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XTMC Mini Contactor

Product Description

Eaton's new line of Cutler-Hammer® ***XT*** Miniature Controls includes non-reversing and reversing mini contactors, mini overload relays and snap-on accessories. A wide range of applications is possible including small electrical motors from fractional to 5 hp (460V AC) or up to 4 kW (400V AC).

Application Description

Due to its compact size, the ***XT*** line of mini controls is best suited to be applied in light duty loads such as hoisting, packaging, material handling, heating, lighting and automation systems. ***XT*** mini contactors are a particularly compact, economic and environmentally friendly solution wherever control of small motors or loads is required.

Features

Mini Contactors — Types XTMC and XTMF, 6 – 9A

- AC Control from 12V to 550V 50 Hz, 600V 60 Hz
- DC Control from 12V to 220V
- Available with screw or spring cage terminals
- Reversing or Non-reversing
- 3 and 4-Pole Configurations
  - 3-Pole XTMC
  - 4-Pole XTMF
- Panel or DIN rail mounting
- IP20 finger and back-of-hand proof
- Low noise operation
- High degree of climatic proofing
- Large ambient temperature range -25° to 50°C [-13° to 122°F]

Mini Overload Relays — Bimetallic Type XTOM

- Phase failure sensitivity
- Direct mount to XTMC and XTMF Mini Contactors
- Trip Class 10
- 11 settings to cover 0.1 to 12A
- Ambient temperature compensated -5° to 50°C [23° to 122°F]
- Manual and automatic reset by selector switch
- 1 Make (NO) or 1 Break (NC) auxiliary contact as standard
- Test/Off Button
- Trip-free release

Standards and Certifications

- IEC EN 60947
- CE Approved
- UL
- CSA
- ATEX
- CCC

Instructional Leaflets

Pub51219	Inside of Packaging XTMC, XTMF Mini Contactors, XTRM Mini Control Relay and Accessories
Pub51243	Inside of Packaging XTOM Mini Overload Relays
Pub51206	Mini Reversing Link Kits
MN03402002E	XTOM Mini Overload Relays Installation and User Manual

Catalog Number Selection

Table 22. *XT* IEC Miniature Contactors — Catalog Numbering System

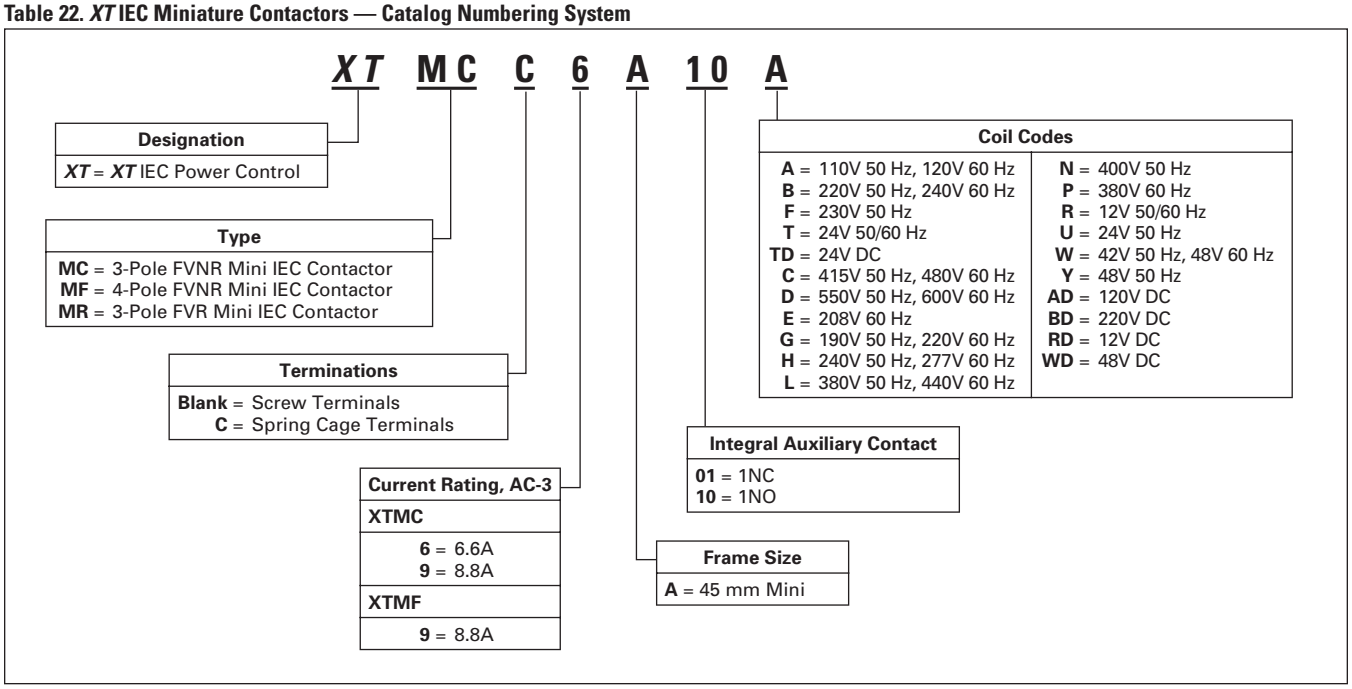
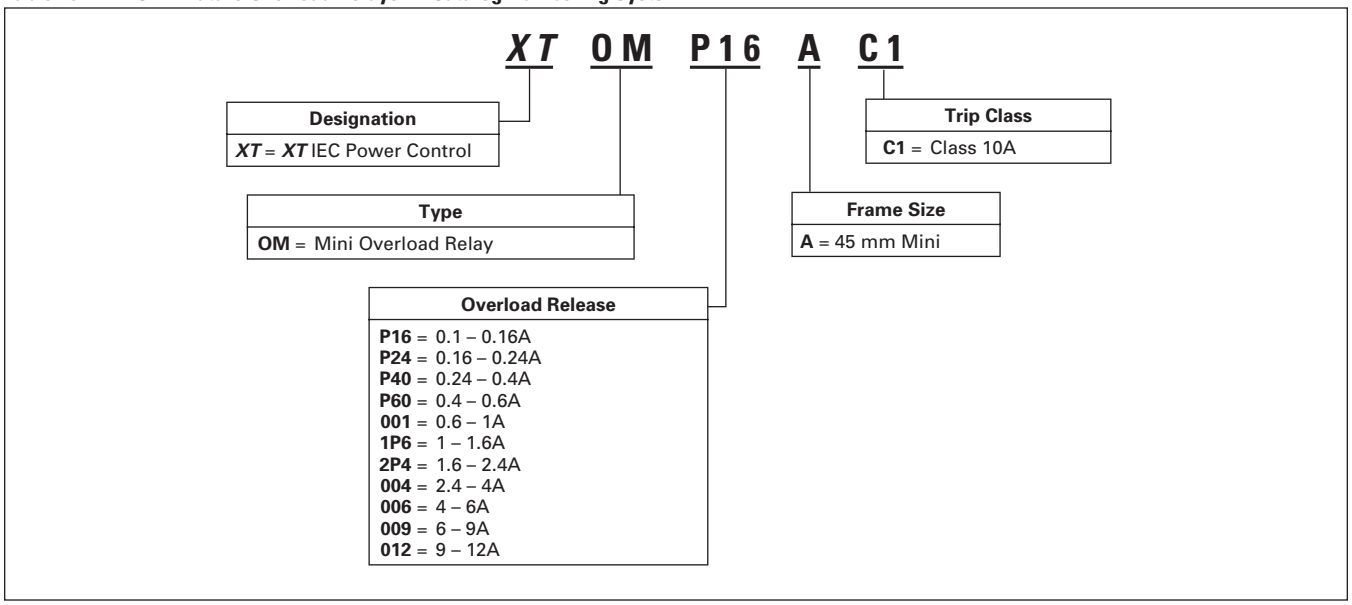


Table 23. *XT* IEC Miniature Overload Relays — Catalog Numbering System



Product Selection

Non-reversing Mini Contactors



Table 24. Full Voltage Non-reversing Contactors

Operational Current AC-3 Amp Rating 380/400V	Conventional Free Air Thermal Current AC-1 at 50°C	Maximum kW Ratings AC-3				Maximum Three-phase Motor Rating							No. of Power Poles	Aux. Contacts	Catalog Number ①		Price U.S. $	
		3-Phase Motors 50 – 60 Hz				1-Phase Horsepower Ratings			3-Phase Horsepower Ratings						Screw Terminals	Spring Cage Terminals	AC Coil	DC Coil
		220 – 240V	380 – 400V	550V	660/ 690V	115V	200V	230V	200V	230V	460V	575V						
6.6	20	1.5	3	3	3	1/4	3/4	1	1-1/2	2	3	3	3	1NO	**XTMC6A10_**	**XTMCC6A10_**	59.	77.
6.6	20	1.5	3	3	3	1/4	3/4	1	1-1/2	2	3	3	3	1NC	**XTMC6A01_**	**XTMCC6A01_**	59.	77.
8.8	20	2.2	4	4	4	1/2	1	1-1/2	2	3	5	5	3	1NO	**XTMC9A10_**	**XTMCC9A10_**	76.	94.
8.8	20	2.2	4	4	4	1/2	1	1-1/2	2	3	5	5	3	1NC	**XTMC9A01_**	**XTMCC9A01_**	76.	94.
8.8	20	2.2	4	4	4	1/2	1	1-1/2	2	3	5	5	4	—	**XTMF9A00_**	**—**	76.	94.

① Underscore (_) indicates Magnetic Coil Suffix required. See **Table 26**.

Reversing Mini Contactors



Table 25. Full Voltage Reversing Contactors

Operational Current AC-3 Amp Rating 380/400V	Conventional Free Air Thermal Current AC-1 at 50°C	Maximum kW Ratings AC-3				Maximum 3-Phase Current Motor Rating							Spare Auxiliary Contacts		Catalog Number ②③	Price U.S. $	
		3-Phase Motors 50 – 60 Hz				1-Phase hp Ratings			3-Phase hp Ratings				K1M	K2M		AC	DC
		220/ 230/ 240V	380/ 400/ 440V	500V	660/ 690V	115V	200V	230V	200V	230V	460V	575V					
6.6	20	1.5	3	3	3	1/4	3/4	1	1-1/2	2	3	3			**XTMR6A21_**	225.	261.
8.8	20	2.2	4	4	4	1/2	1	1-1/2	2	3	5	5			**XTMR9A21_**	259.	296.

② Underscore (_) indicates Magnetic Coil Suffix required. See **Table 26**.

③ The factory installed reversing mini contactor includes (2) XTMC...01 Contactors, (2) XTMCXFA20 2NO Front Mount Auxiliary Contacts (1) XTMCXRL Reversing Link Kit and (1) XTMCXML Mechanical Interlock.

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Table 26. Magnet Coil Suffix

Coil Voltage	Suffix Code	Coil Voltage	Suffix Code	Coil Voltage	Suffix Code	Coil Voltage	Suffix Code ①
110V 50 Hz, 120V 60 Hz	**A**	415V 50 Hz, 480V 60 Hz	**C**	400V 50 Hz	**N**	120V DC	**AD**
220V 50 Hz, 240V 60 Hz	**B**	550V 50 Hz, 600V 60 Hz	**D**	380V 60 Hz	**P**	220V DC	**BD**
230V 50 Hz	**F**	208V 60 Hz	**E**	12V 50/60 Hz	**R**	12V DC	**RD**
24V 50/60 Hz	**T**	190V 50 Hz, 220V 60 Hz	**G**	24V 50 Hz	**U**	48V DC	**WD**
24V DC	**TD** ①	240V 50 Hz, 277V 60 Hz	**H**	42V 50 Hz, 48V 60 Hz	**W**	—	—
—	—	380V 50 Hz, 440V 60 Hz	**L**	48V 50 Hz	**Y**	—	—

① With DC Operation: Integrated diode resistor combination, coil rating 2.6W.

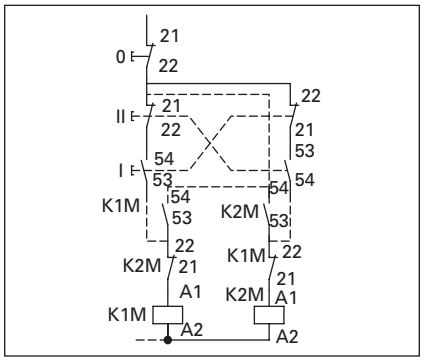

Figure 19. XTMR Reversing Contactor Control Wiring Diagram

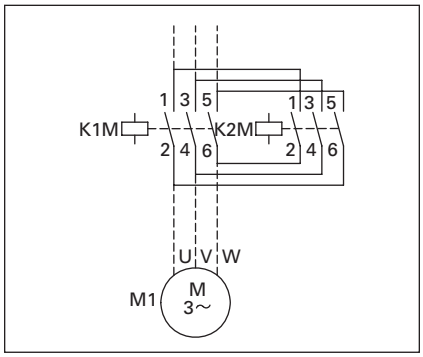

Figure 20. XTMR Reversing Contactor Power Wiring Diagram

Notes:

IEC Utilization Categories, see **Page 207**, Reference Data.

AC-1: Non-inductive or slightly inductive loads.

AC-3: Squirrel-cage motors — starting, switching of motors during running.

AC-4: Squirrel-cage motors — starting, plugging, inching.

Star-Delta (Wye-Delta) Miniature Contactors



Table 27. Star-Delta (Wye-Delta) Miniature Contactor Configuration ①

Maximum kW Ratings AC-3			Maximum 3-Phase Current Motor Rating							Max. Changeover Time (sec.)	Spare Auxiliary Contacts	Components	
3-Phase Motors 50 – 60 Hz			1-Phase hp Ratings			3-Phase hp Ratings						Description	Catalog Number ②
220/230/240V	380/400/440V	500V	115V	200V	230V	200V	230V	460V	575V		K1M		
4	5.5	5.5	1/2	1	1-1/2	2	3	5	7-1/2	30		K1M Main Contactor	**XTMC9A10_**
												K1M Auxiliary Contact	**XTMCXFC22**
												K5M Delta Contactor	**XTMC9A01_**
												K3M Star Contactor	**XTMC9A10_**
												K3M Auxiliary Contact	**XTMCXFC02**
												K1T Timing Relay	**XTTR6A60S51B**

① Operating Frequency: 30 Starts/hour
② Underscore (_) indicates magnet coil suffix required. See **Table 29**.

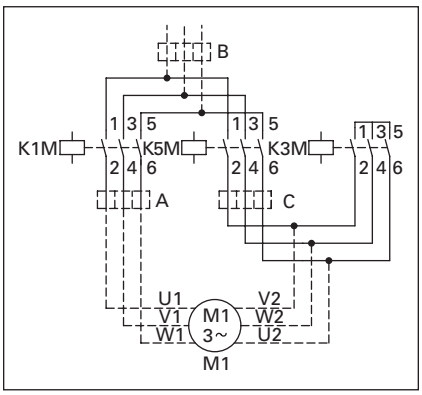

Figure 21. Star-Delta (Wye-Delta) Power Wiring Diagram

Table 28. Mini Overload Relay Settings (A)

Setting	Starting
A: I_N x 0.58	≤ 15 sec
Motor Protection in the Y and Delta Configurations.	
B: I_N x 1	15 – 40 sec
Only partial motor protection in star position	
C: I_N x 0.58	> 40 sec
Motor not protected in star position.	
Timing Relay set to approximately 10 sec.	

Note: Depending on the coordination type required (i.e. Type 1 or Type 2) it must be established whether the fuse protection and the input wiring for the main and delta contactors are to be common or separate.

Table 29. Magnet Coil Suffix

Coil Voltage	Suffix Code	Coil Voltage	Suffix Code	Coil Voltage	Suffix Code	Coil Voltage	Suffix Code ③
110V 50 Hz, 120V 60 Hz	**A**	415V 50 Hz, 480V 60 Hz	**C**	400V 50 Hz	**N**	120V DC	**AD**
220V 50 Hz, 240V 60 Hz	**B**	550V 50 Hz, 600V 60 Hz	**D**	380V 60 Hz	**P**	220V DC	**BD**
230V 50 Hz	**F**	208V 60 Hz	**E**	12V 50/60 Hz	**R**	12V DC	**RD**
24V 50/60 Hz	**T**	190V 50 Hz, 220V 60 Hz	**G**	24V 50 Hz	**U**	48V DC	**WD**
24V DC	**TD** ③	240V 50 Hz, 277V 60 Hz	**H**	42V 50 Hz, 48V 60 Hz	**W**	—	—
—	—	380V 50 Hz, 440V 60 Hz	**L**	48V 50 Hz	**Y**	—	—

③ With DC Operation: Integrated diode resistor combination, coil rating 2.6W.

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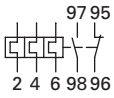
Discount Symbol **1CD7**

Overload Relays



Table 30. Mini Overload Relays ①②

Overload Release I_t	Trip Class	Contact Sequence	Contact Configuration	Short Circuit Protection (A)				Catalog Number	Price U.S. $
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL	Circuit Breaker	CEC/NEC Fuse		
0.1 – 0.16A	10A		1NO-1NC	20	0.5	15	—	**XTOMP16AC1**	75.00
0.16 – 0.24A				20	1	15	—	**XTOMP24AC1**	75.00
0.24 – 0.4A				20	2	15	—	**XTOMP40AC1**	75.00
0.4 – 0.6A				20	2	15	—	**XTOMP60AC1**	75.00
0.6 – 1A	10A		1NO-1NC	20	4	15	3	**XTOM001AC1**	75.00
1 – 1.6A				20	6	15	6	**XTOM1P6AC1**	75.00
1.6 – 2.4A				20	6	15	6	**XTOM2P4AC1**	75.00
2.4 – 4A	10A		1NO-1NC	20	10	15	15	**XTOM004AC1**	75.00
4 – 6A				20	10	15	20	**XTOM006AC1**	75.00
6 – 9A				20	10	15	35	**XTOM009AC1**	75.00
9 – 12A				—	—	—	45	**XTOM012AC1**	75.00

① Short-circuit protection:
Observe the maximum permissible fuse of the contactor with direct device mounting. See **MN03402002E** for more information.

② When fitted directly to the contactor, a clearance of at least 5 mm is required between the overload relays.

Tripping Characteristics Chart

These tripping characteristics are mean values of the spread at 20°C ambient temperature in a cold state. Tripping time depends on response current. With devices at operating temperature, the tripping time of the overload relay reduces to approx. 25% of the read off value. Specific characteristics for each individual setting range can be found on **Page 27**.

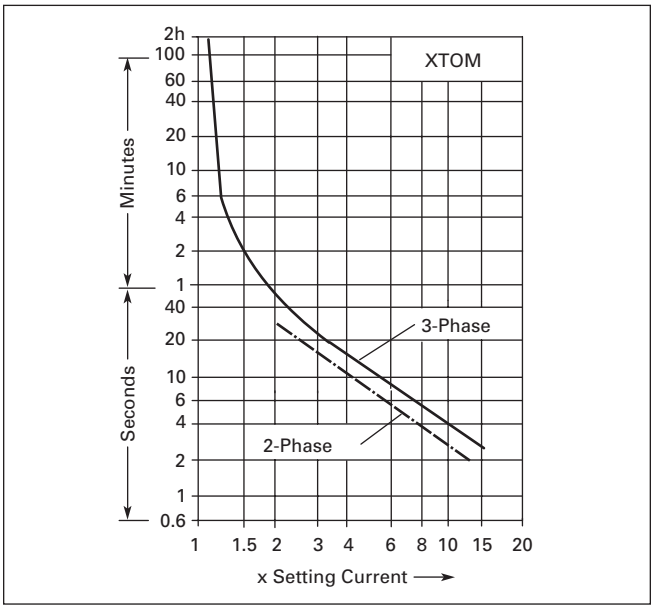


Figure 22. Tripping Characteristics

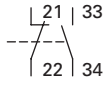
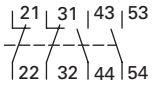
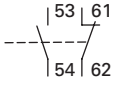
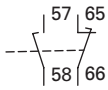
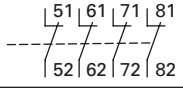
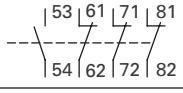
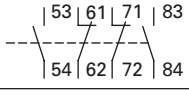
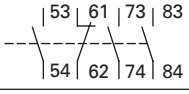
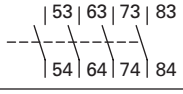
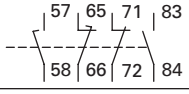
Dimensions ..... **Page 28**
Discount Symbol **1CD7**

Accessories

Auxiliary Contacts

Front mounted snap-on auxiliary contacts for mini contactors are available with screw or spring cage terminals in a variety of contact configurations. Auxiliary contact modules are standard with interlocked opposing contacts, except in the case of early-make or late-break contacts.

Table 31. Front Mount Auxiliary Contacts for Use with Mini Contactors

Conventional Free Air Thermal Current, $I_{th} = I_e$, AC-1 in Amps	Contact Configuration	Contact Sequence	Package Qty.	Catalog Number		Price U.S. $ ①
				Screw Terminals	Spring Cage Terminals	
10	2NC		5	**XTMCXFC02**	—	19.20
10	1NO-1NC		5	**XTMCXFD11**	**XTMCXFDC11**	19.20
10	2NO-2NC		5	**XTMCXFC22**	**XTMCXFCC22**	33.25
10	2NC		5	**XTMCXFA02**	—	19.20
10	1NO-1NC		5	**XTMCXFA11**	**XTMCXFAC11**	19.20
10	2NO		5	**XTMCXFA20**	—	19.20
10	$1NO_E$-$1NC_L$		5	**XTMCXFAL11** ②	—	46.00
10	4NC		5	**XTMCXFA04**	**XTMCXFAC04**	33.25
10	1NO-3NC		5	**XTMCXFA13**	**XTMCXFAC13**	33.25
10	2NO-2NC		5	**XTMCXFA22**	**XTMCXFAC22**	33.25
10	3NO-1NC		5	**XTMCXFA31**	**XTMCXFAC31**	33.25
10	4NO		5	**XTMCXFA40**	**XTMCXFAC40**	33.25
10	1NO-1NC 1N O_E-$1NC_L$		5	**XTMCXFAL22** ②	**XTMCXFCLC22** ②	62.00

① Price listed is for a quantity of one (1). Orders must be placed in multiples of package quantity listed.
② 1 early-make contact (NO_E), 1 late-break contact (NC_L).

Discount Symbol **1CD7**

RC Suppressor

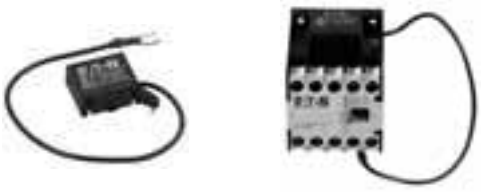


Table 32. RC Suppressor ①

Voltage	For Use with…	Circuit Symbol	Package Qty.	Catalog Number	Price U.S. $ ②
24 – 48	XTMC6A…, XTMC9A…	A1 / A2	10	**XTMCXRSW**	32.00
48 – 130	XTMC6A…, XTMC9A…		10	**XTMCXRSA**	32.00
110 – 250	XTMC6A…, XTMC9A…		10	**XTMCXRSB**	32.00
24 – 48	XTMCC6A…, XTMCC9A…		10	**XTMCXRSCW**	32.00
48 – 130	XTMCC6A…, XTMCC9A…		10	**XTMCXRSCA**	32.00
110 – 250	XTMCC6A…, XTMCC9A…		10	**XTMCXRSCB**	32.00

① For AC operated contactors, 50/60 Hz. Note drop-out delay.
② Price listed is for a quantity of one (1). Orders must be placed in multiples of package quantity listed.

Varistor Suppressor



Table 33. Varistor Suppressor ③

Voltage	For Use with…	Circuit Symbol	Package Qty.	Catalog Number	Price U.S. $ ④
24 – 48	XTMC6A…, XTMC9A…	A1 / A2	10	**XTMCXVSW**	27.75
48 – 130	XTMC6A…, XTMC9A…		10	**XTMCXVSA**	27.75
110 – 250	XTMC6A…, XTMC9A…		10	**XTMCXVSB**	27.75
380 – 415	XTMC6A…, XTMC9A…		10	**XTMCXVSN**	27.75
24 – 48	XTMCC6A…, XTMCC9A…		10	**XTMCXVSCW**	27.75
48 – 130	XTMCC6A…, XTMCC9A…		10	**XTMCXVSCA**	27.75
110 – 250	XTMCC6A…, XTMCC9A…		10	**XTMCXVSCB**	27.75

③ For AC operated contactors, 50/60 Hz. DC operated contactors have integrated varistor suppressors.
④ Price listed is for a quantity of one (1). Orders must be placed in multiples of package quantity listed.

Mechanical Interlock



Table 34. Mechanical Interlock

Description	Package Qty.	Catalog Number	Price U.S. $ ⑤
Mechanical Interlock	5	**XTMCXML**	19.20

⑤ Price listed is for a quantity of one (1). Orders must be placed in multiples of package quantity listed.

Note:
- For two contactors with AC or DC operated magnet system that are horizontally or vertically mounted, the distance between contactors is 0 mm, and the mechanical lifespan is 2.5 x 10^6 operations.

Reversing Link Kit



Table 35. Reversing Link Kit

Description	Package Qty.	Catalog Number	Price U.S. $
Main current wiring for reversing contactors and starters.	1	**XTMCXRL**	31.00

Notes:
- The following control cables are integrated as part of the electrical interlock:
  K1M: A1 — K2M: 21; K1M: 21 — K2M: A1
- Reversing Link Kit does not include mechanical interlock. See **Table 34** for Mechanical Interlock.

Star-Delta (Wye-Delta) Link Kit



Table 36. Star-Delta (Wye-Delta) Link Kit

Description	Package Qty.	Catalog Number	Price U.S. $
Main current wiring for star-delta (wye-delta) combinations. Includes the Star-Delta Bridge.	1	**XTMCXSDL**	36.25

Notes:
- The following control cables are integrated in addition to the electrical interlock:
  K3M: A1 — K5M: 21; K3M: 21 — K5M: A1; K3M: A2 — K5M: A2
- When combined with overload relay use separate mounting.

Discount Symbol **1CD7**

Star-Delta (Wye-Delta) Bridge



Table 37. Star-Delta (Wye-Delta) Bridge

Contact Sequence	Package Qty.	Catalog Number	Price U.S. $ ①
	20	**XTMCXSDB** ②	7.50

① Price listed is for a quantity of one (1). Orders must be placed in multiples of package quantity listed.
② Protected against direct contact in accordance with IEC 536.

Paralleling Link Set for Main Contacts



Table 38. Paralleling Link Set for Main Contacts

Contact Sequence	Package Qty.	Catalog Number	Price U.S. $ ③
	5	**XTMCXPLK** ④⑤⑥	37.50

③ Price listed is for a quantity of one (1). Orders must be placed in multiples of package quantity listed.
④ Protected against direct contact in accordance with IEC 536.
⑤ 4th pole can be broken off:
4-pole: I_{th} = 60A; 3-pole: I_{th} = 50A
⑥ AC-1 current carrying capacity of the open contactor increases by a factor of 2.5.

Connector



Table 39. Connector

Description	Package Qty.	Catalog Number	Price U.S. $ ⑦
For mechanically arranging contactors and timing relays in combinations.	50	**XTMCXCN** ⑧	1.10

⑦ Price listed is for a quantity of one (1). Orders must be placed in multiples of package quantity listed.
⑧ 0 mm distance between contactors.

IP40 Sealable Transparent Shroud



Table 40. IP40 Sealable Transparent Shroud

Description	Package Qty.	Catalog Number	Price U.S. $
IP40 Sealable Transparent Shroud, snap fitting on mini contactor.	1	**XTMCXSHROUD**	5.35

Discount Symbol **1CD7**

Technical Data and Specifications

Table 41. *XT* Miniature Controls — General Specifications

Description	XTMC6A…		XTMC9A…		XTMF9A…	
	AC Coils	DC Coils	AC Coils	DC Coils	AC Coils	DC Coils
Physical and Electrical (Continued)						
Standards	IEC/EN 60947, VDE 0660, CSA, UL, CCC					
Weights in kg [lb]	0.2 [0.44]	0.17 [0.37]	0.2 [0.44]	0.17 [0.34]	0.2 [0.44]	0.17 [0.37]
Mechanical Life — Operations	10,000,000	20,000,000	10,000,000	20,000,000	20,000,000	—
Mechanical Life — Coil @ 50 Hz	7	—	7	—	7	—
Maximum mechanical operating frequency (ops/hr)	9000					
Insulation Voltage (U_i) VAC	690	690	690	690	690	690
Impulse Withstand Voltage (U_{imp}) VAC	6000	6000	6000	6000	6000	6000
Operational Voltage (U_e) VAC	690	690	690	690	690	690
Safe Isolation to VDE 0106 Part 101 and Part 101/A1 between coil and contacts (VAC) between contacts (VAC)	 300 300	 300 300	 300 300	 300 300	 300 300	 300 300
Making Capacity (amps)	110	110	110	110	110	110
Breaking Capacity (amps) 220/230V 380/400V 500V 660/690V	 90 90 64 54	 90 90 64 54	 90 90 64 54	 90 90 64 54	 90 90 64 54	 90 90 64 54
Short-Circuit Protection rating maximum fuse (gL/gG) Type 2 Coordination (A) Type 1 Coordination (A)	 10 20	 10 20	 10 20	 10 20	 10 20	 10 20
Degree of Protection	IP20					
Protection against direct contact when actuated from front (IEC 536)	Finger- and back-of-hand proof					
Terminal Capacity of main and auxiliary contacts Solid (mm^2)	 1 x (0.75 – 2.5) 2 x (0.75 – 2.5)	 1 x (0.75 – 2.5) 2 x (0.75 – 2.5)	 1 x (0.75 – 2.5) 2 x (0.75 – 2.5)	 1 x (0.75 – 2.5) 2 x (0.75 – 2.5	 1 x (0.75 – 2.5) 2 x (0.75 – 2.5)	 1 x (0.75 – 2.5) 2 x (0.75 – 2.5)
Flexible with ferrule (mm^2)	1 x (0.75 – 1.5) 2 x (0.75 – 1.5)	1 x (0.75 – 1.5) 2 x (0.75 – 1.5)	1 x (0.75 – 1.5) 2 x (0.75 – 1.5)	1 x (0.75 – 1.5) 2 x (0.75 – 1.5)	1 x (0.75 – 1.5) 2 x (0.75 – 1.5)	1 x (0.75 – 1.5) 2 x (0.75 – 1.5)
Solid or Stranded (AWG)	18-14	18-14	18-14	18-14	18-14	18-14
Terminal Screw	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
Pozidriv screwdriver	Size 2	Size 2	Size 2	Size 2	Size 2	Size 2
Standard screwdriver (mm)	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6
Max. Tightening Torque Nm Lb-in	 1.2 10.6	 1.2 10.6	 1.2 10.6	 1.2 10.6	 1.2 10.6	 1.2 10.6
Terminal Capacity of spring cage main terminals Solid (mm^2)	 1 x (1 – 2.5) 2 x (1 – 2.5)	 1 x (1 – 2.5) 2 x (1 – 2.5)	 1 x (1 – 2.5) 2 x (1 – 2.5)	 1 x (1 – 2.5) 2 x (1 – 2.5)	 1 x (1 – 2.5) 2 x (1 – 2.5)	 1 x (1 – 2.5) 2 x (1 – 2.5)
Flexible with ferrule (mm^2)	1 x (1 – 2.5) 2 x (1 – 2.5)	1 x (1 – 2.5) 2 x (1 – 2.5)	1 x (1 – 2.5) 2 x (1 – 2.5)	1 x (1 – 2.5) 2 x (1 – 2.5)	1 x (1 – 2.5) 2 x (1 – 2.5)	1 x (1 – 2.5) 2 x (1 – 2.5)
Standard screwdriver (mm)	0.6 x 3.5	0.6 x 3.5	0.6 x 3.5	0.6 x 3.5	0.6 x 3.5	0.6 x 3.5
Mounting Position	As required, except vertical with terminals A1/A2 at the bottom 					
Environmental						
Ambient Temperature	-25° to 50°C [-13° to 122°F]					
Mechanical Shock Resistance (IEC/EN 60068-2-27) Half-sinusoidal shock 10 ms Contactor without auxiliary contact module Main contact — make contact Main contact — break/make contact Contactor with auxiliary contact module Main contact — make contact Main contact — make/break contact	 10g 10/8g 10g 20/20g	 10g 10/8g 10g 20/20g	 10g 10/8g 10g 20/20g	 10g 10/8g 10g 20/20g	 10g — 10g 20/20g	 10g — 10g 20/20g
Climatic Proofing	Damp heat, constant, to IEC 60 068-2-78; Damp heat, cyclic, to IEC 60 068-2-30					
Pollution Degree	III/3	III/3	III/3	III/3	III/3	III/3

Table 42. *XT* Miniature Controls — Magnet Systems

Description	XTMC6A…		XTMC9A…		XTMF9A…	
	AC Coils	DC Coils	AC Coils	DC Coils	AC Coils	DC Coils
Voltage Tolerance						
Pick-Up (x U_C)						
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	0.8 – 1.1	—	0.8 – 1.1	—	0.8 – 1.1	—
Dual frequency coil 50/60 Hz	0.85 – 1.1	—	0.85 – 1.1	—	0.85 – 1.1	—
DC operated ①	—	0.8 – 1.1	—	0.8 – 1.1	—	0.85 – 1.1
Power Consumption						
AC Operation						
Pick-Up VA						
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	25	—	25	—	25	—
Dual frequency coil 50/60 Hz at 50 Hz	30	—	30	—	30	—
Dual frequency coil 50/60 Hz at 60 Hz	29	—	29	—	29	—
Pick-Up W						
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	22	—	22	—	22	—
Dual frequency coil 50/60 Hz at 50 Hz	26	—	26	—	26	—
Dual frequency coil 50/60 Hz at 60 Hz	24	—	24	—	24	—
Sealing VA						
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	4.6	—	4.6	—	4.6	—
Dual frequency coil 50/60 Hz at 50 Hz	5.4	—	5.4	—	5.4	—
Dual frequency coil 50/60 Hz at 60 Hz	3.9	—	3.9	—	3.9	—
Sealing W						
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	1.3	—	1.3	—	1.3	—
Dual frequency coil 50/60 Hz at 50 Hz	1.6	—	1.6	—	1.6	—
Dual frequency coil 50/60 Hz at 60 Hz	1.1	—	1.1	—	1.1	—
DC operated ①						
Power consumption pick-up = sealing (VA/W)	—	2.6	—	2.6	—	2.6
Duty Factor (%)	100	100	100	100	100	100
Switching Time at 100% U_C						
Make Contact						
Closing delay min (mS)	14	26	14	26	14	26
Closing delay max (mS)	21	35	21	35	21	35
Opening delay min (mS)	8	15	8	15	8	15
Opening delay max (mS)	18	25	18	25	18	25
Closing delay with top mounting auxiliary contact (mS)	max. 45	max. 70	max. 45	max. 70	max. 45	max. 70
Reversing contactors						
Changeover time at 100% U_C						
Min (mS)	16	40	16	40	16	40
Max (mS)	21	50	21	50	21	50
Arcing time at 690V AC (mS)	max. 12	max. 12	max. 12	max. 12	max. 12	max. 12

① Smoothed DC or three-phase bridge rectifier.

Table 43. XT Miniature Controls

Description	XTMC6A…		XTMC9A…		XTMF9A…	
	AC Coils	DC Coils	AC Coils	DC Coils	AC Coils	DC Coils
AC-1 Operation						
Conventional free air thermal current, 3-pole, 50 – 60 Hz (A)						
at 40°C (I_{th})	22	22	22	22	22	22
at 50°C (I_{th})	20	20	20	20	20	20
at 55°C (I_{th})	19	19	19	19	19	19
Conventional free air thermal current, 1-pole (I_{th})	50	50	50	50	60	60
AC-3 Operation						
Rated Operational Current, 50/60 Hz ① (I_e) in amperes (A)						
220/230V	6.6	6.6	9.0	9.0	9.0	9.0
240V	6.6	6.6	9.0	9.0	9.0	9.0
380/400V	6.6	6.6	9.0	9.0	9.0	9.0
415V	6.6	6.6	9.0	9.0	9.0	9.0
440V	6.6	6.6	9.0	9.0	9.0	9.0
500V	5	5	6.4	6.4	6.4	6.4
660/690V	3.5	3.5	4.8	4.8	4.8	4.8
Rated power (P) in kilowatts (kW)						
220/230V	1.5	1.5	2.2	2.2	2.2	2.2
240V	1.8	1.8	2.5	2.5	2.5	2.5
380/400V	3	3	4	4	4	4
415V	3.1	3.1	4.3	4.3	4.3	4.3
440V	3.3	3.3	4.6	4.6	4.6	4.6
500V	3	3	4	4	4	4
660/690V	3	3	4	4	4	4
AC-4 Operation						
Rated Operational Current, 50/60 Hz ① (I_e) in amperes (A)						
220/230V	5	5	6.6	6.6	6.6	6.6
240V	5	5	6.6	6.6	6.6	6.6
380/400V	5	5	6.6	6.6	6.6	6.6
415V	5	5	6.6	6.6	6.6	6.6
440V	5	5	6.6	6.6	6.6	6.6
500V	3.7	3.7	5	5	5	5
660/690V	2.9	2.9	3.4	3.4	3.4	3.4
Rated power (P) in kilowatts (kW)						
220/230V	1.1	1.1	1.5	1.5	1.5	1.5
240V	1.3	1.3	1.8	1.8	1.8	1.8
380/400V	2.2	2.2	3	3	3	3
415V	2.3	2.3	3.1	3.1	3.1	3.1
440V	2.4	2.4	3.3	3.3	3.3	3.3
500V	2.2	2.2	3	3	3	3
660/690V	2.2	2.2	3	3	3	3

① At maximum permissible ambient temperature.

Table 44. *XT* Miniature Controls

Description	XTMC6A…		XTMC9A…		XTMF9A…	
	AC Coils	DC Coils	AC Coils	DC Coils	AC Coils	DC Coils
DC-1 Operation ②						
12V	20	20	20	20	—	—
24V	20	20	20	20	—	—
60V	20	20	20	20	—	—
110V	20	20	20	20	—	—
220V	20	20	20	20	—	—
DC-3 Operation ②						
12V	6	6	8	8	—	—
24V	6	6	8	8	—	—
60V	3	3	4	4	—	—
110V	2	2	3	3	—	—
220V	—	—	—	—	1	1
DC-4 Operation ②						
12V	1.8	1.8	2.5	2.5	—	—
24V	1.8	1.8	2.5	2.5	—	—
60V	1.8	1.8	2.5	2.5	—	—
110V	1.1	1.1	1.5	1.5	2.5	2.5
220V	0.2	0.2	0.3	0.3	1	1
Current Heat Loss (3- or 4-pole) in watts						
at I_{th}	2	3.5	2	3.5	2.7	4.7
at I_e to AC-3/400V	0.3	0.4	0.5	0.7	—	—

② Rated operation current (I_e) in amperes, at maximum permissible ambient temperature.

Table 45. *XT* Miniature Controls — Auxiliary Contacts

Description	Built-in Auxiliary XTMC	Add-on Auxiliary XTMCXF…
Interlocked opposing contacts to ZH1/457, including auxiliary contact module	Yes	Yes
Rated impulse withstand voltage, U_{imp} (VAC)	6000	6000
Overvoltage category / pollution degree	III/3	III/3
Rated insulation voltage, U_i (VAC)	690	690
Rated operational voltage, U_e (VAC)	600	600
Safe isolation to VDE 0106 Part 101 and Part 101(A) in VAC between coil and auxiliary contacts between the auxiliary contacts	 300 300	 300 300
Rated Operational Current AC-15, I_e 220/240V 380/415V 500V DC-13 (Contacts in Series) 1: 24V 2: 60V 3: 100V 3: 220V	 6A 3A 1.5A 2.5A 2.5A 1.5A 0.5A	 4A 2A 1.5A 2.5A 2.5A 1.5A 0.5A
Conventional thermal current, I_{th}	10A	10A
Control circuit reliability (at U_e = 24 VDC, U_{min} = 17 V, I_{min} = 5.4 mA)	<10-8, < one failure at 100 million operations	
Component Lifespan at U_e = 240V AC-15, operations x 10^6 DC-13 L/R = 50 mS: 2 contacts in series at I_e = 0.5A, operations x 10^6	 0.2 0.15	 0.2 0.15
Short Circuit rating without welding Short Circuit protection rating maximum fuse, 500V gG/gL Short Circuit protection rating maximum fuse, 500V fast	 6A 10A	 6A 10A
Current heat loss at conventional free air thermal current I_{th} per contact, W	0.2	0.2

Electrical Switching Operation Charts

Squirrel-cage motors
Operating characteristics
Starting: from rest
Stopping: after attaining a full running speed
Electrical Characteristics —
Make (NO): Up to 6x rated motor current
Breaking (NC): 1x rated motor current

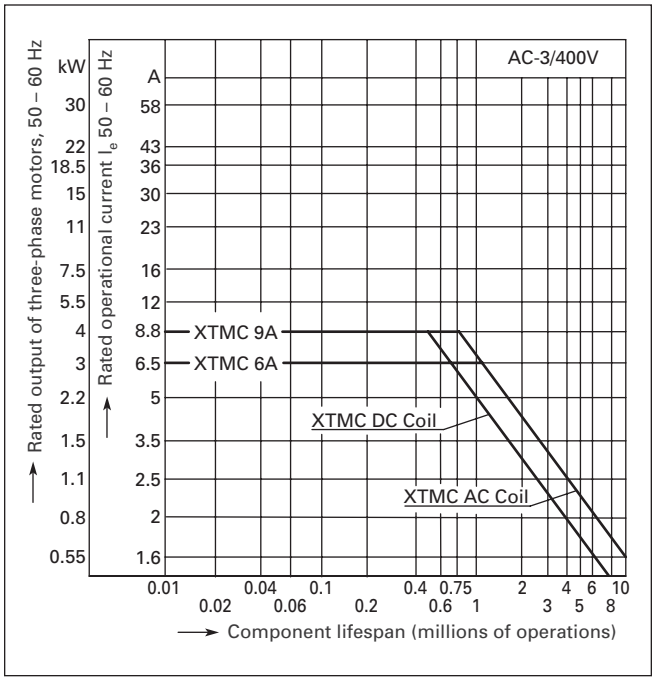


Figure 23. Normal Switching Duty — AC-3/400V

Squirrel-cage motors
Operating characteristics
Jogging, plugging, reversing
Electrical Characteristics —
Make (NO): 6x rated motor current
Breaking (NC): 6x rated motor current

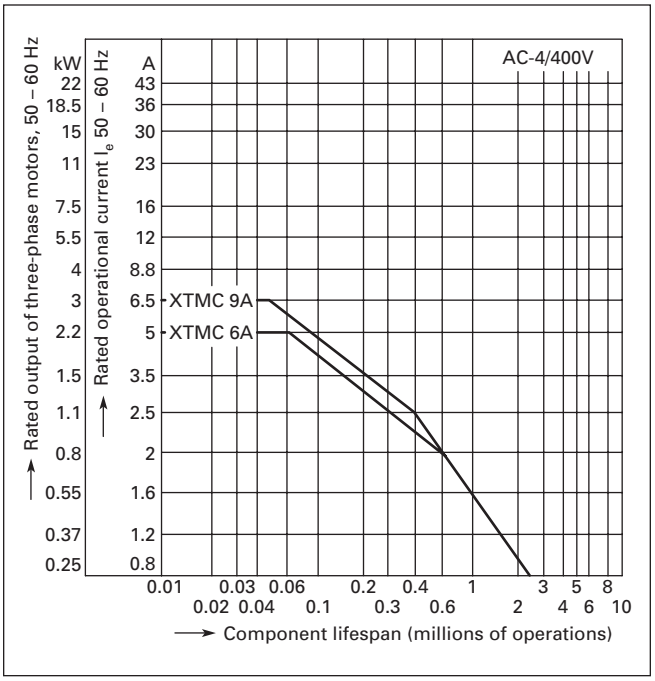


Figure 25. Extreme Switching Duty — AC-4/400V

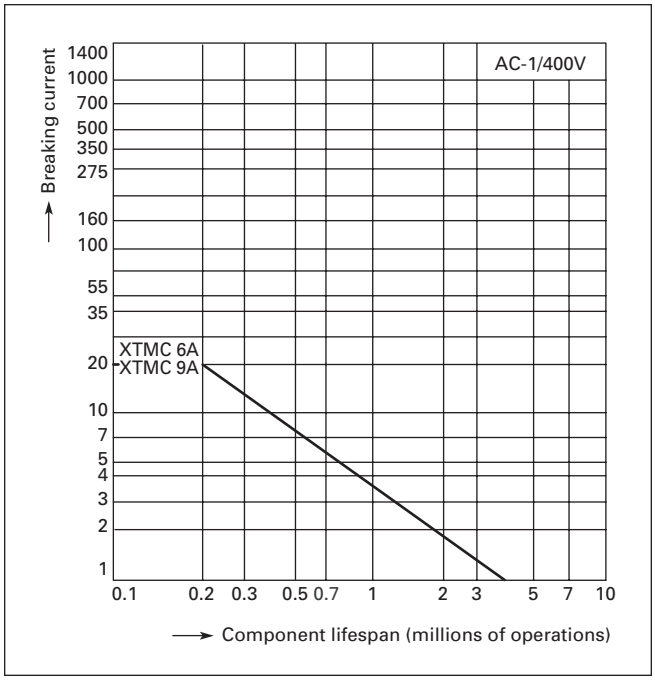


Figure 24. Switching Duty for Non-motor Loads, 3- & 4-Pole — AC-1/400V

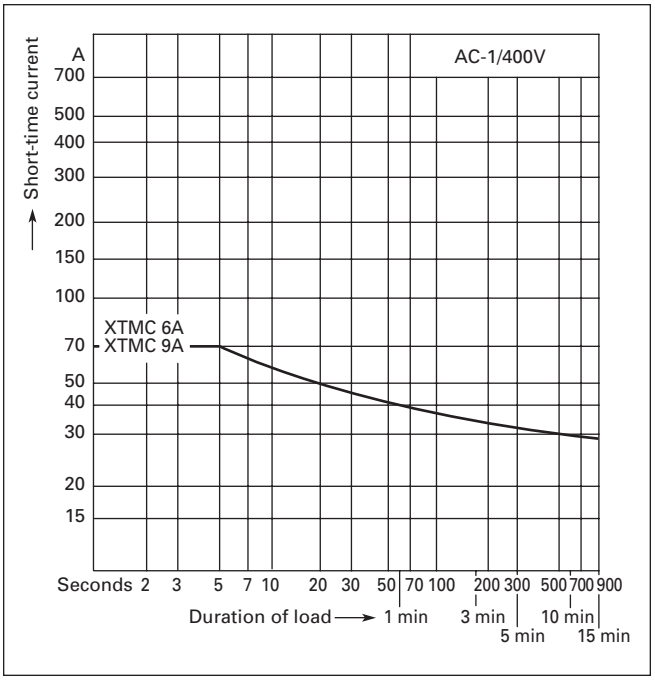
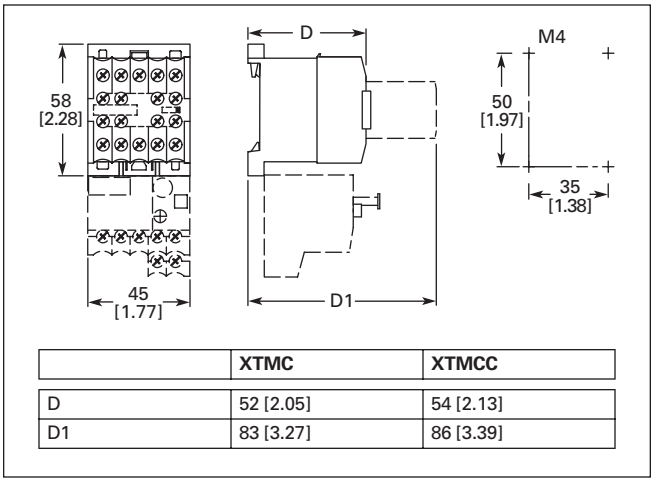


Figure 26. Short Time Loading, 3-Pole — AC-1/400V (time interval between two loading cycles: 15 minutes)

Dimensions



	XTMC	XTMCC
D	52 [2.05]	54 [2.13]
D1	83 [3.27]	86 [3.39]

Figure 27. Non-reversing Mini Contactor

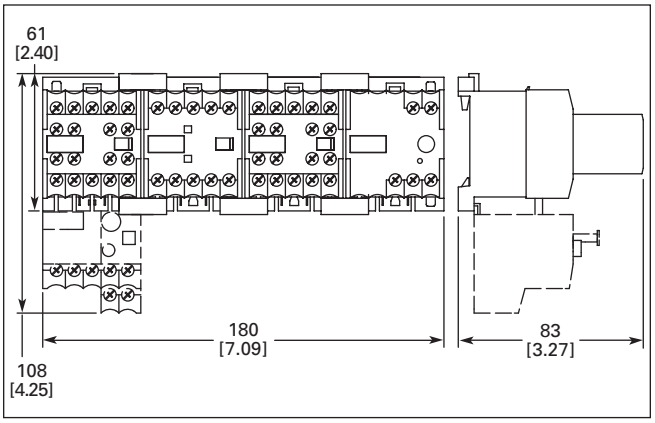


Figure 28. Star-Delta Starter Combinations

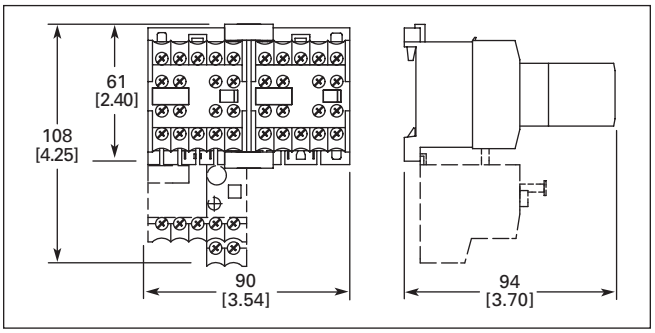


Figure 29. Reversing Mini Contactor

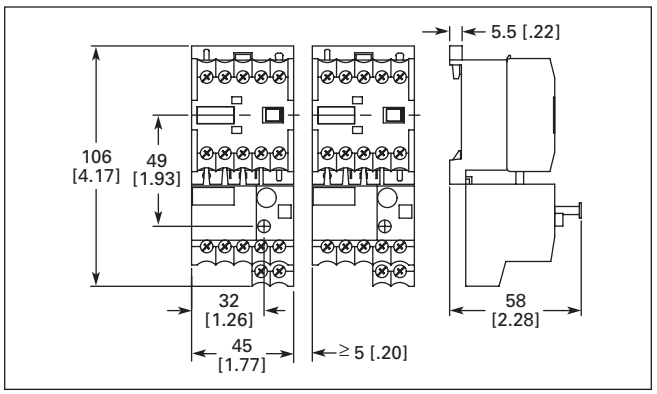


Figure 30. Non-reversing Mini Contactor with Overload Relay

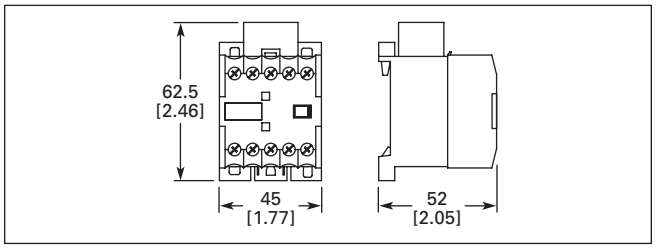


Figure 31. XTMCXRSA, XTMCXVSA Mini Suppressors — Approximate Dimensions in mm [in]

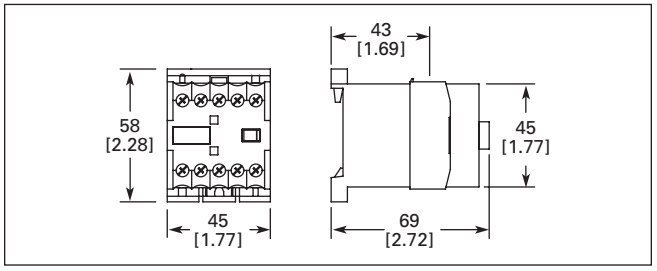


Figure 32. XTMCXTSA Mini Sealable Shroud — Approximate Dimensions in mm [in]

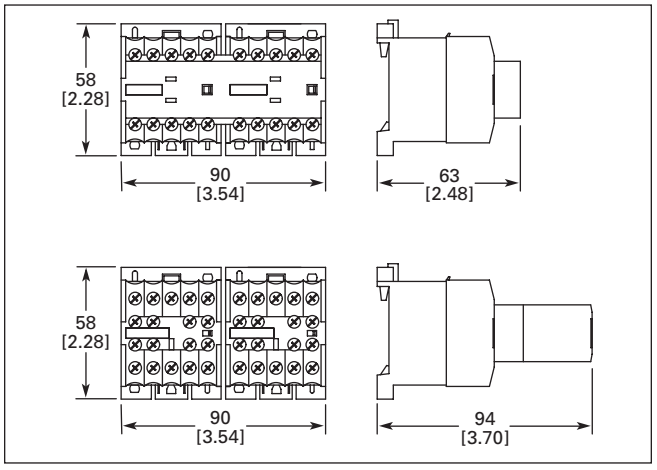


Figure 33. XTMCXML Mechanical Interlock — Approximate Dimensions in mm [in]