Page 4-2

DIRECT-ON-LINE STARTERS WITH AND WITHOUT THERMAL RELAY

- Motor ratings, up to 95A 440V in IEC AC3 duty
- General use up to 65A / motor rating up to 52A 600V per UL/CSA
- Versions with Reset button or with Start-Stop/Reset buttons.

Page 4-9

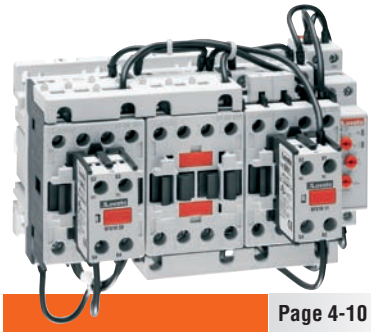
REVERSING CONTACTOR ASSEMBLIES

- For three-phase motor control 9-25A 440V / 4-12.5kW 400V, in IEC AC3 duty and up to 15HP 600V per UL/CSA
- Versions with built-in or external mechanical interlock
- Complete with rigid connections
- PCB version 9A 440V / 4kW 400V in IEC AC3 duty; 5HP 300V per UL/CSA.

Page 4-9

CHANGEOVER CONTACTOR ASSEMBLIES

- For 20A loads at ≤40°C in IEC AC1 duty
- For 20A general use per UL/CSA.
- With built-in mechanical interlock.



Page 4-10

STAR-DELTA STARTERS OPEN FRAME

- Suitable for three-phase motor control, 16A-690A 440V / 7.5kW-375kW 400V ratings in IEC AC3 duty.

Page 4-11

STAR-DELTA STARTERS IN NON-METALLIC ENCLOSURE

- Suitable for three-phase motor control, 16-60A 440V / 7,5kW-30kW 400V ratings in IEC AC3 duty.

Page 4-11

EMPTY NON-METALLIC ENCLOSURES

- Versions without push buttons, with Reset button only or with Start-Stop/Reset buttons
- For starters, with push buttons and metal plate
- Suitable to contain BG mini-contactor or BF09A to BF110 contactors, up to 110A 440V rating, in IEC AC3 duty; up to 52A at 600V for UL/CSA.

Electromechanical starters

- Direct-on-line starters in non-metallic enclosure complete with or without thermal relay
- Versions with RESET or START/STOP push buttons
- Non-metallic enclosures for customer-assembled starters
- Reversing and changeover contactor assemblies
- Star-delta starters, open frame and in non-metallic enclosure versions.

Enclosed with thermal overload relay

M0 P...12 M1 P...12 M2 P...12

M3 P...12

M0 R...12 M1 R...12 M2 R...12

M3 R...12

Order code	Relay adj range	IEC technical characteristics (≤440V) Ie	kW	Qty per pkg	Wt	Components Starter enclosure	Contactor	Thermal relay	Auxiliary contact block
	[A]	[A]	[kW]	n°	[kg]				
Starters with Start and Stop/Reset push buttons ❷.									
M0 P009 12❶	0.6-1	1	0.18-0.25	1	0.760	M0 PA	BG09 10A	RF9 1	—
M0 P009 12❶V5	0.9-1.5	1.5	0.37	1	0.760	M0 PA	BG09 10A	RF9 1V5	—
M0 P009 12❶2V3	1.4-2.3	2.3	0.55-0.75	1	0.760	M0 PA	BG09 10A	RF9 2V3	—
M0 P009 12❶33	2-3.3	3.3	1.1	1	0.760	M0 PA	BG09 10A	RF9 33	—
M0 P009 12❶5	3-5	5	1.5-2.2	1	0.760	M0 PA	BG09 10A	RF9 5	—
M0 P009 12❶75	4.5-7.5	7.5	2.2-3	1	0.760	M0 PA	BG09 10A	RF9 75	—
M0 P009 12❶10	6-10	10	3-4	1	0.760	M0 PA	BG09 10A	RF9 10	—
M0 P012 12❶15	9-15	12	5.5	1	0.760	M0 PA	BG12 10A	RF9 15	—
M1 P009 12❶A4	0.63-1	1	0.25	1	1.040	M1 PA	BF09 10A	RF38 0100	—
M1 P009 12❶A5	1-1.6	1.6	0.37-0.55	1	1.040	M1 PA	BF09 10A	RF38 0160	—
M1 P009 12❶A6	1.6-2.5	2.5	0.75	1	1.040	M1 PA	BF09 10A	RF38 0250	—
M1 P009 12❶A7	2.5-4	4	1.1-1.5	1	1.040	M1 PA	BF09 10A	RF38 0400	—
M1 P009 12❶A8	4-6.5	6.5	2.2-3	1	1.040	M1 PA	BF09 10A	RF38 0650	—
M1 P009 12❶A9	6.3-10	10	3-4	1	1.040	M1 PA	BF09 10A	RF38 1000	—
M1 P009 12❶B0	9-14	13	5.5	1	1.040	M1 PA	BF09 10A	RF38 1400	—
M1 P018 12❶B1	13-18	18	7.5	1	1.040	M1 PA	BF18 10A	RF38 1800	—
M2 P025 12❶B2	17-23	23	11	1	1.220	M2 PA	BF25 10A	RF38 2300	—
M2 P025 12❶B3	20-25	25	11	1	1.220	M2 PA	BF25 10A	RF38 2500	—
M2 P032 12❶B4	24-32	32	15	1	1.300	M2 PA	BF32 00A	RF38 3200	G418 10
M3 P038 12❶B5	28-42	38	18.5	1	2.880	M3 PA	BF38 00A	RF95 2 42	G418 10
M3 P050 12❶B6	35-50	50	18.5-22	1	3.760	M3 PA	BF50 00	RF95 3 50	G418 10
M3 P065 12❶B7	46-65	65	30	1	3.760	M3 PA	BF65 00	RF95 3 65	G418 10
M3 P080 12❶B8	60-82	80	37-45	1	3.760	M3 PA	BF80 00	RF95 3 82	G418 10
M3 P095 12❶B9	70-95	95	45	1	3.760	M3 PA	BF95 00	RF95 3 95	G418 10
Starters with Reset push button ❷.									
M0 R009 12❶	0.6-1	1	0.18-0.25	1	0.720	M0 RA	BG09 10A	RF9 1	—
M0 R009 12❶V5	0.9-1.5	1.5	0.37	1	0.720	M0 RA	BG09 10A	RF9 1V5	—
M0 R009 12❶2V3	1.4-2.3	2.3	0.55-0.75	1	0.720	M0 RA	BG09 10A	RF9 2V3	—
M0 R009 12❶33	2-3.3	3.3	1.1	1	0.720	M0 RA	BG09 10A	RF9 33	—
M0 R009 12❶5	3-5	5	1.5-2.2	1	0.720	M0 RA	BG09 10A	RF9 5	—
M0 R009 12❶75	4.5-7.5	7.5	2.2-3	1	0.720	M0 RA	BG09 10A	RF9 75	—
M0 R009 12❶10	6-10	10	3-4	1	0.720	M0 RA	BG09 10A	RF9 10	—
M0 R012 12❶15	9-15	12	5.5	1	0.720	M0 RA	BG12 10A	RF9 15	—
M1 R009 12❶A4	0.63-1	1	0.25	1	0.995	M1 RA	BF09 10A	RF38 0100	—
M1 R009 12❶A5	1-1.6	1.6	0.37-0.55	1	0.995	M1 RA	BF09 10A	RF38 0160	—
M1 R009 12❶A6	1.6-2.5	2.5	0.75	1	0.995	M1 RA	BF09 10A	RF38 0250	—
M1 R009 12❶A7	2.5-4	4	1.1-1.5	1	0.995	M1 RA	BF09 10A	RF38 0400	—
M1 R009 12❶A8	4-6.5	6.5	2.2-3	1	0.995	M1 RA	BF09 10A	RF38 0650	—
M1 R009 12❶A9	6.3-10	10	3-4	1	0.995	M1 RA	BF09 10A	RF38 1000	—
M1 R009 12❶B0	9-14	13	5.5	1	0.995	M1 RA	BF09 10A	RF38 1400	—
M1 R018 12❶B1	13-18	18	7.5	1	0.995	M1 RA	BF18 10A	RF38 1800	—
M2 R025 12❶B2	17-23	23	11	1	1.165	M2 RA	BF25 10A	RF38 2300	—
M2 R025 12❶B3	20-25	25	11	1	1.165	M2 RA	BF25 10A	RF38 2500	—
M2 R032 12❶B4	24-32	32	15	1	1.260	M2 RA	BF32 00A	RF38 3200	G418 10
M3 R038 12❶B5	28-42	38	18.5	1	2.600	M3 RA	BF38 00A	RF95 2 42	G418 10
M3 R050 12❶B6	35-50	50	18,5-22	1	3.410	M3 RA	BF50 00	RF95 3 50	G418 10
M3 R065 12❶B7	46-65	65	30	1	3.410	M3 RA	BF65 00	RF95 3 65	G418 10
M3 R080 12❶B8	60-82	80	37-45	1	3.410	M3 RA	BF80 00	RF95 3 82	G418 10
M3 R095 12❶B9	70-95	95	45	1	3.410	M3 RA	BF95 00	RF95 3 95	G418 10

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 12 024 1 for direct-on-line starter in M0 type enclosure with Start and Stop/Reset buttons , 9A/AC3 contactor with 24VAC 50/60Hz coil and 0.6-1A thermal overload relay.
M0 P009 12 024 60 1 for direct-on-line starter in M0 type enclosure with Start and Stop/Reset buttons , 9A /AC3 contactor with 24VAC 60Hz coil and 0.6-1A thermal overload relay.

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

Special M3... versions
Refer to page 4-3 for details.

Operational characteristics
Certifications and compliance
Refer to page 4-3 for details.

UL/CSA HP ratings
See page 4-4

Enclosed without thermal overload relay

M0 P...10 M1 P...10 M2 P...10

M3 P...10

M0 R...10 M1 R...10 M2 R...10

M3 R...10

Order code	Maximum operating current (≤440V)	Qty per pkg	Wt
	[A]	n°	[kg]
Starters with Start and Stop/Reset push buttons ❷.			
M0 P009 10❶	10	1	0.667
M0 P012 10❶	12	1	0.667
M1 P009 10❶	13	1	0.900
M1 P018 10❶	18	1	0.900
M2 P025 10❶	25	1	1.060
M2 P032 10❶	32	1	1.162
M3 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 push button ❷.			
M0 R009 10❶	9	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
M3 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.

Components			
Starter enclosure	Contactor	Thermal relay to purchase separately	Auxiliary contact block
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
M3 PA	BF38 00A	RF95 2 42	G418 10
M3 PA	BF50 00	RF95 3❺	G418 10
M3 PA	BF65 00	RF95 3❺	G418 10
M3 PA	BF80 00	RF95 3❺	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
M3 RA	BF38 00A	RF95 2 42	G418 10
M3 RA	BF50 00	RF95 3❺	G418 10
M3 RA	BF65 00	RF95 3❺	G418 10
M3 RA	BF80 00	RF95 3❺	G418 10
M3 RA	BF95 00	RF95 3❺	G418 10

❸ For thermal overload relay selection, refer to pages 3-2 or 3-3.
❹ For thermal overload relay selection, refer to pages 3-4.
❺ For thermal overload relay selection, refer to pages 3-4 or 3-5.

Operational characteristics:
– Ambient conditions:
• Operating temperature: -25...+60°C
• Storage temperature: -40...+70°C
– Degree of protection: IP65 for all; type 4/4X industrial control enviroment for M1, M2 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 B6**UL**.

UL/CSA HP ratings
See page 4-4

Certifications and compliance
Certifications obtained: cULus and cCSAus M0, M1 and M2 types only; cULus only for M3... UL types up to 52A max for motor control / 65A max for general use.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508 CSA C22.2 n° 14.

4

CONFIGURATIONS FOR USA AND CANADA.

Order code for magnetic motor starters in non-metallic enclosure with 2 push buttons	T/O RELAY ADJ RANGE	MAX UL/CSA HP RATINGS INDICATED ON STARTER (based on t/o relay adj range)					
		Single phase		Three phase			
	[A]	120V	240V	200V	240V	480V	600V
M0P009❶❷1	0.6 - 1	-	-	-	-	½	½
M0P009❶❷1V5	0.9 - 1.5	-	-	-	-	¾	¾
M0P009❶❷2V3	1.4 - 2.3	-	-	-	½	1	1
M0P009❶❷33	2 - 3.3	-	¼	¾	1½	½	2
M0P009❶❷5	3 - 5	-	½	1	1	3	3
M0P009❶❷75	4.5 - 7.5	-	¾	1½	2	5	5
M0P009❶❷10	6 - 10	½	1½	2	3	5	5
M0P012❶❷15	9 - 15	½	1½	3	3	7½	10
M1P009❶❷A4	0.63 - 1	-	-	-	-	-	½
M1P009❶❷A5	1 - 1.6	-	-	-	-	½	¾
M1P009❶❷A6	1.6 - 2.5	-	-	½	½	1	1½
M1P009❶❷A7	2.5 - 4	-	-	¾	¾	2	3
M1P009❶❷A8	4 - 6.5	¼	½	1	1½	3	5
M1P009❶❷A9	6.3 - 10	½	1½	2	3	5	7½
M1P009❶❷B0	9 - 14	¾	2	3	3	5	7½
M1P012❶❷B0	9 - 14	1	2	5	5	7½	10
M1P018❶❷B1	13 - 18	1	3	5	5	10	15
M2P025❶❷B2	17 - 23	1½	3	5	7½	15	15
M2P025❶❷B3	20 - 25	2	3	7½	7½	15	15
M2P026❶❷B2	17 - 23	1½	3	5	7½	15	20
M2P026❶❷B3	20 - 25	2	5	7½	7½	15	20
M2P026❶❷B4	24 - 32	2	5	7½	7½	15	20
M2P032❶❷B4	24 - 32	3	5❹	10	10	20	25
M3P038❶❷B5UL	28 - 42	3	7½	10	15	30	30
M3P050❶❷B6UL	35 - 50	5❸	10	10	15	30	40
M3P065❶❷B7UL	46 - 65	-	-	15❺	15❺	40❺	50❺
M3P080❶❷B8	60 - 82	-	-	25❻	30❻	60❻	75❻
M3P095❶❷B9	70 - 95	-	-	30❻	30❻	60❻	75❻

NOTE: The HP / FLA values vary from one motor to another; if possible, always verify the HP and FLA (or rated current) on the motor nameplate.
Enclosure type 1, 12, 4 and 4X industrial control environment for M1, M2 and M3…UL versions; designation of control units can be:
N – without push buttons, R with reset button only
P – per table, with start-stop push buttons
S – with start selector and stop push button.
Consult Customer Service for any other special combination required; see contact details on inside front cover.

❶ Complete the order code by indicating:
- – 10 if required without thermal overload relay
- – 12 if required with three-phase overload relay
- – 13 if required with single-phase overload relay
- – 15 if required with automatic reset of overload relay for M0 types
- – 17 if required with disconnect switch for M2 and M3 types
- – 42 if required with reversing contactor combination for M2 and M3 types.

❷ Complete the order code by indicating coil voltage required:
- – 02460 for 24V 60Hz
- – 04860 for 48V 60Hz / 42V 50Hz
- – 12060 for 120V 60Hz / 110V 50Hz
- – 22060 for 220V 60Hz / 200V 50/60Hz
- – 23060 for 230V 60Hz / 220V 50Hz
- – 46060 for 460V 60Hz / 400V 50Hz
- – 57560 for 575V 60Hz.

❸ cCSAus rating; cULus rating is 3HP single-phase at 120VAC since maximum cULus rating is 52A for motor control.

❹ cCSAus rating; cULus rating is 7½HP single-phase at 230VAC.

❺ Indicated values are magnetic contactor UL ratings. Maximum cULus rating is 52A for motor control and cULus listings for the controller are three-phase 15HP at 230VAC, 40HP at 480VAC and 50HP at 600VAC.

❻ No CSA or UL certification. Indicated values correspond to UL/CSA magnetic contactor ratings and for indication and reference purposes only.

Certifications obtained:
For M0, M1 and M2 types:
- CSA certified for Canada and USA (File 944157) as Magnetic Motor Controllers at max 600VAC, max 32A for 5HP single phase and 30HP three phase.
- UL Listed for USA and Canada (File E93602) as Magnetic Motor Controllers – Enclosed

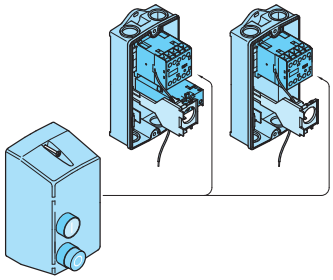
For M3…UL types:
- UL Listed for USA and Canada (File E93602) as Magnetic Motor Controllers – Enclosed.

Markings:
Line (voltage and frequency value)
Amps (overload adjustment range)
Max HP (horsepower value)
Control (coil and frequency value)
Caution: Bonding between conduits must be provided.

M0...starters, enclosed

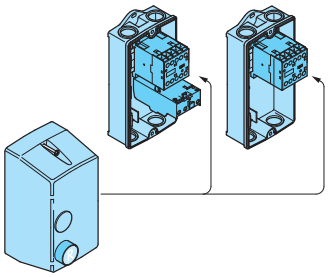
M0 P009 12...
M0 P012 12...

M0 P009 10...
M0 P012 10...



M0 R009 12...
M0 R012 12...

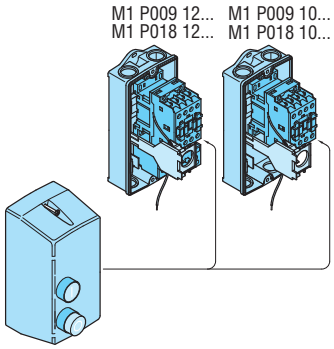
M0 R009 10...
M0 R012 10...



M1... starters, enclosed

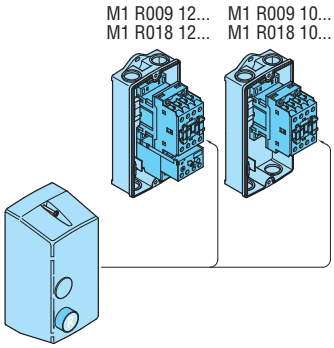
M1 P009 12...
M1 P018 12...

M1 P009 10...
M1 P018 10...



M1 R009 12...
M1 R018 12...

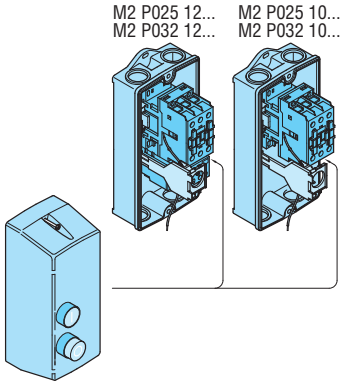
M1 R009 10...
M1 R018 10...



M2... starters, enclosed

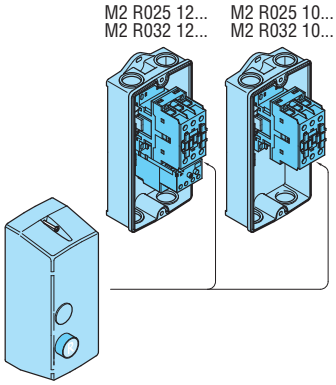
M2 P025 12...
M2 P032 12...

M2 P025 10...
M2 P032 10...



M2 R025 12...
M2 R032 12...

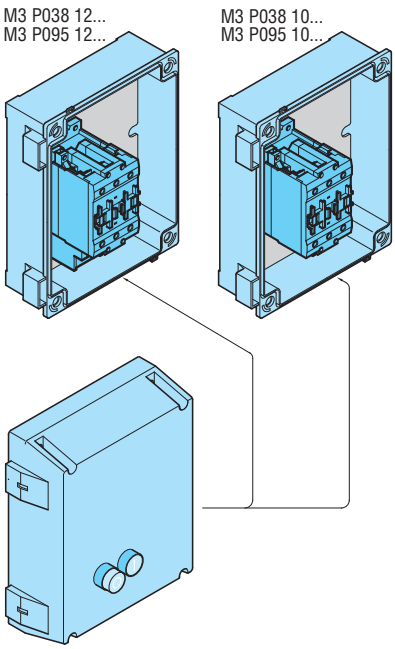
M2 R025 10...
M2 R032 10...



M3... starters, enclosed

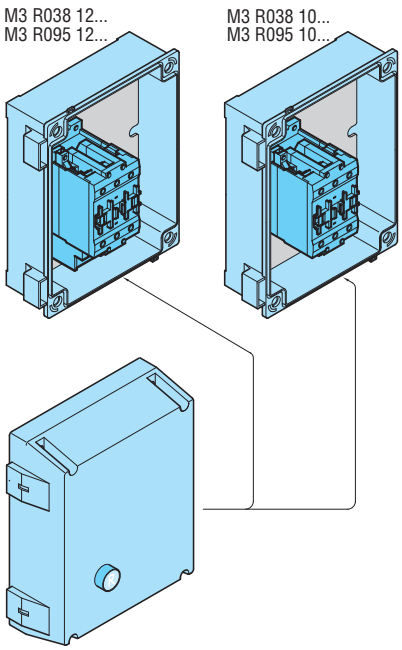
M3 P038 12...
M3 P095 12...

M3 P038 10...
M3 P095 10...



M3 R038 12...
M3 R095 12...

M3 R038 10...
M3 R095 10...



4

Maximum combinations for M0… and M1… starters in enclosure

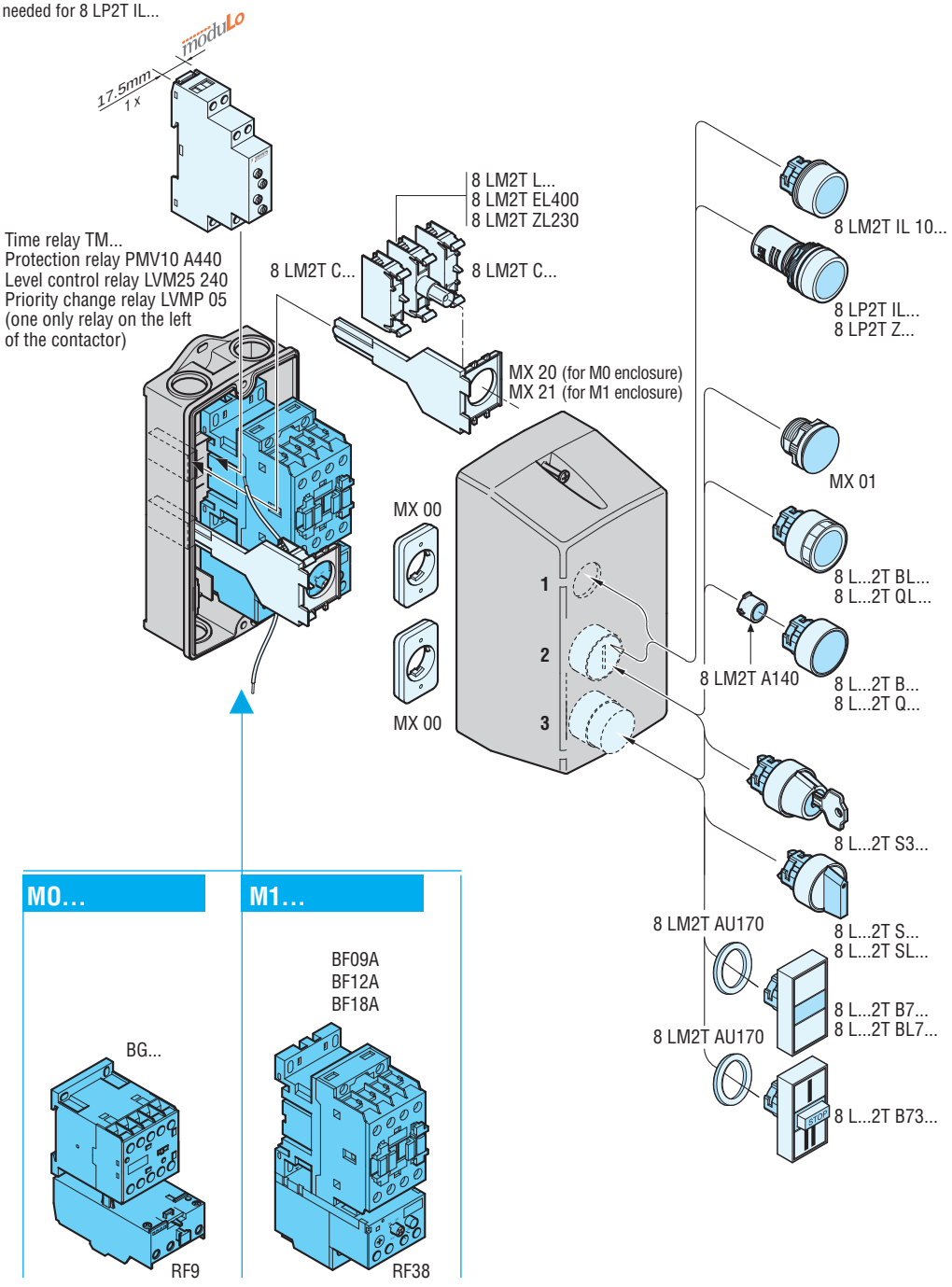
For the fitting of add-on blocks and electronic relays in the starters, consult our Customer Service; see contact details on inside front cover.

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 8 LM2T IL10… or 8 LP2T IL… pilot light can be fitted.
   To fit the 8 LM2T IL10… (not type 8 LP2T IL…) pilot light head, the MX 00 fixing adapter and the mounting base, type MX 20 for M0 enclosure, or type MX 21 for M1 enclosure, must also be purchased. The lamp holder is snapped on to this mounting base.
   No adapter or base is needed for 8 LP2T IL... and 8 LP2T Z...

2) Middle position 2
   Based on the enclosure type, in this position, the user finds either the Start button or a plug in the 22.5mm hole. Various actuators can be fitted in this position, such as flush or extended push buttons, selectors or pilot lights, as illustrated below.
   To fit the actuators, the MX 00 fixing adapter, not required for 8 LP2T IL… pilot lights, and the mounting base, type MX 20 for M0 enclosure, or type MX 21 for M1 enclosure, must also be purchased. The contact or lamp holder elements are snapped on to this mounting base.
   No adapter or base is needed for 8 LP2T IL... and 8 LP2T Z...

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 stopped up by the threaded plug MX 01.



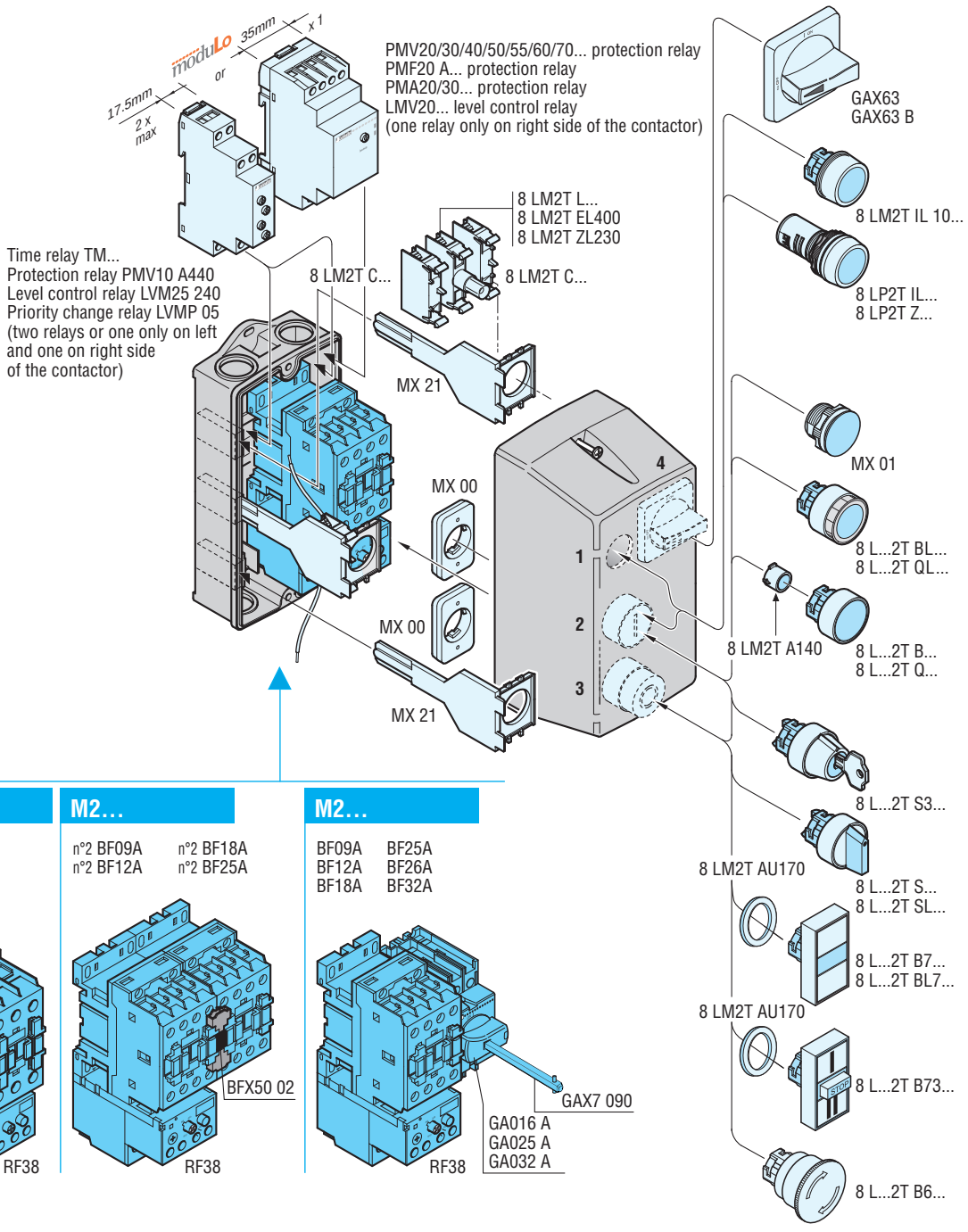
Maximum combinations for M2… starters in enclosure
For the fitting of add-on blocks and electronic relays in the starters, consult our Customer Service; see contact details on inside front cover.
The enclosure covers can be equipped with various types of actuators and pilot lights, per following details.

1) Upper position 1
The cover must be drilled in this position, with a 22.5mm hole, by the user; 8 LM2T IL10… or 8 LP2T IL… pilot light can be fitted.
To fit the 8 LM2T IL10… pilot light, the MX 00 fixing adapter and the mounting base type MX 21, must also be purchased. The lamp holder is snapped on to this mounting base.
No adapter or base is needed for 8 LP2T IL... and 8 LP2T Z...

2) Middle position 2
Based on the enclosure type, in this position, the user finds either the Start button or a plug in the 22.5mm hole.
Various actuators can be fitted in this position, such as flush or extended push buttons, selectors or pilot lights, as illustrated in the side figure.
To fit the actuators, the MX 00 fixing adapter, not required for 8 LP2T IL… pilot light, and the mounting base type MX 21, must also be purchased.
The contact or lamp holder elements are snapped on to this mounting base.
No adapter or base is needed for 8 LP2T IL... and 8 LP2T Z...

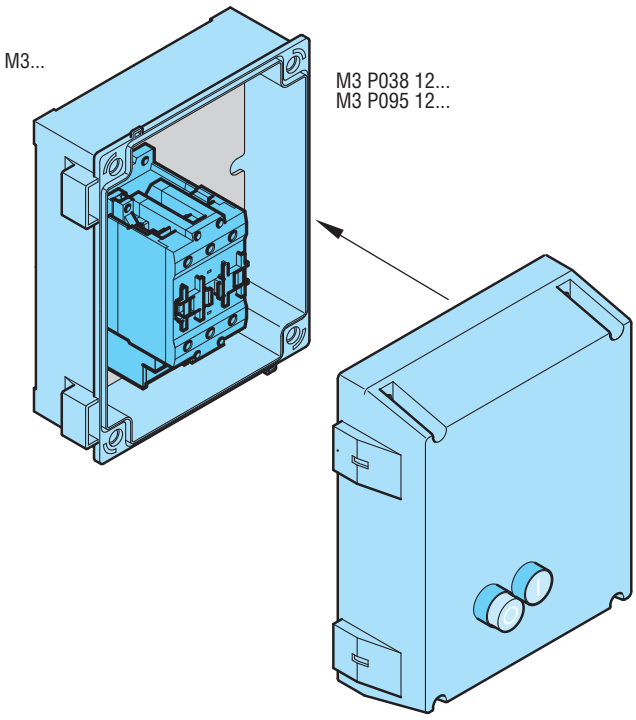
3) Lower position 3
The STOP/RESET button is mounted in this position, except for the enclosure without buttons.
This button activates the thermal overload relay via a mechanical actuator. In eventual applications without thermal overload relay, this button can be removed and the hole stopped up by the threaded plug MX 01.
Various actuators can be fitted in this position, such as flush or extended push buttons, selectors or pilot lights, as illustrated in the drawing below. To fit the actuators, the MX 00 fixing adapter, not required for 8 LP2T IL… pilot light, and the mounting base type MX 21, must also be purchased. The contact or lamp holder elements are snapped on to this mounting base.
No adapter or base is needed for 8 LP2T IL... and 8 LP2T Z...

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.



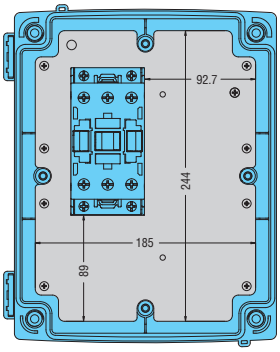
4

Maximum combinations for M3… enclosures



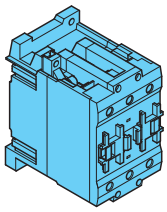
Available space for fitting other electrical or electronic devices

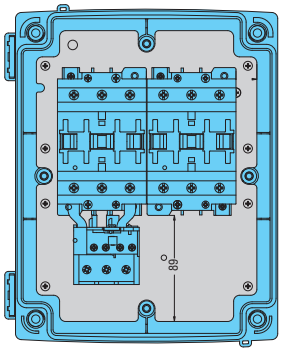
M3P… 10… - M3R… 10…



M3…

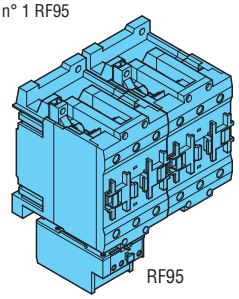
n° 1 BF38A n° 1 BF65 n° 1 BF95
n° 1 BF50 n° 1 BF80 n° 1 BF110

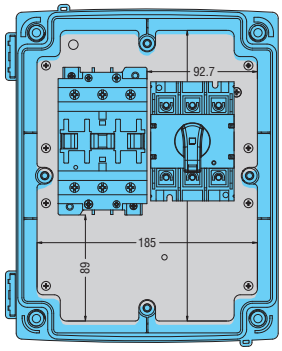




M3…

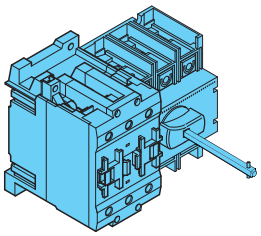
n° 2 BF38A n° 2 BF65 n° 2 BF95
n° 2 BF50 n° 2 BF80 n° 2 BF110
n° 1 RF95

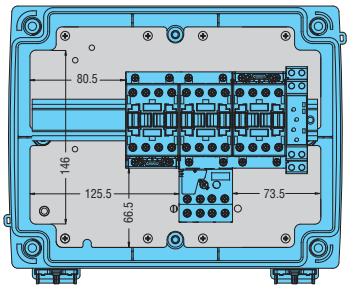




M3…

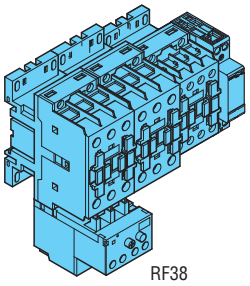
n° 1 BF38A n° 1 BF65 n° 1 BF95
n° 1 BF50 n° 1 BF80 n° 1 BF110 + n° 1 GA...





M3…

Star-delta combinations with t/o relay RF38
TM ST timer and contactors
BF09A BF12A BF18A
BF25A BF26A BF38A

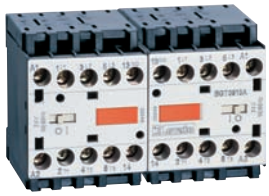


Reversing contactor assemblies

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 600V max when protected by uses class K5 rated not more than 30A.
BGTP09 type is UL Recognized 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 2, pages 2-16 and 2-18.
Special add-on auxiliary contacts, 11 BGX11 11 or 11 BGX11 12 type, must be used 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 2-16 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 (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 [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
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 3-4 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 Line	Delta	Star	Thermal overload relay	Time relay	Auxiliary contacts fitted on contactor: Line	Delta	Star	Rigid connections
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 standards
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-9.

Enclosed starters

M3 P... - 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 12 seconds and a maxmum 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
Enclosure for star-delta starter, complete with Start and Stop/Reset buttons, metal plate fixed with piece of 35mm DIN (IEC/EN 60715) rail.			
new **M3 PA70 ❸**	—	1	2.240

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

– Ambient conditions:
  • Operating temperature: -25...+60°C
  • Storage temperature: -40...+70°C
– Degree of protection: IP65; 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 besides a 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.

Components

Type	Enclosure	Contactors Line	Delta	Star	T/o relay ❷	Time relay	Auxiliary contacts fitted on contactor: Line	Delta	Star	Rigid connections
M3P009 70	M3 PA70	BF09 10A	BF09 01A	BF09 10A	(RF38)	TM ST❹	BFX10 20	—	BFX10 11	BFX31 31
M3P012 70	M3 PA70	BF12 10A	BF12 01A	BF09 10A	(RF38)	TM ST❹	BFX10 20	—	BFX10 11	BFX31 31
M3P018 70	M3 PA70	BF18 10A	BF18 01A	BF12 10A	(RF38)	TM ST❹	BFX10 20	—	BFX10 11	BFX31 31
M3P025 70	M3 PA70	BF25 10A	BF25 01A	BF18 10A	(RF38)	TM ST❹	BFX10 20	—	BFX10 11	BFX31 31
M3P026 70	M3 PA70	BF26 00A	BF26 00A	BF18 10A	(RF38)	TM ST❹	BFX10 20	BFX10 11	BFX10 11	BFX32 32
M3P032 70	M3 PA70	BF32 00A	BF32 00A	BF25 10A	(RF38)	TM ST❹	BFX10 20	BFX10 11	BFX10 11	BFX32 32
M3P038 70	M3 PA70	BF38 00A	BF38 00A	BF25 10A	(RF38)	TM ST❹	BFX10 20	BFX10 11	BFX10 11	BFX32 32

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 star-delta starter with 24VAC 50/60Hz power supply.
M3P009 70 02460 for M3P009 star-delta starter with 24VAC 60Hz power supply.

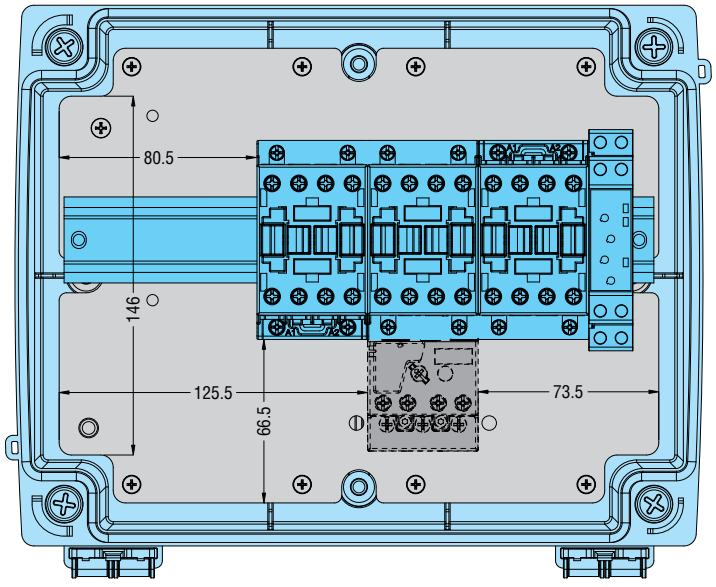
❷ The thermal overload relay is not included and must be purchased separately.
Choose the thermal relay adjustment range considering a value equal to 58% of rated motor current (Ie).
Example: Ie=10A; 58% Ie = 5.8A. The suitable relay range is 4-6.5A, set at 5.8A, so the order code to select is RF380650).
Refer to page 3-4 for the order codes available.

❸ Suitable for BFA...70 starters.

❹ TM ST with auxiliary supply 24...240VAC;
TM ST A440 with auxiliary supply 380...400VAC.

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.

Maximum available space inside M3P... star-delta starters in enclosure and M3 PA70 enclosure



Empty enclosures

M…PA

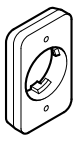
M…RA

M…N

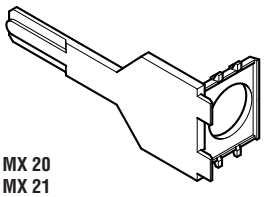
Order code	Contactor type ❶	Thermal relay ❷	Degree of protect.	Qty per pkg	Wt
				n°	[kg]
Enclosures with Start-Stop/Reset buttons.					
M0PA	BG06, BG09, BG12	RF9	IP65	1	0.490
M1PA	BF09A, BF12A, BF18A	RF38	IP65	1	0.545
M2PA❸	BF25A, BF26A BF32A	RF38	IP65	1	0.715
M3PA❹	BF38A, BF50, BF65, BF80, BF95, BF110	RF95 3 ❺	IP65	1	1.900
Enclosures with Reset button.					
M0RA	BG06, BG09, BG12	RF9	IP65	1	0.445
M1RA	BF09A, BF12A, BF18A	RF38	IP65	1	0.500
M2RA❸	BF25A, BF26A BF32A	RF38	IP65	1	0.670
M3RA❹	BF38A, BF50, BF65, BF80, BF95, BF110	RF95 3 ❺	IP65	1	1.850
Enlcosures without external push-buttons.					
M0N	BG06, BG09, BG12	RFA9	IP65	1	0.405
M1N	BF09A, BF12A, BF18A	RF38	IP65	1	0.460
M2N❸	BF25A, BF26A BF32A	RF38	IP65	1	0.640
M3N	BF38A, BF50, BF65, BF80, BF95, BF110	RF95 3 ❺	IP65	1	1.800

❶ To be purchased separately; refer to page 2-4 for contactor choice.
❷ To be purchased separately; refer to pages 3-2 to 3-6 for thermal overload relay choice.
❸ Reversing contactor assemblies can be fitted as well. Refer to drawing on page 4-7.
❹ MX 30 metal mounting plate included.
❺ For the thermal overload relay (RF95 2) to use with BF38A contactor, contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

Accessories and spare parts



MX 00



MX 20
MX 21

Order code	Description	Qty per pkg	Wt
		n°	[kg]
MX 00	Button actuator fixing adapter for M0, M1 and M2 enclosures	10	0.006
MX 01	Threaded plug for unused holes	10	0.006
MX 10	Stop/Reset button extension rod for M0 enclosure	5	0.010
MX 11	Stop/Reset button extension rod for M1 enclosure	5	0.006
MX 12	Stop/Reset button extension rod for M2 enclosure	5	0.008
MX 20	Mounting base for 8LM2T C... contact on M0 enclosure	5	0.014
MX 21	Mounting base for 8LM2T C... contact on M1 or M2 enclosure	5	0.014
MX 30	Metal mounting plate for M3N	1	0.500

Enclosure type	Maximum operating current (≤440V) A
M0...	12
M1...	18
M2...	32
M3...	110

General characteristics
Enclosures are supplied with the following accessories:

Enclosure		M0 PA	M1 PA	M2 PA	M0 RA	M1 RA	M2 RA
Mounting base	MX 20	1					
	MX 21		1	1			
Stop/Reset button 8 LP2T B1176					1	1	1
8 LP2T B2104		1	1	1			
Start button 8 LP2T B1113		1	1	1			
Contact element for Start button 8 LM2T C10		1	1	1			
Operator mounting adapter	MX 00	2	2	2	1	1	1
Start/Reset button extension rod	MX 10	1			1		
	MX 11		1			1	
	MX 12			1			1
Threaded plug for unused holes	MX 01				1	1	1

M3 P... type enclosures are equipped with the following accessories:
– For M3 PA enclosure with 2 push buttons Start and Stop/Reset: 2 G285 auxiliary terminals and 1 MX30 mounting plate
– For M3 RA enclosure with 1 push button Reset: 2 G285 auxiliary terminals and 1 MX30 mounting plate
– For M3N enclosure: Supplied without accessories to be purchased separately including MX 30 mounting plate.

NOTE: Enclosures can house the following contactors with the relative thermal relay:
M0 = BG...
M1 = BF09A-BF12A-BF18A
M2 = BF25A-BF26A-BF32A
M3 = BF38A-BF50-BF65-BF80-BF95-BF110❸

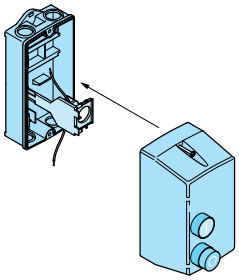
Operational characteristics:
– Ambient conditions:
  • Operating temperature: -25...+60°C
  • Storage temperature: -40...+70°C
– Degree of protection: IP65 for all; type 1, 12, 4/4X industrial control environment for M0, M1, M2 and M3...UL versions.

Special M3… versions
In addition to standard-indicated versions, cULus certified starters and enclosures are available up to 52A - motor control and 65A general use rating max (MX30 plate, earth/ground and neutral terminal plates are always included in this case).
Add suffix **UL** to the order code of enclosures e.g. M3N **UL**.

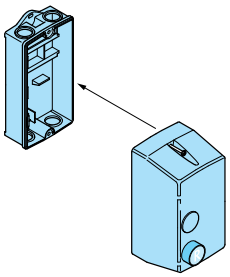
Certifications and compliance
Certifications obtained: cULus and cCSAus for M0, M1 and M2 types enclosures; cULus only for M3...UL version.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14; UL508A for M3NUL type.

M0... empty enclosures

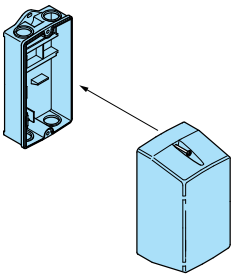
M0PA



M0RA

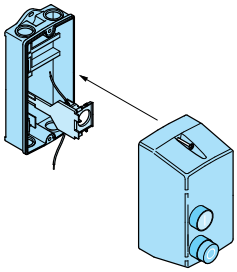


M0N

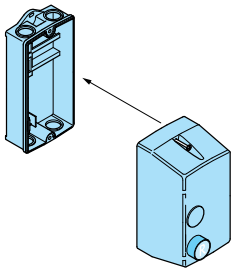


M1... empty enclosures

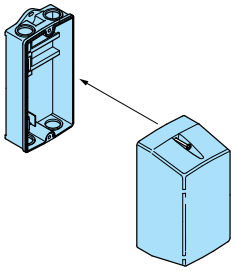
M1PA



M1RA

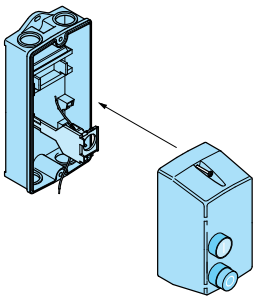


M1N

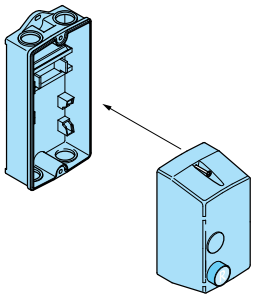


M2... empty enclosures

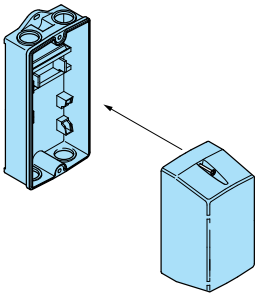
M2PA



M2RA

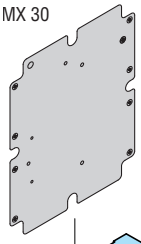


M2N

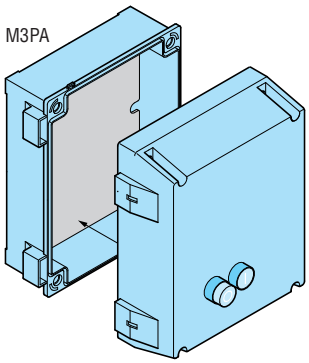


M3... empty enclosures

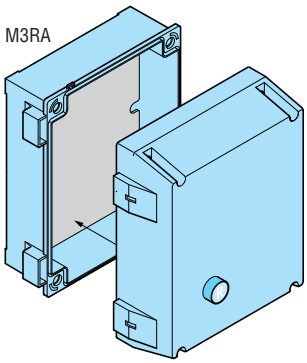
MX 30



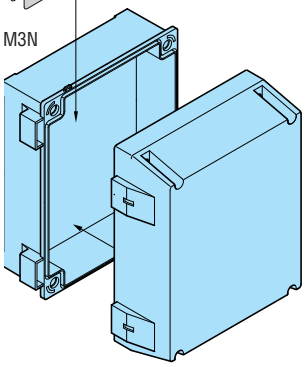
M3PA



M3RA



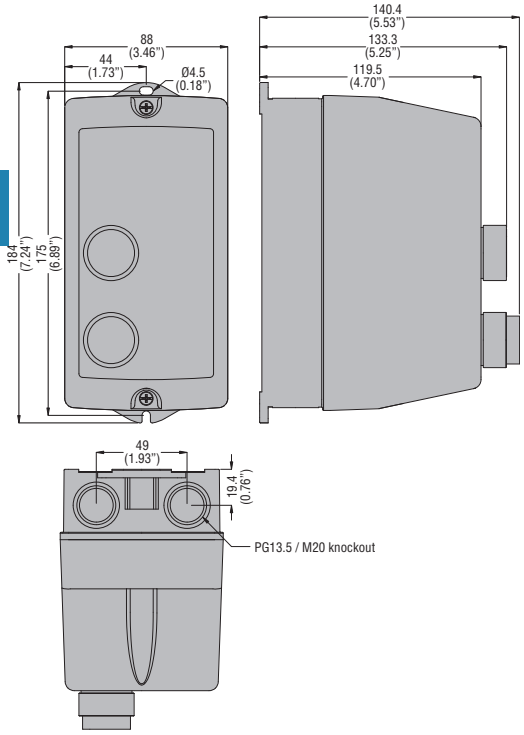
M3N



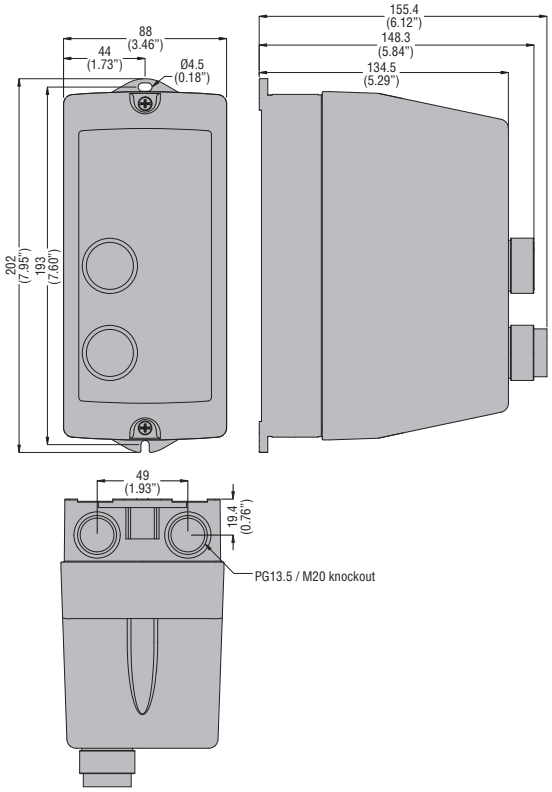
DIRECT-ON-LINE STARTERS - EMPTY ENCLOSURES

4

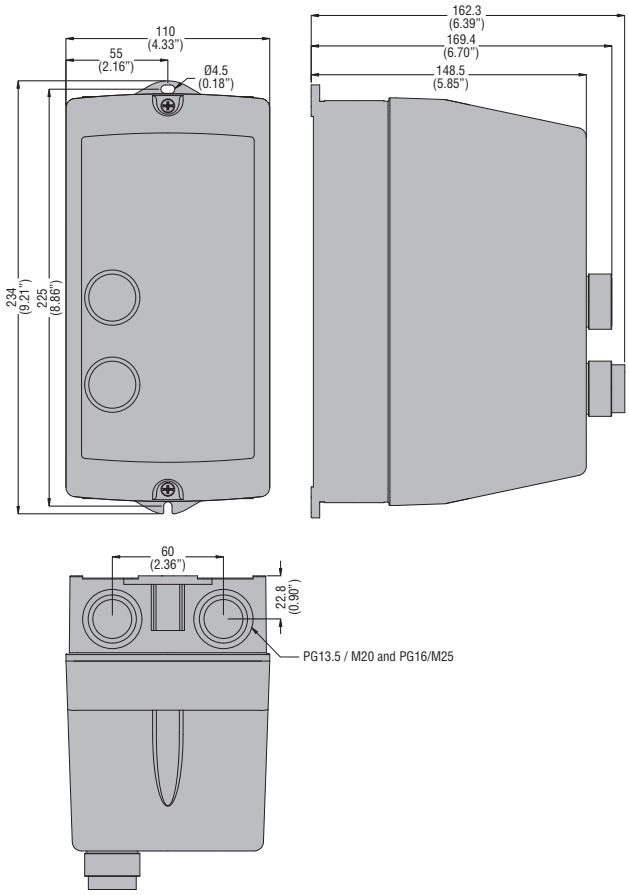
M0



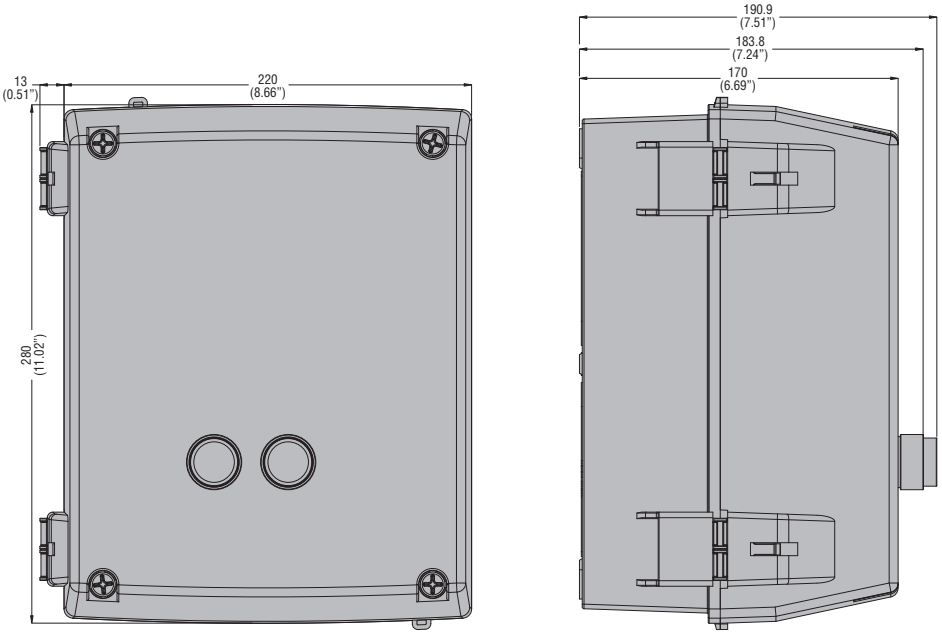
M1



M2

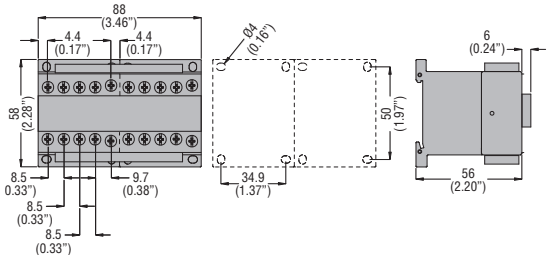


M3

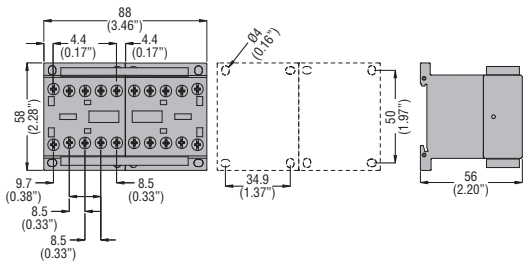


REVERSING CONTACTOR ASSEMBLIES

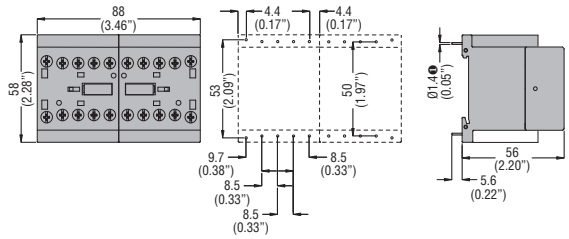
BGR... with external interlock



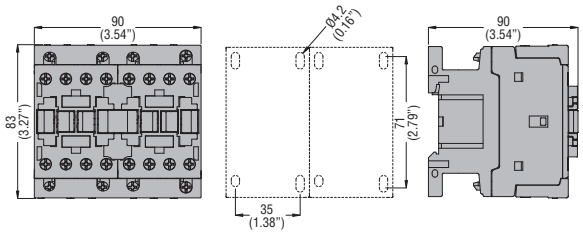
BGT... with internal interlock



BGTP... with rear PCB solder pins and internal interlock



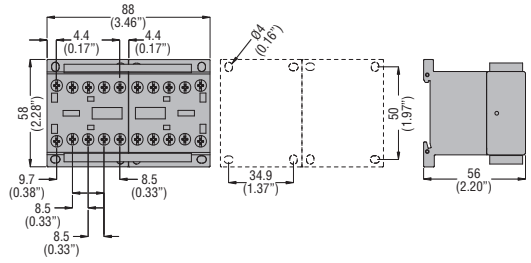
BFA...42 with external interlock



❶ Recommended PCB drillings 1.7-2mm (0.07-0.08").

CHANGEOVER CONTACTOR ASSEMBLIES

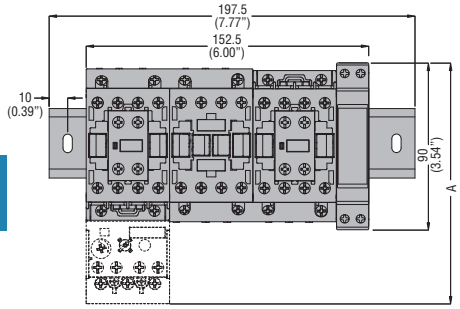
BGC09 T4... with internal interlock

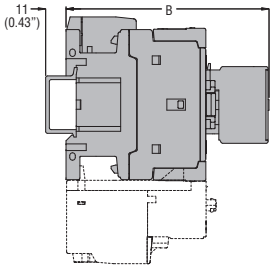


4

STAR-DELTA STARTERS OPEN FRAME

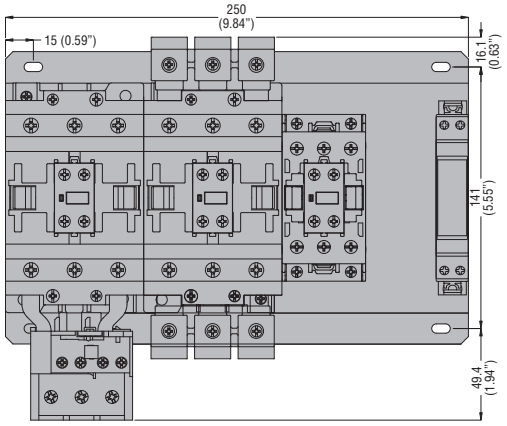
BFA... 70... on 35mm DIN rail, without thermal overload relay

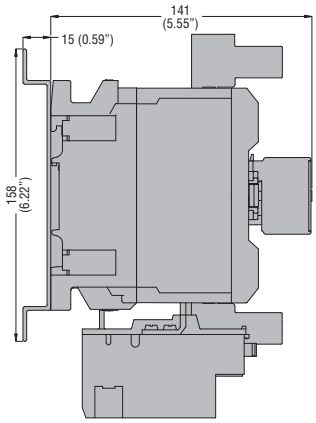




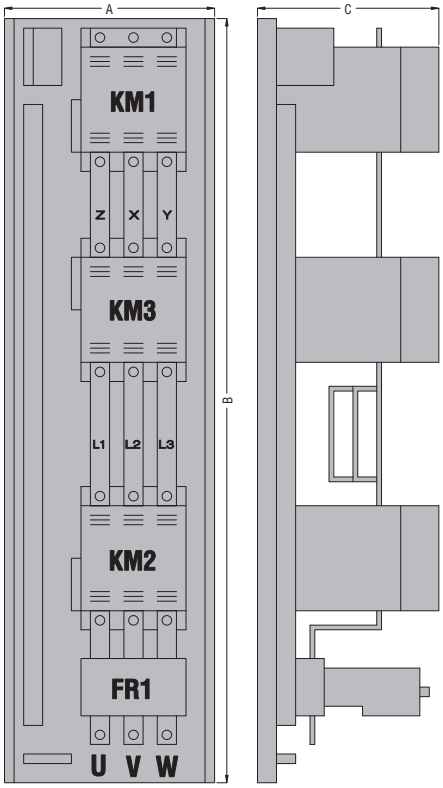
STARTER TYPE	A	B
BFA009 70	130.5 (5.14")	109.5 (4.31")
BFA012 70	130.5 (5.14")	109.5 (4.31")
BFA018 70	130.5 (5.14")	109.5 (4.31")
BFA025 70	130.5 (5.14")	109.5 (4.31")
BFA026 70	135 (5.14")	119 (4.68")
BFA032 70	135 (5.14")	119 (4.68")
BFA038 70	135 (5.14")	119 (4.68")

DYF... on mounting plate, with thermal overload relay



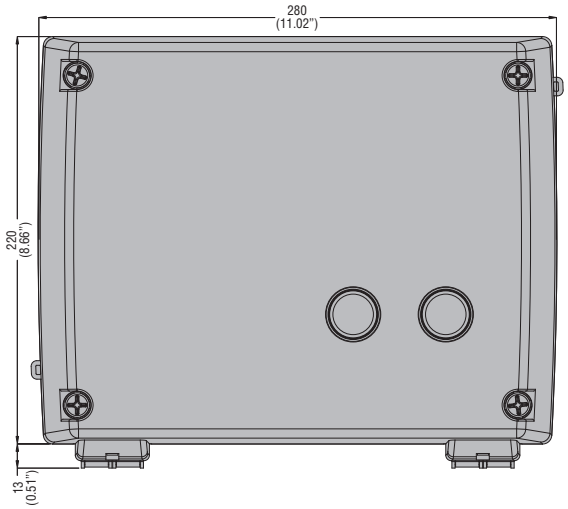


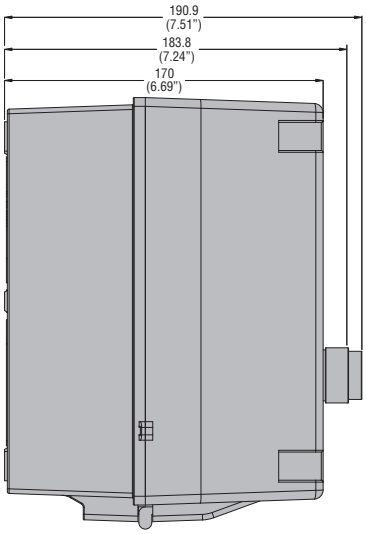
NYF... on mounting plate, with thermal overload relay

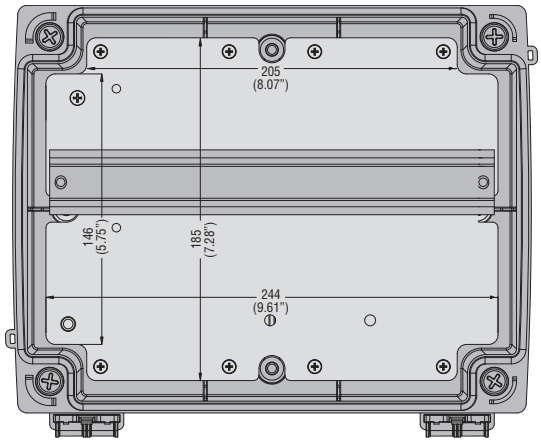


STARTER TYPE	A	B	C
NYF115	340 (13.38")	870 (34.25")	195 (7.68")
NYF145	340 (13.38")	870 (34.25")	195 (7.68")
NYF180	340 (13.38")	870 (34.25")	195 (7.68")
NYF250	440 (17.32")	1000 (39.37")	235 (9.25")
NYF310	440 (17.32")	1000 (39.37")	235 (9.25")
NYF400	440 (17.32")	1000 (39.37")	235 (9.25")

STAR-DELTA STARTERS IN ENCLOSURE - EMPTY ENCLOSURE FOR STAR-DELTA STARTERS
M3P...70 - M3 PA70







4

DIRECT-ON-LINE STARTERS IN ENCLOSURE

M...P

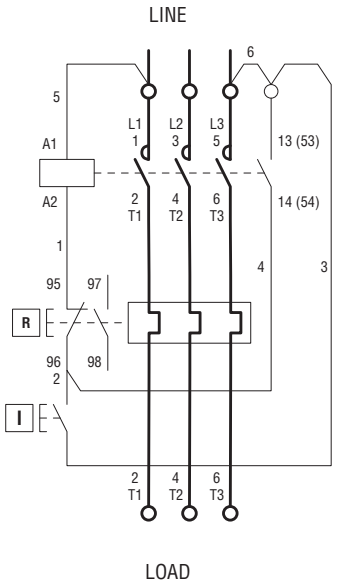


Diagram 1 - Incorporated button control

M...R

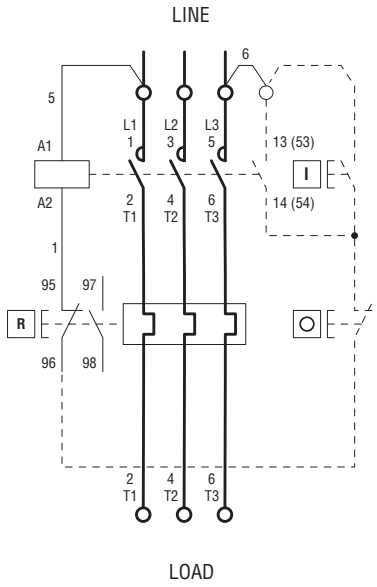


Diagram 2 - External button control

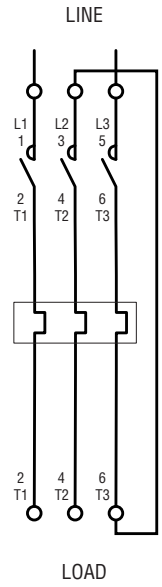


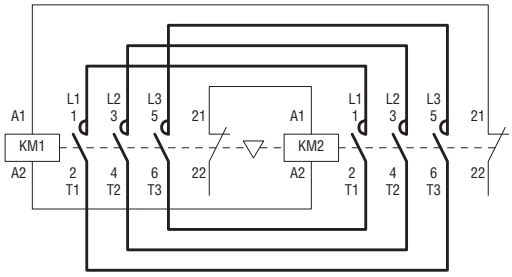
Diagram 3 - Power connection for 1-phase motors

DIAGRAM 2
Connect the eventual two-wire control (e.g. automatism) between terminal .3 of the contactor and terminal 96 of the thermal overload relay.

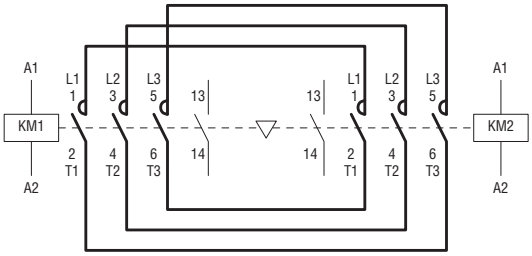
IMPORTANT
- Remove jumpers 5 and 6 and connect the auxiliary to terminals A1 and .3 for a control circuit with a voltage value different than the supply.
- Remove jumper 5 and connect the neutral to terminal A1 for a control circuit between phase and neutral.
- SINGLE-PHASE SUPPLY
  The main circuit must be configured according to Diagram 3 in the case of a single-phase line or motor.
- FUSES
  A set of three uses must be connected upstream of the starter in the event no appropriate protection is included in the system.

REVERSING CONTACTOR ASSEMBLY

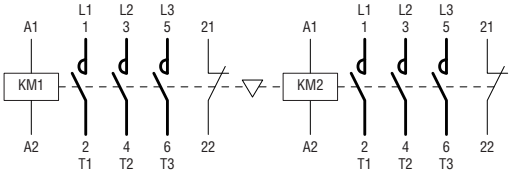
BGR...



BGT...

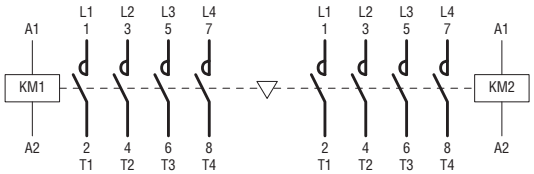


BGTP09...
BFA...42

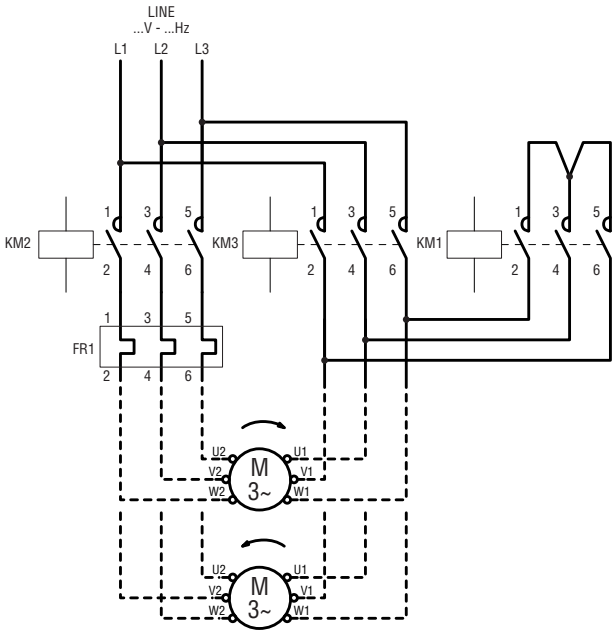


CHANGEOVER CONTACTOR ASSEMBLY

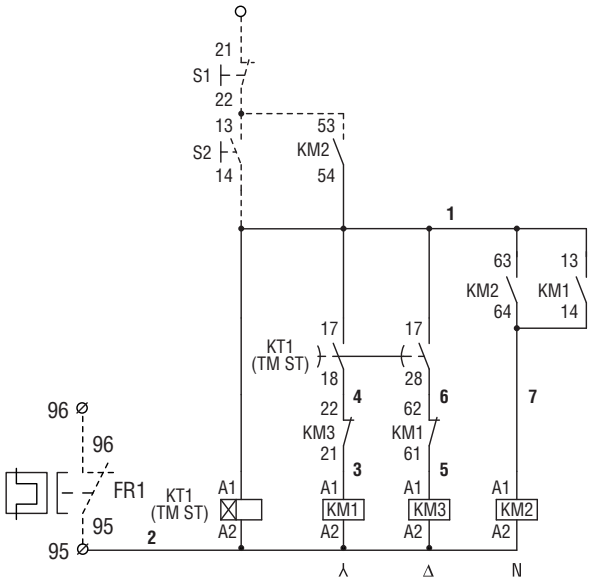
BGC09...



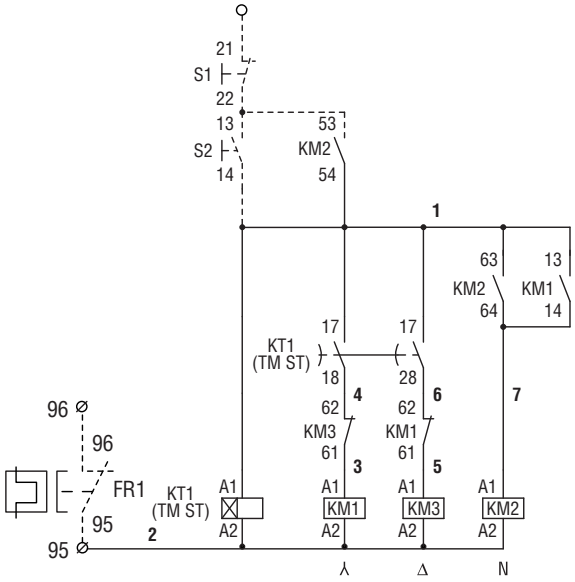
STAR-DELTA STARTERS, OPEN FRAME AND ENCLOSED



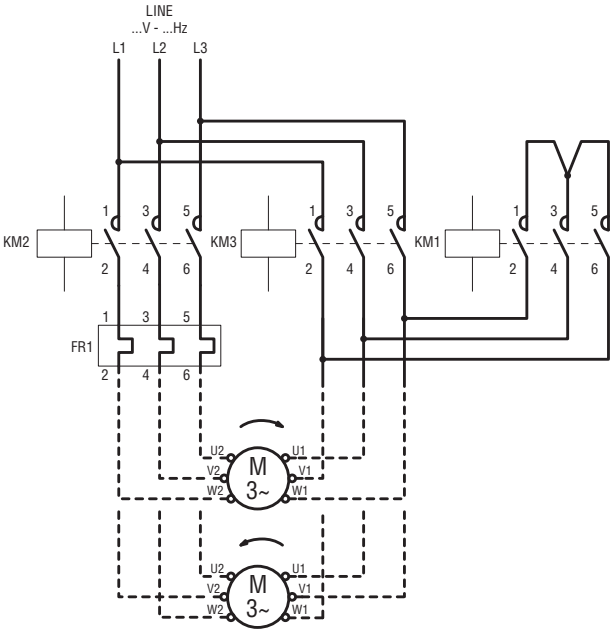
BFA009 70... BFA025 70
M3P009 70...M3P025 70

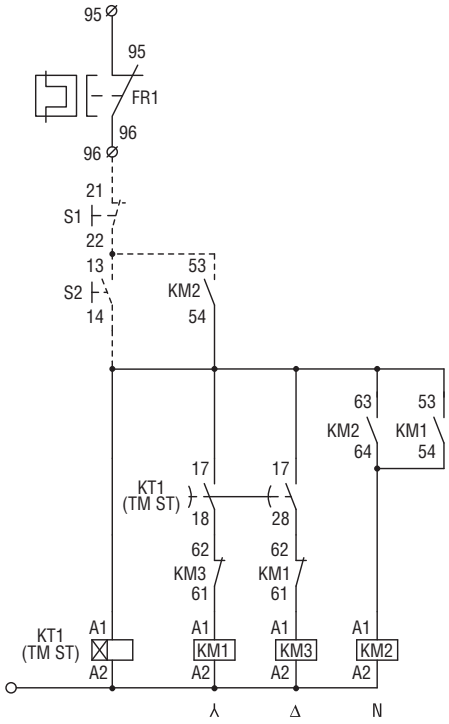


BFA26 70 - BFA038 70
M3P026 70...M3P038 70



STAR-DELTA STARTERS, OPEN FRAME **DYF50... DYF95**





STAR-DELTA STARTERS, OPEN FRAME NYF...