

MOTOR CONTROL & DRIVES

A

A₁

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BG0901A



BG09T4A



BG09T4D



BGX1020



BGX1040



BGX5000



RF12...

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

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

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

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

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

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

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

Accessories for above mini contactors

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

Thermal overload relays for above mini BG contactors

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

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

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



BF0910A



BF2600A



BF5000A



BF15000A

new



B25000



BF00...

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



BF0910D



BF2600D



BF9400E

new

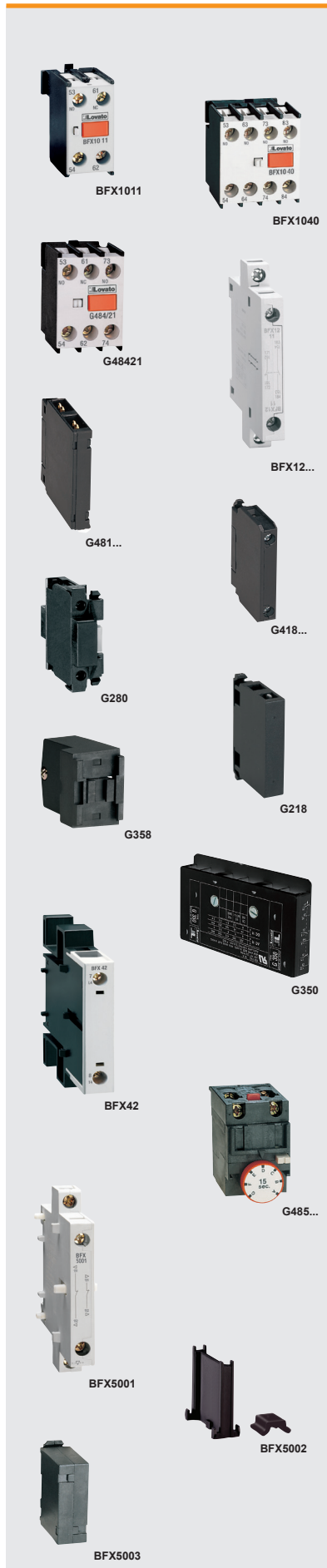


BF15000E + BFX44

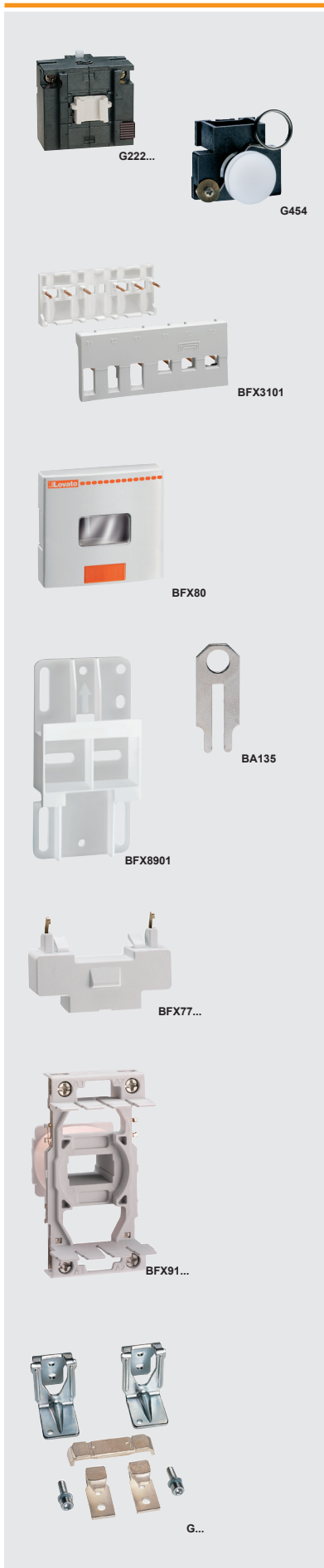


BF00...

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



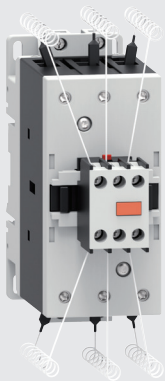
type	mounting	description	terminal	contacts
Clip-on auxiliary contact blocks				
For contactors BF09 - BF150 10A Ith/690V Ui				
BFX1020	top (centre)	auxiliary contact block	screw	2NO
BFX1011	top (centre)	auxiliary contact block	screw	1NO + 1NC
BFX1002	top (centre)	auxiliary contact block	screw	2NC
BFX1040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



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



BFK1810A



BFK11500A

new



G460

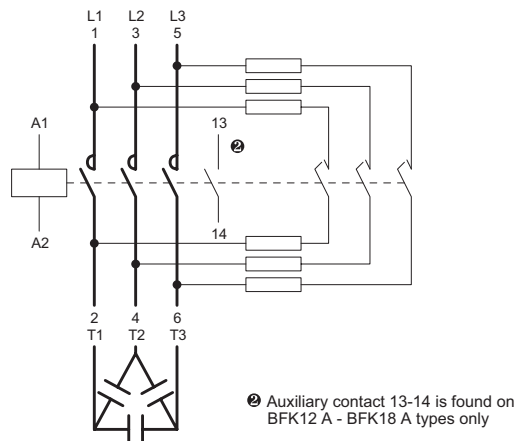
Special capacitor switching contactors are equipped with early-make limiting resistors which limit in-rush currents initially before making contact. Resistors are disconnected from the circuit when contactor closing operation is complete.

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

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

Kit to assemble BFK contactors from standard contactors

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



Thyristor switching modules (intelligent)

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

Integrated current transformers permit complete monitoring and protection of capacitor banks.

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

Advanced communication functions

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

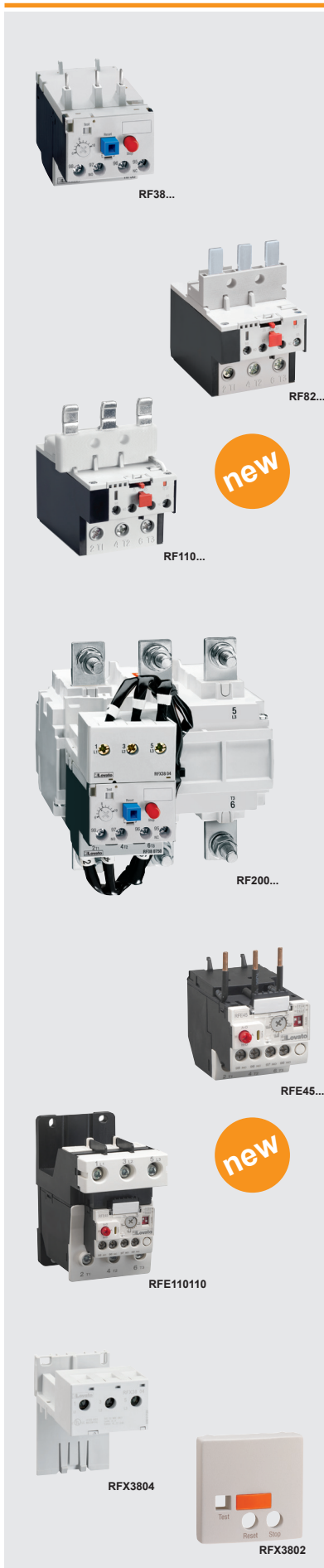
type	kvar 400V	rated current	description	dimensions (mm)		
				(H)	(W)	(D)
DCTLA4000150	15	22A	thyristor switching module	218	75	172
DCTLA4000300	30	43A	thyristor switching module	218	75	172
DCTLA4000500	50	72A	thyristor switching module	226	95	182
DCTLA4001000	100	144A	thyristor switching module	301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



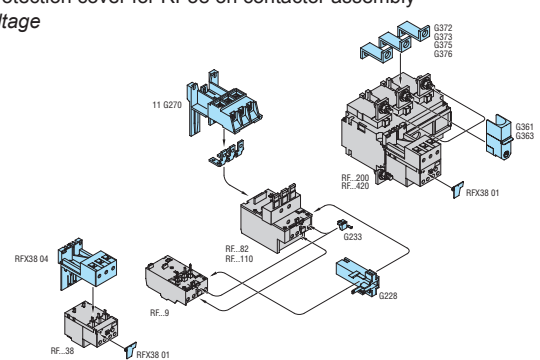
DCTLA...

new

NFC



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





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

Supplied standard with 400V coils

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

Extra charge for above, with on-load isolator

- Padlockable in OFF position, interlocked in ON position

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

* Add part number to end of starter part number

Accessories

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

Reversing DOL starters (enclosed) (IP65)

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

RM25 starters	motor rating	overload range	description	housing
mounted into M25N enclosure (H) 210 x (W) 175 x (D) 165 mm				
RM25P09A5	0.37kW	0.1 - 1.6A	enclosed reversing starter	PC / IP65
RM25P09A6	0.75kW	1.6 - 2.5A	enclosed reversing starter	PC / IP65
RM25P09A7	1.5kW	2.5 - 4.0A	enclosed reversing starter	PC / IP65
RM25P09A8	2.2kW	4.0 - 6.5A	enclosed reversing starter	PC / IP65
RM25P09A9	4.0kW	6.3 - 10A	enclosed reversing starter	PC / IP65
RM25P12B0	5.5kW	9 - 14A	enclosed reversing starter	PC / IP65
RM25P18B1	7.5kW	13 - 18A	enclosed reversing starter	PC / IP65
RM25P25B2	11.0kW	17 - 23A	enclosed reversing starter	PC / IP65
RM25P32B3	15.0kW	24 - 32A	enclosed reversing starter	PC / IP65
RM25P38B5	18.5kW	32 - 38A	enclosed reversing starter	PC / IP65
RM3 starters mounted into M3N enclosure (H) 280 x (W) 220 x (D) 187 mm				
RM3P50B6	22.0kW	35 - 50A	enclosed reversing starter	ABS / IP65
RM3P65B7	30.0kW	45 - 65A	enclosed reversing starter	ABS / IP65
RM3P80B8	37.0kW	60 - 82A	enclosed reversing starter	ABS / IP65

With mounted on-load isolator (extra charges)

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

* Add part number to end of starter part number



SM1P...



SM1R...



SM2R5000



SM3R...

SM series - Motor protection circuit breakers

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

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



Scan to watch video

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

Motor protection circuit breakers

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

- Pushbutton control - padlockable in OFF position

SM1P0016	–	–	0.1 - 0.16A	manual motor starter	100kA
SM1P0025	–	–	0.16 - 0.25A	manual motor starter	100kA
SM1P0040	–	–	0.25 - 0.4A	manual motor starter	100kA
SM1P0063	–	0.18	0.40 - 0.63A	manual motor starter	100kA
SM1P0100	0.12	0.25	0.63 - 1A	manual motor starter	100kA
SM1P0160	0.25	0.37/1.55	1 - 1.6A	manual motor starter	100kA
SM1P0250	0.37	0.75	1.6 - 2.5A	manual motor starter	100kA
SM1P0400	0.55/1.75	1.1/1.5	2.5 - 4A	manual motor starter	100kA
SM1P0650	1.1/1.5	2.2	4 - 6.5A	manual motor starter	100kA
SM1P1000	1.5/2.2	4.0	6.3 - 10A	manual motor starter	100kA
SM1P1400	3.0	5.5	9 - 14A	manual motor starter	25kA
SM1P1800	4.0	7.5	13 - 18A	manual motor starter	25kA
SM1P2500	5.5	11.0	20 - 25A	manual motor starter	15kA
SM1P3200	7.5	15.0	24 - 32A	manual motor starter	10kA
SM1P4000	11	18.5	30 - 40A	manual motor starter	10kA

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

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

SM1R0016	–	–	0.1 - 0.16A	manual motor starter	100kA
SM1R0025	–	–	0.16 - 0.25A	manual motor starter	100kA
SM1R0040	–	–	0.25 - 0.4A	manual motor starter	100kA
SM1R0063	–	0.18	0.40 - 0.63A	manual motor starter	100kA
SM1R0100	0.12	0.25	0.63 - 1A	manual motor starter	100kA
SM1R0160	0.25	0.37/1.55	1 - 1.6A	manual motor starter	100kA
SM1R0250	0.37	0.75	1.6 - 2.5A	manual motor starter	100kA
SM1R0400	0.55/1.75	1.1/1.5	2.5 - 4A	manual motor starter	100kA
SM1R0650	1.1/1.5	2.2	4 - 6.5A	manual motor starter	100kA
SM1R1000	1.5/2.2	4.0	6.3 - 10A	manual motor starter	100kA
SM1R1400	3.0	5.5	9 - 14A	manual motor starter	100kA
SM1R1800	4.0	7.5	13 - 18A	manual motor starter	100kA
SM1R2500	5.5	11.0	20 - 25A	manual motor starter	50kA
SM1R3200	7.5	15.0	24 - 32A	manual motor starter	50kA
SM1R4000	11	18.5	30 - 40A	manual motor starter	20kA

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







- Rotary selector control - padlockable in OFF position

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

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

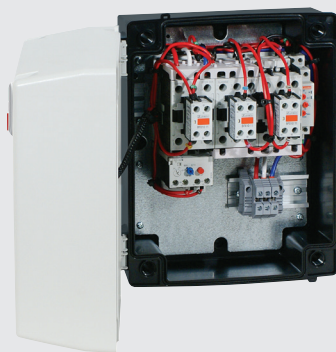
- Rotary selector control - padlockable in OFF position
- Thermal and magnetic trip indication - (by knob position)

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

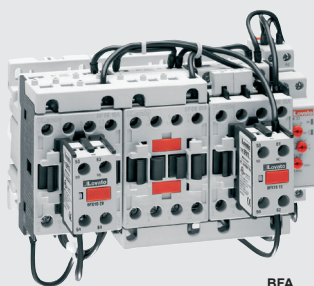
	type	config.	mount position	description	for starter
Auxiliary contacts					
	SM1X1211	1NO + 1NC	left side	mounting auxiliary contact block	SM1P/R
	SM1X1220	2NO	left side	mounting auxiliary contact block	SM1P/R
	SM1X1311	1NO + 1NC	left side	trip indication auxiliary contact block	SM1P/R
	SM1X1111	1NO + 1NC	front	mounting auxiliary contact block	SM1P/R
	SM1X1120	2NO	front	mounting auxiliary contact block	SM1P/R
	SM2X1211	1NO + 1NC	left side	mounting auxiliary contact block	SM2/3R
	SM2X1220	2NO	left side	mounting auxiliary contact block	SM2/3R
	SM2X1311	1NO + 1NC	left side	trip indication auxiliary contact block	SM2/3R
	SM2X1111	1NO + 1NC	front	mounting auxiliary contact block	SM2/3R
	SM2X1120	2NO	front	mounting auxiliary contact block	SM2/3R
Shunt trip release					
	SM1X16024	24 VAC	right side	side mounting shunt trip release unit	SM1P/R
	SM1X16110	110 VAC	right side	side mounting shunt trip release unit	SM1P/R
	SM1X16230	230 VAC	right side	side mounting shunt trip release unit	SM1P/R
	SM1X16400	400 VAC	right side	side mounting shunt trip release unit	SM1P/R
	SM2X16024	24 VAC	right side	side mounting shunt trip release unit	SM2/3R
	SM2X16110	110 VAC	right side	side mounting shunt trip release unit	SM2/3R
	SM2X16230	230 VAC	right side	side mounting shunt trip release unit	SM2/3R
	SM2X16400	400 VAC	right side	side mounting shunt trip release unit	SM2/3R
Undervoltage release					
	SM1X14230	230 VAC	right side	mounting undervoltage release	SM1P/R
	SM1X14400	400 VAC	right side	mounting undervoltage release	SM1P/R
	SM2X14230	230 VAC	right side	mounting undervoltage release	SM2/3R
	SM2X14400	400 VAC	right side	mounting undervoltage release	SM2/3R
Door interlocking handle <i>(for SM1/2/3R rotary type starters)</i>					
	SM1X18200R	red/yellow		door interlock handle (IP65) +200 mm shaft	SM1R
	SM2X18200R	red/yellow		door interlock handle (IP65) +200 mm shaft	SM2/3R
	SM1X18S	support		optional shaft support for	SM1R
Mounting accessories					
	BFX8901	universal		base for screw fixing motor protection	SM1P/R
	SM1X3040P	3Ph rigid		rigid connection between SM1P and contactor	BG mini
	SM1X3141P	3Ph rigid		rigid connection between SM1P and AC contactor	BF09-25A
	SM1X3241P	3Ph rigid		rigid connection between SM1P and AC contactor	BF26-38A
	SM1X3040R	3Ph rigid		rigid connection between SM1R and contactor	BG mini
	SM1X3141R	3Ph rigid		rigid connection between SM1R and AC contactor	BF09-25A
	SM1X3241R	3Ph rigid		rigid connection between SM1R and AC contactor	BF26-38A
Bridge bars for SM1P/R motor protection circuit breakers					
	SMX9032	insulated		3-phase bridge bar to connect	2 units (45 mm)
	SMX9033	insulated		3-phase bridge bar to connect	3 units (45 mm)
	SMX9034	insulated		3-phase bridge bar to connect	4 units (45 mm)
	SMX9035	insulated		3-phase bridge bar to connect	5 units (45 mm)
With spacing to accommodate side mounted auxiliaries or releases					
	SMX9042	insulated		3-phase bridge bar to connect	2 units (54 mm)
	SMX9043	insulated		3-phase bridge bar to connect	3 units (54 mm)
	SMX9044	insulated		3-phase bridge bar to connect	4 units (54 mm)
	SMX9045	insulated		3-phase bridge bar to connect	5 units (54 mm)
	SMX9030	25 mm ²		3-phase busbar supply block	<i>(enlarged terminal)</i>
Enclosures for motor protection circuit breakers - (IP65)					
	SM1Z1701P	surface		mount enclosure for starters	135 x 80 x 101 SM1P
	SM1Z1715R	surface		mount enclosure for starters	154 x 100 x 138 SM1R
Flush mount enclosure - (IP65) <i>panel cutout (H) 115.5 x (W) 70.5 mm</i>					
	SM1Z1705P	flush		mount enclosure for starters	133 x 87 x 86 SM1P
	SM1X1745P			button membrane protection cover for enclosure	SM1P
	SM1X1740P			emergency stop <i>(twist release)</i> pushbutton assembly for enc.	SM1P



JDY25/P



JDY25/PI040



BFA...

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

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

Enclosed star-delta starters (IP65)

ABS enclosure M3N (hinged door 180° opening)

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

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

- Padlockable in OFF position, door interlocking in ON position

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

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

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

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

- Padlockable in OFF position, door interlocking in ON position

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

Extra charges

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

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

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

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



ADXC012400



ADXC037400



ADXL0030600



ADXL0075600



ADX0640

ADXC series - Compact soft starters

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



Scan to watch video

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

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

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

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

ADXL series (with integrated by-pass relay)

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

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

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

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

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




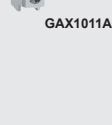
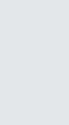


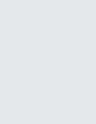
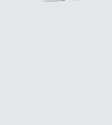
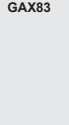

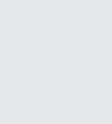
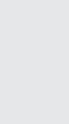


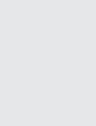
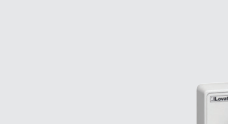





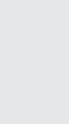
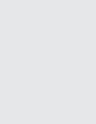

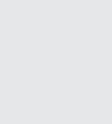

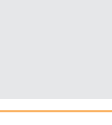



ADX0310	310A	160kW	soft starter	600	640	380
ADX0365	365A	200kW	soft starter	600	640	380
ADX0470	470A	250kW	soft starter	650	790	430
ADX0568	568A	315kW	soft starter	650	790	430
ADX0640	640A	355kW	soft starter	650	790	430
ADX0820	820A	400kW	soft starter	950	910	442
ADX1200	1200A	710kW	soft starter	950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

Accessories for soft starters

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



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

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

new



GAZ025



GAZM016EM



GAZM160EM



GAZS016EM

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

type	AC21A ≤ 690V		AC23A ≤ 415V		poles	description	dimensions (mm)		
							(H)	(W)	(D)
Plastic ABS enclosed isolators (IP65)									
GAZ016	16A	7.5kW	3 pole	enclosed load-break switch	160	100	120		
GAZ025	25A	11.0kW	3 pole	enclosed load-break switch	160	100	120		
GAZ032	32A	15.0kW	3 pole	enclosed load-break switch	160	100	120		
GAZ040EM	40A	18.5kW	3 pole	enclosed load-break switch	160	100	120		
GAZ063EM	63A	22.0kW	3 pole	enclosed load-break switch	160	100	120		
GAZ080EM	80A	45.0kW	3 pole	enclosed load-break switch	210	175	122		
GAZ125EM	125A	55.0kW	3 pole	enclosed load-break switch	210	175	122		
GAZ160EM	160A	55.0kW	3 pole	enclosed load-break switch	210	175	122		

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

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

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

Metal enclosed isolators (IP65)

GAZ series 16...160A

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

GLZ series 200...315A

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

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

Stainless steel (AISI 304) enclosed isolators (IP65)

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

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

Attachable 4th pole for above switches

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



C45



GL16



OD-GL



PBM B..



PBM HE

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

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

Significant technical advantages of Fanox protection devices include:

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

type	current setting	motor rating 400V	description
------	-----------------	-------------------	-------------

C series - Basic motor protection

Overload - Phase imbalance

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

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

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

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

For larger sizes, use C9 with external CTs.

GL series - Motor protection

Overload - Phase imbalance - Over temperature - Phase sequence

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

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

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

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

For larger sizes, use GL16 with external CTs

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

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

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

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

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

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

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

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

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

For larger sizes, use PBM B11 with external CTs

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

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

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

Series		ME300 Series											MS300 Series																	
		single phase					three phase						single phase					three phase												
Model number	VFD-__ME/MS/E	1A6	2A8	4A8	7A5	11A	1A5	2A7	4A2	5A5	9A0	13A	17A	1A6	2A8	4A8	7A5	11A	1A5	2A7	4A2	5A5	9A0	13A	17A	25A	32A	38A	45A	
Frame size		A	A	B	C	C	A	A	B	C	C	D	D	B	B	B	C	C	B	B	B	C	C	D	D	E	E	F	F	
Max. applicable motor output	kW	0.2	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	0.2	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	
Output rating																														
Rated output capacity	NORMAL DUTY	kVA	0.7	1.2	1.9	3.2	4.8	1.4	2.3	3.5	5	8	12	15.6	0.7	1.2	1.9	3.2	4.8	1.4	2.3	3.5	5	8	9.9	13	19.1	24.4	29	34.4
		A	1.8	3.2	5	8.5	12.5	1.8	3	4.6	6.5	10.5	15.7	20.5	1.8	3.2	5	8.5	12.5	1.8	3	4.6	6.5	10.5	15.7	20.5	28	36	41.5	49
Output frequency	Hz	0.0 - 599Hz											0.0 - 599Hz																	
Carrier frequency	kHz	2 - 15kHz											2 - 15 kHz (default 4)																	
Rated output capacity	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	1.1	2.1	3.2	4.2	6.9	9.9	13	19.1	24.4	29	34.3
		A	1.6	2.8	4.8	7.5	11	1.5	2.7	4.2	5.5	9	13	17	1.6	2.8	4.8	7.5	11	1.5	2.7	4.2	5.5	9	13	17	25	32	38	45
Carrier frequency	kHz	2 - 15kHz											2 - 15kHz (default 4)																	
Input rating																														
Input current (heavy duty)	A	3.4	5.9	10.1	15.8	23.1	1.7	3	4.6	6.1	9.9	14.3	18.7	3.4	5.9	10.1	15.8	23.1	2.1	3.7	5.8	6.1	9.9	14.3	18.7	27.5	35.2	41.8	49	
Input current (normal duty)	A	3.8	6.7	10.5	17.9	26.3	2	3.3	5.1	7.2	11.6	17.3	22.6	3.8	6.7	10.5	17.9	26.35	2.5	4.2	6.4	7.2	11.6	17.3	22.6	30.8	39.6	45.7	53.9	
Rated voltage	V	1-phase 200-240V (-15~+10%)					3-phase AC 380V ÷ 480V (-15~+10%)						1-phase 200-240V (-15~+10%)					3-phase AC 380V ÷ 480V 50/60Hz												
Operating voltage range	V	170 - 265V					323 - 528V						170 - 264V					342 - 528V												
Frequency range	Hz	47 - 63Hz ± 5%																												
Cooling method		convection					fan						convection					fan cooling												
Braking chopper		built-in																												
DC reactor		optional																												
Control method		V/F, SVC																												
Starting torque	%	up to 150% at 3 Hz including auto-torque/slip																												
Max. output frequency	Hz	0.00-599.00 Hz											0.00-599.00 Hz																	
Frequency output accuracy		-																												
Frequency setting resolution	Hz	0.01Hz											0.01Hz																	
Overload tolerance (normal duty)		120% of rated output current for 60 seconds; 150% for 3 seconds											120% of rated output current for 60 seconds; 150% for 3 seconds																	
Overload tolerance (heavy duty)		150% of rated output current for 60 seconds; 200% for 3 seconds											150% of rated output current for 60 seconds; 200% for 3 seconds																	
Frequency setting signal		0 - 10V / 4(0)-20mA, PWM pulse width input (1kHz), pulse input (10kHz)											0 ~ +10 V / -10 V ~ +10 V, 4 - 20 mA / 0 ~ +10 V, 1 pulse input (33 kHz), 1 pulse output (33 kHz)																	
Accel./decel. Time		0.1 - 600 sec. (2 settings accel/decel time)																												
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																												
Motor protection		electronic thermal relay and phase failure protection											over/under-volt/current, external fault, overload, IGBT short circuit, PTC																	
Over-current protection		yes											yes																	
Over-voltage protection		yes											yes																	
Over-temperature protection		yes											yes																	
Stall prevention		Stall prevention during acceleration, deceleration and running independently											Stall prevention during acceleration, deceleration and running independently																	
Re-start after momentary power off		yes											yes																	
Ground current protection		yes											yes																	
EMI filter		no											no					built-in Class A (C2)												
Dimensions (H) x (W) x (D)	H	mm	128	128	142	157	128	128	142	157	207			142	157	142	157	207	250	300										
	W	mm	68	68	72	87	68	68	72	87	109			72	87	72	87	109	130	175										
	D	mm	78	107	127	136	113	127	127	136	138			159	179	159	179	187	219	244										
Weight	kg	0.4	0.5	0.8	1	0.55	0.7	0.8	1	2			1.32	1.8	1.32	1.8	2.07	3.97	6.25											
Optional accessories		DIN rail mount adaptor											DeviceNet, Ethernet/IP, Profibus DP, Modbus TCP, CANopen communication cards, external 24 VDC power supply card, DIN rail mount adaptor, cable for remote mounting of digital keypad																	

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



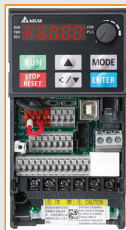
new



VFD1A6ME21ANN



VFD4A8ME21ANN



VFD4A8MS21ANS



VFD32AMS43AFS

ME300/MS300 series - Vector control compact drive

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

Common features include:

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



Scan to watch video

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

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

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

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

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

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

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

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

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

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

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

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

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

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



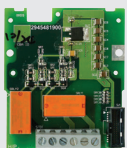
VFD004E21T



VFD110E43A



KPE-LE02



CMM...

E series - Sensorless vector control compact drive

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

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

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

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

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

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

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

Accessories for E series drives

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

Fieldbus modules for E series drives

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

Accessories for ME/MS300 series drives

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

Fieldbus modules for MS series drives

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



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

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

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

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

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

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

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

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

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

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



CP2000 series - Fan and Pump purpose drives

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

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



VFD150CP4EB-21



VFD220CP4EA-21



VFD450CP43S-21

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

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

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

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

Accessories for C2000 and CP2000 series drives

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

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

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

Mounting accessories

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

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

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

Conduit boxes

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

A₂



new



VFD040FP4EA-52



VFD450FP4EA-52

CFP2000 series - Drives for Fans and Pumps (IP55)

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

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

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

Applications:

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

Standard: IEC 60721-3-3 class 3C3

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

General features:

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

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

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

Accessories for CFP2000 series drives

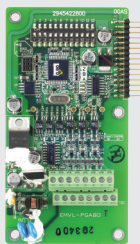
EMC-D42A	4DI / 2DO	digital I/O extension card, selectable NPN/PNP, DC 24V
EMC-A22A	2AI / 2AO	analog I/O extension card, selectable 0-10V/4-20mA
EMC-R6AA	6 relay	relay output extension card

Fieldbus modules for CFP2000 series drives (plugs into drive)

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



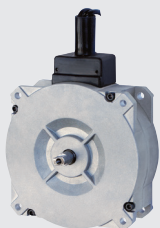
VFD185ED43S



EMED-PGABD-1



VFD004DD21S



ECMD-B91608MS

ED series - Elevator drives

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

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

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

Larger sizes available on request.

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

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

PG feedback cards

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

DD series - Elevator door drive

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

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

Single - phase input 230 VAC 50/60Hz

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

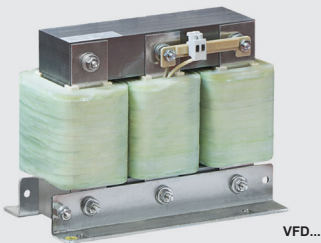
- MEC-SG1026S** 1 meter encoder cable (*without D-SUB connector*) for DD series
- MEC-SG3026S** 3 meter encoder cable (*without D-SUB connector*) for DD series

Slimline sliding door motor DC brushless motor

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

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

new



VFD...

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

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

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

General features:

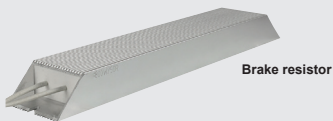
- Compact dimensions
- Insulation class H - 1000 VAC
- Rated for Delta 400V drives
- High quality grain orientated silicon steel
- High operation temperature (125 °C)
- Normal operation temperature (40 to 50 °C) above ambient

AC Reactors - Input and Output Reactors 400V

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

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

Other sizes and voltages available on request.



Brake resistor

See opposite page

Drive	Motor rating kW	Full Load torque (kg-m)	Brake unit		Braking resistor for each brake unit				Resistor value		Min Equiv Resistor Value		
			Part No.	No.	Type	No.	Series	Parallel	W	Ohm			
"ME" Series													
VFD1A6ME21ANN	230V	0.20	0.1	-	-	BR80W/750RJ	1	-	-	80	750	190	
VFD2A8ME21ANN		0.40	0.3	-	-	BR80W/200RJ	1	-	-	80	200	95	
VFD4A8ME21ANN		0.75	0.5	-	-	BR80W/200RJ	1	-	-	80	200	63.3	
VFD7A5ME21ANN		1.50	1	-	-	BR200W/91RJ	1	-	-	200	91	45.7	
VFD11A5ME21ANN		2.20	1.5	-	-	BR300W/70RJ	1	-	-	300	70	38	
VFD1A5ME43ANN	460V	0.40	0.3	-	-	BR80W/750RJ	1	-	-	80	750	380	
VFD2A7ME43ANN		0.75	0.5	-	-	BR80W/750RJ	1	-	-	80	750	190	
VFD4A2ME43ANN		1.50	1	-	-	BR200W/360RJ	1	-	-	200	360	126.7	
VFD5A5ME43ANN		2.20	1.5	-	-	BR300W/250RJ	1	-	-	300	250	108.6	
VFD9A0ME43ANN		3.70	2.5	-	-	BR400W/150RJ	1	-	-	400	150	84.4	
VFD13A5ME43ANN		5.50	3.7	-	-	BR1KW/75RJ	1	-	-	1000	75	50.7	
VFD17A5ME43ANN		7.50	5.1	-	-	BR1KW/75RJ	1	-	-	1000	75	40	
"MS" Series													
VFD1A6MS21ANS	230V	0.20	0.1	-	-	BR80W/750RJ	1	-	-	80	750	190	
VFD2A8MS21ANS		0.40	0.3	-	-	BR80W/200RJ	1	-	-	80	200	95	
VFD4A8MS21ANS		0.75	0.5	-	-	BR80W/200RJ	1	-	-	80	200	63.3	
VFD7A5MS21ANS		1.50	1	-	-	BR200W/91RJ	1	-	-	200	91	45.7	
VFD11A5MS21ANS		2.20	1.5	-	-	BR300W/70RJ	1	-	-	300	70	38	
VFD1A5MS43AFS	460V	0.40	0.3	-	-	BR80W/750RJ	1	-	-	80	750	380	
VFD2A7MS43AFS		0.75	0.5	-	-	BR80W/750RJ	1	-	-	80	750	190	
VFD4A2MS43AFS		1.50	1	-	-	BR200W/360RJ	1	-	-	200	360	126.7	
VFD5A5MS43AFS		2.20	1.5	-	-	BR300W/250RJ	1	-	-	300	250	108.6	
VFD9A0MS43AFS		3.70	2.500	-	-	BR400W/150RJ	1	-	-	400	150	84.4	
VFD13A5MS43AFS		5.50	3.700	-	-	BR1KW/75RJ	1	-	-	1000	75	50.7	
VFD17A5MS43AFS		7.50	5.100	-	-	BR1KW/75RJ	1	-	-	1000	75	40	
VFD25A5MS43AFS		11.00	7.400	-	-	BR1.5KW/43RJ	1	-	-	1500	43	33	
VFD32A5MS43AFS		15.00	10.200	-	-	BR1KW/16RJ	2	2	-	2000	32	26.2	
VFD38A5MS43AFS		18.00	12.200	-	-	BR1KW/16RJ	2	2	-	2000	32	26.2	
VFD45A5MS43AFS	22.00	14.900	-	-	BR1.5KW/13RJ	2	2	-	3000	26	23		
"E" Series													
VFD004E43T	460V	0.40	0.21	-	1	BR80W/750RJ	1	-	-	80	750	422.2	
VFD007E43T		0.75	0.51	-	1	BR80W/750RJ	1	-	-	80	750	422.2	
VFD015E43T		1.50	1.02	-	1	BR200W/360RJ	1	-	-	200	360	126.7	
VFD022E43A		2.20	1.49	-	-	BR200W/250RJ	1	-	-	300	250	84.4	
VFD037E43A		3.70	2.5	-	-	BR300W/70RJ	2	2	-	600	140	84.4	
VFD055E43A		5.50	3.72	-	-	BR1KW/75RJ	1	-	-	1000	75	63.3	
VFD075E43A		7.50	5.08	-	-	BR1KW/75RJ	1	-	-	1000	75	42.2	
VFD110E43A		11.00	7.45	-	-	BR1.5KW/43RJ	1	-	-	1500	43	42.2	
VFD150E43A		15.00	10.16	-	-	BR1KW/20RJ	2	2	-	2000	40	21.1	
VFD185E43A		18.50	12.52	-	-	BR1.2KW/15RJ	2	2	-	2400	30	17.7	
VFD220E43A		22.00	14.89	-	-	BR1.5KW/13RJ	2	2	-	3000	26	17.7	
"C 2000" Series													
VFD040C43E	460V	4	2.7	-	-	BR1KW/75RJ	1	-	-	1000	75	54.3	
VFD055C43E		5.5	3.7	-	-	BR1KW/75RJ	1	-	-	1000	75	54.3	
VFD075C43E		7.5	5.1	-	-	BR1KW/75RJ	1	-	-	1000	75	47.5	
VFD110C43E		11	7.5	-	-	BR1.5KW/43RJ	1	-	-	1500	43	42.2	
VFD150C43E		15	10.2	-	-	BR1KW/16RJ	2	-	-	2000	32	26.2	
VFD185C43E		18.5	12.2	-	-	BR1KW/16RJ	2	2	-	2000	32	23	
VFD220C43E		22	14.9	-	-	BR1.5KW/13RJ	2	2	-	3000	26	23	
VFD300C43E		30	20.3	-	-	BR1KW/16RJ	4	2	2	4000	16	14.1	
VFD370C43A		37	25.1	VFDB4045	1	BR1.2KW/15RJ	4	2	2	4800	15	12.7	
VFD450C43A		45	30.5	VFDB4045	1	BR1.5KW/13RJ	4	2	2	6000	13	12.7	
VFD550C43A		55	37.2	VFDB4030	1	BR1KW/5,1RJ	4	-	4	8000	10.2	9.5	
VFD750C43A		75	50.8	VFDB4045	2	BR1.2KW/15RJ	4	2	2	9600	7.5	6.3	
VFD900C43A		90	60.9	VFDB4045	2	BR1.5KW/13RJ	4	2	2	12000	6.5	6.3	
VFD1100C43A		110	74.5	VFDB4110	2	BR1.2KW/15RJ	10	2	5	12000	6	6	
VFD1320C43A		132	89.4	VFDB4160	1	BR1.5KW/12RJ	12	2	6	18000	4	4	
VFD1600C43A		160	108.3	VFDB4160	1	BR1.5KW/12RJ	12	2	6	18000	4	4	
VFD1850C43A		185	125.3	VFDB4185	1	BR1.5KW/12RJ	14	2	7	21000	3.4	3.4	
VFD2200C43A		220	148.9	VFDB4110	2	BR1.2KW/15RJ	10	2	5	24000	3	3	
VFD2800C43A		280	189.6	VFDB4160	2	BR1.5KW/12RJ	12	2	6	36000	2	2	
VFD3150C43A		315	213.3	VFDB4160	2	BR1.5KW/12RJ	12	2	6	36000	2	2	
VFD3550C43A		355	240.3	VFDB4185	2	BR1.5KW/12RJ	14	2	7	42000	1.7	1.7	
VFD4500C43A		450	304.7	VFDB4185	3	BR1.5KW/12RJ	12	2	6	54000	1.3	1.1	
"CP 2000" Series													
VFD040CP4EA-21		460V	4	2.5	-	-	BR400W/150RJ	1	-	-	1000	75	54.3
VFD055CP4EB-21			5.5	2.7	-	-	BR1KW/75RJ	1	-	-	1000	75	54.3
VFD075CP4EB-21			7.5	3.7	-	-	BR1KW/75RJ	1	-	-	1000	75	47.5
VFD110CP4EB-21			11	5.1	-	-	BR1KW/75RJ	1	-	-	1500	43	42.2
VFD150CP4EB-21	15		7.4	-	-	BR1.5KW/43RJ	2	2	-	2000	32	26.2	
VFD185CP4EB-21	18.5		10.2	-	-	BR1KW/16RJ	2	2	-	2000	32	23	
VFD220CP4EA-21	22		12.2	-	-	BR1KW/16RJ	2	2	-	3000	26	23	
VFD300CP4EB-21	30		14.9	-	-	BR1.5KW/13RJ	4	2	2	4000	16	14.1	
VFD370CP4EB-21	37		20.3	-	-	BR1KW/16RJ	4	2	2	4800	15	12.7	
VFD450CP43S-21	45		25	VFDB4045	1	BR1.2KW/15RJ	4	2	2	6000	13	12.7	
VFD550CP43S-21	55		30.5	VFDB4030	2	BR1.5KW/13RJ	4	4	-	8000	10.2	9.5	
VFD750CP43B-21	75		37.2	VFDB4045	2	BR1KW/5,1RJ	4	2	2	9600	7.5	6.3	
VFD900CP43A-21	90		50.8	VFDB4045	2	BR1.2KW/15RJ	4	2	2	12000	6.5	6.3	
VFD1100CP43A-21	110		60.9	VFDB4110	1	BR1.5KW/13RJ	10	2	5	12000	6	6	
VFD1320CP43B-21	132		74.5	VFDB4160	1	BR1.2KW/15RJ	12	2	6	18000	4	4	
VFD1600CP43A-21	160		89.4	VFDB4160	1	BR1.5KW/12RJ	12	2	6	18000	4	4	



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