A	-	capacitor switching contactor
BFK8000A...	50	56	75A	-	capacitor switching contactor
BFK11500A...	75	85	115A	-	capacitor switching contactor
BFK15000A...	100	115	144A	-	capacitor switching contactor

Standard coil voltages (add to part number): **AC - 230/400/525V**

Kit to assemble BFK contactors from standard contactors

type	description	for contactor
G460	kit to assemble standard contactors for capacitor switching	BF09...38
BFX10K3	kit to assemble standard contactors for capacitor switching	BF50...80
BFX10K4	kit to assemble standard contactors for capacitor switching	BF95 ...150



Thyristor switching modules (intelligent)

DCTL series thyristor modules are ideal for dynamic correction of power factor. Zero cross switching guarantees very short switching times, reducing current peaks generated by capacitor insertion without voltage peaks on disconnection. Integrated current transformers permit complete monitoring and protection of capacitor banks.

- Suitable for dynamic (fast) power factor correction
- Prevents high in-rush currents at capacitor switching
- Operational voltage: 400 VAC (440/690V available on request)

Advanced communication functions

- NFC connectivity for programming via smart devices
- Optical port for frontal connection to a PC via USB or WiFi via **CX01** or **CX02** dongle
- Optional RS485 card (order code **EXC1042** - see page **A-12**) for connection to DCRG8F connector

type	kvar 400V	rated current	description	dimensions (mm)		
				(H)	(W)	(D)
DCTLA4000150	15	22A	thyristor switching module	218	75	17
DCTLA4000300	30	43A	thyristor switching module	218	75	172
DCTLA4000500	50	72A	thyristor switching module	226	95	182
DCTLA4001000	100	144A	thyristor switching module	301	212	216



EXP...



CX02



CX01

Expansion modules for controllers

EXP series expansion modules add extra functionality to following panel mount products:

- DMG 600/700/800/900** - Digital multimeters and power analysers
- DCRL and DCRG** - Automatic power factor controllers
- ATL 610/800/900** - Automatic transfer controllers
- RGK 400/600/750/800/900** - Generator controllers

type	inputs	outputs	description
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EXP expansion modules (plug into rear of controller to add more functionality)

Inputs/Outputs

EXP1006	–	2 relay	to increase number of capacitor steps
EXP1007	–	3 relay	to increase number of capacitor steps
EXP1000	4 digital	–	opto-isolated digital inputs
EXP1001	–	4 static	opto isolated to increase static steps
EXP1002	2 digital	2 static	opto-isolated digital inputs and static outputs
EXP1003	–	2 relay	outputs rated 5A 250 VAC
EXP1004	2 analog	–	opto-isolated PT100, 0/4-20mA, 0-10V, 0...±5V
EXP1005	–	2 analog	opto-isolated 0/4-20mA or 0-10V or 0...±5V
EXP1016	3ph (A)	–	+ 2 x NTC for capacitor bank protection

Communication

EXP1010	USB	–	opto-isolated USB interface
EXP1011	RS232	–	opto-isolated RS232 interface
EXP1012	RS485	–	opto-isolated RS485 interface
EXP1013	Ethernet	–	opto-isolated Ethernet with web server function
EXP1014	Profibus	–	opto-isolated Profibus-DP interface
EXP1015	GSM	–	GPRS/GSM modem without antenna

Accessories

C2	PC - DCRL/DCRG connecting cable + EXP10 11 module
C9	PC - Analog modem connecting cable
CX01	PC - controller USB dongle with connecting cable
CX02	PC - Controller Wi-Fi dongle for programming, data download, diagnostics
CX03	GSM Quad-band antenna for EXP10 15 modem (800/900/1800/1900MHz)



275.525-701400



275.186-405600



275.396-715401



275.100-10120

MKPg-275 three-phase cylindrical capacitors

MKPg-275 three-phase power capacitors, dry self-healing dielectric, gas filled (N₂) protecting windings from environmental influences extending life expectancy, permitting mounting in any position.

- Capacitance tolerance: -5 - +10%
- Max. permissible current: 1.5 - 2 IN
- Impregnant (*filling*): Inert insulation gas (N₂) completely harmless to the environment
- Mounting: M12 base mounted fixing stud (*any position*)
- Protection: Overpressure disconnection facility
- Standards: IEC/EN 60831, VDE 0560-46/47, CSA C22.2 - 190-M1985, UL - 810, GOST 1282-88
- Dielectric losses: <0.25 W/kvar
- Max. inrush current: 300 x IN

type	kvar at:			CN µF 3 x	description	dimensions (mm)	
	400V	440V	480V			(H)	Ø

400...440V three-phase capacitors *Supplied with discharge resistors*

- Rated Voltage: 440V, 50 Hz
- Temp category: **D** -50°C to +55°C Max. (24 hr average 45°C - annual average 35°C)
- Duty: Continuous (*life expectancy > 100.000 h*)
- For PFC equipment in mains with standard operating conditions

275.548-408200	12.5	15	–	82	3-ph cylindrical capacitor	245	75	
275.269-416600	25	30	–	166	3-ph cylindrical capacitor	280	95	
275.39B-527400*	41	50	–	274	3-ph cylindrical capacitor	295	136	
275.105-10068*	discharge resistor module for 275.39B-527400 capacitor						3 x 68	kΩ

400...480V three-phase industrial capacitors

- For PFC equipment in mains with severe operating conditions or substantial voltage fluctuations.

- Rated Voltage: 480V, 50 Hz
- Temp category: **60** -50°C to +60°C Max. (24 hr average 50°C - annual average 40°C)
- Duty: Continuous (*life expectancy > 150.000 h*)
- Supplied with discharge resistors (*except * require separate discharge module*)

275.523-502800	4.2	5	6.1	33	3-ph cylindrical capacitor	196	60	
275.545-504000	6.2	7.5	8.7	40	3-ph cylindrical capacitor	164	75	
275.546-505800	8.3	10	12.5	58	3-ph cylindrical capacitor	230	75	
275.546-506800	10.0	12.5	15.0	68	3-ph cylindrical capacitor	230	75	
275.256-508300	12.5	15.0	18.0	83	3-ph cylindrical capacitor	230	85	
275.266-511100	16.8	20.0	24.1	111	3-ph cylindrical capacitor	230	95	
275.278-513700	20.0	25.0	30.0	137	3-ph cylindrical capacitor	245	100	
275.279-516600	25.0	30.0	36.0	166	3-ph cylindrical capacitor	280	100	
275.389-519900*	30.0	36.0	43.0	199	3-ph cylindrical capacitor	280	116	
275.389-522100*	33.3	40.0	48.0	221	3-ph cylindrical capacitor	280	116	
275.100-10120*	discharge resistor module for 275.389-519900 capacitor						3 x 120	kΩ
275.105-10100*	discharge resistor module for 275.389-522100 capacitor						3 x 100	kΩ

525V three-phase capacitors

- Rated Voltage: 400...525V, 50 Hz
- Temp category: **D** -40°C - +55°C (Max: 24 hr average 45°C - annual ave 35°C)
- Duty: Continuous (*life expectancy 480V >150000 h 525V >100000 h*)
- Supplied with discharge resistors (*except * require separate discharge module*)

	525V	480V	400V					
275.525-701400	3.6	3.0	2.2	14	3-ph cylindrical capacitor	164	60	
275.535-601900	5	4.1	3	19	3-ph cylindrical capacitor	164	65	
275.546-703800	10	8.3	6.2	38	3-ph cylindrical capacitor	230	75	
275.548-605800	15	12.5	9.4	58	3-ph cylindrical capacitor	245	75	
275.266-607700	20	16.7	12.5	77	3-ph cylindrical capacitor	230	95	
275.269-611500	30	25.0	18.6	115	3-ph cylindrical capacitor	280	95	
275.396-715401*	40	33.4	25	154	3-ph cylindrical capacitor	230	136	
275.105-10100*	discharge resistor module for 40 kvar 525V capacitor						3 x 100	kΩ

690V three-phase capacitors

- Rated Voltage: 690...760V, 50 Hz
- Temperature category: **60** -40°C - +60°C (Max: 24 hr average 50°C - annual ave 40°C)
- Duty: Continuous (*life expectancy > 150000 h*)
- Supplied with discharge resistors (*except * require separate discharge module*)

	690V	760V	400					
275.185-402800*	12.5	15	–	27.6	3-ph cylindrical capacitor	164	116	
275.186-405600*	25	30	–	56	3-ph cylindrical capacitor	230	116	
275.39B-411100*	50	60	–	111	3-ph cylindrical capacitor	295	136	
275.100-10300*	discharge resistor module for 12.5/25 kvar 690V capacitor						3 x 300	kΩ
275.105-10180*	discharge resistor module for 50 kvar 690V capacitor						3 x 180	kΩ



RCS...

RC series - Power Factor rack system

RC series power factor racks are designed for direct panel mounting onto vertical supports within floor standing electrical panels.

RC series rack design incorporates the following:

- Sheet metal mounting frame for easy panel mounting
- Electronic heavy duty "gas filled" cylindrical capacitors (*with integrated discharge resistors*)
- Special capacitor switching contactors 400 VAC coil (*230V on request*)
- Three-phase busbar mounted fuse holder with hinged fuse protection cover
- Suitably rated HRC fuses per phase of each capacitor bank
- Incorporated busbar, supports and inter-connecting busbar links

type	kvar at:			description	dimensions (mm)		
	400V	440V	480V		(H)	(W)	(D)

RC series - Rack system (*without harmonic reactors*)

Single step racks - 480V capacitors - fuse protection

RCS01204	12.5	14	17	single step capacitor rack	270	555	470
RCS02504	25	28	34	single step capacitor rack	270	555	470
RCS05004	50	56	67	single step capacitor rack	270	555	470

Double step - racks 480V capacitors - separate fuse protection for each bank

RCD02524	2 x 12.5	2 x 14	2 x 17	double step capacitor rack	270	555	470
RCD05024	2 x 25	2 x 28	2 x 34	double step capacitor rack	270	555	470
RCD10024	2 x 50	2 x 56	2 x 68	double step capacitor rack	270	555	470
RCD03734	12.5+25	14 + 28	17 + 34	double step capacitor rack	270	555	470
RCD07534	25 + 50	28 + 56	34 + 67	double step capacitor rack	270	555	470



RCD...

HR7 series - Racks (480V capacitors) with 7% de-tuned harmonic capacitor banks

7% - 189 Hz De-tuned reactors *for networks with 5th and 7th Harmonics*

Single step - racks 480V capacitors - separate fuse protection for each bank

HRS014074	13.5	15	18	capacitor + 7% reactor rack	310	740	538
HRS027074	27	30	36	capacitor + 7% reactor rack	310	740	538
HRS054074	54	60	72	capacitor + 7% reactor rack	310	740	538

Double step - racks 480V capacitors - separate fuse protection for each bank

HRD027274	2 x 13.5	2 x 15	2 x 18	capacitor + 7% reactor rack	310	740	538
HRD054274	2 x 27	2 x 30	2 x 36	capacitor + 7% reactor rack	310	740	538
HRD108274	2 x 54	2 x 60	2 x 72	capacitor + 7% reactor rack	310	740	538
HRD041374	13.5+27	15 + 30	18 + 36	capacitor + 7% reactor rack	310	740	538
HRD081374	27 + 54	30 + 60	36 + 72	capacitor + 7% reactor rack	310	740	538



HRD...

HR14 series - Racks (525V capacitors) with 14% de-tuned harmonic capacitor banks

14% - 134 Hz De-tuned reactors *for networks with a high levels of 3rd Harmonics*

Single step - racks 480V capacitors - separate fuse protection for each bank

HRS013144	13.5	15	18	capacitor + 14% reactor rack	310	740	538
HRS027144	27	30	36	capacitor + 14% reactor rack	310	740	538
HRS054144	54	60	72	capacitor + 14% reactor rack	310	740	538

Double step - racks 480V capacitors - separate fuse protection for each bank

HRD027144	2 x 13.5	2 x 15	2 x 18	capacitor + 14% reactor rack	310	740	538
HRD054144	2 x 27	2 x 30	2 x 36	capacitor + 14% reactor rack	310	740	538
HRD040144	13.5+27	15 + 30	18 + 36	capacitor + 14% reactor rack	310	740	538

RC series - 525V Rack system (*without harmonic reactors*)

	525V	440V	400V				
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RCS02005	20	14	11.5	single step capacitor rack	270	555	470
RCD04025	2 x 20	2 x 14	2 x 11.5	double step capacitor rack	270	555	470
RCD08025	2 x 40	2 x 28	2 x 23	double step capacitor rack	270	555	470
RCD06035	20 + 40	2 x 56	11.5 + 23	double step capacitor rack	270	555	470



RCD...



Try the EM PFC Calculator.

Visit our website www.em.co.za/powerfactor

Power factor systems (automatic)

For applications with varying capacitor requirements. An automatic reactive controller monitors the network and only switches capacitor banks when required, avoiding potential over or under compensation in a network.

FMS series - Floor standing systems

Complete ready-to-install system comprising following:

- Suitably ventilated floor standing enclosure (*thermostatically controlled roof mounted exhaust fan*)
- Mains isolator, door interlocking (*with early make/late break auxiliary contact*)
- High end reactive control relay **DCRG 8** (*incorporating digital display of all important network parameters*)
- Reverse-flow roof mounted exhaust fan (*improved cooling and ventilation of the entire panel*)
- Bottom cable entry (*top entry available on request*)
- RC series racks heavy duty cylindrical 480V rated capacitors, fusegear and busbar "special" capacitor switching contactors incorporating limiting inductances

Able to monitor all three phase voltage and current to providing accurate indication of:

- Active, Apparent Power as well as Active, Reactive, Apparent Energy monitoring
- Current and Voltage Harmonics analysis (*up to 31st harmonic*)
- Calendar-clock with backup reserve power
- Event logging: alarms, setup changes, events etc. (*internal memory stores last 250 events*)
- Internal panel temperature monitoring
- Expandable with up to 4 expansion modules for: additional steps, Analog Inputs/Outputs, RS323, RS485, Ethernet, GPRS/GSM modem communication

type	kvar at:		steps (kvar) at 400V				Expands to (kvar)	dimensions (mm)		
	400V	440V	12.5	25	50	100		(H)	(W)	(D)

FMS series - Floor standing complete power factor systems (480V capacitors)

400V floor standing complete power factor systems

FMS13804	137.5	165	1	1	2	-	475	2180	600	630
FMS17504	175.0	210	-	1	3	-	475	2180	600	630
FMS21304	212.5	255	1	2	3	-	475	2180	600	630
FMS23804	237.5	285	1	1	2	1	475	2180	600	630
FMS27504	275.0	330	-	1	3	1	475	2180	600	630
FMS31304	312.5	375	1	2	1	2	475	2180	600	630
FMS33804	338.0	390	1	1	2	2	475	2180	600	630
FMS37504	375.0	450	-	1	3	2	475	2180	600	630
FMS41304	412.5	480	1	2	3	2	475	2180	600	630
FMS43804	437.5	525	1	1	2	3	475	2180	600	630
FMS47504	475.0	570	-	1	1	4	-	2180	600	630
FMS53804	537.5	645	1	1	2	4	950	2180	1200	630
FMS57504	575.0	690	-	1	3	4	950	2180	1200	630
FMS63804	637.5	765	1	1	2	5	950	2180	1200	630
FMS67504	675.0	810	-	1	1	6	950	2180	1200	630
FMS73804	738.0	870	-	1	2	6	950	2180	1200	630
FMS77504	775.0	930	-	1	1	7	950	2180	1200	630
FMS83804	838.0	990	1	1	2	7	950	2180	1200	630
FMS85004	850.0	1020	-	2	2	7	950	2180	1200	630
FMS87504	875.0	1050	-	1	3	7	950	2180	1200	630
FMS95004	950.0	1140	-	2	2	8	-	2180	1200	630

525V floor standing complete power factor systems

type	kvar at:		steps (kvar) at 525V				Expands to (kvar)	dimensions (mm)		
	525V	415V	20	40	80			(H)	(W)	(D)

FMS14005	140	88	1	1	1	-	400	2180	600	630
FMS20005	200	126	2	2	1	-	400	2180	600	630
FMS22005	220	138	1	1	2	-	400	2180	600	630
FMS28005	280	176	2	2	2	-	400	2180	600	630
FMS30005	300	188	1	1	3	-	400	2180	600	630
FMS36005	360	226	2	2	3	-	400	2180	600	630
FMS38005	380	238	1	1	4	-	400	2180	600	630
FMS46005	460	288	1	1	5	-	800	2180	1200	630
FMS52005	520	326	2	2	5	-	800	2180	1200	630
FMS54005	540	338	1	1	6	-	800	2180	1200	630
FMS62005	620	388	1	1	7	-	800	2180	1200	630
FMS68005	680	426	2	2	7	-	800	2180	1200	630
FMS70005	700	438	1	1	8	-	800	2180	1200	630
FMS78005	780	488	1	1	9	-	800	2180	1200	630
FMS80005	800	500	-	-	10	-	-	2180	1200	630



FMS...

FHS series - Floor standing power factor systems (with anti-harmonic de-tuned capacitor banks)

- For networks with THDU ≤6% and/or THDI ≤40%

Growing use of power electronic devices such as: variable speed drives, inverters, UPS systems, battery chargers, LED lighting etc. is causing increasing levels of harmonic distortion in electrical networks, often leading to problems with capacitor installations.

Installation of de-tuned (*reactor-connected*) capacitors designed to force the resonant frequency of the network below the frequency of the lowest harmonic present (*usually the 5th*), thereby ensuring no resonant circuit or amplification of harmonic currents. Such an installation also has a partial filtering effect, reducing the level of voltage distortion on the supply. De-tuned capacitors safer than non-de-tuned capacitors and future-proof for conditions of more and more deteriorating power quality in modern mains.

Complete ready-to-connect floor standing power factor system comprising:

- Suitably ventilated floor standing enclosure with roof mounted exhaust fan
- Mains isolator, door interlocking (*with early make/late break auxiliary contact*)
- HR heavy duty racks comprising: capacitors, reactors, switchgear, fusegear and busbars
- High end reactive control relay **DCRG 8** (*incorporating digital display of all important network parameters*)
Configurable to monitor three voltage and current phases and provide accurate indication of:
 - Active, Apparent power as well as Active, Reactive, Apparent Energy monitoring
 - Current and Voltage Harmonics analysis (*up to 31st harmonic*)
 - Calendar-clock with backup reserve power
 - Event logging: alarms, setup, changes, etc. (*internal memory stores last 250 events*)
 - Internal panel temperature monitoring
- Expandable with up to 4 expansion modules for:
 - additional steps, Analog I/O's, RS323, RS485, Ethernet, GPRS/GSM modem communication



DCRG 8 (Door mount)



FHS...

type	kvar at:		steps (kvar) at 400V				Expands to kvar	dimensions (mm)		
	400V	440V	13.5	27	54	108		(H)	(W)	(D)

Anti-harmonic systems incorporating 7% de-tuned capacitor banks (480V capacitors)

- **7% - 189 Hz De-tuned reactors** *for networks with 3rd and 5th Harmonics*

FHS122074	122	131	1	2	1	-	405	2280	900	600
FHS149074	149	161	1	1	2	-	405	2280	900	600
FHS176074	176	190	1	2	2	-	405	2280	900	600
FHS203074	203	219	1	1	3	-	405	2280	900	600
FHS230074	230	248	1	2	3	-	405	2280	900	600
FHS257074	257	277	1	1	2	1	405	2280	900	600
FHS297074	297	320	-	1	1	2	405	2280	900	600
FHS338074	338	364	1	2	1	2	405	2280	900	600
FHS365074	365	393	1	1	2	2	405	2280	900	600
FHS405074	405	436	-	1	1	3	-	2280	900	600
FHS446074	446	481	1	2	1	3	864	2280	1800	600
FHS473074	473	510	1	1	2	3	864	2280	1800	600
FHS513074	513	553	-	1	1	4	864	2280	1800	600
FHS554074	554	597	1	2	1	4	864	2280	1800	600
FHS621074	621	669	-	1	1	5	864	2280	1800	600
FHS675074	675	727	-	1	2	5	864	2280	1800	600
FHS729074	729	786	-	1	1	6	864	2280	1800	600
FHS770074	770	830	1	2	1	6	864	2280	1800	600
FHS837074	837	902	-	1	1	7	864	2280	1800	600
FHS864074	864	931	-	-	2	7	-	2280	1800	600

Anti-harmonic systems incorporating 14% de-tuned capacitor banks (525V capacitors)

- **14% - 134 Hz De-tuned reactors** *for networks with a high levels of 3rd Harmonics*

FHS095144	95	102	1	1	1	-	203	2280	900	600
FHS149144	149	161	1	1	2	-	203	2280	900	600
FHS203144	203	219	1	1	3	-	-	2280	900	600
FHS257144	257	277	1	1	4	-	432	2280	1800	600
FHS311144	311	335	1	1	5	-	432	2280	1800	600
FHS365144	365	393	1	1	6	-	432	2280	1800	600
FHS419144	419	452	1	1	7	-	432	2280	1800	600
FHS432144	432	466	-	-	8	-	-	2280	1800	600
FHS473144	473	510	1	1	8	-	648	2280	2700	600
FHS527144	527	568	1	1	9	-	648	2280	2700	600
FHS581144	581	626	1	1	10	-	648	2280	2700	600
FHS635144	635	684	1	1	11	-	648	2280	2700	600
FHS648144	648	698	-	-	12	-	-	2280	2700	600



WMS...

WMS series - Wall mount power factor systems (automatic) 400/440V

For applications with varying capacitor requirements. An automatic reactive controller monitors the network and only switches capacitor banks when required, avoiding potential over or under compensation in a network.

WMS series wall mount power factor systems (37 - 150 kvar - 400V)

Complete ready-to-install system comprising following

- Reverse-flow fan ventilated wall mount enclosure, bottom cable entry (*top entry on request*)
- Mains isolator, door interlocking (*with early make / late break auxiliary*)
- Heavy duty three phase capacitors (with internal discharge resistors)
- Reactive control relay **DCRL 5** (digital display of all important electrical network parameters)
- "Special" capacitor switching contactors incorporating limiting resistors
- HRC fuse protection (*per capacitor bank*)

type	kvar at:		steps (kvar) at 415V			Expands to (kvar)	dimensions (mm)		
	415V	440V	12.5	25	50		(H)	(W)	(D)

WM series - Wall mount complete power factor systems (440V capacitors)

WMS03704	37.5	45	1	1	-	87.5	700	600	300
WMS05004	50	60	2	1	-	87.5	700	600	300
WMS06204	62.5	75	1	2	-	87.5	700	600	300
WMS07504	75	90	2	2	-	87.5	700	600	300
WMS08704	87.5	105	1	3	-	-	700	600	300
WMS10004	100	120	2	1	1	150	700	900	300
WMS11204	112.5	135	1	2	1	150	700	900	300
WMS12504	125	150	2	2	1	150	700	900	300
WMS13704	137.5	165	1	1	2	150	700	900	300
WMS15004	150	180	-	2	2	-	700	900	300



WMS...



HFRA...

De-tuned anti-harmonic reactors 400V, 50Hz

De-tuned reactors protect capacitors against harmonics, avoiding parallel resonance and amplification of harmonics flowing within the network.

- Insulation: F class insulation, 155°C
- Internal protection: Thermal cutout (125°C) incorporated (*on centre phase*)
- Reference standards: IEC/EN 60076-6, 61558-2-20

type	kvar at:		%	description	dimensions (mm)		
	400V	440V			(H)	(W)	(D)

7% - 189 Hz De-tuned reactors

for networks with 5th and 7th Harmonics

HFRA1207	12.5	15	7%	anti-harmonic reactors	215	210	120
HFRA2507	25	30	7%	anti-harmonic reactors	190	240	170
HFRA5007	50	60	7%	anti-harmonic reactors	240	300	180

14% - 134 Hz De-tuned reactors

for networks with a high levels of 3rd Harmonics

HFRA1314	13.5	16	14%	anti-harmonic reactors	280	240	150
HFRA2714	27	32	14%	anti-harmonic reactors	250	330	220
HFRA5414	54	64	14%	anti-harmonic reactors	270	340	220



EXP1011



EXP1015 + CX03

Remote monitoring of FM series systems

For remote monitoring and control of all electrical network parameters including harmonics, panel internal temperature, alarms, events and all setup parameters.

Communication modules simply plug-in to the controller and are automatically configured to offer various communication protocols.

EXP1011	opto-isolated	RS232 plug-in communication	expansion module
EXP1012	opto-isolated	RS485 plug-in communication	expansion module
EXP1013	opto-isolated	ETHERNET with web server function	expansion module
EXP1014	opto-isolated	Profibus-DP plug-in communication	expansion module

Plug-in GPRS/GSM modem automatically configures to the controller when mounted and once a data-enabled SIM card is installed the controller can send alarm or event SMS's or e-mails.

EXP1015	plug-in GPRS/GSM Modem for remote monitoring	expansion module
CX03	GSM/GPRS penta-band antenna (850/900/1800/1900/2100MHz)	for above

Static Var Generator (SVG) systems

The increase of non-linear and other challenging loads in electrical grids today present unique Power Quality challenges. **SVG** (Static Var Generator) provides a cost effective, extremely fast solution to Power Quality problems, enhancing equipment operating life whilst improving overall power system capacity.

SVG is the new standard in reactive energy compensation, a highly accurate, reliable solution for today's networks characterised by significant increases in harmonics. SVG provides stable, accurate, real-time PFC (*without the drawbacks of traditional capacitor based systems*)

The **SVG** operates by detecting the load current, analysing the reactive content and then injecting the exact reverse reactive compensating current on an instantaneous real-time basis enabling perfect compensation on each phase for both inductive and capacitive loads.

Typical applications

- Data centres: For correction of leading power factor
- UPS systems: Enabling back-up generators to easily synchronise with network UPS systems
- Renewable power generation: (e.g. *photovoltaics and wind turbines*)
- Plastic industry machinery: (e.g. *extruders, injection moulders*)
- Loads with low power factor: Motors, cables, lightly loaded transformers, lighting, etc.
- Electrical welding systems
- Highly dynamic loads requiring rapid reactive power compensation, e.g: electric arc furnaces, or in big steps like cranes, sawmill machinery, etc.

Benefits include: - reduced maintenance, a considerably longer life span, compact size

- Complete Power Quality improvement solution including real-time elimination of harmonics, flicker mitigation
- Provides dynamic step-less compensation instantaneously in real-time to each phase individually
- Only injects the kVAr required in that moment with no possibility of over or under-compensation.
- Can maintain a PF of 0.99 lagging or unity (*if required*) for both inductive and capacitive loads.
- Voltage fluctuations (*flicker*) mitigation and reduction of voltage (*sag and swell*) variations
- Immune to harmonics, resonance and voltage level and is maintenance free (*with no electromechanical components*)
- Expandable by unlimited parallel installations (*unnecessary to over-dimension the capacity to cater future needs*)
- Output current is unaffected by mains voltage fluctuations providing stable support for mains voltage.

Static Var Generator (SVG) systems

- Cooling: Forced air cooling (*fan cooling*)
- Efficiency: $\geq 97\%$
- Communication: RS485 and Ethernet (RJ45) ports (*via HMI*)/RS232 (*via LCM*)



PQCMS503BVB00B0



PQCMA101ANB21B0

type	Kvar	description	expands: up to	dimensions (mm) (H) (W) (D)		
Static Var Generators (SVG) - Wall mount system			(3 phase 4 wire) 400V			
PQCMS503BVB00B0*	50kvar	Static Var Generators (SVG) system	–	174	440	600
PQCMA750ANA23B0	–	LCM screen controller for (SVG)	up to	7 slave devices		
PQCMA101ANB21B0	–	HMI touch screen controller for (SVG)	up to	7 slave devices		
* Touch screen or LCM controller required.						
Static Var Generators (SVG) - Floor standing system			(3 phase 4 wire) 400V			
Withdrawable type cabinet - for withdrawable type SVG modules (IP30)						
PQCS-400-50-200DC4EM	50kvar	4 module cabinet with rack	200kvar	2000	600	800
PQCS-400-50-350DC4EM	50kvar	7 module cabinet with rack	350kvar	2000	600	800
Withdrawable rack for above draw type cabinet						
PQCMS503BHB02B0	50kvar	rack module for above cabinet	–	174	440	522

Active Power Filter (APF) systems

The increase of non-linear and other challenging loads in electrical grids today present unique Power Quality challenges. **APF** (Active Power Filter) provides a cost efficient solution to Power Quality problems, eliminating resonance problems, preventing amplified harmonic current and voltage, simultaneously compensating reactive power in real-time to maintain power factor at >0.99, enhancing equipment operating life whilst improving overall power system capacity.

APF systems provide multiple compensation functionality including:

- **Harmonic compensation:** *(filtering any order from 2nd to 50th harmonic)*
- **Power Factor compensation:** *(compensating in real-time to maintain power factor at >0.99)*
- **Phase Imbalance compensation:** *(reducing the peak current demand tariff on electricity bills)*

APF is the new standard in harmonic filtering, a highly accurate, reliable solution for today's networks characterised by significant increases in harmonics, able to provide stable, accurate, real-time PFC *(without the drawbacks of traditional capacitor based systems)*

Typical applications:

Malls, shopping centres, office blocks, hospitals, printing works, processing plants, Data centres, pumping stations and all applications where harmonic generating equipment is utilised, such as variable speed drives (VSD's) rectifiers, battery charges, UPS's, Power supplies, LED lighting.

- Plastic industry machinery: *(e.g. extruders, injection moulders)*
- Loads with low power factor: Motors, cables, lightly loaded transformers, lighting, etc.

Benefits include:

- Complete power quality improvement solution including real-time elimination of harmonics, flicker mitigation
- Provides dynamic step-less compensation instantaneously in real-time to each phase individually
- Only injects the kVAR required in that moment with no possibility of over or under-compensation.
- Can maintain a PF of 0.99 lagging or unity *(if required)* for both inductive and capacitive loads.
- Voltage fluctuations *(flicker)* mitigation and reduction of voltage *(sag and swell)* variations
- Correcting phase imbalance *(reducing the peak current which reduces the peak demand tariff on electricity bills)*
- Maintenance free *(with no electromechanical components)* and a longer life span
- Expandable by unlimited parallel installations *(unnecessary to over-dimension the capacity to cater future needs)*
- Output current is unaffected by mains voltage fluctuations providing stable support for mains voltage.

Active Power Filter (APF) systems

- Harmonic compensation: 2nd to 50th harmonic
- Cooling: Forced air cooling (fan cooling)
- Efficiency: ≥97%
- Communication: RS485 and Ethernet (RJ45) ports *(via HMI)/RS232 (via LCM)*

type	amps	description	expands: up to	dimensions (mm) (H) (W) (D)
Active Power Filters (APF) - Wall mount system (3 phase 4 wire) 400V				
PQCA500BVB00B0*	50A	Active Power Filter (APF) system	–	174 440 600
PQCA750ANA23B0	–	LCM controller for (APF)	up to	7 slave devices
PQCA101ANB21B0	–	HMI touch screen controller for (APF)	up to	7 slave devices
* Touch screen or LCM controller required.				
Active Power Filters (APF) - Floor standing system (3 phase 4 wire) 400V				
Withdrawable type cabinet - for withdrawable type APF modules (IP30)				
PQCA-400-75-300DC4EM	75A	4 module cabinet fitted with rack	300A	2000 600 800
PQCA-400-75-525DC4EM	75A	7 module cabinet fitted with rack	525A	2000 600 800
Withdrawable rack module for above draw type cabinet				
PQCA750BHA00B0	75A	rack module for above cabinet	–	174 440 522



new



PQCA-400-75-525DC4EM



PQCA750BHA00B0

Passive harmonic filters

ECOsine FN 3416 series represent a very compact economical harmonic filter with a THID performance of $\leq 10\%$ in conjunction with VSD's built-in DC-link choke. Ideal for non-linear three-phase equipment with 6-pulse front-end rectifier circuits.

Performance complies with EN 61000-3-12 or with IEEE-519 for $I_{sc}/I_L < 50$. and other power standards. Schaffner ECOsine filters help to unburden the electrical infrastructure from excess loading and heat caused by current harmonics, and therefore support a better utilization of electric system capacity. Lower harmonics also reduce the risk of system resonances and potential downtime of sensitive electronic equipment.

FN 3416 filters upgrade standard motor drives to "low-harmonic drives" quickly and easily.

- Ideal for motor drives with 6-pulse rectifier front-end
- Suitable for diode and thyristor (SCR) rectifier applications

Nominal operating voltage: 3x 380 to 500 VAC $\pm 10\%$
 THID current distortion: $< 10\%$ @ rated power (with DC-Link choke)
 Efficiency: $> 98\%$ @ nominal line voltage and power
 Conformity to: UL 508, EN 61558-2-20, CE (LVD2006/95/EC)



FN3416-45-33

type	current	rated load power		power loss (W)	dimensions (mm)			kg
	400V	400V	500V		(H)	(W)	(D)	

ECOsine passive harmonic filters

FN3416-10-44	10A	4kW	5.5kW	63	390	185	190	10
FN3416-13-44	13A	5.5kW	7.5kW	82	390	185	190	10
FN3416-16-44	16A	7.5kW	11kW	105	390	185	190	15
FN3416-24-33	24A	11kW	15kW	153	455	250	230	20
FN3416-32-33	32A	15kW	18.5kW	294	455	250	230	22
FN3416-38-33	38A	18.5kW	22kW	256	455	250	230	25
FN3416-45-33	45A	22kW	30kW	306	455	280	230	29
FN3416-60-34	60A	30kW	37kW	408	520	280	248	37
FN3416-75-34	75A	37kW	45kW	410	520	280	248	43
FN3416-90-35	90A	45kW	55kW	493	580	280	248	47
FN3416-110-35	110A	55kW	75kW	546	580	280	248	50
FN3416-150-40	150A	75kW	90kW	784	700	450	385	86
FN3416-180-40	180A	90kW	110kW	817	700	450	385	92
FN3416-210-40	210A	110kW	132kW	887	700	450	385	100
FN3416-260-99	260A	132kW	160kW	947	700	450	385	125
FN3416-320-99	320A	160kW	200kW	988	700	450	385	135

EMC/RFI - Three phase filters

Electro Magnetic Interference (EMI) unwanted high frequencies which ride on AC waveform. Many products such as variable frequency drives generate EMI, which may interrupt, obstruct, degrade or limit the effective performance of electronic equipment.

FN 3258 filters ensure compliance with Class A limits according to EN 55011 up to 50 m cable length and beyond, and contribute significantly to meet emission limits to Class B

Applications:

Three-phase variable speed motor drives, servo drives, inverters and converters
 HVAC equipment, elevators, power supplies, UPS and further three-phase applications

- Exceptional attenuation performance from 150 kHz to 30 MHz
- Excellent saturation resistance up to 50 m cable length
- Most compact and slim filter design in its class

Max. continuous operating voltage: 3x 480/277 VAC (FN 3258)
 Conformity to: UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939



FN3258-16-44

type	current	typical drive	leakage current	power loss (W)	dimensions (mm)			kg
	at 50°C				(H)	(W)	(D)	

FN3258-16-44	16A	7.5kW	4.3 mA	6.1	250	45	70	0.8
FN3258-30-33	30A	15kW	4.3 mA	11.8	270	50	85	1.2
FN3258-42-33	42A	22kW	4.3 mA	15.7	310	50	85	1.4
FN3258-55-34	55A	30kW	4.3 mA	25.9	250	85	90	2
FN3258-75-34	75A	37kW	4.3 mA	32.2	270	80	135	2.7
FN3258-100-35	100A	55kW	4.3 mA	34.5	270	90	150	4.3
FN3258-130-35	130A	75kW	4.3 mA	43.1	270	90	150	4.5
FN3258-180-40	180A	90kW	4.3 mA	58.3	380	120	170	6

M - Tools



new



P01157151



P01157150



P01157151 + P01102134



P01120580

Chauvin Arnoux - PEL103 Power & Energy Loggers IP54 casing

Portable, advanced yet simple to use Power and Energy logger, designed for energy audits (ISO 50001 standard) or one-off measurements of the Power and Energy values in low-voltage electrical networks (1000 V CAT III)

PEL100 series Power and Energy loggers provide a complete solution to measuring and identifying energy consumption in any industry, they can be used handsfree, remotely without interruption to the mains power. The logger tracks even the slightest consumption in an electrical network, providing all Power and Energy measurement recording on the internal 2GB SD card, while simultaneously permitting real-time monitoring on its backlit 4 line LCD display. Recordings are time/date stamped for ease of comparing measured gains achieved before and after installation modification. Easily transfer recorded data to a PC via the free PEL data transfer software and SD card with USB adaptor (included). Designed to fit inside most electrical cabinets thanks to its magnetic base or hook for easy mounting.

Key Features of the PEL103 include:

Measurements and display of:

- RMS frequency, voltage and current measurements
- Voltage measurement ranges 10 to 1000V AC/DC +/- 0.2 % + 0.5 V
- Current measurement ranges 5 mA to 10 kA AC / 50 mA to 1,4 kA DC ±0.5 %
- VA, W and var power values
- Power Factor (PF), cos φ, tan φ and crest factor
- Total Harmonic Distortion (THD) for currents and voltages
- DC, 50 Hz, 60 Hz and 400 Hz measurements
- Phase rotation indication and MIN/MAX indication of all parameters
- VAh, Wh (source, load) and varh (4 quadrant) energy values, total energy
- Harmonics: up to the 50th order for currents and voltages (an essential feature to help identify problems)



Scan to watch video

- **Network types include:** Three phase (with or without neutral), split phase, single phase
- **Automatic recognition:** Of the type of sensor connected
- **Communication / Data transfer:** USB, Ethernet and Bluetooth / PEL transfer PC software (included)
- **Records:** Measurements and calculation results on SD card (included)
- **Acquisition rate:** 128s/period

PEL 103 Power and Energy logger (KIT) (created as a complete kit with following accessories)

- 1 x PEL103 Power and Energy Logger: Analyser with backlit LCD screen
- 3 x MA193 (200 mm) flexible current clamps: MINIFLEX MA193 flexible current sensors - 200mA to 10 kA
- 4 x Measurement leads and crocodile clips: Robust high quality test leads for frequent use/built to last
- 1 x Set of coloured rings and Inserts: For easy identification of connections and leads
- 1 x 2GB SD card (internal): SD card to USB adaptor

SD card to USB adapter, USB cable, mains cable, MultiFIX mounting system, operating manual (on CD)
PEL transfer PC software enabling data to be transferred to PC, all in a convenient canvas carrying bag.

type	model	description	dimensions (mm)		
			(H)	(W)	(D)

PEL 103 Power and Energy logger (KIT)					
P01157151	PEL103 (KIT)	portable power and energy logger/analyser	256	125	37
P01157150	PEL102 (KIT)	as above, but without LCD display screen	256	125	37

Accessories for PEL103 Power and Energy logger

P01120434B	MN 93A	compact tong clamps for PEL102/3	Ø20 mm	0.005 - 100A	
P01120323B	C193	compact tong clamps for PEL102/3	Ø52 mm	1 - 1000A	
P01120580*	MA193-250	Ampflex 250 mm flexible current sensor	Ø70 mm	200mA - 10kA	
P01120526B	A193-450	Ampflex 450 mm flexible current sensor	Ø140 mm	100mA - 10kA	
P01101959	CA833X-F	for reading from 5A secondary CT's		5A adaptor	

P01102134	self-power	mains adaptor for self powering PEL from supply	mains adaptor		
P01295174*	mains lead	mains power cable - (2P EUR)			
P01295476*	test leads	spare measurement leads (3m) with crocodile clips	KIT (black)		
P01102080*	set	ID rings and inserts (for ends of leads and sensors)	diff. colours		

P01298078* bag no.23 canvas carrying bag for PEL analyser and access

* Items supplied with standard PEL KIT.

Data processing software power quality & installation supervision

Automatically recognizes the instrument connected to the PC and opens the corresponding menu, providing direct access to the configuration and saved data. Includes many predefined report templates for quick generation in compliance with applicable standards. Users can create personalised models to fit their requirements and add comments directly.

- Configuration of all the functions of instruments connected to a PC or via Bluetooth
- Recovery of the recorded measurement data and backup of measurement files
- Opening of saved files / processing and creation of reports (EN50160)
- Export into an Excel spreadsheet or PDF format / Database management

P01102095 DataView powerful configuration/transfer/measurement data processing software



ENERGY EFFICIENCY

Modular time switches



Finder

G-1

Occupancy sensors



Finder
Hager

G-2
G-3



10 series - Daylight switches

Light dependant relays for automatic control of external lighting according to ambient light level.

- Adjustable sensitivity: 1...80 lux
- Built-in time delay: (ON - 15 sec / OFF - 30 sec)
- Ambient range: -30...+70°C

type	switch current	contact config.	supply voltage	lux setting	delay ON/OFF	description
10 series - Daylight switches (IP54)						
10.41 – light dependant relays (daylight switches) (H) 111 x (W) 59 x (D) 40 mm						
						<ul style="list-style-type: none"> • LED indication of relay status • Wall or pole mounting (brackets supplied)
104182300000	16A	1 NO	230 VAC	1...80 lux	15/30s	standard daylight switch
10.42 – 2 independent outputs with individual lux settings						
104282300000	16A	2x 1 NO	230 VAC	2x 1...80	15/30s	2 circuit daylight switch
10.51 – miniature light dependant relays (daylight switches) (H) 81 x (W) 37 x (D) 37 mm						
						<ul style="list-style-type: none"> • LED indication of relay status • Wall or pole mounting (brackets supplied)
105182300000	12A	1 NO	230 VAC	1...80 lux	15/30s	mini daylight switch
10.61 – hole mount (Ø 18 mm) (H) 48 x (Ø) 80						
						<ul style="list-style-type: none"> • Can be mounted directly on street light body
106182300000	16A	1 NO	230 VAC	(fixed) 10	15/30s	hole mount daylight switch

11 series - Daylight switches with separate light sensor

Light dependant relays for automatic control of external lighting according to ambient light level - with separate light sensor.

- Modular DIN rail mounting (same cutout as standard MCBs)
- Selectable: std range 1...80lux / high range 30...1000lux / permanent ON or OFF
- LED indication of relay status

11.31 series - 17.5 mm wide (H) 84 x (W) 17.5 x (D) 61 mm

113182300000	16A	1 NO	230 VAC	1...1000	15/30s	modular daylight switch
113100240000	16A	1 NO	12/24 VAC/DC	1...1000	15/30s	modular daylight switch

11.42 series - 2 independent outputs with individual lux settings

114282300000	12A	2x 1 NO	230 VAC	2x 1-1000	15/30s	2 circuit daylight switch
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Light sensors for 11 series modular light dependant relays

01102	sensor	IP54	surface	mount	light sensor for 11 series modular relays
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Flush mount light sensor (mounts through 15/18 mm Ø hole) for modular relays

01103	sensor	IP66/67	flush	mount	light sensor for 11 series modular relays
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Modular time switches NFC programmable (with smartphone) (H) 89 x (W) 35 x (D) 61 mm

Finder digital time switches incorporate easy to use NFC (Near Field Communication) for fast, flexible programming of time via a smartphone, can also be performed via the front mounted joystick control

- Versions with 1 or 2 contacts - 16A
- 110...230 VAC/DC supply
- Internal battery (easily replaceable) for set-up and programming without supply voltage
- Wide backlit display for easy programming and visualisation

type	time range	contact config.	reserve	min. setting	description
Digital (analogue-style) time switch					easily configurable for daily or weekly programming
125182300000	24hr/7 day	1 CO	yes	30 min.	digital time switch
Digital time switch with programmable pulse output (for school bell lunch/tea/interval ringing)					
					<ul style="list-style-type: none"> • Manual override facility • Pulse output adjustable (1 sec...59 min) • Holiday program
126182300000	7 day	1 CO	yes	1 sec.	digital time switch with pulse output
Astro time switches (calculates sunrise/sunset according to longitude/latitude coordinates)					
					<ul style="list-style-type: none"> • Astro program: calculation of sunrise and sunset times through date, time, location coordinates • Programmable offset from Astronomic times (up to 90 min)
12A182300000	7 day	1 CO	yes	1 sec.	astro programmable time switch
12A282300000	7 day	2 CO	yes	1 sec.	astro programmable time switch



182182300000



183182300000



184182300300



185182300300



18A182300300



PIR movement detectors (IP40)

Designed to monitor rooms, corridors, offices and staircases for human presence. Once motion is detected and if ambient light is below the preset level it will provide a signal to switch lights ON. Lights will remain on after the room has been vacated for a preset delay period. Often used as an energy saving device used to switch off air conditioners or heating systems once the room has been vacated.

type	switching current	supply voltage	mounting	sense area (met)	description
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Movement detectors (economic version) 120 - 230 VAC

Compact economical ceiling mount movement detector for internal installations, these sensors detect movement in common areas and operate lights when required in low ambient areas.

- Wide area of survey 360° (5/8 meter detection at 2.8 meter height)
- Adjustable settings: Light ON (since last detection) 10 sec - 12 min.
Lux setting (ambient light intervention threshold) 5 - 350 lx

182182300000	10A	120...230V	surface	Ø 5/8	PIR movement detector
183182300000	10A	120...230V	recess	Ø 5/8	PIR movement detector

Passage/corridor sensor 84 x (D) flush: 44 / surface: 85 mm

- Rectangular areas - lobbies, corridors and walkways (sensing area 30 met x 4 met wide)
- Adjustable settings: - Light ON (since last detection) 12 sec - 35 min.
- Lux setting (ambient light intervention threshold) 1 - 500 lx

184182300300	10A	110...230V	surf/recess	30 x 4	PIR movement detector
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Occupancy sensors - Incorporating "presence" and "movement" detection

Responds to very small movements, suitable for use in offices, schools and the workplace

- Two sensors - "presence" (for zones of low activity) and "movement" (for transit areas)
- Dual "push-in" termination for easy "looping" with other switches with pushbutton release
- Supplied with all hardware for surface mounting or recess mounting
- Wide sensing area 360° (4/8 meter detection at 2.8 meter height)
- Adjustable settings: - Light ON (since last detection) 12 sec - 35 min.
- Lux setting (ambient light intervention threshold) 5 - 350 lx
- Sensitivity control for reduced sensing area

Ceiling mount sensor 84 x (D) flush: 35 / surface: 76 mm

185182300300	10A	110...230V	surf/recess	Ø 4/8	PIR occupancy detector
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External PIR movement detector (IP55)

- Compact design wall mount detector for external installations - 110° detection up to 10 met.
- Adjustable settings: Light ON (since last detection) 10 sec - 20 min.
Lux setting (ambient light intervention threshold) 5 - 1000 lx

18A182300300	10/2500		wall mount external movement and presence detector		
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EE804A



EE805A



EE820



EE860



EE815

Occupancy sensors

- Detect movement
- Measure ambient light
- Automatically switch lights "on" (if ambient is below pre-set level and movement is detected)
- Automatically switch lights "off" (if no movement is detected after a pre-set time delay period)
- Complies with: IEC 60669-1 and IEC 60669-2-1
 - Supply voltage: 230 VAC 50Hz
 - Switch current: 8/10/16A 230V (AC1)
 - Lux adjustment: 5 - 1000 lux

EE804A / EE805A series - Motion detectors

EE804A and EE805A are 360° indoor movement detectors with a built-in light sensitive switching function. Ideal for use in interior circulation areas such as corridors, entrance halls, bathrooms etc.

- Operating time delay: 5s - 15 min
- Detection range: 6 meter radius (at 2.5 meters high) 360°

type	mounting		description	rated current
EE804A	surface	105.5 mm dia.	economical motion detector	8A
EE805A	flush	75 mm hole	economical motion detector	8A

EE820 series - Basic motion detectors (IP55)

Wall mounting with numerous mounting possibilities for indoor or outdoor applications.

- Operating time delay: Pulse, 5s -15 min
- Detection range: 16 met frontal /8 met lateral (at 2.5 meters high)

EE820	surface	140°	wall mnt. basic occupancy sensor	10A
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EE860 - Enhanced motion detectors (IP55)

Offers vertical and horizontal adjustment and area limitation with shutters suitable for indoor or outdoor applications. Wall, inner/outer corner, ceiling mount. Setting and adjustments made via concealed potentiometers or remote control.

- Operating time delay: 5s - 15min
- Detection range: 16 met frontal / 10 met lateral (at 2.5 meters high)
- Sensitivity adjustment: 20% - 100%

EE860	surface	220°	wall mnt. basic occupancy sensor	16A
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Accessories

EE825	corner mount accessory (inner/outer)			EE820
EE827	ceiling mount accessory			EE820
EE855	corner mount accessory (inner/outer)			EE860
EE806	IR remote control for enhanced series			EE815/20

High-performance combined presence and motion detector

High-performance presence detectors combine detection of both presence and motion in an area ideally suited for offices where human presence is detected to maintain lighting level. Motion detection enhances the overall sensing range of the detectors.

EE815 series - Compact flush mount presence detector

Compact super-flush device mounts through a 50 mm hole for very neat installation. Settings and adjustments made via concealed potentiometers or remote control.

- Operating time delay: 1 min - 1 hour
- Detection range: Presence 5 meter radius (at 2.5 meters high)
Motion 7 meter radius (at 2.5 meters high)

EE815	flush	60 mm hole	360° enhanced presence detector	16A
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EE810 series - Surface flush mount presence detector

- Operating time delay: 1 min - 1 hour
- Detection range: Presence 7 meter radius (at 2.5 meters high)
Motion 13 meter radius (at 2.5 meters high)
- Lux adjustment: 5 - 1200 lux

EE810	flush	dual sensor	360° enhanced presence detector	16A
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:hager

SCAME
electrical solutions

Lovato
electric

Fandis
colors of engineering

SEIFERT

ENCLOSURE & CLIMATE CONTROL

Insulated housings		Scame	H-1
Plastic enclosures		Lovato	H-2
Distribution boards		Hager	H-3...5
Floor standing distribution boards		Hager	H-6...12
Busbar system and accessories		Hager	H-13...14
Sheet metal enclosures		Hager EM	H-15...16 H-17...18
Stainless steel enclosures		EM	H-18..19
Panel thermostats and heaters		Finder Fandis	H-20 H-23
Panel ventilation fans and filters		Finder EM Fandis	H-20 H-21...22 H-23...24
Cabinet air conditioners		Siefert	H-25...26
Panel lamp (LED)		Fandis Siefert	H-24 H-26



686.204



686.206



686.409



686.230



COMBI 308

Junction boxes for electrical installations (IP56)

The SCABOX series plastic boxes/enclosures are ideal for housing electrical accessories and terminals for household and fixed electrical installations and offer IP56 degree of protection.

- Max. operating temperature: 60°C
- Reference standards: EN 60439-1, EN 60670-1, EN60670-22
- Material: Engineering plastic RAL 7035 grey (*stabilised*)

type	IP rating	description	carton qty.	ext. dimension (mm)		
				(H)	(W)	(D)

Plastic housings (IP56)

Opaque cover/lid

686.204	IP56	PVC housing - opaque lid	40	100	100	50
686.205	IP56	PVC housing - opaque lid	42	120	80	50
686.206	IP56	PVC housing - opaque lid	48	150	110	70
686.207	IP56	PVC housing - opaque lid	30	190	140	70
686.208*	IP56	PVC housing - opaque lid	16	240	190	90
686.209*	IP56	PVC housing - opaque lid	8	300	220	120
686.210*	IP56	PVC housing - opaque lid	4	380	300	120
686.211*	IP56	PVC housing - opaque lid	1	450	370	130
686.404	IP56	PVC housing - opaque (<i>high</i>) lid	24	100	100	80
686.408*	IP56	PVC housing - opaque (<i>high</i>) lid	6	240	190	125
686.409*	IP56	PVC housing - opaque (<i>high</i>) lid	6	300	220	170
686.410*	IP56	PVC housing - opaque (<i>high</i>) lid	3	380	300	170
686.411*	IP56	PVC housing - opaque (<i>high</i>) lid	1	450	370	180

Transparent cover/ lid

686.226	IP56	PVC housing - transparent lid	48	150	110	70
686.227	IP56	PVC housing - transparent lid	30	190	140	70
686.228*	IP56	PVC housing - transparent lid	16	240	190	90
686.229*	IP56	PVC housing - transparent lid	8	300	220	120
686.230*	IP56	PVC housing - transparent lid	4	380	300	120
686.231*	IP56	PVC housing - transparent lid	1	450	370	130
686.428*	IP56	PVC housing - transparent (<i>high</i>) lid	6	240	190	125
686.429*	IP56	PVC housing - transparent (<i>high</i>) lid	6	300	220	170
686.430*	IP56	PVC housing - transparent (<i>high</i>) lid	3	380	300	170
686.431*	IP56	PVC housing - transparent (<i>high</i>) lid	1	450	370	180

Accessories for above enclosures

Chassis plates (steel)

for enclosures

654.0787	–	chassis plate for enc.	686.207/227	190	140	–
654.0788	–	chassis plate for enc.	686.208/408/228/428	240	190	–
654.0789	–	chassis plate for enc.	686.209/409/229/429	300	220	–
654.0790	–	chassis plate for enc.	686.210/410/230/430	380	300	–
654.0791	–	chassis plate for enc.	686.211/411/231/431	460	380	–
654.0080	–	sealing caps for internal mounting holes				(12 pcs)
654.0085	–	kit to hinge the lid on enclosures				(1 pair)
654.0021	–	plastic wall mounting brackets				set (4 pcs)

* Enclosures which accept **654.0085** hinge kit.

COMBI Junction boxes (IP66/67)

(see page L-29 for all sizes)

Wiska COMBI junction boxes provide ultimate protection from environmental conditions in a compact, very attractive format, suitable for extreme outdoor installations.

- Weather proof, ultraviolet resistant, shatterproof, impact resistant, flame retardant and halogen free
- Integrated thread for cable gland entry without locknuts (308/407/607/1210)

type	cable entry		thread	description	colour	dimensions (mm)		
						(H)	(W)	(D)
				∅				

COMBI 308 IP66/67 (*captive - quick release lid screws*)

10060400	8	–	M20	weatherproof junction box	grey	85	85	51
10060581	8	–	M20	weatherproof junction box	black	85	85	51

see page L-29



M1N



M24N



M3N

Plastic enclosures (IP65)

Lovato M series enclosures are high quality, extremely robust housings ideally suited to indoor or outdoor installations, offering IP65 protection to internally mounted components.

- Protection degree: IP 65
- Operating temperature: -25 – +60°C
- Material: Made of UV protected Polycarbonate
- Colour: Black base and RAL7035 (light grey) cover

type	IP rating	cable entry	description	dimensions (mm)		
				(H)	(W)	(D)

M1 and M2 series - Housings (IP65) (light grey)

Slim, deep housings designed for compact but tall components such as contactors, timers, voltage, liquid level and phase failure relays etc. required to be housed in a protective enclosure without occupying much space.

- External mounting holes
- DIN rail incorporated into internal base of enclosure for mounting electrical components
- Two M20 knock-outs on top and bottom of enclosure (to accommodate gland for cable entry)

M1N	IP65	M20	slim polycarbonate housing	202	88	135
M2N	IP65	M20	slim polycarbonate housing	234	110	149

M24 and M25 series - Housings (IP65) (light grey)

Robust, heavy duty enclosures for mounting a variety of electrical components.

- Incorporated earth terminal
- Mounting holes within the enclosure (outside the sealing gasket)
- Supplied complete with internal metal chassis plate (156 x 148 mm)
- Moulded (alpha and numeric) grid on internal door for ease of mounting control devices
- Two M25/M32 knock-outs on top and bottom of enclosure (to accommodate gland for cable entry)

M24N	IP65	M25/32	shallow polycarbonate housing	210	175	99
M25N	IP65	M25/32	deep polycarbonate housing	210	175	165

M3 series - Housings (IP65) (light grey)

Robust, heavy duty enclosure with high impact resistance and incorporated hinge facility for mounting a variety of electrical components.

- Material: ABS plastic material
- Incorporated hinge facility (180° full opening) lid can be removed if required
- Mounting holes within the enclosure (outside the sealing gasket)
- Moulded (alpha - numeric) grid on internal door for easy alignment of control devices
- Internal ribbing in base for mounting components - DIN rail etc.
- Plain base (no knockouts) for easy configuration of cable entry/exits

M3N	IP65	–	ABS housing without chassis plate	280	220	170
MX30	chassis	–	metal chassis plate for M3 housing	244	185	–

Enclosures / Distribution boards						
type	no. of ways	IP rating	description	dimensions (mm)		
				(H)	(W)	(D)
Mini gamma series (surface shrouds) (IP30)						
<ul style="list-style-type: none"> Incorporated DIN profile and labelling facility Hinged transparent doors available (IP40 with door) Lead seal-able housing 						
GD102B	2 way	IP30	surface mounting MCB shroud	160	55	82
GD104B	4 way	IP30	surface mounting MCB shroud	180	110	82
GD106B	6 way	IP30	surface mounting MCB shroud	180	146	82
GD110B	10 way	IP30	surface mounting MCB shroud	180	218	82
Accessories for above GD series boards						
GP102T	door	–	transparent (horizontally) hinged door	for	GD102B	
GP104T	door	–	transparent (horizontally) hinged door	for	GD104B	
GP106T	door	–	transparent (horizontally) hinged door	for	GD106B	
GP110T	door	–	transparent (horizontally) hinged door	for	GD110B	
GZ104S	support	–	clip-in support for terminals GZ04E/N	for	GD104B	
GZ106S	support	–	clip-in support for terminals GZ04E/N	for	GD106B	
GZ110S	support	–	clip-in support for terminals GZ04E/N	for	GD110B	
GZ04E	4 way	terminal	insulated "earth" terminal (clips onto above supports)			
GZ04N	4 way	terminal	insulated "neutral" terminal (clips onto above supports)			
Golf series - Surface and flush-mount distribution boards						
<ul style="list-style-type: none"> Transparent door 180° opening (hinged left or right) / key-lock facility Internal cable tie fixing points / cable can be run behind breakers / optional cable retainer clips Supplied with earth / neutral terminals Colour: RAL9010 (light grey) / glow wire test to 650°C to UNE 60595-2-1 						
VS surface mounting enclosures - IP40 (with door)						
<ul style="list-style-type: none"> Pre-cut profiles for cable, conduit, trunking entry Enclosures can be joined together (horizontally or vertically) 						
VS104TJ	4 way	IP40	surface mounting distribution board	184	138	99
VS108TJ	8 way	IP40	surface mounting distribution board	184	210	99
VS112TJ	12 way	IP40	surface mounting distribution board	252	282	99
VS212TJ	24 (2 x 12)	IP40	surface mounting distribution board	377	282	99
VS118TJ	18 way	IP40	surface mounting distribution board	252	390	99
VS218TJ	36 (2 x 18)	IP40	surface mounting distribution board	377	390	99
VS318TJ	54 (3 x 18)	IP40	surface mounting distribution board	500	390	99
VF flush mounting enclosures - IP40 (with door)						
<ul style="list-style-type: none"> 72 mm installation depth, can be mounted into "hollow wall" with optional brackets 						
VF108TJ	8 way	IP40	flush mounting distribution board	225	275	98
VF112TJ	12 way	IP40	flush mounting distribution board	293	352	98
VF212TJ	24 (2 x 12)	IP40	flush mounting distribution board	418	352	98
VF118TJ	18 way	IP40	flush mounting distribution board	293	460	98
VF218TJ	36 (2 x 18)	IP40	flush mounting distribution board	418	460	98
VF318TJ	54 (3 x 18)	IP40	flush mounting distribution board	543	460	98
Accessories for Golf series (VS/VF) enclosures						
VZ696N	bracket	hollow wall mounting brackets for flush enclosures			(4pcs)	
VZ699N	retainer	cable retaining guides for all enclosures			(4pcs)	
VZ786N	bracket	brick wall fixing brackets for flush enclosures			(4pcs)	
VZ787N	label	spare transparent label holder for all enclosures			(5pcs)	
VZ794N	key	key lock facility for all enclosures			(2pcs)	
Volta series - "Exclusive" flush mounting boards IP41 (class II)						
<ul style="list-style-type: none"> Metallic front door and frame (reversible - opening from left or right) Integrated mini spirit level (installation aid for alignment) 30% more wiring space available Supplied with earth / neutral terminals Colour: RAL 9010 (white) IEC 60439-3 						
VU12NE	12 way		flush mount "exclusive" distribution board	356	348	96
VU24NE	24 (2 x 12)		flush mount "exclusive" distribution board	505	348	96
VU36NE	36 (3 x 12)		flush mount "exclusive" distribution board	630	348	96
VU48NE	48 (4 x 12)		flush mount "exclusive" distribution board	755	348	96



Vector series - Surface mount enclosures class II

- Compliant: IEC 61439-3
- Colour: RAL 7035 (light grey)
- Adjustable DIN rail depth (to fit products of different depth)
- Transparent hinged cover (2 - 10 way) or door (12 - 54 way)
- Rear adjustment screws for mounting on uneven/irregular wall surfaces (up to 3 mm)
- Premarked knock-outs for cable glands **M20, M25, M32, M40, M50** (size dependant)

type	number of ways	dimensions (mm)		
		(H)	(W)	(D)

Vector VE-L - Surface-mount distribution boards (IP55)

- Supplied with Earth/Neutral terminals

VE103L	3 way	surface mounting distribution board	175	111	93
VE106L	6 way	surface mounting distribution board	190	165	113
VE110L	10 way	surface mounting distribution board	210	237	114
VE112L	12 way	surface mounting distribution board	302	310	151
VE212L	24 (2 x 12)	surface mounting distribution board	427	310	151
VE118L	18 (1 x 18)	surface mounting distribution board	302	418	151
VE218L	36 (2 x 18)	surface mounting distribution board	452	418	151
VE318L	54 (3 x 18)	surface mounting distribution board	602	418	151

Vector VE-SN - Surface-mount boards for outdoor use (IP65)

UV stabilised and IP65 surface mounting enclosure range designed specifically for outdoor use and photovoltaic applications.

- Resistant to ultraviolet radiation, immersion in water in accordance with UL746C
- Dimensional stability up to 100°C, resistant to frost down to -25°C
- Plain base (no knockouts) for easy configuration of cable entry/exits
- Earth and neutral terminals to be ordered separately (see below)

VE112SN	12 way	surface mounting distribution board	302	310	151
VE212SN	24 (2 x 12)	surface mounting distribution board	427	310	151
VE312SN	36 (2 x 18)	surface mounting distribution board	552	318	151

Earth/Neutral terminal set for above VE...SN boards

VZ522	E/Neutral	terminals each with: (1x25 mm ² + 5x16 mm ² + 7x10 mm ²)
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VP series - Polycarbonate enclosures (IP65)

- IP65 protection / insulation class II
- Plain door 130° opening
- Supplied complete with chassis plate and mounting brackets
- Colour: RAL7035 (light grey)

VP20G	empty	polycarbonate surface mount enclosure	350	250	160
VP36G	empty	polycarbonate surface mount enclosure	500	300	160
VP54G	empty	polycarbonate surface mount enclosure	550	400	210
VP72G	empty	polycarbonate surface mount enclosure	650	400	210

Distribution boards (industrial) IP65 as above, including following accessories

- Fitted with DIN rail and modular covers (accepts modular devices and MCBs)
- With smoked transparent hinged door with 130° opening
- Included earth and neutral terminals

VP36M	36 (3 x 12)	polycarbonate surface mount enclosure	500	300	160
VP54M	54 (3 x 18)	polycarbonate surface mount enclosure	550	400	210
VP72M	72 (4 x 18)	polycarbonate surface mount enclosure	650	400	210

Accessories for polycarbonate enclosures

FL711E	blank front modular cover	for VP36M	150	300	—
FL712E	blank front modular cover	for VP54/72M	150	400	—
VP01Z	replacement key type locking handle for enclosures		—	—	—



Vega D series - Surface and flush mounting distribution boards IP41 (with optional door fitted)

Vega D enclosures are suitable for installations in residential and commercial buildings for supplies up to 250A. Delivered in a ready-to-mount configuration. All enclosures have 24 module rows.

- Material: Metallic enclosure
- Colour: RAL 9010 (light grey)
- Integrated quick connect earth terminals
- Removable front frame for optimal access to internal installed devices
- Doors sheet metal plain or with transparent window (to be ordered separately)
- Protection class: IP30/IK07 (without door) - IP41/IK08 (with door) - class II totally insulated



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type	number of modular ways	description	dimensions (mm)		
			(H)	(W)	(D)

Surface-mounting boards 48 way to 168 way

- Removable top and bottom plates for easier cable entry

FD22DN	48	(2 x 24)	surface mounting distribution board	450	550	193
FD32DN	72	(3 x 24)	surface mounting distribution board	600	550	193
FD42DN	96	(4 x 24)	surface mounting distribution board	750	550	193
FD52DN	120	(5 x 24)	surface mounting distribution board	900	550	193
FD62DN	144	(6 x 24)	surface mounting distribution board	1050	550	193
FD72DN	168	(7 x 24)	surface mounting distribution board	1200	550	193

Partially equipped surface enclosures

FD42AN*	96	(2 x 24)	surface mounting distribution board	750	550	193
FD52AN*	120	(3 x 24)	surface mounting distribution board	900	550	193
FD62AN*	144	(4 x 24)	surface mounting distribution board	1050	550	193
FD72AN*	168	(5 x 24)	surface mounting distribution board	1200	550	193

Flush-mounting boards 48 way to 168 way

- Metallic flush mounting tray (depth 110 mm with insulated cable entries top and bottom)
- Removable chassis with uprights accommodating modular devices
- Metallic (easily removable) finishing frame DN=40 / AN=72 mm depth

FU22DN	48	(2 x 24)	flush mounting distribution board	537	550	150
FU32DN	72	(3 x 24)	flush mounting distribution board	687	550	150
FU42DN	96	(4 x 24)	flush mounting distribution board	837	550	150
FU52DN	120	(5 x 24)	flush mounting distribution board	987	550	150
FU62DN	144	(6 x 24)	flush mounting distribution board	1137	550	150
FU72DN	168	(7 x 24)	flush mounting distribution board	1287	550	150

Partially equipped surface enclosures

FU42AN*	96	(2 x 24)	flush mounting distribution board	837	550	182
FU52AN*	120	(3 x 24)	flush mounting distribution board	987	550	182
FU62AN*	144	(4 x 24)	flush mounting distribution board	1137	550	182
FU72AN*	168	(5 x 24)	flush mounting distribution board	1287	550	182

* Supplied without top two rows. To be completed with internal modules of choice (below) to accept main switch MCCB (up to 250A) or two rows modular devices or chassis plate.

Doors for Vega D enclosures (sheet metal)

Plain doors (left or right hinged 135° opening)

FD22PN	plain	sheet metal door for enclosures	FD/FU22	350	500	–
FD32PN	plain	sheet metal door for enclosures	FD/FU32	500	500	–
FD42PN	plain	sheet metal door for enclosures	FD/FU42	650	500	–
FD52PN	plain	sheet metal door for enclosures	FD/FU52	800	500	–
FD62PN	plain	sheet metal door for enclosures	FD/FU62	950	500	–
FD72PN	plain	sheet metal door for enclosures	FD/FU72	1100	500	–

Transparent doors (left or right hinged 135° opening)

FD22TN	transparent	sheet metal door for enclosures	FD/FU22	350	500	–
FD32TN	transparent	sheet metal door for enclosures	FD/FU32	500	500	–
FD42TN	transparent	sheet metal door for enclosures	FD/FU42	650	500	–
FD52TN	transparent	sheet metal door for enclosures	FD/FU52	800	500	–
FD62TN	transparent	sheet metal door for enclosures	FD/FU62	950	500	–
FD72TN	transparent	sheet metal door for enclosures	FD/FU72	1100	500	–

Internal modules (to fill upper 2 spaces on FD/FU42,62,72AN enclosures)

FD01A1	1 row 24 way	standard chassis with modular DIN cover	150	–	–
FD01A2	1 row adj.	DIN rail kit for terminals with plain front cover	150	–	–
FD01K1	1 row	for 1x horizontally mounted 160A MCCB	150	–	–

See page H-6 for Vega D internal modules and accessories ➔



Quadro 5 series - Floor standing distribution board system IP55

- Nominal insulation voltage: $U_i = 690\text{ V}$
- Type tested nominal current: 630A, 35 kA
- Colour: RAL9010, (plinth RAL7042)
- Class of protection: IP55, IK10 (with door) to EN 60530

type	description	for enclosure	dimensions (mm)		
			(H)	(W)	(D)

Enclosures - Height: 1260 mm - Surface wall mount or (floor mount with optional plinth)

- Main frame with back plate, removable top and bottom plates and 4 lugs for wall mounting
- 1200 mm Internal height - accepts: - 8 rows (150 mm high) or 6 rows (200 mm high) 24 way

FM205	upright basic frame without plinth	(standard)	1260	700	260
FM405	pair of side plates (L and R) for enclosure	FM205	1260	–	260
FM450	plinth (optional) for floor mounting enclosure	FM205	150	700	260
FM535	transparent sheet metal hinged door for	FM205	1260	685	–
FM545	plain sheet metal hinged door for	FM205	1260	685	–

Enclosures - Height: 2010 mm (floor standing with back plate, removable top plate and plinth)

- Main frame with back plate, removable top plate and plinth with 2 wall securing lugs
- 1800 mm Internal height - accepts: - 12 rows (150 mm high) or 9 rows (200 mm high) 24 way

FM109	upright basic frame with back plate and plinth	(narrow)	2010	450	260
FM209	upright basic frame with back plate and plinth	(standard)	2010	700	260
FM409	pair of side plates (L and R) for enclosure	FM1/209	2010	–	260
FM519	plain sheet metal hinged door (narrow)	FM109	2010	435	–
FM539	plain sheet metal hinged door (standard)	FM209	2010	685	–
FM549	transparent sheet metal hinged door (standard)	FM209	2010	685	–

Equipment mounting kits - For Quadro 5 system

- Comprises: mounting rail + accessories and front covers for modular MCBs and MCCBs

For 700 mm wide (standard) panels

UC201	mounting kit for MCBs (150 mm)	24 modules	FM205/9	150	600	–
UC205	mounting kit for MCBs (200 mm)	24 modules	FM205/9	200	600	–
UC011H	mounting kit for MCCBs	25-160A	FM205/9	300	600	–
UC021H	mounting kit for MCCBs	250A	FM205/9	300	600	–
UC141H	mounting kit for MCCBs	400/630A	FM205/9	400	600	–
UC233EM	kit with knock-outs for 3 x 96 mm instruments		FM205/9	200	600	–

For 450 mm wide (narrow) panels

UC200	mounting kit for MCBs	10 modules	FM109	150	350	–
UC010H	mounting kit for MCCBs	125/160A	FM109	300	350	–
UC020H	mounting kit for MCCBs	250A	FM109	300	350	–
UC140H	mounting kit for MCCBs	400/630A	FM109	400	350	–

Accessories for Quadro 5 enclosures - (other common accessories see page H-13)

FM484	chassis plates for standard enclosures	FM205/9	300	500	–
FM635	horizontal joining kit (side by side mounting of frames)				
FM653	screw-in lifting ring set for Quadro 5 enclosures				(2pcs)
UC915	clip-in cable trunking support (60 mm vertical / 40 mm horizontal)				
JP024	blanking strip (24 modules wide) with breakable sections				
FZ517	replacement square 6 x 6 mm key lock insert				

(continued...) Vega D Internal modules

type	number of modular ways	description	dimensions (mm)		
			(H)	(W)	(D)
FD02A1	2 rows (24 way)	standard chassis with modular DIN cover	300	–	–
FD02K1	2 row	for 1 x vertically mounted 250A MCCB	300	–	–
FD02C2	2 row	perforated chassis plate + plain front cover	300	–	–
FD00C2	2 row	plain flat surface front cover for enclosures	300	–	–
FD00M2	2 row	chassis plate direct fixing on vert. supports	300	–	–

Accessories for Vega D enclosures

JP002	blanking strip	24 way blanking strip (breakable sections)			(ea)
FD00A1	label holder	24 way holder and paper strip for marking			(10 per pack)
FD00F1	bracket	for horizontal side by side mounting			(ea)
FD00F2	brackets	external wall mount for surface enclosures			(ea)
FZ794	pocket plan	self adhesive flexible A4 format pocket plan			(10 per pack)
FD00S1	key lock	key lock to replace original door latch			(ea)

quadro+

the complete solution

Our quadro enclosures are designed, manufactured and tested to the highest international standards. And they are available in a range of shapes and forms to fit any project.



Technical specifications to the highest standards

- Rated voltage UN 400 V a.c.
- Rated operational voltage Ue 400 V a.c.
- Rated current IN up to 1600 A
- Rated peak withstand current Ipk up to 105 kA
- Rated short-time withstand current Icw up to 50 kA
- Rated frequency fn 50 Hz
- Rated impulse withstand voltage Uimp 8 - 12 kV
- Rated insulation voltage Ui 800 - 1000 V
- Mechanical impact protection IK10
- Degree of protection IP30 / IP55

Proven planning tools



Project management software: hagercad



Technical handbook



Training



five key benefits of a fully-tested system

01

Tested quality

02

Trusted rigidity

03

Reliable support

04

Unique ease of mounting

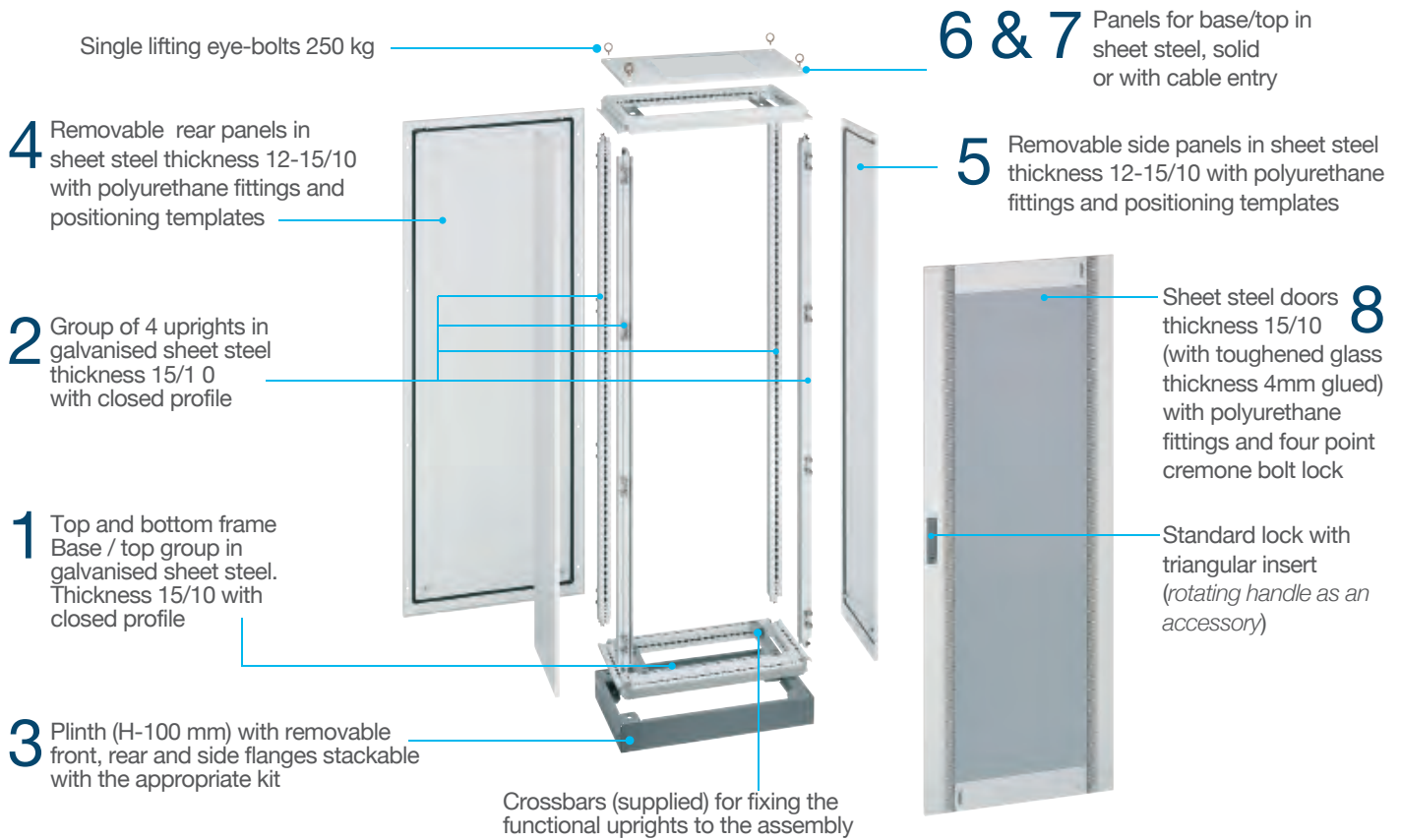
05

Safe & convenient transportation

:hager

quadro+

Hager's quadro boards and enclosures are user friendly when it comes to installation. Quick to assemble - the modular elements enable one to create boards according to your specific needs.



Examples of a 700 x 600 x 1900

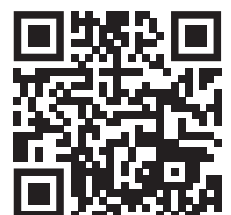
Item	type	description	Qty
1	FN029E	top and bottom frame (set)	1
2	FN046E	4 uprights	1
3	FN451E	plinth (H=100 mm)	1
4	FN276E	back panel	1
5	FN366E	side panel	2
6	FN089E	plain top or bottom cable entry plates	1
7	FN109E	top or bottom cable entry plates	1
8	FN516E	transparent door	1
9	FN696E	functional uprights	1

- Add mounting kits to fit MCBs, MCCBs and ACBs
- Add blanking plates as needed
- Add chassis plate to fit other equipment (VSDs, inverters, Etc.)



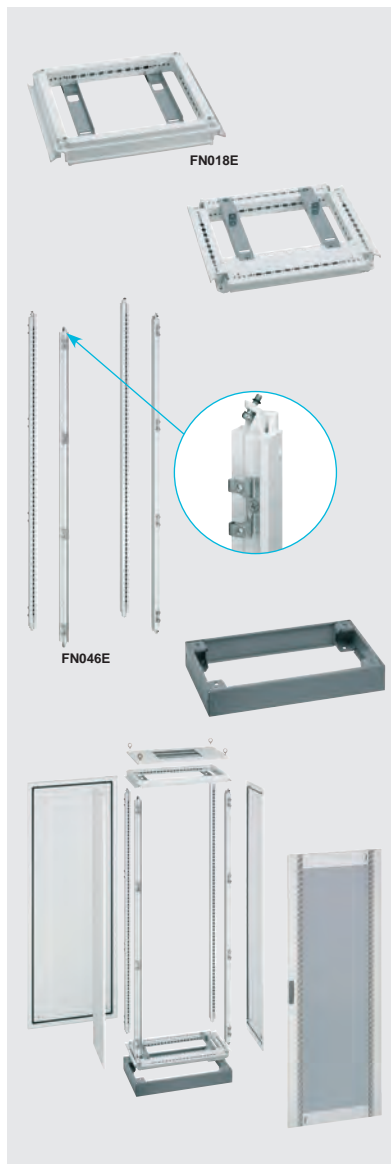
hagercad

Take low voltage distribution planning to the next level



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<ul style="list-style-type: none"> • Quick and easy to assemble • IP55 (with door) • Access from all sides • Sheet metal class I 	1		2		3		4		5	
Dimension (mm)			Top and bottom frame (set)	4 uprights	plinth (H=100 mm)	back panel	side panel			
width	depth	height								
450	400	1900	FN018E	FN046E	FN438E	FN216E	FN356E			
450	600	1900	FN020E	FN046E	FN440E	FN216E	FN366E			
450	800	1900	FN022E	FN046E	FN442E	FN216E	FN376E			
700	400	1900	FN021E	FN046E	FN441E	FN276E	FN356E			
700	600	1900	FN029E	FN046E	FN451E	FN276E	FN366E			
700	800	1900	FN013E	FN046E	FN433E	FN276E	FN376E			
900	400	1900	FN023E	FN046E	FN443E	FN296E	FN356E			
900	600	1900	FN031E	FN046E	FN453E	FN296E	FN366E			
900	800	1900	FN017E	FN046E	FN437E	FN296E	FN376E			



Quadro+ distribution board system (IP55)

Quadro + enclosure systems are supplied in a “flat-pack” format for ease of transportation and on-site assembly. Cabinets can be joined horizontally to form complete multi-cabinet systems without limitations. Ideal for applications up to 4000A. Basic component requirement to assemble a single floor standing cabinet:

- Top and bottom frames • four uprights • plinth • side panels • back panel • top and bottom plates • door

type	description	dimensions (mm)		
		(H)	(W)	(D)
Top and bottom frame set (connects to uprights)				
FN018E	top and bottom set frame (connects to uprights)	–	450	400
FN020E	top and bottom set frame (connects to uprights)	–	450	600
FN022E	top and bottom set frame (connects to uprights)	–	450	800
FN021E	top and bottom set frame (connects to uprights)	–	700	400
FN029E	top and bottom set frame (connects to uprights)	–	700	600
FN013E	top and bottom set frame (connects to uprights)	–	700	800
FN023E	top and bottom set frame (connects to uprights)	–	900	400
FN031E	top and bottom set frame (connects to uprights)	–	900	600
FN017E	top and bottom set frame (connects to uprights)	–	900	800
Four uprights (connects to top and bottom frames with single captive screw)				
FN046E	set of 4 uprights (connects to top and bottom frame)	1900	–	–
Plinth (100 mm high)				
FN438E	plinth with removable front and rear inspection plates	100	450	400
FN440E	plinth with removable front and rear inspection plates	100	450	600
FN442E	plinth with removable front and rear inspection plates	100	450	800
FN441E	plinth with removable front and rear inspection plates	100	700	400
FN451E	plinth with removable front and rear inspection plates	100	700	600
FN433E	plinth with removable front and rear inspection plates	100	700	800
FN443E	plinth with removable front and rear inspection plates	100	900	400
FN453E	plinth with removable front and rear inspection plates	100	900	600
FN437E	plinth with removable front and rear inspection plates	100	900	800
Back panel (removable)				
FN216E	back panel for Quadro+ enclosures (removable)	1900	450	–
FN276E	back panel for Quadro+ enclosures (removable)	1900	700	–
FN296E	back panel for Quadro+ enclosures (removable)	1900	900	–
Side panels (removable) supplied individually				
FN356E	side panel for Quadro+ enclosures (removable)	1900	–	400
FN366E	side panel for Quadro+ enclosures (removable)	1900	–	600
FN376E	side panel for Quadro+ enclosures (removable)	1900	–	800

6		7		8		9	
top and bottom cable entry plates		doors		chassis plate full height		functional uprights	
plain plate	cable entry	plain	transparent				
FN078E	FN098E	FN546E	–	FN726E		FN696E	
FN080E	FN100E	FN546E	–	FN726E		FN696E	
FN082E	FN102E	FN546E	–	FN726E		FN696E	
FN081E	FN101E	FN506E	FN516E	FN736E		FN696E	
FN089E	FN109E	FN506E	FN516E	FN736E		FN696E	
FN073E	FN093E	FN506E	FN516E	FN736E		FN696E	
FN083E	FN103E	FN526E	FN536E	FN746E		FN696E	
FN091E	FN111E	FN526E	FN536E	FN746E		FN696E	
FN077E	FN097E	FN526E	FN536E	FN746E		FN696E	



type	description	dimensions (mm)			
		(H)	(W)	(D)	
Top and bottom cable entry plate					
FN078E	top (or) bottom plain plate	(plain)	–	450	400
FN080E	top (or) bottom plain plate	(plain)	–	450	600
FN082E	top (or) bottom plain plate	(plain)	–	450	800
FN081E	top (or) bottom plain plate	(plain)	–	700	400
FN089E	top (or) bottom plain plate	(plain)	–	700	600
FN073E	top (or) bottom plain plate	(plain)	–	700	800
FN083E	top (or) bottom plain plate	(plain)	–	900	400
FN091E	top (or) bottom plain plate	(plain)	–	900	600
FN077E	top (or) bottom plain plate	(plain)	–	900	800
FN098E	top (or) bottom cable entry plate	(sliding)	–	450	400
FN100E	top (or) bottom cable entry plate	(sliding)	–	450	600
FN102E	top (or) bottom cable entry plate	(sliding)	–	450	800
FN101E	top (or) bottom cable entry plate	(sliding)	–	700	400
FN109E	top (or) bottom cable entry plate	(sliding)	–	700	600
FN093E	top (or) bottom cable entry plate	(sliding)	–	700	800
FN103E	top (or) bottom cable entry plate	(sliding)	–	900	400
FN111E	top (or) bottom cable entry plate	(sliding)	–	900	600
FN097E	top (or) bottom cable entry plate	(sliding)	–	900	800
Doors (with hinges and locks)					
FN510E	door for Quadro+ system (reversible)	(transparent)	1900	450	–
FN516E	door for Quadro+ system (reversible)	(transparent)	1900	700	–
FN536E	door for Quadro+ system (reversible)	(transparent)	1900	900	–
FN546E	door for Quadro+ system (reversible)	(plain)	1900	450	–
FN506E	door for Quadro+ system (reversible)	(plain)	1900	700	–
FN526E	door for Quadro+ system (reversible)	(plain)	1900	900	–
Chassis plates (full height)					
FN726E	chassis plate, galvanized steel	(full height)	1900	450	–
FN736E	chassis plate, galvanized steel	(full height)	1900	700	–
FN746E	chassis plate, galvanized steel	(full height)	1900	900	–
* Partial chassis plates, see page H-12					
Functional uprights					
• Required for fixing mounting rails/chassis plates and front covers to support circuit breaker					
FN696E	functional uprights (to support CB mounting acc.)		1900	–	–
* Functional uprights partial height, see page H-12					



Equipment mounting kits (for Quadro 5 and Quadro+ systems)

- Comprises: mounting accessories and front covers for MCB's, MCCB's and ACB's

type	description	for components	dimensions (mm)	
			(H)	(W)
For 450 mm wide panels				
UC200	kit for mounting MCBs	10 modules	150	350
UC010H	kit for mounting 2 x MCCBs	vertical 125/160A	300	350
UC020H	kit for mounting 1 x MCCB	vertical 250A	300	350
UC140H	kit for mounting 1 x MCCB	vertical 400/630A	400	350
For 700 mm wide panels				
Vertical mounting (terminals top and bottom)				
UC201	kit for mounting MCBs	24 modules	150	600
UC205	kit for mounting MCBs	24 modules	200	600
UC011H	kit for mounting 5 x MCCBs	vertical 25 - 160A	300	600
UC021H	kit for mounting 2 x MCCBs	vertical 250A	300	600
UC141H	kit for mounting 2 x MCCBs	vertical 400/630A	400	600
UC050H	kit for mounting 1 x MCCB	vertical 800/1000A	600	600
UC060H	kit for mounting 1 x MCCB	vertical 1250/1600A	600	600
UC317S	kit for motorized C/overs	horizontal 125-400A	300	600
UC321S	kit for motorized C/overs	horizontal 125-630A	300	600
UC062HEM	kit for mounting ACBs	frame A 1250/1600A	700	600
UC233EM	kit with knock-outs for up to 3 x 96 mm ² instruments		700	200
Horizontal mounting (terminals left and right)				
UC127H	kit for mounting 1 x MCCB	horizontal 250A	200	600
UC147H	kit for mounting 1 x MCCB	horizontal 400/630A	200	600
UC054H	kit for mounting 1 x MCCB	horizontal 800/1000A	400	600
For 900 mm wide panels				
Vertical mounting (terminals top and bottom)				
UC203	kit for mounting MCBs	36 modules	150	800
UC207	kit for mounting MCBs	36 modules	200	800
UC012H	kit for mounting 8 x MCCBs	vertical 25 - 160A	300	800
UC022H	kit for mounting 3 x MCCBs	vertical 250A	300	800
UC142H	kit for mounting 2 x MCCBs	vertical 400/630A	400	800
UC051H	kit for mounting 1 x MCCB	vertical 800/1000A	600	800
UC061H	kit for mounting 1 x MCCB	vertical 1250/1600A	600	800
UC082HEM	kit for mounting ACBs	frame B 1000/4000A	900	600
UC328S	kit for motorized C/overs	horizontal 800-1600A	600	800
UC243EM	kit with knock-outs for up to 3 x 96 mm ² instruments		900	200
Horizontal mounting (terminals left and right)				
UC128H	kit for mounting 1 x MCCB	horizontal 250A	200	800
UC148H	kit for mounting 1 x MCCB	horizontal 400/630A	200	800
UC055H	kit for mounting 1 x MCCB	horizontal 800/1000A	400	800
Blanking plates (for Quadro 5 and Quadro+ systems)				
UC221	front blanking cover plate	(plain)	50	350
UC222	front blanking cover plate	(plain)	150	350
UC223	front blanking cover plate	(plain)	200	350
UC224	front blanking cover plate	(plain)	300	350
UC225	front blanking cover plate	(plain)	400	350
UC226	front blanking cover plate	(plain)	600	350
UC231	front blanking cover plate	(plain)	50	600
UC239	front blanking cover plate	(plain)	100	600
UC232	front blanking cover plate	(plain)	150	600
UC233	front blanking cover plate	(plain)	200	600
UC234	front blanking cover plate	(plain)	300	600
UC235	front blanking cover plate	(plain)	400	600
UC236	front blanking cover plate	(plain)	600	600
UC241	front blanking cover plate	(plain)	50	800
UC249	front blanking cover plate	(plain)	100	800
UC242	front blanking cover plate	(plain)	150	800
UC243	front blanking cover plate	(plain)	200	800
UC244	front blanking cover plate	(plain)	300	800
UC245	front blanking cover plate	(plain)	400	800
UC246	front blanking cover plate	(plain)	600	800



Equipment mounting kits (for Quadro 5 and Quadro+ systems)

type	description	dimensions (mm)		
		(H)	(W)	(D)
Internal door (sheet metal)				
FN700E	internal hinged door for Quadro+ cabinets	1900	600	–
FN706E	internal hinged door for Quadro+ cabinets	1900	800	–

Accessories for Quadro+

All accessories are designed for adapting enclosures to accommodate a range of components. Perforations in profiles, brackets, rails are in steps 25 mm apart and accommodate cage nuts M6 (UC990).

Perforated crossbars mounts (horizontally) directly onto side uprights of enclosure

FN690E	perforated mounting rail for sides of enclosure	50	–	400
FN691E	perforated mounting rail for sides of enclosure	50	–	600
FN692E	perforated mounting rail for sides of enclosure	50	–	800

Perforated mounting rails mounts (horizontally) directly onto side uprights of enclosure

FN873E	perforated mounting rail for back of enclosure	50	300	–
FN875E	perforated mounting rail for back of enclosure	50	450	–
FN877E	perforated mounting rail for back of enclosure	50	700	–
FN879E	perforated mounting rail for back of enclosure	50	900	–

Perforated brackets mounts (horizontally) directly onto crossbars FN690/1/2E

FN863E	perforated mounting rail connects onto crossbars	50	450	–
FN865E	perforated mounting rail connects onto crossbars	50	700	–
FN867E	perforated mounting rail connects onto crossbars	50	900	–

Finishing frame required when no door is fitted to enclosure

FN406E	finishing frame when no door is used on enclosures	1900	700	–
FN426E	finishing frame when no door is used on enclosures	1900	900	–

Horizontal joining kit for joining two enclosures side by side

FN950	side connection kits (4 galvanised plates)	–	–	–
FN951	seal kit 10 x 6 mm for joining two enclosures (10 met)	–	–	–

Functional uprights (partial height)

To accept mounting kits for circuit breakers / requires 4 x perforated crossbars + front cover fixing profile

FN892E	functional uprights (supports mounting accessories)	200	–	–
FN893E	functional uprights (supports mounting accessories)	300	–	–
FN894E	functional uprights (supports mounting accessories)	400	–	–
FN895E	functional uprights (supports mounting accessories)	600	–	–

Front cover fixing profile for mounting front covers without full functional uprights

FN696EP	profile for fixing front plates to enclosures	1900	–	–
FN696EX01	full vertical upright kit to accommodate rack system	1900	–	–

Partial chassis plate (adjustable depth) mounts onto functional uprights

UC960	perforated partial chassis plate (depth adjustable)	300	600	–
UC962	perforated partial chassis plate (depth adjustable)	450	600	–
UC964	perforated partial chassis plate (depth adjustable)	600	600	–

Vertical dividing upright to create cable compartment in 900 wide enclosures

FN286E	vertical dividing upright with fixing accessories	1900	–	–
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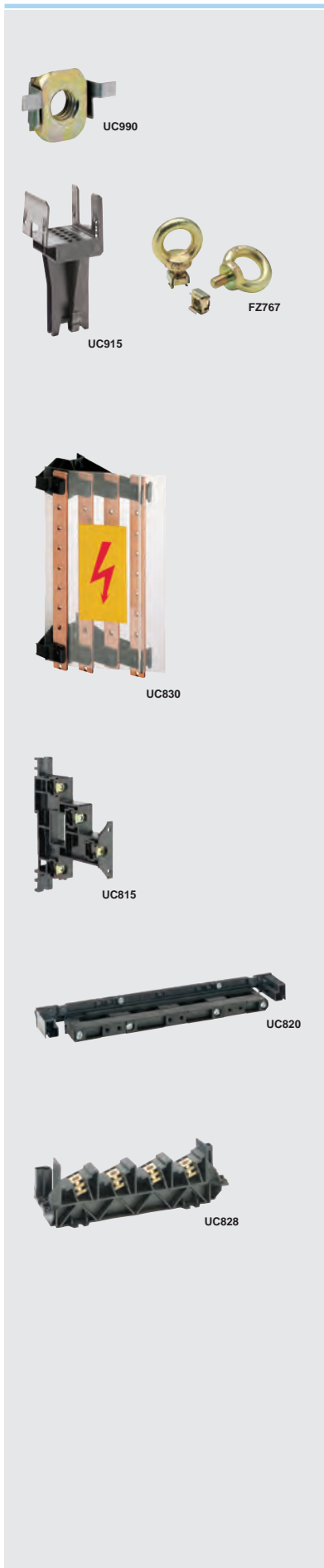
Cable compartment cover to cover compartment section front/back

FN266E	cover plate for cable compartment	1900	200	–
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Cover plates (covers top joint when joining two enclosures)

FN942E	plate to cover joint bet. two side by side enclosures	–	–	400
FN943E	plate to cover joint bet. two side by side enclosures	–	–	600
FN944E	plate to cover joint bet. two side by side enclosures	–	–	800

See overleaf (H-13) for more accessories.



Accessories for Quadro+

type	description	dimensions (mm)		
		(H)	(W)	(D)
UC268	hinge kit for modular covers (<i>hinge from left or right</i>)	-	-	-
UC990	clip-in M6 cage nuts for perforations in profiles	-	-	-
UC991	M6 x 12 mm screws for above cage nuts	-	-	-
UC915	clip-in cable trunking support (<i>Vert. 60 mm Hor. 40 mm</i>)	-	80	-
UZ25V1	rail mount cable clamp / guide	-	-	-
JP024	blanking strip (<i>24-way</i>) with breakable sections	-	-	-
JE003	spare transparent self-adhesive marking strips (<i>24-way</i>)	-	-	-
FZ516	replacement square 6 x 6 mm key-lock insert	-	-	-
FN952	door latch unit (<i>in open position</i>)	-	-	-
FZ767	lifting rings for enclosures	Quadro+ (2pcs)	-	-
FZ760E	lifting rings for double enclosures	Quadro+ (2pcs)	-	-

Busbar supports for Quadro system

All accessories are designed for adapting enclosures to accommodate a range of components. Perforations in profiles, brackets, rails are in steps 25 mm apart and accommodate cage nuts M6 (UC900).

type	current	bar size		pole	description	dimensions	
		width (mm)	thick (mm)			length (mm)	width (mm)

Side busbar support

UC830	250A	20	5	4	side mounting busbar supports kit (2)	-	-
UC834	-	-	-	-	protective screen for above supports	1000	-

Multi stage busbars support

UC815	400A	32	5	4	stepped busbar support (1)	-	-
UC288					universal crossbars for mounting UC815	-	185
UC289					universal crossbars for mounting UC816	-	500
UC988					universal crossbars for mounting UC815	-	250
UC816					protective screen for above supports	620	170

Flat busbar support

UC820	630A	20/30	5/10	4	busbar support for flat bars (1)	-	-
UC812					support kit for rear vertical mounting	-	250
UC289					universal crossbars for mounting	-	500
UC827					protective screen for above support	620	-

Inclined busbar supports

UC828	250A				protective screen for above support	990	212
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Universal busbar support (*adjustable*)

UC895E	3200A	30 - 120	5	4	support kit for 5 mm bars (<i>up to 4 bars per phase</i>)		
UC896E	3200A	30 - 120	10	4	support kit for 10 mm bars (<i>up to 2 x busbars per phase</i>)		
UC897E	3200A	30 - 120	10	4	support kit for 10 mm bars (<i>up to 3 x busbars per phase</i>)		
UC860E					perforated aluminium profile for support kit	2 met.	-
UC861E					bracket kits for above UC860E	-	-



type	description	
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Rail mountable earth/neutral terminals (clips vertically onto rail)

KM13N	rail mountable neutral terminal (blue)	6 x 16 + 7 x 10 mm ²
KM13E	rail mountable earth terminal (green)	6 x 16 + 7 x 10 mm ²

Terminal support (clips into various distribution boards)

KN00A	universal terminal support	Din rail mount (horizontal or vertical) 105 mm
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Distribution terminals (fully insulated clips onto above support)

Incoming	1.5..25 mm ² screw clamp terminal
Outgoing	1.5..4 mm ² connect cage clamp terminals (push-in)

type	supply	output	description	colour
	1.5..25 mm ²	1.5..4 mm ²		
KN10E	63A 2 x 25 mm ²	8 x 4 mm ²	insulated earth terminal	(green)
KN18E	63A 4 x 25 mm ²	14 x 4 mm ²	insulated earth terminal	(green)
KN26E	63A 6 x 25 mm ²	20 x 4 mm ²	insulated earth terminal	(green)
KN99E	earth insulated bridge piece for above terminals (push-in)			
KN10N	63A 2 x 25 mm ²	8 x 4 mm ²	insulated neutral terminal	(blue)
KN18N	63A 4 x 25 mm ²	14 x 4 mm ²	insulated neutral terminal	(blue)
KN26N	63A 6 x 25 mm ²	20 x 4 mm ²	insulated neutral terminal	(blue)
KN99N	neutral insulated bridge piece for above terminals (10pcs)			
KN10P	63A 2 x 25 mm ²	8 x 4 mm ²	insulated phase terminal	(brown)
KN18P	63A 4 x 25 mm ²	14 x 4 mm ²	insulated phase terminal	(brown)
KN26P	63A 6 x 25 mm ²	20 x 4 mm ²	insulated phase terminal	(brown)
KN99P	phase insulated bridge piece for above terminals (10 pcs)			
KN04N	90A 4 x 25 mm ²	screw clamp	insulated neutral terminal	(blue)
KN07N	90A 7 x 25 mm ²	screw clamp	insulated neutral terminal	(blue)
KN04P	90A 4 x 25 mm ²	screw clamp	insulated phase terminal	(brown)
KN07P	90A 7 x 25 mm ²	screw clamp	insulated phase terminal	(brown)

Single-pole distribution blocks (fully protected) Icc: 36kA

- Space saving
- IP20 protection
- DIN rail or bolt down mounting
- One main cable input - various cable outputs

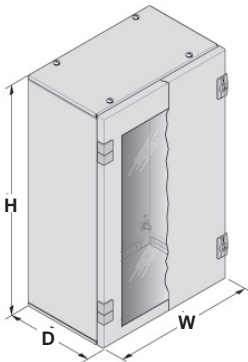
type	amps	incoming terminals	outgoing terminals (per phase) mm ²				Icc kA	poles
			1.5...6	2.5...10	2.5...16	2.5...25		
KJ02D	125A	1x35/1x16 mm ²			6		36	1 pole
KJ02C	160A	70 mm ²			6		36	1 pole
KJ02A	250A	95 mm ²		4	5	2	36	1 pole
KJ02B	400A	150 mm ²		4	5	2	36	1 pole

Multi-pole distribution blocks (3Ph+N distribution bars in modular format)

- Modular DIN rail mounting (mounts through modular front cut-out)
- High fault level
- IEC 60947-1

type	amps	incoming terminals	outgoing terminals (per phase) mm ²				Icc kA	poles
			1.5...6	2.5...10	2.5...16	2.5...25		
KJ01A	100A	35 mm ²			10	1	29	2 pole
KJ01B	80A	16 mm ²		8			21	4 pole
KJ01C	125A	35 mm ²			10	1	29	4 pole
KJ01D	160A	50 mm ²			8		20	4 pole
KJ02E	100A	25 mm ²	5/4*	2/6*			20	4 pole

*= Neutral terminals



Orion + Enclosures (IP65) (sheet metal and polyester)

Sheet steel or glass reinforced polyester - the **Orion Plus** enclosures are suited for the harshest conditions and can be applied for wet and mechanical use. Even under chemical use, Orion Plus offers the ideal solution with glass reinforced polyester. Flexibly is provided via mounting plate or DIN rail (*in 2 different versions*) and thus offers the suitable interior equipment system - both for the application in automation and for classical current distribution.

- Colour: RAL 7035 (light grey)
- Mounting: Surface mounting
- Certification: CEI EN 60439-1
- Material: Sheet steel - class I or polyester - class II
- IP Rating: (IP65/IK10) protection, insulation class I (powder-coated epoxy polyester)

General features:

- Size and depth adapted according to your need
- Front door with foamed gasket opening 140°, hinged left or right
- Interior kits for conversion to distribution facility (*for mounting MCBs and modular products*)
- Sheet metal enclosures for indoor application, Polyester enclosures for indoor and outdoor applications

Typical applications:

- Installation of automation products for the control of machines or small processes
- Installation of non modular products such as contactors, transformers, etc
- Cable termination and distribution



type	protection	description	dimensions (mm)		
			(H)	(W)	(D)

Sheet metal enclosures (surface mounting) colour: RAL 7035 (light grey)

- IP65 protection, insulation class I (powder-coated epoxy polyester)
- Full-sized top and bottom gland plates (*enclosures can be mounted on top of each other*)

FL102A	IP65	surface mount sheet metal enclosure	300	250	160
FL104A	IP65	surface mount sheet metal enclosure	350	300	160
FL110A	IP65	surface mount sheet metal enclosure	500	300	200
FL112A	IP65	surface mount sheet metal enclosure	500	400	200
FL117A	IP65	surface mount sheet metal enclosure	650	400	200
FL120A	IP65	surface mount sheet metal enclosure	650	500	250
FL124A	IP65	surface mount sheet metal enclosure	800	600	300
FL128AEM	IP65	surface mount sheet metal enclosure	950	800	300
FL130AEM	IP65	surface mount sheet metal enclosure	1250	800	300

Note: Above enclosures with transparent door (add suffix T to part no. - e.g **FL102AT**)

+ 15%

Polyester enclosures (surface mounting) colour: RAL 7035 (light grey)

- IP65 protection, insulation class II
- Waterproof hood, top and bottom (*incorporated*)

FL204B	IP65	surface mount polyester enclosure	350	300	160
FL209B	IP65	surface mount polyester enclosure	500	300	200
FL213B	IP65	surface mount polyester enclosure	500	400	200
FL216B	IP65	surface mount polyester enclosure	650	400	200
FL221B	IP65	surface mount polyester enclosure	650	500	250
FL229B	IP65	surface mount polyester enclosure	800	600	300

Chassis plates (supplied separately)

- Plain mounting plate mounted either directly
- Sheet metal thickness 2 mm
- Mounting either directly on the back of enclosure or on the integrated slides with brackets **FL450A** to adjust depth, see page **H-16**

type	description	for enclosures	
FL402A	internal sheet metal chassis plate	for enclosure	FL102
FL404A	internal sheet metal chassis plate	for enclosure	FL104/204
FL407A	internal sheet metal chassis plate	for enclosure	FL110/209
FL408A	internal sheet metal chassis plate	for enclosure	FL112/213
FL412A	internal sheet metal chassis plate	for enclosure	FL117/216
FL413A	internal sheet metal chassis plate	for enclosure	FL120/221/221B
FL415A	internal sheet metal chassis plate	for enclosure	FL124/229
FL417AEM	internal sheet metal chassis plate	for enclosure	FL128
FL419AEM	internal sheet metal chassis plate	for enclosure	FL130



FL544A

Orion + Enclosures (IP65) (sheet metal and polyester)

type	description	for enclosures
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Internal door assembly

- Internal doors, sheet metal reversible
- Delivered with fixing accessories mounting on slides with delivered fixing frame

FL544A	internal door mounting kit	for enclosure	FL104/204
FL547A	internal door mounting kit	for enclosure	FL110/209
FL548A	internal door mounting kit	for enclosure	FL112/213
FL551A	internal door mounting kit	for enclosure	FL117/216
FL552A	internal door mounting kit	for enclosure	FL120/221
FL555A	internal door mounting kit	for enclosure	FL124/229
FL557A	internal door mounting kit	for enclosure	FL128
FL559A	internal door mounting kit	for enclosure	FL130

Functional chassis (complete) for mounting modular products and MCBs

- To convert a surface mount enclosure into a distribution board
- Pre-assembled made up of: 2 Uprights, DIN guides and modular panels

type	number of modular ways	description	for enclosures
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FL979A	24 (2x12)	complete modular chassis system	FL104A
FL980A	24 (2x12)	complete modular chassis system	FL204B
FL981A	36 (3x12)	complete modular chassis system	FL110/209
FL982A	54 (3x18)	complete modular chassis system	FL112/213
FL983A	72 (4x18)	complete modular chassis system	FL117/216
FL994A	88 (4x22)	complete modular chassis system	FL120A/221B
FL996A	140 (5x28)	complete modular chassis system	FL124A/229B
FL998A	216 (6x36)	complete modular chassis system	FL128A
FL000A	288 (8x36)	complete modular chassis system	FL130A



FL981A

Kits for main incomer for enclosures

FL372A	(H) 300 mm	kit to mount 125/160A MCCBs	into	FL120/221
FL373A	(H) 300 mm	kit to mount 125/160A MCCBs	into	FL124/229
FL374A	(H) 300 mm	kit to mount 125/160A MCCBs	into	FL128/130

Above requires **HYA033H** DIN rail adaptor to mount onto rail in kit, see page **B-19**

Blank front covers

- Fixed by screws of 1/4 turn to replace modular covers

FL711E	150 mm	blank front cover for enclosures	FL104/10FL204/9
FL712E	150 mm	blank front cover for enclosures	FL112/17/FL213/16
FL713E	150 mm	blank front cover for enclosures	FL120A/221B
FL714E	150 mm	blank front cover for enclosures	FL124A/229B
FL715E	150 mm	blank front cover for enclosures	FL128/130A
FL733E	300 mm	blank front cover for enclosures	FL120A/221B
FL734E	300 mm	blank front cover for enclosures	FL124A/229B
FL735E	300 mm	blank front cover for enclosures	FL128/130A



FL713E

Plinths for enclosures

FL958A	base mount plinth system	for enclosures	FL120/221
FL960A	base mount plinth system	for enclosures	FL124/229
FL962A	base mount plinth system	for enclosures	FL128/130

Accessories for enclosures

FL670A	seal kit for mounting enclosures one above another
FL85Z	metallic mounting brackets for sheet metal enclosures
FL863Z	plastic mounting brackets for polyester enclosures
FL871Z	blanking strip (grey) 6 x 4 way blanks in a pack
FL96ZX01	lever handle door lock (without key) for all enclosures
FL96Z	lever handle door lock (with key) for all enclosures
FL93Z	set of 2 locks triangular centre 8 mm
FL450A	4 brackets delivered with fixing screws



FL96Z



FL958A



FL85Z



FL670A



HE204

HE series - Sheet metal electrical enclosures

- Manufactured from high-grade mild steel, powder-coated
- Supplied with internal Aluzinc chassis plate (2 mm thick)
- Supplied with 6 mm square drive locks, key lock and mounting brackets
- Degree of protection: IP65 (continuous foam gasket)

type	IP rating	colour	description	dimensions (mm)		
				(H)	(W)	(D)

Sheet metal enclosures (IP65)

Orange enclosures - (RAL2000) electric orange

HE200	IP65	orange	wall mount sheet metal enclosure	250	200	170
HE201	IP65	orange	wall mount sheet metal enclosure	350	250	170
HE202	IP65	orange	wall mount sheet metal enclosure	450	300	220
HE203	IP65	orange	wall mount sheet metal enclosure	550	400	220
HE204	IP65	orange	wall mount sheet metal enclosure	650	450	270
HE205	IP65	orange	wall mount sheet metal enclosure	750	550	270
HE206	IP65	orange	wall mount sheet metal enclosure	850	600	270
HE206E	IP65	orange	wall mount sheet metal enclosure	850	600	330
HE206EGP2*	IP65	orange	as above with top/bottom gland plate	850	600	330
HE207	IP65	orange	wall mount sheet metal enclosure	950	700	270
HE207E	IP65	orange	wall mount sheet metal enclosure	950	700	330
HE208	IP65	orange	wall mount sheet metal enclosure	1150	850	270
HE208E	IP65	orange	wall mount sheet metal enclosure	1150	850	330

* GP2-(top/bottom gland plate)

Enclosures with transparent glass door

HE201T	IP65	orange	enclosure with transparent door	350	250	170
HE202T	IP65	orange	enclosure with transparent door	450	300	220
HE203T	IP65	orange	enclosure with transparent door	550	400	220
HE204T	IP65	orange	enclosure with transparent door	650	450	270
HE205T	IP65	orange	enclosure with transparent door	750	550	270
HE206T	IP65	orange	enclosure with transparent door	850	600	270
HE206ET	IP65	orange	enclosure with transparent door	850	600	330
HE207T	IP65	orange	enclosure with transparent door	950	700	270
HE207ET	IP65	orange	enclosure with transparent door	950	700	330
HE208T	IP65	orange	enclosure with transparent door	1150	850	270
HE208ET	IP65	orange	enclosure with transparent door	1150	850	330

Grey enclosures - (RAL7032) light grey (IP65)

HE200-G	IP65	grey	wall mount sheet metal enclosure	250	200	170
HE201-G	IP65	grey	wall mount sheet metal enclosure	350	250	170
HE202-G	IP65	grey	wall mount sheet metal enclosure	450	300	220
HE203-G	IP65	grey	wall mount sheet metal enclosure	550	400	220
HE204-G	IP65	grey	wall mount sheet metal enclosure	650	450	270
HE205-G	IP65	grey	wall mount sheet metal enclosure	750	550	270
HE206-G	IP65	grey	wall mount sheet metal enclosure	850	600	270
HE206E-G	IP65	grey	wall mount sheet metal enclosure	850	600	330
HE207-G	IP65	grey	wall mount sheet metal enclosure	950	700	270
HE207E-G	IP65	grey	wall mount sheet metal enclosure	950	700	330
HE208-G	IP65	grey	wall mount sheet metal enclosure	1150	850	270
HE208E-G	IP65	grey	wall mount sheet metal enclosure	1150	850	330

Enclosures with transparent glass door

HE201T-G	IP65	grey	enclosure with transparent door	350	250	170
HE202T-G	IP65	grey	enclosure with transparent door	450	300	220
HE203T-G	IP65	grey	enclosure with transparent door	550	400	220
HE204T-G	IP65	grey	enclosure with transparent door	650	450	270
HE205T-G	IP65	grey	enclosure with transparent door	750	550	270
HE206T-G	IP65	grey	enclosure with transparent door	850	600	270
HE206ET-G	IP65	grey	enclosure with transparent door	850	600	330
HE207T-G	IP65	grey	enclosure with transparent door	950	700	270
HE207ET-G	IP65	grey	enclosure with transparent door	950	700	330
HE208T-G	IP65	grey	enclosure with transparent door	1150	850	270
HE208ET-G	IP65	grey	enclosure with transparent door	1150	850	330



HE204T-G



type	IP rating	colour	description	dimensions (mm)		
				(H)	(W)	(D)
Internal door kit for HE enclosures						
ID02	-	white	internal door kit for enclosures	HE202	-	-
ID03	-	white	internal door kit for enclosures	HE203	-	-
ID04	-	white	internal door kit for enclosures	HE204	-	-
ID05	-	white	internal door kit for enclosures	HE205	-	-
ID06	-	white	internal door kit for enclosures	HE206	-	-
ID06E	-	white	internal door kit for enclosures	HE206E	-	-
ID07	-	white	internal door kit for enclosures	HE207	-	-
ID07E	-	white	internal door kit for enclosures	HE207E	-	-
ID08	-	white	internal door kit for enclosures	HE208	-	-
ID08E	-	white	internal door kit for enclosures	HE208E	-	-
Canopy for HE enclosures						
Orange - RAL2000 (electric orange)						
HC02	IP65	orange	steel canopy for enclosures	HE202	-	300 220
HC03	IP65	orange	steel canopy for enclosures	HE203	-	400 220
HC04	IP65	orange	steel canopy for enclosures	HE204	-	450 270
HC05	IP65	orange	steel canopy for enclosures	HE205	-	550 270
HC06	IP65	orange	steel canopy for enclosures	HE206	-	600 270
HC06E	IP65	orange	steel canopy for enclosures	HE206E	-	600 330
HC07	IP65	orange	steel canopy for enclosures	HE207	-	700 270
HC07E	IP65	orange	steel canopy for enclosures	HE207E	-	700 330
HC08	IP65	orange	steel canopy for enclosures	HE208	-	850 270
HC08E	IP65	orange	steel canopy for enclosures	HE208E	-	850 330
Grey - RAL7035 (light grey)						
HC02-G	IP65	grey	steel canopy for enclosures	HE202	-	300 220
HC03-G	IP65	grey	steel canopy for enclosures	HE203	-	400 220
HC04-G	IP65	grey	steel canopy for enclosures	HE204	-	450 270
HC05-G	IP65	grey	steel canopy for enclosures	HE205	-	550 270
HC06-G	IP65	grey	steel canopy for enclosures	HE206	-	600 270
HC06E-G	IP65	grey	steel canopy for enclosures	HE206E	-	600 330
HC07-G	IP65	grey	steel canopy for enclosures	HE207	-	700 270
HC07E-G	IP65	grey	steel canopy for enclosures	HE207E	-	700 330
HC08-G	IP65	grey	steel canopy for enclosures	HE208	-	850 270
HC08E-G	IP65	grey	steel canopy for enclosures	HE208E	-	850 330
Accessories						
16.4.431.01	16 mm	black	padlockable lever handle			for above enclosures
Special "extra deep" enclosures (IP65)						
<ul style="list-style-type: none"> • Ideal for changeover switch applications • Supplied with internal Aluzinc chassis plate (2 mm thick) • Degree of protection: IP65 (continuous foam gasket) • Colour : RAL2000 (electric orange) - other colours on request 						
HE09645	IP65	orange	extra deep sheet metal enclosures	900	600	450
HE12960GP2*	IP65	orange	as above with top/bottom gland plate	1200	900	600
* GP2-(top/bottom gland plate)						
Special "termination" enclosures (IP65)						
• Front cover secured by 4 x screws						
Sheet metal enclosures						
GAZM1E	IP65	grey	sheet metal enclosures	200	150	120
Stainless steel (AISI 304) enclosures						
GAZS1E	IP65	S/Steel	stainless steel enclosures	200	150	120



SE....



RGS....



RGS....

3CR12 series - Stainless steel enclosures (IP65)

- Manufactured from 3CR12 stainless steel and powder-coated
- Supplied with internal Aluzinc chassis plate (2 mm thick)
- Supplied with 6 mm square drive locks, key lock and mounting brackets
- Degree of protection: IP65 (continuous foam gasket)
- Colour: RAL2000 (electric orange) - other colours on request

type	IP rating	colour	description	dimensions (mm)		
				(H)	(W)	(D)

3CR12 stainless steel enclosures (IP65)

SE1030	IP65	orange	3CR12 stainless steel enclosure	350	250	170
SE1040	IP65	orange	3CR12 stainless steel enclosure	400	300	220
SE1050	IP65	orange	3CR12 stainless steel enclosure	500	400	220
SE1065	IP65	orange	3CR12 stainless steel enclosure	600	500	220
SE1070	IP65	orange	3CR12 stainless steel enclosure	700	600	270
SE1080	IP65	orange	3CR12 stainless steel enclosure	800	600	270
SE1090	IP65	orange	3CR12 stainless steel enclosure	900	700	330
SE1100	IP65	orange	3CR12 stainless steel enclosure	1000	800	330
SE1201	IP65	orange	3CR12 stainless steel enclosure	1200	800	330

Stainless steel enclosures with transparent glass door

SE1040T	IP65	orange	3CR12 enc. with transparent door	400	300	220
SE1050T	IP65	orange	3CR12 enc. with transparent door	500	400	220
SE1065T	IP65	orange	3CR12 enc. with transparent door	600	500	220
SE1070T	IP65	orange	3CR12 enc. with transparent door	700	600	270
SE1080T	IP65	orange	3CR12 enc. with transparent door	800	600	270
SE1090T	IP65	orange	3CR12 enc. with transparent door	900	700	330
SE1100T	IP65	orange	3CR12 enc. with transparent door	1000	800	330
SE1201T	IP65	orange	3CR12 enc. with transparent door	1200	800	330

Canopy for above enclosures

HC3CR-4	IP65	orange	canopy for stainless steel enclosures			SE1040
HC3CR-5	IP65	orange	canopy for stainless steel enclosures			SE1050
HC3CR-6	IP65	orange	canopy for stainless steel enclosures			SE1065
HC3CR-7	IP65	orange	canopy for stainless steel enclosures			SE1070/1080
HC3CR-9	IP65	orange	canopy for stainless steel enclosures			SE1090
HC3CR-10	IP65	orange	canopy for stainless steel enclosures			SE1100/1200

Add "-G" to the end of the above SE.. / HC3CR.. part numbers for grey (RAL 7035) enclosures.

304 stainless steel enclosures (IP65)

- Manufactured from high grade SS 304 stainless steel
- Supplied with internal Aluzinc chassis plate (2 mm thick)
- Supplied with bottom SS 304 gland plate and enclosure mounting brackets
- Degree of protection: IP65 (continuous foam gasket)
- Colour: Stainless Steel - "brushed" finish

RGS304-30	IP65	S/Steel	SS 304 stainless steel enclosure	350	250	170
RGS304-40	IP65	S/Steel	SS 304 stainless steel enclosure	400	300	220
RGS304-50	IP65	S/Steel	SS 304 stainless steel enclosure	500	400	220
RGS304-65	IP65	S/Steel	SS 304 stainless steel enclosure	600	500	220
RGS304-70	IP65	S/Steel	SS 304 stainless steel enclosure	700	600	270
RGS304-80	IP65	S/Steel	SS 304 stainless steel enclosure	800	600	270
RGS304-93	IP65	S/Steel	SS 304 stainless steel enclosure	900	700	330
RGS304-103	IP65	S/Steel	SS 304 stainless steel enclosure	1000	800	330
RGS304-123	IP65	S/Steel	SS 304 stainless steel enclosure	1200	800	330

Internal door kit for all above enclosures (mild steel)

ID3CR-4	-	white	internal door kit for above enclosures	400	300	170
ID3CR-5	-	white	internal door kit for above enclosures	500	400	220
ID3CR-6	-	white	internal door kit for above enclosures	600	500	220
ID3CR-7	-	white	internal door kit for above enclosures	700	600	270
ID3CR-8	-	white	internal door kit for above enclosures	800	600	270
ID3CR-9	-	white	internal door kit for above enclosures	900	700	330
ID3CR-10	-	white	internal door kit for above enclosures	1000	800	330
ID3CR-12	-	white	internal door kit for above enclosures	1200	800	330



7T8100002303



7T5102304360



7F2082302055



7F0200002000



7H5102300025



7H5182300400

7T series - Snap action thermostatic bimetal sensor (used to control temperatures within enclosures)

Bimetal thermostats to control temperatures inside enclosures. Suitable for different applications, with close-on-rise (NO) or open-on rise (NC) contact for regulation of heating and ventilation equipment or to activate signalling devices.

- Small, compact size, 17.5 mm wide
- Enclosure PA66 self-extinguishing to UL 94V-0
- DIN rail (EN 60715) mountable
- IP20 protected screw terminals
- Applied standards EN 60730-1, UL approved UL873 and C22.2

type	temperature range	elec. contact	description	dimensions (mm)		
				(H)	(W)	(D)

7T series - Modular rail mount panel thermostats (same dimensions as 1 pole MCB)

7T8100002303	0...+60°C	1 x NO	rail mnt panel thermostat (blue dial)	86	17.5	48
7T8100002401	-20...+40°C	1 x NC	rail mnt panel thermostat (red dial)	86	17.5	48

7T series electronic hygrostat humidity control

Hygrostats automatically regulate humidity inside enclosures, triggering a heater or fan when a preset relative humidity is exceeded, prevents condensation on internal electric and electronic components

- Electronic multi-functional control of temperature and humidity (4 functions)
- LED status indication (contact ON)
- Humidity range: 10...90%

7T5102304360	+10...+60°C	1 x NO	DIN rail mount panel hygrostat	110...240 VAC/DC		
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7F series - Filter Fans (IP54) (EN 60529)

New filter fan range from Finder ensures performance of internal components and instrumentation. Dedicated to maintaining a constant temperature in control panels and enclosures.

- Complete fan - with mounting frame, removable filter and metal finger guard
- Very low acoustic noise - minimal depth within enclosure
- Time-saving installation and maintenance - easily replaceable filter mat

type	voltage (V)	rated power	air flow m³/h	noise dB (A)	description	dimensions (mm²)		
						size	frame	cutout
7F2082301020	230 VAC	17 W	24	27	complete filter fan	1	120	92
7F2082302055	230 VAC	28 W	55	42	complete filter fan	2	155	125
7F2082303100	230 VAC	28 W	100	42	complete filter fan	3	209	177

Exhaust filter without fan - used as outlet or inlet

The exhaust filter should match the size of the filter fan to achieve optimal ventilation within the cabinet

7F0200001000	outlet/inlet	–	14	–	exhaust filter only	1	120	92
7F0200002000	outlet/inlet	–	40	–	exhaust filter only	2	155	125
7F0200003000	outlet/inlet	–	75	–	exhaust filter only	3	209	177

7H series - Panel heaters (anti-condensation)

For the thermal regulation of electrical cabinets. The heaters consist of a self-extinguishing PTC element in a touch safe, DIN rail mountable housing.

- Compact dimensions - DIN rail mounting - touch safe - self-regulating PTC resistance
- Screw terminal connection (250/400W heaters supplied with fast wiring screwless terminals)
- Complies with standards: IEC/EN 60335-1 and IEC 60004-1

type	voltage (V)	heating power	current (mA)	description	dimensions (mm)		
					(H)	(W)	(D)
7H5102300025	110...230V	25 W	130	rail mounting panel heater	102	61	64
7H5102300050	110...230V	50 W	200	rail mounting panel heater	117	61	64
7H5102300100	110...230V	100 W	450	rail mounting panel heater	167	61	64
7H5102300150	110...230V	150 W	700	rail mounting panel heater	242	61	64
7H5182300250	230 VAC	250W	1000	rail mounting panel heater	197	61	81
7H5182300400	230 VAC	400W	1700	rail mounting panel heater	272	61	81

new



FU-9801C1 P2D



FU-9803C1 P2A23



FU-9804C1 P2A40



FU-9804C2 P2A23

FU98 series - Complete filter/fan units

Complete filter fan assembly with fan, mounting frame, removable filter and internal finger guard. Mounts through panel wall or door for simple installation as a ventilator device for electrical cabinets and panels.

- Temperature: -10°C...+85°C
- Permanent sealing gasket in polyurethane foam
- Shielded self lubricating ball bearing fans

type	fan type	voltage (V)	power (W)	air flow (m³/h)	noise (dB/A)	dimensions (mm²)		
						size	frame	cutout

FU98A series - Panel fan/filter units (IP44)

- Material: ABS self-extinguishing - UL94V-0, RoHS

AC filter/fans

FU-9801C1 P2A23	KA8025	230 VAC	15.1	23	32	1	109	83
FU-9802C1 P2A23	KA9225	230 VAC	18.4	32	37	2	121	95
FU-9803C1 P2A23	KA1238	230 VAC	21.6	88	52	3	149	122
FU-9804C1 P2A23	KA1725	230 VAC	46.4	201	60	4	204	175
FU-9805C1 P2A23	KA2208	230 VAC	43.2	439	69	5	255	223
FU-9806C1 P2A23	KA2509	230 VAC	61.6	668	70	6	332	292
FU-9803C1 P2A40	KA1238	400 VAC	19.4	88	54	3	149	122
FU-9804C1 P2A40	KA1725	400 VAC	48.6	201	62	4	204	175

DC filter/fans

FU-9801C1 P2D	DC8025	24 VDC	4.1	38	38	1	109	83
FU-9802C1 P2D	DC9225	24 VDC	3.9	50	50	2	121	95
FU-9803C1 P2D	DC1225	24 VDC	8.3	85	85	3	149	122

Larger sizes available on request

Exhaust filter - Without fan - used as a matching air outlet

Exhaust filter should match the size of the filter/fan to achieve optimal ventilation within the cabinet.

FU9801A P2	outlet	-	-	exhaust filter only	1	109	83
FU9802A P2	outlet	-	-	exhaust filter only	2	121	95
FU9803A P2	outlet	-	-	exhaust filter only	3	149	122
FU9804A P2	outlet	-	-	exhaust filter only	4	204	175
FU9805A P2	outlet	-	-	exhaust filter only	5	255	223
FU9806A P2	outlet	-	-	exhaust filter only	6	332	292

FU98B series - Filter/fan units with rain hood (IP55)

- Material: PC - (Polycarbonate) UV protected - self-extinguishing - UL94V-0, RoHS

AC filter/fans - (with rain hood)

FU-9801C2 P2A23	KA8025	230 VAC	10	25	33	1	109	83
FU-9802C2 P2A23	KA9225	230 VAC	20	43	35	2	121	95
FU-9803C2 P2A23	KA1238	230 VAC	21	117	49	3	149	122
FU-9804C2 P2A23	KA1725	230 VAC	45	268	57	4	204	175
FU-9805C2 P2A23	KA2208	230 VAC	40	585	65	5	255	223
FU-9806C2 P2A23	KA2509	230 VAC	57	890	66	6	332	292
FU-9803C2 P2A40	KA1238	400 VAC	21	117	49	3	149	122
FU-9804C2 P2A40	KA1725	400 VAC	45	268	57	4	204	175

DC filter/fans - (with rain hood)

FU-9801C2 P2D	DC8025	24 VDC	4.1	49	32	1	109	83
FU-9802C2 P2D	DC9225	24 VDC	4.1	67	33	2	121	95
FU-9803C2 P2D	DC1225	24 VDC	6.5	113	40	3	149	122

Larger sizes available on request

Exhaust filter with rain hood - without fan - used as an air outlet

Exhaust filter should match the size of the filter/fan to achieve optimal ventilation within the cabinet.

FU9801B P2	outlet	-	-	exhaust filter only	1	109	83
FU9802B P2	outlet	-	-	exhaust filter only	2	121	95
FU9803B P2	outlet	-	-	exhaust filter only	3	149	122
FU9804B P2	outlet	-	-	exhaust filter only	4	204	175
FU9805B P2	outlet	-	-	exhaust filter only	5	255	223
FU9806B P2	outlet	-	-	exhaust filter only	6	332	292



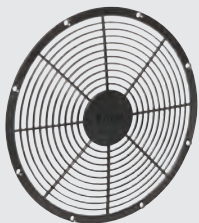
KA8025HA2B



FU9805A P2/P5-220



FU9805B P2/P5-220



FU-8825B



FG-80

KA series - Frame fans and accessories

- Temperature: -40°C...+60°C
- Shielded self lubricating ball bearing fans

type	voltage (V)	power (W)	air flow (m³/h)	noise (dB/A)	IP rating	dimensions (mm²)		
						size	□	(D)

AC frame fans only

KA8025HA2B	230 VAC	14	30	30	-	1	80	25
KA9225HA2B	230 VAC	17	43	35	-	2	92	25
KA1238HA2B	230 VAC	20	117	49	IP55	3	120	38
KA1725HA2B	230 VAC	43	268	57	IP55	4	172 x 150	51
KA2208HA2B 2P	230 VAC	40	585	65	IP55	5	∅ 222	60
KA2509HA2B 2P	230 VAC	57	890	66	IP55	6	∅ 255	89
KA1238HA3B	400 VAC	18	117	51	IP55	3	120	38
KA1725HA3B	400 VAC	45	268	59	IP55	4	172 x 150	51
KA2206HA3B	400 VAC	55	585	68	IP55	5	∅ 222	60
KA2509HA3B 2P	400 VAC	63	890	67	IP55	6	∅ 255	89

DC frame fans only

DC8025 24V	24 VDC	3.8	50	33	-	1	80	25
DC9225 24V	24 VDC	3.6	67	35	-	2	92	25
DC1225 24V	24 VDC	7.7	113	43	-	3	120	38
DC1725 24V	24 VDC	11	365	58	-	4	172 x 150	55

Panel mount filter units (to accommodate above fans) (IP44)

type	accepts fan type	with air duct	external material	IP rating	dimensions (mm²)		
					size	frame	cutout

FU9801A P2	KA8025	-	ABS	-	IP44	1	109	83
FU9802A P2	KA9225	-	ABS	-	IP44	2	121	95
FU9803A P2	KA1238	-	ABS	-	IP44	3	149	122
FU9804A P2/P4-172	KA1725	P4-172	ABS	-	IP44	4	204	175
FU9805A P2/P5-220	KA2206	P5-220	ABS	-	IP44	5	255	223
FU9806A P2/P6-250	KA2509	P6-250	PC+UV	-	IP44	6	332	292

All metallic version (ADC12 aluminium alloy material)

FU9803AM	KA1238	-	metal	-	IP44	3	149	122
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Panel mount filter units - With rain hood cover (IP55)

FU9801B P2	KA8025	-	PC+UV	-	IP55	1	109	83
FU9802B P2	KA9225	-	PC+UV	-	IP55	2	121	95
FU9803B P2	KA1238	-	PC+UV	-	IP55	3	149	122
FU9804B P2/P4-172	KA1725	P4-172	PC+UV	-	IP55	4	204	175
FU9805B P2/P5-220	KA2206	P5-220	PC+UV	-	IP55	5	255	223
FU9806B P2/P6-250	KA2509	P6-250	PC+UV	-	IP55	6	332	292

All metallic version (ADC12 aluminium alloy material)

FU9803BM	KA1238	-	metal	-	IP55	3	149	122
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Finger guards (internal) for fans

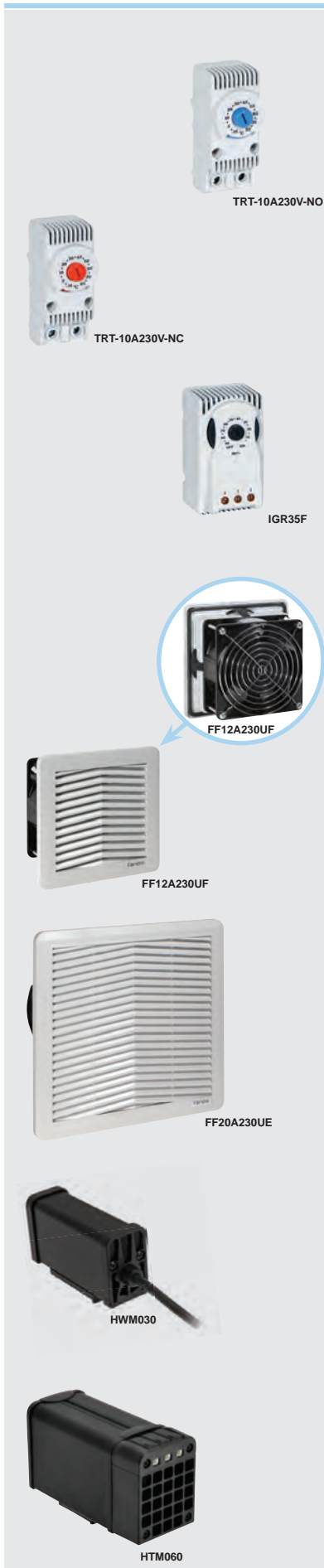
type	for fan	colour	material	description	size	H	x	W
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FU-8808B	KA8025	black	ABS	finger guard	1	80	x	80
FU-8809B	KA9225	black	ABS	finger guard	2	92	x	92
FU-8812B	KA1238	black	ABS	finger guard	3	120	x	120
FU-8817B	KA1725	black	ABS	finger guard	4	172	x	150
FU-8822B	KA2206	black	ABS	finger guard	5	220	x	∅
FU-8825B	KA2509	black	ABS	finger guard	6	250	x	∅
FG-80	KA8025	chrome	metal	finger guard	1	80	x	80
FG-92	KA9225	chrome	metal	finger guard	2	92	x	92
FG-120	KA1238	chrome	metal	finger guard	3	120	x	120
FG-172	KA1725	chrome	metal	finger guard	4	172	x	150
FG-220	KA2206	chrome	metal	finger guard	5	220	x	∅
FG-250	KA2509	chrome	metal	finger guard	6	250	x	∅

3-in-1 econo filter - Comprising frame, low density fabric filter and cover guard

FU-8808A	KA8025	black	ABS	3-in-1 air outlet	1	80	x	80
FU-8809A	KA9225	black	ABS	3-in-1 air outlet	2	92	x	92
FU-8812A	KA1238	black	ABS	3-in-1 air outlet	3	120	x	120
FU-8817A	KA1725	black	ABS	3-in-1 air outlet	4	172	x	150

Note: Filter mats available on request.



TRT series - Mechanical bimetal thermostats (used to control temperatures within enclosures)

Bimetal thermostats used to control temperatures inside enclosures. Suitable for different applications, available with closed-on-rise (NO) or open-on rise (NC) contact for regulation of heating and ventilation equipment or for switching signalling devices.

- Compact dimensions - (H) 68 x (W) 29 x (D) 45 mm
- Enclosure PA66 self-extinguishing to UL 94V-0
- DIN rail mountable
- IP20 protected screw terminals
- Applied standards EN 60730-1, UL approved UL873 and C22.2

type	temperature range	contact	description	
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Thermostats (panel mount)

TRT-10A230V-NO	-10 - +80°C	1 x NO	DIN rail mount panel thermostat	(blue knob)
TRT-10A230V-NC	-10 - +80°C	1 x NC	DIN rail mount panel thermostat	(red knob)

IGR series - Mechanical hygrostat

Mechanical hygrometers automatically regulate humidity inside enclosures, triggering a heater or fan when a preset relative humidity is exceeded. To prevent condensation on electric and electronic components the relative humidity is raised above the dew point.

IGR35F	10 - 90% RH	ch/over	DIN rail mounting panel hygrometer	
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Panel ventilation

FF series - Complete fan-filter units (IP54)

Compact design, snap-on mounting, integrated sealing gasket preventing dust and water penetration. Ideal for all panel ventilation applications.

- Complete fan with mounting frame, removable filter and metal finger guard
- Screwless mounting (simply clips into panel cut-out)
- Plastic parts self extinguishing to UL 94V-0
- Permanent sealing gasket in polyurethane foam
- Shielded self lubricating ball bearing fans
- Filter replaceable from the front removable grill

FF series - Complete fan-filter units

type	voltage (V)	power (W)	air flow (m³/h)	noise (dB/A)	description	dimensions (mm²)	
						frame	cutout
FF08A230UN	230 VAC	10	10	33	complete fan filter	107	92
FF12A230UF	230 VAC	18	45	49	complete fan filter	150	124
FF15A230UF	230 VAC	32	230	50	complete fan filter	250	223
FF20A230UE	230 VAC	79	460	66	complete fan filter	325	291

Outlet filter grill/frame (without fan)

FF08U	separate panel mount ventilation outlet/filter unit	107	92
FF12U	separate panel mount ventilation outlet/filter unit	150	124
FF15U	separate panel mount ventilation outlet/filter unit	250	223
FF20U	separate panel mount ventilation outlet/filter unit	325	291

Panel heaters (anti-condensation) 15W - 400W

For the thermo regulation of electrical cabinets. The heaters consist of a self-extinguishing PTC element in a black anodized aluminium DIN rail mountable housing.

- Compact dimensions - DIN rail mounting
- Self-regulating PTC resistance
- Screw terminal connection (15/30W heaters supplied with 500 mm cable)
- Voltage range: 110 - 250 VAC
- Complies with standards: IEC/EN 60335-1 and IEC 60004-1

type	heating power	current mA	description	dimensions (mm)		
				(H)	(W)	(D)
HWM015	15 W	65	DIN rail mount panel heater	78	28	49
HWM030	30 W	130	DIN rail mount panel heater	108	28	49
HTM060	60 W	260	DIN rail mount panel heater	138	62	85
HTM100	100 W	475	DIN rail mount panel heater	188	62	85
HTM150	150 W	770	DIN rail mount panel heater	238	62	85



TP19U230B54

TP series - Roof mount exhaust fan units

Roof exhaust fan units used to directly extract heat from the upper region of the cabinet facilitating effective internal air flow. Equipped with a high-head radial fan.

- Mounting via 8 x Ø4 mm screws (*mounts through 175 mm² cutout*)
- Plastic parts in PC/ABS alloy and aluminium self extinguishing to UL 94V-0
- Permanent sealing gasket in polyurethane foam
- Compact dimensions, height: total 94 mm / hood 62 mm
- Colour: RAL 7035 (*others colours available on request*)

type	voltage (V)	power (W)	air flow (m³/h)	noise (dB/A)	description	dimensions (mm)		
						(H)	(W)	(D)
Exhaust Fan (roof mount)		<i>(IP24)</i>						
TP19U230B	230 VAC	70	500	68	roof exhaust fan	324	324	94
Exhaust Fan (roof mount)		<i>(IP54)</i>						
TP19U230B54	230 VAC	70	420	68	roof exhaust fan	324	324	94

LED Lamp for switchboards

During maintenance and inspection on switchboards it is essential for to have a good level of lighting LEDs provides effective illumination within electrical cabinets at significantly low consumption. Switching via a mounted switch or version with a PIR sensor which detects motion within 120° radius with delayed auto off with no detected presence.

type	power	supply voltage	description	dimensions (mm)		
				(H)	(W)	(D)

Fandis FLL - Panel lamps

Termination is via "push-in" cage clamp terminals on both sides with an incorporated release button
Magnetic fastening for simple positioning on metallic surfaces (*with optional magnet set*)
Lamp rotates to six different positions on base (*max. to 40°*)

- LED light output: 315 Lm (*luminous flux*), 120°, daylight, colour temperature 7.100K
- Operating temp: -30 to +60°C
- Lifetime: 160.000 h at 25°C
- Certification: CE; UL E237844 (UL 508 and CSA C22.2 No. 14)

FLL-300565U-S	5 Watt	115...230 VAC	LED panel lamp with switch	32	356	48
FLL-300565U-IR	5 Watt	115...230 VAC	LED lamp with PIR sensor	32	356	48

FLL-2MA magnet magnet mounting kit for lamps (*2 magnets*)



FLL-300565U-IR



SlimLine Pro - 8500 series - Cabinet cooling units

SlimLine Pro series cabinet cooling air conditioners feature an innovative one man mounting system permitting screwless installation with maintenance free operation due to the eco-friendly filter less construction. The compact, slim construction combined with modern design features provide excellent size to performance ratio to meet modern day requirements. Providing improved cooling performance ensuring total reliability in all industrial applications.

- Innovative mounting system - (*screwless, one man mounting*)
- Simplified panel cutout - (*ease mounting even further*)
- Integrated condensate evaporation
- Temperature range 10°C to 60°C
- Standard material: Powder coated mild steel housing RAL 7035 (*light grey*)
- Enhanced protection class IP 56
- Compliance to NEMA / UL type 3, 3R, 12, 4 und 4X
- Can be mounted external or recessed (*with only 35-50 mm protruding*) into the panel

type	cooling capacity	supply voltage	description	dimensions (mm)			
				(H)	(W)	(D)	Ext.
SlimLine Pro 8500 series							
850600001	670W	230 VAC	SlimLine Pro panel air conditioner	600	250	135	(25)
850800001	825W	230 VAC	SlimLine Pro panel air conditioner	950	305	210	(35)
851200001	1.2kW	230 VAC	SlimLine Pro panel air conditioner	950	305	210	(35)
851500001	1.5kW	230 VAC	SlimLine Pro panel air conditioner	1350	395	210	(35)
852000001	2.0kW	230 VAC	SlimLine Pro panel air conditioner	1350	395	210	(35)
852500001	2.5kW	230 VAC	SlimLine Pro panel air conditioner	1350	395	210	(35)
854000001	4.0kW	230 VAC	SlimLine Pro panel air conditioner	1550	455	270	(50)

SlimLine series - Filter less technology air conditioners

SlimLine series air conditioners provide maximum power-to-size ratio compatible with market standards ensuring simple integration with cabinet systems. Designed to operate with minimum maintenance, due to eco-friendly filter less construction. The optimised wide-ribbed aluminium condenser provides improved cooling performance ensuring total reliability in all industrial applications.

Can be mounted externally or internally (*with only 25 mm protruding when recess mounted*)

- Compressor type: Rotary piston compressor
- Mounting: Internal / External
- Supply: 230V - 50/60Hz (*others on request*)

42660001	320 W	230 VAC	SlimLine panel air conditioner	520	270	110	(25)
42700001	600 W	230 VAC	SlimLine panel air conditioner	810	395	145	(25)
42710001	820 W	230 VAC	SlimLine panel air conditioner	980	395	145	(25)
42720001	1100 W	230 VAC	SlimLine panel air conditioner	1250	395	145	(25)
42740001	1500 W	230 VAC	SlimLine panel air conditioner	1550	395	145	(25)

ComPact series - Economical all-round systems

ComPact series air conditioners optimise high efficiencies with outstanding COP values throughout the range, the built-in controller displays temperature, operating status and can be simply adjusted. Surface treated condenser with high fin separation provide virtually maintenance free service.

- Operating temp. range: 20°C - 55°C
- Compressor type: Reciprocating compressor
- Mounting: External mounting
- Colour: RAL 7035 (*other colours available on request*)

43040001	320W	230 VAC	ComPact panel air conditioner	500	280	200	-
43050001	550W	230 VAC	ComPact panel air conditioner	650	315	260	-
43080001	750W	230 VAC	ComPact panel air conditioner	650	315	260	-
43100001	1000W	230 VAC	ComPact panel air conditioner	650	315	260	-
43150001	1500W	230 VAC	ComPact panel air conditioner	980	395	260	-
43200001	2000W	230 VAC	ComPact panel air conditioner	980	395	260	-

SlimLine TOP series - Top mounted filter less air conditioners

- Compressor type: Rotary piston compressor
- Mounting: Roof mounting
- Supply: 230V - 50/60Hz

44820001	450 W	230 VAC	roof mount air conditioner	230	430	330	-
45550001	1100 W	230 VAC	roof mount air conditioner	400	600	400	-

Variable speed DC air conditioner

- Compressor type: Speed controlled rotary compressor
- Mounting: Internal / External

20250241	120 - 450W	24 VDC	SlimLine air conditioner	465	296	85	
20250481	120 - 450W	48 VDC	SlimLine air conditioner	465	296	85	



TG 3102-24V

TG series - Thermoelectric cooling units IP66

For cooling enclosures or electronic components

Thermoelectric cooling units are an effective solution for the conditioning of enclosures or electronic components. Electric energy transferred heat without the use of hazardous gases or liquids. The core of the system are the thermoelectric modules (*Peltier modules*), permitting heat absorption from one side (*cold side*) and heat expulsion to the ambient from the other side.

- External or recessed mounting in almost any position (*except roof mounting*)
- Suitable for indoor and outdoor application, ingress protection rating of IP66
- Stainless steel AISI 304 (V2A)
- Maintenance free
- Easy installation

type	voltage (V)	cooling power	rated current	cutout dimensions (mm)	dimensions (mm)		
					(H)	(W)	(D)

SoliTherm Peltier - Panel cooling units

- Temperature range: -20°C...+65°C

TG 3102-24V	24 VDC	100W	4.8A	260 x 160 mm	304	200	138
TG 3200-24V	24 VDC	200W	9.0A	370 x 155	400	180	171

Drip trays (to collect condensate from the cold internal dissipater)

1003303	drip tray	stainless steel for above TG 3102-24V thermoelectric units
1002303	drip tray	stainless steel for above TG 3200-24V thermoelectric units



1002303

Seifert SL 4000 series - Panel lamps

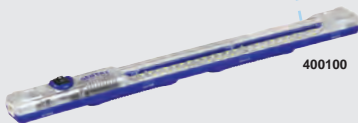
(IP20)

LED Lamp for switchboards

Maintenance/inspection of switchboards require a good level of lighting to clearly see components within the panel. LEDs provide effective illumination within electrical cabinets at significantly low consumption. Slimline design provides greater installation versatility and guarantee of safety. Switching is via a mounted ON/OFF switch or version with a PIR sensor which detects motion with delayed auto off.

- Operating voltage: 24 - 265 VAC/DC
- LED 400 Lm, 120°, daylight, colour temperature 6500K
- Operating temp: -30 to 70°C
- Approvals: CE, cURus

type	power	description	dimensions (mm)		
			(H)	(W)	(D)
400100	4 Watt	LED panel lamp with on/off rocker switch	32	350	28
400000	4 Watt	LED panel lamp with infrared sensor	32	350	33



400100










Plug-in connectors for above SL4000 panel lamps

91.921.3053.0	white	female connector plug for panel lamps	18	53	14
91.922.3053.0	white	male connector plug for panel lamps	18	53	14

Note: Termination via 2 pin latching plug (**supplied separately**) on both ends of the lamp. Mounting is via supplied mounting clips or incorporated magnets for simple positioning on metallic surfaces.



PLUGS & SOCKETS

Industrial plugs and sockets		Scame	I-1...5
Industrial switched sockets		Scame	I-6...7
Distribution boards		Scame	I-8...9
Industrial plug adaptors		Scame	I-9
Weatherproof switches and sockets		Scame	I-10
Weatherproof plugs and sockets		Wieland	I-11
Installation connectors		Wieland	I-12
Multi pole connectors		Wieland	I-13...15
Flat blade connectors		Rema	I-16...17



213.163...



213.633...



218.163...



218.1636...



313.324...



318.324...

Optima series 16A - 32A - 63A - 125A

- Insulation voltage: 690 VAC
- Standards: IEC 60309-2
- Material: Thermoplastic (*halogen free*)
- Impact resistance: IK08 (*1.7kg with a striking energy of 2J*)
- Operating temperature: -25 – +40°C (*max operating temperature +60°C*)
- Cable inlet: External cable stay with tulip clamping IP67 gland

Voltage Coding

■	100 to 130V*
■	200 to 250V
■	380 to 480V
■	480 to 525V

* On request

type	rated current	(h) pos.	pin configuration	IP protection 44/54 66/7/9	description	cable outlet
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Male plugs (straight cable exit) 16 - 125A

213.1633	16A	6h	■	2P+E (3pin)	●	male ind. plug	straight
213.1636	16A	6h	■	3P+E (4pin)	●	male ind. plug	straight
213.1637	16A	6h	■	3P+N+E (5pin)	●	male ind. plug	straight
213.3233	32A	6h	■	2P+E (3pin)	●	male ind. plug	straight
213.3236	32A	6h	■	3P+E (4pin)	●	male ind. plug	straight
213.3237	32A	6h	■	3P+N+E (5pin)	●	male ind. plug	straight
213.6333	63A	6h	■	2P+E (3pin)	●	male ind. plug	straight
213.6336	63A	6h	■	3P+E (4pin)	●	male ind. plug	straight
213.6337	63A	6h	■	3P+N+E (5pin)	●	male ind. plug	straight
218.1633	16A	6h	■	2P+E (3pin)	●	male ind. plug	straight
218.1636	16A	6h	■	3P+E (4pin)	●	male ind. plug	straight
218.16366	16A	7h	■	3P+E (4pin)	●	male ind. plug	straight
218.1637	16A	6h	■	3P+N+E (5pin)	●	male ind. plug	straight
218.16376	16A	7h	■	3P+N+E (5pin)	●	male ind. plug	straight
218.3233	32A	6h	■	2P+E (3pin)	●	male ind. plug	straight
218.3236	32A	6h	■	3P+E (4pin)	●	male ind. plug	straight
218.32364*	32A	3h	■	3P+E (4pin)	●	male ind. plug	straight
218.32366	32A	7h	■	3P+E (4pin)	●	male ind. plug	straight
218.3237	32A	6h	■	3P+N+E (5pin)	●	male ind. plug	straight
218.32376	32A	7h	■	3P+N+E (5pin)	●	male ind. plug	straight
218.6333	63A	6h	■	2P+E (3pin)	●	male ind. plug	straight
218.6336	63A	6h	■	3P+E (4pin)	●	male ind. plug	straight
218.63366	63A	7h	■	3P+E (4pin)	●	male ind. plug	straight
218.6337	63A	6h	■	3P+N+E (5pin)	●	male ind. plug	straight
218.63376	63A	7h	■	3P+N+E (5pin)	●	male ind. plug	straight
218.12533	125A	6h	■	2P+E (3pin)	●	male ind. plug	straight
218.12536	125A	6h	■	3P+E (4pin)	●	male ind. plug	straight
218.125366	125A	7h	■	3P+E (4pin)	●	male ind. plug	straight
218.12537	125A	6h	■	3P+N+E (5pin)	●	male ind. plug	straight
218.125376	125A	7h	■	3P+N+E (5pin)	●	male ind. plug	straight

Connectors/couplers (female in-line socket)

313.1643	16A	6h	■	2P+E (3pin)	●	female connector	straight
313.1646	16A	6h	■	3P+E (4pin)	●	female connector	straight
313.1647	16A	6h	■	3P+N+E (5pin)	●	female connector	straight
313.3243	32A	6h	■	2P+E (3pin)	●	female connector	straight
313.3246	32A	6h	■	3P+E (4pin)	●	female connector	straight
313.3247	32A	6h	■	3P+N+E (5pin)	●	female connector	straight
313.6343	63A	6h	■	2P+E (3pin)	●	female connector	straight
313.6346	63A	6h	■	3P+E (4pin)	●	female connector	straight
313.6347	63A	6h	■	3P+N+E (5pin)	●	female connector	straight
318.1643	16A	6h	■	2P+E (3pin)	●	female connector	straight
318.1646	16A	6h	■	3P+E (4pin)	●	female connector	straight
318.16466	16A	7h	■	3P+E (4pin)	●	female connector	straight
318.1647	16A	6h	■	3P+N+E (5pin)	●	female connector	straight
318.16476	16A	7h	■	3P+N+E (5pin)	●	female connector	straight
318.3243	32A	6h	■	2P+E (3pin)	●	female connector	straight
318.3246	32A	6h	■	3P+E (4pin)	●	female connector	straight
318.32464*	32A	3h	■	3P+E (4pin)	●	female connector	straight
318.32466	32A	7h	■	3P+E (4pin)	●	female connector	straight
318.3247	32A	6h	■	3P+N+E (5pin)	●	female connector	straight
318.32476	32A	7h	■	3P+N+E (5pin)	●	female connector	straight
318.6343	63A	6h	■	2P+E (3pin)	●	female connector	straight
318.6346	63A	6h	■	3P+E (4pin)	●	female connector	straight
318.63466	63A	7h	■	3P+E (4pin)	●	female connector	straight
318.6347	63A	6h	■	3P+N+E (5pin)	●	female connector	straight
318.63476	63A	7h	■	3P+N+E (5pin)	●	female connector	straight

Continued overleaf....

* Refrigerated container (Reefer plugs)



243.639...



248.329...



240.639...T



570.90164

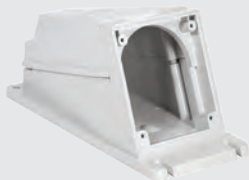
type	rated current	(h) pos.	pin configuration	IP protection 44/54 66/7/9	description	flange size
continued... Connectors/couplers (female in-line socket)						
318.12543	125A	6h	2P+E (3pin)	●	female connector	straight
318.12546	125A	6h	3P+E (4pin)	●	female connector	straight
318.125466	125A	7h	3P+E (4pin)	●	female connector	straight
318.12547	125A	6h	3P+N+E (5pin)	●	female connector	straight
318.125476	125A	7h	3P+N+E (5pin)	●	female connector	straight
Optima series - Appliance inlets (male pins - accept female connector)						
Flush mount appliance inlet (straight inlet)						
243.1693	16A	6h	2P+E (3pin)	●	flush mnt appliance inlet	75 x 75
243.1696	16A	6h	3P+E (4pin)	●	flush mnt appliance inlet	75 x 75
243.1697	16A	6h	3P+N+E (5pin)	●	flush mnt appliance inlet	75 x 75
243.3293	32A	6h	2P+E (3pin)	●	flush mnt appliance inlet	75 x 75
243.3296	32A	6h	3P+E (4pin)	●	flush mnt appliance inlet	75 x 75
243.3297	32A	6h	3P+N+E (5pin)	●	flush mnt appliance inlet	75 x 75
243.6393	63A	6h	2P+E (3pin)	●	flush mnt appliance inlet	100 x 110
243.6396	63A	6h	3P+E (4pin)	●	flush mnt appliance inlet	100 x 110
243.6397	63A	6h	3P+N+E (5pin)	●	flush mnt appliance inlet	100 x 110
248.1693	16A	6h	2P+E (3pin)	●	flush mnt appliance inlet	75 x 75
248.1696	16A	6h	3P+E (4pin)	●	flush mnt appliance inlet	75 x 75
248.16966	16A	7h	3P+E (4pin)	●	flush mnt appliance inlet	75 x 75
248.1697	16A	6h	3P+N+E (5pin)	●	flush mnt appliance inlet	75 x 75
248.16976	16A	7h	3P+N+E (5pin)	●	flush mnt appliance inlet	75 x 75
248.3293	32A	6h	2P+E (3pin)	●	flush mnt appliance inlet	75 x 75
248.3296	32A	6h	3P+E (4pin)	●	flush mnt appliance inlet	75 x 75
248.32966	32A	7h	3P+E (4pin)	●	flush mnt appliance inlet	75 x 75
248.3297	32A	6h	3P+N+E (5pin)	●	flush mnt appliance inlet	75 x 75
248.32976	32A	7h	3P+N+E (5pin)	●	flush mnt appliance inlet	75 x 75
248.6393	63A	6h	2P+E (3pin)	●	flush mnt appliance inlet	100 x 110
248.6396	63A	6h	3P+E (4pin)	●	flush mnt appliance inlet	100 x 110
248.63966	63A	7h	3P+E (4pin)	●	flush mnt appliance inlet	100 x 110
248.6397	63A	6h	3P+N+E (5pin)	●	flush mnt appliance inlet	100 x 110
248.63976	63A	7h	3P+N+E (5pin)	●	flush mnt appliance inlet	100 x 110
248.12593	125A	6h	2P+E (3pin)	●	flush mnt appliance inlet	114 x 114
248.12596	125A	6h	3P+E (4pin)	●	flush mnt appliance inlet	114 x 114
248.125966	125A	7h	3P+E (4pin)	●	flush mnt appliance inlet	114 x 114
248.12597	125A	6h	3P+N+E (5pin)	●	flush mnt appliance inlet	114 x 114
248.125976	125A	7h	3P+N+E (5pin)	●	flush mnt appliance inlet	114 x 114
Surface mount appliance inlet (angled inlet) cable entry						
240.1693	16A	6h	2P+E (3pin)	●	surf mnt appliance inlet	M25
240.1696	16A	6h	3P+E (4pin)	●	surf mnt appliance inlet	M25
240.1697	16A	6h	3P+N+E (5pin)	●	surf mnt appliance inlet	M25
240.3293	32A	6h	2P+E (3pin)	●	surf mnt appliance inlet	M32
240.3296	32A	6h	3P+E (4pin)	●	surf mnt appliance inlet	M32
240.3297	32A	6h	3P+N+E (5pin)	●	surf mnt appliance inlet	M32
240.6393T	63A	6h	2P+E (3pin)	●	surf mnt appliance inlet	M40
240.6396T	63A	6h	3P+E (4pin)	●	surf mnt appliance inlet	M40
240.6397T	63A	6h	3P+N+E (5pin)	●	surf mnt appliance inlet	M40
245.1693	16A	6h	2P+E (3pin)	●	surf mnt appliance inlet	M25
245.1696	16A	6h	3P+E (4pin)	●	surf mnt appliance inlet	M25
245.1697	16A	6h	3P+N+E (5pin)	●	surf mnt appliance inlet	M25
245.3293	32A	6h	2P+E (3pin)	●	surf mnt appliance inlet	M32
245.3296	32A	6h	3P+E (4pin)	●	surf mnt appliance inlet	M32
245.3297	32A	6h	3P+N+E (5pin)	●	surf mnt appliance inlet	M32
245.6393T	63A	6h	2P+E (3pin)	●	surf mnt appliance inlet	M40
245.6396T	63A	6h	3P+E (4pin)	●	surf mnt appliance inlet	M40
245.6397T	63A	6h	3P+N+E (5pin)	●	surf mnt appliance inlet	M40
245.12597T	125A	6h	3P+N+E (5pin)	●	surf mnt appliance inlet	M63
Protection caps for plugs and appliance inlets IP66/IP67/IP69						
570.90163	16A	-	2P+E	●	covers for plugs and inlets	
570.90164	16A	-	3P+E	●	covers for plugs and inlets	
570.90165	16A	-	3P+N+E	●	covers for plugs and inlets	
570.90324	32A	-	2/3P+E	●	covers for plugs and inlets	
570.90325	32A	-	3P+N+E	●	covers for plugs and inlets	
570.9063	63A	-	all configurations	●	covers for plugs and inlets	
570.9125	125A	-	all configurations	●	covers for plugs and inlets	



413.166...



418.636...



570.M0125



423.166...



428.166...

Optima series - Panel mount sockets 16A - 32A - 63A - 125A

- Insulation voltage: 690 VAC
- Operating temperature: -25 – +40°C (max operating temperature +60°C)
- Material: Thermoplastic (halogen free) / Impact resistance IK08

type	rated current	(h) pos.	pin configuration	IP protection 44/54 67/8/9	description	flange size
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Flush mount angled socket outlet (18°) 16A - 125A Standards: IEC 60309-2

413.1663	16A	6h	2P+E (3pin)	●	angled socket	70 x 87
413.1666	16A	6h	3P+E (4pin)	●	angled socket	70 x 87
413.1667	16A	6h	3P+N+E (5pin)	●	angled socket	70 x 87
413.3263	32A	6h	2P+E (3pin)	●	angled socket	84 x 106
413.3266	32A	6h	3P+E (4pin)	●	angled socket	84 x 106
413.3267	32A	6h	3P+N+E (5pin)	●	angled socket	84 x 106
413.6363	63A	6h	2P+E (3pin)	●	angled socket	100 x 110
413.6366	63A	6h	3P+E (4pin)	●	angled socket	100 x 110
413.6367	63A	6h	3P+N+E (5pin)	●	angled socket	100 x 110
418.1663	16A	6h	2P+E (3pin)	●	angled socket	70 x 87
418.1666	16A	6h	3P+E (4pin)	●	angled socket	70 x 87
418.16666	16A	7h	3P+E (4pin)	●	angled socket	70 x 87
418.1667	16A	6h	3P+N+E (5pin)	●	angled socket	70 x 87
418.16676	16A	7h	3P+N+E (5pin)	●	angled socket	70 x 87
418.3263	32A	6h	2P+E (3pin)	●	angled socket	84 x 106
418.3266	32A	6h	3P+E (4pin)	●	angled socket	84 x 106
418.32664*	32A	3h	3P+E (4pin)	●	angled socket	84 x 106
418.32666	32A	7h	3P+E (4pin)	●	angled socket	84 x 106
418.3267	32A	6h	3P+N+E (5pin)	●	angled socket	84 x 106
418.32676	32A	7h	3P+N+E (5pin)	●	angled socket	84 x 106
418.6363	63A	6h	2P+E (3pin)	●	angled socket	100 x 110
418.6366	63A	6h	3P+E (4pin)	●	angled socket	100 x 110
418.63666	63A	7h	3P+E (4pin)	●	angled socket	100 x 110
418.6367	63A	6h	3P+N+E (5pin)	●	angled socket	100 x 110
418.63676	63A	7h	3P+N+E (5pin)	●	angled socket	100 x 110
418.12563	125A	6h	2P+E (3pin)	●	angled socket	114 x 114
418.12566	125A	6h	3P+E (4pin)	●	angled socket	114 x 114
418.125666	125A	7h	3P+E (4pin)	●	angled socket	114 x 114
418.12567	125A	6h	3P+N+E (5pin)	●	angled socket	114 x 114
418.125676	125A	7h	3P+N+E (5pin)	●	angled socket	114 x 114

Micro-switch - for plug inserted indication of above angled outlet sockets only

654.0391	16/32A	1x NO	micro-switch for above angled sockets	-
654.0392	16/32A	1x NC	micro-switch for above angled sockets	-
654.0393	63/125A	1x NO	micro-switch for above angled sockets	-
654.0394	63/125A	1x NC	micro-switch for above angled sockets	-

Housings to surface mount (above) angled sockets

570.0116	16A	angled housing	●	for p/mnt sockets	70 x 87
570.0016	16A	straight housing	●	for p/mnt sockets	70 x 87
570.0132	32A	angled housing	●	for p/mnt sockets	84 x 106
570.0032	32A	straight housing	●	for p/mnt sockets	84 x 106
570.M0163	63A	angled housing	●	for p/mnt sockets	100 x 110
570.M0125	125A	angled housing	●	for p/mnt sockets	114 x 114

Flush mount straight socket outlet 16A - 125A Standards: IEC 60309-2

423.1663	16A	6h	2P+E (3pin)	●	straight socket	75 x 75
423.1663/R	16A	6h	2P+E (3pin)	●	straight socket	62 x 62
423.1666	16A	6h	3P+E (4pin)	●	straight socket	75 x 75
423.1666/R	16A	6h	3P+E (4pin)	●	straight socket	62 x 62
423.1667	16A	6h	3P+N+E (5pin)	●	straight socket	75 x 75
423.3263	32A	6h	2P+E (3pin)	●	straight socket	75 x 75
423.3266	32A	6h	3P+E (4pin)	●	straight socket	75 x 75
423.3267	32A	6h	3P+N+E (5pin)	●	straight socket	75 x 75
423.6363	63A	6h	2P+E (3pin)	●	straight socket	100 x 110
423.6366	63A	6h	3P+E (4pin)	●	straight socket	100 x 110
423.6367	63A	6h	3P+N+E (5pin)	●	straight socket	100 x 110
428.1663	16A	6h	2P+E (3pin)	●	straight socket	75 x 75
428.1666	16A	6h	3P+E (4pin)	●	straight socket	75 x 75
428.1667	16A	6h	3P+N+E (5pin)	●	straight socket	75 x 75
428.3263	32A	6h	2P+E (3pin)	●	straight socket	75 x 75
428.3266	32A	6h	3P+E (4pin)	●	straight socket	75 x 75
428.32664*	32A	3h	3P+E (4pin)	●	straight socket	75 x 75
428.3267	32A	6h	3P+N+E (5pin)	●	straight socket	75 x 75

Continued overleaf....

* Refrigerated container (Reefer plugs)



428.636...



513.325...



518.635...T



518.325...T

type	rated current	(h) pos.	pin configuration	IP protection 44/54 67/8/9	description	flange size
continued... Flush mount socket outlet - straight						
428.6363	63A	6h	2P+E (3pin)	●	straight socket	100 x 110
428.6366	63A	6h	3P+E (4pin)	●	straight socket	100 x 110
428.6367	63A	6h	3P+N+E (5pin)	●	straight socket	100 x 110
428.12563	125A	6h	2P+E (3pin)	●	straight socket	114 x 114
428.12566	125A	6h	3P+E (4pin)	●	straight socket	114 x 114
428.12567	125A	6h	3P+N+E (5pin)	●	straight socket	114 x 114
OPTIMA series - Surface-mount socket outlets						
• Insulation voltage:		690 VAC				
• Operating temperature:		-25 – +40°C (max operating temperature +60°C)				
• Material:		Thermoplastic (halogen free)				
• Impact resistance:		IK08 (1.7kg with a striking energy of 2J)				
type	rated current	(h) pos.	pin configuration	IP protection 44/54 67/8/9	description	cable entry
BASE version - IP44 compact, economical, slimline socket outlets (angled)						
513.1653	16A	6h	2P+E (3pin)	●	surface mnt socket	M20/25
513.1656	16A	6h	3P+E (4pin)	●	surface mnt socket	M20/25
513.1657	16A	6h	3P+N+E (5pin)	●	surface mnt socket	M20/25
513.3253	32A	6h	2P+E (3pin)	●	surface mnt socket	M32
513.3256	32A	6h	3P+E (4pin)	●	surface mnt socket	M32
513.3257	32A	6h	3P+N+E (5pin)	●	surface mnt socket	M32
TOP version - IP44 and IP67 (angled)						
• Compact, flexible, safe - removable socket section for ease of wiring						
• Reversible base (1 or 2 cable outlets top or bottom entry)						
513.1653T	16A	6h	2P+E (3pin)	●	surface mnt socket	M20/25
513.1656T	16A	6h	3P+E (4pin)	●	surface mnt socket	M20/25
513.1657T	16A	6h	3P+N+E (5pin)	●	surface mnt socket	M20/25
513.3253T	32A	6h	2P+E (3pin)	●	surface mnt socket	M32
513.3256T	32A	6h	3P+E (4pin)	●	surface mnt socket	M32
513.3257T	32A	6h	3P+N+E (5pin)	●	surface mnt socket	M32
513.6353T	63A	6h	2P+E (3pin)	●	surface mnt socket	M40
513.6356T	63A	6h	3P+E (4pin)	●	surface mnt socket	M40
513.6357T	63A	6h	3P+N+E (4pin)	●	surface mnt socket	M40
518.1653T	16A	6h	2P+E (3pin)	●	surface mnt socket	M20/25
518.1656T	16A	6h	3P+E (4pin)	●	surface mnt socket	M20/25
518.1657T	16A	6h	3P+N+E (5pin)	●	surface mnt socket	M20/25
518.3253T	32A	6h	2P+E (3pin)	●	surface mnt socket	M32
518.3256T	32A	6h	3P+E (4pin)	●	surface mnt socket	M32
518.32564T*	32A	3h	3P+E (4pin)	●	surface mnt socket	M32
518.3257T	32A	6h	3P+N+E (5pin)	●	surface mnt socket	M32
518.6353T	63A	6h	2P+E (3pin)	●	surface mnt socket	M40
518.6356T	63A	6h	3P+E (4pin)	●	surface mnt socket	M40
518.6357T	63A	6h	3P+N+E (5pin)	●	surface mnt socket	M40
518.12553T	125A	6h	2P+E (3pin)	●	surface mnt socket	M63
518.12556T	125A	6h	3P+E (4pin)	●	surface mnt socket	M63
518.12557T	125A	6h	3P+N+E (5pin)	●	surface mnt socket	M63
Surface mount switch sockets (no mechanical interlocked)						
513.1653TS	16A	6h	2P+E (3pin)	●	surface mnt socket	M25
513.1656TS	16A	6h	3P+E (4pin)	●	surface mnt socket	M25
513.1657TS	16A	6h	3P+N+E (5pin)	●	surface mnt socket	M25
513.3253TS	32A	6h	2P+E (3pin)	●	surface mnt socket	M32
513.3256TS	32A	6h	3P+E (4pin)	●	surface mnt socket	M32
513.3257TS	32A	6h	3P+N+E (5pin)	●	surface mnt socket	M32
518.1653TS	16A	6h	2P+E (3pin)	●	surface mnt socket	M25
518.1656TS	16A	6h	3P+E (4pin)	●	surface mnt socket	M25
518.1657TS	16A	6h	3P+N+E (5pin)	●	surface mnt socket	M25
518.3253TS	32A	6h	2P+E (3pin)	●	surface mnt socket	M32
518.3256TS	32A	6h	3P+E (4pin)	●	surface mnt socket	M32
518.3257TS	32A	6h	3P+N+E (5pin)	●	surface mnt socket	M32

* Refrigerated container (Reefer plugs)



221.163...



247.169...



422.166...



452.166...

Eureka series 16A/32A - 90° inlets

- Insulation voltage: 690 VAC
- Protection degree: IP44 and IP67
- Operating temperature: -25 – +40°C (max operating temperature +60°C)
- Material: Thermoplastic
- Impact resistance: IK07 (0.5kg with a striking energy of 2J)
- Standards: IEC 6039-1 / EN 60309-3

type	rated current	(h) pos.	pin configuration	IP protection		description	flange size
				44/54	66/7/9		
Male plugs (90° cable inlet) 16A - 32A							
221.1633	16A	6h	2P+E (3pin)	●		90° ind male plug	sleeve
221.1636	16A	6h	3P+E (4pin)	●		90° ind male plug	sleeve
221.1637	16A	6h	3P+N+E (5pin)	●		90° ind male plug	sleeve
221.3233	32A	6h	2P+E (3pin)	●		90° ind male plug	sleeve
221.3236	32A	6h	3P+E (4pin)	●		90° ind male plug	sleeve
221.3237	32A	6h	3P+N+E (5pin)	●		90° ind male plug	sleeve
226.1633	16A	6h	2P+E (3pin)		●	90° ind male plug	gland
226.1636	16A	6h	3P+E (4pin)		●	90° ind male plug	gland
226.1637	16A	6h	3P+N+E (5pin)		●	90° ind male plug	gland
226.3233	32A	6h	2P+E (3pin)		●	90° ind male plug	gland
226.3236	32A	6h	P+E (4pin)		●	90° ind male plug	gland
226.3237	32A	6h	3P+N+E (5pin)		●	90° ind male plug	gland
Appliance inlets (90° inlet) 16A - 32A							
242.1693	16A	6h	2P+E (3pin)	●		90° appliance inlet	70 x 87
242.1696	16A	6h	3P+E (4pin)	●		90° appliance inlet	70 x 87
242.1697	16A	6h	3P+N+E (5pin)	●		90° appliance inlet	70 x 87
242.3293	32A	6h	2P+E (3pin)	●		90° appliance inlet	70 x 87
242.3296	32A	6h	3P+E (4pin)	●		90° appliance inlet	70 x 87
242.3297	32A	6h	3P+N+E (5pin)	●		90° appliance inlet	70 x 87
247.1693	16A	6h	2P+E (3pin)		●	90° appliance inlet	70 x 87
247.1696	16A	6h	3P+E (4pin)		●	90° appliance inlet	70 x 87
247.1697	16A	6h	3P+N+E (5pin)		●	90° appliance inlet	70 x 87
247.3293	32A	6h	2P+E (3pin)		●	90° appliance inlet	70 x 87
247.3296	32A	6h	3P+E (4pin)		●	90° appliance inlet	70 x 87
247.3297	32A	6h	3P+N+E (5pin)		●	90° appliance inlet	70 x 87
Sockets (90° outlet) 16A - 32A							
452.1663	16A	6h	2P+E (3pin)	●		90° female socket	70 x 87
452.1666	16A	6h	3P+E (4pin)	●		90° female socket	70 x 87
452.1667	16A	6h	3P+N+E (5pin)	●		90° female socket	70 x 87
452.3263	32A	6h	2P+E (3pin)	●		90° female socket	70 x 87
452.3266	32A	6h	3P+E (4pin)	●		90° female socket	70 x 87
452.3267	32A	6h	3P+N+E (5pin)	●		90° female socket	70 x 87
457.1663	16A	6h	2P+E (3pin)		●	90° female socket	70 x 87
457.1666	16A	6h	3P+E (4pin)		●	90° female socket	70 x 87
457.1667	16A	6h	3P+N+E (5pin)		●	90° female socket	70 x 87
457.3263	32A	6h	2P+E (3pin)		●	90° female socket	70 x 87
457.3266	32A	6h	3P+E (4pin)		●	90° female socket	70 x 87
457.3267	32A	6h	3P+N+E (5pin)		●	90° female socket	70 x 87
Container plugs and sockets 32A (IP67)							
• Refrigeration container (Reefer plugs and sockets)							
• Earth pin (3h) position							
218.32364	32A	3h	3P+E (4pin)		●	container straight male plug	
318.32464	32A	3h	3P+E (4pin)		●	container straight connector	
428.32664	32A	3h	3P+E (4pin)		●	p/mnt straight socket	75 x 75
418.32664	32A	3h	3P+E (4pin)		●	p/mnt angled socket	84 x 106
518.32564T	32A	3h	3P+E (4pin)		●	TOP surface mnt socket outlet	
505.32864	32A	3h	3P+E (4pin)		●	Omnia surf switch/socket outlet	
561.32864	32A	3h	3P+E (4pin)		●	Advance surf switch/socket outlet	



500.168...



505.328...



561.328...



561.328...

Industrial switched sockets (interlocked)

IEC 60309-1/-2

- Protection degree: IP44 and IP67 (non ageing elastomer seals)
- Operating temp: -25 – +40°C (max operating temperature +60°C)
- Material: Thermoplastic (RAL 7035)
- Mechanical interlock: Only operates with plug inserted - cannot be removed with switch "ON"

type	rated current	(h) pos.	pin configuration	IP protection 44/54 67/8/9	description
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OMNIA series - Switched sockets (I-O) (interlocked)

- Surface mounting: (flush mountable with surface box removed)
- Impact resistance: IK08 (1.7kg with a striking energy of 2J)

OMNIA Series 16A - 32A

(H)125 x (W)136 x (D)85 mm

500.1683	16A	6h	2P+E (3pin)	●	●	surface switch socket outlet
500.1686	16A	6h	3P+E (4pin)	●	●	surface switch socket outlet
500.1687	16A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet
500.3283	32A	6h	2P+E (3pin)	●	●	surface switch socket outlet
500.3286	32A	6h	3P+E (4pin)	●	●	surface switch socket outlet
500.3287	32A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet
505.1683	16A	6h	2P+E (3pin)	●	●	surface switch socket outlet
505.1686	16A	6h	3P+E (4pin)	●	●	surface switch socket outlet
505.1687	16A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet
505.3283	32A	6h	2P+E (3pin)	●	●	surface switch socket outlet
505.3286	32A	6h	3P+E (4pin)	●	●	surface switch socket outlet
505.32864*	32A	3h	3P+E (4pin)	●	●	surface switch socket outlet
505.3287	32A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet

OMNIA Series 63A (rectangular shape)

(H)275 x (W)136 x (D)186 mm

505.6383	63A	6h	2P+E (3pin)	●	●	surface switch socket outlet
505.6386	63A	6h	3P+E (4pin)	●	●	surface switch socket outlet
505.6387	63A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet

Accessories for above Omnia series switched sockets

572.0310	base	surface base housing for 125 x 136 mm 16/32A switch sockets
654.0120	blank	plain blank cover for above surface box 5720310
572.0120	6 way	6 module consumer insert and cover for box 5720310
409.0428	cover	IP56 Omnia cover accepts Evolution domestic sockets
572.0200	wall box	flush mounting wall box for Omnia 16/32A switch socket outlets
572.0220	frame	flush frame (IP55) for above flush mounting box 5720200

Advance 2 series - Industrial switch sockets (I-O) (interlocked)

- Impact resistance: IK07 (500g with a striking energy of 2J)

16A/32A - compact version

(H)240 x (W)106 x (D)129 mm

560.1683	16A	6h	2P+E (3pin)	●	●	surface switch socket outlet
560.1686	16A	6h	3P+E (4pin)	●	●	surface switch socket outlet
560.1687	16A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet
560.3283	32A	6h	2P+E (3pin)	●	●	surface switch socket outlet
560.3286	32A	6h	3P+E (4pin)	●	●	surface switch socket outlet
560.3287	32A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet
561.1683	16A	6h	2P+E (3pin)	●	●	surface switch socket outlet
561.1686	16A	6h	3P+E (4pin)	●	●	surface switch socket outlet
561.16866	16A	7h	3P+E (4pin)	●	●	surface switch socket outlet
561.1687	16A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet
561.16876	16A	7h	3P+N+E (5pin)	●	●	surface switch socket outlet
561.3283	32A	6h	2P+E (3pin)	●	●	surface switch socket outlet
561.3286	32A	6h	3P+E (4pin)	●	●	surface switch socket outlet
561.32864*	32A	3h	3P+E (4pin)	●	●	surface switch socket outlet
561.32866	32A	7h	3P+E (4pin)	●	●	surface switch socket outlet
561.3287	32A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet
561.32876	32A	7h	3P+N+E (5pin)	●	●	surface switch socket outlet

63A - large version

(H)390 x (W)136 x (D)166-207 mm

561.6383	63A	6h	2P+E (3pin)	●	●	surface switch socket outlet
561.6386	63A	6h	3P+E (4pin)	●	●	surface switch socket outlet
561.63866	63A	7h	3P+E (4pin)	●	●	surface switch socket outlet
561.6387	63A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet
561.63876	63A	7h	3P+N+E (5pin)	●	●	surface switch socket outlet

125A - large version

(H)460 x (W)212 x (D)217 mm

548.12586	125A	6h	3P+E (4pin)	●	●	surface switch socket outlet
548.12587	125A	6h	3P+N+E (5pin)	●	●	surface switch socket outlet

* Refrigerated container (Reefer plugs)



568.168...



LED indication



503.638...

type	rated current	(h) pos.	pin configuration	IP protection	description
With interlocked switch and 6 way distribution board 16 - 32 - 63A					
• DIN rail facility for 6 x modular devices - MCB's, earth leakage, contactors					
16/32A - switched socket					(H)410 x (W)136 x (D)163 mm
568.1683	16A	6h ■	2P+E (3pin)	●	surface switch socket outlet
568.1686	16A	6h ■	3P+E (4pin)	●	surface switch socket outlet
568.1687	16A	6h ■	3P+N+E (5pin)	●	surface switch socket outlet
					(H)420 x (W)136 x (D)176 mm
568.3283	32A	6h ■	2P+E (3pin)	●	surface switch socket outlet
568.3286	32A	6h ■	3P+E (4pin)	●	surface switch socket outlet
568.3287	32A	6h ■	3P+N+E (5pin)	●	surface switch socket outlet
63A - switched socket					(H)438 x (W)136 (D)182 mm
568.6383	63A	6h ■	2P+E (3pin)	●	surface switch socket outlet
568.6386	63A	6h ■	3P+E (4pin)	●	surface switch socket outlet
568.6387	63A	6h ■	3P+N+E (5pin)	●	surface switch socket outlet
Advance-GRP "extra heavy duty" interlocked switch socket outlet 16 - 125A (O-II)					
• Material:		Thermosetting (halogen free) RAL 7037			
• Self-extinguishing:		GW test: 960°C - UL94 V0			
• Impact resistance:		IK10 (5kg with a striking energy of 20J)			
• Ex classification:		Atex code Ex II 2D			
• LED indication:		Correct supply and all phases present			
16A/32A - extra heavy-duty					(H)260 x (W)130 x (D)170-185 mm
503.1683	16A	6h ■	2P+E (3pin)	●	heavy duty switch socket outlet
503.1686	16A	6h ■	3P+E (4pin)	●	heavy duty switch socket outlet
503.1687	16A	6h ■	3P+N+E (5pin)	●	heavy duty switch socket outlet
503.3283	32A	6h ■	2P+E (3pin)	●	heavy duty switch socket outlet
503.3286	32A	6h ■	3P+E (4pin)	●	heavy duty switch socket outlet
503.3287	32A	6h ■	3P+N+E (5pin)	●	heavy duty switch socket outlet
63A - extra heavy-duty					(H)380 x (W)170 x (D)225 mm
503.6386	63A	6h ■	3P+E (4pin)	●	heavy duty switch socket outlet
503.6387	63A	6h ■	3P+N+E (5pin)	●	heavy duty switch socket outlet
125A - extra heavy-duty					(H)575 x (W)280 x (D)253 mm
503.12586-01	125A	6h ■	3P+E (4pin)	●	heavy duty switch socket outlet
503.12587-01	125A	6h ■	3P+N+E (5pin)	●	heavy duty switch socket outlet



672.2012.1102



672.4032.1102



672.4316



672.1200



654.0420



654.0410

Domino series - Distribution boards (IP66)

- Protection degree: IP66
- Max. operating temperature: 60°C
- Material: Thermoplastic (RAL 7035)
- Standards: EN 62208 / EN 60670-24 / EN 61439-3
- Impact resistance: IK07 (500g with a striking energy of 2J)

type	no. DIN modules	description	dimensions (mm)		
			(H)	(W)	(D)

Domino series - Distribution boards

- Reversible hinged door (*hinged from left or right side*)
- Adjustable DIN rail depth (*can accept rail mounted MCCB's*)
- Knock-outs on all sides (*can be coupled to other enclosures using coupler glands*)
- Facility to accept earth and neutral terminals

672.2002	2	IP66 consumer unit / distribution board	135	76	102
672.2004	4	IP66 consumer unit / distribution board	190	112	106
672.2008	8	IP66 consumer unit / distribution board	190	184	106
672.2012.1102	12 (1 x 12)	IP66 consumer unit / distribution board	250	256	140
672.4024.1102	24 (2 x 12)	IP66 consumer unit / distribution board	400	256	140
672.2016.1102	16 (1 x 16)	IP66 consumer unit / distribution board	250	328	140
672.4032.1102	32 (2 x 16)	IP66 consumer unit / distribution board	400	328	140
672.5048.1102	48 (3 x 16)	IP66 consumer unit / distribution board	550	328	140

.1102 (*supplied with mounted earth and neutral terminals*)

Boards with additional blank component section (for mounting non modular devices)

672.3100	12 (1 x 12)	with blank section (H) 150 x (D) 115 mm	400	256	140
672.4116	16 (1 x 16)	with blank section (H) 150 x (D) 115 mm	400	328	140
672.5116	16 (1 x 16)	with blank section (H) 300 x (D) 115 mm	550	328	140

Boards with section to accommodate industrial sockets

type	no. DIN modules	sockets No.	flange size (mm)	dimensions (mm)		
				(H)	(W)	(D)
672.2300	8 (1 x 8)	board + 2 x 16A sockets	70 x 87	340	184	106
672.3300*	12 (1 x 12)	board + 2 x 16A sockets	70 x 87	400	256	140
672.3302	12 (1 x 12)	board + 1 x 63A sockets	100 x 110	400	256	140
672.4316*	16 (1 x 16)	board + 3 x 16A sockets	70 x 87	400	328	140
672.5616*	16 (1 x 16)	board + 6 x 16A sockets	70 x 87	550	328	140

To accommodate Omnia interlocked switch sockets

672.3200	12 (1 x 12)	board + 1 x 16/32A sw/socket	136 x 125	400	256	140
672.4216	16 (1 x 16)	board + 2 x 16/32A sw/socket	136 x 125	400	328	140
672.5316	16 (1 x 16)	2 x 16/32A + 1 x 63A sw/socket	136 x 125	550	328	140
672.5416	16 (1 x 16)	board + 4 x 16/32A sw/socket	136 x 125	550	328	140

Empty enclosures for Domino series boards

type	for boards	description	flange	(H)	(W)	(D)
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- Enclosures can be attached to boards (*or one another*) using coupler glands (*below*)

672.1101	12 way enclosure	with blank cover	—	150	256	115
672.1301*	12 way enclosure	2 x 16A sockets	70x87	150	256	115

* *With suitable adaption, can accommodate 32A socket (84x106 mm flange)*

672.1100	16 way enclosure	with blank cover	—	150	328	115
672.1300*	16 way enclosure	3 x 16A sockets	70x87	150	328	115
672.1200	16 way enclosure	2 x 16/32A sw/socket	136x125	150	328	115

Accessories for Domino boards

654.0365	4 way	5 way insulated terminal block for boards				(IP20)
654.0363	8 way	10 way insulated terminal block for boards				(IP20)
654.0360	12 - 48 way	additional 10 way insulated terminal block				(IP20)
654.0358	DIN rail mountable	insulated terminal block	vertical	5x10 + 5x16 mm ²		
654.0359	DIN rail mountable	insulated terminal block	horizontal	5x10 + 5x16 mm ²		
654.0400	4 module	blanking strip for boards		(sectionable ½ and 1 module)		
654.0410	1 module	rail mount dummy module		(assists heat dissipation)		
654.0420	½ module	rail mount dummy module		(assists heat dissipation)		

Coupler glands IP66 (to join two enclosures together)

805.3335	coupler gland PG21 for joining 12/24 way enclosures together	(ea)
805.3337	coupler gland PG36 for joining 16/32 way enclosures together	(ea)



(Excluding sockets & MCBs) MBOX2



(Excluding sockets & MCBs) MBOX3



(Excluding sockets & MCBs) MBOX5



610.3760



610.3700



606.3005-062

MBOX series - Distribution assemblies (IP66) (EN 60670-1 / EN 61439-3 / EN 61439-4)

MBOX panels are made of engineering resin with high mechanical sturdiness suitable for outdoor installations with high impact resistance and excellent dimensional stability at high temperatures. Numerous combinations of sockets ensure reliability to meet common installation requirements for construction sites, equipped areas, camping sites, harbours and outdoor areas in general.

- Incorporated fold-out carrying handle
- Wall, trestle, turret or pole mountable (with additional accessories)
- Incorporated emergency disconnect pushbutton RAL 7035
- Incorporated distribution board to accommodate modular devices MCBs, earth leakages

type	no. DIN modules	mountable accessories to be ordered separately	dimensions (mm)		
			(H)	(W)	(D)

MBOX series - Distribution assemblies

MBOX2 distribution assemblies (no front door)

- Supplied with 16 mm² 5 pole terminal box

656.0924-000	16 (2 x 8)	4 x 16/32A	Omnia industrial switch sockets	365	332	290
656.0926-000	16 (2 x 8)	6 x 16/32A	Optima industrial socket outlets	365	332	290

MBOX3 distribution assemblies (supplied with door for socket compartment)

- Supplied with door for socket compartment
- Incorporates extremely low consumption LED light connected to a daylight sensor (for improved visibility at night or in areas with poor light)

657.0936-000	39 (3 x 13)	6 x 16/32A	Omnia industrial switch sockets	520	465	380
657.0938-000	39 (3 x 13)	9 x 16/32A	Optima industrial socket outlets	520	465	380

MBOX5 distribution assemblies (supplied with door for socket compartment)

- Supplied with door for socket compartment
- Internal frame to accept 4 x Omnia switch sockets with facilities to mount an additional 8 surface
- Supplied with incoming terminal blocks (5 x 16 mm² + 5 x 35 mm²)
- Incorporates extremely low consumption LED light connected to a daylight sensor (for improved visibility at night or in areas with poor light)

658.0950-000	52 (4 x 13)	12 x 16/32A	Omnia industrial switch sockets	670	775	400
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Accessories for MBOX distribution assemblies for enclosure

654.0051	cable support kit (to wind feeder cable on rear of enclosure)					MBOX2
654.0024	wall mounting bracket for enclosures					MBOX2/3/5
655.46090	pole mounting bracket for enclosures					MBOX2
655.32090	pole mounting bracket for enclosures					MBOX3/5
657.0121	trestle metal support trestle for enclosures					MBOX3/5

Adapto series adaptors (from industrial IEC309 to multi and domestic sockets)

type	from ind. socket		to sockets	description
610.3700	16A	2P+E	2 x 16A	Italian socket
610.3720	16A	2P+E	1 x 16A	German (Schuko)
610.3760	16A	2P+E	1 x 16A	South African socket
600.1623	16A	2P+E	2 x 16A 2P+E	multi-way adaptor
600.1626	16A	3P+E	2 x 16A 3P+E	multi-way adaptor
600.1629	16A	3P+N+E	1 x 2P+E/1x 3P+E	multi-way adaptor
606.3005-062	16A	2P+E	3 x 16A 2P+E	appliance inlets
606.3005-063	16A	2P+E	3 x 16A 3P+E	appliance inlets

Covers to accommodate domestic sockets

- Replaces standard industrial sockets and Omnia switch sockets with domestic sockets

type	IP rating	description	ind socket flange
570.6428	IP66	cover with South African 16A domestic socket	70 x 87
409.0428	IP56	Omnia cover with S A 16A domestic socket	125 x 136
570.5052	IP66	cover accepts Evolution domestic sockets	70 x 87
654.0122	IP66	Omnia cover accepts Evolution domestic sockets	125 x 136

* See page I-6 for available clip-in domestic socket modules for above covers



136.5121-303



136.5122-303



136.5123-303



136.5123-414



101.6303.G



101.6414.G



137.5012



137.5022



137.6111

Unibox series - Surface mounting IP55

- Housing: Thermoplastic (RAL 7035) (grey)
- Impact resistance: IK06 (500g with a striking energy of 1J)
- Max. temperature: +60°C
- Standards: EN 60670-1

type	amps	poles	description	dimensions (mm)		
				(H)	(W)	(D)

Unibox series - Surface mounting (IP55)

1 gang surface mount switches

136.5121-303	16A	1P	1-way surface mount switch	82	68	66
136.5121-302	20A	2P	1-way surface mount switch	82	68	66
136.5121-323	16A	1P	2-way surface mount switch	82	68	66
136.5121-333	16A	1P	bell-push (momentary action)	82	68	66

2 gang surface mount switches

136.5122-303	16A	2P	2 x 1-pole surface mount switch	82	68	66
136.5122-414	15A	2P+E	2-pole + earth socket only	82	68	66

3 gang surface mount switches

136.5123-303	16A	3P	3 x 1-pole surface mount switch	82	98	66
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Surface mount switch socket

136.5123-414	15A	2P+E	switch socket outlet	82	98	66
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Accessories for Unibox series

136.5121	1 gang	surface mount empty housing only (IP55)	82	68	66
136.5122	2 gang	surface mount empty housing only (IP55)	82	68	66
136.5123	3 gang	surface mount empty housing only (IP55)	82	98	66
136.001	-	external mount brackets for surface boxes			(10 pcs)
570.5052*	2 gang	panel mount housing for switches or sockets	82	68	-
570.6001*	2 gang	panel mnt housing (IP66 with plug inserted)	107	84	-
136.5023	3 gang	flush mnt housing for switches or sockets	82	98	-
875.4303	3 gang	wall box for flush mount empty housing	82	98	-

* Fits into housing for industrial sockets with 70 x 87 mm flange

Evolution series - Switches and sockets for above boxes

101.6303.G	16 A	1-pole	on/off switch for housings	(1 module)
101.6311.G	16 A	2-pole	changeover switch (I-O-II)	(1 module)
101.6403.G	16A	2P+E	Italian socket for housings	(1 module)
101.6414.G	15A	2P+E	SA socket for housings	(2 module)
101.6407.G	16A	2P+E	German socket for housings	(2 module)

DIN rail mount support for Evolution switches and sockets

654.0091	support	rail mnt support for above switches/sockets	(1 module)
654.0092	support	rail mnt support for above switches/sockets	(2 module)

Protecta series - Switches and sockets (IP66)

- Housing: Thermoplastic (halogen free) RAL 7035 (grey)
- Mounting: Surface mount (can be flush mounted)
- Max temperature: +60°C
- Glow wire test: 850°C / IK07

1 gang surface mount switches

137.5012	20A	1P	surface mount switch	95	95	-
137.5462	20A	2P	surface mount switch	95	95	-
137.5212	20A	1P	2 way surface mnt switch	95	95	-
137.5311P	10A	1P	bell-push(momentary action)	95	95	-

2 gang surface mount switches

137.5022	20A	2P	surface mount switch	95	95	-
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Switch socket outlet

137.6111	15A	2P+E	2 p + earth switch socket outlet	115	115	-
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Accessories for above Protecta switches

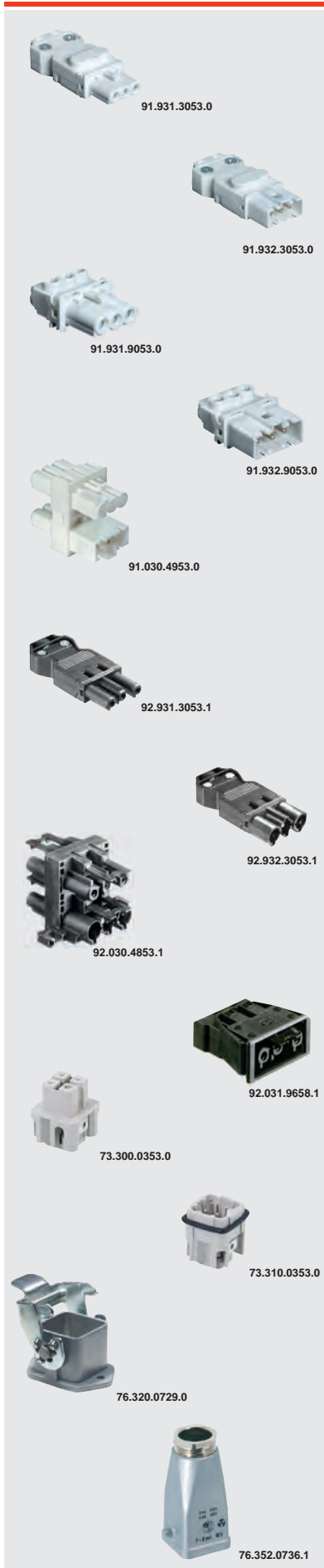
137.101	surface	surface mount back box for above switches	95	95	-
137.141	pole	pole mount back box for above switches	95	95	-
137.002	cover	IP66 cover accepts 2 x evolution (modules)	-	-	-
137.121	flush	flush mount frame kit for above switches	95	95	-
137.123	flush	flush mount frame kit for above sockets	115	115	-



RST connectors are an ideal solution to providing pluggable connections to products able to withstand severe conditions, the connectors easily replace conventional cable glands providing a flexible, pluggable solution.

- Rapid mounting through ease of handling
- UV-resistant (*Polymide - Halogen free*)
- Cross-sections up to 6 mm²
- Protection degree: IP65, IP66, IP67, IP68, IP69K
- Colour: Black

type	current (A)	No. poles	for cable (Ø mm)	wire (mm ²)	description	panel hole Ø
RST MINI Twistlock technology 250V						
RST 16i3	16A	3 pole				
46.031.4553.1	16A	3 pole	5 - 9.5	.25 - 1.5	in-line female connector	-
46.032.4553.1	16A	3 pole	5 - 9.5	.25 - 1.5	in-line male connector	-
46.031.5053.1	16A	3 pole	-	.25 - 1.5	panel mnt female connector	M16
46.032.5053.1	16A	3 pole	-	.25 - 1.5	panel mount male connector	M16
46.030.1253.1	16A	3 pole	-	-	1in / 2out distribution block	-
Z6.561.7253.1	16A	3 pole	protection cover for above 3 pole female connectors		-	-
Z6.561.6953.1	16A	3 pole	protection cover for above 3 pole male connectors		-	-
RST 16i5	16A	5 pole				
46.051.4553.1	16A	5 pole	5 - 9.5	.25 - 1.5	in-line female connector	-
46.052.4553.1	16A	5 pole	5 - 9.5	.25 - 1.5	in-line male connector	-
46.051.5053.1	16A	5 pole	-	.25 - 2.5	panel mnt female connector	M20
46.052.5053.1	16A	5 pole	-	.25 - 2.5	panel mount male connector	M20
46.050.1253.1	16A	5 pole	-	-	1in / 2out distribution block	-
06.562.5853.1	16A	3/5 pole	mounting base for above 3/5 pole distribution blocks		-	-
Z6.561.7153.1	16A	5 pole	protection cover for above 5 pole female connectors		-	-
Z6.561.6853.1	16A	5 pole	protection cover for above 5 pole male connectors		-	-
RST 20i3 20A 3 pole 250V						
96.031.4053.1	20A	3 pole	6 - 10	.75 - 6.0	in-line female connector	-
96.031.4153.1	20A	3 pole	10 - 14	.75 - 6.0	in-line female connector	-
96.032.4053.1	20A	3 pole	6 - 10	.75 - 6.0	in-line male connector	-
96.032.4153.1	20A	3 pole	10 - 14	.75 - 6.0	in-line male connector	-
96.031.5053.1	20A	3 pole	-	.75 - 6.0	panel mnt female connector	M25
96.032.5053.1	20A	3 pole	-	.75 - 6.0	panel mount male connector	M25
RST 20i5	20A	5 pole				
96.051.4153.1	20A	5 pole	10 - 14	.75 - 4.0	in-line female connector	-
96.052.4153.1	20A	5 pole	10 - 14	.75 - 4.0	in-line male connector	-
96.051.4353.1	20A	5 pole	10 - 14	.75 - 1.5	female splitter connector	-
96.051.5053.1	20A	5 pole	-	.75 - 4.0	panel mnt female connector	M25
96.052.5053.1	20A	5 pole	-	.75 - 4.0	panel mount male connector	M25
96.031.4253.1	20A	3/5 pole	6 - 10	.75 - 2.5	female splitter connector	-
96.031.4353.1	20A	3/5 pole	10 - 14	.75 - 2.5	female splitter connector	-
01.006.1553.1	20A	3/5 pole	mounting plate for 20A 3/5 pole splitter connectors		-	-
RST 25i3 32A (using 6 mm² cable) PV applications						
96.031.4554.3	32A	3 pole	10 - 14	.75 - 6.0	in-line female connector	-
96.032.4554.3	32A	3 pole	10 - 14	.75 - 6.0	in-line male connector	-
96.031.5054.3	32A	3 pole	-	.75 - 6.0	panel mnt female connector	M25
96.032.5054.3	32A	3 pole	-	.75 - 6.0	panel mount male connector	M25
RST 50i5 50A 5 pole power series						
97.051.4053.1	50A	5 pole	15 - 25	4.0 - 16.0	in-line female connector	M32
97.052.4053.1	50A	5 pole	15 - 25	4.0 - 16.0	in-line male connector	M32
97.051.5553.1	50A	5 pole	-	4.0 - 16.0	panel mnt female connector	M32
97.052.5553.1	50A	5 pole	-	4.0 - 16.0	panel mount male connector	M32
Accessories for RST20/25/50 connectors						
05.564.8653.1	20/32A	-	manual disconnect tool (<i>easy release button</i>)		-	-
05.568.8853.1	20/32A	-	spacer ring (<i>manually actuated</i>) for M25 connectors		M25	-
99.416.6205.2	20/32A	3 pole	protection cover for 20/32A 3 pole female connector		-	-
99.414.6205.2	20/32A	3 pole	protection cover for 20/32A 3 pole male connector		-	-
99.532.0000.7	20/32A	5 pole	protection cover for 20/32A 5 pole female connector		-	-
99.530.0000.7	20/32A	5 pole	protection cover for 20/32A 5 pole male connector		-	-
Z5.567.5653.0	50A	cover	protection cover for 50A male or female connectors		-	-



GST multipole connectors

Rated voltage: 250V Rated current: 16A
 Protection degree: IP20 Colour: White (black available on request)

• Quick, easy and reliable connection technology with Integrated locking device

type	current (A)	No. poles	for cable (Ø mm)	wire (mm ²)	description	panel hole Ø
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GST 15i3 (Gesis mini) connectors 16A/250V

In-line connectors (with strain relief)		screw connection			
91.921.3053.0	16A	2 pole	5.5 - 8.5	0.5 - 1.5	female in-line connector
91.922.3053.0	16A	2 pole	5.5 - 8.5	0.5 - 1.5	male in-line connector
91.931.3053.0	16A	3 pole	5.5 - 8.5	0.5 - 1.5	female in-line connector
91.932.3053.0	16A	3 pole	5.5 - 8.5	0.5 - 1.5	male in-line connector
91.931.9053.0	16A	3 pole	–	0.5 - 1.5	flush female p/mnt connector
91.931.9153.0	16A	3 pole	–	0.5 - 1.6	protruding female p/mnt conn.
91.932.9053.0	16A	3 pole	–	0.5 - 1.5	flush male p/mnt connector
91.932.9153.0	16A	3 pole	–	0.5 - 1.6	protruding male p/mnt conn.

GST 18i3 (Gesis) connectors 16A/250V

In-line connectors (with strain relief)		screw connection			
92.931.3053.0	16A	3 pole	6.5 - 10.5	0.75 - 2.5	female in-line connector
92.932.3053.0	16A	3 pole	6.5 - 10.5	0.75 - 2.5	male in-line connector

Panel mounting (snap-in) spring-loaded screwless connection

92.031.9658.0	16A	3 pole	–	0.75 - 2.5	female panel mount connector
92.032.9658.0	16A	3 pole	–	0.75 - 2.5	male panel mount connector

Accessories for GST connectors

91.030.6053.0	16A	3 pole			1 in / 2 out distribution unit for GST15i connectors
91.030.4953.0	16A	3 pole			1 in / 3 out distribution unit for GST15i connectors
91.030.5853.0	16A	3 pole			U-type intermediate coupling for GST 15i connectors
91.030.5953.0	16A	3 pole			in-line intermediate coupling for GST 15i connectors
92.030.4853.0	16A	3 pole			1 in / 3 out distribution unit for GST18i connectors
92.030.5958.0	16A	3 pole			in-line intermediate coupling for GST 18i connectors
05.587.3156.0	lock	–			locking device for in-line connectors
05.561.3653.0	cover	–			protection cover for GST18i female connectors

Revos MINI - industrial multipole connectors

Protection degree: IP 65 (when used with appropriate cable gland)

type	current (A)	No. poles	rated voltage	connect type	cable inlet	description
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• Set is made up with - contact inserts (male and female) - base - hood

Revos MINI 10A/400V

Contact inserts		Screw connection - (cables 0.5 - 2.5 mm ²)				
73.310.0353.0	10A	3p + ⊥	400 V	screw	–	male insert - screw terminal
73.310.0453.0	10A	4p + ⊥	400 V	screw	–	male insert - screw terminal
73.300.0353.0	10A	3p + ⊥	400 V	screw	–	female insert - screw terminal
73.300.0453.0	10A	4p + ⊥	400 V	screw	–	female insert - screw terminal

Crimp connection - (crimp contacts to be ordered separately)

73.710.0753.0	10A	7p + ⊥	250 V	crimp	–	male insert - for crimp pins
73.710.0853.0	10A	8 pole	50 V	crimp	–	male insert - for crimp pins
05.544.1029.0	10A	–	250 V	crimp	.75 - 1.5 mm ²	male crimp contact pins
73.700.0753.0	10A	7p + ⊥	250 V	crimp	–	female insert - for crimp pins
73.700.0853.0	10A	8 pole	50 V	crimp	–	female insert - for crimp pins
02.124.1029.0	10A	–	250 V	crimp	.75 - 1.5 mm ²	female crimp contact pins

Bases with locking lever for hood connection

76.320.0729.0	metal	3/4/7/8		open	straight	base for contact inserts
76.321.0729.0	metal	3/4/7/8		open	90°	angled base for cont. inserts
76.320.0753.0	plastic	3/4/7/8		open	straight	base for contact inserts
76.321.0753.0	plastic	3/4/7/8		open	90°	angled base for cont. inserts

Hoods with threaded collar to accept M20 cable glands

76.352.0736.1	metal	3/4/7/8		M20	straight	hood for contact inserts
76.350.0736.1	metal	3/4/7/8		M20	90°	angled hood for cont. inserts
76.352.0760.1	plastic	3/4/7/8		M20	straight	hood for contact inserts
76.350.0760.1	plastic	3/4/7/8		M20	90°	angled hood for cont. inserts



70.310.1040.0



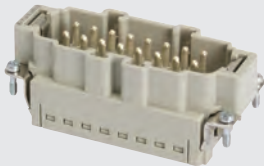
70.300.1040.0



70.415.0653.0



70.405.0653.0



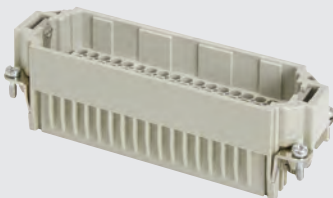
70.415.1653.0



70.405.1653.0



73.810.2453.0



73.810.0853.0

Revos BASIC - Industrial multipole connectors

Heavy duty connectors for use in tough environment conditions. Used in the automotive industry, packaging, instrumentation, control and automation equipment. They permit simple, time-saving installation of machinery and equipment, providing effective protection against mechanical impact, water and dust entry.

- Rated voltage: 690V
- Rated current: 10/16A
- Protection degree: Supplied without gland (IP65 when used with appropriate cable gland)

type	current (A)	No. poles	rated voltage	connect type	cable inlet	size	description
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Contact inserts Fit into all revos bases and hoods to make up a complete connector.

Revos BASIC Standard contact inserts with screw termination - 6/10/16/24/32/48 pole + earth

- Connector set is made up with - contact inserts (*male and female*) - base - hood

Screw terminal (<i>with wire protection</i>)							
							(for cables 0.5 - 2.5 mm ²)
70.310.0640.0	16A	6p+ $\frac{1}{2}$	690V	screw	-	6	male insert - screw term.
70.310.1040.0	16A	10p+ $\frac{1}{2}$	690V	screw	-	10	male insert - screw term.
70.310.1640.0	16A	16p+ $\frac{1}{2}$	690V	screw	-	16	male insert - screw term.
70.310.2440.0	16A	24p+ $\frac{1}{2}$	690V	screw	-	24	male insert - screw term.
70.310.3253.0	16A	32p+ $\frac{1}{2}$	690V	screw	-	32	male insert - screw term.
70.310.4840.0	16A	48p+ $\frac{1}{2}$	690V	screw	-	48	male insert - screw term.
70.300.0640.0	16A	6p+ $\frac{1}{2}$	690V	screw	-	6	female insert - screw term.
70.300.1040.0	16A	10p+ $\frac{1}{2}$	690V	screw	-	10	female insert - screw term.
70.300.1640.0	16A	16p+ $\frac{1}{2}$	690V	screw	-	16	female insert - screw term.
70.300.2440.0	16A	24p+ $\frac{1}{2}$	690V	screw	-	24	female insert - screw term.
70.300.3253.0	16A	32p+ $\frac{1}{2}$	690V	screw	-	32	female insert - screw term.
70.300.4840.0	16A	48p+ $\frac{1}{2}$	690V	screw	-	48	female insert - screw term.

Push-in termination contact inserts

New push-in technology allows flexible conductors with ferrules to be simply and quickly connected without the use of tools. Simply push-in the wire conductor for a high contact quality, reliable, gas-tight, vibration proof connection.

- Extremely quick connection time - (*cables are simply withdrawn by pressing a release button*)

70.415.0653.0	16A	6p+ $\frac{1}{2}$	690V	push-in	-	6	male insert - push-in term.
70.415.1053.0	16A	10p+ $\frac{1}{2}$	690V	push-in	-	10	male insert - push-in term.
70.415.1653.0	16A	16p+ $\frac{1}{2}$	690V	push-in	-	16	male insert - push-in term.
70.415.2453.0	16A	24p+ $\frac{1}{2}$	690V	push-in	-	24	male insert - push-in term.
70.405.0653.0	16A	6p+ $\frac{1}{2}$	690V	push-in	-	6	female insert - push-in term.
70.405.1053.0	16A	10p+ $\frac{1}{2}$	690V	push-in	-	10	female insert - push-in term.
70.405.1653.0	16A	16p+ $\frac{1}{2}$	690V	push-in	-	16	female insert - push-in term.
70.405.2453.0	16A	24p+ $\frac{1}{2}$	690V	push-in	-	24	female insert - push-in term.

Revos DD High density contact inserts for crimp contacts - 24/42/72/108 poles

High contact density in the most compact housing. Connection is made with proven turned crimp contacts.

- Crimp connection - (*crimp contact pins to be ordered separately - see below*)
- Connector set is made up with - contact inserts and crimp contact pins (*male and female*) - base - hood

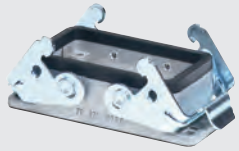
73.810.2453.0	10A	24p+ $\frac{1}{2}$	250V	crimp	-	6	male insert - for crimp pins
73.810.4253.0	10A	42p+ $\frac{1}{2}$	250V	crimp	-	10	male insert - for crimp pins
73.810.7253.0	10A	72p+ $\frac{1}{2}$	250V	crimp	-	16	male insert - for crimp pins
73.810.0853.0	10A	108p+ $\frac{1}{2}$	250V	crimp	-	24	male insert - for crimp pins
73.800.2453.0	10A	24p+ $\frac{1}{2}$	250V	crimp	-	6	female insert - for crimp pins
73.800.4253.0	10A	42p+ $\frac{1}{2}$	250V	crimp	-	10	female insert - for crimp pins
73.800.7253.0	10A	72p+ $\frac{1}{2}$	250V	crimp	-	16	female insert - for crimp pins
73.800.0853.0	10A	108p+ $\frac{1}{2}$	250V	crimp	-	24	female insert - for crimp pins

Crimp contacts for Revos DD contact inserts (cables 0.75 - 1 mm²)

05.544.4329.8	10A	-	250 V	0.75 - 1 mm ²	male crimp contact pins
02.125.4329.8	10A	-	250 V	0.75 - 1 mm ²	female crimp contact pins
05.544.4429.8	10A	-	250 V	1.5 mm ²	male crimp contact pins
02.125.4429.8	10A	-	250 V	1.5 mm ²	female crimp contact pins

Accessories for contact inserts

95.101.0800.0	tool	-	-	crimp	-	crimping tool for crimp contact pins
05.502.2100.0	die	-	-	crimp	-	die set for crimping contact pins
05.502.3100.0	pos.	-	-	crimp	-	contact pin positioner for crimping tool
05.502.0710.0	tool	-	-	-	-	extraction tool for removing crimp contact pins from contact inserts



70.320.1028.0



70.331.1035.1



70.350.1035.1
(excluding gland)



70.352.1035.1
(excluding gland)



70.372.0635.1

continued... Revos BASIC

- Set is made up with - contact inserts (*male and female*) - base - hood

type	locking lever	gland entry	cable inlet	size	description
Bases (housings)					<i>(diecast aluminium)</i>
Panel mount (open bottom base - no cover)					
Single locking lever					
70.320.0628.0	single	open	straight	6	bulkhead mounting base
71.320.1028.0	single	open	straight	10	bulkhead mounting base
71.320.1628.0	single	open	straight	16	bulkhead mounting base
71.320.2428.0	single	open	straight	24	bulkhead mounting base
70.320.4828.0	single	open	straight	48	bulkhead mounting base
Double locking lever					
70.320.1028.0	double	open	straight	10	bulkhead mounting base
70.320.1628.0	double	open	straight	16	bulkhead mounting base
70.320.2428.0	double	open	straight	24	bulkhead mounting base
70.320.3228.0	double	open	straight	32	bulkhead mounting base
Surface mount (closed bottom base)			metric threaded side cable gland entry		
Single locking lever					
70.331.0635.1	single	M20	side	6	side entry surface mount base
71.331.1035.1	single	M20	side	10	side entry surface mount base
71.331.1635.1	single	M25	side	16	side entry surface mount base
71.331.2435.1	single	M25	side	24	side entry surface mount base
70.344.4835.1	single	M40	side	48	side entry surface mount base
Double locking lever					
70.331.1035.1	double	M20	side	10	side entry surface mount base
70.331.1635.1	double	M25	side	16	side entry surface mount base
70.331.2435.1	double	M25	side	24	side entry surface mount base
Hoods (with studs to receive locking lever on bases)					<i>(diecast aluminium)</i>
Lateral cable entry (side entry)			metric threaded cable gland entry		
Single locking lever					
70.350.0635.1	single	M20	side	6	lateral cable gland entry hood
71.350.1035.1	single	M20	side	10	lateral cable gland entry hood
71.350.1635.1	single	M25	side	16	lateral cable gland entry hood
71.350.2435.1	single	M25	side	24	lateral cable gland entry hood
70.350.4835.1	single	M32	side	48	lateral cable gland entry hood
Double locking lever					
70.350.1035.1	double	M20	side	10	lateral cable gland entry hood
70.350.1635.1	double	M25	side	16	lateral cable gland entry hood
70.350.2435.1	double	M25	side	24	lateral cable gland entry hood
70.350.3235.1	double	M32	side	32	lateral cable gland entry hood
Top cable entry			metric threaded cable gland entry		
Single locking lever					
70.352.0635.1	single	M20	top	6	top cable gland entry hood
71.352.1035.1	single	M20	top	10	top cable gland entry hood
71.352.1635.1	single	M25	top	16	top cable gland entry hood
71.352.2435.1	single	M25	top	24	top cable gland entry hood
70.352.4835.1	single	M32	top	48	top cable gland entry hood
Double locking lever					
70.352.1035.1	double	M20	top	10	top cable gland entry hood
70.352.1635.1	double	M25	top	16	top cable gland entry hood
70.352.2435.1	double	M25	top	24	top cable gland entry hood
70.352.3235.1	double	M32	top	32	top cable gland entry hood
With locking levers (for in-line cable-to-cable connection)					
70.372.0635.1	single	M20	top	6	locking levers for cable to cable
71.372.1035.1	single	M20	top	10	locking levers for cable to cable
71.372.1635.1	single	M25	top	16	locking levers for cable to cable
71.372.2435.1	single	M25	top	24	locking levers for cable to cable



07.417.6753.0



07.409.7356.0



Z7.428.1453.0

Protective covers for Revos housings

type	size	locking lever	for	gasket	description
Covers without locking levers for bases					
07.417.6753.0	mini	single	male	no	protection cover for bases
07.409.7056.0	6	single	base	no	protection cover for bases
07.428.5553.0	10	single	base	no	protection cover for bases
07.428.5653.0	16	single	base	no	protection cover for bases
07.428.5753.0	24	single	base	no	protection cover for bases
07.409.7156.0	10	double	base	no	protection cover for bases
07.409.7256.0	16	double	base	no	protection cover for bases
07.409.7356.0	24	double	base	no	protection cover for bases
Z7.419.6228.0	32	double	base	no	protection cover for bases
Covers with locking levers for hoods					
07.417.6853.0	mini	single	female	yes	protection cover for hoods
Z7.428.1153.0	6	single	hood	yes	protection cover for hoods
Z7.428.5553.0	10	single	hood	yes	protection cover for hoods
Z7.428.5653.0	16	single	hood	yes	protection cover for hoods
Z7.428.5753.0	24	single	hood	yes	protection cover for hoods
Z7.428.1253.0	10	double	hood	yes	protection cover for hoods
Z7.428.1353.0	16	double	hood	yes	protection cover for hoods
Z7.428.1453.0	24	double	hood	yes	protection cover for hoods
Z7.419.6128.0	32	double	hood	yes	protection cover for hoods

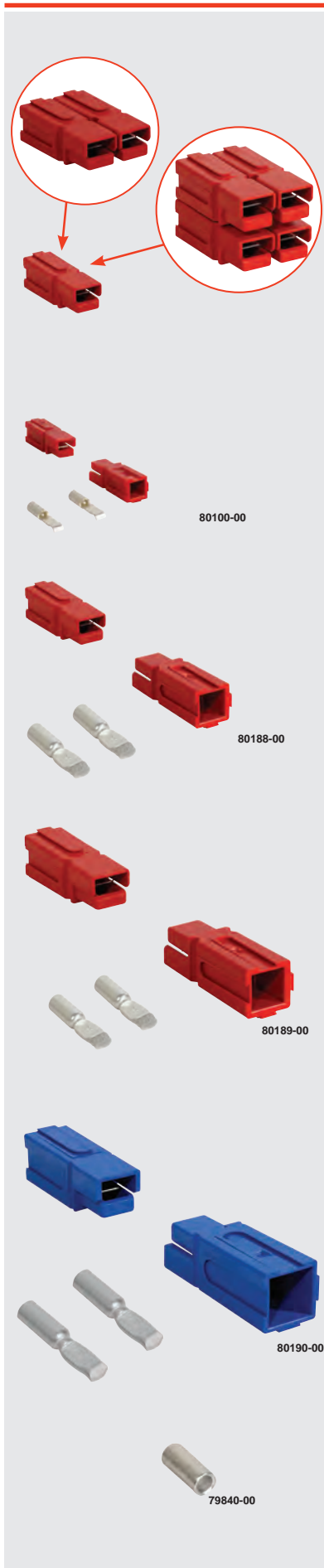


REMA® flat blade contact connectors offer a cost effective, quick-disconnect DC power connector solution. Available in different colours used to differentiate the voltage types, ensuring compatibility of properly configured mating connectors according to their respective voltage.

- Housing constructed of glass fibre reinforced material for extreme durability and resistance to battery acid
- Genderless housing design (*same unit reversed plugs into opposite*)
- REMA® engineered contacts made of high grade electrolyte copper, silver plated for corrosion protection
- Different contacts with sizes epitomised for metric and AWG cable dimensions
- CE and UL 1977 certified component meets or exceeds EN 1175-1 industry standards
- In compliance with machinery directive 2006/42 EG and therefore with "CE" marking
- Accepts REMA® strain relief clamps and handles for easy intuitive assembly

type	current (A)	colour	cable connection		description
			AWG	eq. mm ²	
SR 50 50A connector (H) 48 x (W) 36.5 x (D) 15.9 mm					
78176-01	50A	red	AWG 8	10 mm ²	heavy duty 2 pole connector
78184-00	50A	red	AWG 6	16 mm ²	heavy duty 2 pole connector
78180-02	50A	grey	AWG 8	10 mm ²	heavy duty 2 pole connector
78180-00	50A	grey	AWG 6	16 mm ²	heavy duty 2 pole connector
78181-05	50A	black	AWG 8	10 mm ²	heavy duty 2 pole connector
78181-00	50A	black	AWG 6	16 mm ²	heavy duty 2 pole connector
SR 175 175A connector (H) 79.4 x (W) 55.6 x (D) 25.4 mm					
78230-00	175A	yellow	AWG 4	25 mm ²	heavy duty 2 pole connector
78231-00	175A	yellow	AWG 2	35 mm ²	heavy duty 2 pole connector
78232-00	175A	yellow	AWG 0	50 mm ²	heavy duty 2 pole connector
78234-00	175A	red	AWG 4	25 mm ²	heavy duty 2 pole connector
78235-00	175A	red	AWG 2	35 mm ²	heavy duty 2 pole connector
78236-00	175A	red	AWG 0	50 mm ²	heavy duty 2 pole connector
78220-01	175A	grey	AWG 4	25 mm ²	heavy duty 2 pole connector
78220-02	175A	grey	AWG 2	35 mm ²	heavy duty 2 pole connector
78220-00	175A	grey	AWG 0	50 mm ²	heavy duty 2 pole connector
78224-01	175A	blue	AWG 4	25 mm ²	heavy duty 2 pole connector
78224-02	175A	blue	AWG 2	35 mm ²	heavy duty 2 pole connector
78224-00	175A	blue	AWG 0	50 mm ²	heavy duty 2 pole connector
Accessories for SR 175 (above)					
78290-00	-	grey	-	-	handle for SR 175 connectors
78291-00	-	red	-	-	handle for SR 175 connectors
78010-00	-	grey	-	-	cable clamp for SR 175
SR 350 350A Connector (H) 108 x (W) 69.8 x (D) 33.3 mm					
78311-00	350A	yellow	AWG 0	50 mm ²	heavy duty 2 pole connector
78312-00	350A	yellow	AWG 00	70 mm ²	heavy duty 2 pole connector
78313-00	350A	yellow	AWG 000	95 mm ²	heavy duty 2 pole connector
78307-00	350A	red	AWG 0	50 mm ²	heavy duty 2 pole connector
78308-00	350A	red	AWG 00	70 mm ²	heavy duty 2 pole connector
78309-00	350A	red	AWG 000	95 mm ²	heavy duty 2 pole connector
78299-00	350A	grey	AWG 0	50 mm ²	heavy duty 2 pole connector
78300-00	350A	grey	AWG 00	70 mm ²	heavy duty 2 pole connector
78301-00	350A	grey	AWG 000	95 mm ²	heavy duty 2 pole connector
78303-00	350A	blue	AWG 0	50 mm ²	heavy duty 2 pole connector
78304-00	350A	blue	AWG 00	70 mm ²	heavy duty 2 pole connector
78304-01	350A	blue	AWG 000	95 mm ²	heavy duty 2 pole connector
Accessories for SR350 (above)					
78297-00	-	grey	-	-	handle for SR 350 connectors
78298-00	-	red	-	-	handle for SR 350 connectors
78011-00	-	grey	-	-	cable clamp for SR 350
Reduction bushings			from	to	
79840-00	reduction bushing		AWG 6	6 mm ²	cable reducing bushing
79844-00	reduction bushing		AWG 2	16 mm ²	cable reducing bushing
79846-00	reduction bushing		AWG 0	25 mm ²	cable reducing bushing
79847-00	reduction bushing		AWG 0	35 mm ²	cable reducing bushing

Recommended colour voltage coding:
 Yellow: 12V - red: 24V - grey: 36V - blue: 48V



REMA® flat blade contact connectors offer a cost effective, quick-disconnect power connector solution. Available in different colours used to differentiate the voltage types, ensuring compatibility of properly configured mating connectors according to their respective voltage.

- Interlocking facility permitting multi-pole connections (2P, 3P, 4P..) in a flat horizontal or square format
- Constructed of glass fibre reinforced material for extreme durability and resistance to battery acid
- Genderless housing design (*same unit reversed plugs into opposite*)
- REMA® engineered contacts made of high grade electrolyte copper, silver plated for corrosion protection
- Different contacts with sizes optimised for metric and AWG cable dimensions
- CE and UL 1977 certified component meets or exceeds EN 1175-1 industry standards
- In compliance with machinery directive 2006/42 EG and therefore with "CE" marking

















type	current (A)	colour	cable connection		description	pack qty
			AWG	eq. mm ²		
MC30 (H) 41.3 x (W) 7.9 x (D) 7.9 mm						
80100-00	30A	■ red	AWG 12	2.5/4 mm ²	single pole connector	100
80100-02	30A	■ black	AWG 12	2.5/4 mm ²	single pole connector	100
80100-01	30A	□ white	AWG 12	2.5/4 mm ²	single pole connector	100
80100-03	30A	■ green	AWG 12	2.5/4 mm ²	single pole connector	100
80100-04	30A	■ blue	AWG 12	2.5/4 mm ²	single pole connector	100
MC75 (H) 81.4 x (W) 15.9 x (D) 15.9 mm						
80188-00	75A	■ red	AWG 6	16 mm ²	single pole connector	50
80188-02	75A	■ black	AWG 6	16 mm ²	single pole connector	50
80188-04	75A	□ white	AWG 6	16 mm ²	single pole connector	50
80188-06	75A	■ green	AWG 6	16 mm ²	single pole connector	50
80188-08	75A	■ blue	AWG 6	16 mm ²	single pole connector	50
MC120 (H) 117.5 x (W) 22.2 x (D) 22.2 mm						
80189-00	120A	■ red	AWG 2	35 mm ²	single pole connector	25
80189-01	120A	■ black	AWG 2	35 mm ²	single pole connector	25
80189-02	120A	□ white	AWG 2	35 mm ²	single pole connector	25
80189-03	120A	■ green	AWG 2	35 mm ²	single pole connector	25
80191-00	120A	■ blue	AWG 2	35 mm ²	single pole connector	25
MC180 (H) 139.7 x (W) 28.6 x (D) 28.6 mm						
80190-01	180A	■ red	AWG 0	50 mm ²	single pole connector	25
80190-02	180A	■ black	AWG 0	50 mm ²	single pole connector	25
80190-03	180A	□ white	AWG 0	50 mm ²	single pole connector	25
80190-04	180A	■ green	AWG 0	50 mm ²	single pole connector	25
80190-00	180A	■ blue	AWG 0	50 mm ²	single pole connector	25
Reduction bushings						
			from	to		
79840-00	reduction bushing		AWG 6	6 mm ²	cable reducing bushing	ea
79844-00	reduction bushing		AWG 2	16 mm ²	cable reducing bushing	ea
79846-00	reduction bushing		AWG 0	25 mm ²	cable reducing bushing	ea
79847-00	reduction bushing		AWG 0	35 mm ²	cable reducing bushing	ea

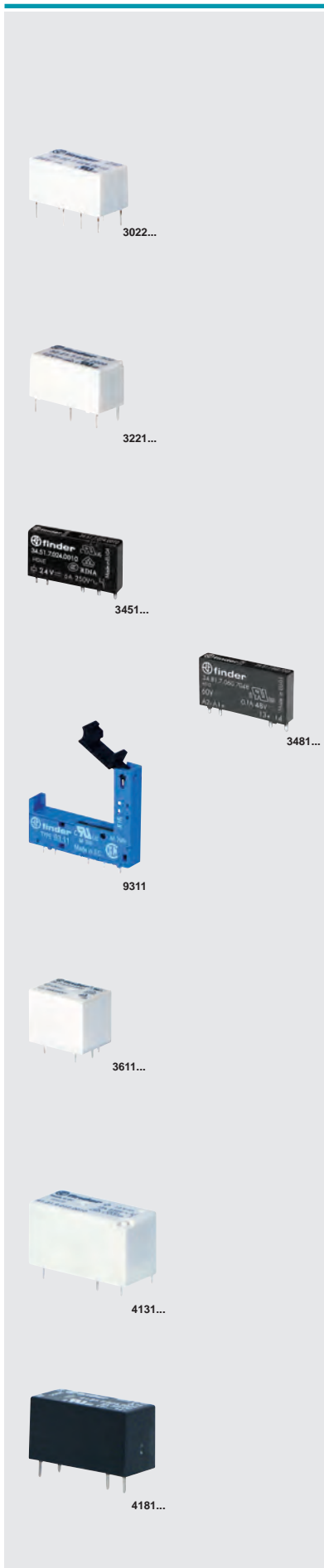
Recommended colour voltage coding:
 Red: 24V - blue: 48V - green: 72V



TIMERS & CONTROL RELAYS

J

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30 series Subminiature DIL relay (11.4 x 20.3 x 10.1 mm)

- 2-pole changeover contacts low level switching capability - 2A
- Sensitive DC coil - 200mW
- Wash tight: RT III

type	switch current	description	contact	pin pitch (mm)	coil voltage
302270120010	2A	sealed DIL PCB relay	2 ch/over	5.08	12 VDC
302270240010	2A	sealed DIL PCB relay	2 ch/over	5.08	24 VDC
302270480010	2A	sealed DIL PCB relay	2 ch/over	5.08	48 VDC

32 series Subminiature low profile relay (10.7 x 20 x 10 mm)

- 1-pole changeover contacts - 6A
- Sensitive DC coil - 200mW
- Wash tight: RT III

322170124000	6A	low profile PCB relay	1 ch/over	7.62	12 VDC
322170244000	6A	low profile PCB relay	1 ch/over	7.62	24 VDC
322170484000	6A	low profile PCB relay	1 ch/over	7.62	48 VDC

34 series Ultra-slim relay (5 mm) (15 x 28 x 5 mm)

EMR - Electromechanical relays

- 1-pole changeover contact - 6A
- Sensitive DC coil - 170mW
- 8 mm clearance/creepage distance
- 6kV (1.2/50 µs) insulation, coil-contacts

345170050010	6A	ultra-slim PCB relay	1 ch/over	5	5 VDC
345170120010	6A	ultra-slim PCB relay	1 ch/over	5	12 VDC
345170240010	6A	ultra-slim PCB relay	1 ch/over	5	24 VDC
345170480010	6A	ultra-slim PCB relay	1 ch/over	5	48 VDC
345170600010	6A	ultra-slim PCB relay	1 ch/over	5	60 VDC

SSR - Solid State relays *Silent, high speed switching with long electrical life*

- 1-NO single circuit switching - 6A, 24 VDC / 2A, 240 VAC
- Sensitive DC input circuit
- 3.000 V insulation, input-output

				operating		switching	
				VDC	VAC	VDC	VAC
348170129024	6A	slim solid state relay	1 NO	8 - 17 VDC	1.5 - 33 VDC	1.5 - 33 VDC	1.5 - 33 VDC
348170249024	6A	slim solid state relay	1 NO	16 - 30 VDC	1.5 - 33 VDC	1.5 - 33 VDC	1.5 - 33 VDC
348170609024	6A	slim solid state relay	1 NO	35 - 72 VDC	1.5 - 33 VDC	1.5 - 33 VDC	1.5 - 33 VDC
348170248240	2A	slim solid state relay	1 NO	16 - 30 VDC	12 - 275 VAC	12 - 275 VAC	12 - 275 VAC
348170608240	2A	slim solid state relay	1 NO	35 - 72 VDC	12 - 275 VAC	12 - 275 VAC	12 - 275 VAC

9311 PCB-mount socket with hinged retain/release clip for 34 series relays

36 series Miniature "sugar cube" relay (15.5 x 19 x 15.2 mm)

- 1-pole changeover contact 10A
- DC coil - 360mW
- Wash tight: RTIII

361190124011	10A	"sugar cube" PCB relay	1 ch/over	-	12 VDC
361190244011	10A	"sugar cube" PCB relay	1 ch/over	-	24 VDC

41 series Low-profile PCB relay (15.7 x 29 x 12.6 mm)

- 1 and 2 pole changeover contact 8/12/16A
- DC coil - 400mW
- 8mm 6kV (1.2/50 µs) insulation, coil-contacts
- Flux proof: RT II (*standard*)

EMR - Electromechanical relays

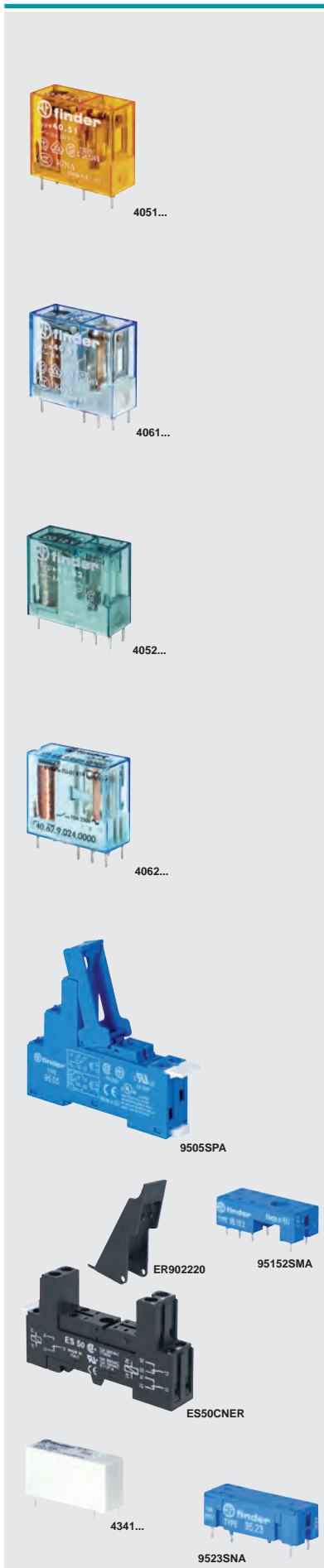
413190120010	12A	low-profile PCB relay	1 ch/over	3.5	12 VDC
413190240010	12A	low-profile PCB relay	1 ch/over	3.5	24 VDC
416190120010	16A	low-profile PCB relay	1 ch/over	5	12 VDC
416190240010	16A	low-profile PCB relay	1 ch/over	5	24 VDC
415290120010	8A	low-profile PCB relay	2 ch/over	5	12 VDC
415290240010	8A	low-profile PCB relay	2 ch/over	5	24 VDC

SSR - Solid State relays

- 1-NO single circuit switching 3/5A
- Silent, high speed switching with long electrical life
- 2.500 V insulation, input-output

				operating		switching	
				VDC	VAC	VDC	VAC
418170249024	5A	solid state PCB relay	1 NO	14 - 32 VDC	1.5 - 24 VDC	1.5 - 24 VDC	1.5 - 24 VDC
418170248240	3A	solid state PCB relay	1 NO	14 - 32 VDC	12 - 275 VAC	12 - 275 VAC	12 - 275 VAC

Other voltages available on request.



40 series Miniature PCB relays (25 x 29 x 12.4 mm)
 • 8 mm, 6kV (1.2/50µs) isolation, coil-contacts • Flux proof: RT II (standard)

type	current	description	contact	pin pitch	coil voltage
405180120000	10A	miniature PCB relay	1 ch/over	5 mm	12 VAC
405180240000	10A	miniature PCB relay	1 ch/over	5 mm	24 VAC
405180480000	10A	miniature PCB relay	1 ch/over	5 mm	48 VAC
405181100000	10A	miniature PCB relay	1 ch/over	5 mm	110 VAC
405182400000	10A	miniature PCB relay	1 ch/over	5 mm	240 VAC
405190120000	10A	miniature PCB relay	1 ch/over	5 mm	12 VDC
405190240000	10A	miniature PCB relay	1 ch/over	5 mm	24 VDC
405190360000	10A	miniature PCB relay	1 ch/over	5 mm	36 VDC
405190480000	10A	miniature PCB relay	1 ch/over	5 mm	48 VDC
405191100000	10A	miniature PCB relay	1 ch/over	5 mm	110 VDC
406180120000	16A	miniature PCB relay	1 ch/over	5 mm	12 VAC
406180240000	16A	miniature PCB relay	1 ch/over	5 mm	24 VAC
406180480000	16A	miniature PCB relay	1 ch/over	5 mm	48 VAC
406181100000	16A	miniature PCB relay	1 ch/over	5 mm	110 VAC
406182400000	16A	miniature PCB relay	1 ch/over	5 mm	240 VAC
406190120000	16A	miniature PCB relay	1 ch/over	5 mm	12 VDC
406190240000	16A	miniature PCB relay	1 ch/over	5 mm	24 VDC
406190360000	16A	miniature PCB relay	1 ch/over	5 mm	36 VDC
406190480000	16A	miniature PCB relay	1 ch/over	5 mm	48 VDC
406191100000	16A	miniature PCB relay	1 ch/over	5 mm	110 VDC
405280120000	8A	miniature PCB relay	2 ch/over	5 mm	12 VAC
405280240000	8A	miniature PCB relay	2 ch/over	5 mm	24 VAC
405280480000	8A	miniature PCB relay	2 ch/over	5 mm	48 VAC
405281100000	8A	miniature PCB relay	2 ch/over	5 mm	110 VAC
405282400000	8A	miniature PCB relay	2 ch/over	5 mm	240 VAC
405290120000	8A	miniature PCB relay	2 ch/over	5 mm	12 VDC
406290120000	10A	miniature PCB relay	2 ch/over	5 mm	12 VDC
405290240000	8A	miniature PCB relay	2 ch/over	5 mm	24 VDC
406290240000	10A	miniature PCB relay	2 ch/over	5 mm	24 VDC
405290360000	8A	miniature PCB relay	2 ch/over	5 mm	36 VDC
405290480000	8A	miniature PCB relay	2 ch/over	5 mm	48 VDC
405291100000	8A	miniature PCB relay	2 ch/over	5 mm	110 VDC

Other voltages available on request.

Other configurations: replace **5th digit** with following: (e.g. 4051**6**0120000)

- 6 Bistable (single coil) version
- 7 DC sensitive coil version 0.5 W

Sockets and accessories for 40 series relays for relay

95152SMA	PCB mount socket (with retaining clip) for relay	40 series
9505SPA*	surface/DIN mount socket (screw terminal) with retaining clip	40 series
95P5SPA*	surf/DIN mount socket (push-in terminal) with retaining clip	40 series
09518	8 way jumper link for sockets	9505
09758	8 way jumper link for sockets	95P5
46392/PS	sheet of (48) marking tags (mounts onto retain clip or holder)	9505/P5
09700	tag holder for 46392/PS (mounts directly onto socket) (10pcs)	9505/P5
* Accepts plug-in LED, diode, timing modules (plugs directly into socket) see page J-8		
ES50CNER	Ersce black surface/DIN mount socket (screw terminal)	40 series
ER902220	spring securing/release clip for socket (10pcs)	ES50
ER902230	clip-on marking plate (top or bottom) for socket (10pcs)	ES50

43 series Low-profile slimline PCB relays (15.4 x 28.6 x 10.2 mm)

- 1-pole changeover contact 10A
- Very high coil-contact isolation 10 mm, 6kV (1.2/50µs)
- Flux proof: RT II (standard)

434170122000	10A	low profile slim PCB relay	1 ch/over	3.2 mm	12 VDC
434170242000	10A	low profile slim PCB relay	1 ch/over	3.2 mm	24 VDC
9523SNA		PCB-mount socket 43 series relay (with retaining clip)			4341



46618...



46619...



46528...



9711



9702SPA



5514...

46 series Miniature industrial plug-in relays (32.8 x 29 x 12.4 mm)

- AC and DC coil voltages
- Lockable test/override button
- 8 mm, 6kV (1.2/50µs) isolation, coil-contacts
- Manual override facility and mechanical flag indication of relay status
- Plug-in or direct connection via robust faston terminals (1 pole 4.75 / 2 pole 2.5 mm)

type	current	description	contact	coil voltage
466180120040	16A	miniature plug-in relay	1 ch/over	12 VAC
466180240040	16A	miniature plug-in relay	1 ch/over	24 VAC
466180480040	16A	miniature plug-in relay	1 ch/over	48 VAC
466181100040	16A	miniature plug-in relay	1 ch/over	110 VAC
466182300040	16A	miniature plug-in relay	1 ch/over	230 VAC
466190120040	16A	miniature plug-in relay	1 ch/over	12 VDC
466190240040	16A	miniature plug-in relay	1 ch/over	24 VDC
466190480040	16A	miniature plug-in relay	1 ch/over	48 VDC
466191100040	16A	miniature plug-in relay	1 ch/over	110 VDC
465280120040	8A	miniature plug-in relay	2 ch/over	12 VAC
465280240040	8A	miniature plug-in relay	2 ch/over	24 VAC
465280480040	8A	miniature plug-in relay	2 ch/over	48 VAC
465281100040	8A	miniature plug-in relay	2 ch/over	110 VAC
465282300040	8A	miniature plug-in relay	2 ch/over	230 VAC
465290120040	8A	miniature plug-in relay	2 ch/over	12 VDC
465290240040	8A	miniature plug-in relay	2 ch/over	24 VDC
465290480040	8A	miniature plug-in relay	2 ch/over	48 VDC
465291100040	8A	miniature plug-in relay	2 ch/over	110 VDC

Other configurations: replace **last two digits** with following: (e.g.4661801200**54**)

- 54 internal LED indicator for AC relays
- 74 internal LED indicator for DC relays

Sockets and accessories for 46 series relays

		for relay
9711	PCB mount socket for relay	4661
9712	PCB mount socket for relay	4652
9701SPA*	surface/DIN mount socket (screw terminal) with retaining clip	ser 4661
9702SPA*	surface/DIN mount socket (screw terminal) with retaining clip	ser 4652
97P1SPA*	surface/DIN mount socket (push-in terminal) with retaining clip	ser 4661
97P2SPA*	surface/DIN mount socket (push-in terminal) with retaining clip	ser 4652
04607	DIN rail mountable support bracket for relays	4661/52
09518	8 way jumper link for sockets	9701/02
09758	8 way jumper link for sockets	97P1/2
46392/PS	sheet of (48) marking tags (mounts onto retain clip or holder)	970/P1/2
09700	tag holder for 46392/PS tags (mounts directly onto socket) (10pcs)	970/P1/2

* Accepts plug-in LED, diode, timing modules (plugs directly into socket) see page J-8

55 series Miniature industrial PCB mount relays (32.8 x 29 x 12.4 mm)

PCB mount termination

551280120000	10A	miniature PCB mount relay	2 ch/over	12 VAC
551280240000	10A	miniature PCB mount relay	2 ch/over	24 VAC
551281100000	10A	miniature PCB mount relay	2 ch/over	110 VAC
551282400000	10A	miniature PCB mount relay	2 ch/over	230 VAC
551290120000	10A	miniature PCB mount relay	2 ch/over	12 VDC
551290240000	10A	miniature PCB mount relay	2 ch/over	24 VDC
551290480000	10A	miniature PCB mount relay	2 ch/over	48 VDC
551291100000	10A	miniature PCB mount relay	2 ch/over	110 VDC
551292200000	10A	miniature PCB mount relay	2 ch/over	220 VDC
551480120000	7A	miniature PCB mount relay	4 ch/over	12 VAC
551480240000	7A	miniature PCB mount relay	4 ch/over	24 VAC
551481100000	7A	miniature PCB mount relay	4 ch/over	110 VAC
551482400000	7A	miniature PCB mount relay	4 ch/over	230 VAC
551490120000	7A	miniature PCB mount relay	4 ch/over	12 VDC
551490240000	7A	miniature PCB mount relay	4 ch/over	24 VDC
551490480000	7A	miniature PCB mount relay	4 ch/over	48 VDC
551491100000	7A	miniature PCB mount relay	4 ch/over	110 VDC
551492200000	7A	miniature PCB mount relay	4 ch/over	220 VDC



55 series Miniature industrial relays (37.2 x 20.7 x 27.7 mm)

Plug-in termination

- 2, 3 and 4 pole versions
- AC and DC coil voltages
- Plug-in or direct PCB mounting
- Lockable test/override button (*plug-in version only*)
- Mechanical flag indication of relay status (*plug-in version only*)

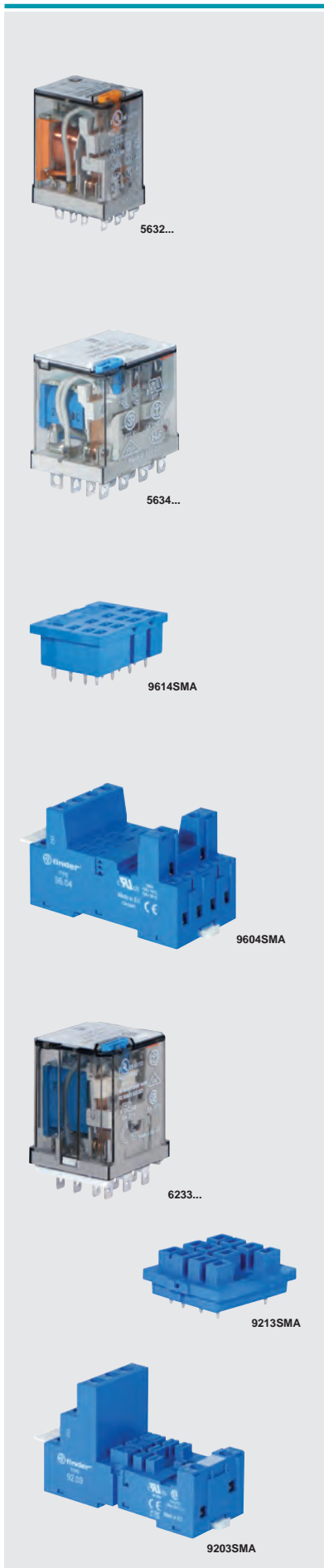
type	current	description	contact	coil voltage
2 changeover contacts				
553280120040	10A	miniature plug-in relay	2 changeover	12 VAC
553280240040	10A	miniature plug-in relay	2 changeover	24 VAC
553280360040	10A	miniature plug-in relay	2 changeover	36 VAC
553280480040	10A	miniature plug-in relay	2 changeover	48 VAC
553280600040	10A	miniature plug-in relay	2 changeover	60 VAC
553281100040	10A	miniature plug-in relay	2 changeover	110 VAC
553282300040	10A	miniature plug-in relay	2 changeover	240 VAC
553290120040	10A	miniature plug-in relay	2 changeover	12 VDC
553290240040	10A	miniature plug-in relay	2 changeover	24 VDC
553290360040	10A	miniature plug-in relay	2 changeover	36 VDC
553290480040	10A	miniature plug-in relay	2 changeover	48 VDC
553290600040	10A	miniature plug-in relay	2 changeover	60 VDC
553291100040	10A	miniature plug-in relay	2 changeover	110 VDC
553292200040	10A	miniature plug-in relay	2 changeover	220 VDC
4 changeover contacts				
553480120040	7A	miniature plug-in relay	4 changeover	12 VAC
553480240040	7A	miniature plug-in relay	4 changeover	24 VAC
553480360040	7A	miniature plug-in relay	4 changeover	36 VAC
553480480040	7A	miniature plug-in relay	4 changeover	48 VAC
553480600040	7A	miniature plug-in relay	4 changeover	60 VAC
553481100040	7A	miniature plug-in relay	4 changeover	110 VAC
553482400040	7A	miniature plug-in relay	4 changeover	240 VAC
553490120040	7A	miniature plug-in relay	4 changeover	12 VDC
553490240040	7A	miniature plug-in relay	4 changeover	24 VDC
553490360040	7A	miniature plug-in relay	4 changeover	36 VDC
553490480040	7A	miniature plug-in relay	4 changeover	48 VDC
553490600040	7A	miniature plug-in relay	4 changeover	60 VDC
553491100040	7A	miniature plug-in relay	4 changeover	110 VDC
553492200040	7A	miniature plug-in relay	4 changeover	220 VDC

Other configurations: replace **last two digits** with following: (e.g.5532801200**74**)

54	internal LED indicator for	AC relays
74	internal LED indicator for	DC relays

Sockets and accessories for 55 series relays

type	description	for relay
9412SMA	2 pole PCB mount socket for relay	5532
9414SMA	4 pole PCB mount socket for relay	5534
9432SMA	2 pole flange mount socket (<i>solder terminal</i>)	5532
9434SMA	4 pole flange mount socket (<i>solder terminal</i>)	5534
9402SPA*	surface/DIN mnt socket (<i>screw terminal</i>) with retaining clip	5532
9404SPA*	surface/DIN mnt socket (<i>screw terminal</i>) with retaining clip	5534
94P4SPA*	surface/DIN mount socket (<i>push-in terminal</i>) with retaining clip	5532/4
05627	DIN rail mountable support bracket for	5532/34
09406	6 way jumper link (<i>bridge bar</i>) for socket	9402/04
09456	6 way jumper link (<i>bridge bar</i>) for socket	94P4
09471	retaining clip	(10pcs) 94 series
46392/PS	sheet of (48) marking tags (<i>mounts onto retain clip or holder</i>)	940/P2/4
09700	tag holder for 46392/PS tags (<i>mounts directly onto socket</i>) (10pcs)	940/P2/4
* Accepts plug-in LED, diode, timing modules (plugs directly into socket) see pg J-8		
ES152NCNER	Ersce black surface/DIN mount socket (<i>screw terminal</i>)	5532
ES154NCNER	Ersce black surface/DIN mount socket (<i>screw terminal</i>)	5534
ER600420	spring securing/release clip for socket	(10pcs) ES15
ER600210	clip-on marking plate (<i>top or bottom</i>) for socket	(10pcs) ES15



56 series Miniature power relays (37.2 x 20.7(2pole) 40.8(4pole) x 27.7 mm)

- Faston 187, 4.8 x 0.5 mm termination
- Mechanical flag indication of relay status
- Lockable test/override button

type	current	description	contact configuration	coil voltage
563280120040	12A	miniature power relay	2 changeover	12 VAC
563280240040	12A	miniature power relay	2 changeover	24 VAC
563280480040	12A	miniature power relay	2 changeover	48 VAC
563281100040	12A	miniature power relay	2 changeover	110 VAC
563282400040	12A	miniature power relay	2 changeover	240 VAC
563290120040	12A	miniature power relay	2 changeover	12 VDC
563290240040	12A	miniature power relay	2 changeover	24 VDC
563290480040	12A	miniature power relay	2 changeover	48 VDC
563290600040	12A	miniature power relay	2 changeover	60 VDC
563291100040	12A	miniature power relay	2 changeover	110 VDC
563292200040	12A	miniature power relay	2 changeover	220 VDC
563480120040	12A	miniature power relay	4 changeover	12 VAC
563480240040	12A	miniature power relay	4 changeover	24 VAC
563480480040	12A	miniature power relay	4 changeover	48 VAC
563481100040	12A	miniature power relay	4 changeover	110 VAC
563482400040	12A	miniature power relay	4 changeover	240 VAC
563490120040	12A	miniature power relay	4 changeover	12 VDC
563490240040	12A	miniature power relay	4 changeover	24 VDC
563490480040	12A	miniature power relay	4 changeover	48 VDC
563490600040	12A	miniature power relay	4 changeover	60 VDC
563491100040	12A	miniature power relay	4 changeover	110 VDC
563492200040	12A	miniature power relay	4 changeover	220 VDC

Other configurations: replace **last two digits** with following: (e.g 563280120040**74**)

- 54** internal LED indicator for AC relays
- 74** internal LED indicator for DC relays

PCB termination: replace **3rd digit 56 (3)** with a **(4)** (e.g.56**4**280120040)

Sockets and accessories for 56 series relays for relay

9612SMA	PCB mount socket for relay	5632
9614SMA	PCB mount socket for relay	5634
9602SPA*	surface/DIN mount socket (screw terminal) with retaining clip	5632
9604SMA*	surface/DIN mount socket (screw terminal) with retaining clip	5634
05627	DIN rail mountable support bracket	5632
05647	DIN rail mountable support bracket	5634
* Accepts plug-in LED, diode, timing modules (plugs directly into socket) see page J-8		
095004	spare marking tag (10pcs) for sockets	5632
090002	spare marking tag (10pcs) for sockets	5634

62 series Plug-in power relays (49.1 x 38.2 x 35.8 mm)

- Lockable test/override button
- Mechanical flag indication of relay status
- Plug-in or faston 187 (4.8 x 0.5 mm) termination
- Reinforced insulation between coil and contacts to EN60335-1

623380120040	16A	plug-in industrial power relay	3 changeover	12 VAC
623380240040	16A	plug-in industrial power relay	3 changeover	24 VAC
623380480040	16A	plug-in industrial power relay	3 changeover	48 VAC
623381100040	16A	plug-in industrial power relay	3 changeover	110 VAC
623382400040	16A	plug-in industrial power relay	3 changeover	240 VAC
623384000040	16A	plug-in industrial power relay	3 changeover	400 VAC
623390120040	16A	plug-in industrial power relay	3 changeover	12 VDC
623390240040	16A	plug-in industrial power relay	3 changeover	24 VDC
623390480040	16A	plug-in industrial power relay	3 changeover	48 VDC
623391100040	16A	plug-in industrial power relay	3 changeover	110 VDC
623392200040	16A	plug-in industrial power relay	3 changeover	220 VDC

Other configurations: replace **last two digits** with following: (e.g 6233801200**74**)

- 54** internal LED indicator for AC relays
- 74** internal LED indicator for DC relays

Sockets and accessories for 62 series relays for relay

9213SMA	PCB mount socket for relay	6233
9233SMA	panel mnt (flange) solder terminal socket for relay	6233
9203SMA	surface/DIN mount socket (screw terminal) standard	6233
06207	DIN rail mountable support bracket (top mount)	6233
06208	DIN rail mountable support bracket (rear mount)	6233



60 series General purpose plug-in relays (54.2 x 32.5 x 36.4 mm)

- AC and DC coil voltages
- Lockable test/override button
- 2 pole (8 pin) and 3 pole (11 pin) changeover versions
- 8pin (2pole) 11pin (3pole) round pin plug-in termination
- Current sensing coil available: AC: 0.1 - 2.5A \ DC: 0.1 - 2.0A
- Mechanical flag indication of relay status and manual override facility

type	current	pins	description	contact configuration	coil voltage
601280120040	10A	8 pin	plug-in industrial relay	2 ch/over	12 VAC
601280240040	10A	8 pin	plug-in industrial relay	2 ch/over	24 VAC
601280360040	10A	8 pin	plug-in industrial relay	2 ch/over	36 VAC
601280480040	10A	8 pin	plug-in industrial relay	2 ch/over	48 VAC
601280600040	10A	8 pin	plug-in industrial relay	2 ch/over	60 VAC
601281100040	10A	8 pin	plug-in industrial relay	2 ch/over	110 VAC
601282400040	10A	8 pin	plug-in industrial relay	2 ch/over	240 VAC
601284000040	10A	8 pin	plug-in industrial relay	2 ch/over	400 VAC
601290120040	10A	8 pin	plug-in industrial relay	2 ch/over	12 VDC
601290240040	10A	8 pin	plug-in industrial relay	2 ch/over	24 VDC
601290360040	10A	8 pin	plug-in industrial relay	2 ch/over	36 VDC
601290480040	10A	8 pin	plug-in industrial relay	2 ch/over	48 VDC
601290600040	10A	8 pin	plug-in industrial relay	2 ch/over	60 VDC
601291100040	10A	8 pin	plug-in industrial relay	2 ch/over	110 VDC
601292200040	10A	8 pin	plug-in industrial relay	2 ch/over	220 VDC
601380120040	10A	11 pin	plug-in industrial relay	3 ch/over	12 VAC
601380240040	10A	11 pin	plug-in industrial relay	3 ch/over	24 VAC
601380360040	10A	11 pin	plug-in industrial relay	3 ch/over	36 VAC
601380480040	10A	11 pin	plug-in industrial relay	3 ch/over	48 VAC
601380600040	10A	11 pin	plug-in industrial relay	3 ch/over	60 VAC
601381100040	10A	11 pin	plug-in industrial relay	3 ch/over	110 VAC
601382400040	10A	11 pin	plug-in industrial relay	3 ch/over	240 VAC
601384000040	10A	11 pin	plug-in industrial relay	3 ch/over	400 VAC
601390120040	10A	11 pin	plug-in industrial relay	3 ch/over	12 VDC
601390240040	10A	11 pin	plug-in industrial relay	3 ch/over	24 VDC
601390360040	10A	11 pin	plug-in industrial relay	3 ch/over	36 VDC
601390480040	10A	11 pin	plug-in industrial relay	3 ch/over	48 VDC
601390600040	10A	11 pin	plug-in industrial relay	3 ch/over	60 VDC
601391100040	10A	11 pin	plug-in industrial relay	3 ch/over	110 VDC
601392200040	10A	11 pin	plug-in industrial relay	3 ch/over	220 VDC

Other configurations: replace **last two digits** with following: (e.g. 6012801200**54**)

54	internal LED indicator for	AC relays
74	internal LED indicator for	DC relays
46392/PS	sheet of (48) marking tags (<i>mounts directly onto relay</i>)	6012/3

Sockets and accessories for 60 series relays for relay

9012	panel mnt (<i>flange</i>) solder terminal socket	for relay	6012
9013	panel mnt (<i>flange</i>) solder terminal socket for relay	for relay	6013
9014	PCB mount (8 pin) socket for relay (<i>diameter 20.5 mm</i>)	for relay	6012
90141	PCB mount (8 pin) socket for relay (<i>diameter 17.5 mm</i>)	for relay	6012
9015	PCB mount (11 pin) socket for relay (<i>diameter 22.0 mm</i>)	for relay	6013
90151	PCB mount (11 pin) socket for relay (<i>diameter 19.0 mm</i>)	for relay	6013
9020SMA	surface/DIN mount socket (<i>screw terminal</i>) standard	for relay	6012
9021SMA	surface/DIN mount socket (<i>screw terminal</i>) standard	for relay	6013
9022SMA	surface/DIN mount socket (<i>screw terminal</i>) oval	for relay	6012
9023SMA	surface/DIN mount socket (<i>screw terminal</i>) oval	for relay	6013
9026SMA	surface/DIN mount socket (<i>screw terminal</i>) square	for relay	6012
9027SMA	surface/DIN mount socket (<i>screw terminal</i>) square	for relay	6013
9048SMA	surface/DIN mount socket (<i>screw terminal</i>) rectangular	for relay	6012
9049SMA	surface/DIN mount socket (<i>screw terminal</i>) rectangular	for relay	6013
9002SMA*	surface/DIN mount socket (<i>screw terminal</i>) for modules	for relay	6012
9003SMA*	surface/DIN mount socket (<i>screw terminal</i>) for modules	for relay	6013
09006	6 way jumper link (<i>bridge bar</i>) for sockets		9002/3
09002	spare marking tag for sockets	(10pcs)	9002/3
* Accepts plug-in LED, diode, timing modules (<i>plugs directly into socket</i>) see page J-8			
ES8CNER	Ersce	black surface/DIN mount socket (<i>screw terminal</i>)	6012
ES11CNER	Ersce	black surface/DIN mount socket (<i>screw terminal</i>)	6013



6531...



6531...



6682...



6622...PCB

65 series High power relays (43.3 x 32.2 x 36.6 mm)

- AC and DC coil voltages
- Flange mount with faston 250 (6.3 x 0.5 mm) termination
- ATEX compliant options (*available on request*)
- Reinforced insulation between coil and contacts to EN60335-1

type	current	description	contact configuration	coil voltage
20A 1 NO + 1 NC				
653180120000	20A	plug-in industrial power relay	1 NO + 1 NC	12 VAC
653180240000	20A	plug-in industrial power relay	1 NO + 1 NC	24 VAC
653180480000	20A	plug-in industrial power relay	1 NO + 1 NC	48 VAC
653181100000	20A	plug-in industrial power relay	1 NO + 1 NC	110 VAC
653182400000	20A	plug-in industrial power relay	1 NO + 1 NC	240 VAC
653184000000	20A	plug-in industrial power relay	1 NO + 1 NC	400 VAC
653190120000	20A	plug-in industrial power relay	1 NO + 1 NC	12 VDC
653190240000	20A	plug-in industrial power relay	1 NO + 1 NC	24 VDC
653190480000	20A	plug-in industrial power relay	1 NO + 1 NC	48 VDC
653191100000	20A	plug-in industrial power relay	1 NO + 1 NC	110 VDC
653192200000	20A	plug-in industrial power relay	1 NO + 1 NC	220 VDC
30A 1 NO				
• ≥ 3 mm contact gap				
653180120300	30A	plug-in industrial power relay	1 NO	12 VAC
653180240300	30A	plug-in industrial power relay	1 NO	24 VAC
653180480300	30A	plug-in industrial power relay	1 NO	48 VAC
653181100300	30A	plug-in industrial power relay	1 NO	110 VAC
653182400300	30A	plug-in industrial power relay	1 NO	240 VAC
653184000300	30A	plug-in industrial power relay	1 NO	400 VAC
653190120300	30A	plug-in industrial power relay	1 NO	12 VDC
653190240300	30A	plug-in industrial power relay	1 NO	24 VDC
653190480300	30A	plug-in industrial power relay	1 NO	48 VDC
653191100300	30A	plug-in industrial power relay	1 NO	110 VDC
653192200300	30A	plug-in industrial power relay	1 NO	220 VDC

Other configurations:

PCB mount terminals: replace 3rd digit 65 (3) with (6) (e.g. 656180120000)

Accessories for 65 series relays

- 06507** DIN rail mounting frame (*terminals facing forward*)
- 06508** DIN rail mounting frame (*terminals facing down*)

66 series High power 2 pole relays (31 x 51.5 x 33.5 mm)

- AC and DC coil voltages
- Faston 250 (6.3 x 0.8 mm) termination
- 8 mm, 6kV (1.2/50 μs) isolation, coil-contacts
- 2 pole changeover contacts 30A NO - 10A NC
- Reinforced insulation between coil and contacts to EN60335-1

30A 2 changeover

668280120000	30A	plug-in industrial power relay	2 changeover	12 VAC
668280240000	30A	plug-in industrial power relay	2 changeover	24 VAC
668281100000	30A	plug-in industrial power relay	2 changeover	110 VAC
668282400000	30A	plug-in industrial power relay	2 changeover	240 VAC
668290120000	30A	plug-in industrial power relay	2 changeover	12 VDC
668290240000	30A	plug-in industrial power relay	2 changeover	24 VDC
668291100000	30A	plug-in industrial power relay	2 changeover	110 VDC

PCB termination: replace 3rd digit 66 (8) with (2) (e.g. 662280120000)

Accessories for 66 series relays

- 06607** DIN rail mounting frame (*terminals facing forward*)



9902...



9902...59



9902...99



9902...09



8630...



86000...

Plug-in modules - LED / Diode / Timer

Plug-in modules are convenient add-on devices for relays which offer LED indication (*for ease of viewing relay status from a distance*), diode protection, RC circuits, bypass and timing facilities for all socket-mounted plug-in relays. The modules simply plug into specific sockets to enhance the relays functionality.

type	LED colour	description	voltage
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Diode module

Recovery diode modules are used for DC applications, reverse voltage peaks of the coil are short circuited by the recovery diode, release time is increased by a factor of 3.

9902300000	–	diode module (<i>standard polarity A1/+</i>)	6 - 220 VDC
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LED module

Used for AC and DC, the LED indicator illuminates when the relay coil is energised. It is essential to connect "+" to terminal A1 in DC applications.

9902002459	green	plug-in LED module	6 - 24 VAC/DC
9902006059	green	plug-in LED module	28 - 60 VAC/DC
9902023059	green	plug-in LED module	110 - 240 VAC/DC

LED + diode module

Recovery diode + LED module are used for DC, reverse voltage peaks are short circuited by the recovery diode (*positive to terminal A1*), release time is increased by approximately 3 times, if this is undesirable use a Varistor or RC module. LED indicator illuminates when coil is energised.

9902902499	green	plug-in LED + diode module	6 - 24 VDC
9902906099	green	plug-in LED + diode module	28 - 60 VDC
9902922099	green	plug-in LED + diode module	110 - 220 VDC

LED + varistor module

LED + Varistor modules are used for AC and DC coils, reverse voltage peaks of the relay coil are limited by the Varistor to approximately 2.5 times the nominal voltage of the supply. Insignificant increase in release times.

9902002498	green	plug-in LED + Varistor module	6 - 24 VAC/DC
9902006098	green	plug-in LED + Varistor module	28 - 60 VAC/DC
9902023098	green	plug-in LED + Varistor module	110 - 240 VAC/DC

RC circuit module

RC circuit modules are used for AC and DC applications. The reverse voltage peaks of the coil are limited by the RC module to approximately 2.5 times the nominal supply voltage. Insignificant increase in release times.

9902002409	green	plug-in RC module for AC and DC lines	6 - 24 VAC/DC
9902006009	green	plug-in RC module for AC and DC lines	28 - 60 VAC/DC
9902023009	green	plug-in RC module for AC and DC lines	110 - 240 VAC/DC

Residual current bypass module

Bypass modules are used in applications for 110 and 220 VAC relays with a tendency to fail to release, mainly caused by residual currents from AC proximity switches or inductive coupling caused by long parallel lying AC control lines.

9902823007	–	plug-in residual current bypass module	110 - 240 VAC
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Timer modules

- Multi-function, multi-voltage timer module
- Time range: 1s, 10s, 100s, 10m, 100m, 10hr, 100hr (*adjustable*)
- Plugs directly into sockets converting standard relays into timing devices

Note: Can be used with **9002/3, 9203, 9604** sockets

863000240000	green	multi-range, bi-functional timer module	12 - 24 VAC/DC
863082400000	green	multi-range, bi-functional timer module	240 VAC
860002400000	green	multi-range, multi-function timer module	12 - 240 VAC/DC

39 Series Master**INTERFACE** - slimline relay interface modules

- Space saving 6.2 mm wide
- Connections for 16 way jumper links (*bridging bars*)
- Integral LED coil indication and protection circuit
- Secure relay retention with easy ejection clip
- DIN 35 rail mounting (EN60715)

type	current voltage	operating voltage	switching	contact	type terminal	description
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MasterPLUS relay interface modules (*for general use in any type of system and application*)

- Accepts output fuse module (**09363**) for quick/easy space efficient protection of output circuits

MasterPLUS - EMR **electromechanical relays** (H) 87 x (W) 6.2 x (D) 91 mm

393100120060	6A	12 VAC/DC	up to 400V	1 ch/over	screw	relay interface module
393100240060	6A	24 VAC/DC	up to 400V	1 ch/over	screw	relay interface module
396100240060	6A	24 VAC/DC	up to 400V	1 ch/over	push-in	relay interface module
393182300060	6A	230 VAC	up to 400V	1 ch/over	screw	relay interface module

MasterPLUS - SSR **solid state relays**

393070129024	6A	12 VDC	1.5 - 33 VDC	1 NO	screw	relay interface module
393070249024	6A	24 VDC	1.5 - 33 VDC	1 NO	screw	relay interface module
396070249024	6A	24 VDC	1.5 - 33 VDC	1 NO	push-in	relay interface module
396070248240	2A	24 VDC	230 VAC	1 NO	push-in	relay interface module

Plug-in output fuse module - for Master**PLUS** interface - accepts std 20 x 5 mm fuses up to 6A, 250V
 - Quick easy plug-in connection to socket (fuse condition visibility with inspection window)

09363	fuse	-	plug-in	output fuse module for Master PLUS interface		
093630024	fuse	24 VAC/DC	plug-in	output fuse module with LED fuse status indicator		
093638230	fuse	230 VAC	plug-in	output fuse module with LED fuse status indicator		

MasterINPUT relay interface module

- Interface between auxiliary contacts, sensors, limit switches and PLC's/controllers
- Permits full termination of input devices (*no additional terminals required*)
- Quick and easy distribution of supply voltage with jumper links
- Gold plated output contacts for improved compatibility with low energy PLC inputs

MasterINPUT - EMR **electromechanical relays**

394100245060	6A	24 VAC/DC	up to 400V	1 ch/over	screw	relay interface module
397100245060	6A	24 VAC/DC	up to 400V	1 ch/over	push-in	relay interface module
394182305060	6A	230 VAC	up to 400V	1 ch/over	screw	relay interface module

MasterINPUT - SSR **solid state relays**

394000249024	6A	24 VAC/DC	1.5 - 33 VDC	1 NO	screw	relay interface module
397070249024	6A	24 VDC	1.5 - 33 VDC	1 NO	push-in	relay interface module
394000248240	2A	24 VAC/DC	230 VAC	1 NO	screw	relay interface module

MasterOUTPUT relay interface module

- Interface between PLC's / controllers and output devices, valves, motors etc...
- Quick and easy distribution of supply voltage with jumper link

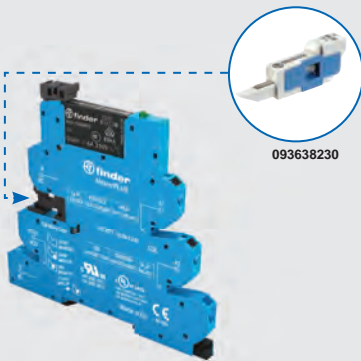
MasterOUTPUT - EMR **electromechanical relays**

392100240060	6A	24 VAC/DC	up to 400V	1 ch/over	screw	relay interface module
395100240060	6A	24 VAC/DC	up to 400V	1 ch/over	push-in	relay interface module
392182300060	6A	230 VAC	up to 400V	1 ch/over	screw	relay interface module

MasterOUTPUT - SSR **solid state relays**

392070129024	6A	12 VDC	1.5 - 33 VDC	1 NO	screw	relay interface module
392070249024	6A	24 VDC	1.5 - 33 VDC	1 NO	screw	relay interface module
395070249024	6A	24 VDC	1.5 - 33 VDC	1 NO	push-in	relay interface module
392082309024	2A	230 VAC	1.5 - 33 VDC	1 NO	screw	relay interface module

Accessories for 39 series interface modules **see overleaf...**



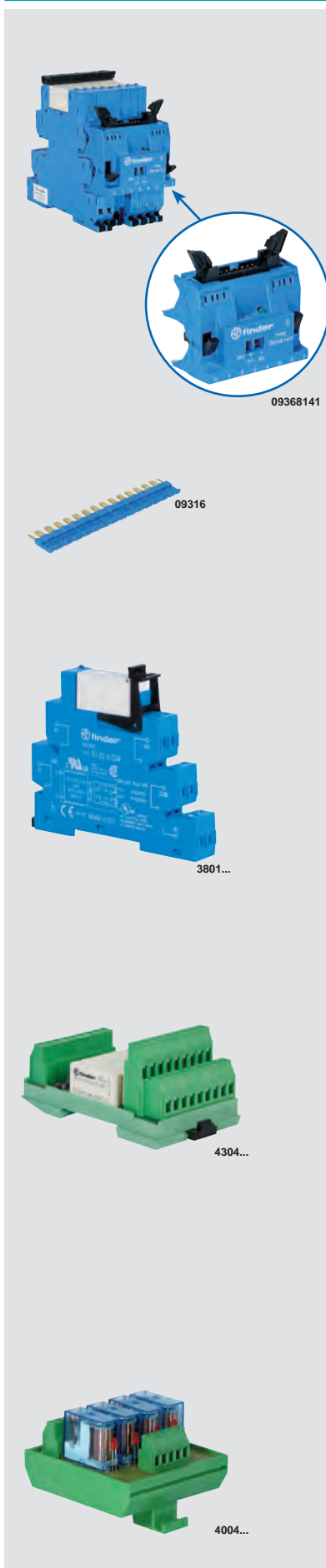
3931...



3960...



3941...



(Continued from previous page)... Accessories for 39 series relay interface modules

type	No. of ways	colour	description			
16-way jumper link (bridging bar) - possibility of multiple connection, side by side						
09316	16 way	blue	plug-in	jumper link (bridge bar) for interfaces		
093160	16 way	black	plug-in	jumper link (bridge bar) for interfaces		
093161	16 way	red	plug-in	jumper link (bridge bar) for interfaces		

Separator dual-purpose (1.8 mm or 6.2 mm separation)
 - useful for the visual separation of different groups or voltages of neighbouring interfaces,

09360 separator plastic separator for interface modules (1.8 or 6.2 mm separation)

Terminal doubler - (for Push-in terminal sockets only) Max. wire size 2 x 1.5 mm²

09363 doubler 6A - 300V terminal doubler (for two cables) push-in terminal sockets

MasterADAPTOR - interconnects 8 interface modules (A1/A2 and power supply terminals)
 - connection of up to 8 interface modules to PLC outputs via 14-pole ribbon cable

09368141 adaptor 24 VDC MasterADAPTOR easy connection of up to 8 interface modules

46392/PS marking 6 x 12 mm sheet of 48 marking tags (mounts onto retain clip)

38 series relay interface module (1 pole 16A / 2 pole 8A) (H) 90 x (W) 14 x (D) 77 mm

- Sensitive DC coil or AC/DC coil versions
- Integral coil indication and protection circuit
- Easy ejection of relay using retaining clip
- DIN rail mounting (EN 60715)

type	switch current	supply voltage	switching voltage	contact	type terminal	description
Electromechanical relays						
380170240050*	16A	24 VDC	up to 400V	1 ch/over	screw	relay interface module
380100240060*	16A	24 VAC/DC	up to 400V	1 ch/over	screw	relay interface module
380102400060*	16A	240 VAC/DC	up to 400V	1 ch/over	screw	relay interface module
* Special wiring for loads greater than 10A						
385170240050	8A	12 VDC	up to 400V	2 ch/over	screw	relay interface module
385270120050	8A	12 VDC	up to 400V	2 ch/over	screw	relay interface module
385270240050	8A	24 VDC	up to 400V	2 ch/over	screw	relay interface module
385200240060	8A	24 VAC/DC	up to 400V	2 ch/over	screw	relay interface module
385202400060	8A	240 VAC/DC	up to 400V	2 ch/over	screw	relay interface module

Solid state relays

383170249024 5A 24 VDC 1.5 - 24 VDC 1 NO screw relay interface module
 383170248240 3A 24 VDC 12 - 275 VAC 1 NO screw relay interface module

09308 8 way blue plug-in jumper link (bridge bar) for interfaces

4/8 way relay interface modules

- Incorporates LED relay status indication and diode protected coils
- Negative common (standard) / positive (+) common (on request)

4304 series relay interface module 4-way (H) 90 x (W) 54 x (D) 30 mm (with relays)
 • 4-way DIN rail mounting relay interface module (43 series relay 10A)

43049024 10A 24 VDC up to 400V ch/over 4 way fixed relay interface

Plug-in version for easy relay replacement (relays 4341 to be ordered separately)

43049000P 10A 12/24 VDC up to 400V ch/over 4 way plug-in version

34 series relay interface module 8-way (H) 90 x (W) 54 x (D) 45 mm (with relays)
 • 8-way DIN rail mounting relay interface module (34 series relay 6A)

34089024 6A 24 VDC up to 400V ch/over 8 way fixed relay interface

4004 series relay interface module 4-way (H) 76 x (W) 71 x (D) 55 mm (with relays)

• 4-way DIN rail mounting relay interface module (40 series relay 10A)

40049024 10A 24 VDC up to 400V ch/over 4 way fixed relay interface

40048230 10A 230 VAC up to 400V ch/over 4 way fixed relay interface

Plug-in version for easy relay replacement (relays 4051 to be ordered separately)

40049000P 10A 12/24 VDC up to 400V 4 way plug-in version

40048000P 10A 230 VAC up to 400V 4 way plug-in version



2232...



2234...



02235



192100240000

Modular contactors 25A

- Modular DIN rail mount
- Auto - On - Off selector
- Continuous duty coils and contacts
- AC/DC silent coil (*with varistor protection*)
- Mechanical flag and LED indicators as standard
- Clip-on auxiliary contact module available (1NO+1NC or 2NO)
- Protective separation (*reinforced insulation*) between coil and contacts

type	rated power		description	modules width in 17.5 mm	contact configuration	coil voltage AC/DC
	AC-1 (A)	AC-3 kW (230V)				
2 pole modular contactor			25A	(H) 89 x (W) 17.5 (D) 61 mm		

- Compact (*one module wide*) 17.5 mm

223200124340	25A	1.0 kW *	modular contactor	1	2 NO	12V
223200244340	25A	1.0 kW *	modular contactor	1	2 NO	24V
223200484340	25A	1.0 kW *	modular contactor	1	2 NO	48V
223202304340	25A	1.0 kW *	modular contactor	1	2 NO	230V
223200124440	25A	1.0 kW *	modular contactor	1	2 NC	12V
223200244440	25A	1.0 kW *	modular contactor	1	2 NC	24V
223202304440	25A	1.0 kW *	modular contactor	1	2 NC	230V
223200124540	25A	1.0 kW *	modular contactor	1	1NO + 1NC	12V
223200244540	25A	1.0 kW *	modular contactor	1	1NO + 1NC	24V
223200484540	25A	1.0 kW *	modular contactor	1	1NO + 1NC	48V
223202304540	25A	1.0 kW *	modular contactor	1	1NO + 1NC	230V

* Single phase motor rating 230 VAC

4 pole modular contactor			25A	(H) 89 x (W) 35 (D) 61 mm		
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type	rated power		description	modules width in 17.5 mm	contact configuration	coil voltage AC/DC
	AC-1 (A)	AC-3 kW (400V)				

- Compact (*two modules wide*) 35 mm

223400124340	25A	4.0 kW	modular contactor	2	4 NO	12V
223400244340	25A	4.0 kW	modular contactor	2	4 NO	24V
223402304340	25A	4.0 kW	modular contactor	2	4 NO	230V
223400124740	25A	4.0 kW	modular contactor	2	3NO + 1NC	12V
223400244740	25A	4.0 kW	modular contactor	2	3NO + 1NC	24V
223402304740	25A	4.0 kW	modular contactor	2	3NO + 1NC	230V
223400124640	25A	4.0 kW	modular contactor	2	2NO + 2NC	12V
223400244640	25A	4.0 kW	modular contactor	2	2NO + 2NC	24V
223402304640	25A	4.0 kW	modular contactor	2	2NO + 2NC	230V

Accessories for above contactors

Clip-on auxiliaries for above contactors (H) 84 x (W) 8.8 (D) 61 mm

02235	6A	clip-on auxiliary contact block		0.5	1NO + 1NC	
02233	6A	clip-on auxiliary contact block		0.5	2 NO	
02218	8-way	jumper link for 2 pole contactors		1	17.5 mm	blue
02226	6-way	jumper link for 4 pole contactors		2	35 mm	blue
02001	adaptor	chassis mounting adaptor		1	17.5 mm	
01101	adaptor	chassis mounting adaptor		2	35 mm	
02209	separator	rail mounting contactor separator		0.5	9 mm	
46392IPS	sheet of (48) marking tags (<i>mounts directly onto contactor</i>)					2232/4

19 series modular DIN rail mount relay			(H) 84 x (W) 11.2 (D) 57 mm			
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- 3 function selector switch
 - Auto: Works as a monostable relay
 - OFF: Relay permanently OFF
 - ON: Relay permanently ON

- Slimline (*11.2 mm wide*) modular relay
- LED indication - auto-off-on selector

192100240000	10A	slimline	modular relay		1 ch/over	24V
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Type	No of steps	Sequence			
		1	2	3	4
20.23	2				
20.26	3				
20.24	4				
20.28	4				

Modular step relays 10/16A

26 series step relays (pulse "ON", pulse "OFF") (H) 46.6 x (W) 45 (D) 22 mm

- Screw terminal connections
- Maximum pulse duration: 1 hour
- Electrically separated coils and contact circuits

type	switch current	No. steps	description	contact configuration	coil voltage
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26 series step relays (pulse "ON", pulse "OFF") (H) 46.6 x (W) 45 (D) 22 mm

- AC coil
- Base/chassis mounting
- Screw terminal connections
- Maximum pulse duration: 1 hour
- Electrically separated coils and contact circuits

260380120000	10A	2 step	base mounting step relay	1NO+1NC	12 VAC
260380240000	10A	2 step	base mounting step relay	1NO+1NC	24 VAC
260381100000	10A	2 step	base mounting step relay	1NO+1NC	110 VAC
260382300000	10A	2 step	base mounting step relay	1NO+1NC	230 VAC
0269012	module for operating above 26 series with DC				12 VDC
0269024	module for operating above 26 series with DC				24 VDC



20 series modular step relays

(H) 84 x (W) 17.5 x (D) 57 mm

- AC and DC coils
- Modular DIN rail mounting
- Manual override/test button
- Maximum pulse duration: 1 hour
- Compact one module (17.5 mm) wide
- Mechanical flag indicators of contact positions

202380120000	16A	2 step	modular pulse step relay	2 contact	12 VAC
202380240000	16A	2 step	modular pulse step relay	2 contact	24 VAC
202382300000	16A	2 step	modular pulse step relay	2 contact	230 VAC
202390120000	16A	2 step	modular pulse step relay	2 contact	12 VDC
202390240000	16A	2 step	modular pulse step relay	2 contact	24 VDC
202680120000	16A	3 step	modular pulse step relay	2 contact	12 VAC
202680240000	16A	3 step	modular pulse step relay	2 contact	24 VAC
202682300000	16A	3 step	modular pulse step relay	2 contact	230 VAC
202690120000	16A	3 step	modular pulse step relay	2 contact	12 VDC
202690240000	16A	3 step	modular pulse step relay	2 contact	24 VDC
202480120000	16A	4 step	modular pulse step relay	2 contact	12 VAC
202480240000	16A	4 step	modular pulse step relay	2 contact	24 VAC
202482300000	16A	4 step	modular pulse step relay	2 contact	230 VAC
202490120000	16A	4 step	modular pulse step relay	2 contact	12 VDC
202490240000	16A	4 step	modular pulse step relay	2 contact	24 VDC
202880120000	16A	4 step	modular pulse step relay	2 contact	12 VAC
202880240000	16A	4 step	modular pulse step relay	2 contact	24 VAC
202882300000	16A	4 step	modular pulse step relay	2 contact	230 VAC
202890120000	16A	4 step	modular pulse step relay	2 contact	12 VDC
202890240000	16A	4 step	modular pulse step relay	2 contact	24 VDC



All **Celduc SSR's** (*Solid State Relays*) are fitted with back-to-back thyristors and employ 4th generation TMS² technology with a very long lifetime expectancy.

Okpac® SO series power relays

- Very high immunity according to IEC/EN 61000-4-4 (*bursts*) and IEC/EN 61000-4-5 (*spikes*)
- UL/cUL, VDE (EN 60950), IEC/EN 60947-4-3, CE marking
- Regulated input current
- EMC compatible for industrial environment
- Control status LED

Note: All current ratings are based on utilising SSR's with suitable heat sink.

type	thyristor rating	switching voltage	peak voltage	control voltage	I ² t	description
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SO9 series *for resistive loads (AC-51) - heating* (H) 58.5 x (W) 45 x (D) 30 mm

• Zero-cross switching specifically designed for resistive loads

SO941460	12A	12 - 280 VAC	600V	3 - 32 VDC	128A ² s	solid state relay
SO942460	25A	12 - 280 VAC	600V	3 - 32 VDC	600A ² s	solid state relay
SO943460	40A	12 - 280 VAC	600V	3 - 32 VDC	1250A ² s	solid state relay
SO945460	50A	12 - 280 VAC	600V	3 - 32 VDC	2800A ² s	solid state relay
SO965460	60A	24 - 600 VAC	1200V	3.5 - 32 VDC	2800A ² s	solid state relay
SO967460	90A	24 - 600 VAC	1200V	3.5 - 32 VDC	7200A ² s	solid state relay

SO8 series *for most load types - lamps and infrared* (H) 58.5 x (W) 45 x (D) 30 mm

- Zero-cross switching with low zero-crossing level (<12V) for most loads
- Voltage protection on input (*transil*) and output (VDR)

DC control

SO842074	25A	12 - 275 VAC	600V	3 - 32 VDC	600A ² s	solid state relay
SO845070	50A	12 - 275 VAC	600V	3 - 32 VDC	2800A ² s	solid state relay
SO865070	50A	24 - 510 VAC	1200V	3.5 - 32 VDC	2800A ² s	solid state relay
SO867070	75A	24 - 510 VAC	1200V	3.5 - 32 VDC	7200A ² s	solid state relay
SO868070	95A	24 - 510 VAC	1200V	3.5 - 32 VDC	16200A ² s	solid state relay
SO869070	125A	24 - 510 VAC	1200V	3.5 - 32 VDC	22000A ² s	solid state relay

AC control

SO842974	25A	12 - 275 VAC	600V	20 - 265 VAC/DC	600A ² s	solid state relay
SO865970	50A	24 - 510 VAC	1200V	20 - 265 VAC/DC	2800A ² s	solid state relay
SO867970	75A	24 - 510 VAC	1200V	20 - 265 VAC/DC	7200A ² s	solid state relay
SO868970	95A	24 - 510 VAC	1200V	20 - 265 VAC/DC	16200A ² s	solid state relay
SO869970	125A	24 - 510 VAC	1200V	20 - 265 VAC/DC	22000A ² s	solid state relay

SO7 series *for motor loads (AC-53) inductive loads and phase angle control applications*

- Random switching Solid State Relay designed for high inductive loads, motors (AC-53)
- Large control voltage range 3.5-32 VDC with input current limiter
- Over-Voltage protection on input (*transil*) and output (RC and VDR)

DC control

SO765090	50A	24 - 510 VAC	1200V	3.5 - 32 VDC	2800A ² s	solid state relay
SO767090	75A	24 - 510 VAC	1200V	3.5 - 32 VDC	7200A ² s	solid state relay
SO768090	95A	24 - 510 VAC	1200V	3.5 - 32 VDC	16200A ² s	solid state relay

SOB series *two phase SSR's*

- Dual zero cross Solid State Relay with LED indication for each input
- Plug-in control terminals (*connector to be ordered separately*)

SOB9 *designed for resistive loads*

SOB965660	2 x 50A	24 - 600 VAC	1200V	10 - 30 VDC	2500A ² s	solid state relay
1Y042715						plug-in input screw terminal for above dual phase relay

Accessories *for above SO series relays*

type	thermal rating	description	dimensions (mm)		
			(H)	(W)	(D)

Heatsinks *SSR current ratings are based on sufficient cooling by the use of heatsinks*

WF151200	2.2K/W	DIN rail mountable heatsink for SO series relays	80	45	73
WF108110	1.1K/W	DIN rail mountable heatsink for SO series relays	98	90	81
WF115100	0.9K/W	DIN rail mountable heatsink for SO series relays	90	110	100
5TH23000	pads	thermal transfer pads for mounting SO Solid State Relays onto heat sinks			
1LD12020	adaptor	adaptor for direct mounting of SO relays on DIN rail			

All Celduc SSR's (Solid State Relays) are fitted with back-to-back thyristors and employ 4th generation TMS² technology with a very long life expectancy.

Celpac® SU series power relays

Pluggable control terminals

- Cost-effective, reliable and compact solution (22.5 mm pitch SSR solution)
- Mounting configuration compatible with all standard hockey puck style relays
- Over-voltage protection on input (*transil*)
- IP20 terminal protection cover (*removable*)
- Control status LED indication

Note: Current ratings are based on utilising SSR's with suitable heat sink.



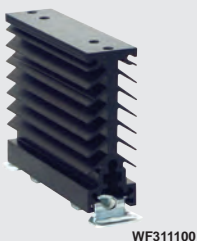
SU963460



SU865070



ESUC0450



WF311100

type	thyristor rating	switching voltage	peak voltage	control voltage	I ² t	description
SU9 series	<i>for resistive loads (AC-51) - heating</i>				<i>(H) 90 x (W) 22.5 x (D) 42 mm</i>	

• Zero-cross switching specifically designed for resistive loads

SU942460	25A	12 - 280 VAC	600V	3 - 32 VDC	600A ² s	solid state relay
SU963460	35A	24 - 600 VAC	1200V	3.5 - 32 VDC	882A ² s	solid state relay
SU965460	50A	24 - 600 VAC	1200V	3.5 - 32 VDC	1680A ² s	solid state relay
SU967460	75A	24 - 600 VAC	1200V	3.5 - 32 VDC	7200A ² s	solid state relay

SU8 series	<i>for most load types - lamps and infrared</i>				<i>(H) 90 x (W) 22.5 x (D) 42 mm</i>	
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• Zero-cross switching with low zero-crossing level (<12V) for most loads

DC control

SU842070	25A	12 - 275 VAC	600V	3 - 32 VDC	600A ² s	solid state relay
SU865070	50A	24 - 510 VAC	1200V	3.5 - 32 VDC	1680A ² s	solid state relay
SU867070	75A	24 - 510 VAC	1200V	3.5 - 32 VDC	7200A ² s	solid state relay

AC control

SU842970	25A	12 - 275 VAC	600V	160 - 240 VAC	600A ² s	solid state relay
SU865970	50A	24 - 510 VAC	1200V	160 - 240 VAC	1680A ² s	solid state relay

Accessories for SU series SSR's

type	thermal rating	description	dimensions (mm)		
			(H)	(W)	(D)
ESUC	current monitoring module for SU range				

Mounted directly onto SU or SUL devices, this module provides diagnostic information for up to 5 heating elements in parallel.

- Detection of: - partial load break - open mains - open load - short-circuited SSR

ESUC0450	2 - 40A	8 - 30 VDC	current monitoring module		
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Heatsinks *SSR current ratings are based on sufficient cooling by the use of heatsinks*

WF311100	3.0K/W	DIN rail mountable heatsink for SU series relays			80	22.5	73
WF151200	2.2K/W	DIN rail mountable heatsink for SU series relays			80	45	73
WF112100	1K/W	DIN rail mountable heatsink for SU series relays			120	50	118

5TH24000	thermal transfer pads	for mounting SU relays onto heatsinks				
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Complete "ready for use" SSR + heat sink combination

SUL9 range	<i>for resistive loads (AC-51) - heating</i>				<i>(H) 90 x (W) 22.5 x (D) 112 mm</i>		
SUL942460	25A	12 - 280 VAC	600V	3 - 32 VDC	600A ² s	SSR + heat sink	
SUL967460	75A	24 - 600 VAC	1200V	3.5 - 32 VDC	7200A ² s	SSR + heat sink	

SUL/SUM 8 range	<i>for most load types - lamps and infrared</i>				<i>(H) 90 x (W) 22.5 x (D) 112 mm</i>		
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DC control

SUL842070	25A	12 - 275 VAC	600V	3 - 32 VDC	600A ² s	SSR + heat sink	
SUL867070	75A	24 - 510 VAC	1200V	3.5 - 32 VDC	7200A ² s	SSR + heat sink	

SUM8 *(H) 90 x (W) 45 x (D) 112 mm*

SUM865070	50A	24 - 510 VAC	1200V	3.5 - 32 VDC	1680A ² s	SSR + heat sink	
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AC control *(H) 90 x (W) 22.5 x (D) 112 mm*

SUL842970	25A	12 - 275 VAC	600V	160 - 240 VAC	600A ² s	SSR + heat sink	
SUL865970	50A	24 - 510 VAC	1200V	160 - 240 VAC	1680A ² s	SSR + heat sink	

Fuse protection of solid state relays

Type 2 coordination: In case of short circuit the protection device must react before damaging the SSR, rendering the SSR suitable for further use.

Ultra-fast fuses must be used to protect solid state relays against short-circuits of the load. The I²t value of the fuse must be less than half of the typical I²t value of the Solid State Relay.



SO4 series - Proportional controllers

- Analog switching SSR for resistive load power control (*phase angle principle*)
- Overvoltage protection by varistor
- 4-20mA / 0-10V / Potentiometer control
- IP20 protection cover (*removeable*)
- Control status LED

type	thyristor rating	switching voltage	peak voltage	control voltage	description
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SO4 series - Proportional controllers (H) 58.5 x (W) 45 x (D) 30 mm

4-20mA control current input

SO465420	50A	200 - 480 VAC	–	4-20mA	proportional output SSR
SO467420	75A	200 - 480 VAC	–	4-20mA	proportional output SSR
SO468420	95A	200 - 480 VAC	–	4-20mA	proportional output SSR
SO469420	125A	200 - 480 VAC	–	4-20mA	proportional output SSR

0-10V Analog input

- Control supply voltage 8 - 30 VDC

SO465020	50A	200 - 480 VAC	–	0-10V	proportional output SSR
SO468020	95A	200 - 480 VAC	–	0-10V	proportional output SSR
SO469020	125A	200 - 480 VAC	–	0-10V	proportional output SSR

Potentiometer analog input

- Control supply voltage 8 - 30 VDC

SO465320	50A	200 - 480 VAC	–	potentiometer	proportional output SSR
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DC Solid State Relays DC-in, DC-out

MOSFET technology

SOM series - Latest MOSFET technology generation (H) 58.5 x (W) 45 x (D) 30 mm

Designed to switch DC loads e.g solenoid valves, brakes, indicators

- Ultra low on-state resistance
- Low output leakage current and control current
- Built-in overvoltage protection

SOM020100	20A	5 - 60 VDC	100V	3.5 - 32 VDC	DC output Solid State Relay
SOM040200	40A	5 - 110 VDC	200V	3.5 - 32 VDC	DC output Solid State Relay

IGBT technology - for high DC voltage applications

SCI series - Integrated reverse diode (H) 58.2 x (W) 45 x (D) 27 mm

SCI0251700	25A	0 - 1700 VDC	1700V	4.5 - 32 VDC	DC output Solid State Relay
SCI0501200	50A	0 - 1200 VDC	1200V	4.5 - 32 VDC	DC output Solid State Relay
SCI100600	100A	0 - 600 VDC	600V	4.5 - 32 VDC	DC output Solid State Relay

SDI series - Integrated protection (H) 157 x (W) 68 x (D) 83 mm

- Overvoltage protection
- Load short circuit protection
- Overload temperature protection

SDI0501700	50A	24 - 940 VDC	1700V	24 - 48 VDC	DC output Solid State Relay
SDI0501710	50A	24 - 940 VDC	1700V	72- 110 VDC	DC output Solid State Relay

Accessories for above Solid State Relays

type	thermal rating	description	dimensions (mm)		
			(H)	(W)	(D)

Heatsinks SSR current ratings are based on sufficient cooling by the use of heatsinks

WF151200	2.2K/W	rail mountable heatsink for SO,SC series relays	80	45	72
WF108110	1.1K/W	rail mountable heatsink for SO,SC series relays	98	90	81
WF115100	0.9K/W	rail mountable heatsink for SO,SC series relays	90	110	100

5TH23000	pads	thermal transfer pads for SO,SC Solid State Relays
1LD12020	adaptor	adaptor for mounting heat sinks on DIN rail

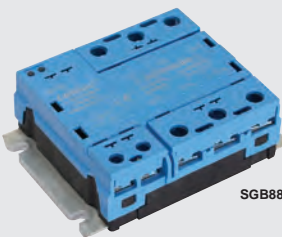
new



SMB8650510



SMT8620520



SGB8850200



SGT8670500

Three phase Solid State Relays

All three-phase Solid State Relays incorporate new high efficiency back to back thyristors on output with TMS² technology for a long lifetime expectancy and high surge currents.

- Three phase Zero Cross Solid State Relays
- Control status LED
- Conforms to: IEC/EN 60947-4-3, CEI 62314, UL-cUL

type	max. thyristor rating	switching current AC-51 (40°C)	switching voltage	peak voltage	control voltage	I2t
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Sightpac series - 3 phase Solid State Relays (H) 100 x (W) 45 x (D) 48 mm

- New compact - 45 mm wide version

SMB series two leg 3 phase Solid State Relay

Designed for controlling three-phase loads connected in star or delta (*if balanced*)
Two of the three phases are switched by the SSR the third phase being directly connected

- Three phase Zero Cross Solid State relay with one direct connected phase
- Designed for resistive loads

SMB8650510	2 x 50A	3 x 30A	24 - 520 VAC	1600V	4 - 30 VDC	2800A ² s
SMB8670910	2 x 75A	3 x 35A	150 - 520 VAC	1600V	4 - 30 VDC	7200A ² s

SMT series 3 phase Solid State Relay - for controlling three-wire three-phase loads

- Three phase Zero Cross Solid State relay (SSR) designed for most load types
- Plug-in control terminals and spring clamp power terminals

SMT8620520	3x25A	3 x 20A	24 - 520 VAC	1200V	4 - 30 VDC	380A ² s
SMT8628520	3x25A	3 x 20A	24 - 520 VAC	1200V	24 - 255 VAC/DC	380A ² s

Cel3pac series - 3 phase Solid State Relays (H) 100 x (W) 76.5 x (D) 35.5 mm

SGB series two leg 3 phase Solid State Relays

Designed for controlling three-phase loads connected in star or delta (*if balanced*)
Two of the three phases are switched by the SSR with the third being directly connected

- Three phase Zero Cross Solid State Relay with one direct connected phase
- Designed for resistive loads

SGB8850200	2 x 50A	3 x 50A	24 - 640 VAC	1600V	4 - 30 VDC	2800A ² s
SGB8890200	2 x 125A	3 x 85A	24 - 640 VAC	1600V	4 - 30 VDC	22000A ² s

SGT series - 3 phase Solid State Relays - for controlling three-wire three-phase loads

SGT9 - zero cross for resistive loads (AC-51)

SGT9834300	3 x 35A	3 x 30A	24 - 660 VAC	1600V	4 - 30 VDC	1250A ² s
SGT9854300	3 x 50A	3 x 42A	24 - 660 VAC	1600V	4 - 30 VDC	2800A ² s
SGT9874300	3 x 75A	3 x 54A	24 - 660 VAC	1600V	4 - 30 VDC	7200A ² s

SGT8 series - Zero cross for most load types

DC control

SGT8850200	3 x 50A	3 x 42A	24 - 640 VAC	1600V	4 - 30 VDC	2800A ² s
SGT8670500	3 x 75A	3 x 54A	24 - 520 VAC	1600V	4 - 30 VDC	7200A ² s
SGT8690500	3 x 125A	3 x 64A	24 - 520 VAC	1600V	4 - 30 VDC	22000A ² s

AC control

SGT8658500	3 x 50A	3 x 42A	24 - 520 VAC	1600V	24 - 255 VAC/DC	2800A ² s
SGT8678500	3 x 75A	3 x 54A	24 - 520 VAC	1600V	24 - 255 VAC/DC	7200A ² s
SGT8698500	3 x 125A	3 x 64A	24 - 520 VAC	1600V	24 - 255 VAC/DC	22000A ² s

SGTA series - 3 phase proportional controllers (H) 75 x (W) 100 x (D) 46 mm

- Control supply voltage 8 - 30 VDC

4-20mA control current input

SGTA4654	3 x 50A	300 - 510 VAC	4 - 20mA	proportional output SSR
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0-10V analog input

SGTA4650	3 x 50A	300 - 510 VAC	0 - 10V	proportional output SSR
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Accessories for above 3 phase series relays

type	thermal rating	description	dimensions (mm)		
			(H)	(W)	(D)

Heatsinks SSR current ratings are based on sufficient cooling by the use of heatsinks

WF108110	1.1K/W	rail mountable heatsink for SM series relays	98	90	78
WF115100	0.9K/W	rail mountable heatsink for SM, SG, series relays	90	110	100
1K199000	cover	transparent terminal cover for relays SGB and SGT			



Modular timing devices

- Multi-time range: 1s/10s/60s/10m/60m/10h/1day/10days/ON or OFF
- Excellent time accuracy and stability
- Compact robust DIN rail mounting modular housing (one 17.5 mm wide module)
- 1 x changeover relay 8A 250 VAC

type	description	supply voltage
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On-delay timer - delay on make (relay switches after preset time elapses)

- Multi-time range: 1s/10s/60s/10m/60m/10h/1day/10days/ON or OFF
- Multi-voltage: 24 - 48 VDC / 24-240 VAC

TMP multi-time range, multi-voltage, on-delay modular electronic timer

Multi-function timer (several selectable timing functions in one module)

- Multi-voltage: 12 - 240 VAC/DC
- Multi-function: Selectable functions:
 - A On-delay (relay only switches after preset time lapse)
 - B Interval (relay switches for preset time when energised)
 - C Equal repeat (start with OFF time first)
 - D Equal repeat (start with ON time first)
 - E Pulsed controlled interval (relay switches on close of external contact timing only begins on opening of contact)
 - F Pulsed controlled Interval (timing begins on closing of external contact)
 - G Pulsed controlled Interval (timing begins on opening of external contact)
 - H Pulse cont. On-delay/Interval (timing begins on opening and closing of external contact)
 - I Step relay (relay changes state on each closure of external contact)
 - J Pulse generator (unequal repeat adjustable OFF time/fixed 0.5 sec ON time)

TMM1 multi-time range, multi-voltage, multi-function modular elect. timer 12 - 240 VAC/DC

As above with NFC programmability (without front adjustment knobs)

- 40 selectable functions
- Counter and hour counter included
- Simple, fast and intuitive programming
- Very high accuracy and repeatability of settings
- Programmable via smartphone or tablet with NFC technology and APP
- Access to settings can be protected by setting a 4-digit password via the App
- Programming via NFC ensures excellent accuracy in time settings and tripping thresholds



Scan to watch video

TMM1NFC multi-time range, multi-voltage, multi-func. mod. elect. timer (NFC) 12 - 240 VAC/DC

Unequal repeat timer (separately adjustable ON and OFF times)

Programmable time relay with a asymmetrical recycle time, with independent timing adjustment for ON and OFF times. Multi-time range and multi-voltage.

- Multi-time range: 1s/10s/60s/10m/60m/10h/1day/10days/30 days/100days
- Multi-voltage: 12 - 240 VAC/DC

TMPL multi-time, multi-voltage, modular unequal repeat electronic timer 12-240 VAC/DC

Delay on de-energisation timer

Electronic time relay. True off delay - relay energises on applying supply and remains energised (for pre-settime period) after supply is removed and then resets.

- Relay remains energised for preset time after removal of supply
- Selectable time ranges: 0.6s/6s/60s/180s (adjustable)
- Multi-voltage: 24 - 240 VAC/DC

TMD multi-time, multi-voltage, delay on de-energisation elect. timer 24 - 240 VAC/DC

Star-delta timer (star connection delay and adjustable transition delay)

Electronic time relay for starting star-delta, impedance, auto transformer starters. Adjustable "star" time delay where after a 20...300ms "transition" delay before "delta" is energised

- Selectable time ranges: 1s/10s/60s/10min - transition: 20-300ms (adjustable)

TMST multi-time, multi-voltage, mod. star-delta elect. timer 24 - 48 VDC / 24 - 240 VAC

TMSTA440 multi-time, multi-voltage, modular star-delta elect. timer 380 - 440 VAC



Voltage monitoring modular relays

- Modular DIN rail mounting (*aligns with standard MCBs*)
- True RMS measurements

type	description	monitored voltage	width in 17.5 mm
Phase failure / reversal relay <i>instantaneous trip</i>			
PMV10A440	phase failure / reversal relay	208 - 480 VAC	1
PMV20A575	phase failure / reversal relay	208 - 575 VAC	2

Voltage monitors *single-phase or three-phase*

- Voltage monitoring relays, self powered, for minimum and maximum voltage
- Adjustments
 - "V max" maximum voltage tripping threshold 105 - 115% Ue
 - "V min" minimum voltage tripping threshold 80 - 95% Ue
 - "tripping" and "reset" time delay 0.1 - 20sec

Single phase monitoring

PMV55A240	single-phase over/under voltage monitor	208 - 240 VAC	2
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Three phase monitoring (*without neutral*)

- Self powered, for minimum and maximum voltage, phase loss and incorrect phase sequence

PMV50A575	3-phase over/under voltage monitor	380 - 575 VAC	2
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Three phase monitoring (*with or without neutral*) *self powered*

- For minimum and maximum voltage, phase loss, neutral loss and incorrect phase sequence

PMV50NA440	minimum and maximum AC voltage	380 - 440 VAC	3
PMV50NA600	minimum and maximum AC voltage	480 - 600 VAC	3

As above with NFC programmability (*without front adjustment knobs*)

Multifunction voltage and frequency monitoring relay, self powered, for minimum and maximum voltage and frequency, phase loss, neutral loss, incorrect phase sequence and asymmetry.

- Programmable via smartphone or tablet with NFC technology and APP
- Simple, fast and intuitive programming (*password protected*)
- Very high accuracy and repeatability of settings

PMV95NA575NFC	multi-func. voltage and frequency relay (NFC)	380 - 575 VAC	2
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Current monitoring relays *TRMS measurements*

Single and three-phase, AC/DC minimum or maximum current control with delayed trip. Auxiliary AC/DC power supply, automatic or manual reset.

- AC/DC minimum or maximum current control with programmable delayed trip
- Multi-voltage auxiliary power supply 24 - 240 VAC/DC
- Direct connection up to 16A or by current transformer (CT) 5A secondary
- Automatic or manual reset
- Adjustments
 - maximum or minimum current tripping threshold 5 - 100% Ie
 - maximum or minimum hysteresis threshold 1 - 50%
 - "trip" delay (*selectable*) 0.1 - 30sec
 - "inhibition" time - external input or power up 1 - 60sec
 - current scale selection: 5A or 16A
 - tripping memory (*latch*) On or Off

PMA30240	minimum or maximum current monitor	24 - 240 VAC/DC	2
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Pump protection relay *single and three-phase systems (selectable)*

Maximum AC current and minimum cosφ. Delayed trip. Phase loss and incorrect sequence. Instantaneous trip (*automatic or manual reset*)

- Pump protection relay against dry running, auxiliary AC power supply
- Maximum AC current and minimum cosφ (*delayed trip*)
- Direct connection up to 16A or by current transformer (CT) 5A secondary
- Phase loss and incorrect phase sequence (*instantaneous trip*)
- Voltage control range 80 - 660 VAC
- Adjustments
 - "minimum" cosφ threshold (*underload/dry running*) 0.1 - 0.99
 - "maximum" (*over*) current threshold 10 - 100%
 - "trip" delay for min cosφ and max current 0.1 - 10sec
 - "inhibition" time - external input or power up 1 - 60sec
 - automatic reset time Off - 100min
 - current selection: 5A or 16A

PMA50A240	pump protection relay (<i>against dry running</i>)	220 - 240 VAC	3
PMA50A415	pump protection relay (<i>against dry running</i>)	380 - 415 VAC	3



LVM series - Level control relays

- Level monitoring for conductive liquids
- Modular DIN rail mounting (*aligns with standard MCB's*)
- Double insulation between supply, electrodes and output relay

type	description	supply voltage	width in 18 mm
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LVM series - Level control relays *three detecting probes (Min, Max and Com)*

LVM20 *single voltage level control relay*

- Emptying function (*automatic reset*)
- Adjustable sensitivity (*2.5 - 50kΩ*)
- Relay outputs: 1 x changeover (SPDT)

LVM20A240	liquid level control relay for "emptying" function	220 - 240 VAC	2
LVM20A415	liquid level control relay for "emptying" function	380 - 415 VAC	2

LVM25 *multi-voltage supply 24-240VAC/DC*

- Slimline one module (*18 mm*) wide
- Relay outputs: 1 x changeover (SPDT)
- Adjustments - sensitivity (**2.5 - 100kΩ**)
- Selectable - "emptying" (*or*) "filling" function (*with fail safe operation*)

LVM25240	multi-voltage liquid level control relay	24 - 240 VAC/DC	1
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LVM30 *dual-voltage supply level control relay*

- Relay outputs: 2 x changeover (SPDT)
- Adjustments - probe signal delay 1-10sec / pump start delay 0-300sec
- Selectable - "emptying" (*or*) "filling" function (*with fail safe operation*)

LVM30A240	dual-voltage liquid level control relay	24/220-240 VAC	3
LVM30A415	dual-voltage liquid level control relay	110-127/380-415 VAC	3

LVM40 *five detecting probes (Min1, Max1, Min2, Max2 and Com)*

- Adjustments - sensitivity (2.5 - 200kΩ) (*sep adj for Max electrodes for foam detection*)
- probe signal delay 1-10s / - pump start delay 0-30min
- Relay outputs: 1 x changeover (SPDT) 1 x NO (SPDT)
- Selectable 5 different functions:
 - (A) standard emptying function and alarms
 - (B) standard filling function and alarms
 - (C) emptying function with priority start-up change control
 - (D) filling function with priority start-up change control
 - (E) well draining and tank filling and alarms

LVM40A240	5 probe multi-function liquid level control relay	220 - 240 VAC	3
LVM40A415	5 probe multi-function liquid level control relay	380 - 415 VAC	3

Level electrodes and holders for conductive liquids

SN1	1-pole insulated electrode (<i>AISI 303 stainless steel</i>) for LVM relays	
PS3S	electrode holder for 3 rod probes/electrodes	
P1000S	electrodes for above PS3S holder	(1 meter length)
FS03-3P	electrode spacer disc	(for extending probe length)
PXL	electrode extension locknut	(for extending probe length)

Pump start-up priority change relay

To balance operation times, hence wear of two pumps, compressors, generators when two units (*primary and standby*) are installed.

- Outputs: 2 x NO (SPST)
- Multi-voltage: 24/48 VDC / 24-240 VAC

LVMP05	pump priority change relay	24 - 48 VDC / 24 - 240 VAC	1
LVMP10A240	pump priority change relay with 4 I/O	220 - 240 VAC	3



Scan to watch video

LVFS series - Float switches

Float switches for automation of electrical equipment - pumps, solenoid valves, alarms, motorised sluice gates, etc. They feature an internal changeover contact operated in accordance with the level of liquid where the float is located. Cables used are high-quality and offer excellent mechanical and chemical resistance over time.

- Relay with changeover contact 10A 250 VAC 50/60Hz
- Compliant with standards: TUV, IEC/EN 60730-1, IEC/EN 60730-2-15.

type	activation angle	cable length	supplied with counterweight	max. pressure	description
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For grey water (IP68)

Used for civil and industrial control of levels of grey water, e.g. rainwater, groundwater or cooling water from industry.

- PVC cable
- The MIN and MAX levels can be adjusted by varying the distance between counterweight and float.
- Changeover contact permits selection of filling and emptying function during regulator wiring.

LVFSP1W05	45°	5 met	yes	3 bar	float level switch for grey water
LVFSP1W10	45°	10 met	yes	3 bar	float level switch for grey water
LVFSP1W15	45°	15 met	yes	3 bar	float level switch for grey water



LVFSP1W05

For drinking water (IP68)

These float switches are suitable for drinking water and foodstuff applications such as aquaducts, fountains, aquariums, drinks, fish hatcheries, swimming pools, etc. Realised with a non-toxic polypropylene outer shell, a stainless steel untreated sphere, and an AD8 cable with health certification ACS (*Attestation de Conformité Sanitaire*) outer sheath in PVC suitable for drinkable water immersion and use with food products.

- PVC cable ACS + AD8 certified
- Provided with stainless steel counterweight (AISI 316)
- The MIN and MAX levels can be adjusted by varying the distance between counterweight and float.
- Changeover contact permits selection of filling and/or emptying function during regulator wiring.

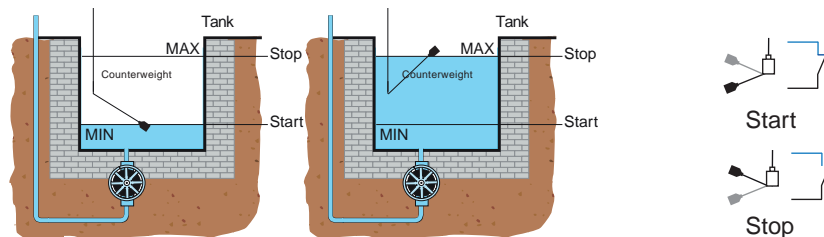
LVFSA1D05	30°	5 met	yes (AISI 316)	2 bar	float level switch for drinking water
LVFSA1D10	30°	10 met	yes (AISI 316)	2 bar	float level switch for drinking water
LVFSA1D15	30°	15 met	yes (AISI 316)	2 bar	float level switch for drinking water



LVFSA1D10

Example: Filling function for LVFS series

The level regulator contact closes the lower circuit at minimum level and opens the circuit when the float reaches the upper maximum/minimum level level.



For dirty water (IP68)

For civil and industrial control of dirty water levels, e.g. sewage or waste water from industry. Made of one-piece blow-moulded external polypropylene casing, with fixed internal counterweight located in the cable exit area. The regulator contact is positioned centrally in its own watertight chamber, insulated from external casing by injected closed-cell foam.

- Level control usually performed using two float switches, one for MIN. and another for MAX. levels
- Cable H07 RN-F3X1 (*Neoprene*)

LVFSN1B05	15°	5 met	yes (<i>internal</i>)	5 bar	float level switch for dirty water
LVFSN1B10	15°	10 met	yes (<i>internal</i>)	5 bar	float level switch for dirty water
LVFSN1B15	15°	15 met	yes (<i>internal</i>)	5 bar	float level switch for dirty water



LVFSN1B05



CTA4100A

Delta - CTA - Timer / Counter / Tachometer (Panel mount 48 x 48 mm²)

CTA 3-in-1 Timer/Counter/Tachometer is able to receive external input signals and calculate the times of events, frequency and speed. The CTA unit can be applied to batch counting, total counting, length measurement.

- External power supply: 12 VDC ±10%, 100mA (integrated power supply)
- Display: Double-line, 6-digit negative transmissive LCD display
- Input signal: Non-voltage input (NPN) / Voltage input (PNP)
- Output 1: Relay: SPST max.250 VAC, 5A + Transistor: NPN open collector.
- Output 2: Relay: SPDT max.250 VAC, 5A (or) Transistor: NPN open collector.

- Easy DIP switch setup:
 - Timer - timing up or down 0.01 sec - 999.999 hours
on-delay, interval, repeat (power on, pulse on, pulse off)
 - Counter - counting up or down 1 or 2 stage, batch, total, dual counting (speed selection: 1/30/200/3k/5k/10k Cps)
 - Tachometer - measurement in Hz (can be configured to read RPM)

type	description	output 2	RS-485	supply
CTA4100A	multi-function timer-counter-tachometer	relay	no	100 - 240 VAC
CTA4000A	multi-function timer-counter-tachometer	transistor	no	100 - 240 VAC
CTA4001A	multi-function timer-counter-tachometer	transistor	yes	100 - 240 VAC
CTA4100D	multi-function timer-counter-tachometer	relay	no	24 VDC
CTA4001D	multi-function timer-counter-tachometer	transistor	yes	24 VDC

Lovato - Panel mounting timers (48 x 48 mm²) *Changeover relay (5A 250 VAC)*

- Multi-voltage: 24 VAC/DC, 110, 240 VAC
- Housing: 8-pin plug-in housing

On-delay timer - delay on make (relay switches after preset time elapses)

		time range
L48TPS240	on-delay multi-range/voltage panel mount electronic timer	3/12/100/780sec
L48TPM240	on-delay multi-range/voltage panel mount electronic timer	3/12/100/780min

Two changeover relays (one configurable for instantaneous switching)

L48TPBM240	on-delay multi-time range panel mount electronic timer	1s/10s/1min/10min
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Accessories for above L48 series panel mount timers

ES8CNER	8 pin surface/DIN rail mounting relay socket for L48 timers	(screw terminals)
P3G08	8 pin socket for panel mounting L48 timers (rear terminals)	(screw terminals)
D-48Y	flush-mounting bracket for panel mounting above L48 timers	

CDC - Electromechanical timing devices (motorised)

Multi-range motorised timers 6/60sec - 6/60min - 6/60hrs (on one timer)

Surface/DIN rail mount motorised timer

S45/604/B6/02A	1x instantaneous + 1x delay multi-range motorised timer	24 VAC
S45/604/B6/11A	1x instantaneous + 1x delay multi-range motorised timer	110 VAC
S45/604/B6/22A	1x instantaneous + 1x delay multi-range motorised timer	220 VAC

Flush/panel mount motorised timer

S48/704/B6/02A	1x inst + 1x delay multi-range motorised timer	p/mount 48 mm ²	24 VAC
S48/704/B6/11A	1x inst + 1x delay multi-range motorised timer	p/mount 48 mm ²	110 VAC
S48/704/B6/22A	1x inst + 1x delay multi-range motorised timer	p/mount 48 mm ²	220 VAC
1400/704/B6/22A	1x inst + 1x delay multi-range motorised timer	p/mount 72 mm ²	220 VAC

Accessories

L48P8	rear connected 8 pin screw terminal socket	for S48/1400 timers
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Finder - Asymmetrical timer (up to 300hrs) (use L48P8 for termination)

889202400000	2 pole	panel mount asymmetrical flasher	240 VAC
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EM - Mechanical clockwork timers - panel mount 16 A 250 VAC (1NO + 1NC)

- Mounting by 2 x M4 screws
- Supplied with graduated dial + knob

type	Amps	contact	time range	description
XTI2049	16A	1NO + 1NC	60 min	MI2 mechanical clockwork timer
XTI2048	16A	1NO + 1NC	120 min	MI2 mechanical clockwork timer
XTI2045	16A	1NO + 1NC	12 hour	MI2 mechanical clockwork timer
XTI15163*	16A	1NO + 1NC	24 hour	MI5 mechanical clockwork timer

* Requires separate supply for 220V internal motor



L48TP...



S48/704/B6/...



1400/704/B6/11A



XTI15163



270354



270353



270001



270270

Multi-range - Multi-function - Multi-voltage, modular timer

- Output contact: 1 C/O 5A 250 VAC
- Operating temp: -20...+60°C
- Supply frequency: 35 - 70 Hz
- Multi- time range: Seconds: 1/10/100, Minutes: 1/10, Hours 1/10/100, Days 1/10
- Multi-voltage: 24...300 VAC/DC
- Multi-function:
 - On-delay (on energising, relay only switches after preset time period)
 - Interval (off-delay) (on energising, relay switches for preset time then resets)
 - On/off delay (on energising, relay remains OFF for preset off-time, then switches ON for preset on-time, then resets)
 - Equal repeat (off) (equal repeating starting with preset OFF time first)
 - Equal repeat (on) (equal repeating starting with preset ON time first)

type	description	supply	voltage
T1-M5 Multi-Range/Function/Voltage electronic timer (IP20) (width: 17.5 mm)			
• Modular DIN rail mounting - (H) 90.4 x (W) 17.5 x (D) 66.5 mm (aligns with standard 1 pole MCB)			
270353	multi-range, multi-function, multi-voltage modular electronic timer	24 - 300 VAC/DC	
T1-K Multi-function modular timer (pulse controlled)			
As above T1-M5 also with pulse control of functions (via external contact) configurable with interval on rising or falling edge triggering as well as on-delay with memory			
270354	multi-range/function/voltage modular timer with pulse control	24 - 300 VAC/DC	
SD1 Star-Delta modular timer (IP20) (width: 17.5 mm)			
Applying supply activates the preset "star" time period where after the preset (20...500msec) transition delay occurs before the "delta" relay is energised, it remains in this position until supply is removed.			
• Modular DIN rail mounting - (H) 90.4 x (W) 17.5 x (D) 66.5 mm (aligns with standard 1 pole MCB)			
• Multi-voltage: 150 - 500 VAC			
• Star time: t _λ 1...30 seconds			
270358	modular DIN rail mounting electronic star-delta timer	150 - 500 VAC	
LC3 Liquid level controller (IP20) (width: 36 mm)			
LC3 controls levels of conductive liquids by measuring the resistance of the liquid between probes. If measured resistance is less than the preset value, the output relay will be activated. To avoid electrolysis, an AC signal is applied to the liquid			
• Modular DIN rail mounting - (H) 90 x (W) 36 x (D) 58 mm (aligns with standard 2 pole MCB)			
• Sensitivity adjustment: 5 - 100kΩ			
• Time delay: 0.1 - 10 sec			
270001	modular DIN rail mounting electronic liquid level controller	150 - 500 VAC	
Protection relays (IP20) (width: 17.5 mm)			
• Output contact: 1 C/O 10A 250 VAC			
Phase-failure/reversal/imbalance M1D-SA			
• Fixed time delay: 500msec			
270144	modular DIN rail mount 3 ph phase failure/reversal/imbalance relay	380 - 480 ±25%	
Voltage monitor with phase-failure/reversal/imbalance (IP20) (width: 17.5 mm)			
• Modular DIN rail mounting - (H) 90.4 x (W) 17.5 x (D) 66.5 mm (aligns with standard 1 pole MCB)			
• Adjustable - (via front facia dials)			
Over voltage: +5...+20% with OFF (override) selection			
Under voltage: -5...-20% with OFF (override) selection			
Delay time: 0.1...10sec			
G1D-SA - 3 phase (L1-L3)			
270140	modular 3ph over/under voltage monitor with ph failure/reversal	380 - 480 ±25%	
G1-SA - 3 phase + neutral (L3-N)			
270130	modular 3ph+N over/under voltage monitor + ph failure/reversal	230 ±25%	
Current monitor relay 36 mm (2 modules wide)			
CPR-16	Current measurement: 0.1 ... 16A AC	Hysteresis: 5...20%	
Time delay adjustment: 0.1 ... 10 sec			
270270	0.1...16A modular DIN rail mounting current monitor	36 - 300 VAC/DC	



ASCON series - Analog signal converters

The Ascon range of signal converters are compact electronic devices which measure input parameters and converts them to another signal form continuously. Converting temperature, voltage and current parameters into V, mV, mA, and RS485 outputs.

Different inputs and outputs are configurable via front mounted rotary selector dials

- 3 way - 1.5kV RMS Isolation (*Input, output and supply electrically isolated from one another*)
- Compact modular (*H*) 90.4 x (*W*) 17.5 x (*D*) 66.5 mm (*same dimensions as single pole MCB*)

type	supply voltage	selectable inputs	selectable outputs	description
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ASCON 311 Signal converter (*configurable*)

602300	11 - 30 VDC	0...60mV	0...5mA	0...5V	configurable analog signal converter
		0...100mV	0...10mA	5...0V	
		0...250mV	0...20mA	0...10V	
		0...500mV	-5...5mA	10...0V	
		0...1V	-10...10mA	-5...5V	
		0...2V	-20...20mA	0...20mA	
		0...2.5V	4...20mA	20...0mA	
		0...5V	0...24mA	4...20mA	
		0...10V	4...24mA	20...4mA	
		0...20V	0...12mA	-20...20mA	

ASCON 321 PT100 converter (*configurable*)

602310	11 - 30 VDC	PT100 (2,3,4 wire) -150°C...800°C (<i>configurable</i>)	V/mA same as Ascon 311 (<i>above</i>)	configurable PT100 signal converter
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ASCON 331 Thermocouple converter (*configurable*)

602320	11 - 30 VDC	J:	-200°C...1200°C	V/mA same as Ascon 311 (<i>above</i>)	configurable thermocouple signal converter
		K:	-200°C...1350°C		
		E:	-200°C... 950°C		
		R:	-50°C...1750°C		
		S:	-50°C...1750°C		

ASCON 352 Signal temperature converter (*with RS485*)

602400	11 - 30 VDC	mV, V, mA	RS485	signal temperature converter to RS485
		PT100 (2,3,4 wire)		
		Thermocouple (J,K,E,R,S)		

Voltage and current transducers

Converts voltage and current signals into analog signals for monitoring/managing purposes

- 3 way - 1.5kV RMS Isolation
- Compact modular (*H*) 90.4 x (*W*) 36 x (*D*) 57.5 mm (*same dimensions as 2 pole MCB*)

VT3-AC TRMS voltage transducer

600101	85 - 265 VAC	0-24/36/54/80/120/170/25	V/mA same as Ascon 311 (<i>above</i>)	TRMS AC voltage transducer
600103	10 - 36 VDC	0/400/450/500V AC		TRMS AC voltage transducer
600105	9 - 30 VDC	(10 ranges)		loop powered voltage t/ducer

VT3-ACDC-24 TRMS voltage transducer

600106	10 - 36 VDC	0-24/54/120/250/450V AC/DC (10 ranges)	V/mA same as Ascon 311 (<i>above</i>)	TRMS AC/DC voltage transducer
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CT3 TRMS current transducer

600100	85 - 265 VAC	0-1/2/3/4/5A AC/DC (10 ranges)	V/mA same as Ascon 311 (<i>above</i>)	TRMS AC current transducer
600102	10 - 36 VDC			TRMS AC current transducer
600104	9 - 30 VDC			loop powered current t/ducer



DT... series



DTK4848R01



DT320...



DT340...



DT360...

Temperature controllers

type	panel size (mm) W x H	description	output 1	output 2
DTK series - "Econo" temperature controller 100 - 240 VAC 50/60Hz (60 mm deep)				
<ul style="list-style-type: none"> Universal sensor inputs: <ul style="list-style-type: none"> Thermocouple: Type (K-J-T-E-N-R-S-B-L-U-TXK) Platinum RTD: Pt100, JPt100 LCD display: Process Value (PV) Red colour - Set point (SV) Green colour Control method: PID, ON/OFF, Manual control mode Alarms: 1 alarm output with 9 selectable alarm modes Display: High resolution LCD display Speed: High speed sampling time (100ms) 				
DTK4848R01	48 x 48	econo temperature controller	relay (5A AC1)	-
DTK4848V01	48 x 48	econo temperature controller	14 VDC pulse	-
DTK4848C01	48 x 48	econo temperature controller	4 - 20mA	-
DTK4896R01	48 x 96	econo temperature controller	relay (5A AC1)	-
DTK4896V01	48 x 96	econo temperature controller	14 VDC pulse	-
DTK4896C01	48 x 96	econo temperature controller	4 - 20mA	-
DTK7272R01	72 x 72	econo temperature controller	relay (5A AC1)	-
DTK7272V01	72 x 72	econo temperature controller	14 VDC pulse	-
DTK9696R01	96 x 96	econo temperature controller	relay (5A AC1)	-
DTK9696V01	96 x 96	econo temperature controller	14 VDC pulse	-

DT3 series - Advanced high speed intelligent temperature controller

New **DT3 series** temperature controller designed with upgraded hardware and higher specifications to offer smart operation, fast response and simple expendability and user-defined function keys.

- Various built-in sensor input modes:
 - Thermocouple: K, J, T, E, N, R, S, B, L, U, TXK
 - Platinum RTD: Pt100, JPt100, RTD: Cu50, Ni120
 - Analog input: 0 - 5 V, 0 - 10 V, 0 - 20 mA, 4 - 20 mA, 0 - 50 mV
- Various Control Modes: Auto Tuning, FUZZY, Manual, ON/OFF, PID Process Control, Self Tuning
- Various Output Modes: Relay, Voltage pulse, Current DC, Linear voltage
- Communication: RS-485 communication MODBUS ASCII / RTU protocol
- Display: Large 3-colour LCD Display
- IP protection: IP66 protection level and CE, UL certified
- Output: Dual output control function for heating and cooling
- Detection: Heater disconnection detection
- Sampling rate: 100ms
- Supply voltage: 100 - 240 VAC

			output 1	output 2
DT320RA-0200	48 x 48	advanced temperature controller	relay	see output 2 options (below)
DT320VA-0200	48 x 48	advanced temperature controller	14 VDC pulse	
DT340RA-0200	48 x 96	advanced temperature controller	relay	see output 2 options (below)
DT340VA-0200	48 x 96	advanced temperature controller	14 VDC pulse	
DT360RA-0200	96 x 96	advanced temperature controller	relay	see output 2 options (below)
DT360VA-0200	96 x 96	advanced temperature controller	14 VDC pulse	

Note: 24 VDC (change 7th digit "A" of part number to "D" for 24 VDC application on request)

Expansion facilities and accessories for above DT3 controllers

- Max 1 extra output card
- Max 2 optional cards

Replace the last **4 digits** for additional options:

First 2 digits identify the output - Last 2 digits identify the option

Example: **V213** is a voltage output with event and remote set up input.

0233 is no extra control output but with retransmission output and remote set up input.

- R200	Relay output (5A 250 VAC)	DT3-R
- V200	Voltage output (14 VDC pulse)	DT3-V
- C200	DC current output (4 - 20mA)	DT3-C
- L200	Linear voltage output (0 - 10 VDC)	DT3-L
- 0210	Event input 1	DT3-EVENT
- 0220	CT input 1	DT3-CTI
- 0230	Retransmission output	DT3-RETRANS
- 0203	Remote setup input	DT3-REMOTE

DT3-CT30A	30A	current transformer for heater disconnection or overcurrent detection
DT3-CT100A	100A	current transformer for heater disconnection or overcurrent detection



DTD4848R0



DTA4896R0



DTA7272R0



DTB4824RR



DTC1000...

DTC2000...

Temperature controllers

Common Characteristics

- Universal sensor inputs:
 Thermocouple: Type (K-J-T-E-N-R-S-B-L-U-TXK)
 Platinum RTD: Pt100, JPt100
- Display: 2-line 7-segment LED display *Process Value (PV) Red - Set point (SV) Green*

type	panel size (mm) W x H	description	output 1	output 2
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DTA series - "Standard" temperature controller 100 - 240 VAC 50/60Hz IP65

- Control methods: PID, ON/OFF, Manual control
- Sampling rate: 500msec

DTA4848R0	48 x 48	standard temperature controller	relay	-
DTA4848V0	48 x 48	standard temperature controller	14 VDC pulse	-
DTA4848C0	48 x 48	standard temperature controller	4 - 20mA	-
DTA4896R0	48 x 96	standard temperature controller	relay	-
DTA9648R0	96 x 48	standard temperature controller	relay	-
DTA7272R0	72 x 72	standard temperature controller	relay	-
DTA9696R0	96 x 96	standard temperature controller	relay	-

DTB series - "Advanced" temperature controller 100 - 240 VAC 50/60Hz IP65

- Two groups of outputs to auto-tune 2 groups of PID parameters 3 groups of alarm outputs
- Analog inputs: 0 - 5V, 0 - 10V, 0 - 20mA, 4 - 20mA, 0 - 50mA
- Sampling rate: Analog input: 150msec, Thermocouple or Platinum RTD 400msec
- Built-in dual loop output control for heating and cooling
- Built-in RS-485 digital communication, 2.400 - 38.400bps

DTB4824RR	48 x 24	advanced temperature controller	relay	relay
DTB4848RR	48 x 48	advanced temperature controller	relay	relay
DTB4848VR	48 x 48	advanced temperature controller	14 VDC pulse	relay
DTB4848CR	48 x 48	advanced temperature controller	4 - 20mA	relay
DTB4848LR	48 x 48	advanced temperature controller	0 - 5, 0 - 10V	relay
DTB4896RR	48 x 96	advanced temperature controller	relay	relay
DTB4896VR	48 x 96	advanced temperature controller	14 VDC pulse	relay
DTB4896CR	48 x 96	advanced temperature controller	4 - 20mA	relay
DTB9696RR	96 x 96	advanced temperature controller	relay	relay
DTB9696VR	96 x 96	advanced temperature controller	14 VDC pulse	relay
DTB9696CR	96 x 96	advanced temperature controller	4 - 20mA	relay
DTB9696LR	96 x 96	advanced temperature controller	0 - 5, 0 - 10V	relay
DTB4848RRE*	48 x 48	event input with 2 setpoints	relay	relay
DTB4896RRE*	48 x 96	event input with 2 setpoints	relay	relay

* Event function, permits switching between 2 different temperature set points

DTC series - "Modular" temperature controller 24 VDC, isolated switching power supply

DTC features modular, wire-saving structure able to monitor many temperature points with parallel modular extensions, providing user configurable outputs according to actual requirements

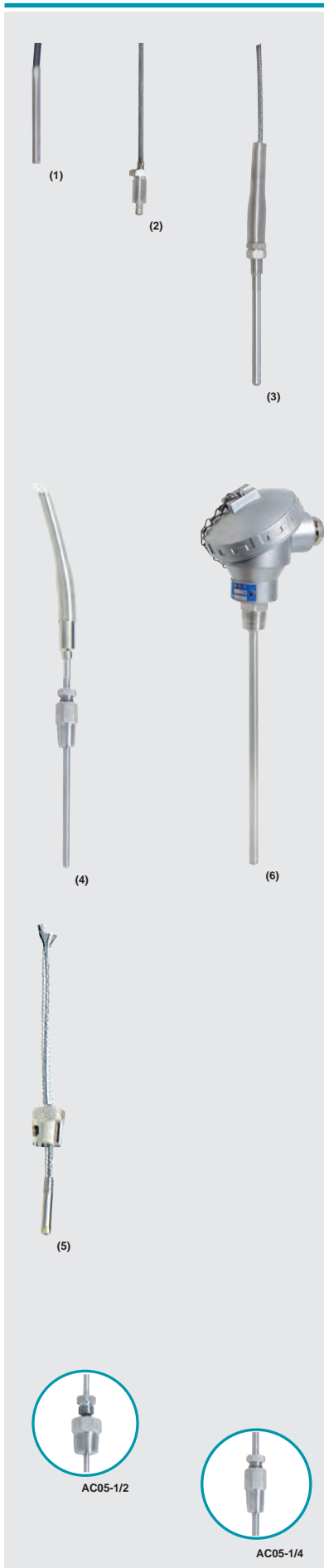
- PID, programmable PID, ON/OFF, Manual control (up to 64 sets)
- Adopts dual-loop output control (able to execute heating and cooling simultaneously)
- Analog inputs: : 0 - 5V, 0 - 10V, 0 - 20mA, 4 - 20mA, 0 - 50mA
- Built-in RS-485 digital communication, 2.400 - 38.400bps

DTC1000R	25.2 x 90	main unit temperature controller	relay	relay
DTC1000C	25.2 x 90	main unit temperature controller	4 - 20mA	relay
DTC2000R	25.2 x 90	extension unit temp controller	relay	relay
DTC2000C	25.2 x 90	extension unit temp controller	4 - 20mA	relay

DVP02TK series - Temperature control modules (universal input) Built-in RTU-485

- Inputs:
 Analog: 0 - 10V, 0 - 20mA, 4 - 20mA (16-bit)
 Thermocouple: J, K, R, S, T, E, N, B, C, L, U, TXK, PLII
 RTD: Pt100, JPt100, Pt1000, Cu50, Cu100, Ni100, Ni1000, LG-Ni1000
- Output point: Built-in PID program control/manual control
- Expandable: With **DVP02TU** plug-in modules to expand (up to 8 modules) see page C-4

DVP02TKL-S	2 in	2 AO	2 analog	output voltage/current	analog
DVP02TKN-S	2 in	4 DO	4 transistor	NPN output overheat/current	transistor
DVP02TKR-S	2 in	4 rel	4 relay	output overheat/overcurrent	relay



type	fitting type	cable	type probe	description	tube SUS304 dia. Ø	length (mm)	
RTD (PT100) sensors (1.5m cable length)							
• Tube: SUS304 material							
SJ-301/P505P	none	PVC	(1)	plain tube sensor	5	50	
SJ-301/P510T	none	teflon	(1)	plain tube sensor	5	100	
SJ-301/P520T	none	teflon	(1)	plain tube sensor	5	200	
SJ-302/P510T	M8 thread	teflon	(3)	threaded coupling	5	100	
SJ-302/P520T	M8 thread	teflon	(3)	threaded coupling	5	200	
SJ-305/P520T	1/4" PT	teflon	(4)	threaded adj. coupling	5	200	
<i>Add "3" to end of part number for 3 meter cable length.</i>							
KN-1/2PT-8-200-PT100	1/2" PT	term. box	(6)	screw terminal box	8	200	
KN-1/2PT-8-300-PT100	1/2" PT	term. box	(6)	screw terminal box	8	300	
Type "J" thermocouples (1.5m cable length)							
• Tube: SUS304 material							
SJ-100/J505B	none	braid	(1)	plain tube sensor	5	50	
SJ-100/J510B	none	braid	(1)	plain tube sensor	5	100	
SJ-100/J520B	none	braid	(1)	plain tube sensor	5	200	
SJ-105/J510B	M8 thread	braid	(3)	threaded coupling	5	100	
SJ-105/J520B	M8 thread	braid	(3)	threaded coupling	5	200	
SJ-106/JM8B	screw-in	braid	(2)	screw-in sensor	M8	–	
SJ-107/J5BB	bayonet	braid	(5)	bayonet fixing sensor	5	–	
<i>Add "3" to end of part number for 3 meter cable length.</i>							
KN-1/2PT-8-200-J	1/2" PT	term. box	(6)	screw terminal box	8	200	
KN-1/2PT-8-300-J	1/2" PT	term. box	(6)	screw terminal box	8	300	
Type "K" thermocouples (1.5m cable length)							
• Tube: SUS304 material							
SJ-100/K505B	none	braid	(1)	plain tube sensor	5	50	
SJ-100/K510B	none	braid	(1)	plain tube sensor	5	100	
SJ-100/K520B	none	braid	(1)	plain tube sensor	5	200	
SJ-105/K510B	M8 thread	braid	(3)	threaded coupling	5	100	
SJ-105/K520B	M8 thread	braid	(3)	threaded coupling	5	200	
SJ-106/KM8B	screw-in	braid	(2)	screw-in sensor	M8	–	
SJ-107/K5BB	bayonet	braid	(5)	bayonet fixing sensor	5	–	
<i>Add "3" to end of part number for 3 meter cable length.</i>							
KN-1/2PT-8-200-K	1/2" PT	term. box	(6)	screw terminal box	8	200	
KN-1/2PT-8-300-K	1/2" PT	term. box	(6)	screw terminal box	8	300	
Thermocouple wire							
RTD/T19W	PT100	teflon coated wire 19/0.13RTD-AFF-3C				<i>(per meter)</i>	
TC-IC-H/S	type J	steel braided covered thermocouple wire				<i>(per meter)</i>	
TC-CA-H/S	type K	steel braided covered thermocouple wire				<i>(per meter)</i>	
Thermocouple connectors							
M-7-J	type J	male	thermocouple connector	plug	black		
F-7-J	type J	female	thermocouple connector	socket	black		
M-7-K	type K	male	thermocouple connector	plug	yellow		
F-7-K	type K	female	thermocouple connector	socket	yellow		
AC05-1/2	threaded sliding coupling for probe			1/2" PT	ID dia	5 –	
AC05-1/4	threaded sliding coupling for probe			1/4" PT	ID dia	5 –	

Electro D series - Modular timing devices

The **Electro "D"** range of control and timing devices are compact modular units for easy introduction into standard panels and/or distribution boards. They mount directly onto DIN rail and align with standard miniature circuit breakers (MCB's)

- Compact DIN rail mounting: (H) 92 x (W) 36 x (D) 64 mm - (2 modules wide)

multi-range (adjustable time ranges)	No.	time ranges
	1	6 sec
	2	60 sec
	3	6 min
	4	60 min
	5	6 hr
	6	60 hr
	7	ON
	8	OFF

multi-function	No.	functions
	A	on-delay
	B	interval
	C	equal repeat
	D	Off delayed (pulse controlled)
	E	interval (pulse controlled)
	F	step relay
	G	pulse generator
	H	on/off delay



DMFTMV



DOD



DUR



DSD

type	supply voltage*	time range	function	description
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Multi-range/multi-function timers - (8 x selectable time ranges / 8 x selectable functions)

Multi-function, multi-range timers designed with latest technology includes all commonly used functions and time ranges (selectable via front mounted dials).

Single voltage type

DMFT012AD	12V AC/DC	1...8	A...H	multi-range/function timer
DMFT110A	110 VAC	1...8	A...H	multi-range/function timer
DMFT230A	230 VAC	1...8	A...H	multi-range/function timer
DMFT400A	400 VAC	1...8	A...H	multi-range/function timer
DMFT024AD	24V AC/DC	1...8	A...H	multi-range/function timer

Multi-voltage type

DMFTMV	12 - 260V AC/DC	1...8	A...H	multi-range/function/voltage timer
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True off delay electronic timer

Multi-range OFF delay (delay on release) timer with advanced power back-up power circuitry to deliver wide time ranges. The unit has to powered for no less than 30 sec + 30% of set time range. (If permanent power is available DMFT timer should be used.)

- Delay on de-energisation timer (delay on removing of supply)

DOD230A	230 VAC	1...4	off delay	multi-range delay on de-energisation
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Unequal repeating electronic timer multi-range (ON/OFF)

Multi-range timer designed with latest technology covers most combinations of ON/OFF time ranges selectable via front mounted dials and DIP switch.

- Asymmetrical recycler with independently adjustable ON and OFF times

TIME RANGE A			TIME RANGE B		
NO	ON (adj)	OFF (adj)	NO	ON (adj)	OFF (adj)
1	6s	6s	1	60s	6m
2	60s	60s	2	6m	60s
3	6m	6m	3	6m	60m
4	60m	60m	4	60m	6m
5	6s	60s	5	60m	6h
6	60s	6s	6	6h	60m
7	6s	60m	7	60s	6h
8	60m	6s	8	6h	60s

DUR110A	110 VAC	1...8	repeat	unequal repeat timer
DUR230A	230 VAC	1...8	repeat	unequal repeat timer
DUR024AD	24V AC/DC	1...8	repeat	unequal repeat timer

Star-Delta timer

Multi-range Star / Delta timer with adjustable transition delay for starting inductive motors. Applying supply switches relay to "star" for the pre-set star period, on lapse of the star period the relays switches to a neutral "transition" position (4 - 180 ms) where after the relay switches to the "delta" position and remains there until supply is removed.

- Adjustable Star time: 30 – 60 sec
- Adjustable Transition time: 40 – 180 ms

DSD110A	110 VAC	–	star delta	star-delta timer
DSD230A	230 VAC	–	star delta	star-delta timer
DSD400A	400 VAC	–	star delta	star-delta timer

* Other voltage options available on request.



DLL4



DCC



DWLT



DWLR



DSI

The **Electro "D"** range of control and timing devices are compact modular units for easy introduction into standard panels and/or distribution boards. They mount directly onto DIN rail and align with standard miniature circuit breakers (MCB's).

- Compact DIN rail mounting: (H) 92 x (W) 36 x (D) 64 mm - (2 modules wide)

type	supply voltage*	output	function	description
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Economic GSM controller

Economic GSM controller with versatile functionality and ease of use with both inputs and outputs. SMS's are sent to the unit to control outputs and SMS is sent to the destination number for any change in inputs.

- 4 numbers for SMS's can be programmed
- ON, OFF and pulse relay function

DGSM0024MV	10-30 VDC	–	GSM	GSM controller with 0 relays
DGSM4012D	12 VDC	–	GSM	GSM controller with 4 relays
DGSM4024D	24 VDC	–	GSM	GSM controller with 4 relays
ANT1	–	–	antenna	antenna for DGSM modules

Liquid level controllers

(H) 92 x (W) DLL/DLL4 36/54 x (D) 64 mm

Controlling of liquid conductive levels with two/ four probes.

- Function: Emptying/ Filling

DLL230A	230 VAC	2 probes+comm	emptying / filling	liquid level controllers
DLL400A	400 VAC	2 probes+comm	emptying / filling	liquid level controllers
DLL024AD	24 VAC/DC	2 probes+comm	emptying / filling	liquid level controllers

- Function: Emptying/filling with alarm, emptying/filling with pump priority, container filling/well draining with alarm, electrode test

DLL4230A	230 VAC	4 probes+comm	emptying / filling	liquid level controllers
DLL4400A	400 VAC	4 probes+comm	emptying / filling	liquid level controllers
DLL4024AD	24 VAC/DC	4 probes+comm	emptying / filling	liquid level controllers

Radio (wireless) level controller

- DIN radio receiver
- 5km transmission (*line of sight*)
- Coin Battery CR3202 for level transmitters (*3 years life span*)
- Two configurable (*radio connected*) relay outputs
- Supply voltage 12 or 24V AC/DC

type	inputs	outputs	function	description
DWLT	3 probe	–	transmitter	level transmitter
DWLR	level controller	2	receiver	level receiver
ANT2	–	–	antenna	per each DWL.. module

Signal Converters / Isolator

(12/24/48 AC/DC on special request)

The Converters are a signal isolator designed to eliminate potential ground loop problems prevalent in 4 - 20mA control loops.

type	supply voltage*	input range	output range	description
DCC111230A	230 VAC	1 0 - 5A	11 0 - 10 VDC	current analog converter
DCC108230A	230 VAC	1 0 - 5A	8 4 - 20mA	current analog converter
DCC108024D	24 VDC	1 0 - 5A	8 4 - 20mA	current analog converter
DSI511230A	230 VAC	5 4 - 20mA	11 0 - 10 VDC	optical signal converter
DSI508230A	230 VAC	5 4 - 20mA	8 4 - 20mA	optical signal converter
DSI708230A	230 VAC	7 0 - 10 VDC	8 4 - 20mA	optical signal converter
DSI508024D	24 VDC	5 4 - 20mA	8 4 - 20mA	optical signal converter

Note: Alternative DCC/DSI input/output combinations available on request only.

* Other voltage options available on request.



The **Electro "D"** range of control and timing devices are compact modular units for easy introduction into standard panels and/or distribution boards. They mount directly onto DIN rail and align with standard miniature circuit breakers (MCB's).

- Compact DIN rail mounting: (H) 92 x (W) 36 x (D) 64 mm - (2 modules wide)

type	supply voltage*	phase	function	description
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Advanced pump protection relay

Advance pump protection relay to safeguard against damage to borehole pumps. The unit is easily calibrated and then monitors all important pump characteristics.

- Over/under current protection
- Running dry restart delay/over current retires
- Over/under voltage protection (with phase rotation on 3 phase units)

DPP1230A	230 VAC	single	pump relay	pump protection relay
DPP3400A	400 VAC	three	pump relay	pump protection relay
DPP4400A	400 VAC	three	pump relay	as above with adj./function selection

Phase failure/reversal relay (sequence and imbalance)

Phase failure / reversal monitor for monitoring three phase supply voltage. The unit is ideal for protection against phase reversal, phase loss and phase imbalance.

DPF1110A	110 VAC	three	failure relay	failure/reversal relay
DPF1400A	400 VAC	three	failure relay	failure/reversal relay
DPF1/K400A	400 VAC	three	failure relay	failure/reversal relay with adj.
DPF1525A	525 VAC	three	failure relay	failure/reversal relay
DPF1/N400A	400 VAC	three	failure relay	as above with neutral
DPF1/K525A	525 VAC	three	failure relay	failure/reversal relay with adj.

Voltage window comparator + phase failure

Over/under voltage monitoring/reversal.

- Delays : No delay, startup delay 10 sec, 180 sec recovery delay, reaction delay 10 sec

DVW1230A	230 VAC	single	comparator	electronic timer
DVW3110A	110 VAC	three	comparator	electronic timer
DVW3400A	400 VAC	three	comparator	electronic timer
DVW3525A	525 VAC	three	comparator	electronic timer
DVW3N400A	400 VAC	three	comparator	as above with neutral

Voltage monitor

Monitors a separate voltage than supply voltage.

- Delays : No delay, startup delay 10sec, 180 sec recovery delay, reaction delay 10sec

DVM400A-230A	230 VAC	-	400 VAC monitoring	voltage monitor device
DVM024D-24A	24 VDC	-	24 VAC monitoring	voltage monitor device
DVM30MV-30MV	10 - 30 VDC	-	10 - 30 VDC monitoring	voltage monitor device

Current monitor

Over or under current monitoring.

- Delays : No delay, startup delay 10sec, 180 sec recovery delay, reaction delay 10 sec

DCM5230A	230 VAC	can interface with 5A CT	current monitor device
DCM5400A	400 VAC	can interface with 5A CT	current monitor device
DCM5024D	24 VDC	can interface with 5A CT	current monitor device
DCM15230A	230 VAC	direct monitor up to 15 A	current monitor device

Current window comparator (over and under current monitoring)

Current window comparator for monitoring current between two levels.

- Delays : No delay, startup delay 10sec, 180 sec recovery delay, reaction delay 10 sec

DCW5230A	230 VAC	can interface with 5A CT	current window comparator timer
DCW15230A	230 VAC	direct monitor up to 15 A	current window comparator timer

Load shed relays

Load shed relay featuring high resolution analog converter to produce precise switching levels. The relay monitors current consumed and switches unnecessary load off.

DLS230A	230 VAC	1 circuit	16A direct conn.	load shed relay
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* Other voltage options available on request.



DDCT



DDDT



DDVW3

new



DRT



DRR

The **Electro "D" range** of control and timing devices are compact modular units for easy introduction into standard panels and/or distribution boards. They mount directly onto DIN rail and align with standard miniature circuit breakers (MCB's).

- Compact DIN rail mounting: (H) 92 x (W) 36 x (D) 64 mm - (2 modules wide)

type	supply voltage*	time range	function	description
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Digital counter/timer

Multi-function four digit counter/timer designed with the latest microprocessor technology. Setup and ranges can be adjusted with an easy to access and control menu system to make all common function available.

- 4 digit count (up/down) with selectable prescaler
- Timer (up/down) with pulse start/stop
- 4 time ranges: 999.9s - 9999 min

DDCT230A	230 VAC	999.9 -9999	timer	counter / timer
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Digital temperature controller with timer (interfaces with TP1 digital probe)

Multi-function/range digital temperature controller with four digit counter/timer designed with the latest microprocessor technology. Setup and ranges can be adjusted with an easy to access and control menu system to make all common function available.

- Two set points / relay outputs / PID control
- Over / under temperature

DDTC230A	230 VAC	—	controller	digital temperature controller
DDTCT230A	230 VAC	—	controller	temp controller with 24 hour clock
TP1	—	—	—	temperature probe

Digital voltage window comparator timer

Multi-function/range digital voltage window comparator timer for monitoring supply voltage between two levels.

- Over and under voltage and frequency monitoring
- 2 relay outputs for individual function
- Adjustable delays
- Phase reversal on 3 phase units
- Separate supply

type	supply voltage*	phase	function	description
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DDVW3400A	400 VAC	three	timer	digital voltage timer
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Digital current window comparator timer (can interface with 5A CT's)

Multi-function digital current window comparator for monitoring current between two levels.

- Over and under current and frequency monitoring
- 2 relay outputs for individual function
- Adjustable delays
- Separate supply

DDCW3230A	230 VAC	three	timer	digital current timer
DDCW3400A	400 VAC	three	timer	digital current timer

* Other voltage options available on request.

Handheld radio (wireless) variable speed drive controller (DIN Radio Receiver)

New radio wireless variable speed drive controller designed to interface with PLC function of variable speed drives.

- Handheld remote 800m transmission (line of sight)

type	inputs	outputs	function	description
DRR	12 or 24V ACDC	5 solid state	receiver	radio VSD controller
DRT	—	—	transmitter	handheld VSD controller
ANT2	—	—	antenna	for DRR module

Wireless signal extender (3 inputs and 3 outputs: Tx and Rx)

- Power supply: 12 or 24V ACDC
- License free radio band
- 7km transmission - line of sight (includes Watchdog protection)

DRC/M	3	3 relay	master transceiver	wireless signal extender
DRC/S	3	3 relay	slave transceiver	wireless signal extender
ANT2	—	—	antenna	per each DRC module



The **Electro 11 pin plug-in** range of control and timing devices are to be installed into a standard 11 pin base making installation easy and convenient.

- Compact DIN rail mounting: (H) 80 x (W) 35 x (D) 79 mm (3 modules wide)

multi-range (adjustable time ranges)	No.	time ranges
	1	6 sec
	2	60 sec
	3	6 min
	4	60 min

multi- function	No.	functions
	A	on-delay
	B	interval
	C	equal repeat
	D	interval (pulse controlled)

type	supply voltage*	time range	function	description
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Multi-range/multi-function timers - (4 x selectable time ranges / 4 x selectable functions)

Multi-function multi-range plug-in timers that includes all commonly used functions. Any change made to function or time range by means of front mounted dials will result in a reset of the unit.

T2M110A	110 VAC	1 - 4	A - C	multi-range/function timer
T2M230A	230 VAC	1 - 4	A - C	multi-range/function timer
T2M400A	400 VAC	1 - 4	A - C	multi-range/function timer
T2M012AD	12V ACDC	1 - 4	A - C	multi-range/function timer
T2M024AD	24V ACDC	1 - 4	A - C	multi-range/function timer
T2M048AD	48V ACDC	1 - 4	A - C	multi-range/function timer
T3M110A	110 VAC	1 - 4	A - D	multi-range/function timer
T3M230A	230 VAC	1 - 4	A - D	multi-range/function timer
T3M024AD	24V ACDC	1 - 4	A - D	multi-range/function timer

True OFF delay on de-energisation timer (delay on removal of supply)

Application of supply operates the relay. On removal of supply the pre-set time period begins, on lapse of time period the relay releases. If supply re-applied before relay releases the time period is reset and relay remains on until supply is removed again. Note: should not be operated by pulses shorter than 30 seconds.

		sec		
T2D10S230A	230 VAC	10	off delay	multi-range delay on de-energisation
T2D30S230A	230 VAC	30	off delay	multi-range delay on de-energisation
T2D30S400A	400 VAC	30	off delay	multi-range delay on de-energisation
T2D60S230A	230 VAC	60	off delay	multi-range delay on de-energisation
T2D180S024AD	24V ACDC	180	off delay	multi-range delay on de-energisation
T2D180S230A	230 VAC	180	off delay	multi-range delay on de-energisation
T2D360S024AD	24V ACDC	360	off delay	multi-range delay on de-energisation
T2D360S230A	230 VAC	360	off delay	multi-range delay on de-energisation
		min		
T2D/B10M230A	230 VAC	10	off delay	multi-range delay on de-energisation
T2D/B30M230A	230 VAC	30	off delay	multi-range delay on de-energisation
T2D/B60M230A	230 VAC	60	off delay	multi-range delay on de-energisation
T2D/B180M230A	230 VAC	180	off delay	multi-range delay on de-energisation

Unequal repeating timer multi-range (for ON and OFF ranges)

Asymmetrical recycler timer with two independently adjustable time ranges. On application of supply the relay operates for the pre-set "on" time, thereafter the relay releases for the separately pre-set "off" time. Cycle repeats until supply is removed. Cycle can be reversed ("off" time first) by bridging terminals 7 and 9.

- Unequal repeating timer (asymmetrical recycler independently adjustable ON time and OFF time)

Dip switch selectable: **ON:** 6sec, 60sec, 6min, 60min, 6 hr
 OFF: 6sec, 60sec, 6min, 60min, 6 hr

R2U110A	110 VAC	–	repeat	unequal repeating timer
R2U230A	230 VAC	–	repeat	unequal repeating timer
R2U400A	400 VAC	–	repeat	unequal repeating timer
R2U012AD	12V ACDC	–	repeat	unequal repeating timer
R2U024AD	24V ACDC	–	repeat	unequal repeating timer

* Other voltage options available on request.



TNE

Star-delta timer multi-range (for ON and OFF ranges)

Applying supply switches relay to "star" for the pre-set star period, on lapse of the star period the relays switches to a neutral "transition" position (4-180 msec) where after the relay switches to the "delta" position and remains there until supply is removed.

type	supply voltage*	time range	function	description
		sec		
TNE30S024AD	24V ACDC	30	star delta	star delta timer
TNE30S110A	110 VAC	30	star delta	star delta timer
TNE30S230A	230 VAC	30	star delta	star delta timer
TNE30S400A	400 VAC	30	star delta	star delta timer
TNE60S024AD	24V ACDC	60	star delta	star delta timer
TNE60S230A	230 VAC	60	star delta	star delta timer
TNE60S400A	400 VAC	60	star delta	star delta timer
TNE180S230A	230 VAC	180	star delta	star delta timer

Defrost timer (with fan delay)

Configurable for 4-hour (defrost cycle every 4 hours) or 8 hour cycles. Application of supply starts the pre-select 1 - 60 min defrost cycle, thereafter the relay switches to the cooling cycle activating the pre-set 1-60sec fan delay period (to prevent water splatter and warm air blowing into the room) and then starts the fan.

- Cycle: 4 or 8 hr
- Defrost: 3-60 min
- Fan: 3-60 sec

DEF1/F230A	230 VAC	timer	–	defrost timer
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Econo range timers

T10/10S230A	230 VAC	10	on-delay	econo on-delay timer
T10/10S400A	400 VAC	10	on-delay	econo on-delay timer
T10/30S230A	230 VAC	30	on-delay	econo on-delay timer
T10/60S230A	230 VAC	60	on-delay	econo on-delay timer
T10/180S024AD	24V ACDC	180	on-delay	econo on-delay timer
T10/180S230A	230 VAC	180	on-delay	econo on-delay timer
T10/360S024AD	24V ACDC	360	on-delay	econo on-delay timer
T10/360S230A	230 VAC	360	on-delay	econo on-delay timer
T10/360S400A	400 VAC	360	on-delay	econo on-delay timer
T10/600S024AD	24V ACDC	600	on-delay	econo on-delay timer
T10/600S230A	230 VAC	600	on-delay	econo on-delay timer
T10/600S400A	400 VAC	600	on-delay	econo on-delay timer
T10/600S525A	525 VAC	600	on-delay	econo on-delay timer
T10/60M230A	230 VAC	60min	on-delay	econo on-delay timer
T11P/30S024AD	24V ACDC	30	interval	econo pulsed internal timer
T11P/30S230A	230 VAC	30	interval	econo pulsed internal timer
T11P/230A	230 VAC	–	one-shot	econo impulse relay
PCT1/230A	230 VAC	–	timer	econo percentage timer
PCT1/400A	400 VAC	–	timer	econo percentage timer
FRT1/230A	230 VAC	–	timer	econo forward/reverse timer
TP2/230A	230 VAC	–	timer	econo two shot timer
SSF1/230MV	95 - 240 VAC	–	timer	econo solid state flasher

* Other voltage options available on request.



T10



RRP1



T1R



SC1

The **Electro 11 pin** plug-in range of control and timing devices are to be installed into a standard 11 pin base making installation easy and convenient.

- Compact DIN rail mounting: (H) 80 x (W) 35 x (D) 79 mm (3 modules wide)

type	supply voltage*	time range	function	description
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Two hand control (safety control)

THC1 two hand control designed as a safety device for machines where operator is forced to operate two pushbuttons within 0.5 secs to operate machines. A latch facility is provided for use with a foot switch.

THC1230A	230 VAC	–	control	two hand controller
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Flip flop relays

Flip flop relays to control many applications such as spreading work load and controlling conveyor direction. F30 combines the discontinued F10 and F23 function. F30 in the mains controlled function has to be energised for at least 30 seconds before the supply is removed.

F12230A	230 VAC	–	relay	pulse controlled without memory
F30230A	230 VAC	–	relay	mains or pulse controlled with memory
F30024AD	24 VACDC	–	relay	mains or pulse controlled with memory

Alarm module (3 circuits)

Alarm module to control alarm signals and generate the appropriate output for simple annunciator panels. Control of alarm outputs from 3 separate N/O inputs. The system can be expanded by bridging all common terminals of the modules.

GAM3012D	12 VDC	–	alarm	control alarm signals
GAM3024D	24 VDC	–	alarm	control alarm signals

Power supply

Provides a regulated DC output from an AC input source.

- Supply: 230 VAC
- Output: 24 VDC (1A)

PSU	230 VAC - 24 VDC	24VA	power supply	overload/short circuit protection
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Tachometer relay multi-range (for ON and OFF ranges)

Multi-function tachometer relay with four selectable speeds. The unit can be selected for OVER and UNDER speeds and interfaces directly with a Namur two wire proximity sensor or limit switch. Relay remains energised for as long as detected speed remains within the pre-set limits.

- Selectable speeds(RPM): 1-10, 10-100, 100-1000, 1000-10000

RRP1024AD	24V AC\DC	–	relay	over/under speed
RRP1110A	110 VAC	–	relay	over/under speed
RRP1230A	230 VAC	–	relay	over/under speed
RRP1012D	12 VDC	–	relay	over/under speed

Temperature relay (direct conn. to PT100)

Directly interface with conventional PT100 (3 wire) sensors, the relay energises and remains so until pre-set maximum temperature limit is reached.

- Standard temperature : -20°- 80°C
- Ranges: 80°-180°C

T1R/180S110A	110 VAC	180s	relay	temperature controller
T1R/180S230A	230 VAC	180s	relay	temperature controller

Converters / Isolaters

Compact signal converter with built-in 24 VDC power supply for the output. The unit is designed for low amplitude signals where isolation is not needed. (Use SI100 for isolation).

type	supply voltage*	input signal	output signal	description
SC120A111230A	230 VAC	0 - 1A	4 - 20mA	current converter
SC120A211110A	110 VAC	0 - 5A	4 - 20mA	current converter
SC120A211230A	230 VAC	0 - 5A	4 - 20mA	current converter
SI1201011230A	230 VAC	0 - 10 VDC	4 - 20mA	signal converter
SI1201011024D	24 VDC	0 - 10 VDC	4 - 20mA	signal converter
SI1200711230A	230 VAC	4 - 20mA	4 - 20mA	signal converter
SI1201014230A	230 VAC	0 - 10 VDC	0 -10 VDC	signal converter

*Note: Alternative SC120A../SI120.. input and output combinations available on request only.
* Other voltage options available on request.*



LA5

The **Electro 11 pin** plug-in range of control and timing devices are to be installed into a standard 11 pin base making installation easy and convenient.

- Compact DIN rail mounting: (H) 80 x (W) 35 x (D) 79 mm (3 modules wide)

Current monitor

The module directly interfaces with conventional 5A CTs. The relay will only operate as long as monitored current remains below the pre-set limit or above the pre-set limit.

type	supply voltage*	input signal	function	description
• Hysteresis 5 - 50%				
LA51230A	230 VAC	0 - 1A	relay	over or under current monitor
LA55230A	230 VAC	0 - 5A	relay	over or under current monitor
LA55400A	400 VAC	0 - 5A	relay	over or under current monitor
WA55230A	400 VAC	0 - 5A	relay	over and under current monitor

Voltage monitor

V1C is a precise UNDER / OVER voltage monitoring relay. This relay monitors a separate voltage input (Pins 5 + 7). The relay will only operate as long as the monitored voltage remains "BELOW" the pre-set over voltage then supply voltage limit or "ABOVE" the pre-set overvoltage limit.

type	supply voltage*	phase	function	description
V1C230A400MV	230 VAC	40 - 400 VAC	over and under	voltage monitor

Frequency monitor

The relay is energised as long as measured frequency is within the presettable limits.

- Upper - 50-56Hz
- Lower - 40-50Hz

H1E0230A	230 VAC	three	over and under	frequency monitor
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Phase failure / sequence relay

The SF1 monitors Negative Phase Sequence (NPS) voltage to detect phase failure, phase reversal and phase imbalance. The relay will only operate while all three phases are present and in sequence.

SF1110A	110 VAC	three	relay	phase failure
SF1400A	400 VAC	three	relay	phase failure
SF1525A	525 VAC	three	relay	phase failure

- With knob

SF1K400A	400 VAC	three	relay	phase failure with adj. for NPS
SF1K525A	525 VAC	three	relay	phase failure with adj. for NPS

Over / under voltage monitor (incorporating phase failure)

Monitors own supply. Relay will only operate whilst the supply voltage is within the presettable "OVER" and "UNDER" voltage limits and all three phases present and in sequence. Providing effective power supply supervision and protection.

- Phase failure/reversal protection
- Over / under voltage protection

V1E230A	230 VAC	single	over and under	voltage monitor
V3E110A	110 VAC	three	over and under	voltage monitor
V3E400A	400 VAC	three	over and under	voltage monitor
V3E525A	525 VAC	three	over and under	voltage monitor
V3EN400A	400 VAC	three +N	over and under	voltage monitor

* Other voltage options available on request.



SFK1



V3E...



LV1



LP3



SN1



PS3S

The **Electro 11 pin** plug-in range of control and timing devices are to be installed into a standard 11 pin base making installation easy and convenient.

- Compact DIN rail mounting:

type	supply voltage*	time range	function	description	
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Level controllers *(failsafe control and monitoring of high and / or low levels)*

Level control unit of conductive liquids which can be configured for FILLING or EMPTYING. The unit can be used as a two probe system for alarm purposes or a three probe system to control HIGH and LOW levels of a reservoir. Up to four LV1 can be utilized in the same reservoir by connecting all commons (*pin7*). The sensitivity of the unit can also be adjusted.

- Emptying/ filling

LV1024A	024 VAC	–	level control	liquid conductive controller	
LV1110A	110 VAC	–	level control	liquid conductive controller	
LV1230A	230 VAC	–	level control	liquid conductive controller	
LV1400A	400 VAC	–	level control	liquid conductive controller	
LV1525A	525 VAC	–	level control	liquid conductive controller	
LV1024D	024 VDC	–	level control	liquid conductive controller	
LVC1230A	230 VAC	–	level control	DC capacitive probe controller	

Pump sequence relay

Alternating relays are designed to minimize pump and motor wear by equalizing run time between parallel components in a multi-pump system. These relays are controlled by an external control switch.

- Three normally open pump outputs
- Permanent memory for next pump activated after power off
- Three normally open pressure switch inputs (*voltage free*)

PSR1230A	230 VAC	3 circuits	relay	pump sequencing relay	
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Pump protection relay

Pump protection relay capable of protecting a submersible pump against all major power line faults.

- Over / Under Current protection
- Running dry restart delay / Over current retries
- Over / Under Voltage protection with phase rotation on 3 phase units

Function: Voltage monitoring
Current monitoring
Security switch trip
Star / Delta connection

type	supply voltage*	recovery time	function	phase	description
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LP1230A	230 VAC	6 hours	relay	single	pump protection relay
LP2230A	230 VAC	1-2-4-8 hrs	relay	single	pump protection relay
LP3400A	400 VAC	1-2-4-8 hrs	relay	three	pump protection relay

Accessories

SN1	single line insulated stainless steel probe for conductive liquids				
PS3S	3 electrode holder (<i>mounts through 50.5 mm hole</i>)				
P1000S	electrodes for PS3S holder (<i>1 meter length</i>)				
FS03-3P	electrode spacer disc (<i>for extended probe length</i>)				
PXL	extension locknut (<i>each</i>)				

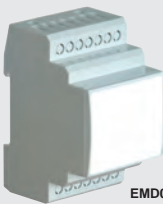
* Other voltage options available on request.



EX11 + EX08



EMD02



EMD03

11 pin - Plug-in black plastic housings (for electronic components)

type	dimensions	description
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11 pin - Plug-in black plastic housings (for electronic components)

EX01		metal retaining clip for plug-in devices
EX02		panel mount adaptor
EX11	(H) 80 x (W) 35 x (D) 79	11 pin empty housing complete (black) 31.20
EX08	front label	blank adhesive label for front of housing
EX06B	black knob	potentiometer knob for above housing
EX06G	grey knob	potentiometer knob for above housing

Modular housings (grey) 6.3 mm terminal centre spacing

- Lines up with standard DIN MCBS and modular devices (2 or 3 modules wide)

EMD02	(H) 92 x (W) 35.5 x (D) 64	2 module complete housing Din rail mount
EMD03	(H) 92 x (W) 53.3 x (D) 64	3 module complete housing Din rail mount
EMX02	front label	blank adhesive front label for EMD02 (2 modular) housing
EMX03	front label	blank adhesive front label for EMD03 (3 modular) housing
EMX04	adj. knob	screw adjustable knob for internal potentiometer



P44MFT1



P44VM12



P44HUM1



P44HTC1

48 x 48 panel mount - timing, counting, control and monitoring devices

Modular DIN rail mounting digital timing, counting, control and monitoring devices available in a compact housing design. Features many innovative features such as various relay output options as well as "re-tx" (re-transmit) function offering an additional 4-20 mA output with specific monitoring devices.

type	supply voltage*	range	relays	with 4-20mA	description
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Digital timing devices and pre-select counter

- Feature ability to continue from where left off in the event of a power loss during timing

P44MFT1-240A	240 VAC	1sec - 9999 hrs	1	–	multifunction timer
P44MFT1-024AD	24V AC/DC	1sec - 9999 hrs	1	–	multifunction timer
P44ACT1-240A	240 VAC	1sec - 100 hrs	2	–	accumulation timer
P44RHM1-240A	240 VAC	1sec - 9999 hrs	1	–	running hour meter
P44CNT1-240A	240 VAC	4 or 8 digit mode	1	–	counter / frequency indicator
P44CWT1-240A	240 VAC	0 - 100min or hrs	1	–	digital clockwork timer

Voltage indicator / monitor

- Displays and/or monitors true RMS single or three phase supply voltages

P44VM12-T-240A	240 VAC	0 - 300V	2	yes	single phase voltage indicator
P44VM32N-400A	400 VAC	0 - 500V	2	–	3 ph voltage & frequency monitor
P44VMD1-240A	240 VAC	0 - 150V	1	–	DC voltage indicator
P44VMD2-T-240A	240 VAC	0 - 150V	2	yes	DC voltage indicator

(N) software selectable neutral monitoring as well.

Current monitors

- Displays and/or monitors true RMS AC current signal from current transformers

P44CMA1-5-240A	240 VAC	0 - 5A	1	–	AC current monitor
P44CMA2-5-T-240A	240 VAC	0 - 5A	2	yes	AC current monitor
P44CMA2-5-240A	240 VAC	0 - 5A	2	–	AC current monitor

0-10V re-transmit available on request.

Humidity controller

P44-HUM1-240A	240 VAC	0 - 100%	1	–	humidity controller
HS4					humidity controller probe (3 meter length)

Temperature controllers

- Displays and/or monitors temperature using various temperature sensors

- Sensor: PT100

P44HTC1-240A	240 VAC	-50°C to 440°C	1	–	temperature controller
P44HTC1-T-024D	24 VDC	-50°C to 440°C	1	yes	temperature controller
P44HTC1-T-240A	240 VAC	-50°C to 440°C	1	yes	temperature controller
P44HTCT1-240A	240 VAC	-50°C to 440°C	1	–	temp controller and 24hr timer
P44HTC2-240A	240 VAC	-50°C to 440°C	2	–	temperature controller
P44HTC2-T-240A	240 VAC	-50°C to 440°C	2	yes	temperature controller
P44HTC2-T-024D	24 VDC	-50°C to 440°C	2	yes	temperature controller
P44-RTC1-240A	240 VAC	-50°C to 440°C	1	–	ramp temperature controller

- Sensor: Thermocouple

P44TTC1-240A	240 VAC	-50°C to 1320°C	1	–	temperature controller
P44TTC1-T-240A	240 VAC	-50°C to 1320°C	1	yes	temperature controller

For type J,K,R,S,T,N thermocouples.

* Other voltage options available on request.



P44LM1

48 x 48 panel mount - signal indicators/monitors (4 - 20mA) loop

Displays and/or monitors transducer generated signals with outputs 4 - 20mA as real world values from -999 to 9999 for indicating voltage, current, temperature, pressure etc. and displaying in real values.

type	supply voltage*	range	relays	with 4-20mA	description
Loop indicator					
P44LM1-240A	240 VAC	0/4 - 20mA	1	-	loop indicator
P44LM1-P-240A	240 VAC	0/4 - 20mA	1	24 VDC PS	loop indicator
P44LM1-T-240A	240 VAC	0/4 - 20mA	1	yes	loop indicator
P44LM2-240A	240 VAC	0/4 - 20mA	2	-	loop indicator
P44LM2-P-240A	240 VAC	0/4 - 20mA	2	24 VDC PS	loop indicator
P44LM2-P-024D	24 VDC	0/4 - 20mA	2	24 VDC PS	loop indicator
P44LM2-T-240A	240 VAC	0/4 - 20mA	2	yes	loop indicator

Note: 0-10V re-transmit output available on request.



P44RPM1

Signal indicator / monitors – 0-10V input

Displays and/or monitors transducer generated signals with outputs 0 - 10V as real world values from -999 to 9999 for indicating voltage, current, temperature, pressure etc. and displaying in real values.

P44SM1-10-240A	240 VAC	1 - 10V*	1	-	signal monitor
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* Available with a 0-5V or 10K potentiometer input on request

RPM / pulses per hour

Displays and/or monitors speed (RPM) relay remains energised while monitored speed is within pre-set parameters NO-NPN proxi, (PNP available on request).

P44RPM1-240A	240 VAC	0 - 9999	1	-	RPM monitor
P44RPM2-240A	240 VAC	0 - 9999	2	-	RPM monitor

48 x 96 – Digital timing devices and pre-select counter

48 x 96 mm panel mounting digital timing, counting, control and monitoring devices are available in a compact housing design. Offer many innovative features such as various relay output options as well as "re-tx" (re-transmit) function offering an additional 4 - 20 mA output with specific monitoring devices.

- Feature ability to continue from where left off in the event of a power loss during timing.

P49MFT1-240A	240 VAC	1sec - 9999 hrs	1	-	multi-function timer
P49MFT1-024AD	24V AC/DC	1sec - 9999 hrs	1	-	multi-function timer
P49ACT1-240A	240 VAC	1sec - 100 hrs	1	-	accumulation timer
P49CNT1-240A	240 VAC	4 digit mode	1	-	counter / frequency monitor
P49CNT1-024AD	24V AC/DC	4 digit mode	1	-	counter / frequency monitor
P49CWT1-240A	240 VAC	0 - 100min or hrs	1	-	digital clockwork timer

Voltage indicator / monitor

- Displays and/or monitors true RMS single or three phase supply voltages

P49VM10-240A	240 VAC	0 - 300V*	1	-	single phase voltage monitor
<i>0 - 10V re-transmit available on request</i>					
P49VM31N-400A	400 VAC	0 - 500V	1	-	3 ph voltage & frequency indicator
P49VM32N-400A	400 VAC	0 - 500V	2	-	3 ph voltage & frequency indicator

(N) software selectable neutral monitoring as well.

P49VMD2-240A	240 VAC	0 - 150V*	2	-	DC voltage indicator
<i>0 - 10V re-transmit available on request</i>					

* Other voltage options available on request.



P49MFT1



P49VM



P49CMA



P49TC



P49LM



P49RPM

Current monitors

Displays and/or monitors true RMS AC current signal from current transformers.

type	supply voltage*	range	relays	with 4-20mA	description
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Current monitors

Displays and/or monitors true RMS AC current signal from current transformers.

P49CMA1-5-240A	240 VAC	0 - 5A	1	-	AC current monitor
P49CMA2-5-240A	240 VAC	0 - 5A	2	-	AC current monitor
P49CMD1-240A	240 VAC	0 - 50mV	1	-	DC current monitor

0 - 10V re-transmit available on request.

Temperature controllers *can be used with one or two TS3 temperature probes*

• Displays and/or monitors temperature from various temperature sensors.

P49TC1-240A	240 VAC	-30°C to 105°C	1	TS3 probe	temperature controller
P49TC2-240A	240 VAC	-30°C to 105°C	2	TS3 probe	temperature controller

TS3 temperature probe for above controllers (3 meter cable)

P49HTC1-240A	240 VAC	-50°C to 440°C	1	PT100	temperature controller
P49HTC1-T-240A	240 VAC	-50°C to 440°C	1	PT100	temperature controller
P49HTC2-240A	240 VAC	-50°C to 440°C	2	PT100	temperature controller
P49TTC1-240A	240 VAC	-50°C to 1320°C	1	thermocouple	temperature controller
P49TTC2-T-240A	240 VAC	-50°C to 1320°C	2	thermocouple	temperature controller

For type J,K,R,S,T,N thermocouples.

Signal indicators / monitors – 4-20 mA LOOP

Displays and/or monitors transducer generated signals with outputs 4 - 20mA as real world values from -999 to 9999 for indicating voltage, current, temperature, pressure etc. and displaying in real values.

P49LM1-024D	24 VDC	0/4 - 20mA	1	-	loop indicator
P49LM1-P-024D	24 VDC	0/4 - 20mA	1	24 VDC PS	loop indicator
P49LM1-240A	240 VAC	0/4 - 20mA	1	-	loop monitor
P49LM1-P-240A	240 VAC	0/4 - 20mA	1	24 VDC PS	loop monitor
P49LM1-T-240A	240 VAC	0/4 - 20mA	1	yes	loop monitor
P49LM1-T-024D	24 VDC	0/4 - 20mA	1	yes	loop monitor
P49LM1-P-T-240A	240 VAC	0/4 - 20mA	1	24 VDC PS	loop monitor
P49LM2-240A	240 VAC	0/4 - 20mA	2	-	loop monitor
P49LM2-P-240A	240 VAC	0/4 - 20mA	2	24 VDC PS	loop monitor
P49LM2-P-T-240A	240 VAC	0/4 - 20mA	2	24 VDC PS	loop monitor
P49LM2-T-240A	240 VAC	0/4 - 20mA	2	yes	loop monitor

Signal indicator / monitors – 0 - 10V input

P49SM1-10-024A	24 VAC	0 - 10V*	1	-	signal indicator
P49SM1-10-024D	24 VDC	0 - 10V*	1	yes	signal indicator
P49SM1-10-T-240A	240 VAC	0 - 10V*	1	yes	signal indicator
P49SM1-10-240A	240 VAC	1 - 10V*	1	-	signal monitor
P49SM2-10-240A	240 VAC	1 - 10V*	2	-	signal monitor
P49SM2-10-T-240A	240 VAC	1 - 10V*	2	yes	signal monitor
P49SM2-10-T-024D	24 VDC	1 - 10V*	2	yes	signal monitor

* Available with a 0 - 5V or 10K potentiometer input

RPM / pulses per hour

Displays and/or monitors speed (RPM) relay remains energised while monitored speed is within pre-set parameters.

P49RPM1-02AD	12V AC/DC	0 - 9999	1	-	RPM monitor
P49RPM1-240A	240 VAC	0 - 9999	1	-	RPM monitor
P49RPM1-024AD	24V AC/DC	0 - 9999	1	-	RPM monitor
P49RPM1-T-240A	240 VAC	0 - 9999	1	yes	RPM monitor

Note: 0-10V re-transmit output available on request.

* Other voltage options available on request.



D3CNT1



D3VM



D3TC1

D3 series - DIN rail mount - Timing, counting, control and monitoring devices

Modular DIN rail mounting digital timing, counting, control and monitoring devices available in a compact housing design. Offers many innovative features such as various relay output options as well as “re-tx” (re-transmit) function offering an additional 4 - 20 mA output with specific monitoring devices.

- Connection: Plug in termination (for ease of replacement)
- Mounting: DIN rail mounting (3-module wide - 54 mm)
- Display: Dual colour LED display

type	supply voltage*	range	relays	with 4-20mA	description
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Digital timing devices and pre-select counter

Feature ability to continue from where left off in the event of a power loss during timing.

D3MFT1-240A	240 VAC	1sec - 9999 hrs	1	–	multi-function timer
D3ACT1-240A	240 VAC	1sec - 100 hrs	1	–	accumulation timer
D3RHM1-240A	240 VAC	1sec - 9999 hrs	1	–	running hour meter
D3CNT1-240A	240 VAC	4 or 8 digit mode	1	–	counter / freq. monitor
D324HR2-240A	240 VAC	24 hours	2	–	4 selectable time zones

Voltage indicator / monitor

Monitors and displays true RMS single or three phase supply voltages.

D3VM31N-400A	400 VAC	0 - 500V (3ph)	1	–	voltage & freq. monitor
D3VM32N-400A	400 VAC	0 - 500V (3ph)	2	–	3 ph voltage & frequency monitor
<i>(N) software selectable neutral monitoring as well</i>					
D3VMD1-240A	240 VAC	–	1	–	DC voltage monitor
D3VMD2-024D	24 VDC	–	2	–	DC voltage monitor
D3VMD2-T-240A	240 VAC	–	2	yes	DC voltage monitor

Current monitors

Monitors and displays true RMS AC current signal from current transformers.

D3CMA1-5-240A	240 VAC	0 - 5 A	1	–	AC current monitor
D3CMA2-5-240A	240 VAC	0 - 5 A	2	–	AC current monitor
D3CMD2-T-240A	240 VAC	0 - 5 A	2	yes	AC current monitor

0 - 10V re-transmit available on request.

Temperature controllers

Monitors and displays temperature using various temperature sensors.

- Can be used with one or two TS3 temperature probes (for high and low temp monitoring)

				sensor	
D3TC1-240A	240 VAC	-30 to 105°C	1	TS3 probe	temperature controller
D3TC2-240A	240 VAC	-30 to 105°C	2	TS3 probe	temperature controller
D3TCT1-240A	240 VAC	-30 to 105°C	1	TS3 probe	temp contr. & 24hr timer
TS3		temperature probe for above controllers			(3 meter cable)
D3HTC1-240A	240 VAC	-50°C to 440°C	1	PT100	temperature controller
D3HTC2-240A	240 VAC	-50°C to 440°C	2	PT100	temperature controller
D3HTC2-T-240A	240 VAC	-50°C to 440°C	2	PT100	temperature controller
D3HTC1-T-240A	240 VAC	-50°C to 440°C	1	PT100	temperature controller
D3HTCT1-240A	240 VAC	-50°C to 440°C	1	PT100	temp controller & 24hr timer
D3RTC1-240A	240 VAC	-50°C to 440°C	1	PT100	ramp temperature controller
D3TTC1-240A	240 VAC	-50 to 1320°C	1	thermocouple	temperature controller
D3TTC1-024AD	24V AC/DC	-50 to 1320°C	1	thermocouple	temperature controller
D3TTC2-T-240A	240 VAC	-50 to 1320°C	2	thermocouple	temperature controller

* Other voltage options available on request.



D3LM

D3 series - DIN rail mount - Signal indicators / monitors – 4 - 20 mA LOOP

Displays and monitors transducer generated signals with outputs 4 - 20mA as real world values from -999 to 9999 for indicating voltage, current, temperature, pressure etc. and displaying in real values.

type	supply voltage*	range	relays	with 4-20mA	description
D3LM1-240A	240 VAC	0/4 - 20mA	1	–	loop monitor
D3LM1-P-240A	240 VAC	0/4 - 20mA	1	24 VDC PS	loop monitor
D3LM1-T-240A	240 VAC	0/4 - 20mA	1	yes	loop monitor
D3LM2-240A	240 VAC	0/4 - 20mA	2	–	loop monitor
D3LM2-P-240A	240 VAC	0/4 - 20mA	2	24 VDC PS	loop monitor
D3LM2-T-240A	240 VAC	0/4 - 20mA	2	–	loop monitor
D3SM2-10-T-240A	240 VAC	0 - 10V**	2	yes	loop monitor

0-10V re-transmit output available on request

** Available with a 0-5V or 10K potentiometer input

Humidity temperature controllers

D3HUM1-240A	240 VAC	0-100%	1	–	humidity controller
HS4	–	–	–	–	humidity controller probe (3m length)

D4 series - DIN mount - Single line display

Digital timing devices and pre-select counter

Feature ability to continue from where left off in the event of a power loss during timing.

D4MFT1-240A	–	1sec - 9999 hrs	1	–	multi-function timer
D4RHM1-240A	–	1sec - 9999 hrs	1	–	running hour meter
D4CNT1-240A	–	4 or 8 digit mode	1	–	counter / freq. monitor

Current monitors (DIN rail mount)

Monitors and displays true RMS AC current signal from current transformers.

D4CMA2-5-240A	240 VAC	1 - 5A	2	–	AC current monitor
D4CMA2-5-400A	400 VAC	1 - 5A	2	–	AC current monitor

Voltage indicator / monitor (DIN rail mount)

Monitors and displays true RMS single or three phase supply voltages.

D4VM31N-400A	400 VAC	0 - 500V (3ph)	1	–	voltage & freq. monitor
D4VM32-400A	400 VAC	300 - 500V (3ph)	2	–	voltage & freq. monitor
D4VM32N-400A	400 VAC	300 - 500V (3ph)	2	–	voltage & freq. monitor

(N) software selectable neutral monitoring as well.

Temperature controllers

Monitors and displays temperature using various temperature sensors.

D4HTC1-230A	230 VAC	-50 to 440°C	1	PT100	temperature controller
D4HTC2-230A	230 VAC	-50 to 440°C	2	PT100	temperature controller

Signal indicators / monitors – 4 - 20 mA LOOP

D4LM2-024D	24 VDC	0 / 4 - 20mA	2	–	loop monitor
D4LM2-240A	240 VAC	0 / 4 - 20mA	2	–	loop monitor

RPM / pulses per hour

Monitors and displays speed (RPM) relay remains energised while monitored speed is within pre-set parameters.

D4RPM2-240A	240 VAC	0 - 9999	2	–	RPM monitor
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* Other voltage options available on request.



D3HUM1

new



D4CMA



Panasonic

Huba Control



FIELD SWITCHING & SENSING

K

Proximity sensors		MD AECO Delta	K-1...4 K-11 K-12
Photoelectric sensors		Panasonic Delta MD	K-13...15/17 K-12 K-5...8/10
Vibration /Inclination sensors		MD	K-4
Ultrasonic sensors		MD	K-9
Fork sensors		MD	K-10
Fibre-optic sensors		Panasonic	K-15...16
Mark / Colour sensors		Panasonic	K-18
Laser sensors / Distance measurement		Panasonic	K-18
Safety light curtains / Controllers		Reer	K-20...22
Pressure transmitters / Sensors		Huba Delta	K-23...25 K-29
Pressure switches / Sensors		Huba Lefoo	K-24...25 K-40
Flow sensors / Switches		Huba Matic EM	K-26 K-36 K-38
Sensor connectors and cables		EM	K-27...28
Micro switches / Limit switches		EM Lovato Ersce	K-30 K-31...32 K-33...34
Float / Flow switches		Matic EM Lefoo	K-35...36 K-37...38 K-40
Fuel level sensors / Indicators		EM	K-39
Smoke detectors		EM	K-41

new



AB1/AP-3A



AD1/AP-3A



AE1/CP-1A



AE6/AP-3A



AM6/AP-3H

Inductive sensors are used to sense metal objects and can be utilised in very difficult applications, even in the presence of oils, powders, liquids and vibrations. They are commonly mounted on machine tools, textile machines, transport systems, packaging machines and all automation applications.

- Protection degree: IP67
- Ambient limits: -25 ... +70°C
- LED indication: Incorporated
- Housing: Nickel-plated brass (PFM/PFK - AISI 316L stainless steel housing)
- Short circuit and polarity reversal protection

type	supply voltage	flush		sensing distance	NPN	PNP	NO	NC	connector	body length
		flush	non flush							

M4 proximity switches (long sensing distance)

Long sensing range		cable connection (2 m)		NPN	PNP	NO	NC	connector	body length
AB1/AP-3A	10 - 30 VDC	●	□						
AB1/CP-3A	10 - 30 VDC	●	□	1 mm	□	●	●	cable	22 mm

M5 proximity switches (long sensing distance)

Long sensing range		cable connection (2 m)		NPN	PNP	NO	NC	connector	body length
AD1/AP-3A	10 - 30 VDC	●	□						
AD1/CP-3A	10 - 30 VDC	●	□	1.5 mm	□	●	●	cable	30 mm

M8 proximity switches

Standard sensing range		cable connection (2 m)		NPN	PNP	NO	NC	connector	body length
AE1/AP-1A	10 - 30 VDC	●	□						
AE1/CP-1A	10 - 30 VDC	●	□	1.5 mm	□	●	●	cable	46 mm
AE1/AP-2A	10 - 30 VDC	□	●	2.5 mm	●	●	□	cable	46 mm
AE1/CP-2A	10 - 30 VDC	□	●	2.5 mm	□	●	●	cable	46 mm

Long sensing range		cable connection (2 m)		NPN	PNP	NO	NC	connector	body length
AE6/AP-3A*	10 - 30 VDC	●	□						
AE6/CP-3A*	10 - 30 VDC	●	□	2 mm	□	●	●	cable	36 mm
AE6/AP-4A*	10 - 30 VDC	□	●	4 mm	●	●	□	cable	36 mm
AE6/CP-4A*	10 - 30 VDC	□	●	4 mm	□	●	●	cable	36 mm

		M8 (4pin) plug connection		NPN	PNP	NO	NC	connector	body length
AE6/AP-3F*	10 - 30 VDC	●	□						
AE6/CP-3F*	10 - 30 VDC	●	□	2 mm	□	●	●	M8 plug	40 mm
AE6/AP-4F*	10 - 30 VDC	□	●	4 mm	●	●	□	M8 plug	40 mm
AE6/CP-4F*	10 - 30 VDC	□	●	4 mm	□	●	●	M8 plug	40 mm

M12 proximity switches

Standard sensing range		cable connection (2 m)		NPN	PNP	NO	NC	standard body	
AM1/AP-1A	10 - 30 VDC	●	□					2 mm	●
AM1/CP-1A	10 - 30 VDC	●	□	2 mm	□	●	●	cable	50 mm
AM1/AN-1A	10 - 30 VDC	●	□	2 mm	●	□	●	cable	50 mm
AM1/CN-1A	10 - 30 VDC	●	□	2 mm	□	●	●	cable	50 mm
AM1/AP-2A	10 - 30 VDC	□	●	4 mm	●	●	□	cable	50 mm
AM1/CP-2A	10 - 30 VDC	□	●	4 mm	□	●	●	cable	50 mm
AM1/AN-2A	10 - 30 VDC	□	●	4 mm	●	□	●	cable	50 mm
AM1/CN-2A	10 - 30 VDC	□	●	4 mm	□	●	●	cable	50 mm

Long sensing range		cable connection (2 m)		NPN	PNP	NO	NC	connector	body length
AM6/AP-3A*	10 - 30 VDC	●	□						
AM6/CP-3A*	10 - 30 VDC	●	□	4 mm	□	●	●	cable	40 mm
AM6/AP-4A*	10 - 30 VDC	□	●	8 mm	●	●	□	cable	40 mm
AM6/CP-4A*	10 - 30 VDC	□	●	8 mm	□	●	●	cable	40 mm

		M12 (4pin) plug connection		NPN	PNP	NO	NC	connector	body length
AM6/AP-3H*	10 - 30 VDC	●	□						
AM6/CP-3H*	10 - 30 VDC	●	□	4 mm	□	●	●	M12 plug	53 mm
AM6/AP-4H*	10 - 30 VDC	□	●	8 mm	●	●	□	M12 plug	53 mm
AM6/CP-4H*	10 - 30 VDC	□	●	8 mm	□	●	●	M12 plug	53 mm

2 wire version		M12 (4pin) plug connection		NPN	PNP	NO	NC	connector	body length
AM1/A0-1H	10 - 30 VDC	●	□						
AM1/A0-2H	10 - 30 VDC	●	□	4 mm	□	●	●	M12 plug	75 mm
AM1/A0-3H*	10 - 30 VDC	□	●	4 mm	●	●	□	M12 plug	75 mm
AM1/A0-4H*	10 - 30 VDC	□	●	8 mm	□	●	●	M12 plug	75 mm

NO + NC output		M12 (4pin) plug connection		NPN	PNP	NO	NC	connector	body length
AM1/BP-1H	10 - 30 VDC	●	□						
AM1/BP-2H	10 - 30 VDC	●	□	4 mm	□	●	●	M12 plug	75 mm

* Long sensing range

Note: For NPN version, replace the "P" with "N" Cables and M8/12 connectors (see page K-27 / 28)

Inductive proximity sensors - Ø M12 and M18

type	supply voltage	flush		sensing distance	NPN	PNP	NO	NC	connector	body length
		flush	non flush							

M12 proximity switches

Decout version	NPN/PNP/NO/NC (on one sensor)		sensing distance		M12 (4pin) plug connection	
PM3/00-1H	10 - 30 VDC	● □	2 mm	● ● ● ●	M12 plug	74 mm
PM3/00-2H	10 - 30 VDC	□ ●	4 mm	● ● ● ●	M12 plug	74 mm

AC version		cable connection	sensing distance			
VM2/A0-1B	20 - 253 VAC	● □	2 mm	TRIAC	● □	cable 72 mm
VM2/C0-1B	20 - 253 VAC	● □	2 mm	TRIAC	●	cable 72 mm
VM2/A0-2B	20 - 253 VAC	□ ●	4 mm	TRIAC	● □	cable 72 mm
VM2/C0-2B	20 - 253 VAC	□ ●	4 mm	TRIAC	●	cable 72 mm

For food and beverage applications

- AISI 316L (DIN 1.4404) stainless steel housing
- IP67 (EN60529) - IP68 (1m - 7 days) - IP69K protection degree
- -40...+80°C (up to 100°C for short exposure during cleaning process)

			sensing distance		M12 (4pin) plug connection	
PFM1/BP-3H*	10 - 30 VDC	● □	4 mm	□ ● ● ●	M12 plug	65 mm
PFM1/BP-4H*	10 - 30 VDC	□ ●	8 mm	□ ● ● ●	M12 plug	65 mm

Cables and M12 connectors (see page K-27 / 28)

M18 cylindrical proximity switches

Standard sensing range		cable connection (3 wire)			
AK1/AP-1A	10 - 30 VDC	● □	5 mm	□ ● ●	cable 50 mm
AK1/CP-1A	10 - 30 VDC	□ ●	5 mm	□ ● ●	cable 50 mm
AK1/AN-1A	10 - 30 VDC	● □	5 mm	● □ ●	cable 50 mm
AK1/CN-1A	10 - 30 VDC	□ ●	5 mm	● □ ●	cable 50 mm
AK1/AP-2A	10 - 30 VDC	□ ●	8 mm	□ ● ●	cable 50 mm
AK1/CP-2A	10 - 30 VDC	● □	8 mm	□ ● ●	cable 50 mm
AK1/AN-2A	10 - 30 VDC	□ ●	8 mm	● □ ●	cable 50 mm
AK1/CN-2A	10 - 30 VDC	● □	8 mm	● □ ●	cable 50 mm

Short body - NO + NC		cable connection (4 wire)			
AK6/BP-1A	10-30 VDC	● □	5 mm	□ ● ● ●	cable 39 mm
AK6/BN-1A	10-30 VDC	□ ●	5 mm	□ ● ● ●	cable 39 mm
AK6/BP-2A	10-30 VDC	□ ●	8 mm	□ ● ● ●	cable 39 mm
AK6/BN-2A	10-30 VDC	● □	8 mm	□ ● ● ●	cable 39 mm

Long sensing range - NO + NC		M12 (4pin) plug connection			
AK6/BP-3H*	10 - 30 VDC	● □	8 mm	□ ● ● ●	M12 plug 49 mm
AK6/BN-3H*	10 - 30 VDC	□ ●	8 mm	□ ● ● ●	M12 plug 49 mm
AK6/BP-4H*	10 - 30 VDC	□ ●	12 mm	□ ● ● ●	M12 plug 49 mm
AK6/BN-4H*	10 - 30 VDC	● □	12 mm	□ ● ● ●	M12 plug 49 mm

2 wire version		M12 (4pin) plug connection			
AK1/A0-1H	10 - 30 VDC	● □	5 mm	● ● ● □	M12 plug 64 mm
AK1/A0-2H	10 - 30 VDC	□ ●	8 mm	● ● ● □	M12 plug 64 mm
AK1/A0-3H*	10 - 30 VDC	● □	8 mm	● ● ● □	M12 plug 64 mm
AK1/A0-4H*	10 - 30 VDC	□ ●	12 mm	● ● ● □	M12 plug 64 mm

Decout version	NPN/PNP/NO/NC (on one sensor)		sensing distance		M12 (4pin) plug connection	
PK3/00-1H	10 - 30 VDC	● □	5 mm	● ● ● ●	M12 plug	72 mm
PK3/00-2H	10 - 30 VDC	□ ●	8 mm	● ● ● ●	M12 plug	72 mm

AC version		cable connection	sensing distance			
VK2/A0-1B	20 - 253 VAC	● □	5 mm	TRIAC	● □	cable 77 mm
VK2/C0-1B	20 - 253 VAC	● □	5 mm	TRIAC	●	cable 77 mm
VK2/A0-2B	20 - 253 VAC	□ ●	8 mm	TRIAC	● □	cable 77 mm
VK2/C0-2B	20 - 253 VAC	□ ●	8 mm	TRIAC	●	cable 77 mm

For food and beverage applications

- AISI 316L (DIN 1.4404) stainless steel housing
- IP67 (EN60529) - IP68 (1m - 7 days) - IP69K protection degree
- -40...+80°C (up to 100°C for short exposure during cleaning process)

			sensing distance		M12 (4pin) plug connection	
PFK1/BP-3H*	10 - 30 VDC	● □	8 mm	□ ● ● ●	M12 plug	63 mm
PFK1/BP-4H*	10 - 30 VDC	□ ●	12 mm	□ ● ● ●	M12 plug	63 mm

* Long sensing range Cables and M12 connectors (see page K-27 / 28)



PM3/00-1H



AK1/CP-1A



PK3/00-1H

new



AT6/BP-3H



AT6/BP-4H



IL8/AP-3A



IL1/AP-3A

Inductive sensors are used to sense metal objects and can be utilised in very difficult applications, even in the presence of oils, powders, liquids and vibrations. They are commonly mounted on machine tools, textile machines, transport systems, packaging machines and all automation applications.

- Protection degree: IP67
- Ambient limits: -25 - +70°C
- LED indication: Incorporated
- Short circuit and polarity reversal protection

type	supply voltage	flush	non flush	sensing distance	NPN	PNP	NO	NC	connector	body length
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M30 cylindrical proximity switches

Standard sensing range

type	supply voltage	flush	non flush	sensing distance	NPN	PNP	NO	NC	connector	body length
AT1/AP-1A	10 - 30 VDC	•		10 mm		•	•		cable	60 mm
AT1/CP-1A	10 - 30 VDC	•		10 mm		•		•	cable	60 mm
AT1/AN-1A	10 - 30 VDC	•		10 mm	•		•		cable	60 mm
AT1/CN-1A	10 - 30 VDC	•		10 mm	•			•	cable	60 mm
AT1/AP-2A	10 - 30 VDC		•	15 mm		•	•		cable	60 mm
AT1/CP-2A	10 - 30 VDC		•	15 mm		•		•	cable	60 mm
AT1/AN-2A	10 - 30 VDC		•	15 mm	•		•		cable	60 mm
AT1/CN-2A	10 - 30 VDC		•	15 mm	•			•	cable	60 mm

cable connection

Long sensing range - NO + NC

type	supply voltage	flush	non flush	sensing distance	NPN	PNP	NO	NC	connector	body length
AT6/BP-3H*	10 - 30 VDC	•		15 mm		•	•	•	M12 plug	44 mm
AT6/BP-4H*	10 - 30 VDC		•	20 mm		•	•	•	M12 plug	44 mm
AT6/BN-3H*	10 - 30 VDC	•		15 mm	•		•	•	M12 plug	44 mm
AT6/BN-4H*	10 - 30 VDC		•	20 mm	•		•	•	M12 plug	44 mm

M12 (4pin) plug connection

2 wire version

type	supply voltage	flush	non flush	sensing distance	NPN	PNP	NO	NC	connector	body length
AT1/A0-1H	10 - 30 VDC	•		10 mm	•	•	•		M12 plug	76 mm
AT1/A0-2H	10 - 30 VDC		•	15 mm	•	•	•		M12 plug	76 mm
AT1/A0-3H*	10 - 30 VDC	•		15 mm	•		•		M12 plug	76 mm
AT1/A0-4H*	10 - 30 VDC		•	20 mm	•		•		M12 plug	76 mm

M12 (4pin) plug connection

AC version

type	supply voltage	flush	non flush	sensing distance	TRIAC	NO	NC	connector	body length
VT2/A0-1B	20 - 253 VAC	•		10 mm	TRIAC	•		cable	80 mm
VT2/C0-1B	20 - 253 VAC	•		10 mm	TRIAC		•	cable	80 mm
VT2/A0-2B	20 - 253 VAC		•	15 mm	TRIAC	•		cable	80 mm
VT2/C0-2B	20 - 253 VAC		•	15 mm	TRIAC		•	cable	80 mm

cable connection

* Long sensing range Cables and M12 connectors (see page K-27 / 28)

Analog output proximity switches

1 x 0-10V and 1 x 4-20mA output

- Voltage 0 - 10 VDC and Current 4 - 20mA outputs (in the same device)
- Wide usable sensing ranges: M12 (6 mm) and M18 (10 mm)
- Excellent resolution (no digitalization)

M12 proximity switches

type	supply voltage	flush	non flush	sensing distance	0-10V	4-20mA	connector	body length
AM1/D2-5H	15 - 30 VDC	•		0...6 mm	0-10V	4-20mA	M12 plug	60 mm

M12 (4pin) plug connection

M18 proximity switches

type	supply voltage	flush	non flush	sensing distance	0-10V	4-20mA	connector	body length
AK6/D2-5H	15 - 30 VDC	•		0...10 mm	0-10V	4-20mA	M12 plug	49 mm

M12 (4pin) plug connection

Rectangular housing inductive proximity switches

8 x 8 x 40 mm rectangular body

type	supply voltage	flush	non flush	sensing distance	NPN	PNP	NO	NC	connector	body length
IL8/AP-3A	10 - 30 VDC	•		2 mm		•	•		cable	40 mm
IL8/CP-3A	10 - 30 VDC	•		2 mm		•		•	cable	40 mm
IL8/AN-3A	10 - 30 VDC	•		2 mm	•		•		cable	40 mm
IL8/CN-3A	10 - 30 VDC	•		2 mm	•			•	cable	40 mm

cable connection

28 x 10 x 16 mm rectangular body

type	supply voltage	flush	non flush	sensing distance	NPN	PNP	NO	NC	connector	body length
IL1/AP-3A	10 - 30 VDC	•		3 mm		•	•		cable	28 mm
IL1/CP-3A	10 - 30 VDC	•		3 mm		•		•	cable	28 mm
IL1/AN-3A	10 - 30 VDC	•		3 mm	•		•		cable	28 mm
IL1/CN-3A	10 - 30 VDC	•		3 mm	•			•	cable	28 mm

(aligns with standard mechanical micro switch)

new



C12P/00-3E



C30P/BN-1E



CQ55/BP-3E



INC1/D0-3A

Capacitive proximity sensors are used to sense any material, solid or liquid (*water, wood, metals, granules, powders, etc...*) even through plastic or glass walls. They feature extremely high electromagnetic compatibility (EMC), with high shock/vibration resistance and minimal sensitivity to dust and moisture, ensuring reliable object detection in harsh industrial environments.

- Detects powders, granulates, liquids and solids
- Sensitivity adjustment
- Short circuit and polarity reversal protection
- Protection degree: IP67/68/69K
- Ambient limits: -20 ... +85°C
- LED indication: Incorporated
- Housing material: Thermoplastic polyester

type	supply voltage	flush	non flush	sensing distance	NPN	PNP	NO	NC	connector	body length
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M12 Capacitive proximity switches M12 (4pin) plug connection

- Adjustable sensitivity via Teach-in button
- Automatic detection of NPN or PNP load

C12P/00-3E	10 - 40 VDC	●	□	0.5...8 mm	●	●	●	●	M12 plug	80 mm
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M18 Capacitive proximity switches M12 (4pin) plug connection

- Adjustable sensitivity via potentiometer
- Standard output: NO and NC

C18P/BP-1E	10 - 40 VDC	●	□	3...8 mm	□	●	●	●	M12 plug	84 mm
C18P/BN-1E	10 - 40 VDC	●	□	3...8 mm	●	●	●	●	M12 plug	84 mm
C18P/BP-2E	10 - 40 VDC	□	●	3...12 mm	□	●	●	●	M12 plug	92 mm
C18P/BN-2E	10 - 40 VDC	□	●	3...12 mm	●	●	●	●	M12 plug	92 mm

AC version

cable connection

C18P/A0-1A	20 - 250 VAC	●	□	3...8 mm	SCR	●	□	□	cable	87 mm
C18P/C0-1A	20 - 250 VAC	●	□	3...8 mm	SCR	□	●	□	cable	87 mm
C18P/A0-2A	20 - 250 VAC	□	●	3...12 mm	SCR	●	□	□	cable	95 mm
C18P/C0-2A	20 - 250 VAC	□	●	3...12 mm	SCR	□	●	□	cable	95 mm

M30 Capacitive proximity switches M12 (4pin) plug connection

- Adjustable sensitivity via potentiometer
- Standard output: NO and NC

C30P/BP-1E	10 - 40 VDC	●	□	2...16 mm	□	●	●	●	M12 plug	79 mm
C30P/BN-1E	10 - 40 VDC	●	□	2...16 mm	●	●	●	●	M12 plug	79 mm
C30P/BP-2E	10 - 40 VDC	□	●	4...25 mm	□	●	●	●	M12 plug	91 mm
C30P/BN-2E	10 - 40 VDC	□	●	4...25 mm	●	●	●	●	M12 plug	91 mm

AC version

cable connection

C30P/00-1A	20 - 250 VAC	●	□	2...16 mm	SCR	●	●	□	cable	79 mm
C30P/00-2A	20 - 250 VAC	□	●	4...25 mm	SCR	●	●	□	cable	91 mm

Cubic capacitive sensors (flat pack housing)

- Adjustable sensitivity via potentiometer
- Standard output: NO and NC

CQ55 series cubic sensors (flat body)		M12 (4pin) plug connection				58 x 35 x 15 mm			
CQ55/BP-3E	10 - 40 VDC	●	□	4...25 mm	□	●	●	M12 plug	58 mm
CQ55/BN-3E	10 - 40 VDC	●	□	4...25 mm	●	●	●	M12 plug	58 mm

VBR/INC series - vibration and inclination sensor M18 IP67

New VBR series shock and vibration sensor incorporates a MEMS 3-axis accelerometer to monitor all accelerations and vibrations. Designed to be easy to use without any special training for operators.

- Programmable operating range:
- Reference axis:
- Frequency range:
- Fully programmable in all its functions, thresholds, alarms and node addresses
- 1 output RS485 (*addressable*) 57600 Baud rate - 1 bit stop - parity
- 1 analogue output (*programmable voltage or current*)

VBR	±2g, ±4g, ±8g, ±16g
	3 (X, Y, Z)
	0 ... 400Hz

INC	360° - 0.025° resolution
	1 direction
	< 3 msec

VBR1/D0-3A	24 VDC	vibration sensor	0 - 10V	4-20mA	cable	40.5 mm
INC1/D0-3A	24 VDC	inclination sensor	0 - 10V	4-20mA	cable	50.5 mm

Mounting accessories for VBR/INC sensors

ST18-S	bracket	M18 mounting bracket/housing for above VBR/INC sensor
ST18-V	bracket	M18 metal mounting bracket for above VBR/INC sensor

Photoelectric sensors transmit a beam which is reflected back from a detected object (*diffused*) or from a reflector (*retro-reflective*) or can be used with a separate transmitter and receiver (*through-beam*), typically used for longer distance sensing.

- Protection degree: IP67 (EN60529)
- Ambient limits: -25 ... +70°C
- Supply protection: Polarity reversal, transient, short circuit
- LED indication: Incorporated
- Housing material: PBT (*plastic*) available in metal (*on request only*)



FAI2/BP-0A



FAI6/BN-2E



MV2/A0-0A



MVC/A0-0A

type	supply voltage	sensitivity adj.	diffused	retro-reflective	polarised retro	through-beam	sensing distance (mm)	IP67 (EN60529)	Ø 18 mm x 65/80 mm	NPN	PNP	NO	NC	connector
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M18 FA series axial beam 10 - 30 VDC IP67 (EN60529) Ø 18 mm x 65/80 mm

Diffuse reflection proximity type detection (no transmitter or reflector required)

Model	Supply Voltage	Sensitivity Adj.	Diffused	Retro-reflective	Polarised Retro	Through-beam	Sensing Distance (mm)	IP67 (EN60529)	Ø 18 mm x 65/80 mm	NPN	PNP	NO	NC	Connector
FAR2/BN-0A	10 - 30 VDC		•				100 mm			•	•	•	•	cable
FAR2/BP-0A	10 - 30 VDC		•				100 mm			•	•	•	•	cable
FAI6/BN-0A	10 - 30 VDC		•				400 mm			•	•	•	•	cable
FAI6/BP-0A	10 - 30 VDC		•				400 mm			•	•	•	•	cable
FAI6/BN-2E*	10 - 30 VDC		•				400 mm			•	•	•	•	M12 plug
FAI6/BP-2E*	10 - 30 VDC		•				400 mm			•	•	•	•	M12 plug
FAI7/BN-0E	10 - 30 VDC	•	•				400 mm			•	•	•	•	M12 plug
FAI7/BP-0E	10 - 30 VDC	•	•				400 mm			•	•	•	•	M12 plug
FAI8/BN-2E*	10 - 30 VDC	•	•				800 mm			•	•	•	•	M12 plug
FAI8/BP-2E*	10 - 30 VDC	•	•				800 mm			•	•	•	•	M12 plug
FAI8/BN-0E	10 - 30 VDC	•	•				1000 mm			•	•	•	•	M12 plug
FAI8/BP-0E	10 - 30 VDC	•	•				1000 mm			•	•	•	•	M12 plug

With adjustable background suppression

Model	Supply Voltage	Sensitivity Adj.	Diffused	Retro-reflective	Polarised Retro	Through-beam	Sensing Distance (mm)	IP67 (EN60529)	Ø 18 mm x 65/80 mm	NPN	PNP	NO	NC	Connector
FARS/BP-0E	10 - 30 VDC	•	•				30...130			•	•	•	•	M12 plug
FARW/BP-0E	10 - 30 VDC	•	•				35...300			•	•	•	•	M12 plug

Retro-reflective

used together with a reflector

Model	Supply Voltage	Sensitivity Adj.	Diffused	Retro-reflective	Polarised Retro	Through-beam	Sensing Distance (mm)	IP67 (EN60529)	Ø 18 mm x 65/80 mm	NPN	PNP	NO	NC	Connector
FAIC/BN-0A	10 - 30 VDC			•			5 meters			•	•	•	•	cable
FAIC/BP-0A	10 - 30 VDC			•			5 meters			•	•	•	•	cable
FAIC/BN-2E*	10 - 30 VDC			•			4 meters			•	•	•	•	M12 plug
FAIC/BP-2E*	10 - 30 VDC			•			4 meters			•	•	•	•	M12 plug

Retro-reflective (polarised)

used together with a reflector

Model	Supply Voltage	Sensitivity Adj.	Diffused	Retro-reflective	Polarised Retro	Through-beam	Sensing Distance (mm)	IP67 (EN60529)	Ø 18 mm x 65/80 mm	NPN	PNP	NO	NC	Connector
FARP/BN-0A	10 - 30 VDC				•		4 meters			•	•	•	•	cable
FARP/BP-0A	10 - 30 VDC				•		4 meters			•	•	•	•	cable

Through beam (receiver)

requires a emitter and receiver

Model	Supply Voltage	Sensitivity Adj.	Diffused	Retro-reflective	Polarised Retro	Through-beam	Sensing Distance (mm)	IP67 (EN60529)	Ø 18 mm x 65/80 mm	NPN	PNP	NO	NC	Connector
FAI2/BN-0A	10 - 30 VDC					•	20 meters			•	•	•	•	cable
FAI2/BP-0A	10 - 30 VDC					•	20 meters			•	•	•	•	cable
FAI2/BP-2E*	10 - 30 VDC					•	15 meters			•	•	•	•	M12 plug
FAIH/00-0A	10 - 30 VDC					•	20 meters			emitter			cable	
FAIH/00-2E*	10 - 30 VDC					•	15 meters			emitter			M12 plug	

* Radial optic (90° sensing)

M18 MV series axial beam 20 - 253 VAC IP67 (EN60529) Ø 18 mm x 79 mm

Diffuse reflection proximity type detection (no transmitter or reflector required)

Model	Supply Voltage	Sensitivity Adj.	Diffused	Retro-reflective	Polarised Retro	Through-beam	Sensing Distance (mm)	IP67 (EN60529)	Ø 18 mm x 79 mm	NPN	PNP	NO	NC	Connector
MV2/A0-0A	20 - 253 VAC		•				100 mm			TRIAC	•			cable
MV2/C0-0A	20 - 253 VAC		•				100 mm			TRIAC	•			cable
MV4/A0-0A	20 - 253 VAC		•				200 mm			TRIAC	•			cable
MV4/C0-0A	20 - 253 VAC		•				200 mm			TRIAC	•			cable
MV6/A0-0A	20 - 253 VAC		•				400 mm			TRIAC	•			cable
MV6/C0-0A	20 - 253 VAC		•				400 mm			TRIAC	•			cable

Retro-reflective

used together with a reflector

Model	Supply Voltage	Sensitivity Adj.	Diffused	Retro-reflective	Polarised Retro	Through-beam	Sensing Distance (mm)	IP67 (EN60529)	Ø 18 mm x 79 mm	NPN	PNP	NO	NC	Connector
MVC/A0-0A	20 - 253 VAC			•			4 meters			TRIAC	•			cable
MVC/C0-0A	20 - 253 VAC			•			4 meters			TRIAC	•			cable

Through beam (receiver)

requires a transmitter and receiver

Model	Supply Voltage	Sensitivity Adj.	Diffused	Retro-reflective	Polarised Retro	Through-beam	Sensing Distance (mm)	IP67 (EN60529)	Ø 18 mm x 79 mm	NPN	PNP	NO	NC	Connector
MVR/A0-0A	20 - 253 VAC					•	16 meters			TRIAC	•			cable
MVR/C0-0A	20 - 253 VAC					•	16 meters			TRIAC	•			cable
MVE/00-0A	20 - 253 VAC					•	16 meters			emitter			cable	

Mounting accessories (see page K-8) Cables and M8/12 connectors (see page K-27 / 28)

Note: Reflectors sold separately, see page K-8

Photo switches transmit a beam which is reflected back from a detected object (*diffused*) or from a reflector (*retro-reflective*) or can be used with a separate transmitter and receiver (*through beam*), typically used for longer distance sensing.

- Sensitivity: Adjustable (*trimmer*)
- Ambient limits: -25 ... +70°C
- Supply protection: Polarity reversal, impulse overvoltage, short circuit
- LED indication: Yellow (*output status*) / green (*supply present*)

type	supply voltage	diffused	retro-reflective	polarised retro	through-beam	sensing distance (mm)	NPN	PNP	NO	NC	connector
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QM series - Miniature cubic sensor IP67 (EN60529) 13 x 21 x 31.2 mm

- Miniaturize high performance photoelectric sensors
- 2 kHz switching frequency
- Selectable LO/DO output state
- M8 (4pin) plug connection

Diffuse reflection

proximity type detection (no transmitter or reflector required)

Model	Supply Voltage	Diffused	Sensing Distance	Output	Connector
QMRS/0P-0F*	10 - 30 VDC	•	30...200	••••	M8 plug
QMR7/0N-0F	10 - 30 VDC	•	400 mm	••••	M8 plug
QMR7/0P-0F	10 - 30 VDC	•	400 mm	••••	M8 plug
QMR8/0N-0F	10 - 30 VDC	•	1 meter	••••	M8 plug
QMR8/0P-0F	10 - 30 VDC	•	1 meter	••••	M8 plug
QMI9/0P-0F	10 - 30 VDC	•	1.5 meters	••••	M8 plug

* With adjustable background suppression

Retro-reflective

used together with a reflector

Model	Supply Voltage	Diffused	Sensing Distance	Output	Connector
QMIC/0N-0F	10 - 30 VDC	•	7 meter	••••	M8 plug
QMIC/0P-0F	10 - 30 VDC	•	7 meter	••••	M8 plug

Retro-reflective (polarised)

used together with a reflector

Model	Supply Voltage	Diffused	Sensing Distance	Output	Connector
QMRN/0N-0F	10 - 30 VDC	•	5 meter	••••	M8 plug
QMRN/0P-0F	10 - 30 VDC	•	5 meter	••••	M8 plug

Retro-reflective

(transparent objects)

Model	Supply Voltage	Diffused	Sensing Distance	Output	Connector
QMRL/0N-0F	10-30 VDC	•	0.4...4 met	••••	M8 plug
QMRL/0P-0F	10-30 VDC	•	0.4...4 met	••••	M8 plug

Through beam

(transmitter and receiver kit)

Model	Supply Voltage	Diffused	Sensing Distance	Output	Connector
QMRHD/0N-0F	10 - 30 VDC	•	20 meter	••••	M8 plug
QMRHD/0P-0F	10 - 30 VDC	•	20 meter	••••	M8 plug

QF series - For food and beverage applications 11 x 21 x 31.4 mm

- M8 (4pin) plug connection
- -26...+60°C (*without freeze*)
- IP67 (EN60529) - IP68 (1m - 7 days) - IP69K protection degree
- AISI 316L (DIN 1.4404) stainless steel housing - Active head PPSU
- Approvals: CE cULus, ECOLAB, IEC60947-5-2

Diffuse reflection

proximity type detection (no transmitter or reflector required)

Model	Supply Voltage	Diffused	Sensing Distance	Output	Connector
QFI4/BP-1F	10 - 30 VDC	•	20...200	••••	M8 plug
QFRS/BP-1F*	10 - 30 VDC	•	25...200	••••	M8 plug
QFR8/BP-1F	10 - 30 VDC	•	0.1...1met	••••	M8 plug

* With adjustable background suppression

Retro-reflective (polarised)

used together with a reflector

Model	Supply Voltage	Diffused	Sensing Distance	Output	Connector
QFRN/BP-1F	10 - 30 VDC	•	6 meter	••••	M8 plug

Mounting accessories (see page K-8) Cables and M8/12 connectors (see page K-27 / 28)

Note: Reflectors sold separately, see page K-8



QMR7/0P-0F



QMRN/0N-0F



QMIC/0N-0F



QFI4/BP-1F

Photo switches transmit a beam which is reflected back from a detected object (diffused) or from a reflector (retro-reflective) or can be used with a separate transmitter and receiver (through beam) typically used for longer distance sensing.

type	supply voltage	diffused	retro-reflective	polarised retro	through-beam	sensing distance (mm)	NPN	PNP	NO	NC	connector
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Q50 - Compact cubic 50 x 50 mm universal photoelectric sensor

- Universal photoelectric sensor, excellent performance and high versatility
- Totally protected against electrical damage
- Sensitivity: Adjustable
- Dimensions: 50 x 50 x 17 mm
- Protection degree: IP67 (EN60529)

DC supply 10...30 VDC

- Revolving M12 (4 pin) connector (for rear or bottom cable entry)

Diffuse reflection *proximity type detection (no transmitter or reflector required)*

Q50I8/B0-0E	10 - 30 VDC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.3 - 2 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M12 plug
Q50IS/B0-0E*	10 - 30 VDC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	120...500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M12 plug

* With adjustable background suppression

Retro-reflective - (polarised) *used together with a reflector*

Q50RN/B0-0E	10-30 VDC	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.2 - 6 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M12 plug
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Through beam (receiver) *requires a transmitter and receiver*

Q50ID/B0-0E	10 - 30 VDC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	20 meter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M12 plug
Q50IH/00-0E	10 - 30 VDC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	20 meter	emitter			M12 plug	

Multi-voltage supply 12...240 VDC / 24...240 VAC

- Relay - SPDT output (3A 240 VAC)

Diffuse reflection *proximity type detection (no transmitter or reflector required)*

Q50I8/0T-0A	multi-voltage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.3 - 2 m	SPDT		cable
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Retro-reflective - (polarised) *used together with a reflector*

Q50RN/0T-0A	multi-voltage	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.3 - 6 m	SPDT		cable
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Through beam (receiver) *requires a transmitter and receiver*

Q50ID/0T-0A	multi-voltage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	20 meter	SPDT		cable
Q50IH/0T-0A	multi-voltage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	20 meter	emitter		cable

RX series (rectangular) 20 - 60 VDC / 20 - 253 VAC IP65 (EN60529)

- Sensitivity: Adjustable
- Connector: M12 (4pin) plug
- AC/DC supply: 20 - 60 VDC / 20 - 253 VAC
- Relay output: Selectable NO or NC
- LED indication: Output state, alignment, stable signal
- Supply protection: Transient (AC), over voltage (DC), short circuit
- Dimensions: (H) 61 x (W) 26 x (D) 92 mm

Diffuse reflection *proximity type detection (no transmitter or reflector required)*

RX8/00-3B	multi-voltage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 meter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M12 plug
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Retro-reflective *used together with a reflector*

RXC/00-3B	multi-voltage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12 meter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M12 plug
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Retro-reflective (polarised) *used together with a reflector*

RXP/00-3B	multi-voltage	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6 meter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M12 plug
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Through beam (receiver) *requires a transmitter and receiver*

RXR/00-3B	multi-voltage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	32 meter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M12 plug
RXE/00-3B	multi-voltage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	32 meter	emitter		M12 plug	

Mounting accessories (see page K-8) Cables and M8/12 connectors (see page K-27 / 28)

Note: Reflectors sold separately, see page K-8



Q50I8/B0-0E



Q50RN/0T-0A



RX8/00-3B



RXC/00-3B



type	supply voltage	diffused	retro-reflective	polarised retro	through-beam	sensing distance (mm)	NPN	PNP	NO	NC	connector	
QX series (rectangular)		IP65 (EN60529)					40 x 15 x 23 mm					
Diffuse reflection		<i>proximity type detection (no transmitter or reflector required)</i>										
QX3/A0-1A	10 - 30 VDC	•				300 mm	•	•	•		cable	
QX3/C0-1A	10 - 30 VDC	•				300 mm	•	•		•	cable	
Retro-reflective		<i>used together with a reflector</i>										
QXC/A0-1A	10 - 30 VDC		•			5 meter	•	•	•		cable	
QXC/C0-1A	10 - 30 VDC		•			5 meter	•	•		•	cable	
Through beam (receiver)		<i>requires a transmitter and receiver</i>										
QXR/A0-1A	10 - 30 VDC				•	8 meter	•	•	•		cable	
QXR/C0-1A	10 - 30 VDC				•	8 meter	•	•		•	cable	
QXX/00-1A	10 - 30 VDC				•	8 meter	emitter				cable	
BS/BV series (rectangular) cubic photoelectric sensors							37 x 16 x 64/70 mm					
<ul style="list-style-type: none"> • Sensitivity: Adjustable • LED indication: Incorporated • Protection degree: IP65 (EN60529) • Supply protection: Transient, short circuit (BS) 												
Diffuse reflection		<i>proximity type detection (no transmitter or reflector required)</i>										
BS6/00-0C	10 - 30 VDC	•				400 mm	•	•	•	•	cable	
BS8/00-0C	10 - 30 VDC	•				1.6 meter	•	•	•	•	cable	
BV4/00-0C	20 - 253 VAC	•				200 mm	TRIAC		•	•	cable	
BV6/00-0C	20 - 253 VAC	•				400 mm	TRIAC		•	•	cable	
Retro-reflective		<i>used together with a reflector</i>										
BSC/00-0C	10 - 30 VDC		•			8 meter	•	•	•	•	cable	
BVC/00-0C	20 - 253 VAC		•			8 meter	TRIAC		•	•	cable	
<i>Mounting accessories - (below) Cables and M8/12 connectors (see page K-27 / 28)</i>												
Accessories for proximity / photoelectric / ultrasonic sensor												
ST300D	tester	device for all DC proximity/photoelectric/ultrasonic devices										
Mounting accessories for sensors												
ST 02	plastic	adjustable swivel mounting bracket for all								M18 sensors		
ST 18-A	metal	axial mounting bracket for all								M18 sensors		
ST 18-C	metal	right angled mounting bracket for all								M18 sensors		
ST 30-A	metal	axial mounting bracket for all								M30 sensors		
ST 30-C	metal	right angled mounting bracket for all								M30 sensors		
ST 01	metal	mounting bracket for rectangular sensors								BS - BV		
ST 80	metal	top mount bracket for rectangular sensors								RX		
ST 81	metal	side mount bracket for rectangular sensors								RX		
ST 101	metal	vertical mounting L shaped bracket for sensors								QM/QF		
ST 102	metal	side mounting vertical L bracket for sensors								QM/QF		
ST 103	metal	vertical mount with protective cover bracket for								QM/QF		
ST 104	metal	horizontal mount protective cover bracket for								QM/QF		
STQMO	adaptor	vertical/horizontal diaphragms (0.5-1-2) for								QM/QF		
ST 03	adaptor	right angled beam adaptor for photoelectric								M18 sensors		
ST 03U	adaptor	right angled beam deflector for ultrasonic								M18 sensors		
Reflectors for photoelectric switches						(D)	(H)	(W)	Ø			
RL 103	02232510	round	reflector			7.4	-	-	34.5			
RL 104	02292510	round	reflector			6.5	-	-	46			
RL 110	80392510	round	reflector			7.3	-	-	84			
RL 113G	00042510	square	reflector			8	61	51	-			
RL 107	03132510	square	reflector			9	100	100	-			
RL 112G	03312510	rectangular	reflector			8.2	73	19	-			
RL 116	00082510	rectangular	reflector			8	60	40	-			

Ultrasonic transducer emits an ultrasonic signal which is reflected back by the target towards the sensor. The trigger circuit measures the time between the emission and the detection of the signal. Since the speed of the ultrasonic beam in air is known, it is easy to have an indication of the presence of the target, as well as a measure of the distance between sensor and target.

A Teach-in button is used to set working distance, output status (NO/NC) and slope of analog output and to change the function. All models are temperature compensated to ensure reliability throughout the entire detection range and are totally resin filled for applications subject to vibration offering an IP67 protection degree.

- Ultrasonic sensors** IP67 (EN60529)
- Sensitivity: Adjustable (*via external Teach-in*)
 - Ambient limits: -20 ... +70°C
 - Supply protection: Polarity reversal, transient, short circuit
 - LED indication: Orange (*output/regulation*), green (*echo reception*)
 - Housing material: PBT plastic (*AISI 316L stainless steel available on request only*)



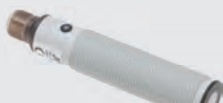
UQ1A/G6-0E



UK6A/HP-0EUL



UK6A/H1-0EUL



UK1D/G6-0ESY



UT2F/G6-0ESY



UT5L/G6-1ESY

type	supply voltage	sensing distance (mm)	description	NPN	PNP	NO	NC	0...10V	4...20mA	connector
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M18 UQ1 series - Cubic ultrasonic sensor with head (H) 53 x (W) 20 x (D) 38 mm

Analog + Digital NO/NC output			M12 (4pin) plug connection					
UQ1A/G6-0E	10 - 30 VDC	40...300	ultrasonic sensor	•	•	•	•	M12 plug
UQ1C/G6-0E	10 - 30 VDC	60...800	ultrasonic sensor	•	•	•	•	M12 plug
UQ1D/G6-0E	10 - 30 VDC	80...1.200	ultrasonic sensor	•	•	•	•	M12 plug
UQ1A/G7-0E	10 - 30 VDC	40...300	ultrasonic sensor	•	•	•	•	M12 plug
UQ1C/G7-0E	10 - 30 VDC	60...800	ultrasonic sensor	•	•	•	•	M12 plug
UQ1D/G7-0E	10 - 30 VDC	80...1.200	ultrasonic sensor	•	•	•	•	M12 plug

M18 UK6 series - Cylindrical ultrasonic sensors

UK6 series - M18 short body			M12 (4pin) plug connection			M18 x 60.3 mm		
Digital NO/NC output								
UK6A/HP-0EUL	10 - 30 VDC	40...300	ultrasonic sensor	•	•	•	•	M12 plug
UK6C/HP-0EUL	10 - 30 VDC	60...800	ultrasonic sensor	•	•	•	•	M12 plug
UK6D/HP-0EUL	10 - 30 VDC	80...1.200	ultrasonic sensor	•	•	•	•	M12 plug
Analog output								
UK6A/H1-0EUL	10 - 30 VDC	40...300	ultrasonic sensor				•	M12 plug
UK6C/H1-0EUL	10 - 30 VDC	60...800	ultrasonic sensor				•	M12 plug
UK6D/H1-0EUL	10 - 30 VDC	80...1.200	ultrasonic sensor				•	M12 plug
UK6A/H2-0EUL	10 - 30 VDC	40...300	ultrasonic sensor				•	M12 plug
UK6C/H2-0EUL	10 - 30 VDC	60...800	ultrasonic sensor				•	M12 plug
UK6D/H2-0EUL	10 - 30 VDC	80...1.200	ultrasonic sensor				•	M12 plug

UK1 series - M18 standard body			M12 (4pin) plug connection			M18 x 91.6 mm		
Analog + Digital NO/NC output								
UK1D/G6-0ESY	10 - 30 VDC	150...1.600	ultrasonic sensor	•	•	•	•	M12 plug
UK1D/G7-0ESY	10 - 30 VDC	150...1.600	ultrasonic sensor	•	•	•	•	M12 plug
UK1F/G6-0ESY	10 - 30 VDC	200...2.200	ultrasonic sensor	•	•	•	•	M12 plug
UK1F/G7-0ESY	10 - 30 VDC	200...2.200	ultrasonic sensor	•	•	•	•	M12 plug

M30 UT series - Standard body (with larger heads for longer distance sensing) M30 x 99 mm

- M30 - standard body **UT1** or with larger head - **UT2** (38.8 mm) **UT5** (61 mm)
- Synchronism - up to 10 sensors connected on the same SYNC wire

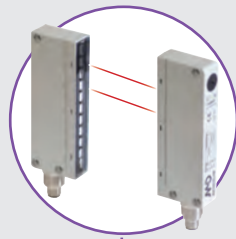
Analog + Digital NO/NC output			M12 (5pin) plug connection					
UT1B/G6-0ESY	10 - 30 VDC	250...3.500	ultrasonic sensor	•	•	•	•	M12 plug
UT1B/G7-0ESY	10 - 30 VDC	250...3.500	ultrasonic sensor	•	•	•	•	M12 plug
UT2F/G6-0ESY	10 - 30 VDC	350...6.000	ultrasonic sensor	•	•	•	•	M12 plug
UT2F/G7-0ESY	10 - 30 VDC	350...6.000	ultrasonic sensor	•	•	•	•	M12 plug
UT5L/G6-1ESY	10 - 30 VDC	600...8.000	ultrasonic sensor	•	•	•	•	M12 plug
UT5L/G7-1ESY	10 - 30 VDC	600...8.000	ultrasonic sensor	•	•	•	•	M12 plug

Mounting accessories (see page K-8) Cables and M8/12 connectors (see page K-27 / 28)

new



CR0/0B-1V

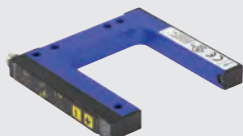


BX10SR/0A-HB

new



FC5R/DP-0506-1F



FC6I/0B-0506-1F



FC7I/0B-M304-0F

Photoelectric area and fork sensors

type	supply voltage	diffused	retro-reflective	polarised retro	through-beam	sensing distance (mm)	NPN	PNP	NO	NC	connector

CR0 series - Area sensors

CR0 series retroreflective polarised area sensors IP67 (EN60529)

CR0 area sensors are retroreflective and work in junction with RL106G reflector (*supplied*). Made up of an array of synchronised photo elements in order to avoid mutual interference.

- Nominal sensing distance: 0.2 ... 4.5 meters
- Controlled height: 69 mm
- Minimum detectable object: 3...6 mm @ 2m - 3...10 mm @ 4.5m
- Connection: 25 cm pigtail with M12 5pin plug
- Dimensions: (H) 107 X (W) 20 X (D) 36 mm

CR0/0B-1V	16...30 VDC	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.2...4.5 met	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M12 plug
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BX series - Through-beam area sensors

(H) 145 x (W) 20 x (D) 45 mm

BX area sensors are supplied with two parts - an emitter and a receiver element. The optical side is made up of an array of synchronised photo elements in order to avoid mutual interference. Ideal solution for detecting irregular shaped objects

- Nominal sensing distance: 0.3... 2 meters
- Controlled height: 90 mm
- Minimum detectable object: **BX4** Ø15 mm / **BX10** Ø5 mm
- Sensitivity: Adjustable (*trimmer*)
- LED indication: Green (*supply*) - red (*alarm sync.*) - yellow (*area stable*)
- Supply protection: Polarity reversal, transient, short circuit (*auto reset*)
- Protection degree: IP67 (EN60529)

BX04 area sensor

4 optics - 30 mm optic step

BX04SR/0A-HB	10... 26 VDC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.3...2 met	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M12 plug
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BX10 area sensor

10 optics - 10 mm optic step

BX10SR/0A-HB	10... 26 VDC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.3...2 met	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M12 plug
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Available with 4 and 6 meter sensing distances on request.

Note: Available in IP69K version (food and beverage) on request
Cables and M8/12 connectors (see page **K-27 / 28**)

FC series - Fork sensors

type	supply voltage	slit/fork		NPN	PNP	NO	NC	connector
		depth	width					

FC5 series - for object detection without regulation

- Minimum size object detection: 0.8 mm
- Switching frequency: 4 KHz
- Connector: M8 plug connection (3 pin)

FC5R/DP-0506-1F	12...24 VDC	60 mm	<input type="checkbox"/>	50 mm	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug
FC5R/DP-0806-1F	12...24 VDC	60 mm	<input type="checkbox"/>	80 mm	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug
FC5R/DP-1212-1F	12...24 VDC	124 mm	<input type="checkbox"/>	120 mm	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug

FC6 series - for object detection with regulation

- Minimum size object detection: 0.2 mm
- Switching frequency: 10 KHz
- Connector: M8 plug connection (4 pin)

FC6I/0B-0304-1F	12...24 VDC	42 mm	<input type="checkbox"/>	30 mm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug
FC6I/0B-0306-1F	12...24 VDC	59 mm	<input type="checkbox"/>	30 mm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug
FC6I/0B-0506-1F	12...24 VDC	59 mm	<input type="checkbox"/>	50 mm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug
FC6I/0B-0510-1F	12...24 VDC	95 mm	<input type="checkbox"/>	50 mm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug
FC6I/0B-0806-1F	12...24 VDC	59 mm	<input type="checkbox"/>	80 mm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug
FC6I/0B-0810-1F	12...24 VDC	95 mm	<input type="checkbox"/>	80 mm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug

FC7 series - fork sensors for label detection

- Minimum object detection: 2 mm (*gap between labels*) / 2 mm (*label size*)

FC7I/0B-M304-0F	12...24 VDC	42 mm	<input type="checkbox"/>	3 mm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M8 plug
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Cables and M8/12 connectors (see page **K-27 / 28**)

Inductive sensors are used to sense metal objects and can be utilised in very difficult applications, even in the presence of oils, powders, liquids and vibrations. They are commonly mounted on machine tools, textile machines, transport systems, packaging machines and all automation applications.

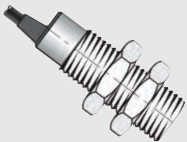
- Protection degree: IP65/67
- Ambient limits: -25 ... +70°C
- LED indication: Incorporated
- Short circuit and polarity reversal protection



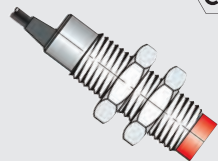
SIP40-C15 NPN



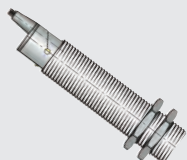
SIQ80-AE50K



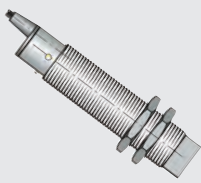
SI12-N2



SI12-NE4



SC18SM-C5 NPN



SC18SM-CE10 NPN

type	supply voltage	flush	non flush	sensing distance	NPN	PNP	NO	NC	connector	body length
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Rectangular housing inductive proximity switches (IP65)

40 x 40 rectangular body terminal block connection

DC version

SIP40-C15 NPN	10 - 55 VDC	•		15 mm	•		•	•	terminal	114 mm
SIP40-C15 PNP	10 - 55 VDC	•		15 mm	•	•	•		terminal	114 mm
SIP40-CE20 NPN	10 - 55 VDC		•	20 mm	•		•	•	terminal	114 mm
SIP40-CE20 PNP	10 - 55 VDC		•	20 mm		•	•	•	terminal	114 mm

AC version

SIP40-A15	20 - 250 VAC	•		15 mm			•	•	terminal	114 mm
SIP40-AE20	20 - 250 VAC		•	20 mm			•	•	terminal	114 mm

80 x 80 x 50 mm square body K plug connection (IP65)

DC version

SIQ80-CE50 NPN K	10 - 55 VDC		•	10 - 60 mm	•		•		K plug	120 mm
SIQ80-CE50 PNP K	10 - 55 VDC		•	10 - 60 mm		•		•	K plug	120 mm

AC version

SIQ80-AE50K	20 - 250 VAC		•	10 - 60 mm			•	•	K plug	120 mm
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NAMUR proximity switches (ATEX approved)

Namur inductive sensors are two-wire non amplified D.C. sensors containing only the oscillator and are adapted to control an electronic amplified threshold circuit and can be utilised in hazardous areas

M12 cylindrical body

SI12-N2	5...30 VDC	•		2 mm				•	cable	41 mm
SI12-NE4	5...30 VDC		•	4 mm				•	cable	45 mm

M18 cylindrical body

SI18-N5	5...30 VDC	•		5 mm				•	cable	47 mm
SI18-NE8	5...30 VDC		•	8 mm				•	cable	54 mm

M30 cylindrical body

SI30-N10	5...30 VDC	•		10 mm				•	cable	43 mm
SI30-NE15	5...30 VDC		•	15 mm				•	cable	58 mm

Capacitive proximity sensors nickel plated brass body

M18 capacitive proximity sensors

SC18SM-C5 NPN	10 - 40 VDC	•		0...5 mm	•		•	•	cable	90 mm
SC18SM-C5 PNP	10 - 40 VDC	•		0...5 mm		•	•	•	cable	90 mm
SC18SM-CE10 NPN	10 - 40 VDC		•	0...10 mm	•		•	•	cable	96 mm
SC18SM-A5	20 - 250 VAC	•		0...5 mm			•	•	cable	92 mm
SC18SM-AE10	20 - 250 VAC		•	0...10 mm			•	•	cable	95 mm

M30 capacitive proximity sensors

SC30SM-C20 NPN	10 - 60 VDC	•		0...20 mm	•		•	•	cable	101 mm
SC30SM-C20 PNP	10 - 60 VDC	•		0...20 mm		•	•	•	cable	101 mm
SC30SM-CE25 NPN	10 - 60 VDC		•	0...25 mm	•		•	•	cable	101 mm
SC30SM-CE25 PNP	10 - 60 VDC		•	0...25 mm		•	•	•	cable	101 mm
SC30SM-A20	20 - 250 VAC	•		0...20 mm			•	•	cable	101 mm
SC30SM-AE25	20 - 250 VAC		•	0...25 mm			•	•	cable	101 mm



Inductive proximity sensors

Inductive sensors are used to sense metal objects and can be utilised in very difficult applications, even in the presence of oils, powders, liquids and vibrations. They are commonly mounted on machine tools, textile machines, transport systems, packaging machines and all automation applications.

- LED indication: Incorporated
- Supply protection: Polarity reversal, short circuit, power surge
- Ambient limits: -25 ... +70°C
- Housing material: Nickel-plated brass; PBT sensing surface

type	supply voltage	flush		sensing distance (mm)	PNP	NPN	NO	NC	body length / thread (mm)
		flush	non-flush						

Inductive proximity sensors *longer detection range with same dimensions*

- Standard sensors for detecting ferrous metals
- Supplied standard with cable connection

M12 cylindrical housing

with 2 meter cable connection

IS-E1204-BPOB2	12 - 24 VDC	•		4 mm	•	•			54
IS-E1204-BPCB2	12 - 24 VDC	•		4 mm			•		54
IS-N1208-BPOB2	12 - 24 VDC		•	8 mm	•		•		53
IS-N1208-BPCB2	12 - 24 VDC		•	8 mm	•		•		53

M18 cylindrical housing

with 2 meter cable connection

IS-E1808-BPOB2	12 - 24 VDC	•		8 mm	•	•			60
IS-E1808-BPCB2	12 - 24 VDC	•		8 mm			•		60
IS-N1812-BPOB2	12 - 24 VDC		•	12 mm	•		•		60
IS-N1812-BPCB2	12 - 24 VDC		•	12 mm	•		•		60

For **NPN** version change "BP" in part number to "BN"

Photoelectric sensors *IP67 (EN60529) (retro-reflective models include reflector)*

Photo sensors transmit a beam which is reflected back from a detected object (*diffused*) or from a reflector (*retro-reflective*), or with a separate transmitter and receiver (*through beam*) typically used for longer distance sensing.

- Supply protection: Polarity reversal, impulse, over current, short circuit
- LED indication: Orange (*output status*) / green (*supply present*)

type	supply voltage	diffused			sensing distance (mm)	PNP	NPN	light-on	dark-on	connector
		diffused	retro-reflective	through-beam						

PS-F series - Flat sensor *fixed sensitivity 30 x 16 x 6.8 mm*

PS-FR2-PLB2	12 - 24 VDC	•			5...50 mm	•		•		cable
PS-FR2-PDB2	12 - 24 VDC	•			5...50 mm	•			•	cable
PS-FL3-PLB2	12 - 24 VDC		•		1000 mm	•		•		cable
PS-FL3-PDB2	12 - 24 VDC		•		1000 mm	•			•	cable

For **NPN** version change "PL/PD" in part number to "NL/ND"

PS-L series - Lateral sensor *IP67 (EN60529) 28 x 14 x 7.7 mm*

- Output type: Push-Pull • Light-ON/Dark-ON: Selectable (*switched by white wire*)

PS-LR2-USB2	12 - 24 VDC	•			5...50 mm	•	•	•	•	cable
PS-LL3-USB2	12 - 24 VDC		•		1000 mm	•	•	•	•	cable

PS-R series - Rectangular sensor *IP67 (EN60529) 31 x 21 x 11.2 mm*

- Sensitivity: Adjustable (potentiometer)
- Output type: Push-Pull • Light-ON/Dark-ON: Selectable
- Mounting: Supplied complete with metallic mounting bracket

PS-RR3-PS12	12 - 24 VDC	•			300 mm	•	•	•	•	cable
PS-RR9-PS12	12 - 24 VDC	•			1000 mm	•	•	•	•	cable
PS-RL4-PS12	12 - 24 VDC		•		4.2 meters	•	•	•	•	cable
PS-RT9-PS12	12 - 24 VDC			•	12 meters	•	•	•	•	cable

PS-M series - Cylindrical photoelectric sensor *(with teach button) M18 Ø x 51 mm*

PS-MR3-US22	12 - 24 VDC	•			300 mm	•	•	•	•	cable
PS-MR9-US22	12 - 24 VDC	•			1000 mm	•	•	•	•	cable
PS-ML4-US22	12 - 24 VDC		•		4.2 meters	•	•	•	•	cable



Photo switches transmit a beam which is reflected back from a detected object (*diffused*) or from a reflector (*retro-reflective*) or can be used with a separate transmitter and receiver (*through-beam*) typically used for longer distance sensing.

type	supply voltage	diffused	retro-reflective	polarised retro	through-beam	max. sensing distance (mm)	PNP	NPN	light-on	dark-on	connector
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EX-Z series - World's smallest sensor 12 - 24 VDC IP67 (EN60529)

Ultra-minute photoelectric sensor (amplifier built-in)

- Output: PNP/NPN open-collector transistor max. 20mA
- LED indication: Orange (*operation*) / green (*stability*)

Through beam (*supplied as a set with transmitter and receiver*)

- Detects objects breaking the beam between the transmitter and the receiver

Front sensing 14 x 8 x 3 mm

EX-Z11FA-P	12 - 24 VDC				•	50	•		•		cable
EX-Z11FB-P	12 - 24 VDC				•	50	•			•	cable
EX-Z12FA-P	12 - 24 VDC				•	200	•		•		cable
EX-Z12FB-P	12 - 24 VDC				•	200	•			•	cable
EX-Z13FA-P	12 - 24 VDC				•	500	•		•		cable
EX-Z13FB-P	12 - 24 VDC				•	500	•			•	cable

Side sensing 15.5 x 5.5 x 6.5 mm

EX-Z11A-P	12 - 24 VDC				•	50	•		•		cable
EX-Z11B-P	12 - 24 VDC				•	50	•			•	cable
EX-Z12A-P	12 - 24 VDC				•	200	•		•		cable
EX-Z12B-P	12 - 24 VDC				•	200	•			•	cable
EX-Z13A-P	12 - 24 VDC				•	500	•		•		cable
EX-Z13B-P	12 - 24 VDC				•	500	•			•	cable

Accessories for above EX-Z sensors

MS-EXZ-1 L-shaped mounting bracket for front and side sensing EX-Z

EX-20 series - Miniature sensor 12 - 24 VDC IP67 (EN60529)

- Output: PNP open-collector transistor max. 50mA
- LED indication: Orange (*operation*) / green (*stability*)

Diffuse reflective Proximity type detection (*no transmitter or reflector required*)

- Photo switch transmits a beam which is reflected back from a detected object

Side sensing 25 x 12.3 x 8.2 mm

EX-22A-PN*	12 - 24 VDC	•				5...160	•		•		cable
EX-22B-PN*	12 - 24 VDC	•				5...160	•			•	cable

Retro-reflective (*supplied with RF200 reflector*)

- Photo switch transmits a beam which is reflected back by a reflector

EX-29A-PN*	12 - 24 VDC		•			30...200	•		•		cable
EX-29B-PN*	12 - 24 VDC		•			30...200	•			•	cable

Through beam (*supplied as a set with transmitter and receiver*) 22 x 10.5 x 8.2 mm

- Detects objects breaking the beam between the transmitter and the receiver

EX-23-PN*	12 - 24 VDC				•	2 met	•		•	•	cable
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Accessories for above photo switches

MSEX202 metallic right angled sensor mounting bracket 20 series

EX-30 series - Threaded miniature "sensor in a screw" IP67 (EN60529)

- Alternative to fibre sensors
- Output: PNP open-collector transistor max. 50mA
- LED indication: Orange (*operation*) / green (*stability*)
- Dimensions: 15.6 x 14 x 18 mm (*mounting: diffused M6, through-beam M4*)

Diffuse reflective Proximity type detection (no transmitter or reflector) M6 mounting

- Photo switch transmits a beam which is reflected back from a detected object

EX-32A-PN*	12 - 24 VDC	•				50	•		•		cable
EX-32B-PN*	12 - 24 VDC	•				50	•			•	cable

Through beam (*supplied as a set with transmitter and receiver*) M4 mounting

- Detects objects breaking the beam between the transmitter and the receiver

EX-33-PN*	12 - 24 VDC				•	800	•		•	•	cable
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* With sensitivity adjustment **NPN** available on request (remove "-P" from the part number)



PM-K45-P



PM-L45-P



PM2-LH10



CY-121B-P-Z



CY-191A-P-Z

Photoelectric sensor transmit a beam which is reflected back from a detected object (*diffused*) or from a reflector (*retro-reflective*) or can be used with a separate transmitter and receiver (*through beam*), typically used for longer distance sensing.

type	supply voltage	diffused	retro-reflective	polarised retro	through-beam	max. sensing distance (mm)	PNP	NPN	light-on	dark-on	connector
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PM series - U type miniature sensor cable connection (1 meter) Ø18 mm x 60 mm

- Output: PNP/NPN open-collector transistor max. 50mA
- LED indication: Orange (*light received*)

Thru U beam detects objects breaking the beam between the U beam shape

Part Number	Supply Voltage	Diffused	Retro-reflective	Polarised Retro	Through-beam	Max. Sensing Distance (mm)	PNP	NPN	Light-on	Dark-on	Shape
PM-K45-P	5 - 24 VDC				•	6 mm	•		•	•	K type
PM-T45-P	5 - 24 VDC				•	6 mm	•		•	•	T type
PM-L45-P	5 - 24 VDC				•	6 mm	•		•	•	L type

PM-2 Convergent reflection sensing miniature sensor 25 x 26 x 8.4 mm

Proximity type detection (*no transmitter or reflector required*)

- Output: NPN open-collector transistor max. 50mA
- LED indication: Orange (*operation*) / green (*stability*)

– Transmits a beam which is reflected back from a detected object (*convergent point: 5 mm*)
 – LH10 top sensing - LF10 front sensing

Part Number	Supply Voltage	Diffused	Retro-reflective	Polarised Retro	Through-beam	Max. Sensing Distance (mm)	PNP	NPN	Light-on	Dark-on	Connector
PM2-LH10	5 - 24 VDC	•				2.5 - 8 mm	•		•		solder
PM2-LH10B	5 - 24 VDC	•				2.5 - 8 mm	•		•		solder
PM2-LF10	5 - 24 VDC	•				2.5 - 8 mm	•		•		solder
PM2-LF10B	5 - 24 VDC	•				2.5 - 8 mm	•		•		solder

CN-13 plug-in connector (*solder terminal*) for PM2 sensors PM2

M18 CY-100 series - Cylindrical sensors Ø18 mm x 60 mm

- Protection degree: IP67 (EN60529)
- Supply protection: Polarity reversal, Transient, Short circuit
- LED indication: Power and Operation indication
- Connection: M12 - 4-pin connector

Diffuse reflective proximity type detection (*no transmitter or reflector required*)

Sensor transmits a beam which is reflected back from a detected object

Part Number	Supply Voltage	Diffused	Retro-reflective	Polarised Retro	Through-beam	Max. Sensing Distance (mm)	PNP	NPN	Light-on	Dark-on	Connector
CY-121A-P-Z	12 - 24 VDC	•				100 mm	•		•		M12 plug
CY-121B-P-Z	12 - 24 VDC	•				100 mm	•		•		M12 plug
CY-122A-P-Z*	12 - 24 VDC	•				600 mm	•		•		M12 plug
CY-122B-P-Z*	12 - 24 VDC	•				600 mm	•		•		M12 plug

* With sensitivity adjustment

Retro-reflective used together with a reflector (*supplied separately*)

Sensor transmits a beam which is reflected back by a reflector

Part Number	Supply Voltage	Diffused	Retro-reflective	Polarised Retro	Through-beam	Max. Sensing Distance (mm)	PNP	NPN	Light-on	Dark-on	Connector
CY-192A-P-Z	12 - 24 VDC		•			4 meters	•		•		M12 plug
CY-192B-P-Z	12 - 24 VDC		•			4 meters	•		•		M12 plug

Retro-reflective (polarised) used together with a reflector (*supplied separately*)

Transmitted beam is only received by reflector (*unaffected by reflection from shiny surfaces*)

Part Number	Supply Voltage	Diffused	Retro-reflective	Polarised Retro	Through-beam	Max. Sensing Distance (mm)	PNP	NPN	Light-on	Dark-on	Connector
CY-191A-P-Z	12 - 24 VDC			•		2 meters	•		•		M12 plug
CY-191B-P-Z	12 - 24 VDC			•		2 meters	•		•		M12 plug

Thru-beam (long range) supplied as a set with transmitter and receiver

Detects objects breaking the beam between the transmitter and the receiver

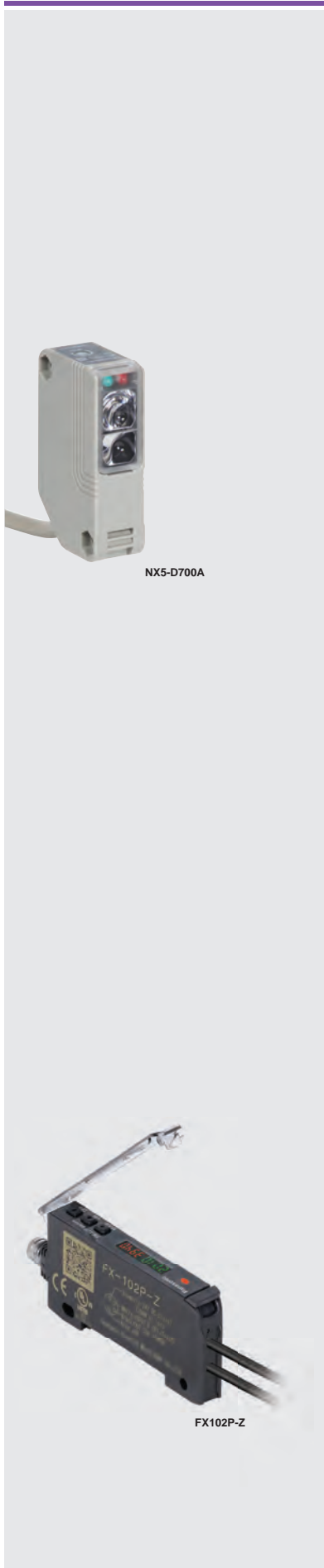
Part Number	Supply Voltage	Diffused	Retro-reflective	Polarised Retro	Through-beam	Max. Sensing Distance (mm)	PNP	NPN	Light-on	Dark-on	Connector
CY-111A-P-Z	12 - 24 VDC				•	15 meters	•		•		M12 plug
CY-111B-P-Z	12 - 24 VDC				•	15 meters	•		•		M12 plug

Note: NPN available on request (*remove "-P" from the part number*)

Accessories

MS-CY1-1		metallic right angled sensor mounting bracket	CY sensors
MS-CY1-2		adjustable (15°) right angled sensor mounting bracket	CY sensors
RF-410	50 x 47 mm	surface mounting reflector for photo sensors	CY sensors
RF-420	24 x 21 mm	surface mounting reflector for photo sensors	CY sensors

Cables and M8/12 connectors (see page K-27 / 28)



NX5-D700A

FX102P-Z

Photo switches transmit a beam which is reflected back from a detected object (*diffused*) or from a reflector (*retro-reflective*) or can be used with a separate transmitter and receiver (*through-beam*), typically used for longer distance sensing.

type	supply voltage	diffused	retro-reflective	polarised retro	through-beam	max. sensing distance (mm)	PNP	NPN	light-on	dark-on	connector
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Photoelectric sensors (IP66) (EN60529) 2 meter cable connection

NX5 series (rectangular) multi-voltage

- Multi-voltage: 24 - 240 VAC / 12 - 240 VDC
- Sensitivity: Continuously adjustable
- Relay output: 1A 250 VAC (*hermetically sealed*)
- LED indication: Red: (*power ON*) Green: (*stable light received*)
- Dimensions: 62 x 18 x 35 mm

Diffuse reflective proximity type detection (no transmitter or reflector required)

NX5-D700A	24 - 240 VAC/DC	•				700			•		cable
NX5-D700B	24 - 240 VAC/DC	•				700				•	cable

Retro-reflective used together with a reflector (includes RF-230)

Sensor transmits a beam which is reflected back by a reflector

NX5-RM7A	24 - 240 VAC/DC		•			7 met			•		cable
NX5-RM7B	24 - 240 VAC/DC		•			7 met				•	cable

Retro-reflective (polarised) used together with a reflector (includes RF-230)

Transmitted beam is only received by reflector (unaffected by reflection from shiny surfaces)

NX5-PRVM5A	24 - 240 VAC/DC			•		5 met			•		cable
NX5-PRVM5B	24 - 240 VAC/DC			•		5 met				•	cable

Thru-beam supplied as a set with transmitter and receiver

Detects objects breaking the beam between the transmitter and the receiver

NX5-M10RA	24 - 240 VAC/DC				•	10 met			•		cable
NX5-M10RB	24 - 240 VAC/DC				•	10 met				•	cable
NX5-M30A	24 - 240 VAC/DC				•	30 met			•		cable
NX5-M30B	24 - 240 VAC/DC				•	30 met				•	cable

Accessories for above NX5 photo switches

Mounting brackets

- MSNX51** metallic right angled foot mounting bracket for NX5 retro-reflective sensors
- MSNX53** metallic right angled rear mounting bracket for NX5 retro-reflective sensors

Reflectors for retro-reflective sensors

- RF-230** standard reflector 59 x 50.3 mm for retro-reflective sensors

Fibre-optic sensors

Fibre-optic amplifiers transmit and receive signal via an attached fibre-optic cable with an optic sensor on the end. The fibre sensor determines the type of sensing as well as the distance it can sense. Totally unaffected by any source of electrical noise.

type	supply voltage	max. sensing distance (mm)	PNP	NPN	light-on	dark-on	connector
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FX series - Fibre-optic amplifiers

- Mounting: DIN rail mounting or side mounting with 3.2 mm screws
- Sensitivity setting: 2-point teaching / limit teaching / Full-auto teaching
- Timer function: ON-delay, OFF-delay, no timer (*selectable*) 1 - 1000 ms
- LED indication: Orange LED when output is ON / Red and Green 4 digit display
- Connection: M8 - 4-pin connector (*supplied separately*)
- Dimensions: 32 x 9 x 66.4 mm

FX102P-Z	12 - 24 VDC	dependant on fibre used	•	•	•	•	M8 plug
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Cables and M8/12 connectors (see page **K-27 / 28**)



FX-551P

FX-551 series - Advanced fibre optic amplifier

DIN rail mounting

Significantly improved stability and operation ease, due to industry's top emission power.
 - 3 times higher emission power and 1.6 times longer sensing range than conventional models
 - Simplified functions for improved operation ease

- Connection: Connector with cable (*supplied separately*)
- Sensitivity setting: 2-point teaching / limit teaching / Full-auto teaching / manual setting
- Timer function: ON-delay, OFF-delay, One shot, no timer (*selectable*) 0.1ms - 32sec
- Dimensions: 32 x 10 x 75 mm

type	supply voltage	max. sensing distance (mm)	PNP	NPN	light-on	dark-on	connector
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Amplifier for optical fibres

FX-551P	12 - 24 VDC	dependant on fibre used	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	connector
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Accessories for above FX551 amplifiers

CN-73-C2	main cable with connector for above amplifier (2 meter)						connector
CN-73-C5	main cable with connector for above amplifier (5 meter)						connector
CN-71-C2	sub cable with connector for above amplifier (2 meter)						connector

Optical fibre sensors for above amplifiers

Due to the vast range of optical fibres available, we illustrate a basic range (*indicated below*).
 Vast range of available optical fibre sensors available, request fibre guide, available as a PDF file.

type	supply voltage	diffused	retro-reflective	polarised retro	through-beam	max. sensing distance(mm)		cuttable fibre	head type	fibre length
						FX102	FX551 hyper mode			

Reflective types *proximity type detection (no transmitter or reflector required)*

Cylindrical threaded body (straight)

(IP67)

FD-31	M3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	140	515	yes	cylindrical	2 met
FD-41	M4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	140	515	yes	cylindrical	2 met
FD-61	M6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	410	1400	yes	cylindrical	2 met

Square threaded body (right angled)

FD-R31G	M3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	150	530	yes	square	2 met
FD-R41	M4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	170	710	yes	square	2 met

Protective tube (for FD series reflective fibres)

FDP-N500	M4	non-corrosive stainless steel protective tube for								0.5 met
FDP-N1000	M4	non-corrosive stainless steel protective tube for								1.0 met
FDP-N1500	M4	non-corrosive stainless steel protective tube for								1.5 met

Thru-beam types

supplied as a set with transmitter and receiver

Cylindrical threaded body (straight)

FT-31	M3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	340	1200	yes	cylindrical	2 met
FT-42	M4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	800	3600	yes	cylindrical	2 met

Square threaded body (right angled)

FT-R31	M3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	340	1000	yes	square	2 met
FT-R43	M4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	640	3000	yes	square	2 met

High temperature fibres

FT-H20-WM1	+200°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	300	1600	no	cylindrical	1 met
FT-H35-M2S6	+350°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	490	1200	no	cylindrical	2 met

Expansion lenses (for thru-beam type fibres)

-60 to +350°C

For fibres: FT-42/43, FT-H20-WM1, FT-H35-M2S6

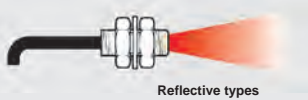
FX-LE1	M4	fibre expansion lens side view 90° beam axis								FT-42/43
FX-SV1	M4	fibre expansion lens (5 times increased sensing)								FT-42/43

Protective tube (for FT series thru-beam fibres)

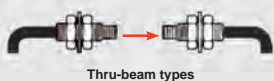
FTP-500	M4	non-corrosive stainless steel protective tube for								0.5 met
FTP-1000	M4	non-corrosive stainless steel protective tube for								1.0 met
FTP-1500	M4	non-corrosive stainless steel protective tube for								1.5 met

Fibre accessories

FX-CT1	fibre cutting tool (<i>to cut fibres to desired length</i>)									
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Reflective types



Thru-beam types

Photo switches transmit a beam which is reflected back from a detected object (*diffused*) or from a reflector (*retro-reflective*) or can be used with a separate transmitter and receiver (*through-beam*), typically used for longer distance sensing.

type	supply voltage	diffused	retro-reflective	polarised retro	through-beam	max. sensing distance (mm)	PNP	NPN	light-on	dark-on	connector
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CX-400 series - Standard compact sensors M8 - 4-pin connector

CX-400 series has a high level of functionality and excellent cost performance. Moreover, a wide number of variations offering a sensor to fit all needs.

- Selectable: Light-ON or Dark-ON
- LED indication: Red: (*output ON*) Green: (*stable light received*)
- Dimensions: 31 x 11.2 x 20 mm

Diffuse reflective *proximity type detection (no transmitter or reflector required)*

CX-421-P-Z	12 - 24 VDC	●				300 mm	●	●	●	●	M8 plug
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Retro-reflective *used together with a reflector (supplied with reflector)*

CX-491-P-Z*	12 - 24 VDC		●			3 meters	●	●	●	●	M8 plug
CX-493-P-Z	12 - 24 VDC		●			5 meters	●	●	●	●	M8 plug
CX-483-P-Z❖	12 - 24 VDC		●			1 meters	●	●	●	●	M8 plug

* With polarizing filter ❖ For sensing transparent objects - adjustable sensing range

Thru-beam (long range) *supplied as a set with transmitter and receiver*

CX-411-P-Z	12 - 24 VDC				●	10 meters	●	●	●	●	M8 plug
CX-413-P-Z	12 - 24 VDC				●	30 meters	●	●	●	●	M8 plug

CX-400 series - Triangulation sensors (IP67) (EN60529) M8 - 4-pin connector

Due to their advanced optical system, Triangulation sensors are not effected by variances in the targets angle or colour. Due to the 2-segment photo-diode adjustable range system, the sensor does not detect objects outside the preset sensing distance.

- Unaffected by colour, material or background
- BGS background suppression (or) FGS foreground suppression
- Long sensing range (*adjustable via 2-turn mechanical adjuster*)
- Improved detectability even when lens is contaminated by dirt, dust, mist or smoke
- High level of basic functionality with excellent cost performance

CX-400 series - Compact triangular sensors 31 x 11.2 x 20 mm

Triangulation sensing *for high precision detection and repeatability*

CX-441-P-Z	12 - 24 VDC	●				2...50 mm	●	●	●	●	M8 plug
CX-444-P-Z	12 - 24 VDC	●				15...100 mm	●	●	●	●	M8 plug
CX-442-P-Z	12 - 24 VDC	●				20...300 mm	●	●	●	●	M8 plug

EQ-30 series - Triangulation sensors (IP67) (EN60529) M12 - 4-pin connector

Featuring a 2-segment photodiode as receiving element with unique circuitry, they detect objects at the same distance regardless of colour or background beyond the adjusted sensing range.

- Sensitivity: Adjustable (*2 turn mechanical adjuster*)
- Selectable: Light-ON or Dark-ON
- LED indication: Red: (*output ON*) Green: (*stable light received*)
- Dimensions: 68 x 20 x 40 mm

Triangulation sensing *for high precision detection and repeatability*

EQ-34	10 - 30 VDC	●				2 meters	●	●	●	●	M12 plug
EQ-34-PN	10 - 30 VDC	●				2 meters	●	●	●	●	M12 plug

EQ-500 series (IP67) (EN60529) *convenient screw terminal block*

- Multi-voltage: 24 - 240 VAC / 12 - 240 VDC
- Relay output: 3A 250V - selectable: Detection-ON or Detection-OFF
- Sensitivity: Adjustable (*2 turn mechanical adjuster*)
- Timing function: 0.1 - 5s ON/OFF delay, one shot (*selectable*) "T" version only
- LED indication: Red: (*output ON*) Green: (*stable light received*)
- Dimensions: 68 x 26 x 68 mm

Triangulation sensing *for high precision detection and repeatability*

EQ-501	24 - 240 VAC/DC	●				0.2...2.5 m	●	●	●	●	screw term.
EQ-501T	24 - 240 VAC/DC	●				0.2...2.5 m	●	●	●	●	screw term.

MS-EQ501 metallic right angled foot mounting bracket EQ-501
MSCX21 L shaped metallic mounting bracket for sensor CX4...

Cables and M8/12 connectors (see page K-27 / 28)



CX-493-P-Z



CX-442-P-Z



EQ-34



EQ-501



LX-101-P-Z

LX-100 - Mark sensor (can detect any mark)

The LX-100 mark sensor detects any marking or colour, the sensor is equipped with red, green and blue LED. In addition, it utilises a coaxial reflective optics system to realise high precision sensing when used with 1/4000 resolution 12-bit A/D converter.

type	supply voltage	diffused	retro-reflective	polished retro	through-beam	max. sensing distance (mm)	PNP	NPN	light-on	dark-on	connector
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LX-100 series - Mark/colour sensor

- Sensing: 3 LEDs: red, green, blue
- Sensing modes: 2 (selectable): Mark mode and Colour mode
- Sensitivity: 2-level teaching/Limit teaching - Mark / 1-level teaching - colour
- LED indication: 4-digit red LED display and various LED indicators
- Dimensions: 35 x 24 x 57 mm
- Response time: Mark mode - 45 µs \ Colour mode 150 µs

Mark/colour sensor M12 - 4-pin connector (supplied separately)

LX-101-P-Z 12 - 24 VDC 10...±3 mm M12 plug

MSLX1 bracket metallic (side mount) mounting bracket for above LX-101

Note: LX-101 can be used in conjunction with ASDA-A2 for high speed mark position applications.

EX-L200 series - Miniature laser sensor (ultra compact) - amplifier integrated

Due to the customised IC and optical design, high precision detection is fulfilled with directivity and visibility achievable only by laser. Class 1 (IEC / JIS / FDA) laser is safe to use, no need to separate the area of sensor usage.

- Sensing: Minute object detection (high precision - high accuracy)
- Easy beam-axis alignment: Visible beam
- Sensitivity: Adjustable (to eliminate background detection)
- Supply protection: Short-circuit / inverse polarity protection
- LED indication: Orange and green LED indicators
- Ultra compact: 29.9 x 8.2 x 13 mm

Spot reflective type (Ø1 mm at a sensing distance of 300 mm)

- Minimum sensing object - 0.01 mm

EX-L221-P 12 - 24 VDC 45...300 mm cable

Thru-beam supplied as a set with transmitter and receiver

- Minimum sensing object - 0.03 mm

EX-L211-P 12 - 24 VDC 1 meter cable

NPN output available on request (remove "-P" from the part number)

MS-EX201 bracket L shaped metallic mounting bracket for sensor EX-L2...

HG-C series - Micro laser distance/measurement sensor (with built-in amplifier) (IP67)

HG-C measurement sensors measure and indicate measured values in mm as well as analog voltage outputs. The data can be used for various calculations and storage (logging) when the output is sent to a PLC + analog unit.

- Reliable detection in 10 µm precision (for HG-C1030)
- Indicates real measurements
- Equipped with 0 - 5V analog output
- Compact and light weight: 44 x 20 x 25 mm

type	supply voltage	repeatability	measurement center distance (mm)	measurement range (mm)	PNP	NPN	light-on	dark-on	connector
HG-C1030-P	12 - 24 VDC	10 µm	30	±5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	cable
HG-C1050-P	12 - 24 VDC	30 µm	50	±15	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	cable
HG-C1100-P	12 - 24 VDC	70 µm	100	±35	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	cable
HG-C1200-P	12 - 24 VDC	200 µm	200	±80	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	cable
HG-C1400-P	12 - 24 VDC	300 µm	400	±200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	cable

MS-HG-01 bracket for above HG-C micro laser sensors

NPN available on request (remove "-P" from the part number)

Note: I/O link available on request

Cables and M8/12 connectors (see page K-27 / 28)



HG-C1050-P



Your future's safe!



Safety Light Curtains
Safety Controllers and Relays
Magnetic and RFID Safety Switches



EOS series - Safety light curtains

With its compact, robust housing EOS series is ideal for the protection of any machine tool, in particular where space restrictions exist. Its zero-dead-zone on one side, allows EOS to keep its original resolution when installed on a plane and up to 40 mm when installed at 90° against another EOS unit. The hardware configuration feature does not require any programming allowing easy installation and replacement.

- Power supply: 24 VDC ± 20%
- Dimensions: (W) 28 x (D) 30 mm
- Restart: Selectable manual/automatic Start/Restart
- Status display: LEDs for light curtain's status and diagnostic
- Integrated function: Integrated External Device Monitoring (EDM) function
- Mounting: Via back slot with provided standard mounting brackets
- Connection: Emitter: M12 5-pin - Receiver: M12 8-pin (see pages K-27 / 28)
- OSSD safety outputs: 2 PNP - 400 mA at 24 VDC with short-circuit, overload, polarity reversal protection



Scan to watch video

type	resolution	protected height	No. beams	description	overall height	connection type
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For finger and hand protection - Safety light curtains (IP65/67)

EOS2 X - Safety light curtain with built-in control functions - Type 2

- Detection: Hand protection (30 mm resolution) • Maximum range: Selectable 4/12 meter
- Safety Level: Type 2, SIL 1/SILCL 1, PL c, Cat. 2

1321200	30 mm	260 mm	13	safety light curtain	313 mm	M12 plug
1320211	30 mm	310 mm	16	safety light curtain	363 mm	M12 plug
1320212	30 mm	460 mm	23	safety light curtain	513 mm	M12 plug
1320213	30 mm	610 mm	31	safety light curtain	663 mm	M12 plug
1320214	30 mm	760 mm	38	safety light curtain	813 mm	M12 plug
1320215	30 mm	910 mm	46	safety light curtain	963 mm	M12 plug
1320216	30 mm	1060 mm	53	safety light curtain	1113 mm	M12 plug

EOS4 X - Safety light curtain with built-in control functions - Type 4

- Detection: Finger protection (14 mm resolution) • Maximum range: Selectable 3/6 meter
- Safety Level: Type 4, SIL 3/SILCL 3, PL e, Cat. 4

1310010	14 mm	160 mm	15	safety light curtain	213 mm	M12 plug
1310011	14 mm	310 mm	30	safety light curtain	363 mm	M12 plug
1310012	14 mm	460 mm	45	safety light curtain	513 mm	M12 plug
1310013	14 mm	610 mm	60	safety light curtain	663 mm	M12 plug
1310014	14 mm	760 mm	75	safety light curtain	813 mm	M12 plug
1310015	14 mm	910 mm	90	safety light curtain	963 mm	M12 plug

- Detection: Hand protection (30 mm resolution) • Maximum range: Selectable 4/12 meter
- Safety Level: Type 4, SIL 3/SILCL 3, PL e, Cat. 4

1310211	30 mm	310 mm	16	safety light curtain	363 mm	M12 plug
1310212	30 mm	460 mm	23	safety light curtain	513 mm	M12 plug
1310213	30 mm	610 mm	31	safety light curtain	663 mm	M12 plug
1310214	30 mm	760 mm	38	safety light curtain	813 mm	M12 plug
1310215	30 mm	910 mm	46	safety light curtain	963 mm	M12 plug
1310216	30 mm	1060 mm	53	safety light curtain	1113 mm	M12 plug
1310217	30 mm	1210 mm	61	safety light curtain	1263 mm	M12 plug

Note: Heights (up to 2.2 meters) and extended range up to 20 meters available on request.

For Body protection and access control - Safety light curtains (IP65/67)

- Detection: Body protection / Access control • Maximum range: Selectable 4/12 meter

EOS2 X - Safety light curtain with built-in control functions - Type 2

1320610	-	510	2	safety light curtain	653 mm	M12 plug
1320611	-	810	3	safety light curtain	953 mm	M12 plug
1320612	-	910	4	safety light curtain	1053 mm	M12 plug

EOS4 X - Safety light curtain with built-in control functions - Type 4

1310610	-	510	2	safety light curtain	653 mm	M12 plug
1310611	-	810	3	safety light curtain	953 mm	M12 plug
1310612	-	910	4	safety light curtain	1053 mm	M12 plug

Mounting accessories for safety light curtains (std L-shaped brackets included with light curtains)

1310980	SFB E180	brackets	set of (4) x 180° swivel brackets for	EOS2/4
1310997	FE 4	brackets	set of (4) flat brackets for	EOS2/4
1310973	SAV 8E	dampers	set of (8) vibration dampers for	EOS2/4

Special versions available on request:

- IP69K Models** - Watertight enclosed, ideal for harsh working environments and Food & Beverage industry where frequent wash down procedures are required (ECOLAB rated)
- T Models** - Textile resistant to high vibrations for applications in the Textile industry



MOSAIC - A unique safety controller: Modular, Expandable, Configurable

MOSAIC is a modular configurable safety controller capable of managing all safety functions of machinery or plants. Made up of a Master unit which can operate as a stand-alone device or control up to 14 expansion units in a system.

Capable of monitoring several safety sensors and signals such as: light curtains - photocells - laser scanners - emergency stops - electromechanical switches - safety door switches - magnetic switches - safety mats and edges - two-hand controls - hand grip switches - encoders and proximities for safety speed control - load cells - pressure switches - temperature, flow and level measurements.

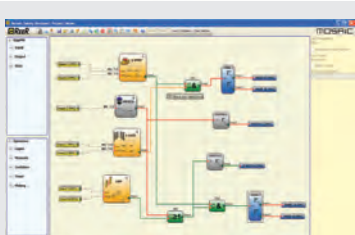
- Power supply: 24V DC ± 20%
- Safety level: SIL 3, PL e, SILCL 3, Cat. 4
- Connections: Removable (screw terminal) blocks
- Mounting: DIN rail mounting according to EN 50022-35 standard
- Dimensions: (H) 99 x (W) 22.5 x (D) 114 mm



Scan to watch video

Advantages

- Tamper-proof system configuration
- Reduced control panel dimension, design and construction time
- Logic configured via graphic interface, eliminating laborious wiring as with traditional solutions
- **Simulation function** allows to validate system functionality without connecting to a machine



FREE DESIGNER SOFTWARE included with M1/M1S units



1100000



1100043



1100050

type	model	digital inputs	Start / Restart inputs	OSSD safety outputs	status outputs	description
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MOSAIC master units

Master units can operate as stand-alone device or expanded with additional I/O modules.

M1 - Standard master unit

- 8 digital inputs
- 2 pairs SIL 3 OSSD safety outputs (PNP 400 mA)
- 2 inputs for Start/Restart interlock and external device monitoring (EDM)
- 2 programmable digital status outputs (PNP 100 mA)
- 4 test outputs (for sensor monitoring)

1100000	M1	8	2	2 pairs	2	standard master controller
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M1S - Enhanced master unit

- 8 digital inputs
- 4 single SIL 3 OSSD or (2 pairs) safety outputs (PNP 400 mA)
- 4 inputs for Start/Restart interlock and external device monitoring (EDM)
- 4 programmable digital status outputs (PNP 100 mA)
- 4 test outputs (for sensor monitoring)

1100003	M1S	8	4	4 or (2 pairs)	4	enhanced master controller
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Accessories for M1/M1S master units

1100060	MCM	memory card to store or duplicate master unit configuration as a backup
1100061	MSC	rear bus connector required to connect to any expansion module
1100062	USB	USB configuration cable (A-mini B, length 1.8 m)

MOSAIC - Expansion modules

Input/output expansion modules provides additional digital inputs and outputs to the master unit

1100010	MI8O2	2x pairs SIL 3 OSSD safety outputs, 8x digital inputs, 2x status outputs
1100011*	MI8O4	4x single SIL 3 OSSD safety outputs, 8x digital inputs, 4x status outputs
1100021	MI16	16x digital inputs and 4x test outputs (for sensor monitoring)
1100025*	MA4	4x 4-20mA (or 0-10V) analogue inputs (for analogue sensors)

* Only compatible with M1S enhanced Master unit.

1100031	MO4	4x pairs SIL 3 OSSD safety outputs, 4x status output
1100032	MO4LHC	4x single high current SIL 3 OSSD safety outputs (2A), 8x status output

Status outputs provides additional non-safety outputs to the master unit

1100092	MOS16	16x programmable digital (non-safety) signal outputs
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Safety relays provides safety relay outputs with guided contacts

1100041	MR4	4x safety relay outputs with guided contacts (6A 250 VAC)
1100043	MOR4S8	4x configurable safety relay outputs with guided contacts

Communication for connection to the most common industrial Field-bus systems

1100050	MBP	Profibus DP	module for diagnostics and data communication
1100051	MBD	DeviceNET	module for diagnostics and data communication
1100052	MBC	CANopen	module for diagnostics and data communication
1100054	MBEI	EtherNET IP	module for diagnostics and data communication
1100082	MBMR	Modbus RTU	module for diagnostics and data communication



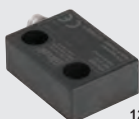
1330900



1330904



1292000



1291001



1291011

Safety interfaces and relays

- Power supply: 24 VDC ± 20%
- Electrical connection: On terminal block
- Mounting: DIN rail mounting according to EN 50022-35 standard
- Dimensions: Relays - (H) 101 x (W) 35 x (D) 120 mm
Interfaces - (H) 99 x (W) 22.5 (35 mm - ADSRM) x (D) 114 mm

type	description		
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Safety interfaces and relays

Safety interface for safety light curtains Type 4 - SIL 3 - SILCL 3 - PL e - Cat. 4

- 1330900 ADSR1 with EDM and Start/Restart for safety light curtains and RFID switches
- 1330904 ADSRM safety interface with integrated muting for safety light curtains

Safety interface for emergency stop buttons and safety switches PL e - Cat. 4

- 1330913 ADSRE4 with automatic/manual start/restart
- 1330914 ADSRE4C with manual monitored start/restart

Safety interface for two-hand control PL e - Cat. 4 Type III C (EN574)

- 1330915 ADSRT safety interface for two-hand control

Safety speed monitoring interface (H) 108 x (W) 22.5 x (D) 114.5 mm SIL 3 - SILCL 3 - PL e - Cat. 4

- 1100078 SVMR0 safety speed monitoring relay for overspeed and zero speed control
- 1100088 SVMR0U safety speed monitoring relay for underspeed control

Safety relay modules for devices with integrated feedback input for EDM

- 1330902 ADSR0 2 NO + 1 NC - 2A 250 VAC
- 1330903 ADSR0A 2 NO - 2A 250 VAC

RFID safety switches 24 VDC SIL 3 - SILCL 3 - PL e - Cat. 4

Magnus RFID non-contact safety sensors provide highly-reliable, tamper-proof personnel protection for monitoring protective doors, gates and guards. It uniquely identifies passive RFID transponders ensuring high coding levels and effective protection against manipulation with easy installation and safety system integration to PL e/SIL 3. Sensors can be individually coded in two different ways for appropriate tampering protection in all applications.

- Actuator coded:** The actuator is free and not specifically assigned to the sensor (*one actuator can work with multiple sensors*)
- Individual coding:** Programmed via teach-in and permanently assigned to sensor during set-up (*the process can be repeated up to 8 times if necessary*)

- Indication: LED status indicators for fast diagnostics
- Output: 2 safety inputs and outputs and 1 diagnostic output
- Connection type: M12 connector - (Pigtail M12/8-pin - 150 mm)
- Mounting: Screw mounting **S** - inter-axis 22 mm / **B** - inter-axis 78 mm
- Tampering protection in accordance with DIN EN 14119, the highest in its class
- Can be installed individually or in series with up to 30 units (*accessories required*)
- High EMC immunity and IP67 protection ensure excellent reliability in harsh environments
- Resistant to aggressive media, e.g. cleaning agents used in the food and packaging industry

type	sensing distance (mm)	description	dimensions (mm)		
			(H)	(W)	(D)

RFID safety switches supplied as sensor/actuator combination

- 1292000 CSCAM 8 ... 18 **S** actuator coding RFID safety switch 26 36 13
- 1292010 CSIAM 8 ... 18 **S** individual coding RFID safety switch 26 36 13

Accessories

- 1292401 SPS spacers for **S** series (*recommended for mounting on metal surfaces*)
- 1292400 SPB spacers for **B** series (*recommended for mounting on metal surfaces*)

Magnetic safety switches 24 VDC

- Compact and robust thermoplastic enclosure (PBT)
- Coded magnetic operation – Tamper resistant
- Sensor with M8/4pin connector: 2 NO contacts
- Connected to Mosaic safety controller provides a certified PL e safety system

- 1291000 MGS20 3...10 MGS compact magnetic safety switches 36 13 26
- 1291001 MGSM 3...10 MGS magnet unit for above switches 36 13 26
- 1291010 MGB20 4...16 MGB rectangular mag. safety switches 88 25 14
- 1291011 MGBM 4...16 MGB magnet unit for above switches 88 25 14

Pressure transmitters/sensors (IP67)

- Compact, rugged construction
- Accuracy: ± 0.3 % fs
- Medium temperature range: -15 ... +125 °C
- Response time: < 2 ms, (1 ms typical)
- Material: Connection stainless steel 1.4404 / AISI 316L
- Conformity: EN 61326-2-3 / IEC 68-2-27 / IEC 68-2-29 / IEC 68-2-6 / UL E325110

type	pressure range (bar) ¹⁾	power supply	output DC ²⁾	electrical connection ³⁾	description	pressure connection ⁴⁾
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Type 525/28 compact pressure transmitter based on well proven ceramic technology developed by Huba Control. These transmitters are suitable for applications across a broad spectrum of industries.

- Medium: Liquids and gases

Type 528	pressure range: -1 ... 0 - 60 BAR	Ø24 x 40.9 mm				
528.9010033411	-1 ... 0	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
528.9120033411	0 ... 1.6	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
528.9140033411	0 ... 2.5	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
528.9150033411	0 ... 4	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
528.9170033411	0 ... 6	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
528.9300033411	0 ... 10	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
528.9310033411	0 ... 16	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
528.9320033411	0 ... 25	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
528.9330033411	0 ... 40	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
528.9400033411	0 ... 60	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"

Type 525	low pressure range: 0 ... 0.05 - 0.6 BAR	Ø26.5 x 46.4 mm				
525.9230033111	0 ... 0.16	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
525.9240033111	0 ... 0.20	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
525.9260033111	0 ... 0.30	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
525.9270033111	0 ... 0.40	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
525.9280033111	0 ... 0.60	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"

Type 520	pressure range: 0 - 1000 BAR	Ø24 x 46.7 mm				
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Huba Control developed thick film technology with fully welded pressure measurement cell. **Meets high burst protection demands.** Ideal for refrigeration applications including ammonia.

- Welded without sealing parts (no elastomer seals)
- Medium: Liquids, gases and refrigerants (including ammonia)

520.906S033401	-1 ... 9	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.917S033401	0 ... 6	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.930S033401	0 ... 10	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.931S033401	0 ... 16	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.932S033401	0 ... 25	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.933S033401	0 ... 40	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.940S033401	0 ... 60	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.941S033401	0 ... 100	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.942S033401	0 ... 160	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.943S033401	0 ... 250	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.954S033401	0 ... 400	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.955S033401	0 ... 600	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"

Explosion proof version EC type examination certificate: SEV 10 ATEX 0145

Intrinsic safety:	Ex II 1/2 G Ex ia IIC T4 Ga/Gb / Ex II 1/2 D Ex ia IIC T125°C Da/Db					
520.917S043401	0 ... 6	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.930S043401	0 ... 10	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.931S043401	0 ... 16	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.932S043401	0 ... 25	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.933S043401	0 ... 40	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"
520.934S043401	0 ... 60	7 - 33 VDC	4 - 20 mA	M12x1	transmitter	G 1/4"

Accessories for transmitters other connectors and cables see page K- 27 / 28

120104-02-024	M12 (4 PIN) assembly connectors for above transmitters	90°
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Heat Sink for high temperature applications

Heat sink effectively reduces temperatures of hot media, permitting usage of transmitters in applications with temperatures in excess of 200°C.

105074	G 1/4" heat sink for transmitters in high temperature applications (L +101 mm)
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¹⁾ Other pressure ranges available on request
²⁾ Other outputs available on request: 0 - 5V, 0 - 10V, Radiometric 10 ... 90%
³⁾ Other electrical connections available: DIN EN 175301-803-A/C, RAST2.5, Swift, M12 x 1, with cable
⁴⁾ Pressure connections: inside/outside thread: 1/4"-18NPT, 1/2"-14NPT, G1/4", G1/2", M20 x 1.5, R 1/4 to DIN 2999



528.9330033411



520.917S033401



520.917S043401



105074



548.9300152401



540.943S052401

Pressure transmitter with display and programmable switching outputs

The 548/540 series μ P-regulated, programmable pressure transmitter has a robust industry design, easily adjustable parameters (via function keys in the configuration menu) with up to two programmable switching points. All units are equipped with a large 4 digit display assuring reliable, accurate readings.

- Compact, rugged construction
- Clearly readable display (rotatable 180°) - 7 segment LED, 4 digits for pressure and parameter values
- Programmable time delay functions rise and switch off delay 0 - 50 s, response time 5 ... 500 ms
- Electrical connection: M12 x 1 (5 pin) connectors and cables see page K-27 / 28
- 1 x Analog signal output 4 ... 20 mA (0 ... 10 V available on request)
- 2 x programmable switching outputs NO or NC (250 mA)
- Medium: Liquids and gases -20 ... +80 °C
- Protection standard: IP67 - IEC 60529
- Conformity: EN 61326-2-3 / IEC 68-2-27 / IEC 68-2-6 / UL 61610-1

type	pressure range (bar) ¹⁾	power supply VDC	output DC ²⁾	electrical connection ³⁾	description	pressure connection ⁴⁾
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Type 548 pressure range: 0 - 40 BAR (H) 73 x (W) 41 x (D) 42 mm

Based on the well proven ceramic technology developed by Huba Controls.

- Accuracy: $\pm 0.3\%$ fs
- Overload: ≤ 10 bar 4 x fs > 10 BAR 3.5 x fs

548.9300152401	0 ... 10	17 - 33	4 - 20 mA	M12x1 PNP	transmitter	G 1/4"
548.9310152401	0 ... 16	17 - 33	4 - 20 mA	M12x1 PNP	transmitter	G 1/4"
548.9320152401	0 ... 25	17 - 33	4 - 20 mA	M12x1 PNP	transmitter	G 1/4"
548.9330152401	0 ... 40	17 - 33	4 - 20 mA	M12x1 PNP	transmitter	G 1/4"

Type 540 pressure range: 0 - 600 BAR (H) 73 x (W) 41 x (D) 42 mm

Based on Huba Control developed thick film technology with fully welded pressure measurement cell.

- Accuracy: $\pm 0.3\%$ fs
- Overload: 3 x fs (max. 1500 BAR) rupture pressure 6 x fs (max. 2500 BAR)

540.941S052401	0 ... 100	17 - 33	4 - 20 mA	M12x1 PNP	transmitter	G 1/4"
540.943S052401	0 ... 250	17 - 33	4 - 20 mA	M12x1 PNP	transmitter	G 1/4"
540.955S052401	0 ... 600	17 - 33	4 - 20 mA	M12x1 PNP	transmitter	G 1/4"

Other pressure ranges available on request.

Level sensing pressure transmitters

- Medium temperature range: -20 ... +80 °C
- Accuracy: $\pm 0.25\%$ fs
- Drinking water approval: KTW, W270, WRAS, ACS
- Protection class: (IP68) Cable PE-HD
- Material: Stainless Steel 1.4404 / AISI 316L - Ceramic sensor Al2O3 (99.6%)

type	pressure range (bar) ¹⁾	supply VDC	output DC ²⁾	electrical connection ³⁾	description	cable length
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Type 712 - Level sensing pressure transmitters $\varnothing 23.4 \times 116$ mm

Type 712 level sensing pressure transmitters are manufactured using an absolute pressure measuring cell with an adjusted and amplified sensor signal.

- Medium: Fuel oil, ultra-light/heavy - SN 181 160-2, Diesel oil, Drinking water

712.913101210	0.0 ... 0.3	10 - 30	4 - 20 mA	cable	transmitter	5 met.
712.911103210	0.0 ... 1.0	10 - 30	4 - 20 mA	cable	transmitter	15 met.
712.912104210	0.0 ... 1.6	10 - 30	4 - 20 mA	cable	transmitter	20 met.

Type 713 - Level sensing pressure transmitters $\varnothing 18.5 \times 138$ mm

Type 713 pressure level transmitter used for continuous fluid level measurement of ground and drinking water. The compact design permits use in applications with restricted access as small as 20 mm i.d. pipes. Available with enhanced energy efficient ratiometric and digital outputs, for battery powered applications.

- Continuous level measurement
- Excellent linearity and long term stability
- Medium: Liquids (suitable for drinking water and borehole application)
- Suitable for ground and drinking water
- Applicable in 1/4 inch pipes

713.9301013111	0 ... 10	10 - 30	4 - 20 mA	cable	transmitter	80 met.
713.9301015111	0 ... 10	10 - 30	4 - 20 mA	cable	transmitter	100 met.
713.9301016111	0 ... 10	10 - 30	4 - 20 mA	cable	transmitter	125 met.
713.9301017111	0 ... 10	10 - 30	4 - 20 mA	cable	transmitter	150 met.
713.9301018111	0 ... 10	10 - 30	4 - 20 mA	cable	transmitter	175 met.
713.9311018111	0 ... 16	10 - 30	4 - 20 mA	cable	transmitter	175 met.



712.913101210



713.9301013111

Differential pressure transmitter

Type 699 transmitters are available in switchable pressure ranges, with or without digital display. They include customer specific adjustment possibilities. Specially developed sensors for each pressure range ensure accurate long term stable measurement and provide the perfect platform for use in air conditioning technology.

- Fast, easy mounting. (*housing incorporates integral wall or ceiling mount bracket*)
- Switchable response curve (*linear or root-extracted*)
- Adjustable measurement range
- Switchable output signals
- Resettable Zero Point (*reset button*)
- Full scale adjustable

Application fields

- Measuring slightest differential pressures in ventilation and air conditioning ducts
 - Check air flows
 - Monitor filters and fan systems
- Pressure supervision in labs, production, storage and clean rooms



699.931014010

type	pressure range (mbar) ¹⁾	supply VDC	output DC ²⁾	electrical connection ³⁾	description	pressure connection ⁴⁾
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Type 699 - Differential pressure transmitter (H) 75 x (W) 92 x (D) 47.9 mm

- Medium: Air and neutral gases - temperature range: 0 ... 70 °C
- Response time: < 20 ms
- Output: 4 ... 20 mA²⁾ (*others available on request 0 ... 5/10V*)
- Degree of protection: IP54 according to EN 60529
- Conformity: EN 61326-1, UL 60730-1, UL 60730-2-6

699.931014010	0.3/0.5/1	13 - 33	4 - 20 mA	screw term.	transmitter	Ø6.2 mm
699.913014010	1/3/5	13 - 33	4 - 20 mA	screw term.	transmitter	Ø6.2 mm
699.915014010	5/10/16	13 - 33	4 - 20 mA	screw term.	transmitter	Ø6.2 mm
699.931011010	0.3/0.5/1	13 - 33	0 - 10V	screw term.	transmitter	Ø6.2 mm
699.913011010	1/3/5	13 - 33	0 - 10V	screw term.	transmitter	Ø6.2 mm
699.915011010	5/10/16	13 - 33	0 - 10V	screw term.	transmitter	Ø6.2 mm

As above with LCD Digital display

699.931024110	0.3/0.5/1	13 - 33	4 - 20 mA	screw term.	transmitter	Ø6.2 mm
699.913024110	1/3/5	13 - 33	4 - 20 mA	screw term.	transmitter	Ø6.2 mm
699.915024110	5/10/16	13 - 33	4 - 20 mA	screw term.	transmitter	Ø6.2 mm
699.931021110	0.3/0.5/1	13 - 33	0 - 10V	screw term.	transmitter	Ø6.2 mm
699.913021110	1/3/5	13 - 33	0 - 10V	screw term.	transmitter	Ø6.2 mm
699.915021110	5/10/16	13 - 33	0 - 10V	screw term.	transmitter	Ø6.2 mm

¹⁾ Other pressure ranges available on request ²⁾ Other outputs available on request (0 ... 5/10V)

Accessories for type 699 above

- 104312 connection kit for vent duct (*metal*) 90° angled - including 2 m long tube
- 100064 connection kit for vent duct (*plastic*) straight - including 2 m long tube



699.931024110

Type 692 - Differential pressure sensor (H) 95 x (Ø) 44 mm

Type 692 pressure transmitters feature unique, well proven ceramic technology. The wide pressure range together with several standard output signals make these transmitters ideal for applications across a broad spectrum of industries. For the measurement of pressure differentials in HVAC systems.

- Robust stainless steel enclosure
- High resistance to extreme temperatures
- High measurement accuracy
- Very low temperature sensitivity

Type 692 - Differential pressure transmitter EN 61326-2-3 compact design

- Response time: < 5 ms
- Medium: Liquids and neutral gases -15 ... +85 °C
- Output: 4 ... 20 mA²⁾ (*others available on request 0 ... 5/10V*)
- Electrical connection: DIN EN 175301-803-A connector (*female not supplied with transmitter*)
- Degree of protection: IP65 according to EN 60529

type	range BAR	max BAR	power supply	output (DC) ²⁾	electrical connection ³⁾	description	screw fitting
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692.912007141	0...1	5	11-33	4 - 20 mA	DIN plug	transmitter	Ø6 mm
692.916007141	0...2.5	12	11-33	4 - 20 mA	DIN plug	transmitter	Ø6 mm
692.919007141	0...6	12	11-33	4 - 20 mA	DIN plug	transmitter	Ø6 mm
692.930007141	0...10	20	11-33	4 - 20 mA	DIN plug	transmitter	Ø6 mm

Accessories for above 692 transmitters

- 103510 DIN EN 175301-803-A female connector for type 692 transmitters
- 101999 mounting bracket (*including screws*) for type 692 transmitters



692.912007141



210.906441K



210...



236...

new



604.9000000

Flow sensors for liquid medium

Huba Control flow sensors are based on the Karman Vortex trail principle and are available in various options. No moving parts, the flow sensor is not sensitive to debris with marginal pressure loss combined with high accuracy.

- Measuring principle: Vortex - Piezoelectric sensor element
- Excellent media resistance: Measuring element not in contact with the media
- Drinking water approval: KTW, W270, WRAS, ACS
- Accuracy at < 50% fs: < 1 % fs (>50% - 2% measuring value)
- Flow medium: Heating water with standard additives, drinking water
- Medium temperature: < +125 °C
- Flow pipe connection: External thread K connection G½ ... G1¼" (others on request)
- Electrical connection: M12 x 1 - 3 pin (supplied separately - see page K-27 / 28)
- Material: Fibreglass-reinforced plastic, sensor paddle ETFE
- Protection class: (IP65)

type	nominal diameter	measuring range (l/min)	power supply	output DC ²⁾	description	connect
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Type 210 - Fibreglass-reinforced plastic PA6T/6I (40% GF)

Type 210 flow sensor for liquid media

210.906441K	DN 6	0.5 ... 10	8 - 33 VDC	4 - 20 mA	flow sensor	G ½"
210.908441K	DN 8	0.9 ... 15	8 - 33 VDC	4 - 20 mA	flow sensor	G ½"
210.910441K	DN 10	1.8 ... 32	8 - 33 VDC	4 - 20 mA	flow sensor	G ½"
210.915441K	DN 15	3.5 ... 50	8 - 33 VDC	4 - 20 mA	flow sensor	G ¾"
210.920441K	DN 20	5.0 ... 85	8 - 33 VDC	4 - 20 mA	flow sensor	G 1"
210.925441K	DN 25	9.0 ... 150	8 - 33 VDC	4 - 20 mA	flow sensor	G 1¼"

²⁾ other outputs available on request 0 - 10V, Frequency square pulse output
Above flow switches can be provided with additional internal PT1000 temperature sensor

Type 236 - Brass bodied flow sensors

The Type 236 is based on the Type 210 but incorporates a brass housing. The vortex sensor has a rugged construction of brass connection.

- Brass (CuZn40PbZ), PA6T/6I (40% GF)

Type 236 Brass bodied flow sensors

236.910441K	DN 10	1.8 ... 32	8 - 33 VDC	4 - 20 mA	flow sensor	G ½"
236.911441K	DN 10	2.0 ... 40	8 - 33 VDC	4 - 20 mA	flow sensor	G ½"
236.932441K	DN 32	14 ... 240	8 - 33 VDC	4 - 20 mA	flow sensor	G 1½"

Above flow switches can be provided with additional internal PT1000 temperature sensor.
For M12 connectors and cables see page K- 27 / 28

Type 604 - Mechanical pressure switches

Type 604 pressure switch is used as a Δp flow switch in ventilation ducts for the control of filters and fans in primary and secondary control systems for the control of air dampers. Ideally suited to protect heating coils from overheating and for monitoring industrial air cooling circuits.

- Easy to install, user friendly snap cover
- Case geometry permits easy cable entry - cable strain relief integrated
- Supplied with Combi-bracket for vertical or horizontal installation
- For ventilation and air conditioning plants (monitor differential pressure under/over pressure)
- To monitor air filters and air flow

- Medium: Air and neutral gases -30 ... +85 °C
- Electrical contact: 1 x changeover contact - 5A 250 VAC (resistive)
- Protection class: (IP54) (with cover)
- Conformity: EN 61326-2-3, EN 60730-1

type	pressure range ¹⁾ mbar	Pa	switch	electrical connection ³⁾	description	pressure connection ⁴⁾
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Type 604 - Mechanical pressure switch (H) 52 x (Ø) 81

- Tolerable overload on one side: 50 mbar
- Pressure connection: PVC nipples - Ø6.2 mm

604.9000000	0.2 ... 3	20 ,, 300	1 ch/over	screw term.	pressure switch	Ø6.2 mm
604.9100000	0.5 ... 5	50 ,, 500	1 ch/over	screw term.	pressure switch	Ø6.2 mm
604.9200000	1 ... 10	100 ,, 1000	1 ch/over	screw term.	pressure switch	Ø6.2 mm
604.9400000	5... 20	500 ,, 2000	1 ch/over	screw term.	pressure switch	Ø6.2 mm
604.9500000	10... 50	1000 ,, 5000	1 ch/over	screw term.	pressure switch	Ø6.2 mm

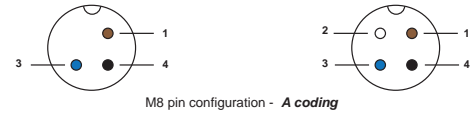
Note: Other pressure ranges available on request

Accessories for type 604 above

- 104312 connection kit for vent duct (metal) 90° angled - including 2 m long tube
- 100064 connection kit for vent duct (plastic) straight - including 2 m long tube

M8 and M12 - Round sensor connectors

- Contact resistance: $\geq 10\text{m}\Omega$
- Protection degree: IP67/68
- Operating temperature: $-25^\circ\text{C} \dots +85^\circ\text{C}$
- Termination: Screw clamp terminal
- Contact material: Gold plated Phosphor Brass/Bronze



new

new

type	gender	No. pins	term.	plug angle	nominal current	rated voltage AC/DC	description
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M8 assembly connectors (A coding) IP67/68

- Plastic body: Insulation PA66+GF
- Cable Ø: $\varnothing 3 \dots 5.5 \text{ mm}$

080103-02-001	female	3	screw	straight	4A	60V	M8 connector
080104-02-001	female	4	screw	straight	4A	60V	M8 connector
080103-01-001	male	3	screw	straight	4A	60V	M8 connector
080104-01-001	male	4	screw	straight	4A	60V	M8 connector

M12 assembly connectors (A coding) IP67/68

- Plastic body: PA66+GF
- Cable Ø: $\varnothing 3 \dots 8 \text{ mm}$

120103-02-022	female	3	screw	straight	4A	250V	M12 connector
120104-02-022	female	4	screw	straight	4A	250V	M12 connector
120105-02-022	female	5	screw	straight	4A	60V	M12 connector
120108-02-022	female	8	screw	straight	2A	30V	M12 connector
120104-02-024	female	4	screw	90°	4A	250V	M12 connector
120105-02-024	female	5	screw	90°	4A	60V	M12 connector
120108-02-024	female	8	screw	90°	2A	30V	M12 connector
120103-01-022	male	3	screw	straight	4A	250V	M12 connector
120104-01-022	male	4	screw	straight	4A	250V	M12 connector
120105-01-022	male	5	screw	straight	4A	60V	M12 connector
120108-01-022	male	8	screw	straight	2A	30V	M12 connector
120104-01-024	male	4	screw	90°	4A	250V	M12 connector
120105-01-024	male	5	screw	90°	4A	60V	M12 connector

M12 metallic body assembly connectors (A coding)

- Gland: PG9 with shield
- Cable Ø: $\varnothing 6 \dots 8 \text{ mm}$
- Termination: Solder terminal

120104-02-006	female	4	solder	straight	4A	250V	M12 connector
120105-02-006	female	5	solder	straight	4A	60V	M12 connector
120108-02-006	female	8	solder	straight	2A	30V	M12 connector
120104-01-006	male	4	solder	straight	4A	250V	M12 connector
120105-01-006	male	5	solder	straight	4A	60V	M12 connector
120108-01-006	male	8	solder	straight	2A	30V	M12 connector

M12 circular panel mount connectors (A coding) IP67/68

- Metallic panel mount circular connectors
- M16 x 1.5 rear mounting

120104-04-001	female	4	solder	straight	4A	250V	M12 panel mount
120105-04-001	female	5	solder	straight	4A	60V	M12 panel mount
120108-04-001	female	8	solder	straight	2A	30V	M12 panel mount
120104-03-001	male	4	solder	straight	4A	250V	M12 panel mount
120105-03-001	male	5	solder	straight	4A	60V	M12 panel mount
120108-03-001	male	8	solder	straight	2A	30V	M12 panel mount

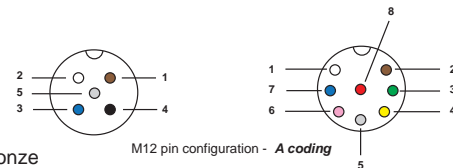
Cable multi-core sensor cable - PUR (Polyurethane)

- High flexibility, oil and abrasion resistant
- Operating temperature: $-25 - 85^\circ\text{C}$

type	(mm ²)	cores	colour	insul. material	wire colours
CA00142	0.34	3	black	cable PUR	brown-blue-black
CA00015	0.34	4	black	cable PUR	brown-white-blue-black
CA00148	0.34	5	black	cable PUR	brown-white-blue-black-grey
CA00103	0.25	8	black	cable PUR	pnk-red-yel-brn-wht-blu-grn-gry

M8 and M12 - Round sensor connectors

- Contact resistance: $\geq 10m\Omega$
- Protection degree: IP67/68
- Operating temperature: $-25^{\circ}C \dots +85^{\circ}C$
- Termination: Moulded on cable
- Contact material: Gold plated Phosphor Brass/Bronze
- PUR cable: High flexibility, oil and abrasion resistant



type	gender	No. pins	colour	plug angle	cable material	cable length	description	
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M8 sensor cable with female connector (A coding)

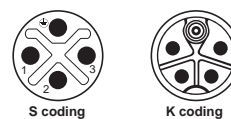
080103-06-027	female	3	black	straight	PUR	2 met.	M8 sensor cable	
080103-06-020	female	3	black	straight	PUR	5 met.	M8 sensor cable	
080103-06-058	female	3	black	90°	PUR	2 met.	M8 sensor cable	
080103-06-024	female	3	black	90°	PUR	5 met.	M8 sensor cable	
080104-06-054	female	4	black	straight	PUR	2 met.	M8 sensor cable	
080104-06-029	female	4	black	straight	PUR	5 met.	M8 sensor cable	
080104-06-063	female	4	black	90°	PUR	2 met.	M8 sensor cable	
080104-06-036	female	4	black	90°	PUR	5 met.	M8 sensor cable	

M12 sensor cable with female connector (A coding)

120104-06-053	female	4	black	straight	PUR	2 met.	M12 sensor cable	
120104-06-061	female	4	black	straight	PUR	5 met.	M12 sensor cable	
120104-06-624	female	4	black	straight	PUR	7.5 met.	M12 sensor cable	
120104-06-625	female	4	black	straight	PUR	10 met.	M12 sensor cable	
120104-06-017	female	4	black	90°	PUR	2 met.	M12 sensor cable	
120104-06-010	female	4	black	90°	PUR	5 met.	M12 sensor cable	
120104-06-923	female	4	black	90°	PUR	7.5 met.	M12 sensor cable	
120104-06-924	female	4	black	90°	PUR	10 met.	M12 sensor cable	
120105-06-075	female	5	black	straight	PUR	2 met.	M12 sensor cable	
120105-06-053	female	5	black	straight	PUR	5 met.	M12 sensor cable	
120105-06-127	female	5	black	90°	PUR	2 met.	M12 sensor cable	
120105-06-055	female	5	black	90°	PUR	5 met.	M12 sensor cable	
120108-06-008	female	8	black	straight	PUR	2 met.	M12 sensor cable	
120108-06-009	female	8	black	straight	PUR	5 met.	M12 sensor cable	
120108-06-115	female	8	black	90°	PUR	2 met.	M12 sensor cable	
120108-06-119	female	8	black	90°	PUR	5 met.	M12 sensor cable	

M12 round connectors - for power applications (S & K coding)

- Contact resistance: $\geq 3m\Omega$
- Protection degree: IP67/68
- Operating temperature: $-25^{\circ}C \dots +85^{\circ}C$
- Termination: Solder terminal



type	gender	No. pins	poles	contact coding	nominal current	rated voltage	description	
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M12 power assembly connectors (S & K coding) IP67/68

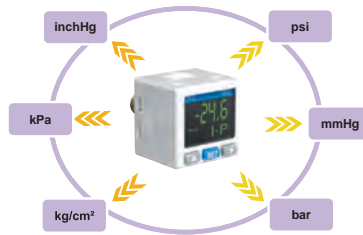
- Plastic body: Insulation PA66+GF
- Wire gauge: max. 1.5 mm²
- Cable Ø: Ø 3...8 mm

120504-01-001	male	4	3+PE	S	12A	630 VAC	M12 connector	
121105-01-001	male	5	4+PE	K	12A	630 VAC	M12 connector	
120504-02-001	female	4	3+PE	S	12A	630 VAC	M12 connector	
121105-02-001	female	5	4+PE	K	12A	630 VAC	M12 connector	

M12 metallic panel mount power connectors (S & K coding) IP67/68

- Metallic panel mount circular connectors
- M16 x 1.5 rear mounting

120504-03-001	male	4	3+PE	S	12A	630 VAC	M12 connector	
121105-03-001	male	5	4+PE	K	12A	630 VAC	M12 connector	
120504-04-001	female	4	3+PE	S	12A	630 VAC	M12 connector	
121105-04-001	female	5	4+PE	K	12A	630 VAC	M12 connector	



Various Unit Conversion

DPA series - Compact miniature pressure/vacuum sensors

Delta's new-generation and slim pressure sensor is small in size and light, supporting many installation methods. DPA features high measurement accuracy, excellent stability, high shock and vibration resistance, good over-load capacity, anti-corrosion and heat resistance, and can work with all Delta's industrial automation products in hi-tech electronics industry, general processing industry, food packaging industry and automatic assembly industry.

Various unit conversion

The DPA series offers 6 kinds of globally adopted pressure units for measurement and display.

3-colour LCD display (green, red, orange)

The large LCD with a green, red and orange 3-colour LCD display allows users to set the display colour according to the ambient environment, such as when the pressure is within normal range or exceeds the allowed range. The display's colour is orange when in parameter setup mode. This makes it easy for reading and reduces operation errors.

Safety control mode

The safety control mode prevents operators from carelessly touching relevant parameters and affecting the operation and production of the equipment.

Functions:

- 2 x digital outputs (NPN or PNP) and 1 x analog output (1 - 5V or 4 - 20mA)
- Various unit conversion functions (kPa, kg/cm², bar, mmHg, psi, inchHg)
- Selectable LED (3 colours) set different colours for different parameters
- 10 sets of output response times available (2ms - 5.000ms)
- Connection: 1/8 PT, inner pore M5
- Safety control function (to prevent unwanted parameter changes)



type	pressure	output type		description
	range (kPa)	2 x digital	1 x analog	

Multifunction small pressure sensor (H)30 x (W)30 x (D)26 mm

2 x digital and 1 x 4 - 20mA output

DPA01P-P	-100 - 100kPa	PNP	+4 - 20mA	mini pressure sensor
DPA10P-P	-100 - 1000kPa	PNP	+4 - 20mA	mini pressure sensor
DPA01N-P	-100 - 100kPa	NPN	+4 - 20mA	mini pressure sensor
DPA10N-P	-100 - 1000kPa	NPN	+4 - 20mA	mini pressure sensor

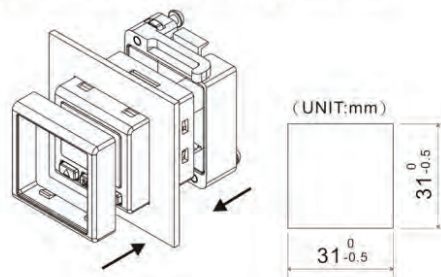
2 x digital and 1 x 1 - 5V

DPA01Q-P	-100 - 100kPa	PNP	+1 - 5V	mini pressure sensor
DPA01M-P	-100 - 100kPa	NPN	+1 - 5V	mini pressure sensor
DPA10M-P	-100 - 1000kPa	NPN	+1 - 5V	mini pressure sensor

Accessories for pressure sensors

DPA-PFKIT	panel mount accessory	(31 x 31 mm cut-out)
DPA-FMKIT	surface mount support bracket	(all sides mounting)

- Panel: Use optional accessory DPA-PFKit.



- To install fixing frame, purchase the optional OPA - FMKit accessory.



Miniature snap-action micro switches

- Snap-action micro switch with wiping contacts, silver alloy

type	current lth	actuator	length	description	contacts
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CMV series - Snap-action micro switches

10A 250 VAC changeover

- Mounting: Ø3 mm - 22.2 x 10.3 mm apart (*diagonal*)
- Terminals: Fast-on 187 (*4.8 x 0.5 mm*)

CMV100D	10A	0	standard plunger	–	miniature micro switch	SPDT
CMV101D	10A	1	short plain lever	35.6 mm	miniature micro switch	SPDT
CMV105D	10A	5	long plain lever	62.2 mm	miniature micro switch	SPDT
CMV104D	10A	4	short roller lever	20.1 mm	miniature micro switch	SPDT
CMV103D	10A	3	long roller lever	34.0 mm	miniature micro switch	SPDT

16A 250 VAC changeover

- Terminals: Fast-on 250 (*6.35 x 0.8 mm*)

CMV16001C	16A	0	standard plunger	–	miniature micro switch	SPDT
CMV16011C	16A	1	short plain lever	35.6 mm	miniature micro switch	SPDT
CMV16051C	16A	5	long plain lever	62.2 mm	miniature micro switch	SPDT
CMV16041C	16A	4	short roller lever	20.1 mm	miniature micro switch	SPDT
CMV16031C	16A	3	long roller lever	34.0 mm	miniature micro switch	SPDT

KW3 series - Snap-action micro switches

16A 250 VAC changeover

- Approvals: UL, cUL, VDE, Semko, Demko, Femko, Nemko, CE, CQC
- Terminals: Fast-on 250 (*6.35 x 0.8 mm*)

KW3A-16Z0B	16A	0	standard plunger	–	miniature micro switch	SPDT
KW3A-16Z3	16A	1	short plain lever	35.6 mm	miniature micro switch	SPDT
KW3A-16Z2	16A	5	long plain lever	59.4 mm	miniature micro switch	SPDT
KW3A-16Z4	16A	4	short roller lever	20.2 mm	miniature micro switch	SPDT
KW3A-16Z5	16A	3	long roller lever	34.0 mm	miniature micro switch	SPDT

CM series - Standard snap-action micro switch

- Mounting: Ø4 mm - 25.4 mm apart (*horizontal*)
- Terminals: Screw-type terminals

CM1300	15A	F	pin plunger		standard micro switch	SPDT
CM1305	15A	G	extended plunger		standard micro switch	SPDT
CM1306	15A	H	button plunger		standard micro switch	SPDT
CM1307	15A	I	ext. panel mnt plunger		standard micro switch	SPDT
CM1308	15A	J	ext. panel mnt roller plunger		standard micro switch	SPDT
CM1309	15A	K	ext. p/mnt roller plunger 90°		standard micro switch	SPDT
CM1701	15A	L	long plain lever		standard micro switch	SPDT
CM1703	15A	M	long roller lever		standard micro switch	SPDT
CM1704	15A	N	short roller lever		standard micro switch	SPDT
CM1705	15A	P	long wire lever		standard micro switch	SPDT
CM1743	15A	O	short roller (<i>collapsible</i>)		standard micro switch	SPDT

CAP-Y

CM switch terminal cover

CZ-7 series - Micro switch 10A 250 VAC

- Rated thermal current: 10A (lth IEC94751) 250 VAC
- Rated insulated voltage: Ui-380V
- Mounting: Ø4 mm - 25.4 mm apart (*horizontal*)
- Terminals: Screw terminals (IP40)

CZ-7310	10A	I	ext. panel mnt plunger		standard micro switch	SPDT
CZ-7311	10A	J	ext. panel mnt roller plunger		standard micro switch	SPDT
CZ-7312	10A	K	ext. p/mnt roller plunger 90°		standard micro switch	SPDT
CZ-7120	10A	L	long plain lever		standard micro switch	SPDT
CZ-7121	10A	M	long roller lever		standard micro switch	SPDT
CZ-7141	10A	N	short roller lever		standard micro switch	SPDT
CZ-7144	10A	O	short roller (<i>collapsible</i>)		standard micro switch	SPDT



Limit switches designed to satisfy all requirements comprising quick installation, easy wiring and simple setup. The innovative locking bayonet mechanism permits to remove and reposition the operating head in the required configuration with no tools. The auxiliary contact blocks are removable assuring remarkable wiring ease.

- Replaceable actuator heads, 45° axial rotation of operating heads
- Direct operating operation; safety function according to IEC/EN 60947-5-1
- Ith 10A – IP65 – Ui 690 VAC – M20 cable entry

type	description		contacts
KB series - Plastic body bottom entry (1 x M20) (IP65)			
- Body dimensions: (H) 69 x (W) 30 x (D) 30 mm fixing hole distance:			20 mm
KB A1 S11	top plunger	industrial limit switch	1NO + 1NC
KB B2 S11	top roller plunger (metal)	industrial limit switch	1NO + 1NC
KB C2 S11	top plunger roller lever (metal)	industrial limit switch	1NO + 1NC
KB D2 S11	roller side push level (metal)	industrial limit switch	1NO + 1NC
KB E2 S11	rotating roller lever (metal)	industrial limit switch	1NO + 1NC
KB F2 S11	rotating roller lever (adjustable)	industrial limit switch	1NO + 1NC
KB H1 S11	ceramic rotating rod roller lever	industrial limit switch	1NO + 1NC
KB L2 S11	rotating rod lever (adjustable)	industrial limit switch	1NO + 1NC
KB M1 S11	omni-directional wobble stick	industrial limit switch	1NO + 1NC
KB P1 L11	hinge operating (short cylinder)	industrial limit switch	1NO + 1NC
KB P2 L11	hinge operating (long cylinder)	industrial limit switch	1NO + 1NC
KN series - Metallic body side entry (2 x M20) (IP65)			
- Body dimensions: (H) 58 x (W) 60 x (D) 30 mm fixing hole distance:			40/20 mm
KN A1 S11	top plunger	industrial limit switch	1NO + 1NC
KN B1 S11	top roller plunger	industrial limit switch	1NO + 1NC
KN C1 S11	top plunger roller lever	industrial limit switch	1NO + 1NC
KN E1 S11	rotating roller lever	industrial limit switch	1NO + 1NC
KN F1 S11	rotating roller lever (adjustable)	industrial limit switch	1NO + 1NC
KN H1 S11	ceramic rotating rod roller lever	industrial limit switch	1NO + 1NC
KN L2 S11	rotating rod lever (adjustable)	industrial limit switch	1NO + 1NC
KN M1 S11	omni-directional wobble stick	industrial limit switch	1NO + 1NC
KM series - Metallic body bottom entry (1 x M20) (IP65)			
- Body dimensions: (H) 69 x (W) 30 x (D) 30 mm fixing hole distance:			20 mm
KM A1 S11	top plunger	industrial limit switch	1NO + 1NC
KM B2 S11	top roller plunger	industrial limit switch	1NO + 1NC
KM C2 S11	top plunger roller lever	industrial limit switch	1NO + 1NC
KM E2 S11	rotating roller lever	industrial limit switch	1NO + 1NC
KM F2 S11	rotating roller lever (adjustable)	industrial limit switch	1NO + 1NC
KM H1 S11	ceramic rotating rod roller lever	industrial limit switch	1NO + 1NC
KM L2 S11	rotating rod lever (adjustable)	industrial limit switch	1NO + 1NC
KM M1 S11	omni-directional wobble stick	industrial limit switch	1NO + 1NC
Spare – contact blocks (interchangeable) - excluding KB Q1 L11			
KX B S11	contact block	snap action	1NO + 1NC
KX B S02	contact block	snap action	2 NC
KX B A11	contact block	slow break (make before break)	1NO + 1NC
KX B L11	contact block	slow break	1NO + 1NC
Safety limit switches (slow break)			
KB Q1 L11	slotted lever actuator	safety limit switch	1 NO + 1 NC
KB N1 L11	key operated (straight key)	safety limit switch	1 NO + 1 NC
KB N2 L11	key operated (angled key)	safety limit switch	1 NO + 1 NC
Spare keys for safety limit switches			
KX N1	straight key	for safety limit switches	–
KX N2	angled key	for safety limit switches	–
KX N3	straight "T" key	for safety limit switches	–
KX N4	angled "T" key	for safety limit switches	–
RS1 series - Rope operated limit switches (H) 104 x (W) 30.5 x (D) 35 mm (IP65)			
<ul style="list-style-type: none"> • Double-insulated housing glass fibre-reinforced self extinguishing • Self-cleaning silver-alloy contacts, Snap action contacts • Thermal current: Ith:10A Ui: 250 VAC 			
Non-latching rope operated limit switches (snap action)			
RS11310	rope operated limit switch (non latching)	25N	1NO + 1NC
Latching (hand reset) limit switches EN 418 compliant			
RS13130	rope operated limit switch (latching/hand reset)	25N	1NO + 1NC



PLNU1AT25W



PLN131311



P2L131312



P33032



P33033



P33036



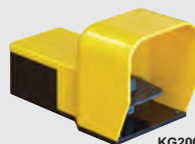
P33034



P33035



KG100S11



KG200S11



KR200S11

Rope-operated pull lever limit switches

- Heavy-duty metal body
- Supplied with cable gland (PG11)
- Protection degree: IP65

type	description	operating force (N)	contacts
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PLNU series - Heavy-duty non-latching rope-operated limit switches

- Direct (*positive*) opening action - safety function according to IEC/EN 60947-5-1
- Thermal current: lth: 10A Ui: 400 VAC
- Dimensions: (H) 89 x (W) 84 x (D) 40.5 mm

PLNU1AT25W	rope operated limit switch	(<i>non-latching</i>)	25N	1NO + 1NC
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P2LU series - Heavy-duty latching rope-operated limit switches

Latching (*hand reset*) limit switches EN 418 compliant

- Latching with push button "Reset" facility on switch
- Thermal current: lth: 6A Ui: 400 VAC
- Dimensions: (H) 175 x (W) 85 x (D) 47 mm

P2LU series (H) 175 x (W) 85 x (D) 47 mm

P2LU1SAT75AG	rope operated limit switch	(<i>latching/hand reset</i>)	7.5 kg	1NO + 1NC
P2LU1SAT15AG	rope operated limit switch	(<i>latching/hand reset</i>)	15 kg	1NO + 1NC

Heavy duty rope-operated limit switches with pre-tensioning facility

- Latching (*hand reset*) limit switches EN418 compliant
- 2 NC contacts (*when pre-tensioned*) 1 opens if rope breaks the other opens when rope is pulled
- Green indicator for correct pre-tensioning adjustment
- Large field of overlap for easier regulation of pre-tensioning
- Latching with push button "Reset" facility on switch
- Thermal current: lth: 6A Ui: 400 VAC

with pre tensioned rope

PLN series - 60N (H) 82 x (W) 104 x (D) 40.5 mm

PLN131311	rope operated limit switch	(<i>latching/hand reset</i>)	60N - 6kg	1NO + 1NO
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P2L series - 120N (H) 161 x (W) 100 x (D) 48.5 mm

P2L131312	rope operated limit switch	(<i>latching/hand reset</i>)	120N - 12kg	1NO + 1NO
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Accessories for rope-operated switches

P33032	adjustable rope terminal clamp Ø 5 mm
P33033	rope eye of Ø 5 mm (<i>cable end thimble</i>)
P33034	turn buckle M6 x 60 for rope tensioning
P33035	threaded eye bolt M8 guide for rope
P33036	steel rope 0.5 mm PVC sheathed (<i>red insulated</i>) (100met)

Industrial foot switches thermoplastic and metallic (IP54)

- Self-extinguishing double insulation polymer thermoplastic
- Cable entry: M20 x 1.5

KG series - Thermoplastic foot switches

- Self-extinguishing double insulation thermoplastic

KG100S11	open-type industrial foot switch	thermoplastic	1NO + 1NC
KG200S11	closed-type industrial foot switch	thermoplastic	1NO + 1NC

KR series - Metallic foot switches

- Aluminium zinc alloy body

KR100S11	open-type industrial foot switch	diecast	1NO + 1NC
KR200S11	closed-type industrial foot switch	diecast	1NO + 1NC

Additional charges

KGX01	kit for adding a second contact block to foot switches	-
KGX02	contact block mounting bracket	-
KX B S11	additional contact block for above foot switches	1NO + 1NC

E series industrial limit switches are suitable for most environmental conditions due to their solid construction, IP66 certification and proven reliability over decades of fieldwork.

- Protection degree: IP66
- Rated thermal current: 10A (Ith IEC947-5-1)
- Conformity: EN 50047, UNI EN 1088, EN ISO 12100-1, IEC529
- Contact blocks with positive opening of the NC contact according to IEC/EN 60947-5-1, VDE 0660-200

A



B



C



E



F



L



E10100BI



E30100EMRA



E40100AM

type	actuator type	description	contact
E100 series - Industrial limit switches (IP66)		CENELEC EN50047	
Body dimensions:	(H) 77.5 x (W) 30.5 x (D) 33 mm	fixing hole distance: 20/22 mm	
Cable entry:	1 x bottom entry - M20 x 1.5		
Thermoplastic body (IP66)			
E10100AI	top steel plunger actuator	limit switch	1NO + 1NC
E10100BI	top steel roller plunger actuator	limit switch	1NO + 1NC
E10100CI	roller lever side action	limit switch	1NO + 1NC
E10100DI	roller lever vertical action	limit switch	1NO + 1NC
E10100EI	rotary roller arm lever	limit switch	1NO + 1NC
E10100EI50	rotary Ø50 mm rubber roller arm lever	limit switch	1NO + 1NC
E10100FI	offset rotary roller arm lever	limit switch	1NO + 1NC
E10100FI	adjustable length rotary roller arm lever	limit switch	1NO + 1NC
E10100HI	adjustable rotary Ø6 mm rod lever	limit switch	1NO + 1NC
E10100LI	flexible spring rod actuator rod	limit switch	1NO + 1NC
E10100LSI	Cats whisker actuator	limit switch	1NO + 1NC
E10101SCI	safety switch for hinges	limit switch	1NO + 1NC
Diecast metal body (IP66)			
E10100AM	top steel plunger actuator	limit switch	1NO + 1NC
E10100BM	top steel roller plunger actuator	limit switch	1NO + 1NC
E10100CM	roller lever side action	limit switch	1NO + 1NC
E10100DM	roller lever vertical action	limit switch	1NO + 1NC
E10100EMRA	rotary (metal) roller arm lever	limit switch	1NO + 1NC
E10100IMRA	offset rotary (metal) roller arm lever	limit switch	1NO + 1NC
E10100IM50	rotary Ø50 mm rubber roller arm lever	limit switch	1NO + 1NC
E10100FM	adjustable length rotary roller arm lever	limit switch	1NO + 1NC
E10100HM	adjustable rotary Ø6 mm rod lever	limit switch	1NO + 1NC
E10100LM	flexible spring rod actuator rod	limit switch	1NO + 1NC
E10100LSM	Cats whisker actuator	limit switch	1NO + 1NC
E300 series - Industrial limit switches (IP66)		diecast metal body	
Body dimensions:	(H) 89.5 x (W) 52 x (D) 33.5 mm	fixing hole distance: 40 mm	
Cable entry:	2 side + 1 x bottom entry - M20 x 1.5		
E30100AM	top steel plunger actuator	limit switch	1NO + 1NC
E30100BM	top steel roller plunger actuator	limit switch	1NO + 1NC
E30100CM	roller lever side action	limit switch	1NO + 1NC
E30100DM	roller lever vertical action	limit switch	1NO + 1NC
E30100EMRA	rotary (metal) roller arm lever	limit switch	1NO + 1NC
E30100IMRA	offset rotary (metal) roller arm lever	limit switch	1NO + 1NC
E30100IM50	rotary Ø50 mm rubber roller arm lever	limit switch	1NO + 1NC
E30100FM	adjustable length rotary roller arm lever	limit switch	1NO + 1NC
E30100HM	adjustable rotary Ø6 mm rod lever	limit switch	1NO + 1NC
E30100LM	flexible spring rod actuator rod	limit switch	1NO + 1NC
E30100LSM	Cats whisker actuator	limit switch	1NO + 1NC
E400 series - Industrial limit switches (IP66)		diecast metal body - CENELEC EN50041	
Body dimensions:	(H) 89.5 x (W) 52 x (D) 33.5 mm	fixing hole distance: 2 x 30 mm	
Cable entry:	1 x bottom entry - M20 x 1.5		
E40100AM	top steel plunger actuator	limit switch	1NO + 1NC
E40100BM	top steel roller plunger actuator	limit switch	1NO + 1NC
E40100CM	roller lever side action	limit switch	1NO + 1NC
E40100DM	roller lever vertical action	limit switch	1NO + 1NC
E40100EMRA	rotary (metal) roller arm lever	limit switch	1NO + 1NC
E40100IMRA	offset rotary (metal) roller arm lever	limit switch	1NO + 1NC
E40100IM50	rotary Ø50 mm rubber roller arm lever	limit switch	1NO + 1NC
E40100FM	adjustable length rotary roller arm lever	limit switch	1NO + 1NC
E40100HM	adjustable rotary Ø6 mm rod lever	limit switch	1NO + 1NC
E40100LM	flexible spring rod actuator rod	limit switch	1NO + 1NC
E40100LSM	Cats whisker actuator	limit switch	1NO + 1NC



E40108TBM



E10101SCI



ELEM00



Z5



PDNS11BX10



PPKS11BX10



PDKS11BX10



LK20K13

Safety limit switches

- Protection degree: IP66
- Body Material: Plastic or Metal body limit switches
- Rated thermal current: 10A lthe (IEC947-5-1)
- Mechanical life: 20 million operations

type	actuator type	description	contact
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Pull wire safety switches guarantee the safety of operator who is able to control the immediate stop of machinery at any point in the operating zone.

- 1) Tension wire until both contacts are in the closed position
- 2) When wire is pulled one contact (A) opens and switch is latched (*resettable via front button*)
- 3) If wire breaks, the other contact (B) opens

Both contacts should be wired in series

E10108TBI	latching (<i>resettable by button</i>) pull wire	plastic limit switch	1NO + 1NC
E40108TBM	latching (<i>resettable by button</i>) pull wire	metal limit switch	1NO + 1NC

Key actuated switches 5 way key actuated switches are used on gates, sliding doors and other devices to protect access to dangerous parts of machines. The key is applied to the moving protection barrier and has to be removed from the switch on every opening thus operating a positive opening or the NC contact.

E10101S5I	key actuated safety switch	plastic limit switch	1NO + 1NC
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Hinge operated switches used to guarantee operator safety, applied to machinery fitted with protection barriers with application directly to the hinge of the enclosure. The switches hinged socket accepts an 8 mm shaft.

E10101SCI	safety switch for hinges	plastic limit switch	1NO + 1NC
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Spare contact blocks for all limit switches

ELEM00	standard snap action	contact block	1NO+1NC
ELEM03	slow action	contact block	2NO

Accessories for above limit switches

- Z5** angled key for key actuated safety limit switches
- Z51** straight key for key actuated safety limit switches
- Z52** adjustable key for key actuated safety limit switches

Note: For pull wire switch accessories (see page K-32)



Industrial foot switches (IP65)

EMAS foot operated switches are ideal for all industrial applications. They are supplied as open type or with plastic or diecast foot protection, preventing inadvertent operation. Internal cams are provided to accommodate up to 3 x contact blocks, two with simultaneous operation and one with delayed switching, ideal for two speed operations.

- Mechanical life: 1.000.000 operations
- Electrical life: 100.000 operations min.
- Operating temperature: -5° - +60°C
- Rated thermal current: 10A lthe (IEC 947-51)
- Conformity to Standards: EN 60947-5-1, VDE0660, UL508

type	description	protection cover	contact configuration
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Open type foot switch (IP65)

PDNS11BX10	open type industrial foot switch	no	1NO + 1NC
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Protected foot switches (IP65)

PPKS11BX10	protected type industrial foot switch	thermoplastic	1NO + 1NC
PDKS11BX10	protected type industrial foot switch	diecast	1NO + 1NC

Contact blocks for above foot switches

Up to two additional contact blocks can added to foot switches: 1 x simultaneous operation and 1 x with delayed switching for two speed operations.

LK20K13	snap action contact block for foot switches		1NO + 1NC
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MATIC float switches feature a patented inner chamber filled with Polyurethane foam preventing ingress of humidity and water condensation within the switch.

IMQ, ECC-CENELC-VDE-CE approved.

type	cable length	differential degrees	contact rating	description	dimensions (mm) (H) (W/Ø) (D)		
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MICROSTART/C level regulator for clean water

- Can be used for emptying and filling (*SPDT contact*)
- Counterweight: Supplied complete with cable fixing
- Protection degree: IP68
- Max. water temperature: 55°C
- Electrical contact: 10 (4) A 250 VAC (*rated voltage*)
- Max working pressure: 10 BAR

ACD05P10	5 met	30°	10 (4) A	float switch for clean water	160	70	52
ACD10P10	10 met	30°	10 (4) A	float switch for clean water	160	70	52

Minimatic/C WRAS WRAS approved for drinking water

- Tested and certified by WRAS
- Counterweight: Supplied complete with cable fixing

AAB05W10	5 met	30°	10 A	float switch for drinking water	172	80	56
AAB10W10	10 met	30°	10 A	float switch for drinking water	172	80	56

Little Mercury submerged float switches for sewer water

For regulation of particularly turbulent industrial waters containing residues of suspended agglomerates or of sewer waters.

- Internal weight fixing the rotation centre (*gravity centre*) close to the cable connection.
- Two switches used: 1 for high level and 1 for low level control
- Protection degree: IP68
- Max. water temperature: 55°C
- Electrical contact: 10 A 250 VAC (*rated voltage*)
- Max working pressure: 10 BAR

Little Mercury MC internal micro switch with self-cleaning contacts

AEA05P00	5 met	15°	10 (4) A	float switch for sewer water	138	76	–
AEA10P00	10 met	15°	10 (4) A	float switch for sewer water	138	76	–

Little EX ATEX float switch for use in Diesel oil

For regulation of particularly diesel oil, water and hydrocarbon mixture, motor oils, tools machine oils, etc.

- ATEX Certified: Group and category tool II 1G - Ex ia Group of striking IIC
- Special blue cable for the immersion in hydrocarbons mixture (*3 x 1 NEOPREN*)

AHA05	5 met	15°	21.4 mA	float switch for diesel oil	138	76	–
AHA10	10 met	15°	21.4 mA	float switch for diesel oil	138	76	–

Matic V MC level regulator for water up to 130°C

Outer casing made in 304 AISI stainless steel and electric with outer SILICON sheath resistant to high temperatures.

- ATEX Certified Group and category tool II 1G - Ex ia Group of striking IIC
- Protection degree: IP68
- Electric contact: Max 0.25 A - 60 V (*rated voltage*)
- Max working pressure: 4 BAR

AFA05S00	5 met	10°	0.25 A	float switch for clean water	–	75	–
AFA10S00	10 met	10°	0.25 A	float switch for clean water	–	75	–

Matic P/MC float switch for autoclaves and pipings

Due to its small diameter it can be introduced into a tank through a Ø30 mm hole and disposed either horizontally or vertically (*with counterweight*).

- Protection degree: IP68
- Electric contact: Max 0.25 A - 60 V (*rated voltage*)
- Max working pressure: 8 BAR

AGD05S00	5 met	5°	0.25 A	float level switch	182	28.5	–
AGD10S00	10 met	5°	0.25 A	float level switch	182	28.5	–

Accessories for float switches

CNTRWT/100	100g			standard cable fixing counterweight for float switches			
CNTRWT/360	360g			stainless steel cable fixing counterweight for float switches			



ACD...



AAB...



AEA...



AFA...



AGD...



FBA315



EDA



FAB15

type	supply voltage	max. pressure	max. temp	description
FLOW MATIC Flow switches for circulation and centrifugal pumps				
FLOW MATIC/V <i>in-line flow switch</i>				
For the control of electric pumps connected to accumulation tanks to increase flow or pressure. Controls the start-up or switching off of the motor in correspondence to water requirements, assuring a constant flow.				
The highly sensitive switch permits control of flow as low as three litres per minute. When a tap is opened and water flows at over three litres per minute, it starts the motor and if flow drops below three litres per minute (<i>due to closing tap or empty accumulation tank</i>) it stops the motor.				
Manufactured entirely of glass reinforced polyamide with brass threaded input/output joint G1 for vertical in-line connection to liquid piping.				
<ul style="list-style-type: none"> • Incorporated start button • Minimum flow: 3 litres/min. (<i>max. 90 litres/min.</i>) • Relay: 10 (4) A 250 VAC NO + NC • Start-up delay: 0...10 sec (<i>adjustable</i>) 				
FBA315	220 VAC	8 BAR	85°C	in-line flow switch 1" inch pipe thread
FLOW MATIC/H10AR <i>paddle-type flow switch</i>				
Designed for the control of fluid movement by circulator or centrifugal electric pumps. The high sensitivity switch permits control of flow as low as 20 litres per minute. They incorporate a brass threaded G1 joint for piping from one inch and over.				
The electric contact is housed externally to the flow switch and is moved by a magnet located on the head of the switch.				
The glass reinforced polyamide paddle can be cut to size in 25 mm segments to the diameter of pipe.				
<ul style="list-style-type: none"> • Incorporated test button • Minimum flow: 20 litres/min. • Relay: 10 (4) A 250 VAC NO + NC • Start-up delay: 0...10 sec (<i>adjustable</i>) 				
EDA	250 VAC	10 BAR	100°C	paddle flow switch 1" screw connection
JOLLY PUMP <i>in-line booster pump</i>				
JOLLY PUMP12 is a super-silent automatic electric pump designed to boost water flow to various outlets, featuring automatic starting, stopping and dry running protection in gravity feed or pressure tank systems.				
Installed in line with the main supply pipe to boost water flow and pressure without having to alter the main system.				
When a tap is turned on and flow in the pipe reaches 3 L/min the motor starts automatically, resulting in increased flow constantly until the tap is turned off.				
<ul style="list-style-type: none"> • Dimensions: (H) 272 x (W) 130 x (D) 158 mm • Minimum flow: 3 litres / min. (<i>switches pump on</i>) • Maximum flow: 20 litres / min. • Supply: 1Phase 250 VAC - 245W 				
FAB15	230 VAC	1.2 BAR	60°C	245W booster pump



When the magnetic field (*caused by an internal permanent magnet*) is moved into the proximity of the sealed reed switch inside the stationary stem, the reed switch contacts close the electrical circuit. When the magnet is moved away from the reed switch the circuit is opened. The float switches are extremely compact, simple and easy to install and not effected by electrical interference and withstands chemicals.

Safe – convenient – low cost

Electrical connection: 300 mm cable
 Switch current: 70 VA
 Switch voltage: 250 VAC / 200 VDC
 Switch contact: N.O. (*reversible by reversing float*)
 Accuracy: ± 2 mm in water

type	mounting	thread size (mm)	pressure withstand	internal/external	description
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Plastic (top/bottom mount)

- Float size: (H) 24 mm (Ø)20 mm
- Material: PVC
- Operating temperature: -10°C - +70°C

Short stem float switch 36 mm		internal mounting			
LS-264	top or bottom	M10	8 BAR	internal	vertical mount float switch
Long stem float switch 55 mm		internal mounting			
LS-297	top or bottom	M10	8 BAR	internal	vertical mount float switch

Stainless steel - vertically mount float switches

- Float size: (H) 28 mm (Ø)28 mm
- Material: SUS 304 stainless steel
- Operating temperature: -30°C - +125°C

Short stem float switch 40 mm		internal mounting			
LS-317	top or bottom	G1/8"	20 BAR	internal	vertical mount float switch
Long stem float switch 100 mm		internal mounting			
LS-064A	top or bottom	G1/8"	20 BAR	internal	vertical mount float switch
Long stem float switch 100 mm		external mounting			
LS-318-1	top or bottom	NPT 1"	20 BAR	external	vertical mount float switch
Bent stem (90°) float switch 75 mm		internal mounting			
LS-052-1	side mount	G1/8"	20 BAR	internal	horizontal mount float switch

Nylon (side mount) hinged type

Can be used for "high" or "low" level sensing (*by turning float direction "up" or "down"*).

- Float size: (L) 47 mm (Ø)17 mm
- Material: nylon
- Operating temperature: -10°C - +75°C

LS-147	side mount	M16	8 BAR	internal	horizontal mount float switch
LS-148	side mount	NPT 1/2"	8 BAR	external	horizontal mount float switch

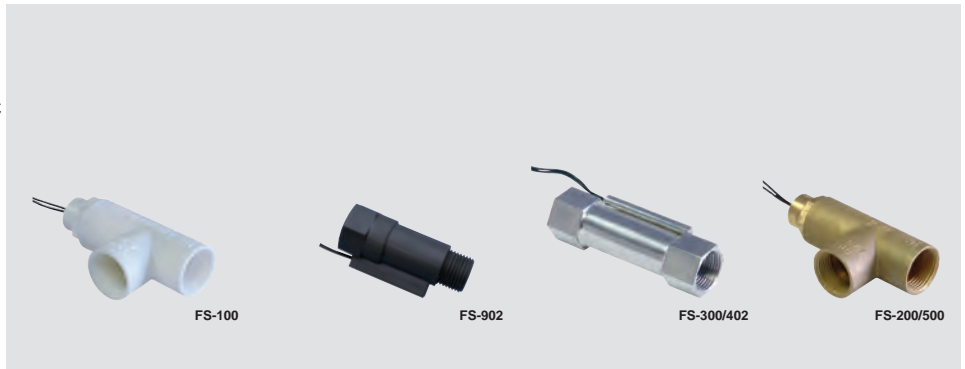
Stainless steel (side mount) hinged type

Can be used for "high" or "low" level sensing (*by turning float direction "up" or "down"*).

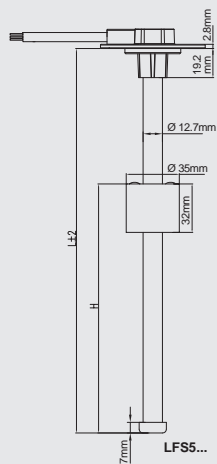
- Float size: (L) 47 mm (Ø) 17 mm
- Material: SUS 304 stainless steel
- Operating temperature: -30°C - +125°C
- Viscosity: water viscosity = 1

LS-154-1	side mount	M16	10 BAR	internal	horizontal mount float switch
LS-055-1	side mount	NPT 1/2"	10 BAR	external	horizontal mount float switch

Electrical connection: 300 mm cable
Switch rating: 0.8A max
Switch current: 1.5A
Switch voltage: 250 VAC / 200 VDC
Material: Plastic
 Brass
 Stainless
Liquid medium: Clean water



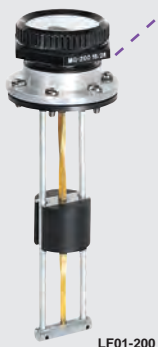
type	for domestic use	heavy duty	for domestic use	heavy duty	heavy duty	heavy duty
Model	FS-100	FS-200	FS-902	FS-300	FS-402	FS-500
Fitting	NPT3/4"	NPT3/4"	1/2"NPT for inlet 1/2" NPT for outlet	NPT3/4"	NPT1/2"	NPT1/2"
Flow switches housing	plastic PPR	brass - C37700	plastic PBT	SUS304	SUS304	brass - C37700
Operating pressure	120 PSI max	150 PSI max	140 PSI max	250 PSI max	250 PSI max	150 PSI max
Temperature range	-10 - 80°C	-10 - 120°C	-10 - 105°C	-20 - 120°C	-20 - 120°C	-10 - 120°C
Medium (liquid)	clean water	clean water	clean water	clean water	clean water	clean water
Contact form	form A S.P.S.T.	form A S.P.S.T.	form A S.P.S.T.	form A S.P.S.T.	form A S.P.S.T.	form A S.P.S.T.
Canry current	1.5A	1.5A	1.0A	1.5A	1.5A	1.5A
Switch current	0.8A max	0.8A max	0.7A max	0.8A max	0.8A max	0.8A max
Switch voltage	220 VAC/DC	220 VAC/DC	220 VAC/DC	220 VAC/DC	220 VAC/DC	220 VAC/DC
Power rating	50VA	50VA	50VA	50VA	50VA	50VA
Lead wire	AWG 22, 300 mm length, U1430 lead wire free terminal	AWG 22, 300 mm length, U1430 lead wire free terminal	AWG 22, 300 mm length, U1430 lead wire free terminal	AWG 22, 300 mm length, U1430 lead wire free terminal	AWG 22, 300 mm length, U1430 lead wire free terminal	AWG 22, 300 mm length, U1430 lead wire free terminal
Operating flow rating	1.5L/min	1.10 - 8L/min	0.75 - 2L/min	1.0 - 8L/min	1.2 - 4L/min	1 - 4L/min
Setting flow value accuracy	±10%	±10%	±10%	±10%	±10%	±10%
Mounting orientation (vertical or horizontal)	As signal of flow direction mounting orientation	As signal of flow direction mounting orientation	As signal of flow direction mounting orientation at any orientation	As signal of flow direction mounting orientation	As signal of flow direction mounting orientation	As signal of flow direction mounting orientation
Maximum flow	15L/min (pressure drop is 10 PIS)	25L/min (pressure drop is 10 PIS)	10L/min (pressure drop is 10 PIS)	10L/min (pressure drop is 10 PIS)	10L/min (pressure drop is 10 PIS)	15L/min (pressure drop is 10 PIS)
Wire colour	black colour	black colour	black colour	black colour	black colour	black colour
Mounting shock	30g for 11ms duration	30g for 11ms duration	30g for 11ms duration	30g for 11ms duration	30g for 11ms duration	30g for 11ms duration
Mounting vibration	35 to 500Hz	35 to 500Hz	35 to 500Hz	35 to 500Hz	35 to 500Hz	35 to 500Hz
Duration of cycle	100.000 cycles	100.000 cycles	100.000 cycles	100.000 cycles	100.000 cycles	100.000 cycles



Red	Signal (out)
Black	Common (input)
White	Low level alarm output



LFTN...



LF01-200

LFS5 series - Fuel level sensor (IP67)

S5 series level sensors employ a magnetic field principle to sense the fuel level depth and to operate the low level alarm signal. The sensors feature long life, unaffected by vibration and are anti explosive.

- Low level alarm contact: 500 mA
- Output signal: 0 - 190 Ω or 4-20mA
- Accuracy: 12 mm

Material: Main body made of SU316 stainless steel
 Mounting: Standard SAE 5 hole mounting flange (supplied with M5 screws and NBR gasket)

type	sensor length	output signal	supply	description
0 - 190Ω resistance output				-40°C - +85°C
LFS5-150	150 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-200	200 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-250	250 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-300	300 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-350	350 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-400	400 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-500	500 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-600	600 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-800	800 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-1000	1000 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-1200	1200 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-1400	1400 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-1600	1600 mm	0 - 190Ω	-	magnetic fuel level sensor
LFS5-2000	2000 mm	0 - 190Ω	-	magnetic fuel level sensor

4 - 20mA output		supply voltage:	24 - 32V	-40°C - +85°C
LFS5-150/4-20	150 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-200/4-20	200 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-300/4-20	300 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-400/4-20	400 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-500/4-20	500 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-600/4-20	600 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-800/4-20	800 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-1000/4-20	1000 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-1200/4-20	1200 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-1400/4-20	1400 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-1600/4-20	1600 mm	4 - 20mA	24 VDC	magnetic fuel level sensor
LFS5-2000/4-20	2000 mm	4 - 20mA	24 VDC	magnetic fuel level sensor

Other lengths available on request

LFTN series - Fuel tank level sensors (IP67)

LFTN series sensors employ a magnet field principle to sense fuel level depth and to operate a low level alarm signal. The sensor also incorporates a suction pipe, return pipe and breather pipe into the same mounting flange as the sensor.

type	sensor length	output signal	fuel pipes (bulge fitting)			description
			suction	return	breather	
LFTN-150	150 mm	0 - 190Ω	10 mm	10 mm	6 mm	fuel level sensor
LFTN-200	200 mm	0 - 190Ω	10 mm	10 mm	6 mm	fuel level sensor
LFTN-250	250 mm	0 - 190Ω	10 mm	10 mm	6 mm	fuel level sensor
LFTN-300	300 mm	0 - 190Ω	10 mm	10 mm	6 mm	fuel level sensor
LFTN-400	400 mm	0 - 190Ω	10 mm	10 mm	6 mm	fuel level sensor
LFTN-500	500 mm	0 - 190Ω	10 mm	10 mm	6 mm	fuel level sensor
LFTN-600	600 mm	0 - 190Ω	10 mm	10 mm	6 mm	fuel level sensor
LFTN-700	700 mm	0 - 190Ω	10 mm	10 mm	6 mm	fuel level sensor

LF01 series - Mechanical fuel level gauges (aluminium alloy) -40°C - +85°C

LF01 mechanical fuel gauges work on a float connected to a swivel rod which indicates fuel level as the float adjusts to the fuel level.

- Mounting: 6 hole mounting flange (M45x2 thread to accept gauge)

LFO1-150	150 mm	gauge	mechanical fuel level gauge
LFO1-200	200 mm	gauge	mechanical fuel level gauge
LFO1-250	250 mm	gauge	mechanical fuel level gauge
LFO1-300	300 mm	gauge	mechanical fuel level gauge
LFO1-400	400 mm	gauge	mechanical fuel level gauge
LFO1-500	500 mm	gauge	mechanical fuel level gauge
LFO1-600	600 mm	gauge	mechanical fuel level gauge
LFO1-700	700 mm	gauge	mechanical fuel level gauge



LF16-1...



LF18-1...



LF55...



FS52

LF10 series - Air pressure switches (IP20)

Pressure switches used to regulate tank pressures between two preset values on small (up to 200psi) electrically driven air compressors. Supplied with unloader valve (preventing starting under load) and manual auto-off override switch.

- Visible contact / no wire looping / ample wiring space
- Automatic unloader valve / manual "auto-off" override facility
- 2 x NC contacts 12A 240 VAC

type	operating pressure		differential range	factory setting	pipe fitting	contact rating
	min ON	max OFF				
	PSI	PSI	PSI	PSI	female ¹⁾	240V
LF10-1H11123-80	25	100	20-35	55-80	1/4 NPT	12A
LF10-1H11123-115	35	150	30-40	85-115	1/4 NPT	12A
LF10-1H11123-150	50	175	35-55	110-150	1/4 NPT	12A

LF16 series - Water pump pressure switch (IP20)

LF16 pressure switches provide time tested, reliable control for automatic water systems. Universally accepted for use as original equipment on water well pumps or pumping systems.

- Visible contact / no wire looping / ample wiring space
- Automatic unloader valve / manual "auto-off" override facility
- 2 x NC contacts 16A 240 VAC

LF16-111-40PSI	20	80	15-30	20-40	1/4 NPT	16A
LF16-111-50PSI	20	80	15-30	30-50	1/4 NPT	16A
LF16-111-60PSI	20	80	15-35	40-60	1/4 NPT	16A

LF19/18 series - Air compressor pressure switch (IP44)

Designed to regulate tank pressure between two preset values on three-phase electrically driven compressors.

- Non-metallic, corrosion-resistant cover
- Automatic unloader valve / manual "auto-off" override facility

	BAR	BAR	BAR	BAR	BAR	
LF19 - 1 phase pressure switch	2 x NC contacts 16A 250 VAC					
LF19-111121-3BAR	1	6	2.0-4.0	1-3	G1/4"	16A
LF19-111121-4BAR	5	14	8.0-10.0	1.8-4	G1/4"	16A
LF18 - 3 phase pressure switch	3 x NC contacts 16A 400 VAC					
LF18-111121-5BAR	2	8	1.0-3.0	3.8-5	G1/4"	16A
LF18-111121-7BAR	3	11	1.4-4.0	5.6-7	G1/4"	16A
LF18-111121-10BAR	4	16	1.8-4.5	8-10	G1/4"	16A

Note: 1 BAR = 14.5 PSI

¹⁾ Other pipe fittings available on request

LF55 series - Pressure switch for refrigeration systems

LF55 series pressure switches are used with fluorinated refrigerants to control the pressure of compressors in refrigeration system, can also used in air and water applications.

- Medium: Refrigerant, air, water, oil -10 - +100°C
- Contact: SPDT 10A 250 VAC

	BAR	BAR	BAR	BAR		fitting	250V
				OFF	ON		
LF5503	-0.5	3	0.35-1.5	2.0	1.0	M12 X 1.25	10A
LF5506	-0.5	6	0.6-4	3.0	2.0	M12 X 1.25	10A
LF5510	1	10	1-3	6.0	5.0	M12 X 1.25	10A
LF5516	3	16	1-4	10.0	8.0	M12 X 1.25	10A
LF5520	5	20	2-5	16.0	13.0	M12 X 1.25	10A

FS series - Liquid flow switches (paddle type)

Designed for managing liquid flow changes of water, ethylene glycol or other non-hazardous liquids in pipes. When liquid flow is higher or lower than pre-set value a SPDT switch operates.

- Supplied with 3 fitted paddles for Ø25 - 75 mm pipes +spare for pipes up to Ø 200 mm
- Adjustable flow setting for different requirements
- Brass 1" NPT connection (available in stainless steel for ammonia and other medium)
- Max liquid pressure: 1 BAR - can be used in multiple applications

FS51	IP33	paddle type liquid flow switch	1" NPT	10A
FS52	IP55	paddle type liquid flow switch	1/2" NPT	10A



Q01-4



Q05-4



8011-3



QA31-4



AH-0217



AH-03127-BS



NQ418

Photoelectric smoke detectors

type	supply voltage	standby current	alarm	description
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Q series smoke detectors

EN54 compliant

- Dual, bicolour LEDs (green: standby / red: alarm) offer 360° sensing
- Standard detector (4 wire) with relay output 0.8A - 30 VDC / 0.4A - 250 VAC
- Made of high endurance, solid and colour-fast fire-proof plastic
- Termination base (*with captive screws*) for easy installation
- Passed strict EMC tests, illuminating false alarms caused by interference from nearby devices

Smoke detector (Ø)102 mm x (H) 48 mm

Q01-4*	12 - 30 VDC	25 - 75µA	45 mA	photoelectric smoke detector
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Combination smoke and heat detector (Ø)102 mm x (H) 54 mm

Q05-4*	12 - 30 VDC	55 - 85µA	45 mA	combination smoke + heat detector
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8011 series smoke detectors

EN54 compliant

- Dual LEDs offer 360° sensing
- Standard detector 2 wire – available in 4 wire (relay output) on request
- Made of high endurance, solid and colour-fast fire-proof plastic
- Termination base (with captive screws) for easy installation

Smoke detector (Ø)102 mm x (H) 47 mm

8011-3*	12 - 30 VDC	25 - 75µA	40 mA	photoelectric smoke detector
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Accessories for above smoke detectors

06MB	Flush mount frame	for sensors	Q01-4, Q05-4, 8011-3
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QA31 series single station smoke detector

EN54 compliant

- Advanced photoelectric technology for precise detection
- Equipped with 9 VDC battery and 220 VAC power plug
- Low-battery warning (flashing LED indicates battery replacement)
- Built-in manual test button, buzzer (90dB/met.) and flashing LED
- Standard detector (4 wire) with relay output 0.8A- 30 VDC / 0.4A - 250 VAC
- Independent stand-alone device – can be installed without any wiring

Single station smoke detector (Ø)105 mm x (H) 40 mm

QA31-4	100 - 220 VAC and/or 9V battery supply	photoelectric smoke detector
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Manual call point "in case of fire" break-glass devices

- Surface mount with plastic film on glass (H) 88 x (W) 88 x (D) 52 mm
- Test key inserts from bottom
- Suitable for majority of conventional fire alarm systems
- Operating contact 6A 250 VAC

AH-0217*	emergency "break glass" manual call point enclosure
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Audible and visual indicating devices

Audible sounder and beacon

IP44

Electronic sounder designed for use with fire alarm, security and industrial signalling systems.

- 32 - signal tones selectable by Dip switch
- High sound output with low current consumption
- Volume control as standard (0 - 20dB adjustable)
- Two sets of input and output terminals for easy installation

AH-03127-S*	24 VDC	14.5mA	surface mount (Ø92.5 mm) electronic sounder
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AH-03127-BS*	24 VDC	14.5mA	electronic sounder and illuminated beacon
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Fire alarm bell

- Bell with ABS plastic base for easy mounting and total insulation from electricity
- Motor energised, low power consumption, long operating life

NQ418*	24 VDC	28mA	4" (100 mm) bell 90dB @1met
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NQ618*	24 VDC	28mA	6" (152 mm) bell 90dB @1met
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* Work in conjunction with fire control system



Klemsan®

wieland
















EZI CANAL
electrical cable ducting

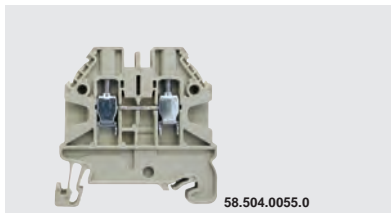
TEKNOMEGA

WSKA
make power smile

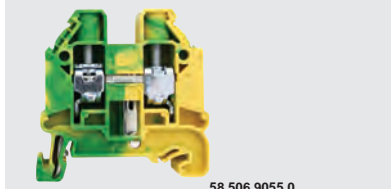
TERMINATION & WIRING



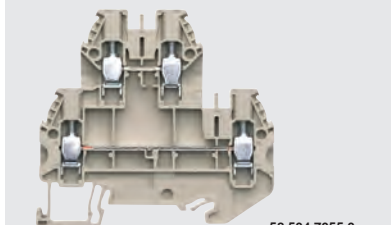
Rail mount terminals		Wieland Klemsan	L-1...4 L-5...8
Slotted cable trunking		Ezi Canal	L-11
DIN mounting rail		EM	L-13
Standard / Stainless steel cable ties		Elematic EM	L-15 L-16
Wire end sleeves / Pre-insulated lugs		GLW Jeesoon	L-17...18 L-19...21
Cable crimping lugs		Cembre	L-22...24
Cable glands		EM Wiska	L-25...26 L-27...28
Junction boxes		Wiska	L-29
Heat shrink / Braided sleeving		EM	L-30
Distribution terminal blocks		Hora Micoel Teknomega	L-14 L-31...32 L-33...34
Earth and neutral terminals		Micoel Teknomega	L-31 L-33
Busbar insulators		Teknomega	L-35
Busbar supports		Micoel Socomec Wohner	L-32 L-39 L-40...42
Flexible insulated busbars / Braided links		Teknomega	L-37...38
Marking system (thermal transfer printing)		Cembre Klemsan	L-43...51 L-9
Cable / Wire marking		Cembre Klemsan	L-44/45/51 L-10



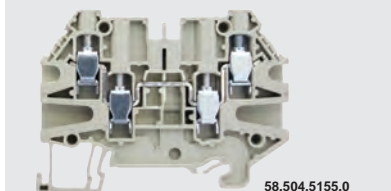
58.504.0055.0



58.506.9055.0



58.504.7055.0



58.504.5155.0



58.504.2055.0

WT series - Terminal blocks - with screw connection technology

- Universal screw connection system (*one-piece thread for stress free connection and re-connection*)
- Compact dimensions - uniform design - universal marking system
- Double cross connection row accepts pluggable cross connectors (*plug-in bridge bars*)

type	model	colour	wire size mm ²	amperage IEC 947-7-1	term. width	maximum voltage
WT through terminals		1000V	<i>(universal terminal block)</i>			
58.503.0055.0	WT2.5	grey	0.14...4	24A	5 mm	1000 V
58.504.0055.0	WT4	grey	0.14...6	32A	6 mm	1000 V
58.506.0055.0	WT6	grey	0.14...10	41A	8 mm	1000 V
58.510.0055.0	WT10	grey	0.14...16	57A	10 mm	1000 V
58.503.0055.6	WT2.5BL	blue	0.14...4	24A	5 mm	1000 V
58.504.0055.6	WT4BL	blue	0.14...6	32A	6 mm	1000 V
58.506.0055.6	WT6BL	blue	0.14...10	41A	8 mm	1000 V
58.510.0055.6	WT10BL	blue	0.14...16	57A	10 mm	1000 V
WT earth terminals		<i>yellow/green screw-less, clip-on earth terminals</i>				
58.503.9055.0	WT2.5PE	yel/grn	0.14...4	–	5 mm	1000 V
58.504.9055.0	WT4PE	yel/grn	0.14...6	–	6 mm	1000 V
58.506.9055.0	WT6PE	yel/grn	0.14...10	–	8 mm	1000 V
58.510.9055.0	WT10PE	yel/grn	0.14...16	–	10 mm	1000 V
End plates		<i>for above terminals</i>				
07.313.2555.0	APWT2.5-10	grey		end plate	for term.	WT2.5/4/6/10
07.313.2655.0	TWWT2.5-10	grey		partition plate	for term.	WT2.5/4/6/10
Multi-tier terminal blocks		500V				
58.504.5055.0	WT4D1/2	grey	0.14...6	32A	6 mm	500 V
58.504.5155.0	WT4D2/2	grey	0.14...6	32A	6 mm	500 V
58.504.7055.0	WT4E	grey	0.14...6	32A	6 mm	800 V
07.313.2955.0	APWT4D1/2	grey		end plate	for term.	WT4D1/2
07.313.3155.0	APWT4D2/2	grey		end plate	for term.	WT4D2/2
07.313.3355.0	APWT4E	grey		end plate for two-tier	for term.	WT4E
07.313.2855.0	TWWT4E	grey		partition for two tier	for term.	WT4E
Disconnect terminal block		<i>hinged blade type</i>				
58.503.2055.0	WT2.5TKM	grey	0.14...4	20A	5 mm	500 V
58.504.2055.0	WT4TKM	grey	0.14...6	24A	6 mm	500 V
07.313.2955.0	APWT4D1/2	grey		end plate	for term.	WT2.5/4TKM
07.313.2855.0	TWWT4E	grey		partition plate	for term.	WT2.5/4TKM
Plug-in cross connectors (bridging bars)		<i>for WT and WTP terminal blocks</i>				
WT series terminals feature a two-row, plug-in jumpering channel, permitting variable potential distribution through use of a chain arrangement, providing a vibration-proof connection. Any number of plug-in jumpers can be connected in succession as necessary.						
• Robust combination of copper current bar and indestructible steel spring individually fabricated.						
			<u>poles</u>			
Z7.284.7027.0	IVBWTP1.5-2		2 pole	plug-in bridging bar	for term.	WTP1.5
Z7.284.7127.0	IVBWTP1.5-3		3 pole	plug-in bridging bar	for term.	WTP1.5
Z7.284.7227.0	IVBWTP1.5-4		4 pole	plug-in bridging bar	for term.	WTP1.5
Z7.284.7327.0	IVBWTP1.5-5		5 pole	plug-in bridging bar	for term.	WTP1.5
Z7.280.6227.0	IVBWKf2.5-2		2 pole	plug-in bridging bar	for term.	WT2.5/P2.5/4
Z7.280.6327.0	IVBWKf2.5-3		3 pole	plug-in bridging bar	for term.	WT2.5/P2.5/4
Z7.280.6427.0	IVBWKf2.5-4		4 pole	plug-in bridging bar	for term.	WT2.5/P2.5/4
Z7.280.6527.0	IVBWKf2.5-5		5 pole	plug-in bridging bar	for term.	WT2.5/P2.5/4
Z7.280.7027.0	IVBWKf2.5-10		10 pole	plug-in bridging bar	for term.	WT2.5/P2.5/4
Z7.280.8027.0	IVBWKf2.5-20		20 pole	plug-in bridging bar	for term.	WT2.5/P2.5/4
Z7.261.1227.0	IVBWKf4-2		2 pole	plug-in bridging bar	for term.	WT4
Z7.261.1327.0	IVBWKf4-3		3 pole	plug-in bridging bar	for term.	WT4
Z7.261.1427.0	IVBWKf4-4		4 pole	plug-in bridging bar	for term.	WT4
Z7.261.1527.0	IVBWKf4-5		5 pole	plug-in bridging bar	for term.	WT4
Z7.261.2027.0	IVBWKf4-10		10 pole	plug-in bridging bar	for term.	WT4
Z7.282.5227.0	IVBWKf6-2		2 pole	plug-in bridging bar	for term.	WT6/WTP6/10
Z7.282.5327.0	IVBWKf6-3		3 pole	plug-in bridging bar	for term.	WT6/WTP6/10
Z7.282.5427.0	IVBWKf6-4		4 pole	plug-in bridging bar	for term.	WT6/WTP6/10
Z7.282.5527.0	IVBWKf6-5		5 pole	plug-in bridging bar	for term.	WT6/WTP6/10
Z7.283.8227.0	IVBWKf10-2		2 pole	plug-in bridging bar	for term.	WT10

DIN mounting rail - see page L-13

Fasis WTP series - Terminal blocks - with push-in connection technology

- Terminate wires easily, directly and without tools (*wires simply push-in to terminals*)
- Integrated release lever - no contact with live parts - flat or star screwdriver release button
- Compact dimensions - uniform design - universal marking system
- Double cross connection row on all terminals for pluggable cross connectors (*plug-in bridge bars*)

type	model	wire size mm ²	amperage IEC 947-7-1	terminal width	terminal in	terminal out	max. voltage
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Feed-through terminals with push-in connection

56.202.0055.0	WTP1.5	0.14...1.5	17.5A	3.5 mm	1	1	500 V
56.203.0055.0	WTP2.5/4	0.2...4	30A	5 mm	1	1	800 V
56.203.5055.0	WTP2.5/4D1/2	0.2...4	32A	5 mm	1	2	800 V
56.203.5155.0	WTP2.5/4D2/2	0.2...4	32A	5 mm	2	2	800 V
56.203.7055.0	WTP2.5/4E	0.2...4	24A	5 mm	2	2	500 V
56.206.0055.0	WTP6/10	0.2...10	57A	8 mm	1	1	1000 V
56.202.0055.6	WTP1.5BL	0.14...1.5	17.5A	3.5 mm	1	1	500 V
56.203.0055.6	WTP2.5/4BL	0.2...4	30A	5 mm	1	1	800 V
56.206.0055.6	WTP6/10BL	0.2...10	57A	8 mm	1	1	1000 V

Earth terminals *yellow/green* *screwless, clip-on earth terminals / plug-in bridging bars*

56.202.9055.0	WTP1.5PE	0.14...1.5	17.5A	3.5 mm	1	1	500 V
56.203.9055.0	WTP2.5/4PE	0.2...4	32A	5 mm	1	1	800 V
56.203.9355.0	WTP2.5/4D1/2PE	0.2...4	32A	5 mm	1	2	800 V
56.206.9055.0	WTP6/10PE	0.2...10	57A	8 mm	1	1	1000 V

End plates/partitions

07.313.4455.0	APWTP1.5			terminal insulated end plate for	WTP1.5
07.312.6755.0	APFN2.5			terminal insulated end plate for	WTP2.5/4
07.312.6955.0	APFN2.5D1/2			terminal insulated end plate for	WTP2.5/4D1/2
07.312.7155.0	APFN2.5D2/2			terminal insulated end plate for	WTP2.5/4D2/2
07.312.7355.0	APFN2.5E			terminal insulated end plate for	WTP2.5/4 E
07.313.4155.0	APWTP6/10			terminal insulated end plate for	WTP6/10
07.312.6855.0	TWFN2.5			terminal insulated partition plate for	WTP2.5/4
07.312.7055.0	TWFN2.5D1/2			terminal insulated partition plate for	WTP2.5/4D1/2
07.312.7255.0	TWFN2.5D2/2			terminal insulated partition plate for	WTP2.5/4D2/2
07.312.7455.0	TWFN2.5E			terminal insulated partition plate for	WTP2.5/4E
07.313.4255.0	TWWTP6/10			terminal insulated partition plate for	WTP6/10E

Accessories for all Wieland terminals

End stops for all terminals

Z5.523.9353.0	WEF1/35	"snap-on"	8 mm	terminal end stop
Z5.523.9453.0	WEF2/35	"snap-on"	5 mm	terminal end stop
Z5.522.8553.0	9708/2S35	"screw-on"	8 mm	terminal end stop
Z5.523.5753.0	WE 1/U	"screw-on"	10 mm	terminal end stop

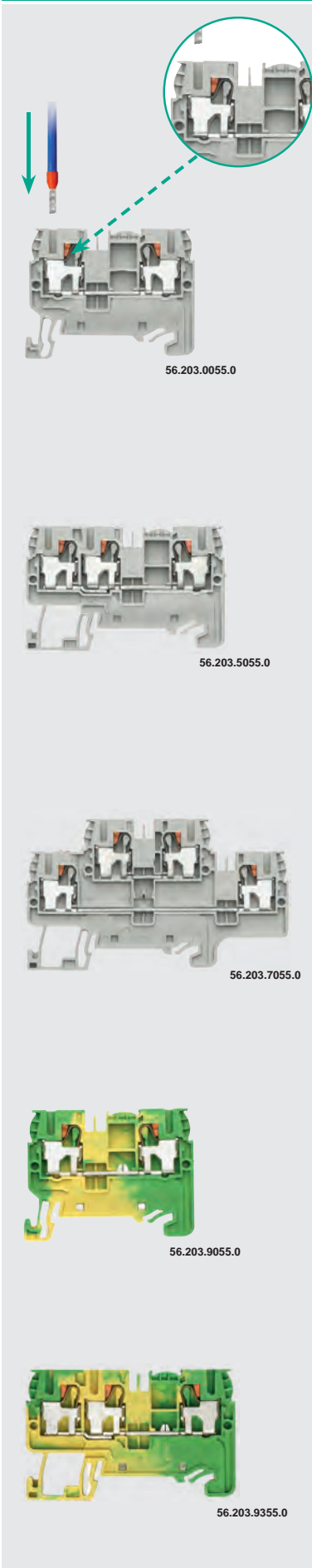
Test terminal

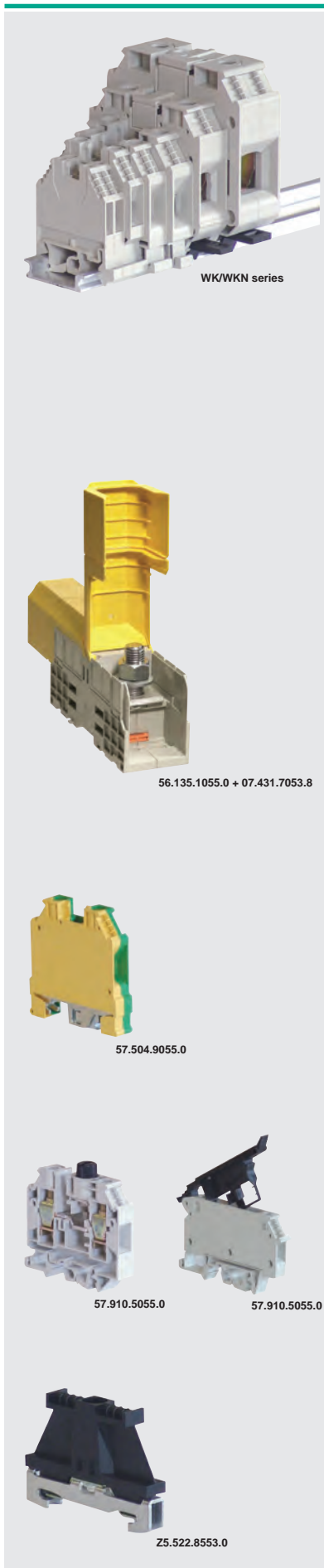
Z1.299.9753.0	PSWKC/F	0.14...4	plug-in test terminal for	WT/WTP 2.5/4
07.312.6053.0	ZP/APPS	-	end plate for above test terminal	PS WKCF

Terminal markers for all Wieland terminals

41490/PS	10 x 5 mm	self marking tag for use with Cembre printer	card of 56 pcs
9704A/*B	numeral marking tags - strip 10 similar markers (25 x strips of 10pcs = 250 per pack)		
9704A/*GB	alphabetical marking strips 10 similar markers (25 x strips of 10pcs = 250 per pack)		
* Replace by:	1/2/3/4/5/6/7/8/9/0/+/-	✦ A/B/C/D/E/F/G/H/I/J/K/L/M/N/O/P/Q/R/S/T/U/V/W/X/Y/Z	
9705A/6	marker adaptor	(increases marking area to 6 digits)	all terminals

Bridging bars - (plug-in cross connectors, see page L-1)
DIN mounting rail, see page L-13



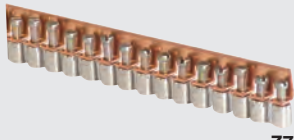


WK series - Terminal blocks - with screw connection technology

- Conformity: IEC60947-7-1 / IEC60685-2-2 / IEC60685-1 / CEI222223-20/21 / VDE0611/ CSA C22.2 / UL1059
- Approvals: SEV / ASEV / RINA / VDE / UL / CSA
- Universal marking system

type	model	wire size mm ²	amperage IEC 947-7-1	terminal width		maximum voltage
Through terminals blocks <i>universal EN50022 (DIN 35) and EN50035 (G rail)</i>						
57.503.0055.0	WK2.5/U	0.5...2.5	26A	5 mm	–	1000 V
57.504.0055.0	WK4/U	0.5...4	35A	6 mm	–	1000 V
57.506.0055.0	WK6/U	0.5...6	46A	8 mm	–	1000 V
57.510.0155.0	WKN10/U	2.5...10	63A	10 mm	–	1000 V
57.516.0155.0	WKN16/U	4...16	85A	12 mm	–	1000 V
57.535.0155.0*	WKN35/U	10...35	138A	16 mm	–	1000 V
57.570.0155.0*	WKN70/U	10...70	213A	25 mm	–	1000 V
Stud terminal blocks <i>bolt to bolt through terminal</i>						
56.135.1055.0	WRT35/M6	2.5...50	125A	27 mm	M6	1000 V
56.170.1055.0	WRT70	2.5...95	192A	32 mm	M8	1000 V
56.197.1055.0	WRT120	6...150	269A	42 mm	M10	1000 V
56.198.1055.0	WRT185	10...240	353A	55 mm	M12	1000 V
56.199.1055.0	WRT300	25...240	520A	55 mm	M16	1000 V
End plates/partitions - for above terminals						
07.311.0155.0	AP2.5-4		terminal end plates		for term.	WK2.5/4
07.311.0255.0	AP6		terminal end plates		for term.	WK6
07.311.6655.0	APN10		terminal end plates		for term.	WK10
07.311.6755.0	APN16		terminal end plates		for term.	WK16
07.431.7053.8	ADWRT35		terminal cover (2 req. per terminal)		for term.	WRT35
07.431.7153.8	ADWRT70		terminal cover (2 req. per terminal)		for term.	WRT70
07.431.7253.8	ADWRT120		terminal cover (2 req. per terminal)		for term.	WRT120
07.431.7353.8	ADWRT185/300		terminal cover (2 req. per terminal)		for term.	WRT185/300
07.311.1155.0	TW2.5-4		terminal end plate/partition		for term.	WK2.5/4
07.311.1255.0	TW6		terminal end plate/partition		for term.	WK6
07.311.7655.0	TWN10		terminal end plate/partition		for term.	WK10
07.311.7755.0	TWN16		terminal end plate/partition		for term.	WK16
Earth terminal blocks <i>yellow/green screw-on earth terminals</i>						
57.504.9055.0*	WK4SL/U	0.5...4	–	6 mm	–	1000 V
57.506.9055.0*	WK6SL/U	0.5...6	–	8 mm	–	1000 V
57.510.9055.0*	WKN10SL/U	2.5...10	–	10 mm	–	1000 V
57.516.9055.0*	WKN16SL/U	4...16	–	12 mm	–	1000 V
57.535.9055.0*	WKN35SL/U	10...35	–	16 mm	–	1000 V
Multi-tier terminal blocks						
57.403.7055.0	WKN2.5E/U	0.2...6	24A	5 mm		500 V
07.312.1755.0	APN2.5E		terminal end plate for above		for term.	WK2.5E/U
57.503.8855.0*	WK2.5-3D/U	0.14...6	32A	6 mm		500 V
57.503.7855.0*	WK2.5-4KI/U	0.14...6	32A	6 mm		800 V
Fuse terminal blocks <i>accepts 20 x 5 mm fuses</i>						
57.904.5355.0*	WK4/THSI5/U	0.5...4	6.3A	8 mm		800 V
57.910.5055.0	WK10/SI/U	1...10	10A	12 mm		500 V
07.311.4155.0	AP10/SI		terminal end plate for above		for term.	WK10/SI/U
End stops for all terminals						
Z5.523.9353.0	WEF1/35	screwless	rail mount	8 mm	"snap-on" term. end stop	
Z5.523.9453.0	WEF2/35	screwless	rail mount	5 mm	"snap-on" term. end stop	
Z5.522.8553.0	9708/2S35	screw mnt	rail mount	8 mm	"screw-on" term. end stop	
Z5.523.5753.0	WE 1/U	screw mnt	rail mount	10 mm	"screw-on" term. end stop	

* Fully insulated terminal (no end plate required)
DIN mounting rail, see page L-13



Z7.28...

Bridging bars screw-in type for WK series terminals

type	model	wire size mm ²	no. ways	description	for terminal
Z7.280.0027.0	VBWK2.5M	2.5	80 way	bridging bar for terminal	WK2.5/U
Z7.281.0027.0	VBWK4M	4	70 way	bridging bar for terminal	WK4/U
Z7.282.0027.0	VBWK6M	6	40 way	bridging bar for terminal	WK6/U
Z7.283.6027.0	VBWKN10M	10	40 way	bridging bar for terminal	WKN10/U
Z7.284.2027.0	VBWKN16M	16	30 way	bridging bar for terminal	WKN16/U
Z7.285.2027.0	VBWKN35M	35	20 way	bridging bar for terminal	WKN35/U
07.201.1227.6	VBWRT35-2	35	2 way	bridging bar for terminal	WRT35
07.201.1327.6	VBWRT35-3	35	3 way	bridging bar for terminal	WRT35
07.201.3227.6	VBWRT70-2	70	2 way	bridging bar for terminal	WRT70
07.201.3327.6	VBWRT70-3	70	3 way	bridging bar for terminal	WRT70
07.201.5227.6	VBWRT120-2	120	2 way	bridging bar for terminal	WRT120
07.201.5327.6	VBWRT120-3	120	3 way	bridging bar for terminal	WRT120
07.201.7227.6	VBWRT185-2	185	2 way	bridging bar for terminal	WRT185
07.201.7327.6	VBWRT185-3	185	3 way	bridging bar for terminal	WRT185
07.201.9227.6	VBWRT300-2	300	2 way	bridging bar for terminal	WRT300
07.201.9327.6	VBWRT300-3	300	3 way	bridging bar for terminal	WRT300

WRT series - Terminal block with screw bolt connection (accommodates ring lugs)

Standard through terminal with threaded stud termination, incorporating a hinged section nut to accommodate ring lugs, provides a secure, safe connection preventing cable from disconnection in the event of loosened screw.

- Universal screw bolt - ring lug connection system (M4)
- Hinged terminal screw for easy access of ring lugs
- Universal marking system

type	model	wire size (stranded)	amperage IEC 947-7-1	term. width	max. voltage
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WRT terminal with stud connection to accept ring lugs

57.106.1155.0	WRT6	0.5...6	41A	11 mm	800V
07.300.6955.0	APRT6	end plate for above terminal		for term.	WRT6

WKN spring supported screw connection terminal block

Special application terminal with spring supported screw connection for use with hook blade terminals the spring provides a secure, safe connection, simultaneously preventing hook blade lug from exiting the terminal even in the event of a loosened connection.

57.506.0555.0	WKN6SF	0.5...6	41A	8 mm	800 V
57.510.0555.0	WKN10SF	2.5...10	57A	10 mm	800 V
07.313.2355.0	APN 6 SF	end plate for above terminal		for term.	WKN 6 SF
07.313.2455.0	APN 10 SF	end plate for above terminal		for term.	WKN 10 SF

WAK busbar termination (earth/neutral)

Busbar (1 meter length)

GI06006.1	6 x 6 mm	120A	1 met.	busbar for WAK terminals
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Busbar support

19.230.0040.0	KSO11/1ZKR	support	busbar support for 6 x 6 mm bars
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Terminals - slide-on - earth or neutral

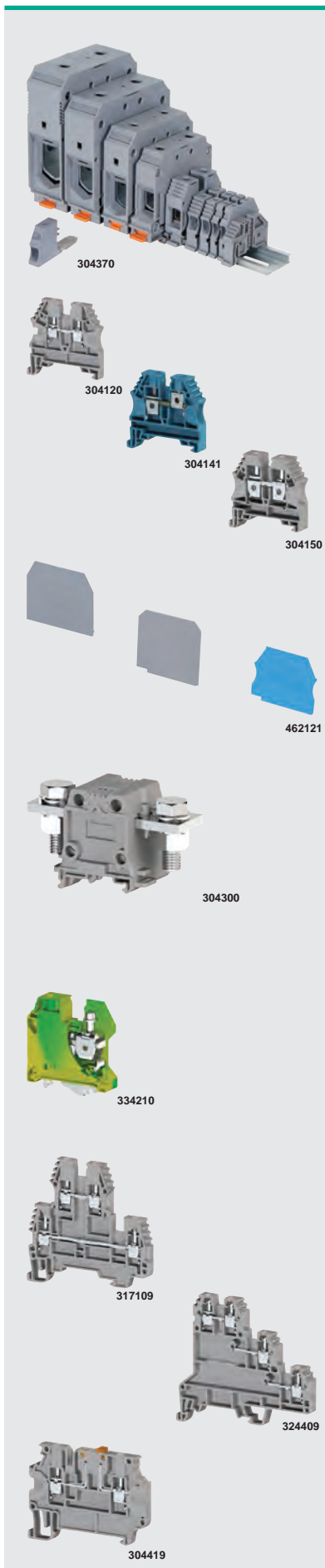
- Steel - zink plated (galvanised)

30.494.0010.0	AK4/1	0.5...4	41A	clamp terminal for 6 x 6 mm busbar
30.494.1010.0	AK16/1	1...16	76A	clamp terminal for 6 x 6 mm busbar
30.494.1110.0	AK25/3	2.5...25	41A	clamp terminal for 6 x 6 mm busbar
30.494.2510.0	AK35/3	2.5...35	125A	clamp terminal for 6 x 6 mm busbar

DIN mounting rail, see page **L-13**



30.494...



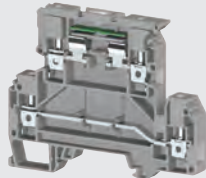
AVK series - Screw clamp terminals

type	wire size (mm ²)	amperage EN60947-7-1	terminal width		description
Standard feed through terminals					
304120	2.5 mm	24A	5 mm	grey	rail mount screw clamp terminal
304130	4 mm	32A	6 mm	grey	rail mount screw clamp terminal
304140	6 mm	41A	8 mm	grey	rail mount screw clamp terminal
304150	10 mm	57A	10 mm	grey	rail mount screw clamp terminal
304121	2.5 mm	24A	5 mm	blue	rail mount screw clamp terminal
304131	4 mm	32A	6 mm	blue	rail mount screw clamp terminal
304141	6 mm	41A	8 mm	blue	rail mount screw clamp terminal
304151	10 mm	57A	10 mm	blue	rail mount screw clamp terminal
304240	16 mm	76A	12 mm	grey	rail mount screw clamp terminal
304290	25 mm	101A	12 mm	grey	rail mount screw clamp terminal
304250*	35 mm	125A	16 mm	grey	rail mount screw clamp terminal
304330*	50 mm	150A	20 mm	grey	rail mount screw clamp terminal
304340*	95 mm	232A	25 mm	grey	rail mount screw clamp terminal
304350*	150 mm	309A	31 mm	grey	rail mount screw clamp terminal
304360*	240 mm	415A	36 mm	grey	rail mount screw clamp terminal
* Fully insulated (no end plate required)					
304370	6 mm	41A	8 mm		plug-in auxiliary term. for 304 340/50/60
End plates for above terminals					
444120	end plate	2.5 - 10	1.5 mm	grey	for 2.5-4-6-10 mm terminals
444121	end plate	2.5 - 10	1.5 mm	blue	for 2.5-4-6-10 mm terminals
444170	end plate	16 mm	1.5 mm	grey	for 16 mm terminals
450250	end plate	25 mm	1.5 mm	grey	for 25 mm terminals
462120	partition	2.5 - 10	1.5 mm	grey	for 2.5-4-6-10 mm terminals
462121	partition	2.5 - 10	1.5 mm	blue	for 2.5-4-6-10 mm terminals
462170	partition	16 mm	1.5 mm	grey	for 16 mm terminals
Stud terminals (bolt and nut termination top and bottom)					
304300	95 mm	232A	40 mm	grey	rail mount stud terminal
304310	150 mm	309A	48 mm	grey	rail mount stud terminal
304320	240 mm	415A	53 mm	grey	rail mount stud terminal
Covers for above stud terminals					
466100	cover	–			hinged isolation cover for stud terminal 304 300
466110	cover	–			hinged isolation cover for stud terminal 304 310
466120	cover	–			hinged isolation cover for stud terminal 304 320
Earth terminals - (fully insulated no end cover required)					
334450	4 mm	–	6 mm	grn/yell	rail mount earth terminal
334460	6 mm	–	8 mm	grn/yell	rail mount earth terminal
334470	10 mm	–	10 mm	grn/yell	rail mount earth terminal
334200	16 mm	–	12 mm	grn/yell	rail mount earth terminal
334210	35 mm	–	16 mm	grn/yell	rail mount earth terminal
334190	50 mm	–	20 mm	grn/yell	rail mount earth terminal
Multi-tier terminals (PIK/PUK)					
317109	2.5 mm	24A	5 mm	two tier	rail mount terminal
319109	4 mm	32A	6 mm	two tier	rail mount terminal
324109	2.5 mm	24A	6 mm	three tier	rail mount terminal
324409	2.5 mm	24A	6 mm	three tier	sensor terminal
449019	end plate	2.5/4 mm	1.5 mm		for 2.5/4 mm 2 tier terminal 317/9109
450139	end plate	2.5 mm	1.5 mm		for 2.5 mm 3 tier terminal 324109
450169	end plate	2.5 mm	1.5 mm		for 2.5 mm sensor terminal 324409
Disconnect terminals (AVK)					
304419*	2.5 mm	16A	5 mm	grey	rail mounting disconnect terminal
304380*	4 mm	20A	6 mm	grey	rail mounting disconnect terminal
450330	end plate	2.5/4 mm	1.5 mm		for above disconnect terminals 304419/380
* 2.5/4 mm terminals accept plug-in bridge pieces 2/3/4/10 way (see page L-7)					
Terminal accessories, see page L-8					
DIN mounting rail, see page L-13					



new

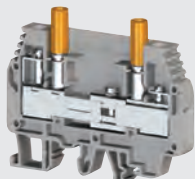
355619



355229



355109

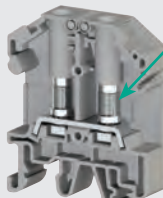


375692

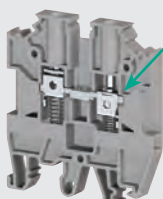
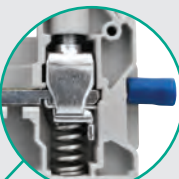
new



476302



308009



304500

AVK series - Screw clamp terminals

type	wire size (mm ²)	amperage EN60947-7-1	terminal width	description	
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Fuse terminals (ASK) - for 5 x 20 mm fuses

Low profile fused terminal - for 5 x 20 mm fuses

351109	6 mm	6.3A	8 mm	low profile fused terminal	–
351229	6 mm	6.3A	8 mm	fused term. LED indication	24V DC
351619	6 mm	6.3A	8 mm	fused term. LED indication	220V AC
450049	end plate	–	1.5 mm	for above 351 ... fused terminals	

Fused terminal with pluggable fuse section (supports spare fuse)

355109*	4 mm	10A	6.2 mm	plug-in fuse terminal	–
355229*	4 mm	10A	6.2 mm	fused term. LED indication	24V DC
355619*	4 mm	10A	6.2 mm	fused term. LED indication	220V AC
450059	end plate	–	1.5 mm	for above 355 ... fused terminals	

Two tier 1 x fused and 1 x through terminal (AVK) (supports spare fuse)

353309*	4 mm	6.3A	8 mm	two tier (one fused)	
353329*	4 mm	6.3A	8 mm	fused term. LED indication	24V DC
450209	end plate	–	1.5 mm	for above 353 ... fused terminals	

* 353/355--- terminals accept plug-in bridge pieces (2/3/4/10 way) (see page L-8)

Special application terminals

WGO test / disconnect terminals

Used to perform required tests without disconnecting the system. Usually installed on secondary side of current transformers, permitting observation of testing equipment safe exchange of meters by bridging secondary side of transformer during exchange

375690	6 mm	41A	8 mm	terminal without test socket	
375691	6 mm	41A	8 mm	terminal with test socket	
375692	6 mm	41A	8 mm	terminal with double test socket	
476302	2 pole			sliding bridge/cross connector	for above test terminals
476303	3 pole			sliding bridge/cross connector	for above test terminals
476304	4 pole			sliding bridge/cross connector	for above test terminals
450229	end plate	–		for above test terminals	375690/1/2

2PB6/NM - Terminal block with screw bolt connection (accommodates ring lugs)

Standard through terminal with threaded stud termination, incorporating a hinged section nut to accommodate a ring lug, provides a secure, safe connection preventing cable from disconnection in the event of loosened screw.

- Universal screw bolt - ring lug connection system (M4)
- Hinged terminal cover for easy access for ring lugs

PB6/NM - Terminal with stud connection to accept ring lugs

308009	0.5...6	41A		11 mm bolt connection terminal block	
451019	end plate	–		for above bolt connection terminal	308009

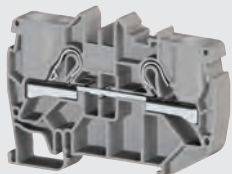
AVK Y series - Spring supported screw connection terminal block

Special application terminal with spring supported screw connection for use with hook blade terminals the spring provides a secure, safe connection, simultaneously preventing hook blade lug from exiting the terminal even in the event of a loosened connection.

304500	0.2...6	32A	6 mm	spring assisted terminal block	
304510	0.5...10	41A	8 mm	spring assisted terminal block	
304520	0.5...16	57A	10 mm	spring assisted terminal block	
450300	end plate	–		for above spring assisted terminal	304500/10
450260	end plate	–		for above spring assisted terminal	304520

Terminal accessories, see page L-8

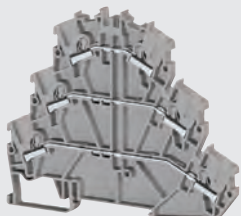
DIN mounting rail, see page L-13



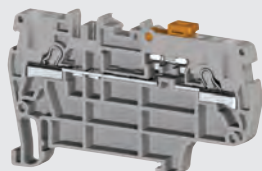
307139



336500



307199



307169



307249



476602



476604



476249

PYK series - "Push-in" spring clamp terminals

Cable connection is made by simply "pushing" the cable into the terminal without the need for tools. Secure connection is guaranteed in all conditions saving time in terminating. If required, cable can easily be removed with the use of a screwdriver. The easy "push-in" termination together with "plug-in" bridging combs combine to speed up connection of terminals, providing a rapid, secure, safe connection over time.

type	wire size (mm ²)	amperage EN60947-7-1	terminal width	description	
Feed through terminals (PYK)					
307019	1.5 mm	17.5A	4.2 mm	rail mount spring clamp terminal	
307109	2.5 mm	24A	5 mm	rail mount spring clamp terminal	
307119	4 mm	32A	6 mm	rail mount spring clamp terminal	
307129	6 mm	41A	8 mm	rail mount spring clamp terminal	
307139	10 mm	57A	10 mm	rail mount spring clamp terminal	
446639	end plate	–	1.2 mm	for 1.5 mm terminal	307019
446449	end plate	–	1.2 mm	for 2.5 mm terminal	307109
446459	end plate	–	1.2 mm	for 4.0 mm terminal	307119
446469	end plate	–	1.2 mm	for 6.0 mm terminal	307129
446479	end plate	–	1.2 mm	for 10.0 mm terminal	307139
Earth terminals - yellow/green screw-less, clip-on earth terminals					
336500	2.5 mm	24A	5 mm	rail mount spring clamp earth terminal	
336510	4 mm	32A	6 mm	rail mount spring clamp earth terminal	
336520	6 mm	41A	8 mm	rail mount spring clamp earth terminal	
336530	10 mm	57A	10 mm	rail mount spring clamp earth terminal	
446442	end plate	–	1.2 mm	for 2.5 mm earth terminal	336500
446452	end plate	–	1.2 mm	for 4.0 mm earth terminal	336510
446462	end plate	–	1.2 mm	for 6.0 mm earth terminal	336520
446472	end plate	–	1.2 mm	for 10.0 mm earth terminal	336530
Multi-tier terminals					
307179	2.5mm	24A	5 mm	two tier	spring clamp terminal
307199	2.5mm	24A	5 mm	three tier	spring clamp terminal
446519	end plate	–	1.2 mm	for 2.5 mm 2 tier terminal	307179
446529	end plate	–	1.2 mm	for 2.5 mm 3 tier terminal	307199
Disconnect terminals					
307169	2.5 mm	20A	5 mm	rail mount disconnect terminal	
446509	end plate	–	1.2 mm	for disconnect terminal	307169
Fuse terminals - for 5 x 20 mm fuses fully insulated - no end plate required					
307249	2.5 mm	10A	8 mm	rail mount fused terminal	
307259	2.5 mm	10A	8 mm	fused term. LED indication	24 VDC
307269	2.5 mm	10A	8 mm	fused term. LED indication	220 VAC
PYK test terminal (plug-in) plugs into standard PYK range terminals					
498559	1.5 mm	plug-in test terminal		(provides an additional terminal outlet)	
Cross connectors (plug-in bridging bars)					
476602	UK1.5/2	2 pole	4.2 mm	plug-in bridge piece for terminals	
476603	UK1.5/3	3 pole	4.2 mm	plug-in bridge piece for terminals	
476604	UK1.5/4	4 pole	4.2 mm	plug-in bridge piece for terminals	
476609	UK1.5/10	10 pole	4.2 mm	plug-in bridge piece for terminals	
476222	UK2.5/2	2 pole	5 mm	plug-in bridge piece for terminals	
476223	UK2.5/3	3 pole	5 mm	plug-in bridge piece for terminals	
476224	UK2.5/4	4 pole	5 mm	plug-in bridge piece for terminals	
476229	UK2.5/10	10 pole	5 mm	plug-in bridge piece for terminals	
476232	UK4/2	2 pole	6 mm	plug-in bridge piece for terminals	
476233	UK4/3	3 pole	6 mm	plug-in bridge piece for terminals	
476234	UK4/4	4 pole	6 mm	plug-in bridge piece for terminals	
476239	UK4/10	10 pole	6 mm	plug-in bridge piece for terminals	
476242	UK6/2	2 pole	8 mm	plug-in bridge piece for terminals	
476243	UK6/3	3 pole	8 mm	plug-in bridge piece for terminals	
476244	UK6/4	4 pole	8 mm	plug-in bridge piece for terminals	
476249	UK6/10	10 pole	8 mm	plug-in bridge piece for terminals	
476252	UK10/2	2 pole	10 mm	plug-in bridge piece for terminals	
476253	UK10/3	3 pole	10 mm	plug-in bridge piece for terminals	
476254	UK10/4	4 pole	10 mm	plug-in bridge piece for terminals	
476259	UK10/10	10 pole	10 mm	plug-in bridge piece for terminals	

DIN mounting rail, see page L-13

Bridging bars (cross-connection) for screw type through terminals

type	ref.	poles	for term. width	description	
Screw-in bridging bars (internal) for 2.5 - 240 mm terminals					
474122	UK2.5/2	2 pole	5 mm	bridge piece for std + 2 tier terminal	304 120
474123	UK2.5/3	3 pole	5 mm	bridge piece for std + 2 tier terminal	304 120
474124	UK2.5/4	4 pole	5 mm	bridge piece for std + 2 tier terminal	304 120
474129	UK2.5/10	10 pole	5 mm	bridge piece for std + 2 tier terminal	304 120
474210	UK2.5/50	50 pole	5 mm	bridge piece for std + 2 tier terminal	304 120
474132	UK4/2	2 pole	6 mm	bridge piece for std + 2 tier terminal	304 130
474133	UK4/3	3 pole	6 mm	bridge piece for std + 2 tier terminal	304 130
474134	UK4/4	4 pole	6 mm	bridge piece for std + 2 tier terminal	304 130
474139	UK4/10	10 pole	6 mm	bridge piece for std + 2 tier terminal	304 130
474190	UK4/50	50 pole	6 mm	bridge piece for std + 2 tier terminal	304 130
480132	UK2.5/2	2 pole	6 mm	screw-in bridge piece for 3 tier terminal	324 109
480133	UK2.5/3	3 pole	6 mm	screw-in bridge piece for 3 tier terminal	324 109
480134	UK2.5/4	4 pole	6 mm	screw-in bridge piece for 3 tier terminal	324 109
480139	UK2.5/10	10 pole	6 mm	screw-in bridge piece for 3 tier terminal	324 109
474142	UK6/2	2 pole	8 mm	screw-in bridge piece for terminals	304 140
474143	UK6/3	3 pole	8 mm	screw-in bridge piece for terminals	304 140
474144	UK6/4	4 pole	8 mm	screw-in bridge piece for terminals	304 140
474149	UK6/10	10 pole	8 mm	screw-in bridge piece for terminals	304 140
474152	UK10/2	2 pole	10 mm	screw-in bridge piece for terminals	304 150
474153	UK10/3	3 pole	10 mm	screw-in bridge piece for terminals	304 150
474154	UK10/4	4 pole	10 mm	screw-in bridge piece for terminals	304 150
474159	UK10/10	10 pole	10 mm	screw-in bridge piece for terminals	304 150
474162	UK16/2	2 pole	12 mm	screw-in bridge piece for terminals	304 160
474163	UK16/3	3 pole	12 mm	screw-in bridge piece for terminals	304 160
474164	UK16/4	4 pole	12 mm	screw-in bridge piece for terminals	304 160
474169	UK16/10	10 pole	12 mm	screw-in bridge piece for terminals	304 160
474172	UK35/2	2 pole	16 mm	screw-in bridge piece for terminals	304 240
474173	UK35/3	3 pole	16 mm	screw-in bridge piece for terminals	304 240
474174	UK35/4	4 pole	16 mm	screw-in bridge piece for terminals	304 240
474179	UK35/10	10 pole	16 mm	screw-in bridge piece for terminals	304 240
478332	UK50/2	2 pole	20 mm	screw-in bridge piece for terminals	304 330
478333	UK50/3	3 pole	20 mm	screw-in bridge piece for terminals	304 330
478334	UK50/4	4 pole	20 mm	screw-in bridge piece for terminals	304 330
478342	UK95/2	2 pole	25mm	screw-in bridge piece for terminals	304 340
478343	UK95/3	3 pole	25mm	screw-in bridge piece for terminals	304 340
478344	UK95/4	4 pole	25mm	screw-in bridge piece for terminals	304 340
478352	UK150/2	2 pole	31 mm	screw-in bridge piece for terminals	304 350
478353	UK150/3	3 pole	31 mm	screw-in bridge piece for terminals	304 350
478354	UK150/4	4 pole	31 mm	screw-in bridge piece for terminals	304 350
478362	UK240/2	2 pole	36 mm	screw-in bridge piece for terminals	304 360
478363	UK240/3	3 pole	36 mm	screw-in bridge piece for terminals	304 360
478364	UK240/4	4 pole	36 mm	screw-in bridge piece for terminals	304 360

Comb type bridge pieces (external)

476262	TKO2.5/2	2 pole	5 mm	comb bridge for std screw terminal	304 200
476263	TKO2.5/3	3 pole	5 mm	comb bridge for std screw terminal	304 200
476264	TKO2.5/4	4 pole	5 mm	comb bridge for std screw terminal	304 200
476269	TKO2.5/10	10 pole	5 mm	comb bridge for std screw terminal	304 200
476272	TKO4/2	2 pole	6 mm	comb bridge for std screw terminal	304 210
476273	TKO4/3	3 pole	6 mm	comb bridge for std screw terminal	304 210
476274	TKO4/4	4 pole	6 mm	comb bridge for std screw terminal	304 210
476279	TKO4/10	10 pole	6 mm	comb bridge for std screw terminal	304 210
476282	TKO6/2	2 pole	8 mm	comb bridge for std screw terminal	304 140
476283	TKO6/3	3 pole	8 mm	comb bridge for std screw terminal	304 140
476284	TKO6/4	4 pole	8 mm	comb bridge for std screw terminal	304 140
476289	TKO6/10	10 pole	8 mm	comb bridge for std screw terminal	304 140
476292	TKO10/2	2 pole	10 mm	comb bridge for std screw terminal	304 150
476293	TKO10/3	3 pole	10 mm	comb bridge for std screw terminal	304 150
476294	TKO10/4	4 pole	10 mm	comb bridge for std screw terminal	304 150
476299	TKO10/10	10 pole	10 mm	comb bridge for std screw terminal	304 150



474122



474142



474164



474179



476262



476274



476294



495049



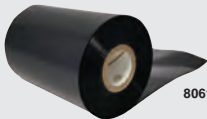
495099



811750



806000



806100



508700



808551

type	wire size (mm ²)	amperage EN60947-7-1	term. width	description
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End stops for all terminals

495049	end stop	screw type	7.5 mm	economical screw type terminal rail end stop
495059*	end stop	screwless	7.5 mm	clamp-on terminal rail end stop
495219*	end stop	screw type	7.5 mm	heavy duty screw type terminal rail end stop
495099*	end stop	screw type	7.5 mm	large HD 50 - 240 mm terminal rail end stop

* Accepts group marking support 49613A (below) ratchet type for height adjustment

Group marking

49613A	support	group marking support for all *	terminal end stops (W) 6 mm
496300	support	group marking support for terminal end stop	495219 (W) 7 mm
496310	support	DIN rail mounting group marking support	(W) 7 mm

Terminal markers on cards for printing by thermal printer

type	print area (mm)	for term width (mm)	colour	description	labels per card	cards per pack
811750	5 x 10	5 mm	white	blank terminal markers	72	10
812250	6 x 10	6 mm	white	blank terminal markers	60	10
812750	8 x 10	8 mm	white	blank terminal markers	48	10
813100	10 x 10	16/12/20/10	white	blank terminal markers	36	10
808458	11.2 x 100	20...36	white	blank terminal markers	12	20

Thermal printer for personalised printing of above terminal markers

806000 KleCard printer for above terminal markers

Klecard thermal printer ribbons

806100	KL-RB ribbon	black	Klecard resin ribbons	110 x 300 mm
806101	KL-RB ribbon	red	Klecard resin ribbons	110 x 300 mm
806102	KL-RB ribbon	blue	Klecard resin ribbons	110 x 300 mm

Clip-on printable cable markers

For use with KleCard thermal printer

type	print area (mm)	cable cross section mm ²	colour	description	labels per pack	cards per pack
814300	4 x 12	0.5...1.5	white	clip-on cable marker	40	6 (240)
814500	4 x 12	1.5...2.5	white	clip-on cable marker	36	5 (180)
814700	4 x 12	4.0...6.0	white	clip-on cable marker	32	4 (128)
814900	4 x 18	0.5...1.5	white	clip-on cable marker	40	6 (240)
815100	4 x 18	1.5...2.5	white	clip-on cable marker	36	5 (180)
815300	4 x 18	4.0...6.0	white	clip-on cable marker	32	4 (128)

Panel labelling system

Tag holder for attractive, professional labelling of panels

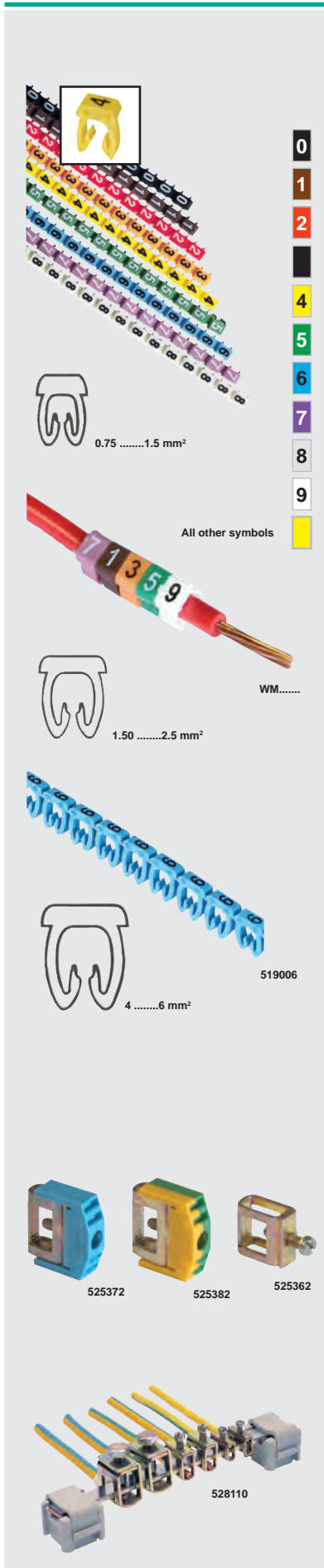
508600	30 x 17	holder	black	self adhesive panel tag/label holder/frame
508601	52 x 17	holder	black	self adhesive panel tag/label holder/frame
508602	70 x 17	holder	black	self adhesive panel tag/label holder/frame
508700	30 x 17	Ø22.5 mm	black	pushbutton tag/label holder/frame

Markable inserts for above holder/frame

/_* provide marking requirements

808551/_*	27 x 15	label	white	markable tag insert for above label holders
808554/_*	50 x 15	label	white	markable tag insert for above label holders
808555/_*	67 x 15	label	white	markable tag insert for above label holders
808601/_*	27 x 15	label	yellow	markable tag insert for above label holders
808604/_*	50 x 15	label	yellow	markable tag insert for above label holders
808605/_*	67 x 15	label	yellow	markable tag insert for above label holders
508813	27 x 15	-	t/parent	protection window for above label holders
508814	50 x 15	-	t/parent	protection window for above label holders
508815	67 x 15	-	t/parent	protection window for above label holders

/_* Insert marking requirement



Wire markers 0.5 mm² - 6 mm²

- Clip-on wire markers simply clip directly onto already installed cables
(no need to remove wire from terminals to mark them)
- Markers incorporate small guide pins, ensuring perfect alignment of markers when mounted on cables
- Mounted markers provide firm secure mounting onto wires (not easily removable)
- Made of polyimide 6.6 (ambient temperature -30°C - +70°C)
- Supplied in packs of all one numerical, alphabetical, symbol : alphabet 200 pcs per pack
: numerical 500 pcs per pack

type	character	colour	wire size mm ²	description	qty per pack
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WM01 marker for cables (cross-section 0.5 mm² - 1.5 mm²)

517000	"0"	black	0.5-1.5	clip-on cable marker	500
517001	"1"	brown	0.5-1.5	clip-on cable marker	500
517002	"2"	red	0.5-1.5	clip-on cable marker	500
517003	"3"	orange	0.5-1.5	clip-on cable marker	500
517004	"4"	yellow	0.5-1.5	clip-on cable marker	500
517005	"5"	green	0.5-1.5	clip-on cable marker	500
517006	"6"	blue	0.5-1.5	clip-on cable marker	500
517007	"7"	purple	0.5-1.5	clip-on cable marker	500
517008	"8"	grey	0.5-1.5	clip-on cable marker	500
517009	"9"	white	0.5-1.5	clip-on cable marker	500
519514/_*	/_*	yellow	0.5-1.5	clip-on cable marker	200

WM02 marker for cables (cross-section 1.5 mm² - 2.5 mm²)

518000	"0"	black	1.5-2.5	clip-on cable marker	500
518001	"1"	brown	1.5-2.5	clip-on cable marker	500
518002	"2"	red	1.5-2.5	clip-on cable marker	500
518003	"3"	orange	1.5-2.5	clip-on cable marker	500
518004	"4"	yellow	1.5-2.5	clip-on cable marker	500
518005	"5"	green	1.5-2.5	clip-on cable marker	500
518006	"6"	blue	1.5-2.5	clip-on cable marker	500
518007	"7"	purple	1.5-2.5	clip-on cable marker	500
518008	"8"	grey	1.5-2.5	clip-on cable marker	500
518009	"9"	white	1.5-2.5	clip-on cable marker	500
519524/_*	/_*	yellow	1.5-2.5	clip-on cable marker	200

WM03 marker for cables (cross-section 4 mm² - 6 mm²)

519000	"0"	black	4.0...6.0	clip-on cable marker	500
519001	"1"	brown	4.0...6.0	clip-on cable marker	500
519002	"2"	red	4.0...6.0	clip-on cable marker	500
519003	"3"	orange	4.0...6.0	clip-on cable marker	500
519004	"4"	yellow	4.0...6.0	clip-on cable marker	500
519005	"5"	green	4.0...6.0	clip-on cable marker	500
519006	"6"	blue	4.0...6.0	clip-on cable marker	500
519007	"7"	purple	4.0...6.0	clip-on cable marker	500
519008	"8"	grey	4.0...6.0	clip-on cable marker	500
519009	"9"	white	4.0...6.0	clip-on cable marker	500
519534/_*	/_*	yellow	4.0...6.0	clip-on cable marker	200

/_* Insert marking requirement A,B,C...Z/+/-/■/●/ or other)

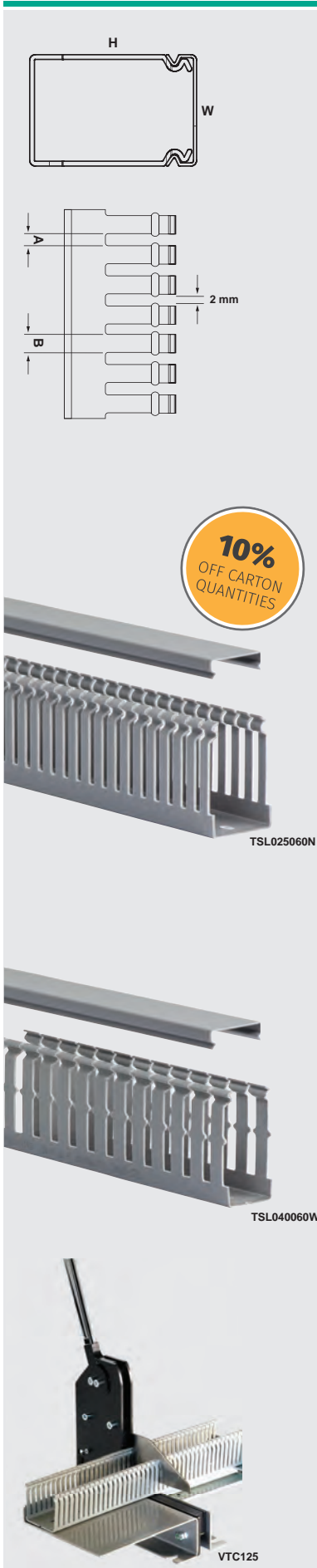
Clamping yokes (slide onto 10 x 3 mm busbar)

Clamping yokes can be slid onto a 10 x 3 mm flat busbar to make up any size earth or neutral bar with terminals to accommodate 4/10/35 mm² cables

type	cable size mm ²	insulation	description	
525361	0.5 - 4	clamp	none	bar mount clamping yoke BK4
525362	2.5 - 10	clamp	none	bar mount clamping yoke BK10
525363	16 - 35	clamp	none	bar mount clamping yoke BK35
525371	0.5 - 4	clamp	blue (neut.)	bar mount clamping yoke IBK4
525372	2.5 - 10	clamp	blue (neut.)	bar mount clamping yoke IBK10
525373	16 - 35	clamp	blue (neut.)	bar mount clamping yoke IBK35
525381	0.5 - 4	clamp	grn/yel (E)	bar mount clamping yoke IBK4
525382	2.5 - 10	clamp	grn/yel (E)	bar mount clamping yoke IBK10
525383	16 - 35	clamp	grn/yel (E)	bar mount clamping yoke IBK35

Accessories for above clamping yokes

GI03010.1	10 x 3 mm	Cu flat copper bar for above clamping yokes	1 meter
528110	screw	universal support for single bars (10 x 3/6 x 6/15 x 3 mm)	
495109	rail mnt	DIN universal support for up to three bars (10 x 3/6 x 6 mm)	



Slotted trunking

Ezi Canal slotted cable ducting features an improved cover design for ease of opening and closing, permitting easy access to wiring in control panels. Meets maximum wire capacity requirements and space constraints (*from small control panels to large integrated systems*) to provide effective support for demanding wire management solutions.

Manufactured from high-impact, self-extinguishing, warp-proof rigid PVC material providing a shock proof insulated protection solution resistant to acids, oils and grease. Used for general purpose control panel wiring to provide improved aesthetics and a neater wire management solution in high density control panels.

- Simple open/close cover design for easy access to wiring in control panel
- Double score-line permits finger/slot or complete sidewall removal
- Coining process for burr-free edges to protect hands and wiring from abrasion
- Restricted slot design retains wire within slot for fast, easy wire installation or removal
- Duct and cover form a flush sidewall to provide increased capacity and improved appearance
- UL94 flammability rating V-0 for excellent flame retardation

Standard colour: Grey - others available on request (*volume dependant*)
 Standard length: Supplied in two meter lengths, complete with covers

type	dimensions (mm)		colour	description	slot A (mm)	finger B (mm)	carton qty (L - 2 m)
	(W)	(H)					
Narrow slotted trunking					Finger: 6 mm / Slot - 4 mm (10 mm pitch)		
• Narrow slot/finger design to closely fit spacing of high density terminal blocks and I/O modules							
KKC1518	15	18	grey	PVC slotted cable trunking	5	7.5	112
TSL025025N	25	25	grey	PVC slotted cable trunking	4	6	48
TSL025040N	25	40	grey	PVC slotted cable trunking	4	6	40
TSL040040N	40	40	grey	PVC slotted cable trunking	4	6	24
TSL060040N	60	40	grey	PVC slotted cable trunking	4	6	24
TSL080040N	80	40	grey	PVC slotted cable trunking	4	6	18
TSL025060N	25	60	grey	PVC slotted cable trunking	4	6	30
TSL040060N	40	60	grey	PVC slotted cable trunking	4	6	28
TSL060060N	60	60	grey	PVC slotted cable trunking	4	6	18
TSL080060N	80	60	grey	PVC slotted cable trunking	4	6	14
TSL100060N	100	60	grey	PVC slotted cable trunking	4	6	12
TSL025080N	25	80	grey	PVC slotted cable trunking	4	6	28
TSL040080N	40	80	grey	PVC slotted cable trunking	4	6	20
TSL060080N	60	80	grey	PVC slotted cable trunking	4	6	12
TSL080080N	80	80	grey	PVC slotted cable trunking	4	6	8
TSL100080N	100	80	grey	PVC slotted cable trunking	4	6	8
TSL040100N	40	100	grey	PVC slotted cable trunking	4	6	16
TSL060100N	60	100	grey	PVC slotted cable trunking	4	6	12
TSL080100N	80	100	grey	PVC slotted cable trunking	4	6	8
TSL100100N	100	100	grey	PVC slotted cable trunking	4	6	8
Wide slotted trunking					Finger: 12 mm / Slot - 8 mm (20 mm pitch)		
TSL040060W	40	60	grey	PVC slotted cable trunking	8	12	28
TSL060060W	60	60	grey	PVC slotted cable trunking	8	12	18
TSL080060W	80	60	grey	PVC slotted cable trunking	8	12	14
TSL100060W	100	60	grey	PVC slotted cable trunking	8	12	12
TSL040080W	40	80	grey	PVC slotted cable trunking	8	12	20
TSL060080W	60	80	grey	PVC slotted cable trunking	8	12	12
TSL080080W	80	80	grey	PVC slotted cable trunking	8	12	8
TSL100080W	100	80	grey	PVC slotted cable trunking	8	12	8
TSL040100W	40	100	grey	PVC slotted cable trunking	8	12	16
TSL060100W	60	100	grey	PVC slotted cable trunking	8	12	12
TSL080100W	80	100	grey	PVC slotted cable trunking	8	12	8
TSL100100W	100	100	grey	PVC slotted cable trunking	8	12	8

Note: 10% off list price for full carton quantities of **TSL** trunking (above) - add /B to end of part number (e.g **TSL025040N/B**)

Spare covers for above trunking

TSM025	25	-	grey	spare PVC trunking covers	-	-	80
TSM040	40	-	grey	spare PVC trunking covers	-	-	80
TSM060	60	-	grey	spare PVC trunking covers	-	-	80
TSM080	80	-	grey	spare PVC trunking covers	-	-	80
TSM100	100	-	grey	spare PVC trunking covers	-	-	68

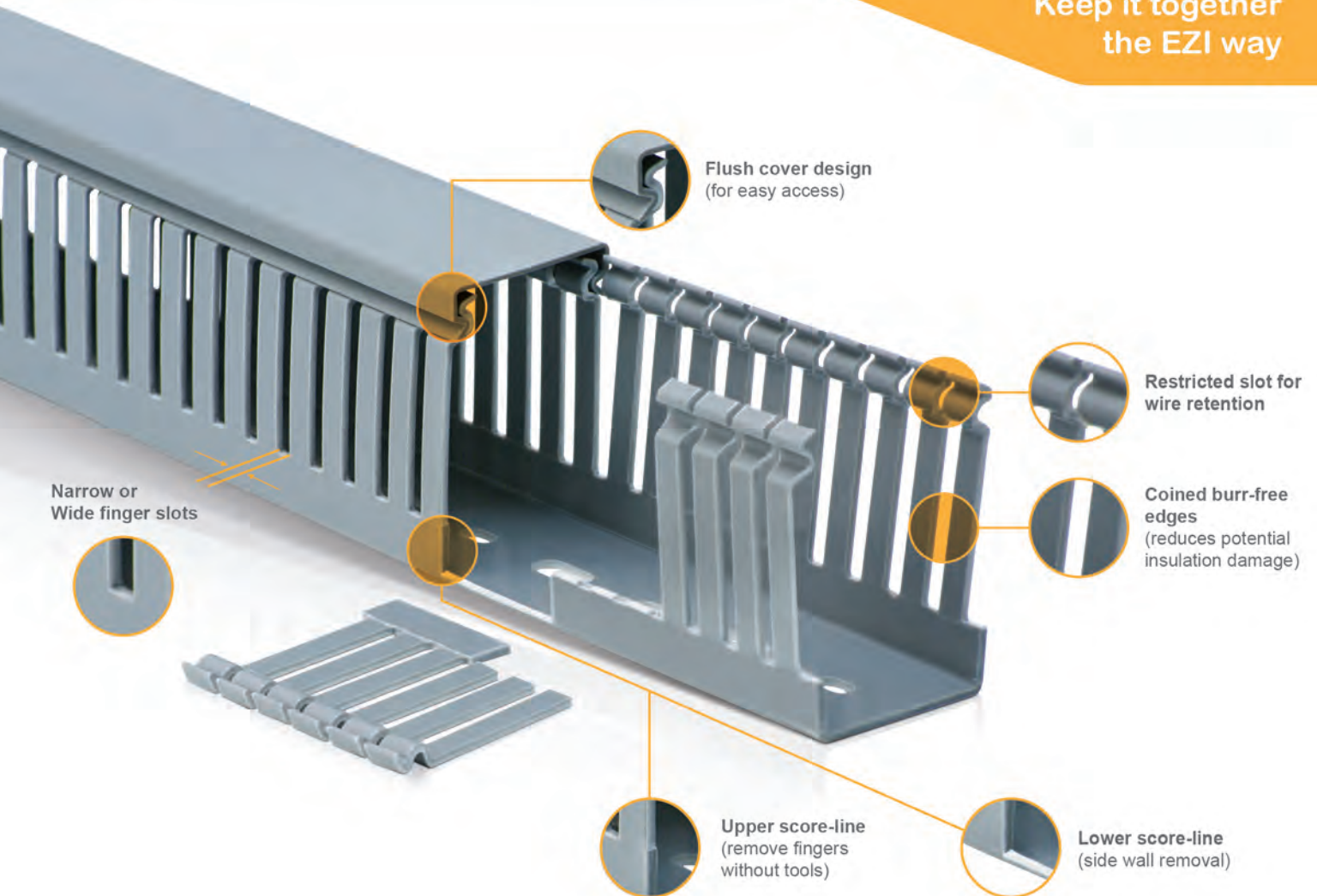
Trunking accessories

553415	84	14	grey	sectionable cable retainer clip			(10 pcs)
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For **VTC125** - wiring duct cutter, see page (L-13)

Locally manufactured from high impact, self-extinguishing, warp-proof rigid PVC

Keep it together
the EZI way



Quick and easy to install

- Simple open/close cover design for easy access to wiring in control panels.
- Double score-line permits finger/slot removal or complete sidewall removal.
- Coining process for burr-free edges to protect hands and wiring from abrasion.



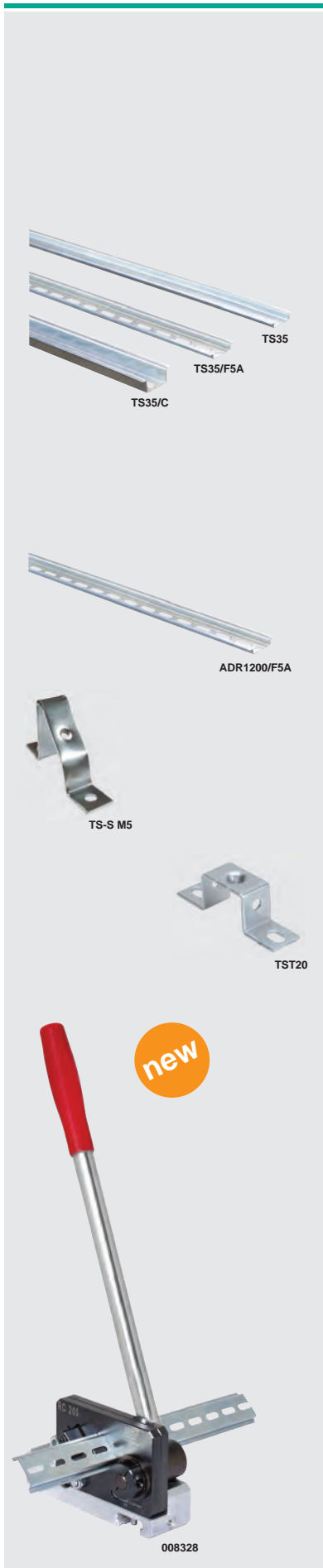
Enhances aesthetics and clarity

- Restricted slot/finger design to closely fit spacing for high density terminal blocks and input/output modules.
- Duct and cover form a flush sidewall to provide increased capacity.



Provides complete electrical insulation

- UL94 flammability rating V-O for excellent flame retardation.
- Supplied in 2 meter lengths.
- Spare covers available on request.
- Shock proof insulated protection solution, resistant to acids, oils and grease.



DIN mounting rail

Passivation process for Electro DIN rail does not contain hazardous substances and complies fully with RoHS directives 2002/95/EC. New electrolytic zinc-plating treatment is far superior and fully replaces previous Hexavalent Chrome treatment which contains Lead (*usually a "yellowish" finish*) now banned in most countries.

type	rail	depth	description		length
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Steel mounting rail EN 60715

- High quality, galvanic zinc plating - white passivation "Cr VI free" fully **RoHS** compliant

Standard

1 mm thick

TS35	DIN 35	7.5 mm	standard DIN mounting rail	plain	2 meter
TS35/F5A*	DIN 35	7.5 mm	standard DIN mounting rail	perforated	2 meter
TS35/SF6*	DIN 35	10 mm	standard DIN mounting rail	perforated	2 meter

Heavy duty

1.5 mm steel

TS35/C	DIN 35	15 mm	HD standard DIN mounting rail	plain	2 meter
TS35/CF5A*	DIN 35	15 mm	HD standard DIN mounting rail	perforated	2 meter

* Perforated - slot **F5A** = 18 x 5.2 mm / **F6** = 18 x 6.3 mm (25 mm between centres)

Stainless steel mounting rail (INOX) 1 mm thick

- Perforated slot - 18 x 5.2 mm (25 mm between centres)

TS35/F6 INOX	DIN 35	7.5 mm	stainless steel DIN mounting rail	perforated	2 meter
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Aluminium mounting rail 1.1 mm thick

- Perforated slot - 20 x 4.8 mm (35 mm between centres)

ADR1200/F5A	DIN 35	7.5 mm	aluminium DIN mounting rail	perforated	2 meter
CUT-ADR	DIN 35	7.5 mm	aluminium DIN rail cutter	<i>(for aluminium rail only)</i>	

Accessories for DIN rail

type	rail	high	description		mounting hole
TS-S M5	bracket	48 mm	angled stand-off DIN rail support bracket		M5
TST20	bracket	20 mm	steel support brackets for raising DIN rail		M6
TST30	bracket	30 mm	steel support brackets for raising DIN rail		M6
TST40	bracket	40 mm	steel support brackets for raising DIN rail		M6
TST50	bracket	50 mm	steel support brackets for raising DIN rail		M6
TST70	bracket	70 mm	steel support brackets for raising DIN rail		M6
FIX KLIP M4	DIN 35	-	M4 DIN rail mounting clip for components		M4
FIX KLIP M5	DIN 35	-	M5 DIN rail mounting clip for components		M5

Category-M

DIN rail cutter made in Germany **GLW**

DIN rail cutter (*for steel mounting rail only*)

DIN rail is often cut by saw or angle grinder creating dust, noise, and a considerable risk of injury. **The RC200** is a high quality, professional DIN rail cutter designed for high output, offering "burr-free" precision cut and trim of standard DIN rails.

- Incorporates two cut profiles (7.5 x 35 and 15 x 35 mm) DIN rails
- Precision "burr-free" cut and trim of DIN rail to length without waste
- Increased work safety and quiet operation

see page
M-8 for
info

type	rail	for depth	description	
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RC200 DIN rail cutter		<i>for DIN 35 rail 7.5 and 15 mm deep</i>		
008328	cutter	7.5 + 15 mm	DIN rail cutter (2 profiles) for 7.5/15 mm high x 35 mm rail	

Accessories for above RC200 DIN rail cutter

009465	scale	metric scale plate and length stop for above DIN rail cutter		RC200
009102	clamp	table clamp for above DIN rail cutter		RC200

Wiring duct cutter (professional) *with 1 meter graduated dimension rule + length stop*

For fast, accurate cutting of wiring ducts to length without burrs and with very little force

VTC 125 wiring duct cutter (*made in Italy*)

- Burr-free cut edges - No noise, no chips or dust
- Quick and easy cutting - ducts cut precisely to the millimetre

VTC125	trunking	125 mm	precision slotted wiring duct (<i>trunking</i>) cutter	<i>all sizes</i>
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Distribution blocks

- 1 pole (*stackable horizontally*) clips together to add additional poles
- Rapid horizontal installation on 35 mm DIN rail
- Extremely compact, all side finger-safe DIN EN 50274
- Terminal body: Brass (CuZn39Pb2) Housing: Self-extinguishing, halogen free
- 1000V AC/DC - DIN/EN 60947-7-1

type	rated current	feed-in terminals		output terminals mm ²				description	designation
		max. cable (mm ²)	busbar (mm)	10	16	25	50		

HLAK - Main line/branch terminals

080110-0-4	152A	25 mm ²	–		2x			rail mount terminals	Line	
080110-1-4	152A	25 mm ²	–		2x			rail mount terminals	Neutral	
080110-2-4	152A	25 mm ²	–		2x			rail mount terminals	Earth	
080210-0-4	202A	35 mm ²	–			2x		rail mount terminals	Line	
080210-1-4	202A	35 mm ²	–			2x		rail mount terminals	Neutral	
080210-2-4	202A	35 mm ²	–			2x		rail mount terminals	Earth	
080310-0-4	300A	70 mm ²	–				2x	rail mount terminals	Line	
080310-1-4	300A	70 mm ²	–				2x	rail mount terminals	Neutral	
080310-2-4	300A	70 mm ²	–				2x	rail mount terminals	Earth	

type	rated current	feed-in terminals		output terminals mm ²				description	designation
		max. cable (mm ²)	busbar (mm)	10	16	25	35		

UVB - Sub-distribution blocks for copper conductors

080010-0-4	100A	2x 25	–	6x				distribution block	Line	
080010-1-4	100A	2x 25	–	6x				distribution block	Neutral	
080010-2-4	100A	2x 25	–	6x				distribution block	Earth	
080030-0-4	200A	70	–		6x	1x		distribution block	Line	
080030-1-4	200A	70	–		6x	1x		distribution block	Neutral	
080030-2-4	200A	70	–		6x	1x		distribution block	Earth	

PDB - Power distribution blocks AI/Cu

- Suitable for Copper or Aluminium conductors (*current ratings for copper conductors*)
- DIN rail mounting or direct chassis plate mount (*horizontal or vertical*)
- Hexagon head screws for high torque connections (*captive screws*)
- Transparent cover for easy inspection of termination

082040-0-3	164A	2.5...25	–	3x	3x			distribution block	grey	
082050-0-3	214A	4...35	–		4x	2x		distribution block	grey	
082060-0-3	215A	10...70	15.5 x 5		3x	2x		distribution block	grey	
082070-0-3	270A	16...95	–			8x	2x	distribution block	grey	
082080-0-3	400A	35...120	24 x 10		4x	3x	2x	distribution block	grey	
082090-0-3	490A	95...185	24 x 10		4x	3x	2x	distribution block	grey	

SSAK - Busbar connection terminals 690V IEC 60947-7-1

Fastens directly onto busbars (3-10 mm thick) and provides 2 x outgoing 16 mm² cable terminals

- For direct cable connection to copper bars 3-10 mm thickness

type	rated current	feed-in terminals		branch terminal 1-16 mm ²	description	designation
		busbar (thickness)				

Insulated conductor connection terminals (H) 47.8 x (W) 15.2 x (D) 55.2 mm

- All insulated, finger-safe PA6 (*self extinguishing, halogen free*)

086105-0-4	114A	3...10 mm thick	2x 1...16 mm ²	busbar connect terminal	Line	
086105-1-4	114A			busbar connect terminal	Neutral	
086105-2-4	114A			busbar connect terminal	Earth	
086105-3-4	114A			busbar connect terminal	Line	

Uninsulated conductor connection terminals

086105-9-2	114A	3...10 mm thick	2x 1...16 mm ²	busbar connect terminal	–	–
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Feed in Terminals (H) 27.1 x (W) 17.3 x (D) 24.7 mm (without pin)

Designed for ease of feed-in to common bridging busbars used with MCB's in distribution boards

- Universal, configurable for front or (*either*) side power feed
- Screw clamp termination ensuring touch safety

084551-1-4	–	50 mm ²	insulated feed-in terminal short pin (15 mm)	grey	
084553-1-4	–	50 mm ²	insulated feed-in terminal long pin (29.5 mm)	grey	



Cable ties (Polyamide)

Elematic standard cable ties are produced exclusively in Polyamide 6.6 Black cable ties have additional carbon black providing a UV resistance for outdoor applications.

Raw material: Polyamide 6.6 Halogen-free
 Installation temperature: -10°...+60°C Flammability rating: UL 94 class V2
 Approvals: Lloyds Register, Bureau Veritas, UL, GL, Rina, DNV.

Standard Cable Ties *bent rounded tip for easier insertion through the cable tie head*

type	dimensions (mm) length width	colour	bundle Ø max. (mm)	tensile strength	description	pack qty
Cable ties <i>rounded edges for the safest application</i>						
5303/CE	98 2.5	black	21 mm	80 (N)	standard cable tie	100
5305/CE	135 2.5	black	32 mm	80 (N)	standard cable tie	100
5309/CE	140 3.5	black	35 mm	180 (N)	standard cable tie	100
5310/CE	290 3.5	black	80 mm	180 (N)	standard cable tie	100
5315/CE	200 4.5	black	50 mm	220 (N)	standard cable tie	100
5317E	290 4.5	black	79 mm	220 (N)	standard cable tie	100
5318E	390 4.5	black	106 mm	220 (N)	standard cable tie	100
5327E	365 7.5	black	100 mm	540 (N)	standard cable tie	100
5331E	540 7.5	black	158 mm	540 (N)	standard cable tie	100
5337E	500 12.5	black	143 mm	1080 (N)	standard cable tie	50
5203/CE	98 2.5	natural	21 mm	80 (N)	standard cable tie	100
5209/CE	140 3.5	natural	35 mm	180 (N)	standard cable tie	100
5210/CE	290 3.5	natural	80 mm	180 (N)	standard cable tie	100
5218E	390 4.5	natural	106 mm	220 (N)	standard cable tie	100

UV resistant cable ties *made with special additives ensuring extra resistance to UV rays*

- Excellent resistance to UV rays
- Suitable for PV photovoltaic installations

Tested according to norm CEI EN 62275 according to ISO 4892-2

5303/C UVE	98 2.5	black	21 mm	80 (N)	UVE cable tie	100
5309/C UVE	140 3.5	black	35 mm	180 (N)	UVE cable tie	100
5315/C UVE	200 4.5	black	50 mm	220 (N)	UVE cable tie	100
5317 UVE	290 4.5	black	79 mm	220 (N)	UVE cable tie	100
5327 UVE	365 7.5	black	100 mm	540 (N)	UVE cable tie	100

Belturing plus heavy duty cable ties Halogen-free *ideal for photovoltaic installations*

- Highly resistant to climatic conditions (including sea areas)
- Excellent resistance to UV rays

Produced with special techno-polymer providing exceptional UV resistance according to norm CEI EN 62275 (ISO 4892-2). Recommended for outdoor applications and prolonged UV exposure.

Raw material: Polyamide 6.6 Installation temperature: -30°...+60°C
 Flammability rating: UL 94 class HB

6450XE	180 6	black	45 mm	280 (N)	single head lock	100
6454XE	360 6	black	100 mm	280 (N)	single head lock	100
6453XE	260 9	black	60 mm	540 (N)	double head lock	100
6455XE	360 9	black	93 mm	540 (N)	double head lock	100

Cable tie supports

type	max. tie width	hole Ø (mm)	colour	tensile strength	dimensions (mm) (H) (W) (D)			pack qty
Adhesive tie mounts (fixing with screw or adhesive backing)								
5469 RBE	3.6 mm	4.1	black	180 (N)	19	19	5.0	100
5475 RBE	4.8 mm	4.8	black	220 (N)	27	27	6.5	100
5467 RBE	3.6 mm	4.1	natural	180 (N)	19	19	5.0	100
5473 RBE	4.8 mm	4.8	natural	220 (N)	27	27	6.5	100

Note: For correct application of the self-adhesive mount, surfaces must be thoroughly cleaned and degreased with solvent (alcohol or similar cleaning product)

Cradles (screw down) *ideal for fixing cables and pipes in civil and industrial applications*

Raw material: Polyamide 6.6

5499	4.8 mm	3.5	black	220 (N)	9.5	15	7	100
5497E	9.0 mm	5	black	700 (N)	14.6	22.5	11	100

Tensioning tools for cable ties

- Metal tool for tensioning cable ties with incorporated cable tie cutting device.

5406C	3.5 - 12.5	metal tensioning and cutting tool for cable ties					1
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Cable ties (stainless steel)

For use in critical applications where strength, corrosion, radiation, vibration and temperature extremes are a factor. Unique ball locking mechanism permits simple, rapid installation and secure locking in any position. High tensile strength, non flammability, UV-resistant, high resistance to acids and corrosion for a strong durable solution to bundling and mechanical fastening in harsh environments.

- Self-locking head design speeds installation and locks at any length along the tie body
- Smooth surface, rounded edges assure cable protection and worker safety

type	length (mm)	wide (mm)	thick (mm)	AISI	bundle dia max.(mm)	description	
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AISI 304 stainless steel *for general purpose applications* *per (100)*

Working temperature: -60°C – +550°C

Metallic band and buckle

SST4/15-04	150	4.6	0.25	304	37	stainless steel cable ties
SST4/25-04	250	4.6	0.25	304	63	stainless steel cable ties
SST4/35-04	350	4.6	0.25	304	89	stainless steel cable ties
SST4/45-04	450	4.6	0.25	304	115	stainless steel cable ties
SST4/55-04	550	4.6	0.25	304	141	stainless steel cable ties
SST7/25-04	250	7.9	0.25	304	63	stainless steel cable ties
SST7/45-04	450	7.9	0.25	304	115	stainless steel cable ties
SST7/60-04	600	7.9	0.25	304	154	stainless steel cable ties
SST7/80-04	800	7.9	0.25	304	193	stainless steel cable ties

AISI 316 stainless steel - Epoxy coated *for extra corrosive environments* *per (100)*

- Black band with metallic buckle
- Coated band with non-toxic, Halogen free polyester coating
- Provides additional edge protection, prevents corrosion between dissimilar materials

SSTP4/20-16	200	4.6	0.36	316	50	stainless steel cable ties
SSTP4/30-16	300	4.6	0.36	316	76	stainless steel cable ties
SSTP4/40-16	400	4.6	0.36	316	102	stainless steel cable ties
SSTP4/50-16	500	4.6	0.36	316	128	stainless steel cable ties
SSTP7/30-16	300	7.9	0.36	316	76	stainless steel cable ties
SSTP7/40-16	400	7.9	0.36	316	102	stainless steel cable ties
SSTP7/60-16	600	7.9	0.36	316	154	stainless steel cable ties
SSTP7/80-16	800	7.9	0.36	316	193	stainless steel cable ties

Marking tags - stainless steel *(cable tie max. width 4.6 mm)* *per (100)*

Stainless steel tie-on tags for permanent identification of cables, conduits, pipes in arduous applications where high resistance to aggressive environments is essential.

AISI 304 stainless steel

SSM1089-04	89	9.5	0.40	304	–	stainless steel marking tags
SSM1989-04	89	19	0.40	304	–	stainless steel marking tags

AISI 316 stainless steel

SSM1089-16	89	9.5	0.40	316	–	stainless steel marking tags
SSM1989-16	89	19	0.40	316	–	stainless steel marking tags

Laser engraved stainless steel tags (each)

Custom laser marking of tags and cable ties. Upper/lower case characters, detailed marking, text and graphics, high quality, crisp, clean and permanent.

- Once laser engraved the inscription remains with the product for life

SSM1089-04/PS*	89	9.5	0.40	304		custom engraved marking tags
SSM1989-04/PS*	89	19	0.40	304		custom engraved marking tags
SSM1089-16/PS*	89	9.5	0.40	316		custom engraved marking tags
SSM1989-16/PS*	89	19	0.40	316		custom engraved marking tags

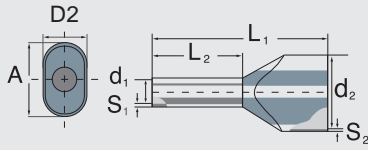
* **Print area:** L:79 x W:8.5 – * **Print area:** L:79 x W:18

Please provide detailed information on required laser engraving of tags when ordering.

Accessories (cable tie gun)

- Tensioning tool (*with auto cut*) for all above stainless steel cable ties
- Adjustable tension value - (4 settings)

HS-600	tensioning and cutting tool for 4.6 and 7.9 mm SS cable ties
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Crimped ferrule



Ferrules / wire end sleeves (Insulated)

- Material: Tin-plated copper (min. thickness 3µ) / polypropylene collar
- CSA certified (certificate 2110332)
- DIN 46228 part 4, CSA C22.2 No. 65-93, 188-M1983

type	wire size mm ²	colour	dimensions (mm)						pack qty
			L1	L2 ¹⁾	D1	S1	D2	D3	

Wire end sleeves with insulating collar

- Supplied in mini bags on a strip (10 x 100 pcs). bags can be torn from strip individually

005606	0.50	white	14.0	8.0	1.1	0.15	2.4	-	0.30	100
005644	0.75	blue	14.0	8.0	1.3	0.15	2.7	-	0.30	100
005718*	1.0	red	14.0	8.0	1.5	0.15	3.3	-	0.30	100
005738*	1.0	red	16.0	10.0	1.5	0.15	3.3	-	0.30	100
005765*	1.5	black	14.0	8.0	1.8	0.15	3.7	-	0.30	100
005791*	1.5	black	16.0	10.0	1.8	0.15	3.7	-	0.30	100
005808	2.5	grey	15.0	8.0	2.3	0.15	4.1	-	0.30	100
005829	2.5	grey	17.0	10.0	2.3	0.15	4.1	-	0.30	100
005831*	2.5	grey	18.0	10.0	2.3	0.15	4.7	-	0.30	100
005851	4.0	orange	18.0	10.0	2.9	0.20	4.7	-	0.30	100
007739*	4.0	grey	18.0	10.0	2.9	0.20	6.1	-	0.30	100
005871	6.0	green	20.0	12.0	3.6	0.20	6.1	-	0.30	100
005896	10.0	brown	21.0	12.0	4.6	0.20	7.4	-	0.40	100
005917	16.0	white	23.0	12.0	6.0	0.20	8.6	-	0.50	100
005919*	16.0	white	23.0	12.0	6.0	0.20	9.4	-	0.50	100
005950	25.0	black	29.0	16.0	7.5	0.20	10.9	-	0.50	50
005968	35.0	red	30.0	16.0	8.5	0.20	12.3	-	0.50	50
005980	50.0	blue	36.0	20.0	10.5	0.30	14.8	-	0.60	50
005988	70.0	yellow	37.0	20.0	12.7	0.40	15.8	-	0.60	25
005990	95.0	red	44.0	25.0	14.7	0.40	17.7	-	0.60	25
005915	120.0	blue	48.0	27.0	16.7	0.50	20.7	-	0.70	25
005916	150.0	yellow	58.0	32.0	18.7	0.50	22.6	-	1.00	25

* Broader collar to accommodate wires with thicker insulation

Twin wire end sleeves with insulating collar (accepts two cables)

type	wire size (mm ²)	colour	dimensions (mm)						pack qty
			L1	L2 ¹⁾	D1	S1	D2	A	

- Accepts two wires into one insulated end sleeve
- Supplied in mini bags on a strip (10 x 100 pcs). bags can be torn from strip individually

005613	2 x 0.5	white	15.0	8.0	1.5	0.15	2.4	4.6	0.30	100
005653	2 x 0.75	blue	15.0	8.0	1.8	0.15	2.7	5.4	0.30	100
005722	2 x 1.0	red	15.0	8.0	2.1	0.15	3.3	5.3	0.30	100
005740	2 x 1.0	red	17.0	10.0	2.1	0.15	3.3	5.3	0.30	100
005770	2 x 1.5	black	16.0	8.0	2.3	0.15	3.5	6.5	0.30	100
005794	2 x 1.5	black	20.0	12.0	2.3	0.15	3.5	6.5	0.30	100
005816	2 x 2.5	grey	19.0	10.0	2.9	0.20	4.1	7.7	0.40	100
005853	2 x 4.0	orange	23.0	12.0	3.8	0.20	4.9	8.7	0.40	100
005873	2 x 6.0	green	25.0	14.0	4.9	0.20	6.1	9.9	0.40	100
005898	2 x 10.0	brown	26.0	14.0	6.5	0.20	7.1	12.9	0.50	100
005921	2 x 16.0	white	31.0	16.0	8.5	0.20	9.8	16.8	0.60	50

Wire end sleeves with insulating collar supplied in belt strips

Wire end sleeves in belt form (K reels), for use in automatic cable preparation machines (see page M-4)
Reel/cassette simply clips onto machines (500/1000 terminals per reel)

- Tape mounted supplied in type K box dispenser (box size = 150 x 150 x 18 mm)

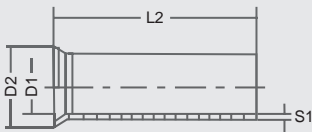
type	wire size (mm ²)	colour	dimensions (mm)						reel qty
			L1	L2 ¹⁾	D1	S1	D2	centre	

005611	0.50	white	14.5	8.0	1.1	0.15	2.6	3.5	0.25	1000
005649	0.75	blue	14.5	8.0	1.3	0.15	2.7	3.6	0.25	1000
005720	1.0	red	14.5	8.0	1.5	0.15	3.0	3.9	0.30	1000
005767	1.5	black	14.5	8.0	1.8	0.15	3.2	4.2	0.30	1000
005813	2.5	grey	14.5	8.0	2.3	0.15	4.1	5.0	0.30	500

¹⁾ Other lengths available on request



005649



Ferrules / wire end sleeves (un-insulated)

- Material: tin-plated copper (min.thickness 3µ)
- CSA certified (certificate 2110332)
- DIN 46228 part 4, CSA C22.2 No. 65-93, 188-M1983
- Supplied in standard bulk pack quantity (size dependant)

type	wire size (mm ²)	dimensions (mm)				description	pack qty
		L2 ¹⁾	D1	D2	S1		

Un-insulated wire end sleeve (cord end / bootlace terminals)

006010	0.50	–	10.0	1.0	2.1	0.15	un-insulated ferrules	1000
006015	0.75	–	10.0	1.2	2.3	0.15	un-insulated ferrules	1000
006022	1.0	–	10.0	1.4	2.5	0.15	un-insulated ferrules	1000
006031	1.5	–	10.0	1.7	2.8	0.15	un-insulated ferrules	1000
006045	2.5	–	12.0	2.2	3.4	0.15	un-insulated ferrules	1000
006053	4.0	–	12.0	2.8	4.0	0.2	un-insulated ferrules	1000
006060	6.0	–	12.0	3.5	4.7	0.2	un-insulated ferrules	1000
006068	10.0	–	12.0	4.5	5.8	0.2	un-insulated ferrules	500
006079	16.0	–	12.0	5.8	7.5	0.2	un-insulated ferrules	250
006091	25.0	–	15.0	7.3	9.5	0.2	un-insulated ferrules	100
006098	35.0	–	18.0	8.3	11.0	0.2	un-insulated ferrules	100
006102	50.0	–	18.0	10.3	13.0	0.3	un-insulated ferrules	100
006107	70.0	–	25.0	12.5	15.0	0.4	un-insulated ferrules	100
006109	95.0	–	25.0	14.5	17.0	0.4	un-insulated ferrules	50
006075	120.0	–	32.0	16.5	19.0	0.5	un-insulated ferrules	50

Available in smaller (from 0.25 mm²) and larger wire sizes (up to 240 mm²)

¹⁾ Other lengths available on request



made in Sweden **pressmaster**

Category-M

Crimping tools for wire end sleeves

type	for terminals	conductor (mm ²)	cable entry	description
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Pressmaster - Professional self-adjusting crimping tool

- High precision die geometry for a clearly defined square crimp shape of the ferrule
- Automatic self-adjustment to required wire size

4300-4661	ferrules	0.14...10	side	professional self-adjusting crimping tool
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Mobile frame system - with interchangeable dies for various terminals

Lightweight, compact ratchet crimp tool designed for most types of mechanical, electrical and electronic connectors. Easily interchangeable crimp dies are kept together with a special pin to simplify handling.

- Reliable crimping performance consistent and accurate with a parallel action stroke.
- Easy-access release for fast, simple exchange of crimp dies (no special tools required)

4300-3149	die dependant		side	MCT frame only for interchangeable dies
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Interchangeable die sets for above tool frame

- A wide range of crimp dies to cover all applications in just one tool frame.
- Dies are kept in pairs and delivered in a modular reusable box.

4300-3129	insulated	0.5 to 4	side	red/blue insulated terminal crimping die set
4300-3128	insulated	4 to 6	side	yellow insulated terminal crimping die set
4300-3137	uninsulated	0.75 to 2.5	side	cable lug crimping die set
4300-3139	uninsulated	4 to 10	side	cable lug crimping die set
4300-3127	end sleeves	0.25 to 10	side	wire end sleeve crimping die set
4300-3153	end sleeves	16 to 25	side	wire end sleeve crimping die set
4300-3154	end sleeves	35 to 50	side	wire end sleeve crimping die set
4300-3146	open barrel	0.5 to 6	side	open barrel connector crimping die set
4300-3136	coaxial	RG58/59/62/71	side	coaxial connector crimping die set

Consult the category **M-Tools** section of our catalogue for hydraulic crimpers and die sets

see page
M-3 for
info

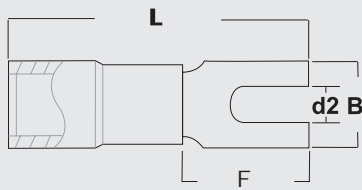


4300-4661



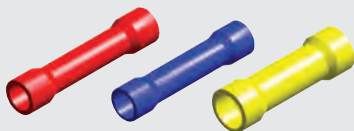
4300-3129

4300-3149



- Maximum electrical rating: 600V
- Operating temperature: 105°C
- Material: Terminal: Copper (*tin plated*)
Insulation: Vinyl (PVC)

type	colour	wire size mm ²	description	dimensions (mm)			pack qty
				d2	B	L	
Ring terminals							
R1-3V	red	0.5 - 1.5	insulated ring lug	3.2	5.5	16.7	100
R1-3.5MV	red	0.5 - 1.5	insulated ring lug	3.7	5.5	16.7	100
R1-4SV	red	0.5 - 1.5	insulated ring lug	4.3	6.6	19.6	100
R1-4LV	red	0.5 - 1.5	insulated ring lug	4.3	8.0	21.0	100
R1-5V	red	0.5 - 1.5	insulated ring lug	5.3	8.0	21.0	100
R1-6V	red	0.5 - 1.5	insulated ring lug	6.5	11.6	26.8	100
R1-8V	red	0.5 - 1.5	insulated ring lug	8.4	11.6	26.8	100
R1-10V	red	0.5 - 1.5	insulated ring lug	10.5	13.6	30.7	100
R1-12V	red	0.5 - 1.5	insulated ring lug	13	19.2	35.6	100
R2-3V	blue	1.5 - 2.5	insulated ring lug	3.2	6.4	17.5	100
R2-3.5MV	blue	1.5 - 2.5	insulated ring lug	3.7	6.4	17.5	100
R2-4SV	blue	1.5 - 2.5	insulated ring lug	4.3	6.6	19.5	100
R2-4LV	blue	1.5 - 2.5	insulated ring lug	4.3	8.5	22.0	100
R2-5SV	blue	1.5 - 2.5	insulated ring lug	5.3	8.5	22.0	100
R2-6V	blue	1.5 - 2.5	insulated ring lug	6.5	12.0	27.0	100
R2-8V	blue	1.5 - 2.5	insulated ring lug	8.4	12.0	27.0	100
R2-10V	blue	1.5 - 2.5	insulated ring lug	10.5	13.6	30.7	100
R2-12V	blue	1.5 - 2.5	insulated ring lug	13	19.2	35.6	100
R5-3V	yellow	4.0 - 6.0	insulated ring lug	3.2	7.2	22.0	100
R5-3.5SV	yellow	4.0 - 6.0	insulated ring lug	3.7	7.2	22.0	100
R5-4SV	yellow	4.0 - 6.0	insulated ring lug	4.3	7.2	25.5	100
R5-4LV	yellow	4.0 - 6.0	insulated ring lug	4.3	9.5	25.5	100
R5-5V	yellow	4.0 - 6.0	insulated ring lug	5.3	9.5	25.5	100
R5-6V	yellow	4.0 - 6.0	insulated ring lug	6.5	12.0	29.0	100
R5-8V	yellow	4.0 - 6.0	insulated ring lug	8.4	15.0	33.7	100
R5-10V	yellow	4.0 - 6.0	insulated ring lug	10.5	15.0	33.7	100
R5-12V	yellow	4.0 - 6.0	insulated ring lug	13.0	9.2	38.1	100
Fork / Spade terminals							
S1-3V	red	0.5 - 1.5	insulated fork lug	3.2	5.8	21.0	100
S1-3.5SV	red	0.5 - 1.5	insulated fork lug	3.7	5.8	21.0	100
S1-3.5MV	red	0.5 - 1.5	insulated fork lug	3.7	6.4	20.6	100
S1-4SV	red	0.5 - 1.5	insulated fork lug	4.3	6.4	20.6	100
S1-4MV	red	0.5 - 1.5	insulated fork lug	4.3	7.2	21.0	100
S1-5SV	red	0.5 - 1.5	insulated fork lug	5.3	8.0	21.0	100
S1-6SV	red	0.5 - 1.5	insulated fork lug	6.5	9.5	21.0	100
S2-3V	blue	1.5 - 2.5	insulated fork lug	3.2	5.8	21.0	100
S2-3.5SV	blue	1.5 - 2.5	insulated fork lug	3.7	5.8	21.0	100
S2-3.5MV	blue	1.5 - 2.5	insulated fork lug	3.7	6.4	21.0	100
S2-4SV	blue	1.5 - 2.5	insulated fork lug	4.3	6.4	21.0	100
S2-4LV	blue	1.5 - 2.5	insulated fork lug	4.3	8.5	22.0	100
S2-5SV	blue	1.5 - 2.5	insulated fork lug	5.3	8.5	22.0	100
S2-6SV	blue	1.5 - 2.5	insulated fork lug	6.5	9.5	22.0	100
S5-4SV	yellow	4.0 - 6.0	insulated fork lug	4.3	8.5	25.2	100
S5-5V	yellow	4.0 - 6.0	insulated fork lug	5.3	9.5	25.2	100
S5-6SV	yellow	4.0 - 6.0	insulated fork lug	6.5	9.5	25.2	100
Pin terminals							
PT1-10V	red	0.5 - 1.5	insulated pin lug	1.9	10.5	20.5	100
PT2-10V	blue	1.5 - 2.5	insulated pin lug	1.9	10.5	20.5	100
PT2-12V	blue	1.5 - 2.5	insulated pin lug	1.9	12.5	22.5	100
PT5-13V	yellow	4.0 - 6.0	insulated pin lug	2.8	13.7	26.2	100
Ferrule / butt connector							
BB1V	red	0.5 - 1.5	insulated ferrule	1.7	–	26.0	100
BB2V	blue	1.5 - 2.5	insulated ferrule	2.3	–	26.0	100
BB5V	yellow	4.0 - 6.0	insulated ferrule	2.3	–	26.0	100



	type	colour	wire size mm ²	description	dimensions (mm)			pack qty	
					d2	B	L		
Flat-blade terminal									
	BT1-10V	red	0.5 - 1.5	insulated flat blade lug	2.4	10.7	20.7	100	
	BT1-14V	red	0.5 - 1.5	insulated flat blade lug	3	14	24	100	
	BT1-18V	red	0.5 - 1.5	insulated flat blade lug	2.4	18	28	100	
	BT2-10V	blue	1.5 - 2.5	insulated flat blade lug	2.4	10.7	20.7	100	
	BT2-13V	blue	1.5 - 2.5	insulated flat blade lug	2.4	13	23	100	
	BT2-18V	blue	1.5 - 2.5	insulated flat blade lug	2.4	18	28	100	
	BT5-10V	yellow	4.0 - 6.0	insulated flat blade lug	2.8	10	22.5	100	
	BT5-18V	yellow	4.0 - 6.0	insulated flat blade lug	3	18	30.5	100	
	Hook-blade terminal								
		LB1-3V	red	0.5 - 1.5	insulated hook blade lug	3.0	18.0	28.0	100
LB1-4.6V		red	0.5 - 1.5	insulated hook blade lug	4.6	18.0	28.0	100	
LB2-3V		blue	1.5 - 2.5	insulated hook blade lug	3.0	18.0	28.0	100	
LB2-4.6V		blue	1.5 - 2.5	insulated hook blade lug	4.6	18.0	28.0	100	
LB5-3V		yellow	4.0 - 6.0	insulated hook blade lug	3.0	17.5	30.0	100	
LB5-4.6V		yellow	4.0 - 6.0	insulated hook blade lug	4.6	17.5	30.0	100	
Female disconnect terminals "push-on"									
		F1-2.8V/5	red	0.5 - 1.5	female disconnect	2.8	3.2	18.5	100
	F1-2.8VD/5*	red	0.5 - 1.5	female disconnect	2.8	3.2	18.5	100	
	F1-4.8V/5	red	0.5 - 1.5	female disconnect	4.8	5.0	19.0	100	
	F1-4.8VD/5*	red	0.5 - 1.5	female disconnect	4.8	5.0	19.0	100	
	F1-6.4V	red	0.5 - 1.5	female disconnect	6.4	6.6	21.0	100	
	F1-6.4VF	red	0.5 - 1.5	fully insulated disconnect	6.4	6.6	22.0	100	
	F1-6.4VD*	red	0.5 - 1.5	female disconnect	6.4	6.6	21.0	100	
	F1-6.4VQD*	red	0.5 - 1.5	fully insulated disconnect	6.4	6.6	21.5	100	
	F2-2.8VD/5*	blue	1.5 - 2.5	female disconnect	2.8	3.2	18.5	100	
	F2-4.8V/5	blue	1.5 - 2.5	female disconnect	4.8	5.0	19.0	100	
	F2-4.8VD/5*	blue	1.5 - 2.5	female disconnect	4.8	5.0	19.0	100	
	F2-6.4V	blue	1.5 - 2.5	female disconnect	6.4	6.6	21.0	100	
	F2-6.4VF	blue	1.5 - 2.5	fully insulated disconnect	6.4	6.6	22.0	100	
	F2-6.4VD*	blue	1.5 - 2.5	female disconnect	6.4	6.6	21.0	100	
	F2-6.4VQD*	blue	1.5 - 2.5	fully insulated disconnect	6.4	6.6	21.5	100	
	F2-8V	blue	1.5 - 2.5	female disconnect	8.0	8.4	24.0	100	
	F2-8VD*	blue	1.5 - 2.5	female disconnect	8.0	8.4	24.0	100	
	F5-6.4V	yellow	4.0 - 6.0	female disconnect	6.4	6.6	23.5	100	
	F5-6.4VD*	yellow	4.0 - 6.0	female disconnect	6.4	6.6	23.5	100	
	F5-6.4VQD*	yellow	4.0 - 6.0	fully insulated disconnect	6.4	6.6	24.5	100	
F5-9.5V	yellow	4.0 - 6.0	female disconnect	9.5	9.9	28.5	100		
F5-9.5VD*	yellow	4.0 - 6.0	female disconnect	9.5	9.9	28.5	100		
* Twin-grip crimp ■ Square entry / twin-grip / fully insulated									
Male disconnect terminals "push-on"									
	M1-2.8V/5	red	0.5 - 1.5	male disconnect	—	2.8	19.2	100	
	M1-2.8VD/5*	red	0.5 - 1.5	male disconnect	—	2.8	19.2	100	
	M1-4.8V/5	red	0.5 - 1.5	male disconnect	—	4.8	19.2	100	
	M1-4.8VD/5*	red	0.5 - 1.5	male disconnect	—	4.8	19.2	100	
	M1-6.4V	red	0.5 - 1.5	male disconnect	—	6.4	21.2	100	
	M1-6.4VD*	red	0.5 - 1.5	male disconnect	—	6.4	21.2	100	
	M2-2.8V/5	blue	1.5 - 2.5	male disconnect	—	2.8	19.2	100	
	M2-2.8VD/5*	blue	1.5 - 2.5	male disconnect	—	2.8	19.2	100	
	M2-4.8V/5	blue	1.5 - 2.5	male disconnect	—	4.8	19.2	100	
	M2-4.8VD/5*	blue	1.5 - 2.5	male disconnect	—	4.8	19.2	100	
	M2-6.4V	blue	1.5 - 2.5	male disconnect	—	4.8	21.2	100	
	M2-6.4VD*	blue	1.5 - 2.5	male disconnect	—	4.8	21.2	100	
	M5-6.4V	yellow	4.0 - 6.0	male disconnect	—	6.4	23.2	100	
	M5-6.4VD*	yellow	4.0 - 6.0	male disconnect	—	6.4	23.7	100	
	* Twin-grip crimp								



	type	colour	wire size mm ²	description	dimensions (mm)			pack qty	
					d2	B	L		
	Piggy back disconnect terminals "push-on"								
	PB1-6.4V	red		0.5 - 1.5	piggy-back disconnect	6.4	6.6	21.0	100
	PB1-6.4VD*	red		0.5 - 1.5	piggy-back disconnect	6.4	6.6	21.0	100
	PB2-6.4V	blue		1.5 - 2.5	piggy-back disconnect	6.4	6.6	21.0	100
	PB2-6.4VD*	blue		1.5 - 2.5	piggy-back disconnect	6.4	6.6	21.0	100
	PB5-6.4V	yellow		4.0 - 6.0	piggy-back disconnect	6.4	6.6	23.5	100
	PB5-6.4VD*	yellow		4.0 - 6.0	piggy-back disconnect	6.4	6.6	23.5	100
	* <i>Twin-grip crimp</i>								
	Male bullet disconnector								
	BD1-4V	red		0.5 - 1.5	male bullet disconnect	–	4.0	21.0	100
BD1-4VD*	red		0.5 - 1.5	male bullet disconnect	–	4.0	21.0	100	
BD2-5V	blue		1.5 - 2.5	male bullet disconnect	–	5.0	21.0	100	
BD2-5VD*	blue		1.5 - 2.5	male bullet disconnect	–	5.0	21.0	100	
BD5-5V	yellow		4.0 - 6.0	male bullet disconnect	–	5.0	23.0	100	
BD5-5VD*	yellow		4.0 - 6.0	male bullet disconnect	–	5.0	23.0	100	
* <i>Twin-grip crimp</i>									
Female bullet disconnector									
RE1-4VF	red		0.5 - 1.5	female bullet disconnect	–	4.0	22.0	100	
RE1-4VFD*	red		0.5 - 1.5	female bullet disconnect	–	4.0	22.5	100	
RE2-5VF	blue		1.5 - 2.5	female bullet disconnect	–	5.0	23.5	100	
RE2-5VFD*	blue		1.5 - 2.5	female bullet disconnect	–	5.0	23.5	100	
RE5-5VF	yellow		4.0 - 6.0	female bullet disconnect	–	5.0	25.5	100	
RE5-5VFD*	yellow		4.0 - 6.0	female bullet disconnect	–	5.0	25.0	100	
* <i>Twin-grip crimp</i>									
Quick-splice connectors									
SP1	red		0.5 - 1.5	quick-splice connector	–	20.0	26.8	100	
SP2	blue		1.5 - 2.5	quick-splice connector	–	20.0	26.8	100	
SP5	yellow		4.0 - 6.0	quick-splice connector	–	20.0	35.0	100	
Insulated cord-end (boot lace) terminals									
CE007508F	blue		0.75	cord-end terminal	1.2	14.0	8.0	500	
CE010010F	red		1.0	cord-end terminal	1.4	16.0	10.0	500	
CE015010F	black		1.5	cord-end terminal	1.7	16.0	10.0	500	
CE025012F	grey		2.5	cord-end terminal	2.2	18.0	12.0	500	
CE040012F	orange		4.0	cord-end terminal	2.8	20.0	12.0	500	
CE060012F	green		6.0	cord-end terminal	3.5	20.0	12.0	500	
CE100012F	brown		10.0	cord-end terminal	4.5	22.0	12.0	500	
CE160012F	ivory		16.0	cord-end terminal	5.8	24.0	12.0	500	
CE250016F	black		25.0	cord-end terminal	7.3	30.0	16.0	500	
Category-M									
Crimping tools for pre-insulated terminals									
<ul style="list-style-type: none"> • Crimping profiles for different wire cross-sections (<i>red/blue/yellow</i>) • With ratchet closing control 									
JSL 1305-1	universal crimping tool for: red / blue / yellow pre-insulated terminals								
Crimpfit IT6L	universal high quality "made in Germany" crimping tool for pre-insulated terminals								

see page
M-3 for
info

Insulated crimping lugs for copper conductors

ANE-M series lugs manufactured from electrolytic copper tube annealed and tin plated, designed to obtain the most efficient electrical conductivity and mechanical strength to resist vibration and pull out.

- Material: Electrolytic Copper - Insulated sleeve: PA6.6 (-20 to 115°C)
- Interior of sleeve funnel shaped to ensure complete and easy introduction of conductor strands

type	cable (mm ²)	Ø stud (mm)	palm width (mm)	description	std pack qty
ANE-M series - Insulated crimping lugs					
ANE2-M4	10	4.3	10	heavy duty ins. ring lug	100
ANE2-M5	10	5.3	10	heavy duty ins. ring lug	100
ANE2-M6	10	6.4	11	heavy duty ins. ring lug	100
ANE2-M8	10	8.4	15	heavy duty ins. ring lug	100
ANE3-M4	16	4.3	11.5	heavy duty ins. ring lug	100
ANE3-M5	16	5.3	11.5	heavy duty ins. ring lug	100
ANE3-M6	16	6.4	11.5	heavy duty ins. ring lug	100
ANE3-M8	16	8.4	15	heavy duty ins. ring lug	100
ANE5-M5	25	5.3	14	heavy duty ins. ring lug	100
ANE5-M6	25	6.4	14	heavy duty ins. ring lug	100
ANE5-M8	25	8.4	15	heavy duty ins. ring lug	100
ANE5-M10	25	10.5	18	heavy duty ins. ring lug	100
ANE7-M6	35	6.4	17	heavy duty ins. ring lug	50
ANE7-M8	35	8.4	17	heavy duty ins. ring lug	50
ANE7-M10	35	10.5	19	heavy duty ins. ring lug	50
ANE7-M12	35	13.2	21	heavy duty ins. ring lug	50
ANE10-M6	50	6.4	19	heavy duty ins. ring lug	50
ANE10-M8	50	8.4	19	heavy duty ins. ring lug	50
ANE10-M10	50	10.5	20	heavy duty ins. ring lug	50
ANE10-M12	50	13.2	21	heavy duty ins. ring lug	50
ANE-U series - Insulated fork lugs					
ANE2-U4	10	4.3	9.8	heavy ins. duty fork lug	100
ANE2-U5	10	5.3	11.5	heavy ins. duty fork lug	100
ANE3-U4	16	4.3	10.0	heavy ins. duty fork lug	100
ANE3-U5	16	5.3	11.5	heavy ins. duty fork lug	100
ANE-P series - Insulated pin lugs					
ANE2-P12	10	L-14	4.3	heavy duty pin lug	100
ANE3-P14	16	L-18	5.5	heavy duty pin lug	100
ANE5-P16	25	L-20	7.0	heavy duty pin lug	100
ANE7-P20	35	L-24	8.0	heavy duty pin lug	50



ANE3-M8



ANE3-U5



ANE7-P20

Crimping lugs for copper conductors

A-M series lugs are manufactured from electrolytic copper tube annealed and tin plated, designed to obtain the most efficient electrical conductivity and mechanical strength to resist vibration and pull out.

• Material: Electrolytic Copper - annealed and Tin plated

type	cable (mm ²)	Ø stud (mm)	palm width (mm)	description	std pack qty
A03-M4	1.5	4.3	6.5	heavy duty crimping lug	100
A03-M5	1.5	5.3	7.5	heavy duty crimping lug	100
A03-M6	1.5	6.4	9.0	heavy duty crimping lug	100
A06-M4	2.5	4.3	7.5	heavy duty crimping lug	100
A06-M5	2.5	5.3	8.5	heavy duty crimping lug	100
A06-M6	2.5	6.4	9.0	heavy duty crimping lug	100
A1-M4	4-6	4.3	8.0	heavy duty crimping lug	100
A1-M5	4-6	5.3	9.0	heavy duty crimping lug	100
A1-M6	4-6	6.4	11.0	heavy duty crimping lug	100
A2-M4	10	4.3	10	heavy duty crimping lug	100
A2-M5	10	5.3	10	heavy duty crimping lug	100
A2-M6	10	6.4	11	heavy duty crimping lug	100
A2-M8	10	8.4	15	heavy duty crimping lug	100
A3-M4	16	4.3	11.5	heavy duty crimping lug	100
A3-M5	16	5.3	11.5	heavy duty crimping lug	100
A3-M6	16	6.4	11.5	heavy duty crimping lug	100
A3-M8	16	8.4	15	heavy duty crimping lug	100
A5-M6	25	6	14	heavy duty crimping lug	100
A5-M8	25	8	15	heavy duty crimping lug	100
A5-M10	25	10	18	heavy duty crimping lug	100
A5-M12	25	12	21	heavy duty crimping lug	100
A7-M6	35	6	17	heavy duty crimping lug	100
A7-M8	35	8	17	heavy duty crimping lug	100
A7-M10	35	10	19	heavy duty crimping lug	100
A7-M12	35	10	21	heavy duty crimping lug	50
A10-M6	50	6	19	heavy duty crimping lug	50
A10-M8	50	8	19	heavy duty crimping lug	50
A10-M10	50	10	20	heavy duty crimping lug	50
A10-M12	50	12	21	heavy duty crimping lug	50
A14-M8	70	8	21	heavy duty crimping lug	50
A14-M10	70	10	21	heavy duty crimping lug	50
A14-M12	70	12	22	heavy duty crimping lug	50
A14-M16	70	16	26	heavy duty crimping lug	50
A19-M10	95	10	25	heavy duty crimping lug	25
A19-M12	95	12	25	heavy duty crimping lug	25
A19-M16	95	16	27	heavy duty crimping lug	25
A24-M10	120	10	28.5	heavy duty crimping lug	25
A24-M12	120	12	28.5	heavy duty crimping lug	25
A24-M16	120	16	28.5	heavy duty crimping lug	25
A30-M10	150	10	31.5	heavy duty crimping lug	25
A30-M12	150	12	31.5	heavy duty crimping lug	25
A30-M16	150	16	31.5	heavy duty crimping lug	25
A37-M10	185	10	35.5	heavy duty crimping lug	20
A37-M12	185	12	35.5	heavy duty crimping lug	20
A37-M16	185	16	35.5	heavy duty crimping lug	15
A48-M12	240	12	39	heavy duty crimping lug	15
A48-M16	240	16	39	heavy duty crimping lug	15
A48-M20	240	20	39	heavy duty crimping lug	15

Contained palm crimping lugs

These crimping lugs feature a contained palm width, specifically designed for LV circuit breakers with reduced space termination. The contained palm permits immediate and easier installation.

A19B-M8/15.5	95	M8	15.5	contained palm cable lug	25
A24B-M8/19	120	M8	19.0	contained palm cable lug	25
A30B-M8/19	150	M8	19.0	contained palm cable lug	25
A37B-M10/24.5	185	M10	24.5	contained palm cable lug	25
A48-M10/31	240	M10	31.0	contained palm cable lug	15





L-M uninsulated through connectors (ferrules)

type	cable (mm ²)	length (mm)	description	pack qty
L03-M	1.5	L-15	heavy duty crimp ferrules	100
L06-M	2.5	L-15	heavy duty crimp ferrules	100
L1-M	4 - 6	L-22	heavy duty crimp ferrules	100
L2-M	10	L-25	heavy duty crimp ferrules	100
L3-M	16	L-27	heavy duty crimp ferrules	100
L5-M	25	L-29	heavy duty crimp ferrules	100
L7-M	35	L-33	heavy duty crimp ferrules	100
L10-M	50	L-37	heavy duty crimp ferrules	50
L14-M	70	L-39	heavy duty crimp ferrules	50
L19-M	95	L-43	heavy duty crimp ferrules	25
L24-M	120	L-47	heavy duty crimp ferrules	25
L30-M	150	L-58	heavy duty crimp ferrules	25
L37-M	185	L-64	heavy duty crimp ferrules	25
L48-M	240	L-75	heavy duty crimp ferrules	15

Category-M

Hydraulic crimping / cutting tools

type	for terminals	conductor (mm ²)	crimping force (kN)	description
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HT and TC series - Hydraulic tools

lightweight and compact

- Spring loaded handles, dies can be advanced using only one hand
- Pressure release system can easily be operated at any stage of compression
- Supplied with sturdy plastic carrying case for tool with compartments for die sets
- For ease of operation and comfort of operator, tool head can be fully rotated 180°

see page
M-5 for
info

HT45 - Compact hydraulic crimping tool

HT45-E	die dependant	max. 150	50 kN	hydraulic crimping tool
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HT51 - 2 speed hydraulic crimping tool

- Supplied with sturdy plastic carrying case for tool and *(included)* die sets: ME 5-50, 7-50, 10-50, 14-50, 19-50, 24-50, 30-50, 37-50

KITH51-1	die dependant	max. 240	50 kN	hydraulic crimping tool
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HT131 - Hydraulic crimping tool for semi-circular slotted dies

- Supplied with sturdy plastic carrying case for tool and *(included)* die sets: ME 10-C, 14-C, 19-C, 24-C, 30-C, 37-C, 48-C

KITH131-C-1	die dependant	max. 400	130 kN	hydraulic crimping tool
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new



PMGB12-5



PMGB16-7B



PMGB25-18



PMGB40-32



MGM32-22



PPGA20-E-14B



PHPM20B

Cable glands (compression)

Thread: Metric
 Protection degree: IP68-10
 Material: Body: Nylon PA66 UL approved (*Flammability UL94V-2*) Seal: EPDM
 Ambient temperature: -40°C...+100°C (*instantaneous heat resistance up to 120°C*)

type	AG (mm)	thread length	compress area (mm)	colour	description
M - Metric thread cable glands (supplied with locknut)					
PMGB12-5	M12	8.5 mm	3-5.5	light grey	Metric compression gland
PMGB16-7	M16	10 mm	3-7	light grey	Metric compression gland
PMGB18-10	M18	10 mm	6-10	light grey	Metric compression gland
PMGB20-13.5	M20	10 mm	9-14	light grey	Metric compression gland
PMGB25-18	M25	12 mm	13-18	light grey	Metric compression gland
PMGB32-25	M32	12 mm	18-25	light grey	Metric compression gland
PMGB40-32	M40	15 mm	24-32	light grey	Metric compression gland
PMGB50-41	M50	15 mm	31-41	light grey	Metric compression gland
PMGB63-45	M63	18 mm	35-45	light grey	Metric compression gland
PMGB12-5B	M12	8.5 mm	3-6.5	black	Metric compression gland
PMGB16-7B	M16	10 mm	4-8	black	Metric compression gland
PMGB18-10B	M18	10 mm	6-10	black	Metric compression gland
PMGB20-13.5B	M20	10 mm	9-14	black	Metric compression gland
PMGB25-18B	M25	12 mm	13-18	black	Metric compression gland
PMGB32-25B	M32	12 mm	18-25	black	Metric compression gland
PMGB40-32B	M40	15 mm	26-31	black	Metric compression gland
PMGB50-41B	M50	15 mm	26-31	black	Metric compression gland
PMGB63-45B	M63	18 mm	35-45	black	Metric compression gland
PG - Thread cable glands (supplied with locknut)					
PPGB7-5B	12.5	8 mm	3-5.5	black	PG compression gland
PPGB9-8B	15.2	8 mm	4-8	black	PG compression gland
PPGB11-10B	18.6	10 mm	6-10	black	PG compression gland
PPGB13.5-12B	20.4	10 mm	7-12.5	black	PG compression gland
PPGB16-11B	22.5	11 mm	6-11	black	PG compression gland
PPGB19-14B	24	11 mm	8.5-14	black	PG compression gland
PPGB21-18B	28.3	12 mm	12-18	black	PG compression gland
Metal cable glands (supplied with locknut)					
Material:	Body:	Nickel plated brass			
	Seal:	Nylon PA66, EPDM rubber			
MGM8-4.5	M8	4 mm	3-4.5	nickel	metal compression gland
MGM12-6.5	M12	6.5 mm	3-6.5	nickel	metal compression gland
MGM16-8	M16	8 mm	4-8	nickel	metal compression gland
MGM18-10	M18	8 mm	5-10	nickel	metal compression gland
MGM20-12	M20	8 mm	6-12	nickel	metal compression gland
MGM22-14	M22	8 mm	10-14	nickel	metal compression gland
MGM25-16	M25	9 mm	10-16	nickel	metal compression gland
MGM32-22	M32	10 mm	15-22	nickel	metal compression gland
MGM40-30	M40	11 mm	22-30	nickel	metal compression gland
MGM50-38	M50	13 mm	32-38	nickel	metal compression gland
MGM63-44	M63	14 mm	37-44	nickel	metal compression gland
90° Degree cable glands (supplied with locknut)					
Material:	Nylon PA66 UL approved (<i>Flammability UL94V-2</i>)				
PPGA16-E-08B	M16	10 mm	4-7	black	90° compression gland
PPGA20-E-14B	M20	15 mm	9-14	black	90° compression gland
PPGA25-E-18B	M25	15 mm	13-18	black	90° compression gland
PPGA32-E-25B	M32	15 mm	18-25	black	90° compression gland
Nylon hole plugs (supplied with locknut)					
Material:	Nylon PA66 UL approved (<i>Flammability UL94V-2</i>)				
PHPM12B	M12	9.5 mm	-	black	screw-in blanking plugs
PHPM16B	M16	10 mm	-	black	screw-in blanking plugs
PHPM20B	M20	11 mm	-	black	screw-in blanking plugs
PHPM22B	M22	11 mm	-	black	screw-in blanking plugs
PHPM25B	M25	11 mm	-	black	screw-in blanking plugs
PHPM32B	M32	11 mm	-	black	screw-in blanking plugs
PHPM40B	M40	12 mm	-	black	screw-in blanking plugs
PHPM50B	M50	12 mm	-	black	screw-in blanking plugs
PHPM63B	M63	12 mm	-	black	screw-in blanking plugs

new



PSRM16-P-10B



WLCM20S-7B



PLNM16B



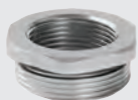
PVM8



MVM12



EAM16/M20H



RAM32/M25H

Wiring accessories

type	AG (mm)	thread length	compress area (mm)	colour	description
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Strain relief cable glands (supplied with locknut) (IP68-10)

Material: Nylon PA66 UL approved (Flammability UL94V-2)

PSRM12-P-7B	M12	8.5mm	4-7	black	nylon strain relief gland
PSRM16-P-10B	M16	10mm	6-10	black	nylon strain relief gland
PSRM20S-P-12B	M20	10mm	6-12.5	black	nylon strain relief gland

Waterproof in-line connector (IP68-10)

Material: Nylon PA66 UL approved (Flammability UL94V-2) seal: EPDM
Ambient temperature: -40°C...+100°C (instantaneous heat resistance up to 120°C)

WLCM20S-7B	M20	3 pole	4-7	black	waterproof connector
WLCM20S-11B	M20	3 pole	6-11	black	waterproof connector
WLCM25-16B	M25	4 pole	10-16	black	waterproof connector
WLCM25-18B	M25	4 pole	13-19	black	waterproof connector

Plastic locknuts (metric)

PLNM12B	M12	locknut		black	nylon metric locknut (only)
PLNM16B	M16	locknut		black	nylon metric locknut (only)
PLNM20B	M20	locknut		black	nylon metric locknut (only)
PLNM22B	M22	locknut		black	nylon metric locknut (only)
PLNM25B	M25	locknut		black	nylon metric locknut (only)
PLNM32B	M32	locknut		black	nylon metric locknut (only)
PLNM40B	M40	locknut		black	nylon metric locknut (only)
PLNM50B	M50	locknut		black	nylon metric locknut (only)
PLNM63B	M63	locknut		black	nylon metric locknut (only)

Vent plugs (pressure equalisation for sealed enclosures) (IP68-10)

Incorporates an internal PTFE-membrane, designed to balance internal enclosure temperature with external ambient, avoiding internal condensation without compromising the IP rating of the enclosure.

Influent pressure: >5 Bar
Temperature: -50°C...+120°C

type	AG (mm)	influent pressure	compress area (mm)	colour	description
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Nylon PA66 UL approved (Flammability UL94V-2)

PVM8	M8	>5 bar	Ap 150-350	light grey	screw-in vent plugs
PVM12	M12	>5 bar	Ap 150-350	light grey	screw-in vent plugs
PVM16	M16	>5 bar	Ap 150-350	light grey	screw-in vent plugs
PVM8B	M8	>5 bar	Ap 150-350	black	screw-in vent plugs
PVM12B	M12	>5 bar	Ap 150-350	black	screw-in vent plugs
PVM16B	M16	>5 bar	Ap 150-350	black	screw-in vent plugs

Nickel plated brass

MVM8	M8	>5 bar	Ap 150-350	nickel	screw-in vent plugs
MVM12	M12	>5 bar	Ap 150-350	nickel	screw-in vent plugs
MVM16	M16	>5 bar	Ap 150-351	nickel	screw-in vent plugs

Adaptors (metallic) enlargers / reducers

type	from male	to female	thread length	colour	description
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• Nickel plated brass

Enlargement adaptors

EAM12/M16H	M12	M16	6 mm	nickel	M enlargement adaptors
EAM16/M20H	M16	M20	6 mm	nickel	M enlargement adaptors
EAM20/M25H	M20	M25	6.5 mm	nickel	M enlargement adaptors
EAM25/M32H	M25	M32	7.5 mm	nickel	M enlargement adaptors
EAM32/M40H	M32	M40	8 mm	nickel	M enlargement adaptors
EAM40/M50H	M40	M50	9 mm	nickel	M enlargement adaptors

RAM16/M12H	M16	M12	6 mm	nickel	M reduction adaptors
RAM20/M16H	M20	M16	6 mm	nickel	M reduction adaptors
RAM25/M20H	M25	M20	6.5 mm	nickel	M reduction adaptors
RAM32/M25H	M32	M25	7.5 mm	nickel	M reduction adaptors
RAM40/M32H	M40	M32	8 mm	nickel	M reduction adaptors
RAM50/M40H	M50	M40	9 mm	nickel	M reduction adaptors

Wiska **SPRINT** cable glands provide ultimate protection from environmental conditions

Suitable for extreme outdoor installations. -40 - +100°C

- Protection: **IP68** to EN 60520 / **IP69K** to DIN 40 050-T9
- UV resistant: Type A, ISO 4892-2, UL-file QCRV2.E179850
- Flame protection: Glow wire test 750° acc.to EN60695-2-11
- Self-locking cap nut thread offering vibration protection
- Increased wall thickness for greater stability
- Smooth internal channel preventing cable jam on insertion
- Claw shape provides large sealing area and excellent adaptation to irregular cable profiles
- Material: Gland - Polyamide
Gasket - EPDM (*highly resistant to chemicals, environment and ultraviolet*)

Metric cable glands *grey (or) black*

type	thread diameter	compress area (mm)	description	dimensions (mm)		
				(TL)	(L)	(SW)

ESKV light grey RAL 7035 • Locknut to be ordered separately

10066410	M12 X 1.5	3 - 7	compression gland (<i>grey</i>)	29 - 43	9	16
10066411	M16 X 1.5	4.5 - 10	compression gland (<i>grey</i>)	31 - 37	9	20
10066412	M20 X 1.5	6 - 13	compression gland (<i>grey</i>)	36 - 45	10	24
10066413	M25 X 1.5	9 - 17	compression gland (<i>grey</i>)	38 - 47	10	29
10066414	M32 X 1.5	13 - 21	compression gland (<i>grey</i>)	42 - 51	12	36
10066415	M40 X 1.5	16 - 28	compression gland (<i>grey</i>)	52 - 65	12	46
10066416	M50 X 1.5	21 - 35	compression gland (<i>grey</i>)	59 - 72	14	55
10066417	M63 X 1.5	34 - 48	compression gland (<i>grey</i>)	64 - 78	15	68

EMUG locknuts for above Material: *Light grey Polyamide/glassfibre reinforced*

10060770	M12 x 1.5	-	gland locknut (<i>grey</i>)	-	-	18
10060771	M16 x 1.5	-	gland locknut (<i>grey</i>)	-	-	22
10060772	M20 x 1.5	-	gland locknut (<i>grey</i>)	-	-	27
10060773	M25 x 1.5	-	gland locknut (<i>grey</i>)	-	-	32
10060774	M32 x 1.5	-	gland locknut (<i>grey</i>)	-	-	40
10060775	M40 x 1.5	-	gland locknut (<i>grey</i>)	-	-	50
10060776	M50 x 1.5	-	gland locknut (<i>grey</i>)	-	-	60
10060777	M63 x 1.5	-	gland locknut (<i>grey</i>)	-	-	75

ESKV black RAL 9005 • Locknut to be ordered separately

10066120	M12 x 1.5	3 - 7	compression gland (<i>black</i>)	29 - 43	9	16
10066121	M16 x 1.5	4.5 - 10	compression gland (<i>black</i>)	31 - 37	9	20
10066122	M20 x 1.5	6 - 13	compression gland (<i>black</i>)	36 - 45	10	24
10066123	M25 x 1.5	9 - 17	compression gland (<i>black</i>)	38 - 47	10	29
10066124	M32 x 1.5	13 - 21	compression gland (<i>black</i>)	42 - 51	12	36
10066125	M40 x 1.5	16 - 28	compression gland (<i>black</i>)	52 - 65	12	46
10066126	M50 x 1.5	21 - 35	compression gland (<i>black</i>)	59 - 72	14	55
10066127	M63 x 1.5	34 - 48	compression gland (<i>black</i>)	64 - 78	15	68

EMUG locknuts for above Material: *Black polyamide/glassfibre reinforced*

10061780	M12 x 1.5	-	gland locknut (<i>black</i>)	-	-	18
10061781	M16 x 1.5	-	gland locknut (<i>black</i>)	-	-	22
10061782	M20 x 1.5	-	gland locknut (<i>black</i>)	-	-	27
10061783	M25 x 1.5	-	gland locknut (<i>black</i>)	-	-	32
10061784	M32 x 1.5	-	gland locknut (<i>black</i>)	-	-	40
10061785	M40 x 1.5	-	gland locknut (<i>black</i>)	-	-	50
10061786	M50 x 1.5	-	gland locknut (<i>black</i>)	-	-	60
10061787	M63 x 1.5	-	gland locknut (<i>black</i>)	-	-	75

EMSKV Metal cable glands • Locknut to be ordered separately

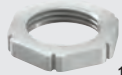
• Material:		Cable gland: Nickle-plated brass		polyamide		
10065000	M12 x 1.5	3 - 7	metal compression gland	23 - 30	5	16
10065001	M16 x 1.5	4.5 - 10	metal compression gland	26 - 34	5	20
10065002	M20 x 1.5	6 - 13	metal compression gland	29 - 37	6	24
10065003	M25 x 1.5	9 - 17	metal compression gland	33 - 42	7	29
10065004	M32 x 1.5	13 - 21	metal compression gland	36 - 44	8	36
10065005	M40 x 1.5	16 - 28	metal compression gland	44 - 55	8	46
10065006	M50 x 1.5	21 - 35	metal compression gland	51 - 62	9	55
10065007	M63 x 1.5	34 - 48	metal compression gland	56 - 67	10	68

EMMU locknuts for above Material: *Nickle-plated brass*

10063141	M12 x 1.5	-	metal gland locknut	-	-	15
10063142	M16 x 1.5	-	metal gland locknut	-	-	19
10063143	M20 x 1.5	-	metal gland locknut	-	-	24
10063144	M25 x 1.5	-	metal gland locknut	-	-	30
10063145	M32 x 1.5	-	metal gland locknut	-	-	36
10063146	M40 x 1.5	-	metal gland locknut	-	-	46
10063147	M50 x 1.5	-	metal gland locknut	-	-	60
10063148	M63 x 1.5	-	metal gland locknut	-	-	70



10066413



10060773



10066123



10061783



10065003



10063144



10102369



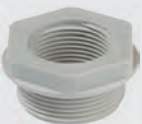
10060802



10101862



10063573



10063582



10063664

Venting (pressure equalization for sealed enclosures) *Polyamide*

Vent plugs/glands incorporate an internal membrane, designed to release pressure in enclosures caused by differing internal temperatures to the outside ambient, without compromising the IP rating of the enclosure.

- Waterproof and dustproof level: IP68, IP69K
- UV resistant: Type A, ISO 4892-2, UL-file QCRV2.E179850
- Long service life in extreme environments
- Reduces fogging and internal condensation, improves heat emission efficiency in sealed enclosures

type	model	thread Ø	colour	description	compress area (mm)	dimensions (mm) (TL) (L) (SW)		
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VentPLUG (stopper and pressure equalisation element in one)

10102369	EVPS 12	M12	■ grey	vent plug	-	17.4	9	16
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VentGLAND (compression gland and pressure equalisation element in one)

10060974	ESVG 20	M20	■ grey	vent gland	6 - 13	41-50	10	24
10100666	ESVG 25	M25	■ grey	vent gland	9 - 17	45-54	10	29
10100801	ESVG 32	M32	■ grey	vent gland	13 - 21	49-58	12	36
10060802	ESVG 20	M20	■ black	vent gland	6 - 13	41-50	10	24
10100667	ESVG 25	M25	■ black	vent gland	9 - 17	45-54	10	29
10100802	ESVG 32	M32	■ black	vent gland	13 - 21	49-58	12	36

CLIXX - Membrane cable entry with strain relief

- Reliable sealing: IP66 and IP67 to EN 60 529 weather proof, UV resistant
- Space-saving: Flat design, minimal space requirement
- Easiest assembly: External mounting from one side only - no thread, no tools, no locknuts
- Incorporated: Strain relief to EN 50 262 Type A
- Time-saving: Simple one-hand-only assembly reduces installation time by 80%
- For wall thickness: 0.8 - 3.5 mm
- Economically priced: Can also be used as a sealing plug
- Material: Polypropylene / Thermoplastic elastomere -40°C to 65°C

10101861	CLIXX 16	M16	4 - 10	membrane cable entry with strain relief	0
10101359	CLIXX 20	M20	6 - 13	membrane cable entry with strain relief	0
10101862	CLIXX 25	M25	9 - 17	membrane cable entry with strain relief	0

Adaptors (Plastic)

- Temperature range: -40°C to 100°C
- Material: Polyamide, reinforced glass fibre

type	model	from male	to female	description	TL (mm)
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Enlargement adaptors

metric - metric

10063570	KEM 12/16	M12	M16	enlarge adaptor	27
10063571	KEM 16/20	M16	M20	enlarge adaptor	27
10063572	KEM 20/25	M20	M25	enlarge adaptor	27
10063573	KEM 25/32	M25	M32	enlarge adaptor	28
10063574	KEM 32/40	M32	M40	enlarge adaptor	30
10063575	KEM 40/50	M40	M50	enlarge adaptor	30

Reduction adaptors

metric - metric

10063577	KRM 16/12	M16	M12	reduction adaptor	16
10063579	KRM 20/16	M20	M16	reduction adaptor	17
10063582	KRM 25/20	M25	M20	reduction adaptor	17
10063584	KRM 32/20	M32	M20	reduction adaptor	19
10063585	KRM 32/25	M32	M25	reduction adaptor	19
10063588	KRM 40/32	M40	M32	reduction adaptor	19
10063591	KRM 50/40	M50	M40	reduction adaptor	21

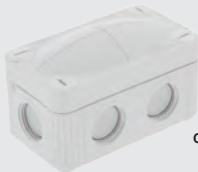
PG - metric adaptors

10063650	APM 7/12	PG 7	M12	metric - PG adaptor	27
10063653	APM 9/16	PG 9	M16	metric - PG adaptor	27
10063655	APM 11/16	PG 11	M16	metric - PG adaptor	27
10063659	APM 13.5/20	PG 13.5	M20	metric - PG adaptor	28
10063661	APM 16/20	PG 16	M20	metric - PG adaptor	28
10063662	APM 16/25	PG 16	M25	metric - PG adaptor	28
10063664	APM 21/25	PG 21	M25	metric - PG adaptor	30
10063667	APM 29/32	PG 29	M32	metric - PG adaptor	19
10063670	APM 36/40	PG 36	M40	metric - PG adaptor	21
10063673	APM 42/40	PG 42	M40	metric - PG adaptor	21

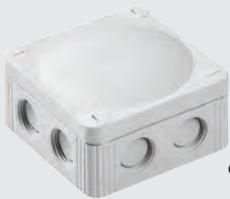
new



COMBI 116



COMBI 206



COMBI 308



COMBI 407



10062...



10064...

Junction boxes (IP66/67)

Wiska COMBI junction boxes provide ultimate protection from environmental conditions in a compact, very attractive format, suitable for extreme outdoor installations.

- **Weather proof - ultraviolet resistant - shatterproof - impact resistant - flame retardant - halogen free**
- **Mounting:** Holes located outside the sealing area but within the lid
- **Material:** Polypropylene, reinforced glass fiber, sealing: thermoplastic elastomer
- **Colour:** RAL 7035 (*light grey*) or RAL 9005 (*black*)

type	cable entry		thread Ø	colour	description	dimensions (mm)		
	sides	rear				(H)	(W)	(D)

Push-on lid/cover IP66 Push-on lid/cover - for easy access to internal wiring

- Cable entry: Elastic self-sealing puncture-membranes for cable entry on sides and in the base

type	cable entry sides	cable entry rear	thread Ø	colour	description	(H)	(W)	(D)
COMBI 108			IP66		<i>(push-on lid/cover)</i>			
10060522	10	2	–	■ grey	weatherproof junction box	76	76	51
COMBI 116			IP66		<i>(push-on lid/cover)</i>			
10109563	18	4	–	■ grey	weatherproof junction box	152	76	51

Screw-on lid/cover IP66 - IP67 (when used with cable gland)

- Captive rust free quick release (*1/4 turn*) lid screws of plastic
- Patented combination of: a) - Integrated thread for Metric cable gland entry without locknuts
 b) - Elastic self-sealing puncture-membrane for cable entry on the sides

type	cable entry sides	cable entry rear	thread	colour	description	(H)	(W)	(D)
COMBI 206			IP66/67		<i>(captive - quick release lid screws)</i>			
10109569	6	2	M20	■ grey	weatherproof junction box	85	49	51
COMBI 308			IP66/67		<i>(captive - quick release lid screws)</i>			
10060400	8	–	M20	■ grey	weatherproof junction box	85	85	51
10060581	8	–	M20	■ black	weatherproof junction box	85	85	51
COMBI 407			IP66/67		<i>1 x M20 cable entry can be knocked-out for M25 entry</i>			
10105595	7	2	M20	■ grey	weatherproof junction box	95	95	60
10105601	7	2	M20	■ black	weatherproof junction box	95	95	60
COMBI 607			IP66/67		<i>M20 cable entries can also be knocked-out for M25 entries</i>			
10060531	7	3	M25	■ grey	weatherproof junction box	110	110	66
10060648	7	3	M25	■ black	weatherproof junction box	110	110	66
COMBI 1210			IP66/67		<i>(captive - quick release lid screws)</i>			
10101459	10	4	M20	■ grey	weatherproof junction box	160	140	81
10101460	10	4	M20	■ black	weatherproof junction box	160	140	81

Accessories for above junction boxes

10109800	ZER 4-12	strain relief ring for securing cable internally	(10 pcs)
22001132	SP-HKT 11/5	5 pole internal mounting terminal for COMBI 108/116/206/308/407	
22000407	SP-HKT607	5 pole internal mounting terminal for COMBI 308/407/607/1210	
10108836		external mounting feet for COMBI 308/407/607/1210	

SPRINT cable glands

SPRINT cable glands can be further enhanced to be applied for diverse applications by the introduction of various special inserts for blind, reduced cable diameters, multiple cable sealing.

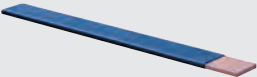
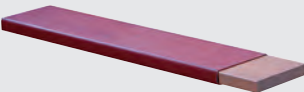
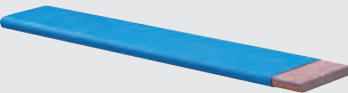
type	model	for gland	compress area (mm)	description	TL (mm)
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Reduction sealing inserts for reduced cable diameters with existing gland

10062183	RDE 12	M12	1 - 3	gland reduction sealing inserts	–
10062184	RDE 16	M16	2 - 6	gland reduction sealing inserts	–
10062185	RDE 20	M20	4 - 8	gland reduction sealing inserts	–
10060768	RDE 25	M25	7 - 12	gland reduction sealing inserts	–
10062186	RDE 32	M32	9 - 14	gland reduction sealing inserts	–
10062187	RDE 40	M40	12 - 20	gland reduction sealing inserts	–

Blind plugs for glands for seal tight of unused cable inlets or multiple sealing inserts

10064000	BS 2	2 mm		gland blind plugs	12
10064002	BS 4	4 mm		gland blind plugs	12
10064004	BS 6	6 mm		gland blind plugs	16
10064005	BS 7	7 mm		gland blind plugs	16
10064008	BS 10	10 mm		gland blind plugs	16
10064010	BS 13	13 mm		gland blind plugs	22
10064012	BS 17	17 mm		gland blind plugs	22
10064014	BS 21	21 mm		gland blind plugs	22



Heat shrink tubing

Provides an effective halogen-free, flexible, flame retardant, abrasion resistant insulation protection for cables and busbars in electrical and electronics applications.

type	inside dia Ø	shrink ratio	after recovery		description	roll length (meters)
			dia Ø	wall thickness		

CB-HFT - Halogen free heat-shrinkable tubing

General purpose heat shrink tubing for use in enclosed areas where a flame retardant, halogen-free environment is required.

- Material: Polyolefin
- Colour: Black (other colours available on request)
- Shrink temperature: 90°C
- Operating temperature: -55°C - 125°C

CB-HFT015-0	1.5 mm	3:1	0.5	≤ 0.40 mm	heat shrink tubing	200 m
CB-HFT030-0	3 mm	3:1	1.0	≤ 0.55 mm	heat shrink tubing	200 m
CB-HFT060-0	6 mm	3:1	2.0	≤ 0.60 mm	heat shrink tubing	100 m
CB-HFT090-0	9 mm	3:1	3.0	≤ 0.70 mm	heat shrink tubing	100 m
CB-HFT120-0	12 mm	3:1	4.0	≤ 0.70 mm	heat shrink tubing	100 m
CB-HFT180-0	18 mm	3:1	6.0	≤ 0.80 mm	heat shrink tubing	100 m
CB-HFT240-0	24 mm	3:1	8.0	≤ 1.00 mm	heat shrink tubing	50 m
CB-HFT390-0	39 mm	3:1	13.0	≤ 1.25 mm	heat shrink tubing	25 m

Other colours (replace last digit "0" with: "R" (red) "B" (blue) "W" (white))

CYGBT-1KV heat-shrinkable bus bar insulation protection (medium wall)

Track resistant polyolefin heat-shrinkable bus bar tubing used to protect and insulate rectangular, square or round bus bars – halogen free, low smoke.

Busbar tubing calculation: add four sides and divide by 3.4+10%

- Material: Polyolefin
- Colour: Black (other colours available on request)
- Shrink ratio: 2.5:1
- Shrink temperature: 110°C
- Tensile strength: ≥ 10.4MPa
- Elongation at break: ≥ 500%
- Dielectric strength: ≥ 25kV/mm
- Operating temperature: -55°C - 125°C

CYGBT020-0	20.0	2.5:1	8	1.10 mm	heat shrink tubing	50 m
CYGBT030-0	30.0	2.5:1	12	1.10 mm	heat shrink tubing	50 m
CYGBT040-0	40.0	2.5:1	16	1.10 mm	heat shrink tubing	50 m
CYGBT050-0	50.0	2.5:1	20	1.10 mm	heat shrink tubing	25 m
CYGBT060-0	60.0	2.5:1	24	1.10 mm	heat shrink tubing	25 m
CYGBT080-0	80.0	2.5:1	28	1.20 mm	heat shrink tubing	25 m
CYGBT100-0	100.0	2.0:1	50	1.20 mm	heat shrink tubing	25 m

Other colours (replace last digit "0" with: "R" (red) "B" (blue) "W" (white))

Expandable braided sleeving

Braided expandable sleeving provides excellent protection, durable abrasion resistance with excellent flame-retardant properties for the protection of wires, cables, wire harnesses, pipes and industrial hoses.

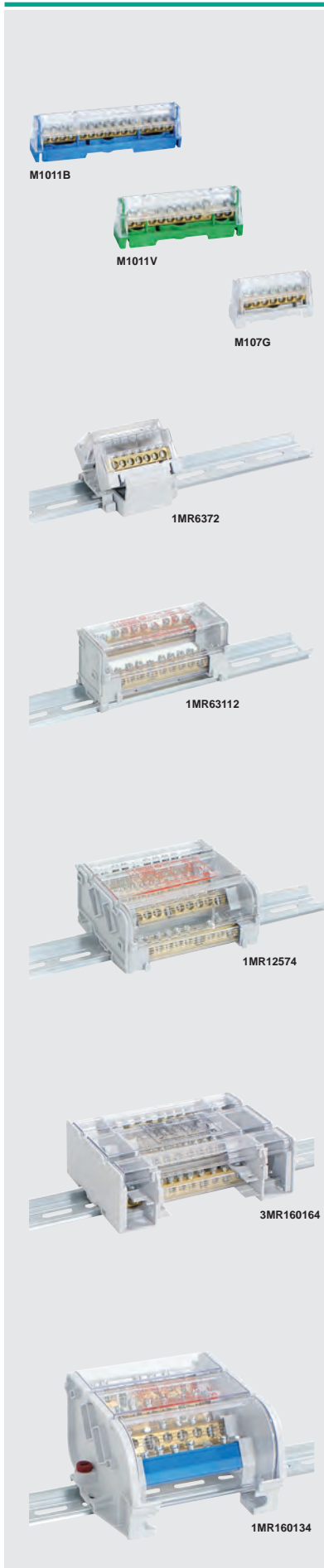
- Material: Polyester monofilament
- Standard colour: Black
- Operating temperature: -50°C - +150°C (melt point 230°C)
- Flammability: Flame retardant UL94 V-O
- Certified: RoHS, UL, CSA

type	nominal size *	expanded range Ø		description	carton length
		min.	max.		
HFR-008BK	8 mm	5 mm	16 mm	expandable braided sleeving	100 m
HFR-010BK	10 mm	7 mm	19 mm	expandable braided sleeving	100 m
HFR-012BK	12 mm	8 mm	24 mm	expandable braided sleeving	50 m
HFR-015BK	15 mm	10 mm	27 mm	expandable braided sleeving	50 m
HFR-020BK	20 mm	14 mm	30 mm	expandable braided sleeving	50 m
HFR-030BK	30 mm	20 mm	50 mm	expandable braided sleeving	50 m
HFR-040BK	40 mm	30 mm	60 mm	expandable braided sleeving	50 m
HFR-050BK	50 mm	40 mm	80 mm	expandable braided sleeving	50 m

* Nominal size indicates flat width

Application tools for above products

- KD-8-3** handheld hot knife to cut and seal braided sleeving (to prevent fraying)
- CS-800** hot gun 100-590°C digital temperature control for heatshrink tubing



Distribution terminals(DIN rail mountable) - 7, 11, 15 way

Maximum operating temperature: -5...+85°C (heat resistance to +130°C)
 Insert material: Brass with zinc plated screws
 Insulating body material: Support material polyamide – cover polycarbonate
 Mounting: DIN rail mounting (EN50022) or screw down
 Standards: EN 60998-1, EN 60998-2-1

type	No. ways	description	max. wire size (mm ²)				dimensions (mm)			
			input	10	16	25	35	(H)	(W)	(D)
Multi way terminal posts 750V										
M107V	7	green (earth) bar	2x16	5x	-	-	-	59	19	34
M1011V	11	green (earth) bar	2x16	9x	-	-	-	88	19	34
M1015V	15	green (earth) bar	2x16	13x	-	-	-	114	19	34
M107B	7	blue (neutral) bar	2x16	5x	-	-	-	59	19	34
M1011B	11	blue (neutral) bar	2x16	9x	-	-	-	88	19	34
M1015B	15	blue (neutral) bar	2x16	13x	-	-	-	114	19	34
M107G	7	grey (phase) bar	2x16	5x	-	-	-	59	19	34
M1011G	11	grey (phase) bar	2x16	9x	-	-	-	88	19	34
M1015G	15	grey (phase) bar	2x16	13x	-	-	-	114	19	34

Multi-pole protected distribution terminals (DIN rail mountable) 750V

1MR series - Distribution terminals

- DIN rail or chassis mounting
- Low profile 45 mm deep (height of standard MCBs)
- Supplied with insulated DIN rail cover
- Rated voltage: 750V

type	No ways	amps	no. bars	max. wire size (mm ²)					dimensions (mm)		
				input	10	16	25	35	(H)	(W)	(D)
2 pole - (1Ph+N)											
<i>IpK 12kA - Icc rms 6kA - Icw rms (1s) 1.9kA</i>											
1MR6372	7	63A	2	2x16	5x	-	-	-	68	59	45
1MR63112	11	63A	2	2x16	9x	-	-	-	68	88	45
<i>IpK 22kA - Icc rms 11kA - Icw rms (1s) 6kA</i>											
1MR12572	7	125A	2	35 mm ²	5x	-	1x	-	47	68	45
1MR125112	11	125A	2	35 mm ²	6x	2x	2x	-	47	105	45
1MR125152	15	125A	2	35 mm ²	10x	2x	2x	-	47	134	45
4 pole - (3ph+N)											
<i>IpK 22kA - Icc rms 11kA - Icw rms (1s) 6kA</i>											
1MR12574	7	125A	4	35 mm ²	5x	-	1x	-	98	72	45
1MR125114	11	125A	4	35 mm ²	6x	2x	2x	-	98	109	45
1MR125154	15	125A	4	35 mm ²	10x	2x	2x	-	98	138	45

Additional terminal bars **M107/1011/1015** can easily be clipped onto above distribution terminals

160A stepped distribution block 70 mm deep profile

IpK 24kA - Icc rms 12kA - Icw rms (1s) 8kA

1MR160134	13	160A	4	50 mm ²	-	8x	2x	2x	136	186	70
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3MR series - Distribution terminal

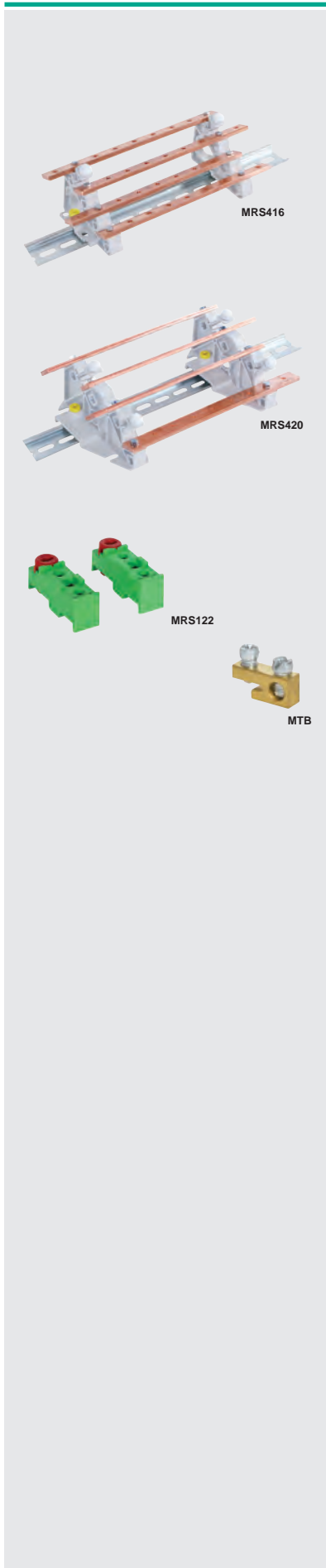
Separated incoming terminals (two extra large incoming phase terminals on either side)

IpK 22kA - Icc rms 11kA - Icw rms (1s) 6kA

3MR125164	16	125A	4	35 mm ²	11x	2x	2x	-	107	202	45
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IpK 24kA - Icc rms 12kA - Icw rms (1s) 8kA

3MR160164	16	160A	4	50 mm ²	11x	-	2x	2x	107	233	45
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Busbar supports

The MRS range of busbar supports are four pole (3Ph+N) with stepped phases for easy access and termination. Ideally combined with drilled and threaded copper busbars to make up distribution terminals of any size. Insulating protection covers are available (*in one-meter lengths*) to provide protection against accidental touch of the bars. Ipk ratings are influenced by bar dimensions and the distance between supports.

Maximum operating temperature: +85°C Heat resistance: +130°C
 Insulating body material: Polyamide
 Mounting: DIN rail or chassis mount
 Standards: CEI EN 17-13/1 EN 60439

type	amps	no. bars	max bar width	description	dimensions (mm)		
					(H)	(W)	(D)

Multi-pole busbar supports

- DIN rail or chassis mount
- With mounting accessories for (*optional*) protection cover and busbar mounting

2 pole supports (1Ph+N)

supplied in pairs (2pcs)

MRS122	65A	2	12 mm	1P+N	busbar supports (2 pcs)	47	14	18
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4 pole stepped supports (3Ph+N)

supplied in 4 pcs (2 pair per set)

160A - 4 pole busbar support

MRS416	160A	4	16 mm	3P+N	busbar supports (4 pcs)	90	25	57
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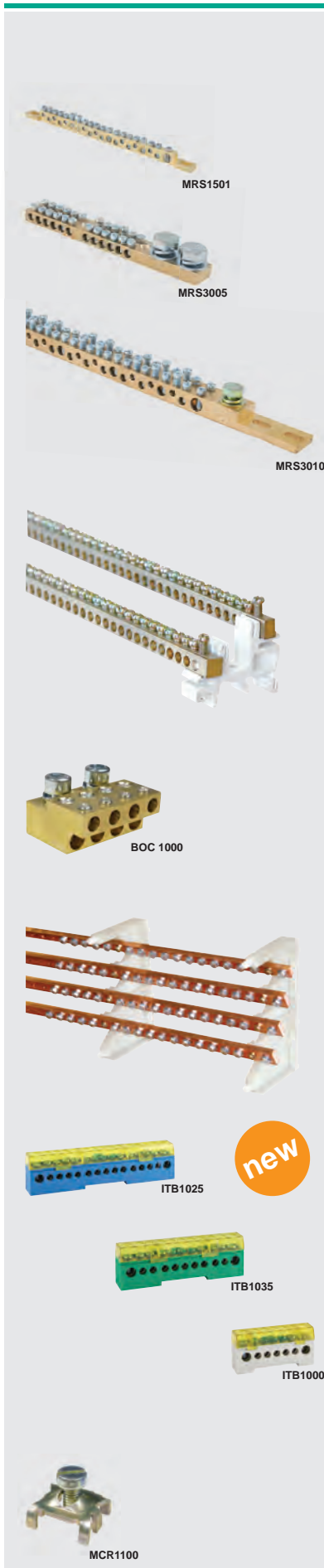
250A - 4 pole busbar support

MRS420	250A	4	20 mm	3P+N	busbar supports (4 pcs)	132	67	59
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Terminal protection covers (for above supports)

MRC2150	screen	protection cover for busbar support MRS416	(1 meter length)
MRC2250	screen	protection cover for busbar support MRS420	(1 meter length)

MTB	DIN rail earthing terminal	(for connecting earth wire to DIN rail)
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Brass earthing and neutral terminals

- Brass bars with galvanised steel screws (*with cross head*)

type	wire sizes mm ²				No. of ways	screw Ø	dimensions (mm)		
	1.5...4	2.5...6	4...16	16...35			(H)	(W)	(L)

Single connection per hole

MRS1501	–	113	–	–	113	M4	9	6	1met
MRS1506	–	–	116	–	116	M5	12	8	1met

1300110 rail or base mount double support for brass rod

Double connection per hole M4 mounting holes

- Dual input up to 50mm² (*2 x M10 bolt connections*)

MRS3000	–	2 x 6	–	–	12	M5	9	19	102
MRS3005	–	2 x 12	–	–	24	M5	9	19	144
MRS3010	–	2 x 24	–	–	48	M5	9	19	230

Chassis mounting earthing terminals

- Universal fixing: chassis mount or direct copper bar mount
- M6 mounting screws and input termination supplied with nuts, spacers and washers

MRS2000	8	8	3	1	20	M5	6	13	215
MRS5000	19	24	6	1	50	M5	6	13	462

Double connection per hole

- Universal fixing: chassis mount or direct copper bar mount
- M8 bolt to accommodate cable lug up to 95 mm²
- M6 mounting screws supplied with nuts, spacers and washers

MRS3500	2 x 14	2 x 19	2 x 7	2 x 1	82	M5	13	20	462
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Brass tap-off distribution block - direct busbar mounted (*drilled or clamp-on*)

- For direct connection onto Busbar, to tap off cables (*4 x 2.5...25 mm² + 4 x 4...35 mm²*)

BOC 1000	brass bolt-on busbar mounting terminal	(8 x outputs)
BOC 1005	brass clamp-on busbar mounting terminal	(for 5 mm bars)
BOC 1010	brass clamp-on busbar mounting terminal	(for 10 mm bars)

Distribution terminals

Single pole distribution terminals

DIN rail mountable - 7, 11, 15 way

Insulating body: PA 66 UL94-V0
 Insert material: Brass, screws galvanised steel
 Mounting: DIN rail mounting
 Base colours: Green, Blue, Grey
 Protection cover: PC UL94-V0, transparent yellow
 Standards: EN 60947-7-1

type	no. ways	base colour	wire size mm ²			description	length (mm)
			In (2x)	No.	Out		

Unipolar terminal blocks

ITB1030	7	green	2.5 - 16	5 x	1.5 - 6	earth distribution block	63
ITB1035	11	green	2.5 - 16	9 x	1.5 - 6	earth distribution block	95
ITB1040	15	green	2.5 - 16	13 x	1.5 - 6	earth distribution block	125
ITB1015	7	blue	2.5 - 16	5 x	1.5 - 6	neutral distribution block	63
ITB1020	11	blue	2.5 - 16	9 x	1.5 - 6	neutral distribution block	95
ITB1025	15	blue	2.5 - 16	13 x	1.5 - 6	neutral distribution block	125
ITB1000	7	grey	2.5 - 16	5 x	1.5 - 6	phase distribution block	63
ITB1005	11	grey	2.5 - 16	9 x	1.5 - 6	phase distribution block	95
ITB1010	15	grey	2.5 - 16	13 x	1.5 - 6	phase distribution block	125

ITB2000 DIN rail mount support for horizontal mounting of up to 4 of above terminals

Spider connector for threaded bars 12 mm wide

- Material: Passivated galvanised steel
- Connections: 1 or 2 cables 1.5...10 mm²
- Complete with: M5 x 12 screws

MCR1100	spider connector to connect cables to 12mm threaded bar	1.5...10 mm ²
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Please note: Prices of copper products are based on the London Metal Exchange and will vary from time to time. Consult our sales department for the latest pricing before placing orders.



Distribution blocks permit simple termination from one main incoming supply (up to 500A) to be distributed to many other lower current outputs downstream. Equipped with an opening transparent protection screen for easy inspection of terminations.

type	rated current (A)	feed-in terminals		max. output terminals (mm ²)					lcw (kA)	lpk (kA)	dimensions (mm)		
		max. cable (mm ²)	busbar W (mm)	4	6	10	16	35			(H)	(W)	(D)

RP series - Power distribution blocks

- Insulating body: PA 66 UL 94-V0, Cover: PC, transparent yellow
- Conduction block: Tinned copper
- Index Protection: IP20
- Compliant with standard EN 60947-7-1

Single pole power distribution blocks - can receive Cable or Flexible/rigid bars (in some cases)

Model	Rated Current (A)	Max. Cable (mm ²)	Busbar W (mm)	4	6	10	16	35	lcw (kA)	lpk (kA)	H (mm)	W (mm)	D (mm)
RPU3000	125A	10...35	9	-	-	-	9x	-	4.4	30	75	40	48
RPU3005	160A	10...70	13	-	-	-	9x	-	11	30	75	40	48
RPU3010	250A	35...120	15.5	-	-	4x	5x	2x	21	51	96	47	50
RPU3015	400A	95...185	20	-	-	4x	5x	2x	21	51	96	47	50
RPU3020	500A	-	24	-	-	4x	5x	2x	21	51	96	47	50

Multi-pole distribution blocks *DIN rail mountable* EN 60947-7-1

- Mounting: DIN rail or chassis mounting
- Insulating structure: Self-extinguishing to UL94-V0 - Insulation between phases
- Conductor material: Brass conductors - galvanised steel screws
- Protection cover: PC UL94-V0, transparent yellow - front removal

4 pole (3ph+N) distribution blocks *DIN rail mounting*

Low profile version 50 mm deep (fits into same space as standard MCBs)

Model	Rated Current (A)	Max. Cable (mm ²)	4	6	10	16	35	lcw (kA)	lpk (kA)	H (mm)	W (mm)	D (mm)	
RPQ1005	125A	10...35	-	7	7	-	2	1	4.2	20	84	100	50
RPQ1010	125A	10...35	-	11	11	-	2	1	4.2	20	84	132	50

Separated input terminals

Front entry input terminals - (2 phases on each side)

Model	Rated Current (A)	Max. Cable (mm ²)	4	6	10	16	35	lcw (kA)	lpk (kA)	H (mm)	W (mm)	D (mm)
RPQ1015	160A	10...50	-	-	-	8	3	9	22	85	168	70

Side entry input terminals - (all inputs from left side)

Model	Rated Current (A)	Max. Cable (mm ²)	4	6	10	16	35	lcw (kA)	lpk (kA)	H (mm)	W (mm)	D (mm)
RPQ1018	160A	10...50	-	-	-	8	3	9	22	95	154	67

Busbar supports *(Per pack)*

4 pole (3ph+N) insulated busbar supports

- Glow wire test: 960°C
- Working temperature: -40°C ... +130°C
- Self-extinguishing UL 94-V0 - Halogen free
- Polyamide 66 reinforced with 30% fibreglass
- Supplied with screws and nuts for mounting on panels, fixing busbars and protection screen

250A - DIN rail or chassis mount busbar support (1 piece per pack)

Model	Rated Current (A)	Description	H (mm)	W (mm)	D (mm)
PSP1002	250A	busbar support for 15/20 mm x 5 mm bars	190	20	105

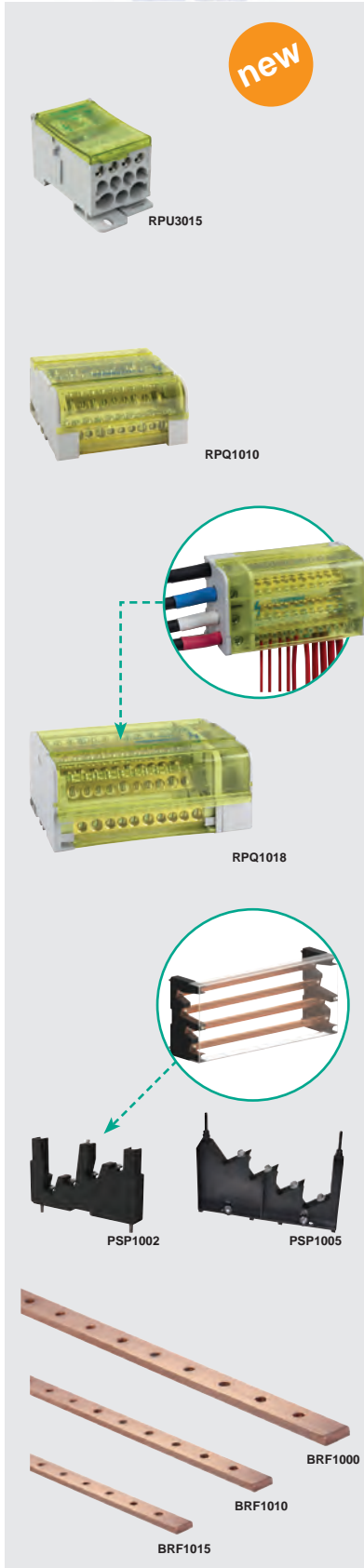
400A - Panel mount busbar support (2 piece per pack)

Model	Rated Current (A)	Description	H (mm)	W (mm)	D (mm)
PSP1005	400A	busbar support for 15/20/30 mm x 5/10 mm bars	216	34	117

Threaded copper bars *(bolts/screws, washers not supplied)*

- Pre-punched and threaded copper bars (ready for use)
- Electrolytic copper Cu-ETP 99.90% (rounded corners)
- Current (A) based on ΔT temperature rise as per DIN 43671 (reference room temperature of 35°C)

type	In (A) ΔT		screw Ø	hole centers	description	dimensions (mm)		
	30°C	50°C				(H)	(W)	(L)
BRF1000	160A	212A	M5	18 mm	threaded copper busbar	12	4	1met.
BRF1005	183A	241A	M5	18 mm	threaded copper busbar	12	5	1met.
BRF1010	218A	289A	M6	25 mm	threaded copper busbar	15	5	1met.
BRF1015	274A	363A	M6	25 mm	threaded copper busbar	20	5	1met.
BRF1020	400A	530A	M6	25 mm	threaded copper busbar	32	5	1met.
BRF1045	573A	756A	M6	25 mm	threaded copper busbar	30	10	1met.



Please note: Prices of copper products are based on the London Metal Exchange and will vary from time to time. Consult our sales department for the latest pricing before placing orders.



ISO...



CLN...



SM...



ISO3005

Busbar standoff insulators

- Insulation: Polyamide 66 fibreglass reinforced (30%) (Halogen free)
- Self extinguishing: VO-UL94
- Glow wire test: 960°C
- Threaded inserts: Galvanized steel
- Rated voltage: 1000 VAC / 1500 VDC
- Working temperature: -40°C - 130°C
- Colour: Black
- Conformity: IEC/EN60004-1 and IEC/EN 61439-1

type	height (H)	Ø width socket	threaded	torque (Nm)	description
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ISO - Insulators *injection moulded* *UL approved (file No. 300607)*

ISO2010	20 mm	15 mm	M6	8	busbar standoff insulators
ISO2020	25 mm	15 mm	M6	10	busbar standoff insulators
ISO2030	30 mm	26 mm	M8	25	busbar standoff insulators
ISO2040	35 mm	28 mm	M8	25	busbar standoff insulators
ISO2055	40 mm	28 mm	M8	25	busbar standoff insulators
ISO2070	45 mm	33 mm	M8	25	busbar standoff insulators
ISO2085	50 mm	29 mm	M8	25	busbar standoff insulators
ISO2100	60 mm	42 mm	M10	50	busbar standoff insulators

CLN - Spacer columns *Injection moulded* *UL approved (file No. 300607)*

ISO2140	20 mm	20 mm	M6	8	spacing columns
ISO2155	25 mm	20 mm	M6	8	spacing columns
ISO2170	30 mm	20 mm	M6	8	spacing columns
ISO2185	35 mm	20 mm	M6	10	spacing columns
ISO2200	40 mm	20 mm	M6	10	spacing columns
ISO2245	30 mm	30 mm	M8	25	spacing columns
ISO2257	40 mm	30 mm	M8	25	spacing columns
ISO2267	50 mm	30 mm	M8	25	spacing columns
ISO2295	70 mm	30 mm	M8	25	spacing columns

SM - Econo busbar insulators

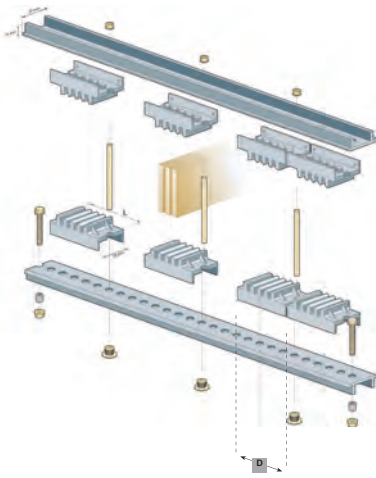
- Insulation: Polyester, fibreglass reinforced (20%)
- Self extinguishing: VO-UL94
- Threaded inserts: Galvanized steel
- Rated voltage: 1000 VAC / 1500 VDC
- Working temperature: -20°C - 120°C
- Colour: Red RAL 3031

SM25	25 mm	23 mm	M6	8	busbar standoff insulators
SM30	30 mm	26 mm	M8	10	busbar standoff insulators
SM35	35 mm	28 mm	M8	13	busbar standoff insulators
SM40	40 mm	34 mm	M8	13	busbar standoff insulators
SM45	45 mm	28 mm	M8	13	busbar standoff insulators
SM51	51 mm	29 mm	M8	27	busbar standoff insulators
SM60	60 mm	34 mm	M10	27	busbar standoff insulators
SM76	76 mm	36 mm	M10	54	busbar standoff insulators

Threaded stud kits for insulators

- Galvanized steel class 8.8 (complete with threaded stud, nut, flat washer and spring lock washer)

type	length (mm)	Ø	description
ISO3005	30 mm	M6	threaded stud kit for insulators
ISO3015	35 mm	M8	threaded stud kit for insulators
ISO3020	40 mm	M10	threaded stud kit for insulators



TOP - Universal busbar support – up to 4500A (IEC 60439-1)

- Universal busbar support system
- Adjustable distance between phases
- High short-circuit strength up to 100kA (see **Annex-7** for ratings)
- Non-magnetic aluminium alloy profile (EN AW-6060) prepunched (12.5 mm pitch)
- Quick and simplified universal fitting - cost effective
- For bars 30-120 mm wide / 5 or 10 mm thick
- Type tested according to IEC 60439-1 certification: ACAE LOVAG (65 / 75 / 100kA eff 1 sec)

type	for busbar thickness	no. bars	description	
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Ω TOP - Universal busbar support – up to 4500A (IEC 60439-1)

Three pole system kits (3Ph)

Supplied with: Insulated supports (6) and all screws, nuts, washers

type	for busbar thickness	no. bars	description
TOP1005	5 mm	1 - 2	TOP2/5T universal busbar support kit
TOP1025	10 mm	1	TOP1/10T universal busbar support kit
TOP1035	10 mm	1 - 2	TOP2/10T universal busbar support kit
TOP1045	10 mm	1 - 3	TOP3/10T universal busbar support kit

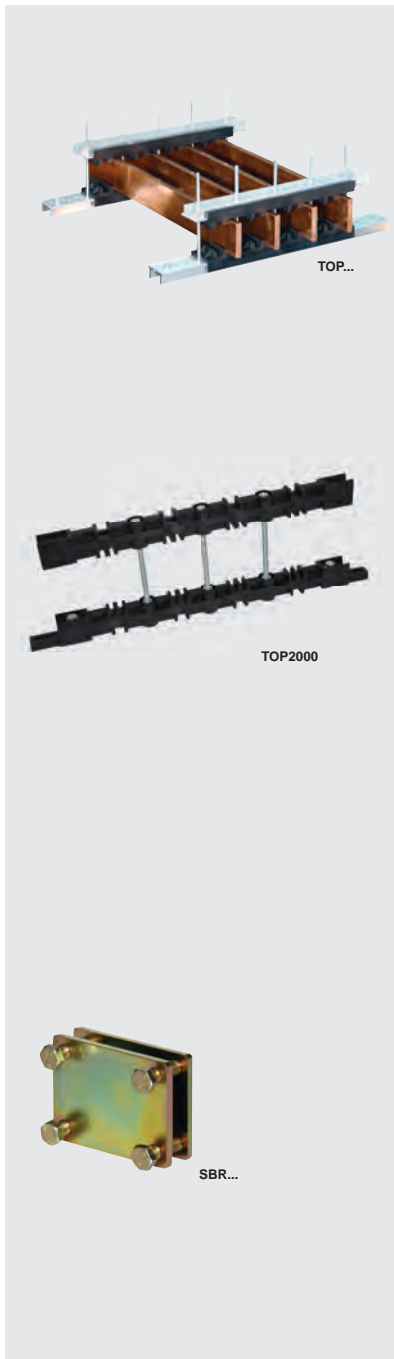
Four pole system kits (3Ph+N)

Supplied with: Insulated supports (8) and all screws, nuts, washers

type	for busbar thickness	no. bars	description
TOP1010	5 mm	1 - 2	TOP2/5TN universal busbar support kit
TOP1040	10 mm	1 - 2	TOP2/10TN universal busbar support kit
TOP1050	10 mm	1 - 3	TOP3/10TN universal busbar support kit

Accessories

TOP1000	pre-punched aluminium profile (12.5 mm pitch)		(2 metre length)
TOP1100	bracket for horizontal mounting of busbar system profiles		
TOP1105	bracket for vertical mounting of busbar system profiles		
TOP1055	rislan tube to insulate tie rods (only required for minimum distance)		



TOP Junior - Fixed busbar support – up to 1600A (IEC 61439-2)

- Universal busbar support system
- Distance between phases 70 mm
- High short-circuit strength up to 60kA (see **Annex-7** for ratings)
- Polyamide 6/6 reinforced with 30% fibreglass - self-extinguishing UL 94-V0
- Single reference for use with 5 or 10 mm thick bars
- For bars 30-80 mm wide / 5 or 10 mm thick
- Type tested according to IEC 61439-2 certification: ACAE LOVAG (65kA eff 1 sec)

Four pole system kit (3Ph+N)

Supplied with: Insulated supports (2) and all screws, nuts, washers

TOP2000	5/10 mm	2/1	TOP J 5 - 10	universal busbar support kit
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Busbar clamps (galvanized steel 5 mm thick)

- Permits direct connection of flexible and solid bars, from main bar (without drilling)

type	max. bar width	flexi bar width	plate dimensions	description
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Rectangular busbar clamps

SBR1000	50 mm	20/24 mm	77 x 51 mm	busbar connection clamps
SBR1005	50 mm	32 mm	77 x 59 mm	busbar connection clamps
SBR1010	50 mm	40 mm	77 x 67 mm	busbar connection clamps
SBR1020	80 mm	32 mm	107 x 59 mm	busbar connection clamps
SBR1025	80 mm	50 mm	107 x 77 mm	busbar connection clamps

Square busbar clamps

SBQ1000	30 mm	30 mm	53 x 53 mm	busbar connection clamps
SBQ1005	40 mm	40 mm	63 x 63 mm	busbar connection clamps
SBQ1015	63 mm	63 mm	90 x 90 mm	busbar connection clamps
SBQ1020	80 mm	80 mm	115 x 115 mm	busbar connection clamps
SBQ1025	100 mm	100 mm	135 x 135 mm	busbar connection clamps

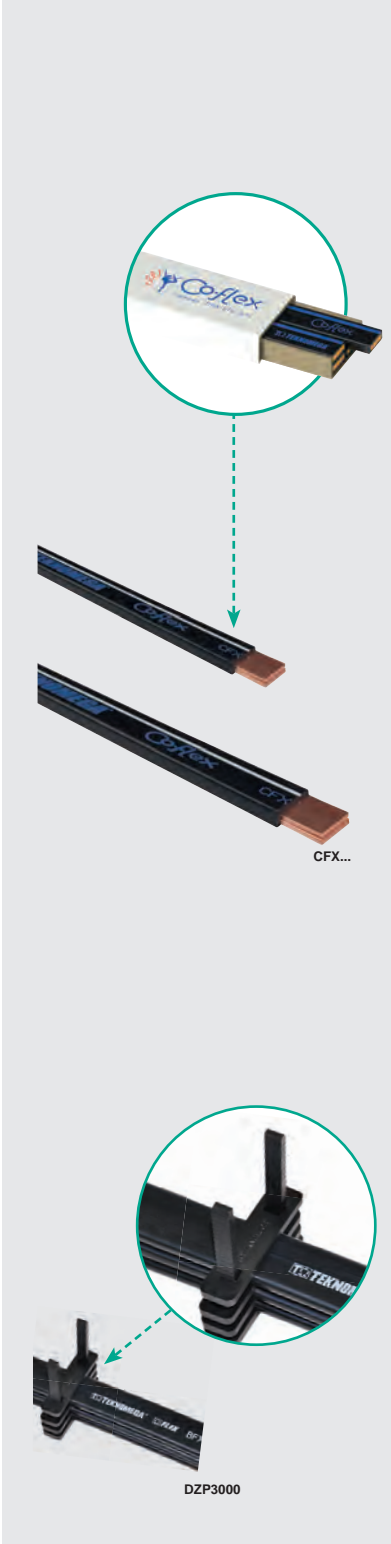
Please note: Prices of copper products are based on the London Metal Exchange and will vary from time to time. Consult our sales department for the latest pricing before placing orders.



Coflex series - Insulated flexible busbars

COFLEX is designed with high conductivity electrolytic copper laminates (CuETP), protected within a durable highly resistant self extinguishing PVC insulation, guaranteeing excellent electrical insulation in aggressive high temperature environments.

- Conductor: Electrolytic copper Cu-ETP 99.90% (laminate thickness 0.8 - 1.0 mm)
- Insulation: Self-extinguishing PVC UL 94-V0 (thickness 2 mm)
- Dielectric rigidity: 20 kV / mm
- Max. elongation: 365%
- Rated voltage: 1000 VAC / 1500 VDC
- Working temperature: -40°C - +105°C
- Standard length: 2 meters



type	conductor size (mm)						Δ T (°K) see Annex-1 max. current capacity (A) at Δ T (°K) as per IEC 439-1				
	width	No. Laminations	thick	total thickness	cross section (mm²)	length (metre)	65°C	50°C	40°C	30°C	20°C

Insulated flexible busbars (2 metre lengths)

CFX 1005	9	3	0.8	2.4	21.6	2	160	140	125	108	89
CFX 1020	9	6	0.8	4.8	43.2	2	285	250	224	194	158
CFX 1023	13	6	0.5	3	39	2	285	250	224	194	158
CFX 1035	15.5	4	0.8	3.2	49.6	2	365	320	286	248	202
CFX 1045	15.5	6	0.8	4.8	74.4	2	456	400	358	310	253
CFX 1060	20	3	1.0	3	60	2	399	350	313	271	221
CFX 1070	20	5	1.0	5	100	2	490	430	385	333	272
CFX 1076	20	8	1.0	8	160	2	638	560	501	434	354
CFX 1090	24	3	1.0	3	72	2	456	400	358	310	253
CFX 1100	24	5	1.0	5	120	2	581	510	456	395	323
CFX 1115	24	10	1.0	10	192	2	912	800	716	620	506
CFX 1135	32	5	1.0	5	160	2	741	650	581	503	411
CFX 1145	32	8	1.0	8	256	2	992	870	778	674	550
CFX 1150	32	10	1.0	10	320	2	1163	1020	912	790	645
CFX 1170	40	5	1.0	5	200	2	884	775	693	600	490
CFX 1180	40	8	1.0	8	320	2	1180	1035	926	802	655
CFX 1185	40	10	1.0	10	400	2	1343	1178	1054	912	745
CFX 1200	50	5	1.0	5	250	2	1055	925	827	717	585
CFX 1210	50	8	1.0	8	400	2	1357	1190	1064	922	753
CFX 1215	50	10	1.0	10	500	2	1573	1380	1234	1069	873
CFX 1230	63	5	1.0	5	315	2	1209	1060	948	821	670
CFX 1240	63	8	1.0	8	504	2	1596	1400	1252	1084	885
CFX 1245	63	10	1.0	10	630	2	1391	1615	1444	1251	1021
CFX 1260	80	5	1.0	5	400	2	1459	1280	1145	991	810
CFX 1270	80	8	1.0	8	640	2	1833	1608	1438	1246	1017
CFX 1275	80	10	1.0	10	800	2	2028	1779	1591	1378	1125
CFX 1285	100	5	1.0	5	500	2	1750	1535	1373	1189	971
CFX 1300	100	10	1.0	10	1000	2	2394	2100	1878	1627	1328

Derating coefficient for bars in parallel			
Number of bars	2 bars	3 bars	4 bars
Coefficient to use x	1.8	2.5	3.2

Accessories

Simple support with spacer

- For use with insulated flexible bars up to 32 x 10 mm
- Possibility to fit up to 4 flexible bars
- Mounts into panel board by means of screw (not supplied) inserted at the base of spacer
- Excellent heat dissipation due to the spacing between bars

DZP3000 panel mount spacer and overlapping support for flexible bars up to 32 x 10 mm

Please note: Prices of copper products are based on the London Metal Exchange and will vary from time to time. Consult our sales department for the latest pricing before placing orders.



Insulated copper braided links *highly flexible braided copper link with PVC insulation*

No cutting - no stripping - no lug - no crimping

J-LINK is a ready-to-use flexible prefabricated shunt made of tinned copper braid, coated with PVC insulation. for the quickest, most convenient solution to create electrical connections from 125 to 630 A.

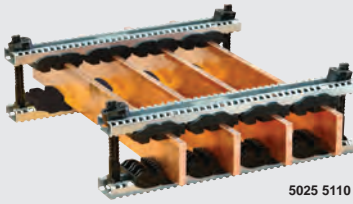
- Conductor: Tinned electrolytic copper braid Cu-ETP 99.90% (wire strand 0.20 mm)
- Insulation: Self-extinguishing PVC UL94V0 (thickness 1.8 - 2 mm)
- Dielectric rigidity: 20 kV / mm
- Rated voltage: 1000 VAC / 1500 VDC
- Working temperature: -40°C ... +105°C
- Standard length: 330 ... 1030 mm lengths



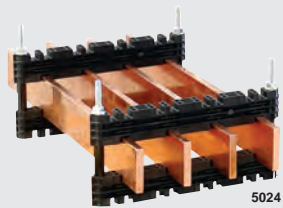
type	conductor size (mm)				Δ T (°K) see Annex-1 max. current capacity (A) at Δ T (°K) as per IEC 439-1			description
	width	thickness	length	cross sec. (mm ²)	45°C	35°C	25°C	
25 mm² insulated braided links <i>mounting holes: Ø d1=8.5 / Ø d2=10.5 mm</i>								
JLK1005	20	4.3	330	25	185	175	145	insulated braided shunt
JLK1010	20	4.3	430	25	185	175	145	insulated braided shunt
JLK1015	20	4.3	530	25	185	175	145	insulated braided shunt
JLK1020	20	4.3	630	25	185	175	145	insulated braided shunt
JLK1021	20	4.3	730	25	185	175	145	insulated braided shunt
JLK1023	20	4.3	930	25	185	175	145	insulated braided shunt
35 mm² insulated braided links <i>mounting holes: Ø d1=8.5 / Ø d2=10.5 mm</i>								
JLK1030	20	4.9	330	35	225	205	170	insulated braided shunt
JLK1035	20	4.9	430	35	225	205	170	insulated braided shunt
JLK1040	20	4.9	530	35	225	205	170	insulated braided shunt
JLK1045	20	4.9	630	35	225	205	170	insulated braided shunt
JLK1046	20	4.9	730	35	225	205	170	insulated braided shunt
JLK1048	20	4.9	930	35	225	205	170	insulated braided shunt
JLK1049	20	4.9	1030	35	225	205	170	insulated braided shunt
50 mm² insulated braided links <i>mounting holes: Ø d1=8.5 / Ø d2=10.5 mm</i>								
JLK1055	20	5	330	50	280	250	220	insulated braided shunt
JLK1060	20	5	430	50	280	250	220	insulated braided shunt
JLK1065	20	5	530	50	280	250	220	insulated braided shunt
JLK1070	20	5	630	50	280	250	220	insulated braided shunt
JLK1071	20	5	730	50	280	250	220	insulated braided shunt
JLK1073	20	5	930	50	280	250	220	insulated braided shunt
JLK1074	20	5	1030	50	280	250	220	insulated braided shunt
120 mm² insulated braided links <i>mounting holes: Ø d1=10.5 / Ø d2=10.5 mm</i>								
JLK1075	30	7.5	330	120	440	400	335	insulated braided shunt
JLK1080	30	7.5	430	120	440	400	335	insulated braided shunt
JLK1085	30	7.5	530	120	440	400	335	insulated braided shunt
JLK1090	30	7.5	630	120	440	400	335	insulated braided shunt
JLK1095	30	7.5	730	120	440	400	335	insulated braided shunt
JLK1097	30	7.5	930	120	440	400	335	insulated braided shunt
JLK1098	30	7.5	1030	120	440	400	335	insulated braided shunt
240 mm² insulated braided links <i>mounting holes: Ø d1=12.5 / Ø d2=10.5 mm</i>								
JLK1100	32	12.5	330	240	730	680	565	insulated braided shunt
JLK1105	32	12.5	430	240	730	680	565	insulated braided shunt
JLK1110	32	12.5	530	240	730	680	565	insulated braided shunt
JLK1115	32	12.5	630	240	730	680	565	insulated braided shunt
JLK1120	32	12.5	730	240	730	680	565	insulated braided shunt
JLK1130	32	12.5	930	240	730	680	565	insulated braided shunt
JLK1135	32	12.5	1030	240	730	680	565	insulated braided shunt

Phase colours: Besides standard white (above), colours red and blue can be ordered on request by adding .../R (red) or .../B (blue) to above (white) part numbers.

Derating coefficient for bars in parallel		
Number of bars	2 bars	3 bars
Coefficient to use	x 1.6	x 2



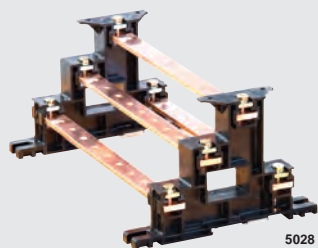
5025 5110



5024 6400



5020 2030



5028 0410

SBC ER – Compact adjustable busbar support - IEC 60439-1 4000A

Universal multipole (*edgewise mounting*) busbar support system.

- Easy to install – cost effective
- Adjustable distance between phases (*5 mm increments*) minimum = 70 mm
- Up to 75kA rms Isc - 165kA peak Isc (*distance between supports dependant*)
- For bars 30...125 mm wide x 5/10 mm thick (*1...3 bars per phase*)
- High dielectrical resistance
- High mechanical strength Vertical bars
- High short circuit strength (see **Annex-8**)



type	for busbar thickness	No. bars per phase	insulation voltage	interphase distance	description	pcs per pack	
5025 5110	10 mm	1-2	1000V	adjustable	busbar support inserts	(4 pcs)	
5025 5105	5 mm	1-3	1000V	adjustable	busbar support inserts	(8 pcs)	
5025 5100	universal clamping stud kit for bars 25 to 200 mm (H)					per pack	(4 pcs)
5025 5101	metal clamping stud kit for bars 25 to 100 mm (H)					per pack	(2 pcs)
5025 5124	profile	perforated support profile for inserts			length 380 mm	(4 pcs)	
5025 5125	profile	perforated support profile for inserts			length 480 mm	(4 pcs)	
5025 5126	profile	perforated support profile for inserts			length 580 mm	(4 pcs)	
5025 5128	profile	perforated support profile for inserts			length 780 mm	(4 pcs)	

One complete busbar support systems:
 2 x support inserts (per phase) (3P = 6 / 4P = 8)
 2 x clamping studs
 2 x support profiles (1 x top, 1 x bottom)

SBC 10 – Compact busbar support – IEC 60439-1 2500A

Multipole (*edgewise mounting*) busbar support system - fixed interphase distance.

- For bars 30 ... 120 mm wide x 10 mm thick (*one or two bars per phase*)
- Up to 50kA rms Isc - 110kA peak Isc (*distance between supports dependant*)
- Reverse support to accommodates busbar offset (*for joining bars*)

5024 6400	10 mm	1/2	800V	75/90 mm	3 pole busbar support	(ea)
5024 6700	10 mm	1/2	1000V	90 mm	4 pole busbar support	(ea)

For complete system, order: 2 x supports + 1 x mounting accessory kit (below)

Mounting accessory kits - (2 x M8 threaded studs/insulation spacers/nuts)

5020 2030	mounting accessory kit	(rods/spacers/nuts)	for 30 mm busbars
5020 2040	mounting accessory kit	(rods/spacers/nuts)	for 40 mm busbars
5020 2050	mounting accessory kit	(rods/spacers/nuts)	for 50 mm busbars
5020 2060	mounting accessory kit	(rods/spacers/nuts)	for 60 mm busbars
5020 2080	mounting accessory kit	(rods/spacers/nuts)	for 80 mm busbars
5020 2100	mounting accessory kit	(rods/spacers/nuts)	for 100 mm busbars

SB E 44 – Four-pole stair type busbar support system 300A

Four-pole stair type busbar support system. (H) 180 x (W) 25 x (D) 126 mm

- For flat bars 15/20/30 mm wide x 5 mm thick (*solid or perforated*)
- Up to 22kA rms Isc - 50kA peak Isc (*distance between supports dependant*)
- DIN rail mountable or bolt down
- Thermoplastic
- Self-extinguishing UL94VO

5028 0410	5 mm	1	1000V	35.5 mm	4 pole stair type support
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60mm - System classic

The 60 mm system is an extremely compact busbar system with 60 mm spacing between busbars arranged in horizontal format, permitting simple attachable “clip-on” accessories such as connections for various cable and/or flexible or solid busbars, fuse holders and switches as well as easy connectors which accommodate circuit breakers, contactors etc.

type	for busbar size (mm) width	thick	no. poles	description	amps
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Busbar supports up to 630A

- Horizontal mounting of busbars (15 - 20 - 25 - 30 mm wide)
- Permits direct mounting of accessories: various termination, fuse/circuit breaker protection

01601	15 - 30 mm	5/10 mm	1	universal busbar support	630A
01356	15 - 30 mm	5/10 mm	2	universal busbar support	630A
01495	15 - 30 mm	5/10 mm	3	universal busbar support	630A
01484*	15 - 30 mm	5/10 mm	3	busbar support (with control terminals)	630A
01485	15 - 30 mm	5/10 mm	4	universal busbar support	630A

* With integrated 16mm termination for control wiring/connection

“H” profile busbar supports up to 1600A

- Horizontal mounting of “H” profile busbars 30 mm wide
- Permits direct mounting of accessories: various termination, fuse/circuit breaker protection

01116	30 mm	“H” profile	1	“H” profile busbar support	1600A
01231	30 mm	“H” profile	3	“H” profile busbar support	1600A

01116 (1 pole) attaches to 01231 (3 pole) to make a 4 pole support

End covers for busbar supports (provides insulated protection of busbar ends)

01573	end cover for		3	01495 / 01484 busbar supports
01131	end cover for		4	01485 busbar supports
01373	end cover for		1	01116 busbar supports
01234	end cover for		3	01231 busbar supports

Busbar termination (for connecting cables directly onto busbars)

For cable conductors

- “clip-on” terminals for cable conductors
- Direct clamping onto busbars no drilling required

type	for busbar size (mm) width	thick	no. poles	cable size mm ² min max		description	amps
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01284	15 - 30 mm	5 mm	1	1.5	16	conductor terminal	180A
01285	15 - 30 mm	5 mm	1	4	35	conductor terminal	270A
01287	15 - 30 mm	5 mm	1	16	70	conductor terminal	400A
01289	15 - 30 mm	10 mm	1	1.5	16	conductor terminal	180A
01290	15 - 30 mm	10 mm	1	4	35	conductor terminal	270A
01292	15 - 30 mm	10 mm	1	16	70	conductor terminal	400A
01203	15 - 30 mm	10 mm	1	16	120	conductor terminal	440A

CRITO® ProfiClip brace terminals for cable conductors (for standard and “H” profile bars)

01318	20 - 30 mm	5/10 mm	1	95	185	conductor terminal	500A
01760	20 - 30 mm	5/10 mm	1	120	300	conductor terminal	600A

3 phase clamp-on terminals (fully insulated, internally partitioned)

01563	15 - 30 mm	5/10 mm	3	1.5	16	conductor terminal	80A
01240	15 - 30 mm	5/10 mm	3	6	50	conductor terminal	300A
01243	15 - 30 mm	5/10 mm	3	35	120	conductor terminal	440A
01199	20 - 30 mm	5/10 mm	3	95	185	conductor terminal	460A
01754	20 - 30 mm	5/10 mm	3	120	300	conductor terminal	560A
01537*	20 - 30 mm	5/10 mm	3	120	300	conductor terminal	560A

* Adjustable phase separation distance to align with connected component (supplied without cover)

CRITO® brace terminals for flat and flexible copper busbars

	width	thick	no.	max. bar size		description	amps
				wide	thick		
01319	30 mm	10 mm	1	30	20	busbar connection	750A
01069	30 mm	10 mm	1	55	28	busbar connection	1600A
01070	30 mm	10 mm	1	68	28	busbar connection	1600A
01071	30 mm	10 mm	1	105	28	busbar connection	1600A
01538*	20 - 30 mm	5/10 mm	3	32	20	busbar connection	800A

* Adjustable phase separation distance (to align with connected component) supplied without cover

EQUES series - Easy connectors

Direct busbar mountable "clip-on" adaptors accept various devices such as MCB's, circuit breakers, fuse holders, contactors etc. without drilling busbars.

type	for busbars (mm)		no. rails	wires mm ²	dimensions (mm)		description	amps
	width	thick			W	H		

Easy connectors 25 - 32 - 63A

- Direct busbar mounting adaptors for busbars 15 - 20 - 25 - 30 mm wide and "H" profile
- With integrated DIN rail and pre-wired power leads from connected busbars

32430	15 - 30	5/10/"H"	1	4	45	200	easy connector	25A
32431	15 - 30	5/10/"H"	2	4	45	200	easy connector	25A
32441	15 - 30	5/10/"H"	1	6	54	200	easy connector	32A
32442	15 - 30	5/10/"H"	2	6	54	200	easy connector	32A
32454	15 - 30	5/10/"H"	1	10	54	200	easy connector	63A
32455	15 - 30	5/10/"H"	2	10	54	200	easy connector	63A
32459	15 - 30	5/10/"H"	2	10	81	200	easy connector	63A

Universal power connectors (to accommodate MCCB's and switchgear)

- For commercially available switchgear (*M4 fixing screws*)
- For top connection to busbar system (*bottom connection available on request*)

32214	15 - 30	5/10/"H"	top connection	108	222	busbar adaptor	200A
32215	15 - 30	5/10/"H"	bottom connection	108	222	busbar adaptor	200A
32168	15 - 30	5/10/"H"	top connection	110	320	busbar adaptor	250A
32004*	15 - 30	5/10/"H"	top/bottom	184	320	busbar adaptor	630A

* With top or bottom connection

Busbar mounted fuse bases

type	for busbars (mm)		no. rails	fuse size	description	amps
	width	thick				

- Clamps directly onto busbar (*no drilling required*)

NH DIN fuse holders (blade type fuses)

03370	15 - 30	5/10/"H"	1 pole	"00"	busbar mounted NH fuse base	160A
03656	15 - 30	5/10/"H"	3 pole	"00"	busbar mounted NH fuse base	160A
03301	15 - 30	5/10/"H"	3 pole	"1"	busbar mounted NH fuse base	250A
03693	15 - 30	5/10/"H"	3 pole	"2"	busbar mounted NH fuse base	400A

NH fuse protection covers

79448			1 pole	"00"	grip lug cover for NH fuses	-
79449			1 pole	1-2-3	grip lug cover for NH fuses	-

Cylindrical fuse holders 10 x 38 mm

1 pole busbar mounted fuse holder for 10 x 38 cylindrical fuses

31570	30 mm	5/10	1 pole	10 x 38	1000 VDC busbar mount f/holder	30A
31572	20 mm	5/10	1 pole	10 x 38	1000 VDC busbar mount f/holder	30A

3 pole busbar mounted fuse holder for 10 x 38 cylindrical fuses

- Vertical mount compact (*27 mm wide*) 3 pole in-line fuse holder

31954	15-30	5/10/"H"	3 pole	10 x 38	busbar mount fuse base	160A
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Bus-mounted fuse switch disconnectors (top or bottom connection)

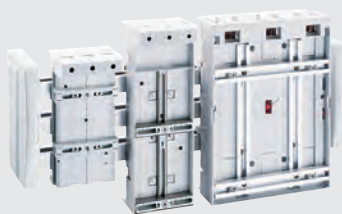
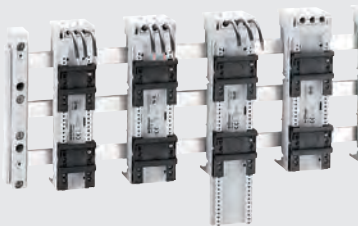
- Bus-mounting fuse switch disconnector, top/bottom connection

Horizontal mount

33216	15 - 30	5/10/"H"	3 pole	"000"	busbar mounted NH fuse base	125A
33398	15 - 30	5/10/"H"	3 pole	"00"	busbar mounted NH fuse base	160A
33601	15 - 30	5/10/"H"	3 pole	"1"	busbar mounted NH fuse base	250A
33602	15 - 30	5/10/"H"	3 pole	"2"	busbar mounted NH fuse base	400A
33603	15 - 30	5/10/"H"	3 pole	"3"	busbar mounted NH fuse base	630A

Vertical mount (in-line)

33234	15 - 30	5/10/"H"	3 pole	"00"	in-line bus mounted NH fuse base	160A
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100 mm - Universal busbar support system

The 100 mm system is a compact busbar system with 100 mm spacing between busbar centres. Busbars are arranged in a horizontal format, permitting simple attachable "clip-on" accessories such as connections for various cable and/or flexible or solid busbars, fuse holders and switches as well as easy connectors which accommodates circuit breakers, contactors etc.

type	for busbar size (mm) width	thick	no. poles	description	rated current
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Busbar supports 100 mm 1250A (3 pole)

- Horizontal mounting of undrilled busbars 30 - 40 - 50 - 60 mm wide
- Permits direct mounting of accessories: various termination, fuse/circuit breaker protection

01479 30 - 60 mm 10 mm 3 universal 100 mm busbar support 1250A

End covers for above busbar supports *provides insulated protection of busbar ends*

01254 end cover 3 for above **01479** busbar supports

Busbar supports 185 mm 2500A (3 pole)

The 185 mm busbar support system accepts busbars from 30 to 120 mm wide mounted horizontally with 185 mm spacing between busbar centres. The wide spacing of busbars offers short-circuit ratings in excess of 100 kA.

01230 30 - 120 mm 10 mm 3 universal 185 mm busbar support 2500A

End covers for above busbar supports *provides insulated protection of busbar ends*

33341 end cover 3 for above **01230** busbar supports

Accessories for busbar systems

Busbar covers

01245 30 10 single busbar cover (*clips directly onto busbar*) 1 met

01252 30 "H" profile single busbar cover (*clips directly onto busbar*) 2 met

01025 3 pole reserve section cover (*requires 01026 support for cover*) 0.7 met

01026 support for reserve section cover 32 mm high (*clips directly onto busbars*)

01320 support for reserve section cover 107 mm high (*clips directly onto busbars*)

System cover (can be used to make up any sized cover for busbars, terminals etc.)

01136 (left + right) support for cover section (*clips directly onto busbars*)

01554 front cover section (*requires 01136 supports*) 1.1 met

01555 top/bottom cover section (*requires 01136 supports*) 1.1 met

Surface/rail mount fuse holders and switch disconnectors

type	no. poles	fuse size	description	rated current
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Cylindrical fuse holders

- Modular DIN rail mounting, shock protection to DIN VDE 0660, IEC/EN 60947-3
- Silicone and chlorine free, self extinguishing to UL94
- Creepage resistance CTI 200

31110 DIN rail mounting 1 10 x 38 cylindrical fuse holder 32A

31113 DIN rail mounting 3 10 x 38 cylindrical fuse holder 32A

31115 DIN rail mounting 1 14 x 51 cylindrical fuse holder 50A

31118 DIN rail mounting 3 14 x 51 cylindrical fuse holder 50A

31120 DIN rail mounting 1 22 x 58 cylindrical fuse holder 125A

31123 DIN rail mounting 3 22 x 58 cylindrical fuse holder 125A

NH fuseswitch disconnectors

3 pole switching DIN VDE 0660, IEC/EN 60947-3

- Shock protection with integrated positive action closure and arc chambers
- Mechanical fuse retention in disconnector lid
- IP30 front degree of protection
- Silicone and chlorine free, self extinguishing to UL94

33217 fuse switch/holder 3 C00 fuse switch disconnector 125A

33222 fuse switch/holder 3 00 fuse switch disconnector 165A

33201 fuse switch/holder 3 1 fuse switch disconnector 250A

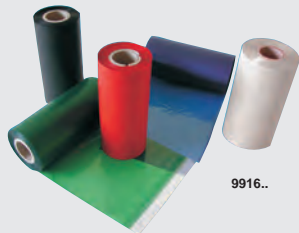
33202 fuse switch/holder 3 2 fuse switch disconnector 400A

33203 fuse switch/holder 3 3 fuse switch disconnector 630A

33204 fuse switch/holder 3 4 fuse switch disconnector 1600A



MG3



9916..



VALMG



991004

MARKINGENIUS MG3 printer

- Easy printing system: no maintenance, no settings, no technical skills needed
- Best resolution in the market: 300 x 600 dpi
- Just 3 plates for thousands labels and tags
- MG3 is the first printer especially designed for identification



Thermal transfer printer for customised marking of tags on a sheet

MARKINGENIUS MG3 - Exclusively designed for the identification of conductors and electrical components. High resolution plug & play printer based on thermal transfer technology, capable of producing tags for cables, pipes, tubes, terminal block markers, legends and labels for electrical panels, components and equipment.

Can reproduce clipart images, drawings, barcodes and bitmaps down to very fine detail. Compact, ergonomical, clean and quiet, MG3 may be conveniently located in an office, like any other computer peripheral.

Each monochrome ribbon prints more than 300 000 (4 x 10 mm) cable tags with full printable surface coverage. Carriage loading and unloading operations are rapid and easy. Support templates are easily interchangeable. Pigment deposited from the ribbon dries instantaneously, printed sheets are immediately ready for use.

MARKINGENIUS MG3 printer (H) 221 x (W) 230 x (D) 382 mm

- **Speed:** Prints 112 MG-TPMF (4 x 10 mm) cable tags in less than 12 seconds
- **Convenience:** Software provides quick and easy upload of data to be printed
- **Economy:** Prints up to 300 000 MG-TPMF 4 x 10 cable tags with a single ribbon
- **Quality:** Printer resolution 300 x 600 dpi

Following supplied with MG3 printer:

- MG2-PWC (991000) support template for tags (**MG-TPM**)
- MG2-PLT (991002) support template for legends, labels and signs and all **serieFLAT** media
- MG2-QTB (991011) support template for terminal block markers (**MG-CPM-01,02,03,04,07**)
- Mains/USB cable, protective cover, Black ribbon and take up core, installation/operating docs
- GENIUSPRO (software - 5 multiple licences and manual)

type	description
MG3	MARKINGENIUS MG3 thermal transfer printer for marking tags and legends

Accessories and spares for MG3 printers

MG2-ETR ribbons for MARKINGENIUS MG3				thermal transfer printer ribbon	
type	width (mm)	length (meters)	colour	description	Pantone ref.
991600	120	200	black	thermal transfer printer ribbon	Black C
991601	120	200	blue	thermal transfer printer ribbon	2935C
991602	120	200	red	thermal transfer printer ribbon	186C
991606	120	200	white	thermal transfer printer ribbon	-
VALMG	transportation case with wheels for MG3 thermal transfer printer				

Support templates for MG3 printer

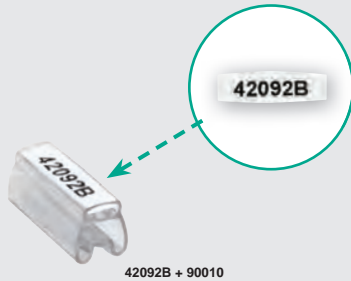
- 991000* MG2-PWC support template for cable tags **MG-TPM**
- 991002* MG2-PLT support template for legends, labels, signs and all **serieFLAT**
- 991011* MG2-QTB support template for terminal markers **MG-CPM-01/02/03/04/07**
- 991004 MG2-WTB support template for terminal markers **MG-CPM-05/12**
- 991010 MG2-PTM support template for cable tags **MG-TDMO & MG-TDM** (4 - 16 mm)

* Usually supplied with MG3 printer

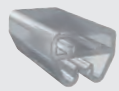
- 991670 MG2-CKP print head cleaning kit (template, pad & cleaning fluid)
- 992150 MG2-CNP replacement pads for above cleaning kit **MG2-CKP** (5 pcs)
- 991671 MG2-CHS replacement cleaning fluid for above cleaning kit **MG2-CKP**

Cable tags precut 4 mm push-in marker tags for PMF holders - new "easy entry" profile

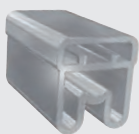
SeriesFLAT MG-TPMF tags are used for marking cables, conduit, tubes, conductors and components. Presented in stem format, tags are simply snapped off their stems and inserted into appropriate holders for perfect protection against degradation by chemical and environmental agents over time. Tag stems can also be labelled to indicate specific job or application notes.



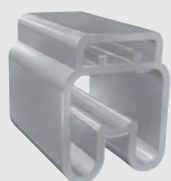
42092B + 90010



PMF-00



PMF-01



PMF-03

type	size (mm)	for cable (mm ²)	SW code	colour	description	tags per sheet	tags per box
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MG-TPMF slide-in marking tags for **PMF** transparent holders - "easy entry"

- Material: Rigid PVC, self extinguishing class VO: UL 94
- Operating temperature: -30°C - +60°C
- Support template: **991002 MG2-PLT** (usually supplied with MG3 printer)

42091B	4 x 12	—	505	white	slide-in tags for PMF holders	80	4000
42092B	4 x 15	—	503	white	slide-in tags for PMF holders	80	4000
42093B	4 x 20	—	504	white	slide-in tags for PMF holders	64	1600
42096B	4 x 30	—	509	white	slide-in tags for PMF holders	48	1200
42097B	4 x 40	—	508	white	slide-in tags for PMF holders	32	800
42041B	4 x 12	—	505	yellow	slide-in tags for PMF holders	80	4000
42042B	4 x 15	—	503	yellow	slide-in tags for PMF holders	80	4000
42043B	4 x 20	—	504	yellow	slide-in tags for PMF holders	64	1600
42046B	4 x 30	—	509	yellow	slide-in tags for PMF holders	48	1200
42047B	4 x 40	—	508	yellow	slide-in tags for PMF holders	32	800

Other colours available on request

PMF transparent tag holders for **MG-TPMF seriesFLAT** pre-printed 4 mm cable tags

PMF holders are specifically designed to accommodate appropriately sized cables. They slide on to cables to receive a pre-printed marking tag into a protected sleeve on the holder.

type	for tag (mm)	for cable (mm ²)	colour	description	std pack qty
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- Material: Plasticised PVC, self extinguishing to class VO: UL 94
- Operating temperature: -40°C - +80°C
- Free of Cadmium, Lead, Silicon, Teflon. Resistant to alkali, alcohol, acids and solvents

PMF-00 for cable ext. Ø diameter 1.3 - 2.2 mm

90010	4 x 12	0.25-0.5	t/parent	slide-on transparent tag holder	7000
90020	4 x 15	0.25-0.5	t/parent	slide-on transparent tag holder	6000
90040	4 x 20	0.25-0.5	t/parent	slide-on transparent tag holder	4000
90070	4 x 30	0.25-0.5	t/parent	slide-on transparent tag holder	2000
90090	4 x 40	0.25-0.5	t/parent	slide-on transparent tag holder	2500

PMF-01 for cable ext. Ø diameter 2 - 3.7 mm

90110	4 x 12	0.5 - 2.5	t/parent	slide-on transparent tag holder	5000
90120	4 x 15	0.5 - 2.5	t/parent	slide-on transparent tag holder	4000
90140	4 x 20	0.5 - 2.5	t/parent	slide-on transparent tag holder	3000
90170	4 x 30	0.5 - 2.5	t/parent	slide-on transparent tag holder	2000
90190	4 x 40	0.5 - 2.5	t/parent	slide-on transparent tag holder	1000

PMF-02 for cable ext. Ø diameter 3.4 - 4.3 mm

90210	4 x 12	2.5 - 4	t/parent	slide-on transparent tag holder	4000
90220	4 x 15	2.5 - 4	t/parent	slide-on transparent tag holder	3000
90240	4 x 20	2.5 - 4	t/parent	slide-on transparent tag holder	2000
90270	4 x 30	2.5 - 4	t/parent	slide-on transparent tag holder	1000
90290	4 x 40	2.5 - 4	t/parent	slide-on transparent tag holder	1000

PMF-03 for cable ext. Ø diameter 4 - 6.3 mm

90310	4 x 12	4 - 10	t/parent	slide-on transparent tag holder	2000
90320	4 x 15	4 - 10	t/parent	slide-on transparent tag holder	2000
90340	4 x 20	4 - 10	t/parent	slide-on transparent tag holder	1000
90370C	4 x 30	4 - 10	t/parent	slide-on transparent tag holder	1000
90390	4 x 40	4 - 10	t/parent	slide-on transparent tag holder	1000

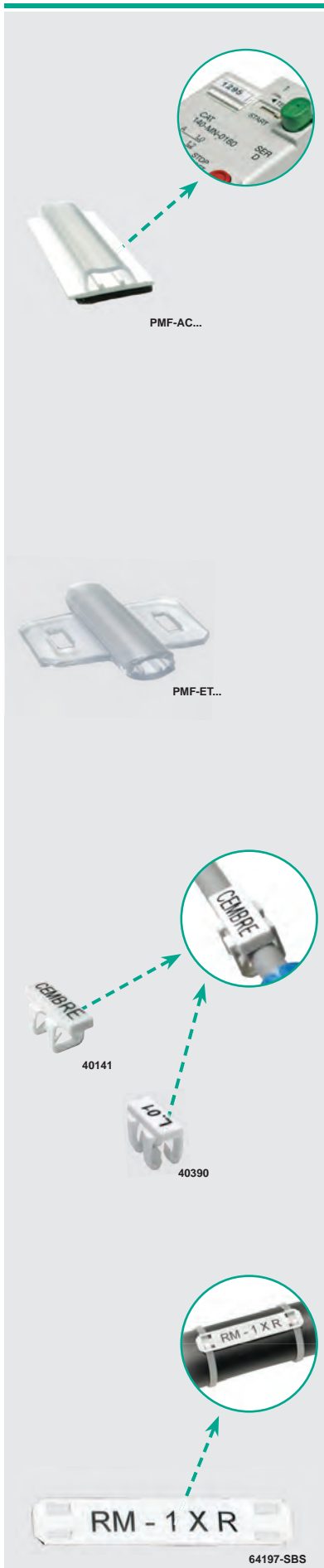
PMF-04 for cable ext. Ø diameter 6 - 10 mm

90420	4 x 15	10 - 25	t/parent	slide-on transparent tag holder	1000
90440	4 x 20	10 - 25	t/parent	slide-on transparent tag holder	500
90470	4 x 30	10 - 25	t/parent	slide-on transparent tag holder	500
90490	4 x 40	10 - 25	t/parent	slide-on transparent tag holder	500

PMF-05 for cable ext. Ø diameter 9 - 15 mm

90520	4 x 15	25 - 70	t/parent	slide-on transparent tag holder	250
90540	4 x 20	25 - 70	t/parent	slide-on transparent tag holder	250
90570	4 x 30	25 - 70	t/parent	slide-on transparent tag holder	150
90590	4 x 40	25 - 70	t/parent	slide-on transparent tag holder	100

Larger sizes up to 240 mm² available on request



Transparent tag holders to receive 4 mm pre-printed tags

PMT holders are specifically designed to receive a pre-printed marking tag into a protected sleeve on the holder.

type	for tag (mm)	mounting	colour	description	std pack
PMF transparent holders for MG-TPMF series FLAT cable tags 4 mm					
<ul style="list-style-type: none"> Material: Plasticised PVC, self extinguishing to class VO: UL 94 Operating temperature: -40°C - +80°C Free of Cadmium, Lead, Silicon, Teflon. Resistant to alkali, alcohol, acids and solvents 					
PMF-AC self adhesive tag holders for surface mounting of 4 mm tags					
66010N	4 x 12	adhesive	t/parent	self adhesive 4 mm tag holder	4000
66020N	4 x 15	adhesive	t/parent	self adhesive 4 mm tag holder	4000
66040N	4 x 20	adhesive	t/parent	self adhesive 4 mm tag holder	4000
66070N	4 x 30	adhesive	t/parent	self adhesive 4 mm tag holder	2000
66090N	4 x 40	adhesive	t/parent	self adhesive 4 mm tag holder	1000
PMF-ET tie-on tag holders for mounting on cables, hoses, tubes, conduits with cable ties					
<ul style="list-style-type: none"> Tie on holder (max cable tie width 6 mm) longitudinal mounting of cables, tubes, conduit 					
63020	4 x 15	tie mount	1 tie	t/parent tie-on transparent tag holder	2000
63040	4 x 20	tie mount	1 tie	t/parent tie-on transparent tag holder	1000
63070	4 x 30	tie mount	1 tie	t/parent tie-on transparent tag holder	1000
63090	4 x 40	tie mount	2 ties	t/parent tie-on transparent tag holder	500

MG series one piece cable marking tags (without holder - directly mounts onto cable)

MG one piece tags require no holders and can be directly mounted onto cable without tools
A sheet of tags takes 10 seconds to print. Partially printed sheets may be re-used to avoid wastage.
MG - one piece marking tags mount onto cables via the two range-taking apertures

- Material: Polycarbonate, Halogen Free, self extinguishing to class VO: UL 94
- Operating temperature: -40°C - +130°C

991010 Use support template MG2-PTM for all MG series markers (see page L-37)

type	size (mm)	for cable (mm ²)	SW code	colour	description	tags per sheet	box
MG-TDM slide-on one piece marking tags (pre - termination)							
MG-TDM-01		for cable external Ø diameter		1.6 - 3.25 mm			
40141	4 x 16	0.5-1.5	123	yellow	slide-on cable marker tags	40	800
MG-TDM-02		for cable external Ø diameter		2 - 4.4 mm			
40241	4 x 16	1 - 6	124	yellow	slide-on cable marker tags	40	640
MG2-TDMO clip-on one piece marking tags (post termination)							
MG2-TDMO-01		for cable external Ø diameter		2 - 2.9 mm			
40390	4 x 12	0.5 - 1.5	125	white	slide-on cable marker tags	40	880
40391	4 x 16	0.5 - 1.5	128	white	slide-on cable marker tags	40	880
MG2-TDMO-02		for cable external Ø diameter		2.9 - 3.5 mm			
40490	4 x 12	1.5 - 2.5	126	white	slide-on cable marker tags	40	640
40491	4 x 16	1.5 - 2.5	129	white	slide-on cable marker tags	40	640
MG2-TDMO-03		for cable external Ø diameter		2 - 4.4 mm			
40590	4 x 12	4 - 6	127	white	slide-on cable marker tags	40	560
40591	4 x 16	4 - 6	130	white	slide-on cable marker tags	40	560

MG-ETF cable and conduit tags (cable tie mounting)

- For marking large diameter cables, hoses, tubes and conduit
- Max. cable tie width: 4.8 mm
- Support template: **991002 MG2-PLT** (usually supplied with MG3 printer)

64192-SBS	13 x 57	581	white	11 x 35 mm tie mount cable tags	14	700
64142-SBS	13 x 57	581	yellow	11 x 35 mm tie mount cable tags	14	700
64293-SBS	15 x 95	584	white	15 x 95 mm tie mount cable tags	5	250
64197-SBS	28 x 57	591	white	26 x 35 mm tie mount cable tags	6	300
64147-SBS	28 x 57	591	yellow	26 x 35 mm tie mount cable tags	6	300

Other colours available on request.

9 mm marking tags and holders

type	size (mm)	SW code	colour	description	tags per sheet	box
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MG-TAPW 9 mm push-in precut marking legends for PMT series legend holders (*below*)

- Presented in stem format
- Tags are simply snapped off their stems and inserted into the appropriate holders
- Support template: **991002 MG2-PLT** (*usually supplied with MG3 printer*)

Material: Rigid PVC, self extinguishing to class VO: UL 94
Operating temperature: -30°C - +60°C

49090N	9 x 20	362	white	push-in legends for PMT holders	55	2750
49091N	9 x 35	364	white	push-in legends for PMT holders	33	1650
49095N	9 x 70	378	white	push-in legends for PMT holders	11	550
49040N	9 x 20	362	yellow	push-in legends for PMT holders	55	2750
49041N	9 x 35	364	yellow	push-in legends for PMT holders	33	1650
49045N	9 x 70	378	yellow	push-in legends for PMT holders	11	550

MG-TAA 9 mm self adhesive, precut legends supplied on a sheet

- Self adhesive, can be applied to panels, components and equipment
- Support template: **991002 MG2-PLT** (*usually supplied with MG3 printer*)

Material: Rigid PVC, self extinguishing to class VO: UL 94
Operating temperature: -30°C - +60°C

49290N	9 x 12	960	white	precut self adhesive blank legends	88	2200
49397N	9 x 15	961	white	precut self adhesive blank legends	77	1925
49190N	9 x 20	962	white	precut self adhesive blank legends	55	1375
49191N	9 x 35	964	white	precut self adhesive blank legends	33	825
49240N	9 x 12	960	yellow	precut self adhesive blank legends	88	2200
49347N	9 x 15	961	yellow	precut self adhesive blank legends	77	1925
49140N	9 x 20	962	yellow	precut self adhesive blank legends	55	1375
49141N	9 x 35	964	yellow	precut self adhesive blank legends	33	825

PMT transparent legend holders to receive **MG-TAPW** 9 mm pre-printed tags (*above*)

Material: Plasticised PVC, self extinguishing to class VO: UL 94
Operating temperature: -40°C - +80°C
Free of Cadmium, Lead, Silicon and Teflon. Resistant to alkali, alcohol, acid and many other solvents

type	for tags (mm)	mounting	colour	description	std pack qty
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PMT-AC self adhesive tag holder for surface mounting of 9 mm marking tags

59042N	9 x 20	adhesive	t/parent	self adhesive tag holder	500
59050N	9 x 35	adhesive	t/parent	self adhesive tag holder	500

PMT-ET tie-on tag holders for mounting on cables, hoses, tubes, conduits with cable ties

- Tie on holder (max cable tie width 6 mm) longitudinal mounting of cables, tubes, conduit

54040	9 x 20	1 tie	t/parent	tie-on transparent tag holder	1000
54050	9 x 35	2 ties	t/parent	tie-on transparent tag holder	500

PMT-CT tie-on tag holders for mounting on cables, hoses, tubes, conduits with cable ties

54013	9 x 35	2 ties	t/parent	55 mm t/parent tie-on tag holder	500
54014	9 x 70	2 ties	t/parent	90 mm t/parent tie-on tag holder	250

Rail holder and protective covers for 9 mm legends (*above*)

Legend rails provide an alternative to direct marking on components. 15 mm legends simply slide into rail and can be protected by using optional RT-CCP transparent protective strip.

- Legend rail for 9 mm labels
- Non-deformable up to 90°C
- Rigid dielectric high impact PVC. Lead-free, self extinguishing to class VO: UL 94

RTA-TAP self adhesive rail, accepts 9 mm legends

990506N	1 met	adhesive	grey	adhesive rail holder for 9 mm legend	25
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RT-CCP transparent protective strip for above rail

990734	1 met	RT-CCP	t/parent	protective strip for above 9 mm rails	25
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49040N



MG-TAA



59042N



54040



990506N



MG-TAP



MG-TAA



PMT-AC



PMT-ET

15 mm marking tags and holders

- Operating temperature: -30°C - +60°C
- Material: Rigid PVC, self extinguishing to class VO: UL 94
- Support template: **991002 MG2-PLT** (usually supplied with MG3 printer)

type	size (mm)	SW code	colour	description	tags per sheet	box
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MG-TAP slide-in marking legends for PMT-AC/ET/DT, PLR, PTPR legend holders (below)

- Presented in stem format
- Tags are simply snapped off their stems and inserted into the appropriate holders

47090N	15 x 17	165	white	slide-in markers for 15 mm holders	42	1050
47091N	15 x 27	166	white	slide-in markers for 15 mm holders	28	1400
47092N	15 x 49	167	white	slide-in markers for 15 mm holders	14	700
47093N	15 x 67	168	white	slide-in markers for 15 mm holders	7	350

MG-17.5-R marking legends for RTR/RTA-TAP rail (overleaf)

- For use with RTR/RTA-TAP 15 mm legend rails
- Modular legends to suit standard MCB's for distribution boards

990768N	15 x 17.5	321	white	1 module	legend for rail holders	42	1050
990766N	15 x 35	322	white	2 module	legend for rail holders	21	1050
990764N	15 x 52.5	323	white	3 module	legend for rail holders	12	700
990762	15 x 70	324	white	4 module	legend for rail holders	6	300
990755	15 x 87.5	325	white	5 module	legend for rail holders	6	300
990798N	15 x 107.5	329	white	6 module	legend for rail holders	7	350
990883	15 x 140	331	white	8 module	legend for rail holders	7	350

MG-TAA self adhesive precut legends

- Self adhesive - can be applied to panels, components and equipment
- Material: Rigid PVC - self extinguishing to class VO: UL 94
- Support template: **991002 MG2-PLT** (usually supplied with MG3 printer)

49192N	15 x 17	965	white	precut self adhesive blank legends	42	1050
49193N	15 x 27	966	white	precut self adhesive blank legends	28	700
49194N	15 x 49	967	white	precut self adhesive blank legends	14	350
49195N	15 x 67	968	white	precut self adhesive blank legends	7	175

MG-17.5-A self adhesive modular legends (for modular MCB's)

990824	15 x 107.5	929	white	6 module	self adhesive legends	7	175
990880	15 x 140	931	white	8 module	self adhesive legends	7	175

PMT transparent legend holders to receive MG-TAP 15 mm pre-printed legends (above)

PMT holders are specifically designed to receive a pre-printed marking tag into a protected sleeve on the holder.

type	for tags (mm)	mounting	colour	description	std pack qty
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- Material: Plasticised PVC, self extinguishing to class VO: UL 94
- Operating temperature: -40°C - +80°C
- Free of Cadmium, Lead, Silicon and Teflon. Resistant to alkali, alcohol, acids and solvents

PMT-AC self adhesive legend holders for surface mounting of 15 mm marking legends

59002N	15 x 17	adhesive	t/parent	self adhesive 15 mm tag holder	500
59010N	15 x 27	adhesive	t/parent	self adhesive 15 mm tag holder	1000
59020N	15 x 49	adhesive	t/parent	self adhesive 15 mm tag holder	500
59030N	15 x 67	adhesive	t/parent	self adhesive 15 mm tag holder	250

PMT-ET tie-on legend holders for mounting on cables, hoses, tubes and conduits with cable ties

- Tie on holder (max cable tie width 6 mm) longitudinal mounting of cables, tubes, conduit

54000	15 x 17	1 tie	t/parent	tie-on transparent tag holder	500
54010	15 x 27	1 tie	t/parent	tie-on transparent tag holder	500
54020	15 x 49	1 tie	t/parent	tie-on transparent tag holder	250
54030	15 x 67	2 ties	t/parent	tie-on transparent tag holder	250



Legend holders/base to receive MG-TAP 15 mm pre-printed legends

PMT holders are specifically designed to receive a pre-printed marking legends into a protected sleeve.

type	for tags (mm)	mount	colour	size (mm)	description	tags per sheet	box
Holder/base to receive MG-TAP 15 mm pre-printed legends							
PLR <i>rectangular legend support/base - rivet fixing</i>							
34202	15 x 17	rivet	black	17 x 20	legend holder/base	100	
34302	15 x 27	rivet	black	17 x 30	legend holder/base	100	
34402	15 x 49	rivet	black	17 x 52	legend holder/base	100	
34502	15 x 67	rivet	black	17 x 70	legend holder/base	100	
PTPR-22 <i>legend holder for standard Ø 22.5 mm pushbuttons</i>							
34102	15 x 27	Ø 22.5	black	48 X 30	p/button legend holder	100	
MG-TAP-CCS transparent protective covers for above legend supports							
990508N	15 x 17	165	t/parent		covers for legend supports	42	1050
990510N	15 x 27	166	t/parent		covers for legend supports	28	1400
990513N	15 x 49	167	t/parent		covers for legend supports	14	700
990514N	15 x 67	168	t/parent		covers for legend supports	7	350

Rail holder and protective covers for MG-17.5 15 mm legends

Legend rails provide an alternative to direct marking on components. 15 mm legends simply slide into rail and can be protected by using optional RT-CCP transparent protective strip.

- Legend rail for 15 mm labels
- Rigid dielectric high impact PVC. Lead-free, self extinguishing to class VO: UL 94
- Non-deformable up to 90°C

RTR-TAP <i>pre-drilled rail, accepts MG-17.5-R 15 mm legends</i>							
990454	430 mm	rivet	black		rail holder for 15 mm legend	25	
990664	650 mm	rivet	black		rail holder for 15 mm legend	25	
RTA-TAP <i>self adhesive rail, accepts MG-17.5-R 15 mm legends</i>							
990525N	1 met	adhesive	black		adhesive rail holder for 15 mm legend	25	
RT-CCP <i>transparent protective strip for above rail</i>							
990735	1 met	RT-CCP	t/parent		protective strip for above rails	25	

Push button legends Ø 22.5 mm precut

- Operating temperature: -30°C - +60°C
- Material: Rigid PVC, self extinguishing to class VO: UL 94
- Support template: **991002 MG2-PLT** (usually supplied with MG3 printer)

type	size (mm)	SW code	colour	description	tags per sheet	box
MG-PTS Ø22.5 mm precut legends for pushbuttons						
15090	40 x 30	1000	white	Ø 22.5 mm pushbutton legend	6	300
15040	40 x 30	1000	yellow	Ø 22.5 mm pushbutton legend	6	300
15000	40 x 30	1000	black	Ø 22.5 mm pushbutton legend	6	300
15091	50 x 30	1001	white	Ø 22.5 mm pushbutton legend	6	300
15041	50 x 30	1001	yellow	Ø 22.5 mm pushbutton legend	6	300
15001	50 x 30	1001	black	Ø 22.5 mm pushbutton legend	6	300

MG-VRT-A Panel plates self adhesive, customisable

Rigid PVC self adhesive panel plates used to create name plates, rating plates, data plates using company logos, technical data, serial numbers, certification, etc.

- Material: Rigid PVC - self extinguishing to class VO: UL 94
- Support template: **991002 MG2-PLT** (usually supplied with MG3 printer)

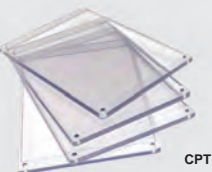
88916	25 x 50	853	white	precut self adhesive blank labels	8	200
88900N	32 x 58	200	white	precut self adhesive blank labels	6	150
88945	35 x 75	825	white	precut self adhesive blank labels	3	75
88918	50 x 50	858	white	precut self adhesive blank labels	4	100
88901	42 x 78	202	white	precut self adhesive blank labels	2	50
88902	62 x 88	204	white	precut self adhesive blank labels	1	25
88903	52 x 107	204	white	precut self adhesive blank labels	2	50
88913	92 x 118	813	white	precut self adhesive blank labels	1	25
88904	105 x 110	812	white	precut self adhesive blank labels	1	25



MG-TAA



MG-VYT



Self adhesive precut legends for marking

- Self adhesive - can be applied to panels, components and equipment
- Material: Rigid PVC - self extinguishing to class VO: UL 94
- Support template: **991002 MG2-PLT** (usually supplied with **MG3 printer**)

type	size (mm)	SW code	colour	description	tags per sheet box	
MG-TAA self adhesive, precut legends						
49196	7 x 20	179	white	precut self adhesive blank legends	60	1500
49597	7 x 44	796	white	precut self adhesive blank legends	24	600
49498	8.5 x 30	720	white	precut self adhesive blank legends	33	825
49290N	9 x 12	960	white	precut self adhesive blank legends	88	2200
49397N	9 x 15	961	white	precut self adhesive blank legends	77	1925
49190N	9 x 20	962	white	precut self adhesive blank legends	55	1375
49191N	9 x 35	964	white	precut self adhesive blank legends	33	825
49193N	15 x 27	966	white	precut self adhesive blank legends	28	1050
49194N	15 x 49	967	white	precut self adhesive blank legends	14	350
49195N	15 x 67	968	white	precut self adhesive blank legends	7	175
49293	20 x 48	850	white	precut self adhesive blank legends	10	250
49294	20 x 72	851	white	precut self adhesive blank legends	5	125

MG-VYT self adhesive precut labels

- Dielectric PVC film labels used for internal and external marking
- Support template: **991002 MG2-PLT** (usually supplied with **MG3 printer**)

46915	6 x 15	181	white	precut self adhesive blank labels	105	5250
44891	7 x 10	191	white	precut self adhesive blank labels	120	6000
46928	7 x 15	182	white	precut self adhesive blank labels	60	3000
46935	7 x 20	190	white	precut self adhesive blank labels	60	3000
46914	9 x 12	160	white	precut self adhesive blank labels	80	4000
44895	9 x 15	161	white	precut self adhesive blank labels	70	3500
44896N	9 x 20	162	white	precut self adhesive blank labels	55	2750
46910N	9 x 35	164	white	precut self adhesive blank labels	33	1650
46921N	15 x 27	186	white	precut self adhesive blank labels	28	1400
46933N	15 x 49	187	white	precut self adhesive blank labels	14	700
46925	25 x 50	612	white	precut self adhesive blank labels	8	400
46926	25 x 80	613	white	precut self adhesive blank labels	4	200

Other sizes available on request.

MG-VRT-R customisable panel plates

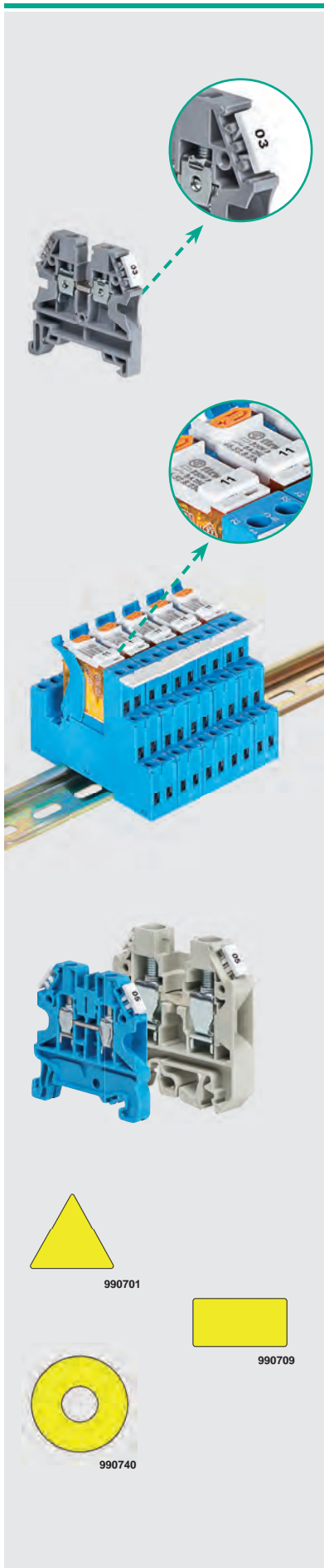
Rigid PVC panel plates used to create name plates, rating plates, data plates using company logos, technical data, serial numbers, certification, etc. CPT transparent polycarbonate covers can be used for increased durability

- Material: Rigid PVC - self extinguishing to class VO: UL 94
- Support template: **991002 MG2-PLT** (usually supplied with **MG3 printer**)

48900N	32 x 58	200	white	precut customisable panel plates	6	300
48901	42 x 78	202	white	precut customisable panel plates	2	100
48902	62 x 88	203	white	precut customisable panel plates	1	50
48903	52 x 107	204	white	precut customisable panel plates	2	100
48913	92 x 118	813	white	precut customisable panel plates	1	50

CPT transparent rivet fixing protection covers for panel plates (above)

Polycarbonate covers can be used to increase durability (Ø 3 mm mounting holes)						std pack qty
47590	37 x 79	-	t/parent	covers for 32 x 58 panel plates	10	
47591	47 x 98	-	t/parent	covers for 42 x 78 panel plates	10	
47594	67 x 109	-	t/parent	covers for 62 x 88 panel plates	10	
47592	57 x 127	-	t/parent	covers for 52 x 107 panel plates	10	
47593	97 x 140	-	t/parent	covers for 92 x 118 panel plates	10	

**MG-CPM terminal block markers**

Terminal block markers are available in versions to suit the particular clip formats of the most widely used terminals, they provide an elevated mechanical robustness, high dimensional stability and are Halogen free. To optimise application time, additional data such as job details, location, etc - can be printed on the stems.

type	size (mm)	SW code	colour	description	tags per sheet	box
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MG-CPM terminal block markers

- Material: Polycarbonate, Halogen free self extinguishing to class VO: UL 94
- Operating temperature: -40°C - +130°C
- Support template: **991011 MG2-QTB** (usually supplied with **MG3 printer**)

MG-CPM-01

For terminals - **Klemsan**, Weidmuller, ABB Entrelec, Wago, Allen Bradley, ContaClip, Connectwell

41094	5 x 7	13	white	terminal block marking tag	56	1960
41090N	5 x 10	14	white	terminal block marking tag	56	1960
41091N	5 x 15	16	white	offset terminal block marking tag	48	1680
41095	6 x 10	17	white	modular terminal block marking tag	48	1680
41096	8 x 10	18	white	terminal block marking tag	32	1120

MG-CPM-04

For terminals - Phoenix Contact UK/UT/ST, ABB Entrelec, Wago, Cabur, Connectwell

41390N	5 x 10	42	white	terminal block marking tag	48	1680
41391	6 x 10	45	white	terminal block marking tag	48	1344

MG-CPM-07

For terminals - Phoenix Contact ST/STU/STS/STI/STN/STTB, Siemens 8WH, Schlegel

41691	5 x 10	71	white	terminal block marking tag	48	1680
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MG-CPM-11

For terminals - **Finder**, **Klemsan**, Allen Bradley, Weidmuller WDU, Contra Clip RK, Omron

46392	6 x 12	106	white	terminal block marking tag	48	1344
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MG-CPM-05

For terminals - **Wieland**, Telemecanique, Legrand

- Support template: **991004 MG2-WTB** support template for **MG-CPM-05**

41490	5 x 10	51	white	terminal block marking tag	56	1960
41494	5 x 10	51	white	modular terminal marking tag	56	1960

MG-SIGNS-VY self adhesive **panel labels**, warning, hazard, prohibition

- Material: PVC film
- Operating temperature: -30°C - +70°C

990700N	50	241	yellow	self adhesive triangle warning sign	4	200
990701	100	242	yellow	self adhesive triangle warning sign	1	50
990709	34 x 74	246	yellow	self adhesive rectangular label	2	100
990710	52 x 105	247	yellow	self adhesive rectangular label	2	100
990740	Ø 62	232	yellow	round label for 22.5 mm hole	1	50
990741	Ø 90	233	yellow	round label for 22.5 mm hole	1	50

new



Rolly3000

Thermal transfer printer for customised marking of tags on rolls

ROLLY3000 is designed for volume printing of all Cembre flat material on rolls, eg. Cable tags for holders, tie-on, wraparound cable markers, legend strips and labels.

Carriage loading and unloading operations are rapid and support templates are easily interchangeable. As pigment deposited from the ribbon dries instantaneously, printed sheets are immediately ready for use.

ROLLY3000 package comprises: (H) 286 x (W) 252 x (D) 440 mm

- ROLLY3000 printer
- Mains and USB cable, Black printer ribbon, installation/operating documentation, GENIUSPRO - software

type	description
ROLLY3000 printer	Thermal transfer printer for marking of tags and legends

- **Speed** Prints 1000 TPM-ROLL 4 x 10 cable tags in less than 2 minutes
- **Convenience** Software provides quick and easy upload of data to be printed
- **Economy** Prints up to 140.000 TPM-ROLL 4 x 10 cable tags with a single ribbon
- **Quality** Printer resolution 300 dpi

ROLLY3000 Thermal transfer printer for marking tags and legends on rolls

Accessories for ROLLY3000 printer

type	width (mm)	length (met.)	colour	description	Pantone ref.
842112	105	200	black	TPS-060 thermal t/fer printer ribbon	Black C

TPM-ROLL push-in 4 mm marking tags on a roll for **PMF, PMT-AC** tag holders

- Presented on a roll for ROLLY3000 printers
- Tags are simply inserted into appropriate holders and snapped off their branches

Material: Rigid PVC, self extinguishing to class VO: UL 94
 Operating temperature: -30°C - +60°C

type	size (mm)	SW code	colour	description	tags per roll
44091B	4 x 12	4022	white	push-in tags for PMF 4 mm holders	12552
44092B	4 x 15	4023	white	push-in tags for PMF 4 mm holders	12552
44093B	4 x 20	4005	white	push-in tags for PMF 4 mm holders	10200
44096B	4 x 30	4026	white	push-in tags for PMF 4 mm holders	6270
44097B	4 x 40	4007	white	push-in tags for PMF 4 mm holders	5005
44041B	4 x 12	4022	yellow	push-in tags for PMF 4 mm holders	12552
44042B	4 x 15	4023	yellow	push-in tags for PMF 4 mm holders	12552
44043B	4 x 20	4005	yellow	push-in tags for PMF 4 mm holders	10200
44046B	4 x 30	4026	yellow	push-in tags for PMF 4 mm holders	6270
44047B	4 x 40	4007	yellow	push-in tags for PMF 4 mm holders	5005

TAR-ROLL push-in 9 mm marking tags for **PMT and RT-TAPW** tag holders

75098	9 x 20	4301	white	push-in tags for PMT 9 mm holders	5800
75099	9 x 70	4300	white	push-in tags for PMT 9 mm holders	1450
75049	9 x 70	4300	yellow	push-in tags for PMT 9 mm holders	1450

ETF-ROLL tie-on, precut one piece 13 mm markers (max cable tie width 4.8 mm)

44192-SBS	13 x 57	4400	white	tie-on cable and conduit tags	1775
44142-SBS	13 x 57	4400	yellow	tie-on cable and conduit tags	1775

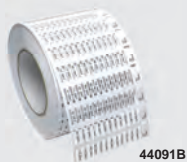
STRIP-ROLL-R modular component legend strips on a roll

- For use with RTA-TAP rail legend holder (page L-48)
- **SW code - 5002** - 430 mm / **SW 5102** - 630 mm / **SW5 202** - 1000 mm

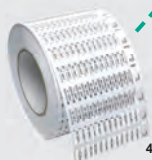
13160	15 mm	-	white	modular component legend strip	25 met
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TTL self-adhesive thermal transfer labels on a roll (Polyester film)

8400008WPYG	7 x 15	4102	white	self adhesive labels on a roll	32000
8401010WPYG	7 x 20	4101	white	self adhesive labels on a roll	24000
8400092WPYG	9 x 15	4107	white	self adhesive labels on a roll	26660
8400017WPYG	9 x 20	4106	white	self adhesive labels on a roll	19995
8400094WPYG	9 x 38	4108	white	self adhesive labels on a roll	13300
8401008WPYG	15 x 27	4120	white	self adhesive labels on a roll	13320
8400038WPYG	22 x 40	4164	white	self adhesive labels on a roll	4800
8400073WPYG	25 x 45	4168	white	self adhesive labels on a roll	5710
8400042WPYG	30 x 50	4175	white	self adhesive labels on a roll	2420
8400072WPYG	30 x 80	4176	white	self adhesive labels on a roll	2420
8400051WPYG	40 x 80	4188	white	self adhesive labels on a roll	2800
8400083WPYG	40 x 90	4121	white	self adhesive labels on a roll	1860



44091B



44192-SBS



84...WPYG



»JOKARI«

Cembre

GLW
Crimping Technology

CHAUVIN
ARNOUX
GROUP

TOOLS

M

Wire / Cable strippers		Jokari	M-1...2
Cable knives / Multifunction tools		Jokari	M-2
Hand operated crimping tools		Pressmaster Z&F Cembre Jeesoon Rennsteig	M-3 M-3 M-3 M-3 M-4
Hydraulic crimping / Cutting tools		Cembre	M-5
Battery operated crimping tools		Cembre	M-6
Die sets for crimping tools		Cembre	M-7
Automatic cable preparation machines		GLW	M-4
DIN rail cutter		GLW	M-8
Wire duct / Trunking cutter		GLW	M-8
Portable tester / Multimeter		Chauvin Arnoux	M-9
Clamp testers		Chauvin Arnoux	M-10
Portable network analyser / Logger		Chauvin Arnoux	M-11
Thermal camera		Chauvin Arnoux	M-12
Electrical installation tester		Chauvin Arnoux	M-13



30900



20100



20050



20090



30120

Jokari a market leader in stripping technology for all types of wires, cables and conductors. Producing professional tools for most application areas in which wires must be processed easily, quickly and safely. All cable knives, cable and wire strippers are TÜV- and GS-certified.

- Highest standards of workmanship and material
- Durable, reliable performance guaranteed
- Complete quality assurance



Scan to watch video

Wire strippers

type	tool name	description	wire size
Allrounder for stripping of standard round and flat cables up to Ø 15 mm			
For removing of the coating, longitudinal sections, stripping of solid or flexible wires for exposing of wire lengths for specific connections, and a broad working range.			
<ul style="list-style-type: none"> • Round cables Ø 4...15 mm, Flat cables max. 15 mm wide and flexible wire 1.5...50 mm² • Extra blade for longitudinal cut. 2 stripping notches with length stop for stripping conductors • Removable length stop, suitable for left and right hand use, can be stored in the tool handle. 			
30900	Allrounder	universal stripper for round and flat cables	Ø 4 - 15 mm
Secura 2K soft grip (professional wire stripper)			
Automatic wire stripper for single, multiple and fine stranded cables 0.2...6.0 mm ² with std insulation.			
<ul style="list-style-type: none"> • No adjustment necessary for different cross-sections • Integrated safety wire cutter for wires up to 2.5 mm² • Strip length stopper adjustable 6 to 18 mm • Ergonomic security soft grip handle (<i>non-tiring long operation</i>) 			
20100	Secura 2K	soft-grip wire stripper (<i>incorporating cutter</i>)	0.2 - 6 mm ²
29100		spare blade set for above soft-grip stripper	
Super 4 plus wire stripper (econo version)			
<ul style="list-style-type: none"> • Automatic wire stripper for solid and standard wires 0.2 - 6 mm² • Integrated safety cutter for wires up to max. 2.5 mm² • Strip length stopper adjustable: 6 to 15 mm • No adjustment necessary for different cross-sections 			
20050	Super 4 plus	econo wire stripper (<i>incorporating wire cutter</i>)	0.2 - 6 mm ²
No. 6-16 stripper for larger wire sizes 6 - 16 mm²			
Suitable for solid and stranded conductors 6...16 mm ² for removing the outer sheath from PVC-Flex.			
<ul style="list-style-type: none"> • Automatic wire stripper suitable for wires 6 - 16 mm² (<i>no adjustments required</i>) • Special cut permits removal of outer sheath of 3 core-flex 3 x 0.75 mm and solar cables • Adjustable strip length: 15 - 18 - 20 mm 			
20090	No.6-16	wire stripper for larger cross-section wires	6 - 16 mm ²
Universal No.12 - Cable stripper			
For quick, precise cable stripping of all common round and multicore cables Ø 8...13 mm.			
<ul style="list-style-type: none"> • No adjustment of cutting depth necessary • Ideal for cable stripping confined spaces such as in junction boxes • Blades with special Titanium-Nitride coating (TIN) to achieve longer life, faster cutting and less wear 			
30120	Universal No.12	universal for all round cables (<i>no adjustment</i>)	Ø 8 - 13 mm
Secura No.15 - Super stripper			
<ul style="list-style-type: none"> • No cutting depth adjustments required • Integrated, multi-functional slide-out blade • Locking mechanism prevents unwanted opening of the tool • Absolutely straight-forward longitudinal cuts - with innovative internal cable duct • Special outlined blades for effortless stripping of wires of diameters 0.2 - 0.3 - 0.8 - 1.5 - 2.5 - 4.0 mm² 			
30155	Secura No.15	same as No.12 + wire stripper 0.2...4 mm ² and blade	Ø 8 - 13 mm
Flat cable stripper			
For PVC insulated and sheathed cables e.g. Twin Flat Cable 2 x 1/1.5/2.5 mm ²			
Twin and Earth Cable 3 x 1.0 mm ² , 3 x 1.5 mm ² , 3 x 2.5 mm ²			
<ul style="list-style-type: none"> • Removes outer sheath and inner conductor insulation (<i>no adjustment necessary</i>) • Adjustable strip length: 15 - 18 - 20 mm 			
20030	EM-Set FKZ	for flat twin and twin + earth cables	0.75...2.5 mm ²



10281



10350



70000



30161



62000

Specialised wire strippers

- Highest standards of workmanship and material - durable, reliable performance guaranteed
- Blades with special Titanium-Nitride coating (TIN) to achieve longer life, faster cutting and less wear

type	tool name	description	wire Ø
Cable knives <i>cable knife contains spare blade (inside handle)</i>			
<ul style="list-style-type: none"> • For stripping outer sheath from all standard round cables • Automatic swivel blade (<i>screw adjustable for cutting depth</i>) 			
10160	Secura No.16	cable knife (<i>adjustable blade depth</i>)	4 - 16 mm
10280	Secura No.28H	cable knife with additional hooked blade	8 - 28 mm
10281	Secura No.28G	cable knife with additional straight blade	8 - 28 mm
10350	No.35	standard cable knife (<i>adjustable blade depth</i>)	27 - 35 mm
19000	–	spare blade for above cable knives	(3 pc set)
Cable knife system 4-70 <i>with newly developed hook blade protection mechanism</i>			
<ul style="list-style-type: none"> • Bracket change system permits stripping of cables from Ø 4...70 mm diameter with just one tool • Perfect ergonomic design ensures easy, comfortable handling 			
70000	System 4-70	knife with protected hook blade with bracket No. 28	8 - 28 mm
79016	Bracket No. 16	bracket for system 4 - 70 for cables with diameter	4 - 16 mm
79035	Bracket No. 35	bracket for system 4 - 70 for cables with diameter	27 - 35 mm
79050	Bracket No. 50	bracket for system 4 - 70 for cables with diameter	35 - 50 mm
79070	Bracket No. 70	bracket for system 4 - 70 for cables with diameter	50 - 70 mm
19000	–	spare blade for above cable knives	(3 pc set)
Coax cable strippers <i>for coaxial cables</i>			
<p>Secura Coaxi No.1, strips coaxial cables in two easy and quick motions, stripping the outer sheathing and inner dielectric coat precisely without any damage to the wires or essential shielding.</p> <ul style="list-style-type: none"> • Quick, easy stripping of coaxial cable types - TV antenna cables, RG58/59, PVC-Flex 3 x 0.75 mm² • No adjustment necessary, without damaging the inner metal shield 			
30600	Coaxi No. 1	Coax/RG59/59, CAT and PVC cables 3 x 0.75 mm ²	Ø 4.8 - 7.5 mm
PC-Strip <i>for PVC-insulated data communications and control cables</i>			
<p>Special sheathing and insulation stripping tool for PVC-insulated data communications and control cables.</p> <ul style="list-style-type: none"> • No adjustment of cutting depth necessary (<i>wire stripping range 0.2 - 4.0 mm²</i>) 			
30160	PC-Strip	data/network/printer/control cables 0.2...4 mm ²	Ø 5 - 15 mm
PC-CAT <i>for CAT5, CAT6, CAT7, Twisted-Pair-Cable</i>			
<p>For PVC-insulated data communications and control cables Cat5, Cat6, Cat7, twisted-pair, network and thinly insulated cables. Also for stripping individual wires (0.2...0.8 mm²)</p> <ul style="list-style-type: none"> • No adjustment of cutting depth necessary (<i>wire stripping range: 0.2...0.8 mm²</i>) • Integrated, multi-functional slide-out blade 			
30161	PC-CAT	CAT5 / 6 / 7 cable or twisted pair 0.2...4 mm ²	Ø 4.5 - 10 mm
SE-Strip <i>for standard energy and security cables, double shielded solar cables</i>			
<p>For all common security, energy cables and double shielded solar cables with convenient pocket clip.</p> <ul style="list-style-type: none"> • No adjustment of cutting depth necessary • Included wire stopper / length scale 8 - 10 - 12 mm 			
30190	SE-Strip 2.5-6	energy/double shielded solar cable Ø7.5...9.5 mm	2.5/4/6 mm ²
30200	SE-Strip 10/16	energy/double shielded solar cable Ø 11...13 mm	10 - 16 mm ²
Quadro Plus <i>4 functions in one - cutting - twisting - stripping - crimping</i>			
<p>Ergonomic, automatic wire stripper and crimping pliers for wires from 0.5...2.5 mm² wire stopper for perfect length, for quick precise stripping and crimping on insulated sleeves.</p> <ul style="list-style-type: none"> • Self adjusting blades cause no damage to conductors • Integrated twisting device prevents splaying of wire strands • Trapezium crimping to VDE 0609 • Cartridge accepts insulated ferrules (<i>in strips</i>) 0.5...2.5 mm² • Incorporated side cutter for wires up to 2.5 mm² 			
62000	Quadro	insulated carrying case with 2 spare cartridges	0.5 - 2.5 mm ²
60100	–	spare quick-change cartridges for Quadro tool	–



Manual crimping tools for wire ferrules (bootlace terminals)

Proteus 10S - Professional self-adjusting crimping tool providing a square crimp cross section suitable for wire ferrules 0.14...10 mm². Ergonomically shaped handles with selected surface textures for comfortable, frequent use.

- Professional self-adjusting crimping tool providing a square crimp profile on wire ferrules
- Full cycle ratchet mechanism ensuring consistent, reliable crimp (*release on completion of crimping operation*)
- Ergonomic handles, light weight, low handle force and optimum opening for comfortable crimping
- Release lever to clear miscrimps and obstructions (*releases jaws before completion of crimp*)
- Non-slip rubber grip pad for applying pressure against a surface

type	for terminals	conductor (mm ²)	cable entry	description
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Pressmaster - Professional self-adjusting crimping tool

- High precision die geometry for a clearly defined square crimp shape of the ferrule
- Automatic self-adjustment to required wire size

4300-4661	ferrules	0.14...10	side	professional self-adjusting crimping tool
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Mobile frame system - with interchangeable dies for various terminals

Lightweight, compact ratchet crimp tool designed for most types of mechanical, electrical and electronic connectors. Easily interchangeable crimp dies are kept together with a special pin to simplify handling.

- Reliable crimping performance consistent and accurate with a parallel action stroke.
- Easy-access release for fast, simple exchange of crimp dies (*no special tools required*)

4300-3149	die dependant		side	MCT frame only for interchangeable dies
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Interchangeable die sets for above tool frame

- A wide range of crimp dies to cover all applications in just one tool frame.
- Dies are kept in pairs and delivered in a modular reusable box.

4300-3129	insulated	0.5 to 4	side	red/blue insulated terminal crimping die set
4300-3128	insulated	4 to 6	side	yellow insulated terminal crimping die set
4300-3137	uninsulated	0.75 to 2.5	side	cable lug crimping die set
4300-3139	uninsulated	4 to 10	side	cable lug crimping die set
4300-3127	end sleeves	0.25 to 10	side	wire end sleeve crimping die set
4300-3153	end sleeves	16 to 25	side	wire end sleeve crimping die set
4300-3154	end sleeves	35 to 50	side	wire end sleeve crimping die set
4300-3146	open barrel	0.5 to 6	side	open barrel connector crimping die set
4300-3136	coaxial	RG58/59/62/71	side	coaxial connector crimping die set

Z&F - Crimping tools (for insulated and uninsulated ferrules)

Crimpit 2.4	end sleeves	0.5 to 4		economic crimping tool (<i>front and side entry</i>)
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Crimping tool with ratchet closing control

Crimpit F6L	end sleeves	0.5 to 6	side	crimping tool for wire end ferrules (<i>5 profiles</i>)
Crimpit F16L	end sleeves	6 to 16	side	crimping tool for wire end ferrules (<i>3 profiles</i>)
Crimpit F25L	end sleeves	6 to 25	side	crimping tool for wire end ferrules (<i>4 profiles</i>)
Crimpit F50L	end sleeves	35 to 50	side	crimping tool for wire end ferrules (<i>2 profiles</i>)

Crimpit IT6L (for pre-insulated cable lugs)

- Crimping tool for PVC, PC and DPA insulated lugs, with ratchet closing control
- Crimping profiles for different wire cross-sections (*red/blue/yellow*)

Crimpit IT6L	insulated	0.5 to 6	side	crimping tool for pre-insulated lugs (<i>3 profiles</i>)
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Jeesoon - Crimping tool for pre-insulated terminals

- With ratchet closing control
- Crimping profiles for different wire cross-sections (*red/blue/yellow*)

JSL 1305-1	insulated	0.5 to 6	side	crimping tool for pre-insulated terminals
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Cembre - Crimpstar range - Ratchet crimping tools

- Ergonomically designed non-slip moulded plastic grips
- Factory-set ratchet for crimping control (*automatic release on completion of crimping operation*)
- Emergency release lever (*releases jaws before completion of crimp*)

HP3	insulated	0.25 to 6	side	red/blue/yellow ratchet crimping tool
HNN3	insulated	1.5 to 10	side	manual indent ratchet crimping tool
HNN4	insulated	10 to 16	side	manual indent ratchet crimping tool
HN-A25	uninsulated	10 to 25	side	manual hexagona ratchet crimping tool
HNKE4	end sleeves	0.5 to 4	side	wire end sleeve crimping tool
HNKE16	end sleeves	4 to 16	side	wire end sleeve crimping tool
HNKE50	end sleeves	25 to 50	side	wire end sleeve crimping tool



Professional hand tools for cable preparation

type	wire sizes mm ²	tool length	description	dimensions (mm)		
				H	W	D

Cable shears (cutters)

- For cutting single/multi-strand and fine wire aluminium and copper cables
- Easy, clean cut with one hand operation - no crushing or deformation of cables

700 015 36 Cu 70 170 mm cable shears for stranded conductors up to 70 mm²

Professional scissors *supplied with carry case and swivel belt hook*

Robust-A professional scissors with special steel frame for high resistance and a long life

- Safe and easy operation even when wearing work gloves
- Dual compound material - soft rubber inserts to maximise grip
- Extremely lightweight and robust for safe, easy handling and comfort
- Easy cutting of conductors up to 50 mm² using the shaped grooves in each blade

SC5X scissors professional workmans scissors 162 77 18

Crimping tools for insulated and uninsulated ferrules (bootlace terminals)

Entry-level crimping tool for 0.25 – 2.5 mm² ferrules PE 7.1

- Forged body - milled trapezoidal crimp profile

610 001 0 0.25...2.5 150 mm entry-level crimping tool for ferrules 0.25...2.5 mm²

Professional crimping tool for 0.08 - 16 mm² ferrules **PEW 8.185 / PEW8.87**

- The established, patented tool further improved
- High-precision die geometry leads to a clearly defined square crimp shape of the ferrule
- Automatic self-adjustment to requested wire size

610 185 3 0.08-16 side entry professional crimping tool for ferrules 0.08 - 16 mm²

610 087 3 0.08-10 front entry professional crimping tool for ferrules 0.08 - 10 mm²

Automatic machines for cable preparation

type	wire sizes (mm ²)	measuring length (mm)	description	dimensions (mm)		
				H	W	D

Cable cutting machine *supply voltage 100...240 VAC 50/60Hz*

LC 100 offers significant potential savings. Measuring and transport rollers automatically adjust to wire diameter on insertion. Enter the desired length and quantity on the control panel and the production can begin. Included software enables recurring cutting jobs to be saved as projects.

- Easy to use, faster material change
- Cable cross-section is automatically detected
- Simple and fast data entry via clear graphical display and control panel
- High measuring accuracy through separate measuring and transporting roller

LC 100 0.8..10 2...1000 met automatic wire cutter 194 228 301

CS 60 - Stripping machine *supply voltage - 230 VAC 50Hz*

CS 60 settings are made by large user-friendly dials. A graphic display indicates values entered within seconds, the cross section settings and stripping length are performed. Insulation of cables not fully stripped to prevent fanning of the wire strands.

- Mobile use by carrying handle
- Fast setting of length and cross section
- Large graphic display facilitates adjustment
- The automatic clamping force adjustment protects sensitive insulations

CS 60 0.8...6 2...20 mm automatic wire stripper 221 141 363

Stripping and crimping machines (combined)

type	wire sizes mm ²	crimping length (mm)	description	dimensions (mm)		
				H	W	D

Electric stripping and crimping machine *supply voltage - 230 VAC 50Hz*

Wire stripping and crimping done in one operation using belt strip ferrules in type K box dispensers Controlled by a sophisticated cam mechanism achieving a stable working process.

- Cycle time: 1.5s
- Easy to use, silent operation
- Cross-sectional change in a few simple steps.

MC 25 0.25...2.5 8 mm automatic stripper/crimper 270 165 320



Hydraulic crimping / cutting tools

type	for terminals	conductor (mm ²)	crimping force (kN)	description
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HT and TC series - Hydraulic tools *lightweight and compact*

- Spring loaded handles, dies can be advanced using only one hand
- Pressure release system can easily be operated at any stage of compression
- Supplied with sturdy plastic carrying case for tool with compartments for die sets
- For ease of operation and comfort of operator, tool head can be fully rotated 180°

HT45 compact hydraulic crimping tool

HT45-E	die dependant	max. 150	50 kN	hydraulic crimping tool
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HT51 -2 speed hydraulic crimping tool

- Supplied with sturdy plastic carrying case for tool and *(included)* die sets: ME 5-50, 7-50, 10-50, 14-50, 19-50, 24-50, 30-50, 37-50

KITHT51-1	die dependant	max. 240	50 kN	hydraulic crimping tool
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HT131 hydraulic crimping tool for semi-circular slotted dies

- Supplied with sturdy plastic carrying case for tool and *(included)* die sets: ME 10-C, 14-C, 19-C, 24-C, 30-C, 37-C, 48-C

KITHT131-C-1	die dependant	max. 400	130 kN	hydraulic crimping tool
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RH series - Hydraulic presshead

Hydraulic presshead complete with quick automatic coupler for connection to a hydraulic pump with a working pressure of 700 bar max.

RHC131	die dependant	max. 400	130 kN	hydraulic presshead only
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TC series - Hydraulic cutting tool

Hand operated hydraulic tool specifically designed to cut Copper, Aluminium-Steel cables. Double speed action: a fast advancing speed for rapid approach of blades to cable and a slower more powerful speed for cutting.

- Blades manufactured from high strength steel, heat treated to ensure long service life

type	max. cutting diameter Ø	length	width	description
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TC026 compact hydraulic cutting tool *supplied with canvas carrying bag for tool*

HT-TC026	Ø 25 mm	382 mm	129 mm	hydraulic cutting tool
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TC series -2 speed hydraulic cutting tool *supplied with plastic carrying case for tool*

HT-TC041N	Ø 45 mm	727 mm	202 mm	hydraulic cutting tool
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TC series hydraulic cutting head *supplied with canvas carrying bag for tool*

Hydraulic cutting head complete with quick automatic coupler for connection to a hydraulic pump with a working pressure of 700 bar max.

TC050	Ø 50 mm	325 mm	112 mm	hydraulic cutting head
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Larger sizes available on request.

Hydraulic foot operated pump

- Pressure release can easily be operated at any stage of compression
- Supplied with 3 meter long high pressure flexible hose with self-lock quick coupler

PO - Foot operated double speed pump *develops a maximum pressure of 700 bar.*

- Supplied with solid shaped stand providing stability during operation
- Supplied with sturdy plastic carrying case for tool

PO7000	700 BAR	680 mm	200 mm	hydraulic foot operated pump
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Manual crimping tool

- Heat treated steel crimp jaws
- Handles of anti-slip plastic with hilt

TN series (indent crimp) *adjustable for different conductor sizes*

- Easily adjustable die positioning by knurled screw and reference vernier scale

TN70SE	uninsulated	6 to 70	indent	adjustable manual crimping tool
TN120SE	uninsulated	10 to 120	indent	adjustable manual crimping tool



B35-50MD



KITB500-1



KITB1300-C-1



B1300PL

Battery operated crimping tools

Cordless hydraulic crimping tools (18.0 V Li-Ion high power batteries)

- Pressure release button
- Extremely quiet, minimal vibration
- One hand operation, improved balance for better handling
- Tool head rotates 180° for ease of operation in confined spaces
- Durable moulded body with high resistance to wear and damage in all operating conditions

type	for terminals	conductor (mm ²)	crimping force (kN)	description
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B 35-50MD series - "Inline" type crimping tool

- LED light illuminating working area
- Wide opening head, ideal for derivations from running conductors
- Supplied with plastic carrying case for tool, battery, charger and space for die sets
- Two Li-Ion 18.0V 2.0Ah batteries and charger included (*indication of remaining battery life*)

B35-50MD	die dependant	max. 150	35 kN	battery operated crimping tool
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B 500 series - "Pistol grip" type crimping tool

- LED light illuminating working area
- Li-Ion 18.0V 4.0Ah high power battery
- Crimping cycle data stored (*up to 200.000 events*) in memory for later transfer to PC
- Supplied with plastic carrying case for tool, battery, charger and (*included*) die sets: ME 5-50, 7-50, 10-50, 14-50, 19-50, 24-50, 30-50, 37-50
- Digital display indicating: crimp pressure, available battery life, service/maintenance info

KITB500-1	die dependant	max. 300	63 kN	battery operated crimping tool
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B1300 series - Portable crimping tool

- LED light illuminating working area
- Li-Ion 18.0V 4.0Ah high power battery
- Crimping cycle data stored (*up to 200.000 events*) in memory for later transfer to PC
- Supplied with plastic carrying case for tool, battery, charger and (*included*) die sets: ME 10-C, 14-C, 19-C, 24-C, 30-C, 37-C, 48-C
- Digital display indicating: crimp pressure, available battery life, service/maintenance information

KITB1300-C-1	die dependant	max. 400	132 kN	battery operated crimping tool
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Die sets for crimping - see page M-7

Hydraulic pump (supplied with sturdy plastic carrying case for pump accessories)















- Pressure release can easily be operated at any stage of compression
- Supplied with 3 meter long high pressure flexible hose with self-lock quick coupler

B1300 -battery operated hydraulic pump Li-Ion 18V 4 Ah battery (supplied)

- Supplied with pump, battery and charger, 0.9m flexible hose with quick connector
- Plastic carrying case suitable for storing the pump, battery and charger and all accessories.

B1300PL	729 BAR	354 mm	240 mm	battery operated pump
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Die sets for crimping - see page M-7

Die sets for hydraulic and battery operated crimping tools					
type	for terminals	conductor (mm ²)	crimping type		for crimping tool
Die sets for uninsulated terminals					
 ME1	cable lugs	4...6	hexagonal		HT45-E
	cable lugs	10	hexagonal		HT45-E
	cable lugs	16	hexagonal		HT45-E
	cable lugs	25	hexagonal		HT45-E
	cable lugs	35	hexagonal		HT45-E
	cable lugs	50	hexagonal		HT45-E
	cable lugs	70	hexagonal		HT45-E
	cable lugs	95	hexagonal		HT45-E
	cable lugs	120	hexagonal		HT45-E
	cable lugs	150	hexagonal		HT45-E
 ME7					
	cable lugs	4...6	hexagonal		HT51/B35-50/B500
	cable lugs	10	hexagonal		HT51/B35-50/B500
	cable lugs	16	hexagonal		HT51/B35-50/B500
	cable lugs	25	hexagonal		HT51/B35-50/B500
	cable lugs	35	hexagonal		HT51/B35-50/B500
	cable lugs	50	hexagonal		HT51/B35-50/B500
	cable lugs	70	hexagonal		HT51/B35-50/B500
	cable lugs	95	hexagonal		HT51/B35-50/B500
	cable lugs	120	hexagonal		B35-50MD
 MA1-50					
	cable lugs	150	hexagonal		B35-50MD
	cable lugs	120	hexagonal		HT51/B500
	cable lugs	150	hexagonal		HT51/B500
	cable lugs	185	hexagonal		HT51/B500
	cable lugs	240	hexagonal		HT51/B500
	nest	4...6	indent		HT51/B35-50/B500
	nest	10	indent		HT51/B35-50/B500
	nest	25	indent		HT51/B35-50/B500
	indenter	4...25	indent		HT51/B35-50/B500
 MA19-50					
	nest	35	indent		HT51/B35-50/B500
	nest	50	indent		HT51/B35-50/B500
	indenter	35...50	indent		HT51/B35-50/B500
	nest	70	indent		HT51/B35-50/B500
	nest	95	indent		HT51/B35-50/B500
	indenter	70...95	indent		HT51/B35-50/B500
	nest	120	indent		HT51/B35-50/B500
	indenter	120	indent		HT51/B35-50/B500
	indenter	120	indent		HT51/B35-50/B500
 MA7-C					
	cable lugs	35	hexagonal		HT/RHC131/B1300
	cable lugs	50	hexagonal		HT/RHC131/B1300
	cable lugs	70	hexagonal		HT/RHC131/B1300
	cable lugs	95	hexagonal		HT/RHC131/B1300
	cable lugs	120	hexagonal		HT/RHC131/B1300
	cable lugs	150	hexagonal		HT/RHC131/B1300
	cable lugs	185	hexagonal		HT/RHC131/B1300
	cable lugs	240	hexagonal		HT/RHC131/B1300
	cable lugs	300	hexagonal		HT/RHC131/B1300
 MA7-C					
	nest	35	indent		HT/RHC131/B1300
	nest	50	indent		HT/RHC131/B1300
	indenter	10...50	indent		HT/RHC131/B1300
	nest	70	indent		HT/RHC131/B1300
	nest	95	indent		HT/RHC131/B1300
	nest	120	indent		HT/RHC131/B1300
	indenter	70...120	indent		HT/RHC131/B1300
	nest	150	indent		HT/RHC131/B1300
	nest	185	indent		HT/RHC131/B1300
 MN2RF-50					
	nest	240	indent		HT/RHC131/B1300
	indenter	150...240	indent		HT/RHC131/B1300
	nest	300	indent		HT/RHC131/B1300
	indenter	300	indent		HT/RHC131/B1300
	indenter	300	indent		HT/RHC131/B1300
Die sets for insulated terminals					
	cable lugs	10	radial		HT51/B35-50/B500
	cable lugs	16	radial		HT51/B35-50/B500
	cable lugs	25	radial		HT51/B35-50/B500
	cable lugs	35	radial		HT51/B35-50/B500
	cable lugs	50	radial		HT51/B35-50/B500



P01191773



P01196773



P01298076

Voltage Absence Tester (VAT) CAT IV 1000 V

Installations connected to an electricity distribution network, require measurements to be performed with power off to avoid electrical hazards (EN 50110-1 standard, DIN VDE 0682-401, NF C 18-510, etc.) Securing the installation to ensure that it is non-current-carrying, requires the use of a Voltage Absence Tester.

- **Comprehensive integrated autotest** - indication of type of fault also displays a text message for information.
- **IP65 protection** for indoor and outdoor use, significantly higher than the IP54 rating required by the standard.
- **Audible and visual continuity** indication up to 100 Ω, in compliance with standards recommendations.
- **Removable test probes** to meet specific requirements in certain applications (*various models available*)

AC and DC voltage testing Voltage detection takes priority, is automatic and indicated by distinct visual (*bargraph*) and intermittent beep. Stray voltages can be detected by pressing two buttons simultaneously to switch to low impedance mode.

2-wire phase rotation with microprocessor Simple and quick, the 2-wire phase rotation function with microprocessor is useful in all circumstances, including installations powered by an electrical generator set or behind an isolating transformer.

Continuity and resistance testing Checks that conductors are correctly connected. Continuity ($R < 100 \Omega$) is indicated by a continuous audio signal whilst the resistance value is displayed directly.

Residual Current Device (RCD) trip test up to 30 mA By simultaneously pressing the double command, you can cause a fault current sufficient to trip the RCD to flow through a low-impedance load.

Ergonomics specially designed for use in the field Digital display, removable test probes ensure excellent handling. A built-in torch illuminates the point of measurement.

type	model	description
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Voltage Absence Tester *IP65 enclosure* *228 x 60 x 39 mm*

Display:	LEDs + backlit digital display
Voltage:	12 VAC - 1.000 VAC / 12 VDC - 1.400 VDC
Impedance:	> 500 kΩ / Polarity indication
Android application:	Not applicable
RCD tripping:	By low-impedance load switching (<i>approx. 30 mA at 230 V</i>)
Continuity & Resistance:	Buzzer trigger threshold 100 Ω typical (<i>150 Ω max.</i>)
Extended continuity test:	0.5 Ω to 2.999 kΩ
Phase rotation:	2-wire type with microprocessor - Ph/Ph voltage 50 V - 1,000 VAC
Buzzer:	Intermittent for Voltage Detection - Continuous for continuity
Standards and elec safety:	IEC 61243-3:2009, EN 61243-3:2010, IEC 61010 1.000 V CAT I

Delivered with: *manual, set removable test probes, 2x 1.5 V LR03/AAA batteries, Velcro strap.*

P01191773 C.A 773 CAT IV 1.000 V Voltage Absence Tester (VAT)

Digital multimeter (CAT IV 600 V) *IP54*

General-purpose professional measuring instrument with TRMS measurements (*sinusoidal, distorted and DC signals*) measurement accuracy, rugged design, reliability of an on-site instrument.

- Large 6000-count display
- Double backlit display
- Temperature and capacitance measurements
- Min/Max memorization

Display:	2 x 6000 counts, backlit
Bargraph:	(63 elements) Bi-mode (<i>full scale / central zero</i>)
Acquisition:	TRMS AC / DC
Measurement rate:	5 measurements per second
Automatic / manual ranges:	Yes / Yes
AC/DC voltage:	600 mV / 6 / 60 / 600 / 1.000 V - accuracy 0.2% - 40Hz to 3kHz
LowZ AC voltage:	Low-impedance setting with Low-pass Filter
AC/DC current:	6.000 A / 10.00 A (20 A/30s)
Resistance measurement:	600 / 6,000 Ω / 60 / 600 kΩ / 6 / 60 MΩ, Audible continuity, Diode test
Frequency:	600 Hz / 6 kHz / 50 kHz
Capacitance:	8 cal.: 6.000 nF to 60.00 mF
Temperature:	-59.6 to +1.200°C / -4 to +2,192°F
Hold facility:	Yes Min / MAX (100 ms)
Min / MAX (100 ms):	Yes
Automatic power-off:	Yes (<i>can be deactivated</i>)
Safety:	IEC 61010-1, IEC 61010-2-033 CAT IV 600 V / CAT III 1000V
Power supply:	1x 9 V 6LR61 battery
Dimensions / weight:	90 x 190 x 45 / 400 g

Delivered with: *Set leads, set test probes, 1x 9V 6LR61 battery, K thermocouple temp sensor*

P01196773 C.A.5273 digital multimeter hand held for all applications

Accessories for above C.A.5273 multimeter

P01298076 carrying bag with MultiFix multi-position mounting accessory



new



P01120925



P01120947



785796

Digital Power and harmonics clamp multimeter

General-purpose professional clamp-on measuring instrument with True RMS measurement accuracy, reliable and particularly resistant to falls.

Clamping diameter:	Ø34 mm
Display:	Large 6000-count, backlit LCD screen
Amp (RMS)	AC 600 A DC, AC+DC 900 A
Volt AC (RMS)	AC 1000 V - 1%
Volt DC	DC, AC+DC 1400 V - 1%
Automatic AC/DC detection:	Yes (V and A)
Frequency for V/I:	Yes / Yes
Resistance measurement:	60 kΩ
Audible continuity:	Yes (< 1 Ω...599Ω)
Diode test:	(semi-conductor junction)
Temperature (type K):	-60.0 to +1000 °C
Power:	W, var, VA, PF Yes - single-phase and total three-phase
Harmonic analysis:	THDf / THDr
Phase rotation:	(2-wire method)
Motor-inrush function:	Yes
True-inrush function"	Yes
"Min / Max" / Peak function:	Yes / Yes
Auto Power off / "Hold" function:	Yes
Low battery indication:	Yes
Electrical safety as per:	IEC 61010 CAT IV 600V, CAT III 1000 V
Dimensions / weight:	78 x 222 x 42 / 340g



Scan to watch video

Delivered with: 1 set of PVC leads (black/red) with insulated elbowed male banana plug / insulated straight male banana plug, 2 test probes / insulated female plug (black/red) 1 safety crocodile clip (black) 1 x 9 V 6LR61 battery, 1 Multifix shoulder bag, mini-CD containing the User Manual.

type	model	description
P01120925	F205	digital clamp multimeter/tong tester for all applications

Power and harmonics clamp multimeter (IP54)

Current 1000 A, Voltage 1000 V, power, harmonics and recorder

Clamping diameter:	Ø48 mm
Display:	Large triple 10 000 count, backlit screen
Amp (RMS)	AC 150mA to 1000 A - 1% DC, AC+DC 150mA to 1500 A - 1%
Volt AC (RMS)	AC 100 mV to 1000 V - 1%
Volt DC	DC, AC+DC 100 mV to 1000 V - 1%
Automatic AC/DC detection:	Yes (V and A)
Resistance measurement:	100 kΩ (continuity buzzer)
Audible continuity:	Yes (< 40 Ω)
Frequency:	15Hz to 20kHz
Power:	W, VA, var Yes - single-phase and total three-phase
PF and cos φ (DPF):	Yes
Total Harmonic Distortion:	THDf % / THDr %
Harmonic decomposition:	Yes - up to 25th order
Crest factor (CF) / Motor InRush:	Yes
Current surge (True InRush):	Yes
"Min Max" / Peak function:	Yes / Yes
Auto power off / "Hold" function:	Yes
REC storage function:	Yes - (up to 3000 measurements)
Data logging:	Yes
PC / Bluetooth interface:	Yes
Electrical safety as per:	IEC 61010 CAT IV 1000V, CAT III 1000 V

Delivered with: Multifix shoulder bag, Power Analyser Transfer (PAT) software, 2 voltage leads (red/black), 2 test probes (red/black), 2 crocodile clips (red/black), 4x 1.5 V AA alkaline batteries, operating manual.

P01120947	F407	digital clamp multimeter/tong tester for all applications
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Accessories for above F205\F407 multimeters

P01102100Z	mount kit	multifix magnetic mounting kit for clamp meters
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DEHNcare series - Safety protective gloves

- Size (international): 8 - medium
- Standard: IEC 61482-1-2 / 1-1, DIN EN 388 / 407
- Direct incident energy (after box test: class 2) (Eio): 427 kJ / m²
- Good touch sensitivity due to soft leather glove palm (breathable materials maximise wearing comfort)

785796	medium	Arc-fault tested protective gloves
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new



P01157151



P01157150



P01157151 + P01102134



P01120580

Chauvin Arnoux - PEL103 Power & Energy Loggers IP54 casing

Portable, advanced yet simple to use Power and Energy logger, designed for energy audits (ISO 50001 standard) or one-off measurements of the Power and Energy values in low-voltage electrical networks (1000 V CAT III)

PEL100 series Power and Energy loggers provide a complete solution to measuring and identifying energy consumption in any industry, they can be used handsfree, remotely without interruption to the mains power. The logger tracks even the slightest consumption in an electrical network, providing all Power and Energy measurement recording on the internal 2GB SD card, while simultaneously permitting real-time monitoring on its backlit 4 line LCD display. Recordings are time/date stamped for ease of comparing measured gains achieved before and after installation modification. Easily transfer recorded data to a PC via the free PEL data transfer software and SD card with USB adaptor (included). Designed to fit inside most electrical cabinets thanks to its magnetic base or hook for easy mounting.

Key Features of the PEL103 include:

Measurements and display of:

- RMS frequency, voltage and current measurements
- Voltage measurement ranges 10 to 1000V AC/DC +/- 0.2 % + 0.5 V
- Current measurement ranges 5 mA to 10 kA AC / 50 mA to 1,4 kA DC ±0.5 %
- VA, W and var power values
- Power Factor (PF), cos φ, tan φ and crest factor
- Total Harmonic Distortion (THD) for currents and voltages
- DC, 50 Hz, 60 Hz and 400 Hz measurements
- Phase rotation indication and MIN/MAX indication of all parameters
- VAh, Wh (source, load) and varh (4 quadrant) energy values, total energy
- Harmonics: up to the 50th order for currents and voltages (an essential feature to help identify problems)

- **Network types include:** Three phase (with or without neutral), split phase, single phase
- **Automatic recognition:** Of the type of sensor connected
- **Communication / Data transfer:** USB, Ethernet and Bluetooth / PEL transfer PC software (included)
- **Records:** Measurements and calculation results on SD card (included)
- **Acquisition rate:** 128s/period



Scan to watch video

PEL 103 Power and Energy logger (KIT) (created as a complete kit with following accessories)

- 1 x PEL103 Power and Energy Logger: Analyser with backlit LCD screen
- 3 x MA193 (200 mm) flexible current clamps: MINIFLEX MA193 flexible current sensors - 200mA to 10 kA
- 4 x Measurement leads and crocodile clips: Robust high quality test leads for frequent use/built to last
- 1 x Set of coloured rings and Inserts: For easy identification of connections and leads
- 1 x 2GB SD card (internal): SD card to USB adaptor

SD card to USB adaptor, USB cable, mains cable, MultiFIX mounting system, operating manual (on CD)
PEL transfer PC software enabling data to be transferred to PC, all in a convenient canvas carrying bag.

type	model	description	dimensions (mm)		
			(H)	(W)	(D)

PEL 103 Power and Energy logger (KIT)

P01157151	PEL103 (KIT)	portable power and energy logger/analyser	256	125	37
P01157150	PEL102 (KIT)	as above, but without LCD display screen	256	125	37

Accessories for PEL103 Power and Energy logger

P01120434B	MN 93A	compact tong clamps for PEL102/3	Ø20 mm	0.005 - 100A	
P01120323B	C193	compact tong clamps for PEL102/3	Ø52 mm	1 - 1000A	
P01120580*	MA193-250	Ampflex 250 mm flexible current sensor	Ø70 mm	200mA - 10kA	
P01120526B	A193-450	Ampflex 450 mm flexible current sensor	Ø140 mm	100mA - 10kA	
P01101959	CA833X-F	for reading from 5A secondary CT's		5A adaptor	
P01102134	self-power	mains adaptor for self powering PEL from supply		mains adaptor	
P01295174*	mains lead	mains power cable - (2P EUR)			
P01295476*	test leads	spare measurement leads (3m) with crocodile clips			KIT (black)
P01102080*	set	ID rings and inserts (for ends of leads and sensors)			diff. colours

P01298078* bag no.23 canvas carrying bag for PEL analyser and access

* Items supplied with standard PEL KIT.

Data processing software power quality & installation supervision

Automatically recognizes the instrument connected to the PC and opens the corresponding menu, providing direct access to the configuration and saved data. Includes many predefined report templates for quick generation in compliance with applicable standards. Users can create personalised models to fit their requirements and add comments directly.

- Configuration of all the functions of instruments connected to a PC or via Bluetooth
- Recovery of the recorded measurement data and backup of measurement files
- Opening of saved files / processing and creation of reports (EN50160)
- Export into an Excel spreadsheet or PDF format / Database management

P01102095 Data/View powerful configuration/transfer/measurement data processing software



DIACAM 2 series - Thermal Camera

DIACAM 2 is a high performance thermal camera making it simple to perform thermal inspections for energy audits, ensuring trouble-free industrial, electrical or mechanical maintenance.

The wide 2.8-inch screen with auto brightness adjustment provides comfortable reading with a field of view of 38° x 28° and the camera is focus-free. A built-in sliding cover protects the highly sensitive lens. Contextual help guides users step-by-step, limiting the risk of errors. Particularly rugged, with IP54 ingress protection, the camera can withstand falls from 2 metres.

Industrial maintenance For electrical maintenance, can detect electrical equipment malfunctions, particularly abnormal overheating before a fault occurs, avoiding the considerable cost of halting production to carrying out repairs.

Report creation The supplied CAmReport® software, used to create automatic reports can be exported in Word or PDF format, simplifying printing and archiving.

Features:

- Flexible use thanks to its Laser pointer and focus-free capability with 38° x 28° field of view
- Exceptional 9-hour continuous use
- Recovery of data from other measuring instruments (*current, humidity, dew point, etc.*)
- Recording and storage in memory of the configurations for each application
- Allows you to record voice comments directly on the image
- Comfortable grip, perfect balance with direct access to all functions with just one hand
- Wide 2.8-inch screen with automatic or manual brightness control
- Slide-down protective lens cover
- Quick start-up

Detector:

Type: UFPA microbolometer, 8 ~14 µm
 Frequency: 9 Hz
 Sensitivity (N.E.T.D): 80 mK @ 30°C (0.08 °C @ 30 °C)

Temperature Measurement:

Temperature range: -20 °C to +250 °C
 Accuracy: ±2 °C or ±2 % of reading

Image Performance:

Thermal image: -20 °C to +250 °C
 Field of view: 38° x 28°
 IFOV (*spatial resolution*): 4.1 mrad
 Focus: Fixed
 Minimum focal distance: 30 cm
 Real image: Yes (320 x 240 pixels)
 Display mode: Thermal image, real image with automatic parallax compensation (*merging of both images possible with PC software*)

Analytical Functions:

Measuring Tools: Manual cursor + automatic detection + Min Max Avg on adjustable area + temperature profile + isotherm
 Parameter settings: Emissivity, environmental temperature, distance, relative humidity
 Vocal comments: Yes via Bluetooth (*earphones provided*)
 Data storage: On 2 GB micro SD card (*approx. 4.000 images*) replaceable up to 32 GB
 Image format: PNG - thermal and real images recorded simultaneously
 Laser pointer: Yes

Image Display:

Settings: Automatic or manual adjustment of the min max for the palette
 Freezing of image: Animated or fixed image
 Display of image: Multi-palette
 Screen: 2.8 inch

Power Supply:

Type: NiMH rechargeable batteries with low self-discharge
 Recharging method: External charger (*supplied*)
 Battery life: 9 hrs (*typical*) / 50 % brightness and Bluetooth deactivated

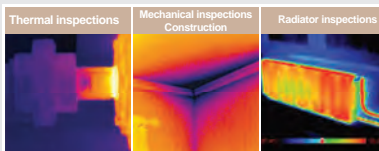
Dimensions / weight: 225 x 125 x 83 / 700 g

Delivered with: C.A 1954 thermal camera in a site-proof case with 4 NiMH batteries and battery charger, micro SD HC card, USB cable, Bluetooth earpiece, specimen measurement report, CAm Report® software on CD-Rom and user's manual.



P01651904

new



Thermal Camera - DIACAM 2		IP54
type	model	description
P01651904	C.A 1954	high performance thermal camera



Electrical installation tester

Designed for checking safety on electrical installations, the **C.A 6133** tester can be used to test new before powering up, installations check existing installations whether in operation or not, and troubleshoot malfunctions. For certification organizations, these portable instruments are simple, effective and, above all, compliant with applicable standards.

The C.A 6133 is designed to be exceptionally simple to use. All measurements and functions are accessible directly on the front panel of these compact, lightweight instruments. Explicit markings on terminals prevent any risk of connection errors.

- Earth measurement by stake and loop methods
- Continuity measurement at 0.2A
- Insulation testing
- RCD testing: Current and trip time
- Automatic test sequences
- Storage of test results
- ANDROID application for report generation
- Power supply by mains-rechargeable batteries, USB socket or vehicle cigarette lighter

The C.A 6133 is equipped with a cable compensation function to ensure reliable measurements and can be used for Voltage, Continuity, Resistance, Insulation and Loop measurements. Current can be measured with (*optional*) MN73A external clamp. The tester also checks the phase rotation and can test type A & AC RCDs in ramp or pulse mode. To save time the C.A6133 can automatically run test sequences and store the results. For example, it is possible to store a sequence such as AUTO LOOP - RCD - MΩ to speed up work in the field.

Ergonomics:

- Stand for positioning on a bench or table
- Magnetized casing for magnetic mounting
- 4-point strap for effortless hands-free use
- Backlit screen for easy reading, even in low light conditions
- Terminals with explicit markings (*L, N, PE, H, S, E, +, com connections*) prevent connection errors
- Remote-control probe for starting tests remotely
- A three-pole cable for direct measurements on 2P + E sockets

The "IT Report" dedicated to electrical installation testing enables users to download test results via Bluetooth and to generate and view the measurement report.

Voltage measurement:	550 VAC / 800 VDC
Continuity:	At 200mA,
Resistance:	From 1 to 99.99 kΩ
Insulation: test voltage	250V, 500V or 1,000 V (0.01 - 999.9 MΩ / 10 kΩ or 100 kΩ / ± (3% R + 3 cts)
Type AC & A RCDs:	30mA, 100mA, 300 mA, 500 mA, 650 mA
RCD in pulse mode:	Tripping time
RCD in ramp mode (30 mA):	Tripping current
Phase rotation:	45 to 550V; 45 to 65 Hz
Frequency measurement:	30 Hz to 999.9 Hz
Insulation:	Additional 1,000 V test voltage
3P earth (stakes):	Up to 2.000 Ω
Automatic RCD test sequence:	No trip - pulse - ramp
Automatic test sequence:	Loop - RCD - MΩ
Data storage:	30 sites with 99 tests each
Power supply:	By rechargeable batteries with built-in charger
Bluetooth communication:	Yes

Recharging possible via the mains, USB socket or vehicle cigarette lighter socket
Automatic recognition of the optional MN73A external clamp

Delivered with: Carrying bag containing: 1 neck strap, 1 three-pole EURO mains cable, 3 safety cables with crocodile clips, 1 test probe, USB 2A power supply + USB cable, 6 Ni MH rechargeable batteries, test report with measurement report



P01146013

type	model	description
P01146013	C.A 6133	electrical installation tester for all applications

Accessories for above C.A 6133 Installation tester

P01120439	MN73A	current clamp for above electrical installation tester
P01102157		remote-control probe for electrical installation tester

SANS 10142-1:2017 Edition 2

Single-core PVC insulated cables, unarmoured, with or without sheath.
 (SANS 1507-3) Current-carrying capacity copper conductors
 Installation method 3 (*clipped direct*).

Cable current ratings				
Conventional rated thermal current (A)	Copper conductor section			
	Cable		Busbars	
	No.	Section (mm ²)	No.	Dim (mm)
15 A	1x	1.0	-	-
20 A	1x	1.5	-	-
27 A	1x	2.5	-	-
37 A	1x	4.0	-	-
47 A	1x	6.0	-	-
65 A	1x	10	-	-
87 A	1x	16	-	-
115 A	1x	25	-	-
140 A	1x	35	-	-
180 A	1x	50	1	15 x 5
235 A	1x	70	1	20 x 5
280 A	1x	95	-	-
330 A	1x	120	1	30 x 5
380 A	1x	150	-	-
433 A	1x	185	-	-
510 A	1x	240	-	-
590 A	2x	150	-	-
630 A	2x	185	1	30 x 10
740 A	2x	240	1	40 x 10
800 A	-	-	1	40 x 10
1000 A	-	-	1	50 x 10
1250 A	-	-	1	60 x 10
1600 A	-	-	1	80 x 10
2000 A	-	-	1	100 X 10

WÖHNER busbar support fault level chart						
icc kA pk	42	52.7	63	73.5	84	
icc kA eff. 1 s	20	25	30	35	40	
01485/01495/01356						
D = 60 (mm)						
E	20 X 5	400	250	-	-	-
	30 x 5	600	350	250	-	-
	20 x 10	470	300	-	-	-
	30 x 10	650	600	450	300	250
01231("H" Profile)						
D = 60 (mm)						
	"H" Profile	1100	1000	770	700	550
01479						
D = 100 (mm)						
E	30 X 10	600	400	-	-	-
	40 x 10	600	500	-	-	-
	50 x 10	600	500	-	-	-
	60 x 10	650	600	600	-	-
01230						
D = 185 (mm)						
E	60 X 10	600	600	500	-	-
	80 x 10	600	600	500	-	-
	100 x 10	600	600	500	-	-
	120 x 10	600	600	500	-	-
	"H" Profile	600	600	600	600	600

Current rating of non-insulated flat busbar												
A correction factor complying with DIN 43671 can be determined for flat busbars using the table below. The factor is dependant on the relevant ambient temperature. This correction factor should be taken into account when conditions change and loading is continuous.												
air temp	busbar temperature											
	50°C	55°C	60°C	65°C	70°C	75°C	80°C	85°C	90°C	100°C	110°C	120°C
correction factor k_2												
20°C	1.00	1.15	1.20	1.25	1.35	1.42	1.48	1.55	1.62	1.70	1.80	1.90
25°C	0.95	1.05	1.1	1.20	1.25	1.35	1.40	1.45	1.55	1.65	1.75	1.85
30°C	0.80	0.92	1.0	1.10	1.15	1.25	1.32	1.40	1.45	1.55	1.70	1.80
35°C	0.70	0.80	0.90	1.00	1.10	1.15	1.25	1.30	1.40	1.50	1.60	1.70
40°C	0.55	0.66	0.80	0.90	1.00	1.10	1.15	1.25	1.30	1.45	1.55	1.65
45°C	0.40	0.52	0.65	0.75	0.90	0.95	1.05	1.15	1.25	1.35	1.50	1.60
50°C	0.30	0.35	0.50	0.65	0.80	0.90	1.00	1.05	1.15	1.30	1.40	1.55
55°C	-	-	0.35	0.55	0.65	0.75	0.90	0.95	1.05	1.20	1.35	1.45
60°C	-	-	-	0.30	0.50	0.65	0.75	0.85	0.95	1.10	1.25	1.40

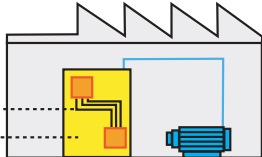
30 x 10 busbar can under normal operating conditions be loaded with 630A. A correction factor k_2 of 1.30 for example is required if a load of 800A is applied. This diagram demonstrates that the busbar heats up to 85°C if this correction factor and an air temperature of 35°C apply.

Δ T (°K) calculation

eg.
 T_1 (internal panel temperature) 50°C
 T_2 (temperature of conductor) 100°C

temperature rise of conductor = $T_2 - T_1 = \Delta T(^{\circ}K)$

eg. T_2 (100°C) - T_1 (50°C) = select from 50°K



Rated motor current conversion table

Rated power		3-phase 4-pole 50 - 60 hz					Single phase	
kW	Hp	400V A	415V A	440V A	500V A	660V A	220V A	240V A
0.37	0.5	0.9	0.9	0.9	0.8	0.6	3.9	3.6
0.55	0.75	1.4	1.4	1.3	1.1	0.9	5.2	4.8
0.75	1	1.9	1.8	1.7	1.5	1.1	6.6	6.1
1.1	1.5	2.5	2.4	2.3	2	1.5	9.6	8.8
1.5	2	3.5	3.3	3	2.7	2	12.7	11.7
2.2	3	4.8	4.7	4.4	3.8	3	18.6	17.1
4	5.5	8.1	8	7.5	6.5	5	32	29
5.5	7.5	11.1	11	10	9	6.7	42.2	38.7
7.5	10	14.7	14.3	13.5	12	9	54.4	50
10	13.5	19.5	19	18	15.6	12	–	–
11	15	20.9	20.5	19.5	17	13	75	–
15	20	28.5	28	26.5	23	17.5		
18.5	25	35.1	34	32	28	21.3		
22	30	42	40	38	33.5	25.4		
30	40	56	54	51	45	34		
37	50	68.4	66	62	55	42		
45	60	81	78	73	65	49		
55	75	99	95	90	79	60		
75	100	132	128	121	106	81		
90	125	162	157	148	130	99		
110	150	195	188	177	156	118		
132	180	233	225	212	187	142		
160	220	285	276	260	229	174		
200	270	353	341	321	283	214		
220	300	389	375	353	311	236		
250	340	442	426	402	353	268		
315	430	551	530	500	440	334		
355	480	617	595	560	490	374		
375	500	660	630	585	530	395		
425	580	742	715	675	594	450		

Star-delta ratings calculated at full load current x 0.58

Contactor utilisation categories (IEC 60947-4-1)

Category AC-1	Continuous current rating: All AC loads with a power factor ≥ 0.95 – heating, distribution
Category AC-2	Starting, plugging and inching of slip ring motors – starting ± 2.5 times rated motor current – stopping ≤ mains supply voltage
Category AC-3	Starting and stopping squirrel cage motors – closing and opening at 6 to 8 times rated motor current – stopping the voltage is at ± 20% of mains supply voltage – light breaking
Category AC-4	Plugging and inching of squirrel cage – closing and opening 6 to 8 times rated motor current – severe breaking

Type 2 co-ordination tables

80kA 400V (IEC/EN60947-4-1), Direct-on-line starters with fuses

Motor		Fuse switch type	Fuse rating		Contactor	Thermal overload	Current range (A)
Rated output (KW)	Rated current (A)		gG	aM			
0.37	1.1	3631 3003	6	4	BF09A	RF380160	1-1.6
0.55	1.5	3631 3003	10	4	BF09A	RF380160	1-1.6
0.75	1.9	3631 3003	10	4	BF09A	RF380250	1.6-2.5
1.1	2.7	3631 3003	16	6	BF09A	RF380400	2.5-4
1.5	3.6	3631 3003	16	10	BF09A	RF380400	2.5-4
2.2	4.9	3631 3003	25	10	BF09A	RF380650	4-6.5
3.0	6.5	3631 3003	32	16	BF12A	RF381000	6.3-10
4.0	8.5	3631 3003	32	20	BF16A	RF381000	6.3-10
5.5	11.5	3831 3011	50	25	BF25A	RF381400	9-14
7.5	15.5	3831 3011	63	32	BF32A	RF381800	13-18
11.0	22	3831 3011	80	40	BF32A	RF382500	20-25
15.0	29	3831 3011	100	63	BF50	RF95333	20-22
18.5	35	3831 3011	125	80	BF50	RF95342	28-32
22	41	3831 3024	160	100	BF65	RF95350	35-50
30	55	3831 3024	200	100	BF95	RF95365	46-65
37	66	3831 3024	200	125	BF95	RF95382	60-82
45	80	3831 3024	250	160	B145	RF200100	60-100
55	97	3831 3039	315	200	B180	RF200100	90-150
75	132	3831 3039	400	250	B250	RF200150	120-200
90	160	3831 3039	400	315	B250	RF420250	150-250
110	195	3831 3039	400	355	B310	RF420250	150-250
132	230	3811 3063	630	400	B400	RF420250	150-250
160	280	3811 3063	630	500	B400	RF420300	180-300
200	350	3811 3063	630	630	B500	RF420400	250-420

80kA 400V, Star-Delta starters with fuses


Motor		Fuse switch type	Fuse rating					Current range (A)
Rated output (kW)	Rated current (A)		gG	aM	Line	Delta	Star	
4.0	8.6	3631 3003	20	10	BF9A	BF9A	BF9A	
5.5	11.5	3631 3003	25	16	BF12A	BF12A	BF9A	
7.5	15.2	3631 3003	32	20	BF16A	BF16A	BF9A	6.3-10
11.0	22	3631 3005	40	25	BF25A	BF25A	BF9A	9-14
15.0	29	3631 3005	50	32	BF25A	BF25A	BF12A	13-18
18.5	35	3638 3011	63	40	BF25A	BF25A	BF18A	17-23
22	41	3638 3011	80	50	BF32A	BF32A	BF18A	24-32
30	55	3638 3011	100	63	BF38A	BF38A	BF25A	32-38
37	66	3638 3011	125	80	BF50	BF50	BF32A	35-50
45	80	3638 3011	125	100	BF65	BF65	BF32A	35-50
55	97	3831 3024	160	125	BF80	BF80	BF38A	46-65
75	132	3831 3024	200	160	BF80	BF80	BF50	60-100
90	160	3831 3024	250	200	B115	B115	BF65	90-150
110	195	3831 3024	250	200	B115	B115	BF65	120-200
132	230	3831 3039	315	250	B145	B145	BF80	120-200
160	280	3831 3039	400	315	B180	B180	B115	120-200
250	430	3811 3063	500	500	B250	B250	B145	150-250
295	540	3811 3063	630	630	B310	B310	B180	240-400

50 kA 400V, between SM circuit breakers and contactors series BG and BF

P (kW)	I _e (A)	Current adjustment range (A)	Circuit breaker	Contactor
<0.6	-	0.1 - 0.16	SM1R0016	BG6...
0.06	-	0.16 - 0.25	SM1R0025	BG6...
0.09	-	0.25 - 0.4	SM1R0040	BG6...
0.12	-	0.4 - 0.63	SM1R0063	BG6...
0.25	0.85	0.63 - 1	SM1R0100	BG6...
0.55	1.4	1 - 1.6	SM1R0160	BG6...
0.75	1.9	1.6 - 2.5	SM1R0250	BG6...
1.5	3.5	2.5 - 4	SM1R0400	BG6...
2.2	4.8	4 - 6.5	SM1R0650	BG6...
4	8	6.3 - 10	SM1R1000	BG9.../BF9...
5.5	11	9 - 14	SM1R1400	BF12...
7.5	15	13 - 18	SM1R1800	BF16...
11	21	20 - 25	SM1R2500	BF25...
15	29	22 - 32	SM1R3200	BF32...
18.5	35	28 - 40	SM1R4000	BF40...
22	41	40 - 50	SM2R5000	BF50...
30	55	45 - 63	SM2R6300	BF65...
37	67	57 - 75	SM3R7500	BF80...
45	80	80 - 100	SM3R9900	BF95...

IP rating chart			
The system provides a classification from solid objects to liquids in relation to electrical equipment and enclosures. IP rating consists of 2 codes (i.e. IP65).			
First digit	Protection against solid objects	Second digit	Protection against moisture
0	No protection	0	No protection
1	Protection against objects >50mm	1	Protection against vertically dripping water
2	Protection against objects >12.5mm	2	Protection against spraying water ±15° from vertical
3	Protection against objects >2.5mm	3	Protection against spraying water ±60° from vertical
4	Protection against objects 1.0mm	4	Protection against spraying water ±90° from vertical
5	Dust protection (limited ingress)	5	Protection against low pressure water jets
6	Dust tight protection	6	Protection against high pressure water jets
		7	Protection against temporary immersion (15cm and 1cm)
		8	Protection against continuous immersion under pressure

NB: IP69K refers to the product ability to resist ingress of high temperature (steam) and high pressure washdowns normally used to sanitise equipment.

IK rating chart			
Degree of protection against mechanical wear and tear. IK rating consists of 2 codes (i.e. IK06).			
Code	 Weight	Height (cm)	Impact Energy (J)
01	0.2kg	7.5	0.15
02		10	0.20
03		17.5	0.35
04		25	0.50
05		35	0.70
06		20	1
07	0.5kg	40	2
08	1.7kg	29.5	5
09	5kg	20	10
10		40	20

Conversion tables					
Length	from:	to	meter	foot	inch
	1 meter (m)		1	3.281	39.37
	1 inch (in / ")		0.0254	0.08378	1
	1 foot (ft / ')		0.3048	1	12
Weight	from:	to	kg	lb	oz
	1 kilogram (kg)		1	2.205	35.27
	1 pound (1b)		0.454	1	16
	1 ounce (oz)		0.028	0.0625	1
Pressure	from:	to	n/m ²	bar	PSI
	1 n/m ² or pascal		1	0.00001	0.000145
	1 bar		100000	1	14.504
	1 PSI		6849.76	0.0689476	1

Power factor correction						
Individual motor compensation						
Capacitor rating in kVAr			To improve P.F to 0.95 or better at all loads			
motor kW	2 pole 3000rpm	4 pole 1500rpm	6 pole 1000rpm	8 pole 750rpm	10 pole 600rpm	12 pole 500rpm
1.5	0.5	1	1	1.5	1.5	1.5
2.2	0.75	1	1	1.5	1.5	1.5
4	1.0	1.5	2	2.5	3	3
5.5	1.5	2	3	3.5	4	4
7.5	2.5	3	3.5	4	5	5
11	4	4	4.5	6	6	6
15	5	5	6	8	8	10
18.5	6	6	7	8	10	12
22	7	8	9	10	12	14
30	9	10	11	14	14	16
37	12	12	14	16	18	18
45	14	14	15	18	20	22
55	15	16	18	20	22	26
63	16	18	20	22	24	28
75	20	22	24	26	28	32
90	25	26	30	32	35	30
110	28	30	32	35	38	45
132	30	32	32.6	38	45	60

Calculating capacitor size requirements for power factor correction

It is imperative that correct capacitor sizes be selected when calculating capacitor requirements. In the case of group compensation it is recommended that the first capacitor step be equal to half the value of the following steps, to allow a smooth overall more finely tuned correction system.

Table 2 below will assist in calculating capacitor values required in specific applications. Prior knowledge of the following is required:

- a) Power factor before applying capacitors (*left column*)
- b) Required power factor after applying capacitors (*top row*)
- c) Total consumption in kW (per kW)

The correct capacitor size can then be calculated by crossing the horizontal and vertical values of table 2.

Example:

1. Convert the plant load to kW (kVA x Power Factor = kW)
400 kVA x 0.70 PF = 280kW (useful power).
2. To correct a load of 400 kVA at 0.70 PF to 0.96. Follow the 0.70 value (in the left vertical column table 2) horizontally until below the 0.96 value (in the top horizontal row) the value is 0.729.
3. Capacitor required to correct from 0.70 to 0.96 (Power x Capacitor from table value)
280kW x 0.729 = 204.12 kVAr

Savings:

280kW at 0.70 PF = 400 kVA
280kW at 0.96 PF = 292 kVA
Reduction = 108 kVA (27% less of transformer load)



Table 2

PF load before applying capacitors	Target power factor												
	0.80	0.85	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	Unity
0.40	1.537	1.668	1.805	1.832	1.861	1.924	1.959	1.988	2.037	2.003	2.085	2.146	2.288
0.41	1.474	1.605	1.742	1.769	1.798	1.831	1.860	1.896	1.935	1.973	2.021	2.082	2.225
0.42	1.413	1.544	1.681	1.709	1.738	1.771	1.800	1.836	1.874	1.913	1.961	2.022	2.164
0.43	1.356	1.487	1.624	1.651	1.680	1.713	1.742	1.778	1.816	1.855	1.903	1.964	2.107
0.44	1.290	1.421	1.558	1.585	1.614	1.647	1.677	1.712	1.751	1.790	1.837	1.899	2.041
0.45	1.230	1.360	1.501	1.532	1.561	1.592	1.626	1.659	1.695	1.737	1.784	1.846	1.988
0.46	1.179	1.309	1.446	1.473	1.502	1.533	1.567	1.600	1.636	1.677	1.725	1.786	1.929
0.47	1.130	1.260	1.397	1.425	1.454	1.485	1.519	1.552	1.588	1.629	1.677	1.758	1.881
0.48	1.076	1.206	1.343	1.370	1.400	1.430	1.464	1.497	1.534	1.575	1.623	1.684	1.826
0.49	1.030	1.160	1.297	1.326	1.355	1.386	1.420	1.453	1.489	1.530	1.578	1.639	1.782
0.50	0.982	1.112	1.248	1.276	1.303	1.337	1.369	1.403	1.441	1.481	1.529	1.590	1.732
0.51	0.936	1.066	1.202	1.230	1.257	1.291	1.323	1.357	1.395	1.435	1.483	1.544	1.686
0.52	0.894	1.024	1.160	1.188	1.215	1.249	1.281	1.315	1.353	1.393	1.441	1.502	1.644
0.53	0.850	0.980	1.116	1.144	1.171	1.205	1.237	1.271	1.309	1.349	1.397	1.458	1.600
0.54	0.809	0.939	1.075	1.103	1.130	1.164	1.196	1.230	1.268	1.308	1.356	1.417	1.559
0.55	0.769	0.899	1.035	1.063	1.090	1.124	1.156	1.190	1.228	1.268	1.316	1.377	1.519
0.56	0.730	0.860	0.996	1.024	1.051	1.085	1.117	1.151	1.189	1.229	1.277	1.338	1.480
0.57	0.692	0.822	0.958	0.986	1.013	1.047	1.079	1.113	1.151	1.191	1.239	1.300	1.442
0.58	0.655	0.785	0.921	0.949	0.976	1.010	1.042	1.076	1.114	1.154	1.202	1.263	1.405
0.59	0.618	0.748	0.884	0.912	0.939	0.973	1.005	1.039	1.077	1.117	1.165	1.226	1.368
0.60	0.584	0.714	0.849	0.878	0.905	0.939	0.971	1.005	1.043	1.083	1.131	1.192	1.334
0.61	0.549	0.679	0.815	0.843	0.870	0.904	0.936	0.970	1.008	1.048	1.096	1.157	1.299
0.62	0.515	0.645	0.781	0.809	0.836	0.870	0.902	0.934	0.974	1.014	1.062	1.123	1.265
0.63	0.483	0.613	0.749	0.777	0.804	0.838	0.870	0.904	0.942	0.982	1.030	1.091	1.233
0.64	0.450	0.580	0.716	0.744	0.771	0.805	0.837	0.871	0.909	0.949	0.997	1.058	1.200
0.65	0.419	0.549	0.685	0.713	0.740	0.774	0.806	0.840	0.878	0.918	0.966	1.027	1.169
0.66	0.388	0.518	0.654	0.682	0.709	0.743	0.775	0.809	0.847	0.887	0.935	0.996	1.138
0.67	0.358	0.488	0.624	0.652	0.679	0.713	0.745	0.779	0.817	0.857	0.905	0.966	1.108
0.68	0.329	0.459	0.595	0.623	0.650	0.684	0.716	0.750	0.788	0.828	0.876	0.937	1.079
0.69	0.299	0.429	0.565	0.593	0.620	0.654	0.686	0.720	0.758	0.798	0.840	0.907	1.049
0.70	0.270	0.400	0.536	0.564	0.591	0.625	0.657	0.691	0.729	0.769	0.811	0.878	1.020
0.71	0.242	0.372	0.508	0.536	0.563	0.597	0.629	0.663	0.701	0.741	0.783	0.850	0.992
0.72	0.213	0.343	0.479	0.507	0.534	0.568	0.600	0.634	0.672	0.712	0.754	0.821	0.963
0.73	0.186	0.316	0.452	0.480	0.507	0.541	0.573	0.607	0.645	0.685	0.727	0.794	0.936
0.74	0.159	0.289	0.425	0.453	0.480	0.514	0.546	0.580	0.618	0.658	0.700	0.767	0.909
0.75	0.132	0.262	0.398	0.426	0.453	0.487	0.519	0.553	0.591	0.631	0.673	0.740	0.882
0.76	0.105	0.235	0.371	0.399	0.426	0.460	0.492	0.526	0.564	0.604	0.652	0.713	0.855
0.77	0.079	0.209	0.345	0.373	0.400	0.434	0.466	0.500	0.538	0.578	0.620	0.687	0.829
0.78	0.053	0.183	0.319	0.347	0.374	0.408	0.440	0.474	0.512	0.552	0.594	0.661	0.803
0.79	0.026	0.156	0.292	0.320	0.347	0.381	0.413	0.447	0.485	0.525	0.567	0.634	0.776
0.80	-	0.130	0.266	0.294	0.321	0.355	0.387	0.421	0.459	0.499	0.541	0.608	0.750
0.81	-	0.104	0.240	0.268	0.295	0.329	0.361	0.395	0.433	0.473	0.515	0.582	0.724
0.82	-	0.078	0.214	0.242	0.269	0.303	0.335	0.369	0.407	0.447	0.489	0.556	0.698
0.83	-	0.052	0.188	0.216	0.243	0.277	0.309	0.343	0.381	0.421	0.463	0.530	0.672
0.84	-	0.026	0.162	0.190	0.217	0.251	0.283	0.317	0.355	0.395	0.437	0.504	0.645
0.85	-	-	0.136	0.164	0.191	0.225	0.257	0.291	0.329	0.369	0.417	0.478	0.620
0.86	-	-	0.109	0.140	0.167	0.198	0.230	0.264	0.301	0.343	0.390	0.450	0.593
0.87	-	-	0.083	0.114	0.141	0.172	0.204	0.238	0.275	0.317	0.364	0.424	0.567
0.88	-	-	0.054	0.085	0.112	0.143	0.175	0.209	0.246	0.288	0.335	0.395	0.538
0.89	-	-	0.028	0.059	0.086	0.117	0.149	0.183	0.230	0.262	0.309	0.369	0.512
0.90	-	-	-	0.031	0.058	0.089	0.121	0.155	0.192	0.234	0.281	0.341	0.484
0.91	-	-	-	-	0.027	0.058	0.090	0.124	0.161	0.203	0.250	0.310	0.453
0.92	-	-	-	-	-	0.031	0.063	0.097	0.134	0.176	0.223	0.283	0.426
0.93	-	-	-	-	-	-	0.032	0.066	0.103	0.145	0.192	0.252	0.395

Capacitor ratings at different voltages

	kVAr at				capacitance total (uF)	capacitance in delta (uF)	current in delta (A)				line current (A)			
	525V	440V	415V	400V			525V	440V	415V	400V	525V	440V	415V	400V
10		9	8		164	82		8	7	7		13	12	12
15		13	12		247	123		11	11	10		20	19	18
20		18	17		329	164		15	14	14		26	25	24
25		22	21		411	206		19	18	17		33	31	30
30		27	25		493	247		23	21	21		39	37	36
40		36	33		658	329		30	29	28		52	50	48
45		40	37		740	370		34	32	31		59	56	54
50		44	41		822	411		38	36	34		66	62	60
60		53	50		987	493		45	43	41		79	74	72
75		67	62		1234	617		57	54	52		98	93	89
80		71	66		1316	658		61	57	55		105	99	95
90		80	74		1480	740		68	64	62		118	111	107
100		89	83		1645	822		76	71	69		131	124	119
120		107	99		1974	987		91	86	83		157	149	143
125		111	103		2056	1028		95	89	86		164	155	149
150		133	124		2467	1234		114	107	103		197	186	179
175		156	145		2879	1439		133	125	121		230	217	209
180		160	149		2961	1480		136	129	124		236	223	215
200		178	165		3290	1645		152	143	138		262	248	239
210		187	174		3454	1727		159	150	145		276	260	251
225		200	186		3701	1851		170	161	155		295	278	268
240		214	198		3948	1974		182	171	165		315	297	286
250		222	207		4112	2056		189	179	172		328	309	298
270		240	223		4441	2221		205	193	186		354	334	322
275		245	227		4524	2262		208	196	189		361	340	328
300		267	248		4935	2467		227	214	207		394	371	358
325		289	269		5346	2673		246	232	224		426	402	388
330		294	273		5428	2714		250	236	227		433	408	394
350		311	289		5757	2879		265	250	241		459	433	418
360		320	298		5922	2961		273	257	248		472	446	429
375		334	310		6169	3084		284	268	258		492	464	447
400		356	331		6580	3290		303	286	275		525	495	477
420		374	347		6909	3454		318	300	289		551	520	501
425		378	351		6991	3496		322	304	293		558	526	507
450		400	372		7402	3701		341	322	310		590	557	537
475		423	393		7814	3907		360	339	327		623	588	567
480		427	397		7896	3948		364	343	331		630	594	573
500		445	413		8225	4112		379	357	344		656	619	596
600		534	496		9870	4935		455	429	413		787	743	716
700		623	579		11515	5757		530	500	482		919	866	835
10	7	6	6	116	58	6	5	5	5	11	9	9	8	
20	14	12	12	231	116	13	11	10	10	22	18	17	17	
30	21	19	17	347	173	19	16	15	15	33	28	26	25	
40	28	25	23	462	231	25	21	20	19	44	37	35	34	
50	35	31	29	578	289	32	27	25	24	55	46	43	42	
60	42	37	35	693	347	38	32	30	29	66	55	52	50	
70	49	44	41	809	404	44	37	35	34	77	65	61	59	
80	56	50	46	924	462	51	43	40	39	88	74	70	67	
90	63	56	52	1040	520	57	48	45	44	99	83	78	75	
100	70	62	58	1155	578	63	53	50	48	110	92	87	84	
120	84	75	70	1387	693	76	64	60	58	132	111	104	101	
140	98	87	81	1618	809	89	74	70	68	154	129	122	117	
160	112	100	93	1849	924	102	85	80	77	176	147	139	134	
180	126	112	104	2080	1040	114	96	90	87	198	166	156	151	
200	140	125	116	2311	1155	127	106	100	97	220	184	174	168	
220	155	137	128	2542	1271	140	117	110	106	242	203	191	184	
240	169	150	139	2773	1387	152	128	120	116	264	221	209	201	
260	183	162	151	3004	1502	165	138	130	126	286	240	226	218	
280	197	175	163	3235	1618	178	149	141	135	308	258	243	235	
300	211	187	174	3466	1733	190	160	151	145	330	276	261	251	
320	225	200	186	3697	1849	203	170	161	155	352	295	278	268	
400	281	250	232	4622	2311	254	213	201	193	440	369	348	335	

Standard rated capacitor voltage 440V or 525V

- Notes:**
1. "capacitance total" refers to total calculated capacitance of the delta connected capacitor at rated capacitor voltage
 2. "capacitance in delta" refers to calculated capacitance between any two terminals of delta wired capacitor
 3. "line current" refers to calculated current at terminals of delta capacitor
 4. calculated values may vary in practice due to tolerances allowed in manufacturing standards, and the effect of cables, discharge resistors, etc

Capacitor selection regarding harmonics

	Capacitor without reactor	Capacitor without reactor	Capacitor with reactor	Capacitor with reactor
		Standard type	Standard class	Reinforced class
S.H		15-25%	25-35%	35-50%
S.T				
THDU/ THDI		≤ 3% / ≤ 10%	≤ 4% / ≤ 20%	≤ 6% / ≤ 40%

- Notes:**
- S.H and S.T are given in kVA
 - S.H: weighted power of harmonic generators in kVA
 - S.T: power of the transformer HV/LV

TEKNOMEGA TOP busbar support fault level chart

lcc pk	Short-circuit current peak value expressed in kA																																				
lcc rms	Effective value of short-circuit, duration equal to 1 second, expressed in kA																																				
lcc pk (kA)	53 kA					74 kA					110 kA					143 kA					165 kA				187 kA			220 kA									
lcc rms (kA)	25 kA					35 kA					50 kA					65 kA					75 kA				85 kA			100 kA									
Space between phases (mm)	50	75	100	125		50	75	100	125	150	50	75	100	125	150	50	75	100	125	150	50	75	100	125	150	100	125	150	100	125	150	100	125	150	100	125	150

Bar Cross - Section (mm)	30 x 5	225	280	320	360	160	200	230	260	-	110	135	155	175	-	-	100	120	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40 x 5	265	320	370	415	190	230	265	300	-	125	155	180	200	-	-	120	135	155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50 x 5	295	360	415	465	210	260	300	335	-	140	175	200	225	-	110	130	155	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	60 x 5	330	405	470	525	235	290	335	375	-	160	195	225	250	-	120	150	170	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	80 x 5	370	455	530	585	265	325	375	420	-	180	220	250	285	-	135	170	195	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Bar Cross - Section (mm)	30 x 5	320	390	450	510	230	280	320	360	-	150	190	220	240	-	120	150	170	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40 x 5	370	450	520	580	260	320	370	420	-	180	220	250	280	-	140	170	190	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50 x 5	410	510	580	650	300	360	420	470	-	200	240	280	310	-	150	190	220	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	60 x 5	460	570	660	730	330	410	470	520	-	220	270	320	350	-	170	210	240	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	80 x 5	520	640	740	830	370	460	530	590	-	250	310	360	400	-	165	240	250	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Bar Cross - Section H x D (mm)	30 x 10	455	555	640	720	325	400	460	520	-	250	270	310	350	-	170	205	240	265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40 x 10	525	645	745	835	375	460	530	600	-	255	310	360	400	-	195	240	275	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50 x 10	590	720	830	935	420	515	595	665	-	285	350	400	450	-	200	255	310	345	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	60 x 10	645	790	900	900	460	565	650	730	-	310	380	490	490	-	200	255	340	380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	80 x 10	745	900	900	900	535	650	750	845	-	335	440	565	565	-	200	300	390	435	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100 x 10	830	900	900	900	590	730	840	900	-	335	490	635	635	-	200	300	400	490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	120 x 10	900	900	900	900	650	790	900	900	-	335	500	690	690	-	200	300	400	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

lcc pk (kA)	53 kA					74 kA					110 kA					143 kA					165 kA				187 kA			220 kA													
lcc rms (kA)	25 kA					35 kA					50 kA					65 kA					75 kA				85 kA			100 kA													
Space between phases (mm)	75	100	125			75	100	125	150		75	100	125	150		75	100	125	150	175		100	125	150	175		100	125	150	175		100	125	150	175		100	125	150	175	

Bar Cross - Section H x D (mm)	30 x 10	785	900	900	560	650	720	790	380	440	490	530	270	335	370	410	-	240	265	-	-	-	205	270	320	310	-	-	-	-	-	-	-	-	-
	40 x 10	900	900	900	650	750	840	900	440	500	560	620	270	365	430	470	-	275	310	-	-	-	205	270	340	320	-	-	-	-	-	-	-	-	-
	50 x 10	900	900	900	720	840	900	900	460	560	630	690	270	365	455	530	-	310	345	-	-	-	205	270	340	320	-	-	-	-	-	-	-	-	-
	60 x 10	900	900	900	790	900	900	900	460	610	690	750	270	365	455	545	-	340	380	-	-	-	205	270	340	320	-	-	-	-	-	-	-	-	-
	80 x 10	900	900	900	900	900	900	900	460	610	770	870	270	365	455	545	-	390	435	-	-	-	205	270	340	320	-	-	-	-	-	-	-	-	-
	100 x 10	900	900	900	900	900	900	900	460	610	770	900	270	365	455	545	-	400	490	-	-	-	205	270	340	320	-	-	-	-	-	-	-	-	-
	120 x 10	900	900	900	900	900	900	900	460	610	770	900	270	365	455	545	-	400	500	-	-	-	205	270	340	320	-	-	-	-	-	-	-	-	-

Bar Cross - Section H x D (mm)	30 x 10	-	900	900	-	790	890	900	-	530	600	650	-	410	460	500	540	350	400	440	470	275	345	380	420	-	-	-	-	-	-	-	-
	40 x 10	-	900	900	-	900	900	900	-	620	690	750	-	470	530	580	630	350	440	500	540	275	345	440	480	-	-	-	-	-	-	-	-
	50 x 10	-	900	900	-	900	900	900	-	690	770	840	-	470	590	650	700	350	440	530	610	275	345	415	480	-	-	-	-	-	-	-	-
	60 x 10	-	900	900	-	900	900	900	-	750	840	900	-	470	590	710	770	350	440	530	620	275	345	415	480	-	-	-	-	-	-	-	-
	80 x 10	-	900	900	-	900	900	900	-	870	900	900	-	470	590	710	825	350	440	530	620	275	345	415	480	-	-	-	-	-	-	-	-
	100 x 10	-	900	900	-	900	900	900	-	900	900	900	-	470	590	710	825	350	440	530	620	275	345	415	480	-	-	-	-	-	-	-	-
	120 x 10	-	900	900	-	900	900	900	-	900	900	900	-	470	590	710	825	350	440	530	620	275	345	415	480	-	-	-	-	-	-	-	-

TOP junior compact busbar supports

lcc pk (kA)	53 kA	74 kA	110 kA	132 kA	
lcc rms (kA)	25 kA	35 kA	50 kA	60 kA	
Space between phases (mm)	70 mm				
TOP Junior 1/10 (1 x 10mm bar per phase)					
Bar Cross - Section (mm)	30 x 10	540	385	260	200
	40 x 10	610	445	285	200
	50 x 10	695	495	285	200
	60 x 10	760	545	285	200
	80 x 10	870	630	285	200

lcc pk (kA)	53 kA	74 kA	110 kA	132 kA	
lcc rms (kA)	25 kA	35 kA	50 kA	60 kA	
Space between phases (mm)	70 mm				
TOP Junior 2/5 (1 x 5mm bar per phase)					
Bar Cross - Section (mm)	30 x 10	270	190	130	105
	40 x 10	310	220	150	125
	50 x 10	350	250	165	129
	60 x 10	380	275	180	129
	80 x 10	390	310	210	129

lcc pk (kA)	53 kA	74 kA	110 kA	132 kA	
lcc rms (kA)	25 kA	35 kA	50 kA	60 kA	
Space between phases (mm)	70 mm				
TOP Junior 2/5 (2 x 5mm bar per phase)					
Bar Cross - Section (mm)	30 x 10	380	270	180	150
	40 x 10	440	310	210	165
	50 x 10	490	350	235	165
	60 x 10	540	385	240	165
	80 x 10	620	445	240	165

Socomec busbar support fault levels

Adhering to the maximum distances between two supports ensures the busbar supports are able to withstand the given short circuit current values. At these values, deformation of the copper bars may occur. These deformations are permitted by standard IEC 60439-1 as long as they adhere to the insulation distances.

SBC 10 Busbar supports

Peak I _{sc}		15kA	24kA	48kA	63kA	82kA	114kA	space between phases	in cabinet 45° C bars 80° C
Rms I _{sc}		9kA	12kA	23kA	30kA	39kA	52kA		
Bar (mm)	No.	Max. L (distance between centres of sets of supports in mm)						d (mm)	I _z (A)
25 x 10	1	1000	1000	500	375	275	200	65	-
25 x 10	2	1000	1000	525	400	300	200	90	850
40 x 10	1	1000	1000	650	475	375	250	65	700
40 x 10	2	1000	1000	700	525	400	275	90	1250
50 x 10	1	1000	1000	725	550	425	300	65	850
50 x 10	2	1000	1000	800	600	475	325	90	1550
60 x 10	1	1000	1000	800	625	475	325	65	1000
60 x 10	2	1000	1000	900	675	525	350	90	1800
80 x 10	1	1000	1000	975	725	550	400	65	1300
80 x 10	2	1000	1000	1000	850	650	350	90	2300
100 x 10	1	1000	1000	1000	850	650	400	65	1550
100 x 10	2	1000	1000	1000	975	675	350	90	2750

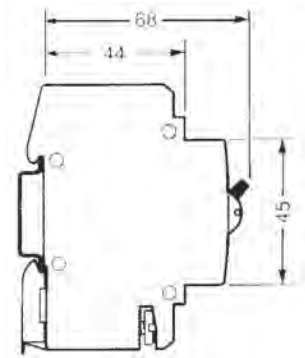
SBC ER Busbar supports

Peak I _{sc}		63kA	82kA	114kA	152kA	165kA	187kA	space between phases	in cabinet 45° C bars 80° C
Rms I _{sc}		30kA	39kA	52kA	69kA	75kA	85kA		
Bar (mm)	No.	Max. L (distance between centres of sets of supports in mm)						d (mm)	I _z (A)
50 x 5	1	600	500	325	175	150	-	70	600
50 x 5	2	600	500	325	175	150	100	70	1050
60 x 5	1	625	525	350	200	175	-	70	700
60 x 5	2	625	525	350	200	175	125	70	1250
80 x 5	1	625	525	350	200	175	125	70	900
80 x 5	2	625	525	350	200	175	125	70	1550
100 x 5	1	650	550	375	225	200	175	70	1100
100 x 5	2	650	550	375	225	200	175	70	1900
50 x 10	1	1000	1000	650	250	200	150	70	850
50 x 10	2	1000	1000	650	250	200	150	70	1550
60 x 10	1	1000	1000	675	275	225	175	70	1050
60 x 10	2	1000	1000	675	275	225	175	70	1850
80 x 10	1	1000	1000	700	300	250	175	70	1300
80 x 10	2	1000	1000	700	300	250	175	70	2300
100 x 10	1	1000	1000	725	325	275	175	70	1550
100 x 10	2	1000	1000	725	325	275	175	70	2750
120 x 10	1	1000	1000	725	350	275	200	70	1900
120 x 10	2	1000	1000	725	350	275	200	70	3350

SBE 44 Busbar supports

Peak I _{sc}		10kA	15kA	24kA	38kA	48kA	63kA	space between phases	in cabinet 45° C bars 80° C
Rms I _{sc}		6kA	9kA	12kA	19kA	23kA	30kA		
Bar (mm)	No.	Max. L (distance between centres of sets of supports in mm)						d (mm)	I _z (A)
15 x 3	1	950	625	400	250	175	-	35	160
15 x 5	1	1000	825	500	300	175	-	35	220
20 x 5	1	1000	1000	675	300	175	-	35	280
20 x 8	1	1000	1000	775	300	175	-	35	370
32 x 5	1	1000	1000	675	250	170	-	35	410

Use of MCBs in DC systems



Protection and control of circuits against overloads and short circuits – in commercial and industrial electrical distribution systems

EN 60898-1
NF C 61-410
IEC 60947-2
SANS 60947-2

DC applications

Because of their quick make and break design and excellent arc quenching capabilities, Hager circuit breakers are suitable for use on DC. When selecting a circuit breaker for any DC application it is necessary to consider 2 main points:

a) system voltage

The system voltage and the type of system determines the number of poles required to provide the necessary breaking capacity and arc control. The table gives the maximum DC voltage and breaking capacity for one pole or two poles connected in the series.

The positioning of these breaking poles in the system depends on whether the system is earthed or insulated and if it is earthed whether one polarity is earthed or the centre point is earthed.

b) type of DC systems: 3 different types

- Network connected to the earth - one polarity earthed (+ve or -ve):
If -ve is earthed, all poles will be placed in series in the +ve leg.
If the +ve is earthed, all poles will be placed in the -ve leg.
Note: an extra pole will be needed on the earthed polarity to provide isolation.
- Network connected to the earth - middle point earthed:
The number of poles required to break I_{sc} should be placed on each polarity.
- Network insulated to the earth:
The number of poles required to break I_{sc} should be split between the two polarities.

Table 1			breaking capacity				
			L/R = 15ms				
range	I _n	nb of poles in series needed for breaking	<48V	60V	125V	250V	500V
MV	6 to 63A	1P	15	–	–	–	–
		2P	20	20	–	–	–
		3P	25	25	20	–	–
		4P	35	35	25	–	–
NF/NFN NGN, NCN	1 to 63A	1P	15	15	10	–	–
		2P	20	20	15	6	–
		3P	25	25	20	10	–
		4P	35	35	25	15	10
NRN	6 to 20A	1P	25	25	20	–	–
		2P	35	35	25	15	–
		3P	40	40	35	20	–
		4P	45	45	40	25	10
	25 to 40A	1P	20	20	15	–	–
		2P	25	25	20	10	–
		3P	30	30	30	15	–
		4P	35	35	35	20	10
	50 and 63A	1P	15	15	10	–	–
		2P	20	20	15	6	–
		3P	25	25	20	10	–
		4P	35	35	25	15	10
HMC, HMD, HMK	80 to 125A	1P	15	15	10	–	–
		2P	20	20	15	6	–
		3P	30	30	30	15	–
		4P	35	35	35	20	10
HLF	80 to 125A	1P	12	12	8	–	–
		2P	15	15	10	4	–
		3P	25	25	25	10	–
		4P	30	30	30	15	5

Table 2 magnetic trip		1	2	3	4
		I _{t1}	I _{t2}	I _{rm1}	I _{rm2}
Curve B	AC 50Hz	1.13 I _n	1.45 I _n	3 I _n	5 I _n
	DC	1.13 I _n	1.45 I _n	4 I _n	7 I _n
Curve C	AC 50Hz	1.13 I _n	1.45 I _n	5 I _n	10 I _n
	DC	1.13 I _n	1.45 I _n	7 I _n	15 I _n
Curve D	AC 50Hz	1.13 I _n	1.45 I _n	10 I _n	20 I _n
	DC	1.13 I _n	1.45 I _n	15 I _n	30 I _n

Cascading according to IEC 60947-2 MCCB x160, x250, h250, h400, h630,h1000, h1600

Cascading value in kA according to IEC 947-2. Network: 3 phases + neutral, 380-415 VAC

Upstream Circuit Breaker

MCB's

	REFERENCE	NFN	NGN	NCN	NRN	HLF	HMC	HMD	HMK
		10 kA	15 kA	25 kA	20 kA	15 kA	15 kA	15 kA	30 kA
MJT	IEC 60947-2	63A	C	C	C	125A	125A	125A	125A
MA									
NFN									
NGN									
NCN									
NRN									
HLF									
HMC									
HMD									
HMK									

MCCB's

	HHA	HNA	HHA	HNB	HEG	HHD	HND	HED	HNE	HEE	HNF	HEF
	x160 TM	160A	x250 TM	250A	h250 TM	h400 TM	h630 LSI	h1000 LSI	1000A	1600A	h1600 LSI	1600A
	18	18	6	6	6	6	6	6	6	6	6	6
	25	25	40	40	50	17	17	20	20	20	15	15
	25	25	40	40	50	17	17	20	20	20	15	15
	25	25	40	40	50	17	17	20	20	20	15	15
	25	25	40	40	50	25	25	29	29	30	20	20
	25	25	40	40	50	15	15	19	19	20	15	15
	25	25	40	40	50	17	17	17	17	17	15	15
	25	25	40	40	50	17	17	19	19	17	15	15
	25	25	40	40	50	17	17	19	19	17	15	15
	40	40	-	40	50	25	50	70	50	60	35	70

Downstream Circuit Breaker

	HHA	HNA	HHA	HNB	HEG	HHD	HND	HED	HNE	HEE	HNF	HEF
	x160 TM	160A	x250 TM	250A	h250 TM	h400 TM	h630 LSI	h1000 LSI	1000A	1600A	h1600 LSI	1600A
	25	25	40	40	50	17	17	20	20	20	15	15
	25	25	40	40	50	17	17	20	20	20	15	15
	25	25	40	40	50	25	25	29	29	30	20	20
	25	25	40	40	50	15	15	19	19	20	15	15
	25	25	40	40	50	17	17	17	17	17	15	15
	25	25	40	40	50	17	17	19	19	17	15	15
	25	25	40	40	50	17	17	19	19	17	15	15
	40	40	-	40	50	25	50	70	50	60	35	70

Drive rating chart 525 - 690V

Drive series	Heavy Duty				(Default) Light Duty			
	150% (60sec) / 180% (3sec)				120% (60sec) / 150% (3sec)			
	525V	575V	690V	Rated Amps	525V	575V	690V	Rated Amps
kW	kW	kW	kW		kW	kW		

Nominal voltage range 525V - 600V (-15% ~ +10%)

VFD037C53A-21	3.7	4	-	4.6	5.5	6	-	6.7
VFD055C53A-21	5.5	6	-	6.9	8	9	-	9.9
VFD075C53A-21	7	7.5	-	8.3	10	11	-	12.1
VFD110C53A-21	11	12	-	13	15	17	-	18.7
VFD150C53A-21	15	15	-	16.8	20	22	-	24.2

Nominal voltage range 525V - 690V (-15% ~ +10%)

VFD220C63B-21	17	18	22	20	25	27	32	30
VFD300C63B-21	20	22	26	24	30	32	39	36
VFD370C63B-21	25	27	33	30	37	41	49	45
VFD450C63B-21	30	33	40	36	45	49	59	54
VFD550C63B-21	38	41	50	45	55	61	73	67
VFD750C63B-21	45	50	60	54	71	78	94	86
VFD900C63B-21	56	61	74	67	87	95	114	104
VFD1100C63B-21	72	79	95	86	104	114	137	125
VFD1320C63B-21	87	95	114	104	125	137	164	150
VFD1600C63B-21	104	115	137	125	150	165	197	180
VFD2000C63B-21	125	137	165	150	184	200	241	220
VFD2500C63B-21	150	165	198	180	242	265	318	290
VFD3150C63B-21	184	202	242	220	292	320	384	350

KW values may vary according to power factor and motor efficiency. Values are a guide line only and the user should cross check drive selection against the motor nameplate. For more information, please speak to an EM technical representative.

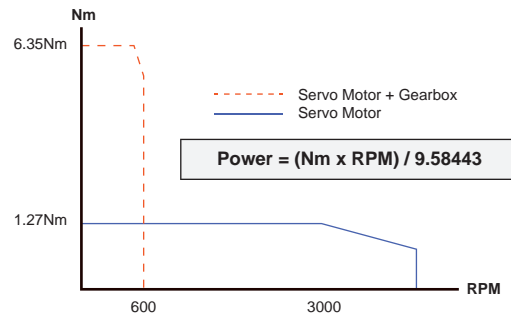
Drive dual rating chart

Dual rating allows drives to be used across a range of applications according to overload capacity required, for example:

Light Duty / Normal Duty - Fan and pump application
Heavy Duty - Compressor, crusher, spindle and conveyor

Drive series	(Default) Heavy Duty		Normal Duty	
	150% (60sec) / 200% (3sec)		120% (60sec) / 150% (3sec)	
	kW	Rated Amps	kW	Rated Amps
VFD1A6ME/MS21	0.2	1.6	0.3	1.8
VFD2A8ME/MS21	0.4	2.8	0.55	3.2
VFD4A8ME/MS21	0.75	4.8	0.9	5
VFD7A5ME/MS21	1.5	7.5	1.8	8.5
VFD11AME/MS21	2.2	11	3	12.5
VFD1A5ME/MS43	0.4	1.5	0.55	1.8
VFD2A7ME/MS43	0.75	2.7	1.1	3
VFD4A2ME/MS43	1.5	4.2	1.6	4.6
VFD5A5ME/MS43	2.2	5.5	2.8	6.5
VFD9A0ME/MS43	4	9	4.5	10.5
VFD13AME/MS43	5.5	13	6	15.7
VFD17AME/MS43	7.5	17	8.5	20.5
VFD25AMS43AFS	11	25	12	28
VFD32AMS43AFS	15	32	17	36
VFD38AMS43AFS	18.5	38	20	41.5
VFD45AMS43AFS	22	45	24	49

Gear ratio chart



Example:

Servo Motor - ECMA-C10604RS
Rated Torque - 1.27 Nm
Rated Speed - 3000 RPM

Gearbox - WAB-060-005-K-P1
Ratio - 5:1
Rated Torque - 60 Nm

$T_{out} = T_m \times R$
 $T_{out} = 1.27 \times 5$
 $T_{out} = 6.35 \text{ Nm}$

$S_{out} = S_m / R$
 $S_{out} = 3000 / 5$
 $S_{out} = 600 \text{ RPM}$

T_{out} = Torque Output
 S_{out} = Speed Output
 T_m = Motor rated Torque

S_m = Motor rated Speed
 R = Gearbox reduction ratio

Drive	Motor rating kW	Full Load torque (kg-m)	Brake unit		Braking resistor for each brake unit				Resistor value		Min Equiv Resistor Value	
			Part No.	No.	Type	No.	Series	Parallel	W	Ohm		
"ME" Series												
VFD1A6ME21ANN	230V	0.20	0.1	-	-	BR80W/750RJ	1	-	-	80	750	190
VFD2A8ME21ANN		0.40	0.3	-	-	BR80W/200RJ	1	-	-	80	200	95
VFD4A8ME21ANN		0.75	0.5	-	-	BR80W/200RJ	1	-	-	80	200	63.3
VFD7A5ME21ANN		1.50	1	-	-	BR200W/91RJ	1	-	-	200	91	45.7
VFD11A5ME21ANN		2.20	1.5	-	-	BR300W/70RJ	1	-	-	300	70	38
VFD1A5ME43ANN	460V	0.40	0.3	-	-	BR80W/750RJ	1	-	-	80	750	380
VFD2A7ME43ANN		0.75	0.5	-	-	BR80W/750RJ	1	-	-	80	750	190
VFD4A2ME43ANN		1.50	1	-	-	BR200W/360RJ	1	-	-	200	360	126.7
VFD5A5ME43ANN		2.20	1.5	-	-	BR300W/250RJ	1	-	-	300	250	108.6
VFD9A0ME43ANN		3.70	2.5	-	-	BR400W/150RJ	1	-	-	400	150	84.4
VFD13A5ME43ANN		5.50	3.7	-	-	BR1KW/75RJ	1	-	-	1000	75	50.7
VFD17A5ME43ANN		7.50	5.1	-	-	BR1KW/75RJ	1	-	-	1000	75	40
"MS" Series												
VFD1A6MS21ANS	230V	0.20	0.1	-	-	BR80W/750RJ	1	-	-	80	750	190
VFD2A8MS21ANS		0.40	0.3	-	-	BR80W/200RJ	1	-	-	80	200	95
VFD4A8MS21ANS		0.75	0.5	-	-	BR80W/200RJ	1	-	-	80	200	63.3
VFD7A5MS21ANS		1.50	1	-	-	BR200W/91RJ	1	-	-	200	91	45.7
VFD11AMS21ANS		2.20	1.5	-	-	BR300W/70RJ	1	-	-	300	70	38
VFD1A5MS43AFS	460V	0.40	0.3	-	-	BR80W/750RJ	1	-	-	80	750	380
VFD2A7MS43AFS		0.75	0.5	-	-	BR80W/750RJ	1	-	-	80	750	190
VFD4A2MS43AFS		1.50	1	-	-	BR200W/360RJ	1	-	-	200	360	126.7
VFD5A5MS43AFS		2.20	1.5	-	-	BR300W/250RJ	1	-	-	300	250	108.6
VFD9A0MS43AFS		3.70	2.500	-	-	BR400W/150RJ	1	-	-	400	150	84.4
VFD13AMS43AFS		5.50	3.700	-	-	BR1KW/75RJ	1	-	-	1000	75	50.7
VFD17AMS43AFS		7.50	5.100	-	-	BR1KW/75RJ	1	-	-	1000	75	40
VFD25AMS43AFS		11.00	7.400	-	-	BR1.5KW/43RJ	1	-	-	1500	43	33
VFD32AMS43AFS		15.00	10.200	-	-	BR1KW/16RJ	2	2	-	2000	32	26.2
VFD38AMS43AFS		18.00	12.200	-	-	BR1KW/16RJ	2	2	-	2000	32	26.2
VFD45AMS43AFS	22.00	14.900	-	-	BR1.5KW/13RJ	2	2	-	3000	26	23	
"E" Series												
VFD004E43T	460V	0.40	0.21	-	1	BR80W/750RJ	1	-	-	80	750	422.2
VFD007E43T		0.75	0.51	-	1	BR80W/750RJ	1	-	-	80	750	422.2
VFD015E43T		1.50	1.02	-	1	BR200W/360RJ	1	-	-	200	360	126.7
VFD022E43A		2.20	1.49	-	-	BR200W/250RJ	1	-	-	300	250	84.4
VFD037E43A		3.70	2.5	-	-	BR300W/70RJ	2	2	-	600	140	84.4
VFD055E43A		5.50	3.72	-	-	BR1KW/75RJ	1	-	-	1000	75	63.3
VFD075E43A		7.50	5.08	-	-	BR1KW/75RJ	1	-	-	1000	75	42.2
VFD110E43A		11.00	7.45	-	-	BR1.5KW/43RJ	1	-	-	1500	43	42.2
VFD150E43A		15.00	10.16	-	-	BR1KW/20RJ	2	2	-	2000	40	21.1
VFD185E43A		18.50	12.52	-	-	BR1.2KW/15RJ	2	2	-	2400	30	17.7
VFD220E43A		22.00	14.89	-	-	BR1.5KW/13RJ	2	2	-	3000	26	17.7
"C 2000" Series												
VFD040C43E	460V	4	2.7	-	-	BR1KW/75RJ	1	-	-	1000	75	54.3
VFD055C43E		5.5	3.7	-	-	BR1KW/75RJ	1	-	-	1000	75	54.3
VFD075C43E		7.5	5.1	-	-	BR1KW/75RJ	1	-	-	1000	75	47.5
VFD110C43E		11	7.5	-	-	BR1.5KW/43RJ	1	-	-	1500	43	42.2
VFD150C43E		15	10.2	-	-	BR1KW/16RJ	2	-	-	2000	32	26.2
VFD185C43E		18.5	12.2	-	-	BR1KW/16RJ	2	2	-	2000	32	23
VFD220C43E		22	14.9	-	-	BR1.5KW/13RJ	2	2	-	3000	26	23
VFD300C43E		30	20.3	-	-	BR1KW/16RJ	4	2	2	4000	16	14.1
VFD370C43A		37	25.1	VFDB4045	1	BR1.2KW/15RJ	4	2	2	4800	15	12.7
VFD450C43A		45	30.5	VFDB4045	1	BR1.5KW/13RJ	4	2	2	6000	13	12.7
VFD550C43A		55	37.2	VFDB4030	1	BR1KW/5,1RJ	4	-	4	8000	10.2	9.5
VFD750C43A		75	50.8	VFDB4045	2	BR1.2KW/15RJ	4	2	2	9600	7.5	6.3
VFD900C43A		90	60.9	VFDB4045	2	BR1.5KW/13RJ	4	2	2	12000	6.5	6.3
VFD1100C43A		110	74.5	VFDB4110	2	BR1.2KW/15RJ	10	2	5	12000	6	6
VFD1320C43A		132	89.4	VFDB4160	1	BR1.5KW/12RJ	12	2	6	18000	4	4
VFD1600C43A		160	108.3	VFDB4160	1	BR1.5KW/12RJ	12	2	6	18000	4	4
VFD1850C43A		185	125.3	VFDB4185	1	BR1.5KW/12RJ	14	2	7	21000	3.4	3.4
VFD2200C43A		220	148.9	VFDB4110	2	BR1.2KW/15RJ	10	2	5	24000	3	3
VFD2800C43A		280	189.6	VFDB4160	2	BR1.5KW/12RJ	12	2	6	36000	2	2
VFD3150C43A		315	213.3	VFDB4160	2	BR1.5KW/12RJ	12	2	6	36000	2	2
VFD3550C43A	355	240.3	VFDB4185	2	BR1.5KW/12RJ	14	2	7	42000	1.7	1.7	
VFD4500C43A	450	304.7	VFDB4185	3	BR1.5KW/12RJ	12	2	6	54000	1.3	1.1	
"CP 2000" Series												
VFD040CP4EA-21	460V	4	2.5	-	-	BR400W/150RJ	1	-	-	1000	75	54.3
VFD055CP4EB-21		5.5	2.7	-	-	BR1KW/75RJ	1	-	-	1000	75	54.3
VFD075CP4EB-21		7.5	3.7	-	-	BR1KW/75RJ	1	-	-	1000	75	47.5
VFD110CP4EB-21		11	5.1	-	-	BR1KW/75RJ	1	-	-	1500	43	42.2
VFD150CP4EB-21		15	7.4	-	-	BR1.5KW/43RJ	2	2	-	2000	32	26.2
VFD185CP4EB-21		18.5	10.2	-	-	BR1KW/16RJ	2	2	-	2000	32	23
VFD220CP4EA-21		22	12.2	-	-	BR1KW/16RJ	2	2	-	3000	26	23
VFD300CP4EB-21		30	14.9	-	-	BR1.5KW/13RJ	4	2	2	4000	16	14.1
VFD370CP4EB-21		37	20.3	-	-	BR1KW/16RJ	4	2	2	4800	15	12.7
VFD450CP43S-21		45	25	VFDB4045	1	BR1.2KW/15RJ	4	2	2	6000	13	12.7
VFD550CP43S-21		55	30.5	VFDB4030	2	BR1.5KW/13RJ	4	4	-	8000	10.2	9.5
VFD750CP43B-21		75	37.2	VFDB4045	2	BR1KW/5,1RJ	4	2	2	9600	7.5	6.3
VFD900CP43A-21		90	50.8	VFDB4045	2	BR1.2KW/15RJ	4	2	2	12000	6.5	6.3
VFD1100CP43A-21		110	60.9	VFDB4110	1	BR1.5KW/13RJ	10	2	5	12000	6	6
VFD1320CP43B-21		132	74.5	VFDB4160	1	BR1.2KW/15RJ	12	2	6	18000	4	4
VFD1600CP43A-21		160	89.4	VFDB4160	1	BR1.5KW/12RJ	12	2	6	18000	4	4

Inductive proximity switches

Namur version *namur-DIN 19234 (2 wire)*

Two wire non-amplified DC sensors contain only the oscillator and are adapted to control an electronic amplified threshold circuit. Only a few components are required, guaranteeing maximum operational safety and reliability. The sensor is not susceptible to inductive or capacitive irradiations into the amplifier.

Ideally suited for explosion proof applications connected intrinsically safe amplifiers.

Nominal voltage: 8 VDC (7.7 ÷ 9 V) - Load resistant 1 kΩ
 Output current: Presence of metal ≤ 1 mA
 Absence of metal ≤ 3 mA

DC version *direct voltage (3 wire)*

Amplified Dc sensors containing an output amplifier. In addition to the oscillator they are supplied with functions NO or NC in NPN or PNP. As standard this version if sensor is protected against short circuit and against polarity and peaks created by the disconnection of inductive loads.

AC version *alternative voltage (2 wire)*

Two wire amplified AC sensors containing a thyristor output amplifier, in addition to the oscillator the load (i.e. relay) is connected in series. Due to this system attention must be paid (particularly in the low voltage range) if electronic controls have high resistance inputs, as there is a residual current flow even when in the open state. All AC sensors protected against overvoltage created by the power supply.

Capacitive proximity switches

Capacitive sensors

These are electronic transducers which give output signals when any material (wood, marble, metals, glass, coffee, fodder, etc.) affects their sensing part without necessarily entering in contact with them. They have high resistance to knocks and vibrations and can operate in severe ambient conditions since they are completely static. The devices can be supplied with a rapid or delayed intervention.

Reduction factors

<i>inductive sensors</i>		<i>capacitive sensors</i>	
Aq37	1	Metals	c.a.1
Stainless steel	0.85	Water	c.a.1
Brass, bronze	0.55	Plastic	c.a.0.5
Aluminium	0.45	Glass	c.a.0.5
Copper	0.40	Wood	c.a.0.4

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474139.....	L-8	4829 0554.....	E-10, E-13	485259.....	B-42	492225.....	B-41	513.1656.....	I-4	525.9280033111.....	K-23
474142.....	L-8	4829 0555.....	E-10, E-13	485260.....	B-42	492230.....	B-41	513.1657.....	I-4	528110.....	L-10
474143.....	L-8	4829 0556.....	E-10, E-13	485262.....	B-42	492250.....	B-41	513.3253.....	I-4	528.9010033411.....	K-23
474144.....	L-8	4829 0557.....	E-10, E-13	485264.....	B-42	492255.....	B-41	513.3256.....	I-4	528.9120033411.....	K-23
474149.....	L-8	4829 0558.....	E-10, E-13	485301.....	B-42	492262.....	B-41	513.3257.....	I-4	528.9140033411.....	K-23
474152.....	L-8	4829 0570.....	E-10, E-13	485303.....	B-42	49240N.....	L-46	513.1653T.....	I-4	528.9150033411.....	K-23
474153.....	L-8	4829 0571.....	E-10, E-13	485305.....	B-42	49293.....	L-49	513.1653TS.....	I-4	528.9170033411.....	K-23
474154.....	L-8	4829 0572.....	E-10, E-13	485308.....	B-42	49294.....	L-49	513.1656T.....	I-4	528.9300033411.....	K-23
474159.....	L-8	4829 0655.....	E-10, E-13	485356.....	B-42	49290N.....	L-46, L-49	513.1656TS.....	I-4	528.9310033411.....	K-23
474162.....	L-8	4829 0656.....	E-10, E-13	485357.....	B-42	49347N.....	L-46	513.1657T.....	I-4	528.9320033411.....	K-23
474163.....	L-8	4829 0657.....	E-10, E-13	485358.....	B-42	49397N.....	L-46, L-49	513.1657TS.....	I-4	528.9330033411.....	K-23
474164.....	L-8	4829 0658.....	E-10, E-13	485359.....	B-42	4941 3602.....</					

54014	L-46	563482400040	J-5	601280480040	J-6	653190240030	J-7	686.229	H-1	71.352.1635.1	I-14
54010	L-47	563490120040	J-5	601280600040	J-6	653190480000	J-7	686.231	H-1	71.352.2435.1	I-14
54020	L-47	563490240040	J-5	601281100040	J-6	653190480300	J-7	686.404	H-1	71.372.1035.1	I-14
54030	L-47	563490480040	J-5	601282400040	J-6	653191100000	J-7	686.408	H-1	71.372.1635.1	I-14
54040	L-46	563490600040	J-5	601284000040	J-6	653191100300	J-7	686.409	H-1	71.372.2435.1	I-14
54050	L-46	563491100040	J-5	601290120040	J-6	653192200000	J-7	686.411	H-1	72692	D-18
5406C	L-15	563492200040	J-5	601290240040	J-6	653192200300	J-7	686.428	H-1	73.300.0353.0	I-12
540.941S052401	K-24	568.1683	I-7	601290360040	J-6	654.0021	H-1	686.429	H-1	73.300.0453.0	I-12
540.943S052401	K-24	568.1686	I-7	601290480040	J-6	654.0085	H-1	686.431	H-1	73.310.0353.0	I-12
540.955S052401	K-24	568.1687	I-7	601290600040	J-6	654.0787	H-1	686.210	H-1	73.310.0453.0	I-12
5467 RBE	L-15	568.3283	I-7	601291100040	J-6	654.0788	H-1	686.230	H-1	73.700.0753.0	I-12
5469 RBE	L-15	568.3286	I-7	601292200040	J-6	654.0789	H-1	686.410	H-1	73.700.0853.0	I-12
5473 RBE	L-15	568.3287	I-7	601380120040	J-6	654.0791	H-1	686.430	H-1	73.710.0753.0	I-12
5475 RBE	L-15	568.6383	I-7	601380240040	J-6	654.0080	H-1	692.912007141	K-25	73.710.0853.0	I-12
548.12586	I-6	568.6386	I-7	601380360040	J-6	654.0790	H-1	692.916007141	K-25	73.800.0853.0	I-13
548.12587	I-6	568.6387	I-7	601380480040	J-6	654.0091	I-10, B-13	692.919007141	K-25	73.800.2453.0	I-13
548.9300152401	K-24	56.197.1055.0	L-3	601380600040	J-6	654.0092	I-10, B-13	692.930007141	K-25	73.800.4253.0	I-13
548.9310152401	K-24	56.198.1055.0	L-3	601381100040	J-6	654.0391	I-3	69784	D-21	73.800.7253.0	I-13
548.9320152401	K-24	56.199.1055.0	L-3	601382400040	J-6	654.0392	I-3	69785	D-21	73.810.0853.0	I-13
548.9330152401	K-24	56.135.1055.0	L-3	601384000040	J-6	654.0393	I-3	69786	D-21	73.810.2453.0	I-13
5497E	L-15	56.170.1055.0	L-3	601390120040	J-6	654.0394	I-3	69787	D-21	73.810.4253.0	I-13
5499	L-15	56.202.0055.0	L-2	601390240040	J-6	654.012	I-6	69788	D-21	73.810.7253.0	I-13
55011	E-18	56.202.0055.6	L-2	601390360040	J-6	654.0358	I-8	69789	D-21	75049	L-51
55012	E-18	56.202.9055.0	L-2	601390480040	J-6	654.0359	I-8	699.913011010	K-25	75098	L-51
55013	E-18	56.203.0055.0	L-2	601390600040	J-6	654.036	I-8	699.913014010	K-25	75099	L-51
551280120000	J-3	56.203.0055.6	L-2	601391100040	J-6	654.0363	I-8	699.913021110	K-25	76.320.0729.0	I-12
551280240000	J-3	56.203.5055.0	L-2	601392200040	J-6	654.0365	I-8	699.913024110	K-25	76.320.0753.0	I-12
551281100000	J-3	56.203.9355.0	L-2	601400	C-25	654.04	I-8	699.915011010	K-25	76.321.0729.0	I-12
551282400000	J-3	56.203.5155.0	L-2	601401	C-25	654.041	I-8	699.915014010	K-25	76.321.0753.0	I-12
551290120000	J-3	56.203.7055.0	L-2	601430	C-25	654.042	I-8	699.915021110	K-25	76.350.0736.1	I-12
551290240000	J-3	56.203.9055.0	L-2	601431	C-25	654.0024	I-9	699.915024110	K-25	76.350.0760.1	I-12
551290480000	J-3	56.206.0055.0	L-2	601432	C-25	654.0051	I-9	699.931011010	K-25	76.352.0736.1	I-12
551291100000	J-3	56.206.0055.6	L-2	601433	C-25	654.0122	I-9	699.931014010	K-25	76.352.0760.1	I-12
551292200000	J-3	56.206.9055.0	L-2	601440	C-25	655.3209	I-9	699.931021110	K-25	78010-00	I-16
551480120000	J-3	570.6001	I-10	601450	C-25	655.4609	I-9	699.931024110	K-25	78011-00	I-16
551480240000	J-3	570.90163	I-2	602300	J-23	656.0924-000	I-9			78176-01	I-16
551481100000	J-3	570.90164	I-2	602310	J-23	656.0926-000	I-9			78180-00	I-16
551482400000	J-3	570.90165	I-2	602320	J-23	657.0121	I-9	70000	M-2	78180-02	I-16
551490120000	J-3	570.90324	I-2	602400	J-23	657.0936-000	I-9	700 015 36	M-4	78181-00	I-16
551490240000	J-3	570.90325	I-2	604.9000000	K-26	657.0938-000	I-9	7038	E-17	78181-05	I-16
551490480000	J-3	570.9063	I-2	604.9100000	K-26	658.0950-000	I-9	7039	E-17	78184-00	I-16
551491100000	J-3	570.91225	I-2	604.9200000	K-26	66010N	L-45	7041	E-17	78220-00	I-16
551492200000	J-3	570.90016	I-3	604.9400000	K-26	66020N	L-45	7045	E-17	78220-01	I-16
553280120040	J-4	570.0032	I-3	604.9500000	K-26	66040N	L-45	7047	E-17	78220-02	I-16
553280240040	J-4	570.0116	I-3	606.3005-062	I-9	66070N	L-45	7050	E-17	78224-00	I-16
553280360040	J-4	570.0132	I-3	606.3005-063	I-9	66090N	L-45	7053	E-17	78224-01	I-16
553280480040	J-4	570.M0125	I-3	610 001 0	M-4	668280120000	J-7	7030.0640.0	I-13	78224-02	I-16
553280600040	J-4	570.M0163	I-3	610 087 3	M-4	668280240000	J-7	70.300.1040.0	I-13	78230-00	I-16
553281100040	J-4	570.6428	I-9	610 185 3	M-4	668281100000	J-7	70.300.1640.0	I-13	78231-00	I-16
553282300040	J-4	570.5052	I-9, I-10	610 37	I-9	668282400000	J-7	70.300.2440.0	I-13	78232-00	I-16
553290120040	J-4	572.012	I-6	610.372	I-9	668290120000	J-7	70.300.3253.0	I-13	78234-00	I-16
553290240040	J-4	572.02	I-6	610.376	I-9	668290240000	J-7	70.300.4840.0	I-13	78235-00	I-16
553290360040	J-4	572.022	I-6	62000	M-2	668291100000	J-7	70.310.0640.0	I-13	78236-00	I-16
553290480040	J-4	572.031	I-6	623380120040	J-5	672.11	I-8	70.310.1040.0	I-13	78290-00	I-16
553290600040	J-4	57.106.1155.0	L-4	623380240040	J-5	672.1101	I-8	70.310.1640.0	I-13	78291-00	I-16
553291100040	J-4	57.404.7055.0	L-3	623380480040	J-5	672.12	I-8	70.310.2440.0	I-13	78297-00	I-16
553292200040	J-4	57.503.8855.0	L-3	623381100040	J-5	672.13	I-8	70.310.3253.0	I-13	78298-00	I-16
553480120040	J-4	57.503.7855.0	L-3	623382400040	J-5	672.1301	I-8	70.310.4840.0	I-13	78299-00	I-16
553480240040	J-4	57.504.9055.0	L-3	623384000040	J-5	672.2002	I-8	70.320.0628.0	I-14	78300-00	I-16
553480360040	J-4	57.506.9055.0	L-3	623390120040	J-5	672.2004	I-8	70.320.1028.0	I-14	78301-00	I-16
553480480040	J-4	57.510.0155.0	L-3	623390240040	J-5	672.2008	I-8	70.320.1628.0	I-14	78303-00	I-16
553480600040	J-4	57.510.9055.0	L-3	623390480040	J-5	672.23	I-8	70.320.2428.0	I-14	78304-00	I-16
553481100040	J-4	57.516.0155.0	L-3	623391100040	J-5	672.31	I-8	70.320.3228.0	I-14	78304-01	I-16
553482400040	J-4	57.516.9055.0	L-3	623392200040	J-5	672.32	I-8	70.320.4828.0	I-14	78307-00	I-16
553490120040	J-4	57.535.0155.0	L-3	63020	L-45	672.33	I-8	70.331.0635.1	I-14	78308-00	I-16
553490240040	J-4	57.535.9055.0	L-3	63040	L-45	672.3302	I-8	70.331.1035.1	I-14	78309-00	I-16
553490360040	J-4	57.570.0155.0	L-3	63070	L-45	672.4116	I-8	70.331.1635.1	I-14	78311-00	I-16
553490480040	J-4	57.510.0555.0	L-4	63090	L-45	672.4216	I-8	70.331.2435.1	I-14	78312-00	I-16
553490600040	J-4	57.506.0555.0	L-4	63-001341-003	B-48	672.4316	I-8	70.344.4835.1	I-14	78313-00	I-16
553491100040	J-4	57.910.5055.0	L-3	63-001341-004	B-48	672.5116	I-8	70.350.0635.1	I-14	785796	M-10
553492200040	J-4	57.904.5355.0	L-3	63-001415-002	B-48	672.5316	I-8	70.350.1035.1	I-14	79016	M-2
553415	L-11	58.510.0055.6	L-1	63-002354-001	B-48	672.5416	I-8	70.350.1635.1	I-14	79035	M-2
560.1683	I-6	58.510.9055.0	L-1	63-028802-003	B-48	672.5616	I-8	70.350.2435.1	I-14	79050	M-2
560.1686	I-6	58.503.0055.0	L-1	63-811628-041	B-48	672.2012.1102	I-8	70.350.3235.1	I-14	79070	M-2
560.1687	I-6	58.503.0055.6	L-1	63-811685-061	B-48	672.2016.1102	I-8	70.350.4835.1	I-14	79448	L-41
560.3283	I-6	58.503.9055.0	L-1	63-811686-061	B-48	672.4024.1102	I-8	70.352.0635.1	I-14	79449	L-41
560.3286	I-6	58.503.2055.0	L-1	63-811748-021	B-48	672.4032.1102	I-8	70.352.1035.1	I-14	79840-00	I-16, I-17
560.3287	I-6	58.504.0055.6	L-1	63-811750-061	B-48	672.5048.1102	I-8	70.352.1635.1	I-14	79844-00	I-16, I-17
561.32864	I-5, I-6	58.504.5055.0	L-1	63-811761-021	B-48	680040040	B-60	70.352.2435.1	I-14	79846-00	I-16, I-17
561.1683	I-6	58.504.5155.0	L-1	63-823191-021	B-48	680040042	B-60	70.352.3235.1	I-14	79847-00	I-16, I-17
561.1686	I-6	58.504.7055.0	L-1	63-823234-041	B-48	680063040	B-60	70.352.4835.1	I-14	7F0200001000	H-20
561.16866	I-6	58.504.9055.0	L-1	63-823256-021	B-48	680063042	B-60	70.372.0635.1	I-14	7F0200002000	H-20
561.1687	I-6	58.504.2055.0	L-1	63-823259-141	B-48	680100040	B-60	70.405.0653.0	I-13	7F0200003000	H-20
561.16876	I-6	58.506.0055.6	L-1	63-823267-001	B-48	680100042	B-60	70.405.1053.0	I-13	7F2082301020	H-20
561.3283	I-6	58.506.9055.0	L-1	63-823427-002	B-48	680130042	B-60	70.405.1653.0	I-13	7F2082302055	H-20
561.3286	I-6	59002N	L-47	64142-SBS	L-45	680200040	B-60	70.405.2453.0	I-13	7F2082303100	H-20
561.32866	I-6	59010N	L-47	64147-SBS	L-45	680200042	B-60	70.415.0653.0	I-13	7H5102300025	H-20
561.3287	I-6	59020N	L-47	64192-SBS	L-45	680320040	B-60	70.415.1053.0	I-13	7H5102300050	H-20
561.32876	I-6	59030N	L-47	64197-SBS	L-4						

80064.....	E-21	90062.....	D-18	91364.....	D-17	952176.....	B-55	9902300000.....	J-8	A3-M6.....	L-23
80065.....	E-21	90063.....	D-18	91367.....	D-17	9523 3016.....	B-33	9902823007.....	J-8	A3-M8.....	L-23
80067.....	E-21	90064.....	D-18	91378.....	D-17	9523 3025.....	B-33	9902902499.....	J-8	A48-M12.....	L-23
80068.....	E-21	90070.....	L-44	91382.....	D-17	9523 3040.....	B-33	9902906099.....	J-8	A48-M16.....	L-23
80080.....	E-21	90081.....	D-18	91383.....	D-17	9523 3063.....	B-33	9902922099.....	J-8	A48-M20.....	L-23
80098.....	E-21	90082.....	D-18	91.030.4953.0.....	I-12	9523 3080.....	B-33	9902006098.....	J-8	A48-M10/31.....	L-23, B-19
80100.....	E-21	90083.....	D-18	91.030.5853.0.....	I-12	9523 3010.....	B-33	990454.....	L-48	A5-M10.....	L-23
80100-00.....	I-17	90084.....	D-18	91.030.5953.0.....	I-12	9523 3120.....	B-33	990506N.....	L-46	A5-M12.....	L-23
80100-01.....	I-17	90090.....	L-44	91.030.6053.0.....	I-12	9523 3160.....	B-33	990508N.....	L-48	A5-M6.....	L-23
80100-02.....	I-17	90110.....	L-44	91.931.3053.0.....	I-12	9523 3200.....	B-33	990510N.....	L-48	A5-M8.....	L-23
80100-03.....	I-17	9012.....	J-6	91.931.9053.0.....	I-12	9523 3250.....	B-33	990513N.....	L-48	A7-M10.....	L-23
80100-04.....	I-17	90120.....	L-44	91.931.9153.0.....	I-12	9523 3320.....	B-33	990514N.....	L-48	A7-M12.....	L-23
80115.....	E-21	9013.....	J-6	91.932.3053.0.....	I-12	9523 4016.....	B-33	990525N.....	L-48	A7-M6.....	L-23
80117.....	E-21	9014.....	J-6	91.932.9053.0.....	I-12	9523 4025.....	B-33	990664.....	L-48	A7-M8.....	L-23
8011-3.....	K-41	90141.....	J-6	91.932.9153.0.....	I-12	9523 4040.....	B-33	990734.....	L-46	AAB05W10.....	K-35
80122.....	E-21	90140.....	L-44	91.921.3053.0.....	I-12, H-26	9523 4063.....	B-33	990755.....	L-47	AAB10W10.....	K-35
80120.....	E-21	9015.....	J-6	91.922.3053.0.....	I-12, H-26	9523 4080.....	B-33	990762.....	L-47	AB1/AP-3A.....	K-1
80147.....	E-21	90151.....	J-6	920244.....	B-56	9523 4100.....	B-33	990764N.....	L-47	AB1/CP-3A.....	K-1
80149.....	E-21	90170.....	L-44	920300.....	B-56	9523 4120.....	B-33	990766N.....	L-47	AC05-1/2.....	J-26
80151.....	E-21	90190.....	L-44	9203SMA.....	J-5	9523 4160.....	B-33	990768N.....	L-47	AC05-1/4.....	J-26
80153.....	E-21	9020SMA.....	J-6	9213SMA.....	J-5	9523 4200.....	B-33	990798N.....	L-47	ACD05P10.....	K-35
80155.....	E-21	9021SMA.....	J-6	9233SMA.....	J-5	9523 4250.....	B-33	990735.....	L-48	ACD10P10.....	K-35
80157.....	E-21	90210SMA.....	L-44	926244.....	B-56	9523 4320.....	B-33	990701.....	L-50	ACN01-5.....	E-22
80188-00.....	I-17	9022SMA.....	J-6	929121.....	B-56	952341.....	B-55	990709.....	L-50	ACN02-5.....	E-22
80188-02.....	I-17	90220.....	L-44	929221.....	B-56	952310.....	B-55	990710.....	L-50	ACN03-5.....	E-22
80188-04.....	I-17	9023SMA.....	J-6	92.030.4853.0.....	I-12	952315.....	B-55	990740.....	L-50	ACN04-5.....	E-22
80188-06.....	I-17	90240.....	L-44	92.030.5958.0.....	I-12	952322.....	B-55	990741.....	L-50	ACN05-5.....	E-22
80188-08.....	I-17	9026SMA.....	J-6	92.031.9658.0.....	I-12	952327.....	B-55	990700N.....	L-50	ACN06-5.....	E-22
80189-00.....	I-17	9027SMA.....	J-6	92.032.9658.0.....	I-12	9523SNA.....	J-2	990824.....	L-47	ACN08-5.....	E-22
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EE855.....	G-3	ESW3012M.....	B-27	F661AC0551.....	D-13	FD52TN.....	H-5	FL557A.....	H-16	FN103E.....	H-10
EE860.....	G-3	ESW3016M.....	B-27	F661AC0552.....	D-13	FD62AN.....	H-5	FL559A.....	H-16	FN109E.....	H-10
EG004.....	B-12	ESW3025M.....	B-27	F661AL0111.....	D-13	FD62DN.....	H-5	FL670A.....	H-16	FN111E.....	H-10
EG005.....	B-12	ESW3040M.....	B-27	F661AL0222.....	D-13	FD62PN.....	H-5	FL713E.....	H-16	FN216E.....	H-9
EG007.....	B-12	ESW3063M.....	B-27	F661AL0331.....	D-13	FD62TN.....	H-5	FL714E.....	H-16	FN266E.....	H-12
EG1010A.....	A-20	ESW3080M.....	B-27	F661AL0332.....	D-13	FD72AN.....	H-5	FL715E.....	H-16	FN276E.....	H-9
EG103B.....	B-12	ESW3100M.....	B-27	F661AL0333.....	D-13	FD72DN.....	H-5	FL711E.....	H-4, H-16	FN286E.....	H-12
EG103E.....	B-12	ESW3125M.....	B-27	F661AL0441.....	D-13	FD72PN.....	H-5	FL712E.....	H-4, H-16	FN296E.....	H-9
EG103V.....	B-12	EX01.....	J-36	F661AL0442.....	D-13	FD72TN.....	H-5	FL733E.....	H-16	FN3258-100-35.....	F-15
EG2010A.....	A-20	EX02.....	J-36	F661AL0443.....	D-13	FD-31.....	K-16	FL734E.....	H-16	FN3258-130-35.....	F-15
EG203E.....	B-12	EX06B.....	J-36	F661AL0444.....	D-13	FD-41.....	K-16	FL735E.....	H-16	FN3258-16-44.....	F-15
EG3010A.....	A-20	EX06G.....	J-36	F661AL0553.....	D-13	FD-61.....	K-16	FL85Z.....	H-16	FN3258-180-40.....	F-15
EG493E.....	B-12	EX08.....	J-36	F661AL0555.....	D-13	FD-R31G.....	K-16	FL863Z.....	H-16	FN3258-30-33.....	F-15
EH010.....	B-12	EX11.....	J-36	F661EC25555002.....	D-13	FD-R41.....	K-16	FL871Z.....	H-16	FN3258-42-33.....	F-15
EH011.....	B-12	EX-22A-PN.....	K-13	F662AC0220.....	D-13	FDP-N1000.....	K-16	FL93Z.....	H-16	FN3258-55-34.....	F-15
EH109.....	B-12	EX-22B-PN.....									

FN3416-320-99.....	F-15	FU9805B P2.....	H-21	G48430.....	A-4	GLX1010EA.....	A-14	GX32 90U.....	D-9	HE207T-G.....	H-17
FN3416-38-33.....	F-15	FU9806A P2.....	H-21	G485120.....	A-4	GLX420315.....	A-13, A-15	GX32 91U.....	D-9	HE208.....	H-17
FN3416-45-33.....	F-15	FU9806B P2.....	H-21	G4856.....	A-4	GLX61.....	A-13	GX32 92U.....	D-9	HE208-G.....	H-17
FN3416-60-34.....	F-15	FU9801A P2.....	H-21, H-22	G48560.....	A-4	GLX61B.....	A-13	GX32 92U25.....	D-9	HE208E.....	H-17
FN3416-75-34.....	F-15	FU9801B P2.....	H-21, H-22	G486120.....	A-4	GLX61D.....	A-13	GX40 10U.....	D-9	HE208E-G.....	H-17
FN3416-90-35.....	F-15	FU9802A P2.....	H-21, H-22	G4866.....	A-4	GLX61DB.....	A-13	GX40 51U.....	D-9	HE208ET.....	H-17
FN356E.....	H-9	FU9802B P2.....	H-21, H-22	G48660.....	A-4	GLX7200S10.....	A-13	GX40 52U.....	D-9	HE208ET-G.....	H-17
FN366E.....	H-9	FU9803A P2.....	H-21, H-22	G487.....	A-4	GLX7300S10.....	A-13	GX40 53U.....	D-9	HE208T.....	H-17
FN376E.....	H-9	FU9803B P2.....	H-21, H-22	G525.....	A-5	GLX7400S10.....	A-13	GX40 75U.....	D-9	HE208T-G.....	H-17
FN406E.....	H-12	FU9803AM.....	H-22	G526.....	A-5	GLX7500S10.....	A-13	GX40 90U.....	D-9	HED400H.....	B-18
FN426E.....	H-12	FU9803BM.....	H-22	G-CHECK 230.....	B-50	GLX800.....	A-14	GX40 91U.....	D-9	HED630H.....	B-18
FN433E.....	H-9	FU9804A P2/P4-172.....	H-22	GA016A.....	A-13	GLX801.....	A-14	GX40 92U.....	D-9	HEE800H.....	B-18
FN437E.....	H-9	FU9804B P2/P4-172.....	H-22	GA025A.....	A-13	GLX900.....	A-14	GXM5.....	D-9	HEE970H.....	B-18
FN438E.....	H-9	FU9805A P2/P5-220.....	H-22	GA025C.....	A-14	GLX901.....	A-14	GXM6.....	D-9	HEF980H.....	B-18
FN440E.....	H-9	FU9805B P2/P5-220.....	H-22	GA032A.....	A-13	GLZM0200EM.....	A-15	GZ04E.....	H-3	HEF990H.....	B-18
FN441E.....	H-9	FU9806A P2/P6-250.....	H-22	GA030A.....	A-13	GLZM0250EM.....	A-15	GZ04N.....	H-3	HEG063U.....	B-18
FN442E.....	H-9	FU9806B P2/P6-250.....	H-22	GA040A.....	A-13	GLZM0315EM.....	A-15	GZ04H.....	H-3	HEG100U.....	B-18
FN443E.....	H-9	FU-8808A.....	H-22	GA040C.....	A-14	GP102T.....	H-3	GZ104S.....	H-3	HEG160U.....	B-18
FN451E.....	H-9	FU-8808B.....	H-22	GA063A.....	A-13	GP104T.....	H-3	GZ106S.....	H-3	HEG250U.....	B-18
FN453E.....	H-9	FU-8809A.....	H-22	GA063SA.....	A-13	GP106T.....	H-3	GZ110S.....	H-3	HFR-008BK.....	L-30
FN506E.....	H-10	FU-8809B.....	H-22	GA080A.....	A-13	GP110T.....	H-3	H1E0230A.....	J-34	HFR-010BK.....	L-30
FN510E.....	H-10	FU-8812A.....	H-22	GA080C.....	A-14	GQ10T-DB220VN.....	D-28	HASP-20-OPC01.....	C-13	HFR-012BK.....	L-30
FN516E.....	H-10	FU-8812B.....	H-22	GA125A.....	A-13	GQ10T-DB24VN.....	D-28	HC02.....	H-18	HFR-015BK.....	L-30
FN526E.....	H-10	FU-8817A.....	H-22	GA125C.....	A-14	GQ10T-DG220VN.....	D-28	HC02-G.....	H-18	HFR-020BK.....	L-30
FN536E.....	H-10	FU-8817B.....	H-22	GA160A.....	A-13	GQ10T-DG24VN.....	D-28	HC03.....	H-18	HFR-030BK.....	L-30
FN546E.....	H-10	FU-8822B.....	H-22	GAM3012D.....	J-33	GQ10T-DR220VN.....	D-28	HC03-G.....	H-18	HFR-040BK.....	L-30
FN696E.....	H-10	FU-8825B.....	H-22	GAM3024D.....	J-33	GQ10T-DR24VN.....	D-28	HC03-G.....	H-18	HFR-050BK.....	L-30
FN690E.....	H-12	FU-9801C1 P2A23.....	H-21	GAX1011A.....	A-14	GQ10T-DW220VN.....	D-28	HC04-G.....	H-18	HFRA1207.....	F-12
FN691E.....	H-12	FU-9801C1 P2D.....	H-21	GAX1011C.....	A-14	GQ10T-DW24VN.....	D-28	HC05.....	H-18	HFRA1314.....	F-12
FN692E.....	H-12	FU-9801C2 P2A23.....	H-21	GAX1110EA.....	A-14	GQ10T-DY220VN.....	D-28	HC05-G.....	H-18	HFRA2507.....	F-12
FN696EP.....	H-12	FU-9802C1 P2A23.....	H-21	GAX1210EA.....	A-14	GQ12T-DB220VN.....	D-28	HC06.....	H-18	HFRA2714.....	F-12
FN696EX01.....	H-12	FU-9802C1 P2D.....	H-21	GAX391.....	A-14	GQ12T-DB24VN.....	D-28	HC06-G.....	H-18	HFR5007.....	F-12
FN700E.....	H-12	FU-9802C2 P2A23.....	H-21	GAX42063A.....	A-13	GQ12T-DB24VN.....	D-28	HC06-G.....	H-18	HFR5414.....	F-12
FN706E.....	H-12	FU-9802C2 P2D.....	H-21	GAX41040A.....	A-13, A-15	GQ12T-DG220VN.....	D-28	HC06E.....	H-18	HG-C1030-P.....	K-18
FN726E.....	H-10	FU-9803C1 P2A23.....	H-21	GAX41125A.....	A-13, A-15	GQ12T-DG24VN.....	D-28	HC06E-G.....	H-18	HG-C1050-P.....	K-18
FN736E.....	H-10	FU-9803C1 P2D.....	H-21	GAX42040A.....	A-13, A-15	GQ12T-DG24VN.....	D-28	HC07.....	H-18	HG-C1100-P.....	K-18
FN746E.....	H-10	FU-9803C1 P2A40.....	H-21	GAX42063SA.....	A-13, A-15	GQ12T-DR220VN.....	D-28	HC07-G.....	H-18	HG-C1200-P.....	K-18
FN863E.....	H-12	FU-9803C1 P2D.....	H-21	GAX42125A.....	A-13, A-15	GQ12T-DR24VN.....	D-28	HC07E.....	H-18	HG-C1400-P.....	K-18
FN865E.....	H-12	FU-9803C2 P2A23.....	H-21	GAX42160A.....	A-13, A-15	GQ12T-DW220VN.....	D-28	HC07E-G.....	H-18	HHA016Z.....	B-17
FN867E.....	H-12	FU-9803C2 P2A40.....	H-21	GAX42040C.....	A-14	GQ12T-DW24VN.....	D-28	HC08.....	H-18	HHA020Z.....	B-17
FN873E.....	H-12	FU-9803C2 P2D.....	H-21	GAX42125C.....	A-14	GQ12T-DY220VN.....	D-28	HC08-G.....	H-18	HHA032Z.....	B-17
FN875E.....	H-12	FU-9804C1 P2A23.....	H-21	GAX5000.....	A-14	GQ12T-DY24VN.....	D-28	HC08E.....	H-18	HHA040Z.....	B-17
FN877E.....	H-12	FU-9804C1 P2A40.....	H-21	GAX5001.....	A-14	GQ16T-DLB220VN.....	D-28	HC08E-G.....	H-18	HHA050Z.....	B-17
FN879E.....	H-12	FU-9804C2 P2A23.....	H-21	GAX64.....	A-13	GQ16T-DLB24VN.....	D-28	HC3CR-10.....	H-19	HHA063Z.....	B-17
FN892E.....	H-12	FU-9804C2 P2A40.....	H-21	GAX66N.....	A-13, A-14	GQ16T-DLG220VN.....	D-28	HC3CR-4.....	H-19	HHA080Z.....	B-17
FN893E.....	H-12	FU-9805C1 P2A23.....	H-21	GAX68.....	A-13, A-14	GQ16T-DLG24VN.....	D-28	HC3CR-5.....	H-19	HHA100Z.....	B-17
FN894E.....	H-12	FU-9805C2 P2A23.....	H-21	GAX6000.....	A-14	GQ16T-DLR220VN.....	D-28	HC3CR-6.....	H-19	HHA115Z.....	B-17
FN895E.....	H-12	FU-9806C1 P2A23.....	H-21	GAX6001.....	A-14	GQ16T-DLR24VN.....	D-28	HC3CR-7.....	H-19	HHA160Z.....	B-17
FN942E.....	H-12	FU-9806C2 P2A23.....	H-21	GAX67B.....	A-14	GQ16T-DLW220VN.....	D-28	HC3CR-8.....	H-19	HHA160Z.....	B-17
FN943E.....	H-12	FX102P-Z.....	K-15	GAX7200.....	A-13	GQ22T-DLB024VN.....	D-28	HC3CR-9.....	H-19	HHB200Z.....	B-17
FN944E.....	H-12	FX-551P.....	K-16	GAX7200AN.....	A-13	GQ22T-DLB220VN.....	D-28	HCA125Z.....	B-18	HHB250Z.....	B-17
FN950.....	H-12	FX-CT1.....	K-16	GAX81.....	A-14	GQ22T-DLB24VN.....	D-28	HCA126Z.....	B-18	HJ-6X6.....	C-23
FN951.....	H-12	FX-LE1.....	K-16	GAX82.....	A-14	GQ22T-DLY220VN.....	D-28	HCA160Z.....	B-18	HLF180S.....	B-3
FN952.....	H-13	FX-SV1.....	K-16	GAX83.....	A-14	GQ22T-DLY24VN.....	D-28	HCA161Z.....	B-18	HLF190S.....	B-3
FRT1/230A.....	J-32	FZ516.....	H-13	GAX84.....	A-14	GQ22T-DLY24VN.....	D-28	HCB250Z.....	B-18	HLF199S.....	B-3
FS03-3P.....	J-19, J-35	FZ517.....	H-6	GAZ016.....	A-15	GQ22T-DLB024VN.....	D-28	HCB251Z.....	B-18	HLF280S.....	B-3
FS51.....	K-40	FZ760E.....	H-13	GAZ025.....	A-15	GQ22T-DLB220VN.....	D-28	HCD400H.....	B-18	HLF290S.....	B-3
FS52.....	K-40	FZ767.....	H-13	GAZ032.....	A-15	GQ22T-DLG024VN.....	D-28	HCD401H.....	B-18	HLF299S.....	B-3
FS-100.....	K-38	FZ794.....	H-6	GAZ040EM.....	A-15	GQ22T-DLG220VN.....	D-28	HCD630H.....	B-18	HLF380S.....	B-3
FS-200.....	K-38			GAZ063EM.....	A-15	GQ22T-DLR024VN.....	D-28	HCD631H.....	B-18	HLF390S.....	B-3
FS-300.....	K-38			GAZ080EM.....	A-15	GQ22T-DLR220VN.....	D-28	HCE800H.....	B-18	HLF399S.....	B-3
FS-402.....	K-38			GAZ1.....	A-15	GQ22T-DLW024VN.....	D-28	HCE801H.....	B-18	HLF480S.....	B-3
FS-500.....	K-38	G218.....	A-4	GAZ125EM.....	A-15	GQ22T-DLW220VN.....	D-28	HCE970H.....	B-18	HLF490S.....	B-3
FS-902.....	K-38	G222.....	A-5	GAZ160EM.....	A-15	GQ22T-DLY024VN.....	D-28	HCE971H.....	B-18	HLF499S.....	B-3
FSA 02A.....	B-47	G228.....	A-7	GAZ205.....	A-15	GQ22T-DLY220VN.....	D-28	HCF980H.....	B-18	HMC180.....	B-5
FSA 04A.....	B-47	G231.....	A-5	GAZ025.....	A-15	GX16 10U.....	D-9	HCF981H.....	B-18	HMC190.....	B-5
FSA 06A.....	B-47	G232.....	A-5	GAZ032.....	A-15	GX16 10U25.....	D-9	HCF990H.....	B-18	HMC199.....	B-5
FSA 10A.....	B-47	G233.....	A-7	GAZ040EM.....	A-15	GX16 51U.....	D-9	HCF991H.....	B-18	HMC280.....	B-5
FSA 16A.....	B-47	G270.....	A-7	GAZ063EM.....	A-15	GX16 52U.....	D-9	HE09645.....	H-18	HMC290.....	B-5
FSA 20A.....	B-47	G272.....	A-5	GAZ080EM.....	A-15	GX16 53U.....	D-9	HE12960GP2.....	H-18	HMC299.....	B-5
FSA 25A.....	B-47	G280.....	A-4	GAZ1.....	A-15	GX16 66U.....	D-9	HE200.....	H-17	HMC380.....	B-5
FSA 32A.....	B-47	G324.....	A-1	GAZ125EM.....	A-15	GX16 66U.....	D-9	HE200-G.....	H-17	HMC390.....	B-5
FSDCP 100.....	B-47	G326.....	A-1	GAZ160EM.....	A-15	GX16 67U.....	D-9	HE201.....	H-17	HMC399.....	B-5
FSDCP 63.....	B-47	G350.....	A-4	GAZ2.....	A-15	GX16 69U.....	D-9	HE201-G.....	H-17	HMC480.....	B-5
FSDCP 80.....	B-47	G354.....	A-4	GAZ205.....	A-15	GX16 75U.....	D-9	HE201T.....	H-17	HMC490.....	B-5
FSF 160.....	B-47	G355.....	A-4	GAZM016EM.....	A-15	GX16 80U.....	D-9	HE201T-G.....	H-17	HMC499.....	B-5
FSF 200.....	B-47	G356.....	A-4	GAZM032EM.....	A-15	GX16 91U.....	D-9	HE202.....	H-17	HMD180.....	B-4
FSFP 125.....	B-47	G356.....	A-4	GAZM040EM.....	A-15	GX16 92U.....	D-9	HE202-G.....	H-17	HMD190.....	B-4
FSFP 160.....	B-47	G356.....	A-4	GAZM063EM.....	A-15	GX16 92U25.....	D-9	HE202T.....	H-17	HMD199.....	B-4
FSFP 200.....	B-47	G358.....	A-4	GAZM080EM.....	A-15	GX16 97U.....	D-9	HE203.....	H-17	HMD280.....	B-4
FSK 250.....	B-47	G370.....	A-4	GAZM125EM.....	A-15	GX16 98U.....	D-9	HE203-G.....	H-17	HMD290.....	B-4
FSK 315.....	B-47	G371.....	A-5	GAZM160EM.....	A-15	GX20 10U.....	D-9	HE203T.....	H-17	HMD299.....	B-4
FSS 40.....	B-47	G372.....	A-7	GAZM1E.....	H-18	GX20 51U.....	D-9	HE204.....	H-17	HMD380.....	B-4
FSS 50.....	B-47	G373.....	A-7	GAZS016EM.....	A-15	GX20 52U.....	D-9	HE204-G.....	H-17	HMD390.....	B-4
FSS 63.....	B-47	G376.....	A-7	GAZS032EM.....	A-15	GX20 53U.....	D-9	HE205.....	H-17	HMD399.....	B-4
FT-31.....	K-16	G381.....	A-5	GAZS040EM.....	A-15	GX20 54U.....	D-9	HE205-G.....	H-17	HMD480.....	B-4
FT-42.....	K-16	G382.....	A-5	GAZS063EM.....	A-15	GX20 55U.....	D-9	HE206.....	H-17	HMD490.....	B-4
FT-H20-WM1.....	K-16	G383.....	A-5	GAZS1E.....	H-18	GX20 56U.....	D-9	HE206-G.....	H-17	HMD499.....	B-4
FT-H35-M2S6.....	K-16	G384.....	A-5	GD102B.....	H-3	GX20 69U.....	D-9	HE206T.....	H-17	HMK180.....	B-6
FT-R31.....	K-16	G385.....	A-5	GD104B.....	H-3	GX20 75U.....	D-9	HE207.....	H-17	HMK190.....	B-6
FT-R43.....	K-16	G41810.....	A-4	GD106B.....	H-3	GX20 90U.....	D-9	HE207-G.....	H-17	HMK199.....	B-6
FTM 500.....	B-47	G41810A.....	A-4	GD110B.....	H-3	GX20 91U.....	D-9	HE207E.....	H-17	HMK280.....	B-6
FTM 600.....	B-47	G419.....	A-4	GI03010.1.....	L-10	GX20 92U.....	D-9	HE207E-G.....	H-17	HMK290.....	B-6
FTP-1000.....	K-16	G419.....	A-4	GI06006.1.....	L-4	GX32 10U.....	D-9	HE208.....	H-17	HMK299.....	B-6
FTP-1500.....	K-16	G454.....	A-5	GL0160C1.....	A-13	GX32 10U25.....	D-9	HE208E.....	H-17	HMK380.....	B-6
FTU2DN.....	H-5	G455.....	A-5	GL0200C1.....	A-13	GX32 51U.....	D-9	HE208E-G.....	H-17	HMK390.....	B-6
FU32DN.....	H-5	G460.....	A-6, F-6	GL0250C1.....	A-13	GX32 52U.....	D-9	HE208ET.....	H-17	HMK399.....	B-6
FU42AN.....	H-5	G48102.....	A-4	GL0315C1.....	A-13	GX32 53U.....	D-9	HE208ET-G.....	H-17	HMK480.....	B-6
FU42DN.....	H-5	G48111.....	A-4	GL16.....	A-16	GX32 54U.....	D-9	HE209.....	H-17	HMK490.....	B-6
FU52AN.....	H-5	G48120.....	A-4	GL200.....	A-16	GX32 55U.....	D-9	HE209-G.....	H-17	HMK499.....	B-6
FU52DN.....	H-5	G483.....	A-4	GL40.....	A-16	GX32 56U.....	D-9	HE209T.....			

HNA125U	B-17	HWX524	B-22	ID02	H-18	IVBWTP1.5-2	L-1	KJ01B	H-14	LB6GLB	D-25
HNA126U	B-17	HWX525	B-22	ID03	H-18	IVBWTP1.5-3	L-1	KJ01C	H-14	LB6GLM	D-25
HNA160U	B-17	HWX534	B-22	ID04	H-18	IVBWTP1.5-4	L-1	KJ01D	H-14	LC 100	M-4
HNA161U	B-17	HWX535	B-22	ID05	H-18	IVBWTP1.5-5	L-1	KJ02A	H-14	LCP-1250A4FDRJ	C-19
HNB250U	B-17	HWX541	B-22	ID06	H-18			KJ02B	H-14	LCP-1250B4QDRJ	C-19
HNB251U	B-17	HWX544	B-22	ID06E	H-18			KJ02C	H-14	LF01-150	K-39
HND320P	B-17	HWX551	B-22	ID07	H-18	JdY09/M2	A-11	KJ02D	H-14	LF01-200	K-39
HND400H	B-17	HWX554	B-22	ID07E	H-18	JDY09/P	A-11	KJ02E	H-14	LF01-250	K-39
HND400P	B-17	HWX555	B-22	ID08	H-18	JDY09/M4	A-11	KKC1518	L-11	LF01-300	K-39
HND400U	B-17	HWY502	B-22	ID08E	H-18	JDY115/M4	A-11	KM13E	H-14	LF01-400	K-39
HND401U	B-17	HWY503	B-22	ID3CR-10	H-19	JDY12/M2	A-11	KM13N	H-14	LF01-500	K-39
HND630H	B-17	HWY509	B-22	ID3CR-12	H-19	JDY12/P	A-11	KM A1 S11	K-31	LF01-600	K-39
HND631H	B-17	HWY630	B-22	ID3CR-4	H-19	JDY150/M4	A-11	KM B2 S11	K-31	LF01-700	K-39
HNE500P	B-17	HWY631	B-22	ID3CR-5	H-19	JDY18/M2	A-11	KM C2 S11	K-31	LF10-1H11123-115	K-40
HNE630P	B-17	HWY632	B-22	ID3CR-6	H-19	JDY18/P	A-11	KM E2 S11	K-31	LF10-1H11123-150	K-40
HNE800H	B-17	HWY633	B-22	ID3CR-7	H-19	JDY180/M5	A-11	KM F2 S11	K-31	LF10-1H11123-80	K-40
HNE800P	B-17	HWY637	B-22	ID3CR-8	H-19	JDY25/M2	A-11	KM H1 S11	K-31	LF16-111-40PSI	K-40
HNE801H	B-17	HWY638	B-22	ID3CR-9	H-19	JDY25/P	A-11	KM L2 S11	K-31	LF16-111-50PSI	K-40
HNE970H	B-17	HWY641	B-22	IF9	D-10	JDY250/M7E	A-11	KM M1 S11	K-31	LF16-111-60PSI	K-40
HNE971H	B-17	HWY642	B-22	IFD6503	C-20	JDY26/M2	A-11	KN00A	H-14	LF18-111121-10BAR	K-40
HNF980H	B-17	HWY648	B-22	IFD6530	C-20	JDY26/P	A-11	KN04N	H-14	LF18-111121-5BAR	K-40
HNF981H	B-17	HWY649	B-22	IFD6500	C-20, A-20, C-5	JDY38/M2	A-11	KN04P	H-14	LF18-111121-7BAR	K-40
HNF990H	B-17	HWY670	B-22	IFD8500	C-14	JDY38/P	A-11	KN07N	H-14	LF19-111121-3BAR	K-40
HNF991H	B-17	HWY671	B-22	IFD8510	C-20	JDY400/M7E	A-11	KN07P	H-14	LF19-111121-4BAR	K-40
HNKE16	M-3	HWY672	B-22	IFD8520	C-20	JDY50/M4	A-11	KN10E	H-14	LF5503	K-40
HNKE4	M-3	HWY673	B-22	IFD9502	C-20	JDY65/M4	A-11	KN10N	H-14	LF5506	K-40
HNKE50	M-3	HWY674	B-22	IFD9503	C-20	JDY80/M4	A-11	KN10P	H-14	LF5510	K-40
HNN3	M-3	HWY675	B-22	IFD9506	C-20	JE003	H-13	KN18E	H-14	LF5516	K-40
HNN4	M-3	HWY697	B-22	IFD9507	C-20	JLK1005	L-38	KN18N	H-14	LF5520	K-40
HP3	M-3	HWY701	B-22	IGR35F	H-23	JLK1010	L-38	KN18P	H-14	LF55-1000	K-39
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HR500	B-10	HWY703	B-22	IL1/AP-3A	K-3	JLK1020	L-38	KN26N	H-14	LF55-1200	K-39
HR502	B-10	HWY706	B-22	IL1/CN-3A	K-3	JLK1021	L-38	KN26P	H-14	LF55-1200/4-20	K-39
HR510	B-10	HWY707	B-22	IL1/CP-3A	K-3	JLK1023	L-38	KN3C-R1021	D-29	LF55-1400	K-39
HR520	B-10	HWY708	B-22	IL8/AN-3A	K-3	JLK1030	L-38	KN3C-R1121	D-29	LF55-1400/4-20	K-39
HR700	B-10	HXA007H	B-18	IL8/AP-3A	K-3	JLK1035	L-38	KN3C-R1122	D-29	LF55-150	K-39
HR742	B-10	HXA021H	B-18	IL8/CN-3A	K-3	JLK1040	L-38	KN3C-R1211	D-29	LF55-150/4-20	K-39
HR743	B-10	HXA024H	B-18	IL8/CP-3A	K-3	JLK1045	L-38	KN3C-R1321	D-29	LF55-1600	K-39
HR745	B-10	HXA014H	B-19	IMN1/05	E-22	JLK1046	L-38	KN3C-R1322	D-29	LF55-1600/4-20	K-39
HR830	B-10	HXA015H	B-19	IMN1/06	E-22	JLK1048	L-38	KN99E	H-14	LF55-200	K-39
HRD027144	F-9	HXA030H	B-19	IMN1/07	E-22	JLK1049	L-38	KN99N	H-14	LF55-200/4-20	K-39
HRD027274	F-9	HXA031H	B-19	IMN1/10	E-22	JLK1055	L-38	KN99P	H-14	LF55-2000	K-39
HRD040144	F-9	HXB030H	B-19	IMN1/12	E-22	JLK1060	L-38	KN A1 S11	K-31	LF55-2000/4-20	K-39
HRD041374	F-9	HXB031H	B-19	IMN1/15	E-22	JLK1065	L-38	KN B1 S11	K-31	LF55-250	K-39
HRD054144	F-9	HXB042H	B-19	IMN1/16	E-22	JLK1070	L-38	KN C1 S11	K-31	LF55-300	K-39
HRD054274	F-9	HXC007H	B-18	IMN1/20	E-22	JLK1071	L-38	KN E1 S11	K-31	LF55-300/4-20	K-39
HRD081374	F-9	HXC021H	B-18	IMN1/25	E-22	JLK1073	L-38	KN F1 S11	K-31	LF55-350	K-39
HRD108274	F-9	HXC024H	B-18	IMN2/16	E-22	JLK1074	L-38	KN H1 S11	K-31	LF55-400	K-39
HRS013144	F-9	HXC014H	B-19	IMN2/20	E-22	JLK1075	L-38	KN L2 S11	K-31	LF55-400/4-20	K-39
HRS014074	F-9	HXC015H	B-19	IMN2/25	E-22	JLK1080	L-38	KN M1 S11	K-31	LF55-500	K-39
HRS027074	F-9	HXC030H	B-19	IMN2/30	E-22	JLK1085	L-38	KN-1/2PT-8-200-J	J-26	LF55-500/4-20	K-39
HRS027144	F-9	HXC031H	B-19	IMN2/40	E-22	JLK1090	L-38	KN-1/2PT-8-200-K	J-26	LF55-600	K-39
HRS054074	F-9	HXD007P	B-18	IMN2/50	E-22	JLK1095	L-38	KN-1/2PT-8-200-PT100	J-26	LF55-600/4-20	K-39
HRS054144	F-9	HXD022P	B-18	IMN2/60	E-22	JLK1097	L-38	KN-1/2PT-8-300-J	J-26	LF55-800	K-39
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HT45-E	M-5	HXD015P	B-19	IS-E1204-BPOB2	K-12	JLK1105	L-38	KPC-CC01	A-20, A-22	LFTN-200	K-39
HT-TC026	M-5	HXD030H	B-19	IS-E1808-BPCB2	K-12	JLK1110	L-38	KPE-LE02	A-20	LFTN-250	K-39
HT-TC041N	M-5	HXD031H	B-19	IS-E1808-BPOB2	K-12	JLK1115	L-38	KR100S11	K-32	LFTN-300	K-39
HTM060	H-23	HXD031P	B-19	IS-N1208-BPCB2	K-12	JLK1120	L-38	KR200S11	K-32	LFTN-400	K-39
HTM100	H-23	HXD042H	B-19	IS-N1208-BPOB2	K-12	JLK1130	L-38	KW3A-16Z0B	K-30	LFTN-500	K-39
HTM150	H-23	HXE007P	B-18	IS-N1812-BPCB2	K-12	JLK1135	L-38	KW3A-16Z2	K-30	LFTN-600	K-39
HTR-3A-100A-P	C-23	HXE022P	B-18	IS-N1812-BPOB2	K-12	JP002	H-6	KW3A-16Z3	K-30	LFTN-700	K-39
HTR-3A-1024A-P	C-23	HXE024P	B-18	ISO2010	L-35	JP024	H-6, H-13, B-7	KW3A-16Z4	K-30	LK20K13	K-34
HTR-3A-360A-P	C-23	HXE014H	B-19	ISO2020	L-35	JSL 1305-1	M-3, L-21	KW3A-16Z5	K-30	LM2T A161	D-5
HTR-3A-500A-P	C-23	HXE014P	B-19	ISO2030	L-35			KX B A11	K-31	LM2T A200	D-5
HTR-5B-1024A-H	C-23	HXE015H	B-19	ISO2040	L-35			KX B L11	K-31	LM2T B102	D-7
HTR-5B-1024A-P	C-23	HXE015P	B-19	ISO2055	L-35			KX B S02	K-31	LM2T B103	D-7
HTR-5B-2000A-H	C-23	HXE030H	B-19	ISO2070	L-35	KA1238HA2B	H-22	KX B S11	K-31, K-32	LM2T B104	D-7
HTR-5B-2000A-P	C-23	HXE031H	B-19	ISO2085	L-35	KA1238HA3B	H-22			LM2T B105	D-7
HTR-5B-360A-H	C-23	HXE031P	B-19	ISO2100	L-35	KA1725HA2B	H-22	KX N1	K-31	LM2T B106	D-7
HTR-5B-360A-P	C-23	HXE042H	B-19	ISO2110	L-35	KA1725HA3B	H-22	KX N2	K-31	LM2T B106	D-7
HTR-HD30-1024-3-PP	C-23	HXF030H	B-19	ISO2140	L-35	KA2206HA3B	H-22	KX N3	K-31	LM2T B204	D-7
HTR-HD30-600-3-PP	C-23	HXF031H	B-19	ISO2155	L-35	KA2208HA2B 2P	H-22	KX N4	K-31	LM2T B6144	D-7
HTR-HM15-1024-3-PP	C-23	HXF042H	B-19	ISO2170	L-35	KA2509HA2B 2P	H-22	KZ022	B-7	LM2T B6164	D-7
HTR-HM15-600-3-PP	C-23	HYA014H	B-19	ISO2185	L-35	KA2509HA3B 2P	H-22	KZ023A	B-7	LM2T B6344	D-7
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HTR-HN-8-360A-P	C-23	HYA027H	B-19	ISO2245	L-35	KA9225HA2B	H-22			LM2T BL103	D-7
HTR-HN-8-500A-P	C-23	HYA033H	B-19	ISO2257	L-35	KB190C	B-7			LM2T BL104	D-7
HWAN312EDCZ	B-21	HYB001H	B-19	ISO2267	L-35	KB263C	B-7	L03-M	L-24	LM2T BL105	D-7
HWAN312EFCZ	B-21	HYB011H	B-19	ISO2295	L-35	KB363C	B-7	L06-M	L-24	LM2T BL106	D-7
HWAN316EDCZ	B-21	HYB019H	B-19	ISO3005	L-35	KB380B	B-7	L10-M	L-24	LM2T BL107	D-7
HWAN316EFCZ	B-21	HYB021H	B-19	ISO3015	L-35	KB463C	B-7	L14-M	L-24	LM2T IL103	D-7
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HWAN416EFCZ	B-21	HYC011H	B-19	ITB1000	L-33	KB B2 S11	K-31	L1-M	L-24	LM2T IL105	D-7
HWBS325EDCZ	B-21	HYC019H	B-19	ITB1005	L-33	KB C2 S11	K-31	L24-M	L-24	LM2T IL106	D-7
HWBS325EFCZ	B-21	HYC021H	B-19	ITB1010	L-33	KB D2 S11	K-31	L2-M	L-24	LM2T IL107	D-7
HWBS332EDCZ	B-21	HYD003H	B-19	ITB1015	L-33	KB E2 S11	K-31	L30-M	L-24	LM2T Q202	D-7
HWBS332EFCZ	B-21	HYD014H	B-19	ITB1020	L-33	KB F2 S11	K-31	L37-M	L-24	LM2T Q203	D-7
HWBS340EDCZ	B-21	HYD021H	B-19	ITB1025	L-33	KB H1 S11	K-31	L3-M	L-24	LM2T Q204	D-7
HWBS340EFCZ	B-21	HYE021H	B-19	ITB1030	L-33	KB L2 S11	K-31	L48-M	L-24	LM2T Q205	D-7
HWBS425EDCZ	B-21			ITB1035	L-33	KB M1 S11	K-31	L48P8	J-21	LM2T Q206	D-7
HWBS425EFCZ	B-21			ITB1040	L-33	KB N1 L11	K-31	L48TPBM240	J-21	LM2T QL203	D-7
HWBS432EDCZ	B-21			ITB2000	L-33	KB N2 L11	K-31	L48TPM240	J-21	LM2T QL204	D-7
HWBS432EFCZ	B-21			IVBWK10-2	L-1	KB P1 L11	K-31	L48TPS240	J-21	LM2T QL205	D-7
HWBS440EDCZ	B-21			IVBWK2.5-10	L-1	KB P2 L11	K-31	L5-M	L-24	LM2T QL206	D-7
HWBS440EFCZ	B-21			IVBWK2.5-20	L-1	KB Q1 L11	K-31	L7-M	L-24	LM2T QL207	D-7
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HWCP450EDCZ	B-21			IVBWK2.5-5	L-1	KB C2 S11	K-31	LA55400A	J-34	LM2T S130	D-7
HWCP450EFCZ	B-21			IVBWK4-10	L-1	KB D2 S11	K-31	LA55400A	J-34	LM2T S131	D-7
HWM015	H-23			IVBWK4-2	L-1	KB E2 S11	K-31	LB1-3V	L-20	LM2T S133	D-7
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STANDARD TERMS AND CONDITIONS OF SALE APPLICABLE TO ALL CREDIT TRANSACTIONS WITH ELECTRAHERTZ (PTY) LTD

1. GENERAL

1.1 If anywhere in the Agreement it refers to the singular, it also means the plural or the other way around, as the case may be. Similarly if the masculine is referred to it also means the feminine and neuter, or the other way around, as the case may be. Reference to natural persons includes artificial persons, or the other way around, as the case may be.

1.2 The address which you choose to accept service of all documents on yourself will be, for all purposes, your delivery address overleaf. The address which you choose to receive any letters or notices on yourself will be your delivery address or postal address or Telefax number. You shall therefore be deemed to have received any letter or notice on the 8th day after the date of posting or on the day the notice or letter was delivered or telefaxed to the abovementioned address.

1.3 Each phrase, sentence, paragraph and clause in the Agreement can be separated the one from the other irrespective of how they may be linked together and if a court orders any phrase, sentence, paragraph or clause to be defective or unenforceable, the remaining part of the Agreement shall still be of full force and effect.

2. PAYMENT TERMS:

2.1 You agree that, unless specifically otherwise agreed in writing, any amounts for which credit has been granted will be payable strictly within thirty days from date of the statement.

2.2 If any amount owing by you is not paid within sixty days from date of statement, you will be liable for interest at the rate of 2% above the prime overdraft lending rate of Standard Bank of South Africa, from time to time, per month, on the overdue amount, calculated from due date to date of payment and if the interest is not paid, it shall be added to the principal sum and the whole amount shall form the principal debt which will also bear interest as aforesaid.

3. CERTIFICATE CERTIFYING AMOUNT DUE:

A certificate signed by our managing director or any other person/s authorised by him, certifying the amount due by you will on the face of it be proof of the amount of your indebtedness. It shall not be necessary to prove the appointment of the person signing such certificate.

4. PROOF OF DELIVERY:

4.1 If you or any of your staff or representatives sign our delivery note, it shall be regarded as acceptance by you that the goods reflected in the delivery note have been properly and completely delivered.

4.2 In the event of any order being given to us on an order form reflecting your name as the person who submitted the order, the order shall be deemed to have been submitted by you, notwithstanding the fact that such order may have been submitted and signed by a person not authorised by you.

5. DELIVERY DATES

5.1 We will not be bound by any delivery dates furnished by our employees, unless the delivery date was furnished to you in writing.

5.2 You cannot hold us liable for any delays in manufacture or delivery as a result of the breakdown of machinery, strikes, civil unrest, labour disputes, accidents, any act of God or any other cause which is beyond our control.

6. NO DELIVERY IN CASE OF BREACH, INSOLVENCY ETC.

If you breach any of the conditions of this agreement, or fail to pay any amounts due to us, or if you become insolvent, or compromise with any of your creditors, or if you have made false statements in connection with this agreement or you allow any judgment that has been granted against you to remain unsatisfied for more than seven days, or if you are subject to a final or provisional order of Liquidation, or if you are an individual and your estate is provisionally sequestrated, you agree that we may refuse to deliver goods or any part thereof to you, even if you have already ordered the goods.

7. INSPECTION OF GOODS

You are advised and undertake to, upon selection, properly inspect the goods prior to delivery thereof and to satisfy yourself with the condition of the goods and that they suite the purpose for which you purchased them.

8. RISK AND WARRANTIES

8.1 The risk in and to any goods purchased will pass to you once delivery has taken place, subject to 8.2.

8.2 Goods to be dispatched to you by rail or other carrier shall be at your risk from the time delivery is made by us to such carrier, whether or not the costs of transportation are paid by us.

8.3 Except for the implied warranties provided for in the Consumer Protection Act, No. 68 of 2008, we do not give any other warranty, whether express or implied, in regard to material, workmanship or fitness of goods for any particular purpose, unless in writing.

8.4 Claims for shortages or damages to supplied product must be notified in writing within 48hours after delivery of goods, failing which no claim will be recognized.

8.5 Guarantees and Warranties will differ from product to product.

8.6 The **COMPANY** will repair or at its discretion replace, at point of original delivery, any goods sold which are proved within the guarantee/warranty period of such goods, from date of delivery, not to conform to specifications or to be defective due to faulty workmanship or materials. Save as aforesaid, no warranty, guarantee or representation of any nature is given or implied by the **COMPANY** and any other warranty, guarantee or representation is expressly excluded. Under no circumstances shall the **COMPANY** or any of its

employees be responsible for loss of the PURCHASERS' profit or any consequential or indirect or any damages of any nature whatsoever and from whatever cause arising.

9. WE REMAIN OWNER OF GOODS UNTIL PAID

Until such time as you have paid the full purchase price for any goods purchased, the ownership in such goods shall remain vested in us. We will, in our sole discretion, without notice to you, be entitled to take possession of any such goods which have not been paid for but in respect of which payment is overdue, in which event you will be entitled to a credit in respect of the goods so returned, subject to the goods being returned in original packaging, acceptable and non-damaged, being the price at which the goods were sold or the value thereof as determined by us.

10. YOUR DUTY TO NOTIFY US OF CHANGE IN OWNERSHIP

10.1 You hereby undertake to notify us in writing, within seven days, of any change in ownership of your business, or should you be a company, any share transaction in terms of which the majority shareholder is substituted, or should the purchaser be a Close Corporation, any transaction in terms of which the holder of the majority members interest is substituted, failing which notice the entire balance owing, whether due or not, will immediately become due and payable by you.

10.2 You agree that immediately upon any change of ownership of your business, any outstanding amount, whether due or not, shall forthwith become payable to us.

11. TRANSFER OF OUR RIGHTS

We may, without notice to you, transfer all or any portion of our rights in terms of this Agreement or our ownership of goods, delivered and not paid for, to any other person or persons. You agree that, if we transfer our rights, that you will hold the goods and continue to fulfill your obligations to the new owners of the rights to the agreement and/or the goods.

12. RETURNED GOODS

Goods received may under no circumstances be returned for credit, unless incorrectly supplied by us and without prior arrangements having been made and is subject to a minimum 15% handling fee or other reasonable fee. All goods for which arrangements have been made which have been received into our store, are subject to inspection before any credits will be passed and must be returned in the original packaging and in the condition as it was supplied. No goods will be accepted back after 30days following date of invoice. Under no circumstances will any goods needed to be returned, be accepted by our drivers' or couriers representing us. These goods **MUST** be returned to the point of dispatch, namely our premises.

13. WITHDRAWAL OF CREDIT FACILITIES:

Credit facilities may be withdrawn by us at any time without prior notice to you and we reserve the right to review the conditions on which the credit facilities were granted to you.

14. COLLECTION COSTS TO BE PAID BY YOU:

Should we be obliged to instruct attorneys to collect any amount due from you, you agree to pay all costs and collection fees on an attorney and client scale.

15. COURT JURISDICTION:

You agree that the Magistrate's Court shall have jurisdiction over any proceedings resulting from this agreement or any sale of goods in terms hereof. We will however have the right to institute proceedings in the High Court if we so wish.

16. PRICES:

16.1 We will not be bound to any quoted prices furnished by our employees, unless the pricing was furnished to you in writing.

16.2 All prices are quoted exclusive of Value Added Tax;

16.3 Our advertised pricing is subject to change without notice, E&OE (Errors and Omissions Excluded)

16.4 Prices are based on the cost to us of the material, labour, transport, customs, size and other duty landing charges if any, insurance as well as exchange rates as at date of sale of the goods. You agree that if there is any increase which effects such costs prior to delivery, the prices will be adjusted accordingly and without prior notice at our discretion.

17. ENTIRE AGREEMENT:

You and we both agree that this is the entire agreement, regardless of any representations that may have been made regarding the goods or the agreement and no variation, waiver, suspension, extension of time or agreement to cancel shall be of any force or effect unless contained in a written document and signed by both you and us.

18. INDULGENCES BY US:

If we grant you an extension of time in order to pay, or any other indulgence, this does not mean that we have given up any of our rights in terms of this agreement.

WE ALSO STOCK AND SUPPLY:

BACKUP POWER	synerji On/Off Grid Inverters and Deep Cycle Batteries; GenSets and UPS's
CABLE	Armoured - Trailing - Welding - Submersible - Cabtyre Surfix - Multi-core - Screened - Pendant Control - Flat
WIRE	House - Panel - Silicone - Stranded - Thermocouple
CONDUIT	Steel - PVC - Flexible
TRUNKING	Steel - PVC - Slotted - Power Skirting
CONTROL	Programmable Logic Controllers - AC Variable Speed
GENERAL	Adhesives - Silicone - Tapes - Joints - Insulators - Busbar - Lugs - Connectors
LIGHTING	synerji Lamps - Fittings - Flood Lights - Low Voltage Lamps - Tubes Decorative - Fluorescent - Energy Saving
SECURING	Cable Ladder - Cable Tray - Cable Support Systems
TEMPERATURE	Controllers - Indicators - Thermocouples - Thermostats
TESTERS	Multimeters - Insulation Testers - Current & Voltage Compliance Testers (FLUKE ®, KYORITSU ®, MAJOR TECH ®, TOPTRONIC ®)
TRANSFORMER	Voltage - Current - Low Voltage - Transducer
TOOLS	Power Tools - Hand Tools - Contractor Tools (METABO ®, RYOBI ®, HELLERMANN ®, MAJOR TECH ®)

ALL **synerji** RENEWABLE PRODUCTS AVAILABLE FROM US and CERTAIN ELECTROBASE SUPPLIERS

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