















A

MOTOR CONTROL & DRIVES

A₁

	Mini contactors	A-1	Lovato
	Contactors	A-2...6	Lovato
	Thermal overload relays	A-1/7	Lovato
	Direct-on-line starters	A-8	Lovato
	Motor protection circuit breakers	A-9...10	Lovato
	Star-delta starters	A-11	Lovato
	Soft starters	A-13...14	Lovato
	Electronic motor protection	A-15...16	Elecnova
	Load break / Changeover switches	A-17...20	Lovato

A₂

	Variable speed drives (VSDs)	A-23...29	Delta
	Pump panel systems	A-31...32	EM
	AC reactors	A-33	EM
	Brake units and resistors	A-34	EM
	Medium voltage drives (VSDs)	A-35...36	Delta



BG0901A



BG09T4A



BG09T4D



BGX1020



BGX1040



G324



BGX5000



RF12...

type	rated current (AC1) (AC3)		kW rating (AC3) 400V		control	description	auxiliary contacts	price
Three-pole mini contactors			(Ui 690V)					
BG0610A...	16A	6A	2.2kW		AC	3-pole mini contactor	1NO	358.82
BG0910A...	20A	9A	4.0kW		AC	3-pole mini contactor	1NO	432.42
BG0901A...	20A	9A	4.0kW		AC	3-pole mini contactor	1NC	493.37
BG1210A...	20A	12A	5.7kW		AC	3-pole mini contactor	1NO	483.02
BG1201A...	20A	12A	5.7kW		AC	3-pole mini contactor	1NC	515.22
BG0910D...	20A	9A	4.0kW		DC	3-pole mini contactor	1NO	565.82
BG0901D...	20A	9A	4.0kW		DC	3-pole mini contactor	1NC	614.12

Four-pole mini contactors			(Ui 690V)					
type	rated current (lth) (AC1)		kW (AC1) 230V 400V		control	description	main contacts	price
BG09T4A...	20A	20A	8	14	AC	4-pole mini contactor	4NO	517.52
BG09T2A...	20A	20A	8	14	AC	4-pole mini contactor	2NO + 2NC	524.42
BGP09T4A...	20A	20A	8	14	AC	PCB mount contactor	4NO	966.04
BG09T4D...	20A	20A	8	14	DC	4-pole mini contactor	4NO	1 196.04
BG09T2D...	20A	20A	8	14	DC	4-pole mini contactor	2NO + 2NC	1 255.84

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	
Control relays are used where additional contacts are required to switch low-level current loads such as pilot lights, motor starters, or other relays.								
BG0040A...	10A	-	-	-	AC	mini control relay	4NO	495.67
BG0031A...	10A	-	-	-	AC	mini control relay	3NO + 1NC	495.67
BG0022A...	10A	-	-	-	AC	mini control relay	2NO + 2NC	495.67

Standard coil voltages (add to part number): **AC** - 024/048/110/230/400V

Auxiliary contact blocks for above mini contactors 10A lth / Ui 690V								
BGX1020	10A	clip-on auxiliary contact	-	-	-	for BG contactors	2NO	276.01
BGX1011	10A	clip-on auxiliary contact	-	-	-	for BG contactors	1NO + 1NC	276.01
BGX1002	10A	clip-on auxiliary contact	-	-	-	for BG contactors	2NC	276.01
BGX1040	10A	clip-on auxiliary contact	-	-	-	for BG contactors	4NO	480.72
BGX1022	10A	clip-on auxiliary contact	-	-	-	for BG contactors	2NO + 2NC	480.72
BGX1004	10A	clip-on auxiliary contact	-	-	-	for BG contactors	4NC	480.72

Accessories for above mini contactors									
BGX8000	shroud to fit into modular distribution boards with 45 mm cutout								59.81
BGX5000	mechanical interlock for BG contactors								238.06
G324	paralleling links (2 pole) for BG contactors								142.61
G326	paralleling links (4 pole) for BG contactors								155.26

Thermal overload relays for above mini BG contactors

RF12 series - Mini thermal overload relays

- Compensated, differential single-phase protection
- Incorporating test button facility and mechanical trip indication
- Adjustable range: 0.10 - 12.50A
- Selectable automatic or manual reset
- NO + NC auxiliary contacts
- Phase failure sensitive

type	motor rating AC3 (400V)	description	adjustable range	for contactors	price
RF120016	-	thermal overload relay	0.10 - 0.16A	BG6/9/12	647.48
RF120025	-	thermal overload relay	0.16 - 0.25A	BG6/9/12	647.48
RF120040	0.06kW	thermal overload relay	0.25 - 0.40A	BG6/9/12	647.48
RF120063	0.12kW	thermal overload relay	0.45 - 0.63A	BG6/9/12	647.48
RF120080	0.18kW	thermal overload relay	0.55 - 0.80A	BG6/9/12	647.48
RF120100	0.25 - 0.37kW	thermal overload relay	0.75 - 1.00A	BG6/9/12	647.48
RF120160	0.55kW	thermal overload relay	1.10 - 1.60A	BG6/9/12	647.48
RF120250	0.75kW	thermal overload relay	1.80 - 2.50A	BG6/9/12	647.48
RF120400	1.10 - 1.50kW	thermal overload relay	2.90 - 4.00A	BG6/9/12	647.48
RF120630	2.2kW	thermal overload relay	4.50 - 6.30A	BG6/9/12	647.48
RF121000	4.0kW	thermal overload relay	7.20 - 10.00A	BG6/9/12	647.48
RF121250	5.5kW	thermal overload relay	9.00 - 12.50A	BG6/9/12	647.48



BF0910A



BF2600A



BF5000A



BF2300E...



B310400



BF00...

type	rated current		kW rating		control	description	auxiliary contacts	price
	(AC1)	(AC3)	(AC3)	400V				
Three-pole contactors (Ui 690V) / AC control circuit								
BF0910A...	25A	9A	4.2kW		AC	3-pole contactor	1NO	560.07
BF0901A...	25A	9A	4.2kW		AC	3-pole contactor	1NC	560.07
BF1210A...	28A	12A	5.7kW		AC	3-pole contactor	1NO	667.03
BF1201A...	28A	12A	5.7kW		AC	3-pole contactor	1NC	667.03
BF1810A...	32A	18A	7.5kW		AC	3-pole contactor	1NO	882.08
BF1801A...	32A	18A	7.5kW		AC	3-pole contactor	1NC	882.08
BF2510A...	32A	25A	12.5kW		AC	3-pole contactor	1NO	1 227.09
BF2501A...	32A	25A	12.5kW		AC	3-pole contactor	1NC	1 227.09
BF2600A...	45A	26A	13.0kW		AC	3-pole contactor	-	1 319.10
BF3200A...	56A	32A	16.0kW		AC	3-pole contactor	-	1 871.11
BF3800A...	56A	38A	18.5kW		AC	3-pole contactor	-	2 201.17
Three-pole contactors (Ui 1000V) / AC and AC/DC control circuit								
BF4000A...	70A	40A	18.5kW		AC	3-pole contactor	-	2 680.74
BF5000A...	90A	50A	22kW		AC	3-pole contactor	-	2 753.19
BF6500A...	100A	65A	30kW		AC	3-pole contactor	-	3 696.22
BF8000A...	115A	80A	45kW		AC	3-pole contactor	-	4 249.39
BF9400A...	115A	95A	55kW		AC	3-pole contactor	-	5 240.72
BF9500A...	140A	95A	55kW		AC	3-pole contactor	-	5 861.74
BF11500A...	160A	115A	55kW		AC	3-pole contactor	-	6 619.61
BF15000A...	165A	150A	75kW		AC	3-pole contactor	-	8 136.51
BF16000E...	250A	160A	75kW		AC/DC	3-pole contactor	-	10 222.68
BF19500E...	275A	195A	90kW		AC/DC	3-pole contactor	-	11 289.91
BF23000E...	350A	230A	110kW		AC/DC	3-pole contactor	-	14 409.96
<i>"E" standard voltage coils - 024=24...60V / 110=60...130V / 230=100...250V / 400=250...500V AC/DC</i>								
B25000...	350A	265A	140kW		AC/DC	3-pole contactor	-	20 033.63
B31000...	450A	320A	170kW		AC/DC	3-pole contactor	-	25 013.29
B40000...	550A	420A	225kW		AC/DC	3-pole contactor	-	31 729.50
B50000...	700A	520A	290kW		AC/DC	3-pole contactor	-	36 548.15
B63000...	800A	630A	335kW		AC/DC	3-pole contactor	-	56 432.27
B125024...	1250A	-	(AC1) 830kW		AC/DC	3-pole contactor	-	112 082.51
B160024...	1600A	-	(AC1) 950kW		AC/DC	3-pole contactor	-	157 669.94
Four-pole contactors / AC control circuit								
type	rated current		kW (AC1)		control	description	main contacts	price
	lth (AC1)		230V	400V				
BF09T4A...	25A	-	9.5	16	AC	4-pole contactor	4NO	1 032.74
BF12T4A...	28A	-	10	18	AC	4-pole contactor	4NO	1 332.90
BF18T4A...	32A	-	12	21	AC	4-pole contactor	4NO	1 612.36
BF26T4A...	45A	-	17	30	AC	4-pole contactor	4NO	2 289.73
BF38T4A...	56A	-	21	36	AC	4-pole contactor	4NO	4 753.10
Add attachable 4th pole (below) to 3 pole contactors (BF26 - BF150) to make up a 4 pole contactor								
BFX42	56A		attachable 4th pole for 3 pole contactors				BF26/32/38A	1 194.89
BFX43	115A		attachable 4th pole for 3 pole contactors				BF40/50/65/80/94A	2 085.02
BFX44	165A		attachable 4th pole for 3 pole contactors				BF95/115/150A	2 548.48
BF160T4E...	250A	-	95	165	AC/DC	4-pole contactor	4NO	16 353.52
BF195T4E...	275A	-	104	181	AC/DC	4-pole contactor	4NO	18 067.07
BF230T4E...	350A	-	132	230	AC/DC	4-pole contactor	4NO	23 069.73
B310400...	450A	-	158	270	AC/DC	4-pole contactor	4NO	43 252.86
B400400...	550A	-	200	345	AC/DC	4-pole contactor	4NO	53 522.68
B500400...	700A	-	252	438	AC/DC	4-pole contactor	4NO	61 227.92
B630400...	800A	-	288	500	AC/DC	4-pole contactor	4NO	105 308.80
Contactors with special pole configurations								
BF09T2A...	25A	-	9.5	16	AC	4-pole contactor	2NO + 2NC	1 493.90
BF18T2A...	32A	-	10	18	AC	4-pole contactor	2NO + 2NC	1 834.31
BF26T2A...	45A	-	12	21	AC	4-pole contactor	2NO + 2NC	3 103.95
BF38T2A...	56A	-	17	30	AC	4-pole contactor	2NO + 2NC	5 742.13
BF80T2A...	115A	-	43	76	AC	4-pole contactor	2NO + 2NC	12 535.40
BF18T0A...	32A	-	21	36	AC	4-pole contactor	4NC	1 834.31
Control relays / AC control circuit								
BF0040A...	10A	-	-	-	AC	control relay	4NO	687.73
BF0031A...	10A	-	-	-	AC	control relay	3NO + 1NC	687.73
BF0022A...	10A	-	-	-	AC	control relay	2NO + 2NC	687.73
BF0004A...	10A	-	-	-	AC	control relay	4NC	687.73
<i>Standard coil voltages: AC - 024/048/110/230/400V others available on request</i>								



BF0910D



BF9400E



BF2300E...

new



BF15000E + BFX44



BF00...

type	rated current		kW rating		control	description	auxiliary contacts	price
	(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	918.88
BF1210D...	28A	12A	5.7kW	DC	3-pole contactor	1NO	1 040.79
BF1810D...	32A	18A	7.5kW	DC	3-pole contactor	1NO	1 357.05
BF2510D...	32A	25A	12.5kW	DC	3-pole contactor	1NO	1 909.06
BF2600D...	45A	26A	13.0kW	DC	3-pole contactor	-	2 753.19
BF3200D...	56A	32A	15.0kW	DC	3-pole contactor	-	2 839.44
BF3800D...	56A	38A	18.5kW	DC	3-pole contactor	-	3 463.91

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	1 131.64
BF1210L...*	28A	12A	5.7kW	DC	3-pole contactor	1NO	1 251.24
BF1810L...*	32A	18A	7.5kW	DC	3-pole contactor	1NO	1 569.80
BF2510L...*	32A	25A	12.5kW	DC	3-pole contactor	1NO	2 191.97
BF3200L...*	56A	32A	15.0kW	DC	3-pole contactor	-	3 129.25
BF3800L...*	56A	38A	18.5kW	DC	3-pole contactor	-	3 753.72

* Extra low consumption DC coil voltages (add to part number): DC - 024/048V

AC/DC electronically controlled coil (wide voltage range)

- Wide operating coil
- Low consumption during in-rush and in service
- Built-in surge suppressor filter

BF4000E...	70A	40A	18.5kW	AC/DC	3-pole contactor	-	4 419.59
BF5000E...	90A	50A	22kW	AC/DC	3-pole contactor	-	4 527.70
BF6500E...	100A	65A	30kW	AC/DC	3-pole contactor	-	6 086.00
BF8000E...	115A	80A	45kW	AC/DC	3-pole contactor	-	6 412.61
BF9400E...	115A	95A	55kW	AC/DC	3-pole contactor	-	6 688.61
BF9500E...	140A	95A	55kW	AC/DC	3-pole contactor	-	7 138.28
BF11500E...	160A	115A	55kW	AC/DC	3-pole contactor	-	7 886.95
BF15000E...	165A	150A	75kW	AC/DC	3-pole contactor	-	9 382.00
BF16000E...❖	250A	160A	75kW	AC/DC	3-pole contactor	-	10 222.68
BF19500E...❖	275A	195A	90kW	AC/DC	3-pole contactor	-	11 289.91
BF23000E...❖	350A	230A	110kW	AC/DC	3-pole contactor	-	14 409.96

"E" std voltage coils - 024=20...48V / 110=60...110V / 230=100...250V AC/DC

❖ "E" std voltage coils - 024=24...60V / 110=60...130V / 230=100...250V / 400=250...500V AC/DC

Larger sizes 350...1600A - see page A-2 AC/DC contactors

Four-pole contactors (Ui 690V) - DC control circuit

type	rated current		kW (AC1)		control	description	auxiliary contacts	price
	(lth)	(AC1)	230V	400V				

Permanent magnet types (Ui 690V) - DC control circuit

BF09T4D...	25A	25A	9.5	16	DC	4-pole contactor	4NO	2 181.62
BF18T4D...	32A	32A	12	21	DC	4-pole contactor	4NO	2 970.55

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	1 194.89
BFX43	115A	attachable 4th pole for 3-pole contactors				BF40...94E	2 085.02
BFX44	165A	attachable 4th pole for 3-pole contactors				BF95...150A/E	2 548.48

Larger sizes 250...800A - see page A-2 AC/DC contactors

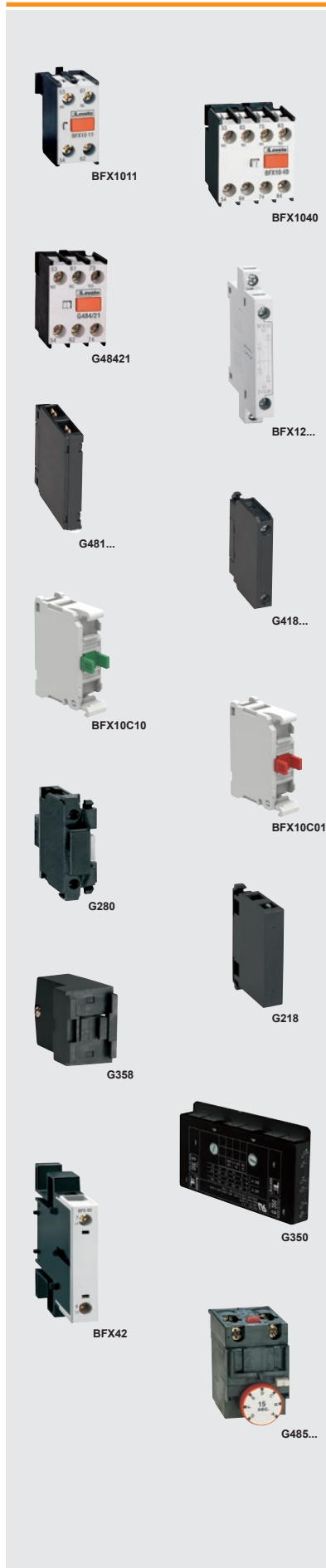
Special pole configuration contactors

main cont.

BF18T2D...	32A	32A	10	18	DC	4-pole contactor	2NO + 2NC	3 046.45
BF26T2D...	45A	45A	12	21	DC	4-pole contactor	2NO + 2NC	4 360.94
BF38T2D...	56A	56A	17	30	DC	4-pole contactor	2NO + 2NC	7 403.94
BF80T2E...	115A	115A	43	76	AC/DC	4-pole contactor	2NO + 2NC	14 731.97
BF18T0D...	32A	32A	10	18	DC	4-pole contactor	4NC	3 046.45
BF26T0D...	45A	45A	12	21	DC	4-pole contactor	4NC	4 360.94

Control relays - DC control circuit (extra-low consumption coil 2.4 watt)

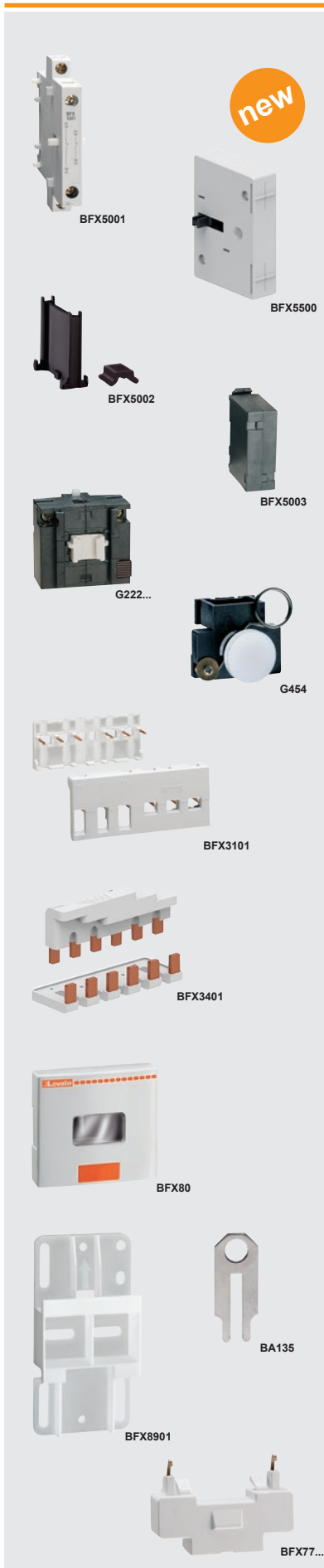
BF0040L...	10A	10A	-	-	DC	control relay	4NO	1 857.31
BF0031L...	10A	10A	-	-	DC	control relay	3NO + 1NC	1 857.31
BF0022L...	10A	10A	-	-	DC	control relay	2NO + 2NC	1 857.31
BF0004L...	10A	10A	-	-	DC	control relay	4NC	1 857.31



Accessories for contactors

- Snap-on installation: Quick and easy installation to fit and remove an auxiliary contact without a tool
- Rigid connection kits: Available in reversing, changeover or line-star-delta connecting kits
- Mechanical interlock: Side, top, horizontal and vertical options are available, see page **A-5**
- Attachable 4th pole: Side mount attachable 4th pole can be snapped on a 3 pole contactor
- Pneumatic delay blocks: On-delay, delay-on de-energisation
- Spare voltage coils: Spare coils compatible with all contactors, see page **A-6**

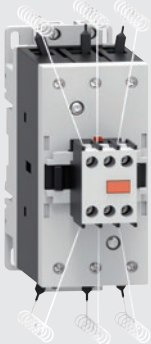
type	mounting	description	terminal	contacts	price
Clip-on auxiliary contact blocks					
For contactors BF09 - BF150 10A lth / Ui 690V					
BFX1020	top (centre)	auxiliary contact block	screw	2NO	250.71
BFX1011	top (centre)	auxiliary contact block	screw	1NO + 1NC	250.71
BFX1002	top (centre)	auxiliary contact block	screw	2NC	250.71
BFX1040	top (centre)	auxiliary contact block	screw	4NO	501.42
BFX1031	top (centre)	auxiliary contact block	screw	3NO + 1NC	501.42
BFX1022	top (centre)	auxiliary contact block	screw	2NO + 2NC	501.42
BFX1004	top (centre)	auxiliary contact block	screw	4NC	501.42
BFX1220	side	auxiliary contact block	screw	2NO	393.32
BFX1211	side	auxiliary contact block	screw	1NO + 1NC	393.32
BFX1202	side	auxiliary contact block	screw	2NC	393.32
G48430	top (centre)	auxiliary contact block	screw	3NO	461.17
G48421	top (centre)	auxiliary contact block	screw	2NO + 1NC	461.17
G48412	top (centre)	auxiliary contact block	screw	1NO + 2NC	461.17
G48403	top (centre)	auxiliary contact block	screw	3NC	461.17
G41810	top (side)	auxiliary contact block	screw	1NO	186.31
G41810A	top (side)	auxiliary (early break)	screw	1NO	218.51
G41801	top (side)	auxiliary contact block	screw	1NC	218.51
G41801D	top (side)	auxiliary (late make)	screw	1NC	218.51
G48120	top (side)	auxiliary contact block	push-on	2NO	273.71
G48111	top (side)	auxiliary contact block	push-on	1NO + 1NC	273.71
G48102	top (side)	auxiliary contact block	push-on	2NC	273.71
G218	top (side)	auxiliary contact block	push-on	1NO (or) 1NC	190.91
For contactors BF160 - BF230 - 10A lth / Ui 690V					
BFX10C10	top	auxiliary contact block	screw	1NO	236.91
BFX10C01	top	auxiliary contact block	screw	1NC	236.91
BFX12C02	side	auxiliary contact block	screw	2NC	509.47
BFX12C11	side	auxiliary contact block	screw	1NO + 1NC	509.47
BFX12C20	side	auxiliary contact block	screw	2NO	509.47
For contactors B250 - BF630 - 16A lth / Ui 690V					
G354	side	auxiliary contact (up to 4 per contactor)		1NO + 1NC	740.63
G350	side	auxiliary contact (up to 4 per contactor)		2NO (or) 1NC	908.53
G370	adaptor	adaptor fast on to screw terminal for		G350/354	77.06
Accessories for above auxiliary contact blocks					
G280	side	side mount adaptor for auxiliary		G218	77.06
G419	side	side mount adaptor for auxiliary		G418	87.41
G483	side	side mount adaptor for auxiliary		G481	96.61
G358	adaptor	to fit BFX10/G484/G485 auxiliaries to		B250...B630	499.12
Pneumatic delay blocks BF09 - BF150					
G4856		on-delay timer contact block	6sec	1NO + 1NC	1 797.51
G48560		on-delay timer contact block	60sec	1NO + 1NC	1 941.27
G485120		on-delay timer contact block	120sec	1NO + 1NC	2 432.33
G4866		delay-on de-energisation contact block	6sec	1NO + 1NC	1 765.31
G48660		delay-on de-energisation contact block	60sec	1NO + 1NC	1 905.61
G486120		delay-on de-energisation contact block	120sec	1NO + 1NC	2 386.33
G487		delay-on de-energisation contact block	70msec	1NO + 1NC	1 122.44
Attachable 4th pole for contactors BF26 - BF150A/E (fully rated)					
• Add following attachable 4th pole to above 3 pole contactors to make up a 4 pole contactor					
BFX42	56A	attachable 4th pole for contactors		BF26...38A	1 194.89
BFXD42	56A	attachable 4th pole for contactors		BF26...38D/L	1 194.89
BFX43	115A	attachable 4th pole for contactors		BF40...94E	2 085.02
BFX44	165A	attachable 4th pole for contactors		BF95...150A/E	2 548.48



type	description		for contactor	price
Mechanical interlocks between two contactors				
BFX5000	side	side mount mechanical interlock	BF09...38	414.02
BFX5001	side	mechanical interlock with 2NC contacts	BF09...38	618.72
BFX5002	top (side)	economy (low profile) mech. interlock	BF09...38	166.76
BFX5003	top (side)	top mount mechanical interlock	BF09...38	517.52
BFX5300	side	side mount mechanical interlock	BF40...94A/E	426.67
BFX5301	side	mechanical interlock with 2NC contacts	BF40...94A/E	638.27
BFX5303	top (side)	top mount mechanical interlock	BF40...94A/E	517.52
BFX5400	side	side mount mechanical interlock	BF95...150A/E	426.67
BFX5401	side	mechanical interlock with 2NC contacts	BF95...150A/E	638.27
BFX5403	top (side)	top mount mechanical interlock	BF95...150A/E	517.52
BFX5500	horizontal	side mount mechanical interlock for	BF160...230	577.32
BFX5503	vertical	side mount mechanical interlock for	BF160...230	1 406.50
G355	horizontal	mechanical interlock	B250...630	469.22
G3563	vertical	mechanical interlock (<i>interaxis 305 - 345 mm</i>)	B250...630	1 508.85
G3564	vertical	mechanical interlock (<i>interaxis 345 - 385 mm</i>)	B250...630	1 524.95
G3565	vertical	mechanical interlock (<i>interaxis 390 - 425 mm</i>)	B250...630	1 554.85
G3566	vertical	mechanical interlock (<i>interaxis 470 - 500 mm</i>)	B250...630	1 621.56
Mechanical latch blocks (electric or hand reset)				
G222...		mechanical latch mechanism (<i>electrical/hand reset</i>)	BF09...38	1 524.95
G272...		mechanical latch mechanism (<i>electrical/hand reset</i>)	BF40...94	1 524.95
BFX641...		mechanical latch mechanism (<i>electrical/hand reset</i>)	BF95...150	1 524.95
G454		mechanical latch mechanism (<i>hand set/reset</i>)	BF09...38	699.23
G455		mechanical latch mechanism (<i>hand set/reset</i>)	BF40...94	699.23
BFX642		mechanical latch mechanism (<i>hand set/reset</i>)	BF95...150	699.23
<i>Large frame contactors (B250 - B630) are available with built-in latch facility</i>				
<i>Standard coil voltages (add to part number): 024/048/110/220/380 VAC 012/024/048/110/220 VDC</i>				
Accessories for contactors BF09 - 230 / B250 - 630 (with interlock)				
BFX3101	reversing contactor rigid connecting kit	BFX5002/5003	BF09...25	345.02
BFX3102	reversing contactor rigid connecting kit	BFX5000/5001	BF09...25	345.02
BFX3201	reversing contactor rigid connecting kit	BFX50	BF26...38	378.37
BFX3301	reversing contactor rigid connecting kit	BFX5303	BF40...94	446.22
BFX3401	reversing contactor rigid connecting kit	BFX5403	BF95...150	731.43
BFX3501	reversing contactor rigid connecting kit	BFX5500	BF160...230	4 011.33
BFX3361	changeover rigid connecting kit 3pole	BFX5300/5301	BF40...94	256.46
BFX3461	changeover rigid connecting kit 3pole	BFX5400/5401	BF95...150	402.52
BFX3561	changeover rigid connecting kit 3pole	BFX5500	BF160...230	2 236.83
BFX3371	changeover rigid connecting kit 4pole	BFX5300/5301	BF40...94	365.72
BFX3471	changeover rigid connecting kit 4pole	BFX5400/5401	BF95...150	538.22
BFX3131	line-star-delta rigid connecting kit	for contactors	BF09...25	394.47
BFX3231	line-star-delta rigid connecting kit	for contactors	BF26...38	520.97
BFX3232	line-star-delta rigid connecting kit	(<i>line-delta</i>) BF26-38	BF09...25	520.97
BFX3331	line-star-delta rigid connecting kit	for contactors	BF40...94	579.62
BFX3432	line-star-delta rigid connecting kit	(<i>line-delta</i>) BF95-150	BF40...94	836.08
BFX3431	line-star-delta rigid connecting kit	for contactors	BF95...150	836.08
BFX3531	line-star-delta rigid connecting kit	for contactors	BF160...230	3 712.32
BFX80	sealing cover	for contactors	BF09...38	62.11
BFX8901	universal screw mounting base	for contactors	BF09...38	63.26
BFX8902	screw fixing brackets (2 pcs)	for contactors	BF09...38	47.16
BA135	2-pole paralleling links	for contactors	BF09...25	56.36
BA235	2-pole paralleling links	for contactors	BF26...38	70.16
BA435	3-pole paralleling links	for contactors	BF95...150	386.42
BFX3593	3-pole star connecting bar	for contactors	BF160...230	622.17
BA1721	3-pole star connection bar	for contactors	B250...400	552.02
BA1846	3-pole star connection bar	for contactors	B500...630	693.48
G371	adaptor for fast-on to screw terminal (<i>coil</i>)		B250...630	257.61
G231	1-pole enlarged terminal (1 x 6 mm ²)	for contactors	BF09...25	140.31
G232	1-pole enlarged terminal (1 x 16 mm ²)	for contactors	BF26...38	164.46
BFX30	blank label for self labelling (<i>orange</i>)	for contactors	BF09...150	26.11
Surge suppressors for contactors BF09 - 150 (quick connect)				
BFX77048	≤ 48 VAC/DC	varistor	for contactors	BF09-150A 270.26
BFX77125	48-125 VAC/DC	varistor	for contactors	BF09-150A 270.26
BFX77240	125-240 VAC/DC	varistor	for contactors	BF09-150A 270.26
BFX79415	240-415 VAC	resistor-capacitor	for contactors	BF09-150A 331.22
Note: For spare coils compatible with all contactors, see bottom of page A-6.				



BFK1810A...



BFK11500A...



DCTLA...



BFX91...



G...

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	price
Capacitor switching contactors						
BFK1210A...	12.5	14	18A	1NO	capacitor switching contactor	1 335.20
BFK1810A...	15	17	23A	1NO	capacitor switching contactor	1 508.85
BFK2600A...	20	22	30A	-	capacitor switching contactor	2 456.48
BFK3200A...	25	27.5	36A	-	capacitor switching contactor	2 860.14
BFK3800A...	30	33	43A	-	capacitor switching contactor	3 018.85
BFK5000A...	40	41	58A	-	capacitor switching contactor	4 494.35
BFK8000A...	50	56	75A	-	capacitor switching contactor	4 981.96
BFK11500A...	75	85	115A	-	capacitor switching contactor	9 026.64
BFK15000A...	100	115	144A	-	capacitor switching contactor	10 694.19

Standard coil voltages (add to part number):

AC - 230/400 others available on request

Kit to assemble BFK contactors from standard contactors

		for contactor	
G460	kit to assemble standard contactors for capacitor switching	BF09...38	726.83
BFX10K3	kit to assemble standard contactors for capacitor switching	BF50...94	1 301.85
BFX10K4	kit to assemble standard contactors for capacitor switching	BF95...150	1 627.31

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...480 VAC (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** (see page **A-14**)
- Optional RS-485 card (order code **EXC1042** - see page **A-14**) for connection to **DCRG8F** controller

type	kvar 400V	kvar 480V	rated current	description	dimensions (mm)			price
					(H)	(W)	(D)	
DCTLA4800180	15	18	22A	thyristor switching module	218	75	172	16 158.01
DCTLA4800360	30	36	43A	thyristor switching module	218	75	172	16 848.03
DCTLA4800600	50	60	72A	thyristor switching module	226	95	182	23 368.74
DCTLA4801200	100	120	144A	thyristor switching module	301	212	216	35 110.60

Spare coils for all contactors

				for contactor	
BFX91A/...	AC		spare coil only	for contactors	423.22
BFX92A/...	AC		spare coil only	for contactors	514.07
BFX93A/...	AC		spare coil only	for contactors	914.28
BFX93E/...	AC/DC		spare coil only	for contactors	2 407.03
BFX94A/...	AC		spare coil only	for contactors	1 492.75
BFX94E/...	AC/DC		spare coil only	for contactors	3 660.57
BFX95E/...	AC/DC		spare coil only	for contactors	4 524.25
BA1671/...	AC/DC		spare coil only	for contactors	8 741.43
BA1796/...	AC/DC		spare coil only	for contactors	14 662.96

Standard coil voltages (add to part number): 024/048/110/230/400VAC - 012/024/048/060/110/220VDC

Spare contact sets (fixed and moving) per three-pole set

BFX99040T	3-pole	main contact replacement set (<i>fixed and moving</i>)	BF40	2 035.57
BFX99050T	3-pole	main contact replacement set (<i>fixed and moving</i>)	BF50	2 408.18
BFX99065T	3-pole	main contact replacement set (<i>fixed and moving</i>)	BF65	3 077.50
BFX99080T	3-pole	main contact replacement set (<i>fixed and moving</i>)	BF80	3 779.02
BFX99095T	3-pole	main contact replacement set (<i>fixed and moving</i>)	BF95	4 809.46
BFX99115T	3-pole	main contact replacement set (<i>fixed and moving</i>)	BF115	5 499.48
BFX99150T	3-pole	main contact replacement set (<i>fixed and moving</i>)	BF150	6 080.25
BFX99195T	3-pole	main contact replacement set (<i>fixed and moving</i>)	BF195	8 528.67
BFX99230T	3-pole	main contact replacement set (<i>fixed and moving</i>)	BF230	10 892.00
G383	3-pole	main contact replacement set (<i>fixed and moving</i>)	B250	10 136.42
G385	3-pole	main contact replacement set (<i>fixed and moving</i>)	B310	14 030.44
G384	3-pole	main contact replacement set (<i>fixed and moving</i>)	B400	16 606.52
G525	3-pole	main contact replacement set (<i>fixed and moving</i>)	B500	29 935.44
G526	3-pole	main contact replacement set (<i>fixed and moving</i>)	B630	65 057.54

	type	motor rating AC3 (400V)	description	adjustment range	for contactor	price
<p>RF38...</p>	RF38 series (phase failure sensitive)					
	Motor protection relay, phase failure/single-phase sensitive. Three-pole (three-phase), manual or automatic resetting.					
	• Selectable manual or automatic reset					
	• Direct mounting on BF09 - BF38 contactors, 6.3...10A					
	RF380016	—	thermal overload	0.10 - 0.16A	BF09...38	788.93
	RF380025	0.06 kW	thermal overload	0.16 - 0.25A	BF09...38	788.93
	RF380040	0.09 kW	thermal overload	0.25 - 0.40A	BF09...38	788.93
	RF380063	0.12/0.18 kW	thermal overload	0.40 - 0.63A	BF09...38	788.93
	RF380100	0.25 kW	thermal overload	0.63 - 1.00A	BF09...38	788.93
	RF380160	0.37/0.55 kW	thermal overload	1.00 - 1.60A	BF09...38	788.93
<p>RF82...</p>	RF380250	0.75 kW	thermal overload	1.60 - 2.50A	BF09...38	788.93
	RF380400	1.1/1.5 kW	thermal overload	2.50 - 4.00A	BF09...38	788.93
	RF380650	2.2 kW	thermal overload	4.00 - 6.50A	BF09...38	788.93
	RF381000	3.0/4.0 kW	thermal overload	6.30 - 10.0A	BF09...38	788.93
	RF381400	5.5 kW	thermal overload	9.00 - 14.0A	BF09...38	788.93
	RF381800	7.5 kW	thermal overload	13.0 - 18.0A	BF09...38	898.18
	RF382300	11 kW	thermal overload	17.0 - 23.0A	BF09...38	898.18
	RF382500	11 kW	thermal overload	20.0 - 25.0A	BF09...38	898.18
	RF383200	15 kW	thermal overload	24.0 - 32.0A	BF09...38	1 074.14
	RF383800	18.5 kW	thermal overload	32.0 - 38.0A	BF09...38	1 366.25
<p>RF110...</p>	RF82 series (phase failure sensitive)					
	• Manual resetting - direct mounting on BF40 - BF94 contactors, 35...50A					
	RF824200	18.5 kW	thermal overload	28 - 42A	BF40...94	2 666.94
	RF825000	22 kW	thermal overload	35 - 50A	BF40...94	3 023.45
	RF826500	25-30 kW	thermal overload	46 - 65A	BF40...94	3 023.45
	RF828200	37 kW	thermal overload	60 - 82A	BF40...94	3 467.36
<p>RF110...</p>	RF829500	45 kW	thermal overload	70 - 95A	BF40...94	3 768.67
	RF110 series (phase failure sensitive)					
	• Manual resetting - direct mounting on BF95 - BF150 contactors, 90...110A					
	RF110095	45 kW	thermal overload	70 - 95A	BF95...150	3 850.33
<p>RF200...</p>	RF110110	55 kW	thermal overload	90 - 110A	BF95...150	4 311.49
	RF200 series (phase failure sensitive) req. links RFX20035/G373 to attach to contactor					
	• Manual resetting - direct mounting on BF95 - BF150 contactors, 90...110A					
	RF200150	51/80 kW	thermal overload	90 - 150A	BF160-230 / B310-400	5 965.24
<p>RF420...</p>	RF200200	75/100 kW	thermal overload	120 - 200A	BF160-230 / B310-400	6 379.25
	RF420 series (phase failure sensitive) req. links RFX42035/G376 to attach to contactor					
	RF420250	92/132 kW	thermal overload	150 - 250A	BF160-230/B310-400	8 550.52
	RF420300	100/162 kW	thermal overload	180 - 300A	BF160-230/B310-400	8 788.58
<p>RFE45...</p>	RF420420	129/198 kW	thermal overload	250 - 420A	BF160-230/B310-400	9 025.49
	RFE series - Electronic overload relays (self powered by main circuit)					
	The RFE... electronic thermal overload relays for BF series contactors are characterised by a wide current adjustment range and high reliability and accuracy of tripping. They are self powered by the main circuit current and therefore do not require separate auxiliary supply voltage.					
	RFE electronic thermal overload relays are suitable for all types of motor starting thanks to the possibility to select several tripping classes. A single front push button is used to select the reset function, manual or automatic, and to activate or deactivate the STOP function.					
<p>RFE45...</p>	RFE450200	0.12-0.75 kW	electronic overload	0.4 - 2A	BF09...38	1 764.16
	RFE450800	0.75-3.0 kW	electronic overload	1.6 - 8A	BF09...38	1 764.16
	RFE453200	3-15 kW	electronic overload	6.4 - 32A	BF09...38	1 764.16
	RFE454500	4-22 kW	electronic overload	9 - 45A	BF09...38	2 949.85
<p>RFX3804</p> <p>RFX3802</p>	Accessories for overloads					
	RFX20035	set links for mounting	RF200 overload onto contactor		BF160-230	676.23
	G373	set links for mounting	RF200 overload onto contactor		B250-B400	757.88
	RFX42035	set links for mounting	RF400 overload onto contactor		BF160-230	702.68
	G376	set links for mounting	RF420 overload onto contactor		B250...B400	1 026.99
	RFX3804	separate mounting adaptor	(surface / DIN rail mount)		RF38/RFE	230.01
	G270	separate mounting adaptor	(surface / DIN rail mount)		RF82/110	794.68
	G228*	electrical reset mechanism for overloads			RF82/110	861.38
	RFX3801	lead sealing device for overloads			RF38/200/420	81.66
	G233	lead sealing device for overloads			RF82/110	65.56
	RFX3802	protection cover for RF38 on contactor assembly			BF09...25	62.11
	RFX3803	protection cover for RF38 on contactor assembly			BF26...38	62.11
	* Specify coil voltage					



M1P...



M2P...



M1N



M3N



M3PA

Enclosed direct-on-line starters

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

type	motor rating AC3 (400V)	overload range	description	housing	price
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)170 mm		
			M3P (H)280 x (W)233 x (D)187 mm		
M1P00912A4	0.25kW	0.63 - 1.0A	direct-on-line starter	PC / IP65	1 933.22
M1P00912A5	0.55kW	1.0 - 1.6A	direct-on-line starter	PC / IP65	1 933.22
M1P00912A6	0.75kW	1.6 - 2.5A	direct-on-line starter	PC / IP65	1 933.22
M1P00912A7	1.5kW	2.5 - 4.0A	direct-on-line starter	PC / IP65	1 933.22
M1P00912A8	2.2kW	4.0 - 6.5A	direct-on-line starter	PC / IP65	1 933.22
M1P00912A9	4.0kW	6.3 - 10A	direct-on-line starter	PC / IP65	1 933.22
M1P00912B0	5.5kW	9 - 14A	direct-on-line starter	PC / IP65	2 035.57
M1P01812B1	7.5kW	13 - 18A	direct-on-line starter	PC / IP65	2 349.53
M2P02512B2	11.0kW	17 - 23A	direct-on-line starter	PC / IP65	2 948.70
M2P03212B4	15.0kW	24 - 32A	direct-on-line starter	PC / IP65	3 896.33
M2P03812B5	18.5kW	32 - 38A	direct-on-line starter	PC / IP65	4 466.74
M3P05012B6	22.0kW	35 - 50A	direct-on-line starter	ABS / IP65	7 246.38
M3P06512B7	30.0kW	45 - 65A	direct-on-line starter	ABS / IP65	8 136.51
M3P08012B8	37.0kW	60 - 82A	direct-on-line starter	ABS / IP65	9 080.69

Supplied standard with 400V coils

Specify others voltages (add to part number): 024/048/110/230 - on request

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	545.12
I40*	with padlockable interlocking isolator (in M2P enclosure)	up to 18.5kW	686.57
I80*	with padlockable interlocking isolator (in M3P enclosure)	up to 37.0kW	1 299.54

* Add part number to end of starter part number

Accessories

M1PA	empty housing with start-stop/reset pushbuttons (IP65)	BF09...18	596.87
M2PA	empty housing with start-stop/reset pushbuttons (IP65)	BF25...38	871.73
M3PA	empty housing with start-stop/reset pushbuttons (IP65)	BF50...94	1 706.66
M1N	empty housing without external pushbuttons (IP65)	202 x 88 x 135 mm	496.82
M2N	empty housing without external pushbuttons (IP65)	234 x 110 x 149 mm	824.58
M3N	empty housing without external pushbuttons (IP65)	280 x 233 x 170 mm	806.18
M25N	housing no external pushbuttons (IP65) with chassis plate	210 x 175 x 149 mm	796.98
MX31	metal chassis/mounting plate (for M25N enclosures)		322.02
MX30	metal chassis/mounting plate (for M3N enclosures)		184.01
MX21P	fixing adaptor for pushbutton contact blocks (for M1/2/25 enclosures)		41.41
MX11P	stop/reset button extension rod (for M1 enclosures)		27.95
MX12P	stop/reset button extension rod (for M2/25 enclosures)		27.95

RM series - Reversing DOL starters (enclosed) IP65

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

RM25 starters	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	4 541.50
RM25P09A6	0.75kW	1.6 - 2.5A	enclosed reversing starter	PC / IP65	4 541.50
RM25P09A7	1.5kW	2.5 - 4.0A	enclosed reversing starter	PC / IP65	4 541.50
RM25P09A8	2.2kW	4.0 - 6.5A	enclosed reversing starter	PC / IP65	4 541.50
RM25P09A9	4.0kW	6.3 - 10A	enclosed reversing starter	PC / IP65	4 541.50
RM25P12B0	5.5kW	9 - 14A	enclosed reversing starter	PC / IP65	4 765.75
RM25P18B1	7.5kW	13 - 18A	enclosed reversing starter	PC / IP65	5 332.72
RM25P25B2	11.0kW	17 - 23A	enclosed reversing starter	PC / IP65	6 058.39
RM25P32B3	15.0kW	24 - 32A	enclosed reversing starter	PC / IP65	8 053.71
RM25P38B5	18.5kW	32 - 38A	enclosed reversing starter	PC / IP65	8 746.03
RM3 starters	mounted into M3N enclosure (H) 280 x (W) 233 x (D) 187 mm				
RM3P50B6	22.0kW	35 - 50A	enclosed reversing starter	ABS / IP65	12 098.38
RM3P65B7	30.0kW	45 - 65A	enclosed reversing starter	ABS / IP65	14 076.45
RM3P80B8	37.0kW	60 - 82A	enclosed reversing starter	ABS / IP65	15 709.50

With mounted on-load isolator (extra charges)

I16*	isolator	with padlockable door interlocking isolator	up to 7.5kW	545.12
I40*	isolator	with padlockable door interlocking isolator	up to 18.5kW	686.57
I80*	isolator	with padlockable door interlocking isolator	up to 37.0kW	1 299.54

* Add part number to end of starter part number



SM1P...



SM1R...



SM2R5000



SM3R...

SM series - Motor protection circuit breakers

SM series motor protection circuit breakers are completely renewed in every range of rated current, from 0.1 to 100A. The series includes three sizes: SM1, with a range-extended up to 40A (available versions: with buttons or with rotary knob for motor protection, with rotary knob for starters and a version for fuse monitoring), SM2 from 34 to 63 A and SM3 from 55 to 100A, both with rotary knobs.

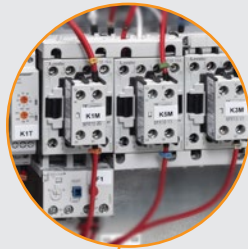
(Type 2 co-ordination with contactors – see Annex 2)

General features:

- Temperature compensation
- Thermal and magnetic protection
- Rated insulation voltage Ui 690V
- For safety lockout hasps refer to page N-12
- High fault level (type 2 coordination with contactors)
- Differential single-phase protection (phase failure sensitive)
- Snap-on auxiliary contacts, shunt trip and undervolt release
- 3 sizes, from 0.1 to 100A, with pushbutton and rotary versions
- Trip-test facility/indication of trip condition overload (or) short circuit (SM1R series)

type	motor rating		thermal trip	description	short circuit	price
	230V (kW)	400V (kW)	adj.range (A)		capacity Icu 400V	
SM1P series Icu 100 to 10kA (H) 90 x (W) 45 x (D) 75 mm (incl. buttons)						
• Pushbutton control - padlockable in OFF position						
SM1P0016	–	–	0.1 - 0.16A	manual motor starter	100kA	814.23
SM1P0025	–	–	0.16 - 0.25A	manual motor starter	100kA	814.23
SM1P0040	–	–	0.25 - 0.4A	manual motor starter	100kA	814.23
SM1P0063	–	0.18 kW	0.40 - 0.63A	manual motor starter	100kA	814.23
SM1P0100	0.12 kW	0.25 kW	0.63 - 1A	manual motor starter	100kA	814.23
SM1P0160	0.25 kW	0.37/0.55 kW	1 - 1.6A	manual motor starter	100kA	814.23
SM1P0250	0.37 kW	0.75 kW	1.6 - 2.5A	manual motor starter	100kA	814.23
SM1P0400	0.55/0.75 kW	1.1/1.5 kW	2.5 - 4A	manual motor starter	100kA	814.23
SM1P0650	1.1/1.5 kW	2.2 kW	4 - 6.5A	manual motor starter	100kA	814.23
SM1P1000	1.5/2.2 kW	4.0 kW	6.3 - 10A	manual motor starter	100kA	887.83
SM1P1400	3.0 kW	5.5 kW	9 - 14A	manual motor starter	25kA	887.83
SM1P1800	4.0 kW	7.5 kW	13 - 18A	manual motor starter	25kA	887.83
SM1P2500	5.5 kW	11.0 kW	20 - 25A	manual motor starter	15kA	1 256.99
SM1P3200	7.5 kW	15.0 kW	24 - 32A	manual motor starter	10kA	1 567.50
SM1P4000	11 kW	18.5 kW	30 - 40A	manual motor starter	10kA	2 883.15
SM1R series Icu 100 to 20kA (H) 90 x (W) 45 x (D) 91 mm (incl. 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	961.44
SM1R0025	–	–	0.16 - 0.25A	manual motor starter	100kA	961.44
SM1R0040	–	–	0.25 - 0.4A	manual motor starter	100kA	961.44
SM1R0063	–	0.18 kW	0.40 - 0.63A	manual motor starter	100kA	961.44
SM1R0100	0.12 kW	0.25 kW	0.63 - 1A	manual motor starter	100kA	1 058.04
SM1R0160	0.25 kW	0.37/0.55 kW	1 - 1.6A	manual motor starter	100kA	1 058.04
SM1R0250	0.37 kW	0.75 kW	1.6 - 2.5A	manual motor starter	100kA	1 058.04
SM1R0400	0.55/0.75 kW	1.1/1.5 kW	2.5 - 4A	manual motor starter	100kA	1 058.04
SM1R0650	1.1/1.5 kW	2.2 kW	4 - 6.5A	manual motor starter	100kA	1 058.04
SM1R1000	1.5/2.2 kW	4.0 kW	6.3 - 10A	manual motor starter	100kA	1 153.49
SM1R1400	3.0 kW	5.5 kW	9 - 14A	manual motor starter	100kA	1 153.49
SM1R1800	4.0 kW	7.5 kW	13 - 18A	manual motor starter	100kA	1 153.49
SM1R2500	5.5 kW	11.0 kW	20 - 25A	manual motor starter	50kA	1 508.85
SM1R3200	7.5 kW	15.0 kW	24 - 32A	manual motor starter	50kA	1 884.91
SM1R4000	11 kW	18.5 kW	30 - 40A	manual motor starter	20kA	3 437.46
SM2R series Icu 50kA (H) 140 x (W) 55 x (D) 145 mm (incl. knob)						
• Rotary selector control - padlockable in OFF position						
SM2R5000	15.0 kW	22.0 kW	34 - 50A	manual motor starter	50kA	4 995.76
SM2R6300	18.5 kW	30.0 kW	45 - 63A	manual motor starter	50kA	4 995.76
SM3R series Icu 50kA (H) 165 x (W) 70 x (D) 165 mm (incl. knob)						
• Rotary selector control - padlockable in OFF position						
• Thermal and magnetic trip indication - (by knob position)						
SM3R7500	22.0 kW	37.5 kW	55 - 75A	manual motor starter	50kA	5 765.14
SM3R9000	25.0 kW	45.0 kW	70 - 90A	manual motor starter	50kA	6 149.25
SM3R9900	30.0 kW	55.0 kW	80 - 100A	manual motor starter	50kA	6 533.36

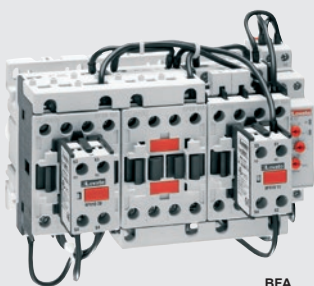
	type	config.	mount position	description	for starter	price
SM1X1211 SM1X1311 SM2X16230 SM1X1120 SM2X16400 SM2X18200R SM1X18200R SM1X18S SM1X3241P SM1Z1701P SM1X1740P SM1X1745P	Auxiliary contacts					
	SM1X1211	1NO + 1NC	left side	mounting auxiliary contact block	SM1P/R	200.11
	SM1X1220	2NO	left side	mounting auxiliary contact block	SM1P/R	200.11
	SM1X1311	1NO + 1NC	left side	trip indication auxiliary contact block	SM1P/R	497.97
	SM1X1111	1NO + 1NC	front	mounting auxiliary contact block	SM1P/R	163.31
	SM1X1120	2NO	front	mounting auxiliary contact block	SM1P/R	170.21
	SM2X1211	1NO + 1NC	left side	mounting auxiliary contact block	SM2/3R	254.16
	SM2X1220	2NO	left side	mounting auxiliary contact block	SM2/3R	254.16
	SM2X1311	1NO + 1NC	left side	trip indication auxiliary contact block	SM2/3R	497.97
	SM2X1111	1NO + 1NC	front	mounting auxiliary contact block	SM2/3R	254.16
SM2X1120	2NO	front	mounting auxiliary contact block	SM2/3R	254.16	
Shunt trip release						
• Allows for remote tripping of the motor protection circuit breakers						
SM1X16024	24 VAC	right side	side mounting shunt trip release unit	SM1P/R	833.78	
SM1X16110	110 VAC	right side	side mounting shunt trip release unit	SM1P/R	833.78	
SM1X16230	230 VAC	right side	side mounting shunt trip release unit	SM1P/R	692.33	
SM1X16400	400 VAC	right side	side mounting shunt trip release unit	SM1P/R	692.33	
SM2X16024	24 VAC	right side	side mounting shunt trip release unit	SM2/3R	707.28	
SM2X16110	110 VAC	right side	side mounting shunt trip release unit	SM2/3R	707.28	
SM2X16230	230 VAC	right side	side mounting shunt trip release unit	SM2/3R	707.28	
SM2X16400	400 VAC	right side	side mounting shunt trip release unit	SM2/3R	707.28	
Undervoltage release						
• Opens the MPCB when mains voltage fails and prevents unexpected starting when power is restored						
• Equipped with integrated normally open early make contacts						
SM1X14230	230 VAC	right side	mounting undervoltage release	SM1P/R	692.33	
SM1X14400	400 VAC	right side	mounting undervoltage release	SM1P/R	692.33	
SM2X14230	230 VAC	right side	mounting undervoltage release	SM2/3R	707.28	
SM2X14400	400 VAC	right side	mounting undervoltage release	SM2/3R	707.28	
Door interlocking handle				(for SM1/2/3R rotary type starters)		
SM1X18200R	red/yellow		door interlock handle (IP65) +200 mm shaft	SM1R	1 052.29	
SM2X18200R	red/yellow		door interlock handle (IP65) +200 mm shaft	SM2/3R	1 052.29	
SM1X18S	support		optional shaft support for	SM1R	182.86	
Mounting accessories						
BFX8901	universal		base for screw fixing motor protection	SM1P/R	63.26	
SM1X3040P	3Ph rigid		rigid connection between SM1P and contactor	BG mini	180.56	
SM1X3141P	3Ph rigid		rigid connection between SM1P and AC contactor	BF09-25A	240.36	
SM1X3241P	3Ph rigid		rigid connection between SM1P and AC contactor	BF26-38A	272.56	
SM1X3040R	3Ph rigid		rigid connection between SM1R and contactor	BG mini	180.56	
SM1X3141R	3Ph rigid		rigid connection between SM1R and AC contactor	BF09-25A	240.36	
SM1X3241R	3Ph rigid		rigid connection between SM1R and AC contactor	BF26-38A	272.56	
Bridge bars for SM1P/R motor protection circuit breakers						
SMX9032	insulated		3-phase bridge bar to connect	2 units (45 mm)	377.22	
SMX9033	insulated		3-phase bridge bar to connect	3 units (45 mm)	476.12	
SMX9034	insulated		3-phase bridge bar to connect	4 units (45 mm)	504.87	
SMX9035	insulated		3-phase bridge bar to connect	5 units (45 mm)	547.42	
With spacing to accommodate side mounted auxiliaries or releases						
SMX9042	insulated		3-phase bridge bar to connect	2 units (54 mm)	388.72	
SMX9043	insulated		3-phase bridge bar to connect	3 units (54 mm)	489.92	
SMX9044	insulated		3-phase bridge bar to connect	4 units (54 mm)	517.52	
SMX9045	insulated		3-phase bridge bar to connect	5 units (54 mm)	560.07	
SMX9030	25 mm ²		3-phase busbar supply block	(enlarged terminal)	424.37	
Enclosures for motor protection circuit breakers - IP65						
Robust plastic enclosures for rotary and button controlled motor protection circuit breakers up to 40A. Ideal for small machines and isolated motors.						
SM1Z1701P	surface		mount enclosure for starters	135 x 80 x 101	SM1P 437.02	
SM1Z1715R	surface		mount enclosure for starters	154 x 100 x 138	SM1R 644.03	
Flush mount enclosure - (IP65) panel cutout (H) 115.5 x (W) 70.5 mm						
SM1Z1705P	flush		mount enclosure for starters	133 x 87 x 86	SM1P 395.62	
SM1X1745P			button membrane protection cover for enclosure		SM1P 143.76	
SM1X1740P			emergency stop (twist release) pushbutton assembly for enc.		SM1P 585.37	



JDY18/P



JDY25/M2



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 - 024/110/230V to part number*)

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

Enclosed star-delta starters IP65

ABS enclosure M3N (*hinged door 180° opening*)

JDY09/P	7.5 kW	6.3 - 10A	enclosed star-delta starter	280	270	170	6 335.55
JDY12/P	11.0 kW	9 - 14A	enclosed star-delta starter	280	270	170	6 558.66
JDY18/P	15.0 kW	13 - 18A	enclosed star-delta starter	280	270	170	7 238.33
JDY25/P	18.5 kW	17 - 23A	enclosed star-delta starter	280	270	170	8 070.96
JDY26/P	22.0 kW	24 - 32A	enclosed star-delta starter	280	270	170	8 614.92
JDY38/P	30.0 kW	32 - 38A	enclosed star-delta starter	280	270	170	11 103.60

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	18.5 kW	686.57
I063*	isolator	with padlockable door interlocking isolator	up to	30.0 kW	1 132.79

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

JDY09/M2	7.5 kW	6.3 - 10A	enclosed star-delta starter	450	300	220	7 641.99
JDY12/M2	11.0 kW	9 - 14A	enclosed star-delta starter	450	300	220	7 865.10
JDY18/M2	15.0 kW	13 - 18A	enclosed star-delta starter	450	300	220	8 544.77
JDY25/M2	18.5 kW	17 - 23A	enclosed star-delta starter	450	300	220	9 495.85
JDY26/M2	22.0 kW	24 - 32A	enclosed star-delta starter	450	300	220	10 039.82
JDY38/M2	30.0 kW	32 - 38A	enclosed star-delta starter	450	300	220	12 535.40
JDY50/M4	37/45 kW	35 - 50A	enclosed star-delta starter	650	450	270	17 204.54
JDY65/M4	55 kW	46 - 65A	enclosed star-delta starter	650	450	270	19 297.61
JDY80/M4	75 kW	60 - 82A	enclosed star-delta starter	650	450	270	22 069.20
JDY095/M4	90 kW	90 - 110A	enclosed star-delta starter	650	450	270	28 072.38
JDY115/M4	110 kW	75 - 125A	enclosed star-delta starter	650	450	270	31 108.48
JDY150/M4	132 kW	90 - 150A	enclosed star-delta starter	650	450	270	39 952.26
JDY180/M5	160 kW	120 - 200A	enclosed star-delta starter	750	550	270	56 271.27
JDY250/M7E	250 kW	150 - 250A	enclosed star-delta starter	950	700	330	93 946.45
JDY400/M7E	375 kW	250 - 420A	enclosed star-delta starter	950	700	330	119 258.70

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	18.5 kW	686.57
I063*	isolator	with padlockable door interlocking isolator	up to	30 kW	1 132.79
I125*	isolator	with padlockable door interlocking isolator	up to	55 kW	1 328.29
I160*	isolator	with padlockable door interlocking isolator	up to	75 kW	2 035.56
I200*	isolator	with padlockable door interlocking isolator	up to	110 kW	2 955.59
I250*	isolator	with padlockable door interlocking isolator	up to	132 kW	3 990.62
I315*	isolator	with padlockable door interlocking isolator	up to	160 kW	4 473.64
I630*	isolator	with padlockable door interlocking isolator	up to	375 kW	9 982.31

Extra charges	pilot light "trip" or "run" indication incorporated into pushbuttons				9 982.31
	with ammeter mounted on enclosure door (48 x 48 direct max. 40A)				9 982.31
	with voltmeter mounted on enclosure door (48 x 48)				9 982.31

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	7.5 kW	6.3 - 10A	open frame complete star-delta starter	4 809.46
BFA012.14	11.0 kW	9 - 14A	open frame complete star-delta starter	5 032.56
BFA018.18	15.0 kW	13 - 18A	open frame complete star-delta starter	4 827.86
BFA025.23	18.5 kW	17 - 23A	open frame complete star-delta starter	6 663.31
BFA026.32	22.0 kW	24 - 32A	open frame complete star-delta starter	7 206.13
BFA038.38	30.0 kW	32 - 38A	open frame complete star-delta starter	9 691.36
BFA050.50	37.5/45 kW	35 - 50A	open frame complete star-delta starter	12 949.41
BFA065.65	55 kW	46 - 65A	open frame complete star-delta starter	14 927.47
BFA080.82	75 kW	60 - 82A	open frame complete star-delta starter	17 342.55
BFA095.110	90 kW	90 - 110A	open frame complete star-delta starter	23 345.74
BFA115.125	110 kW	75 - 125A	open frame complete star-delta starter	26 818.84
BFA150.150	132 kW	90 - 150A	open frame complete star-delta starter	31 039.48
BFA180.200	160 kW	120 - 200A	open frame complete star-delta starter	46 564.96
BFA250.250	250 kW	150 - 250A	open frame complete star-delta starter	73 832.32
BFA400.420	375 kW	250 - 420A	open frame complete star-delta starter	107 735.40

ADXN Series - Soft starters

SIMPLE, COMPACT AND FUNCTIONAL

NEW



Simple and quick to configure, the **ADXN series** is equipped with an extended power range, from 208 to 600VAC. Controls two phases and features an integrated bypass relay. Their compact footprint (45mm wide) makes them ideal for installation in restricted spaces.

The range covers nominal currents from 6 to 45A, and includes 3 variants:

- Basic version with potentiometer regulation
- Programmable version featuring NFC technology
- Advanced version with both potentiometers and NFC plus integrated current thermal protection.

Wide range of applications, including pump, compressor, fan, mixer and belt conveyor control.

COMPACT DIMENSIONS

The soft starter ADXN series is characterised by two phase control and are housed in a compact enclosure, only **45mm wide** for the entire range up to 45A (divided in 2 mechanical sizes that differ in height and depth).

MOUNTING

ADXN can be fixed with screws on the rear panel or on **35mm DIN rail**. For the screw fixing there are 4 holes on the base of the soft starter enclosure where the DIN rail fixing there is a rubber pad insert which prevents the soft starter from sliding on the DIN rail.

EASY SETUP

Equipped with **NFC technology** to simplify the parameter setting procedure. Using a compatible smartphone or tablet, the user (even with the soft starter turned off) can download, save and edit the parameter menu using the **LOVATO NFC App**. Access to the parameters can be locked with a **password** to protect settings against tampering by unauthorised personnel.

RIGID CONNECTION FOR THE DIRECT MOUNTING TO A MOTOR PROTECTION CIRCUIT BREAKER (MPCB)

The rigid connection **SM1X3150R** allows the direct mounting of the soft starter **ADXN** to a motor protection circuit breaker type SM1R (rotary knob type) up to size 38A, allowing the realisation of compact starters and reducing the installation time.

BUILT-IN BYPASS

ADXN series integrates a bypass relay which automatically deactivates the thyristors circuit once the acceleration ramp is completed and the motor reaches its run condition, allowing the reduction of the heat and the power dissipation, which consequently results in **energy saving**. In addition, the presence of the bypass increases the reliability of the soft starter by protecting the thyristors for most of the operating time.



CX01



CX02



CX04

The **LOVATO NFC App** is freely downloadable from the Google Play Store and App Store.



NFC





new

ADXNB...



NFC

ADXNF...
(NFC version available on request)



NFC

ADXNP...



EXP8007



CX04

ADXN series - Compact soft starters (two-phase control)

The soft starters ADXN series are the ideal solution for those who need a simple, compact and fast to configure product for the gradual control of the starting and stopping of the motors. Ultra compact design of only 45 mm width. Their versatility makes them suitable for several applications such as the control of pumps, fans, conveyor belts, compressors and they are available with rated currents from 6 to 45A.

- Economical soft starters for motors up to 22kW (400 VAC)
- Rated operational voltage: 208...600 VAC
- Integrated bypass relay disabling the thyristors once the starting ramp has concluded
- Ready to use. Factory set configuration for quick and simple commissioning

Integrated protection functions include: Soft starter thermal protection with integrated temperature sensor, line frequency/voltage out of tolerance, line voltage not present, phase loss, incorrect phase sequence.

type	rated current Ie	rated power (400V)	description	dimensions (mm)			price
				(H)	(W)	(D)	

ADXNB series - Basic version

Ideal solution for a soft starter with basic functions extremely simple to configure, for gradually starting and stopping motors. Their versatility makes them adaptable to a variety of applications, including pump, fan, conveyor and compressor control.

Just 3 parameters, configurable with the front panel potentiometers:

- Initial voltage step: 30-80%U
- Acceleration ramp: 1-20s
- Deceleration ramp: 0-20s

Auxiliary supply Us 100...240 VAC

ADXNB006	6A	2.2 kW	basic industrial soft starter	139	45	113	4 517.35
ADXNB012	12A	5.5 kW	basic industrial soft starter	139	45	113	5 627.13
ADXNB018	18A	7.5 kW	basic industrial soft starter	139	45	113	6 536.81
ADXNB025	25A	11.0 kW	basic industrial soft starter	159	45	128	7 001.42
ADXNB030	30A	15.0 kW	basic industrial soft starter	159	45	128	8 913.93
ADXNB038	38A	18.5 kW	basic industrial soft starter	159	45	128	11 476.21
ADXNB045	45A	22.0 kW	basic industrial soft starter	159	45	128	13 409.42

Auxiliary supply Us 24 VAC/DC

ADXNB00624	6A	2.2 kW	basic industrial soft starter	139	45	113	4 855.46
ADXNB01224	12A	5.5 kW	basic industrial soft starter	139	45	113	5 908.89
ADXNB01824	18A	7.5 kW	basic industrial soft starter	139	45	113	6 863.42
ADXNB02524	25A	11.0 kW	basic industrial soft starter	159	45	128	7 351.04
ADXNB03024	30A	15.0 kW	basic industrial soft starter	159	45	128	9 359.00
ADXNB03824	38A	18.5 kW	basic industrial soft starter	159	45	128	12 052.38
ADXNB04524	45A	22.0 kW	basic industrial soft starter	159	45	128	14 087.95

ADXNP series - Advanced version

Parameter configuration via front potentiometers or NFC connectivity via smart devices with the LOVATO NFC App (available for Android and iOS).

Provides current thermal overload protection of the motor via integrated current transformers, permitting management of starting ramps with current limiting, automatically adapted to follow load variations with configurable separate thermal classes for starting and stopping. Offering protection against locked rotor, current asymmetry, low load, starter timeout.

- Optional RS-485 (Modbus-RTU) module for integration into a control and supervision network
- Factory set thresholds, reconfigurable via NFC

Auxiliary supply Us 100...240 VAC

ADXNP012	12A	5.5 kW	advanced industrial soft starter	139	45	113	7 314.23
ADXNP018	18A	7.5 kW	advanced industrial soft starter	139	45	113	8 497.62
ADXNP025	25A	11.0 kW	advanced industrial soft starter	159	45	128	9 101.39
ADXNP030	30A	15.0 kW	advanced industrial soft starter	159	45	128	11 592.37
ADXNP038	38A	18.5 kW	advanced industrial soft starter	159	45	128	14 927.47
ADXNP045	45A	22.0 kW	advanced industrial soft starter	159	45	128	17 434.55

Auxiliary supply Us 24 VAC/DC

ADXNP01224	12A	5.5 kW	advanced industrial soft starter	139	45	113	7 681.10
ADXNP01824	18A	7.5 kW	advanced industrial soft starter	139	45	113	8 921.98
ADXNP02524	25A	11.0 kW	advanced industrial soft starter	159	45	128	9 555.65
ADXNP03024	30A	15.0 kW	advanced industrial soft starter	159	45	128	12 167.39
ADXNP03824	38A	18.5 kW	advanced industrial soft starter	159	45	128	15 675.00
ADXNP04524	45A	22.0 kW	advanced industrial soft starter	159	45	128	18 308.58

Accessories for ADXN soft starters

SM1X3150R	Rigid connection for direct mounting ADXN 6-38A to SM1R manual motor starter	215.06
EXP8007	Fan for ADXN 6...45A (built-in for ADXN sizes 38 and 45A)	1 845.81
CX01	USB connect PC to ADXNP for programming, download and diagnostics	3 583.52
CX02	Wi-Fi connect PC/smartphone - ADXNP for programming and monitoring.	8 954.19
CX04	RS-485 communication module for ADXNP, Modbus-RTU, 24 VAC/DC aux supply	3 968.78



ADXL0030600



ADXL0075600



ADX0640



CX02

ADXL series - Soft starters (with two phase control, integrated bypass facility)

Two phase control and built-in bypass relay permits control of the start and stopping of three phase motors. Equipped with a backlit display with icons and NFC technology, for simple, intuitive and fast configuration with a smartphone or tablet.

Ideal for simple "plug and play" applications, provides control and protection during the motor start-up and in operation. Includes protection features for the starter and motor, and possibility to enable specific alarms such as the number of starts performed or the operation hours of the motor to signal maintenance needs.

General features:

- Auxiliary supply: 100...240 VAC
- Rated operational voltage: 208...600 VAC
- Programming, data download and diagnostics via incorporated optical port
- Voltage ramp startup, torque control, kick start, limited maximum starting current
- Equipped with backlit LCD display icons and NFC connectivity, for simple configuration
- Selectable default application: Centrifugal pump, fire pump, conveyor belt, fan, mixer and general
- Optional RS-485 communication
- Indicating:
 - Voltage - current L1/L2/L3 - torque - active power - PF - motor thermal status
 - Soft starter temperature - active energy - motor hour counter - startup counter

type	rated current le	rated power 400V	description	dimensions (mm)			price
				(H)	(W)	(D)	
ADXL series (with two phase control, integrated bypass facility)							
ADXL0018600	18A	7.5 kW	industrial soft starter	218	75	172	15 180.48
ADXL0030600	30A	15.0 kW	industrial soft starter	218	75	172	17 883.06
ADXL0045600	45A	22.0 kW	industrial soft starter	218	75	172	20 079.63
ADXL0060600	60A	30.0 kW	industrial soft starter	218	75	172	22 621.21
ADXL0075600	75A	37.0 kW	industrial soft starter	226	95	182	25 024.79
ADXL0085600	85A	45.0 kW	industrial soft starter	226	95	182	27 359.36
ADXL0115600	115A	55.0 kW	industrial soft starter	226	95	182	34 351.58
ADXL0135600	135A	75.0 kW	industrial soft starter	301	212	216	39 722.25
ADXL0162600	162A	90.0 kW	industrial soft starter	301	212	216	44 529.40
ADXL0195600	195A	110.0 kW	industrial soft starter	486	212	216	52 729.16
ADXL0250600	250A	132.0 kW	industrial soft starter	486	212	216	57 961.82
ADXL0320600	320A	160.0 kW	industrial soft starter	486	212	216	62 768.97

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

ADX three-phase control soft starter used to start and gradually stop three-phase motors. Startup can be performed through voltage ramp with torque control and limitation of the maximum startup current. Integrated bypass contactor (only for ADX...B types) drastically limits heat dissipation and reducing required enclosure size.

- Proprietary ASCII and Modbus-RTU communication protocols
- Autocall function in case of alarm conditions, sending of SMS or e-mail
- Equipped with RS-232 and RS-485 interfaces (optional keypad for 51ADX)
- During starting: Torque control acceleration, current limit control and booster
- During stopping: Torque control deceleration, dynamic braking and free-wheel
- Remote control: PC supervision with RS-232/RS-485 converter, analog or GSM modem

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

ADX0085B	85A	45.0 kW	industrial soft starter	534	157	250	45 058.42
ADX0110B	110A	55.0 kW	industrial soft starter	584	157	250	47 243.48
ADX0142B	142A	75.0 kW	industrial soft starter	600	273	285	63 171.48
ADX0190B	190A	90.0 kW	industrial soft starter	680	273	310	88 161.76
ADX0245B	245A	132.0 kW	industrial soft starter	680	273	310	91 059.86

ADX series - Incorporate control contacts for energising an external by-pass contactor

ADX0310	310A	160 kW	industrial soft starter	600	640	380	110 334.46
ADX0365	365A	200 kW	industrial soft starter	600	640	380	113 198.05
ADX0470	470A	250 kW	industrial soft starter	650	790	430	149 849.70
ADX0568	568A	315 kW	industrial soft starter	650	790	430	160 315.02
ADX0640	640A	355 kW	industrial soft starter	650	790	430	186 765.85
ADX0820	820A	400 kW	industrial soft starter	950	910	442	320 515.04
ADX1200	1200A	630 kW	industrial soft starter	950	910	442	390 092.22

Accessories for ADX soft starters (above)

CX01	Optical USB connector/cable for programming, data download for ADXL	3 583.52
CX02	Wi-Fi connection device for programming, data download for ADXL	8 954.19
EXCRDU1	Remote keypad, LCD touchscreen display for the control of up to 32 soft starters ADXL..., RS-485 cable included 3m, supply 100-240 VAC	7 724.80
EXC1042	RS-485 communication plug-in board for ADXL...	1 890.66
51C2	PC-ADX connecting cable for ADX... starters	1 147.74
EXP8003	35 mm DIN rail mounting accessory for ADXL... from 18 to 115A	540.52
EXP8004	Optional fan for ADXL from 18 to 115A (sizes 75...115A require 2 fans)	1 845.81



new



WDH-31-533-5



WDH-31-53X



WDH-31-53XC



WDH-31-531-100 with built-in CTs

Advanced electronic motor protection and control

WDH advanced motor management systems provide detailed multifunctional monitoring, control, protection and communication as an integral solution for management of 3-phase AC motors. Offering high-performance, reliable, accurate motor protection and control in harsh industrial applications.

Potential motor fault situations anticipated via predictive analysis, avoiding dreaded unexpected disruptions and downtime in important processes, increasing productivity and reducing downtime by providing detailed fault reporting with self-diagnosis, installation monitoring and statistics of all necessary information.

Predefined, selectable motor control protection modes incorporated into the controller:

- A** - Direct start *starting of non reversing motors*
- B** - Bi-directional start *starting of reversing motors*
- C** - Two speed start *2-speed starting of motors (Dahlander, pole changer)*
- E** - Star-delta start *star-delta starting of motors*
- H** - Autotransformer start *autotransformer starting*
- K** - Overload *monitoring of motors not managed by the controller*
- R** - Soft-starter start *Soft start with starting control*
- P** - VFD starter *Starting control with frequency converter*
- V** - Electric valve start *Starting of electric valves*

Measurement / metering functions (rms values):

Three-phase current - Current imbalance - Temperature - Residual current - Three-phase voltage - Frequency - Active/Reactive power - Power factor - Active/Reactive energy - Resistance input

Protection functions with configurable trip and starting delays

- Overload inverse time protection
- Start acceleration timeout protection
- Starting overcurrent protection
- Operating overcurrent protection
- Short circuit protection
- Current imbalance / open phase protection
- Under load (current or power)
- Overvoltage protection
- Undervoltage protection
- Residual current (grounding) 0.3le~8.0le
- Residual current (leakage) 50mA~5000mA
- External fault protection (process interlock)
- tE time protection (increased safety motor)
- Under power protection
- Phase sequence protection
- Temperature protection
- Analog input protection (process interlock)
- Voltage imbalance

Rated voltage: 400V / 690 VAC
 Rated current: 0.1...800A - Internal Current Transformers up to 100 A (by external CTs up to 800A)

Control voltage: 80...270 VAC/DC
 Communication: RS-485, Modbus-RTU communication (others on request)
 Trip classes: 10A-10-20-30 (IEC 947-4-1)
 Logic inputs: 5 (customisable)
 Relay logic outputs: 4 - (1NC / 3NO) customisable
 Analog output: 1 - DC 4-20mA (programmable)

Optional HMI display unit for reading, displaying, diagnostics, and modifying monitored parameters.

type	current range	motor rating (400V)	inbuilt CT hole Ø	description	dimensions (mm) (H) (W) (D)			price
------	---------------	---------------------	-------------------	-------------	-----------------------------	--	--	-------

Advanced motor management controller

- DIN rail mounting, compact design
- Integrated current transformers and residual current transformer
- PTC / NTC thermistor input for motor temperature monitoring and protection

WDH-31-533-5	0.2-5 A	0.13 - 2 kW	10.5 mm	motor protection	90	70	130	7 682.25
WDH-31-533-25	2.5-25 A	2 - 11 kW	10.5 mm	motor protection	90	70	130	7 682.25
WDH-31-533-100	10-100 A	11 - 55 kW	18.0 mm	motor protection	90	90	121	7 682.25

Above 100A - use 5A unit with 3 x 5A secondary Current Transformers

Display units for (above) controllers (IP65)

WDH-31-50xx external HMI LCD display and control keypad dedicated to WDH motor controllers for configuration, operation, monitoring and displaying of controller parameters, faults and alarms.

- Panel mounting: 98 x 61 mm display - (cut-out 91.5 x 55 mm) 61 98 27
- IP Protection: IP65 (front panel)
- USB port for up/download of parameters and logic (only WDH-31-50XC)
- Supplied with cable for connection to WDH controller (1 meter)

WDH-31-53X	HMI	external HMI LCD display and control keypad	2 461.08
WDH-31-53XC	HMI	external HMI TFT (full colour) display and control keypad	5 624.83

Controller with integrated LCD display (as above WDH-31-533 but with LCD display)

WDH-31-531-5	0.2 - 5A	0.13 - 2 kW	10.5 mm	motor protection	90	70	130	10 844.84
WDH-31-531-25	2.5 - 25A	2 - 11 kW	10.5 mm	motor protection	90	70	130	10 844.84
WDH-31-531-100	10 - 100A	11 - 55 kW	18.0 mm	motor protection	90	90	121	10 844.84

Above 100A - use 5A unit with 3 x 5A secondary current transformers (CTs)



Basic electronic motor protection and control

WDH electronic motor protection with basic control, provides multifunctional protection, control and monitoring as an integral solution for management of 3-phase motors, providing accurate high-performance, reliable, motor protection in harsh industrial applications.

Motor control modes incorporated into the controller:

- A** - Direct start *starting of non reversing motors*
- B** - Bi-directional start *starting of reversing motors*
- C** - Two speed start *2-speed starting of motors (Dahlander, pole changer)*
- E** - Star-delta start *star-delta starting of motors*
- K** - Overload protection *monitoring of motors not managed by the controller*

Motor protection modes:

- Start timeout
- Stall
- Jam
- Overload
- Under load
- Current Imbalance
- Over voltage
- Under voltage
- Residual current
- Analog input
- External fault
- tE time

Measurement / metering functions (rms values):

- Three-phase current
- Current imbalance rate
- Heat capacity
- Residual current (optional)
- Three-phase Voltage
- Three-phase Power
- Three-phase Energy

Protection functions

- Overload inverse time protection
- Start acceleration timeout protection
- Starting overcurrent protection
- Operating overcurrent protection
- Short circuit protection
- Current imbalance / open phase protection
- Under load / under current protection
- Over / Under voltage protection
- Residual current (grounding) 0.3le~8.0le
- External fault protection (process interlock)



WDH-31-213-100

type	current range	motor rating kW (400V)	description	price
------	---------------	------------------------	-------------	-------

Series 210 - Motor protection controller IP65

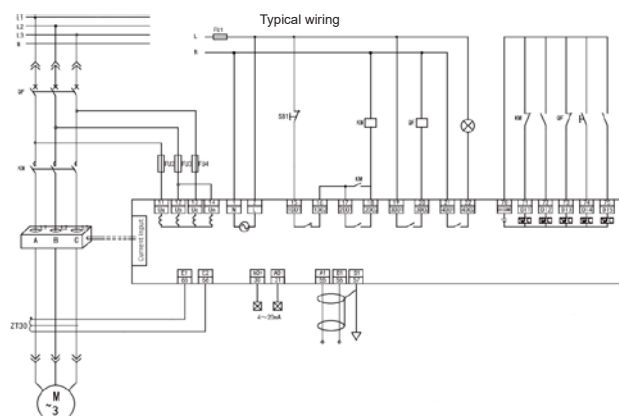
Mounting: Panel mount controller with LCD display 98 x 61 mm (cutout 91.5 x 55 mm) separate DIN rail/chassis mount 3Ph current transformer module 400 VAC
 Rated voltage: 400 VAC
 Rated Current: 0...800A (3ph CT module up to 100 A (up to 800A by external CTs)
 Control voltage: 80...270 VAC/DC
 Communication: RS-485 Modbus-RTU communication (others on request)
 Digital inputs: 5 (customisable)
 Relay logic outputs: 4 - (3 control + 1 signal relay)
 Analog outputs: 1 - DC 4 - 20mA (programmable)

WDH-31-213-6.3	2...6.3A	1.1...2.2	motor management controller	9 128.99
WDH-31-213-25	6.3...25A	4...11	motor management controller	9 128.99
WDH-31-213-100	25...100A	15...55	motor management controller	9 128.99

Above 100A use 6.3A unit with 3 x 5A secondary current transformers (CTs)

Typical application:

Replaces typical electrical components such as thermal relays, time relays, transmitters, etc., simplifying traditional motor control protection. Benefits include a wider protection range, precise, accurate and reliable troubleshooting which is more intuitive when a fault occurs.





type	AC-21A ≤ 690V	AC-23A ≤ 415V	poles	description	dimensions (mm) (H) (W) (D)			price
GA series - Three 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>) 								
GA016A	16A	7.5 kW	3 pole	Isolator/load-break switch	78	36	75	294.41
GA025A	25A	11.0 kW	3 pole	Isolator/load-break switch	78	36	75	335.82
GA032A	32A	15.0 kW	3 pole	Isolator/load-break switch	78	36	75	387.57
GA040A	40A	18.5 kW	3 pole	Isolator/load-break switch	78	36	75	430.12
GA063SA	63A	22.0 kW	3 pole	Isolator/load-break switch	78	36	75	604.92
GA063A	63A	30 kW	3 pole	Isolator/load-break switch	100	70	75	856.78
GA080A	80A	45 kW	3 pole	Isolator/load-break switch	100	70	75	1 016.64
GA125A	125A	55 kW	3 pole	Isolator/load-break switch	100	70	75	1 221.34
GA160A	160A	55 kW	3 pole	Isolator/load-break switch	100	70	75	1 426.05
GL series - Three pole load-break switches 160A - 630A								
<ul style="list-style-type: none"> DIN rail mounting (160A - 315A) or chassis mountable Door interlocking handle and shaft (<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>) 								
GL0160C1	160A	90 kW	3 pole	Isolator/load-break switch	155	162	91	2 188.52
GL0200C1	200A	110 kW	3 pole	Isolator/load-break switch	155	162	91	2 352.98
GL0250C1	250A	140 kW	3 pole	Isolator/load-break switch	155	162	91	3 182.15
GL0315C1	315A	160 kW	3 pole	Isolator/load-break switch	155	162	91	3 647.92
GL0400C1	400A	200 kW	3 pole	Isolator/load-break switch	188	204	146	4 642.70
GL0500C1	500A	250 kW	3 pole	Isolator/load-break switch	188	204	146	5 261.42
GL0630C1	630A	355 kW	3 pole	Isolator/load-break switch	260	231	146	5 570.78
Attachable 4th pole (for above 3 pole switches)								
GAX42040A	40A	-	1 pole	attachable 4th pole for switches	GA016A-40			142.61
GAX42063SA	63A	-	1 pole	attachable 4th pole for switches	GA063SA			230.01
GAX42125A	125A	-	1 pole	attachable 4th pole for switches	GA063A-125A			335.82
GAX42160A	160A	-	1 pole	attachable 4th pole for switches	GA160A			412.87
GAX41040A	40A	-	1 pole	early make 4th pole for switches	GA016A-40A			156.41
GAX41125A	125A	-	1 pole	early make 4th pole for switches	GA063A-125A			371.47
GLX420315	315A	-	1 pole	attachable 4th pole for switches	GL0160-315C1			1 136.24
GLX420400	400A	-	1 pole	attachable 4th pole for switches	GL0315-400C1			2 149.42
GLX420630	630A	-	1 pole	attachable 4th pole for switches	GL0500-630C1			3 033.80
Handles (external front operation) IP65								
<ul style="list-style-type: none"> External door interlocking handles padlockable (3 padlocks) in "OFF" position for switch 								
GAX61	red/yellow			door interlocking handle 65 mm ² (<i>screw fixing</i>)	GA016A-160A			155.26
GAX63	red/yellow			door interlocking handle 65 mm ² (<i>ring fix Ø 22 mm</i>)	GA016A-160A			238.06
GAX64	red/yellow			as above - defeatable 65 mm ² (<i>ring fix Ø 22 mm</i>)	GA016A-160A			353.07
GAX68	red/yellow			door interlocking handle 48 mm ² (<i>screw fixing</i>)	GA016A-063SA			152.96
GAX66N*	red/yellow			door interlocking pistol grip handle - (<i>defeatable</i>)	GA063A-160A			687.73
GAX66NB*	black			door interlocking pistol grip handle - (<i>defeatable</i>)	GA063A-160A			687.73
* Requires GAX60B adaptor (below) and 7 mm ² extension shaft								
GAX60B				adaptor to accommodate 7 mm ² shaft required for handles	GAX66N/NB			75.91
GLX61	red/yellow			door interlocking pistol grip handle (<i>125 mm</i>)	GL0160-315A			445.07
GLX61B	black			door interlocking pistol grip handle (<i>125 mm</i>)	GL0160-315A			445.07
GLX62	red/yellow			door interlocking pistol grip handle (<i>175 mm</i>)	GL0400-630A			495.67
GLX62B	black			door interlocking pistol grip handle (<i>175 mm</i>)	GL0400-630A			495.67
GLX00	-			shaft alignment ring for pistol grip handles	GAX66, GLX61/62			219.66
GLX61DB	black			direct switch mount internal handle	GL0160-315A			554.32
GLX61D	red/yellow			direct switch mount internal handle	GL0160-315A			554.32
GLX62DB	black			direct switch mount internal handle	GL0320-630A			637.12
Extension shafts (for above handles)								
GAX7200	200 mm	5 mm ²		extension shaft for switches	GA016A-63SA			71.31
GAX7300	300 mm	5 mm ²		extension shaft for switches	GA016A-63SA			100.06
GAX7200AN	200 mm	7 mm ²		extension shaft for switches	GA063A-160A			216.21
GAX7300AN	300 mm	7 mm ²		extension shaft for switches	GA063A-160A			246.11
GLX7200S10	200 mm	10 mm ²		extension shaft for switches	GL0160-630A			193.21
GLX7300S10	300 mm	10 mm ²		extension shaft for switches	GL0160-630A			212.76
GLX7400S10	400 mm	10 mm ²		extension shaft for switches	GL0160-630A			303.61
GLX7500S10	500 mm	10 mm ²		extension shaft for switches	GL0160-630A			552.02



type	contact / poles		description	for switch	price	
Auxiliary contact blocks (Ith 10A)						
Auxiliary contact blocks are used for the operation of auxiliary circuits and control circuits for standard industrial environments.						
<ul style="list-style-type: none"> • N.O. + N.C. contacts • Clipping onto the right- and/or left-hand side of the switches 						
GAX1011A	1NO + 1NC	auxiliary	contact for DIN rail mounting switches	GA016-160A	272.56	
GAX1110EA	1NO	auxiliary	for rail mount switches (<i>early-break</i>)	GA016A-63SA	305.91	
GAX1210EA	1NO	auxiliary	for rail mount switches (<i>early-break</i>)	GA063A-160A	305.91	
GLX1010EA	1NO	auxiliary	contact for GL switches (<i>early break</i>)	GL0160-630A	155.26	
GLX1001	1NC	auxiliary	contact block for GL switches	GL0160-630A	254.16	
Terminal shrouds						
GAX81	1 pole	terminal	protection shroud (<i>set of 2 pcs</i>)	GA016A-63SA	71.31	
GAX82	1 pole	terminal	protection shroud (<i>set of 2 pcs</i>)	GA063A-160A	116.16	
GAX83	3 pole	terminal	protection shroud (<i>set of 2 pcs</i>)	GA016A-63SA	119.61	
GAX84	3 pole	terminal	protection shroud (<i>set of 2 pcs</i>)	GA063A-160A	195.51	
GLX800	1 pole	terminal	protection shroud (<i>set of 3 pcs</i>)	GL0160-315C1	612.97	
GLX802	1 pole	terminal	protection shroud (<i>set of 3 pcs</i>)	GL0200-630AC1	870.58	
Phase barriers (required for voltage > 500V) - GL0630 supplied with mounted phase barriers						
GLX900	3 pole	barrier	phase barrier (<i>set of 6 pcs</i>)	GL0160-315C1	874.03	
GLX902	3 pole	barrier	phase barrier (<i>set of 6 pcs</i>)	GL0320-500C1	1 365.10	
Captive nuts - for GL switches 160 - 630A						
GLX550	1 terminal		captive nuts for switch terminals (<i>set of 8 pcs</i>)	GL0160-315C1	1 036.19	
GLX551	1 terminal		captive nuts for switch terminals (<i>set of 8 pcs</i>)	GL0400-630C1	248.41	
Changeover and parallel attachments for switches 16A - 160A						
Changeover attachment						
• Used to mechanically interlock two switches side-by-side to make up a changeover switch						
GAX5000	ch/over		changeover mechanism/interlock for 2 switches	GA016A-63SA	573.87	
GAX5001	ch/over		changeover mechanism/interlock for 2 switches	GA063A-160A	764.78	
GAX67B	black		door interlocking handle (I-O-II) for above changeover mechanisms		279.46	
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 (<i>6/8 pole</i>)	GA016A-63SA	554.32	
GAX6001*	parallel		attachment for combining 2 switches (<i>6/8 pole</i>)	GA063A-125A	664.73	
GAX66NB*	black		door interlocking pistol grip handle - (<i>defeatable</i>)	GA063A-160A	687.73	
* Requires GAX60B adaptor (below) and 7 mm ² extension shaft						
GAX60B	adaptor		to accommodate 7 mm ² shaft required for handles	GAX66NB	75.91	
Three pole fuse holder for load-break switches 16 - 32A (for cylindrical 10 x 38 mm fuses)						
GAX391	10 x 38		3ph fuse holder (<i>attaches onto switches</i>)	GA016A - 040A	548.57	
Direct door mounting switches (rear access terminals) with shaft						
type	AC-21A ≤ 690V	AC-23A ≤ 415V	poles	description	dimensions (mm) (H) (W) (D)	price
GA025C	25A	11.0 kW	3 pole	direct mnt load-break switch	78 36 73	379.52
GA040C	40A	18.5 kW	3 pole	direct mnt load-break switch	78 36 73	471.52
GA080C	80A	45.0 kW	3 pole	direct mnt load-break switch	100 70 70	1 101.74
GA125C	125A	55.0 kW	3 pole	direct mnt load-break switch	100 70 70	1 307.60
Accessories for (above) direct door mounted switches						
Attachable 4th pole						
GAX42040C	40A	18.5 kW	1 pole	attachable 4th pole for switch	GA016-40C	179.41
GAX42125C	125A	55 kW	1 pole	attachable 4th pole for switch	GA080-125C	418.62
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	155.26
GAX68	red/yellow			door interlocking handle 48 mm ² (<i>screw fixing</i>)	GA025-40C	152.96
GAX63	red/yellow			door interlocking handle 65 mm ² (<i>ring fix Ø 22 mm</i>)	GA025-40C	238.06
Auxiliary contact blocks (Ith 10A) (for above door mount switches)						
GAX1011C	1NO + 1NC	auxiliary		for direct door mount switches	GA016-125C	287.51



GAZ025



GAZM016EM



GAZM160EM



GAZS016EM

Enclosed Isolators

GA 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.

General features:

- Manual operated
- IP rating: IP65
- Attachable 4th pole available
- Padlockable handles (3 padlocks) in OFF position
- Red/Yellow handle, interlocked with front cover in ON position
- Available in plastic (ABS), metal (sheet metal) and stainless steel

type	AC-21A ≤ 690V	AC-23A ≤ 415V	poles	description	dimensions (mm)			price
					(H)	(W)	(D)	

Plastic ABS enclosed isolators

IP65

GAZ016	16A	7.5 kW	3 pole	enclosed load-break switch	160	100	120	655.53
GAZ025	25A	11.0 kW	3 pole	enclosed load-break switch	160	100	120	724.53
GAZ032	32A	15.0 kW	3 pole	enclosed load-break switch	160	100	120	818.83
GAZ040EM	40A	18.5 kW	3 pole	enclosed load-break switch	160	100	120	945.33
GAZ063EM	63A	22.0 kW	3 pole	enclosed load-break switch	160	100	120	1 129.34
GAZ080EM	80A	45.0 kW	3 pole	enclosed load-break switch	210	175	122	2 024.07
GAZ125EM	125A	55.0 kW	3 pole	enclosed load-break switch	210	175	122	2 239.13
GAZ160EM	160A	55.0 kW	3 pole	enclosed load-break switch	210	175	122	2 453.03

For 4 pole - add attachable 4th pole (see bottom of page) to above switches

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

GAZ1	enclosure	empty enclosure - supplied with handle and shaft	160	100	97			470.37
GAZ2	enclosure	empty enclosure - supplied with handle and shaft	210	175	99			910.83
GAZ3	enclosure	empty enclosure - supplied with handle and shaft	280	220	170			1 606.61

Metal enclosed isolators

IP65

GAZM series 16 - 160A

GAZM016EM	16A	7.5 kW	3 pole	enclosed load-break switch	200	150	120	2 129.87
GAZM025EM	25A	11.0 kW	3 pole	enclosed load-break switch	200	150	120	2 173.57
GAZM032EM	32A	15.0 kW	3 pole	enclosed load-break switch	200	150	120	2 227.62
GAZM040EM	40A	18.5 kW	3 pole	enclosed load-break switch	200	150	120	2 272.48
GAZM063EM	63A	22.0 kW	3 pole	enclosed load-break switch	200	150	120	2 456.48
GAZM080EM	80A	45.0 kW	3 pole	enclosed load-break switch	200	150	120	2 887.75
GAZM125EM	125A	55.0 kW	3 pole	enclosed load-break switch	300	200	120	3 072.90
GAZM160EM	160A	55.0 kW	3 pole	enclosed load-break switch	300	200	120	3 287.96

GLZ series 200 - 315A

GLZM0200EM	200A	110 kW	3 pole	enclosed load-break switch	400	300	220	5 484.53
GLZM0250EM	250A	132 kW	3 pole	enclosed load-break switch	400	300	220	6 356.25
GLZM0315EM	315A	140 kW	3 pole	enclosed load-break switch	400	300	220	6 843.87

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

Stainless steel (AISI 304) enclosed isolators

IP65

GAZS016EM	16A	7.5 kW	3 pole	enclosed load-break switch	200	150	120	3 715.77
GAZS025EM	25A	11.0 kW	3 pole	enclosed load-break switch	200	150	120	3 759.47
GAZS032EM	32A	15.0 kW	3 pole	enclosed load-break switch	200	150	120	3 813.52
GAZS040EM	40A	18.5 kW	3 pole	enclosed load-break switch	200	150	120	3 858.38
GAZS063EM	63A	22.0 kW	3 pole	enclosed load-break switch	200	150	120	4 042.38

For 4 pole - add attachable 4th pole (see bottom of page) to above switches

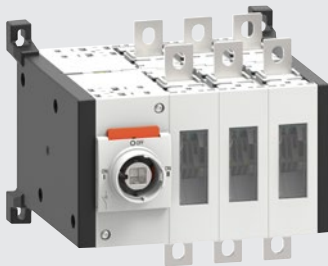
Attachable 4th pole for above switches

GAX42040A	40A	18.5 kW	attachable 4th pole for above switches		GA016-40A			142.61
GAX42063SA	63A	22.0 kW	attachable 4th pole for above switches		GA016-63A			230.01
GAX42125A	125A	55.0 kW	attachable 4th pole for above switches		GA080-160A			335.82
GAX42160A	160A	55.0 kW	attachable 4th pole for above switches		GA080-160A			412.87
GAX41040A	40A	18.5 kW	attachable early-make 4th pole for above		GA016-63A			156.41
GAX41125A	125A	55.0 kW	attachable early-make 4th pole		GA080-160A			371.47
GLX420315	315A	132 kW	attachable 4th pole for above switches		GL0160-315A			1 136.24
GLX420400	400A	-	1 pole attachable 4th pole for switches		GL0320-400C1			2 149.42
GLX420630	630A	-	1 pole attachable 4th pole for switches		GL0500-630C1			3 033.80



GA025ET6

new



GLC0200C1



GLX00



GLX61DB



GAZ025 ET6

type	AC-21A ≤ 690V	AC-23A ≤ 415V	poles	description	dimensions (mm) (H) (W) (D)			price
GA series - Three pole changeover switches				25A - 160A				
<ul style="list-style-type: none"> • Direct operating handle and door coupling version • Plastic, metal and AISI 304 stainless-steel enclosure • UL60947-4-1 and UL98 certified three-pole; add-on fourth pole available • 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 available for all switches 								
GA025ET6	25A	11.0 kW	3 pole	changeover load-break switch	78	72	89	2 470.28
GA040ET6	40A	18.5 kW	3 pole	changeover load-break switch	78	72	89	2 716.39
GA063SAET6	63A	30 kW	3 pole	changeover load-break switch	78	72	89	2 908.45
GA080ET6	80A	45 kW	3 pole	changeover load-break switch	100	140	89	4 317.24
GA125ET6	125A	55 kW	3 pole	changeover load-break switch	100	140	89	6 444.81
GA160ET6	160A	55 kW	3 pole	changeover load-break switch	100	140	89	6 713.92
GLC series - Three pole changeover switches				200A - 630A				
<ul style="list-style-type: none"> • Certification: IEC/EN, 60947-6-1 • Operating handle and shaft (<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 4 per switch</i>) 								
GLC0200C1	200A	110 kW	3 pole	isolator/load-break switch	141	186	213	12 236.39
GLC0250C1	250A	140 kW	3 pole	isolator/load-break switch	141	186	213	14 858.47
GLC0315C1	315A	160 kW	3 pole	isolator/load-break switch	141	186	213	17 181.54
GLC0400C1	400A	200 kW	3 pole	isolator/load-break switch	188	237	256	22 310.70
GLC0500C1	500A	250 kW	3 pole	isolator/load-break switch	188	237	256	26 324.33
GLC0630C1	630A	355 kW	3 pole	isolator/load-break switch	258	263	256	31 741.00
Handles for changeover switches (external front operation)				IP65				
<ul style="list-style-type: none"> • External door interlocking handles padlockable (<i>3 padlocks</i>) in "OFF" position 					for switch			
GAX67B	black	door interlocking handle 65 mm ² (<i>screw fixing</i>)			GA025-63SA		279.46	
GLX61CB	black	door interlocking pistol grip handle (<i>125 mm</i>)			GLC0200-315A		874.03	
GLX62CB	black	door interlocking pistol grip handle (<i>175 mm</i>)			GLC0400-630A		1 160.39	
GLX00	-	shaft alignment ring for pistol grip handles			GAX67, GLX61/62		219.66	
Direct switch mounted handles - for changeover switches								
GLX61DB	black	direct switch mount internal handle			GLC0200-315A		554.32	
GLX62DB	black	direct switch mount internal handle			GLC0400-630A		637.12	
Switch accessories								
Phase barriers (required for voltage > 500V) - GLC0630C1 supplied with mounted phase barriers								
GLX900	3 pole	barrier	phase barrier (<i>set of 6 pcs</i>)		GLC0200-315C1		874.03	
GLX902	3 pole	barrier	phase barrier (<i>set of 6 pcs</i>)		GLC0400-500C1		1 365.10	
Captive nuts - for switch terminals GLC...200...630A								
GLX550	1 terminal	captive nuts for switch terminals (<i>set of 8 pcs</i>)			GLC0200-315C1		1 036.19	
GLX551	1 terminal	captive nuts for switch terminals (<i>set of 8 pcs</i>)			GLC0400-630C1		248.41	
Enclosed changeover switches (I-O-II)				IP65		25 - 125A		
<ul style="list-style-type: none"> • Enclosure material: Polycarbonate • Possibility of fitting: 2 contact blocks both on the right and left side for GAZ...ET6 types 1 contact block both on the right and left side for GAZ...ET8 types 								
GAZ025 ET6	25A	11.0 kW	3 pole	enclosed load-break switch	210	175	184	2 711.79
GAZ040 ET6	40A	18.5 kW	3 pole	enclosed load-break switch	210	175	184	2 909.60
GAZ080 ET6	80A	45.0 kW	3 pole	enclosed load-break switch	280	220	208	4 342.54
GAZ125 ET6	125A	55.0 kW	3 pole	enclosed load-break switch	280	220	208	4 772.65

For 4 pole - add attachable 4th pole to above switches

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	13A	2A7	4A2	
Frame size		A	A	B	C	C	A	A	B	C	C	D	D	A	A	B	C	C	D	A	B	
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	5.5	0.75	1.5	
Output rating																						
Rated output capacity	NORMAL DUTY heavy 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	9.9	2.3	3.5
Rated output current		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	15.7	3	4.6
Output frequency	HEAVY DUTY super heavy duty	Hz	0.0 - 599Hz											0.0 - 599Hz								
Carrier frequency		kHz	2 - 15kHz											2 - 15 kHz (default 4)								
Rated output capacity	HEAVY DUTY super heavy duty	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	9.9	2.1	3.2
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	13	2.7	4.2
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	14.3	3.7	5.8	
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	17.3	4.2	6.4	
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									
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, heavy 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, super 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									
Dimensions (H) x (W) x (D)	H	mm	128	128	142	157	128	128	142	157	207			128	128	142	157	128	128	142		
	W	mm	68	68	72	87	68	68	72	87	109			68	68	72	87	68	68	72		
	D	mm	78	107	127	136	113	127	127	136	138			96	143	143	179	129	143	143		
Weight	kg	0.4	0.5	0.8	1	0.55	0.7	0.8	1	2			0.65	0.95	0.95	1.24	0.76	0.81	1			
Optional accessories		DIN rail mount adaptor											DeviceNet, Ethernet/IP, Profibus DP, Modbus TCP, CANopen, Ethercat communication cards, external 24 VDC power supply card, DIN rail mount adaptor, cable for remote mounting of digital keypad									



MS300 Series										C2000+ Series																										
three phase																																				
5A5	9A0	13A	17A	25A	32A	38A	45A	040	055	075	110	150	185	220	300	370	450	550	750	900	1100	1320	1600	1850	2000	2200	2500	2800	3150	3550	4000	4500	5000	5600		
C	C	D	D	E	E	F	F	A	A	B	B	B	C	C	C	D	D	D	D	E	E	F	F	G	G	G	G	H	H	H	H	H	H	H	H	
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	200	220	250	280	315	355	400	450	500	5600		
5	8	9.9	13	19.1	24.4	29	34.4	8.4	10	14	19	25	30	36	48	58	73	84	114	136	167	197	235	280	315	348	383	417	466	517	544	544	690	741		
6.5	10.5	15.7	20.5	28	36	41.5	49	10.5	12	18	24	32	38	45	60	73	91	110	150	180	220	260	310	370	395	460	491	550	616	683	683	683	866	930		
0.10 - 599.0 Hz										Normal duty: 0.1 - 600 Hz; Heavy duty: 0.00 - 300 Hz																										
1 - 15 kHz										2 - 6kHz (2kHz)																										
4.2	6.9	9.9	13	19.1	24.4	29	34.3	7.6	9.6	14	18	24	29	34	45	55	69	84	114	136	167	197	235	280	247	348	315	417	466	517	544	544	690	741		
5.5	9	13	17	25	32	38	45	10.5	12	18	24	32	38	45	60	73	91	110	150	150	220	260	310	370	310	437	395	523	585	649	683	683	866	930		
2 - 15kHz (default 4)										2 - 15kHz (8kHz)			2 - 10kHz (6kHz)						2 - 9kHz (4kHz)																	
6.1	9.9	9.9	13	19.1	24.4	29	34.3	14.5	16	19	25	33	38	45	60	70	96	108	149	159	197	228	285	361	300	380	390	469	527	594	590	625	866	930		
7.2	11.6	13	17	25	32	38	45	15.5	17	20	26	35	40	47	63	74	101	114	157	167	207	240	300	380	397	400	447	494	555	625	770	866	930	1094		
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																										
built-in										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										150% of rated output current: 1 minute for every 5 minutes or 180% of rated output current: 3 seconds for every 30 seconds (heavy duty default)																										
150% of rated current for 1 minute										150% of rated output current: 1 minute for every 5 minutes or 200% of rated output current: 3 seconds for every 30 seconds (super heavy duty)																										
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																										
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										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																										
										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																										
no										built-in									optional																	
157	207	250	300	250	320	400	550	590	800	1000																										1435
87	109	130	175	130	190	250	330	370	420	500																										700
152	154	185	192	170	190	210	275	300	300	397																										398
1.24	2.07	3.97	6.25	2.6	5.4	9.8	27	38.5	65	87																										228
DeviceNet, Ethernet/IP, Profibus DP, Modbus TCP, CANopen, Ethercat communication cards, external 24 VDC power supply card, DIN rail mount adaptor, cable for remote mounting of digital keypad										Digital keypad and panel mount adaptor, I/O extension cards, relay extension cards, PG encoder cards, EtherNet/IP - Modbus TCP -PROFIBUS-DP - DeviceNet - CANopen, Ethercat, Profinet communication cards																										

A₂



VFD1A6ME21ANN



VFD4A8ME21ANN



VFD4A8MS21ANS



VFD32AMS43ANS

ME300/MS300 series - Vector control compact drive

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

Common features include:

- Built-in PID feedback control and leakage detection function
- Easy to navigate keypad with LED display and potentiometer
- 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
- Multiple digital outputs MS300 (1x relay, 2x transistor) ME300 (1x relay, 1x transistor)
- Dual rating chart for ME/MS300 drives - normal and heavy duty applications (see Annex-4)
- Overload capabilities: 150% of rated output current for 60 sec, 200% for 3 seconds
- 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
- Default drive rating: Heavy duty

type	motor rating	rated current	description	frame size	dimensions (mm)			price
					(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 4 digit LED display, frequency adjustment knob and direction - run/stop function keys

Single-phase input 200-240V 50/60Hz (three phase output voltage 230VAC)

VFD1A6ME21ANN	200W	1.6A	1-Ph AC motor drive	A1	128	68	78	3 716.92
VFD2A8ME21ANN	400W	2.8A	1-Ph AC motor drive	A3	128	68	107	3 797.42
VFD4A8ME21ANN	750W	4.8A	1-Ph AC motor drive	B2	142	72	127	3 958.43
VFD7A5ME21ANN	1.5kW	7.5A	1-Ph AC motor drive	C1	157	87	136	5 232.67
VFD11AME21ANN	2.2kW	11A	1-Ph AC motor drive	C1	157	87	136	6 046.89

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

VFD1A5ME43ANN	400W	1.5A	3-Ph AC motor drive	A4	128	68	113	5 301.67
VFD2A7ME43ANN	750W	2.7A	3-Ph AC motor drive	A6	128	68	127	5 555.83
VFD4A2ME43ANN	1.5kW	4.2A	3-Ph AC motor drive	B1	142	72	127	6 034.24
VFD5A5ME43ANN	2.2kW	5.5A	3-Ph AC motor drive	C1	157	87	136	7 177.38
VFD9A0ME43ANN	3.7kW	9.0A	3-Ph AC motor drive	C1	157	87	136	8 197.46
VFD13AME43ANN	5.5kW	13A	3-Ph AC motor drive	D1	207	109	138	9 943.22
VFD17AME43ANN	7.5kW	17A	3-Ph AC motor drive	D1	207	109	138	11 902.88

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

Essential functions built-in as standard includes: PLC capacity for simple programming needs, communication slots for various communication cards, support for both IM and PM motor controls, STO function ensuring worry-free operation while protecting facilities from damage.

- 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-24)
- Integrated Safe Torque Off (STO) SIL2/PLD compliance, offers high safety machine stop
- USB port for simplicity of data uploads and downloads (supports offline program via USB)
- 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 230VAC)

VFD1A6MS21ANS	200W	1.6A	1-Ph AC motor drive	A1	128	68	96	5 685.78
VFD2A8MS21ANS	400W	2.8A	1-Ph AC motor drive	A3	128	68	125	5 767.44
VFD4A8MS21ANS	750W	4.8A	1-Ph AC motor drive	B2	142	72	143	6 229.75
VFD7A5MS21ANS	1.5kW	7.5A	1-Ph AC motor drive	C1	157	87	152	7 206.13
VFD11AMS21ANS	2.2kW	11A	1-Ph AC motor drive	C1	157	87	152	9 753.46

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

VFD1A5MS43ANS	400W	1.5A	3-Ph AC motor drive	A4	128	68	129	7 146.33
VFD2A7MS43ANS	750W	2.7A	3-Ph AC motor drive	A5	128	68	143	7 324.58
VFD4A2MS43ANS	1.5kW	4.2A	3-Ph AC motor drive	B1	142	72	143	7 958.25
VFD5A5MS43ANS	2.2kW	5.5A	3-Ph AC motor drive	C1	157	87	152	9 142.79
VFD9A0MS43ANS	3.7kW	9.0A	3-Ph AC motor drive	C1	157	87	152	10 603.34
VFD13AMS43ANS	5.5kW	13A	3-Ph AC motor drive	D1	207	109	154	14 030.44
VFD17AMS43ANS	7.5kW	17A	3-Ph AC motor drive	D1	207	109	154	16 790.53
VFD25AMS43ANS	11kW	25A	3-Ph AC motor drive	E1	250	130	185	19 780.62
VFD32AMS43ANS	15kW	32A	3-Ph AC motor drive	E1	250	130	185	25 484.80
VFD38AMS43ANS	18.5kW	38A	3-Ph AC motor drive	F1	300	175	192	30 958.97
VFD45AMS43ANS	22kW	45A	3-Ph AC motor drive	F1	300	175	192	36 191.64

For ME/MS300 series accessories, see page A-24



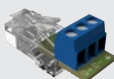
new



VFD3A0MS53ANS



VFD2A8MS21MNS



MKM-HUB01



IFD6500



CMM...

MS300 series - Vector control compact drive

New MS300 range of compact vector controlled drives offer standard essential built-in functionality including - multi-pump control, built-in brake chopper, RS-485 (Modbus) supporting both IM and PM motors.

- High starting torque (*up to 200% rated starting torque at 0.5 Hz*)
- Overload capabilities: 150% of rated output current for 60 seconds, 200% for 3 seconds
- Integrated Safe Torque Off (STO) SIL2/PLd compliance, offers high safety machine stop
- Built-in PLC functionality (*2K steps*), supports high speed pulse (*33kHz*) frequency input signal
- Default drive rating: Heavy duty (*break resistor chart, see Annex-3*)

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

MS300 series - 575V compact AC motor drives (VF/SVC open-loop control)

Modbus Communications Built-in. Options for CANopen, DeviceNET, PROFIBUS, ModbusTCP, Ethernet/IP and EtherCAT communications

Three-phase input 525-600V 50/60Hz

VFD1A7MS53ANS	750W	1.7A	3-Ph AC motor drive	A5	128	68	143	10 901.20
VFD3A0MS53ANS	1.5kW	3.0A	3-Ph AC motor drive	B1	142	72	143	12 569.90
VFD4A2MS53ANS	2.2kW	4.2A	3-Ph AC motor drive	C1	157	87	152	14 375.45
VFD6A6MS53ANS	3.7kW	6.6A	3-Ph AC motor drive	C1	157	87	152	18 584.59
VFD9A9MS53ANS	5.5kW	9.9A	3-Ph AC motor drive	D1	207	109	154	24 357.77
VFD12AMS53ANS	7.5kW	12A	3-Ph AC motor drive	D1	207	109	154	27 508.87

MS300 series IP66 - AC motor drives (VF/SVC open-loop control)

IP66 / NEMA4X water-proof and dust-proof design enables stable operation under harsh environment. Quick installation without control cabinet saves cost.

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

VFD2A8MS21MNS	400W	2.8A	1-Ph AC motor drive	A1	230	160	151	11 207.11
VFD4A8MS21MNS	750W	4.8A	1-Ph AC motor drive	A1	230	160	151	12 098.38
VFD7A5MS21MNS	1.5kW	7.5A	1-Ph AC motor drive	A2	230	160	167	14 421.46
VFD11AMS21MNS	2.2kW	11A	1-Ph AC motor drive	B	280	175	193	18 941.10

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

VFD1A5MS43MNS	400W	1.5A	3-Ph AC motor drive	A1	230	160	151	14 294.95
VFD2A7MS43MNS	750W	2.7A	3-Ph AC motor drive	A1	230	160	151	14 651.46
VFD4A2MS43MNS	1.5kW	4.2A	3-Ph AC motor drive	A2	230	160	167	15 916.50
VFD5A5MS43MNS	2.2kW	5.5A	3-Ph AC motor drive	A3	230	160	190	18 285.58
VFD9A0MS43MNS	3.7kW	9.0A	3-Ph AC motor drive	B	280	175	193	21 218.17
VFD13AMS43MNS	5.5kW	13A	3-Ph AC motor drive	C	300	195	193	28 049.38
VFD17AMS43MNS	7.5kW	17A	3-Ph AC motor drive	C	300	195	193	33 569.56

Accessories for ME/MS300 series drives

MKM-DRB	DIN rail	mounting kit for frame A and B						ME/MS300 drives	172.51
MKM-DRC	DIN rail	mounting kit for frame C						ME/MS300 drives	216.21
EMM-BPS01	24 VDC	external DC power supply card						for MS300 drives	4 619.70
KPC-CC01	keypad	panel mount LCD, parameter copy						for MS300 drives	2 198.87
KPMS-LE01	keypad	panel mount LCD, parameter copy						for MS300 drives	558.92
MKM-HUB01	adaptor	daisy chain - RJ-45 to screw connector						for ME300 drives	271.41
EG1010A	cable	to remotely mount keypad	1 met					for MS300 drives	462.32
EG2010A	cable	to remotely mount keypad	2 met					for MS300 drives	537.07
EG3010A	cable	to remotely mount keypad	3 met					for MS300 drives	611.82
UC-PRG030-02A	USB (B to A)	programming cable PC-VFD	3 met					for MS300 drives	224.26
IFD6500	RS-485 to USB	converter (<i>no ext. power supply required</i>)							1 388.10

❖ Applicable to MS300 IP66

Fieldbus modules for MS series drives

CMM-DN01	DeviceNet	plug-in communication card	1 port					for MS300 drives	3 830.77
CMM-EIP02	Ethernet/IP	Modbus TCP plug-in com. card	1 port					for MS300 drives	1 856.16
CMM-EIP03	Ethernet/IP	Modbus TCP plug-in com. card	2 port					for MS300 drives	1 856.16
CMM-EC02	EtherCAT	plug-in communication card	2 port					for MS300 drives	2 683.04
CMM-PD01	Profibus-DP	plug-in communication card	1 port					for MS300 drives	5 261.42
CMM-COP02	CANopen	plug-in communication card	2 port					for MS300 drives	991.34

Cables for above communication cards

								frame	Pos.*	
CBM-CL01A	cable for	CMM-DN/EIP/PD/COP/EC	145 mm					A,B	1	492.22
								A	2	
CBM-CL02A	cable for	CMM-DN/EIP/PD/COP/EC	250 mm					C,D,E,F	1	543.97
								B,C,D	2	
CBM-CC01	cable for	CMM-DN/EIP/PD/COP	145 mm					A	2	573.87
CBM-CC02	cable for	CMM-DN/EIP/PD/COP	250 mm					B,C,D	2	633.67

* Pos 1 - compact mounting, communication card installed back to front

* Pos 2 - right side up mounting, with extra additional cover (adds to frame size depth)

A₂



VFD004E21T



VFD110E43A



KPE-LE02



CME...

E series - Sensorless vector control compact drive

Modular in design with flexible extension cards and built-in PLC functionality (500 steps) offers a full range of protection

Applications include for use in smaller cranes, washing machines, treadmills, the robot arm of an injection machine (clamp), elevators, grinding machines, drilling machines, wood machines, webbing looms, air conditioners for large buildings and water supply systems for large buildings.

General features:

- IP protection: IP20
- Constant torque applications
- Standard Modbus protocol via RS-485
- Built-in EMI filter (to efficiently reduce electromagnetic interference)
- High-efficiency cooling and compact design (for side-by-side installation)
- Built-in PLC function - programming and editing capacity without an additional PLC
- 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
- Default rated current: Heavy duty

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

E series - Sensorless vector control compact drive

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

VFD004E21T	400W	2.5A	1-Ph AC motor drive	A1	142	72	152	6 095.20
VFD007E21T	750W	4.2A	1-Ph AC motor drive	A1	142	72	152	6 595.46
VFD015E21A	1.5kW	7.5A	1-Ph AC motor drive	B	174	100	152	6 988.17
VFD022E21A	2.2kW	11A	1-Ph AC motor drive	B	174	100	152	10 421.63

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

VFD004E43T	400W	1.5A	3-Ph AC motor drive	A1	142	72	152	8 465.42
VFD007E43T	750W	2.5A	3-Ph AC motor drive	A1	142	72	152	8 574.67
VFD015E43T	1.5kW	4.2A	3-Ph AC motor drive	A2	142	72	152	8 919.68
VFD022E43A	2.2kW	5.5A	3-Ph AC motor drive	B	174	100	152	10 037.52
VFD037E43A	3.7kW	8.2A	3-Ph AC motor drive	B	174	100	152	12 293.89
VFD055E43A	5.5kW	13A	3-Ph AC motor drive	C	260	130	169	16 917.03
VFD075E43A	7.5kW	18A	3-Ph AC motor drive	C	260	130	169	19 056.10
VFD110E43A	11kW	24A	3-Ph AC motor drive	C	260	130	169	25 197.29
VFD150E43A	15kW	32A	3-Ph AC motor drive	D	310	200	190	30 590.96
VFD185E43A	18.5kW	38A	3-Ph AC motor drive	D	310	200	190	38 135.20
VFD220E43A	22kW	45A	3-Ph AC motor drive	D	310	200	190	42 148.82

Accessories for E series drives

Variable Frequency Drives (VFD) accessories are optional components that enhance the performance and capability of the E-series drive.

- Accessories include:
- Operator keypad - allows remote control for E-series drive
 - Comms. cards - optional communication protocols i.e CANopen
 - Feedback cards - enables encoder connection to E-series drive
 - Convertors - PC/laptop connectivity for program and monitoring

MKE-DRA	adaptor	DIN rail mounting frame	A	(400W ~ 1.5kW)	119.61
MKE-DRB	adaptor	DIN rail mounting frame	B	(2.2 ~ 3.7kW)	149.51
KPE-LE02	keypad	digital display/keypad	for speed change and status		410.57
EG1010A	cable	to remotely mount keypad	1 met	(drive to keypad)	462.32
EG2010A	cable	to remotely mount keypad	2 met	(drive to keypad)	537.07
EG3010A	cable	to remotely mount keypad	3 met	(drive to keypad)	611.82
IFD6500	converter	USB to RS-485	(no ext. power supply required)		1 388.10
CME-USB01	USB card	for parameter settings and PLC programming			1 342.10
EME-R2CA	I/O card	output plug-in extension card	2 relay		663.58
EME-R3AA	I/O card	output plug-in extension card	3 relay		708.43
EME-D33A	I/O card	3MI/3MO plug-in card	(photocoupler 3 in and 3 out)		566.97
EME-A22A	I/O card	2 Analog in / 2 Analog out	plug-in card		1 081.04
EME-PG01	PG card	5 - 24 VDC supply to encoder	open collect 50mA pulse out		886.68
MKE-HUB01	COMMS	RS-485 parallel adaptor (RJ45)	RJ-45 splitter		194.36

Fieldbus modules for E series drives

CME-COP01	CANopen	plug-in communication card	for E series drives		3 919.33
CME-DN01	DeviceNet	plug-in communication card	for E series drives		2 556.54
CME-LW01	LonWorks	plug-in communication card	for E series drives		4 910.66
CME-PD01	Profibus DP	plug-in communication card	for E series drives		5 916.94



new



VFD150C4EA-21



VFD220C4EA-21



VFD370C63B-21

C2000+ series - High performance vector control drive

C2000+ series features precise speed, torque and position control, suitable for both sensor and sensorless types of synchronous and asynchronous motors. With higher overload capacity providing best performance and stability for a variety of heavy duty and constant torque applications in production, processing, food/chemical industry, metal processing, rubber and plastics.

- Speed/torque/position control mode. High bandwidth control
- Accepts various PG (*encoder*), I/O extension, relay extension and communication cards
- Integrated Safe Torque Off (STO) SIL2/PLd compliance, offers high safety machine stop
- Dual rating design - heavy duty / super heavy duty. Built-in PLC function (*10k steps capacity*)
- Overload capabilities: C2000/C2000+ 150% of rated output current for 1min, 180% 3sec
- Enhanced PCB coatings (**IEC 60721-3-3 class 3C3 standard**) ensures drive operation in harsh environments
- Built-in Modbus and CANopen (up to 30kW) high-speed communication interface (*optional cards for others*)
- Default drive rating: Heavy duty (*break resistor chart, see Annex-3*)

type	motor rating 400V	rated current	description	frame size	dimensions (mm)			price
					(H)	(W)	(D)	

C2000+ - Three-phase input 380-480V 50/60Hz

VFD007C4EA-21*	750W	3.0A	3-Ph AC motor drive	A	250	130	170	15 203.48
VFD015C4EA-21*	1.5kW	4.0A	3-Ph AC motor drive	A	250	130	170	16 273.01
VFD022C4EA-21*	2.2kW	6.0A	3-Ph AC motor drive	A	250	130	170	17 837.06
VFD040C4EA-21*	4.0kW	10.5A	3-Ph AC motor drive	A	250	130	170	23 173.23
VFD055C4EA-21*	5.5kW	12A	3-Ph AC motor drive	A	250	130	170	24 116.26
VFD075C4EA-21*	7.5kW	18A	3-Ph AC motor drive	B	320	190	190	27 025.85
VFD110C4EA-21*	11kW	24A	3-Ph AC motor drive	B	320	190	190	31 487.99
VFD150C4EA-21*	15kW	32A	3-Ph AC motor drive	B	320	190	190	39 193.23
VFD185C4EA-21*	18.5kW	38A	3-Ph AC motor drive	C	400	250	210	48 692.53
VFD220C4EA-21*	22kW	45A	3-Ph AC motor drive	C	400	250	210	54 948.73
VFD300C4EA-21*	30kW	60A	3-Ph AC motor drive	C	400	250	210	62 941.48
VFD370C43S-00	37kW	73A	3-Ph AC motor drive	D0-1	500	280	255	58 260.83
VFD450C43S-00	45kW	91A	3-Ph AC motor drive	D0-1	500	280	255	66 771.10
VFD550C43A-00	55kW	110A	3-Ph AC motor drive	D1	550	330	275	89 104.79
VFD750C43A-00	75kW	150A	3-Ph AC motor drive	D1	550	330	275	122 593.84
VFD900C43A-00	90kW	180A	3-Ph AC motor drive	E1	589	370	300	142 489.47
VFD1100C43A-00	110kW	220A	3-Ph AC motor drive	E1	589	370	300	165 605.19
VFD1320C43A-00	132kW	260A	3-Ph AC motor drive	F1	800	420	300	197 116.18
VFD1600C43A-00	160kW	310A	3-Ph AC motor drive	F1	800	420	300	241 162.55
VFD1850C43A-00	185kW	370A	3-Ph AC motor drive	G1	1000	500	397	311 659.76
VFD2000C43A-00	200kW	395A	3-Ph AC motor drive	G1	1000	500	397	322 930.11
VFD2200C43A-00	220kW	460A	3-Ph AC motor drive	G1	1000	500	397	372 956.68
VFD2500C43A-00	250kW	481A	3-Ph AC motor drive	G1	1000	500	397	404 582.67
VFD2800C43A-00	280kW	550A	3-Ph AC motor drive	H1	1435	700	398	488 650.30
VFD3150C43A-00	315kW	616A	3-Ph AC motor drive	H1	1435	700	398	523 956.41
VFD3550C43A-00	355kW	683A	3-Ph AC motor drive	H1	1435	700	398	590 888.50
VFD4000C43A-00	400kW	770A	3-Ph AC motor drive	H1	1435	700	398	649 540.34
VFD4500C43A-00	450kW	886A	3-Ph AC motor drive	H1	1435	700	398	746 948.39
VFD5000C43A-00	500kW	930A	3-Ph AC motor drive	H1	1435	700	398	811 235.40
VFD5600C43A-00	560kW	1044A	3-Ph AC motor drive	H1	1435	700	398	949 124.72

* Frames A, B, C - built-in braking chopper, EMI filter and CANopen communication
Frames D,E,F,G,H - DC reactor built-in

C2000 - Three-phase input 525-600V (up to 15kW) 525-690V (from 22kW) 50/60Hz

type	motor rating at 525V	rated current	description	frame size	dimensions (mm)			price
					(H)	(W)	(D)	
VFD037C53A-21*	4.0kW	6.7A	3-Ph AC motor drive	A	250	130	170	17 273.55
VFD055C53A-21*	5.5kW	9.9A	3-Ph AC motor drive	B	320	190	190	23 886.25
VFD075C53A-21*	7.5kW	12.1A	3-Ph AC motor drive	B	320	190	190	27 497.37
VFD110C53A-21*	11kW	18.7A	3-Ph AC motor drive	B	320	190	190	34 811.59
VFD150C53A-21*	15kW	24.2A	3-Ph AC motor drive	B	320	190	190	43 482.87
VFD300C63B-21*	22kW	36A	3-Ph AC motor drive	C	400	250	210	82 814.10
VFD370C63B-21*	30kW	45A	3-Ph AC motor drive	C	400	250	210	91 105.86
VFD450C63B-00	37kW	54A	3-Ph AC motor drive	D1	550	330	275	112 071.01
VFD550C63B-00	45kW	67A	3-Ph AC motor drive	D1	550	330	275	124 663.91
VFD750C63B-00	55kW	86A	3-Ph AC motor drive	E1	589	370	300	161 925.07
VFD900C63B-00	75kW	104A	3-Ph AC motor drive	E1	589	370	300	178 140.58
VFD1320C63B-00	90kW	150A	3-Ph AC motor drive	E1	589	370	300	253 812.95
VFD1600C63B-00	132kW	180A	3-Ph AC motor drive	F1	800	420	300	281 758.82
VFD2000C63B-00	160kW	220A	3-Ph AC motor drive	F1	800	420	300	339 835.64
VFD2500C63B-00	185kW	290A	3-Ph AC motor drive	G1	1000	500	397	416 198.03
VFD3150C63B-00	250kW	350A	3-Ph AC motor drive	G1	1000	500	397	568 692.81

Above motor ratings are for 525V "normal duty" applications

(see Annex 3 for detailed derating chart for different duties and voltages)

* Frame A, B, C built-in braking chopper (frames D,E,F,G,H) DC reactor built-in

A₂



VFD150CP4EB-21



VFD450CP43S-21



VFD075FP4EA-52

CP2000 series - Fan and Pump purpose drives

CP2000 series AC motor drive for energy-saving HVAC systems and for pump and fan applications. Equipped with special HVAC parameters and PID control functions for efficient operation, as well as multi-segment V/F control curve and soft start functions to assist frequent torque change and constant output applications with energy-saving performance.

- 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 optional 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/wake up mode and auto-energy saving mode
- Enhanced PCB coatings (IEC 60721-3-3 class 3C2 standard) ensures drive operation in harsh environments
- Default rated current: Light duty (break resistor chart, see Annex-3)
- Dual rating chart for CP/CFP2000 drives - normal and heavy duty applications (see Annex-4)

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

CP2000 series - Fan/Pump vector control drives

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

VFD015CP4EB-21*	1.5kW	4.2A	3-Ph AC motor drive	A	250	130	170	11 481.96
VFD022CP4EB-21*	2.2kW	5.5A	3-Ph AC motor drive	A	250	130	170	12 454.89
VFD040CP4EA-21*	4.0kW	10.5A	3-Ph AC motor drive	A	250	130	170	15 168.98
VFD055CP4EB-21*	5.5kW	13A	3-Ph AC motor drive	A	250	130	170	16 744.53
VFD075CP4EB-21*	7.5kW	18A	3-Ph AC motor drive	A	250	130	170	17 975.07
VFD110CP4EB-21*	11kW	24A	3-Ph AC motor drive	B	320	190	190	22 862.72
VFD150CP4EB-21*	15kW	32A	3-Ph AC motor drive	B	320	190	190	27 186.86
VFD185CP4EB-21*	18.5kW	38A	3-Ph AC motor drive	B	320	190	190	30 843.97
VFD220CP4EA-21*	22kW	45A	3-Ph AC motor drive	C	400	250	210	36 490.65
VFD300CP4EB-21*	30kW	60A	3-Ph AC motor drive	C	400	250	210	41 159.79
VFD370CP4EB-21*	37kW	73A	3-Ph AC motor drive	C	400	250	210	45 748.44
VFD450CP43S-21	45kW	91A	3-Ph AC motor drive	D0	500	280	255	56 570.28
VFD550CP43S-21	55kW	110A	3-Ph AC motor drive	D0	500	280	255	63 355.49
VFD750CP43B-21	75kW	150A	3-Ph AC motor drive	D	550	330	275	89 093.29
VFD900CP43A-21	90kW	180A	3-Ph AC motor drive	D	550	330	275	122 478.84
VFD1100CP43A-21	110kW	220A	3-Ph AC motor drive	E	589	370	300	138 349.34
VFD1320CP43B-21	132kW	260A	3-Ph AC motor drive	E	589	370	300	160 890.04
VFD1600CP43A-21	160kW	310A	3-Ph AC motor drive	F	800	420	300	191 481.00
VFD1850CP43B-00	185kW	370A	3-Ph AC motor drive	F	800	420	300	264 968.30
VFD2200CP43A-00	220kW	460A	3-Ph AC motor drive	G1	1000	500	397	338 225.59
VFD2800CP43A-00	280kW	530A	3-Ph AC motor drive	G1	1000	500	397	420 453.17
VFD3150CP43A-00	315kW	616A	3-Ph AC motor drive	H1	1435	700	398	484 510.17
VFD3550CP43A-00	355kW	683A	3-Ph AC motor drive	H1	1435	700	398	556 272.42
VFD4000CP43A-00	400kW	770A	3-Ph AC motor drive	H1	1435	700	398	625 849.60
VFD5000CP43A-00	500kW	930A	3-Ph AC motor drive	H1	1435	700	398	787 659.66

* Frames A, B, C - built-in braking chopper, EMI filter. Frames D,E,F,G,H - DC reactor built-in
Flange mount kits for rear projecting heat sinks for improved ventilation (see page A-28)
Larger sizes up to 630kW available on request.

CFP2000 series - Drives for Fans and Pumps

IP55

CFP2000 series designed with an industry leading IP55 enclosure providing effective protection from dust, and water. It includes many outstanding features and built-in functionality, reducing setup and tuning time while providing higher efficiency.

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

- Built-in EMI filter (meets EN61800-3)
- Built-in DC choke (meets EN6100-3-12)
- Built-in Safe Torque Off (STO) SIL2 function and 2 sets of PID controller functions
- Enhanced PCB coating to (IEC 60721-3-3 class 3C3) ensures reliability in harsh environments
- Integrates all requirements into one drive for the friendliest, smartest choice available in the industry

VFD015FP4EA-52*	1.5kW	4.2A	3-Ph AC motor drive	A-1	366	161	199	19 999.13
VFD022FP4EA-52*	2.2kW	5.5A	3-Ph AC motor drive	A-1	366	161	199	21 310.17
VFD040FP4EA-52*	4.0kW	10.5A	3-Ph AC motor drive	A-1	366	161	199	22 184.20
VFD055FP4EA-52*	5.5kW	13A	3-Ph AC motor drive	A-1	366	161	199	23 046.73
VFD075FP4EA-52*	7.5kW	18A	3-Ph AC motor drive	A-1	366	161	199	23 483.74
VFD110FP4EA-52*	11kW	24A	3-Ph AC motor drive	B-1	491	216	229	26 094.32
VFD150FP4EA-52*	15kW	32A	3-Ph AC motor drive	B-1	491	216	229	32 178.01
VFD185FP4EA-52*	18.5kW	38A	3-Ph AC motor drive	B-1	491	216	229	41 746.31
VFD220FP4EA-52*	22kW	45A	3-Ph AC motor drive	B-1	491	216	229	52 177.14

CFP2000 series - Drives for Fans and Pumps continues on the next page... ➡



VFD450FP4EA-52



IFD6500



CMC-EIP02



MKC-DN1CB

... Continued... CFP2000 series - Drives for Fans and Pumps

type	motor rating	rated current	description	frame size	IP55 dimensions (mm)			price
					(H)	(W)	(D)	
VFD300FP4EA-52*	30kW	60A	3-Ph AC motor drive	C-1	630	282	265	61 745.44
VFD370FP4EA-52*	37kW	73A	3-Ph AC motor drive	C-1	630	282	265	82 607.09
VFD450FP4EA-52	45kW	91A	3-Ph AC motor drive	D0-1	680	308	307	104 342.77
VFD550FP4EA-52	55kW	110A	3-Ph AC motor drive	D0-1	680	308	307	121 788.82
VFD750FP4EA-52	75kW	150A	3-Ph AC motor drive	D-1	770	370	335	147 894.63
VFD900FP4EA-52	90kW	180A	3-Ph AC motor drive	D-1	770	370	335	171 355.37

* Built-in braking chopper

Accessories for C2000+, CP/CFP2000 series drives

Delta's AC Motor Drive product line provides a full range of motor control technologies and accessories that can be used throughout a wide range of industries, to enhance and improve machine automation. Optional communication cards include; EtherCAT, EtherNet/IP, DeviceNet, PROFINET, PROFIBUS DP, Modbus TCP, CANopen

type	device	description	price
KPC-CC01	keypad	with LCD display, parameters backup function C series drives	2 198.87
MKC-KPPK	bracket	remote panel adapter for KPC-CC01 (IP66) C series drives	775.13
EMC-D42A	DC 24V	digital I/O extension card, selectable NPN/PNP 4DI / 2DO	708.43
EMC-A22A	analog	I/O extension card, selectable 0-10V/4-20mA 2AI / 2AO	1 282.30
EMC-R6AA	card	multi-function relay output extension card 6 relay	1 155.79
IFD6530	converter/program	USB to RS-485 - KPC-CC01 and C series drives	2 326.53
IFD6500	converter	USB to RS-485 - C series drives	1 388.10

Fieldbus modules for drives (plugs into drive)

type	comms	description	rate	price
CMC-EIP02	EtherNet/IP	supports, Modbus TCP protocols 2 port	10/100 Mbps	2 869.34
CMC-DN01	DeviceNet	plug-in communication card	125kbp/250kbps/500kbps	3 465.06
CMC-PD01	Profibus-DP	plug-in communication card	9.6kbps - 12Mbps	6 378.10
EMC-COP01	CANopen	plug-in communication card	50kbps - 1Mbps	1 363.95
CMC-EC01	EtherCAT	plug-in 2 port comm. card	100 Mbps	5 476.48
CMC-PN01	Profinet	plug-in 2 port comm. card	10/100 Mbps Auto-Detect	5 640.93

Cables for above communication cards

UC-CMC010-01A	CANopen	standard fieldbus cable, RJ45 connector	1 meter	188.61
UC-CMC020-01A	CANopen	standard fieldbus cable, RJ45 connector	2 meter	279.46
UC-CMC030-01A	CANopen	standard fieldbus cable, RJ45 connector	3 meter	502.57
UC-EMC010-02A	Ethernet	Shielded Ethernet cable	1 meter	999.39
UC-EMC020-02A	Ethernet	Shielded Ethernet cable	2 meter	1 654.91
UC-EMC050-02A	Ethernet	Shielded Ethernet cable	5 meter	2 220.72

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	1 312.20
MKC-BFM	flange	mount kit for rear exposure of heat sink	for drive frame B	1 453.65
MKC-CFM	flange	mount kit for rear exposure of heat sink	for drive frame C	1 654.91

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

Conduit boxes

• Application : Wall mount IP00 - IP21

MKC-DN1CB	frame D	Conduit box kit for frame D1 (not D01)	3 390.31
MKC-EN1CB	frame E	Conduit box kit for frame E1	3 904.38
MKC-FN1CB	frame F	Conduit box kit for frame F1	5 379.87

PG cards for C2000 drives

type	output voltage	PG 1-300kHz motor encoder	PG 2-300kHz optional pulse command	PG out re-transmission 1-255 ratio	price
EMC-PG01L	5 or 12 VDC	Line drive / Open collector	Line drive / Open collector	Line driver	3 189.05
EMC-PG01O	5 or 12 VDC	Line drive / Open collector	Line drive / Open collector	Open collector	2 459.93
EMC-PG01U	5 or 12 VDC	Line drive with commutation	Line drive / Open collector	Line driver	3 435.16

Remote monitoring solutions

Polar Monitoring offers comprehensive cloud solution that remotely monitors (RS-485) Variable Speed Drives i.e solar and irrigation from any location.(see page G-1)



VFD185ED43S



EMED-PGABD-1



VFD004DD21S



ECMD-B91608MS

ED series - Elevator drives

ED series motor drives are specifically designed for elevator applications, and feature the latest innovative control technology providing extended features with outstanding performance. Designed to high safety standards and for high durability, the ED series is an excellent solution for elevator operation in critical environments.

General features:

- Auto-tuning with load attached
- Dual-output protection for reliable rides
- 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 levelling accuracy providing ride comfort
- Built-in STO (Safe Torque Off) function (complies with **EN61800-5-2** and **EN61508 (SIL2)** standards)
- Supports 1 phase 30 VAC UPS (*light-load direction search function triggered automatically on power failure*)
- Default rated current: Heavy duty

type	motor rating	rated current	description	frame size	dimensions (mm)			price
					(H)	(W)	(D)	
Single-phase input 200-240 VAC 50/60Hz								
VFD037ED21S	3.7kW	17A	1-Ph elevator drive	B	247	194	134	22 138.20
Three-phase input 380-460VAC 50/60Hz								
VFD055ED43S*	5.5kW	13A	3-Ph elevator drive	C	350	235	146	24 392.27
VFD075ED43S*	7.5kW	17A	3-Ph elevator drive	C	350	235	146	27 819.38
VFD110ED43S*	11kW	23A	3-Ph elevator drive	C	350	235	146	33 224.55
VFD150ED43S*	15kW	30A	3-Ph elevator drive	C	350	235	146	39 768.25
VFD185ED43S*	18.5kW	38A	3-Ph elevator drive	C	350	235	146	52 487.65
VFD220ED43S*	22kW	45A	3-Ph elevator drive	D	404	255	178	59 019.85
VFD300ED43S*	30kW	58A	3-Ph elevator drive	D	404	255	178	85 689.19
VFD370ED43S	37kW	80A	3-Ph elevator drive	E	550	330	274	101 893.19
VFD450ED43S	45kW	100A	3-Ph elevator drive	E	550	330	274	113 761.57

* Braking chopper built in (break resistor chart, see **Annex-3**)
Larger sizes available on request.

Braking units for above drives without built-in braking chopper

type	IMAX (A) 10%ED	ICONT (A)	Input range. (VDC)	Min. Resistance (ohm)	price
VFDB4045	60	18	400-750	13.6	6 649.51

PG feedback cards

EMED-PGAB	supports open-collector or Line-driver and UVW encoder signal, 5/12 VDC supply	1 505.40
EMED-PGABD-1	open-collector, differential, UVW encoder signal and frequency divider output	2 124.12
EMED-PGHSD-3	supports Heidenhain ERN1387/ECN1313, SICK HIPERFACE 5/8V supply	2 869.34

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.

- 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 /speed control / multi-step speed control modes

Single-phase input 230 VAC 50/60Hz

VFD004DD21S	0.4 kW	2.5A	1-Ph elevator door drive	170	215	55	7 459.14
-------------	--------	------	--------------------------	-----	-----	----	----------

Accessories for DD Drive

MEC-SG1026S	1 meter	encoder cable (<i>without D-SUB connector</i>) for DD series	284.06
MEC-SG3026S	3 meter	encoder cable (<i>without D-SUB connector</i>) for DD series	552.02
KPC-CC01	keypad	with LCD display, parameters backup function	2 198.87

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	7 585.64
DPB-N7779	dust cap		dust cover for protection of door motor terminals				164.46

PHOTON | ELECTRON

Pre-assembled Pump Panel Systems

Our pump panel systems not only **reduce energy costs**, they also **safeguard our water resources** and keep **productivity** at an optimal level.



Pump panel systems reduce energy costs and safeguard water resources, maintaining productivity at optimal levels. A complete and robust range of pre-assembled pump panel systems providing solutions for a wide range of pumping applications.

Pre-configured VSDs (variable speed drives) drastically reduce energy consumption by controlling motor pump speed while maintaining a constant pressure in the line.

The panel layout provides ample working space, significantly simplifying installation, commissioning and servicing.

PHOTON⁺ Series (Solar pump panel)

Standard Features

- Multi-status indicator lamp
- On/Off selector switch
- DC fuse protection (includes spare)
- Power and control terminals
- No flow input and underload protection
- Maximum power point tracking software and manual override

ELECTRON Series (Standard pump panel)

Standard Features

- Panel mount isolator
- Drive and control circuit breakers
- Class II surge protection
- Power and control terminals
- Manual off/auto selector switch
- Run and trip indication
- Cooling fans and vents
- Rotary setpoint selector (more than one setpoint)

Typical Applications



Irrigation of land



Domestic water supply



Fish farming



Water for livestock



Solar powered fountains



Sprinklers, misters and soakers



Ground dewatering for excavation



Construction sites

Benefits

- Electricity and water savings
- Automatic sleep and wake functions
- Enhanced motor and pump protection features
- Class II surge protection
- Weather-tight protection
- Lower mechanical wear and tear
- Controls the maximum output pressure
- Eliminates the need for control valves
- Accurate flows or constant pressures
- Available in several size and panel variations

PHOTON Series

new



022PV4-O

Photon - Solar pump panels

Photon pump control panels use the power of the sun to deliver water where it is needed most. Ideal for remote agricultural applications and to combat increasing electricity costs, renewable pumping systems are a very attractive solution.

"Solar" mode regulates the pump speed based on available solar radiation (*within user defined parameters*) Interfaced with a pressure transmitter in this mode, the drive can limit the output pressure to a user defined value. (CP2000)

"Hybrid" mode permits simultaneous connection to an AC power source while connected to the solar array. In lower solar radiation conditions, the drive system can compensate with mains AC power.

Interfaced with a pressure transmitter in this mode, the drive can perform constant pressure control (CP2000)

Comprehensive ready-to-connect solar pump panel comprising:

- Solar and control tracking system
 - Utilising an internal 10k step PLC to automatically preserve the system at peak efficiency
 - Static Voltage maximum set point, or variable (*MPPT*) Voltage maximum set point
 - Underload and no flow detection
 - No flow digital input (*optional*)
- 2 position selector switch for on/off - Run and trip lamps for operational indication
- Ergonomic LCD keypad display for easy setup, operation, and display of all vital information:
 - Motor current, output frequency, DC voltage feedback & set point, feedback pressure.
 - No load & no flow time out, sleep/wake status
- Graphical menu for easy navigation through basic to advanced embedded features such as:
 - MPPT upper and lower values
 - Dual point acceleration curves (*bore hole pump starting*)
 - Pressure transmitter setup
- Powder coated metal RAL2000 enclosure suitable for outdoors with hooded vents and panel (*IP55*)

AC Automatic mode works in conjunction with a pressure transmitter (**Type 528**) and requires a **4-pin M12 cable**.

type	motor rating	rated output current (A)	vmp range (DC)	Voc (DC)	dimensions (mm)			price
					(H)	(W)	(D)	

Photon series - Ultra compact, high starting torque solar pump drive - MS300

- Speed limiter via digital POT in solar mode
- 5 digit LED display - Multistate display indication lamp
- Constant speed control via digital POT in Hybrid mode

230V three-phase pump

007PV2-O	0.7kW	4.8A	270-330V	370 VDC	550	400	220	14 720.47
015PV2-O	1.5kW	7.5A	270-330V	370 VDC	550	400	220	17 181.54
022PV2-O	2.2kW	11A	270-330V	370 VDC	550	400	220	19 665.62

400V three-phase pump

007PV4-O	0.75kW	2.7A	500-650V	770V	550	400	220	15 778.50
015PV4-O	1.5kW	4.2A	500-650V	770V	550	400	220	19 964.63
022PV4-O	2.2kW	5.5A	500-650V	770V	550	400	220	22 563.71
040PV4-O	4.0kW	9A	500-650V	770V	550	400	220	23 702.25
055PV4-O	5.5kW	13A	500-650V	770V	550	400	220	25 887.32

Note: For "Hybrid" option (Insert "-D" to part no. e.g **007PV4-D-O**) 1 ph 220 VAC or 3 ph 400 VAC supply **+15%**

Photon series - Pump vector control drives - CP2000

- Customised LCD keypad interface
- Pressure control/limiter in solar mode
- Constant speed and pressure control in hybrid mode
- Sleep and wake functions in both solar and hybrid mode

400V three-phase pump

022PV4-O-CP	2.2kW	5.5A	500-650V	770V	650	450	270	26 818.84
040PV4-O-CP	4.0kW	10.5A	500-650V	770V	650	450	270	29 613.43
055PV4-O-CP	5.5kW	13A	500-650V	770V	650	450	270	31 223.48
075PV4-O-CP	7.5kW	18A	500-650V	770V	650	450	270	32 500.02
110PV4-O-CP	11kW	24A	500-650V	770V	750	550	270	40 124.76
150PV4-O-CP	15kW	32A	500-650V	770V	750	550	270	47 807.00
185PV4-O-CP	18.5kW	38A	500-650V	770V	750	550	270	51 556.12
220PV4-O-CP	22kW	45A	500-650V	770V	850	600	270	63 079.48
300PV4-O-CP	30kW	60A	500-650V	770V	850	600	270	68 300.64
370PV4-O-CP	37kW	73A	500-650V	770V	850	600	270	71 658.75
450PV4-O-CP	45kW	91A	500-650V	770V	950	700	330	89 127.79
550PV4-O-CP	55kW	110A	500-650V	770V	950	700	330	96 913.54
750PV4-O-CP	75kW	150A	500-650V	770V	1150	850	330	127 309.00
900PV4-O-CP	90kW	180A	500-650V	770V	1150	850	330	162 960.10
1100PV4-O-CP	110kW	220A	500-650V	770V	1150	850	330	191 941.00
1320PV4-O-CP	132kW	260A	500-650V	770V	1150	850	330	217 126.80

Note: For "Hybrid" option (Insert "-D" to part no. e.g **022PV4-D-O-CP**) 3 phase 400 VAC supply **+15%**
For remote monitoring options, see page **G-1**



300PV4-O-CP

ELECTRON Series

new



022S-5SP-O

Electron series - Standard pump panels

Irrigation and water reticulation applications require precise pump control and protection to pump water reliably and efficiently. Pump purpose drives in constant pressure systems are designed to save energy, eliminate high start up currents, controlling pump speed to match pressure demand precisely.

Conventional constant pressure systems routinely introduce many problems, such as overloads during pipe filling, unreliable sleep and wake states resulting in pump cavitation and require intricate and cumbersome setup, leading to increased maintenance requirements on the water network.

Installation of a smart pump panel utilises various system variables and inputs which dynamically react to prevailing environmental conditions ensuring a reactive dependable control system.

Comprehensive ready-to-connect pump panel comprising:

- Maintain a constant pressure by utilising a CP2000 pump-purpose drive
 - Utilising an internal 10k step PLC to automatically preserve the system at peak efficiency
 - The software assess variables to automatically determine the most reliable operation
 - Phase failure/ reversal, no flow digital input
- Front panel control system
 - Three position Man/Off/Aut selector. Automatic mode maintains constant pressure,
 - Manual mode for speed control by analogue potentiometer - mounted internally
 - Run and trip lamps for operational indication
 - Standard 0-5 position pressure selector for preset set points
 - Local or remote: Selector switch with LR option
- Ergonomic LCD keypad display for easy setup, operation, displaying all vital information:
 - Motor current, output frequency, current pressure set point, feedback pressure No load time out, sleep/wake status No load time out, sleep / wake status
- Graphical menu for easy navigation through basic to advanced embedded features such as:
 - Pipe line filling, smart sleep/wake, no flow/underload protection, overcurrent stall prevention, pump priming
 - Filter flush control (*optional accessory control relays EMC-R6AA*), transmitter failure detection
 - Pipe burst detection, 0-24Hr restart delay for dry run trips, three-point acceleration curve
- Powder coated metal RAL2000 enclosure suitable for outdoors with hooded vents and panel (*IP55*)
- 40kA Class II surge protection

Automatic mode works in conjunction with a pressure transmitter (Type 528) and requires a 4-pin M12 cable.

type	motor rating	rated output current (A)	No. drives	description	dimensions (mm)			price
					(H)	(W)	(D)	
Electron series - Standard pump panel - (3 phase input 380-480V, 50/60Hz) - CP2000								
015S-5SP-O	1.5kW	4.2A	1	pump control panel	650	450	270	27 129.35
022S-5SP-O	2.2kW	5.5A	1	pump control panel	650	450	270	28 175.89
040S-5SP-O	4.0kW	10.5A	1	pump control panel	650	450	270	30 832.47
055S-5SP-O	5.5kW	13A	1	pump control panel	650	450	270	32 270.02
075S-5SP-O	7.5kW	18A	1	pump control panel	650	450	270	33 477.55
110S-5SP-O	11kW	24A	1	pump control panel	750	550	270	39 814.25
150S-5SP-O	15kW	32A	1	pump control panel	750	550	270	43 885.38
185S-5SP-O	18.5kW	38A	1	pump control panel	750	550	270	48 290.02
220S-5SP-O	22kW	45A	1	pump control panel	850	600	270	55 316.74
300S-5SP-O	30kW	60A	1	pump control panel	850	600	270	61 354.43
370S-5SP-O	37kW	73A	1	pump control panel	850	600	270	67 104.61
450S-5SP-O	45kW	91A	1	pump control panel	950	700	330	80 813.03
550S-5SP-O	55kW	110A	1	pump control panel	950	700	330	89 495.81
750S-5SP-O	75kW	150A	1	pump control panel	1150	850	330	126 274.00
900S-5SP-O	90kW	180A	1	pump control panel	1150	850	330	158 590.00
1100S-5SP-O	110kW	220A	1	pump control panel	1150	850	330	179 405.60
1320S-5SP-O	132kW	260A	1	pump control panel	1150	850	330	203 901.40
Note: For additional remote setpoints, 5 x 24 VAC (Insert "LR" to part no. e.g 022S-5SPLR-O)								+3 800.00



300HD-5SP-O

Electron series - Hand-over duty pump panel (3 phase input 380-480V, 50/60Hz) - CP2000

<ul style="list-style-type: none"> • Dual drive system, for variable demand applications • Alternating Master and Slave automatically via step relay 								
022HD-5SP-O	2.2kW	5.5A	2	dual pump panel	850	600	270	52 579.65
040HD-5SP-O	4.0kW	10.5A	2	dual pump panel	850	600	270	58 272.33
055HD-5SP-O	5.5kW	13A	2	dual pump panel	850	600	270	60 963.41
075HD-5SP-O	7.5kW	18A	2	dual pump panel	850	600	270	63 493.49
110HD-5SP-O	11kW	24A	2	dual pump panel	950	700	270	72 429.27
150HD-5SP-O	15kW	32A	2	dual pump panel	950	700	270	83 113.11
185HD-5SP-O	18.5kW	38A	2	dual pump panel	950	700	270	90 450.34
220HD-5SP-O	22kW	45A	2	dual pump panel	1150	850	270	102 962.70
300HD-5SP-O	30kW	60A	2	dual pump panel	1150	850	270	114 693.10
370HD-5SP-O	37kW	73A	2	dual pump panel	1150	850	270	139 959.40
Note: For additional remote setpoints, 5 x 24 VAC (Insert "LR" to part no. e.g 022HD-5SPLR-O)								+3 800.00

For remote monitoring options, see page G-1



new

EIR...

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
- High quality grain orientated silicon steel
- Normal operation temperature (40°C...50°C) above ambient

Input/Line AC reactors

type	motor rating (kW)	rated current (A)	4% impedance (mH)	description	dimensions (mm)			price
					(H)	(W)	(D)	
<ul style="list-style-type: none"> • Increase line impedance, improves power factor, reduced input current, increase system capacity, and reduce interference generated from the motor drive • Reduces momentary voltage surges or abnormal current spikes from the mains power • Install an AC input reactor in series between the main power and the three input phases R S T 								
EIR003A0850	1.5kW	3.5A	8.5	AC Input reactors	135	120	70	2 666.94
EIR005A0590	2.2kW	5.0A	5.9	AC Input reactors	135	120	85	2 867.04
EIR008A0350	4kW	8.5A	3.5	AC Input reactors	155	150	80	3 110.85
EIR012A0260	5.5kW	12A	2.6	AC Input reactors	160	150	80	3 344.31
EIR016A0190	7.5kW	16A	1.9	AC Input reactors	160	150	100	3 555.92
EIR022A0134	11kW	22A	1.34	AC Input reactors	185	150	100	3 777.87
EIR030A0100	15kW	30A	1.00	AC Input reactors	160	180	110	4 888.81
EIR037AP800	18.5kW	37A	0.80	AC Input reactors	160	180	130	5 332.72
EIR044AP670	22kW	44A	0.67	AC Input reactors	160	180	135	5 999.74
EIR060AP490	30kW	60A	0.49	AC Input reactors	210	240	150	7 999.66
EIR072AP400	37kW	72A	0.40	AC Input reactors	210	240	155	8 665.53
EIR085AP350	45kW	85A	0.35	AC Input reactors	210	240	170	9 332.55
EIR105AP280	55kW	105A	0.28	AC Input reactors	205	240	175	9 776.46
EIR140AP210	75kW	140A	0.21	AC Input reactors	270	300	170	12 443.39
EIR170AP170	90kW	170A	0.17	AC Input reactors	270	300	190	14 225.95
EIR205AP140	110kW	205A	0.14	AC Input reactors	260	300	240	16 445.52
EIR245AP120	132kW	245A	0.12	AC Input reactors	260	300	210	17 779.56
EIR295AP100	160kW	295A	0.10	AC Input reactors	310	360	200	19 999.13

Larger sizes available on request.

Output/Load AC reactors

- Useful for applications of multiple motors installed on a single VSD
- Assists in prevention of ground fault (GFF), over-current (OC) and over-voltage (OV) on long cable runs
- Install an AC output reactor in series between the three output phases U V W and the motor
- Increases the high-frequency impedance and reduces terminal voltage to protect the motor

type	motor rating (kW)	rated current (A)	1.2% impedance (mH)	max cable length (m)	dimensions (mm)			price
					(H)	(W)	(D)	
EOR003A0260	1.5kW	3.5A	2.6	45	135	120	70	2 400.13
EOR005A0180	2.2kW	5.0A	1.8	70	135	120	70	2 519.73
EOR008A0105	4kW	8.5A	1.05	70	135	120	90	2 580.69
EOR012AP800	5.5kW	12A	0.80	70	135	120	90	2 640.49
EOR016AP630	7.5kW	16A	0.63	125	160	150	90	2 666.94
EOR022AP400	11kW	22A	0.40	125	190	150	75	2 867.04
EOR030AP300	15kW	30A	0.30	125	130	150	115	3 332.81
EOR037AP240	18.5kW	37A	0.24	125	160	180	110	4 443.74
EOR044AP220	22kW	44A	0.22	125	160	180	120	5 110.76
EOR060AP150	30kW	60A	0.15	125	160	180	140	5 777.79
EOR072AP130	37kW	72A	0.13	125	180	240	160	6 665.61
EOR085AP110	45kW	85A	0.11	200	180	240	160	8 443.57
EOR105AP090	55kW	105A	0.09	200	180	240	160	9 332.55
EOR140AP070	75kW	140A	0.07	200	235	240	160	9 776.46
EOR170AP052	90kW	170A	0.052	200	245	240	155	10 665.44
EOR205AP043	110kW	205A	0.043	200	260	300	170	13 340.42
EOR245AP036	132kW	245A	0.036	200	260	300	170	14 674.46
EOR295AP030	160kW	295A	0.030	200	310	360	200	19 562.12

Use a motor with a rated voltage ≤ 500 VAC and insulation level ≥ 1.35 kV in accordance with IEC 60034-17. Distances based on non-shielded/non-armoured cables. Please refer to specific drive manual for more details for longer cable distances use 3% impedance



EOR...

Aluminium housed compact brake resistors have with protection class superior to conventional ceramic-skeleton resistors offering improved heat dissipation and overload capabilities, designed to endure high pulse loads, common with heavy duty inverters and regenerative braking circuits in industrial drive systems.

- High pulse load and high vibration capability
- Compact structure with a cool surface, low noise and low thermal drift

Protection: (IP33) (others available on request)

Temperature coefficient: Less than 400 ppm/°C

Dielectric strength: AC 3.5kV @50Hz 5s / Vibration: 1.5g



RXLG...

type	power (W)	resistance (ohm)	terminal	description	dimensions (mm) (H) (W) (D)			price
Aluminium housed resistors					Tolerance: <1000 VDC, <1200 VAC			
RXLG-80W/200RJ	80	200Ω	cable	brake resistor	110	40	20	388.72
RXLG-200W/91RJ	200	91Ω	cable	brake resistor	170	60	30	622.17
RXLG-300W/70RJ	300	70Ω	cable	brake resistor	220	60	30	762.48
RXLG-80W/750RJ	80	750Ω	cable	brake resistor	115	40	20	388.72
RXLG-200W/360RJ	200	360Ω	cable	brake resistor	170	60	30	622.17
RXLG-300W/250RJ	300	250Ω	cable	brake resistor	220	60	30	762.48
RXLG-1KW/75RJ	1000	75Ω	cable	brake resistor	400	60	30	1 742.31
RXLG-1.5KW/43RJ	1500	43Ω	busbar	brake resistor	400	107	50	2 694.54
RXLG-2KW/32RJ	2000	32Ω	busbar	brake resistor	450	107	50	3 662.87
RXLG-3KW/26RJ	3000	26Ω	busbar	brake resistor	500	107	50	5 525.93
RXLG-4.8KW/16RJ	5000	16Ω	busbar	brake resistor	700	107	50	8 425.17
RXLG-4KW/20RJ	5000	20Ω	busbar	brake resistor	700	107	50	7 230.28
RXLG-6KW/14RJ	6000	14Ω	busbar	brake resistor	750	107	50	9 884.56

Braking units for drives without built-in braking chopper



VFDB4030

type	IMAX (A) 10%ED	ICONT (A)	Input range. (VDC)	Min. Resistance (ohm)	price
VFDB4030	40	15	400-750	20	6 375.80
VFDB4045	60	18	400-750	13.6	6 649.51
VFDB4110	126	45	400-750	6	18 860.60
VFDB4160	190	50	400-750	4	22 000.19
VFDB4185	225	100	400-750	3.4	25 933.32
VFDB5055	60	20	607-1000	15.8	9 035.84
VFDB6055	46	29	600-1120	24.5	12 615.90
VFDB6110	92	59	600-1120	12.2	15 675.00
VFDB6160	136	86	600-1120	8.2	20 643.15
VFDB6200	162	107	600-1120	6.9	25 519.30

EMC filtering solution

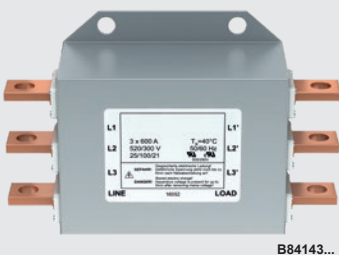
For specific applications and strict regulatory demands, EMC range of filters for Delta VFD range. Filter selection is designed to comply to EN61800-3 radiated emission and conducted emission for power drives systems.

type	rated amps	max output cable CE	emissions conducted	carrier freq	emissions radiated	dimensions (mm) (H) (W) (D)			price
EMC Filters -		ILK = 14mA	• Busbar connection						
• Overload -		1.5 x IR for 3 min per hour or 2.5 x IR for 30s per hour							
• Approvals:		UL 1283; CSA C22.2 No.8 - complies with IEC 60939							
Category C2/C3 - 400V three phase (300- 520V AC)									
B84143B0180S080	180A	150m	C3	C3	<6kHz	550	400	220	22 057.70
B84143B0250S080	250A	150m	C3	C3	<4kHz	550	400	220	28 842.91
B84143B0320S080	320A	150m	C3	C3	<4kHz	550	400	220	30 567.96
B84143B0400S080	400A	150m	C3	C3	<4kHz	550	400	220	32 822.03
B84143B0600S080	600A	150m	C3	C3	<4kHz	550	400	220	37 744.19
B84143B1000S080	1000A	100m	C3	C3	<4kHz	550	400	220	77 282.42
B84143B0120R110	120A	25m	C2	C2	<6kHz	550	400	220	20 447.65
B84143B0180S020*	180A	13m	C2	C3	<4kHz	550	400	220	25 369.80
B84143B0250S020*	250A	13m	C2	C2	<4kHz	550	400	220	33 247.55

* Zero phase reactor UVW

Zero phase reactors (ferrite cores)

type	related filter Amps	min cable insulation	mounting	dimensions (mm) (OD) (ID) (D)			price
- Effective filtering band - 550Hz - 1MHz			- Min cable insulation 600V				
RF300X00A	200-1000A	600V	base mount	217	155	42	23 667.75
T60006L2160V066	150-1000A	600V	ring fit	167	124	31	4 337.94



new

B84143...

Medium Voltage Drives

HIGH PERFORMANCE RELIABLE DRIVES



NOW
AVAILABLE

Why MV Drives Matter?

Recent studies by the International Energy Agency (IEA) indicate that globally industrial applications accounts for 40% of the world's electricity consumption with an estimated 300 million plus electric motors globally consuming 65% of all industrial electricity.

Today, more than ever industries are implementing Environmental and Social Sustainability strategies (ESS) in compliance to governmental legislation. The balance to sustainably improve energy efficiency by reducing CO2 emissions and energy usage and cut operational costs at the same time, without compromising productivity or product quality is attracting interest in energy-efficient technologies such as Medium Voltage (MV) Variable Speed Drives (VSD) solutions.



Delta Electronics Solution

Delta MVF23 / MVF20 series medium voltage drives have built-in advanced flux-oriented vector control techniques with or without speed sensors. The high speed accuracy and fast dynamic response against load fluctuation are suitable for different types of load in the industry. The versatility of functions and protections make it easy to be integrated with field control needs thus to fulfill different applications.

HIGH EFFICIENCY

System efficiency is higher than 98.5% (excluding phase-shifting transformer), saving energy and reducing carbon emission.

LOWER HARMONICS

Multi-pulse phase-shifting rectification technology reduces grid current harmonic content effectively and meets IEEE 519-1992. Multilevel voltage output and starting current control reduce impacts on the motor.

SMALL FOOTPRINT

The compact structure can reduce the requirements for site space.

OPTIMAL RELIABILITY

The system provides a diagnosis function to show the position and type of failure and warn the user about the fault occurrence. Advanced control functions enhance adaptability against unstable grids.

Related Industries



Mining,
Minerals &
Metals



Water
Waste-Water



Power, Energy
& Renewables



Oil & Gas
Petrochemical

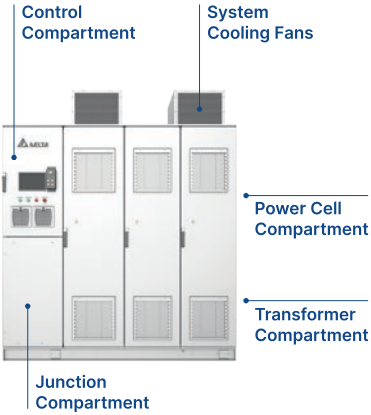


Manufacturing

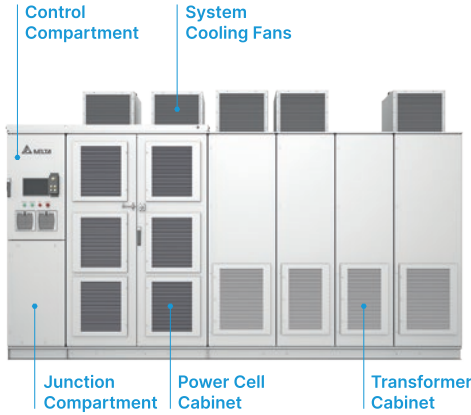


Agriculture

Compact design



In-line design



Scan here
to develop a customised
MV VSD solution.

Selection Guide

MVF2



Series Code
3: Compact design
0: In-line design



Input Voltage
A: 3.3 kV
D: 6.6 kV
F: 11 kV



Output Voltage
A: 3.3 kV
D: 6.6 kV
F: 11 kV



Output Current
036 A
070 A
100 A
140 A
215 A
250 A
350 A



Bypass Cabinet
N: No



Optional Cabinet
F: Filter Cabinet
N: No

SS

Series	Input voltage	Output voltage	Current	Power (kW)	System model	Width	Depth	Height (w/o fan)	Height (w/ fan)	Weight (approx) kg
	V	V				mm	mm	mm	mm	
MVF23 Compact Series	3.3 kV	3.3 kV (18-Pulse)	36 A	160kW	MVF23AA036NNSS	1 210	1 250	2 328	2 868	2 100
			70 A	315kW	MVF23AA070NNSS	1 210				2 300
			100 A	450kW	MVF23AA100NNSS	1 610				3 100
			140 A	630kW	MVF23AA140NNSS	1 610				3 200
			215 A	1000kW	MVF23AA215NNSS	1 910				4 700
	6.6 kV	6.6 kV (36-Pulse)	36 A	320kW	MVF23DD036NNSS	2 310				3 700
			70 A	630kW	MVF23DD070NNSS	2 310				3 800
			100 A	900kW	MVF23DD100NNSS	2 710				5 100
			140 A	1250kW	MVF23DD140NNSS	2 710				5 200
			215 A	2000kW	MVF23DD215NNSS	3 010				6 200
MVF20 In-Line Series	11 kV	11 kV (54-Pulse)	36 A	530kW	MVF20FF036NNSS	3 410	1 400			4 400
			70 A	1060kW	MVF20FF070NNSS	3 410				5 200
			100 A	1500kW	MVF20FF100NNSS	3 910				6 800
			140 A	2100kW	MVF20FF140NNSS	3 910				7 550
			215 A	3400kW	MVF20FF215NNSS	4 660				11 500
			250 A	4000kW	MVF20FF250NNSS	6 400				12 000
			350 A	5600kW	MVF20FF350NNSS	7 600				13 100
	3.3 kV	3.3 kV (18-Pulse)	250 A	1125kW	MVF20AA250NNSS	3 700				4 000
			350 A	1600kW	MVF20AA350NNSS	4 800				5 000
			250 A	2250kW	MVF20DD250NNSS	5 000				8 300
	6.6 kV	6.6 kV (36-Pulse)	350 A	3200kW	MVF20DD350NNSS	6 600				9 800

KW rating is based on Normal Duty (110% O/L) applications with average motor PF = 0.85 and motor efficiency = 95%
Normal Duty (ND) is sufficient for Variable Torque (VT) applications at Altitude (≤1000m) and Ambient Temperature ≤ 40°C



:hager

socomec

sd Electric

DEHN

CPT cirprotec

Lovato electric

APATOR

K' ELECTRIC