Mechtric

5.

IC ELECTRONIC A/S

DELTA

EURA DRIVES

Lovato electric

Enclosed without thermal overload relay


M0 P...10


M0 R...10


M1 P...10


M1 R...10


M2 P...10


M2 R...10


M25 P038 10


M25 R038 10


M3 P...10


M3 R...10

Order code	Maximum operating current (≤440V)	Qty per pkg	Wt
	[A]	n°	[kg]
Starters with Start and Stop/Reset pushbuttons ❷.			
M0 P009 10❶	10	1	0.667
M0 P012 10❶	12	1	0.667
M1 P009 10❶	13	1	0.910
M1 P018 10❶	18	1	0.910
M2 P025 10❶	25	1	1.060
M2 P032 10❶	32	1	1.162
M25 P038 10❶	38	1	2.360
M3 P050 10❶	50	1	3.110
M3 P065 10❶	65	1	3.110
M3 P080 10❶	80	1	3.110
M3 P095 10❶	95	1	3.110
Starters with Reset pushbutton ❷.			
M0 R009 10❶	10	1	0.627
M0 R012 10❶	12	1	0.627
M1 R009 10❶	13	1	0.867
M1 R018 10❶	18	1	0.867
M2 R025 10❶	25	1	1.020
M2 R032 10❶	32	1	1.110
M25 R038 10❶	38	1	2.320
M3 R050 10❶	50	1	3.070
M3 R065 10❶	65	1	3.070
M3 R080 10❶	80	1	3.070
M3 R095 10❶	95	1	3.070

❶ Complete order code with coil voltage digit if 50/60Hz or with voltage digit followed by 60 if 60Hz.
Standard voltages are as follows:
– AC 50/60Hz 024 / 048 / 110 / 230 / 400V
– AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).
Example: M0 R009 10 024 1 for direct-on-line starter in M0 type enclosure with Reset button, 9A /AC3 contactor with 24VAC 50/60Hz coil.
M0 P009 10 024 60 1 for direct-on-line starter in M0 type enclosure with Start and Stop/Reset buttons , 9A /AC3 contactor with 24VAC 60Hz coil.

❷ Protection fuses are to be mounted externally by the user.

For dimensions, accessories and combinations see www.mechtric.com.au

Components

Starter enclosure standard supplied	Contactor standard supplied	Thermal relay to purchase separately	Auxiliary contact standard supplied
M0 PA	BG09 10A	RF9❸	—
M0 PA	BG12 10A	RF9❸	—
M1 PA	BF09 10A	RF38❹	—
M1 PA	BF18 10A	RF38❹	—
M2 PA	BF25 10A	RF38❹	—
M2 PA	BF32 00A	RF38❹	G418 10
M25 PA	BF38 00A	RF38❹	G418 10
M3 PA	BF50 00A	RF82❺	G418 10
M3 PA	BF65 00A	RF82❺	G418 10
M3 PA	BF80 00A	RF82❺	G418 10
M3 PA	BF95 00	RF95 3❺	G418 10
M0 RA	BG09 10A	RF9❸	—
M0 RA	BG12 10A	RF9❸	—
M1 RA	BF09 10A	RF38❹	—
M1 RA	BF18 10A	RF38❹	—
M2 RA	BF25 10A	RF38❹	—
M2 RA	BF32 00A	RF38❹	G418 10
M25 RA	BF38 00A	RF38❹	G418 10
M3 RA	BF50 00A	RF82❺	G418 10
M3 RA	BF65 00A	RF82❺	G418 10
M3 RA	BF80 00A	RF82❺	G418 10
M3 RA	BF95 00	RF95 3❺	G418 10

❸ For thermal overload relay selection, refer to page 2-11.
❹ For thermal overload relay selection, refer to page 2-12.
❺ For thermal overload relay selection, refer to page 2-12.

Operational characteristics
– Cable entry:
  • M0/M1… - 2 knockouts PG13.5/M20 on enclosure top and bottom
  • M2… - 2 knockouts PG13.5/M20 or PG16/M25 on enclosure top and bottom
  • M25… - 2 knockouts PG16/M25-PG29/M32 on enclosure top and bottom
  • M3… - Smooth surfaces; can be drilled by customer
– Ambient conditions:
  • Operating temperature: -25...+60°C
  • Storage temperature: -40...+70°C
– Degree of protection: IP65 for all; type 4/4X industrial control environment for M1 / M2 / M25... and M3... UL versions.

Special M3… versions
In addition to standard-indicated versions, cULus certified starters are available up to 52A motor control or 65A general use rating max.
Add suffix **UL** to the order code,
e.g. M3 P050 10 024**UL**.

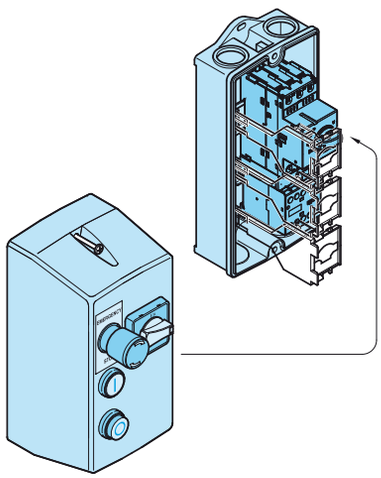
Certifications and compliance
Certifications obtained: EAC for all; UL Listed for USA and Canada (cULus – File E93602) and CSA certified for Canada and USA (cCSAus – File 94157) as Magnetic Motor Controllers, enclosed type, for all M0-M1-M2-M25P/R… starters and M3P/R50-65…UL types as indicated in “Special M3” above.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.

Enclosed with motor protection circuit breaker

M2 P009 11....

Order code	Relay adj range	IEC technical characteristics (≤440V) Ie	kW	Qty per pkg	Wt
	[A]	[A]	[kW]	n°	[kg]
M2 P009 11❶A4	0.63-1	1	0.25	1	1.450
M2 P009 11❶A5	1-1.6	1.6	0.37-0.55	1	1.450
M2 P009 11❶A6	1.6-2.5	2.5	0.75	1	1.515
M2 P009 11❶A7	2.5-4	4	1.1-1.5	1	1.515
M2 P009 11❶A8	4-6.5	6.5	2.2-3	1	1.515
M2 P009 11❶A9	6.3-10	10	3-5	1	1.515
M2 P009 11❶B0	9-14	13	5.5	1	1.515

❶ Complete order code with coil voltage digit (if 50/60Hz) or with voltage digit followed by 60 (if 60Hz).
Standard voltages are as follows:
– AC 50/60Hz 024 / 048 / 110 / 230 / 400V
– AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).
Example: M2 P009 11 400 A8 for direct-on-line starter in M2 type with reset and reset/emergency button, 9A/AC3 contactor with 400VAC 50/60Hz coil and motor protection circuit breaker 4...6.5A.



General characteristics
The M2 P009 11... starters are composed of an IP65 plastic enclosure where the following devices are mounted:
– an motor protection circuit breaker type SM1R... with the short circuit and overload protection function
– a contactor with start / stop function of the motor
– 2 push-buttons for the start and stop
– a mushroom push-button for the emergency stop
– a padlockable rotary actuator, that operates the circuit breaker, for the isolation.

These starters are easily and quickly installable. They are especially suitable to operate the motor of smaller machines where there is no electrical panel.
Inside the enclosure, other components can be added like timers, level relays, protection relays, etc.

Operational characteristics
– M2... - 2 knockouts PG13.5/M20 or PG16/M25 on enclosure top and bottom
– Ambient conditions:
  • Operating temperature: -25...+60°C
  • Storage temperature: -40...+70°C
– Degree of protection: IEC IP65, type 4/4X for UL version.

Certifications and compliance
Certifications obtained: EAC.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1.

Reversing contactor assemblies

11 BGR...

BFA...

11 BGT...

11 BGTP...

Order code	IEC Ie (AC3) ≤440V ≤55°C	Max. IEC power AC3 400V at ≤55°C	Built-in auxiliary contacts		Qty per pkg	Wt
	[A]	[kW]	NO	NC	n°	[kg]
AC COIL. Terminals: clamp screw. External interlock with power and auxiliary wiring.						
11 BGR09 01 A❶	9	4	0	1❸	1	0.394
11 BGR12 01 A❶	12	5.7	0	1❸	1	0.394
BFA009 42❶	9	4.2	0	1❸	1	0.760
BFA012 42❶	12	5.7	0	1❸	1	0.760
BFA018 42❶	18	7.5	0	1❸	1	0.760
BFA025 42❶	25	12.5	0	1❸	1	0.760
Built-in interlock with power wiring only.						
11 BGT09 10 A❶	9	4	1❸	0	1	0.380
11 BGT12 10 A❶	12	5.7	1❸	0	1	0.380
Rear terminals: PCB solder pins. Built-in interlock only.						
11 BGTP09 01 A❶	9	4❹	0	1❸	1	0.400
DC COIL. Terminals: clamp screw. External interlock with power and auxiliary wiring.						
11 BGR09 01 D❷	9	4	0	1❸	1	0.460
11 BGR12 01 D❷	12	5.7	0	1❸	1	0.460
Built-in interlock with power wiring only.						
11 BGT09 10 D❷	9	4	1❸	0	1	0.445
11 BGT12 10 D❷	12	5.7	1❸	0	1	0.445
Rear terminals: PCB solder pins. Built-in interlock only.						
11 BGTP09 01 D❷	9	4❹	0	1❸	1	0.460

Changeover contactor assemblies

11 BGC09 ...

Order code	IEC Operating current (AC1)			UL/CSA General Use	Qty per pkg	Wt
	≤40°C	≤55°C	≤60°C			
	[A]	[A]	[A]	[A]	n°	[kg]
AC COIL. Terminals: clamp screw. Built-in interlock only.						
11 BGC09 T4 A❶	20	18	15	20	1	0.365
DC COIL. Terminals: clamp screw. Built-in interlock only.						
11 BGC09 T4 D❷	20	18	15	20	1	0.450

❶ Complete order code with coil voltage digit or with voltage digit followed by 60 if 60Hz.
Standard voltages are as follows:
– AC 50/60Hz 024 / 048 / 110 / 230 / 400V
– AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).
Example: 11 BGR09 01 A024 for reversing contactor assembly with 2 mini-contactors BG09 having 1 NC auxiliary contact each and 24VAC 50/60Hz coil.
11 BGR09 01 A024 60 for reversing contactor assembly with 2 mini-contactors BG09 having 1 NC auxiliary contact each and 24VAC 60Hz coil.

❷ Complete order code with coil voltage digit.
Standard voltages are:
– DC 012 / 024 / 048 / 060 / 110 / 125 / 220V.
Example: 11BGC09 T4 D012 is a changeover contactor assembly with 2 mini-contactors BG09 having 4 main poles each and 12VDC coil.

❸ One auxiliary contact for each contactor.

❹ Maximum voltage is limited at 300V for UL. For certified type up to 600V, consult Customer Service; see contact details on front inside cover.

General characteristics

REVERSING CONTACTOR ASSEMBLIES
Supplied complete, ready for quick mounting.
The various versions are composed as follows:
BGR... Screw termination, external mechanical interlock BGX50 00, power and auxiliary wiring.
BGT... Screw termination, built-in mechanical interlock and power wiring only.
BGTP... Rear PCB solder pin termination, built-in mechanical interlock only.
No thermal overload relay can be directly mounted to BG... reversing contactor assemblies.
BFA... Screw termination, mechanical interlock BFX50 02 and power wiring.
The thermal overload relay RF38... can be directly mounted to BFA... reversing contactor assemblies; for selection, refer to section 3.

CHANGEOVER CONTACTOR ASSEMBLIES
Supplied complete, ready for quick mounting as follows: BGC09 T4 Four-pole contactors with built-in mechanical interlock. No power or auxiliary wiring included.

Operational characteristics

Type	Maximum IEC operational power at ≤55°C (AC3)					
	230V	400V	415V	440V	500V	690V
	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]
BGR09	2.2	4	4.3	4.5	5	5
BGT09	2.2	4	4.3	4.5	5	5
BGTP09❹	2.2	4	4.3	4.5	5	–
BGR12	3.2	5.7	6.2	5.5	5	5
BGT12	3.2	5.7	6.2	5.5	5	5
BFA009	2.2	4.2	4.5	4.8	5.5	7.2
BFA012	3.2	5.7	6.2	6.2	7.5	10
BFA018	4	7.5	9	9	10	10
BFA025	7	12.5	13.4	13.4	15	11
	at ≤40°C (AC1)					
BGC09 T4	8	14	14	15	16	22

	Maximum UL/CSA horsepower rating					
	Single phase		Three phase			
	120V	240V	208V	240V	480V	600V
	[HP]	[HP]	[HP]	[HP]	[HP]	[HP]
BGR09	½	1½	2	3	5	5
BGT09	½	1½	2	3	5	5
BGTP09	½	1½	2	3	5❹	-❹
BGR12	½	1½	3	3	7½	10
BGT12	½	1½	3	3	7½	10
BFA009	¾	2	3	3	5	7½
BFA012	1	2	5	5	7½	10
BFA018	1	3	5	5	10	15
BFA025	2	3	7½	7½	15	15

NOTE: BGR09, BGT09, BGR12, BGT12... types are UL Listed for USA and Canada as "Magnetic Motor Controller – Reversing Contactors". All these are rated 20A general (purpose) use and suitable for use on a circuit capable of delivering more than 5kA symmetrical. Amps at 600V max when protected by fuses class K5 rated no more than 30A. BGTP09 type is UL Recognised for USA and Canada as "Magnetic Motor Controller – Component – reversing contactors". Max HP rating up to 300VAC only; rated 20A general (purpose) use. BGC... types are UL Listed for USA and Canada as "Magnetic Motor Controller – Changeover contactor".
No coil change or replacement is possible for any BG... types.

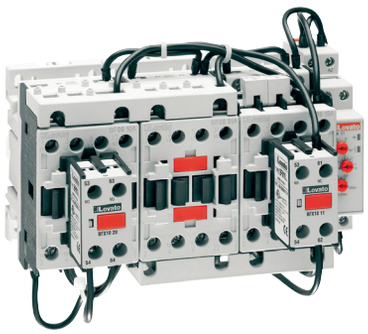
Add-on blocks

Refer to section 1, pages 1-15 and 1-17.
Special add-on auxiliary contacts 11 BGX11 11 or 11 BGX11 12 must be used on the left-side contactor of the BGT reversing assemblies.
For the right-side contactor, normal 11 BGX10... types of auxiliary contacts can be used instead.
Refer to page 1-15 for details.

Certifications and compliance

Certifications obtained: UL Listed for USA and Canada (File E93602) for BGR09, BGT09, BGR12, BGT12, BFA... and BGC... (see NOTE above).
UL Recognized, for USA and Canada (cULus - File E93602 Component), for BGTP09; products having this type of marking are intended for use as components of complete workshop-assembled equipment.
Compliant with standards IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.

Open frame



BFA...

Order code	Three-phase motor control. Max IEC operating current (≤440V)	Qty per pkg	Wt
	[A]	n°	[kg]
Complete star-delta starters, open frame, for starting time up to 12 seconds and a maximum of 30 operations/hour.			
BFA009 70❶❷	16	1	1.700
BFA012 70❶❷	22	1	1.700
BFA018 70❶❷	28	1	1.700
BFA025 70❶❷	35	1	1.800
BFA026 70❶❷	43	1	1.800
BFA032 70❶❷	50	1	1.900
BFA038 70❶❷	60	1	1.900
21 DYF50 E❸❶	85	1	5.200
21 DYF65 E❸❶	110	1	5.200
21 DYF80 E❸❶	140	1	6.265
21 DYF95 E❸❶	145	1	6.265
21 NYF115 ❸❶	220	1	19.000
21 NYF145 ❸❶	260	1	19.000
21 NYF180 ❸❶	310	1	19.000
21 NYF250 ❸❶	480	1	22.650
21 NYF310 ❸❶	530	1	22.650
21 NYF400 ❸❶	690	1	25.000

Operational characteristics
IEC standard motor powers

230V	400V	440V	500V
[kW]	[kW]	[kW]	[kW]
4	7.5	7.5	7.5
5.5	11	11	11
7.5	15	11	11
11	18.5	18.5	22
11	22	22	25
15	25	25	25
15	30	30	30
25	45	45	59
30	59	63	75
40	75	80	100
40	75	80	100
63	110	129	147
80	132	162	185
92	160	185	210
145	250	280	315
160	295	335	368
220	375	425	450

Thermal relay adjustment range
Choose the thermal relay adjustment range considering a value equal to 58% of rated motor current (Ie).
Example: Ie=100A; 58% Ie=58A.
The suitable relay range is 46-65A.
During the setup, the relay is to be regulated at 58A.

For DYF... type

Digit defining thermal relay range	Relay adj range A	IEC aM fuses ❹❺ A	DYF starters 50	65	80	95
42	28-42	80				
50	35-50	100				
65	46-65	125				
82	60-82	160				
95	70-95	200				

For NYF... type

Digit defining thermal relay range	Relay adj range A	IEC aM fuses ❹❺ A	NYF starters 115	145	180	250	310	400
100	60-100	200						
125	75-125	250						
150	90-150	315						
200	120-200	400						
250	150-250	500						
300	180-300	630						
420	250-420	800						

❶ Complete order code with the coil voltage digit or the coil voltage digit followed by 60 if 60Hz.
Standard voltage are as follows:
– AC 50/60Hz 024 / 048 / 110 / 230 / 400V
– AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 (V).
Example: BFA009 70 024 for BFA009 star-delta starter with 24VAC 50/60Hz power supply.
BFA009 70 024 60 for BFA009 star-delta starter with 24VAC 60Hz power supply.
❷ The thermal overload relay is not included and must be purchased separately.
Refer to the example given under Thermal relay adjustment range, for a correct choice and then to page 2-12 for the order code.
❸ The thermal overload relay is included. Replace with digit of thermal relay; see tables above, under Thermal relay adjustment range.
❹ To be mounted by the customer.
❺ Fuses for type 1 co-ordination. For type 2 co-ordination, consult Customer Service; see contact details on inside front cover.
❻ TM ST with auxiliary supply 24...240VAC.
TM ST A440 with auxiliary supply 380...440VAC.

NOTE: For higher powers and voltages, or suitable for heavy-duty starting (centrifugal fans, mills, crushers) that is with starting time exceeding 12s, consult Customer Service; see contact details on inside front cover.

Components

Starter	Contactors			Thermal overload relay	Time relay	Auxiliary contacts fitted on contactor:			Rigid connections
	Line	Delta	Star			Line	Delta	Star	
BFA009 70	BF09 10A	BF09 01A	BF09 10A	❷ (RF38)	TM ST❻	BFX10 20	—	BFX10 11	BFX31 31
BFA012 70	BF12 10A	BF12 01A	BF09 10A	❷ (RF38)	TM ST❻	BFX10 20	—	BFX10 11	BFX31 31
BFA018 70	BF18 10A	BF18 01A	BF12 10A	❷ (RF38)	TM ST❻	BFX10 20	—	BFX10 11	BFX31 31
BFA025 70	BF25 10A	BF25 01A	BF18 10A	❷ (RF38)	TM ST❻	BFX10 20	—	BFX10 11	BFX31 31
BFA026 70	BF26 00A	BF26 00A	BF18 10A	❷ (RF38)	TM ST❻	BFX10 20	BFX10 11	BFX10 11	BFX32 32
BFA032 70	BF32 00A	BF32 00A	BF25 10A	❷ (RF38)	TM ST❻	BFX10 20	BFX10 11	BFX10 11	BFX32 32
BFA038 70	BF38 00A	BF38 00A	BF25 10A	❷ (RF38)	TM ST❻	BFX10 20	BFX10 11	BFX10 11	BFX32 32
DYF50 E	BF50 00	BF50 00	BF32 00	RF95 3	TM ST❻	BFX10 20	BFX10 11	BFX10 11	—
DYF65 E	BF65 00	BF65 00	BF32 00	RF95 3	TM ST❻	BFX10 20	BFX10 11	BFX10 11	—
DYF80 E	BF80 00	BF80 00	BF50 00	RF95 3	TM ST❻	BFX10 20	BFX10 11	BFX10 11	—
DYF95 E	BF95 00	BF95 00	BF50 00	RF95 3	TM ST❻	BFX10 20	BFX10 11	BFX10 11	—
NYF115	B115 00	B115 00	BF65 00	RF200	TM ST❻	G350	G354	BFX10 11	—
NYF145	B145 00	B145 00	BF80 00	RF200	TM ST❻	G350	G354	BFX10 11	—
NYF180	B180 00	B180 00	B115 00	RF200	TM ST❻	G350	G354	G354	—
NYF250	B250 00	B250 00	B145 00	RF420	TM ST❻	G350	G354	G354	—
NYF310	B310 00	B310 00	B180 00	RF420	TM ST❻	G350	G354	G354	—
NYF400	B400 00	B400 00	B250 00	RF420	TM ST❻	G350	G354	G354	—

Reference stardards
Compliant with stardards: IEC/EN 60947-1, IEC/EN 60947-4-9.

Enclosed starters

M3 P…70… - M3 PA70

Order	Three-phase motor control. Max IEC operating current (≤440V)	Qty per pkg	Wt
	[A]	n°	[kg]
Star-delta starters in enclosure with Start and Stop/Reset buttons. Starting time up to 12s and a maximum of 30 operations/hour.			
M3 P009 70❶❷	16	1	3.540
M3 P012 70❶❷	22	1	3.540
M3 P018 70❶❷	28	1	3.540
M3 P025 70❶❷	35	1	3.650
M3 P026 70❶❷	43	1	3.650
M3 P032 70❶❷	50	1	3.800
M3 P038 70❶❷	60	1	3.800
With switch disconnector, rotary door-coupling handle GAX61 and Start and Stop/Reset buttons.			
M3 P009 73❶❷	16	1	3.700
M3 P012 73❶❷	22	1	3.700
M3 P018 73❶❷	28	1	3.700
M3 P025 73❶❷	35	1	3.800
M3 P026 73❶❷	43	1	3.800
M3 P032 73❶❷	50	1	4.300
M3 P038 73❶❷	60	1	4.300

❶ Complete order code with the coil voltage digit or the coil voltage digit followed by 60 if 60Hz. Standard voltage are as follows:
– AC 50/60Hz 024 / 048 / 110 / 230 / 400V
– AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 (V).
Example: M3P009 70 024 for M3P009 stardelta starter with 24VAC 50/60Hz power supply.
M3P009 70 02460 for M3P009 star-delta starter with 24VAC 60Hz power supply.

❷ The thermal overload relay is not included and must be purchased separately.
Choose the thermal relay adjustment range considering a value equal to 58% of rated motor current (Ie).
Example: Ie=10A; 58% Ie = 5.8A. The suitable relay range is 4-6.5A, set at 5.8A, so the order code to select is RF380650).
Refer to page 2-12 for the order codes available.

Operational characteristics
IEC standard motor powers

230V [kW]	400V [kW]	440V [kW]	500V [kW]
4	7.5	7.5	7.5
5.5	11	11	11
7.5	15	11	11
11	18.5	18.5	22
11	22	22	25
15	25	25	25
15	30	30	30

– Cable entry: Smooth surface; can be drilled by customer
– Ambient conditions:
  • Operating temperature: -25...+60°C
  • Storage temperature: -40...+70°C
– Degree of protection: IEC IP65 for M3P…; UL Type 1, 12, 4/4X for M3…UL versions.

Special M3… versions
In addition to standard-indicated versions, cULus certified starters are available up to 52A motor control rating max. This is also valid for the enclosure with general use rating of 65A.
Add suffix **UL** to the order code, e.g. M3 PA70**UL**.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (File E93602), as Magnetic Motor Controllers - Enclosed (starters) and - Enclosures for M3...PUL types.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14 for starters; UL 508A for M3P A70UL.

NOTE: For higher powers and voltage ratings or suitable for heavy-duty starting (centrifugal fans, mills, crushers) that is with starting time exceeding 12s, consult Customer Service; see contact details on inside front cover.

For dimensions, accessories and combinations see www.mechtric.com.au

Components

Type	Enclosure	Contactors			T/o relay ❷	Time relay	Auxiliary contacts fitted on contactor:			Rigid connec-tions	Switch disconnector ❹
		Line	Delta	Star			Line	Delta	Star		
M3P009 70/73	M3 PA70	BF09 10A	BF09 01A	BF09 10A	(RF38)	TM ST ❸	BFX10 20	—	BFX10 11	BFX31 31	GA016 A
M3P012 70/73	M3 PA70	BF12 10A	BF12 01A	BF09 10A	(RF38)	TM ST ❸	BFX10 20	—	BFX10 11	BFX31 31	GA025 A
M3P018 70/73	M3 PA70	BF18 10A	BF18 01A	BF12 10A	(RF38)	TM ST ❸	BFX10 20	—	BFX10 11	BFX31 31	GA032 A
M3P025 70/73	M3 PA70	BF25 10A	BF25 01A	BF18 10A	(RF38)	TM ST ❸	BFX10 20	—	BFX10 11	BFX31 31	GA040 A
M3P026 70/73	M3 PA70	BF26 00A	BF26 00A	BF18 10A	(RF38)	TM ST ❸	BFX10 20	BFX10 11	BFX10 11	BFX32 32	GA063 SA
M3P032 70/73	M3 PA70	BF32 00A	BF32 00A	BF25 10A	(RF38)	TM ST ❸	BFX10 20	BFX10 11	BFX10 11	BFX32 32	GA063 SA
M3P038 70/73	M3 PA70	BF38 00A	BF38 00A	BF25 10A	(RF38)	TM ST ❸	BFX10 20	BFX10 11	BFX10 11	BFX32 32	GA063 SA

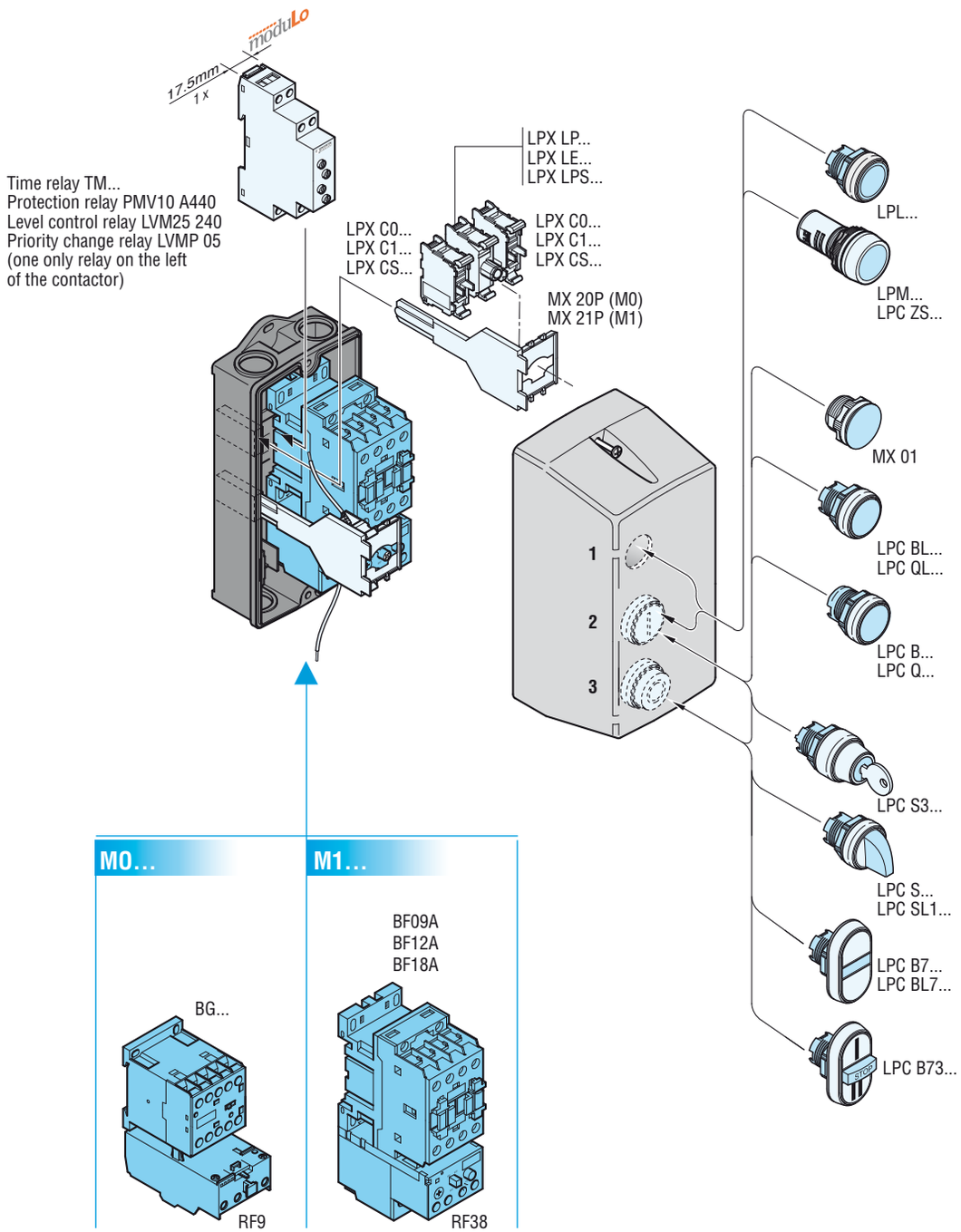
❸ TM ST with auxiliary supply 24...240VAC;
TM ST A440 with auxiliary supply 380...400VAC.
❹ For M3P...73 types

Maximum combinations for M0… and M1… starters in enclosure

For the fitting of add-on blocks and electronic relays in the starters, consult our Customer Service; see contact details on inside front cover.

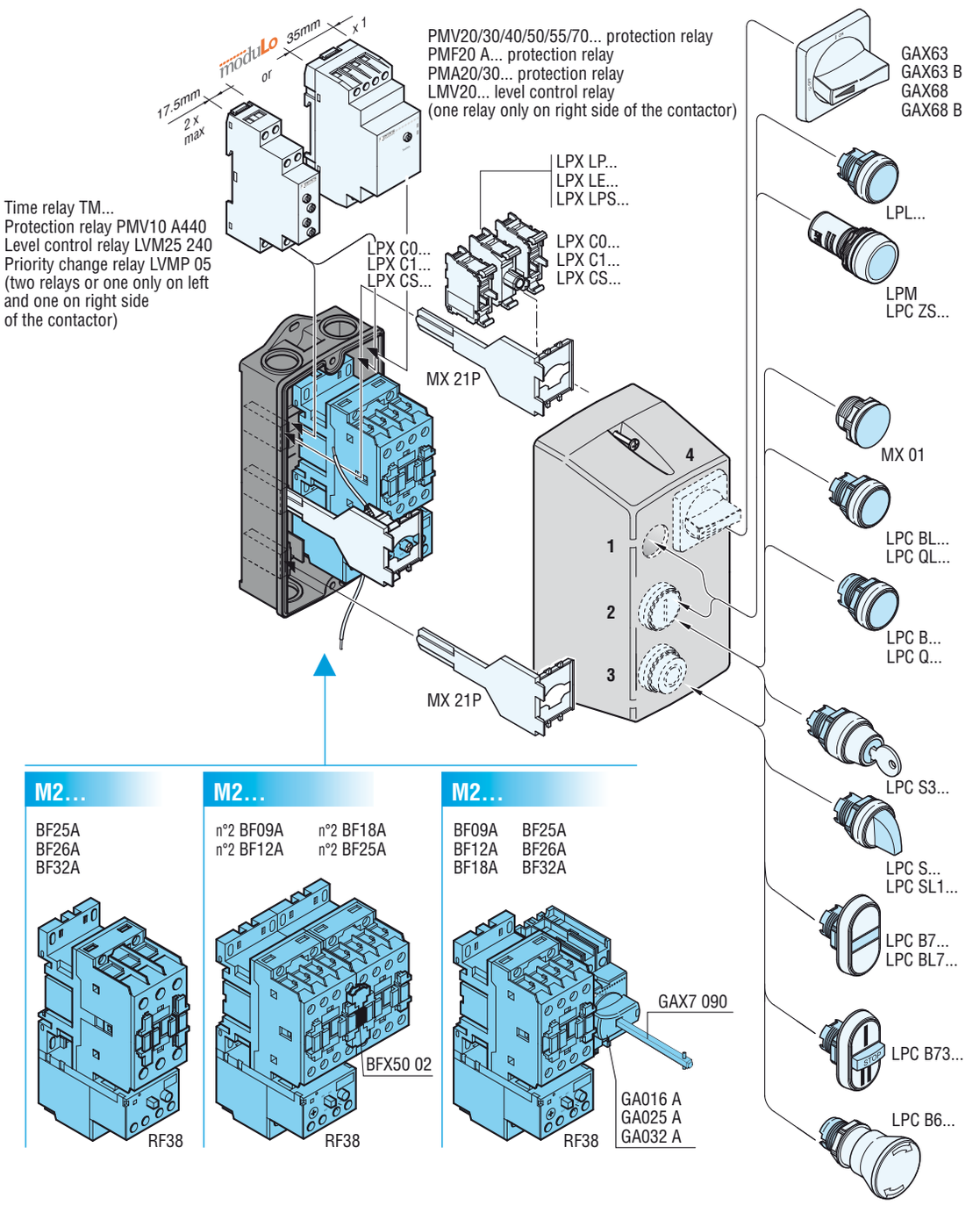
The enclosure cover can be equipped with various types of actuators and pilot lights, per following details:

1) Upper position 1
   The cover must be drilled in this position, with a 22.5mm hole, by the user and LPL..., LPM... and LPC ZS... pilot light can be fitted.
   To fit the LPL... (not type 8 LP2T IL…P) pilot light head, the mounting base, type MX 20P for M0 enclosure or type MX 21P for M1 enclosure, must also be purchased. The LED element is snapped onto this mounting base.
   No adapter or base is needed for LPL..., LPM... and LPC ZS...
2) Middle position 2
   Based on the enclosure type, in this position, the user finds either the Start button or threaded plug. Various PLatinum actuators can be fitted in this position, such as flush or extended buttons, selectors or pilot lights, as illustrated below.
   To fit the actuators, the mounting base, type MX 20 for M0 enclosure, or type MX 21P for M1 enclosure, must also be purchased. The contact or LED elements are snapped onto this mounting base.
   No adapter or base is needed for LPL..., LPM... and LPC ZS...
3) Lower position 3
   The STOP/RESET button is mounted in this position, except for the enclosure without buttons.
   This button activates the thermal overload relay via a mechanical actuator.
   In eventual applications without thermal overload relay, this button can be removed and the hole closed up by the threaded plug MX 01.



Maximum combinations for M2… starters in enclosure
For the fitting of add-on blocks and electronic relays in the starters, consult our Customer Service; see contact details on inside front cover.
The enclosure covers can be equipped with various types of actuators and pilot lights, per following details:

1) Upper position 1
   The cover must be drilled in this position with a 22.5mm hole by the user; LPL..., LPM... or LPC ZS... pilot light can be fitted.
   To fit the LPL... pilot light, the mounting base type MX 21P must also be purchased. The LED element is snapped onto this mounting base.
   No adapter or base is needed for LPL..., LPM... and LPC ZS...
2) Middle position 2
   Based on the enclosure type, in this position, the user finds either the Start button or threaded plug.
   Various PLatinum actuators can be fitted in this position, such as flush or extended buttons, selectors or pilot lights, as illustrated in the side figure.
   To fit the actuators (not required for 8 LP2T IL…P pilot light), the mounting base type MX 21P must also be purchased.
   The contact or LED elements are snapped onto this mounting base.
   No adapter or base is needed for LPL..., LPM... and LPC ZS...
3) Lower position 3
   The STOP/RESET button is mounted in this position, except for the enclosure without buttons.
   This button activates the thermal overload relay via a mechanical actuator. In eventual applications without thermal overload relay, this button can be removed and the hole closed up by the threaded plug MX 01.
   Various PLatinum actuators can be fitted in this position, such as flush or extended buttons, selectors or pilot lights, as illustrated in the drawing below. To fit the actuators (not required for 8 LP2T IL…P pilot light), the mounting base type MX 21P must also be purchased. The contact or LED elements are snapped onto this mounting base.
   No adapter or base is needed for LPL..., LPM... and LPC ZS...
4) Upper position 4
   The cover must be drilled in this position with a 22.5mm hole by the user whenever an external handle is needed for a switch disconnector fitted in the enclosure.



Maximum combinations for starters in M3… enclosure
In addition to a direct-on-line, full voltage across the line, starter or reversing contactor assembly, star-delta starters can be installed as illustrated at the lower right as well as various other electromechanical devices. The cover of the M3 enclosure can be used across the entire surface to mount pushbuttons, measuring instruments or switch disconnectors GA016A…GA125A, etc.
MX 30 internal metal mounting plate is standard supplied with M3P… and M3R… types; not included with the M3N, it can be purchased separately.

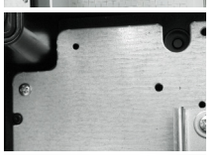
With the specifically designed **hinges**, the cover remains attached to the base, fully open, while the wiring work is being carried out. By applying **slight pressure** on the hinges, the cover can be released from the base.

The cover closing captive **screws** and the wall fixing holes are positioned **outwards** with respect to the sealing gasket. This guarantees the protection degree of the enclosure against liquids infiltrations (IEC IPX5 / UL Type 4X).

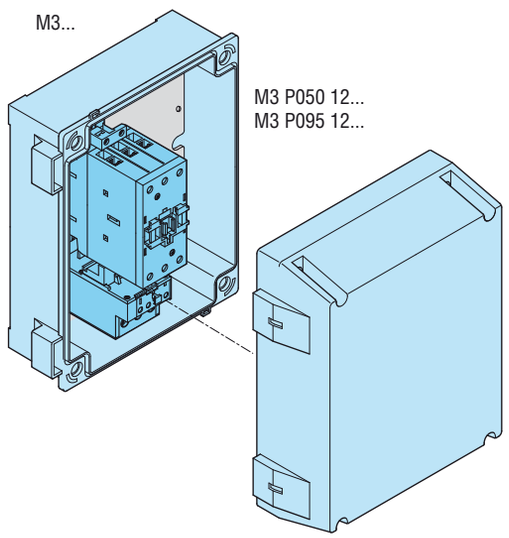
A **safety sealing** system keeps the cover and base together to avoid inopportune opening and tampering.

Grid references, marked by letters and numbers, are engraved on the interior surface of the cover. This grid allows to quickly identify the exact drilling points where pushbuttons, handle or pilot lights will be mounted.

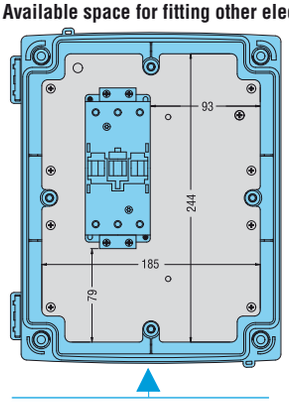
A properly predrilled metal mounting plate (MX 30 standard supplied except for M3N) permits to quickly and precisely fix equipment in place.



The base has **ribbing** which facilitates the fixing of DIN rails, metal mounting plates and electronic printed boards.

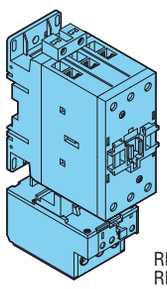


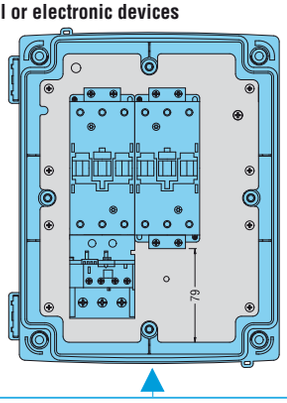
Available space for fitting other electrical or electronic devices



M3…

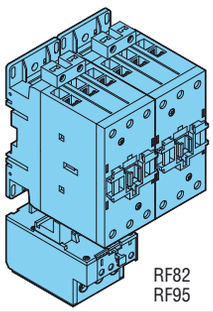
n° 1 BF40 n° 1 BF80
n° 1 BF50 n° 1 BF95
n° 1 BF65 n° 1 BF110

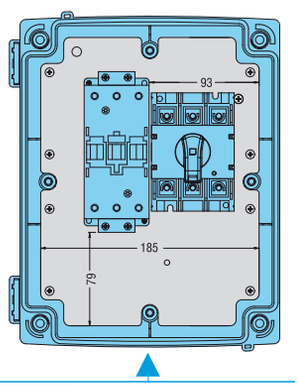




M3…

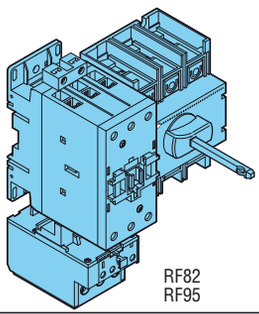
n° 2 BF40 n° 2 BF65 n° 2 BF95
n° 2 BF50 n° 2 BF80 n° 2 BF110

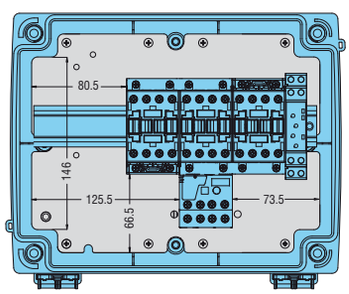




M3…

n° 1 BF40 n° 1 BF65 n° 1 BF95
n° 1 BF50 n° 1 BF80 n° 1 BF110 + n° 1 GA...





STL Starting Torque Limiter

- Allows smooth starting of AC induction motors
- 1 controlled phase
- Rated currents 15 and 25A, rated voltage up to 600V
- Versions for 1ph or 3ph motors
- Adjustable ramp up, and initial torque
- Unlimited starts/hour
- No by pass required
- Compact DIN rail mounting

Specifications

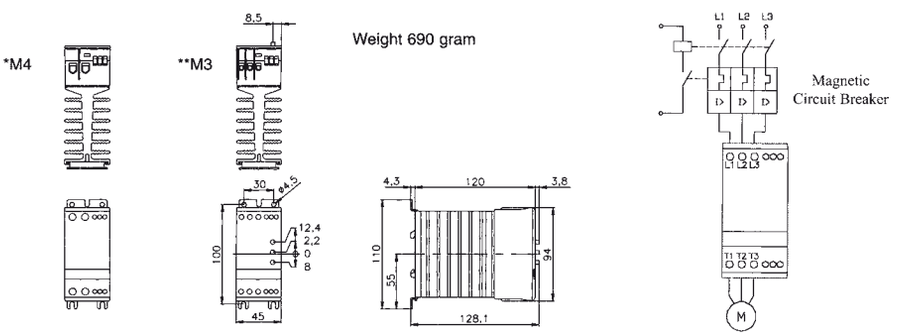
Line Voltage:	208-480V 3ph or 1ph 50/60Hz (Optionally - 550-600V 3ph)
Rated Insulation:	660V
Impulse withstand Voltage:	4kV
Control voltage:	None - operates when mains is applied
Leakage current:	5mA
Minimum operational current:	50mA
Power Dissipation:	1W/A
Protection:	IP20
Temperature rating (°C):	-5 to +40 (up to 60°C with 70% de-rating)
Construction:	Self extinguishing PPO, anodized aluminium heatsink
Weight:	690g

Certifications and compliance
EN60947-4-2. cUL

Model	STL 1 4015	STL 3 4015	STL1 4025	STL 3 4025
Order Code	**ICSTL14015**	**ICSTL34015**	**ICSTL14025**	**ICSTL34025**
Rated current	15A (AC53a)	15A (AC53a)	25A (AC53a)	25A (AC53a)
Motor size	2.2kW 1ph	7.5kW 3ph	4kW 1ph	11kW 3ph
Starting torque	0-85%		0-85%	
Ramp up time	0.5-5sec		0.5-5sec	
Ramp down time	N/A		N/A	
LED indications	LED 1 – Ramping LED 2 – Running			

Note:
1) Protection by semi-conductor fuses is essential
2) See section 2 for motor overload protection relays and motor protection circuit breakers

Dimensions 45 mm module (SC/SRC/SMC3 15A/STL /SPC 30A)



IC ELECTRONIC A/S

ADXC type

ADXC 012…
ADXC 032…

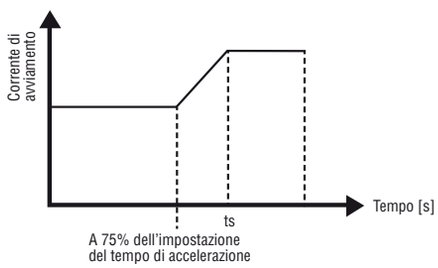
ADXC 037…
ADXC 045…

Order code	IEC rated starter current Ie	Rated motor power ≤40°C ❶ IEC	UL/CSA	Qty per pkg	Wt
	[A]	[kW]	[HP]	n°	[kg]
With built-in bypass relay. Three-phase 400VAC motor control. Auxiliary supply: starter 110…400VAC (L1-L2-L3 inputs); start command 110-400VAC (A1-A2 terminals).					
ADXC 012 400	12	5.5	5	1	0.500
ADXC 016 400	16	7.5	7.5	1	0.500
ADXC 025 400	25	11	10	1	0.500
ADXC 032 400	32	15	15	1	0.500
ADXC 037 400	37	18.5	20	1	0.700
ADXC 045 400	45	22	25	1	0.700
With built-in bypass relay. Three-phase 400VAC motor control. Auxiliary supply: starter 110…400VAC (L1-L2-L3 inputs); start command 24VAC/DC (A1-A2 terminals).					
ADXC 012 400 24	12	5.5	5	1	0.500
ADXC 016 400 24	16	7.5	7.5	1	0.500
ADXC 025 400 24	25	11	10	1	0.500
ADXC 032 400 24	32	15	15	1	0.500
ADXC 037 400 24	37	18.5	20	1	0.700
ADXC 045 400 24	45	22	25	1	0.700
With built-in bypass relay. Three-phase 600VAC motor control. Auxiliary supply: starter 100…240VAC (A1-A2 separate 1-phase); start command 100-240VAC (ST terminals). With 2 relay outputs.					
ADXC 012 600 R2	12	9	10	1	0.500
ADXC 016 600 R2	16	11	15	1	0.500
ADXC 025 600 R2	25	20	20	1	0.500
ADXC 032 600 R2	32	22	30	1	0.500
ADXC 037 600 R2	37	30	30	1	0.700
ADXC 045 600 R2	45	37	40	1	0.700

❶ For operating temperature higher than 40°C, derate starter power; see values given in the technical characteristics on page 5-8, in Rated current In per IEC/FLA current per UL.

Current control

ADXC… gradually increases the current limit at 75% ramp-up time if the motor speed has yet to reach rated value, to avoid locked rotor state before time elapsing.



Typical settings

The following settings are standard ones for the different applications; they are for indication and reference purposes only.
After the installation, it is recommended to always parameterise the soft starter with the motor connected to find the best settings and then test it.
Initial voltage adjustment is the first operation followed by the ramp-up time setting and the ramp-down time is last, if any is required.

Type of application	Initial voltage	Accell. time	Decel. time
	[%]	[s]	[s]
Hydraulic lift	40	2	0
Piston compressor	40	3	0
Screw compressor	50	10	0
Scroll compressor (with revolving spiral)	40	1	0
Low inertia fan	40	10	0
High inertia fan	40	15-20	0
Pump	40	10	10
Centrifugal blower	40	5	0
Conveyor	50	1	5

Regolazioni ADXC…

Ⓐ Initial voltage: 0-85% of the motor control power.
Ⓑ Ramp up time: 1-20 seconds. Initial to maximum load voltage time.
Ⓒ Ramp down time: 0-20 seconds. Maximum to no load voltage time.

General characteristics

ADXC… is a compact type of soft starter, 45mm wide and easy to use, for three phase squirrel-cage induction motors; soft starts and soft stops rated motor load currents up to 45A.
It is based on a current limiting starting methodology to limit the maximum starting current. ADXC… reduces the mechanical load on motor shafts, gearboxes and drive belts.
Ramp up, ramp down and initial voltage time settings can be independently adjusted by built-in potentiometers.
Main features are:
- For three phase induction motors up to 22kW / 25HP at 400VAC and 37kW / 40HP at 600VAC
- Maximum input voltage: 400VAC 50/60Hz for ADX… 400…; 600VAC 50/60Hz for ADXC…600…
- Built-in bypass relay
- Wrong phase sequence and over temperature protection
- Alarm for wrong phase sequence; line voltage and/or frequency out of limits (over and undervoltage); overcurrent, over temperature, irregular ramp up and current flow during bypass; motor voltage unbalance
- Simple setting and installation
- 2 relay outputs for alarms (NC) and bypass closing (NO) for ADXC…600 R2
- 35mm DIN rail mounting (IEC/EN 60715)
- Ideal for hydraulic lifts, conveyor belts, compressors, pumps, hoisting devices, blowers, fans, mixers.

Operational characteristics

- Number of controlled phases: 2
- Input voltage L1-L2-L3:
  - 220-400VAC -15%...+10% for ADXC…400 and ADXC…400 24
  - 220-600VAC -15%…+10% for ADXC…600 R2
- Frequency range: 50/60Hz ±10% self-configurable
- Self powered for ADXC…400… types
- Separate single phase auxiliary power supply A1-A2: 100-240VAC -15%...+10% for ADXC…600 R2
- Start command:
  - A1-A2 24VAC/DC ±10% (ADXC…400 24)
  - A1-A2 110…400VAC -15%...+10% (ADXC…400)
  - ST 100…240VAC -15%...+10% (ADXC…600 R2)
- Ramp up time: 1-20 seconds
- Ramp down time: 0-20 seconds
- Initial voltage: 0-85%
- 3 indication LEDs "alarm" (red – alarm conditions with diverse number of flashes), "ramp/bypass" (yellow – flashing in ramp phase / constantly on with bypass relay connected) and "supply" (green – constantly on with power supply flow)
- Degree of protection: IEC IP20.

Certifications and compliance

Certifications obtained: UL Listed for USA and Canada (cULus – File E223223) under Solid State Motor Controllers as reduced voltage starters; EAC and CCC pending completion at time of catalogue printing.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-2, UL 508, CSA C22.2 n°14.
RCM

TYPE			ADXC012	ADXC016	ADXC025	ADXC032	ADXC037	ADXC045
			With built-in bypass relay					
Motor	Type		Asynchronous three phase					
	Power (40°C)	at 220…240VAC	3kW / 3HP	4kW / 5HP	5.5kW / 7.5HP	9kW / 10HP	9kW /10HP	11kW / 15HP
		at 380…415VAC	5.5kW / 5HP	7.5kW / 7.5HP	11kW / 10HP	15kW / 15HP	18.5kW /20HP	22kW / 25HP
		❶ at 440…480VAC	5.5kW 7.5HP	9kW / 10HP	11kW / 15HP	18.5kW / 20HP	22kW / 25HP	22kW / 30HP
		❶ at 550…600VAC	9kW / 10HP	11kW /15HP	20kW / 20HP	22kW / 30HP	30kW / 30HP	37kW / 40HP
Supply voltage	Input voltage Ue (L1-L2-L3)		220…400VAC -15…+10% (ADXC…400…); 220…600VAC -15…+10% (ADXC…600R2)					
	Start command Uc		A1-A2: 24VAC/DC -15...+10% (ADXC…40024); A1-A2: 110…400VAC -15…+10% (ADXC…400); ST: 100…240VAC -15…+10% (ADXC…600R2)					
	Auxiliary power Us		A1-A2: 100…240VAC -15%...+10% for ADXC…600R2 (Self powered for ADXC…400… from L1-L2-L3)					
	frequenza		50/60Hz ±10% self-configurable					
Undervoltage recovery			174VAC (ADXC…)					
Overvoltage recovery			466VAC (ADXC…400…); 700VAC (ADXC…600R2)					
Control input current			0.4…1mA (ADXC…40024); 0.5…5mA (ADXC…400); 0.4…3mA (ADXC…600R2)					
Number of controlled phases			2					
Starting / stopping method			Voltage control					
Number of starts/hour at 40°C			20 (Overload cycle: AC53B: 3-5: 175)			10 (Overload cycle: AC53B: 4-6: 354)		10 (Overload cycle: AC53B: 3.5-5: 355)
Minimum load current			1A	1A	5A	5A	5A	5A
Rated current In (according to IEC test results)		at 40°C IEC	12A	16A	25A	32A	37A	45A
		at 50°C IEC	11A	15A	23A	28A	34A	40A
		at 60°C IEC	10A	13.5A	21A	24A	31A	34A
FLA current (based on UL test results)		at 40°C UL	12A	17A	25A	32A	32A	41A
		at 50°C UL	11A	15A	23A	28A	—	—
		at 60°C UL	10A	14A	21A	24.3A	—	—
Motor protection			Wrong phase sequence					
Cooling system			Natural					
Status indication LEDs			1 red ALARM; 1 yellow RAMP/BYPASS; 1 green SUPPLY					
STARTUP SETTINGS								
Acceleration ramp			1…20 seconds					
Deceleration ramp			0…20 seconds					
Startup voltage			0…85%					
RELAY OUTPUTS (ADXC…600R2 only)								
NC alarm contact (11, 12) / NO bypass contact (21, 24)			3A 250VAC / 3A 30VDC					
INPUT POWER CIRCUIT CONNECTIONS (L1, L2, L3, T1, T2, T3)								
Number and type of terminals			6 fixed M4 screw					
Conductor cross section (min…max)			2.5…10mm² (AWG 2x10…2x14)					
Tightening torque /Tool			2.5Nm (22lbin) / Pozidriv bit 2					
Cable stripping length			8mm/0.31”					
AUXILIARY SUPPLY CONNECTIONS (A1, A2)								
Number and type of terminals			9 fixed M3 screw					
Conductor cross section (min…max)			0.5…1,5mm² (AWG 10…18)					
Tightening torque / Tool			0.65Nm (5.3lbin) / Pozidriv bit 0					
Cable stripping length			6mm/0.24”					
AUXILIARY CONNNECTIONS (11, 12, 21, 24, ST, F1, F2)								
Type of terminals			M3 screw					
Conductor cross section (min…max)			0.05…1.5mm² (with cable terminal) (AWG 14…12)					
Tightening torque / Tool			0,45Nm (4lbin) / Pozidriv bit 0					
Cable stripping length			6mm/0.24”					
INSULATION								
IEC rated insulation voltage Ui			630VAC (ADX…400…); 690VAC (ADXC…600R2)					
AMBIENT CONDITIONS								
Operating temperature			-20°C…+40°C with no derating; >40°C…+60°C with derating (see IEC/UL rated current values given above)					
Storage temperature			-40°C…+80°C					
Relative humidity			<95% non condensing at 40°C					
Maximum pollution degree			2					
Installation category			III					
Maximum altitude			1000m					
HOUSING								
Mounting			Screw fixing on mounting plate or on 35mm DIN rail (IEC/EN 60715)					
IEC degree of protection			IP20					

❶ For ADXC...600R2 types.

ADXL... types

ADXL 0030 ... ADXL 0060

ADXL 0075 ... ADXL 0115

ADXL 0135 ... ADXL 0162

Order code	IEC rated starter current Ie	IEC rated motor power ≤40°C (380/415V)		Qty per pkg	Wt
	[A]	[kW]	[HP]	no.	[kg]
For standard and heavy-duty uses. With built-in bypass counter. 100...240VAC auxiliary power supply. Start control from dry contact					
ADXL 0030	30	15	20	1	1.940
ADXL 0045	45	22	30	1	1.940
ADXL 0060	60	30	40	1	1.940
ADXL 0075	75	37	50	1	2.670
ADXL 0085	85	45	60	1	2.670
ADXL 0115	115	55	75	1	2.670
ADXL 0135	135	75	100	1	❶
ADXL 0162	162	90	125	1	❶
ADXL 0190	195	110	150	1	❶
ADXL 0250	250	132	200	1	❶
ADXL 0320	320	160	250	1	❶

❶ Contact our Customer Service 1800 252 995 or sales@mechtric.com.au

General characteristics
New series of ADXL soft starters to control the startup and stop of three-phase motors asynchronous on two-phases with built-in bypass. ADXLs are equipped with a backlit display with icons and NFC connectivity, for a simple configuration, possible also from smartphones and tablets. ADXLs are ideal for simple "plug and play" applications, thanks to the installation wizard, and for high-performance applications, with control and protection during the motor startup and operation.
The ADXLs include protection features for the starter and motor, and it's possible to enable specific alarms to signal maintenance needs, such as the number of startups performed or the operation hours of the motor.

It has the following main features:
- Backlit icon LCD display
- Texts available in 6 languages (ENG-ITA-FR-SP-POR-DEU)
- IEC rated starter current Ie from 30 to 320A
- IEC rated motor power 15...160kW (400VAC) and 25...300HP (550/600VAC)
- Voltage ramp startup
- Torque control
- Kick start
- Limited maximum starting current
- Free wheel or controlled stop
- Sequential startup up to 4 motors
- Built-in bypass relay
- Optical port for programming data download and diagnostics through the software Xpress and app Sam1
- NFC technology for parameter programming through the app NFC
- Optional RS485 communication
- Modbus-ASCII, Modbus-RTU and Modbus-TCP communication protocols
- Supervision and energy management software Synergy.

Operational characteristics
- Two controlled phases
- Input voltage:
  • 208...600VAC ±10%
- Network frequency 50 or 60Hz ±10% self-configurable
- 100-100...240VAC auxiliary power supply
- Signalling LED: power supply startup or bypass phase, alarm
- Three programmable outlets: 1 changeover contact 2 normally open contacts
- 2 programmable digital inputs
- 1 programmable digital input, that can be used as PTC input (optional)
- Protection rating: IP20.

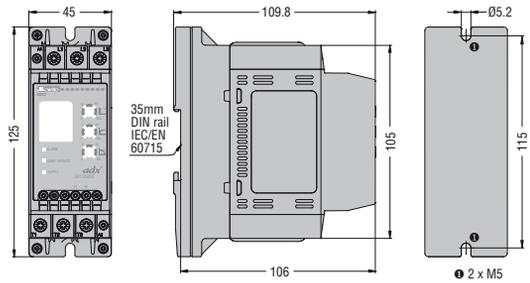
Displayed measures:
Maximum current, L1 current, L2 current, L3 current, torque, average line voltage, total active power, total PF, motor thermal status, starter temperature.

Protections
- Motor: heat protection, PTC protection, locked rotor, current asymmetry, startup too long and minimum torque, motor not-connected
- Additional power supply; voltage too low or mini power-outage longer than the allowed one.
- Power supply: no power supply, phase loss, wrong sequence phase and out-of-range frequency
- Starter: overtemperature, overcurrent, SCR fault, bypass relay fault, temperature sensor fault and fan fault.

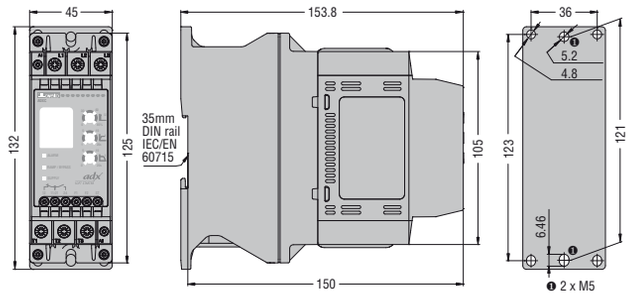
Certifications and compliance
Certificates pending: cULus; EAC.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-2, UL508, CSA C22.2 n° 14.
RCM

TYPE (with 2 controlled phases)		ADXL...	ADXL...600
Motor	Type	Asynchronous three phase squirrel cage	
	Power	15...160kW (400VAC) 20...250HP (440/480VAC)	18.5...200kW (500VAC) 25...300HP (550/600VAC)
	Rated current	30...320A	
Supply voltage	Power circuit	208...500VAC ±10%	208...600VAC ±10%
	Auxiliary power Us	100...240VAC±10%	
	Frequency	50 or 60Hz ±5% self-configurable	
Cooling system	natural	ADXL0030...ADXL0115 and ADXL0030600...ADXL0115600	
	forced	ADXL0135...ADXL0320 and ADXL0135600...ADXL0320600 Optional ADXL0030...ADXL0115 and ADXL0030600...ADXL0115600	
PROTECTIONS			
Auxiliary supply		Voltage too low	
Power supply		Lack of line voltage, lack of phase, out-of-range frequency, minimum and maximum voltage and phase sequence	
Motor		Overload at starting (trip class 2, 10A, 10, 15, 20, 25, 30, 35 and 40), overload during running (trip class 2, 10A, 10, 15, 20, 25 and 30), locked rotor, current asymmetry, minimum torque and maximum starting time	
Starter		Overcurrent and high temperature	
STARTUP AND STOP SETTINGS			
Startup		Torque ramp with current limit, Voltage ramp with current limit, Constant torque with current limit	
Stop		Torque ramp, voltage ramp, free-wheel stop	
Braking		—	
DISPLAY AND PROGRAMMING			
		Using the built-in keyboard and display, PC with CX01 and CX02, App NFC Configurator, App SAM1 with CX02 and remote keyboard with EXC1042	
Display		Backlit icon LCD display	
Measure view		Maximum current, L1 current, L2 current, L3 current, torque, line voltage, total PF, thermal status motor, starter temperature, active power, motor counter, startup counter	
Other views		Operational status, events, alarms, measures	
LED		“POWER”, “RUN” and “FAULT”	
DIGITAL INPUTS			
Number of inputs		3	
Input type		2 input with dry contact - 1 input with dry contact or PTC	
Input function		OFF, motor startup, motor stop, free-range stop, motor preheating, local control, alarm disabling, thermal status reset, keyboard lock, motor selection, user alarm	
RELAY OUTPUTS			
Number of outputs		3	
Output arrangement		- 2 NA: 3A 250V~ AC1 - 3A 30V= AC1 - 1 changeover: NO contact 5A 250V~ AC1 - 5A 30V= ; NC contact 3A 250V~ AC1 - 3A 30V=	
Output functions		OFF, motor powered, ramp completed, global alarm, limits, remote variable, Axx alarm	
COMMUNICATION INTERFACES			
		NFC, front optical port, optional RS485 (EXC1042)	
VARIOUS FUNCTIONS			
Clock		—	
Operational data memory		Startup counter, motor operation counter and maintenance counter	
AMBIENT CONDITIONS			
Operating temperature		-20...+40°C (up tp 60°C with derating)	
Storage temperature		-30°...+80°C	
Maximum altitude		1000m (higher up with derating)	
Maximum pollution degree		3	
Operating position		Vertical ±15°	
HOUSING			
Mounting		Screw-mount on panel or 35mm DIN rail (IEC/EN 60715) with EXP8003 accessory for ADXL0030... ADXL0115	
IEC degree of protection		IP00	

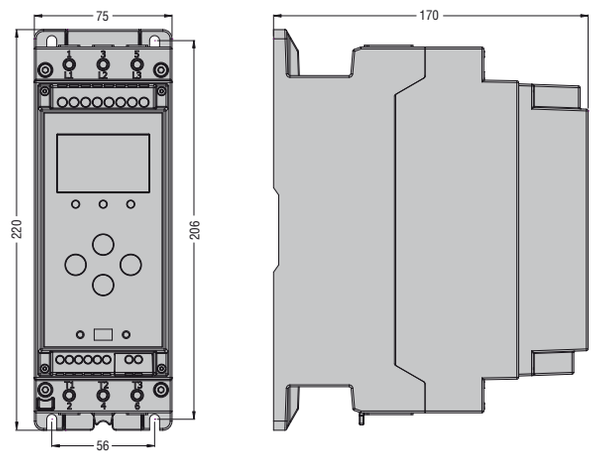
Soft Starters



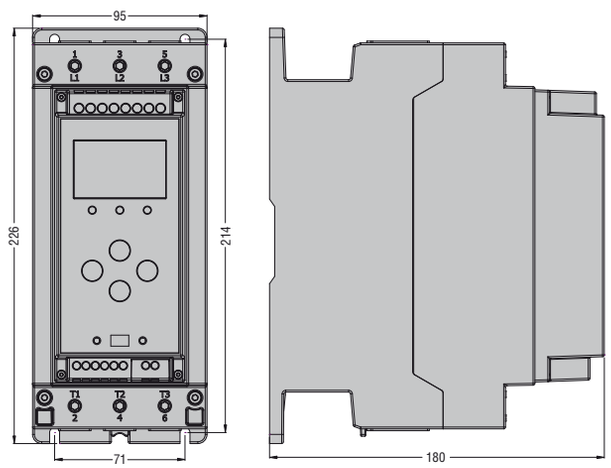
ADXC 012…ADXC 032…



ADXC 037…ADXC 045…



ADXL 0030…ADXL 0060



ADXL 0075…ADXL 0115

ADX type

51 ADX 0017B - 51 ADX 0045B

51 ADX 0060B - 51 ADX 0085B

51 ADX 0110B - 51 ADX 0125B

Order code	Rated starter current Ie	Rated motor power (380/415V)	Qty per pkg	Wt
	[A]	[kW]	n°	[kg]
For standard duty (starting current 5•Ie). With integrated bypass contactor. Auxiliary supply: starter Us 208...240VAC; start command 24VDC. For a high number of starts the by-pass can be disabled, however a larger size starter must be selected.				
51 ADX 0017B	17	7.5	1	7.900
51 ADX 0030B	30	15	1	8.000
51 ADX 0045B	45	22	1	8.300
51 ADX 0060B	60	30	1	14.900
51 ADX 0075B	75	37	1	14.900
51 ADX 0085B	85	45	1	14.900
51 ADX 0110B	110	55	1	15.700
51 ADX 0125B	125	59	1	15.700
51 ADX 0142B	142	75	1	34.000
51 ADX 0190B	190	90	1	37.000
51 ADX 0245B	245	132	1	37.000
For severe duty (starting current 5•Ie). Can be used with external bypass contactor to reduce starter heating during normal operation. Auxiliary supply: starter Us 208...240VAC; start command 24VDC.				
51 ADX 0310	310	160	1	50.000
51 ADX 0365	365	200	1	50.000
51 ADX 0470	470	250	1	90.000
51 ADX 0568	568	315	1	90.000
51 ADX 0640	640	355	1	110.000
51 ADX 0820	820	440	1	170.000
51 ADX 1200	1200	630	1	185.000

Software

Order code	Description
51 ADX SW	PC-ADX remote control software with proprietary ASCII and Modbus-RTU protocols and a set of connecting cables 51 C2, 51 C3, 51 C5, 51 C7 for communications via RS232 port, analog or GSM modem

For details of recommended line and by-pass contactors see the information on www.mechtric.com.au

General characteristics

ADX is a reduced voltage soft starter with torque control and maximum starting current limit. It is used for the progressive starting and stopping of asynchronous three-phase squirrel-cage motors.
The integrated by-pass contactor ADX...B types only, drastically limits dissipation, as a result equipment for electric panel cooling ventilation can be eliminated and the enclosure size can be reduced as well.

CONTROL

During starting: Torque control acceleration, current limit control and booster.
During stopping: Torque control deceleration, dynamic braking and free-wheel.
In emergency conditions: Starting without protections, direct-on-line starting using integrated by-pass contactor.
Remote control: PC supervision by connection with RS232/RS485 converter, modem or GSM modem.
Automatic call function (Autocall) in case of alarm conditions by sending a message to a cellular phone (SMS-Short Message Service) and/or to a mailbox.
Property ASCII and Modbus®-RTU communication protocols.

KEYPAD OPERATIONS

- Liquid-crystal backlit 2-line 16-character display
- Multilanguage capability (Italian, English, French, Spanish)
- Basic, advanced and function programming menus
- Keypad stop and start
- Motor and mains parameter readings:
  - line voltage values (L-L)
  - phase current
  - active and apparent power values per phase
  - power factor per phase
  - kWh
- Time sequential events log
- Clock calendar with backup battery.

PARTICULAR FUNCTIONS

Digital inputs and programmable relay outputs. Analog input (0...10V, 0...20mA or 4...20mA) for ramp acceleration and/or deceleration, motor starting and stopping control thresholds, programmable relay enable and disable control thresholds. Analog output (0...10V, 0...20mA or 4...20mA) for current, torque, motor thermal status and power factor readings.
Input programming for second motor.

PROTECTIONS

- Motor: Dual thermal protection class (one during starting phase and the other during running) or by PTC sensor, locked rotor, current asymmetry, minimum torque and starting time too long
- Auxiliary voltage: Voltage value too low
- Power voltage: Phase failure, phase sequence and frequency out of limits
- Control inputs and analog output: Static 24VDC short-circuit protection with automatic resetting.
- Starter: Overcurrent, high temperature, SCR and by-pass contactor malfunction.

Operational characteristics

- Input voltage:
  - 208-500VAC ±10% for ADX...B❶
  - 208-415VAC ±10% for ADX...❷
- Mains frequency: 50-60Hz ±5%
- Auxiliary supply voltage: 208-240VAC ±10%
- Auxiliary consumption: 20VA
- Rated starter current Ie:
  - 17-245A for ADX...B
  - 310-1200A for ADX...
- Motor current: 0.5-1 Ie
- Overload current:
  - 105% Ie for ADX...B
  - 115% Ie for ADX...

Certifications and compliance

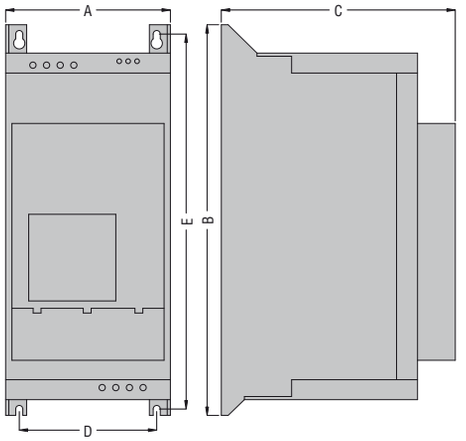
Certifications obtained: EAC for all; CCC for ADX 0110B and ADX 0125B types only.
Compliant with standard: IEC/EN 60947-1, IEC/EN 60947-4-2.

❶ 208-600VAC ±10% on request.
❷ Voltages on request: higher than 415V to 690V maximum.

Operational characteristics ADX type

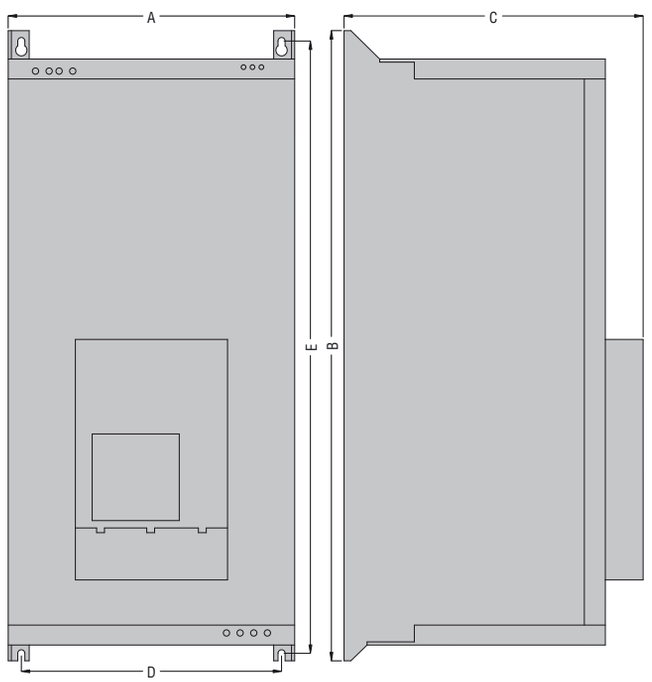
TIPO			**ADX... B** (with integrated by-pass contactor)	**ADX...** (to complete with external by-pass contactor)
Motor	Type		Asynchronous three phase	
	Power		7.5-132kW (ADX...B)	160-630kW
	Rated current		17-245A (ADX...B)	310-1200A
Supply voltage	Power circuit		208 - 500VAC ±10% standard (208-575VAC ±10% on request)	208 - 415VAC ±10% standard Other voltages up to 690VAC maximum on request)
	Rated supply voltage		208 - 240VAC ±10%	
	Frequency		50 or 60Hz ±5% self configurable	
Starting			Torque ramp with maximum current control	
Stopping			Free wheel or torque ramp deceleration	
Braking			DC dynamic by external contactor	
Protections	Auxiliary supply		Voltage too low	
	Power supply		Phase failure, frequency out of limits, minimum and maximum voltage and phase sequence, 24VDC static short circuit	
	Motor		Overload at starting (trip class 2, 10A, 10, 15, 20, 25, 30, 35 and 40), overload during running (trip class 2, 10A, 10, 15, 20 25 and 30), locked rotor, current asymmetry, minimum torque and maximum starting time	
	Starter		Overcurrent and high temperature	
	Analog inputs and outputs		24VDC static short circuit	
Functions	Clock calendar		With back-up battery	
	Event log		20 event registrations in date and time sequential order	
	Operating data mermory		Hour counter, one each for energy usage, number of startings, motor running and maintenance expiry	
	Multilanguage capability		Italian / English / Spanish / French	
Setup configuration			By incorporated or remote keypad or PC	
Keyboard	Display and LED indicators		LCD, 2 line x 16 character, backlit, POWER, RUN, FAULT	
	Membrane keys		ENTER/START, RESET/STOP, PREVIOUS, NEXT, ▲ and ▼	
	Setup parameters		Adjustment menus: basic, advanced, functions, clock and controls	
	Readings display		Voltage, current, power factor ($\cos\varphi$), torque, power (kVA, kW, kvar) and energy usage	
	Graphic display		Current and torque	
	Display		Operating status, events, alarms, event log, data	
Control inputs	Voltage		24VDC (no need for external feeder)	
	Fixed functions		2 for starting and stopping/reset	
	Multifunction input (digital functions)		Free-wheel stopping, external alarm, motor preheat, on board control, alarm inhibition, thermal protection manual reset, cascade starting and keypad lock	
	Multifunction input (analog functions)		Motor protection via PTC probes, acceleration and/or deceleration ramp via analog input, analog input thresholds for motor starting and stopping, analog input thresholds for programmable relay enable and disable, PT100 input thresholds for motor starting and stopping and PT100 input thresholds for programmable relay enable and disable	
Relay outputs	Voltage and capacity		250VAC 5A (AC1)	
	Fixed functions		1 with 1 NO + 1NC contacts for overall alarm	
	Programmable functions		3 each with 1 NO contact for running motor, motor starting, braking, current tripping threshold, maintenance expiry, etc.	
Analog output	Format configuration		0-20mA, 4-20mA or 0-10V	
	Associated source		Current, torque, motor thermal status and power factor	
Communications interface	RS232 port		Setup and remote control	
	RS485 port		Used for remote keypad only	
Degree of protection			IP00❶	
Cooling system		Natural	17-45A (ADX...B)	—
		Forced	60-245A (ADX...B)	All types
Operating temperature			-10...+45°C (higher up to maximum 55°C with derating)	
Storage temperature			-30...+70°C	
Maximum altitude			1000m	
Maximum pollution degree			3	
Operating position			Vertical ±15°	

❶ IP20 for ADX0017B to ADX0125B only.



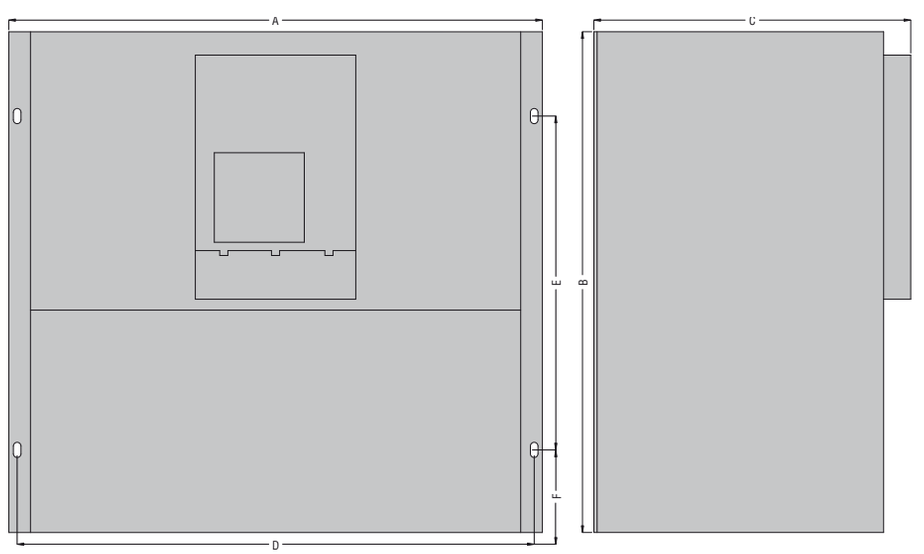
ADX 0017 B…ADX 0125 B

TIPO	A	B	C	D	E
ADX 0022BP	157	372	223	131	357
ADX 0034BP	157	372	223	131	357
ADX 0048BP	157	372	223	131	357
ADX 0058BP	157	534	250	132	517
ADX 0068BP	157	534	250	132	517
ADX 0082BP	157	534	250	132	517
ADX 0092BP	157	534	250	132	517
ADX 0114BP	157	584	250	132	567
ADX 0126BP	157	584	250	132	567
ADX 0017B	157	372	223	131	357
ADX 0030B	157	372	223	131	357
ADX 0045B	157	372	223	131	357
ADX 0060B	157	534	250	132	517
ADX 0075B	157	534	250	132	517
ADX 0085B	157	534	250	132	517
ADX 0110B	157	584	250	132	567
ADX 0125B	157	584	250	132	567



ADX 0142 B…ADX 0245 B

TIPO	A	B	C	D	E
ADX 0150BP	273	600	285	230	640
ADX 0196BP	273	680	310	230	640
ADX 0231BP	273	680	310	230	640
ADX 0142B	273	600	285	230	560
ADX 0190B	273	680	310	230	640
ADX 0245B	273	680	310	230	640



ADX 0310…ADX 1200

TIPO	A	B	C	D	E	F
ADX 0310	640	600	380	620	400	100
ADX 0365	640	600	380	620	400	100
ADX 0470	790	650	430	770	450	100
ADX 0568	790	650	430	770	450	100
ADX 0640	790	650	430	770	450	100
ADX 0820	910	950	442	830	920	❶
ADX 1200	910	950	442	830	920	—

❶ Consult Customer Service
1800 252 995 or sales@mechtric.com.au

Accessories for ADXL... types

CX 01

CX 02

EXC RDU1

EXC 1042

EXP 8003

Order code	Description	Qty per pkg	Wt
		n°	[kg]
CX 01	Connection cable PC ↔ ADXL with optical USB connector for programming, data download, diagnostics and software update firmware	1	0.090
CX 02	Wi-Fi connection device PC ↔ ADXL for data download, programming, diagnostics and cloning	1	0.090
EXC RDU1	Remote keyboard, LCD display with touchscreen, 128 x 112 pixel, IP54 protection	1	0.360
EXC 1042	RS485 communication board	1	0.010
EXC CON 01	RS485/Ethernet converter, 12…48VDC, including mounting kit DIN guide	1	0.400
EXC M3G 01	RS485 gateway/3G modem, 9.5…27VAC/9.5…35VDC, including antenna and programming cable	1	0.340
EXP80 03	DIN guide mount kit for ADXL0030...ADXL0115	1	0.145
EXP80 04	Fan for ADXL0030...ADXL0115 (codes ADXL0075...ADXL0115 house two EXP80 04 fans)	1	0.030

Remote keypad for ADX... types

51 ADX TAST

Order code	Description	Qty per pkg	Wt
		n°	[kg]
51 ADX TAST	Remote keypad 96x96mm, 2x16 backlit LCD, 208-240VAC supply c/w 3m/10ft long connecting cable	1	0.350
31 PA 96X96	Protective cover (IP54) (IP54)	1	0.077
51 C2	PC ↔ ADX connecting cable, 1.8m/6ft long	1	0.090
51 C3	PC ↔ GSM modem connecting cable, 1.8m/6ft long❶	1	0.210
51 C4	PC ↔ 4 PX1 converter drive connecting cable, 1.8m/6ft long	1	0.147
51 C5	ADX ↔ Analog modem connecting cable, 1.8m/6ft long❶	1	0.111
51 C6	ADX ↔ 4 PX1 converter drive connecting cable, 1.8m/6ft long	1	0.102
51 C7	ADX↔ GSM modem connecting cable, 1.8m/6ft long❶	1	0.101
51 C8	ADX ↔ remote keypad connecting cable, 3m/10ft long	1	0.080
4 PX1	RS232/RS485 converter drive, opto-isolated, 220...240VAC (or 110...120VAC)❷	1	0.600

Accessories for ADX... types

51C4

4PX1

❶ Consult Customer Service for modem details; see contact details on inside front cover.
❷ RS232/RS485 opto-isolated converter drive, 38,400 Baud-rate maximum, automatic or manual TRANSMIT line supervision, 220-240VAC ±10% supply (110-120VAC available on request).

General characteristics
Communication devices to connect LOVATO Electric products to:
– Personal computer (PC)
– Smartphones
– Tablets.

CX 01
This USB/optical dongle, complete with cable, allows the frontal connection of products compatible with PCs without having to disconnect the power supply from the electric panel.
The PC identifies the connection as a standard USB.

CX 02
Via Wi-Fi connection, compatible LOVATO Electric products can be viewed on PCs, smartphones and tablets with no need for cabling.

For dimensions, wiring diagrams and technical characteristics, consult the manuals available online in the Download section of the following website: www.LovatoElectric.com

EXC RDU1
Through the EXC RDU1 remote keyboard, it's possible to edit the ADXL programming, view the motor measures, operational data and alarms and turn off the alarms.
– 100...240VAC / 12...24VDC double power supply
– 128x112 pixel touchscreen LCD display
– Built-in buzzer
– Static output (SSR) to signal general alarms
– Ppto-isolated RS485 communication port
– Conductor cross section: 0.2...2.5mm² (24...12 AWG; 18...12 AWG for UL/CSA)
– Tightening torque: 0.56Nm (4.5lbin)
– Compatible with ADXL...

ADX TAST remote keyboard
The flush-mount ADX TAST remote keypad is identical to the one on board the soft starter except for the start and stop controls of the motor, which are permanently disabled. With this keypad, starter setup can be conducted, motor readings and operating data displayed and data and parameter transfer (ADX ↔ remote keypad) made as well.
A backup copy of the starter data and parameter setup is obtainable with the transfer functions. As a result quick and easy setup operations can be done especially with machines assembled in series.
The baud transmission rate, the contrast and backlight can also be adjusted by this keypad.
It is supplied standard with a 3m long cable and suitable connectors to complete the link to the ADX RS485 port.
The three terminals of the keypad supply are removable.
For longer distances, this keypad can be connected to the ADX RS232 port via RS232/RS485 converter.

Advantages
– Flush mount
– Messages in selectable language
– Readings display
– Parameter setup
– Two-way data and parameter transfer.

Operational characteristics
– Auxiliary supply voltage: 208-240VAC ±10%
– Power consumption: 6.9VA
– Dissipation: 3.2W
– Mains frequency: 50/60Hz
– RS485 port: RJ44 connector
– Supply: Removable 3-pole 2.5 mm² terminal block.
– Display: 2 line, 16 character backlit LCD
– LED indication (3): POWER, RUN and FAULT
– Keys (6) ENTER/START, RESET/STOP, ←PREVIOUS, NEXT→, ▼ and ▲
– Ambient conditions
  • Operating temperature: -10...+60°C
  • Storage temperature: -20...+70°C
– Flush mount enclosure
– Degree of protection on front: IP41; IP54 with protective cover.

Certifications and compliance
Certifications obtained: EAC.
Compliant to standards: IEC/EN 61000-6-1 and IEC/EN 61000-6-3 for 4 PX1 types.

VFD-EL Series AC Drive

- Motor power up to 2.2kW 1ph and 3.7kW 3ph
- Keypad with LED display and potentiometer
- Process follower 0-10V, 4-20mA (optional PTC input)
- Optional fieldbus modules (deviceNet, profiBus, CANopen)
- DC bus sharing
- PID feed back control
- RS-485 (MODBUS)
- C-Tick, CE approvals
- Internal filter 1ph and 3ph versions

Certifications and compliance
CE, UL, RCM

Specifications

115V Class			
Part No.	VFD002EL11A	VFD004EL11A	VFD007EL11A
Order Code	**DEVFD002EL11A**	**DEVFD004EL11A**	**DEVFD007EL11A**
Motor Output	0.18kw	0.37kw	0.75kw
Input Voltage	100-120V 1ph ±10% 50/60Hz		
Output Voltage	3 phase 2 x input voltage		
Rated Capacity (kVA)	0.6	1.0	1.6
Input Current	6.4	9A	18A
Output Current	1.6A	2.5A	4.2A
Weight (Kg)	1.1	1.1	1.4
Fan Cooled	No	No	Yes
Dimensions mm (h x w x d)	174 x 72 x 136 (frame A)		174 x 100 x 136 (frame B)

230V Class					
Part No.	VFD002EL21A	VFD004EL21A	VFD007EL21A	VFD015EL21A	VFD022EL21A
Order Code	**DEVFD002EL21A**	**DEVFD004EL21A**	**DEVFD007EL21A**	**DEVFD015EL21A**	**DEVFD022EL21A**
Motor Output	0.18kw	0.37kw	0.75kw	1.5kw	2.2kw
Input Voltage	200-240V 1ph ±10% 50/60Hz				
Output Voltage	3 phase proportional to input voltage				
Rated Capacity (kVA)	0.6	1.0	1.6	2.9	4.2
Input Current	4.9A	6.5A	9.5A	15.7A	24A
Output Current	1.6A	2.5A	4.2A	7.5A	11.0A
Weight (Kg)	1.2			1.7	1.7
Fan Cooled	No	No	No	Yes	Yes
Dimensions mm (h x w x d)	174 x 72 x 136 (h x w x d) (frame A)			174 x 100 x 136 (h x w x d) (frame B)	

460V Class					
Part No.	VFD004EL43A	VFD007EL43A	VFD015EL43A	VFD022EL43A	VFD037EL43A
Order Code	**DEVFD004EL43A**	**DEVFD007EL43A**	**DEVFD015EL43A**	**DEVFD022EL43A**	**DEVFD037EL43A**
Motor Output	0.37kw	0.75kw	1.5kw	2.2kw	3.7kw
Input Voltage	380-480V 3ph ±10% 50/60Hz				
Output Voltage	3 phase proportional to input voltage				
Rated Capacity (kVA)	1.2	2.0	3.3	4.4	6.8
Input Current	1.8A	3.2A	4.3A	7.1A	9A
Output Current	1.5A	2.5A	4.2A	5.5A	8.2A
Weight (Kg)	1.2	1.2	1.2	1.7	1.7
Fan Cooled	No	No	Yes	Yes	Yes
Dimensions mm (h x w x d)	174 x 72 x 136 (h x w x d) (frame A)			174 x 100 x 136 (h x w x d) (frame B)	

VFD-EL Series AC Drive

Specifications common to all sizes

CONTROL			
	Control System		SPWM (Sinusoidal Pulse Width Modulation, carrier frequency 2kHz-12kHz)
	Output Freq. Range		0.1 - 599Hz
	Output Frequency Resolution		0.01Hz
	Torque Characteristics		Including the auto-torque, auto-slip compensation; starting torque can be 150% at 5Hz
	Overload Endurance		150% of rated current for 1 minute
	Skip Frequency		Three zones, setting range 0.1 - 599Hz
	Accel/Decel Time		0.1 to 600 second (2 Independent settings for Accel/Decel Time)
	V/F Pattern		V/F pattern adjustable
	Stall Prevention Level		20 to 250%, Setting of Rated Current
	DC Injection Braking		Operation frequency 0.1 - 599Hz, output 0-100% rated current Start time 0-60 sec, stop time 0-60 sec
	Braking Torque		Approx. 20% (up to 125% with external brake unit and braking resistor)
OPERATION			
	Frequency Setting	Keypad	Setting by keypad or Potentiometer
		External Signal	Potentiometer-5KΩ/0.5W, DC 0 to +10V or 0 to +5V (Input impedance 47KΩ), RS-485 interface, 4 to 20mA (Input impedance 250Ω); Multi-Function Inputs 3 to 6 (15 steps, Jog, up/down)
	Operation Setting Signal	Keypad	Setting by RUN, STOP
		External Signal	2 wires/3 wires (MI1, MI2, MI3), RS-485 serial interface (MODBUS). PLC
	Multi-Function Input Signal		Multi-step selection 0 to15, Jog, accel/decel inhibit, first/second accel/decel switch, counter, ACI/AVI selections, external Base Block (NC, NO), up/down frequency command, driver reset, NPN/PNP input selection
	Multi-Function Output Indication		AC Drive Operating, Frequency Attained, zero speed, external base block detection, Fault Indication, overheat alarm, emergency stop and status selection of input terminals
	Analog Output Signal		Analog frequency/current signal output
	Alarm Output Contact		1 Form C C/O contact or open collector output
Operation Functions			AVR, accel/decel S-curve, over-voltage/over-current stall prevention, 5 fault records, reverse inhibit, momentary power loss restart, DC braking, auto torque/slip compensation, adjustable carrier frequency, output frequency limits, parameter lock/reset, PID control, external counter, MODBUS communication, power saving, fan control, sleep/wake frequency, 1st/2nd frequency source selections and combination, NPN/PNP selection
Protection			Over Voltage, Over Current, Under Voltage, Overload, Overheating, External Fault, Electronic thermal, Ground Fault., IGBT short circuit, PTC
Keypad and Display			6-key, 4-digit, 7- segment LED, 4 status LED's, potentiometer, master frequency, output frequency, output current, user defined units, parameter setup, review and faults. RUN, STOP, RESET, FWD/REV
ENVIRONMENT			
	Installation Location		Altitude 1,000m or below, keep from corrosive gasses, liquid and dust
	Pollution Degree		2
	Ambient Temperature		-10°C to 50°C (Non-Condensing and not frozen) (-40° C for side by side mounting)
	Storage Temperature		-20°C to 60°C
	Ambient Humidity		Below 90% RH (non-condensing)
	Vibration		9.80665m/s2 (1G) less than 20Hz, 5.88m/s2, (0.6G) at 20 to 50Hz

VFD-EL Series AC Drive Accessories

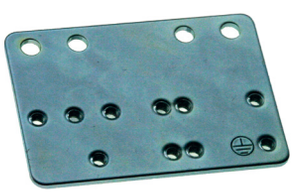
Order Code	Description
DEVFDCMEDN01	CME-DN01 DeviceNet module
DEVFDCMECOP01	CME-COP01 CANopen module
DEVFDCMEPD01	CME-PD01 Profibus module
DEVFDBUE20015	BUE-20015 Brake Unit 0.2kw to 1.5kw 230V (see page 152 for resistor details)
DEVFDBUE20037	BUE-20037 Brake Unit 2.2kw 230V (see page 152 for resistor details)
DEVFDBUE40015	BUE-40015 Brake Unit 0.2kw to 1.5kw 440V (see page 152 for resistor details)
DEVFDBUE40037	BUE-40037 Brake Unit 2.2kw to 3.7kw 440V (see page 152 for resistor details)
DEVFDMKELDRA	MKEL-DRA DIN Rail adaptor frame A
DEVFDMKELDRB	MKEL-DRB DIN Rail adaptor frame B
DEVFDMKEEP	MKE-EP EMC earthing strap
DEVRC01	RC-01 remote operator

BRAKE UNIT

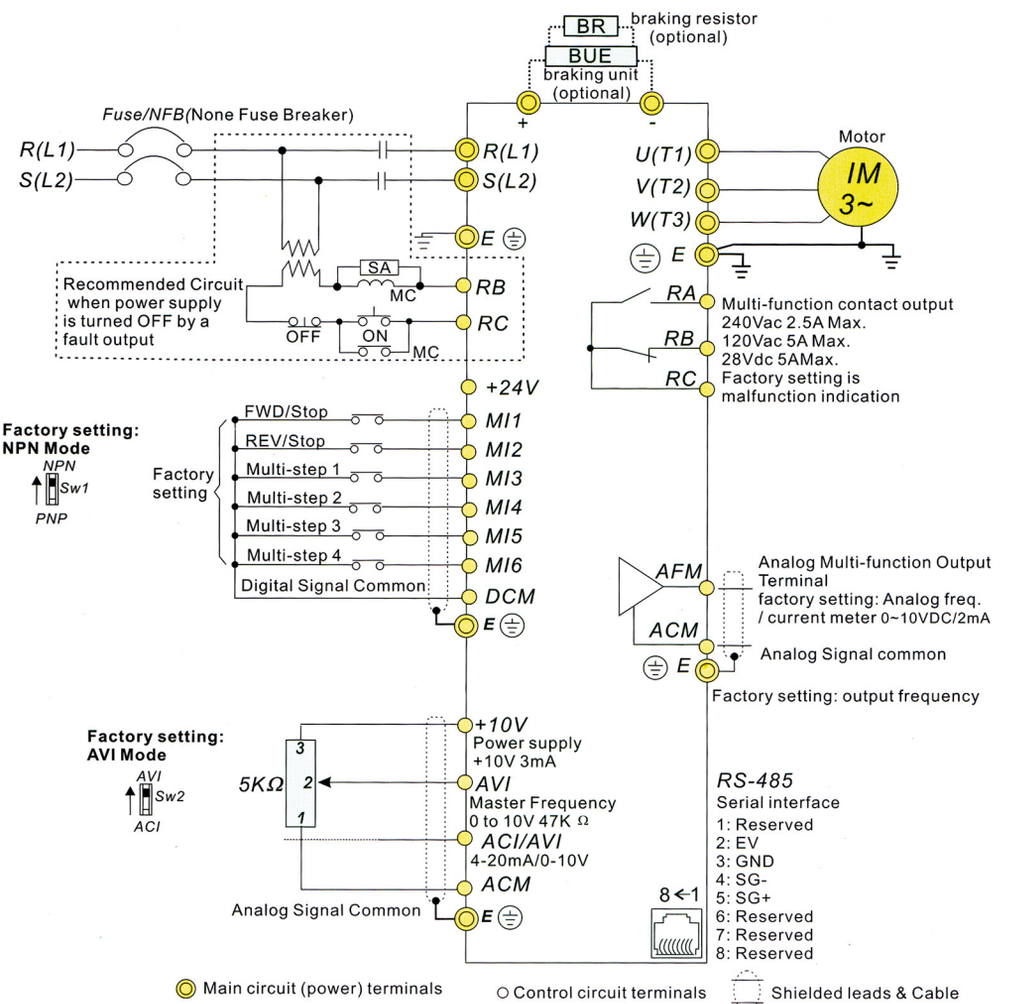
RC-01

CME-DN01

CME-PD01



MKE-EP



VFD-E Series AC Drive

- Motor power up to 2.2kW 1ph and 22kW 3ph
- Sensorless vector or V/F control
- Removable keypad with potentiometer
- Built in PLC with optional I/O and encoder modules
- Process follower 0-10V, 4-20mA (optional PTC input) and PID feedback control
- Optional fieldbus modules (deviceNet, profiBus, CANopen,)
- DC bus sharing
- RS-485 (MODBUS)
- Built in filter and brake chopper
- C-Tick, CE approvals

Certifications and compliance
CE, UL, RCM, ROHS

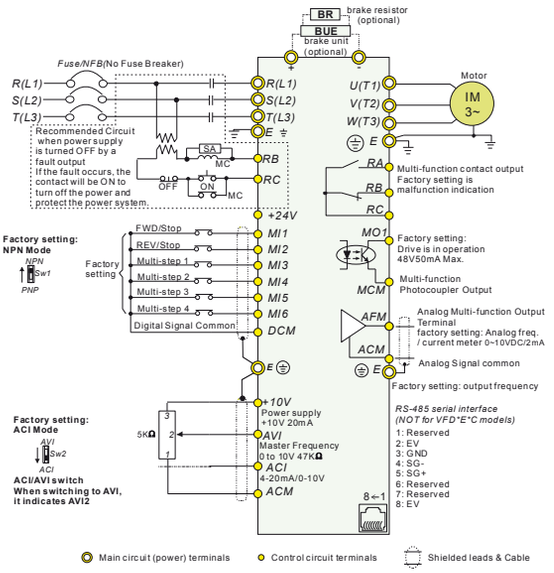
Specifications

230V Class					
Part No.	VFD002E21T	VFD004E21T	VFD007E21T	VFD015E21A	VFD022E21A
Order Code	**DEVFD002E21T**	**DEVFD004E21T**	**DEVFD007E21T**	**DEVFD015E21A**	**DEVFD022E21A**
Motor Output	0.18kw	0.37kw	0.75kw	1.5kw	2.2kw
Input Voltage	200-240V 1ph ±10% 50/60Hz				
Output Voltage	3 phase proportional to input voltage				
Rated Capacity (kVA)	0.6	1.0	1.6	2.9	4.2
Input Current	4.9A	6.5A	9.7A	15.7A	24A
Output Current	1.6A	2.5A	4.2A	7.5A	11.0A
Weight (Kg)	1.1			1.9	
Fan Cooled	No			Yes	
Dimensions mm	142 x 72 x 152 (h x w x d)			174 x 100 x 152 (h x w x d)	
460V Class					
Part No.	VFD004E43T	VFD007E43T	VFD015E43T	VFD022E43A	VFD037E43A
Order Code	**DEVFD004E43T**	**DEVFD007E43T**	**DEVFD015E43T**	**DEVFD022E43A**	**DEVFD037E43A**
Motor Output	0.37kw	0.75kw	1.5kw	2.2kw	3.7kw
Input Voltage	380-480V 3ph ±10% 50/60Hz				
Output Voltage	3 phase proportional to input voltage				
Rated Capacity (kVA)	1.2	2.0	3.3	4.4	6.8
Input Current	1.9A	3.2A	4.3A	7.1A	11.2A
Output Current	1.5A	2.5A	4.2A	5.52A	8.5A
Weight (Kg)	1.2	1.2	1.2	1.9	1.9
Fan Cooled	No			Yes	
Dimensions mm	142 x 72 x 152 (h x w x d)			174 x 100 x 152 (h x w x d)	

Part No.	VFD055E43A	VFD075E43A	VFD110E43A	VFD150E43A	VFD185E43A	VFD220E43A
Order Code	**DEVFD055E43A**	**DEVFD075E43A**	**DEVFD110E43A**	**DEVFD150E43A**	**DEVFD185E43A**	**DEVFD220E43A**
Motor Output	5.5kw	7.5kw	11kw	15kw	18.5kw	22kw
Input Voltage	380-480V 3ph ±10% 50/60Hz					
Output Voltage	3 phase proportional to input voltage					
Rated Capacity (kVA)	9.9	13.7	18.3	24	29	34
Input Current	14A	19A	26A	35A	41A	49A
Output Current	13A	18A	24A	32A	38A	45A
Weight (Kg)	4.2	4.2	4.2	7.5	7.5	7.5
Dimensions mm	260 x 130 x 169.2 (h x w x d)			310 x 200 x 190 (h x w x d)		

Note: Keypad must be ordered separately if required, see accessories.

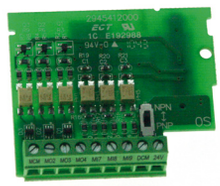
VFD-E Series AC Drive



Specifications common to all sizes

CONTROL			
	Control System		SPWM (Sinusoidal Pulse Width Modulation, carrier frequency 1kHz-15kHz) V/F or sensorless vector control
	Output Freq. Range		1.0-600Hz
	Output Frequency Resolution		0.01Hz
	Torque Characteristics		Including the auto-torque, auto-slip compensation; starting torque can be 150% at 3Hz
	Overload Endurance		150% of rated current for 1 minute
	Skip Frequency		Three zones, setting range 0.1 to 600Hz
	Accel/Decel Time		0.1 to 600 second (2 Independent settings for Accel/Decel Time)
	V/F Pattern		V/F pattern adjustable
	Stall Prevention Level		20 to 250%, Setting of Rated Current
	DC Injection Braking		Operation frequency 1.0-600Hz, output 0-100% rated current Start time 0-60 sec, stop time 0-60 sec
	Braking Torque		Approx. 20% (up to 125% braking resistor all sizes have the braking chopper built in)
OPERATION			
	Frequency Setting	Keypad	Setting by keypad or Potentiometer
		External Signal	Potentiometer-5KΩ/0.5W, DC 0 to +10V or 0 to +5V (Input impedance 47KΩ), RS-485 interface, 4 to 20mA (Input impedance 250Ω); Multi-Function Inputs 3 to 9 (15 steps, Jog, up/down)
	Operation Setting Signal	Keypad	Setting by RUN, STOP
		External Signal	2 wires/3 wires (FWD, REV, EF), RS-485 serial interface (MODBUS). PLC
	Multi-Function Input Signal		Multi-step selection 0 to 15, Jog, accel/decel inhibit, first/second accel/decel switch, counter, ACI/AVI/AUI selections, external Base Block (NC, NO), up/down frequency command, NPN/PNP input selection, aux. motor output
	Multi-Function Output Indication		AC Drive Operating, Frequency Attained, zero speed, external base block detection, Fault Indication, overheat alarm, emergency stop and status selection of input terminals (N/C or N/O), local/remote indication
	Analog Output Signal		Analog frequency/current signal output
	Alarm Output Contact		1 Form C C/O contact or open collector output
Operation Functions			Built-in PLC, AVR, accel/decel S-curve, over-voltage/over-current stall prevention, 5 fault records, reverse inhibit, 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, power saving, fan control, sleep/wake frequency, 1st/2nd frequency source selections and combination, NPN/PNP selection
Protection			Over Voltage, Over Current, Under Voltage, Overload, Overheating, External Fault, Electronic thermal, Ground Fault., IGBT short circuit, PTC
Keypad and Display			6-key, 4-digit, 7- segment LED, 4 status LED's, potentiometer, master frequency, output frequency, output current, user defined units, parameter setup, review and faults. RUN, STOP, RESET, FWD/REV
ENVIRONMENT			
	Installation Location		Altitude 1,000m or below, keep from corrosive gasses, liquid and dust
	Pollution Degree		2
	Ambient Temperature		-10°C to 50°C (Non-Condensing and not frozen) (-40°C for side by side mounting)
	Storage Temperature		-20°C to 60°C
	Ambient Humidity		Below 90% RH (non-condensing)
	Vibration		9.80665m/s2 (1G) less than 20Hz, 5.88m/s2, (0.6G) at 20 to 50Hz

VFD-E Series AC Drive Accessories



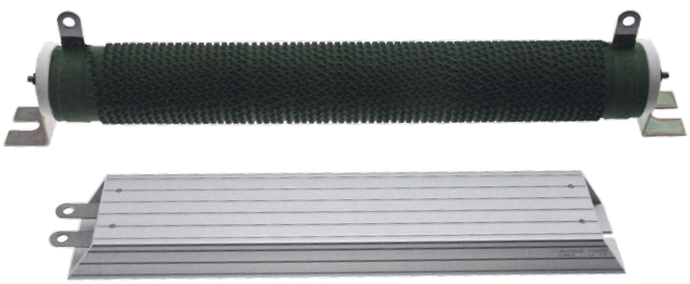
EME-33A

Order Code	Description
DEVFDKPELE02	KPE-LE02 key pad
DEVFDCMEDN01	CME-DN01 DeviceNet module
DEVFDCMECOP01	CME-COP01 CANopen module
DEVFDCMEPD01	CME-PD01 Profibus module
DEVFDCMEUSB01	CME-USB01 second communication card (USB1.1)
DEVFDEMED33A	EME-33A I/O card 3 in/3 out
DEVFDEMER2CA	EME-R2CA relay card 2 x C/O contacts
DEVFDEMER3AA	EME-R3AA relay card 3 x C/O contacts
DEVFDEMEA22A	EME-A22A I/O card 2 analogue in/2 analogue out
DEVFDEMEPG01	EME-PG01 encoder card
DEVFDMKEDRA	MKE-DRA DIN Rail adaptor frame A
DEVFDMKEDRB	MKE-DRB DIN Rail adaptor frame B
DEVFDMKEEP	MKE-EP EMC earthing strap
DEVRC01	RC-01 remote operator
DEVPU06	PU-06 copy programmer

VFD-EL and E Series Braking Resistors

Specifications

Voltage	Applicable Motor		Order Code	Quantity Required	Equivalent brake resistor for each AC drive	Brake Unit Model EL only	Brake Torque 10% ED%	Min. Equivalent Resistor Value for Each AC Drive	Typical Thermal Overload Relay Value
	HP	KW							
115/230V Series	1/4	0.2	DEVBR200W250	1	200W 250Ω	1 x BUE20015	320	200Ω	2A
	1/2	0.4	DEVBR200W250	1	200W 250Ω	1 x BUE20015	170	100Ω	3A
	1	0.75	DEVBR200W150	1	200W 150Ω	1 x BUE20015	140	80Ω	4A
	2	1.5	DEVBR300W100	1	300W 100Ω	1 x BUE20015	107	80 Ω	4A
	3	2.2	DEVBR300W100	2	600W 50Ω	1 x BUE20037	150	25 Ω	12A
460V Series	1/2	0.4	DEVBR300W400	1	300W 400Ω	1 x BUE40015	400	400Ω	2A
	1	0.75	DEVBR300W400	1	300W 400Ω	1 x BUE40015	200	200Ω	3A
	2	1.5	DEVBR200W150	2	400W 300Ω	1 x BUE40015	140	160Ω	4A
	3	2.2	DEVBR300W400	2	300W 400Ω	1 x BUE40037	150	100Ω	6A
	5	3.7	DEVBR300W400	3	900W 120Ω	1 x BUE40037	150	100Ω	6A
	7.5	5.5	DEVBR300W400	4	1200W 100Ω	-	115	96Ω	-
	10	7.5	DEVBR300W400	5	1500W 80Ω	-	107	69Ω	-
	15	11	DEVBR300W400	7	2100W 57Ω	-	100	53Ω	-
	20	15	DEVBR1K2W008	4	4800W 32Ω	-	151	31Ω	-
	25	18.5	DEVBR1K2W008	4	4800W 32Ω	-	121	31Ω	-
	30	22	DEVBR1K2W008	4	4800W 32Ω	-	100	31Ω	-



BRAKE RESISTORS

C2000 VFD-C Series AC Drive

- Motor power up to 450kW 3ph
- 690V versions up to 630kW
- CH2000 version for crane and hoist applications up to 280kW
- Dual rating (constant torque or variable torque)
- Open loop or closed loop field oriented control (up to 200% torque at zero speed in closed loop mode)
- 4 quadrant torque control
- Removable multi line LCD display with Auto/Manual button
- Built in PLC with optional I/O and encoder modules
- Process follower 0-10V, 4-20mA (optional PTC input) and PID feedback control
- RS-485 (MODBUS) and CANopen built in, with optional fieldbus modules (deviceNet, profiBus, EtherNet)
- Built in filter and brake chopper up to 30kw, and built in DC reactor (above 30kw)
- Coated circuit boards
- C-Tick, CE approvals

Certifications and compliance
CE, UL, RCM, EAC

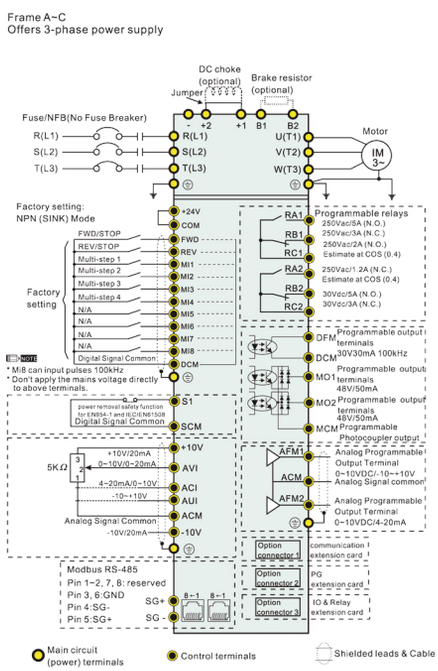
Specifications

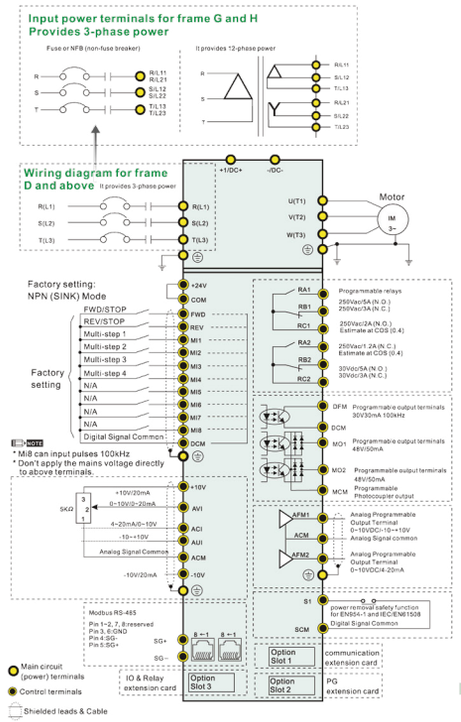
Part No.		VFD007C43E	VFD015C43E	VFD022C43E	VFD040C43E	VFD055C43E	VFD075C43E
Order Code		**DEVFD007C43E**	**DEVFD015C43E**	**DEVFD022C43E**	**DEVFD040C43E**	**DEVFD055C43E**	**DEVFD075C43E**
Motor Output		0.75kw	1.5kw	2.2kw	4.0kw	5.5kw	7.5kw
Input Voltage		380-480V 3ph (-15~+10%) 50/60Hz					
Output Voltage		3 phase proportional to input voltage					
Rated Capacity (kVA)	Heavy Duty	2.3	3.0	4.5	7.6	9.6	14
Input Current	Heavy Duty	2.9A	3.8A	5.7A	9.5A	11A	17A
Output Current	Heavy Duty	4.1A	5.6A	8.3A	14.5A	16A	19A
Carrier Freq.	Heavy Duty	2-6kHz					
Rated Capacity (KVA)	Normal Duty	2.4	3.2	4.8	8.4	10	14
Output Current	Normal Duty	3.0A	4.0A	6.0A	10.5A	12A	18A
Input Current	Normal Duty	4.3A	5.9A	8.7A	15.5A	17A	20A
Carrier Freq.	Normal Duty	2-15kHz					
Weight (Kg)		2.6	2.6	2.8	2.8	2.8	5.4
Dimensions mm		250 x 130 x 170 (h x w x d)					320 x 190 x 190 (h x w x d)
EMI Filter		Built In					

Part No.		VFD110C43E	VFD150C43E	VFD185C43E	VFD220C43E	VFD300C43E	VFD370C43U
Order Code		**DEVFD110C43E**	**DEVFD150C43E**	**DEVFD185C43E**	**DEVFD220C43E**	**DEVFD300C43E**	**DEVFD370C43U**
Motor Output		11kw	15kw	18.5kw	22kw	30kw	37kw
Input Voltage		380-480V 3ph (-15~+10%) 50/60Hz					
Output Voltage		3 phase proportional to input voltage					
Rated Capacity (kVA)	Heavy Duty	18	24	29	34	45	55
Input Current	Heavy Duty	23A	30A	36A	43A	57A	69A
Output Current	Heavy Duty	25A	33A	38A	45A	60A	70A
Carrier Freq.	Heavy Duty	2-6kHz					
Rated Capacity (KVA)	Normal Duty	19	25	30	36	48	58
Output Current	Normal Duty	24A	32A	38A	45A	60A	73A
Input Current	Normal Duty	26A	35A	40A	47A	63A	74A
Carrier Freq.	Normal Duty	2-15kHz		2-10kHz			
Weight (Kg)		5.4	5.4	9.8	9.8	10.8	40
Dimensions mm		320 x 190 x 190 (h x w x d)		400 x 250 x 210 (h x w x d)			615 x 280 x 225 (h x w x d)
EMI Filter		Built In					27FIN538S1075M

C2000 VFD-C Series AC Drive

Wiring





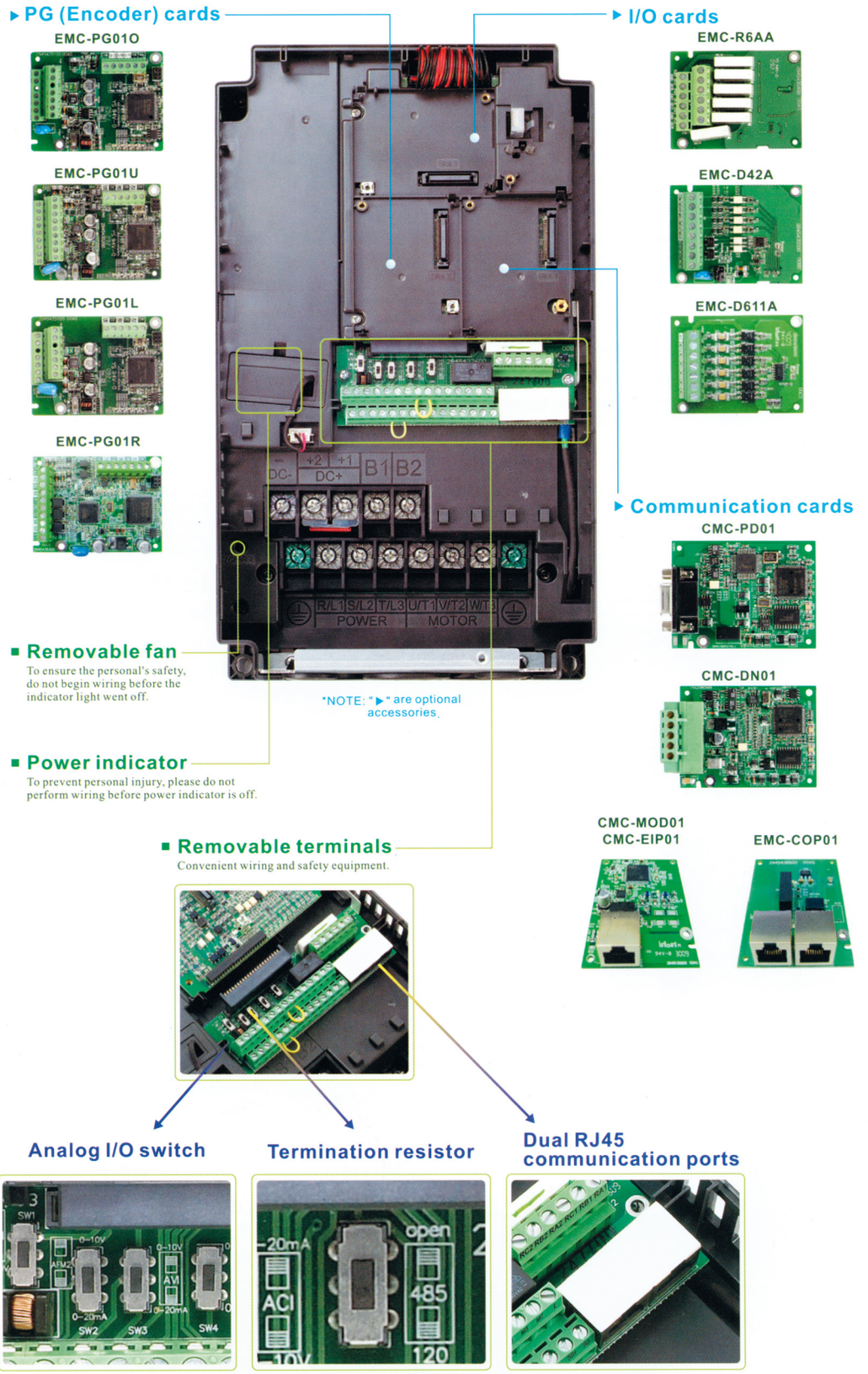
Specifications continued

Part No.		VFD450C43U	VFD550C43E	VFD750C43E	VFD900C43E	VFD1100C43E	VFD1320C43E
Order Code		**DEVFD450C43U**	**DEVFD550C43E**	**DEVFD750C43E**	**DEVFD900C43E**	**DEVFD1100C43E**	**DEVFD1320C43E**
Motor Output		45kw	55kw	75kw	90kw	110kw	132kw
Input Voltage		380-480V 3ph (-15~+10%) 50/60Hz					
Output Voltage		3 phase proportional to input voltage					
Rated Capacity (kVA)	Heavy Duty	69	84	114	136	167	197
Input Current	Heavy Duty	86A	105A	143A	171A	209A	232A
Output Current	Heavy Duty	96A	108A	149A	179A	219A	243A
Carrier Freq.	Heavy Duty	2-6kHz					
Rated Capacity (KVA)	Normal Duty	73	88	120	143	175	207
Output Current	Normal Duty	91A	110A	150A	180A	220A	244A
Input Current	Normal Duty	101A	114A	157A	189A	230A	255A
Carrier Freq.	Normal Duty	2-10kHz				2-9kHz	
Weight (Kg)		40	40	40	66	66	88
Dimensions mm		615 x 280 x 225 (h x w x d)	689 x 330 x 275 (h x w x d)		716 x 370 x 300 (h x w x d)		940 x 420 x 300 (h x w x d)
EMI Filter		27FIN538S1130M		27FIN538S1180M		27FIN538S1280V	

Part No.		VFD1600C43E	VFD1850C43E	VFD2200C43E	VFD2800C43E	VFD3150C43E	VFD3550C43E
Order Code		**DEVFD1600C43E**	**DEVFD1850C43E**	**DEVFD2200C43E**	**DEVFD2800C43E**	**DEVFD3150C43E**	**DEVFD3550C43E**
Motor Output		160kw	185kw	220kw	280kw	315kw	355kw
Input Voltage		380-480V 3ph (-15~+10%) 50/60Hz					
Output Voltage		3 phase proportional to input voltage					
Rated Capacity (kVA)	Heavy Duty	235	280	348	417	466	517
Input Current	Heavy Duty	304A	352A	419A	523A	585A	649A
Output Current	Heavy Duty	312A	361A	429A	535A	598A	663A
Carrier Freq.	Heavy Duty	2-6kHz					
Rated Capacity (KVA)	Normal Duty	247	295	367	438	491	544
Output Current	Normal Duty	320A	370A	440A	550A	616A	683A
Input Current	Normal Duty	328A	380A	451A	562A	629A	697A
Carrier Freq.	Normal Duty	2-9kHz					
Weight (Kg)		88	138	138	228	228	228
Dimensions mm		940 x 420 x 300 (h x w x d)	1241 x 500 x 397 (h x w x d)		1745 x 700 x 404 (h x w x d)		
EMI Filter		27FIN538S1500BC			27FIN538S1750BC		

C2000 VFD-C Series AC Drive Modular Design

- Various accessories options, such as I/O extension cards, encoder feedback cards, communication cards, hot-plugging LCM keypad, removable terminals and removable fan.



C2000 VFD-C Series AC Drive

Specifications common to all sizes

CONTROL			
	Control System		1: V/F, 2: Sensorless Vector, 3:Closed Loop V/F, 4: Closed Loop Field Oriented, 5: Closed Loop Torque Control
	Output Frequency Range		Normal Duty 0.10-600Hz, Heavy Duty 0.01-300hz
	Speed response		5Hz (up to 40Hz with vector control)
	Output Frequency Resolution		Digital Command: 0.01Hz ; Analogue Command 0.03 x f max/60Hz (±11bit)
	Output Frequency Accuracy		Digital Command: ±0.01% ; Analogue Command ±0.01% @ 25°C
	Torque Limit		Max. 200%
	Torque Accuracy		±5%
	Overload Endurance		Normal Duty 120% of rated current for 1 min. ; Heavy Duty 150% for 1min.
	Skip Frequency		Three zones, setting range 0.1 to 600Hz
	Accel/Decel Time		0.01 to 600 /0.01-6000 second (4 Independent settings for Accel/Decel Time)
	V/F Pattern		4 point adjustable V/F curve and square curve
	Stall Prevention Level		Up to 150%, of drive rated current
	Over Torque Detection		10%-250% of drive rated current
	DC Injection Braking		Operation frequency 1.0-600Hz, output 0-100% rated current Start time 0-60 sec, stop time 0-60 sec
	Braking Torque		Approx. 20% (up to 125% braking resistor all sizes have the braking chopper built in)
OPERATION			
	Frequency Setting	Keypad	Setting by keypad
		External Signal	Analogue input DC 0 to +10V or 0 to +5V (Input impedance 47KΩ), 4 to 20mA (Input impedance 250Ω); Multi-Function Inputs 3 to 9 (15 steps, Jog, up/down). Pulse input, RS-485 interface, CANopen
	Operation Setting Signal	Keypad	Setting by RUN, STOP
		External Signal	2 wires/3 wires (FWD, REV, EF), RS-485 serial interface (MODBUS). PLC, CANopen
	Multi-Function Input Signal		Multi-step selection 0 to 15, Jog, accel/decel inhibit, first/second accel/decel switch, counter, ACI/AVI/AUI selections, external Base Block (NC, NO), up/down frequency command, NPN/PNP input selection, aux. motor output + more programmable
	Multi-Function Output Indication		AC Drive Operating, Frequency Attained, zero speed, external base block detection, Fault Indication, overheat alarm, emergency stop and status selection of input terminals (N/C or N/O), local/remote indication + more programmable
	Analog Output Signal		2 x programmable analog signal output.
	Alarm Output Contact		3 x programmable outputs, 2 x programmable output relays (1NC + 1NO each)
Operation Functions			Torque control, Droop control, Speed/torque control switching, Feed forward control, Zero-servo control, Momentary power loss ride thru, Speed search, Over-torque detection, Torque limit, 17-step speed (max), Accel/decel time switch, S-curve accel/decel, 3-wire sequence, Auto-Tuning (rotational, stationary), Dwell, Cooling fan on/off switch, Slip compensation, Torque compensation, JOG frequency, Frequency upper/lower limit settings, DC injection braking at start/stop, High slip braking, PID control (with sleep function),Energy saving control, MODOBUS communication (RS-485 RJ45, max. 115.2 kbps), Fault restart, Parameter copy
Protection			Over-current protection for 220% rated current, current clamp Normal duty: 170~175%; Heavy duty: 180~185%; Electronic thermal relay protection, ground fault protection, over voltage
Keypad and Display			Multi-function LCD, 3 status LED's, 4 function buttons, user defined units, parameter setup, review and faults. RUN, STOP, RESET, FWD/REV, HAND, AUTO
ENVIRONMENT			
	Installation Location		Altitude 1,000m or below, keep from corrosive gasses, liquid and dust
	Pollution Degree		2; Indoor use only
	Ambient Temperature		-10°C to 40°C (Non-Condensing and not frozen) 40-60°C derate 2% for each 1°C
	Storage Temperature		-25°C to 70°C
	Ambient Humidity		Below 90% RH (non-condensing)
	Vibration		15G for 11ms

C2000 VFD-CP Series AC Drive

- Motor power up to 400kW 3ph
- HVAC drive for variable torque loads
- Fire mode and bypass functions
- Sensorless vector control
- Features for building automation applications including multi-pump control
- Removable multi line LCD display with Auto/Manual button
- Built in PLC with optional I/O and encoder modules
- Process follower 0-10V, 4-20mA (optional PTC input) and PID feedback control
- RS-485 (MODBUS) and BACnet built in, with optional fieldbus modules (deviceNet, profiBus, EtherNet)
- Built in filter and brake chopper up to 37kw, built in DC reactor (above 30kw)
- Coated circuit boards
- C-Tick, CE approvals

Certifications and compliance
CE, UL, RCM, ROHS

Specifications

Part No.	VFD007CP4EA-21	VFD015CP4EB-21	VFD022CP4EB-21	VFD040CP4EA-21	VFD055CP4EB-21	VFD075CP4EB-21
Order Code	**DEVFD007CP43E**	**DEVFD015CP4EB**	**DEVFD022CP4EB**	**DEVFD040CP43E**	**DEVFD055CP4EB**	**DEVFD075CP43EB**
Motor Output	0.75kw	1.5kw	2.2kw	4.0kw	5.5kw	7.5kw
Input Voltage	380-480V 3ph (-15~+10%) 50/60Hz					
Output Voltage	3 phase proportional to input voltage					
Rated Capacity (kVA)	2.4	3.3	4.4	8.4	10.4	14.3
Output Current	3.0A	4.2A	5.5A	10.5A	13A	18A
Input Current	4.3A	6A	8.1A	16A	20A	22A
Carrier Freq.	2-15kHz					
Weight (Kg)	2.5	2.5	2.8	2.8	2.8	2.8
Dimensions mm	250 x 130 x 170 (h x w x d)					
EMI Filter	Built In					

Part No.	VFD110CP4EB-21	VFD150CP4EB-21	VFD185CP4EB-21	VFD220CP4EA-21	VFD300CP4EB-21	VFD370CP4EB-21
Order Code	**DEVFD110CP4EB**	**DEVFD150CP43EB**	**DEVFD185CP43EB**	**DEVFD220CP43E**	**DEVFD300CP43EB**	**DEVFD370CP43EB**
Motor Output	11kw	15kw	18.5kw	22kw	30kw	37kw
Input Voltage	380-480V 3ph (-15~+10%) 50/60Hz					
Output Voltage	3 phase proportional to input voltage					
Rated Capacity (kVA)	19	25	30	36	48	58
Output Current	24A	32A	38A	45A	60A	73A
Input Current	26A	35A	42A	50A	66A	80A
Carrier Freq.	2-15kHz			2-10kHz		
Weight (Kg)	4.9	4.9	5.2	9	10.8	10.8
Dimensions mm	320 x 190 x 190 (h x w x d)			400 x 250 x 210 (h x w x d)		
EMI Filter	Built In					

C2000 VFD-CP Series
AC Drive

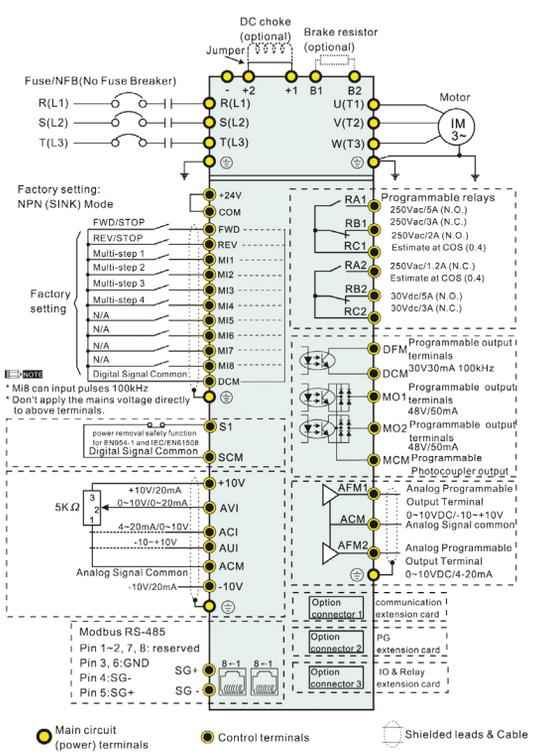
Specifications continued

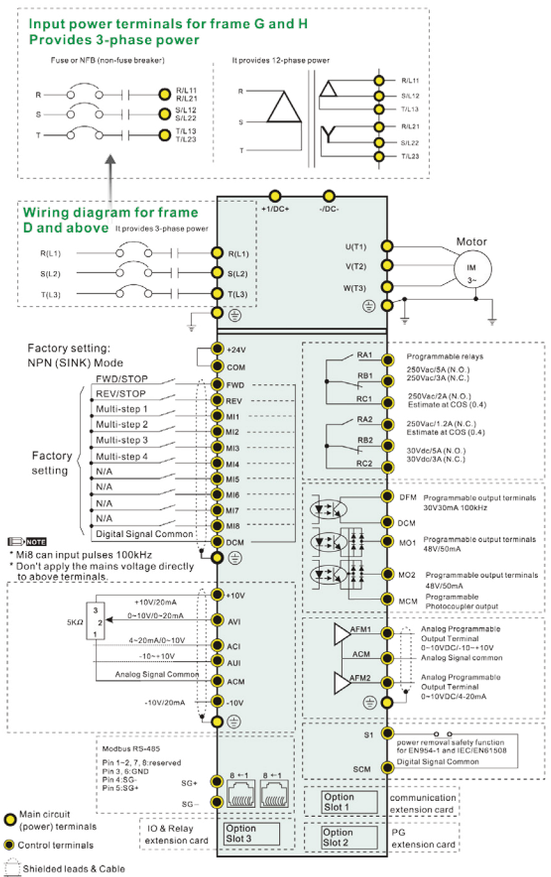
Part No.	VFD450CP43S-21	VFD550CP43S-21	VFD750CP43B-21	VFD900CP43A-21	VFD1100CP43A-21	VFD1320CP43B-21
Order Code	**DEVFD450CP43S**	**DEVFD550CP43S**	**DEVFD750CP43B**	**DEVFD900CP43A**	**DEVFD1100CP43A**	**DEVFD1320CP43B**
Motor Output	45kw	55kw	75kw	90kw	110kw	132kw
Input Voltage	380-480V 3ph (-15~+10%) 50/60Hz					
Output Voltage	3 phase proportional to input voltage					
Rated Capacity (kVA)	73	88	120	143	175	207
Output Current	91A	110A	150A	180A	220A	260A
Input Current	95A	114A	154A	184A	226A	265A
Carrier Freq.	2-10kHz			2-9kHz		
Weight (Kg)	38	38	40	40	66	66
Dimensions mm	615 x 280 x 255 (h x w x d)		689 x 330 x 275 (h x w x d)		716 x 370 x 300 (h x w x d)	
EMI Filter	27FIN538S1130M		27FIN538S1180M		27FIN538S1280V	

Part No.	VFD1600CP43A-21	VFD1850CP43B-21	VFD2200CP43A-21	VFD2800CP43A-21	VFD3150CP43C-21	VFD3550CP43C-21
Order Code	**DEVFD1600CP43A**	**DEVFD1850CP43B**	**DEVFD2200CP43A**	**DEVFD2800CP43A**	**DEVFD3150CP43C**	**DEVFD3550CP43C**
Motor Output	160kw	185kw	220kw	280kw	315kw	355kw
Input Voltage	380-480V 3ph (-15~+10%) 50/60Hz					
Output Voltage	3 phase proportional to input voltage					
Rated Capacity (kVA)	247	295	367	422	491	544
Output Current	310A	370A	460A	530A	616A	683A
Input Current	316A	376A	469A	540A	628A	695A
Carrier Freq.	2-9kHz					
Weight (Kg)	88	88	138	138	257	257
Dimensions mm	940 x 420 x 300 (h x w x d)		1241 x 500 x 397 (h x w x d)		1745 x 700 x 404 (h x w x d)	
EMI Filter	27FIN538S1500BC		27FIN538S1750BC		27FIN538S1750BC	

Wiring

Frame A~C
Offers 3-phase power supply



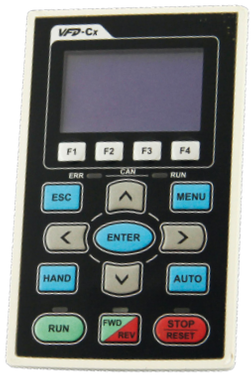


C2000 VFD-CP Series AC Drive

Specifications common to all sizes

CONTROL			
	Control System		1: V/F, 2: Sensorless Vector
	Output Frequency Range		0.10-600Hz, (90kw and above max. 400Hz)
	Speed response		5Hz
	Output Frequency Resolution		Digital Command: 0.01Hz ; Analogue Command 0.03 x f max/60Hz (±11bit)
	Output Frequency Accuracy		Digital Command: ±0.01% ; Analogue Command ±0.01% @ 25°C
	Torque Limit		Max. 170%
	Torque Accuracy		±5%
	Overload Endurance		120% of rated current for 1 min..
	Skip Frequency		Three zones, setting range 0.1 to 600Hz
	Accel/Decel Time		0.01 to 600 /0.01-6000 second (4 Independent settings for Accel/Decel Time)
	V/F Pattern		4 point adjustable V/F curve and square curve
	Stall Prevention Level		Up to 130%, of drive rated current
	Over Torque Detection		10%-200% of drive rated current
	DC Injection Braking		Operation frequency 1.0-600Hz, output 0-100% rated current Start time 0-60 sec, stop time 0-60 sec
	Braking Torque		Approx. 20% (up to 125% braking resistor all sizes have the braking chopper built in)
OPERATION			
	Frequency Setting	Keypad	Setting by keypad
		External Signal	Analogue input DC 0 to +10V or 0 to +5V (Input impedance 47KΩ), 4 to 20mA (Input impedance 250Ω); Multi-Function Inputs 3 to 9 (15 steps, Jog, up/down). Pulse input, RS-485 interface
	Operation Setting Signal	Keypad	Setting by RUN, STOP
		External Signal	2 wires/3 wires (FWD, REV, EF), RS-485 serial interface (MODBUS). PLC, CANopen
	Multi-Function Input Signal		Multi-step selection 0 to 15, Jog, accel/decel inhibit, first/second accel/decel switch, counter, ACI/AVI/AUI selections, external Base Block (NC, NO), up/down frequency command, NPN/PNP input selection, aux. motor output + more programmable
	Multi-Function Output Indication		AC Drive Operating, Frequency Attained, zero speed, external base block detection, Fault Indication, overheat alarm, emergency stop and status selection of input terminals (N/C or N/O), local/remote indication + more programmable
	Analog Output Signal		2 x programmable analog signal output
	Alarm Output Contact		3 x programmable output relays 1 x (1NC + 1NO) and 2 x NO
Operation Functions			Torque control, Speed/torque control switching, Feed forward control, Momentary power loss ride thru, Speed search, Over-torque detection, Torque limit, 17-step speed (max), Accel/decel time switch, S-curve accel/decel, 3-wire sequence, Auto-Tuning (rotational, stationary), Dwell, Cooling fan on/off switch, Slip compensation, Torque compensation, JOG frequency, Frequency upper/lower limit settings, DC injection braking at start/stop, High slip braking, PID control (with sleep function), Energy saving control, MODOBUS communication (RS-485 RJ45, max. 115.2 kbps), BACnet, Fault restart, Parameter copy
Protection			Over-current protection for 240% rated current, current clamp Normal duty: 170~175%; Heavy duty: 180~185%; Electronic thermal relay protection, ground fault protection, over voltage
Keypad and Display			Multi-function LCD, 3 status LED's, 4 function buttons, user defined units, parameter setup, review and faults. RUN, STOP, RESET, FWD/REV, HAND, AUTO
ENVIRONMENT			
	Installation Location		Altitude 1,000m or below, keep from corrosive gasses, liquid and dust
	Pollution Degree		2; Indoor use only
	Ambient Temperature		-10°C to 40°C (Non-Condensing and not frozen) 40-60°C derate 2% for each 1°C
	Storage Temperature		-25°C to 70°C
	Ambient Humidity		Below 90% RH (non-condensing)
	Vibration		15G for 11ms

C2000 VFD-C Series AC Drive Accessories



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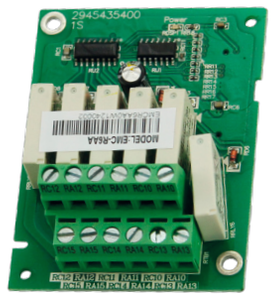

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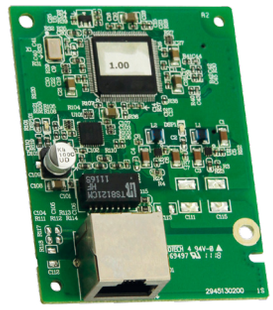

CMC-EIP01

Order Code	Description
27FIN538S1075M	75A EMC filter (suit C2000 37kW)
27FIN538S1130M	130A EMC filter (suit C2000 45-55kW)
27FIN538S1180M	180A EMC filter (suit C2000 75-90kW)
27FIN538S1280V	280A EMC filter (suit C2000 110-132kW)
27FIN538S1500BC	500A EMC filter (suit C2000 160-220kW)
27FIN538S1750BC	750A EMC filter (suit C2000 280-355kW)
DEVFDKPCCC01	Keypad with LCM display, parameters backup function
DEVFDKPCCE01	Keypad with 7-segment display, parameters backup function
DEVFDCBCK3FT	Extended cable between keypad & inverter, RJ-45 connector, length 1m
DEVFDCBCK7FT	Extended cable between keypad & inverter, RJ-45 connector, length 2m
DEVFDCBCK10FT	Extended cable between keypad & inverter, RJ-45 connector, length 3m
DEVFDCBCK16FT	Extended cable between keypad & inverter, RJ-45 connector, length 5m
DEVFDCMCEIP01	Ethernet communication card, supports EtherNet/IP protocol
DEVFDCMCMOD01	Ethernet communication card, supports MODBUS TCP protocol
DEVFDCMCDN01	DeviceNet communication card, 125kbps / 250kbps / 500kbps
DEVFDCMCPD01	PROFIBUS-DP communication card, 9.6kbps to 12Mbps
DEVFDEMCCOP01	CANopen communication card, 50kbps to 1Mbps
DEVFDEMCD42A	4DI / 2DO extension card, DC 24V
DEVFDEMCR6AA	6 relay outputs extension card
DEVFDEMCD611A	6DI extension card, AC 110V power
DEVFDEMCPG01L	PG card, 5 VDC, Line-drive (A,B,Z) 300k pulse/sec. 5VDC 50mA pulse out
DEVFDEMCPG01O	PG card, 5 or 12 VDC, Open-collect 300k pulse/sec. pulse out
DEVFDEMCPG01U	PG card, 5 VDC, Line-drive (A,B,Z,U,V,W) 300k pulse/sec. 5VDC 50mA pulse out
DEVFDMKCKPPK	Keypad remote panel adapter, comply with IP56
DEVFDMKCAFM	Frame A flange mounting kit for models except mentioned in MKC-AFM1
DEVFDMKCAFM1	Frame A flange mounting kit for VFD022C43A/43E
DEVFDMKCBFM	Frame B flange mounting kit
DEVFDMKCCFM	Frame C flange mounting kit

See section 18 for input line reactors, output reactors and sine wave filters.

C2000 Brake Resistors

Specifications

Voltage	Applicable Motor		Order Code	Quantity Required	Equivalent brake resistor for each AC drive	Brake Unit Model	Brake Torque 10% ED% (Kgm)	Min. Equivalent Resistor Value for Each AC Drive	Total Braking Current
	HP	KW							
460V Series	1	0.75	**DEVBR080W750**	1	80W 750Ω	-	0.5	190Ω	1A
	2	1.5	**DEVBR200W360**	1	200W 360Ω	-	1.0	126.7Ω	2.1A
	3	2.2	**DEVBR300W250**	1	300W 250Ω	-	1.5	108.6Ω	3A
	5	4.0	**DEVBR1K0W075**	1	1000W 75Ω	-	2.7	54.3Ω	10.2A
	7.5	5.5	**DEVBR1K0W075**	1	1000W 75Ω	-	3.7	54.3Ω	10.2A
	10	7.5	**DEVBR1K0W075**	1	1000W 75Ω	-	5.1	47.5Ω	10.2A
	15	11	**DEVBR1K5W043**	1	1500W 43Ω	-	7.5	42.5Ω	17.6A
	20	15	**DEVBR1K0W016**	2	2000W 32Ω	-	10.2	26.2Ω	24A
	25	18.5	**DEVBR1K0W016**	2	2000W 32Ω	-	12.2	23Ω	24A
	30	22	**DEVBR1K5W013**	2	3000W 26Ω	-	14.9	23Ω	29A
	40	30	**DEVBR1K0W016**	4	4000W 16Ω		20.3	14.1Ω	47.5A
	50	37	**DEVBR1K2W015**	4	4800W 15Ω	DEVFDB4045	25.1	12.7Ω	50A
	60	45	**DEVBR1K5W013**	4	6000W 13Ω	DEVFDB4045	30.5	12.7Ω	59A
	75	55	**DEVBR1K2W015**	4	7200W 10Ω	DEVFDB4030 x 2	37.2	9.5Ω	76A
	100	75	**DEVBR1K2W015**	8	9600W 7.5Ω	DEVFDB4045 x 2	50.8	6.3Ω	100A
	125	90	**DEVBR1K5W013**	8	12000W 6.5Ω	DEVFDB4045 x 2	60.9	6.3Ω	117A

VFDB4030

BRAKE RESISTORS

EP66 Series AC Drive

- IP66 Enclosure suitable for installation in damp, high humidity and dusty environments.
- Built in EMC filter C3 (2nd environment). C-Tick approved.
- Variable or constant torque applications.
- V/F or sensorless vector control with auto tuning.
- Speed or torque control modes.
- Suitable for permanent magnet synchronous motors.
- 150% overload for 60 sec.
- Starting torque 150% at 0.5Hz.
- Operating temperature up to +50 °C without derating.
- Removable 4 line LCD display.
- Emergency Fire Mode for HVAC applications.
- RS-485 MODBUS.
- Built in brake chopper on 415V 3ph units 0.4kW to 15kW.

Certifications and compliance
EN 61800-3:2004 +A1: 2012, RCM (C-Tick)

Specifications

Part No.	EP66-0007T3I1U1F2	EP66-0015T3I1U1F2	EP66-0022T3I1U1F2	EP66-0030T3I1U1F2	EP66-0040T3I1U1F2
Order Code	**30EP660007T3104**	**30EP660015T3104**	**30EP660022T3104**	**30EP660030T3104**	**30EP660040T3104**
Motor Output	0.75kw	1.5kw	2.2kw	3.0kw	4.0kw
Input Voltage	380-480V 3ph (-15~+10%) 50/60Hz				
Output Voltage	3 phase proportional to input voltage				
Input Current	4.1A	6.9A	9.6A	10.2A	13.6A
Output Current	2A	4A	6.5A	7A	9A
Carrier Freq.	800Hz-16kHz				
Fan Cooling	No		Yes		
Weight (Kg)	6.2				
Dimensions mm	412 x 200 x 198 (h x w x d)				
EMI Filter	Built In				

Part No.	EP66-0055T3I2U1F2	EP66-0075T3I2U1F2	EP66-0110T3I3U1F2	EP66-0150T3I3U1F2	EP66-0185T3I3U1F2
Order Code	**30EP660055T3104**	**30EP660075T3104**	**30EP660110T3104**	**30EP660150T3104**	**30EP660185T3104**
Motor Output	5.5kw	7.5kw	11kw	15kw	18.5kw
Input Voltage	380-480V 3ph (-15~+10%) 50/60Hz				
Output Voltage	3 phase proportional to input voltage				
Input Current	18.8A	22.1A	30.9A	52A	61A
Output Current	12A	17A	23A	32A	38A
Carrier Freq.	800Hz-16kHz				
Fan Cooling	Yes				
Weight (Kg)	8.2		11.3		25
Dimensions mm	418 x 242 x 198 (h x w x d)		471 x 242 x 228 (h x w x d)		650 x 242 x 324 (h x w x d)
EMI Filter	Built In				

EP66 Series AC Drive

Specifications continued

Part No.	EP66-0220T3I4U1F2	EP66-0300T3I4U1F2	EP66-0370T3I4U1F2	EP66-0450T3I3U1F2	EP66-0550T3I3U1F2
Order Code	**30EP660220T3104**	**30EP660300T3104**	**30EP660300T3104**	**30EP660450T3104**	**30EP660550T3104**
Motor Output	22kw	30kw	37kw	45kw	55kw
Input Voltage	380-480V 3ph (-15~+10%) 50/60Hz				
Output Voltage	3 phase proportional to input voltage				
Input Current	70A	95A	118A	141A	172A
Output Current	44A	60A	75A	90A	110A
Carrier Freq.	800Hz-16kHz				
Fan Cooling	yes				
Weight (Kg)	25		40		
Dimensions mm	650 x 242 x 324 (h x w x d)		680 x 308 x 379 (h x w x d)		
EMI Filter	Built In				

Part No.	EP66-0750T3I4U1F2	EP66-0900T3I4U1F2
Order Code	**30EP660750T3104**	**30EP660900T3104**
Motor Output	75kw	90kw
Input Voltage	380-480V 3ph (-15~+10%) 50/60Hz	
Output Voltage	3 phase proportional to input voltage	
Input Current	234A	280A
Output Current	150A	180A
Carrier Freq.	800Hz-16kHz	
Fan Cooling	Yes	
Weight (Kg)	57	
Dimensions mm	770 x 370 x 404 (h x w x d)	
EMI Filter	Built In	

EP66 Series AC Drive
Braking Resistors

Specifications

Voltage	Applicable Motor		Order Code	Quantity Required	Equivalent brake resistor for each AC drive	Built In Brake Chopper	Min. Equivalent Resistor Value for Each AC Drive	Min Resistor Power
	HP	KW						
460V Series	1	0.75	**DEVMVR080W200**	1	80W 200Ω	Standard	145Ω	80W
	2	1.5	**DEVBR200W150**	1	200W 150Ω	Standard	95Ω	150W
	3	2.2	**DEVBR300W100**	1	300W 100Ω	Standard	95Ω	250W
	4	3	**DEVBR300W100**	1	300W 100Ω	Standard	95Ω	300W
	5.5	4	**DEVBR400W150**	1	400W 150Ω	Standard	95Ω	400W
	7.5	5.5	**DEVBR300W250**	2 (II)	600W 125Ω	Standard	95Ω	550W
	10	7.5	**DEVBR300W400**	3 (II)	900W 133.3Ω	Standard	95Ω	750W
	15	11	**DEVBR300W250**	4 (II)	1200W 62.5Ω	Standard	60Ω	1.1kW
	20	15	**DEVBR1K5W040**	1	1500W 40Ω	Standard	35Ω	1.5kW
	25	18.5	**DEVBR1K0W075**	2 (II)	2000W 37.5Ω	Optional	35Ω	2kW
	30	22	**DEVBR1K5W040**	4 (II-II)	3000W 40Ω	Optional	30Ω	2.2kW
	40	30	**DEVBR1K0W075**	3 (II)	3000W 75Ω	Optional	25Ω	3kW
	50	37	**DEVBR1K5W040**	6 (II-II)	4500W 26.6Ω	Optional	25Ω	4kW
	60	45	**DEVBR1K0W075**	5 (II)	5000W 15Ω	Optional	15Ω	4.5kW
	75	55	**DEVBR1K0W050**	12 (II-II)	6000W 16.6Ω	Optional	15Ω	5.5kW
	100	75	**DEVBR1K5W040**	10 (II-II)	7500W 16Ω	Optional	12Ω	7.5kW
	110	90	**DEVBR1K5W040**	12 (II-II)	9000W 13.3Ω	Optional	8Ω	9kW

EP66 Series AC Drive

Specifications common to all sizes

CONTROL			
	Control System		Sensorless vector, V/F, PMSM sensorless vector
	Output Frequency Range		0.50-650Hz
	Speed response		5Hz (up to 40Hz with vector control)
	Output Frequency Resolution		Digital Command: 0.01Hz; Analogue Command 0.03 x f max/60Hz (±12bit)
	Output Frequency Accuracy		±0.5%
	Torque Limit		Max. 200%
	Torque Accuracy		±5%
	Overload Endurance		150% for 1 minute every 10 minutes
	Skip Frequency		Two zones, setting range 0 to 650Hz
	Accel/Decel Time		0.1 to 3000 /0.1-3000 second (4 Independent settings for Accel/Decel Time)
	V/F Pattern		Linear, square, user defined
	Stall Prevention Level		Up to 150% of drive rated current
	Over Torque Detection		60% to 200% of drive rated current
	DC Injection Braking		Operation frequency 0.2 to 50Hz, output 0-100% rated current Start time 0-30 sec, stop time 0-30 sec
	Braking Torque		Approx. 20% (up to 125% with braking resistor braking chopper built in up to 15kW)
OPERATION			
	Frequency Setting	Keypad	Setting by keypad
		External Signal	Analogue input DC 0 to +10V or 0 to +5V, 0 to 20mA; pulse train multi-function inputs (15 steps, jog, up/down). RS-485 interface
	Operation Setting Signal	Keypad	Setting by RUN, STOP
		External Signal	2 wires/3 wires (FWD, REV, EF), RS-485 serial interface (MODBUS)
	Multi-Function Inputs		6 x digital. inputs (NPN-PNP selectable) pulse train-input 2 analogue channels - 12 BIT: 0…10V, 0...5V, -10V...0...10V, 0..(4)20 mA, all free scalable in gain and offset, and can be mathematically combined
	Multi-Function Outputs		2 x programmable DO (with pulse output option)
	Analog Output Signal		1 x analogue frequency output. (2 x AO (Hz +I) for 18.5kW and above)
	Alarm Output Contact		1 x programmable output relays (1 x C/O)
Operation Functions			Torque control, Slip compensation, Torque compensation, momentary power loss ride thru, speed search, over-torque detection, torque limit, JOG frequency, frequency upper/lower limit settings, auto-tuning, accel/decel time switch, S-curve, 15-step speed (max), DC injection braking at start/stop, fan control, PID control (with sleep function), energy saving control, emergency fire control accel/decel, MODOBUS communication (RS-485 RJ45, max. 115.2 kbps)
Protection			Over-current protection, electronic thermal relay protection, ground fault protection, DC over voltage, input under voltage, input phase loss, output phase loss, under load, I2 x t motor protection, PTC input
Keypad and Display			Multi-function LCD, 5 status LED's, user defined units, parameter setup, review and faults. RUN, STOP, RESET, FWD/REV, JOG, LOCAL/REMOTE
ENVIRONMENT			
	Installation Location		Altitude 1,000m or below, For outdoor applications the drive should be installed under a suitable cover to provide protection against potential damage caused by direct exposure to sun
	Protection level		IP66
	Ambient Temperature		-10°C to 50°C (Non-Condensing and not frozen)
	Storage Temperature		-25°C to 70°C
	Ambient Humidity		Below 90% RH (non-condensing)
	Vibration		Below 0.5g

EURA DRIVES