



## XT IEC Power Control

Product Guide

- XT Contactors & Overload relays
- XT Manual Motor Protectors
- XT Manual Motor Controllers

Global products  
mean global  
solutions



## Eaton's Electrical operations

As a market-leading manufacturer of circuit protection and control equipment, Eaton's world leading switch and fuse-gear, circuit breakers, motor control gear and wiring accessory products are distributed across the globe. Incorporating the latest technological advances, Eaton products are the result of a comprehensive ongoing development programme and comply with the industry's most rigorous quality standards. This all serves to make Eaton an industry benchmark, with unsurpassed quality and performance guaranteed. This extensive product range, together with a lengthy experience and specialist knowledge serves to make Eaton your first source solutions provider.

Find out more on [www.eatonelectrical.com](http://www.eatonelectrical.com)



## World-Class Support

**At Eaton, our goal is to deliver world-class support as well as products.**

This is why we continue to invest in our customer service capability to ensure you have easy access to the services you need, when you need them.

### Integrated service strategy

Our integrated service strategy is based upon linking key locations and personnel along with a complete range of services to provide you "one-call" customer service. A central support number allows you to access these support services by selecting the product group and service required. We then ensure it is quickly routed to a qualified support agent. The result is service that delivers you solutions ... fast.

A single point of contact for all your enquiries is just one of the benefits you can look forward to as an Eaton customer.

## Services Portfolio

### Extensive support services

Our service strategy includes an extensive selection of technical and commercial services designed to help you specify, order and receive products quickly and efficiently.

#### Price & Availability

- Prompt Product Pricing
- Up-to-date stock availability

#### Order & Shipment status

- Order Checking and Status
- Shipment details

#### Technical Support

- "Over the phone" resolution
- Technical data assistance
- Selection and cross-reference

#### After Sales Support

- Debit/Credit note resolution
- Policy Returns support

#### Project Co-Ordination

- Order tracking for Systems based orders
- On-site Project Management service
- Tailored Delivery service

#### Engineered Site Services

- Installation and Commissioning
- Maintenance and Service Solution support
- 24 hour "call out" emergency service

#### Distributor Product Training

- Individual or Group Product training forums
- Use of "In house" training facilities

## Two steps to find your product



### STEP 1

Choose main group

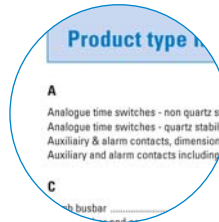


### STEP 2

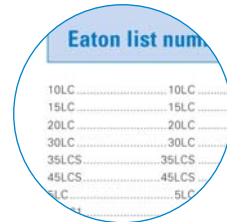
Choose list number

## Indexes

Search by product name or list number.



Product type index



Eaton list number index

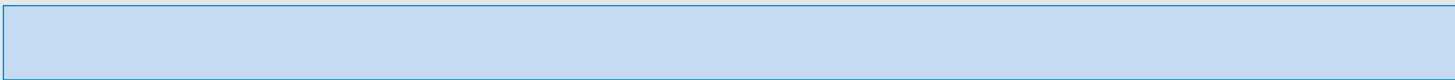
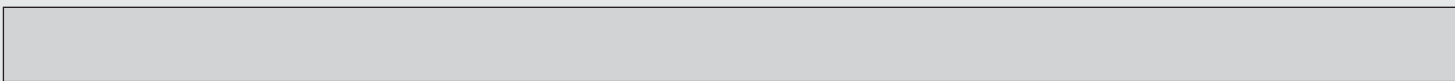
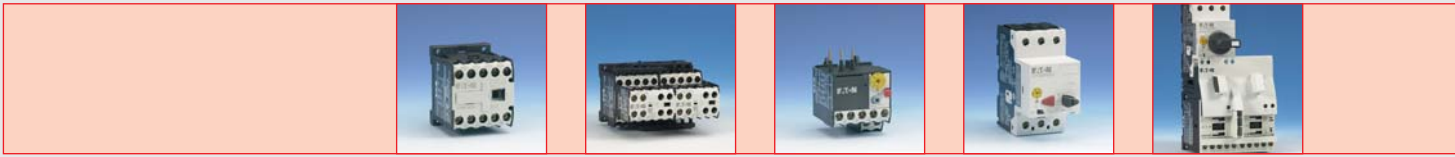
## Legend

Function of coloured text bars:

**Products**

Accessories

Technical data, drawings & specifications



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This chapter describes general characteristics of Eaton's technologically advanced range of Relays and Timers, Miniature Controls, Contactors, Overload Relays, Starters Manual Motor Protectors and Manual Motor Controllers.

Because XT meets IEC, UL, CSA, and CCC standards, it is the perfect product solution for applications all over the world.

## The feature packed line of Relays and Timers

Eaton's new line of XT Relays and Timers includes miniature and standard frame control relays and auxiliary contacts, miniature electronic on-delay and multi-function timers and an electronic star-delta timer for use in star-delta combinations.



### Technical characteristics

- For use with Miniature and Standard frame size contactors and starters
- Control Relays
  - AC Control from 12V to 550V 50 Hz, 600V 60 Hz
  - DC Control from 12V to 220V
- On-Delay and Multi-Function Timers
- 24 – 240V AC/DC Control
- Available with screw or spring cage terminals
- 4-Pole Configurations
- IP20 finger and back-of-hand proof
- Large ambient temperature range – 25° to 50°C

### Standards

- IEC EN 60947
- CE Marked
- UL
- CSA
- CCC (pending)
- ATEX (pending)

## The Feature Packed line of Miniature Controls

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



### Technical characteristics

#### Miniature 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

#### Miniature Overload Relays — Bimetallic Type XTOM

- Phase failure sensitivity
- Direct mount to XTMC and XTMF Miniature Contactors
- Trip Class 10
- 11 settings to cover 0.1 to 12A
- Ambient temperature compensated -5° to 50°C
- 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 Marked
- UL
- CSA
- ATEX (pending)
- CCC (pending)

## The Feature Packed line of Contactors, Overload Relays and Starters

Eaton's new line of XT Contactors and Starters includes non-reversing and reversing contactors, overload relays and a variety of related accessories. Because XT meets IEC, UL, CSA, CCC and ATEX standards, it is the perfect product solution for applications all over the world. The compact, space saving, and easy to install XT line of IEC contactors and starters is the efficient and effective solution for customer applications from 7A to 2000A.



### Technical Characteristics

- AC control from 12V to 600V  
50/60 Hz
- DC control from 12V to 220V
- Available with screw or spring cage terminals
- Reversing or non-reversing contactors and starters
- AC-3 contactor ratings to 1000A and AC-1 contactor ratings to 2000A
- Non-reversing starters to 650A
- Panel or DIN rail mounting to 65A
- IP20 finger and back-of-hand proof
- Large ambient temperature range,  
-25 to 50°C
- AC and DC controlled contactors in the same compact frame
- Low power consumption DC coils
- Built-in NO or NC auxiliary contacts to 32A
- Plug-in accessories for reduced installation time

### Standards and Certifications

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



## The Feature Packed line of Manual Motor Protectors

Eaton's new XT family of Manual Motor Protectors (MMPs) features a pushbutton or rotary ON/OFF manual disconnect, Class 10 adjustable bimetallic overload relay and fixed magnetic short circuit trip capability in one compact unit.

Two frame sizes are available: Frame B (45 mm) for motors with FLC ratings up to 32A and Frame D (55 mm) covers motor FLC ratings up to 63A.



### Technical Characteristics

- ON/OFF Rotary Handle with Lockout Provision
- Visible Trip Indication
- Class 10 Overload Protection
- Phase Loss Sensitivity
- Ambient Temperature Compensation to IEC/EN 60947, VDE 0660
- Fixed Short Circuit Trip — 14 times maximum setting of overload FLC dial
- Type 2 Coordination per IEC 947
- Identification Markers Standard on Starter Faceplate
- Motor Applications from 0.1A to 63A
- Built-in heater and magnetic trip elements to protect the motor
- Adjustment dial for setting motor FLC
- DIN Rail Mount
- Terminal Types Available:
  - Screw terminals
  - Screw (line) and Spring Cage (load) terminals
  - Spring Cage terminals
- Accessories include:
  - Front and Side Auxiliary Contacts
  - Trip Indicating Contacts
  - Tamperproof Cover for OLR Dial
  - Undervoltage Release
  - Shunt Trip
  - Thru-the-Door Operators
  - Enclosures
  - 3-Phase Line Side Connecting Links

### Standards and Certifications

- IEC/EN 60947
- DIN VDE 0660 Part 100, Part 101 and Part 102
- UL Listed
- UL 508 Group Motor and Type E Compliant
- CSA File LR12530, Class 3211-05

### Types (Configurations)

- Motor Protective Device with Thermal and Magnetic Trip
  - XTPB Pushbutton Actuated Manual Motor Protector up to 25A
  - XTPR Rotary Actuated Manual Motor Protector up to 63A
- For the Protection of Transformers with a high inrush current:
  - XTPT Manual Transformer Protector up to 25A
- Motor Protective Device without Overload Function:
  - XTPM Motor Protective Circuit Breaker up to 32A — not UL Approved

## The feature packed line of Eaton Manual Motor Controllers

The new XT IEC Open Non-reversing and Reversing Manual Motor Controllers combine a Manual Motor Protector with Contactors to provide a complete motor protection solution by combining motor disconnect function, thermal overload protection, magnetic short circuit protection and remote control operation in one compact, assembled unit.

These assembled Manual Motor Controllers cover motors with FLC ratings from 0.10A to 52A.



### Manual Motor Controllers XTSC and XTNR

- Manual Motor Controller for Single and Multi Motor Panels. The pre-assembled XT Manual Motor Controllers (MMC) combine a Manual Motor Protector, a Wiring Connector Link (WCL) and Contactor. MMCs can also be field installed with separate MMP, WCL and Contactor(s). An IEC magnetic contactor has been added to allow for remote operation of the motor circuit.

### Features

- ON/OFF rotary handle with lockout provision
- Visible trip indication
- Test trip function
- Motor applications from 0.11A to 50A
- Class 10 overload protection
- Built-in heater and magnetic trip elements to protect the motor
- Phase loss sensitivity
- Type 2 coordination
- Ambient compensated up to 55°C
- Control inputs located at front of starter for easy access and wiring
- Wide range of coils
- DIN Rail mount — XTSC...BB\_
- Mounting plates — XTSC...BC\_, XTSC...D motor controllers
- Adjustment dial for setting motor FLC
- Short circuit trip at 14 times the maximum setting of the FLC adjustment dial
- 1NO-1NC Auxiliary Contact as standard on Manual Motor Protector

### Standards and Certifications

- IEC Type 2 Approved per IEC 60947-4-1
- CE Marked
- UL 508 Type F Manual Motor Controller
- UL Listed File No. E218618



## Miniature and Standard Control Relays

This chapter provides product selection guidance for Eaton's XT range of relays and timers which includes miniature and standard frame control relays and auxiliary contacts, miniature electronic on-delay and multi-function timers and an electronic star-delta timer.

### Standards

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

See page 10 for coil suffix.  
 See page 10 for accessories.  
 See page 78 for dimensional drawings  
 See page 81 for the technical details.



XTRM10A22A

### Miniature Control Relays

Conventional Thermal Current $I_{th}$ (A)	Contact Configuration	Rated Operational Current $I_e$ AC-15 Amps		Circuit Symbol	Terminals	
		220/230/240V	380/400/415V		Screw Eaton list number <sup>1)</sup>	Spring Cage Eaton list number <sup>1)</sup>
10	4NO	6	3		XTRM10A40_	XTRMC10A40_
10	3NO-1NC	6	3		XTRM10A31_	XTRMC10A31_
10	2NO-2NC	6	3		XTRM10A22_	XTRMC10A22_

<sup>1)</sup> Underscore (\_) indicates coil suffix required.



XTRE10B22A

### Standard Control Relays

Conventional Thermal Current $I_{th}$ (A)	Contact Configuration	Rated Operational Current $I_e$ AC-15 Amps		Circuit Symbol	Terminals	
		220/230/240V	380/400/415V		Screw Eaton list number <sup>1)</sup>	Spring Cage Eaton list number <sup>1)</sup>
10	4NO	6	4		XTRE10B40_	XTREC10B40_
10	3NO-1NC	6	4		XTRE10B31_	XTREC10B31_
10	2NO-2NC	6	4		XTRE10B22_	XTREC10B22_

<sup>1)</sup> Underscore (\_) indicates coil suffix required.

## Coil Suffix

Coil Voltage 50Hz	60Hz	DC	Suffix Code <sup>1)</sup>
	110V	120V	
220V	240V		<b>B</b>
230V			<b>F</b>
24V	24V		<b>T</b>
415V	480V		<b>C</b>
550V	600V		<b>D</b>
	208V		<b>E</b>
190V	220V		<b>G</b>
240V	277V		<b>H</b>
380V	440V		<b>L</b>
400V			<b>N</b>
	380V		<b>P</b>
12V	12V		<b>R</b>
24V			<b>U</b>
42V	48V		<b>W</b>
48V			<b>Y</b>
		120V	<b>AD</b> <sup>2)</sup>
		220V	<b>BD</b> <sup>2)</sup>
		12V	<b>RD</b> <sup>2)</sup>
		24V	<b>TD</b> <sup>2)</sup>
		48V	<b>WD</b> <sup>2)</sup>

<sup>1)</sup> Add suffix in place of underscore ( \_ ) to Eaton List Number

<sup>2)</sup> With DC Operation: Integrated diode-resistor combination, coil consumption 2.6 kW.

## Front Mount Auxiliary Contacts for use with XTRM Miniature Control Relays



XTMCFAC02

Conventional Free Air Thermal current, $I_{th} = I_e$ , AC-1 in Amps	Poles	Contact Configuration	Contact Symbol	QPC	Terminals	
					Screw Eaton list number	Spring Cage Eaton list number
10	2	2NC		5	XTMCFAC02	—
10	2	1NO-1NC		5	XTMCFAC11	XTMCFAC11
10	2	2NO-0NC		5	XTMCFAC20	—
10	2	1NO-1NC		5	XTMCFAC11 <sup>1)</sup>	—
10	4	4NC		5	XTMCFAC04	XTMCFAC04
10	4	1NO-3NC		5	XTMCFAC13	XTMCFAC13
10	4	2NO-2NC		5	XTMCFAC22	XTMCFAC22
10	4	3NO-1NC		5	XTMCFAC31	XTMCFAC31
10	4	4NO-0NC		5	XTMCFAC40	XTMCFAC40
10	4	2NO-2NC		5	XTMCFAC22 <sup>1)</sup>	XTMCFAC22 <sup>1)</sup>

<sup>1)</sup> 1 early-make contact, 1 late-break contact.

## Front Mount Auxiliary Contacts for use with XTRE Control Relays



XTCEXFAC02

Conventional Free Air Thermal Current $I_{th} = I_e$ , AC-1 in Amps	Poles	Contact Configuration	Circuit Symbol	QPC	Terminals	Spring Cage
					Screw Eaton list Number	Eaton list number
16	2	2NO		5	XTCEXFAC20	XTCEXFACC20
16	2	1NO-1NC		5	XTCEXFAC11	XTCEXFACC11
16	2	2NC		5	XTCEXFAC02	XTCEXFACC02
16	2	1NO-1NC		5	XTCEXFALC11 <sup>1)</sup>	XTCEXFALCC11 <sup>1)</sup>
16	4	4NO		5	XTCEXFAC40	XTCEXFACC40
16	4	3NO-1NC		5	XTCEXFAC31	XTCEXFACC31
16	4	2NO-2NC		5	XTCEXFAC22	XTCEXFACC22
16	4	1NO-3NC		5	XTCEXFAC13	XTCEXFACC13
16	4	4NC		5	XTCEXFAC04	XTCEXFACC04
16	4	2NO-2NC		5	XTCEXFCLC22 <sup>1)</sup>	XTCEXFCLCC22 <sup>1)</sup>

<sup>1)</sup> 1 early-make contact, 1 late-break contact.

## Electronic Timer Modules

- Front (Top) mounted timer modules for use with XTRE10B\_ control relays. Cannot be combined with top mount auxiliary contacts, XTCEXF\_C\_

Voltage	Timing Range	For use with	QPC	Eaton list number
<b>On-Delayed</b>				
24V AC/DC	0.05 s - 1s	XTRE10B_	1	XTCEXTEEC11T
100 - 130V AC	0.5s - 10s			XTCEXTEEC11T
200 - 240V AC	5s - 100s			XTCEXTEEC11T
<b>Off-Delayed</b>				
24V AC/DC	0.05 s - 1s	XTRE10B_	1	XTCEXTED1C11T
100 - 130V AC				XTCEXTED1C11A
200 - 240V AC				XTCEXTED1C11B
24V AC/DC	0.5s - 10s	XTRE10B_	1	XTCEXTED10C11T
100 - 130V AC				XTCEXTED10C11A
200 - 240V AC				XTCEXTED10C11B
24V AC/DC	5s - 100s	XTRE10B_	1	XTCEXTED100C11T
100 - 130V AC				XTCEXTED100C11A
200 - 240V AC				XTCEXTED100C11B
<b>Star-Delta</b>				
24V AC/DC	1s - 30s	XTRE10B_	1	XTCEXTEYC20T
100 - 130V AC				XTCEXTEYC20A
200 - 240V AC				XTCEXTEYC20B
<b>Sealable Shroud</b>				
	Transparent sealable shroud used to protect electronic timer modules from unwanted access.	XTCEXTEE XTCEXTED XTCEXTEY	1	XTCEXTESHRD



XTMT6A30S11B

### Miniature Electronic On-Delay Timers

- Fixed on Delay

Actuating Voltage	Conventional Thermal Current $I_e$ (A)	Rated Operational Current $I_e$ AC-11 Amps		Time Range Selection	Selectable Function	Circuit Symbol	Eaton list number
		220/230/240V	380/400/440V				
24-240V 50/60Hz 24-240V DC	6	3	3	1.5 – 30 sec .05 – 1 sec 0.15 – 3 sec 0.5 – 10 sec 3 – 60 sec	Fixed, On-delay		<b>XTMT6A30S11B</b>
24-240V 50/60Hz 24-240V DC	6	3	6	0.15 – 3 min 0.5 – 10 min 3 – 60 min 0.15 – 3 h 0.5 – 10 h 3 – 6 h	Fixed, On-delay		<b>XTMT6A60H11B</b>



XTMT6A60H70B

### Miniature Electronic Multi-Function Timers with Connection for Remote Potentiometer

- Adjustable:
- On-delayed
- Fleeting contact on energization
- Flashing;
- Pulse generating
- ON-OFF

Actuating Voltage	Conventional Thermal Current $I_e$ (A)	Rated Operational Current $I_e$ AC-11 Amps		Time Range Selection	Selectable Function	Circuit Symbol	Eaton list number
		220/230/240V	380/400/440V				
24-240V 50/60Hz 24-240V DC	6	3	3	.05 – 1 sec 0.15 – 3 sec 0.5 – 10 sec 3 – 60 sec 0.15 – 3 min 0.5 – 10 min 3 – 60 min 0.15 – 3 h 0.5 – 10 h 3 – 60 h	Adjustable: On-delayed; Fleeting contact on energization; Flashing; Pulse generating; ON-OFF		<b>XTMT6A60H70B</b>



XTTR6A60S51B

### Electronic Star-Delta

- Fixed Star-Delta

Actuating Voltage	Conventional Thermal Current $I_e$ (A)	Rated Operational Current $I_e$ AC-11 Amps		Time Range Selection	Selectable Function	Circuit Symbol	Eaton list number
		230V	400V				
24-240V 50/60Hz 24-240V DC	6	3	3	3 – 60 sec	Fixed, Star-Delta		<b>XTTR6A60S51B</b>



## Miniature Contactors and Overload Relays

This chapter provides product selection guidance for Eaton's XT range of Miniature Contactors and Overload relays which are best suited to applications in light duty loads such as hoisting, packaging machinery, material handling, heating, lighting and automation systems.

### Standards

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

- ➔ See page 14 for coil suffix.
- See page 15 for accessories.
- See page 84 for dimensional drawings.
- See page 87 for technical details.



XTMC9A01A

### Miniature Contactors

Operational Current AC-3 Amp Rating 380/400V	Conventional Free Air Thermal Current AC-1 at 50°C	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60Hz				No. of Power Poles	Auxiliary Contacts	Circuit Symbol	Terminals	
		220 – 240V	380 – 400V	550V	660/ 690V				Screw Eaton list number <sup>1)</sup>	Spring Cage Eaton list number <sup>1)</sup>
6.6	20	1.5	3	3	3	1NO		XTMC6A10_	XTMCC6A1_	
6.6	20	1.5	3	3	3	1NC		XTMC6A01_	XTMCC6A0_	
8.8	20	2.2	4	4	3	1NO		XTMC9A10_	XTMCC9A1_	
8.8	20	2.2	4	4	3	1NC		XTMC9A01_	XTMCC9A0_	
8.8	20	2.2	4	4	4	—		XTMF9A00_	—	

<sup>1)</sup> Underscore ( \_ ) indicates Coil Suffix required.



XTMR9A21

### Miniature Contactors Reversing

Operational Current AC-3 Amp Rating 380/400V	Conventional Free Air Thermal Current AC-1 at 50°C	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz				Spare Auxiliary K1M Forward Contactor	Contacts K2M Reversing Contactor	Eaton list number <sup>1)2)</sup>
		220/230/240V	380/400/440V	500V	660/690V			
6.6	20	1.5	3	3	3		XTMR6A21_	
8.8	20	2.2	4	4	4		XTMR9A21_	

<sup>1)</sup> Underscore ( \_ ) indicates Coil Suffix required.

<sup>2)</sup> The factory installed reversing miniature contactor includes (2) XTMC...10\_ Contactors, (2) XTMCXFD11 1NO1NC Front Mount Auxiliary Contacts (1) XTMCXRL Reversing Link Kit and (1) XTMCXML Mechanical Interlock.



MBL216

## Miniature Contactors Star-Delta

- Operating Frequency: 30 Starts/hour
- 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.

Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz			Max. Changeover Time (sec.)	Spare Auxiliary Contacts K1M	Component Description	Eaton list number <sup>1)</sup>
220/230/240V	380/400/440V	500V				
4	5.5	5.5	30		K1M Main Contactor	<b>XTMC9A10_</b>
					K1M Auxiliary Contact	<b>XTMCXFC22</b>
					K5M Delta Contactor	<b>XTMC9A01_</b>
					K3M Star Contactor	<b>XTMC9A10_</b>
					K3M Auxiliary Contact	<b>XTMCXFC02</b>
					K1T Timing Relay	<b>XTTR6A60S51B</b>

<sup>1)</sup> Underscore (\_) indicates coil suffix required. See Table below.

## Coil Suffix

Coil Voltage 50Hz	60Hz	DC	Suffix Code <sup>1)</sup>
			110V
220V	240V		<b>B</b>
230V			<b>F</b>
24V	24V		<b>T</b>
415V	480V		<b>C</b>
550V	600V		<b>D</b>
	208V		<b>E</b>
190V	220V		<b>G</b>
240V	277V		<b>H</b>
380V	440V		<b>L</b>
400V			<b>N</b>
	380V		<b>P</b>
12V	12V		<b>R</b>
24V			<b>U</b>
42V	48V		<b>W</b>
48V			<b>Y</b>
		120V	<b>AD</b> <sup>2)</sup>
		220V	<b>BD</b> <sup>2)</sup>
		12V	<b>RD</b> <sup>2)</sup>
		24V	<b>TD</b> <sup>2)</sup>
		48V	<b>WD</b> <sup>2)</sup>

<sup>1)</sup> Add suffix in place of underscore (\_) to Eaton List Number.

<sup>2)</sup> With DC Operation: Integrated diode-resistor combination, coil consumption 2.6 kW.



## Front Mount Auxiliary Contacts for Use with Miniature Contactors



XTMCXFA02

- Front mounted snap-on auxiliary contacts for miniature 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.

Conventional free air thermal current, I <sub>th</sub> = I <sub>e</sub> , AC-1 in Amps	Poles	Contact Configuration	Contact Symbol	QPC.	Terminal	
					Screw Eaton list number	Spring Cage Eaton list number
10	2			5	XTMCXFC02	—
10	2	1NO-1NC		5	XTMCXFD11	XTMCXFD11
10	4	2NO-2NC		5	XTMCXFC22	XTMCXFC22
10	2	2NC		5	XTMCXFA02	—
10	2	1NO-1NC		5	XTMCXFA11	XTMCXFA11
10	2	2NO-0NC		5	XTMCXFA20	—
10	2	1NO-1NC		5	XTMCXFAL11 <sup>1)</sup>	—
10	4	4NC		5	XTMCXFA04	XTMCXFA04
10	4	1NO-3NC		5	XTMCXFA13	XTMCXFA13
10	4	2NO-2NC		5	XTMCXFA22	XTMCXFA22
10	4	3NO-1NC		5	XTMCXFA31	XTMCXFA31
10	4	4NO		5	XTMCXFA40	XTMCXFA40
10	4	2NO-2NC		5	XTMCXFAL22 <sup>1)</sup>	XTMCXFAL22 <sup>1)</sup>

<sup>1)</sup> 1 early make, 1 late break.

### RC Suppressor

- For AC operated contactors, 50/60 Hz. Note drop-out delay. See page 87.



XTMCXRSB

Voltage	For Use With —	Circuit Symbol	QPC.	Eaton list number
24 – 48	XTMC6A..., XTMC9A...		10	<b>XTMCXRSW</b>
48 – 130	XTMC6A..., XTMC9A...		10	<b>XTMCXRSA</b>
110 – 250	XTMC6A..., XTMC9A...		10	<b>XTMCXRSB</b>
24 – 48	XTMCC6A..., XTMCC9A...		10	<b>XTMCXRSCW</b>
48 – 130	XTMCC6A..., XTMCC9A...		10	<b>XTMCXRSCA</b>
110 – 250	XTMCC6A..., XTMCC9A...		10	<b>XTMCXRSCB</b>

### Varistor Suppressor

- For AC operated contactors, 50/60 Hz. DC operated contactors have integrated varistor suppressors.

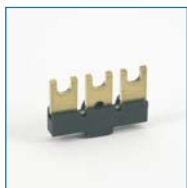


XTMCXVSB

Voltage	For Use With —	Circuit Symbol	QPC.	Eaton list number
24 – 48	XTMC6A..., XTMC9A...		10	<b>XTMCXVSW</b>
48 – 130	XTMC6A..., XTMC9A...		10	<b>XTMCXVSA</b>
110 – 250	XTMC6A..., XTMC9A...		10	<b>XTMCXVSB</b>
380 – 415	XTMC6A..., XTMC9A...		10	<b>XTMCXVSN</b>
24 – 48	XTMCC6A..., XTMCC9A...		10	<b>XTMCXVSCW</b>
48 – 130	XTMCC6A..., XTMCC9A...		10	<b>XTMCXVSCA</b>
110 – 250	XTMCC6A..., XTMCC9A...	10	<b>XTMCXVSCB</b>	

### Star Delta Bridge

- Protected against direct contact in accordance with IEC 536



XTMCXSDB

Description	Circuit Symbol	QPC.	Eaton list number
Star Delta Bridge		20	<b>XTMCXSDB</b>

### Star Delta Link Kit

- 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.



XTMCXSDL

Description	QPC.	Eaton list number
Main current wiring for star-delta combinations. Includes the Star-Delta Bridge.	1	<b>XTMCXSDL</b>

### Paralleling Link Set for Main Contacts

- Protected against direct contact in accordance with IEC 536.
- 4th pole can be broken off: 4-pole: Ith = 60A; 3-pole: Ith = 50A
- AC-1 current carrying capacity of the open contactor increases by a factor of 2.5.



XTMCXPLK

Description	Circuit Symbol	QPC.	Eaton list number
Paralleling Link Set for main Contacts		5	XTMCXPLK

### Reversing Link Kit

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



XTMCXRL

Description	QPC.	Eaton list number
Main current wiring for reversing contactors and starters.	1	XTMCXRL

### Mechanical Interlock

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



XTMCXML

Description	QPC.	Eaton list number
Mechanical Interlock	5	XTMCXML

### Connector

- 0 mm distance between contactors.



XTMCXCN

Description	QPC.	Eaton list number
For mechanically arranging contactors and timing relays in combinations.	50	XTMCXCN

### IP40 Sealable Transparent Shroud



XTMCXSHROUD

Description	QPC.	Eaton list number
IP40 Sealable Transparent Shroud, snap fitting on miniature contactor.	1	XTMCXSHROUD



XTOM012AC1

## Miniature Overload Relays

- See page 91 for Tripping Characteristics.
- When fitted directly to the contactor, a clearance of at least 5 mm is required between the overload relays.

Overload Release I <sub>r</sub>	Trip Class	Contact Configuration	Circuit Symbol	Short Circuit Protection (A)		Circuit Breaker	Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL		
0.1 – 0.16A	10A	1NO-1NC		20	0.5	15	<b>XTOMP16AC1</b>
0.16 – 0.24A				20	1	15	<b>XTOMP24AC1</b>
0.24 – 0.4A				20	2	15	<b>XTOMP40AC1</b>
0.4 – 0.6A				20	2	15	<b>XTOMP60AC1</b>
0.6 – 1A	10A	1NO-1NC		20	4	15	<b>XTOM001AC1</b>
1 – 1.6A				20	6	15	<b>XTOM1P6AC1</b>
1.6 – 2.4A				20	6	15	<b>XTOM2P4AC1</b>
2.4 – 4A	10A	1NO-1NC		20	10	15	<b>XTOM004AC1</b>
4 – 6A				20	10	15	<b>XTOM006AC1</b>
6 – 9A				20	10	15	<b>XTOM009AC1</b>
9 – 12A				—	—	—	<b>XTOM012AC1</b>



This chapter provides product selection guidance for Eaton's XT range of Contactors, Overload relays and accessories which includes non-reversing and reversing contactors, frame sizes B through R, 20A through 2000A AC-1 respectively, Direct mount, separate mount and Current transformer operated overload relays.

### Standards

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

See page 25 for coil suffix.  
 See page 26 for accessories.  
 See page 35 for overload relays.  
 See page 92 for dimensions.  
 See page 106 for the technical details.  
 See page 160 for Type 2 Co-ordination.



XTCE007810B

### 3 - Pole Contactors, Frame B, (7 - 15.5A) 4kW - 8kW (415V)

$I_e$ (A)		Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Eaton <sup>1)2)3)</sup> list number
AC-3	AC-1	220/ 230V	380/ 400V	415V	660/ 690V	1000V		
7	20	2.2	3	4	3.5	—	1NO	XTCE007B10_
7	20	2.2	3	4	3.5	—	1NC	XTCE007B01_
9	20	2.5	4	5.5	4.5	—	1NO	XTCE009B10_
9	20	2.5	4	5.5	4.5	—	1NC	XTCE009B01_
12	20	3.5	5.5	7	6.5	—	1NO	XTCE012B10_
12	20	3.5	5.5	7	6.5	—	1NC	XTCE012B01_
15.5	20	4	7.5	8	7	—	1NO	XTCE015B10_
15.5	20	4	7.5	8	7	—	1NC	XTCE015B01_

- <sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.
- <sup>2)</sup> 7 – 150A DC operated contactors have an integrated suppressor.
- <sup>3)</sup> For Spring Cage Terminals, insert **C** after the fourth digit of the Eaton list number. Example: XTCE**C**007B10A. For 7 – 15A XTCEC Contactors, the power, auxiliary and coil terminals are spring cage.



XTCE018C10B

### 3 - Pole Contactors Frame C, (18 - 32A) 10kW - 18kW (415V)

$I_e$ (A)		Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Terminals <sup>1)2)3)</sup> Screw
AC-3	AC-1	220/ 230V	380/ 400V	415V	660/ 690V	1000V	Eaton list number	
18	35	5	7.5	10	11	—	1NO	XTCE018C10_
18	35	5	7.5	10	11	—	1NC	XTCE018C01_
25	40	7.5	11	14.5	14	—	1NO	XTCE025C10_
25	40	7.5	11	14.5	14	—	1NC	XTCE025C01_
32	40	10	15	18	17	—	1NO	XTCE032C10_
32	40	10	15	18	17	—	1NC	XTCE032C01_

- <sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.
- <sup>2)</sup> 7 – 150A DC operated contactors have an integrated suppressor.
- <sup>3)</sup> For Spring Cage Terminals, insert **C** after the fourth digit of the Eaton list number. Example: XTCE**C**007B10A. For 18 – 32A XTCEC Contactors, the auxiliary and coil terminals are spring cage.



XTCE040D00B

**3 - Pole Contactors Frame D, (40 - 65A) 24kW - 39kW (415V)**

I <sub>e</sub> (A)	AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Eaton <sup>1)2)3)</sup> list number
			220/ 230V	380/ 400V	415V	660/ 690V	1000V		
40	50	12.5	18.5	24	23	—	—	<b>XTCE040D00_</b>	
50	65	15.5	22	30	30	—	—	<b>XTCE050D00_</b>	
65	80	20	30	39	35	—	—	<b>XTCE065D00_</b>	

- <sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.
- <sup>2)</sup> 7 – 150A DC operated contactors have an integrated suppressor.
- <sup>3)</sup> For Spring Cage Terminals, insert **C** after the fourth digit of the Eaton list number. Example: XTCE**C**007B10A. For 40 – 150A XTCEC Contactors, the coil terminals only are spring cage.



XTCE080F00B

**3 - Pole Contactors Frame F, (80 - 95A) 48kW - 57kW (415V)**

I <sub>e</sub> (A)	AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Eaton <sup>1)2)3)</sup> list number
			220/ 230V	380/ 400V	415V	660/ 690V	1000V		
80	90	25	37	48	63	45	—	<b>XTCE080F00_</b>	
95	110	30	45	57	75	55	—	<b>XTCE095F00_</b>	

- <sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.
- <sup>2)</sup> 7 – 150A DC operated contactors have an integrated suppressor.
- <sup>3)</sup> For Spring Cage Terminals, insert **C** after the fourth digit of the Eaton list number. Example: XTCE**C**007B10A. For 40 – 150A XTCEC Contactors, the coil terminals only are spring cage.



XTCE115G00B

**3 - Pole Contactors Frame G, (115 - 150A) 70kW - 91kW (415V)**

I <sub>e</sub> (A)	AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Eaton list <sup>1)2)3)</sup> number
			220/ 230V	380/ 400V	415V	660/ 690V	1000V		
115	130	37	55	70	90	66	—	<b>XTCE115G00_</b>	
150	160	48	75	91	96	80	—	<b>XTCE150G00_</b>	

- <sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.
- <sup>2)</sup> 7 – 150A DC operated contactors have an integrated suppressor.
- <sup>3)</sup> For Spring Cage Terminals, insert **C** after the fourth digit of the Eaton list number. Example: XTCE**C**007B10A. For 40 – 150A XTCEC Contactors, the coil terminals only are spring cage.



XTCE185L22A

**3 - Pole Contactors Frame L, (185 - 250A) 110kW - 148kW (415V)**

I <sub>e</sub> (A)	AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Eaton <sup>1)2)3)</sup> list number
			220/ 230V	380/ 400V	415V	660/ 690V <sup>4)</sup>	1000V <sup>4)</sup>		
185	275	55	90	110	175	108	2NO-2NC	<b>XTCE185L22_</b>	
225	315	70	110	132	215	108	2NO-2NC	<b>XTCE225L22_</b>	
250	350	75	132	148	240	108	2NO-2NC	<b>XTCE250L22_</b>	

- <sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.
- <sup>2)</sup> 185 – 2000A AC and DC contactors have an integrated suppressor.
- <sup>3)</sup> For Spring Cage Terminals, insert **C** after the fourth digit of the Eaton list number. Example: XTCE**C**007B10A. 185 – 2000A Contactors are available with screw terminals only.
- <sup>4)</sup> For 185 – 2000A Contactors at 660/690V or 1000V: Do not reverse directly.



XTCE300M22A

### 3 - Pole Contactors Frame M, (300 - 500A) 180kW - 300kW (415V)

I <sub>e</sub> (A)	AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Eaton <sup>1)2)</sup> list number
			220/ 230V	380/ 400V	415V	660/ 690V <sup>1)</sup>	1000V <sup>1)</sup>		
300	400	90	160	180	286	132	2NO-2NC	<b>XTCE300M22_</b>	
400	500	125	200	240	344	132	2NO-2NC	<b>XTCE400M22_</b>	
500	700	155	250	300	344	132	2NO-2NC	<b>XTCE500M22_</b>	

<sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.

<sup>2)</sup> For 185 – 2000A Contactors at 660/690V or 1000V: Do not reverse directly.



XTCE580N22B

### 3 - Pole Contactors Frame N, (580 - 1000A) 348kW - 610kW 415V)

I <sub>e</sub> (A)	AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Eaton <sup>1)2)3)</sup> list number —
			220/ 230V	380/ 400V	415V	660/ 690V <sup>4)</sup>	1000V <sup>4)</sup>		
580	800	185	315	348	560	600	2NO-2NC	<b>XTCE580N22_</b>	
650	850	205	355	390	630	600	2NO-2NC	<b>XTCE650N22_</b>	
750	900	240	400	455	720	800	2NO-2NC	<b>XTCE750N22_</b>	
820	1000	260	450	500	750	800	2NO-2NC	<b>XTCE820N22_</b>	
1000	1000	315	560	610	1000	1000	2NO-2NC	<b>XTCE10N22_</b>	

<sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.

<sup>2)</sup> 185 – 2000A AC and DC contactors have an integrated suppressor.

<sup>3)</sup> When operating the 580 – 2000A XTCE contactors with frequency inverters, the suppressor on the load side must be removed. The load side suppressor must also be removed when performing a high-voltage test.

<sup>4)</sup> For 185 – 2000A Contactors at 660/690V or 1000V: Do not reverse directly.



XTCEC14P22B

### 3 - Pole Contactors Frame P, (1400A AC1)

I <sub>e</sub> (A)	AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Eaton <sup>1)2)</sup> list number
			220/ 230V	380/ 400V	415V	660/ 690V <sup>4)</sup>	1000V <sup>4)</sup>		
—	—	1400 <sup>3)</sup>	—	—	—	—	—	2NO-2NC	<b>XTCEC14P22_</b>

<sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.

<sup>2)</sup> When operating the 580 – 2000A XTCE contactors with frequency inverters, the suppressor on the load side must be removed. The load side suppressor must also be removed when performing a high-voltage test.

<sup>3)</sup> AC-1 Ratings Only.

<sup>4)</sup> For 185 – 2000A Contactors at 660/690V or 1000V: Do not reverse directly.



XTCEC20R22

### 3 - Pole Contactor Frame R, (2000A AC1)

I <sub>e</sub> (A)	AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Aux. Contact	Eaton <sup>2)</sup> list number
			220/ 230V	380/ 400V	415V	660/ 690V	1000V		
—	—	2000 <sup>3)</sup>	—	—	—	—	—	2NO-2NC	<b>XTCEC20R22_</b>

<sup>1)</sup> Underscore ( \_ ) indicates coil suffix required.

<sup>2)</sup> When operating the 580 – 2000A XTCE contactors with frequency inverters, the suppressor on the load side must be removed. The load side suppressor must also be removed when performing a high-voltage test.

<sup>3)</sup> AC-1 Ratings Only.



XTCF020B00B

### 4-Pole Contactors - Frame B

$I_e$ (A) AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Contact Sequence	Eaton list number <sup>1)</sup>
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		
12	20	3.5	5.5		6.5		XTCF020B00_	

<sup>1)</sup> Underscore ( \_ ) indicates magnet coil suffix required. See Table page 25.

### Add-on 4th Pole, Frame D Contactor

$I_e$ (A) AC-3	AC-1	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Fits on Contactor	AC1 Rated 4th Pole	
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		35A  Eaton list number	75A  Eaton list number
40	50	12.5	18.5	24	23	—	XTCE040D00_	XTCEX4P35D	XTCEXP75D
50	60	15.5	22	30	30	—	XTCE050D00_	XTCEX4P35D	XTCEXP75D
65	72	20	30	39	35	—	XTCE065D00_	XTCEX4P35D	XTCEXP75D

**Note:** Up to 2 auxiliary contacts can also be fitted.





XTCR012B21

### 3 Pole Contactors, Frame B, Reversing

- The factory assembled reversing contactor for the 7 – 32A devices includes: (2) XTCE...01\_ Contactors, (2) XTCEXFAC20 2NO Seq. A Front Mount Auxiliary Contacts, (1) XTCEXRL Reversing Link Kit and (1) XTCEXML\_ Mechanical Interlock.

$I_e$ (A)	Maximum kW Ratings AC-3				Spare Auxiliary Contacts		Eaton list number <sup>1)</sup>
	AC-3	3-Phase Motors 50 – 60 Hz			K1M	K2M	
		220/ 230V	380/ 400V	415V	660/ 690V		
7	2.2	3	4	3.5	$\frac{163}{64}$	$\frac{163}{64}$	XTCR007B21_
9	2.5	4	5.5	4.5	$\frac{163}{64}$	$\frac{163}{64}$	XTCR009B21_
12	3.5	5.5	7	6.5	$\frac{163}{64}$	$\frac{163}{64}$	XTCR012B21_

<sup>1)</sup>Underscore ( \_ ) indicates coil suffix required.



XTCR032C21

### 3 Pole Contactors, Frame C, Reversing

- The factory assembled reversing contactor for the 7 – 32A devices includes: (2) XTCE...01\_ Contactors, (2) XTCEXFAC20 2NO Seq. A Front Mount Auxiliary Contacts, (1) XTCEXRL Reversing Link Kit and (1) XTCEXML\_ Mechanical Interlock.

$I_e$ (A)	Maximum kW Ratings AC-3				Spare Auxiliary Contacts		Eaton list number <sup>1)</sup>
	AC-3	3-Phase Motors 50 – 60 Hz			K1M	K2M	
		220/ 230V	380/ 400V	415V	660/ 690V		
18	5	7.5	8	11	$\frac{163}{64}$	$\frac{163}{64}$	XTCR018C21_
25	7.5	11	14.5	14	$\frac{163}{64}$	$\frac{163}{64}$	XTCR025C21_
32	10	15	18	17	$\frac{163}{64}$	$\frac{163}{64}$	XTCR032C21_

<sup>1)</sup>Underscore ( \_ ) indicates coil suffix required.



XTCR065D11

### 3 Pole Contactors, Frame D, Reversing

- The factory assembled reversing contactor for the 40 – 150A devices includes: (2) XTCE...00\_ Contactors and (2) XTCEXFBG11, 1NO-1NC Seq. B Front Mount Auxiliary Contacts and (1) XTCEXML\_ Mechanical Interlock.

$I_e$ (A)	Maximum kW Ratings AC-3				Spare Auxiliary Contacts		Eaton list number <sup>1)</sup>
	AC-3	3-Phase Motors 50 – 60 Hz			K1M	K2M	
		220/ 230V	380/ 400V	415V	660/ 690V		
40	12.5	18.5	24	23			XTCR040D11_
50	15.5	22	30	30			XTCR050D11_
65	20	30	39	35			XTCR065D11_

<sup>1)</sup>Underscore ( \_ ) indicates coil suffix required.



XTCR095F11

### 3 Pole Contactors, Frame F, Reversing

- The factory assembled reversing contactor for the 40 – 150A devices includes: (2) XTCE...00\_ Contactors and (2) XTCEXFBG11 1NO-1NC Seq. B Front Mount Auxiliary Contacts and (1) XTCEXML\_Mechanical Interlock.

$I_e$ (A)	Maximum kW Ratings AC-3				Spare Auxiliary Contacts		Eaton list number <sup>1)</sup>
	AC-3	3-Phase Motors 50 – 60 Hz		415V	660/690V	K1M	
80	25	37	48	63			XTCR080F11_
95	30	45	57	75			XTCR095F11_

<sup>1)</sup>Underscore ( \_ ) indicates coil suffix required.



XTCR150G11

### 3 Pole Contactors, Frame G, Reversing

- The factory assembled reversing contactor for the 40 – 150A devices includes: (2) XTCE...00\_ Contactors and (2) XTCEXFBG11 1NO-1NC Seq. B Front Mount Auxiliary Contacts and (1) XTCEXML\_Mechanical Interlock.

$I_e$ (A)	Maximum kW Ratings AC-3				Spare Auxiliary Contacts		Eaton list number <sup>1)</sup>
	AC-3	3-Phase Motors 50 – 60 Hz		415V	660/690V	K1M	
115	37	55	70	90			XTCR115G11_
150	48	75	91	96			XTCR150G11_

<sup>1)</sup>Underscore ( \_ ) indicates coil suffix required.

## Coil Suffix

Coil Voltage 50Hz	60Hz	DC	Suffix Code
<b>Frame C – F</b>			
110V	120V		A
220V	240V		B
230V			F
24V	24V		T
415V	480V		C
550V	600V		D
	208V		E
190V	220V		G
240V	277V		H
380V	440V		L
400V			N
	380V		P
12V	12V		R
24V			U
42V	48V 60 Hz		W
48V			Y
		110 – 130V	AD <sup>1)</sup>
		200 – 240V	BD <sup>1)</sup>
		12 – 14V	RD <sup>1)</sup>
		24 – 27V	TD <sup>1)</sup>
		48 – 60V	WD <sup>1)</sup>
<b>Frame G</b>			
100 – 120V	100 – 120V		A
190 – 240V	190 – 240V		B
24V	24V		T
480 – 500V	480 – 500V		C
380 – 440V	380 – 440V		L
42 – 48V	42 – 48V		W
		24 – 27V	TD <sup>1)</sup>
		110 – 130V	AD <sup>1)</sup>
		200 – 240V	BD <sup>1)</sup>
		48 – 60V	WD <sup>1)</sup>
<b>Frame L – M</b>			
110 – 250V	110 – 250V	110 – 250V	A
250 – 500V	250 – 500V		C
48 – 110V	48 – 110V	48 – 110V	Y <sup>1)</sup>
		24 – 48V	TD <sup>1)</sup>

<sup>1)</sup> With DC operation: integrated diode resistor combination coil rating 2.6W

### Front Mount Auxiliary Contacts, Frame B - C

- Front mounted snap-on contacts for XT contactors are available with screw or spring cage terminals in a variety of contact configurations.



XTCEXFCC22

Conventional Thermal Current, I <sub>th</sub> = I <sub>e</sub> AC-1 in Amps	Free Air Poles	Contact Configuration	Circuit Symbol	QPC	Terminals	
					Screw Eaton list number	Spring Cage Eaton list number
16	2	2NO		5	XTCEXFAC20	XTCEXFACC20
16	2	1NO-1NC		5	XTCEXFAC11	XTCEXFACC11
16	2	2NC		5	XTCEXFAC02	XTCEXFACC02
16	2	1NO-1NC		5	XTCEXFALC11 <sup>1)</sup>	XTCEXFALCC11 <sup>1)</sup>
16	2	1NO-1NC		5	XTCEXFDC11 <sup>2)</sup>	XTCEXFDC11 <sup>2)</sup>
16	2	2NC		5	XTCEXFCC02 <sup>2)</sup>	XTCEXFCCC02 <sup>2)</sup>
16	4	4NO		5	XTCEXFAC40	XTCEXFACC40
16	4	3NO-1NC		5	XTCEXFAC31	XTCEXFACC31
16	4	2NO-2NC		5	XTCEXFAC22	XTCEXFACC22
16	4	1NO-3NC		5	XTCEXFAC13	XTCEXFACC13
16	4	4NC		5	XTCEXFAC04	XTCEXFACC04
16	4	1NOE-1NCL		5	XTCEXFAC22 <sup>1)</sup>	XTCEXFACC22 <sup>1)</sup>
16	4	2NO-2NC		5	XTCEXFCC22 <sup>2)</sup>	XTCEXFCCC22 <sup>2)</sup>

<sup>1)</sup> 1 early-make contact, 1 late-break contact.

<sup>2)</sup> To avoid duplicate terminal numbers in contact sequence these auxiliary contacts should be used with contactors with a built-in (normally open) contact.

### Frame B - C, - Front (Top) Mount - Tall Version<sup>1)</sup>

Conventional Thermal Current, I <sub>th</sub> = I <sub>e</sub> AC-1 in Amps	Free Air Poles	Contact Configuration	Circuit Symbol	QPC	Terminals	
					Screw Eaton list number	Spring Cage Eaton list number
16	2	2NO		5	XTCEXFATC20	
16	2	1NO-1NC		5	XTCEXFATC11	
16	2	2NC		5	XTCEXFATC02	
16	4	2NO-2NC		5	XTCEXFATC22	XTCEXFACC22

<sup>1)</sup> Front (Top) Mount Tall Version is for use with Frame B Electrical Wire Bridges and Link Kits and toolless plug combination connection kits: XTCEXRLB, XTCEXDLB, XTPAXTPCB, XTPAXTPCRB, XTPAX.

**Notes:**

- Interlocked opposing contacts, to IEC/EN 60947-5-1 Annex L (Positively driven) within the auxiliary contact modules. (not N/O (early make) and N/C (late break) contacts) and for the built-in auxiliary contacts of the XTCE007B...-XTCE032C...
- Auxiliary break contact can be used as a mirror contact to IEC/EN 60947-4-1 Annex F (not N/C (late break) contact)
- No auxiliary contacts can be fitted between 2 contactors.

### Front Mount Auxiliary Contacts, Frames D - G



XTCEXFBG22

Conventional Free Air Thermal Current, I <sub>th</sub> = I <sub>e</sub> , AC-1 in Amps	Poles	Contact Configuration	Circuit Symbol	QPC	Terminals	
					Screw Eaton list number	Spring Cage Eaton list number
16	2	2NO		5	XTCEXFBG20	—
16	2	1NO-1NC		5	XTCEXFAG11	—
16	2	1NO-1NC		5	XTCEXFBG11	—
16	2	2NC		5	XTCEXFBG02	—
16	4	4NO-0NC		5	XTCEXFBG40	XTCEXFBGC40
16	4	3NO-1NC		5	XTCEXFBG31	XTCEXFBGC31
16	4	2NO-2NC		5	XTCEXFBG22	XTCEXFBGC32
16	4	2NO-2NC		5	XTCEXFAG22	XTCEXFAGC22
16	4	1NO-3NC		5	XTCEXFBG13	XTCEXFBGC13
16	4	0NO-4NC		5	XTCEXFBG04	XTCEXFBGC04
16	4	1NO6-1NCL		5	XTCEXFBLG22 <sup>1)</sup>	XTCEXFBLGC22 <sup>1)</sup>

<sup>1)</sup> 1early-make contact, 1 late-break contact.

### Side Mount Auxiliary Contacts for Frame B - C<sup>1)</sup>

Conventional Free Air Thermal Current, I <sub>th</sub> = I <sub>e</sub> , AC-1 in Amps	Poles	Contact Configuration	Circuit Symbol	QPC	Terminals	
					Screw Eaton list number	Spring Cage Eaton list number
10	2	1NO-1NC		1	XTCEXSCC11	—

<sup>1)</sup> Can be mounted to the left side of contactor only. Cannot be used in combination with Front (Top) Mount Auxiliary contacts or mechanical interlocks

### Side Mount Auxiliary Contacts for Frame D - R, (40 - 2000A)



XTCEXSBLN11

Conventional Free Air Thermal Current, I <sub>th</sub> = I <sub>e</sub> , AC-1 in Amps	Poles	Contact Configuration	Circuit Symbol	QPC.	Terminals	
					Screw Eaton list number	Spring Cage Eaton list number
10	2	1NO-1NC		1	XTCEXSBN11	XTCEXSBN11
10	2	1NO-1NC <sup>1)</sup>		1	XTCEXSBLN11	—
10	2	1NO-1NC		1	XTCEXSCN11	XTCEXSCNC11

<sup>1)</sup> 1early-make contact, 1 late-break contact.

### RC Coil Suppressor

- Note drop-out delay.
- For AC operated contactors, 50/60 Hz. DC operated contactors have an integrated suppressor.



XTCEXRSBB

Coil Voltage	Description	Circuit Symbol	QPC	Eaton List number
24 – 48	Coil Suppressor for use with XTCE007B – XTCE015B, XTCE020B		10	<b>XTCEXRSBW</b>
48 – 130			10	<b>XTCEXRSBA</b>
110 – 240			10	<b>XTCEXRSBB</b>
240 – 500			10	<b>XTCEXRSBC</b>
24 – 48	Coil Suppressor for use with XTCE018C – XTCE032C		10	<b>XTCEXRSBW</b>
110 – 130			10	<b>XTCEXRSBA</b>
110 – 240			10	<b>XTCEXRSBB</b>
240 – 500			10	<b>XTCEXRSBC</b>
24 – 48	Coil Suppressor for use with XTCE040D – XTCE095F		10	<b>XTCEXRSBW</b>
110 – 130			10	<b>XTCEXRSBA</b>
110 – 240			10	<b>XTCEXRSBB</b>
240 – 500			10	<b>XTCEXRSBC</b>

### Varistor Coil Suppressor

- Note drop-out delay.
- For AC operated contactors, 50/60 Hz. DC operated contactors have an integrated suppressor.



XTCEXVSBA

Coil Voltage	Description	Circuit Symbol	QPC	Eaton List number
24 – 48	Coil Suppressor for use with XTCE007B – XTCE015B, XTCE020B		10	<b>XTCEXVSBW</b>
48 – 130			10	<b>XTCEXVSBA</b>
130 – 240			10	<b>XTCEXVSB</b>
240 – 500			10	<b>XTCEXVSB</b>
24 – 48	Coil Suppressor for use with XTCE018C – XTCE032C		10	<b>XTCEXVSBW</b>
48 – 130			10	<b>XTCEXVSBA</b>
130 – 240			10	<b>XTCEXVSB</b>
240 – 500			10	<b>XTCEXVSB</b>
24 – 48	Coil Suppressor for use with XTCE040D – XTCE095F		10	<b>XTCEXVSBW</b>
48 – 130			10	<b>XTCEXVSBA</b>
130 – 240			10	<b>XTCEXVSB</b>
240 – 500			10	<b>XTCEXVSB</b>

### Varistor Coil Suppressor with Integrated LED

- Note drop-out delay.
- For AC operated contactors, 50/60 Hz. DC operated contactors have an integrated suppressor.



XTCEXVSLBB

Coil Voltage	Description	Circuit Symbol	QPC	Eaton List number
24 – 48	Coil Suppressor for use with XTCE007B – XTCE015B		10	<b>XTCEXVSLBW</b>
130 – 240			10	<b>XTCEXVSLBB</b>
24 – 48	Coil Suppressor for use with XTCE018C – XTCE032C		10	<b>XTCEXVSLCW</b>
130 – 240			10	<b>XTCEXVSLCB</b>
29 – 48	Coil Suppressor for use with XTCE040D – XTCE095F		10	<b>XTCEXVSLFW</b>
130 – 240			10	<b>XTCEXVSLFB</b>

## Voltage Indicator



XTCEXVIBA

Coil Voltage	Description	QPC	Eaton list number
24 – 48	Voltage Indicator for use with XTCE007B – XTCE015B, XTCE020B	10	XTCEXVIBW
110 – 120		10	XTCEXVIBA
110 – 250		10	XTCEXVIBB
24 – 48	Voltage Indicator for use with XTCE018C – XTCE032C	10	XTCEXVICW
110 – 130		10	XTCEXVICA
130 – 250		10	XTCEXVICB
42 – 48	Voltage Indicator for use with XTCE040D – XTCE150G	10	XTCEXVIGW
50/60 Hz			
48 – 130		10	XTCEXVIGA
130 – 250		10	XTCEXVIGB

## Contactors, Frames B - G, Mechanical Coupling

- For mechanically coupling contactors in combinations. Distance between contactors is 0 mm.



XTCEXCNC

Description	QPC	Eaton list number
Mechanical Coupling for use with XTCE007B – XTCE032C	50	XTCEXCNC
Mechanical Coupling for use with XTCE040D – XTCE150G	50	XTCEXCNG

## Contactors, Frames B - N, Mechanical Interlock

- For two contactors with AC or DC operated magnet system which are horizontally mounted. For B – G Frames, mechanical lifespan is  $2.5 \times 10^6$  operations and the distance between contactors is 0 mm. For L – N frames mechanical lifespan is  $5 \times 10^6$  operations and no auxiliary contact can be mounted between the mechanical interlock and the contactor. The distance between contactors is 15 mm. XTCEXMLN consists of an interlock element and mounting plate.



XTCEXMLB

Description	QPC	Eaton list number
Mechanical Interlock for use with XTCE007B XTCE015B, XTCE020B	5	XTCEXMLB
Mechanical Interlock for use with XTCE007B – XTCE015B, XTCE020B	5	XTCEXMLB
Mechanical Interlock for use with XTCE018C – XTCE032C	1	XTCEXMLC
Mechanical Interlock for use with XTCE040D – XTCE065D	1	XTCEXMLD
Mechanical Interlock for use with XTAE080F – XTCE150G	1	XTCEXMLG
Mechanical Interlock for use with XTCE185L – XTCE500M	1	XTCEXMLM
Mechanical Interlock for use with XTCE580N – XTCEC10N	1	XTCEXMLN

## Contactor, Frame B, Interlocking Bridge



XTCEXLBB

Description	QPC	Eaton list number
Interlocking Bridge for use with XTCE007B – XTCE015B	20	XTCEXLBB

## Contactors, Frame B - C, Paralleling Bridge



XTCEXPBB

Description	QPC	Eaton list number
Paralleling Bridge for use with XTCE007B – XTCE015B	20	XTCEXPBB
Paralleling Bridge for use with XTCE018C – XTCE032C	20	XTCEXPBC

### Contactors, Frames B - L, Electrical Parallel Link

- 4th Pole can be broken off: 4-Pole: I<sub>th</sub> = 60A; 3-Pole: I<sub>th</sub> = 50A.
- AC-1 current carrying capacity of the contactor increases by a factor of 2.5. For XTCEXPLKL185, one shroud is included for protection against accidental contact
- Protected against accidental contact in accordance with IEC 536.



XTCEXPLKB

Description	QPC	Eaton list number
Electrical Parallel Link for use with XTCE007B – XTCE015B	5	<b>XTCEXPLKB</b>
Electrical Parallel Link for use with XTCE018C – XTCE032C	5	<b>XTCEXPLKC</b>
Electrical Parallel Link for use with XTCE040D – XTCE065D	1	<b>XTCEXPLKD</b>
Electrical Parallel Link for use with XTCE080F – XTCE150G	1	<b>XTCEXPLKG</b>
Electrical Parallel Link for use with XTCE185L	1	<b>XTCEXPLKL185</b>

### Contactors, Frame B, Electrical 3 Phase Commoning Link



XTCEXCLK3B

Description	QPC.	Eaton list number
Electrical 3 phase Commoning Link for use with 3 Contactors	5	<b>XTCEXCLK3B</b>
Electrical 3 phase Commoning Link for use with 4 Contactors	5	<b>XTCEXCLK4B</b>
Electrical 3 phase Commoning Link for use with 5 Contactors	5	<b>XTCEXCLK5B</b>

### Contactors, Frame B - M, Star Delta Electrical Bridge



XTCEXSDBB

Description	QPC	Eaton list number
Star Delta Electrical Bridge for use with XTCE007B – XTCE015B	20	<b>XTCEXSDBB</b>
Star Delta Electrical Bridge for use with XTCE018C – XTCE032C	20	<b>XTCEXSDBC</b>
Star Delta Electrical Bridge for use with XTCE040D – XTCE065D	10	<b>XTCEXSDBD</b>
Star Delta Electrical Bridge for use with XTCE080F – XTCE150G	1	<b>XTCEXSDBG</b>
Star Delta Electrical Bridge for use with XTCE185L – XTCE400M	1	<b>XTCEXSDB400</b>
Star Delta Electrical Bridge for use with XTCE500M	1	<b>XTCEXSDB500</b>

### Contactors, Frame B - C, Star Delta Electrical Link Kits

- Main current wiring for star-delta combinations. Includes the Star-Delta bridge.
- Star Delta Link Kits do not include mechanical interlocks, see page 29.
- The following control cables are integrated in addition to the electrical interlock: (K3M: A1 – K5M: 21), (K3M: 21 – K5M: A1), (K3M: A2 – K5M: A2).



XTCEXSDLB

Description	QPC	Eaton list number
Star Delta Electrical Link Kit for use with XTCE007B – XTCE015B	1	<b>XTCEXSDLB</b>
Star Delta Electrical Link Kit for use with XTCE018C – XTCE032C	1	<b>XTCEXSDLC</b>

### Reversing Link Kit

- Main current wiring for reversing contactors and starters.
- Reversing Link Kits do not include mechanical interlocks, see page 29.
- The following control cables are integrated in addition to the electrical interlock: (K1M: A1 – K2M: 21), (K1M: 21 – K2M: A1), (K1M: A2 – K2M: A2).



XTCEXRLC

Description	QPC	Eaton list number
Reversing Electrical Link Kit for use with XTCE007B – XTCE012B	1	<b>XTCEXRLB</b>
Reversing Electrical Link Kit for use with XTCE018C – XTCE032C	1	<b>XTCEXRLC</b>



### Contactors, Frames B - C Reversing Electrical Bridge



XTCEXRBB

Description	QPC	Eaton list number
Reversing Electrical Bridge for use with XTCE007B – XTCE105B	20	<b>XTCEXRBB</b>
Reversing Electrical Bridge for use with XTCE018C – XTCE032C	20	<b>XTCEXRBC</b>

### Contactor, Frame B, Incoming Terminal

Description	QPC	Eaton list number
Incoming Terminal for use with XTCE007B – XTCE015B	5	<b>XTCEXITB</b>

### Contactors, Frames L - M, Terminal Lug Assembly

- For connection of round, flexible and stranded flat strip conductor. With control circuit terminal.



XTCEXTLA400

Description	QPC	Eaton list number
Terminal Lug Assembly for use with XTCE185L – XTCE225L	1	<b>XTCEXTLA225</b>
Terminal Lug Assembly for use with XTCE250L – XTCE400M	1	<b>XTCEXTLA400</b>

### Contactors, Frames M - N, Set of (3) Lugs



XTCEXTL500

Description	QPC	Eaton list number
Set of 3 Lugs #4-500MCM 2-Phase Cu/Al 500A for use with XTCE500M	1	<b>XTCEXTL500</b>
Set of 3 Lugs #2-500MCM 2-Phase Cu/Al 650A for use with XTCE650N	1	<b>XTCEXTL650</b>
Set of 3 Lugs #2-500MCM 4-Phase Cu/Al 820A or use with XTCE820N	1	<b>XTCEXTL820</b>

### Contactors, Frames M - N, Terminal Flat Bar

- For connection of a flat strip conductor. Comes with control circuit terminal (Consisting of 3 flat strip conductor terminals).



XTCEXTFB650

Description	QPC	Eaton list number
Terminal Flat Bar for use with XTCE500M – XTCE650N	1	<b>XTCEXTFB650</b>
Terminal Flat Bar for use with XTCE750N – XTCE820N	1	<b>XTCEXTFB820</b>

### Contactors, Frames M - L, Terminal Shrouds

- Protection against direct contact with connection lugs when touched vertically from the front.



XTCEXTS400

Description	QPC	Eaton list number
Terminal Shroud for use with XTCE185L – XTCE400M	1	<b>XTCEXTS400</b>
Terminal Shroud for use with XTCE500M	1	<b>XTCEXTS500</b>
Terminal Shroud for use with XTCE580N – XTCE650N	1	<b>XTCEXTS650</b>
Terminal Shroud for use with XTCE750N – XTCEC10N	1	<b>XTCEXTS820</b>

### Contactors, Frames F - G, Control Wire Terminal Extension



XTCEXTCWG

Description	QPC	Eaton list number
Control Wire Terminal Extension for use with XTCE080F – XTCE150G	10	<b>XTCEXTCWG</b>

## Contactors, Frames C - N, Replacement Coils

- See page 124 for technical details.

Frame Size	Voltage			Contactor List Number Coil Suffix	Eaton list number
	50Hz	60Hz	DC		
<b>Frame C</b>	110	120		A	XTCERENCOILCA
			110 – 130	AD	XTCERENCOILCAD
			200 – 240	220	240
	BD	XTCERENCOILCBD			
	415	480		C	XTCERENCOILCC
			550	600	208
	230	240			
			190	220	440
	240	277			
			380	440	
	400				
	12	12			
			24	24	24 – 27
			24	48	48 – 60
42	48				
			48		
			<b>Frame D</b>	110	120
110 – 130	AD	XTCERENCOILDAD			
200 – 240	220	240			
				BD	XTCERENCOILDBD
415	480			C	XTCERENCOILDC
		550		600	208
230	240				
		190		220	440
240	277				
		380		440	
400					
12	12				
		24 /60		24	24 – 27
		24		48	48 – 60
42	48				
		48			
		<b>Frame F</b>		110	120
110 – 130	AD		XTCERENCOILFAD		
200 – 240	220		240		
				BD	XTCERENCOILFBD
415	480			C	XTCERENCOILFC
			550	600	208
230	240				
			190	220	440
240	277				
			380	440	
400					
12	12				
			24	24	
			24	48	48 – 60
42	48				
			48		

### Replacement Coils (Continued)

Frame Size	Voltage			Contactor List Number Coil Suffix	Eaton list number
	50Hz	60Hz	DC		
Frame G	100 – 120V	100 – 120V		<b>A</b>	<b>XTCERENCOILGA</b>
			110 – 130V	<b>AD</b>	<b>XTCERENCOILGAD</b>
	190 – 240 V	190 – 240V		<b>B</b>	<b>XTCERENCOILGB</b>
			200 – 240V	<b>BD</b>	<b>XTCERENCOILGBD</b>
	480 – 500V	480 – 500V		<b>C</b>	<b>XTCERENCOILGC</b>
	380 – 440V	380 – 440V		<b>L</b>	<b>XTCERENCOILGL</b>
	24 V	24V		<b>T</b>	<b>XTCERENCOILGT</b>
			24 – 27V	<b>TD</b>	<b>XTCERENCOILGTD</b>
	42 – 48V	42 – 48V		<b>W</b>	<b>XTCERENCOILGW</b>
		48 – 60V	<b>WD</b>	<b>XTCERENCOILGWD</b>	
Frame L <sup>1)</sup>	110 – 250V		110 – 250V	<b>A</b>	<b>XTCERENCOILLA</b>
	250 – 500V	250 – 500V		<b>C</b>	<b>XTCERENCOILLC</b>
			24 – 48V	<b>TD</b>	<b>XTCERENCOILLTD</b>
	48 – 110V	48 – 110V	48 – 110V	<b>Y</b>	<b>XTCERENCOILLY</b>
Frame M <sup>1)</sup>			110 – 250V	<b>A</b>	<b>XTCERENCOILMA</b>
	250 – 500V	250 – 500V		<b>C</b>	<b>XTCERENCOILMC</b>
			24 – 48V	<b>TD</b>	<b>XTCERENCOILMTD</b>
	48 – 110V	48 – 110V	48 – 110V	<b>Y</b>	<b>XTCERENCOILMY</b>
Frame N <sup>1)</sup>	110 – 250V	110 – 250V	110 – 250V	<b>A</b>	<b>XTCERENCOILNA</b>
	250 – 500V	250 – 500V		<b>C</b>	<b>XTCERENCOILNC</b>
	48 – 110V	48 – 110V	48 – 110V	<b>Y</b>	<b>XTCERENCOILNY</b>

<sup>1)</sup> Electronic modules including coils.

### Contactors, Frames D, L and M, Replacement Contact Kits

Description	Eaton list number
Replacement Contact Kits for use with XTAE040D – XTAE065D	<b>XTCERENCONTACTD</b>
Replacement Contact Kits for use with XTCE185L – XTCE250L	<b>XTCERENCONTACTL</b>
Replacement Contact Kits for use with XTCE300M – XTCE500M	<b>XTCERENCONTACTM</b>

### Contactors, Frames N, Replacement Vacuum Tube Assembly

Description	Eaton list number
Replacement Vacuum Tube Assembly for use with XTCE580N	<b>XTCERENVACT580</b>
Replacement Vacuum Tube Assembly for use with XTCE650N	<b>XTCERENVACT650</b>
Replacement Vacuum Tube Assembly for use with XTCE750N	<b>XTCERENVACT750</b>
Replacement Vacuum Tube Assembly for use with XTCE820N	<b>XTCERENVACT820</b>

### Contactors, Frames L - M, Replacement Arc Chambers

Description	Eaton list number
Replacement Arc Chambers for use with XTCE185L	<b>XTCERENARC185</b>
Replacement Arc Chambers for use with XTCE225L	<b>XTCERENARC225</b>
Replacement Arc Chambers for use with XTCE250L	<b>XTCERENARC250</b>
Replacement Arc Chambers for use with XTCE300M	<b>XTCERENARC300</b>
Replacement Arc Chambers for use with XTCE400M	<b>XTCERENARC400</b>
Replacement Arc Chambers for use with XTCE500M	<b>XTCERENARC500</b>



XT0B016BC1

### Overload Relay, Frame B - Direct Mount

Overload Setting $I_r$ (A)	Circuit Symbol	Contact Configuration	For use with Contactor Amp Range	Short-circuit protection (A)		Circuit Breaker	Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL		
0.1 – 16		1NO-1NC	7 – 15A	25	0.5	15	XT0BP16BC1
0.16 – 0.24		1NO-1NC	7 – 15A	25	1	15	XT0BP24BC1
0.24 – 0.4		1NO-1NC	7 – 15A	25	2	15	XT0BP40BC1
0.4 – 0.6		1NO-1NC	7 – 15A	25	4	15	XT0BP60BC1
0.6 – 1		1NO-1NC	7 – 15A	25	4	15	XT0B001BC1
1 – 1.6		1NO-1NC	7 – 15A	25	6	15	XT0B1P6BC1
1.6 – 2.4		1NO-1NC	7 – 15A	25	10	15	XT0B2P4BC1
2.4 – 4		1NO-1NC	7 – 15A	25	16	15	XT0B004BC1
4 – 6		1NO-1NC	7 – 15A	25	20	15	XT0B006BC1
6 – 10		1NO-1NC	7 – 15A	50	25	15	XT0B010BC1
9 – 12		1NO-1NC	9 – 15A	50	25	25	XT0B012BC1
12 – 16		1NO-1NC	12 – 15A	50	25	30	XT0B016BC1



XT0B032CC1

### Overload Relay, Frame C - Direct Mount

Overload Setting $I_r$ (A)	Circuit Symbol	Contact Configuration	For use with Contactor Amp Range	Short-circuit protection (A)		Circuit Breaker	Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL		
0.1 – 0.16		1NO-1NC	18 – 32A	25	0.5	25	XT0BP16CC1
0.16 – 0.24		1NO-1NC	18 – 32A	25	1	25	XT0BP24CC1
0.24 – 0.4		1NO-1NC	18 – 32A	25	2	25	XT0BP40CC1
0.4 – 0.6		1NO-1NC	18 – 32A	25	4	25	XT0BP60CC1
0.6 – 1		1NO-1NC	18 – 32A	25	4	25	XT0B001CC1
1 – 1.6		1NO-1NC	18 – 32A	25	6	25	XT0B1P6CC1
1.6 – 2.4		1NO-1NC	18 – 32A	25	10	25	XT0B2P4CC1
2.4 – 4		1NO-1NC	18 – 32A	25	16	25	XT0B004CC1
4 – 6		1NO-1NC	18 – 32A	25	20	25	XT0B006CC1
6 – 10		1NO-1NC	18 – 32A	50	25	25	XT0B010CC1
10 – 16		1NO-1NC	18 – 32A	63	35	30	XT0B016CC1
16 – 24		1NO-1NC	18 – 32A	100	35	30	XT0B024CC1
24 – 32		1NO-1NC	25 – 32A	125	63	30	XT0B032CC1



XT0B065DC1

### Overload Relay, Frame D - Direct Mount

Overload Setting $I_r$ (A)	Circuit Symbol	Contact Configuration	For use with Contactor Amp Range	Short-circuit protection (A)		Circuit Breaker	Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL		
6 – 10		1NO-1NC	40 – 65A	50	25	25	XT0B010DC1
10 – 16		1NO-1NC	40 – 65A	63	35	25	XT0B016DC1
16 – 24		1NO-1NC	40 – 65A	63	50	30	XT0B024DC1
24 – 40		1NO-1NC	40 – 65A	125	63	125	XT0B040DC1
40 – 57		1NO-1NC	50 – 65A	160	80	150	XT0B057DC1
50 – 65		1NO-1NC	65A	160	100	150	XT0B065DC1



XTOB150GC1

**Overload Relay, Frame F - G - Direct Mount**

Overload Setting $I_r$ (A)	Circuit Symbol	Contact Configuration	For use with Contactor Amp Range	Short-circuit protection (A)		Circuit Breaker	Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL		
25 – 35		1NO-1NC	80 – 150A	125	100	125	XTOB035GC1
35 – 50		1NO-1NC	80 – 150A	160	125	150	XTOB050GC1
50 – 70		1NO-1NC	80 – 150A	250	160	150	XTOB070GC1
70 – 100		1NO-1NC	80 – 150A	315	200	400	XTOB100GC1
95 – 125		1NO-1NC	80 – 150A	315	250	500	XTOB125GC1
120 – 150		1NO-1NC	80	315	250	600	XTOB150GC1



XTOB150GC1S

**Overload Relay, Frame F - G - Seperate Mount**

Overload Setting $I_r$ (A)	Circuit Symbol	Contact Configuration	For use with Contactor Amp Range	Short-circuit protection (A)		Circuit Breaker	Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL		
25 – 35		1NO-1NC	80 – 150A	125	100	125	XTOB035GC1S
35 – 50		1NO-1NC	80 – 150A	160	125	150	XTOB050GC1S
50 – 70		1NO-1NC	80 – 150A	250	160	150	XTOB070GC1S
70 – 100		1NO-1NC	80 – 150A	315	200	400	XTOB100GC1S
95 – 125		1NO-1NC	80 – 150A	315	250	500	XTOB125GC1S
120 – 150		1NO-1NC	80	315	250	600	XTOB150GC1S



XTOB250LC1

**Overload Relay, Frame L**

Overload Setting $I_r$ (A)	Circuit Symbol	Contact Configuration	For use with Contactor Amp Range	Short-circuit protection (A)		Circuit Breaker	Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL		
50 – 70		1NO-1NC	185 – 250A	250	160	150	XTOB070LC1
70 – 100		1NO-1NC	185 – 250A	315	200	400	XTOB100LC1
95 – 125		1NO-1NC	185 – 250A	315	250	500	XTOB125LC1
120 – 160		1NO-1NC	185 – 250A	400	250	600	XTOB160LC1
160 – 220		1NO-1NC	185 – 250A	400 <sup>1)</sup>	315 <sup>1)</sup>	800	XTOB220LC1
200 – 250		1NO-1NC	225 – 250A	400 <sup>1)</sup>	315 <sup>1)</sup>	600	XTOB250LC1

<sup>1)</sup> For separate mounting, short circuit Type 1 rating is 500A and short circuit Type 2 rating is 400A.



XTOT160C3S

**Overload Relay, Frame M - N Seperate Mount Current Transformer Operated<sup>1)</sup>**

- The main current parameters are defined by the main current wiring which is used.

Overload Setting $I_r$ (A)	Circuit Symbol	Contact Configuration	For use with Contactor Amp Range	Short-circuit protection (A)		Circuit Breaker	Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL		
42 – 63		1NO-1NC	300 – 500A	—	—	150	XTOT063C3S
60 – 90		1NO-1NC	300 – 500A	—	—	250	XTOT090C3S
85 – 125		1NO-1NC	300 – 500A	—	—	500	XTOT125C3S
110 – 160		1NO-1NC	300 – 500A	—	—	600	XTOT160C3S
160 – 240		1NO-1NC	300 – 500A	—	—	600	XTOT240C3S
190 – 290		1NO-1NC	300 – 500A	—	—	600	XTOT290C3S
270 – 400		1NO-1NC	300 – 500A	—	—	1000	XTOT400C3S
360 – 540		1NO-1NC	500A	—	—	600	XTOT540C3S

### Overload Relay, DIN Rail or Panel Mount Adapter, Frames C-D



XTOBXDIND

Description	QPC	Eaton list number
Adaptor for use with XTOB...CC1	5	<b>XTOBXDINC</b>
Adaptor for use with XTOB...DC1	1	<b>XTOBXDIND</b>

### Overload Relay, Terminal Shroud, Frame L, Seperate Mount



XTOBXTSL

Description	Eaton list number
Terminal Shroud for use with XTOB...LC1	<b>XTOBXTSL</b>

### Overload Relay, Terminal Shroud, Frame L, Direct Mount



XTOBXTSCL

Description	Eaton list number
Terminal Shroud for use with XTOB...LC1 to XTCE185L, XTCE225L or XTCE250L	<b>XTOBXTSCL</b>



## Starters

### DOL, DOL Reversing and Star Delta

This chapter provides product selection guidance for Eaton's XT range of Starters, which includes DOL, DOL reversing and Star-delta configurations.

#### Standards

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



See page 41 for coil suffix selection.  
See page 42 for overload relay suffix selection.  
See page 103 for dimensional drawings.  
See page 106 for the technical details.



XTAE007B10

#### Starter, DOL, Frame B

$I_e$ (A) AC-3	AC-1	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz					Auxiliary Contacts	Eaton list number <sup>1)2)</sup>
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		
7	20	2.2	3	4	3.5	—	1NO	XTAE007B10__
7	20	2.2	3	4	3.5	—	1NC	XTAE007B01__
9	20	2.5	4	5.5	4.5	—	1NO	XTAE009B10__
9	20	2.5	4	5.5	4.5	—	1NC	XTAE009B01__
12	20	3.5	5.5	7	6.5	—	1NO	XTAE012B10__
12	20	3.5	5.5	7	6.5	—	1NC	XTAE012B01__
15.5	20	4	7.5	8	7	—	1NO	XTAE015B10__
15.5	20	4	7.5	8	7	—	1NC	XTAE015B01__

<sup>1)</sup> First underscore ( ) indicates coil suffix required.

<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAE018C10

#### Starter, DOL, Frame C

$I_e$ (A) AC-3	AC-1	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz					Auxiliary Contacts	Eaton list number <sup>1)2)</sup>
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		
18	35	5	7.5	10	11	—	1NO	XTAE018C10__
18	35	5	7.5	10	11	—	1NC	XTAE018C01__
25	40	7.5	11	14.5	14	—	1NO	XTAE025C10__
25	40	7.5	11	14.5	14	—	1NC	XTAE025C01__
32	40	10	15	18	17	—	1NO	XTAE032C10__
32	40	10	15	18	17	—	1NC	XTAE032C01__

<sup>1)</sup> First underscore ( ) indicates coil suffix required.

<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAE040D00

#### Starter, DOL, Frame D

$I_e$ (A) AC-3	AC-1	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz					Auxiliary Contacts	Eaton list number <sup>1)2)</sup>
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		
40	50	12.5	18.5	24	23	—	—	XTAE040D00__
50	65	15.5	22	30	30	—	—	XTAE050D00__
65	80	20	30	39	35	—	—	XTAE065D00__

<sup>1)</sup> First underscore ( ) indicates magnet coil suffix required.

<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.





XTAE080F00

### Starter, DOL, Frame F

I <sub>e</sub> (A) AC-3	AC-1	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz					Auxiliary Contacts	Eaton list number <sup>1)2)</sup>
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		
80	90	25	37	48	63	45	—	XTAE080F00__
95	110	30	45	57	75	55	—	XTAE095F00__

- <sup>1)</sup> First underscore ( ) indicates coil suffix required.  
<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAE150G00

### Starter, DOL, Frame G

I <sub>e</sub> (A) AC-3	AC-1	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz					Auxiliary Contacts	Eaton list number <sup>1)2)</sup>
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		
115	130	37	55	70	90	66	—	XTAE115G00__
150	160	48	75	91	96	80	—	XTAE150G00__

- <sup>1)</sup> First underscore ( ) indicates coil suffix required.  
<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAE185L22

### Starter, DOL, Frame L

I <sub>e</sub> (A) AC-3	AC-1	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz					Auxiliary Contacts	Eaton list number <sup>1)2)</sup>
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		
185	275	55	90	110	175	108	2NO-2NC	XTAE185L22__
225	315	70	110	132	215	108	2NO-2NC	XTAE225L22__
250	350	75	132	148	240	108	2NO-2NC	XTAE250L22__

- <sup>1)</sup> First underscore ( ) indicates coil suffix required.  
<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAE300M22

### Starter, DOL, Frame M

I <sub>e</sub> (A) AC-3	AC-1	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz					Auxiliary Contacts	Eaton list number <sup>1)2)</sup>
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		
300	400	90	160	180	286	132	2NO-2NC	XTAE300M22__
400	500	125	200	240	344	132	2NO-2NC	XTAE400M22__
500	700	155	250	300	344	132	2NO-2NC	XTAE500M22__

- <sup>1)</sup> First underscore ( ) indicates coil suffix required.  
<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAE580N22

### Starter, DOL, Frame N

I <sub>e</sub> (A) AC-3	AC-1	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz					Auxiliary Contacts	Eaton list number <sup>1)2)</sup>
		220/ 230V	380/ 400V	415V	660/ 690V	1000V		
580	800	185	315	348	560	600	2NO-2NC	XTAE580N22__
650	850	205	355	390	630	600	2NO-2NC	XTAE650N22__

- <sup>1)</sup> First underscore ( ) indicates coil suffix required.  
<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAR007B1

### Starters, DOL Reversing, Frame B

$I_e$ (A) AC-3	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz				Eaton list number <sup>1)2)</sup>
	220/ 230V	380/ 400V	415V	660/ 690V	
7	2.2	3	4	3.5	XTAR007B21__
9	2.5	4	5.5	4.5	XTAR009B21__
12	3.5	5.5	7	6.5	XTAR012B21__

<sup>1)</sup> First underscore ( ) indicates coil suffix required.

<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAR018C21

### Starters, DOL Reversing, Frame C

$I_e$ (A) AC-3	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz				Eaton list number <sup>1)2)</sup>
	220/ 230V	380/ 400V	415V	660/ 690V	
18	5	7.5	8	11	XTAR018C21__
25	7.5	11	14.5	14	XTAR025C21__
32	10	15	18	17	XTAR032C21__

<sup>1)</sup> First underscore ( ) indicates coil suffix required.

<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAR040D11

### Starters, DOL Reversing, Frame D

$I_e$ (A) AC-3	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz				Eaton list number <sup>1)2)</sup>
	220/ 230V	380/ 400V	415V	660/ 690V	
40	12.5	18.5	24	23	XTAR040D11__
50	15.5	22	30	30	XTAR050D11__
65	20	30	39	35	XTAR065D11__

<sup>1)</sup> First underscore ( ) indicates coil suffix required.

<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAR080F11

### Starters, DOL Reversing, Frame F

$I_e$ (A) AC-3	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz				Eaton list number <sup>1)2)</sup>
	220/ 230V	380/ 400V	415V	660/ 690V	
80	25	37	48	63	XTAR080F11__
95	30	45	57	75	XTAR095F11__

<sup>1)</sup> First underscore ( ) indicates coil suffix required.

<sup>2)</sup> Second underscore ( ) indicates overload relay suffix required.



XTAR115G11

### Starters, DOL Reversing, Frame G

$I_e$ (A) AC-3	Maximum kW Ratings AC-3, 3-Phase Motors 50 – 60 Hz				Eaton list number <sup>1)2)</sup>
	220/ 230V	380/ 400V	415V	660/ 690V	
115	37	55	7	105	XTAR115G11__
150	48	75	91	125	XTAR150G11__

<sup>1)</sup> Underscore ( ) indicates coil suffix required.

<sup>2)</sup> Underscore ( ) indicates overload relay suffix required.

## Coil Suffix

Coil Voltage 50Hz	60Hz	DC	Suffix Code
<b>Frame A – B</b>			
110V	120V		A
220V	240V		B
230V			F
24V	24V		T
415V	480V		C
550V	600V		D
	208V		E
190V	220V		G
240V	277V		H
380V	440V		L
400V			N
	380V		P
12V	12V		R
24V			U
42V	48V		W
48V			Y
		120V	AD <sup>1)</sup>
		220V	BD <sup>1)</sup>
		12V	RD <sup>1)</sup>
		24V	TD <sup>1)</sup>
		48V	WD <sup>1)</sup>
<b>Frame C – F</b>			
110V	120V		A
220V	240V		B
230V			F
24V	24V		T
415V	480V		C
550V	600V		D
	208V		E
190V	220V		G
240V	277V		H
380V	440V		L
400V			N
	380V		P
12V	12V		R
24V			U
42V	48V 60 Hz		W
48V			Y
		110 – 130V	AD <sup>1)</sup>
		200 – 240V	BD <sup>1)</sup>
		12 – 14V	RD <sup>1)</sup>
		24 – 27V	TD <sup>1)</sup>
		48 – 60V	WD <sup>1)</sup>
<b>Frame G</b>			
100 – 120V	100 – 120V		A
190 – 240V	190 – 240V		B
24V	24V		T
480 – 500V	480 – 500V		C
380 – 440V	380 – 440V		L
42 – 48V	42 – 48V		W
		24 – 27V	TD <sup>1)</sup>
		110 – 130V	AD <sup>1)</sup>
		200 – 240V	BD <sup>1)</sup>
		48 – 60V	WD <sup>1)</sup>
<b>Frame L – M</b>			
110 – 250V	110 – 250V	110 – 250V	A
250 – 500V	250 – 500V		C
48 – 110V	48 – 110V	48 – 110V	Y <sup>1)</sup>
		24 – 48V	TD <sup>1)</sup>

<sup>1)</sup> With DC operation: Integrated diode-resistor combination, coil rating 2.6W.

## Starters, DOL and DOL Reversing, Overload Relay Suffix Selection

Frame Size	Motor Full Load Amperes	For use with Contactor Amp Range	Overload Relay Supplied	Suffix Code
<b>Frame B</b>				
	0.1 – 0.16	7 – 15A	XTOBP16BC1	<b>P16</b>
	0.16 – 0.24	7 – 15A	XTOBP24BC1	<b>P24</b>
	0.24 – 0.4	7 – 15A	XTOBP40BC1	<b>P40</b>
	0.4 – 0.6	7 – 15A	XTOBP60BC1	<b>P60</b>
	0.6 – 1	7 – 15A	XTOB001BC1	<b>001</b>
	1 – 1.6	7 – 15A	XTOB1P6BC1	<b>1P6</b>
	1.6 – 2.4	7 – 15A	XTOB2P4BC1	<b>2P4</b>
	2.4 – 4	7 – 15A	XTOB004BC1	<b>004</b>
	4 – 6	7 – 15A	XTOB006BC1	<b>006</b>
	6 – 10	7 – 15A	XTOB009BC1	<b>010</b>
	9 – 12	9 – 15A	XTOB012BC1	<b>012</b>
	12 – 16	12 – 15A	XTOB016BC1	<b>016</b>
<b>Frame C</b>				
	0.1 – 0.16	18 – 32A	XTOBP16CC1	<b>P16</b>
	0.16 – 0.24	18 – 32A	XTOBP24CC1	<b>P24</b>
	0.24 – 0.4	18 – 32A	XTOBP40CC1	<b>P40</b>
	0.4 – 0.6	18 – 32A	XTOBP60CC1	<b>P60</b>
	0.6 – 1	18 – 32A	XTOB001CC1	<b>001</b>
	1 – 1.6	18 – 32A	XTOB1P6CC1	<b>1P6</b>
	1.6 – 2.4	18 – 32A	XTOB2P4CC1	<b>2P4</b>
	2.4 – 4	18 – 32A	XTOB004CC1	<b>004</b>
	4 – 6	18 – 32A	XTOB006CC1	<b>006</b>
	6 – 10	18 – 32A	XTOB010CC1	<b>010</b>
	10 – 16	18 – 32A	XTOB016CC1	<b>016</b>
	16 – 24	18 – 32A	XTOB024CC1	<b>024</b>
	24 – 32	25 – 32A	XTOB032CC1	<b>032</b>
<b>Frame D</b>				
	6 – 10	40 – 65A	XTOB010DC1	<b>010</b>
	10 – 16	40 – 65A	XTOB016DC1	<b>016</b>
	16 – 24	40 – 65A	XTOB024DC1	<b>024</b>
	24 – 40	40 – 65A	XTOB040DC1	<b>040</b>
	40 – 57	50 – 65A	XTOB057DC1	<b>057</b>
	50 – 65	65A	XTOB065DC1	<b>065</b>
<b>Frame F</b>				
	25 – 35	80 – 95A	XTOB055GC1 <sup>1)</sup>	<b>035</b>
	35 – 50	80 – 95A	XTOB050GC1 <sup>1)</sup>	<b>050</b>
	50 – 70	80 – 95A	XTOB070GC1 <sup>1)</sup>	<b>070</b>
	70 – 100	80 – 95A	XTOB100GC1 <sup>1)</sup>	<b>100</b>
<b>Frame G</b>				
	25 – 35	115 – 150A	XTOB055GC1 <sup>1)</sup>	<b>035</b>
	35 – 50	115 – 150A	XTOB050GC1 <sup>1)</sup>	<b>050</b>
	50 – 70	115 – 150A	XTOB070GC1 <sup>1)</sup>	<b>070</b>
	70 – 100	115 – 150A	XTOB100GC1 <sup>1)</sup>	<b>100</b>
	95 – 125	115 – 150A	XTOB125GC1 <sup>1)</sup>	<b>125</b>
	120 – 150	150A	XTOB150GC1 <sup>1)</sup>	<b>150</b>
<b>Frame L</b>				
	50 – 70	185 – 250A	XTOB070LC1	<b>070</b>
	70 – 100	185 – 250A	XTOB100LC1	<b>100</b>
	95 – 125	185 – 250A	XTOB125LC1	<b>125</b>
	120 – 160	185 – 250A	XTOB160LC1	<b>160</b>
	160 – 220	185 – 250A	XTOB220LC1	<b>220</b>
	200 – 250	225 – 250A	XTOB250LC1	<b>250</b>
<b>Frame M</b>				
	42 – 63	300 – 500A	XTOT063C3S	<b>063</b>
	60 – 90	300 – 500A	XTOT090C3S	<b>090</b>
	85 – 125	300 – 500A	XTOT125C3S	<b>125</b>
	110 – 160	300 – 500A	XTOT160C3S	<b>160</b>
	160 – 240	300 – 500A	XTOT240C3S	<b>240</b>
	190 – 290	300 – 500A	XTOT290C3S	<b>290</b>
	270 – 400	300 – 500A	XTOT400C3S	<b>400</b>
	360 – 540	500A	XTOT540C3S	<b>540</b>

## Starters, DOL and DOL Reversing, Overload Relay Suffix Selection (Continued)

Frame Size	Motor Full Load Amperes	For use with Contactor Amp Range	Overload Relay Supplied	Suffix Code
<b>Frame N</b>	42 – 63	580 – 650A	XTOT063C3S	<b>063</b>
	60 – 90	580 – 650A	XTOT090C3S	<b>090</b>
	85 – 125	580 – 650A	XTOT125C3S	<b>125</b>
	110 – 160	580 – 650A	XTOT160C3S	<b>160</b>
	160 – 240	580 – 650A	XTOT240C3S	<b>240</b>
	190 – 290	580 – 650A	XTOT290C3S	<b>290</b>
	270 – 400	580 – 650A	XTOT400C3S	<b>400</b>
	360 – 540	580 – 650A	XTOT540C3S	<b>540</b>
	420 – 630	580 – 650A	XTOT630C3S	<b>630</b>

<sup>1)</sup> Eaton list number refers to direct mount overload relay. Add an **S** to the end of the Eaton list number for separate mount.

## Starters, Star Delta, Frame B, Parts List

I <sub>e</sub> (A) AC-3	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Maximum Changeover Time (sec)	Component Descriptions	Quantity Required	Eaton list number <sup>1)</sup>
	220/ 230V	380/ 400V	415V	500V	660/ 690V				
12	3	5.5	7	5.5	5.5	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 3 1	XTCE007B10_ XTCE007B01_ XTCE007B01_ XTTR6A60S51B XTOB...BC1 XTCEXFAC20 XTCEXSDLB
16	4	7.5	8	7.5	7.5	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 1 3	XTCE009B10_ XTCE009B01_ XTCE009B01_ XTTR6A60S51B XTOB...BC1 XTCEXFAC20 XTCEXSDLB
22	5.5	11	14.5	11	11	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 3 1	XTCE012B10_ XTCE012B01_ XTCE012B01_ XTTR6A60S51B XTOB...BC1 XTCEXFAC20 XTCEXSDLB

<sup>1)</sup> Underscore ( ) indicates coil suffix required. See page 48.

## Starters, Star Delta, Frame C, Parts List

I <sub>e</sub> (A) AC-3	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Maximum Changeover Time (sec)	Component Descriptions	Quantity Required	Eaton list number <sup>1)</sup>
	220/ 230V	380/ 400V	415V	500V	660/ 690V				
30	7.5	15	19	18.5	18.5	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay (2) Auxiliary Contacts Star Delta Link	1 1 1 1 1 3 1	XTCE018C10_ XTCE018C01_ XTCE018C01_ XTTR6A60S51B XTOB...CC1 XTCEXFAC20 XTCEXSDLC
45	11	22	30	30	22	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay (2) Auxiliary Contacts Star Delta Link	1 1 1 1 1 3 1	XTCE025C10_ XTCE025C01_ XTCE025C01_ XTTR6A60S51B XTOB...CC1 XTCEXFAC20 XTCEXSDLC
55	15	30	39	37	30	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay (2) Auxiliary Contacts Star Delta Link	1 1 1 1 1 3 1	XTCE032C10_ XTCE032C01_ XTCE032C01_ XTTR6A60S51B XTOB...CC1 XTCEXFAC20 XTCEXSDLC

<sup>1)</sup> Underscore ( ) indicates coil suffix required. See page 48.

## Starters, Star Delta, Frame D, Parts List

$I_e$ (A) AC-3	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Maximum Changeover Time (sec)	Component Descriptions	Quantity Required	Eaton list number <sup>1)</sup>
	220/ 230V	380/ 400V	415V	500V	660/ 690V				
70	18.5	37	37	45	37	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 2 1	XTCE040D10_ XTCE040D00_ XTCE040D00_ XTTR6A60S51B XTOB...DC1 XTCEXFBG11 XTCEXSDDL
90	22	45	45	55	45	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 2 1	XTCE050D10_ XTCE050D00_ XTCE040D00_ XTTR6A60S51B XTOB...DC1 XTCEXFBG11 XTCEXSDDL
115	30	55	55	75	55	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 2 1	XTCE065D10_ XTCE065D00_ XTCE040D00_ XTTR6A60S51B XTOB...DC1 XTCEXFBG11 XTCEXSDDL

<sup>1)</sup> Underscore ( \_ ) indicates coil suffix required. See page 48.

## Starters, Star Delta, Frame F, Parts List

$I_e$ (A) AC-3	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Maximum Changeover Time (sec)	Component Descriptions	Quantity Required	Eaton list number <sup>1)</sup>
	220/ 230V	380/ 400V	415V	500V	660/ 690V				
140	37	75	75	90	90	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 1 2	XTCE080F10_ XTCE080F00_ XTCE050D00_ XTTR6A60S51B XTOB...FC1 XTCEXFBG11 XTCEXSDF
165	45	90	110	110	132	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 2 1	XTCE095F10_ XTCE095F00_ XTCE065D00_ XTTR6A60S51B XTOB...FC1 XTCEXFBG11 XTCEXSDF

<sup>1)</sup> Underscore ( \_ ) indicates coil suffix required. See page 48.

## Starters, Star Delta, Frame G, Parts List

$I_e$ (A) AC-3	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz					Maximum Changeover Time (sec)	Component Descriptions	Quantity Required	Eaton list number <sup>1)</sup>
	220/ 230V	380/ 400V	415V	500V	660/ 690V				
200	55	110	132	132	160	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 2 1	XTCE115G10_ XTCE115G00_ XTCE080F00_ XTTR6A60S51B XTOB...GC1 XTCEXFBG11 XTCEXSDF
260	75	132	148	160	160	< 20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor K1T Timing Relay Overload Relay Auxiliary Contacts Star Delta Link	1 1 1 1 1 2 1	XTCE150G10_ XTCE150G00_ XTCE080F00_ XTTR6A60S51B XTOB...GC1 XTCEXFBG11 XTCEXSDF

<sup>1)</sup> Underscore ( \_ ) indicates coil suffix required. See page 48.

### Starters, Star Delta, Frame L, Parts List

$I_e$ (A) AC-3	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz						Maximum Changeover Time (sec)	Component Descriptions	Quantity Required	Eaton list number <sup>1)</sup>
	220/ 230V	380/ 400V	415V	500V	660/ 690V	1000V				
315	90	160	180	200	250	132	<30	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay K3M Auxiliary Contact Star Delta Link	1 1 1 1 1 1 1	XTCE185L22_ XTCE185L22_ XTCE115G00_ XTTR6A60S51B XTOB...LC1 XTCEXFBG22 XTCEXDLL250
385	110	200	240	250	315	160	<20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay K3M Auxiliary Contact Star Delta Link	1 1 1 1 1 1 1	XTCE225L22_ XTCE225L22_ XTCE150G00_ XTTR6A60S51B XTOB...LC1 XTCEXFBG22 XTCEXDLL250
430	132	250	300	315	400	200	<30	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay Star Delta Link	1 1 1 1 1 1	XTCE250L22_ XTCE250L22_ XTCE185L22_ XTTR6A60S51B XTOB...LC1 XTCEXDLL250

<sup>1)</sup> Underscore ( \_ ) indicates magnet coil suffix required. See page 48.

<sup>2)</sup> If mechanical interlock of the star contactor is required, star contactor must be the same frame size as main and delta contactors.

### Starters, Star Delta, Frame M, Parts List

$I_e$ (A) AC-3	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz						Maximum Changeover Time (sec)	Component Descriptions	Quantity Required	Eaton list number <sup>1)</sup>
	220/ 230V	380/ 400V	415V	500V	660/ 690V	1000V				
515	160	300	348	355	450	200	<30	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay Star Delta Link	1 1 1 1 1 1	XTCE300M22_ XTCE300M22_ XTCE185L00_ XTTR6A60S51B XTOT...C3S XTCEXSDLM400
685	200	355	390	450	560	220	<20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay Star Delta Link	1 1 1 1 1 1	XTCE400M22_ XTCE400M22_ XTCE250L00_ XTTR6A60S51B XTOT...C3S XTCEXSDLM400
860	250	450	500	560	600	220	<30	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay Star Delta Link	1 1 1 1 1 1	XTCE500M22_ XTCE500M22_ XTCE300M00_ XTTR6A60S51B XTOT...C3S XTCEXSDLM400

<sup>1)</sup> Underscore ( \_ ) indicates magnet coil suffix required. See page 48.

<sup>2)</sup> If mechanical interlock of the star contactor is required, star contactor must be the same frame size as main and delta contactors.



## Starters, Star Delta, Frame N, Parts List

I <sub>e</sub> (A) AC-3	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz						Maximum Changeover Time (sec)	Component Descriptions	Quantity Required	Eaton list number <sup>1,3)</sup>
	220/ 230V	380/ 400V	415V	500V	660/ 690V	1000V				
1000	300	560	610	710	900	355	<30	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay	1 1 1 1 1	XTCE580N22_ XTCE580N22_ XTCE400M00_ XTTR6A60S51B XTOT...C3S <sup>3)</sup>
1120	350	630	680	750	950	355	<30	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay	1 1 1 1 1	XTCE650N22_ XTCE650N22_ XTCE400M00_ XTTR6A60S51B XTOT...C3S <sup>3)</sup>
1290	400	710	760	900	1200	1400	<30	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay	1 1 1 1 1	XTCE750N22_ XTCE750N22_ XTCE580N00_ XTTR6A60S51B XTOT...C3S <sup>3)</sup>
1400	450	800	850	950	1300	1400	<30	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay	1 1 1 1 1	XTCE820N22_ XTCE820N22_ XTCE580N00_ XTTR6A60S51B XTOT...C3S <sup>3)</sup>
1700	560	1000	1050	1200	1700	1700	<20	K1M Main Contactor K5M Delta Contactor K3M Star Contactor <sup>2)</sup> K1T Timing Relay Overload Relay	1 1 1 1 1	XTCEC10N22_ XTCEC10N22_ XTCE650N00_ XTTR6A60S51B XTOT...C3S <sup>3)</sup>

<sup>1)</sup> Underscore ( ) indicates magnet coil suffix required. See page 48.

<sup>2)</sup> If mechanical interlock of the star contactor is required, star contactor must be the same frame size as main and delta contactors.

<sup>3)</sup> Select/ complete Eaton List number for overload relay for (...) from page 48.

## Coil Suffix

Coil Voltage 50Hz	60Hz	DC	Suffix Code <sup>1)</sup>
<b>Frame A – B</b>			
110V	120V		<b>A</b>
220V	240V		<b>B</b>
24V	24V		<b>T</b>
240V	277V		<b>H</b>
380V	440V		<b>L</b>
		48V	<b>WD</b> <sup>2)</sup>
		24V	<b>TD</b>
<b>Frame C – F</b>			
110V	120V		<b>A</b>
220V	240V		<b>B</b>
24V	24V		<b>T</b>
240V	277V		<b>H</b>
380V	440V		<b>L</b>
		24V	<b>TD</b> <sup>2)</sup>
		24 – 27V	<b>TD</b> <sup>2)</sup>
		48 – 60V	<b>WD</b> <sup>2)</sup>
<b>Frame G</b>			
100 – 120V	100 – 120V		<b>A</b>
190 – 240V	190 – 240V		<b>B</b>
24V	24V		<b>T</b>
380 – 440V	380 – 440V		<b>L</b>
		24 – 27V	<b>TD</b> <sup>2)</sup>
<b>Frame L-N</b>			
110 – 250V	110 – 250V	110 – 250V	<b>A</b>
250 – 500V	250 – 500V		<b>C</b>
48 – 110V	48 – 110V	48 – 110V	<b>Y</b> <sup>2)</sup>
		24 – 48V	<b>TD</b> <sup>2)</sup>

<sup>1)</sup> Add suffix in place of underscore (\_) to Eaton List Number.

<sup>2)</sup> With DC Operation: Integrated diode-resistor combination, coil rating 2.6W.



XTOB016BC1

## Overload Relay, Frame B - Direct Mount

- Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.
- Trip Class: 10A

Overload Releases, I <sub>r</sub>	Contact Configuration	Circuit Symbol	For use with Contactor Amp Range	Short-circuit protection (A)			Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL	Circuit Breaker	
0.1 – 16A	1NO-1NC		7 – 15A	25	0.5	15	XTOB <b>P16</b> BC1
0.16 – 0.24A	1NO-1NC		7 – 15A	25	1	15	XTOB <b>P24</b> BC1
0.24 – 0.4A	1NO-1NC		7 – 15A	25	2	15	XTOB <b>P40</b> BC1
0.4 – 0.6A	1NO-1NC		7 – 15A	25	4	15	XTOB <b>P60</b> BC1
0.6 – 1A	1NO-1NC		7 – 15A	25	4	15	XTOB <b>001</b> BC1
1 – 1.6A	1NO-1NC		7 – 15A	25	6	15	XTOB <b>1P6</b> BC1
1.6 – 2.4A	1NO-1NC		7 – 15A	25	10	15	XTOB <b>2P4</b> BC1
2.4 – 4A	1NO-1NC		7 – 15A	25	16	15	XTOB <b>004</b> BC1
4 – 6A	1NO-1NC		7 – 15A	25	20	15	XTOB <b>006</b> BC1
6 – 10A	1NO-1NC		7 – 15A	50	25	15	XTOB <b>010</b> BC1
9 – 12A	1NO-1NC		12 – 15A	50	25	15	XTOB <b>012</b> BC1
12 – 16	1NO-1NC		15A	—	—	15	XTOB <b>016</b> BC1



XTOB032CC1

### Overload Relay, Frame C - Direct Mount

- Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.
- Trip Class: 10A

Overload Releases, $I_r$	Contact Configuration	Circuit Symbol	For use with Contactor Amp Range	Short-circuit protection (A)			Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL	Circuit Breaker	
0.1 – 0.16	1NO-1NC		18 – 32A	25	0.5	25	XTOB <b>P16</b> CC1
0.16 – 0.24	1NO-1NC		18 – 32A	25	1	25	XTOB <b>P24</b> CC1
0.24 – 0.4	1NO-1NC		18 – 32A	25	2	25	XTOB <b>P40</b> CC1
0.4 – 0.6	1NO-1NC		18 – 32A	25	4	25	XTOB <b>P60</b> CC1
0.6 – 1	1NO-1NC		18 – 32A	25	4	25	XTOB <b>001</b> CC1
1 – 1.6	1NO-1NC		18 – 32A	25	6	25	XTOB <b>1P6</b> CC1
1.6 – 2.4	1NO-1NC		18 – 32A	25	10	25	XTOB <b>2P4</b> CC1
2.4 – 4	1NO-1NC		18 – 32A	25	16	25	XTOB <b>004</b> CC1
4 – 6	1NO-1NC		18 – 32A	25	20	25	XTOB <b>006</b> CC1
6 – 10	1NO-1NC		18 – 32A	50	25	25	XTOB <b>010</b> CC1
10 – 16	1NO-1NC		18 – 32A	63	35	30	XTOB <b>016</b> CC1
16 – 24	1NO-1NC		18 – 32A	100	35	30	XTOB <b>024</b> CC1
24 – 32	1NO-1NC		25 – 32A	125	63	30	XTOB <b>032</b> CC1



XTOB065DC1

### Overload Relay, Frame D - Direct Mount

- Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.
- Trip Class: 10A

Overload Releases, $I_r$	Contact Configuration	Circuit Symbol	For use with Contactor Amp Range	Short-circuit protection (A)			Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL	Circuit Breaker	
6 – 10	1NO-1NC		40 – 65A	50	25	25	XTOB <b>010</b> DC1
10 – 16	1NO-1NC		40 – 65A	63	35	25	XTOB <b>016</b> DC1
16 – 24	1NO-1NC		40 – 65A	63	50	30	XTOB <b>024</b> DC1
24 – 40	1NO-1NC		40 – 65A	125	63	125	XTOB <b>040</b> DC1
40 – 57	1NO-1NC		50 – 65A	160	80	150	XTOB <b>057</b> DC1
50 – 65	1NO-1NC		65A	160	100	150	XTOB <b>065</b> DC1



XTOB150GC1

### Overload Relay, Frame F - G - Direct Mount

- Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.
- Trip Class: 10A

Overload Releases, $I_r$	Contact Configuration	Circuit Symbol	For use with Contactor Amp Range	Short-circuit protection (A)			Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL	Circuit Breaker	
25 – 35	1NO-1NC		115 – 150A	125	100	125	XTOB <b>035</b> GC1
35 – 50	1NO-1NC		115 – 150A	160	125	150	XTOB <b>050</b> GC1
50 – 70	1NO-1NC		115 – 150A	250	160	150	XTOB <b>070</b> GC1
70 – 100	1NO-1NC		115 – 150A	315	200	400	XTOB <b>100</b> GC1
95 – 125	1NO-1NC		115 – 150A	315	250	500	XTOB <b>125</b> GC1
120 – 150	1NO-1NC		150A	315	250	600	XTOB <b>150</b> GC1



XTOB150GC1S

### Overload Relay, Frame F - G - Separate Mount

- Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.
- Trip Class: 10A

Overload Releases, $I_r$	Contact Configuration	Circuit Symbol	For use with Contactor Amp Range	Short-circuit protection (A)			Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL	Circuit Breaker	
25 – 35	1NO-1NC		115 – 150A	125	100	125	XTOB <b>035</b> GC1S
35 – 50	1NO-1NC		115 – 150A	160	125	150	XTOB <b>050</b> GC1S
50 – 70	1NO-1NC		115 – 150A	250	160	150	XTOB <b>070</b> GC1S
70 – 100	1NO-1NC		115 – 150A	315	200	400	XTOB <b>100</b> GC1S
95 – 125	1NO-1NC		115 – 150A	315	250	500	XTOB <b>125</b> GC1S
120 – 150	1NO-1NC		150A	315	250	600	XTOB <b>150</b> GC1S



XTOB250LC1

### Overload Relay, Frame L

- Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.
- Trip Class: 10A
- For separate mounting, short circuit Type 1 rating is 500A and short circuit Type 2 rating is 400A.

Overload Releases, $I_r$	Contact Configuration	Circuit Symbol	For use with Contactor Amp Range	Short-circuit protection (A)			Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL	Circuit Breaker	
50 – 70	1NO-1NC		185 – 250A	250	160	150	XTOB <b>070</b> LC1
70 – 100	1NO-1NC		185 – 250A	315	200	400	XTOB <b>100</b> LC1
95 – 125	1NO-1NC		185 – 250A	315	250	500	XTOB <b>125</b> LC1
120 – 160	1NO-1NC		185 – 250A	400	250	600	XTOB <b>160</b> LC1
160 – 220	1NO-1NC		185 – 250A	400	315	800	XTOB <b>220</b> LC1
200 – 250	1NO-1NC		225 – 250A	400	315	600	XTOB <b>250</b> LC1



XTOT160C3S

### Overload Relay, Current Transformer Operated, Frame M - N Separate Mount

- The main current parameters are defined by the main current wiring which is used.

Overload Releases, $I_r$	Contact Configuration	Circuit Symbol	For use with Contactor Amp Range	Short-circuit protection (A)			Eaton list number
				Type 1 Coordination, gG/gL	Type 2 Coordination, gG/gL	Circuit Breaker	
42 – 63	1NO-1NC		300 – 500A	—	—	150	XTOT <b>063</b> C3S
60 – 90	1NO-1NC		300 – 500A	—	—	250	XTOT <b>090</b> C3S
85 – 125	1NO-1NC		300 – 500A	—	—	500	XTOT <b>125</b> C3S
110 – 160	1NO-1NC		300 – 500A	—	—	600	XTOT <b>160</b> C3S
160 – 240	1NO-1NC		300 – 500A	—	—	600	XTOT <b>240</b> C3S
190 – 290	1NO-1NC		300 – 500A	—	—	600	XTOT <b>290</b> C3S
270 – 400	1NO1-1NC		300 – 500A	—	—	1000	XTOT <b>400</b> C3S
360 – 540	1NO-1NC		500A	—	—	600	XTOT <b>540</b> C3S



This chapter provides product selection guidance for Eaton's XT range of Manual Motor Protectors (MMP's) which features a pushbutton or rotary On/Off manual disconnect, Class 10 adjustable bimetallic overload relay and fixed magnetic short circuit trip capability in one compact unit.

The XTPB and XTPR MMP's can also be wired in series with a magnetic contactor to complete the assembly of a remotely operated, manual motor controller.

### Standards

- IEC EN 60947-4-1
- CE Marked



See page 56 for Accessories.  
See page 136 for dimensional drawings.  
See page 148 for the technical details.

When ordering, specify Eaton list numbers according to the following stipulations:  
XT Manual Motor Protectors are selected based on the overload current range required for a given motor. This current range is determined from the motor Full Load Ampere rating and Motor Service Factor usually found on the motor nameplate.



XTPB025BC1

### Manual Motor Protectors, Pushbutton, Frame B, Screw Terminal

- Type 1 and Type 2 Coordination
- Motor Protective Device with Thermal and Magnetic Trip
- Select Manual Motor Protectors by full load current. Maximum Motor Ratings (kW) are for reference only.

Rated Uninterrupted Current — $I_u = I_o$ (Amps)	FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Short Circuit Release — $I_m$ (Amps)	Maximum Motor Ratings Maximum kW Rating AC-3 — P (kW)					Eaton list number
			3-Phase 220 – 240V	380 – 415V	440V	500V	660 – 690V	
0.16	0.1 – 0.16	2.2	—	—	—	—	0.06	XTPBP16BC1
0.25	0.16 – 0.25	3.5	—	0.06	0.06	0.06	0.12	XTPBP25BC1
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	0.12	0.18	XTPBP40BC1
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	0.25	0.25	XTPBP63BC1
1	0.63 – 1	14	0.12	0.25	0.25	0.37	0.55	XTPB001BC1
1.6	1 – 1.6	22	0.25	0.55	0.55	0.75	1.1	XTPB1P6BC1
2.5	1.6 – 2.5	35	0.37	0.75	1.1	1.1	1.5	XTPB2P5BC1
4	2.5 – 4	56	0.75	1.5	1.5	2.2	3	XTPB004BC1
6.3	4 – 6.3	88	1.1	2.2	3	3	4	XTPB6P3BC1
10	6.3 – 10	140	2.2	4	4	4	7.5	XTPB010BC1
12	8 – 12	168	3	5.5	5.5	5.5	11	XTPB012BC1
16	10 – 16	224	4	7.5	9	9	12.5	XTPB016BC1
20	16 – 20	280	5.5	9	11	12.5	15	XTPB020BC1
25	20 – 25	350	5.5	12.5	12.5	15	22	XTPB025BC1



XTPR032BC1

### Manual Motor Protectors, Rotary, Frame B, Screw Terminals

- Type 1 and Type 2 Coordination
- Motor Protective Device with Thermal and Magnetic Trip.
- Select Manual Motor Protectors by full load current. Maximum Motor Ratings (kW) are for reference only.

Rated Uninterrupted Current — $I_u = I_e$ (Amps)	FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Short Circuit Release — $I_m$ (Amps)	Maximum Motor Ratings Maximum kW Rating AC-3 — P (kW)					Eaton list number
			3-Phase		440V	500V	660 – 690V	
			220 – 240V	380 – 415V				
0.16	0.1 – 0.16	2.2	—	—	—	—	0.06	XTPRP16BC1
0.25	0.16 – 0.25	3.5	—	0.06	0.06	0.06	0.12	XTPRP25BC1
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	0.12	0.18	XTPRP40BC1
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	0.25	0.25	XTPRP63BC1
1	0.63 – 1	14	0.12	0.25	0.25	0.37	0.55	XTPR001BC1
1.6	1 – 1.6	22	0.25	0.55	0.55	0.75	1.1	XTPR1P6BC1
2.5	1.6 – 2.5	35	0.37	0.75	1.1	1.1	1.5	XTPR2P5BC1
4	2.5 – 4	56	0.75	1.5	1.5	2.2	3	XTPR004BC1
6.3	4 – 6.3	88	1.1	2.2	3	3	4	XTPR6P3BC1
10	6.3 – 10	140	2.2	4	4	4	7.5	XTPR010BC1
12	8 – 12	168	3	5.5	5.5	5.5	11	XTPR012BC1
16	10 – 16	224	4	7.5	9	9	12.5	XTPR016BC1
20	16 – 20	280	5.5	9	11	12.5	15	XTPR020BC1
25	20 – 25	350	5.5	12.5	12.5	15	22	XTPR025BC1
32	25 – 32	448	7.5	15	15	22	30	XTPR032BC1



XTPR063DC1

### Manual Motor Protectors, Rotary, Frame D, Screw Terminals

- Type 1 and Type 2 Coordination
- Motor Protective Device with Thermal and Magnetic Trip.
- Select Manual Motor Protectors by full load current. Maximum Motor Ratings (kW) are for reference only.

Rated Uninterrupted Current — $I_u = I_e$ (Amps)	FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Short Circuit Release — $I_m$ (Amps)	Maximum Motor Ratings Maximum kW Rating AC-3 — P (kW)					Eaton list number
			3-Phase		440V	500V	660 – 690V	
			220 – 240V	380 – 415V				
16	10 – 16	224	4	7.5	9	9	12.5	XTPR016DC1
25	16 – 25	350	5.5	12.5	12.5	12.5	22	XTPR025DC1
32	25 – 32	448	7.5	15	17.5	17.5	22	XTPR032DC1
40	32 – 40	560	11	20	22	22	30	XTPR040DC1
50	40 – 50	700	14	25	30	30	45	XTPR050DC1
58	50 – 58	812	17	30	37	37	55	XTPR058DC1
65	55 – 63	882	18.5	34	37	37	55	XTPR063DC1



XTPRSC016BC1

### Manual Motor Protectors, Rotary, Frame B, Screw (Line) & Spring Cage (Load) Terminals

- Type 1 and Type 2 Coordination
- Motor Protective Device with Thermal and Magnetic Trip.
- Select Manual Motor Protectors by full load current. Maximum Motor Ratings (kW) are for reference only.

Rated Uninterrupted Current — $I_u = I_g$ (Amps)	FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Short Circuit Release — $I_{rm}$ (Amps)	Maximum Motor Ratings					Eaton list number
			Maximum kW Rating AC-3 — P (kW)					
			3-Phase 220 – 240V	380 – 415V	440V	500V	660 – 690V	
0.16	0.1 – 0.16	2.2	—	—	—	—	0.06	XTPRSCP16BC1
0.25	0.16 – 0.25	3.5	—	0.06	0.06	0.06	0.12	XTPRSCP25BC1
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	0.12	0.18	XTPRSCP40BC1
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	0.25	0.25	XTPRSCP63BC1
1	0.63 – 1	14	0.12	0.25	0.25	0.37	0.55	XTPRSC001BC1
1.6	1 – 1.6	22	0.25	0.55	0.55	0.75	1.1	XTPRSC1P6BC1
2.5	1.6 – 2.5	35	0.37	0.75	1.1	1.1	1.5	XTPRSC2P5BC1
4	2.5 – 4	56	0.75	1.5	1.5	2.2	3	XTPRSC004BC1
6.3	4 – 6.3	88	1.1	2.2	3	3	4	XTPRSC6P3BC1
10	6.3 – 10	140	2.2	4	4	4	7.5	XTPRSC010BC1
12	8 – 12	168	3	5.5	5.5	5.5	11	XTPRSC012BC1
16	10 – 16	224	4	7.5	9	9	12.5	XTPRSC016BC1



XTPRC016BC1

### Manual Motor Protectors, Rotary, Frame B, Spring Cage Terminals

- Type 1 and Type 2 Coordination
- Motor Protective Device with Thermal and Magnetic Trip.
- Select Manual Motor Protectors by full load current. Maximum Motor Ratings (kW) are for reference only.

Rated Uninterrupted Current — $I_u = I_g$ (Amps)	FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Short Circuit Release — $I_{rm}$ (Amps)	Maximum Motor Ratings					Eaton list number
			Maximum kW Rating AC-3 — P (kW)					
			3-Phase 220 – 240V	380 – 415V	440V	500V	660 – 690V	
<b>Frame B</b>								
0.16	0.1 – 0.16	2.2	—	—	—	—	0.06	XTPRCP16BC1
0.25	0.16 – 0.25	3.5	—	0.06	0.06	0.06	0.12	XTPRCP25BC1
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	0.12	0.18	XTPRCP40BC1
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	0.25	0.25	XTPRCP63BC1
1	0.63 – 1	14	0.12	0.25	0.25	0.37	0.55	XTPRC001BC1
1.6	1 – 1.6	22	0.25	0.55	0.55	0.75	1.1	XTPRC1P6BC1
2.5	1.6 – 2.5	35	0.37	0.75	1.1	1.1	1.5	XTPRC2P5BC1
4	2.5 – 4	56	0.75	1.5	1.5	2.2	3	XTPRC004BC1
6.3	4 – 6.3	88	1.1	2.2	3	3	4	XTPRC6P3BC1
10	6.3 – 10	140	2.2	4	4	4	7.5	XTPRC010BC1
12	8 – 12	168	3	5.5	5.5	5.5	11	XTPRC012BC1
16	10 – 16	224	4	7.5	9	9	12.5	XTPRC016BC1



XTPRC016BC1

## Manual Motor Protectors, Rotary, Frame B, Transformer Protective Circuit Breakers, Spring Cage Terminal

- Type 1 and Type 2 Coordination
- Motor Protective Device with Thermal and Magnetic Trip.
- Select Manual Motor Protectors by full load amperes. Maximum Motor Ratings (kW,) are for reference only.

Rated Uninterrupted Current — $I_u = I_o$ (Amps)	FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Short Circuit Release — $I_{sc}$ (Amps)	Maximum Motor Ratings					Eaton list number
			Maximum kW Rating AC-3 — P (kW) 3-Phase					
			220 – 240V	380 – 415V	440V	500V	660 – 690V	
0.16	0.1 – 0.16	2.4	—	—	—	—	0.06	XTPRCP16BC1
0.25	0.16 – 0.25	4.25	—	0.06	0.06	0.06	0.12	XTPRCP25BC1
0.4	0.25 – 0.4	6.8	0.06	0.09	0.12	0.12	0.18	XTPRCP40BC1
0.63	0.4 – 0.63	11.97	0.09	0.12	0.18	0.25	0.25	XTPRCP63BC1
1	0.63 – 1	20	0.12	0.25	0.25	0.37	0.55	XTPRC001BC1
1.6	1 – 1.6	32	0.25	0.55	0.55	0.75	1.1	XTPRC1P6BC1
2.5	1.6 – 2.5	50	0.37	0.75	1.1	1.1	1.5	XTPRC2P5BC1
4	2.5 – 4	84	0.75	1.5	1.5	2.2	3	XTPRC004BC1
6.3	4 – 6.3	141	1.1	2.2	3	3	4	XTPRC6P3BC1
10	6.3 – 10	224	2.2	4	4	4	7.5	XTPRC010BC1
12	8 – 12	224	3	5.5	5.5	5.5	11	XTPRC012BC1
16	10 – 16	358	4	7.5	9	9	12.5	XTPRC016BC1
20	16 – 20	380	5.5	9	11	12.5	15	XTPRC020BC1
25	20 – 25	420	5.5	12.5	12.5	15	15	XTPRC025BC1





XTPM032B

## Manual Motor Protectors, Rotary, Frame B, Magnetic Trip Only, Screw Terminal

- Type 1 and Type 2 Coordination
- Motor Protective Device Magnetic Trip.
- Select Manual Motor Protectors by full load current. Maximum Motor Ratings (kW) are for reference only.
- An appropriate overload relay must be fitted to protect motors against overload.

Rated Uninterrupted Current — $I_u$ (Amps)	FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Short Circuit Release — $I_m$ (Amps)	Maximum Motor Ratings					Eaton list number
			Maximum kW Rating AC-3 — $P$ (kW) 3-Phase					
			220 – 240V	380 – 415V	440V	500V	660 – 690V	
0.16	—	2.2	—	—	—	—	0.06	XTPMP16B
0.25	—	3.5	—	0.06	0.06	0.06	0.12	XTPMP25B
0.4	—	5.6	0.06	0.09	0.12	0.12	0.18	XTPMP40B
0.63	—	8.8	0.09	0.12	0.18	0.25	0.25	XTPMP63B
1	—	14	0.12	0.25	0.25	0.37	0.55	XTPM001B
1.6	—	22	0.25	0.37	0.55	0.75	1.1	XTPM1P6B
2.5	—	35	0.37	0.75	1.1	1.1	1.5	XTPM2P5B
4	—	56	0.75	1.5	1.5	2.2	3	XTPM004B
6.3	—	88	1.1	2.2	3	3	4	XTPM6P3B
10	—	140	2.2	4	4	4	7.5	XTPM010B
12	—	168	3	5.5	5.5	5.5	11	XTPM012B
16	—	224	4	7.5	9	9	12.5	XTPM016B
20	—	280	5.5	9	11	12.5	15	XTPM020B
25	—	350	5.5	12.5	12.5	15	22	XTPM025B
32	—	448	7.5	15	15	22	30	XTPM032B

## Manual Motor Protectors, Side-mount Auxiliary Contacts

- Can be fitted on the right side of manual motor protectors and manual transformer protectors and can be combined with XTPAXSATR... and XTPAXFA... trip indicating auxiliary contact.



XTPAXSA11

Contact Configuration	Contact Sequence	Circuit Symbol	Terminals Screw		Spring Cage	
			QPC	Eaton list number	QPC	Eaton list number
1NO-1NC			1	XTPAXSA11	5	XTPAXSAC11
1NO-2NC			1	XTPAXSA12	—	—
2NO-1NC			1	XTPAXSA21	—	—

## Manual Motor Protectors, Front-mount Auxiliary Contacts

- Can be fitted to manual motor protectors and manual transformer protectors. 45 mm (XTPR...B and XTPB) or 55 mm (XTPR...D) widths of manual motor protectors remained unchanged.



XTPAXFA10

Contact Configuration	Contact Sequence	Circuit Symbol	Terminals Screw		Spring Cage	
			QPC	Eaton list number	QPC	Eaton list number
1NO-1NC			1	XTPAXFA11	—	—
1NO-0NC			1	XTPAXFA10	5	XTPAXFAC10
0NO-1NC			—	—	5	XTPAXFAC01

## Manual Motor Protectors, Side-Mount Trip Indicating Auxiliary Contacts

- Can be fitted on the right side of manual motor protectors. Can be combined with standard auxiliary contacts. Trip indication: A. General Trip indication (overload) B. Short-circuit trip. Local short-circuit indication by red indicator, manually resettable.



XTPAXSATR20

Contact Configuration	Contact Sequence	Circuit Symbol	QPC	Eaton list number
2NO	<p>On/Off</p>		2	XTPAXSATR20
2NC	<p>On/Off</p>		2	XTPAXSATR02

## Manual Motor Protectors, Early-Make Front-Mount Indicating Auxiliary Contacts

- For use with XTPB..., B-Frame XTPR and XTPT. Can be fitted to the front of a manual motor protector. 45 mm width of manual motor protector remains unchanged. For early energization of undervoltage release, e.g. in Emergency-Stop circuits to EN 60204.



XTPBXFAEM20

Contact Configuration	Circuit Symbol	QPC	Eaton list number
2NO		5	XTPBXFAEM20
2NO		2	XTPAXFAEM20

## Manual Motor Protectors, Shunt Release

- Can be fitted on the left side of manual motor protectors. Cannot be combined with the XTPAXUVR. DC: Intermittent operation 5 sec.



XTPAXSR220V50H

Description	Circuit Symbol	QPC.	Terminals	
			Screw Eaton list number	Spring Cage Eaton list number
Shunt Trip 110V50H		2	XTPAXSR110V50H	—
Shunt Trip 110VDC		2	XTPAXSR110VDC	—
Shunt Trip 120V60H		2	XTPAXSR120V60H	—
Shunt Trip 125VDC		2	XTPAXSR125VDC	—
Shunt Trip 208V60H		2	XTPAXSR208V60H	—
Shunt Trip 220V50H		2	XTPAXSR220V50H	—
Shunt Trip 220VDC		2	XTPAXSR220VDC	—
Shunt Trip 230V50H		2	XTPAXSR230V50H	XTPAXSRC230V50H
Shunt Trip 240V50H		2	XTPAXSR240V50H	—
Shunt Trip 240V60H		2	XTPAXSR240V60H	—
Shunt Trip 24V50H		2	XTPAXSR24V50H	—
Shunt Trip 24VDC		2	XTPAXSR24VDC	XTPAXSRC24VDC
Shunt Trip 250VDC		2	XTPAXSR250VDC	—
Shunt Trip 380V50H		2	XTPAXSR380V50H	—
Shunt Trip 400V50H		2	XTPAXSR400V50H	—
Shunt Trip 415V50H		2	XTPAXSR415V50H	—
Shunt Trip 440V60H		2	XTPAXSR440V60H	—
Shunt Trip 480V60H		2	XTPAXSR480V60H	—
Shunt Trip 48V50H		2	XTPAXSR48V50H	—
Shunt Trip 48VDC		2	XTPAXSR48VDC	—
Shunt Trip 60VDC		2	XTPAXSR60VDC	—

## Manual Motor Protectors, Undervoltage Release

- Can be fitted on left side manual motor protectors. Cannot be combined with XTPAXSR. When combined with a circuit breaker, it can be used as Emergency-Stop device to IEC/EN 60204.



XTPAXUVR220V50H

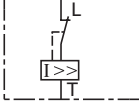
Description	Circuit Symbol	QPC.	Terminals	
			Screw Eaton list number	Spring Cage Eaton list number
Undervoltage release 110V50H		2	XTPAXUVR110V50H	—
Undervoltage release 120V60H		2	XTPAXUVR120V60H	—
Undervoltage release 208V60H		2	XTPAXUVR208V60H	—
Undervoltage release 220V50H		2	XTPAXUVR220V50H	—
Undervoltage release 230V50H		2	XTPAXUVR230V50H	XTPAXUVR230V50H
Undervoltage release 240V50H		2	XTPAXUVR240V50H	—
Undervoltage release 240V60H		2	XTPAXUVR240V60H	—
Undervoltage release 24V50H		2	XTPAXUVR24V50H	—
Undervoltage release 24V60H		2	XTPAXUVR24V60H	—
Undervoltage release 380V50H		2	XTPAXUVR380V50H	—
Undervoltage release 400V50H		2	XTPAXUVR400V50H	—
Undervoltage release 415V50H		2	XTPAXUVR415V50H	—
Undervoltage release 440V60H		2	XTPAXUVR440V60H	—
Undervoltage release 480V60H		2	XTPAXUVR480V60H	—
Undervoltage release 48V50H		2	XTPAXUVR48V50H	—
Undervoltage release 60V50H		2	XTPAXUVR60V50H	—

## Manual Motor Protectors, Current Limiter

- Max. rated operation voltage  $U_e = 690V$ , rated uninterrupted current  $I_u = 63A$ . Can be used for individual and group protection. For group protection and in combination with the XTPR...D, order additional XTPAXIT incoming terminal if required. Mounting next to or behind the manual motor protector. 16 – 63A XTPR...D: 100 kA/400V, 10 kA/690V.



XTPAXCL

Description	Circuit Symbol	QPC.	Eaton list number
To enhance the switching capacity of non-inherently safe 16 – 25A Manual Motor Protectors to 150 kA/440V		1	XTPAXCL

## Manual Motor Protectors, Enclosure, Cable Glands



XTPAXMCG20

Description	QPC	Eaton list number
20.5 mm Metric Cable Gland 6 – 13 mm Wire	20	XTPAXMCG20
25.5 mm Metric Cable Gland 9 – 17 mm Wire	20	XTPAXMCG25
32.5 mm Metric Cable Gland 13 – 21 mm Wire	10	XTPAXMCG32
32.5 mm Metric Cable Gland 18 – 25 mm wire	10	XTPAXMCG32G

## Manual Motor Protectors, Enclosure, IP65 Metric Diaphragm Grommet

- With integral push-through diaphragm.

Description	QPC	Eaton list number
20.5 mm Diaphragm Grommet 1 – 13 mm Wire	100	XTPAXMDG20
25.5 mm Diaphragm Grommet 1 – 18 mm Wire	100	XTPAXMDG25
32.5 mm Diaphragm Grommet 1 – 24 mm Wire	100	XTPAXMDG32

## Manual Motor Protectors, Rotary Handle Mechanism

- Plug-in Connection shaft, XTPAXRHMSFT, can be cut to desired length for mounting depths of 100 – 240 mm. Carrier with extension shaft included.
- With ON/OFF switch position and "+" (tripped), lockable with 3 padlocks, 4 – 8 mm hasp.



XTPAXRHM165B

Description	QPC.	Eaton list number
Rotary Handle Mech IP65 Black — For use as main switch to IEC/EN 60204	1	XTPAXRHM165B
Rotary Handle Mech IP65 Red/Yellow — For use as main switch with Emergency-Stop function to EN 60204	1	XTPAXRHM265RY
Rotary Handle Mech IP65 Black — For use as main switch to EN 60204 in MCC power distribution systems and with B-Frame XTPR when installed rotated 90°.	1	XTPAXRHM365B

## Manual Motor Protectors, Pushbutton & Rotary, Telescopic Mounting Adapter

- With 45 mm top-hat rail to IEC/EN 60715 for compensation of the mounting depth of rear mounted devices in surface mounted enclosures. Stepless adjustment via scale from 75 – 115 mm.



XTPAXTEA

Description	QPC	Eaton list number
Telescoping Adapter, 75 – 115 mm Depth, for use with XTPB and B-Frame XTPR MMPs	1	XTPAXTEA

## Manual Motor Protectors, Rotary, Frame B, Sealing Wire



XTPAXSW

Description	QPC.	Eaton list number
Sealing Wire for B-Frame XTPR. To prevent tampering with the overload release and the test function	5	XTPAXSW

## Manual Motor Protectors, Enclosure, Indicating Lights



XTPAXILGB

Description	Colour	Operating voltage	QPC.	Eaton list number
Indicating Light	White	110 – 230V	10	XTPAXILWB
	White	230 – 240V	10	XTPAXILWN
	White	415 – 500V	10	XTPAXILWC
Indicating Light	Green	110 – 230V	10	XTPAXILGB
	Green	230 – 240V	10	XTPAXILGN
	Green	415 – 500V	5	XTPAXILGC
Indicating Light	Red	110 – 230V	10	XTPAXILRB
	Red	230 – 240V	10	XTPAXILRN
	Red	415 – 500V	5	XTPAXILRC

## Manual Motor Protectors, Pushbutton and Rotary, Frame B, Three-Phase Commoning Link

- Protected against accidental contact. B-Frame short circuit proof  $U_e = 690V$ ,  $I_u = 63A$ ; D-Frame short circuit proof  $U_e = 690V$ ,  $I_u = 128A$ .



XTPAXCLKA2

For use with...	Qty. MMP	Length of Link (mm)	Unit Width (mm)	QPC	Eaton list number
MMP with no side mounted auxiliaries or voltage releases	2	90	45	10	XTPAXCLKA2
	3	135	45	10	XTPAXCLKA3
	4	180	45	10	XTPAXCLKA4
	5	225	45	10	XTPAXCLKA5
	MMP with one auxiliary contact or trip-indicating auxiliary contact fitted on the right	2	99	45 + 9	10
	3	153	45 + 9	10	XTPAXCLKB3
	4	207	45 + 9	10	XTPAXCLKB4
	5	261	45 + 9	10	XTPAXCLKB5
MMP with an auxiliary contact and trip-indicating auxiliary contact mounted on the right or a voltage release mounted on the left.	2	108	45 + 18	10	XTPAXCLKC2
	4	234	45 + 18	10	XTPAXCLKC4

## Manual Motor Protectors, Pushbutton and Rotary, Frame D, Three-Phase Commoning Link

- Protected against accidental contact. B-Frame short circuit proof  $U_e = 690V$ ,  $I_u = 63A$ ; D-Frame short circuit proof  $U_e = 690V$ ,  $I_u = 128A$ .



XTPAXCLKA2D

For use with...	Qty. MMP	Length of Link (mm)	Unit Width (mm)	QPC	Eaton list number
MMP with no side mounted auxiliaries or voltage releases	2	110	55	1	XTPAXCLKA2D
	3	165	55	1	XTPAXCLKA3D
	4	220	55	1	XTPAXCLKA4D

## Manual Motor Protectors, Rotary Unused Terminals Shroud



XTPAXUTS

Description	For use with...	QPC	Eaton list number
To cover unused terminals on three-phase commoning link.	B-Frame XTPR	20	XTPAXUTS
To cover unused terminals on three-phase commoning link.	D-Frame XTPR	10	XTPAXUTSD

## Manual Motor Protectors, Rotary, Frame B, Incoming Terminal

- For three-phase commoning link, protected against accidental contact,  $U_e = 690V$ ,  $I_u = 63A$ ; For conductor cross-sections: 2.5 – 25 mm<sup>2</sup> stranded; 2.5 – 16 mm<sup>2</sup> flexible with ferrules.#



XTPAXIT

Description	For use with...	QPC	Eaton list number
Incoming Terminal	B-Frame XTPR	5	XTPAXIT

## Manual Motor Protectors, Pushbutton Frame B, Insulated Enclosures

- Surface Mounting
- Integrated terminal for PE(N) connection, two M25 cable entry knockouts at top and at bottom.



XTPBXENCSEK65

Description	Degree of Protection	For Use With...	Eaton list number
Enclosure, with membrane actuation.	IP40	XTPB MMP Only or with: XTPAXFA..., XTPBXFAEM20, XTPAXSA..., XTPAXUVR..., XTPAXSR...	<b>XTPBXENC40</b>
	IP65		<b>XTPBXENC65</b>
Enclosure, lockable in OFF position.	IP65	XTPB MMP Only or with: XTPAXFA..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPBXENC65</b>
Enclosure, lockable in OFF position in combination with XTPBXFAEM20 Early Make front mount auxiliary contact	IP65	XTPB MMP Only or with: XTPAXFA..., XTPBXFAEM20, XTPAXUVR..., XTPAXSR...,	<b>XTPBXENC65</b>
Enclosure, with Emergency-Stop (E-Stop) pushbutton actuator	IP65	XTPAXCL	<b>XTPBXENC65</b>
Enclosure, with Emergency-Stop (E-Stop) pushbutton actuator, key release	IP65		<b>XTPBXENC65</b>

## Manual Motor Protectors, Frame B, Pushbutton Insulated Enclosures

- Flush Mounting
- Integrated terminal for PE(N) connection



XTPBXENC40

Description	Degree of Protection	For Use With...	Eaton list number
Enclosure, with membrane actuation	Front IP40	XTPB Only or with: XTPAXFA..., XTPBXFAEM20, XTPAXSA..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPBXENC40</b>
	Front IP55		<b>XTPBXENC55</b>
Enclosure, lockable in OFF position	Front IP55	XTPB Only or with: XTPAXFA..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPBXENC55</b>
Enclosure, lockable in OFF position in combination with XTPBXFAEM20 Early Make front mount auxiliary contact	Front IP55	XTPB Only or with: XTPAXFA..., XTPBXFAEM20, XTPAXUVR..., XTPAXSR...,	<b>XTPBXENC55</b>
Enclosure, , with Emergency-Stop (E-Stop) pushbutton actuator	Front IP55	XTPAXCL	<b>XTPBXENC55</b>
Enclosure, , with Emergency-Stop (E-Stop) pushbutton actuator, key release	Front IP55		<b>XTPBXENC55</b>

## Manual Motor Protectors, Rotary, Frame B, Pushbutton Insulated Enclosures

- Surface Mounting



XTPAXENCS41

Description	Degree of Protection	For Use With...	Eaton list number
Enclosure, cover with aperture dimensioned to accommodate front of MMP. IP40, when mounted turned through 90° to left/right	IP41 with vertical mounting	B-Frame XTPR Only or with: XTPAXFA..., XTPAXSA..., XTPAXSATR..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPAXENCS41</b> <sup>1)</sup>
Enclosure, with black/grey rotary handle	IP65		<b>XTPAXENCS65B</b> <sup>1)</sup>
Enclosure, with red/yellow rotary handle for use as Emergency-Stop switches to IEC/EN 60204	IP65		<b>XTPAXENCS65RY</b> <sup>1)</sup>
Enclosure, cover with aperture dimensioned to accommodate front of MMP.	IP40	B-Frame XTPR Only or with: XTPAXSA..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPAXENCS40</b> <sup>2)</sup>
Enclosure, with black/gray rotary handle	IP55	B-Frame XTPR Only or with:	<b>XTPAXENCS55B</b> <sup>2)</sup>
Enclosure, with red/yellow rotary handle for use as Emergency-Stop switches to IEC/EN 60204	IP55	XTPAXFA..., XTPAXSA..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPAXENCS55RY</b> <sup>2)</sup>

<sup>1)</sup> M25 metric cable entry knock-out, top and bottom. Cable push-through membrane, top and bottom, in the back plate and as a control line entry. Includes N and PE terminals.

<sup>2)</sup> Integrated terminal for PE(N) connection, two M25 cable entry knockouts at the top and bottom.

## Manual Motor Protectors, Rotary, Frame B, Insulated Enclosures

- Early - Make Front Mount Auxiliary Contact



XTPAXENCSEM65B

Description	Degree of Protection	For Use With...	Eaton list number
Enclosure, with black/gray rotary handle	IP65	B-Frame XTPR and	<b>XTPAXENCSEM65B</b>
Enclosure, with red/yellow rotary handle for use as Emergency-Stop switches to IEC/EN 60204	IP65	XTPAXFAEM20 only or with: XTPAXFA..., XTPAXSA..., XTPAXSATR..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPAXENCSEM65RY</b>
Enclosure, with black/gray rotary handle	IP55	B-Frame XTPR and	<b>XTPAXENCSEM55B</b>
Enclosure, with red/yellow rotary handle for use as Emergency-Stop switches to IEC/EN 60204	IP55	XTPAXFAEM20 only or with: XTPAXFA..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPAXENCSEM55RY</b>

## Manual Motor Protectors, Rotary, Frame D, Insulated Enclosures

- Surface Mounting

Description	Degree of Protection	For Use With...	Eaton list number
Enclosure, with black/gray rotary handle	IP65	D-Frame XTPR Only or with:	<b>XTPAXENCSD65B</b>
Enclosure, with red/yellow rotary handle for use as Emergency-Stop switches to IEC/EN 60204	IP65	XTPAXFA..., XTPAXFAEM20, XTPAXSA..., XTPAXSATR..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPAXENCSD65RY</b>



## Manual Motor Protectors, Rotary, Frame B, Insulated Enclosures

- Flush Mounting
- Integrated terminal for PE(N) connection.



XTPAXENCF40

Description	Degree of Protection	For Use With...	Eaton list number
Enclosure, cover with aperture dimensioned to accommodate front of MMP.	Front IP40	B-Frame XTPR Only or with: XTPAXSA..., XTPAXUVR..., XTPAXSR..., XTPAXCL	<b>XTPAXENCF40</b>
Enclosure, with black/gray rotary handle	Front IP55	B-Frame XTPR Only or with:	<b>XTPAXENCF55B</b>
Enclosure, with red/yellow rotary handle for use as Emergency-Stop switches to IEC/EN 60204	Front IP55	XTPAXSA..., XTPAXUVR..., XTPAXSR..., XTPAXFA..., XTPAXCL	<b>XTPAXENCF55RY</b>

## Manual Motor Protector, Rotary, Enclosure Padlock Attachment

- For use as main switch to IEC/EN60204



XTPAXPL1

Description	For Use With...	QPC	Eaton list number
Padlocking feature. Up to 3 padlocks with 3 – 6 mm hasp thickness.	XTPAXENCS65B, XTPAXENCS65RY, XTPAXENCESEM65B, XTPAXENCESEM65RY, XTPAXENCS55B, XTPAXENCS55RY, XTPAXENCESEM55B, XTPAXENCESEM55RY	3	<b>XTPAXPL1</b> <sup>1)</sup>
Padlocking feature. Up to 3 padlocks with 3 – 6 mm hasp thickness.	XTPAXENCSD65B, XTPAXENCSD65RY	1	<b>XTPAXPL2</b> <sup>1)</sup>
Padlocking feature. Up to 3 padlocks with 3 – 6 mm hasp thickness.	XTPAXENCF55B, XTPAXENCF55RY	3	<b>XTPAXPL3</b> <sup>2)</sup>

<sup>1)</sup> Lockable in the 0-position of the XTPR manual motor protector.

<sup>2)</sup> Lockable in the OFF position of the B-Frame XTPR manual motor protector.

## Manual Motor Protector, Pushbutton and Rotary, Frame B, Neutral Terminal

- Flush Mounting Enclosures only



XTPAXNT

Description	For Use With...	QPC	Eaton list number
Neutral Terminal for connection of a fifth conductor	XTPBXENCF40, XTPBXENCF55, XTPAXENCF40, XTPAXENCF55B, XTPAXENCF55RY	20	<b>XTPAXNT</b>



This chapter provides product selection guidance for Eaton's XT range of Manual Motor Controllers which combine a Manual Motor Protector (MMP's) with an XT contactor(s) to provide a complete motor protection solution by combining motor disconnect function, thermal overload protection, magnetic short circuit protection and remote control operation in one compact assembled unit.

#### Standards

- IEC EN 60947-4-1
- CE Marked



See page 66 for accessories  
 See page 68 for coil suffix  
 See page 158 for dimensional drawings  
 See page 158 for technical Details



XTSCP25BB

### Manual Motor Controllers, DOL, Frame B MMP + Frame B Contactor

FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Maximum Motor Ratings Motor kW Rating AC-3 — P 3-Phase 380 – 415V	Component Combinations			Assembled Controller <sup>1)</sup> Eaton list number
		Manual Motor Protector	Connection Kit	Contactor <sup>1)</sup>	
0.16 – 0.25	0.06	XTPRP25BC1	XTPAXTPCB	XTCE007B10_	<b>XTSCP25BB_</b>
0.25 – 0.4	0.09	XTPRP40BC1	XTPAXTPCB	XTCE007B10_	<b>XTSCP40BB_</b>
0.4 – 0.63	0.18	XTPRP63BC1	XTPAXTPCB	XTCE007B10_	<b>XTSCP63BB_</b>
0.63 – 1	0.25	XTPR001BC1	XTPAXTPCB	XTCE007B10_	<b>XTSC001BB_</b>
1 – 1.6	0.55	XTPR1P6BC1	XTPAXTPCB	XTCE007B10_	<b>XTSC1P6BB_</b>
1.6 – 2.5	0.75	XTPR2P5BC1	XTPAXTPCB	XTCE007B10_	<b>XTSC2P5BB_</b>
2.5 – 4	1.5	XTPR004BC1	XTPAXTPCB	XTCE007B10_	<b>XTSC004BB_</b>
4 – 6.3	2.2	XTPR6P3BC1	XTPAXTPCB	XTCE007B10_	<b>XTSC6P3BB_</b>
6.3 – 10	4	XTPR010BC1	XTPAXTPCB	XTCE009B10_	<b>XTSC010BB_</b>
8 – 12	5.5	XTPR012BC1	XTPAXTPCB	XTCE012B10_	<b>XTSC012BB_</b>

<sup>1)</sup> Underscore ( \_ ) indicates Coil Suffix required. See Table Page 68



XTSC016BC

### Manual Motor Controllers, DOL, Frame B MMP + Frame C Contactor

FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Maximum Motor Ratings Motor kW Rating AC-3 — P (kW) 3-Phase 380 – 415V	Component Combinations			Assembled Controller <sup>1)</sup> Eaton list number
		Manual Motor Protector	Connection Kit	Contactor <sup>1)</sup>	
10 – 16	7.5	XTPR016BC1	XTPAXTPCC	XTCE018C10_	<b>XTSC016BC_</b>
16 – 20	9	XTPR020BC1	XTPAXTPCC	XTCE025C10_	<b>XTSC020BC_</b>
20 – 25	11	XTPR025BC1	XTPAXTPCC	XTCE025C10_	<b>XTSC025BC_</b>
25 – 32	15	XTPR032BC1	XTPAXTPCC	XTCE032C10_	<b>XTSC032BC_</b>

<sup>1)</sup> Underscore (\_) indicates Coil Suffix required. See Table Page 68



XTSC016DC

### Manual Motor Controllers, DOL, Frame D MMP + Frame C Contactor

- The connection between the XTPR...DC1 and the XTCE...C... contactor will be made with flexible wire and mounted to the DIN Rail Adapter Plate (XTPAXTPCDP).

FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Maximum Motor Ratings Motor kW Rating AC-3 — P (kW) 3-Phase 380 – 415V	Component Combinations			Assembled Controller <sup>1)</sup> Eaton list number
		Manual Motor Protector	Connection Kit	Contactor <sup>1)</sup>	
10 – 16	7.5	XTPR016DC1		XTCE018C10_	<b>XTSC016DC_</b>
16 – 25	12.5	XTPR025DC1		XTCE025C10_	<b>XTSC025DC_</b>
25 – 32	15	XTPR032DC1		XTCE032C10_	<b>XTSC032DC_</b>

<sup>1)</sup> Underscore (\_) indicates Coil Suffix required. See Table Page 68



XTSC040DD

### Manual Motor Controllers, DOL, Frame D MMP + Frame D Contactor

- XTPAXTPCD — Includes DIN Rail Adapter Plate (XTPAXTPCDP) and electrical contact modules (XTPAXECMD). Prior to release of XTPAXTPCD, the connection between the XTPR...DC1 and the XTCE...D... contactor will be made with flexible wire and mounted to the DIN Rail Adapter Plate (XTPAXTPCDP).

FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Maximum Motor Ratings Motor kW Rating AC-3 — P (kW) 3-Phase 380 – 415V	Component Combinations			Assembled Controller <sup>1)</sup> Eaton list number
		Manual Motor Protector	Connection Kit	Contactor <sup>1)</sup>	
32 – 40	20	XTPR040DC1	XTPAXTPCD	XTCE040D10_	<b>XTSC040DD_</b>
40 – 50	25	XTPR050DC1	XTPAXTPCD	XTCE050D10_	<b>XTSC050DD_</b>
50 – 58	30	XTPR058DC1	XTPAXTPCD	XTCE065D10_	<b>XTSC058DD_</b>
55 – 63	34	XTPR063DC1	XTPAXTPCD	XTCE065D10_	<b>XTSC063DD_</b>

<sup>1)</sup> Underscore (\_) indicates Coil Suffix required. See Table Page 68

### Combination Controller, DOL, Connection Kits



XTPAXTPCB

Description	Eaton list number
Includes: Mechanical & Electrical Connection Element for XTPR...B... (MMP) and XTCE...B... (Contactor).	<b>XTPAXTPCB</b> <sup>1)</sup>
Includes: Mechanical & Electrical Connection Element for XTPR...B... (MMP) and XTCE...C... (Contactor) and DIN Rail Adapter Plate.	<b>XTPAXTPCC</b> <sup>2)</sup>
Includes: Mechanical & Electrical Connection Element for XTPR...D... (MMP) and XTCE...D... (Contactor) and DIN Rail Adapter Plate.	<b>XTPAXTPCD</b>

<sup>1)</sup> Comprised of mechanical connection element for MMP and contactor with main current wiring between MMP and contactor in the tool-less plug connection.  
<sup>2)</sup> Comprised of a top-hat rail adapter plate and main current wiring between MMP and contactor.

### Combination Controller, DOL Reversing, Connection Kits



XTPAXTPCRB

Description	Eaton list number
Includes: Mechanical & Electrical Connection Element for XTPR...B... (MMP) and (2) XTCR...B... (Contactors)	<b>XTPAXTPCRB</b> <sup>1)</sup>
Includes: Mechanical & Electrical Connection Element for XTPR...B... (MMP) and (2) XTCR...C... (Contactors) and DIN Rail Adapter Plate.	<b>XTPAXTPCRC</b> <sup>2)</sup>
Includes: Mechanical & Electrical Connection Element for XTPR...D... (MMP) and (2) XTCR...D... (Contactors) and DIN Rail Adapter Plate.	<b>XTPAXTPCRD</b>

<sup>1)</sup> Comprised of mechanical connection element for MMP and contactor with reversing combination main current wiring in the tool-less plug connection. Control cables for electrical interlocking in toolless plug connection: K1M:A1 - K2M:21, K1M:21 - K2M:A1, K1M:A2 - K2M:A2.  
<sup>2)</sup> Comprised of a top-hat rail adapter plate and reversing combination main current wiring.

### Combination Controller Connection Kits Mounting Plate



XTPAXTCPB

For Use with ...	Description	Pkg. Qty.	Eaton list number <sup>1)</sup>
XTPAXTPCB	For mounting of a B-Frame Non-reversing Manual or Manual Motor Controller	4	<b>XTPAXTCPB</b>
XTPAXTPCRB	For mounting of a B-Frame Reversing Manual or Combination Motor Controller	4	<b>XTPAXTCPB</b>

<sup>1)</sup> Comprised of 45 mm wide adapter plate and connection elements for side-by-side positioning of more plates.



XTSRP25BB

### Manual Motor Controller, DOL Reversing, Frame B MMP + (2) Frame B Contactors

FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Maximum Motor Ratings kW 3-Phase 380 – 415V	Component Combinations			Assembled Controller <sup>1)</sup> Eaton list number
		Manual Motor Protector	Connection Kit	Contactor <sup>1)</sup>	
0.16 – 0.25	0.06	XTPRP25BC1	XTPAXTPCRB	XTCE007B01_	XTSRP25BB_
0.25 – 0.4	0.09	XTPRP40BC1	XTPAXTPCRB	XTCE007B01_	XTSRP40BB_
0.4 – 0.63	0.18	XTPRP63BC1	XTPAXTPCRB	XTCE007B01_	XTSRP63BB_
0.63 – 1	0.25	XTPR001BC1	XTPAXTPCRB	XTCE007B01_	XTSR001BB_
1 – 1.6	0.55	XTPR1P6BC1	XTPAXTPCRB	XTCE007B01_	XTSR1P6BB_
1.6 – 2.5	0.75	XTPR2P5BC1	XTPAXTPCRB	XTCE007B01_	XTSR2P5BB_
2.5 – 4	1.5	XTPR004BC1	XTPAXTPCRB	XTCE007B01_	XTSR004BB_
4 – 6.3	2.2	XTPR6P3BC1	XTPAXTPCRB	XTCE007B01_	XTSR6P3BB_
6.3 – 10	4	XTPR010BC1	XTPAXTPCRB	XTCE009B01_	XTSR010BB_
8 – 12	5.5	XTPR012BC1	XTPAXTPCRB	XTCE012B01_	XTSR012BB_

<sup>1)</sup> Underscore ( ) indicates Coil Suffix required. See page 68.



XTSR016BC

### Manual Motor Controller, DOL Reversing, Frame B MMP + (2) Frame C Contactors

FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Maximum Motor Ratings kW 3-Phase 380 – 415V	Component Combinations			Assembled Controller <sup>1)</sup> Eaton list number
		Manual Motor Protector	Connection Kit	Contactor <sup>1)</sup>	
10 – 16	7.5	XTPR016BC1	XTPAXTPCRC	XTCE018C01_	XTSR016BC_
16 – 20	9	XTPR020BC1	XTPAXTPCRC	XTCE025C01_	XTSR020BC_
20 – 25	11	XTPR025BC1	XTPAXTPCRC	XTCE025C01_	XTSR025BC_
25 – 32	15	XTPR032BC1	XTPAXTPCRC	XTCE032C01_	XTSR032BC_

<sup>1)</sup> Underscore ( ) indicates Coil Suffix required. See page 68.



XTSR016DC

### Manual Motor Controller, DOL Reversing, Frame D MMP + (2) Frame C Contactors

- The connection between the XTPR...DC1 and the XTCE...C... contactor will be made with flexible wire and mounted to the DIN Rail Adapter Plate (XTPAXTPCDP).

FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Maximum Motor Ratings kW 3-Phase 380 – 415V	Component Combinations			Assembled Controller <sup>1)</sup> Eaton list number
		Manual Motor Protector	Connection Kit	Contactor <sup>1)</sup>	
10 – 16	7.5	XTPR016DC1		XTCE018C01_	XTSR016DC_
16 – 25	12.5	XTPR025DC1		XTCE025C01_	XTSR025DC_
25 – 32	15	XTPR032DC1		XTCE032C01_	XTSR032DC_

<sup>1)</sup> Underscore ( ) indicates Coil Suffix required. See page 68.



XTSR04DD

### Manual Motor Controller, DOL Reversing, Frame D MMP + (2) Frame D Contactors

- XTPAXTPCRD — Available June 2006 and will include two DIN Rail Adapter Plates (XTPAXTPCDP) and electrical contact module (XTPAXECMRD). Prior to release of XTPAXTPCD, the connection between the XTPR...DC1 and the two XTCE...D... contactors will be made with flexible wire and mounted to the DIN Rail Adapter Plates (XTPAXTPCDP).

FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Maximum Motor Ratings kW 3-Phase 380 – 415V	Component Combinations			Assembled Controller <sup>1)</sup> Eaton list number
		Manual Motor Protector	Connection Kit	Contactor <sup>1)</sup>	
32 – 40	20	XTPR040DC1	XTPAXTPCRD <sup>2)</sup>	XTCE040D01_	XTSR040DD_
40 – 50	25	XTPR050DC1	XTPAXTPCRD <sup>2)</sup>	XTCE050D01_	XTSR050DD_
50 – 58	30	XTPR058DC1	XTPAXTPCRD <sup>2)</sup>	XTCE065D01_	XTSR058DD_
55 – 63	34	XTPR063DC1	XTPAXTPCRD <sup>2)</sup>	XTCE065D01_	XTSR063DD_

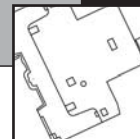
<sup>1)</sup> Underscore ( ) indicates Suffix required. See page 68.

## AC and DC Coil Suffixes

Coil Voltage 50Hz			Suffix Code <sup>1)</sup>
	60Hz	DC	
<b>Frame B Contactors</b>			
110V	120V		<b>A</b>
220V ,	240V		<b>B</b>
230V			<b>F</b>
24V	24V		<b>T</b>
415V	480V		<b>C</b>
550V	600V		<b>D</b>
	208V		<b>E</b>
190V	220V		<b>G</b>
240V	277V		<b>H</b>
380V	440V		<b>L</b>
400V			<b>N</b>
	380V		<b>P</b>
12V	12V		<b>R</b>
24V			<b>U</b>
42V	48V		<b>W</b>
48V			<b>Y</b>
		120V	<b>AD</b> <sup>2)</sup>
		220V	<b>BD</b> <sup>2)</sup>
		12V	<b>RD</b> <sup>2)</sup>
		24V	<b>TD</b>
		48V	<b>WD</b> <sup>2)</sup>
<b>Frame C and D Contactors</b>			
110V	120V		<b>A</b>
220V	240V		<b>B</b>
230V			<b>F</b>
24V	24V		<b>T</b>
415V	480V		<b>C</b>
550V	600V		<b>D</b>
	208V		<b>E</b>
190V	220V		<b>G</b>
240V	277V		<b>H</b>
380V	440V		<b>L</b>
400V			<b>N</b>
	380V		<b>P</b>
12V	12V		<b>R</b>
24V			<b>U</b>
42V	48V		<b>W</b>
48V			<b>Y</b>
		110-130V	<b>AD</b> <sup>2)</sup>
		200-240V	<b>BD</b> <sup>2)</sup>
		12-14V	<b>RD</b> <sup>2)</sup>
		24-27V	<b>TD</b>
		48-60V	<b>WD</b> <sup>2)</sup>

<sup>1)</sup> Add suffix in place of underscore ( \_ ) to Eaton list number

<sup>2)</sup> With DC Operation: Integrated diode-resistor combination, coil rating 2.6W.



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**Master Coil Suffix Table 166**



**Europe**  
Conformité Européen  
(CE)



This mark denotes that the device carrying it conforms to all relevant requirements and specifications. The mandatory application of this mark therefore enables the unrestricted use of marked devices within the European economic area. Since January 1996, all devices sold within the European union must comply with the Electromagnetic Compatibility (EMC) Directive. XT has passed the required tests to these Directives, and the devices carry the CE mark, demonstrating compliance with the EMC Directive. *Because devices bearing the CE mark comply with the harmonized standards, approval and the associated marking is no longer required in the following countries:*

**Belgium**

Comité Electro-  
technique Belge  
Belgisch Elektro-  
technisch Comité  
(CEBEC)



**Netherlands**

Naamloze Vennootschap  
tot Keuring van  
Electrotechnische  
Materialien  
(KEMA)



**Denmark**

Danmarks Elektriske  
Materielkontrol  
(DEMKO)



**Norway**

Norges Elektriske  
Materiellkontrol  
(NEMKO)



**Finland**

(FIMKO)



**Sweden**

Svenska  
Elektriska Materiel-  
Kontrollanstalten  
(SEMKO)



**France**

Union Technique  
de l'Electricité  
(UTE)



**Switzerland**

Schweizerischer  
Elektrotechischer  
Verein  
(SEV)



Devices the USA and Canada have UL and CSA approval.

**USA**

Underwriters  
Laboratories  
(UL)

Listing



Recognition



**Canada**

Canadian Standards  
Association  
(CSA)



Recently introduced is the mandatory approval of electrical products for:

- Slovakia
- Poland
- South Africa
- China
- Russia
- Turkey
- Argentina

Marking is partly mandatory for these countries. The IEC rating data is accepted as in other European countries. Approval is not mandatory in the Czech Republic and Hungary. The manufacturer's declaration of conformity is sufficient here. Romania requires that components that are to be used in public buildings must be approved by the Romanian test authority ICECON.

#### Russia

Devices for Russia must bear the appropriate marking.

Russia  
Goststandart  
(GOST-R)



#### South Africa

ZA  
SABS



#### Argentina



### Selection of Devices

"Selection appropriate for export" does not mean merely meeting the requisite approvals and conformity to relevant specifications. The meaning of the term goes a great deal further by even including that equipment and installations must be designed to a concept with export in mind.

The following are important criteria for selecting switchgear suitable for export:

#### • For motor-protective circuit-breakers

Use inherently short-circuit proof switches capable of controlling the highest prospective fault levels at the point of installation without the need for back-up protection.

- Advantage:
  - No restrictions whatsoever for installation
  - Complete independence from the on-site protective system
  - No problems getting spare parts

#### • For circuit-breakers

Use types with visible contacts, quick-make and quick-break operation as standard. Use current-limiting circuit-breakers for high short-circuit levels. Selective switches are recommended for the selective graduation of networks.

- Advantage:
  - Independence from local accident prevention regulations requiring visible contacts, and safety faults caused by inexperienced operating personnel.
  - The effects of short-circuits are kept to a minimum.
  - Fuseless installations offer greater safety and reliability in plant operation. In the event of a fault, only the faulty section of the system is isolated.

#### • For contactors

Use contactors whose entire range provides consistently reliable operation in the event of voltage drops (consistently down to 80%  $U_n$  should be aimed for) and whose contact system will not assume an indeterminate position either on closing or on opening in such conditions.

- Advantage:
  - During the electrification work in areas such as Africa and the Middle East, an insufficient voltage stability is — at least for a certain time — likely in many applications (for example due to long spur lines or small local generators). The use of devices that fulfill the above requirements will eliminate one of the main failure causes related to contactors.

#### • For enclosures

Use insulated enclosures with transparent covers (i.e. "totally insulated" enclosures).

- Advantage:
  - Total insulation is the best possible protective measure from the user's point of view, avoiding reliance on the possibly doubtful skills of unknown installation personnel. Furthermore, protective measures based on earthing are often extremely difficult, if not impossible (in the Middle East, for example, due to the dryness of the ground).
  - Insulated enclosures completely eliminate the need for any additional protection against corrosion. The transparent covers contribute significantly to the correct operation of a system, because switchgear operation can be monitored even with the doors or covers closed, thus virtually eliminating the possibility of these being left open through carelessness. The transparent cover is an important contribution to safety, especially where exports to areas of uncertain skills are concerned.

• **For overcurrent protective devices**

Always use circuit-breakers and motor-protective circuit-breakers. Avoid fuses as far as possible.










- Advantage:
  - The operational reliability of a system is especially important for export contracts. Circuit-breakers and motor-protective circuit-breakers provide this reliability in full measure since they can be immediately reclosed once a fault has been cleared, they disconnect all poles, they have ideal protection through high tripping accuracy and they can be used for selective operation. Because they have no fuses or other consumables, they also greatly reduce the problem of obtaining replacement parts. The advantages of fuseless design for export are especially evident in this case. No complicated investigation is needed to find out which fusing system is used in the respective location and which specifications have to be followed to select the correct fuses. Often several different fuse systems with widely varying characteristics are used side-by-side in the same country. For the uninitiated, it may be almost impossible to find the right fuse in these circumstances. These problems do not arise where a circuit-breaker is used.

• **For main switches and safety switches**



Use devices with positive contact separation and clear switch position indication.

- Advantage:
  - The mechanical coupling of the actuating element with the contacts ensures that the OFF position is indicated only when all main contacts are separated by the prescribed distance, and only in this position can the switch be padlocked. This ensures safety when carrying out maintenance and repair work on the installation or machinery.

**Test Authorities**

<b>USA</b> USA UL	
<b>Canada</b> CDN CSA	
<b>Romania</b> RO ICECON	ML PAT
<b>Russia</b> RUS GOST-R	
<b>South Africa</b> ZA SABS	
<b>Slovakia</b> SK SKTC	
<b>Poland</b> PL BBJ-SEP	
<b>Turkey</b> TR TSE	
<b>China</b> PRC CCC	
<b>Ukraine</b> UA Ukrain-GOST	

**Shipping Classifications**

<b>Germany</b> Germanischer Lloyd (GL)	
<b>Great Britain</b> Lloyd's Register of Shipping (LR)	

**France**  
Bureau Veritas (BV)



**Russia**  
Russian Maritime  
Register of Shipping  
(RS)



**Italy**  
Registro Italiano Navale  
(RINA)



**Norway**  
Det Norske Veritas  
(DNV)



**Poland**  
Polski Rejestr Statkow  
(PRS)



**Approvals for North America**

Type of Approval	Approval Mark
The device is UL- and CSA-approved as discrete device.	
The device is CSA-approved as discrete device.	
The device is UL-approved as discrete device.	
The device contains UL-approved components; its approval conditions must be maintained in use (UL Recognized). The device is CSA-approved as discrete device.	

## IEC Utilisation Categories used in Technical Data and Formulas

(See also IEC/EN 60947-1; 2.1.18/IEV 441-17-19)

A combination of specified requirements relating to the condition in which the switching device or fuse fulfills its purpose and selected to represent a characteristic group of real-life applications. The specified requirements may, for example, relate to the values of making and breaking capacity and other characteristic values, data concerning associated circuits and the applicable conditions of use and operational behaviour.

Code	Descriptions	Code	Descriptions
DF	Duty factory	$I_{rmv}$	Response value of short-time delayed short-circuit release
$I_{\Delta n}$	Response value of earth-fault release	$I_{sd}$	Response value of short-time delayed short-circuit release
$I_{cm}$	Rated short-circuit making capacity	$I_T$	Response value of earth-fault release
$I_{cn}$	Rated short-circuit breaking capacity	$I_g$	Response value of earth-fault release
$I_{cs}$	Rated service short-circuit breaking capacity	$I_{th}$	Conventional free air thermal current
$I_{cu}$	Rated ultimate short-circuit breaking capacity	$I_{the}$	Conventional thermal current of enclosed devices
$I_{cw}$	Rated short-time withstand current	$I_u$	Rated uninterrupted current
$I_e$	Rated operational current	$S_{NT}$	Transformer rating
$I_k$	Transformer initial short-circuit AC current	$t_r$	Time delay of overload release response
$I_L$	Load monitoring response value	$t_T$	Time delay of earth-fault release response
$I_n$	Rated current	$t_g$	Time delay of earth-fault release response
$I_{NT}$	Transformer rated current	$t_v$	Time delay of short-circuit release response
$I_{PK}$	Rated peak withstand current	$U_c$	Rated actuating voltage
$I_q$	Rated conditional short-circuit current	$U_e$	Rated operational voltage
$I_r$	Overcurrent release set value	$U_i$	Rated insulation voltage
$I_{rm}$	Response value of non-delayed short-circuit release	$U_{imp}$	Rated impulse withstand voltage
$I_i$	Response value of non-delayed short-circuit release	$U_k$	Transformer short-circuit voltage
$I_{rmf}$	Response value of fixed, non-delayed short-circuit release	$U_s$	Rated control voltage

## Examples of Utilization Categories for Low Voltage Switchgear and Controlgear

Category	Typical Applications	Relevant IEC Product Standard
<b>Nature of Current — AC</b>		
AC-1	Non-inductive or slightly inductive loads, resistance furnaces	60947-4-1
AC-2	Slip-ring motors: starting, switching off	60947-4-1
AC-3	Squirrel-cage motors: starting, switching off motors during running	60947-4-1
AC-4	Squirrel-cage motors: starting, plugging <sup>2)</sup> , inching <sup>3)</sup>	60947-4-1
AC-5a	Switching of electric discharge lamp controls	60947-4-1
AC-5b	Switching of incandescent lamps	60947-4-1
AC-6a	Switching of transformers	60947-4-1
AC-6b	Switching of capacitor banks	60947-4-1
AC-7a	Slightly inductive loads for household appliances and similar applications	61095
AC-7b	Motor-loads for household applications	61095
AC-8a	Hermetic refrigerant compressor motor control with manual resetting of overload releases	60947-4-1
AC-8b	Hermetic refrigerant compressor motor control with automatic resetting of overload releases	60947-4-1
AC-12	Control of resistive loads and solid-state loads with isolation by optocouplers	60947-5-1
AC-12	Control of resistive loads and solid-state loads with optical isolation	60947-5-2
AC-13	Control of solid-state loads with transformer isolation	60947-5-1
AC-14	Control of small electromagnetic loads	60947-5-1
AC-15	Control of AC electromagnetic loads	60947-5-1
AC-20	Connecting and disconnecting under no-load conditions	60947-3
AC-21	Switching of resistive loads, including moderate overloads	60947-3
AC-22	Switching of mixed resistive and inductive loads, including moderate overloads	60947-3
AC-23	Switching of motor loads or other highly inductive loads	60947-3
AC-31	Non inductive or slightly inductive loads	60947-6-1
AC-33	Motor loads or mixed loads including motors, resistive loads and up to 30% incandescent lamp loads	60947-6-1
AC-35	Electric discharge lamp loads	60947-6-1
AC-36	Incandescent lamp loads	60947-6-1
AC-40	Distribution circuits comprising mixed resistive and reactive loads having a resultant inductive reactance	60947-6-2
AC-41	Non-inductive or slightly inductive loads, resistance furnaces	60947-6-2
AC-42	Slip-ring motors: starting, switching off	60947-6-2
AC-43	Squirrel-cage motors: starting, switching off motors during running	60947-6-2
AC-44	Squirrel-cage motors: starting, plugging <sup>2)</sup> , inching <sup>3)</sup>	60947-6-2
AC-45a	Switching of electric discharge lamp controls	60947-6-2
AC-45b	Switching of incandescent lamps	60947-6-2
AC-51	Non-inductive or slightly inductive loads, resistance furnaces	60947-4-3
AC-52a	Control of slip ring motor stators: 8 h duty with on-load currents for start, acceleration, run	60947-4-2
AC-52b	Control of slip ring motor stators: intermittent duty	60947-4-2
AC-53a	Control of squirrel-cage motors: 8 h duty with on-load currents for start, acceleration, run	60947-4-2
AC-53b	Control of squirrel-cage motors: intermittent duty	60947-4-2
AC-55a	Switching of electric discharge lamp controls	60947-4-3
AC-55b	Switching of incandescent lamps	60947-4-3
AC-56a	Switching of transformers	60947-4-3
AC-56b	Switching of capacitor banks	60947-4-3
AC-58a	Control of hermetic refrigerant compressor motors with automatic resetting of overload releases: 8 h duty with on-load currents for start, acceleration, run	60947-4-2
AC-58b	Control of hermetic refrigerant compressor motors with automatic resetting of overload releases: intermittent duty	60947-4-2
AC-140	Control of small electromagnetic loads with holding (closed) current 0,2 A, e.g. contactor relays	60947-5-2

<sup>1)</sup> 60947-1 © IEC: 2004.

<sup>2)</sup> By plugging is understood stopping or reversing the motor rapidly by reversing motor primary connections while the motor is running.

<sup>3)</sup> By inching (jogging) is understood energizing a motor once or repeatedly for short periods to obtain small movements of the driven mechanism.

## Examples of Utilization Categories for Low Voltage Switchgear and Controlgear <sup>1)</sup>(Continued)

Category	Typical Applications	Relevant IEC Product Standard
<b>Nature of Current — AC - DC</b>		
A	Protection of circuits, with no rated short-time withstand current	60947-2
B	Protection of circuits, with a rated short-time withstand current	60947-2
<b>Nature of Current — DC</b>		
DC-1	Non-inductive or slightly inductive loads, resistance furnaces	60947-4-1
DC-3	Shunt-motors: starting, plugging <sup>2)</sup> , inching <sup>3)</sup> , Dynamic breaking of motors	60947-4-1
DC-5	Series-motors: starting, plugging <sup>2)</sup> , inching <sup>3)</sup> , Dynamic breaking of motors	60947-4-1
DC-6	Switching of incandescent lamps	60947-4-1
DC-12	Control of resistive loads and solid-state loads with isolation by optocouplers	60947-5-1
DC-12	Control of resistive loads and solid-state loads with optical isolation	60947-5-2
DC-13	Control of electromagnets	60947-5-1
DC-13	Control of electromagnets	60947-5-2
DC-14	Control of electromagnetic loads having economy resistors in circuit	60947-5-1
DC-20	Connecting and disconnecting under no-load conditions	60947-3
DC-21	Switching of resistive loads, including moderate overloads	60947-3
DC-22	Switching of mixed resistive and inductive loads, including moderate overloads (e.g. shunt motors)	60947-3
DC-23	Switching of motor loads or other highly inductive loads (e.g. series motors)	60947-3
DC-31	Resistive loads	60947-6-1
DC-33	Motor loads or mixed loads including motors	60947-6-1
DC-36	Incandescent lamp loads	60947-6-1
DC-40	Distribution circuits comprising mixed resistive and reactive loads having a resultant inductive reactance	60947-6-2
DC-41	Non-inductive or slightly inductive loads, resistance furnaces	60947-6-2
DC-43	Shunt-motors: starting, plugging <sup>2)</sup> , inching <sup>3)</sup> , Dynamic breaking of DC	60947-6-2
DC-45	Series-motors: starting, plugging <sup>2)</sup> , inching <sup>3)</sup> , Dynamic breaking of DC	60947-6-2
DC-46	Switching of incandescent lamps	60947-6-2

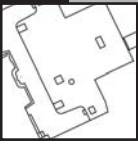
<sup>1)</sup> 60947-1 © IEC: 2004.

<sup>2)</sup> By plugging is understood stopping or reversing the motor rapidly by reversing motor primary connections while the motor is running.

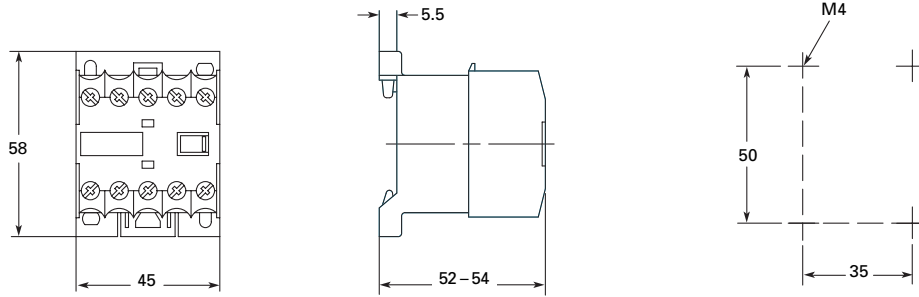
<sup>3)</sup> By inching (jogging) is understood energizing a motor once or repeatedly for short periods to obtain small movements of the driven mechanism.

### On-line Instructional leaflets

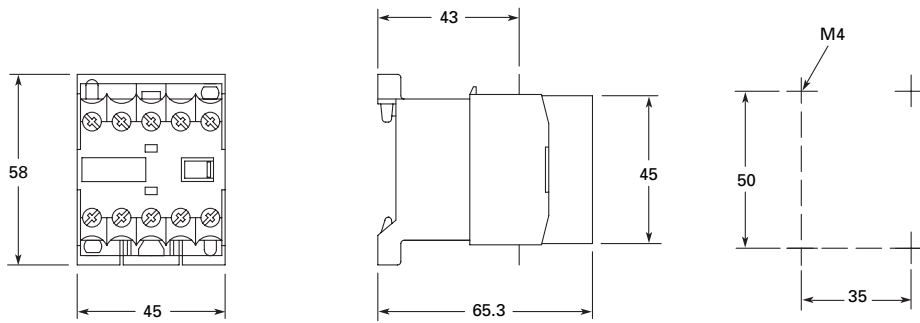
Pub51219	Inside of Packaging XTMC, XTMF Miniature Contactors, XTRM Miniature Control Relay and Accessories
Pub51243	Inside of Packaging XTOM Miniature Overload Relays
Pub51206	Miniature Reversing Link Kits MN03402002EXTOM Miniature Overload Relays Installation and User Manual
Pub51219	Inside of Packaging XTRM Miniature Control Relays
Pub51210	Inside of Packaging 7-15A XTCE Contactors and XTRE Control Relays
Pub51244	XTTR Electronic Star-Delta Timer
Pub51245	XTMT Miniature Electronic On-Delay and Multi-Function Timers



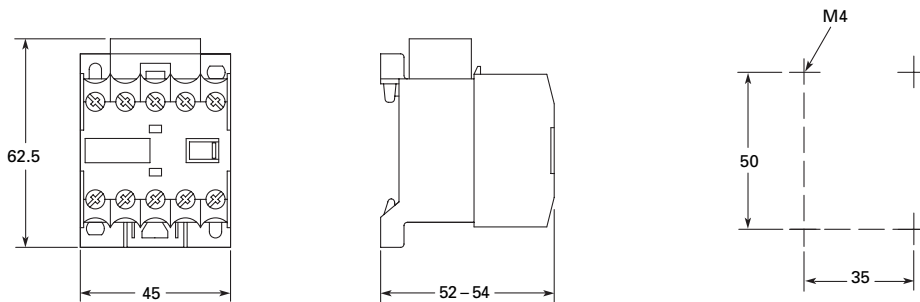
#### Miniature Relays and auxiliary contacts, dimensional drawings



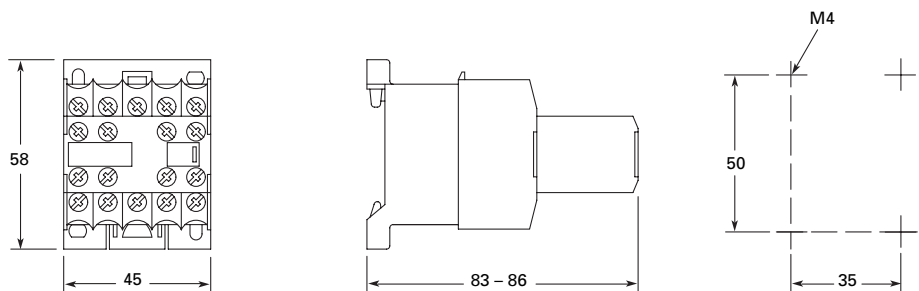
Miniature Control Relay



Miniature Control Relay with XTMCX IP40 Shroud



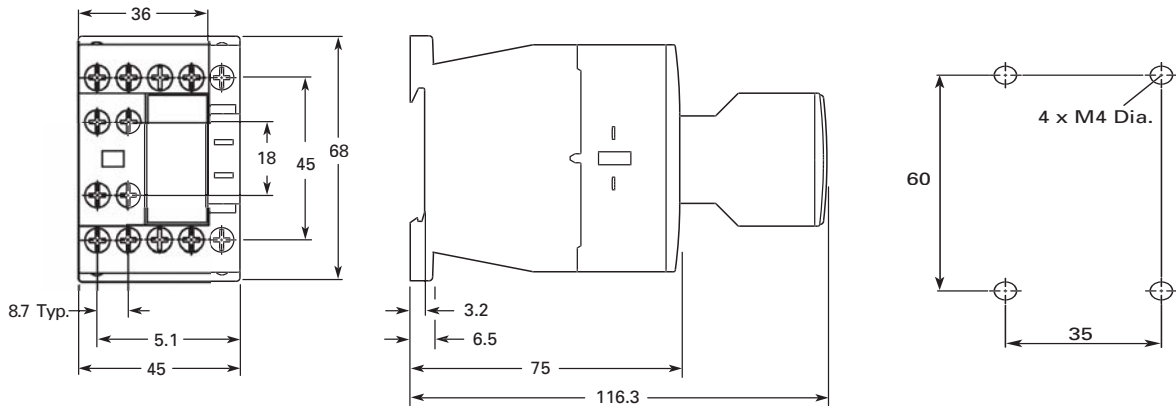
Miniature Control Relay with RC or Varistor Suppressor



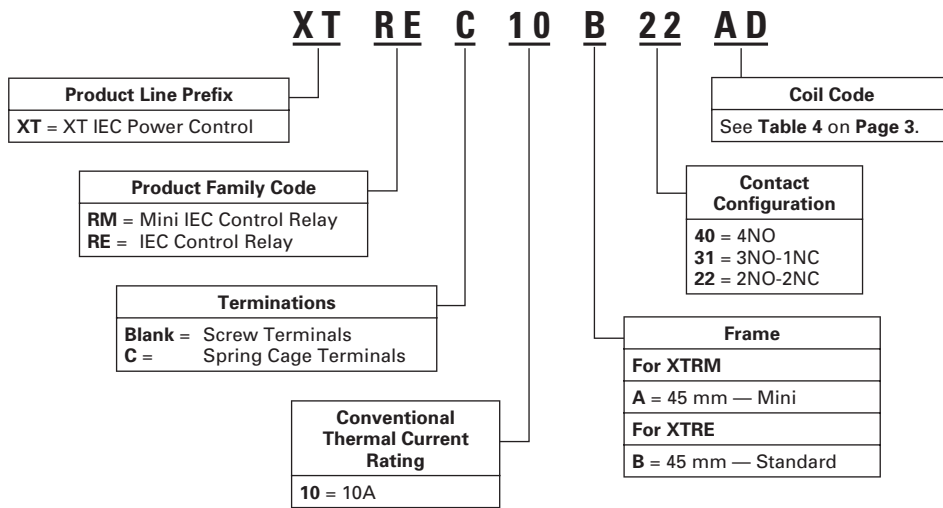
Miniature Control Relay with XTMCXPA Auxiliary Contact



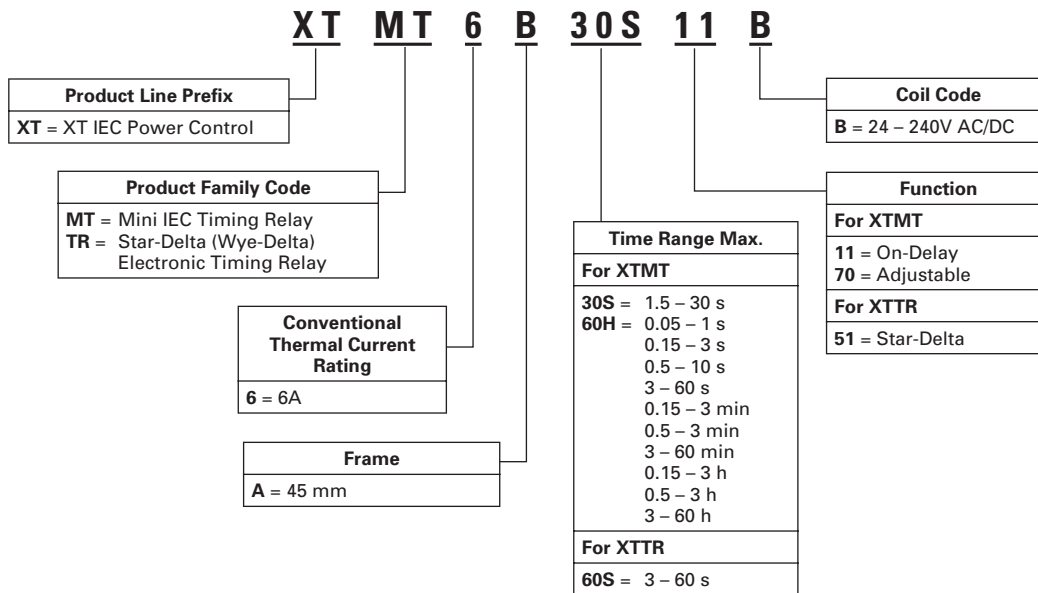
Standard Relays and auxiliary contacts, dimensional drawings



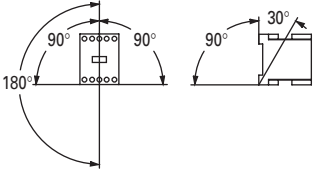
## Control Relays, Eaton Numbering System



## Electronic Timing Relays, Eaton Numbering System



## Miniature and Standard Relays, Technical Data and Specifications

Description	XTRE	XTCEXFAC_	XTRM	XTMCXFA_
<b>Standards</b>	IEC/EN 60947, VDE 0660, UL, CSA			
<b>General</b>				
Lifespan, Mechanical				
AC Operated	20,000,000	10,000,000	10,000,000	10,000,000
DC Operated	20,000,000	10,000,000	20,000,000	20,000,000
Maximum operating frequency (ops/hr)	9000	9000	9000	9000
Climatic Proofing	Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclical, to IEC 60068-2-30			
Ambient Temperature				
Open (°C)	-25 — 60	-25 — 60	-25 — 50	-25 — 50
Enclosed (°C)	-25 — 40	-25 — /40	-25 — 40	-25 — 40
Ambient Temperature for Storage (°C)	-40 — 80	-40 — 80	—	—
Mounting Position				As required, except vertically A1/A2 at the bottom
Mechanical shock resistance (IEC/EN 60068-2-27)				
Half-sinusoidal shock 10 ms				
Base unit with auxiliary contact module				
Make contact				
Break contact	7g	7g	10g	10g
Half-sinusoidal shock 20 ms	5g	5g	8g	8g
Degree of Protection	IP20	IP20	IP20	IP20
Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)	Finger- and back-of-hand proof			
Weight				
AC operated (kg)	0.23	0.05	0.17	—
DC operated (kg)	0.28	0.05	0.20	—
Terminal capacity				
Screw terminals				
Solid (mm <sup>2</sup> )	1 x (0.75 – 4)		1 x (0.75 – 2.5)	
	2 x (0.75 – 2.5)		2 x (0.75 – 2.5)	
Flexible with ferrule (mm <sup>2</sup> )	1 x (0.75 – 2.5)		1 x (0.75 – 1.5)	
	2 x (0.75 – 2.5)		2 x (0.75 – 1.5)	
Solid or stranded (AWG)	18 – 14		18 – 14	
Terminal screw	M3.5	M3.5	M3.5	M3.5
Pozidriv screwdriver	Size 2	Size 2	Size 2	Size 2
Standard screwdriver (mm)	0.8 x 5.5		0.8 x 5.5	
	1 x 6		1 x 6	
Max. tightening torque (Nm)	1.2	1.2	1.2	1.2
Spring cage terminals				
Solid (mm <sup>2</sup> )	1 x (0.75 – 2.5)		1 x (0.75 – 2.5)	
	2 x (0.75 – 2.5)		2 x (0.75 – 2.5)	
Flexible with or without ferrule DIN 46228 (mm <sup>2</sup> )	1 x (0.75 – 2.5)		1 x (0.75 – 2.5)	
	2 x (0.75 – 2.5)		2 x (0.75 – 2.5)	
Solid or stranded (AWG)	18 – 14		18 – 14	
Standard screwdriver (mm)	0.6 x 3.5			

## Miniature and Standard Relays, Technical Data and Specifications (Continued)

Description	XTRE	XTCEXFAC_	XTRM	XTMCXFA_
<b>Contacts</b>				
Interlocked opposing contacts to ZH 1/457, including auxiliary contact module	Yes	Yes	Yes	Yes
Rated impulse withstand voltage ( $U_{imp}$ ) V AC	6000	6000	6000	6000
Overtoltage category/pollution degree	III/3	III/3	III/3	III/3
Rated insulation voltage ( $U_i$ ) V AC	690	690	690	690
Rated operational voltage ( $U_e$ ) V AC	690	500	600	600
Safe isolation to VDE 0106 Part 101 and Part 101/A1				
Between coil and auxiliary contacts (V AC)	400	400	300	300
Between the auxiliary contacts (V AC)	400	400	300	300
Rated operational current				
AC-15 220/240V $I_e$	6	6	6	4
380/415V $I_e$	4	3	3	2
500V $I_e$	1.5	—	1.5	1.5
DC-13 <sup>1)</sup> DC-13 L/R $\leq 15$ mS				
Contacts in series:	Contacts in series:	Voltage		
1:24V	1	24 — 60V	10	—
1:60V	1	24 — 60V	6	—
2:60V	1	24 — 60V	10	—
1:110V	1	24 — 60V	3	—
3:110V	1	24 — 60V	6	—
1:220V	1	24 — 60V	1	—
3:220V	1	24 — 60V	5	—
				2.5
				—
				2.5
				—
				1.5
				—
				0.5
				0.5
DC-13 L/R $\leq 50$ mS				
Contacts in series:	Contacts in series:	Voltage		
2:24V	—	—	—	—
3:24V	3	24 V	4	—
2:60V	—	—	—	—
3:60V	3	60V	4	—
1:110V	—	—	—	—
3:110V	3	110V	2	—
1:220V	—	—	—	—
3:220V	3	220V	1	—
Control Circuit Reliability (at $U_e = 24$ V DC, $U_{min} = 17$ , $I_{min} = 5.4$ mA)				
				$< 10^{-8}$ , < one failure in 100 million operations center
Conventional thermal current ( $I_{th}$ )				
				16
Short-circuit rating without welding				
Maximum overcurrent protective device				
220/240V – XTPR Frame B	4	—	4	4
380/415V – XTPR Frame B	4	—	4	4
Short-circuit protection, max. fuse <sup>2)</sup>				
500V (A gG/gL)	10	10	6	6
500V (A fast)	—	—	10	10
Current heat losses at load of $I_{th}$				
AC operated (W)	0.3	0.3	0.2	0.2
DC operated (W)	0.3	0.3	0.3	0.3
<b>Magnet Systems</b>				
Pick-up and drop-out values				
AC operated				
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz (Pick-up x $U_c$ )	0.8 – 1.1	—	0.8 – 1.1	—
	0.8 – 1.1	—	0.85 – 1.1	—
Dual-frequency coil 50/60 Hz (Pick-up x $U_c$ )				
DC operated <sup>3)</sup>				
Pick-up voltage (Pick-up x $U_c$ )	0.8 – 1.1	—	0.85 – 1.3	—
At 24V: without auxiliary contact module (40°C) (Pick-up x $U_c$ )	0.7 – 1.3	—	0.7 – 1.3	—
Power consumption				
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz				
Pick-up VA	24	—	25	—
Pick-up W	19	—	22	—

## Miniature and Standard Relays, Technical Data and Specifications (Continued)

Description	XTRE	XTCEXFAC_	XTRM	XTMCXFA_
<b>Contacts</b>				
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz				
Sealing VA	3.4	—	4.6	—
Sealing W	1.2	—	1.3	—
Dual-frequency coil 50/60 Hz at 50 Hz				
Pick-up VA	27	—	30	—
Pick-up W	22	—	26	—
Dual-frequency coil 50/60 Hz at 50 Hz				
Sealing VA	4.2	—	5.4	—
Sealing W	1.4	—	1.6	—
Dual-frequency coil 50/60 Hz at 60 Hz				
Pick-up VA	25	—	29	—
Pick-up W	21	—	24	—
Dual-frequency coil 50/60 Hz at 60 Hz				
Sealing VA	3.3	—	3.9	—
Sealing W	1.2	—	1.2	—
DC operated				
Pull-in = sealing (W)	3	—	2.6	—
Duty factor — % DF	100	—	100	—
Switching times at 100% $U_c$ (approximate values)				
AC operated closing delay (mS)	≤ 21	—	14 – 21	—
AC operated make contact opening delay (mS)	≤ 18	—	8 – 18	—
AC operated with auxiliary contact module, max. closing delay (mS)	—	—	45	45
DC operated closing delay (mS)	≤ 31	—	26 – 35	—
DC operated make contact opening delay (mS)	≤ 12	—	15 – 25	—
DC operated with auxiliary contact module, max. closing delay (mS)	—	—	70	70

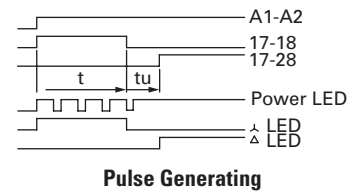
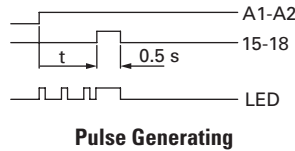
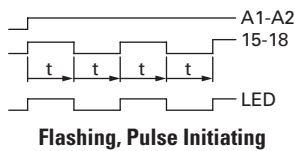
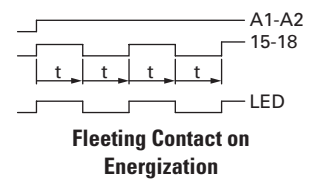
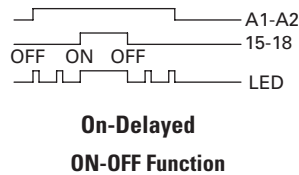
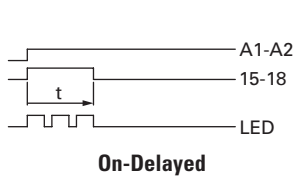
<sup>1)</sup> Making and breaking conditions to DC13, time constant as stated.

<sup>2)</sup> See transparent overlay "Fuses" for time/current characteristics (please enquire).

<sup>3)</sup> Smoothed DC or three-phase bridge rectifier

## Electronic Timing Relays, Technical Data and Standards

### Rating Data for Approved Types

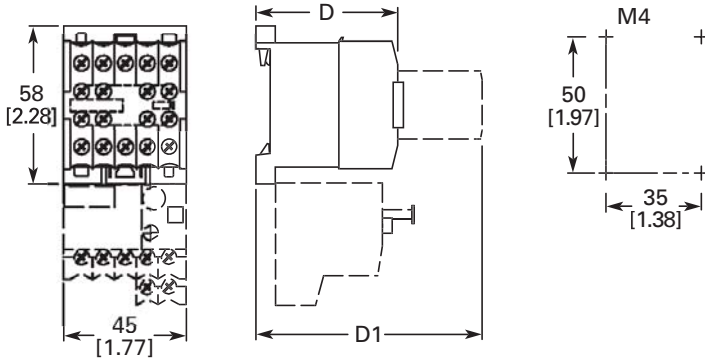


Pilot Duty	General Use
<b>Control Relays — XTMR</b>	
A600, P300	10A – 600V AC 0.5A – 250V DC
<b>Timers — XTMT, XTTR</b>	
B300	6A – 250V AC



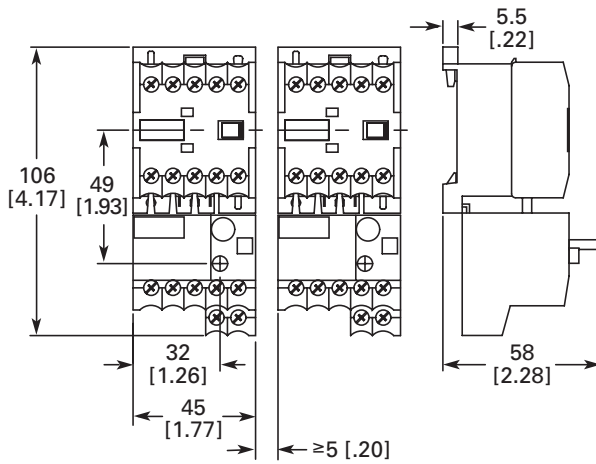
### Miniature Controls

#### Miniature Contactors, Accessories and Overload Relays, dimensional drawings

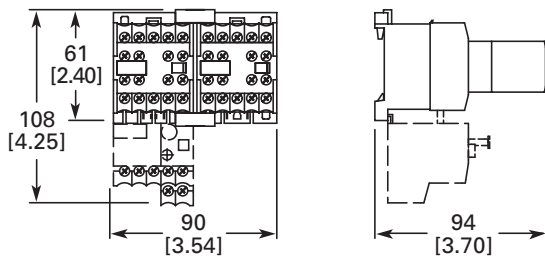


Miniature Contactors DOL with overload relay and auxiliary contact

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

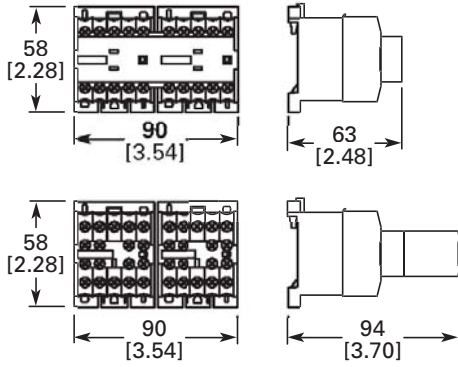


Miniature Contactors DOL with overload relay

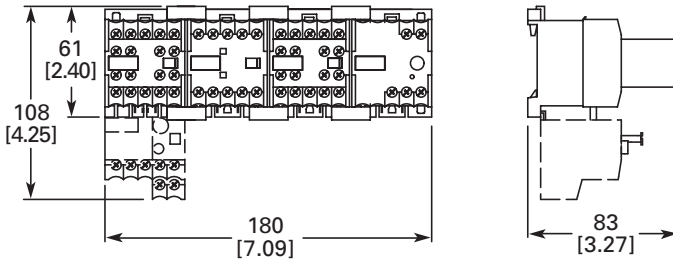


Miniature Contactors DOL Reversing with overload relay and auxiliary contact

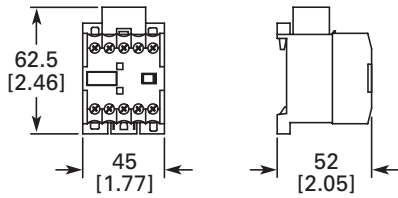
**Miniature Contactors, Accessories and Overload Relays, dimensional drawings (Continued)**



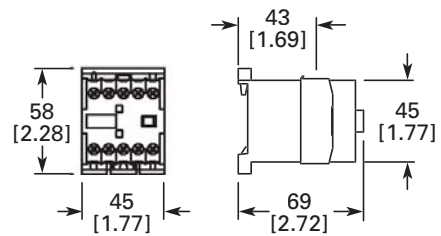
Miniature Contactors DOL Reversing with Mechanical Interlock



Miniature Contactors Star Delta with overload relay and auxiliary contact

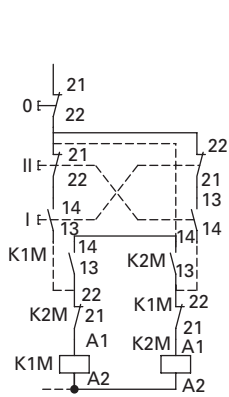


Miniature Contactors fitted with a Suppressor

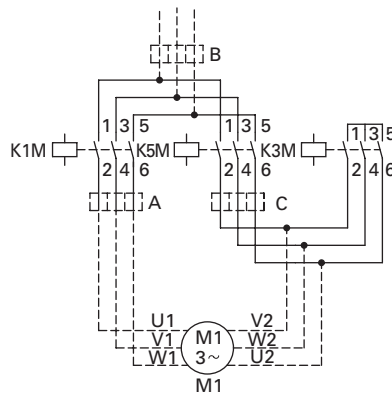


Miniature Contactors fitted with a Sealable Shroud

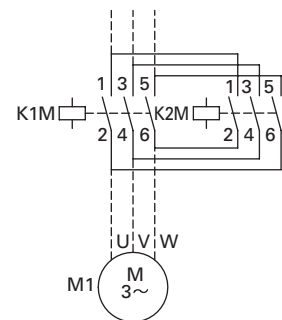
**Miniature Contactors, Wiring Diagrams**



XTRM Reversing Contactor Control Wiring Diagram

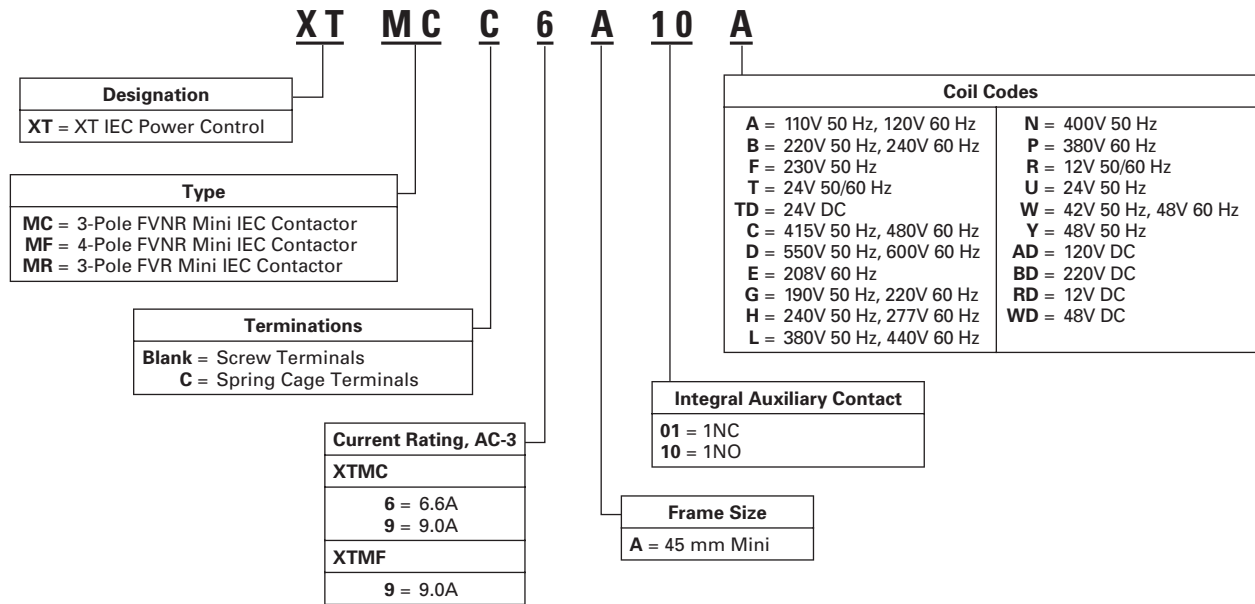


Star Delta Power Wiring Diagram

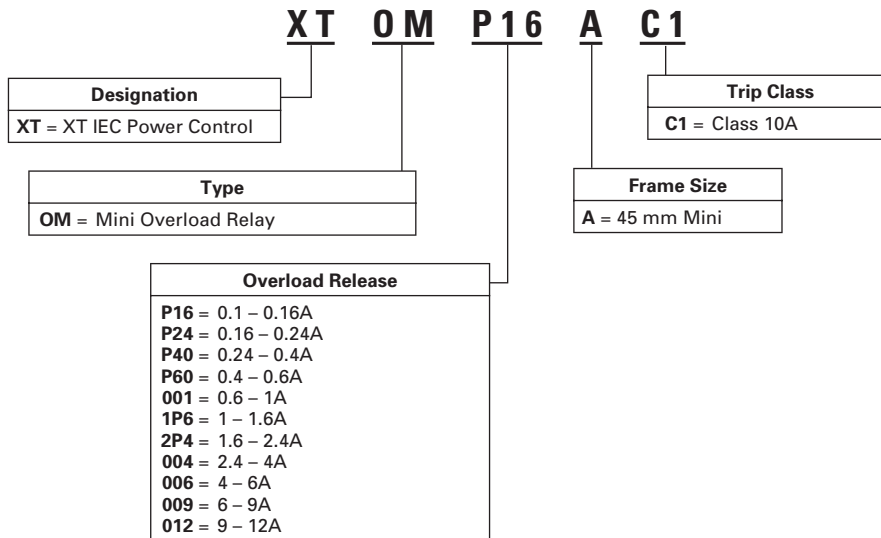


XTRM Reversing Contactor Power Wiring Diagram

## Miniature Contactors, Eaton Numbering System




## Miniature Overload Relays, Eaton Numbering System





## Miniature Contactors, Technical Data and Standards, General Specification

Description	XTMC6A...	XTMC6A...	XTMC9A...	XTMC9A...	XTMF9A...	XTMF9A...
	Coils A – Y	Coils AD – WD	Coils A – Y	Coils AD – WD	Coils A – Y	Coils AD – WD
<b>Standards</b>	IEC/EN 60947, VDE 0660, CSA, UL, CCC					
<b>Physical and Electrical</b>						
Weights in kg	0.2	0.17 ]	0.2	0.17	0.2	0.17
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 <sub>i</sub> ) VAC	690	690	690	690	690	690
Impulse Withstand Voltage (U <sub>imp</sub> ) VAC	6000	6000	6000	6000	6000	6000
Operational Voltage (U <sub>e</sub> ) VAC	690	690	690	690	690	690
Safe Isolation to VDE 0106 Part 101 and Part 101/A1 between coil and contacts (VAC)	300	300	300	300	300	300
between contacts (VAC)	300	300	300	300	300	300
Making Capacity (amps)	110	110	110	110	110	110
Breaking Capacity (amps)						
220/230V	90	90	90	90	90	90
380/400V	90	90	90	90	90	90
500V	64	64	64	64	64	64
660/690V	54	54	54	54	54	54
Short-Circuit Protection rating maximum fuse (gL/gG)						
Type 2 Coordination (A)	10	10	10	10	10	10
Type 1 Coordination (A)	20	20	20	20	20	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 <sup>2</sup> )	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 <sup>2</sup> )	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
Posidrive 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	1.2	1.2	1.2	1.2	1.2	1.2
Terminal Capacity of spring cage main terminals						
Solid (mm <sup>2</sup> )	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 <sup>2</sup> )	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					
						
<b>Environmental</b>						
Ambient Temperature	-25° to 50°C					
Mechanical Shock Resistance (IEC/EN 60068-2-27)	Half-sinusoidal shock 10 ms					
Contactor without auxiliary contact module						
Main contact — make contact	10g	10g	10g	10g	10g	10g
Main contact — break/make contact	10/8g	10/8g	10/8g	10/8g	—	—
Contactor with auxiliary contact module						
Main contact — make contact	10g	10g	10g	10g	10g	10g
Main contact — make/break contact	20/20g	20/20g	20/20g	20/20g	20/20g	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					

## Miniature Contactors, Technical Data and Standards, Magnet Systems

Description	XTMC6A...	XTMC6A...	XTMC9A...	XTMC9A...	XTMF9A...	XTMF9A...
	Coils A – Y	Coils AD – WD	Coils A – Y	Coils AD – WD	Coils A – Y	Coils AD – WD
<b>Voltage Tolerance</b>						
Pick-Up (x U <sub>c</sub> )						
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 <sup>1)</sup>	—	0.8 – 1.1	—	0.8 – 1.1	—	0.85 – 1.1
<b>Power Consumption</b>						
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 <sup>1)</sup>						
Power consumption pick-up = sealing (VA/W)	—	2.6	—	2.6	—	2.6
Duty Factor (%)	100	100	100	100	100	100
<b>Switching Time at 100% U<sub>c</sub></b>						
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
<b>Reversing contactors</b>						
Changeover time at 100% U <sub>c</sub>						
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

<sup>1)</sup> Smoothed DC or three-phase bridge rectifier.

## Miniature Contactors, Technical Data and Standards, Utilisation ratings

Description	XTMC6A...	XTMC6A...	XTMC6A...	XTMC6A...	XTMF9A...	XTMF9A...
	Coils A – Y	Coils AD – WD	Coils A – Y	Coils AD – WD	Coils A – Y	Coils AD – WD
<b>AC-1 Operation</b>						
Conventional free air thermal current, 3-pole,						
50 – 60 Hz (A)	22	22	22	22	22	22
at 40°C ( $I_{th}$ )	20	20	20	20	20	20
at 50°C ( $I_{th}$ )	19	19	19	19	19	19
at 55°C ( $I_{th}$ )						
Conventional free air thermal current, 1-pole ( $I_{th}$ )						
	50	50	50	50	60	60
<b>AC-3 Operation</b>						
Rated Operational Current, 50/60 Hz <sup>1)</sup> ( $I_e$ ) 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
<b>AC-4 Operation</b>						
Rated Operational Current, 50/60 Hz <sup>1)</sup> ( $I_e$ ) 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

<sup>1)</sup> At maximum permissible ambient temperature.

## Miniature Contactors, Technical Data and Standards, Utilisation ratings (Continued)

Description	XTMC6A...	XTMC6A...	XTMC9A...	XTMC9A...	XTMF9A...	XTMF9A...
	Coils A – Y	Coils AD – WD	Coils A – Y	Coils AD – WD	Coils A – Y	Coils AD – WD
<b>DC-1 Operation</b> <sup>1)</sup>						
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	—	—
<b>DC-3 Operation</b> <sup>1)</sup>						
12V	6	6	8	8	—	—
24V	6	6	8	8	—	—
60V	3	3	4	4	—	—
110V	2	2	3	3	—	—
220V	—	—	—	—	1	1
<b>DC-4 Operation</b> <sup>1)</sup>						
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
<b>Current Heat Loss (3- or 4-pole) in watts</b>						
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	—	—

<sup>1)</sup> Rated operation current (I<sub>e</sub>) in amperes, at maximum permissible ambient temperature.

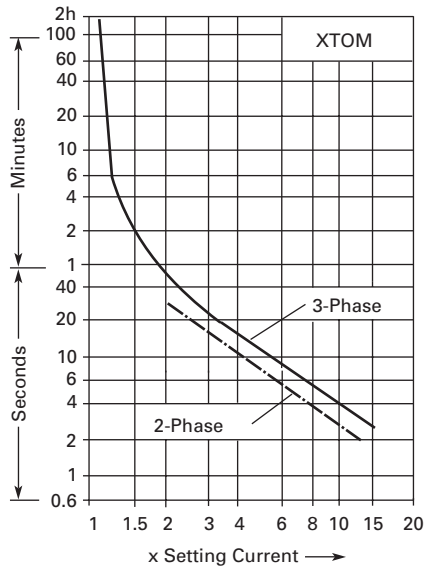
## Miniature Contactors, Technical Data and Standards, Auxiliary Contacts

Description	XTMC6A...	XTMC9A...
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	300	300
between the auxiliary contacts	300	300
Rated Operational Current		
AC-15, $I_e$		
220/240V	6A	6A
380/415V	3A	3A
500V	1.5A	1.5A
DC-13 (Contacts in Series)		
1: 24V	2.5A	2.5A
2: 60V	2.5A	2.5A
3: 100V	1.5A	1.5A
3: 220V	0.5A	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 $U_e = 240$ V		
AC-15, operations x $10^6$	0.2	0.2
DC-13 L/R = 50 mS:	0.15	0.15
2 contacts in series at $I_e = 0.5$ A, operations x $10^6$		
Short Circuit rating without welding		
Short Circuit protection rating maximum fuse, 500V gG/gL	6A	6A
Short Circuit protection rating maximum fuse, 500V fast	10A	10A
Current heat loss at conventional free air thermal current $I_{th}$ per contact, W	0.2	0.2

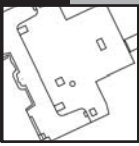
## Miniature Overload Relays Settings

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

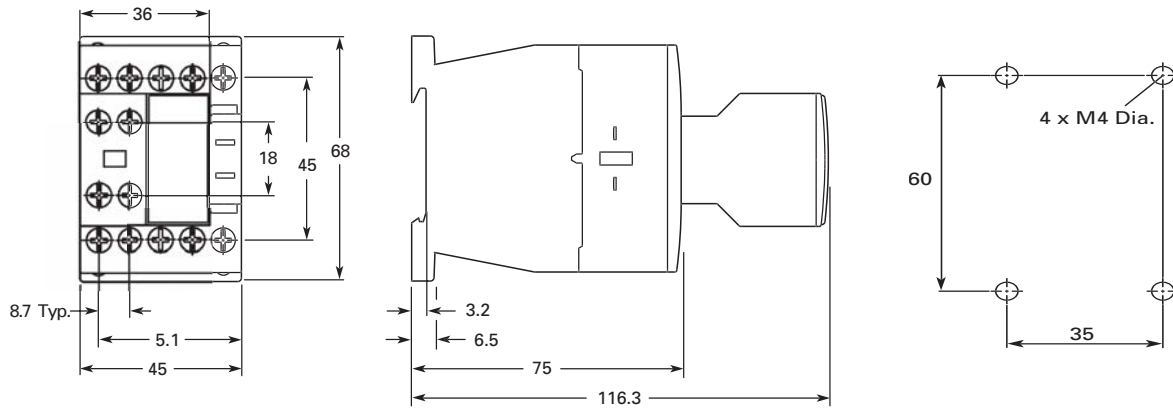
## Miniature Overload Relays, Tripping Characteristic Chart



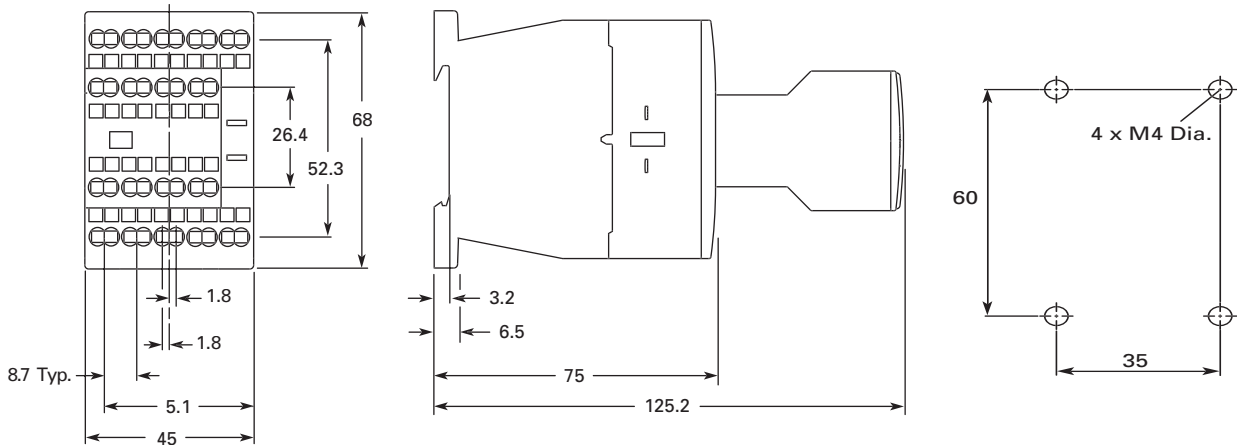
These tripping characteristics are mean values of the spread at 20°C ambient temperature in a cold state. Tripping time depends on response current. With devices at operating temperature, the tripping time of the overload relay reduces to approx. 25% of the read off value. Specific characteristics for each individual setting range can be found on Page 18.



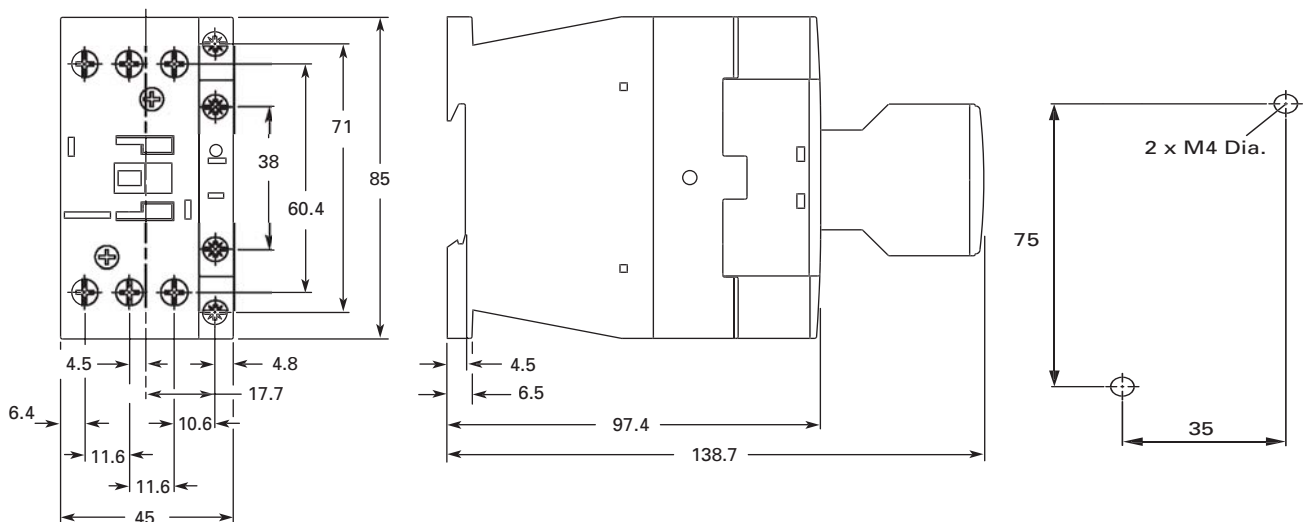
#### Standard, 3P Contactors, Frame B, Screw Terminals, dimensional drawings



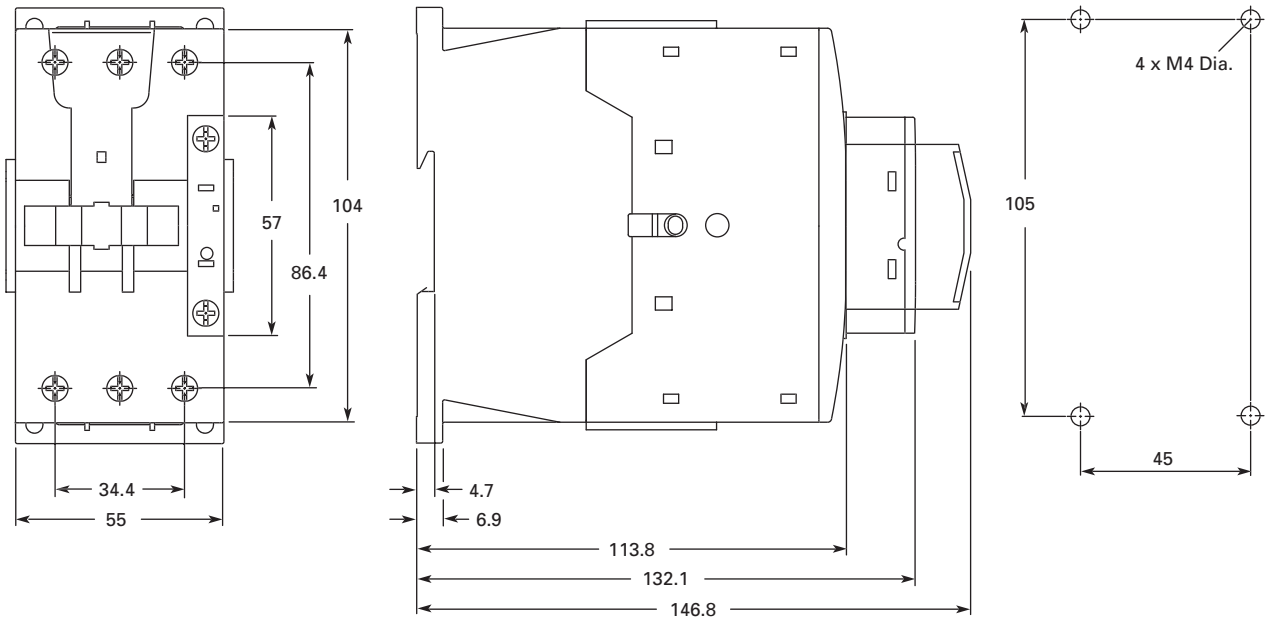
#### Standard, 3P Contactors, Frame B, Cage Terminals, dimensional drawings



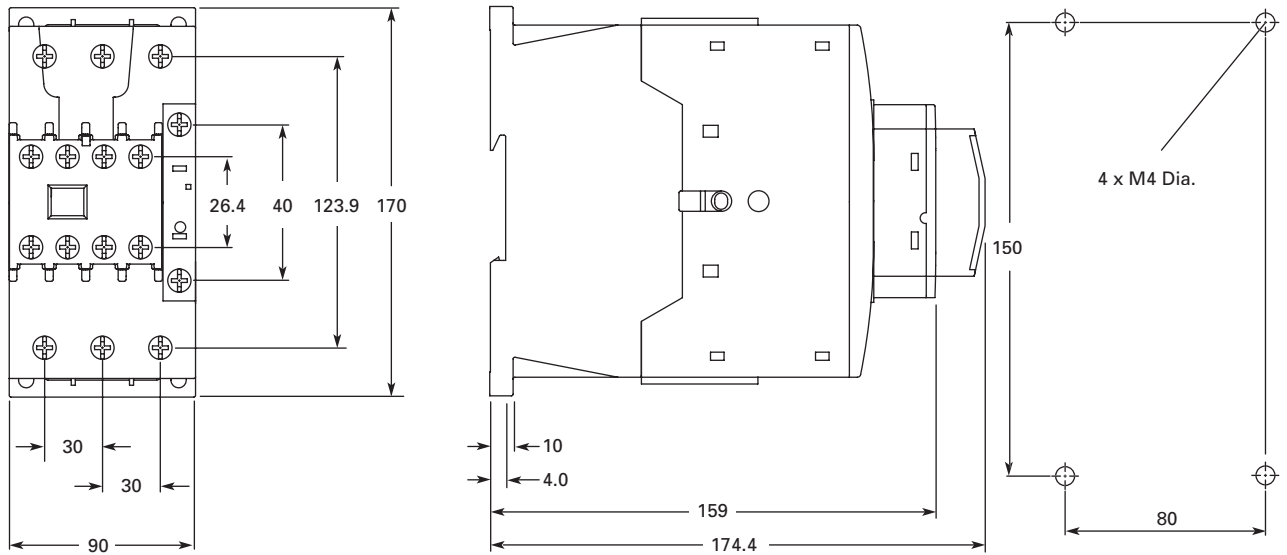
#### Standard, 3P Contactors, Frame C, dimensional drawings



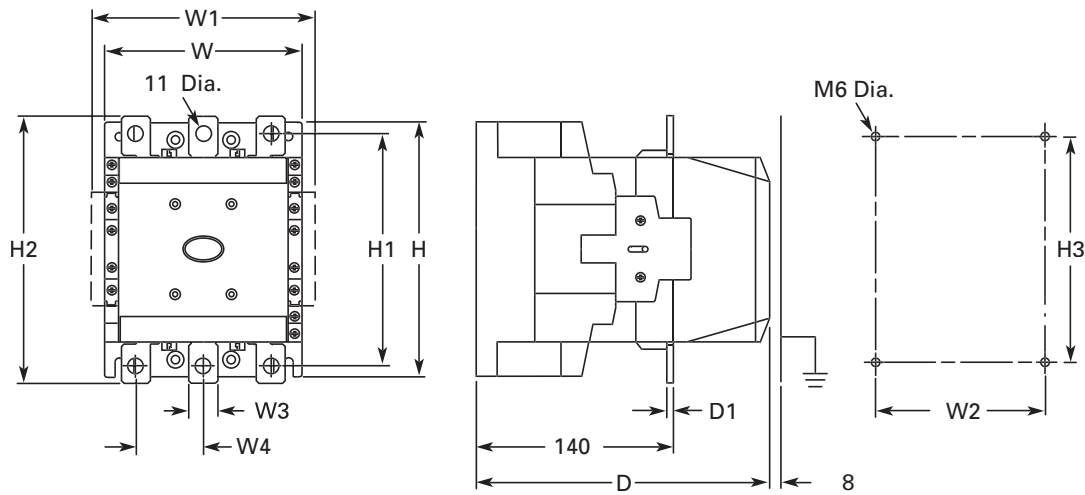
**Standard, 3P Contactors, Frame D, dimensional drawings**



**Standard, 3P Contactors, Frame F - G, dimensional drawings**

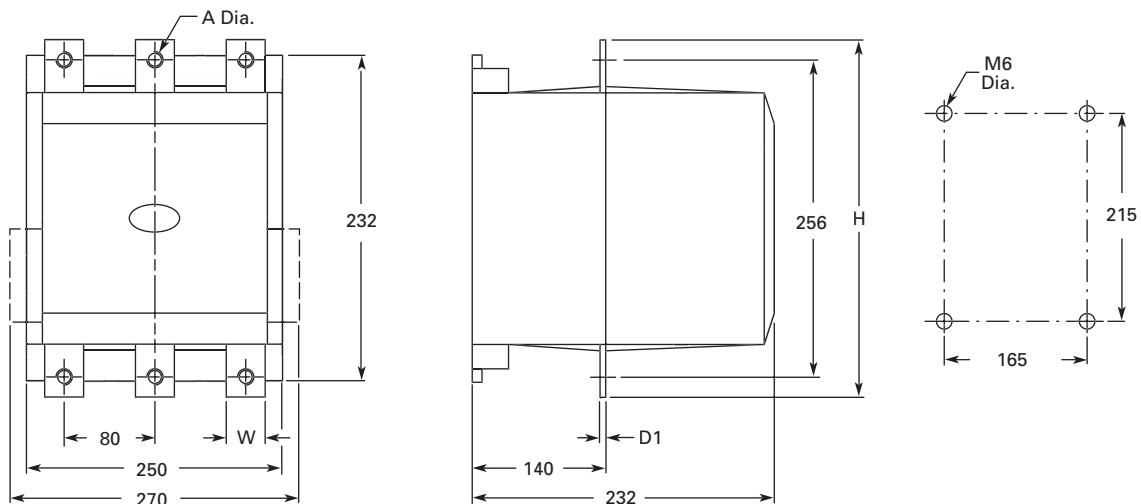


## Standard, 3P Contactors, Frame L – M, dimensional drawings



	W	W1	W2	W3	W4	H	H1	H2	H3	D	D1
<b>Frame L</b> (185 – 250A)	140	160	120	20	48	180	164	189	160	208	5
<b>Frame M</b> (300 – 500A)	160	180	130	25	48	200	184	209	180	216	6

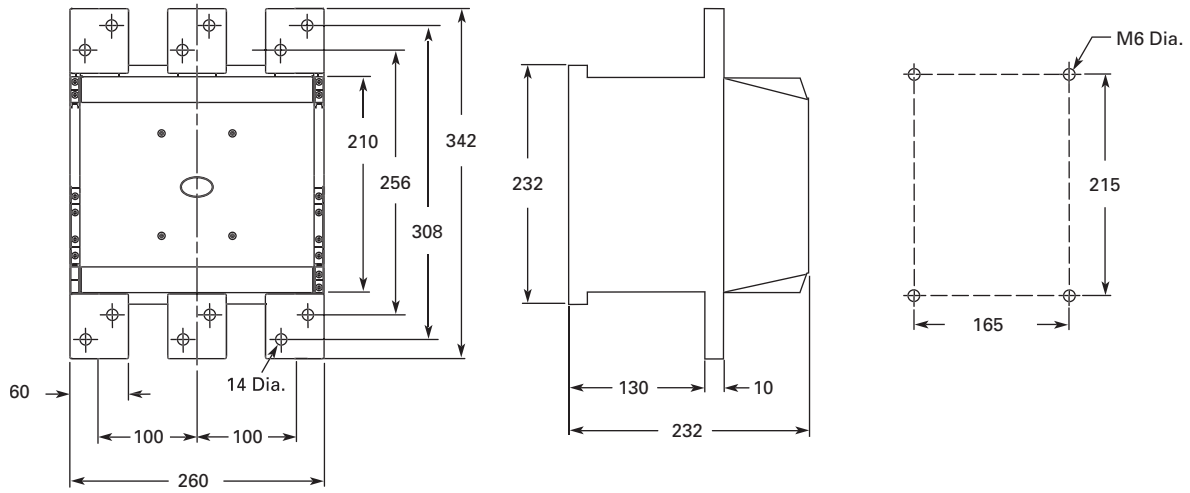
## Standard, 3P Contactors, Frame N, dimensional drawings



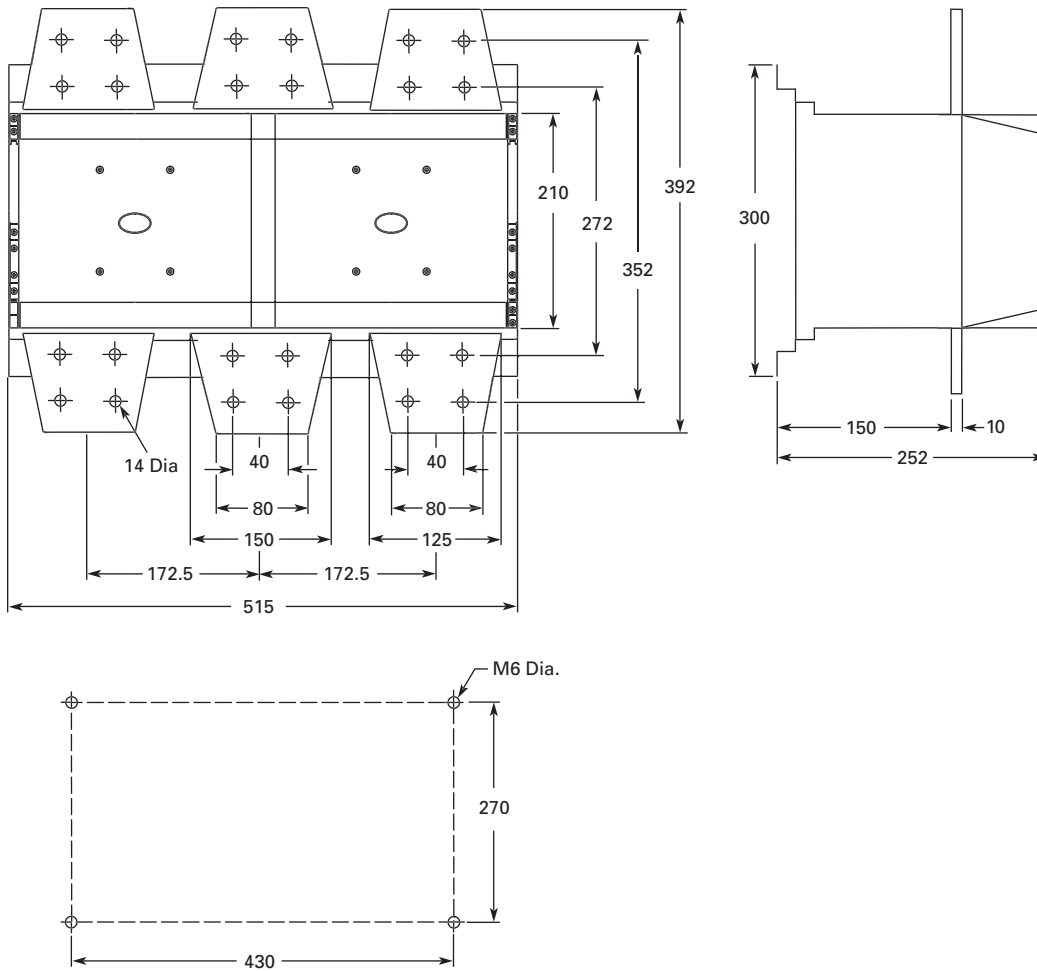
	W	H	D1	A (Dia.)
<b>XTCE580N</b>	35	286	6	11
<b>XTCE650N</b>	35	286	6	11
<b>XTCE750N</b>	45	296	6	13.5
<b>XTCE820N</b>	45	296	6	13.5
<b>XTCEC10N</b>	45	296	10	13.5



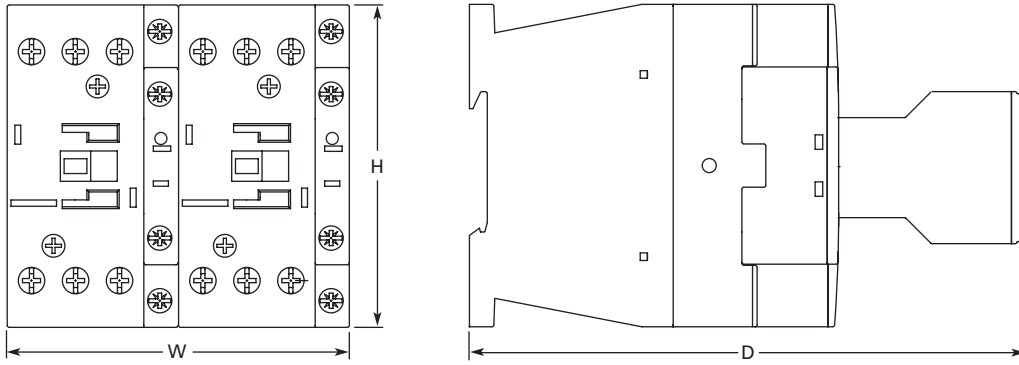
**Standard, 3P Contactors, Frame P, dimensional drawings**



**Standard, 3P Contactors, Frame R, dimensional drawings**

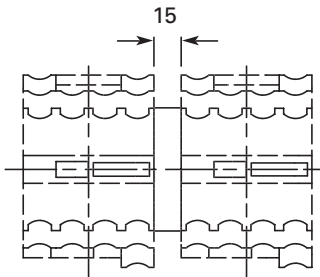


Standard, 3P Contactors, Frames B - G, DOL Reversing, dimensional drawings

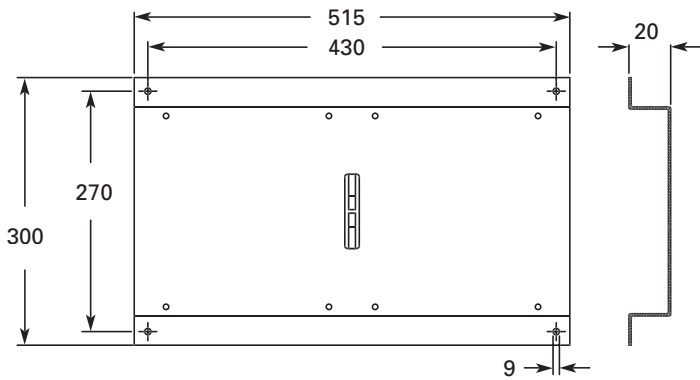


Frame B (7 – 15A)			Frame C (18 – 32A)			Frame D (40 – 65A)			Frame F – G (80 – 150A)		
W	H	D	W	H	D	W	H	D	W	H	D
90	68	125.2	90	85	147.3	110	115	146.8	180	170	174.4

Standard, 3P Contactors, Frames L - M, Mechanical Interlock, dimensional drawings

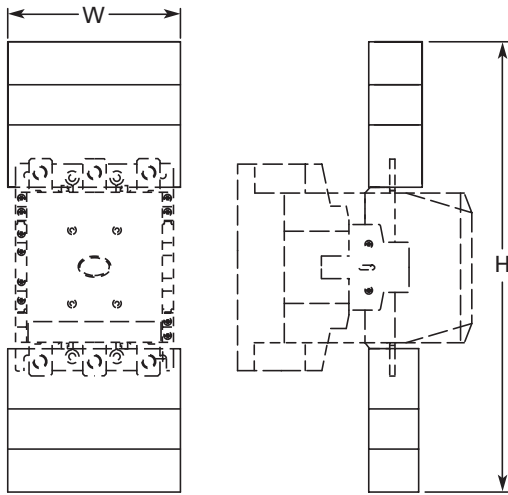


Frame L - M. XTCEXMLM Mechanical Interlock



XTCEXMLM

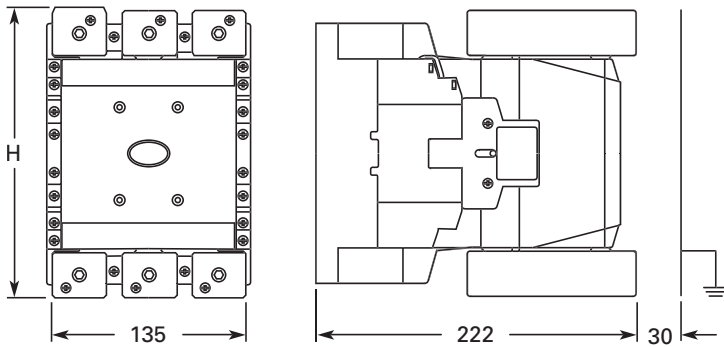
## Standard, 3P Contactors, Frames L - N, with Terminal Shrouds



Frame L - N Contactors, XTCE185L - XTCEC10N,  
with Terminal Shroud XTLEXTS

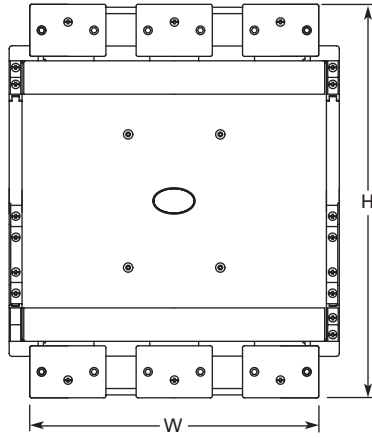
XTCE185L, XTCE225L, XTCE250L		XTCE300M, XTCE400M		XTCE500M		XTCE580N, XTCE650N, XTCE750N, XTCE820N, XTCEC10N	
W	H	W	H	W	H	W	H
150	384	150	404	174	426	236	506

## Standard, 3P Contactors, Frames L - N, Cable Terminal Block, dimensional drawings



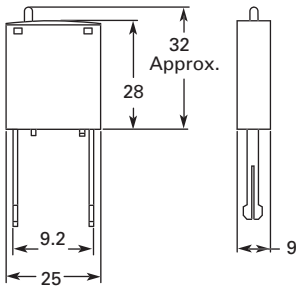
XTCE185L - XTCE250L	XTCE300M - XTCE400M
198	218

**Standard, 3P Contactors, Frames M - N, Flat Strip Conductor Terminals**

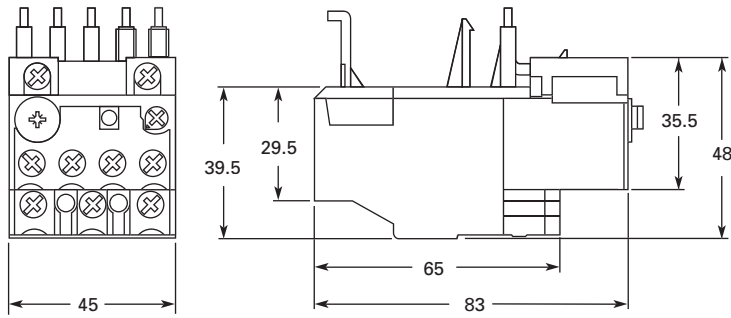


	W	H
XTCE500M	171	232
XTCE580N – XTCE650N	218	295
XTCE750N – XTCE820N	231	310

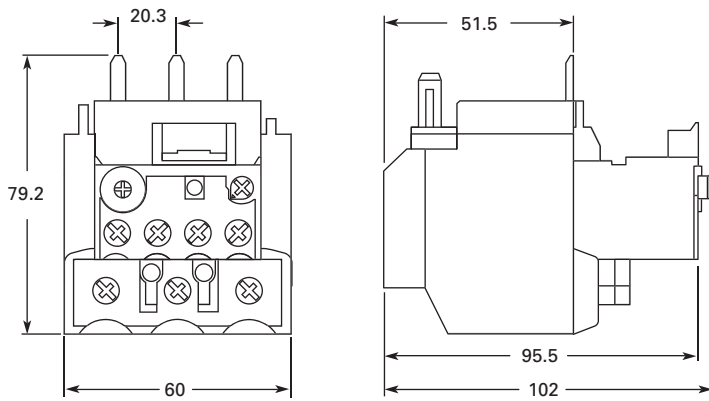
**Standard, 3P Contactors, Frames B - F, Suppressor, dimensional drawing**



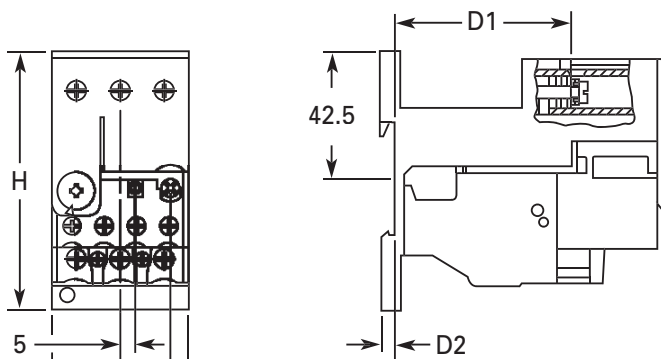
### Standard, Overload Relays, Frame B - C, dimensional drawings



### Standard, Overload Relays, Frame D, dimensional drawings

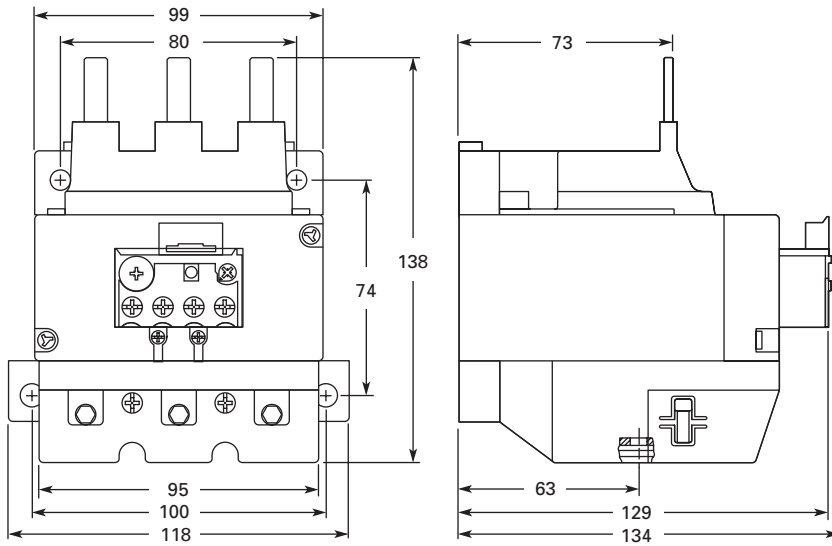


### Standard, Overload Relays, Frame B - C & D, DIN Rail or Panel Mount Adapter, dimensional drawing

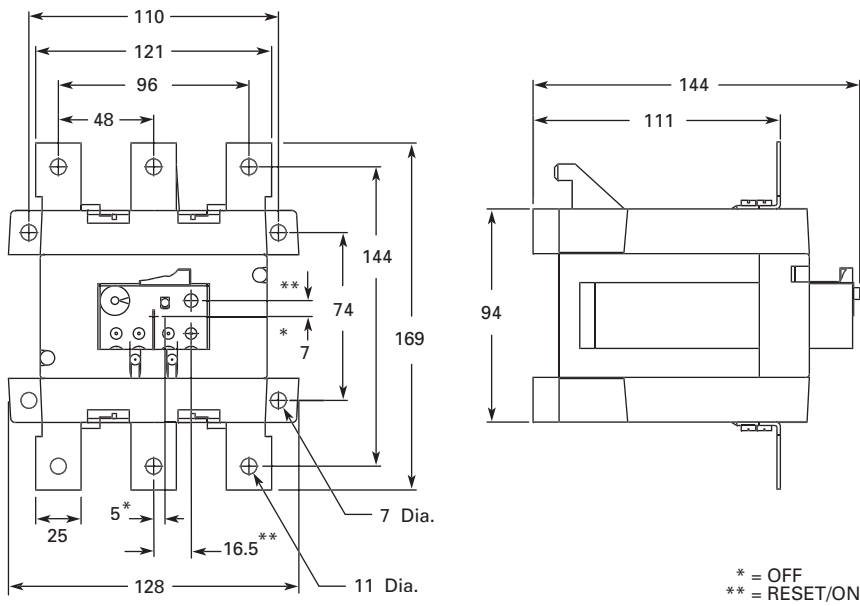


	H	W	D	D1	D2
XTOB...CC1	85	45	90.5	58.3	3.8
XTOB...DC1	86	60	112	80.5	4.7

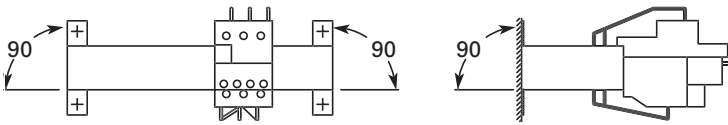
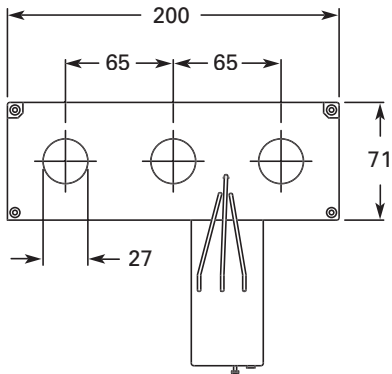
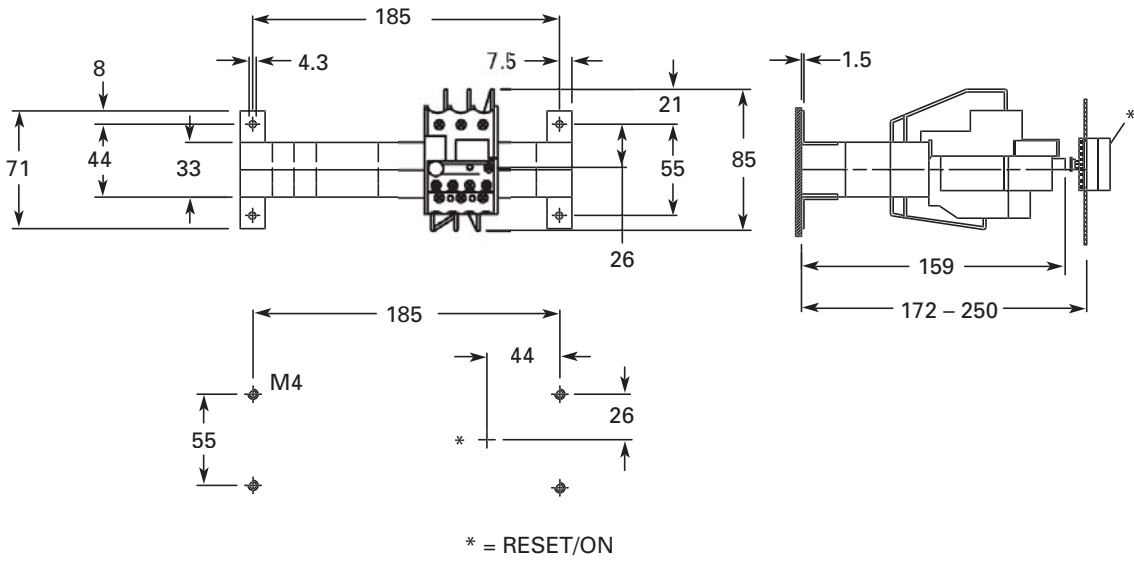
Standard, Overload Relay, Frames F - G, dimensional drawing



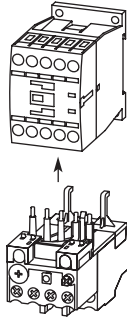
Standard, Overload Relay, Frame L, dimensional drawing



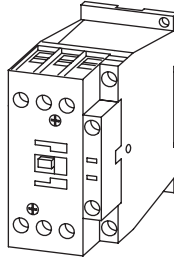
Standard, Overload Relay, Current Transformer Operated, dimensional drawing



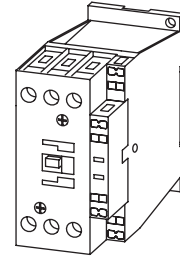
XTOT...C3S



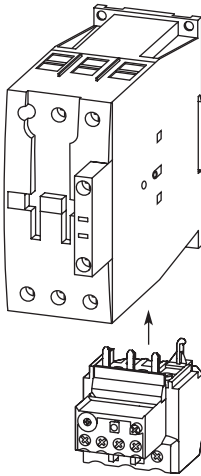
Frame B - Overload Relay  
Fitted Directly to the Contactor



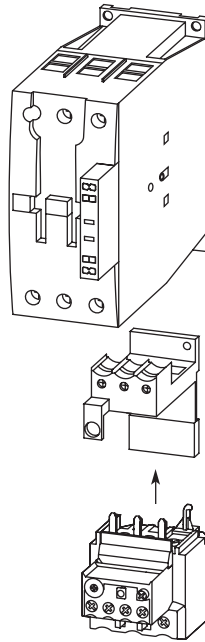
Frame C - Overload Relay  
Fitted Directly to the Contactor



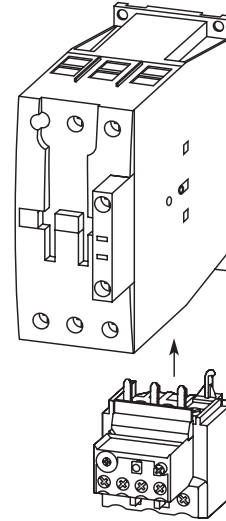
Frame C - Overload Relay  
Fitted Separately from the Contactor



Frame D - Overload Relay  
Fitted Directly to the Contactor



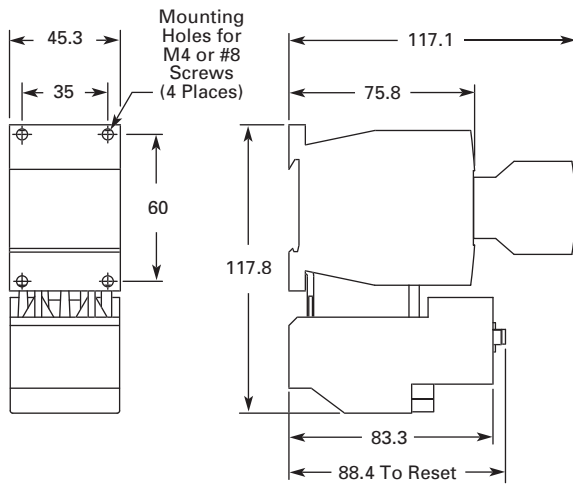
Frame D - Overload Relay  
Mounted Separately from the Contactor



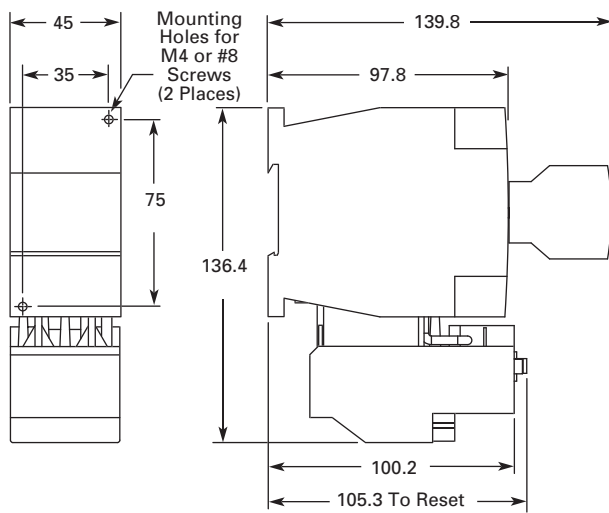
Frame F - G - Overload Relay  
Fitted Directly from the Contactor



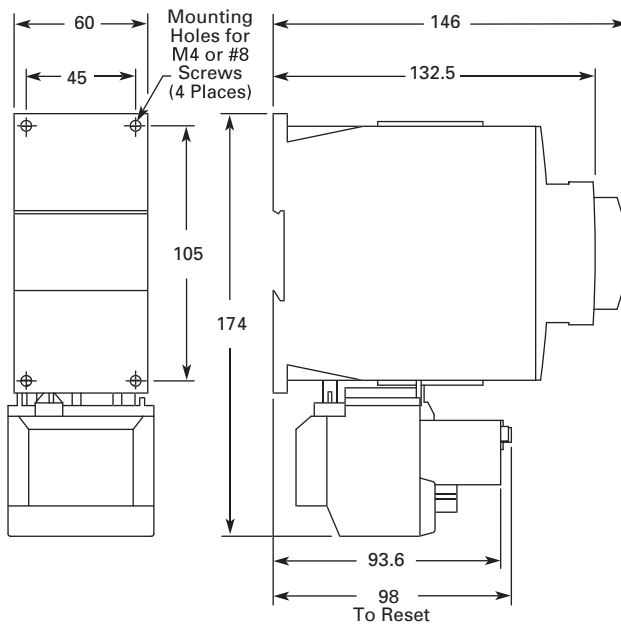
### Standard Starters, DOL, Frame B, dimensional drawings



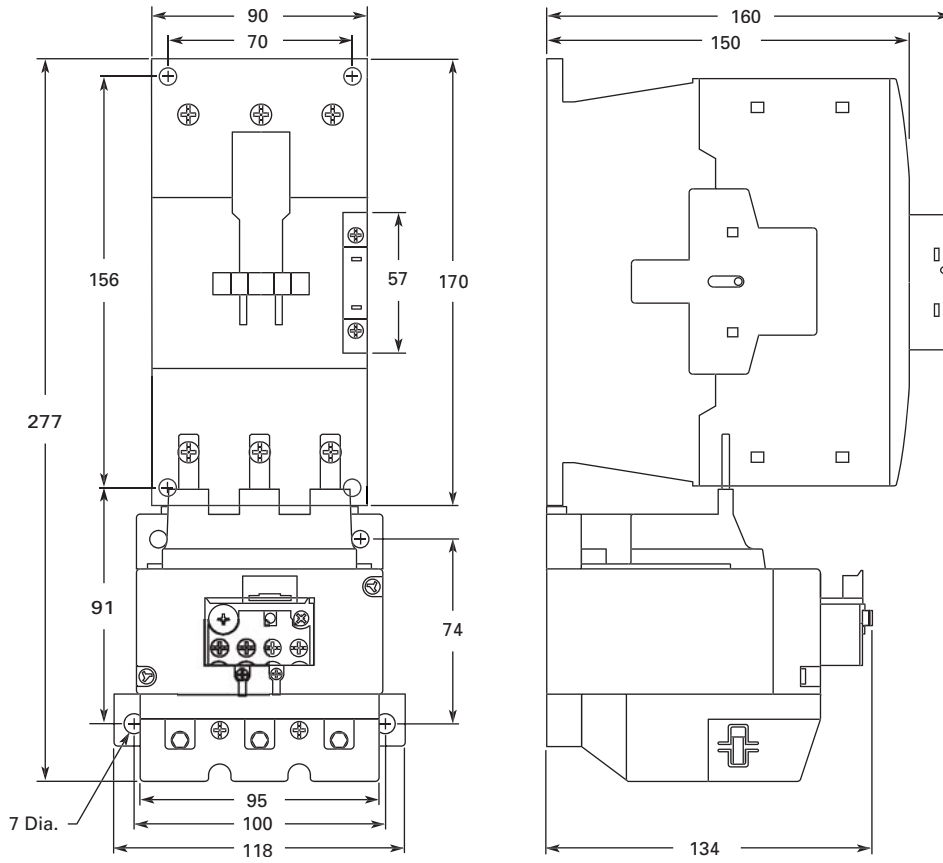
### Standard Starters, DOL, Frame C, dimensional drawings



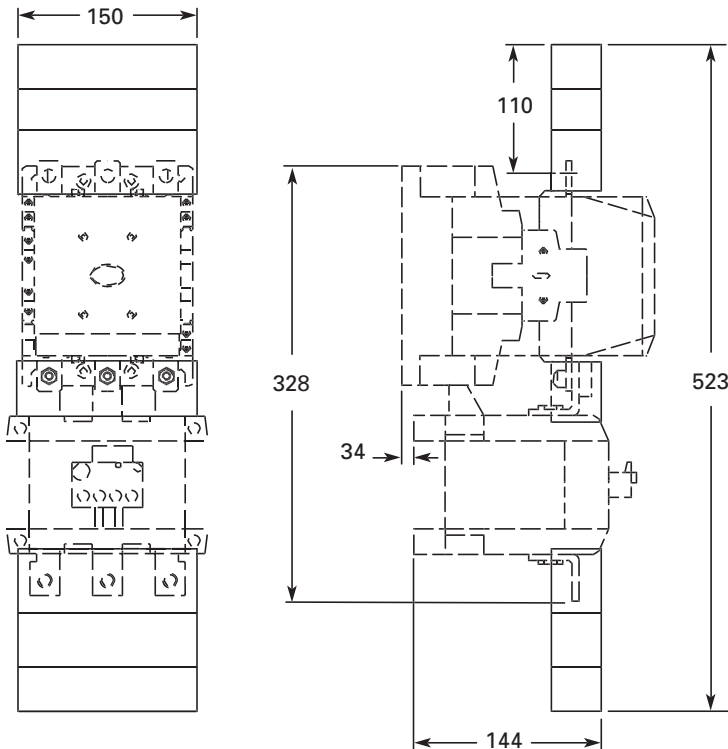
### Standard Starters, DOL, Frame D, dimensional drawings



Standard Starters, DOL, Frames F - G, dimensional drawings



Standard Starters, DOL, Frame L, dimensional drawings



**XT CE C 007 B 01 AD P16**

**Designation**  
XT = XT Line of IEC Control

**Type**  
**CE** = 3-Pole FVNR IEC Contactor  
**CS** = 3-Pole FVNR S Series IEC Contactor  
**CF** = 4-Pole FVNR IEC Contactor  
**CR** = 3-Pole FVR IEC Contactor  
**CC** = IEC Capacitor Contactor  
**AE** = FVNR IEC Starter  
**AS** = FVNR S-Series IEC Starter  
**AR** = FVR IEC Starter

**Terminations**  
**Blank** = Screw Terminals  
 (6 – 65A); 5 mm (80 – 150A);  
 No Lugs (185 – 2000A)  
**C** = Spring Cage Terminals  
 (6 – 32A); Spring Cage Coil  
 Terminals Only (185 – 2000A)

Current Ratings, AC-3	Frame Size Designation	Auxiliary Contact
007 = 7A 009 = 9A 012 = 12A 015 = 15A	<b>B</b> = 45 mm	01 = 1NC 10 = 1NO
018 = 18A 025 = 25A 032 = 32A	<b>C</b> = 45 mm	
040 = 40A 050 = 50A 065 = 65A	<b>D</b> = 55 mm	00 = 0NO-0NC
080 = 80A 095 = 95A	<b>F</b> = 90 mm	
115 = 115A 150 = 150A	<b>G</b> = 90 mm	
185 = 185A 225 = 225A	<b>L</b> = 140 mm	22 = 2NO-2NC
250 = 250A 300 = 300A 400 = 400A 500 = 500A	<b>M</b> = 160 mm	
580 = 580A 650 = 650A 750 = 750A 820 = 820A C10 = 1000A	<b>N</b> = 250 mm	
C14 = 1400A, AC-1	<b>P</b> = 260 mm	
C16 = 1600A, AC-3	<b>R</b> = 515 mm	
C20 = 2000A, AC-1	<b>R</b> = 515 mm	

**Maximum Overload Rating**

**XTAE, XTAS and XTAR Starters Only**

Frame B	Frame G
P16 = 0.1 – 0.16A P24 = 0.16 – 0.24A P40 = 0.24 – 0.4A P60 = 0.4 – 0.6A 001 = 0.6 – 1A 1P6 = 1.0 – 1.6A 2P4 = 1.6 – 2.4A 004 = 2.4 – 4A 006 = 4 – 6A 010 = 6 – 10A 012 = 9 – 12A 016 = 12 – 16A	035 = 25 – 35A 050 = 35 – 50A 070 = 50 – 70A 100 = 70 – 100A 125 = 95 – 125A 150 = 120 – 150A
Frame C	Frame L
P16 = 0.1 – 0.16A P24 = 0.16 – 0.24A P40 = 0.24 – 0.4A P60 = 0.4 – 0.6A 001 = 0.6 – 1A 1P6 = 1.0 – 1.6A 2P4 = 1.6 – 2.4A 004 = 2.4 – 4A 006 = 4 – 6A 010 = 6 – 10A 016 = 10 – 16A 024 = 16 – 24A 032 = 24 – 32A	070 = 50 – 70A 100 = 70 – 100A 125 = 95 – 125A 160 = 120 – 160A 220 = 160 – 220A 250 = 200 – 250A
Frame D	Frame M
010 = 6 – 10A 016 = 12 – 16A 024 = 16 – 24A 040 = 24 – 40A 057 = 40 – 57A 065 = 50 – 65A	063 = 42 – 63A 090 = 60 – 90A 125 = 85 – 125A 160 = 110 – 160A 240 = 160 – 240A 290 = 190 – 290A 400 = 270 – 400A 540 = 360 – 540A
Frame F	Frame N
035 = 25 – 35A 050 = 35 – 50A 070 = 50 – 70A 100 = 70 – 100A	063 = 42 – 63A 090 = 60 – 90A 125 = 85 – 125A 160 = 110 – 160A 240 = 160 – 240A 290 = 190 – 290A 400 = 270 – 400A 540 = 360 – 540A 630 = 420 – 630A

**Coil Codes**

## Standard Contactors, Frame B, Technical Data and Standards

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B
<b>Standards</b>	<b>IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS</b>			
<b>General</b>				
Weights in kg				
AC operated	0.23	0.23	0.23	0.23
DC operated	0.28	0.28	0.28	0.28
Mechanical Life	10,000,000	10,000,000	10,000,000	10,000,000
Mechanical Operating Frequency (ops/hr)				
AC operated	9000	9000	9000	9000
DC operated	9000	9000	9000	9000
Maximum Operating Frequency (ops/hr)				
Mechanical Operating Frequency (ops/hr)				
AC-1; 400V $I_e$	800	800	800	800
AC-3; 400V $I_e$	1000	1000	1000	1000
AC-4; 400V $I_e$	300	300	300	300
Climatic Proofing				
Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60 068-2-30				
Insulation Voltage ( $U_i$ ) VAC	690	690	690	690
Impulse Withstand Voltage ( $U_{imp}$ ) VAC	8000	8000	8000	8000
Operational Voltage ( $U_e$ ) VAC	690	690	690	690
Safe Isolation to VDE 0106 Part 101 and Part 101/A1				
Between coil and contacts (VAC)	400	400	400	400
Between contacts (VAC)	400	400	400	400
Making Capacity (Amps)	108	108	144	155
Breaking Capacity (Amps)				
220/230V	70	90	120	124
380/400V	70	90	120	124
500V	50	70	100	100
660/690V	40	50	70	70
Short-Circuit Protection Rating Maximum Fuse				
Type 2 Coordination				
400V; gG/gL 500V	20	20	20	20
690V; gG/gL 690V	16	16	20	20
Type 1 Coordination				
400V; gG/gL 500V	35	35	35	63
690V; gG/gL 690V	20	20	20	50
Degree of Protection	IP20			
Protection against Direct Contact when Actuated from Front (IEC 536)	Finger- and back-of-hand proof			
Main Cable Cross-Section				
Solid (mm <sup>2</sup> )	1 x (0.75 – 4) 2 x (0.75 – 2.5)	1 x (0.75 – 4) 2 x (0.75 – 2.5)	1 x (0.75 – 4) 2 x (0.75 – 2.5)	1 x (0.75 – 4) 2 x (0.75 – 2.5)
Flexible with ferrule (mm <sup>2</sup> )	1 x (0.75 – 2.5) 1 x (0.75 – 2.5)	1 x (0.75 – 2.5) 1 x (0.75 – 2.5)	1 x (0.75 – 2.5) 1 x (0.75 – 2.5)	1 x (0.75 – 2.5) 1 x (0.75 – 2.5)
Solid or Stranded (AWG)	18 – 14	18 – 14	18 – 14	18 – 14
Main Cable Connection Screw/Bolt				
Tightening torque	M3.5	M3.5	M3.5	M3.5
Nm	1.2	1.2	1.2	1.2
Control Circuit Cable Cross-Sections				
Solid (mm <sup>2</sup> )	1 x (0.75 – 4) 2 x (0.75 – 2.5)	1 x (0.75 – 4) 2 x (0.75 – 2.5)	1 x (0.75 – 4) 2 x (0.75 – 2.5)	1 x (0.75 – 4) 2 x (0.75 – 2.5)
Flexible with ferrule (mm <sup>2</sup> )	1 x (0.75 – 2.5) 1 x (0.75 – 2.5)	1 x (0.75 – 2.5) 1 x (0.75 – 2.5)	1 x (0.75 – 2.5) 1 x (0.75 – 2.5)	1 x (0.75 – 2.5) 1 x (0.75 – 2.5)
Solid or Stranded (AWG)	18 – 14	18 – 14	18 – 14	18 – 14
Main Cable Connection Screw/Bolt				
Tightening torque	M3.5	M3.5	M3.5	M3.5
Nm	1.2	1.2	1.2	1.2
Tools				
Pozidrive screwdriver	Size 2	Size 2	Size 2	Size 2
Standard screwdriver	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5

## Standard Contactors, Frame B, Technical Data and Standards (Continued)

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B
<b>Standards</b>	IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS			
<b>General (Continued)</b>				
Mounting Position, AC and DC Operated				
Ambient Temperature: Enclosed	11 to 40°C	11 to 40°C	11 to 40°C	11 to 40°C
Open	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C
Ambient Storage Temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C
<b>Environmental</b>				
Mechanical Shock Resistance (IEC/EN 60068-2-27)				
Half-sinusoidal shock 10 mS				
Main contact — NO Contact	10g	10g	10g	10g
Auxiliary contact — NO Contact	7g	7g	7g	7g
Auxiliary contact — NC Contact	5g	5g	5g	5g
Overvoltage Category/Pollution degree	III/3	III/3	III/3	III/3

<sup>1)</sup> Rated operational current: Making and breaking conditions to DC-13, L/R constant as stated.

## Standard Contactors, Frame C - D, Technical Data and Standards

Description	XTCE018C	XTCE025C	XTCE032C	XTCE040D	XTCE050D	XTCE065D
<b>Standards</b>	IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS					
<b>General</b>						
Weights in kg						
AC operated	0.42	0.42	0.42	0.9	0.9	0.9
DC operated	0.48	0.48	0.48	1.1	1.1	1.1
Mechanical Life	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Mechanical Operating Frequency (ops/hr)						
AC operated	5000	5000	5000	5000	5000	5000
DC operated	5000	5000	5000	5000	5000	5000
Electrical Operating Frequency (ops/hr)						
AC-1; 400V $I_e$	800	800	800	800	800	800
AC-3; 400V $I_e$	800	800	800	800	800	800
AC-4; 400V $I_e$	300	300	300	300	300	300
Climatic Proofing						
Damp heat, constant, to IEC 60068-2-78;						
Damp heat, cyclic, to IEC 60 068-2-30						
Insulation Voltage ( $U_i$ ) VAC	690	690	690	690	690	690
Impulse Withstand Voltage ( $U_{imp}$ ) VAC	8000	8000	8000	8000	8000	8000
Operating 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)	440	440	440	440	440	440
Between contacts (VAC)	238	440	440	440	440	440
Making Capacity (Amps)	238	350	384	560	700	910
Breaking Capacity (Amps)						
220/230V	170	250	320	400	500	650
380/400V	170	250	320	400	500	650
500V	170	250	320	400	500	650
660/690V	120	150	180	250	320	370
Short-Circuit Protection Rating Maximum Fuse Amps						
Type 2 Coordination						
400V; gG/gL 500V	25	35	63	63	80	125
690V; gG/gL 690V	25	35	35	50	63	80
Type 1 Coordination						
400V; gG/gL 500V	63	100	125	125	160	250
690V; gG/gL 690V	50	50	63	80	80	100
Degree of Protection	IP00					
Protection against Direct Contact when Actuated from Front (IEC 536)	Finger- and back-of-hand proof					

## Standard Contactors, Frame C - D, Technical Data and Standards (Continued)

Description	XTCE018C	XTCE025C	XTCE032C	XTCE040D	XTCE050D	XTCE065D
<b>Standards</b>	IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS					
<b>General</b>						
Main Cable Cross-Section						
Solid (mm <sup>2</sup> )	1 x (0.75 – 16) 2 x (0.75 – 10)	1 x (0.75 – 16) 2 x (0.75 – 10)	1 x (0.75 – 16) 2 x (0.75 – 10)	1 x (2.5 – 16) 2 x (2.5 – 16)	1 x (2.5 – 16) 2 x (2.5 – 16)	1 x (2.5 – 16) 2 x (2.5 – 16)
Flexible with ferrule (mm <sup>2</sup> )	1 x (0.75 – 16) 2 x (0.75 – 10)	1 x (0.75 – 16) 2 x (0.75 – 10)	1 x (0.75 – 16) 2 x (0.75 – 10)	1 x (2.5 – 35) 2 x (2.5 – 25)	1 x (2.5 – 35) 2 x (2.5 – 25)	1 x (2.5 – 35) 2 x (2.5 – 25)
Solid or Stranded (AWG)	18 – 6	18 – 6	18 – 6	18 – 6	18 – 6	18 – 6
Flat Conductor (Number of Segments x Width x Thickness)	—	—	—	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)
Main Cable Connection Screw/Bolt	M5	M5	M5	M6	M6	M6
Tightening torque Nm	3	3	3	3	3	3
Control Circuit Cable Cross-Sections						
Solid (mm <sup>2</sup> )	1 x (0.75 – 4) 1 x (0.75 – 4)	1 x (0.75 – 4) 1 x (0.75 – 4)	1 x (0.75 – 4) 1 x (0.75 – 4)	1 x (0.75 – 4) 1 x (0.75 – 4)	1 x (0.75 – 4) 1 x (0.75 – 4)	1 x (0.75 – 4) 1 x (0.75 – 4)
Flexible with ferrule (mm <sup>2</sup> )	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)
Solid or Stranded (AWG)	18 – 14	18 – 14	18 – 14	12 – 2	12 – 2	12 – 2
Control Circuit Cable Connection Screw/Bolt	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
Tightening torque Nm	1.2	1.2	1.2	1.2	1.2	1.2
<b>Tools</b>						
Main and control circuit cable	Size 2	Size 2	Size 2	Size 2	Size 2	Size 2
Pozidrive screwdriver	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5
Standard screwdriver	1 x 6	1 x 6	1 x 6	1 x 6	1 x 6	1 x 6
<b>Mounting Position, AC and DC operated</b>						
Ambient Temperature	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C
Ambient Storage Temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C
<b>Environmental</b>						
Mechanical Shock Resistance (IEC/EN 60068-2-27)						
Main contact — NO Contact	10	10	10	10	10	10
Auxiliary contact — NO Contact	7	7	7	7	7	7
Auxiliary contact — NC Contact	5	5	5	5	5	5
Overvoltage Category / Pollution Degree	III/3	III/3	III/3	III/3		

## Standard Contactors, Frame F - G, Technical Data and Standards

Description	XTCE080F	XTCE095F	XTCE115G	XTCE150G
<b>Standards</b>	<b>IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS</b>			
General				
Weights in kg				
AC operated	4.41	4.41	4.41	4.41
DC operated	4.63	4.63	4.63	4.63
Mechanical Life	10,000	10,000	10,000	10,000
Mechanical Operating Frequency (ops/hr)				
AC operated	3600	3600	3600	3600
DC operated	3600	3600	3600	3600
Electrical Operating Frequency (ops/hr)				
AC-1; 400V $I_e$	800	800	800	800
AC-3; 400V $I_e$	800	800	800	800
AC-4; 400V $I_e$	300	300	300	300
Climatic Proofing				
Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60 068-2-30				
Insulation Voltage ( $U_i$ ) VAC	1000	1000	1000	1000
Impulse Withstand Voltage ( $U_{imp}$ ) VAC	8000	8000	8000	8000
Operational Voltage ( $U_e$ ) VAC	1000	1000	1000	1000
Safe Isolation to VDE 0106 Part 101 and Part 101/A1				
Between coil and contacts (VAC)	690	690	690	690
Between contacts (VAC)	690	690	690	690
Making Capacity (Amps)	1120	1330	1610	2100
Breaking Capacity (Amps)				
220/230V	800	950	1150	1500
380/400V	800	950	1150	1500
500V	800	950	1150	1500
660/690V	650	800	1100	1200
1000V	1200	1200	1200	1200
Short-Circuit Protection Rating Maximum Fuse				
Type 2 Coordination				
400V; gG/gL 500V	160	160	250	250
690V; gG/gL 690V	160	160	1) <sup>1)</sup>	1) <sup>1)</sup>
Type 1 Coordination				
400V; gG/gL 500V	250	250	250	250
690V; gG/gL 690V	200	200	1) <sup>1)</sup>	1) <sup>1)</sup>
Degree of Protection				
IP00				
Protection Against Direct Contact when Actuated from Front (IEC 536)				
Finger- and back-of-hand proof				
Main Cable Cross-Section				
Solid (mm <sup>2</sup> )				
—				
Flexible with ferrule (mm <sup>2</sup> )				
1 x (10 – 95)				
2 x (10 – 70)				
Stranded (mm <sup>2</sup> )				
1 x (16 – 120)				
2 x (16 – 95)				
Solid or Stranded (AWG)				
10 – 250ACM				
Flat Conductor				
2 x (6 x 16 x 0.8)				
(Number of Segments x Width x Thickness)				
Main Cable Connection Screw/Bolt				
Tightening torque				
Nm				
14				
Control Circuit Cable Cross-Sections				
Solid (mm <sup>2</sup> )				
1 x (0.75 – 4)				
1 x (0.75 – 4)				
Flexible with ferrule (mm <sup>2</sup> )				
1 x (0.75 – 2.5)				
2 x (0.75 – 2.5)				
2 x (0.75 – 2.5)				
2 x (0.75 – 2.5)				
Solid or Stranded (AWG)				
18 – 14				
18 – 14				
18 – 14				
18 – 14				
Control Circuit Cable Connection Screw/Bolt				
Tightening torque				
Nm				
M3.5				
M3.5				
M3.5				
M3.5				

<sup>1)</sup> Contact Eaton.

## Standard Contactors, Frame F - G, Technical Data and Standards (Continued)

Description	XTCE080F	XTCE095F	XTCE115G	XTCE150G
<b>Standards</b>	<b>IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS</b>			
<b>General</b>				
Tools				
Main and control circuit cable	5mm Allen Key	5mm Allen Key	5mm Allen Key	5mm Allen Key
Pozidrive screwdriver	Size 2	Size 2	Size 2	Size 2
Standard screwdriver	0.8 x 0.55	0.8 x 0.55	0.8 x 0.55	0.8 x 0.55
Mounting Position, AC and DC operated				
Ambient Temperature: Enclosed	-25 to 40°C	-25 to 40°C	-25 to 40°C	-25 to 40°C
Open	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C
Ambient Storage Temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C
<b>Environmental</b>				
Mechanical Shock Resistance (IEC/EN 60068-2-27)				
Half-sinusoidal shock 10 mS				
Main contact — NO Contact	10g	10g	10g	10g
Auxiliary contact — NO Contact	7g	7g	7g	7g
Auxiliary contact — NC Contact	5g	5g	5g	5g
Overvoltage Category/Pollution Degree	III/3	III/3	III/3	III/3

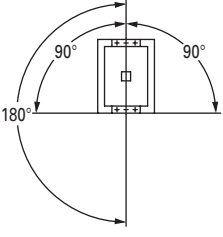
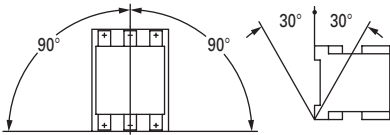


## Standard Contactors, Frame L - M, Technical Data and Standards

Description	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M
<b>Standards</b>	<b>IEC/EN 60947, VDE 0660, UL, CSA</b>					
<b>General</b>						
Weights in kg	6.5	6.5	6.5	8	8	8
Mechanical Life	10,000,000	10,000,000	10,000,000	7000000	7000000	7000000
Mechanical Operating Frequency (ops/hr)						
AC operated	3000	3000	3000	2000	2000	2000
DC operated	3000	3000	3000	2000	2000	2000
Mechanical Operating Frequency (ops/hr)	See page 115.					
Climatic Proofing	Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60 068-2-30					
Insulation Voltage (U <sub>i</sub> ) VAC	1000	1000	1000	1000	1000	1000
Impulse Withstand Voltage (U <sub>imp</sub> ) VAC	8000	8000	8000	8000	8000	8000
Operating Voltage (U <sub>e</sub> ) VAC	1000	1000	1000	1000	1000	1000
Safe Isolation to VDE 0106 Part 101 and Part 101/						
A1	500	500	500	500	500	500
Between coil and contacts (VAC)	500	500	500	500	500	500
Between contacts (VAC)						
Making Capacity (Amps)	3000	3000	3000	5500	5500	5500
Breaking Capacity (Amps)						
220/230V	2500	2500	2500	5000	5000	5000
380/400V	2500	2500	2500	5000	5000	5000
500V	2500	2500	2500	5000	5000	5000
660/690V	2500	2500	2500	5000	5000	5000
1000V	760	760	760	950	950	950
Short-Circuit Protection Rating Maximum Fuse						
Type 2 Coordination						
400V; gG/gL 500V	315	315	315	500	500	500
690V; gG/gL 690V	315	315	315	500	500	500
1000V; gG/gL 1000V	160	160	160	200	200	200
Type 1 Coordination						
400V; gG/gL 500V	400	400	400	630	630	630
690V; gG/gL 690V	400	400	400	630	630	630
1000V; gG/gL 1000V	200	200	200	250	250	250
Degree of Protection	IP00					
Protection Against Direct Contact when Actuated from Front (Iec 536)	Finger- and back-of-hand proof with terminal shroud or terminal block.					
Main Cable Cross-Section						
Flexible with cable lug (mm <sup>2</sup> )	35 – 95	50 – 240	50 – 240	50 – 240	50 – 240	50 – 240
Stranded with cable lug (mm <sup>2</sup> )	50 – 120	70 – 240	70 – 240	70 – 240	70 – 240	70 – 240
Solid or Stranded (AWG)		1/0 – 250	1/0 – 250	1/0 – 250	1/0 – 250	1/0 – 250
Flat Conductor (mm)		MCM <sup>1)</sup>	MCM <sup>1)</sup>	MCM <sup>1)</sup>	MCM <sup>1)</sup>	MCM <sup>1)</sup>
Busbar — Width in mm	20	20	25	25	25	30
Main Cable Connection Screw/Bolt	M10	M10	M10	M10	M10	M10
Tightening torque						
Nm	24	24	24	24	24	24
Lb-in	213	213	213	213	213	213
Control Circuit Cable Cross-Sections						
Solid (mm <sup>2</sup> )	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 <sup>2</sup> )	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)
Solid or Stranded (AWG)	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)
Control Circuit Cable Connection Screw/Bolt	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
Tightening torque						
Nm	1.2	1.2	1.2	1.2	1.2	1.2
Tools						
Main cable wrench	16 mm	16 mm	16 mm	16 mm	16 mm	16 mm
Control circuit cable pozidrive screwdriver	Size 2	Size 2	Size 2	Size 2	Size 2	Size 2

<sup>1)</sup> Screw tightening with flat cable terminal or cable terminal blocks. See terminal capacity for cable terminal blocks.

## Standard Contactors, Frame L - M, Technical Data and Standards (Continued)

Description	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M
<b>General (Continued)</b>						
Mounting Position, AC and DC Operated						
Ambient Temperature	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C
Ambient Storage Temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C
<b>Environmental</b>						
<b>Mechanical Shock</b>						
Resistance (IEC/EN 60068-2-27)						
Half-sinusoidal shock 10 mS						
Main contact — NO Contact	10g	10g	10g	10g	10g	10g
Auxiliary contact — NO	10g	10g	10g	10g	10g	10g
Contact	8g	8g	8g	8g	8g	8g
Auxiliary contact — NC						
Contact						
Overvoltage Category/ Pollution Degree	III/3	III/3	III/3	III/3	III/3	III/3
Switching Capacity, kvar <sup>1)</sup>						
Individual Compensation						
230V	87	—	—	115	—	—
400/420/440V	150	—	—	200	—	—
525V	190	—	—	265	—	—
690V	150	—	—	200	—	—
Group Compensation,						
with Choke	80	100	110	130	160	160
230V	150	175	190	225	280	280
400/420/440V	200	230	260	290	370	370
525V	260	300	340	390	480	480
690V						
Group Compensation,						
without Choke	66	—	—	85	—	—
230V	115	—	—	150	—	—
400/420/440V	145	—	—	195	—	—
525V	115	—	—	150	—	—
690V						

<sup>1)</sup> When using contactors for group compensation, a minimum inductance of approx. 6 uH per capacitor must be available to limit the high inrush current peaks. This corresponds to an air-cored coil with 5 windings and a coil diameter of approximately 140 mm. The conductor cross-section must be selected according to the rated current per phase.

## Standard Contactors, Frame N - R, Technical Data and Standards

Description	XTCE580N	XTCE650N	XTCE750N, XTCE820N,	XTCEC10N	XTCEC14P, XTCEC20R
<b>Standards</b>	<b>IEC/EN 60947, VDE 0660, UL, CSA</b>				
General					
Weights in kg	15	15	15	15	15, 32
Mechanical Life	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
Mechanical Operating Frequency (ops/hr)					
AC operated	1000	1000	1000	1000	1000
DC operated	1000	1000	1000	1000	1000
Maximum Operating frequency (ops/hr)	See page 115.				
Climatic Proofing					
Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60 068-2-30					
Insulation Voltage (U <sub>i</sub> ) VAC	1000	1000	1000	1000	1000
Impulse Withstand Voltage (U <sub>imp</sub> ) VAC	8000	8000	8000	8000	8000
Operating Voltage (U <sub>e</sub> ) VAC	1000	1000	1000	1000	1000
Safe Isolation to VDE 0106 Part 101 and Part 101/A1					
Between coil and contacts (VAC)	500	500	500	500	500
Between contacts (VAC)	500	500	500	500	500
Making Capacity (Amps)	7800	7800	9840	9840	9840
Breaking Capacity (Amps)					
220/230V	6500	6500	8200	8200	8200
380/400V	6500	6500	8200	8200	8200
500V	6500	6500	8200	8200	8200
660/690V	6500	6500	8200	8200	8200
1000V	4350	4350	5800	5800	5800
Short-Circuit Protection Rating Maximum Fuse					
Type 2 Coordination					
400V; gG/gL 500V	630	630	630	630	—
690V; gG/gL 690V	630	630	630	630	—
1000V; gG/gL 1000V	500	500	630	630	—
Type 1 Coordination					
400V; gG/gL 500V	1000	1000	1200	1200	—
690V; gG/gL 690V	1000	1000	1200	1200	—
1000V; gG/gL 1000V	630	630	800	800	—
Degree of Protection	IP00				
Protection Against Direct Contact when Actuated from Front (Iec 536)	Finger- and back-of-hand proof with terminal shroud or terminal block.				
Main Cable Cross-Section					
Flexible with cable lug (mm <sup>2</sup> )	50-240	50-240	50-240	50-240	50-240
Stranded with cable lug (mm <sup>2</sup> )	70-240	70-240	70-240	70-240	70-240
Solid or Stranded (AWG)	2/0 – 500 MCM	2/0 – 500 MCM	2/0 – 500 MCM	2/0 – 500 MCM	2/0 – 500 MCM
Flat Conductor (mm)	<sup>1)</sup>	<sup>1)</sup>	<sup>1)</sup>	<sup>1)</sup>	<sup>1)</sup>
Busbar — Width in mm	50	50	50	50	50
Main Cable Connection Screw/Bolt	M10	M10	M12	M12	M12
Tightening torque					
Nm	24	24	35	35	35
Control Circuit Cable Cross-Sections					
Solid (mm <sup>2</sup> )					
1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)
2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)
Flexible with ferrule (mm <sup>2</sup> )					
1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)
2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)
Solid or Stranded (AWG)					
2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)
Control Circuit Cable Connection Screw/Bolt	M3.5	M3.5	M3.5	M3.5	M3.5
Tightening torque					
Nm	1.2	1.2	1.2	1.2	1.2

<sup>1)</sup> Screw tightening with flat cable terminal or cable terminal blocks. See terminal capacity for cable terminal blocks.

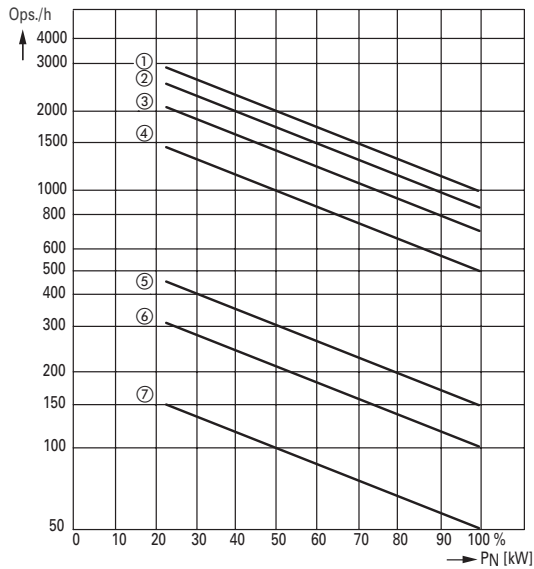
## Standard Contactors, Frame N - R, Technical Data and Standards (Continued)

Description	XTCE580N	XTCE650N	XTCE750N, XTCE820N,	XTCEC10N	XTCEC14N, XTCEC20N
<b>General (Continued)</b>					
Tools					
Main cable wrench	16 mm	16 mm	18 mm	18 mm	18 mm
Control circuit cable pozidrive screwdriver	Size 2	Size 2	Size 2	Size 2	Size 2
Mounting Position, AC and DC Operated					
Ambient Temperature	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C	-25 to 60°C
Ambient Storage Temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C
Environmental					
Mechanical Shock Resistance (IEC/EN 60068-2-27)					
Half-sinusoidal shock 10 mS (g)					
Main contact — NO Contact	10	10	10	10	10
Auxiliary contact — NO Contact	10	10	10	10	10
Auxiliary contact — NC Contact	8	8	8	8	8
Overvoltage Category/Pollution Degree	III/3	III/3	III/3	III/3	III/3
Switching Capacity, kvar <sup>1)</sup>					
Individual Compensation					
230V	175	—	—	—	—
400/420/440V	300	—	—	—	—
525V	400	—	—	—	—
690V	300	—	—	—	—

<sup>1)</sup> When using contactors for group compensation, a minimum inductance of approx. 6 uH per capacitor must be available to limit the high inrush current peaks. This corresponds to an air-cored coil with 5 windings and a coil diameter of approximately 140 mm. The conductor cross-section must be selected according to the rated current per phase.

## Standard Contactors, Frame L - N, Utilisation Categories, (400V) Maximum Operating Frequency

Type	AC-1	AC-3	AC-4
XTCE185L	2	1	6
XTCE225L	2	1	6
XTCE250L	2	1	6
XTCE300M	3	2	7
XTCE400M	3	2	7
XTCE500M	3	2	7
XTCE580N	3	4	5
XTCE650N	3	4	5
XTCE750N	3	4	5
XTCE820N	3	4	5



## Standard Contactors, Frames B - R, AC1, 3, 4, 6A and 6B Electrical Indurance Ratings

Description	XTCE007B	XTCE009B	XTCE012B XTCF020B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
<b>AC-1 Operation</b>							
Conventional Free Air Thermal Current, 3-Pole, 50 – 60 Hz							
at 40°C (I <sub>th</sub> )	22A	22A	22A	22A	40A	45A	45A
at 50°C (I <sub>th</sub> )	21A	21A	21A	21A	38A	43A	43A
at 55°C (I <sub>th</sub> )	21A	21A	21A	21A	37A	42A	42A
at 60°C (I <sub>th</sub> )	20A	20A	20A	20A	35A	40A	40A
Enclosed	18A	18A	18A	18A	32A	36A	36A
Conventional Free Air Thermal Current, 1-Pole (I <sub>th</sub> )							
Enclosed	45A	45A	45A	45A	80A	80A	80A
<b>AC-3 Operation</b>							
Rated Operational Current, 50/60 Hz <sup>1)</sup> (I <sub>e</sub> ) in amperes							
220/230V	7	9	12	15.5	18	25	32
240V	7	9	12	15.5	18	25	32
380/400V	7	9	12	15.5	18	25	32
415V	7	9	12	15.5	18	25	32
440V	7	9	12	15.5	18	25	32
500V	5	7	10	12.5	18	25	32
660/690V	4	5	7	9	12	15	18
1000V	—	—	—	—	—	—	—
Rated power (P) in kilowatts							
220/230V	2.2	2.5	3.5	4	5	7.5	10
240V	2.2	3	4	4.6	5.5	8.5	11
380/400V	3	4	5.5	7.5	7.5	11	15
415V	4	5.5	7	8	10	14.5	19
440V	4.5	5.5	7.5	8.4	10.5	15.5	20
500V	3.5	4.5	7	7.5	12	17.5	23
660/690V	3.5	4.5	6.5	7	11	14	17
1000V	—	—	—	—	—	—	—
<b>AC-4 Operation</b>							
Rated Operational Current, 50/60 Hz <sup>1)</sup> (I <sub>e</sub> ) in amperes							
220/230V	5	6	7	7	10	13	15
240V	5	6	7	7	10	13	15
380/400V	5	6	7	7	10	13	15
415V	5	6	7	7	10	13	15
440V	5	6	7	7	10	13	15
500V	4.5	5	6	6	10	13	15
660/690V	4	4.5	5	5	8	10	12
1000V	—	—	—	—	—	—	—
Rated power (P) in kilowatts							
220/230V	1	1.5	2	2	2.5	3.5	4
240V	1.5	1.6	2.2	2.2	3	4	4.5
380/400V	2.2	2.5	3	3	4.5	6	7
415V	2.3	2.8	3.4	3.4	5	6.5	7.5
440V	2.4	3	3.6	3.6	5.5	7	8
500V	2.5	2.8	3.5	3.5	6	8	9
660/690V	2.9	3.6	4.4	4.4	6.5	8.5	10
1000V	—	—	—	—	—	—	—
<b>AC-6A Operation</b>							
Transformer Loads	Values are application specific. Calculation is $I_e^{AC-3} = X / 6 * I_e^{Transformer}$ where the X is the inrush current of the transformer and I <sub>e</sub> <sup>Transformer</sup> is the nominal current. <sup>2)</sup>						
<b>AC-6B Operation</b>							
Capacitor Loads							
Individual compensation rated operational current I <sub>e</sub> of three-phase capacitors in amperes							
Up to 525V	—	—	—	—	—	—	—
690V	—	—	—	—	—	—	—
Maximum inrush current peak (x I <sub>e</sub> )							
Component Lifesaving (Operations)	—	—	—	—	—	—	—
Maximum Operating Frequency (ops/hr)	—	—	—	—	—	—	—

<sup>1)</sup> At maximum permissible ambient temperature.

<sup>2)</sup> Example — The transformer has a nominal current of 10A with an inrush current of 18 times the nominal current. So, the contactor must have an AC-3 current of 18/6 x 10A = 30A. Using an XTCE032C (32A AC-3) contactor is recommended.

**Standard Contactors, Frames B - R, AC1, 3, 4, 6A and 6B Electrical Indurance Ratings (Continued)**

Description	XTCE040D	XTCE050D	XTCE065D	XTCE080F	XTCE095F	XTCE115G	XTCE150G
<b>AC-1 Operation</b>							
Conventional Free Air Thermal Current, 3-Pole, 50 – 60 Hz							
Open							
at 40°C (I <sub>th</sub> )	60A	80A	98A	110A	130A	160A	190A
at 50°C (I <sub>th</sub> )	57A	71A	88A	88A	125A	142A	180A
at 55°C (I <sub>th</sub> )	55A	66A	83A	94A	115A	135A	170A
at 60°C (I <sub>th</sub> )	50A	65A	80A	90A	110A	130A	160A
Enclosed	45A	58A	72A	80	100A	115A	144A
Conventional Free Air Thermal Current, 1-Pole (I <sub>th</sub> )							
Open	125A	162A	200A	225A	275A	325A	400A
Enclosed	112A	145A	150A	200A	250A	285A	360A
<b>AC-3 Operation</b>							
Rated Operational Current, 50/60 Hz <sup>1)</sup> (I <sub>e</sub> ) in amperes							
220/230V	40	50	65	80	95	115	150
240V	40	50	65	80	95	115	150
380/400V	40	50	65	80	95	115	150
415V	40	50	65	80	95	115	150
440V	40	50	65	80	95	115	150
500V	40	50	65	80	95	115	150
660/690V	25	32	37	65	80	93	100
1000V	—	—	—	—	—	—	—
Rated power (P) in kilowatts							
220/230V	12.5	15.5	20	25	30	37	48
240V	13.5	17	22	27.5	34	40	52
380/400V	18.5	22	30	37	45	55	75
415V	24	30	39	43	57	70	91
440V	25	32	41	51	60	75	95
500V	28	36	47	58	70	85	110
660/690V	23	30	35	63	75	90	96
1000V	—	—	—	—	—	—	—
<b>AC-4 Operation</b>							
Rated Operational Current, 50/60 Hz <sup>1)</sup> (I <sub>e</sub> ) in amperes							
220/230V	18	21	25	40	50	55	65
240V	18	21	25	40	50	55	65
380/400V	18	21	25	40	50	55	65
415V	18	21	25	40	50	55	65
440V	18	21	25	40	50	55	65
500V	18	21	25	40	50	55	65
660/690V	14	17	20	40	50	45	50
1000V	—	—	—	—	—	—	—
Rated power (P) in kilowatts							
220/230V	5	6	7	12	16	17	20
240V	5.5	6.5	7.5	13	17	19	22
380/400V	9	10	12	20	26	28	33
415V	9.5	11	13	24	30	33	39
440V	10	12	14	25	32	35	41
500V	11	13	16	29	36	40	47
660/690V	12	14	17	26	35	45	48
1000V	—	—	—	—	—	—	—
<b>AC-6A Operation</b>							
Transformer Loads	Values are application specific. Calculation is $I_e^{AC-3} = X / 6 * I_e^{Transformer}$ where the X is the inrush current of the transformer and $I_e^{Transformer}$ is the nominal current. <sup>2)</sup>						
<b>AC-6B Operation</b>							
Capacitor Loads							
Individual compensation rated operational current I <sub>e</sub> of three-phase capacitors in amperes							
Up to 525V	—	—	—	—	—	—	—
690V	—	—	—	—	—	—	—
Maximum inrush current peak (x I <sub>e</sub> )	30	30	30	30	30	30	30
Component Lifesaving (Operations)	—	—	—	—	—	—	—
Maximum Operating Frequency (ops/hr)	—	—	—	—	—	—	—

<sup>1)</sup> At maximum permissible ambient temperature.

<sup>2)</sup> Example — The transformer has a nominal current of 10A with an inrush current of 18 times the nominal current. So, the contactor must have an AC-3 current of 18/6 x 10A = 30A. Using an XTCE032C (32A AC-3) contactor is recommended.

**Standard Contactors, Frames B - R, AC1, 3, 4, 6A and 6B Electrical Indurance Ratings (Continued)**

Description	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE580N
<b>AC-1 Operation</b>							
Conventional Free Air Thermal Current, 3-Pole, 50 – 60 Hz							
at 40°C (I <sub>th</sub> )	337	386	429	490	612	857	980
at 50°C (I <sub>th</sub> )	301	345	383	438	548	767	876
at 55°C (I <sub>th</sub> )	287	329	366	418	522	731	836
at 60°C (I <sub>th</sub> )	275	315	350	400	500	700	800
Conventional Free Air Thermal Current, 1-Pole (I <sub>th</sub> )	685	785	875	1000	1250	1750	2000
<b>AC-3 Operation</b>							
Rated Operational Current, 50/60 Hz <sup>1)</sup> (I <sub>e</sub> ) in amperes							
220/230V	185	225	250	300	400	500	580
240V	185	225	250	300	400	500	580
380/400V	185	225	250	300	400	500	580
415V	185	225	250	300	400	500	580
440V	185	225	250	300	400	500	580
500V	185	225	250	300	400	500	580
660/690V	185	225	250	300	400	500	580
1000V	76	76	76	95	95	95	435
Rated power (P) in kilowatts							
220/230V	55	70	75	90	125	155	185
240V	62	75	85	100	132	170	200
380/400V	90	110	132	160	200	250	315
415V	110	132	148	180	240	300	348
440V	115	142	157	190	255	345	370
500V	132	160	180	215	290	360	420
660/690V	175	215	240	286	344	344	560
1000V	108	108	108	132	132	132	600
<b>AC-4 Operation</b>							
Rated Operational Current, 50/60 Hz <sup>1)</sup> (I <sub>e</sub> ) in amperes							
220/230V	136	164	200	240	296	360	456
240V	136	164	200	240	296	360	456
380/400V	136	164	200	240	296	360	456
415V	136	164	200	240	296	360	456
440V	136	164	200	240	296	360	456
500V	136	164	200	240	296	360	456
660/690V	136	164	200	240	296	296	456
1000V	76	76	76	95	95	95	348
Rated power (P) in kilowatts							
220/230V	41	51	62	75	92	112	143
240V	45	54	68	82	101	122	156
380/400V	75	90	110	132	160	200	250
415V	80	96	117	142	176	216	274
440V	85	102	125	151	186	229	290
500V	96	116	143	172	214	260	330
660/690V	127	155	189	229	283	344	440
1000V	108	108	108	132	132	132	509
<b>AC-6A Operation</b>							
Transformer Loads	Values are application specific. Calculation is $I_e^{AC-3} = X / 6 * I_e^{Transformer}$ where the X is the inrush current of the transformer and $I_e^{Transformer}$ is the nominal current. <sup>2)</sup>						
<b>AC-6B Operation</b>							
Capacitor Loads							
Individual compensation rated operational current I <sub>e</sub> of three-phase capacitors in amperes							
Up to 525V	220	220	220	307	307	307	463
690V	133	133	133	177	177	177	265
Maximum inrush current peak (x I <sub>e</sub> )	30	30	30	30	30	30	30
Component Lifesaving (Operations)	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Maximum Operating Frequency (ops/hr)	200	200	200	200	200	200	200

<sup>1)</sup> At maximum permissible ambient temperature.

<sup>2)</sup> Example —The transformer has a nominal current of 10A with an inrush current of 18 times the nominal current. So, the contactor must have an AC-3 current of 18/6 x 10A = 30A. Using an XTCE032C (32A AC-3) contactor is recommended.



## Standard Contactors, Frames B - R, AC1, 3, 4, 6A and 6B Electrical Endurance Ratings (Continued)

Description	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R
<b>AC-1 Operation</b>						
Conventional Free Air Thermal Current, 3-Pole, 50 – 60 Hz						
at 40°C (I <sub>th</sub> )	1041	1102	1225	1225	1714	2450
at 50°C (I <sub>th</sub> )	931	986	1095	1095	1533	2190
at 55°C (I <sub>th</sub> )	888	940	1044	1044	1462	2089
at 60°C (I <sub>th</sub> )	850	900	1000	1000	1400	2000
Conventional Free Air Thermal Current, 1-Pole (I <sub>th</sub> )	2125	2250	2500	2500	3500	5000
<b>AC-3 Operation</b>						
Rated Operational Current, 50/60 Hz <sup>1)</sup> (I <sub>e</sub> ) in amperes						
220/230V	650	750	820	1000	—	—
240V	650	750	820	1000	—	—
380/400V	650	750	820	1000	—	—
415V	650	750	820	1000	—	—
440V	650	750	820	1000	—	—
500V	650	750	820	1000	—	—
660/690V	650	750	820	1000	—	—
1000V	435	580	580	700	—	—
Rated power (P) in kilowatts						
220/230V	205	240	260	315	—	—
240V	225	260	285	340	—	—
380/400V	355	400	450	560	—	—
415V	390	455	500	610	—	—
440V	420	480	525	650	—	—
500V	470	550	600	730	—	—
660/690V	630	720	750	1000	—	—
1000V	600	800	800	1000	—	—
<b>AC-4 Operation</b>						
Rated Operational Current, 50/60 Hz <sup>1)</sup> (I <sub>e</sub> ) in amperes						
220/230V	512	576	656	800	—	—
240V	512	576	656	800	—	—
380/400V	512	576	656	800	—	—
415V	512	576	656	800	—	—
440V	512	576	656	800	—	—
500V	512	576	656	800	—	—
660/690V	512	576	656	800	—	—
1000V	348	464	464	700	—	—
Rated power (P) in kilowatts						
220/230V	161	181	209	260	—	—
240V	176	200	228	280	—	—
380/400V	280	315	355	450	—	—
415V	307	346	394	490	—	—
440V	326	367	418	520	—	—
500V	370	417	474	590	—	—
660/690V	494	556	633	780	—	—
1000V	509	678	678	1000	—	—
<b>AC-6A Operation</b>						
Transformer Loads	Values are application specific. Calculation is $I_{eAC-3} = X / 6 * I_e$ Transformer where the X is the inrush current of the transformer and I <sub>e</sub> Transformer is the nominal current. <sup>2)</sup>					
<b>AC-6B Operation</b>						
Capacitor Loads						
Individual compensation rated operational current I <sub>e</sub> of three-phase capacitors in amperes						
Up to 525V	463	463	463	463	—	—
690V	265	265	265	265	—	—
Maximum inrush current peak (x I <sub>e</sub> )	30	30	30	30	—	—
Component Lifesaving (Operations)	100,000	100,000	100,000	100,000	—	—
Maximum Operating Frequency (ops/hr)	200	200	200	200	—	—

<sup>1)</sup> At maximum permissible ambient temperature.

<sup>2)</sup> Example — The transformer has a nominal current of 10A with an inrush current of 18 times the nominal current. So, the contactor must have an AC-3 current of 18/6 x 10A = 30A. Using an XTCE032C (32A AC-3) contactor is recommended.

### Standard Contactors, Frames B - R, DC1, Electrical Indurance Ratings

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
Rated operation current {1} (I <sub>e</sub> ) in amperes							
60V	20	20	20	20	35	40	40
110V	20	20	20	20	35	40	40
220V	15	15	15	15	35	40	40
440V	1	1.3	1.3	1.3	2.9	2.9	2.9
	XTCE040D	XTCE050D	XTCE065D	XTCE080F	XTCE095F	XTCE115G	XTCE150G
60V	50	60	72	110	110	160	160
110V	50	50	72	110	110	160	160
220V	45	45	65	70	70	90	90
440V	2.9	2.9	2.9	4.5	4.5	4.5	4.5
	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE580N
60V	300	300	300	400	400	400	—
110V	300	300	300	400	400	400	—
220V	300	300	300	400	400	400	—
440V	11	11	11	11	11	11	—
	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R	—
60V	—	—	—	—	—	—	—
110V	—	—	—	—	—	—	—
220V	—	—	—	—	—	—	—
440V	—	—	—	—	—	—	—

### Standard Contactors, Frames B - R, DC3, Electrical Indurance Ratings

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
Rated operation current {1} (I <sub>e</sub> ) in amperes							
60V	20	20	20	20	35	35	40
110V	20	20	20	20	35	35	40
220V	1.5	1.5	1.5	1.5	10	10	25
440V	0.2	0.2	0.2	0.2	0.6	0.6	0.6
	XTCE040D	XTCE050D	XTCE065D	XTCE080F	XTCE095F	XTCE115G	XTCE150G
60V	50	60	72	110	110	160	160
110V	50	50	72	110	110	160	160
220V	25	25	35	35	35	40	40
440V	0.6	0.6	0.6	1	1	1	1
	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE580N
60V	300	300	300	400	400	400	—
110V	300	300	300	400	400	400	—
220V	300	300	300	400	400	400	—
440V	—	—	—	—	—	—	—
	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R	—
60V	—	—	—	—	—	—	—
110V	—	—	—	—	—	—	—
220V	—	—	—	—	—	—	—
440V	—	—	—	—	—	—	—

## Standard Contactors, Frames B - R, DC5, Electrical Indurance Ratings

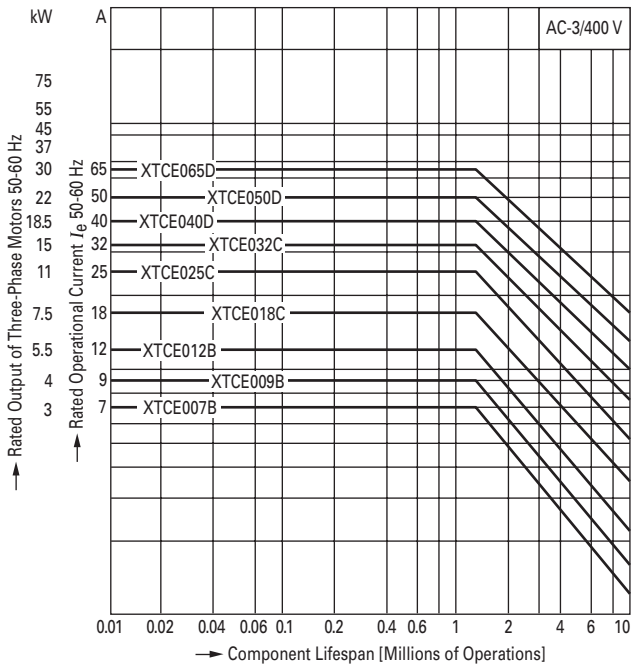
### Heat Loss

Description	XTCE007B	XTCE009B	XTCE012B XTCF020B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
Rated operation current {I} (I <sub>e</sub> ) in amperes							
60V	20	20	20	20	35	35	40
110V	20	20	20	20	35	35	40
220V	1.5	1.5	1.5	1.5	10	10	25
440V	0.2	0.2	0.2	0.2	0.6	0.6	0.6
	XTCE040D	XTCE050D	XTCE065D	XTCE080F	XTCE095F	XTCE115G	XTCE150G
60V	50	60	72	110	110	160	160
110V	50	50	72	110	110	160	160
220V	25	25	35	35	35	40	40
440V	0.6	0.6	0.6	1	1	1	1
	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE580N
60V	300	300	300	400	400	400	—
110V	300	300	300	400	400	400	—
220V	300	300	300	400	400	400	—
440V	—	—	—	—	—	—	—
	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R	—
60V	—	—	—	—	—	—	—
110V	—	—	—	—	—	—	—
220V	—	—	—	—	—	—	—
440V	—	—	—	—	—	—	—

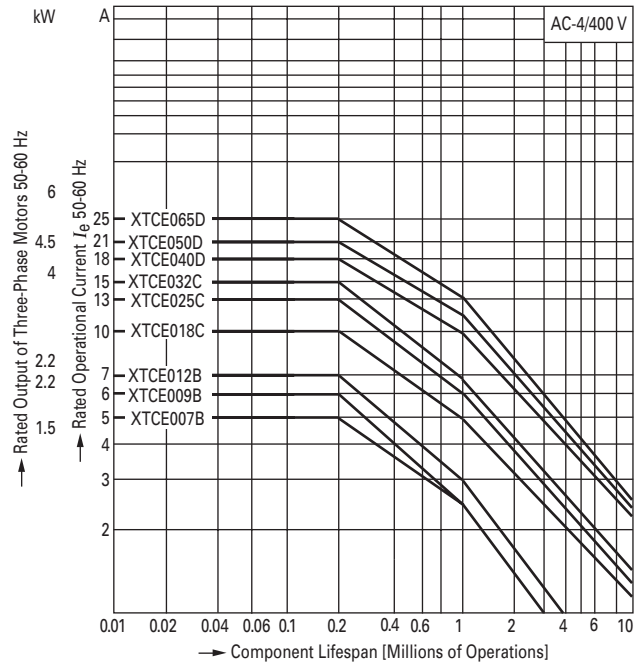
## Standard 3P Contactors, Frames B - R, Current Heat Loss, watts

Description	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C
Current heat loss (3-Pole) in watts							
at I <sub>th</sub>	3	3	3	3	7.3	9.6	12.1
at I <sub>e</sub> to AC-3/400V	0.37	0.6	1.1	1.8	1.9	3.8	6.1
Impedance per pole, mΩ	2.5	2.5	2.5	2.5	2	2	2
	XTCE040D	XTCE050D	XTCE065D	XTCE080F	XTCE095F	XTCE115G	XTCE150G
Current heat loss (3-Pole) in watts							
at I <sub>th</sub>	11.3	19	28.8	14.6	21.8	30.4	46.1
at I <sub>e</sub> to AC-3/400V	7.2	11.3	19	11.5	16.2	23.8	40.5
Impedance per pole, mΩ	1.5	1.5	1.5	0.6	0.6	0.6	0.6
	XTCE185L	XTCE225L	XTCE250L	XTCE300M	XTCE400M	XTCE500M	XTCE580N
Current heat loss (3-Pole) in watts							
at I <sub>th</sub>	79	108	95	123	188	236	227
at I <sub>e</sub> to AC-3/400V	36	55	48	69	120	120	120
Impedance per pole, mΩ							
	XTCE650N	XTCE750N	XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R	—
Current heat loss (3-Pole) in watts							
at I <sub>th</sub>	257	288	355	355	697	711	—
at I <sub>e</sub> to AC-3/400V	150	200	239	355	—	—	—
Impedance per pole, mΩ							

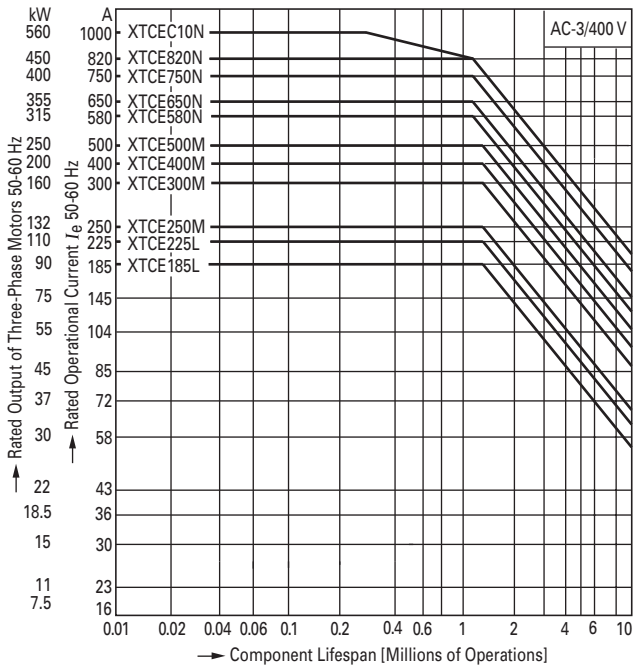
# Standard Contactors, Frames B - N, Mechanical Life Curves



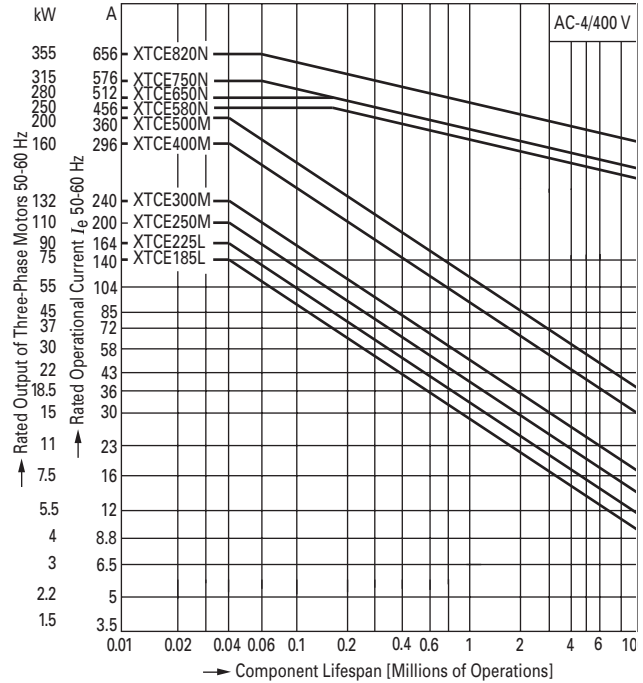
Normal Switching Duty - XTCE007B - XTCE065D



Extreme Switching Duty - XTCE007B - XTCE065D



Normal Switching Duty - XTCE185L - XTCEC10N

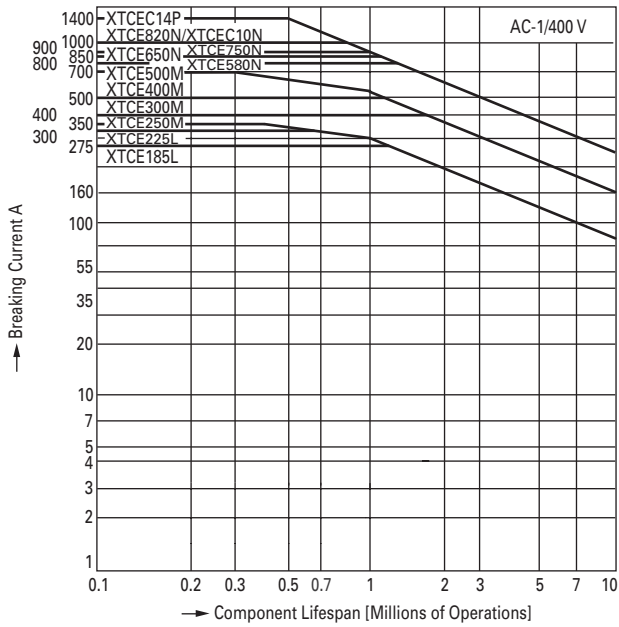


Extreme Switching Duty - XTCE185L - XTCE820N

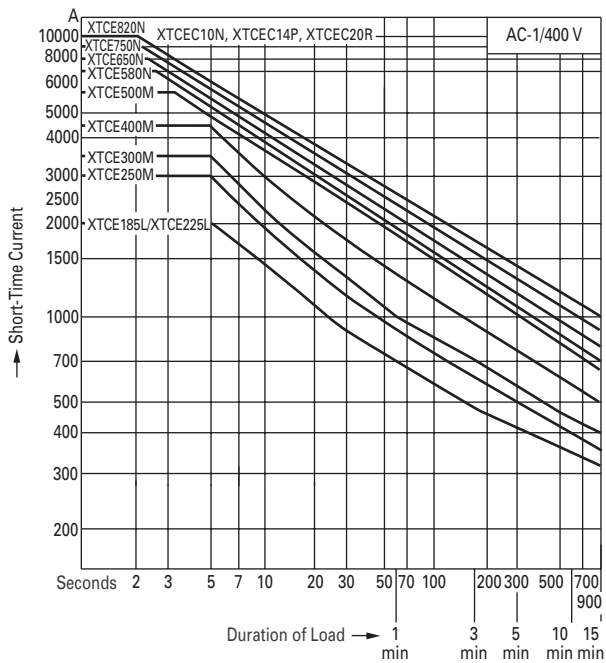
Technical details

Eaton list Prefix	AC-3	Electrical Life (Operations)
XTAE012B	12A	1 million
XTAE015B	15A	1.2 million
XTAE018C	18A	2 million

## Standard Contactors, Frames B - N, Mechanical Life Curves (Continued)



Switching Duty for Non-motor loads, 3-pole, 4-pole -  
XTCE185L - XTCEC14P



Short-Time Loading, 3 Pole - XTCE185L - XTCEC20R

## Coil Data

### Standard, Contactors, Frames B - D, Coil Data

	XTCE007B	XTCE009B	XTCE012B	XTCE015B	XTCE018C	XTCE025C	XTCE032C	XTCE040D	XTCE050D	XTCE065D
<b>Frame</b>										
<b>Voltage Tolerance</b>										
Pick-Up ( $x U_c$ )										
AC operated	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1
DC operated	0.8 – 1.19 1)	0.8 – 1.19 1)	0.8 – 1.19 1)	0.8 – 1.19 2)	0.7 – 1.2 2)	0.7 – 1.2 2)	0.7 – 1.2 2)	0.7 – 1.2 2)	0.7 – 1.2 2)	0.7 – 1.2 2)
Drop-Out ( $x U_c$ )										
AC operated	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6
DC operated	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6
<b>Power Consumption of the coil at cold state and <math>1.0 x U_c</math></b>										
AC operated										
Pick-Up VA	24	24	24	24	50	52	52	149	149	149
Pick-Up W	19	19	19	19	40	40	40	80	80	80
Single-voltage coil 50 Hz										
Sealing VA	3.4	3.4	3.4	3.4	7.1	7.1	7.1	16	16	16
Sealing W	1.2	1.2	1.2	1.2	2.1	2.1	2.1	4.3	4.3	4.3
60 Hz										
Pick-Up VA	30	30	30	30	67	67	67	178	178	178
Pick-Up W	23	23	23	23	50	50	50	117	117	117
Sealing VA	4.4	4.4	4.4	4.4	8.7	8.7	8.7	19	19	19
Sealing W	1.4	1.4	1.4	1.4	2.6	2.6	2.6	5.3	5.3	5.3
50/60 Hz										
Pick-Up VA	27	27	27	27	62	62	62	168	168	168
	25	25	25	25	58	58	58	154	154	154
Pick-Up W	22	22	22	22	48	48	48	120	120	120
	21	21	21	21	43	43	43	43	43	43
Sealing VA	4.2	4.2	4.2	4.2	9.1	9.1	9.1	22	22	22
	3.3	3.3	3.3	3.3	6.5	6.5	6.5	14	14	14
Sealing W	1.4	1.4	1.4	1.4	2.3	2.3	2.3	5.3	5.3	5.3
	1.2	1.2	1.2	1.2	2	2	2	4.3	4.3	4.3
DC operated										
Pick-Up W	3	3	4.5	4.5	12 at 24V	12 at 24V	12 at 24V	12 at 24V	12 at 24V	12 at 24V
Sealing W	3	3	4.5	4.5	0.5 at 24V	0.5 at 24V	0.5 at 24V	0.5 at 24V	0.5 at 24V	0.5 at 24V
Duty Factor (%DF)	100	100	100	100	100	100	100	100	100	100
<b>Switching Time at 100% <math>U_c</math> (approximate values)</b>										
Main Contact										
AC operated										
Closing delay (mS)	<21	<21	<21	<21	<22	<22	<22	<18	<18	<18
Opening delay (mS)	<18	<18	<18	<18	<14	<14	<14	<13	<13	<13
DC operated										
Closing delay (mS)	<31	<31	<31	<31	<47	<47	<47	<54	<54	<54
Opening delay (mS)	<12	<12	<12	<12	<30	<30	<30	<24	<24	<24
Arcing time (mS)	10	10	10	10	10	10	10	10	10	10
<b>Electromagnetic Compatibility (EMC)</b>										
Emitted interference	To EN-60947-1									
Noise Immunity	To EN-60947-1									

1) At 24V: 0.7 – 1.3 without additional auxiliary contact modules and ambient temperature +40°C [104°F].

2) Coil Suffix AD:  $U_{min}$  110V DC/ $U_{max}$  130V DC.

Coil Suffix BD:  $U_{min}$  200V DC/ $U_{max}$  240V DC.

Example:

$$U_c = 0.7 \times U_{min} - 1.2 \times U_{max}$$

$$U_c = 0.7 \times 24V - 1.2 \times 27V \text{ DC}$$

## Standard, Contactors, Frames F - G, Coil Data

	XTCE80F	XTCE95F	XTCE115G	XTCE150G
<b>Voltage Tolerance</b>				
Pick-Up (x U <sub>c</sub> )				
AC operated	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1
DC operated	0.7 – 1.2 <sup>1)</sup>	0.7 – 1.2 <sup>1)</sup>	0.7 – 1.2 <sup>1)</sup>	0.7 – 1.2 <sup>1)</sup>
Drop-Out (x U <sub>c</sub> )				
AC operated	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6
DC operated	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6
<b>Power Consumption of the coil at cold state and 1.0 x U<sub>c</sub></b>				
AC operated				
Pick-Up VA	310	310	180	180
Pick-Up W	165	165	130	130
Single-voltage coil 50 Hz				
Sealing VA	26	26	3.1	3.1
Sealing W	5.8	5.8	2.1	2.1
60 Hz				
Pick-Up VA	345	345	170	170
Pick-Up W	190	190	130	130
Sealing VA	30	30	3.1	3.1
Sealing W	7.1	7.1	2.1	2.1
50/60 Hz				
Pick-Up VA	372/328	372/328	170/170	170/170
Pick-Up W	190	190	130	130
Sealing VA	37.1/22.6	37.1/22.6	3.1/3.1	3.1/3.1
Sealing W	7.5/6.1	7.5/6.1	2.1/2.1	2.1/2.1
DC operated				
Pick-Up W	90 at 24V	90 at 24V	149 at 24V	149 at 24V
Sealing W	1.3 at 24V	1.3 at 24V	2.1 at 24V	2.1 at 24V
Duty Factor (%DF)	100	100	100	100
<b>Switching Time at 100% U<sub>c</sub> (approximate values)</b>				
Main Contact				
AC operated				
Closing delay (mS)	Max. <20 mS	Max. <20 mS	Max. <33 mS	Max. <33 mS
Opening delay (mS)	Max. <14 mS	Max. <14 mS	Max. <41 mS	Max. <41 mS
DC operated				
Closing delay (mS)	Max. <45 mS	Max. <45 mS	Max. <35 mS	Max. <35 mS
Opening delay (mS)	Max. <34 mS	Max. <34 mS	Max. <30 mS	Max. <30 mS
<b>Electromagnetic Compatibility (EMC)</b>				
Emitted interference	To EN60947-1			
Noise Immunity	To EN60947-1			
<b>Arcing Time (mS)</b>	15	15	15	15
Permissible residual current with actuation of A1 - A2 by the electronics (with 0 signal mA)	≤1	≤1	≤1	≤1

<sup>1)</sup> At 24V: 0.7 – 1.3 without additional auxiliary contact modules and ambient temperature +40°C.

## Standard, Contactors, Frames L - R, Coil Data

Description	XTCE185L	XTCE225L, XTCE250L	XTCE300M, XTCE400M	XTCE500M
<b>Voltage Tolerance</b>				
Pick-Up ( $x U_c$ )				
XTCE185L – XTCEC20R		0.7 x $U_{cmin}$ — 1.15 x $U_{cmax}$		
XTCS185L – XTCS500M		0.85 x $U_{cmin}$ — 1.1 x $U_{cmax}$		
Drop-Out ( $x U_c$ )				
XTCE185L – XTCEC20R		0.2 x $U_{cmin}$ — 0.6 x $U_{cmax}$		
XTCS185L – XTCS500M		0.2 x $U_{cmin}$ — 0.4 x $U_{cmax}$		
<b>Power Consumption of the coil at cold state and 1.0 x <math>U_c</math></b>				
XTCE185L – XTCEC20R				
Pick-Up VA	250 <sup>1)</sup>	250 <sup>1)</sup>	450 <sup>1)</sup>	450 <sup>1)</sup>
Pick-Up W	200	200	350	350
Sealing VA	4.3	4.3	4.3	4.3
Sealing W	3.3	3.3	3.3	3.3
XTCS185L – XTCS500M				
Pick-Up VA	360	360	715	715
Pick-Up W	325	325	645	645
Sealing VA	4.3	4.3	4.3	4.3
Sealing W	3.3	3.3	3.3	3.3
Duty Factor (%DF)	100	100	100	100
<b>Switching Time at 100% Main Contact <math>U_c</math> (approximate values)</b>				
XTCE185L – XTCEC20R				
Closing delay (mS)	<100	<100	<80	<80
Opening delay (mS)	<80	<80	<80	<80
XTCS185L – XTCS500M				
Closing delay (mS)	<50	<50	<50	<50
Opening delay (mS)	<40	<40	<40	<40
<b>Reaction in Threshold and Sealing State Transition Range (XTCE185L – XTCEC20R)</b>				
Voltage interruptions				
( $0 - 0.2 x U_{cmin}$ ) $\leq$ 10ms			Time is bridged successfully	
( $0 - 0.2 x U_{cmin}$ ) $>$ 10ms			Drop-out of the contactor	
Voltage Dips				
( $0.2 - 0.6 x U_{cmin}$ ) $\leq$ 12ms			Time is bridged successfully	
( $0.2 - 0.6 x U_{cmin}$ ) $>$ 12ms			Drop-out of the contactor	
( $0.6 - 0.7 x U_{cmin}$ )			Contactor remains switched on	
Excess Voltage				
( $1.15 - 1.3 x U_{cmax}$ )			Contactor remains switched on	
( $>1.3 x U_{cmax}$ ) $\leq$ 3s			Contactor remains switched on	
( $>1.3 x U_{cmax}$ ) $>$ 3s			Drop-out of the contactor	
Pick – Up phase				
( $0 - 0.7 x U_{cmin}$ )			Contactor does not switch on	
( $0.7 x U_{cmin} - 1.15 x U_{cmax}$ )			Contactor switches on with certainty	
( $>1.15 x U_{cmax}$ )			Contactor switches on with certainty	
Permissible contact resistance (of the external command device with actuation of A11), $\Omega$	$\leq$ 500	$\leq$ 500	$\leq$ 500	$\leq$ 500
Permissible residual current (with actuation of A11 by the electronics with 0 signal)	$\leq$ 1	$\leq$ 1	$\leq$ 1	$\leq$ 1
SPS Signal Level (A3 – A4) to IEC/EN 61131-2 (Type 2)				
High	15V	15V	15V	15V
Low	5V	5V	5V	5V
Electromagnetic compatibility (EMC)	This product is designed for operation in industrial environments. Usage in domestic areas can cause radio frequency interference (RFI). Noise suppression measures must be provided for the additional interference.			

<sup>1)</sup> Control transformer with  $U_k \leq 6\%$ .



## Standard, Contactors, Frames L - R, Coil Data (Continued)

Description	XTCE580N	XTCE750N, XTCE820N	XTCEC10N	XTCEC14P	XTCEC20R
<b>Voltage Tolerance</b>					
Pick-Up ( $x U_c$ )					
XTCE185L – XTCEC20R			$0.7 \times U_{cmin} — 1.15 \times U_{cmax}$		
XTCS185L – XTCS500M			$0.85 \times U_{cmin} — 1.1 \times U_{cmax}$		
Drop-Out ( $x U_c$ )					
XTCE185L – XTCEC20R			$0.2 \times U_{cmin} — 0.6 \times U_{cmax}$		
XTCS185L – XTCS500M			$0.2 \times U_{cmin} — 0.4 \times U_{cmax}$		
<b>Power Consumption of the coil at cold state and <math>1.0 \times U_c</math></b>					
XTCE185L – XTCEC20R					
Pick-Up VA	800 <sup>1)</sup>	800 <sup>1)</sup>	800 <sup>1)</sup>	800 <sup>1)</sup>	1600 <sup>1)</sup>
Pick-Up W	700	700	700	700	1400
Sealing VA	7.5	7.5	7.5	7.5	15
Sealing W	6.5	6.5	6.5	6.5	13
XTCS185L – XTCS500M					
Pick-Up VA	—	—	—	—	—
Pick-Up W	—	—	—	—	—
Sealing VA	—	—	—	—	—
Sealing W	—	—	—	—	—
Duty Factor (%DF)	100	100	100	100	100
<b>Switching Time at 100% Main Contact <math>U_c</math> (approximate values)</b>					
XTCE185L – XTCEC20R					
Closing delay (mS)	<70	<70	<70	<70	<70
Opening delay (mS)	<70	<70	<70	<40	<40
XTCS185L – XTCS500M					
Closing delay (mS)	—	—	—	—	—
Opening delay (mS)	—	—	—	—	—
<b>Reaction in Threshold and Sealing State Transition Range (XTCE185L – XTCEC20R)</b>					
Voltage interruptions					
$(0 - 0.2 \times U_{cmin}) \leq 10ms$	Time is bridged successfully				
$(0 - 0.2 \times U_{cmin}) > 10ms$	Drop-out of the contactor				
Voltage Dips					
$(0.2 - 0.6 \times U_{cmin}) \leq 12ms$	Time is bridged successfully				
$(0.2 - 0.6 \times U_{cmin}) > 12ms$	Drop-out of the contactor				
$(0.6 - 0.7 \times U_{cmin})$	Contactor remains switched on				
Excess Voltage					
$(1.15 - 1.3 \times U_{cmax})$	Contactor remains switched on				
$(>1.3 \times U_{cmax}) \leq 3s$	Contactor remains switched on				
$(>1.3 \times U_{cmax}) > 3s$	Drop-out of the contactor				
Pick – Up phase					
$(0 - 0.7 \times U_{cmin})$	Contactor does not switch on				
$(0.7 \times U_{cmin} - 1.15 \times U_{cmax})$	Contactor switches on with certainty				
$(>1.15 \times U_{cmax})$	Contactor switches on with certainty				
Permissible contact resistance (of the external command device with actuation of A11), $\Omega$	$\leq 500$	$\leq 500$	$\leq 500$	$\leq 500$	500
Permissible residual current (with actuation of A11 by the electronics with 0 signal)	$\leq 1$	$\leq 1$	$\leq 1$	$\leq 1$	$\leq 1$
SPS Signal Level (A3 – A4) to IEC/EN 61131-2 (Type 2)					
High	15V	15V	15V	15V	15V
Low	5V	5V	5V	5V	5V
Electromagnetic compatibility (EMC)	This product is designed for operation in industrial environments. Usage in domestic areas can cause radio frequency interference (RFI). Noise suppression measures must be provided for the additional interference.				

<sup>1)</sup> Control transformer with  $U_k \leq 7\%$ .

## Standard, Contactors, Frames B - N, Auxiliary Contacts, Technical Data and Specifications

Description	XTCE007B... – XTCE032C	XTCEXFAC... XTCEXFATC	XTCEXFCC... XTCEXSCL	XTCEXFAG...	XTCEXSBLN... XTCEXSBN... XTCEXSBN... XTCEXSBN... XTCEXSBN... XTCEXSBN...
Interlocked opposing contacts with an auxiliary contact module (to IEC 60947-5 -1 Annex L)	—	Yes	Yes	Yes	Yes
Break contact (not late-break contact) suitable as a mirror contact (to IEC/EN 60947-4 -1 Annex F)	XTCE007B... – XTCE032C	XTCE007B... – XTCE032C	XTCE007B... – XTCE032C	XTCE040D... – XTCE065D...	XTCE040D... – XTCE065D... XTCE185L... – XTCEC10N...
Rated impulse withstand voltage, (U <sub>imp</sub> ) VAC	6000	6000	6000	6000	6000
Overvoltage category / pollution degree	III/3	III/3	III/3	III/3	III/3
Rated insulation voltage, (U <sub>i</sub> ) VAC	690	690	690	690	690
Rated operational voltage, (U <sub>e</sub> ) VAC	500	500	500	500	500
Safe isolation to VDE 0106 Part 101 and Part 101(A) in VAC					
Between coil and auxiliary contacts	400	400	400	440	440
Between the auxiliary contacts	400	400	400	440	440
Rated Operational Current, I <sub>e</sub> AC-15					
230V	6A	6A	6A	6A	6A
380/415V	4A	3A	4A	4A	4A
500V	1.5A	—	1.5A	1.5A	1.5A
DC-3 L/R ≤5 mS <sup>1)</sup>					
24V	10A	10A	10A	10A	10A
60V	6A	6A	6A	6A	6A
110V	3A	3A	3A	3A	3A
220V	1A	1A	1A	1A	1A
Conventional thermal current, I <sub>th</sub>	16A	16A	16A <sup>3)</sup>	10A	10A
Control circuit reliability (at U <sub>e</sub> = 24 V DC, U <sub>min</sub> = 17 V, I <sub>min</sub> = 5.4 mA)	<10 <sup>-8</sup> , < one failure at 100 million operations				
Component Lifespan, Operations x 10 <sup>6</sup> at U <sub>e</sub> = 230V, AC-15, 3A	1.3	1.3	1.3	1.3	1.3
Short-circuit rating without welding <sup>2)</sup>					
Maximum fuse, gG/gL	10A	10A	10A	16A	16A

<sup>1)</sup> Making and breaking conditions to DC-13, time L/R contact as stated.

<sup>2)</sup> See fuses overlay for time/current characteristic (on request).

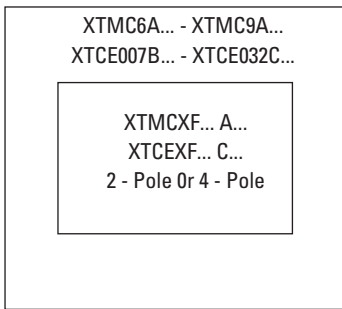
<sup>3)</sup> Conventional thermal current (I<sub>th</sub>) of XTCEXSCL - 10A

		XTCEXPLKB	XTCEXPLKC	XTCEXPLKD	XTCEXPLKG	
<b>Parallel link</b>						
<b>Terminal capacities</b>						
Solid		mm <sup>2</sup>	1 - 16	16	16	—
Flexible with ferrule		mm <sup>2</sup>	1 x (0.5 - 25) 2 x (0.5 0 16)	1 x (16 - 35)	1 x (16 - 120)	—
Stranded		mm <sup>2</sup>	1 x (0.5 - 25) 2 x (0.5 0 16)	1 x (16 - 50)	1 x (16 - 120)	1 x (35 - 300) 2 x (35 - 120)
Flat conductor	number of segments x width x thickness	mm <sup>2</sup>	6 x 9 x 0.8	—	—	2 x (11 x 21 x 1)
Tightening torque		Nm	4	4	14	—
<b>Tool</b>						
Pozidriv screwdriver		Size	2	2	—	—
Hexagon socket-head spanner	SW	mm	—	—	5	6
<b>Conventional thermal current</b>						
3 pole	I <sub>th</sub>	A	50	100	180	400
4 pole	I <sub>th</sub>	A	60	—	—	—

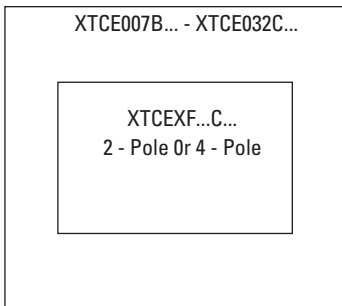
## Auxiliary Contacts Possible Combinations

Eaton list number	Built-in Aux	Front (Top) Mount		Side Mount	Total Auxillary Contacts Available
		2-Pole	4-Pole	2-Pole	
XTMC8A...	1NO or 1NC	1	-	-	3
XTMC9A...		-	1	-	5
XTCE007B...	1NO or 1NC	1	-	-	3
XTCE015B...		-	1	-	5
XTCE018C...	1NO or 1NC	1	-	-	3
XTCE032C...		-	1	-	5
		-	-	1	3
XTCE040D00...		1	-	2	6
XTCE045D00...		-	1	1	6
XTCE060F00...		1	-	2	6
XTCE150G00...		-	1	2	8
		-	-	4	8
XTCE185L22...	2NO or 2NC	-	-	2	8
XTCEC20R22...					

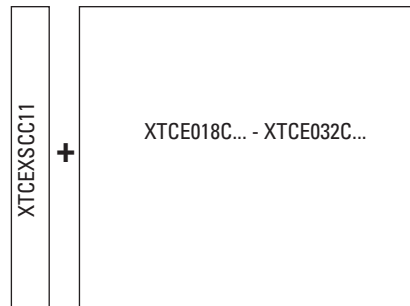
## Auxiliary Contacts Combinations



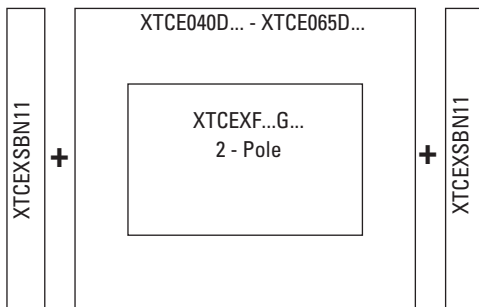
Auxiliary Contact Combinations - Frame A - B



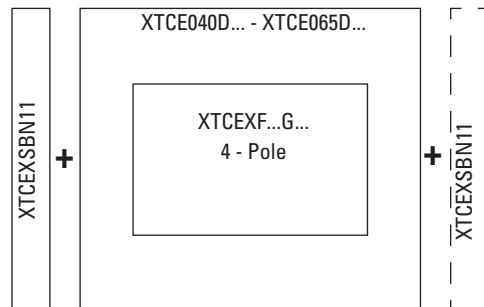
-OR-



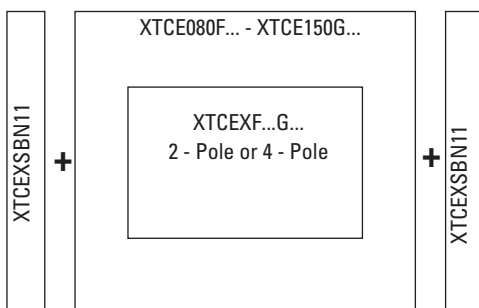
Auxiliary Contact Combinations - Frame C



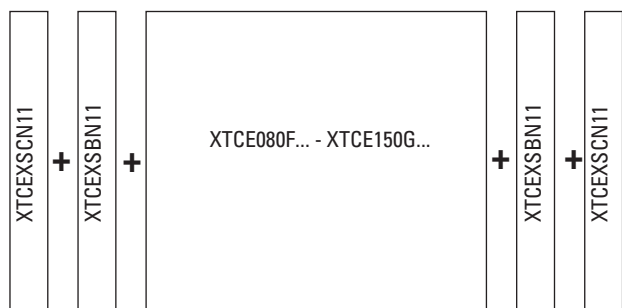
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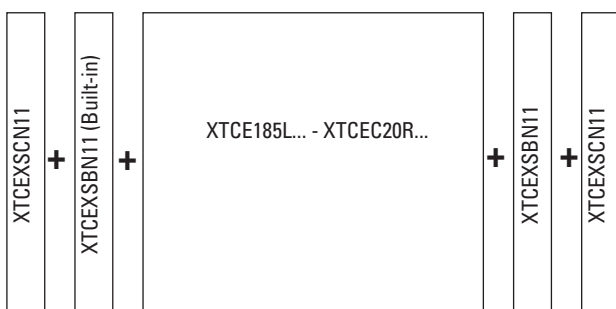
Auxiliary Contact Combinations - Frame D



-OR-



Auxiliary Contact Combinations - Frame F - G



Auxiliary Contact Combinations - Frame L - R

## Standard, 3P Contactors Frames B - R, Contact Sequence (Circuit Symbols)

Contactors Frame	Auxiliary Contacts	Contact Sequence
B - C	1NO	
B - C	1NC	
D - G	—	
L - R	2NO-2NC	

### Note:

The 7 – 32A XTCE Contactors have positively driven contacts between the integrated auxiliary contact and the auxiliary contact module as well as within the auxiliary contact modules.

The 40 – 65A XTCE Contactors have positively driven contacts within the auxiliary contact module. 6 auxiliary contacts are possible with a combination of side mounted and front mount auxiliary contacts.

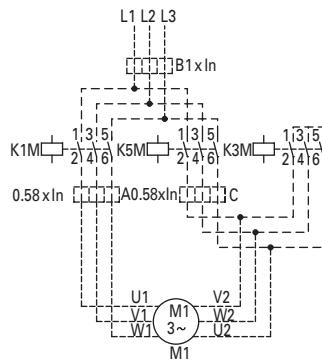
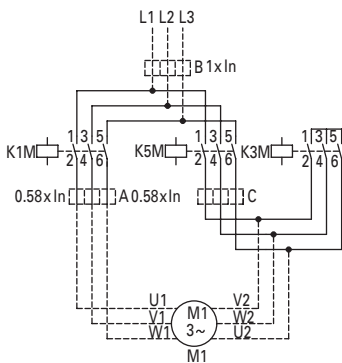
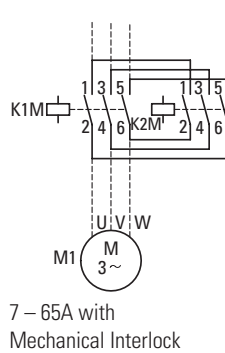
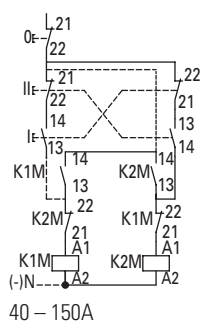
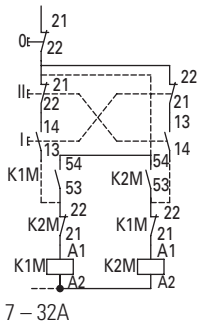
IEC Utilization Categories, see page 76, Reference Data.

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.

## Standard Contactors, Wiring Diagrams

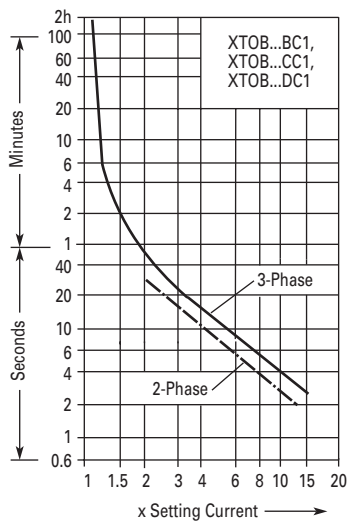


## Standard, Overload Relays, Settings and Tripping Characteristics

Setting	Starting
<b>A:</b> $I_N \times 0.58$ Motor Protection in the Star and Delta Configurations	$\leq 15$ sec
<b>B:</b> $I_N \times 1$ Only partial motor protection in star position	15 – 40 sec
<b>C:</b> $I_N \times 0.58$ Motor not protected in star position Timing Relay set to approximately 10 sec	$> 40$ sec

### Overload Relays

These tripping characteristics are the 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 approximately 25% of the read off value. Specific characteristics for each individual setting range can be found in MN03402001E.



Tripping Characteristics

## Standard, Overload Relays, Technical Data and Standards

Description	XTOB...BC1, XTOB...CC1	XTOB...DC1
<b>General</b>		
Standards	IEC/EN 60947, VDE 0660, UL, CSA	IEC/EN 60947, VDE 0660, UL, CSA
Climatic Proofing	Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60 068-2-30	Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60 068-2-30
Ambient Temperature <sup>1)</sup>	-25 to 50°C	-25 to 50°C
Temperature Compensation	Continuous	Continuous
Mechanical Shock Resistance (IEC/EN 60068-2-27)		
Half-sinusoidal Shock 10 mS	10g	10g
Degree of Protection	IP20	IP20
Protection against Direct Contact when Actuated from Front (IEC 536)	Finger and back of hand proof	Finger and back of hand proof
Insulation Voltage (U <sub>i</sub> ) VAC	690	690
Overvoltage Category /Pollution Degree	III/3	III/3
Impulse Withstand Voltage (U <sub>imp</sub> ) VAC	6000	6000
Operational Voltage (U <sub>e</sub> ) VAC	690	690
Safe Isolation to VDE 0106 Part 101 and Part 101/A1		
Between auxiliary contacts and main contacts (VAC)	440	440
Between main contacts (VAC)	440	440
Overload Relay Setting Range	0.1 – 32A	6 – 75A
Temperature Compensation Residual Error >20°C (%/K)	≤ 0.25	≤ 0.25
Current Heat Loss (3 Conductors)		
Lower value of setting range, W	2.5	3
Upper value of setting range, W	6	7.5
Terminal Capacity	2 x (1 – 6)	2 x (1 – 16)
Solid, mm <sup>2</sup>	2 x (1 – 4)	1 x 25
Flexible with ferrule, mm <sup>2</sup>	2 x (1 – 6) <sup>2)</sup>	2 x (1 – 10) <sup>3)</sup>
Solid or Stranded, AWG	14-8	14-2
Terminal Screw	M4	M6
Tightening Torque		
Nm	1.8	3.5
Lb-in	16	31
Tools		
Pozidrive screwdriver	Size 2	Size 2
Standard screwdriver	1 x 6	1 x 6

<sup>1)</sup> Ambient temperature operating range to IEC/EN 60947, PTB: -5°C to +50°C.

<sup>2)</sup> 6 mm<sup>2</sup> flexible with ferrules to DIN 46228.

<sup>3)</sup> Main contact terminal capacity, solid and stranded conductors with ferrules: When using 2 conductors use identical cross-section.

## Standard, Overload Relays, Technical Data and Standards

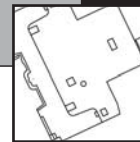
Description	XTOB...BC1, XTOB...CC1	XTOB...DC1
<b>Auxiliary and Control Circuit Connections</b>		
Impulse Withstand Voltage ( $U_{imp}$ ) VAC	6000	6000
Overvoltage Category/Pollution Degree	III/3	III/3
Terminal Capacity		
Solid, mm <sup>2</sup>	2 x (0.75 – 4)	2 x (0.75 – 4)
Flexible with ferrule, mm <sup>2</sup>	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)
Solid or stranded, AWG	2 x (18 – 12)	2 x (18 – 12)
Terminal Screw		
Tightening Torque	M3.5	M3.5
Nm	0.8 – 1.3	0.8 – 1.3
Tools		
Pozidrive screwdriver	Size 2	Size 2
Standard screwdriver	1 x 6	1 x 6
Auxiliary Circuit Rated Insulation Voltage ( $U_i$ ) VAC	500	500
Rated Operational Voltage ( $U_e$ ) VAC	500	500
Safe Isolation to VDE 0106 Part 101 and Part 101/A1		
Between the auxiliary contacts (VAC)	240	240
Conventional Thermal Current, $I_{th}$	6	6
Rated Operational Current —		
AC-15		
NO Contact		
120V	1.5	1.5
240V	1.5	1.5
415V	0.5	0.5
500V	0.5	0.5
NC Contact		
120V	1.5	1.5
240V	1.5	1.5
415V	0.9	0.9
500V	0.8	0.8
Rated Operational Current —		
DC-13 L/R $\leq 15$ ms <sup>1)</sup>		
24V	0.9	0.9
60V	0.75	0.75
110V	0.4	0.4
220V	0.2	0.2
Short Circuit Rating without Welding		
Maximum fuse, A gG/gL	6	6

<sup>1)</sup> Rated operational current. Making and breaking conditions to DC-13, L/R constant as stated.



## Standard, Overload Relays, Type 2 Co-ordination with XT Contactors and BS88 Fuses

Motor P kW	400V	415V	440V	I <sub>q</sub> kA	Combinations Contactor	Overload Relay	BS88 Fuse A
	I <sub>e</sub> A	I <sub>e</sub> A	I <sub>e</sub> A				
0.09	0.31	0.3	0.21	80	XTCE007...	XTOBP40BC1	2
0.12	0.41	0.4	0.31	80	XTCE007...	XTOBP60BC1	4
0.18	0.6	0.58	0.46	80	XTCE007...	XTOBP60BC1	4
0.25	0.8	0.8	0.64	80	XTCE007...	XTOB001BC1	4
0.37	1.1	1.1	1	80	XTCE007...	XTOB016BC1	6
0.55	1.5	1.5	1.4	80	XTCE007...	XTOB016BC1	6
.75	1.9	1.8	1.8	80	XTCE007...	XTOB2P4BC1	10
1.1	2.6	2.6	2.4	80	XTCE007...	XTOB2P4BC1	16
1.5	3.6	3.5	3.3	80	XTCE007...	XTOB2P4BC1	16
2.2	5	4.8	4.7	80	XTCE007...	XTOB006BC1	20
3	6.6	6.4	6.1	80	XTCE007...	XTOB010BC1	20
4	8.5	8.2	7.9	80	XTCE009...	XTOB010BC1	20
5.5	11.3	10.9	10.3	80	XTCE015...	XTOB016CC1	25
7.5	15.2	14.6	14	80	XTCE018...	XTOB016CC1	25
11	21.7	20.9	19.8	80	XTCE025...	XTOB024CC1	35 & 32M35
15	29.3	28	26.4	80	XTCE032...	XTOB032CC1	50
18.5	36	35	33	80	XTCE050...	XTOB040DC1	63
22	41	40	37	80	XTCE065...	XTOB057DC1	80
30	55	53	50	80	XTCE065...	XTOB065DC1	100



## Manual Motor Protectors

For motors with service factors less than 1.15, multiply the motor FLA by .90 to select appropriate MMP.

Example: For motor having FLA of 6.4A and service factor of 1.0 ( $6.4A \times .90 = 5.76A$ ) select Eaton list number XTPB6P3B01.

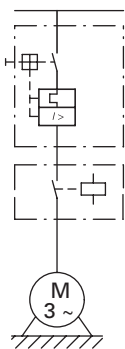
For motor with service factor of 1.15 or greater, use motor nameplate Full Load Amperes to select the appropriate MMP.

Example: For motor having FLA of 11A and service factor of 1.15, select Eaton list number XTPR012BC1.

The assembled Manual Motor Controller (MMC) consists of a XTPR Manual Motor Protector (MMP) and a XTCE contactor. Up to 12A, the assembly can be mounted directly on DIN rail without an adapter. The contactors are supported mechanically with a mechanical connection element (included in XTPAXTPCB). For 16A and above, the assembly is mounted via a DIN Rail Adapter Plate (XTPAXTPCCP) and the electrical connection is made with electrical contact modules (XTPAXEMMC), both included in XTPAXTPCC.

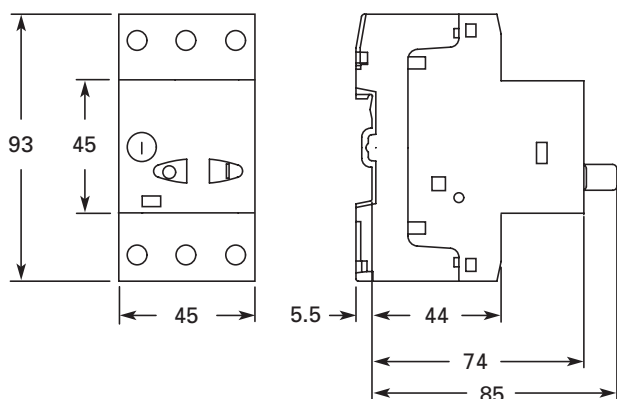
Service Factor Settings: For motors with a service factor (SF) of 1.15, use motor nameplate Full Load Amperes (FLA) to select the appropriate motor controller  $\rightarrow I_r = 1 \times I_{n \text{ mot}}$ . For motors with a service factor (SF) of 1.0 or less, multiply the motor FLA by 0.9 to select the appropriate motor controller  $\rightarrow I_r = 0.9 \times I_{n \text{ mot}}$ .

Single-phasing sensitivity to IEC/EN 60947-4-1, VDE 0660 Part 102.



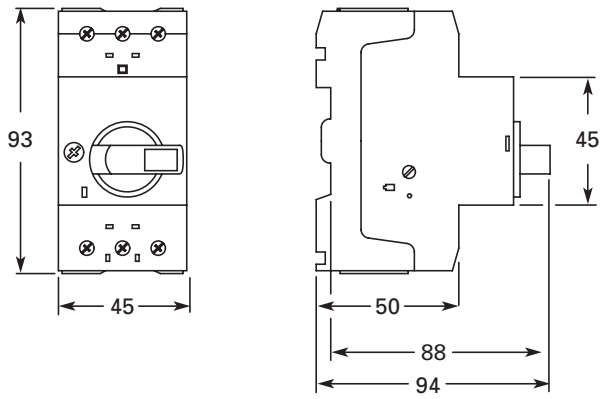
XTSC... Manual Motor Controller

## Manual Motor Protectors, Frame B, Pushbutton, dimensional drawing



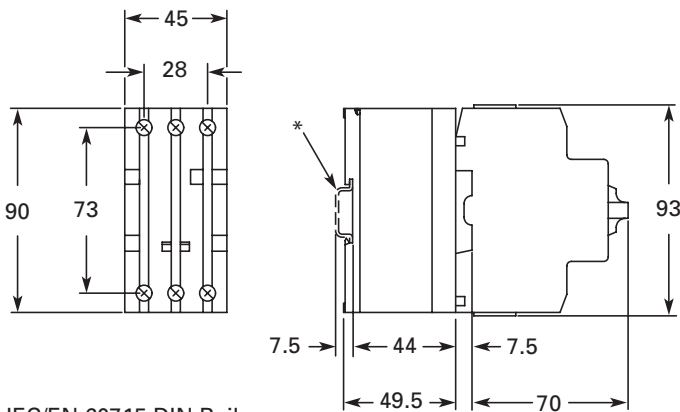
Manual Motor Protectors — XTPB

## Manual Motor Protectors, and Manual Transformer Protectors, Frame B, Rotary, dimensional drawings



Manual Motor Protectors, Manual Transformer Protectors —  
XTPR...B, XTPT and XTPM

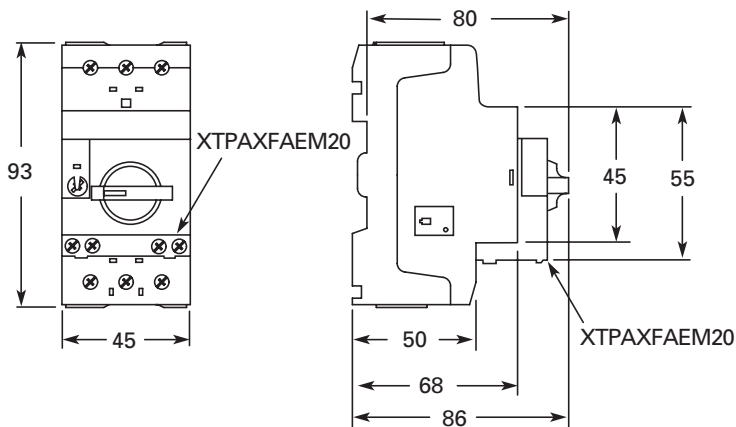
## Manual Motor Protectors, Frame B, Rotary with Current Limiter, dimensional drawing



\* IEC/EN 60715 DIN Rail

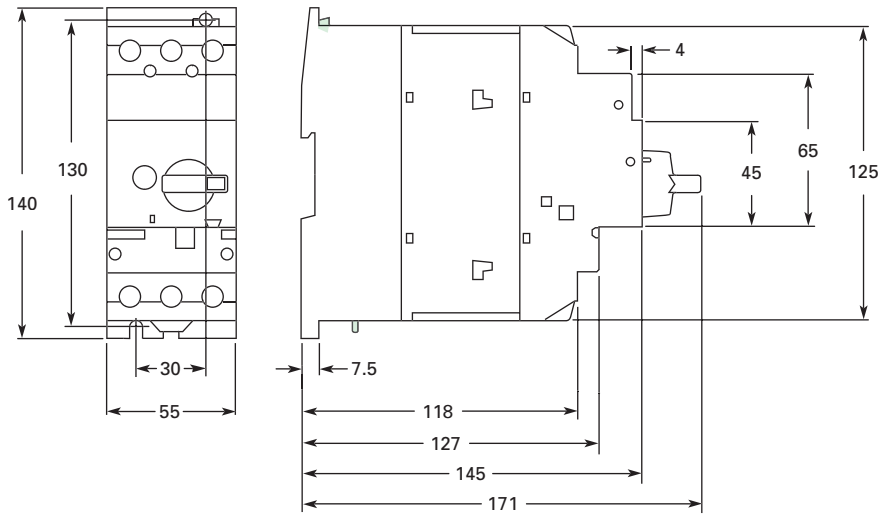
Current Limiter — XTPAXCL

## Manual Motor Protectors, Frame B, Rotary with Early-Make Auxilliary Contacts, dimensional drawing

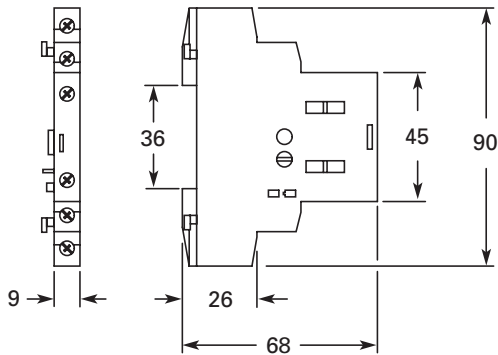


MMPs with Early-Make Auxiliary Contacts — XTPR...BC1 +  
XTPAXFAEM20

**Manual Motor Protectors, Frame D, dimensional drawing**

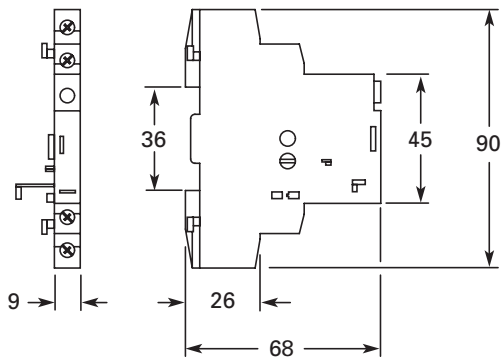


**Manual Motor Protectors, Frame B and D, Standard Auxilliary Contacts, dimensional drawing**



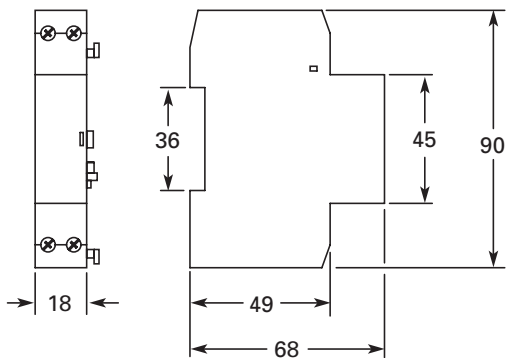
Standard Auxiliary Contact — XTPAXSA...

**Manual Motor Protectors, Frame B and D, Trip Indicating Auxilliary Contact, dimensional drawing**



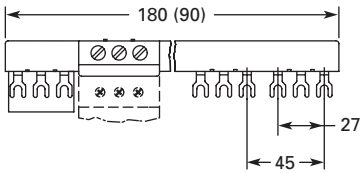
Trip Indicating Auxiliary Contact — XTPAXSATR...

**Manual Motor Protectors, Frame B and D, Undervoltage / Shunt Release, dimensional drawing**

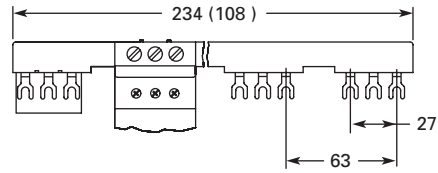


Undervoltage / Shunt Release — XTPAXUVR..., XTPAXSR...

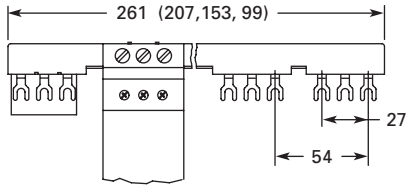
**Manual Motor Protectors, Frame B and D, 3P Commoning Links, dimensional drawing**



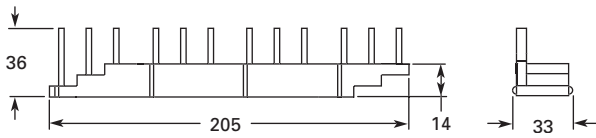
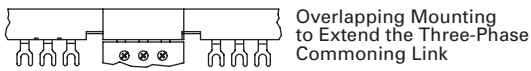
Three-Phase Commoning Link, XTPAXCLKA4, XTPAXCLKA2



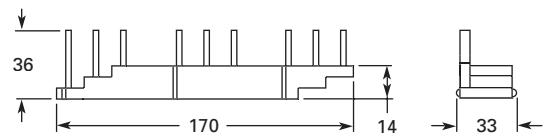
Three-Phase Commoning Link, XTPAXCLKC4, XTPAXCLKC2



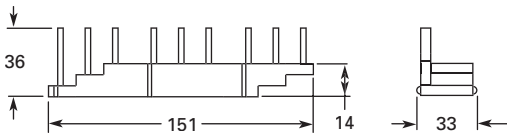
Three-Phase Commoning Link, XTPAXCLKB5, XTPAXCLKB4, XTPAXCLKB3, and XTPAXCLKB2



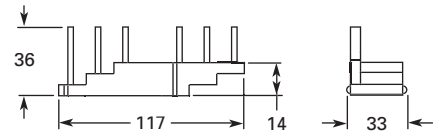
Three-Phase Commoning Link — XTPAXCLKA4D



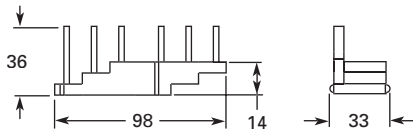
Three-Phase Commoning Link — XTPAXCLKB3D



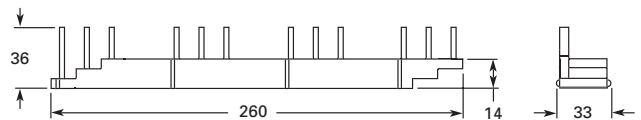
Three-Phase Commoning Link — XTPAXCLKA3D



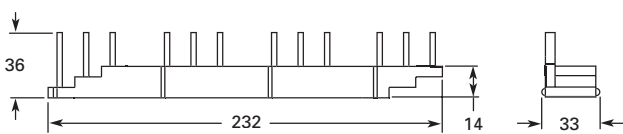
Three-Phase Commoning Link — XTPAXCLKB2D



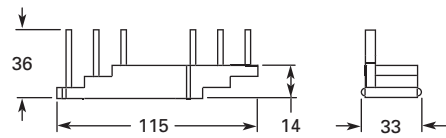
Three-Phase Commoning Link — XTPAXCLKA2D



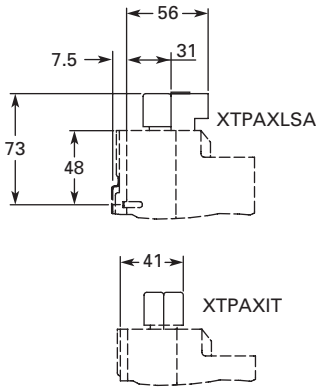
Three-Phase Commoning Link — XTPAXCLKC4D



Three-Phase Commoning Link — XTPAXCLKB4D

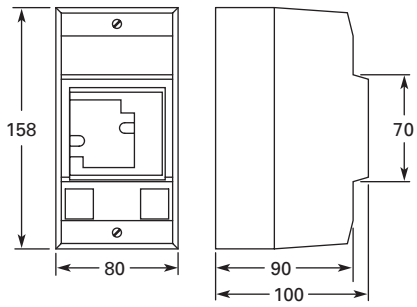


Three-Phase Commoning Link — XTPAXCLKC2D

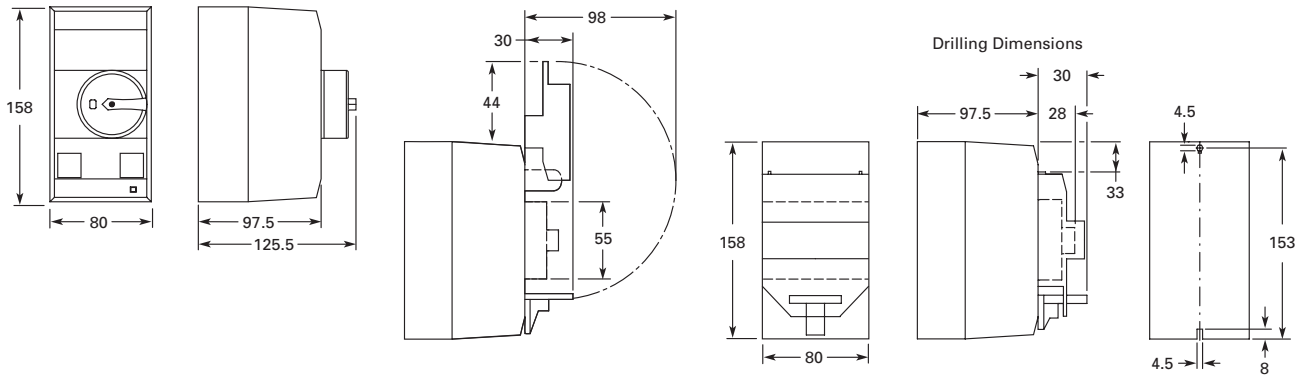


Incoming Terminal, Line Side Adapter — XTPAXIT, XTPAXLSA

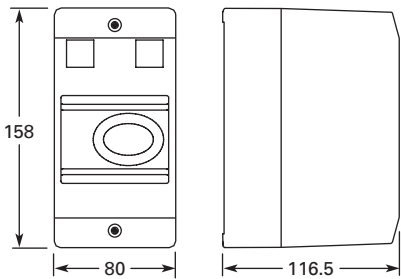
**Manual Motor Protectors, Insulated Enclosures, Surface mount, dimensional drawing**



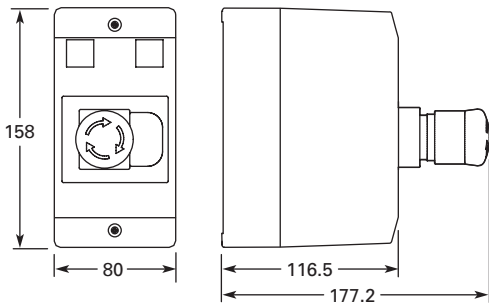
Insulated Enclosures for Surface Mounting — XTPAXENCS40



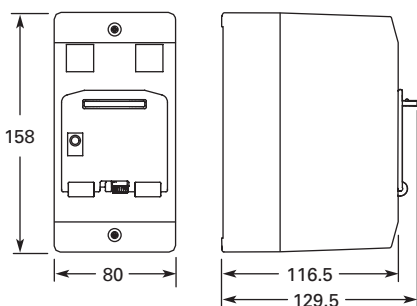
Insulated Enclosures for Surface Mounting — XTPAXENCS55..., XTPAXENCSEM...



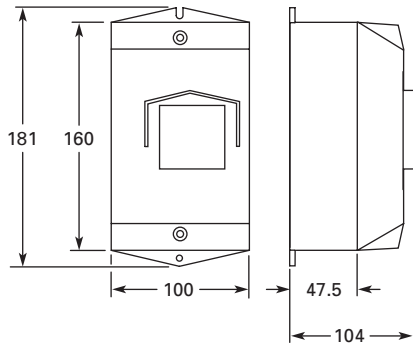
Insulated Enclosures for Surface Mounting, XTPBXENAS... and XTPBXENCS...



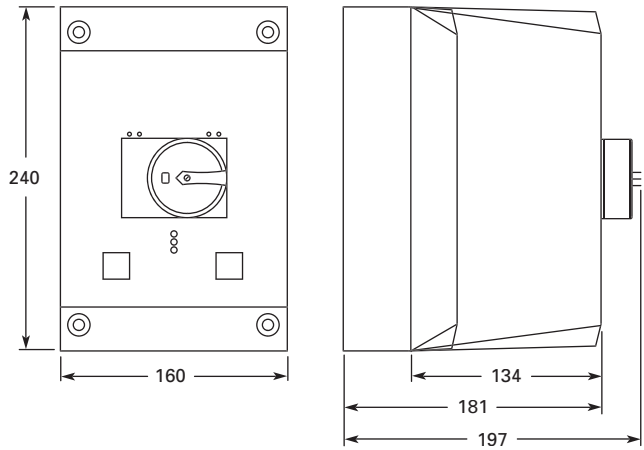
Insulated Enclosures for Surface Mounting, XTPBXENASEK65 and XTPBXENASES65



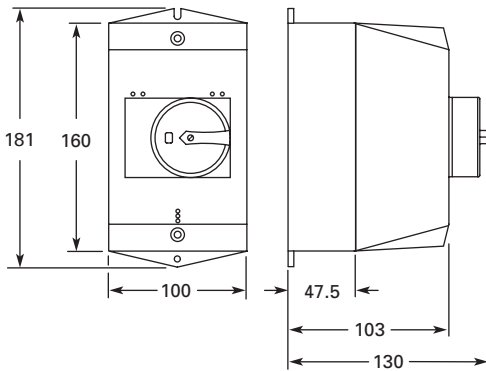
Insulated Enclosures for Surface Mounting, XTPBXENASLEGS and XTPBXENASLOGS



Insulated Enclosures for Surface Mounting -  
XTPAXENAS4 and XTPAXENCS41

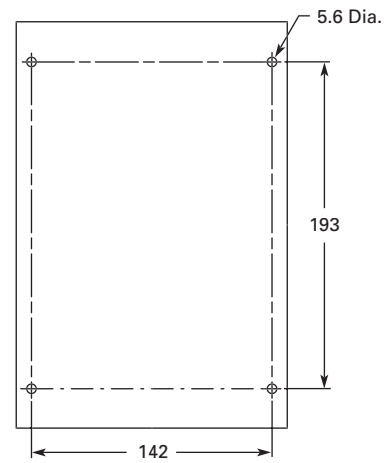
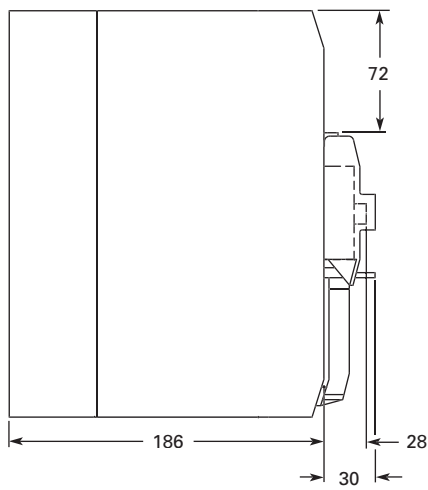
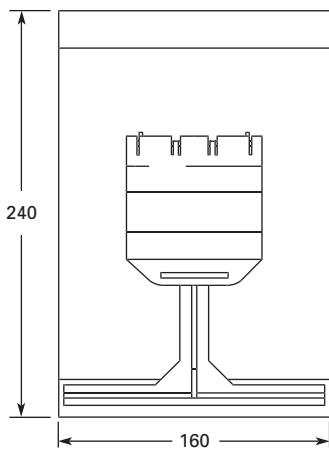
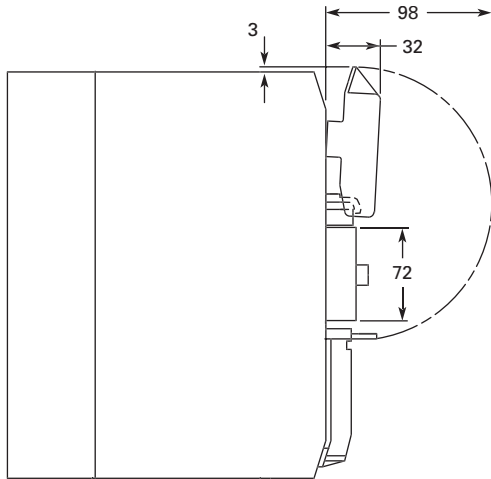


Insulated Enclosures for Surface Mounting — XTPAXENCSD65...

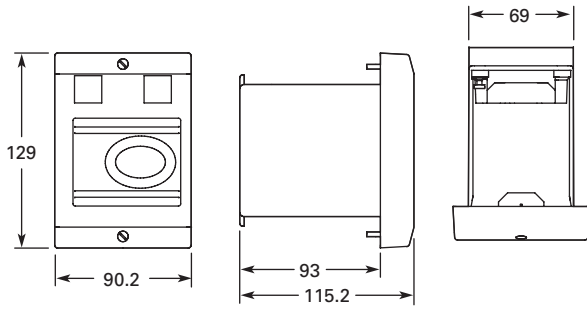


Insulated Enclosures for Surface Mounting -  
XTPAXENAS55..., XTPAXENASEM55..., XTPAXENC65...,  
XTPAXENCSEM65...

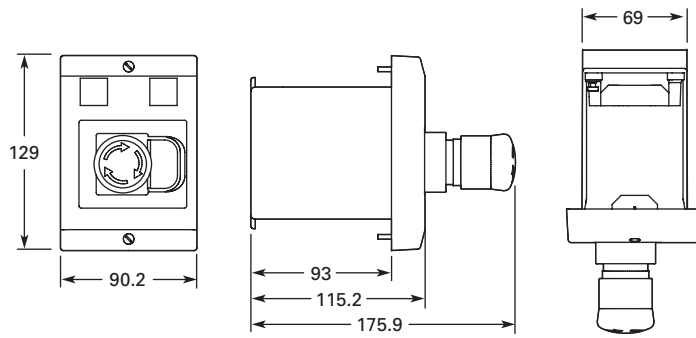




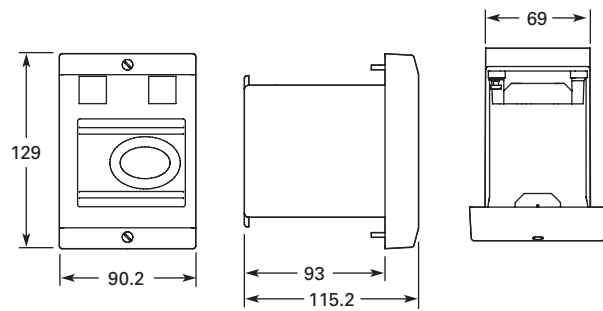
Insulated Enclosures for Surface Mounting — XTPAXENCSD65... + XTPAXPAPL2, XTPAXENCSD65



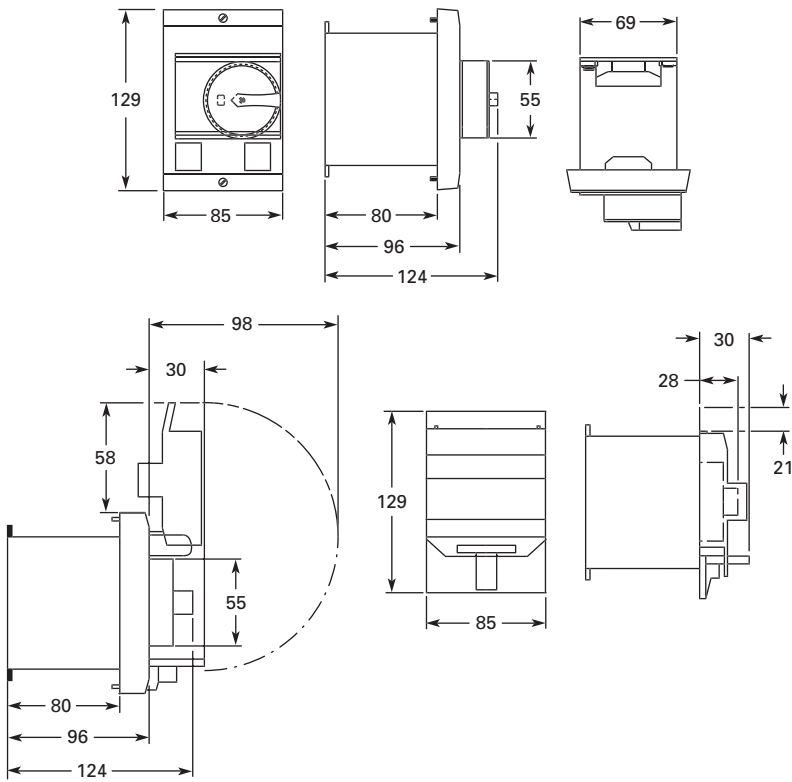
Insulated Enclosures for Flush Mounting, XTPBXENCF...



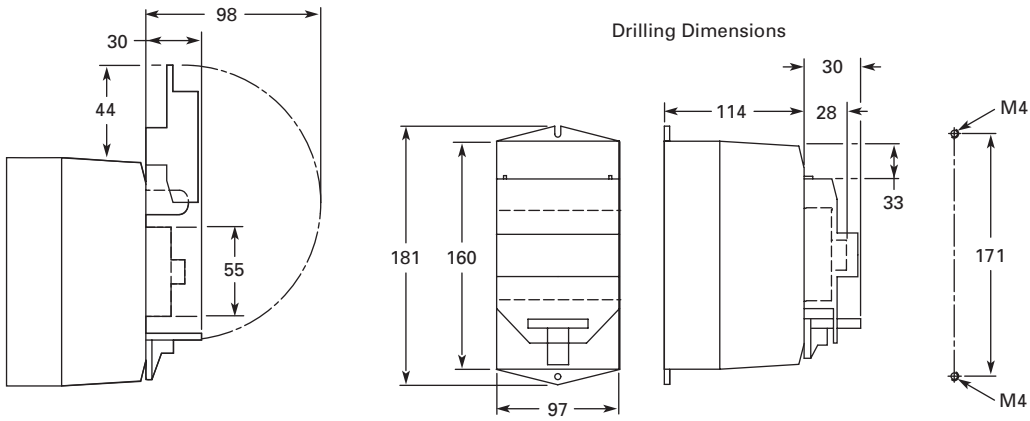
Insulated Enclosures for Flush Mounting, XTPBXENCFEK55 and XTPBXENCFES55



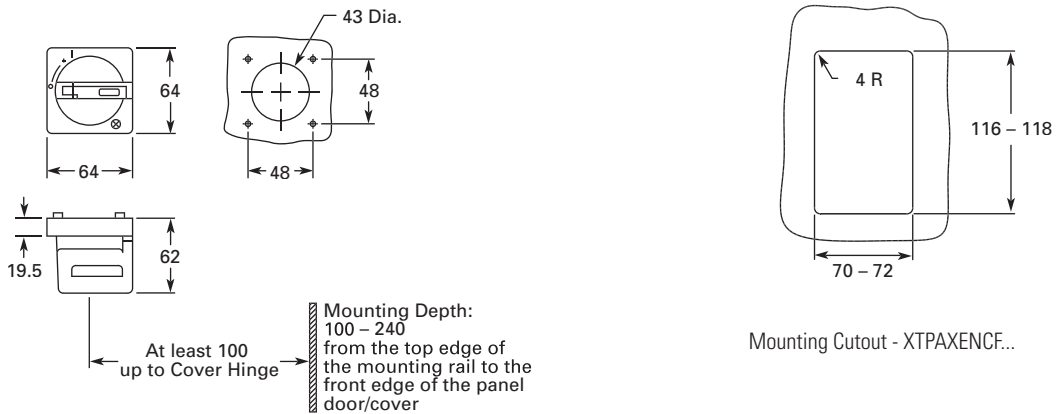
Insulated Enclosures for Flush Mounting, XTPBXENCFL55 and XTPBXENCFL055



Insulated Enclosures for Flush Mounting, XTPAXENCF..., XTPAXENCF55... + XTPAXPL3

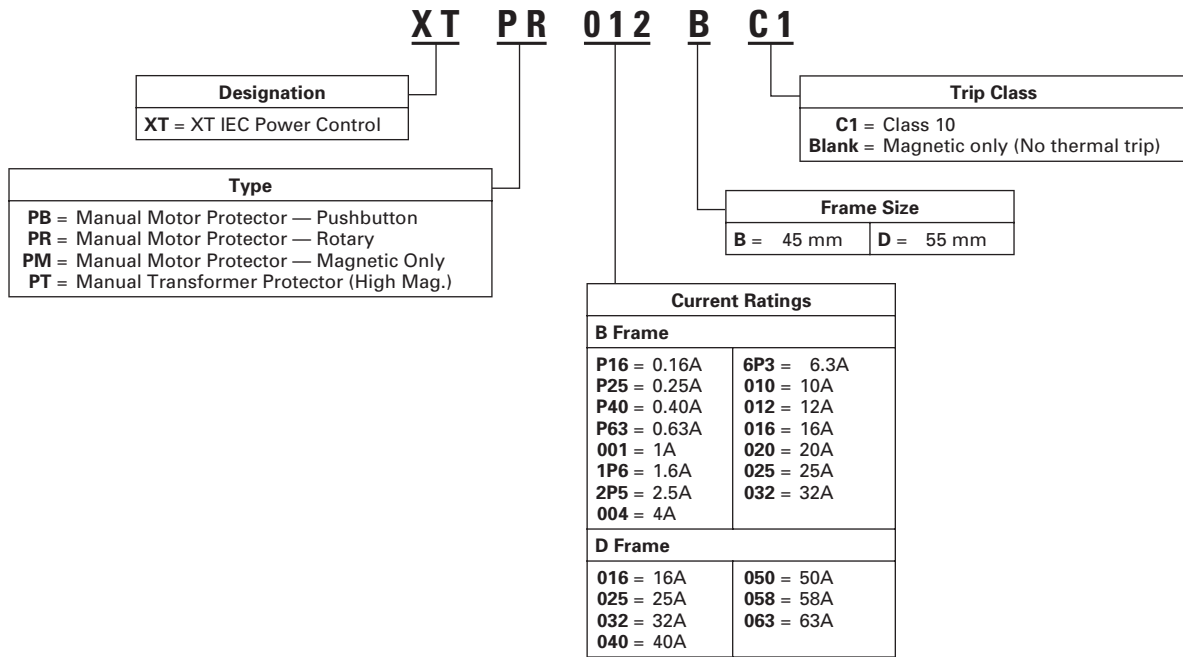


Drilling Dimensions - XTPAXENAS55..., XTPAXENASEM55..., XTPAXENC65..., XTPAXENCSEM65.. + XTPAXPL1



Rotary Handle Mechanism - XTPAXRHM...

Mounting Cutout - XTPAXENCF..



## Manual Motor Protectors, Frames B and D, Technical Data and Standards

	XTPBP16B – XTPB016B	XTPRP16B – XTPR032B	XTPR016D – XTPR063D	XTPMP16B – <sup>1)</sup> XTPM032B	XTPTP16B – XTPPT025B
<b>Standards</b>	IEC/EN 60947, VDE 0660, UL 508, CSA C 22.2 No. 14				
<b>General</b>					
Climatic proofing					
Ambient temperature, °C					
Storage	-25 / 80	-25 / 80	-25 / 70	-25 / 80	-25 / 80
Open	-25 / 55	-25 / 55	-25 / 55	-25 / 55	-25 / 55
Enclosed	-25 / 40	-25 / 40	-25 / 40	-25 / 40	-25 / 40
Temperature compensation					
to IEC/EN 60947, VDE 0660, °C	-5 / 40	-5 / 40	-5 / 40	-5 / 40	-5 / 40
Operating range, °C	-25 / 55	-25 / 55	-25 / 55	-25 / 55	-25 / 55
Temperature compensation residual error for T > 20°C, %/K	≤ 0.25	≤ 0.25	≤ 0.25	≤ 0.25	≤ 0.25
Mounting position					
Direction of incoming supply	As required	As required	As required	As required	As required
Degree of protection					
Device	IP20	IP20	IP20	IP20	IP20
Terminals	IP00	IP00	IP00	IP00	IP00
Protection against direct contact	Finger- and back-of-hand proof				
Shock resistance half-sinusoidal shock 10 mS to IEC 60068-2-27 (g)	25	25	15	25	25
Altitude (m)	max. 2000	max. 2000	max. 2000	max. 2000	max. 2000
Terminal capacity					
Solid (mm <sup>2</sup> )	1 x (1 – 6) 2 x (1 – 6)	1 x (1 – 6) 2 x (1 – 6)	1 x (1 – 50) 2 x (1 – 35)	1 x (1 – 6) 2 x (1 – 6)	1 x (1 – 6) 2 x (1 – 6)
Flexible with ferrule to DIN 46228, (mm <sup>2</sup> )	1 x (1 – 6) 2 x (1 – 6)	1 x (1 – 6) 2 x (1 – 6)	1 x (1 – 35) 2 x (1 – 35)	1 x (1 – 6) 2 x (1 – 6)	1 x (1 – 6) 2 x (1 – 6)
Solid or stranded (AWG)	18 – 10	18 – 10	14 – 2	18 – 10	18 – 10
Terminal screw tightening torque					
Main cable, Nm	1.7	1.7	3	1.7	1.7
Control circuit cable, Nm	1	1	1	1	1
<b>Main contacts</b>					
Rated impulse withstand voltage (U <sub>imp</sub> ), V AC	6000	6000	6000	6000	6000
Overvoltage category / pollution degree	III / 3	III / 3	III / 3	III / 3	III / 3
Rated operational voltage (U <sub>e</sub> ), V AC	690	690	690	690	690
Rated uninterrupted current = rated operational current (I <sub>u</sub> = I <sub>e</sub> ) in amperes	16 or current setting of the overcurrent release	32 or current setting of the overcurrent release	63 or current setting of the overcurrent release	32 or current setting of the overcurrent release	25 or current setting of the overcurrent release
Rated frequency, Hz	40 – 60	40 – 60	40 – 60	40 – 60	40 – 60
Current heat loss (3-pole at operating temperature), W	6	6	22	6	6
Lifespan, mechanical (ops)	50,000	100,000	30,000	100,000	100,000
Lifespan, electrical (AC-3 at 400 V) (ops)	50,000	100,000	30,000	100,000	100,000
Maximum operating frequency, operations/hr	25	40	40	40	40

**Note:** Single-phasing sensitivity to IEC/EN 60947-4-1, VDE 0660 Part 102.  
 Can be snap-fit to IEC/EN 60715 top-hat (DIN) with 7.5 or 15 mm height.  
 Service Factor (SF) — Setting I<sub>r</sub> of current scale in dependence of load factor:  
 SF = 1.15 → I<sub>r</sub> = 1 x I<sub>n mot</sub>  
 SF = 1 → I<sub>r</sub> = 0.9 x I<sub>n mot</sub>

<sup>1)</sup>When using the XTPM as short-circuit protection for motors with heavy starting duty, the rated operational current I<sub>e</sub> must be derated during engineering with the following factors:

Class 5 = 1.0, Class 10 = 1.0, Class 15 = 0.82, Class 20 = 0.71

Class 25 = 0.63, Class 30 = 0.58, Class 35 = 0.53, Class 40 = 0.50

## Manual Motor Protectors, Frames B and D, Technical Data and Standards (Continued)

	XTPBP16B – XTPB016B	XTPRP16B – XTPR032B	XTPR016D – XTPR063D	XTPMP16B – XTPM032B	XTPTP16B – XTPT025B
<b>Main contacts (Continued)</b>					
Short-circuit rating AC	See Page 150.				
DC (kA)	60	60 (up to XTPR016B) 40 (XTPR020B – XTPR032B)	60	60 (up to XTPM016B) 40 (XTPM020B – XTPR032B)	60 (up to XTPT016B) 40 (XTPT020B – XTPT025B)
Motor switching capacity AC-3 (up to 690 V) in amperes DC-5 (up to 250 V) in amperes	16 16	32 25 (3 contacts in series)	63 63 (3 contacts in series)	32	25
Overload release setting range (x I <sub>N</sub> )	0.6 – 1.0	0.6 – 1.0	0.6 – 1.0	—	0.6 – 1.0
Fixed short-circuit release (x I <sub>N</sub> )	14	14	14	14	14
Short-circuit release tolerance	± 20%	± 20%	± 20%	± 20%	± 20%
Phase-failure sensitivity	IEC/EN 60947-1-1, VDE 0660 Part 102			—	IEC/EN 60947-1-1, VDE 0660 Part 102

## Manual Motor Protectors, Auxiliary Contacts, Technical Data and Standards

Description	XTPAXSA__	XTPAXFA__	XTPAXCMSA__	XTPA(B)XFAEM__	XTPAXSATR__
Rated impulse withstand voltage, U <sub>imp</sub> (V AC)	6000	4000	6000	4000	6000
Overvoltage category/pollution degree	III/3	III/3	III/3	III/3	III/3
Rated operational voltage					
U <sub>e</sub> (VAC)	500	440	500	440	500
U <sub>e</sub> (VDC)	250	250	250	250	250
Safe isolation to VDE 0106 Part 101 and Part 101/A1 Between auxiliary contacts and main contacts (V AC)	690	690	690	690	690
Rated operational current					
AC-15					
220 – 240 V, I <sub>e</sub> (A)	3.5	1	3.5	1	3.5
380 – 415 V, I <sub>e</sub> (A)	2	—	2	—	2
440 – 500 V, I <sub>e</sub> (A)	1	—	1	—	1
DC-13 L/R < 100 ms					
24 V, I <sub>e</sub> (A)	2	—	2	—	2
60 V, I <sub>e</sub> (A)	1.5	—	1.5	—	1.5
110 V, I <sub>e</sub> (A)	1	—	1	—	1
220 V, I <sub>e</sub> (A)	0.25	—	0.25	—	0.25
<b>Lifespan</b>					
Mechanical, operations (x 10 <sup>6</sup> )	> 0.1	> 0.1	> 5	> 0.1	> 0.01
Electrical, operations (x 10 <sup>6</sup> )	> 0.05	> 0.1	> 1	> 0.1	> 0.005
Contact reliability (@ U <sub>e</sub> = 24V DC, U <sub>min</sub> – 17V, I <sub>min</sub> = 5.4 mA, fault probability (λ))	< 10 <sup>-8</sup> < 1 fault at 1 x 10 <sup>8</sup> operations				
Positively driven contacts to ZH 1/457	Yes	—	Yes	—	—
<b>Short-circuit rating without welding</b>					
Fuseless	FAZ-B4/1-HI	—	FAZ-B4/1-HI	—	FAZ-B4/1-HI
Fuse (A gG/gL)	10	10	10	10	10
<b>Terminal Capacity</b>					
Solid or flexible conductor with ferrule (mm <sup>2</sup> )	0.75 – 2.5	0.75 – 1.5	0.75 – 2.5	0.75 – 1.5	0.75 – 2.5
Solid or stranded (AWG)	18 – 14	18 – 16	18 – 14	18 – 16	18 – 14

## Manual Motor Protectors, Undervoltage Release, Technical Data and Standards

Description	XTPAXUVR...
<b>Cross-sections</b>	
Solid or flexible conductor with ferrule (mm <sup>2</sup> )	1 x (0.75 – 2.5) 2 x (0.75 – 2.5)
Solid or stranded (AWG)	1 x (18 – 14) 2 x (18 – 14)
<b>Main Contacts</b>	
Rated operational voltage, U <sub>e</sub> (V AC)	42 – 480
Rated operational voltage, U <sub>e</sub> (V DC)	24 – 250
Pick-up voltage, x U <sub>s</sub>	0.85 – 1.1
Drop-out voltage, x U <sub>s</sub>	0.7 – 0.35
<b>Power Consumption</b>	
Pick-up AC (VA)	5
Sealing AC (VA)	3

## Manual Motor Protectors, Current Limiter, Technical Data and Standards

Description	XTPAXCL
Rated Impulse withstand Voltage (U <sub>imp</sub> ), V AC	6000
Overvoltage Category/ Pollution Degree	III/3
Rated operational voltage, U <sub>e</sub> (V AC)	690
Rated interrupted current = Rated operational current (I <sub>u</sub> = I <sub>e</sub> ) in amperes	63

## Manual Motor Protectors, Shunt Release, Technical Data and Standards

Description	XTPAXSR __
<b>Cross-sections</b>	
Solid or flexible conductor with ferrule (mm <sup>2</sup> )	1 x (0.75 – 2.5) 2 x (0.75 – 2.5)
Solid or stranded (AWG)	1 x (18 – 14) 2 x (18 – 14)
<b>Main Contacts</b>	
Rated operational voltage, U <sub>e</sub> (V AC)	42 – 480
Rated operational voltage, U <sub>e</sub> (V DC)	24 – 250
AC Operating Range, x U <sub>s</sub>	0.7 – 1.1
DC Operating Range, x U <sub>s</sub> (intermittent operation 5s)	0.7 – 1.1
<b>Power Consumption</b>	
Pick-up AC (VA)	5
Sealing AC (VA)	3
Pick-up DC (VA)	3
Sealing DC (VA)	3



## Manual Motor Protectors, Frames B and D, Time Current Curve Characteristics

The time/current characteristic, the current limiting characteristics and the  $I^2t$  characteristics were determined in accordance with DIN VDE 0660 and IEC 60 947.

The tripping characteristic of the inverse-time delayed overload releases (thermal overload releases or "a" releases) for DC and AC with a frequency of 0 to 400 Hz also apply to the time/current characteristic.

The characteristics apply to the cold state. At operating temperature, the tripping times of the thermal releases are reduced to approximately 25%.

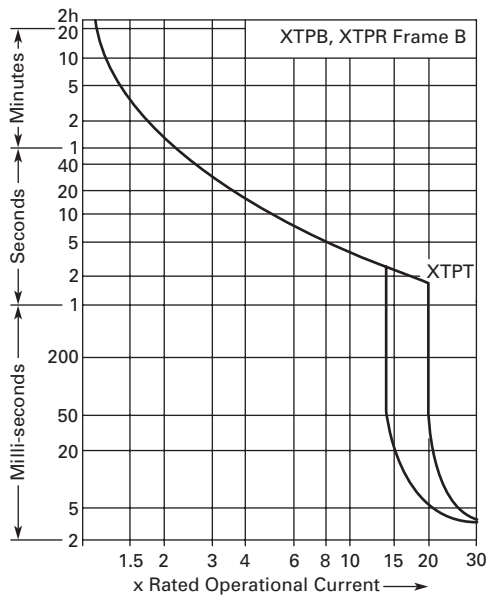
Under normal operating conditions, all three poles of the device must be loaded. The three main conducting paths must be connected in series in order to protect single-phase or DC loads.

With 3-pole loading, the maximum deviation in the tripping time for 3 times the setting current and upwards is  $\pm 20\%$  and thus in accordance with DIN VDE 0165.

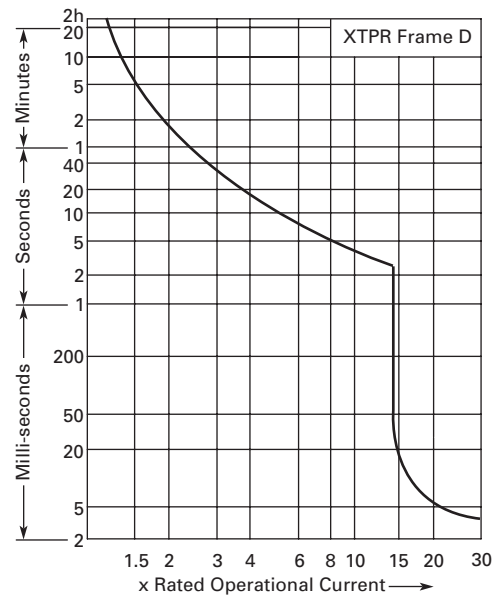
The tripping characteristics for the instantaneous, electromagnetic overcurrent releases (short-circuit releases or "n" releases) are based on the rated current  $I_n$ , which is also the maximum value of the setting range for circuit-breakers with adjustable overload releases. If the current is set to a lower value, the tripping current of the "n" release is increased by a corresponding factor.

The characteristics of the electromagnetic overcurrent releases apply to frequencies of 50/60 Hz. Appropriate correction factors must be used for lower frequencies up to 16-2/3 Hz, for higher frequencies up to 400 Hz and for DC.

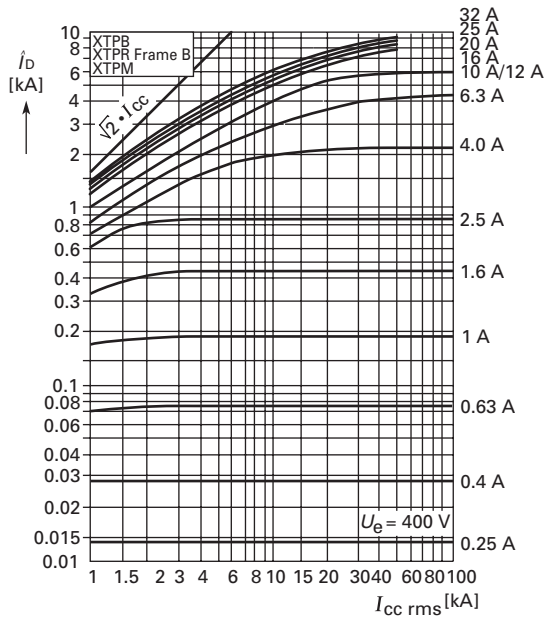
Time/current characteristics, current limiting characteristics and  $I^2t$  characteristics are available on request.



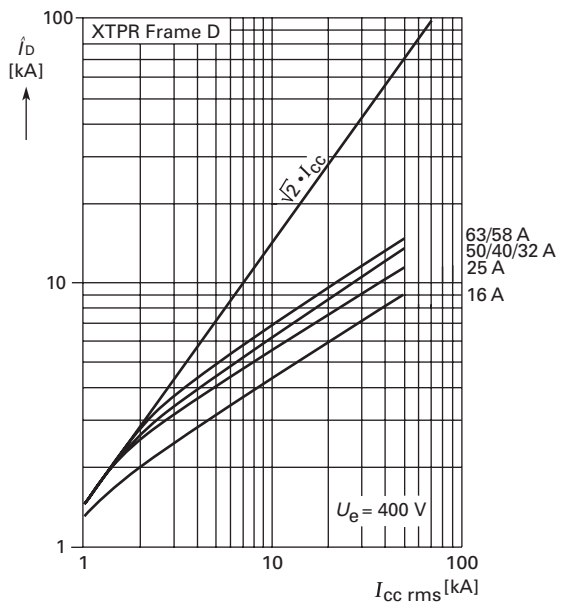
MMP Tripping Characteristics — XTPB, XTPR Frame B and XTPT (not for XTPM)



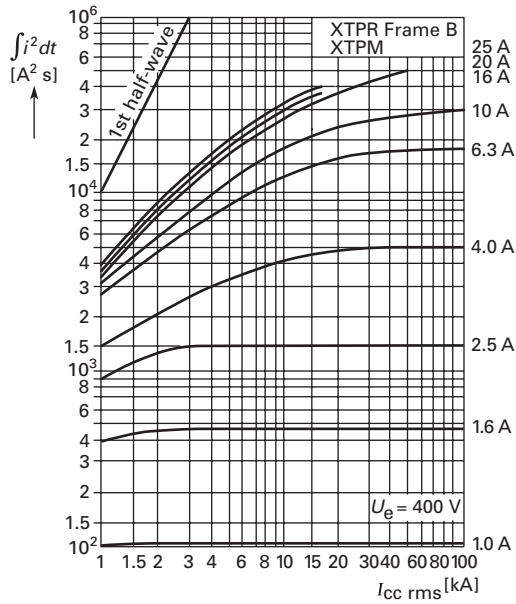
MMP Tripping Characteristics — XTPR Frame D



MMP Let-Through Tripping Characteristics — XTPB, XTPR Frame B, XTPT  
XTPR Frame B, XTPT



MMP Let-Through Tripping Characteristics — XTPR Frame D



MMP Let-Through Tripping Characteristics - XTPR Frame B, XTPM

## Manual Motor Protectors, Frames B and D, Short Circuit Ratings

Rated uninterrupted current  $I_u$  = Rated operational current  $I_e$ .  
 Rated conditional short circuit current  $I_q$  — IEC/EN 60947-4-1.  
 Rated ultimate short circuit breaking capacity  $I_{cu}$  — IEC/EN 60947-2.  
 Rated operational short circuit breaking capacity  $I_{cs}$  — IEC/EN 60947-2.


$I_u$ A	230V				400V				440V				500V				690V				
	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	Fuse 2(3) A	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	Fuse 2(3) A	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	Fuse 2(3) A	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	Fuse 2(3) A	$I_q$ kA	$I_{cu}$ kA	$I_{cs}$ kA	Fuse 2(3) A	
<b>XTPB with classification Type "1" and Type "2"</b>																					
0.16 – 1	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	
1.6	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	
2.5	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	
4	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	
6.3	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	
10	50	50	50	50	50	50	50	50	50	42	42	10	50	42	42	10	50	42	42	10	50
12	50	50	50	50	50	50	10	50	50	15	15	10	50	15	15	10	50	15	15	10	50
<b>XTPR...BC1, XTPT, XTPM with classification Type "1" and Type "2"</b>																					
0.16 – 1	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	1)	1)	1)	50	1)	1)	1)	N	1)	1)	1)	N	
1.6	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	1)	1)	1)	50	1)	1)	1)	N	1)	1)	1)	N	
2.5	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	1)	1)	1)	50	1)	1)	1)	N	5	5	5	50	
4	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	1)	1)	1)	50	1)	1)	1)	N	3	3	3	50	
6.3	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	1)	1)	1)	50	42	42	6	50	3	3	2	50	
10	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	150 <sup>1)</sup>	150 <sup>1)</sup>	150 <sup>1)</sup>	N	42	42	10	50	42	42	6	50	3	3	2	50	
12	50	50	10	50	50	50	10	50	15	15	10	50	15	15	6	50	3	3	2	50	
16	50	50	10	50	50	50	10	50	15	15	10	50	15	15	6	50	3	3	2	50	
20	50	50	10	50	50	50	10	50	15	15	10	50	6	6	6	50	3	3	2	50	
25	50	50	10	50	50	50	10	50	10	10	10	50	6	6	6	50	3	3	2	50	
32	50	50	10	50	50	50	10	50	10	10	10	50	6	6	6	50	3	3	2	50	
<b>XTPR...DC1 with classification Type "1" and Type "2"</b>																					
16	150 <sup>1)</sup>	150 <sup>1)</sup>	25	N	150 <sup>1)</sup>	150 <sup>1)</sup>	25	N	45	45	25	100	15	15	100	8	8	2.5	100		
25	150 <sup>1)</sup>	150 <sup>1)</sup>	25	N	150 <sup>1)</sup>	150 <sup>1)</sup>	25	N	45	45	25	100	15	15	100	8	8	2.5	100		
32	50	50	25	100	50	50	25	100	45	45	25	100	15	15	100	5	5	2.5	100		
40	50	50	25	100	50	50	25	100	45	45	25	100	15	15	100	5	5	2.5	100		
50	50	50	25	100	50	50	25	100	45	45	25	100	15	15	100	5	5	2.5	100		
58	50	50	25	160	50	50	25	160	45	45	25	160	15	15	160	5	5	2.5	160		
63	50	50	25	160	50	50	25	160	45	45	25	160	15	15	160	5	5	2.5	160		
<b>XTPR...BC1, XTPT, XTPM with Current Limiter XTPAXCL</b>																					
0.16 – 1	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	20	N	
1.6	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	20	N	
2.5	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	20	20	20	N	
4	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	20	20	20	N	
6.3	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	50	N	20	20	20	N	
10	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	20	N	20	20	20	N	
12	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	20	N	5	5	2.5	N	
16	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	20	N	5	5	2.5	N	
20	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	10	10	10	N	5	5	2.5	N	
25	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	10	10	10	N	5	5	2.5	N	
32	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	10	10	10	N	5	5	2.5	N	
<b>XTPR...BC1, XTPT, XTPM with (2) Current Limiters XTPAXCL</b>																					
0.16 – 1	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	20	N	
1.6	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	20	N	
2.5	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	40	40	20	N	
4	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	40	40	20	N	
6.3	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	50	N	20	20	20	N	
10	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	40	N	20	20	20	N	
12	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	40	N	10	10	2.5	N	
16	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	1)	1)	40	N	10	10	2.5	N	
20	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	20	20	20	N	10	10	2.5	N	
25	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	20	20	20	N	10	10	2.5	N	
32	1)	1)	1)	N	1)	1)	1)	N	1)	1)	1)	N	20	20	20	N	10	10	2.5	N	

<sup>1)</sup> No upstream protective device required, as it is the auto-protected range (100/150 kA — Frame B, 150 kA — Frame D).

<sup>2)</sup> N = Not required.

<sup>3)</sup> XTPR...BC1, XTPT, XTPM — Required back-up fuse if the short circuit current exceeds the rated conditional short circuit current ( $I_{cc} > I_q$ );  
 XTPB, XTPR...DC1 — Fuse (A gG/gL) for enhancing the switching capacity of the motor protective circuit breaker to 100 kA.

Manual Motor Protectors, Frames B and D, Ratings for Goup Motor Applications - UL 508/CSA C22.2 No.14



Eaton list Number	Rated Uninterrupted Current — $I_u$ (Amps)	FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Short Circuit Release — $I_m$ (Amps)	Maximum Protective Device for UL/CSA Group Protection					
				Max. RMS Sym Current — 600V (kA)	w/Current Limiter — XTPAXCL	Maximum Fuse Rating (A)	w/Current Limiter — XTPAXCL	Circuit Breaker Max (A)	w/Current Limiter — XTPAXCL
									
<b>XTPB — Frame B, Manual Motor Protector with Thermal and Magnetic Trip</b>									
XTPBP16BC1	0.16	0.1 – 0.16	2.2	50	—	600	—	600	—
XTPBP25BC1	0.25	0.16 – 0.25	3.5	50	—	600	—	600	—
XTPBP40BC1	0.4	0.25 – 0.4	5.6	50	—	600	—	600	—
XTPBP63BC1	0.63	0.4 – 0.63	8.8	50	—	600	—	600	—
XTPB001BC1	1	0.63 – 1	14	50	—	600	—	600	—
XTPB1P6BC1	1.6	1 – 1.6	22	50	—	600	—	600	—
XTPB2P5BC1	2.5	1.6 – 2.5	35	50	—	600	—	600	—
XTPB004BC1	4	2.5 – 4	56	50	—	600	—	600	—
XTPB6P3BC1	6.3	4 – 6.3	88	50	—	600	—	600	—
XTPB010BC1	10	6.3 – 10	140	10	50	150	600	125 2)	600
XTPB012BC1	12	8 – 12	168	10	50	150	600	125 2)	600
XTPB016BC1	16	10 – 16	224	10 1)	50 1)	150 1)	600 1)	125 1)2)	600 1)
XTPB020BC1 3)	20	16 – 20	280	10 1)	18 1)	150 1)	600 1)	125 1)	600 1)
XTPB025BC1 3)	25	20 – 25	350	10 1)	18 1)	150 1)	600 1)	125 1)	600 1)
<b>XTPR — Frame B (all Screw and Spring Cage terminal options), Manual Motor Protector with Thermal and Magnetic Trip</b>									
XTPRP16BC1	0.16	0.1 – 0.16	2.2	50	—	600	—	600	—
XTPRP25BC1	0.25	0.16 – 0.25	3.5	50	—	600	—	600	—
XTPRP40BC1	0.4	0.25 – 0.4	5.6	50	—	600	—	600	—
XTPRP63BC1	0.63	0.4 – 0.63	8.8	50	—	600	—	600	—
XTPR001BC1	1	0.63 – 1	14	50	—	600	—	600	—
XTPR1P6BC1	1.6	1 – 1.6	22	50	—	600	—	600	—
XTPR2P5BC1	2.5	1.6 – 2.5	35	50	—	600	—	600	—
XTPR004BC1	4	2.5 – 4	56	50	—	600	—	600	—
XTPR6P3BC1	6.3	4 – 6.3	88	50	—	600	—	600	—
XTPR010BC1	10	6.3 – 10	140	10	50	150	600	125 2)	600
XTPR012BC1	12	8 – 12	168	10	50	150	600	125	600
XTPR016BC1	16	10 – 16	224	10	50	150	600	125 2)	600
XTPR020BC1	20	16 – 20	280	10	18	150	600	125	600
XTPR025BC1	25	20 – 25	350	10	18	150	600	125	600
XTPR032BC1	32	25 – 32	448	10	18	150	600	125	600
<b>XTPR — Frame D, Manual Motor Protector with Thermal and Magnetic Trip</b>									
XTPR016DC1	16	10 – 16	224	10	—	600	—	600	—
XTPR025DC1	25	16 – 25	350	10	—	600	—	600	—
XTPR032DC1	32	25 – 32	448	10	—	600	—	600	—
XTPR040DC1	40	32 – 40	560	10	—	600	—	600	—
XTPR050DC1	50	40 – 50	700	10 1)	—	600 1)	—	600 1)	—
XTPR058DC1	58	50 – 58	812	10 1)	—	600 1)	—	600 1)	—
XTPR063DC1	65	55 – 63	882	10 1)	—	600 1)	—	600 1)	—
<b>XTPT — Frame D, Manual Motor Protector with Thermal and Magnetic Trip</b>									
XTPTP16BC1	0.16	0.1 – 0.16	2.4	50	—	600	—	600	—
XTPTP25BC1	0.25	0.16 – 0.25	4.25	50	—	600	—	600	—
XTPTP40BC1	0.4	0.25 – 0.4	6.8	50	—	600	—	600	—
XTPTP63BC1	0.63	0.4 – 0.63	12	50	—	600	—	600	—
XTPT001BC1	1	0.63 – 1	20	50	—	600	—	600	—
XTPT1P6BC1	1.6	1 – 1.6	32	50	—	600	—	600	—
XTPT2P5BC1	2.5	1.6 – 2.5	50	50	—	600	—	600	—
XTPT004BC1	4	2.5 – 4	84	50	—	600	—	600	—
XTPT6P3BC1	6.3	4 – 6.3	141	50	—	600	—	600	—
XTPT010BC1	10	6.3 – 10	224	10	50	150	600	125 2)	600
XTPT012BC1	12	8 – 12	224	10	50	150	600	125	600
XTPT016BC1	16	10 – 16	358	10	50	150	600	125	600
XTPT020BC1	20	16 – 20	380	10	18	150	600	125	600
XTPT025BC1	25	20 – 25	420	10	18	150	600	125	600

1) Rating is pending UL approval, available September 2005. Contact Eaton for availability.

2) 22kA 600V AC

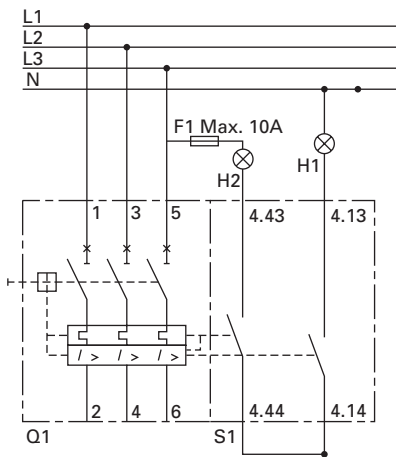
3) IEC/EN 60947-4-1

## Manual Motor Protectors, MMC and Manual Motor Controllers MMC, Frames B and D, Ratings

Eaton list number		Rated Current — $I_e$ (Amps)	FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Short Circuit Release — $I_m$ (Amps)	Rated Short Circuit Breaking Capacity (kA)		
Non-reversing	Reversing				240V	480/277V	600/347V
 							
<b>XTSC &amp; XTSR Manual Motor Controllers (MMC) / Starter Combinations</b>							
XTSCP25BB_	XTSRP25BB_	0.25	0.16 – 0.25	3.5	50	50	50
XTSCP40BB_	XTSRP40BB_	0.4	0.25 – 0.4	5.6	50	50	50
XTSCP63BB_	XTSRP63BB_	0.63	0.4 – 0.63	8.82	50	50	50
XTSC001BB_	XTSR001BB_	1	0.63 – 1	14	50	50	50
XTSC1P6BB_	XTSR1P6BB_	1.6	1 – 1.6	22.4	50	50	50
XTSC2P5BB_	XTSR2P5BB_	2.5	1.6 – 2.5	35	50	50	50
XTSC004BB_	XTSR004BB_	4	2.5 – 4	56	50	50	50
XTSC6P3BB_	XTSR6P3BB_	6.3	4 – 6.3	88.2	50	50	50
XTSC010BB_	XTSR010BB_	10	6.3 – 10	140	50	50	50
XTSC012BB_	XTSR012BB_	12	8 – 12	168	50	42	—
XTSC016BC_	XTSR016BC_	16	10 – 16	224	18	42	—
XTSC020BC_	XTSR020BC_	20	16 – 20	280	18	18	—
XTSC025BC_	XTSR025BC_	25	20 – 25	350	18	18	—
XTSC032BC_	XTSR032BC_	32	25 – 32	448	18	18	—
XTSC016DC_	XTSR016DC_	16	10 – 16	224	50	50	—
XTSC025DC_	XTSR025DC_	25	16 – 25	350	50	50	—
XTSC032DC_	XTSR032DC_	32	25 – 32	448	50	50	—
XTSC040DD_	XTSR040DD_	40	32 – 40	560	50	50	—
XTSC050DD_	XTSR050DD_	50	40 – 50	700	50 <sup>1)</sup>	50 <sup>1)</sup>	—
XTSC058DD_	XTSR058DD_	58	50 – 58	812	50 <sup>1)</sup>	50 <sup>1)</sup>	—
XTSC063DD_	XTSR063DD_	63	55 – 63	882	50 <sup>1)</sup>	50 <sup>1)</sup>	—
<b>XTFC &amp; XTFR Manual Motor Controllers (MMC), UL 508 Type F</b>							
XTFCP25BB_	XTFRP25BB_	0.25	0.16 – 0.25	3.5	50	50	50
XTFCP40BB_	XTFRP40BB_	0.4	0.25 – 0.4	5.6	50	50	50
XTFCP63BB_	XTFRP63BB_	0.63	0.4 – 0.63	8.82	50	50	50
XTFC001BB_	XTFR001BB_	1	0.63 – 1	14	50	50	50
XTFC1P6BB_	XTFR1P6BB_	1.6	1 – 1.6	22.4	50	50	50
XTFC2P5BB_	XTFR2P5BB_	2.5	1.6 – 2.5	35	50	50	50
XTFC004BB_	XTFR004BB_	4	2.5 – 4	56	50	50	50
XTFC6P3BB_	XTFR6P3BB_	6.3	4 – 6.3	88.2	50	50	50
XTFC010BB_	XTFR010BB_	10	6.3 – 10	140	50	50	50
XTFC012BB_	XTFR012BB_	12	8 – 12	168	50	42	—
XTFC016BC_	XTFR016BC_	16	10 – 16	224	18	18	—
XTFC020BC_	XTFR020BC_	20	16 – 20	280	18	18	—
XTFC025BC_	XTFR025BC_	25	20 – 25	350	18	18	—
XTFC032BC_	XTFR032BC_	32	25 – 32	448	18	18	—
XTFC016DC_	XTFR016DC_	16	10 – 16	224	50	50	—
XTFC025DC_	XTFR025DC_	25	16 – 25	350	50	50	—
XTFC032DC_	XTFR032DC_	32	25 – 32	448	50	50	—
XTFC040DD_	XTFR040DD_	40	32 – 40	560	50	50	—

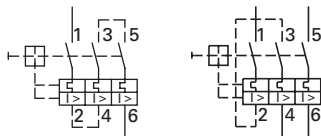
<sup>1)</sup> Ratings pending UL approval. Contact Eaton for availability.

Manual Motor Protectors with XTPAXSATR20 Signalling switch.  
Separate "Short-Circuit" and "Tripped" signals.

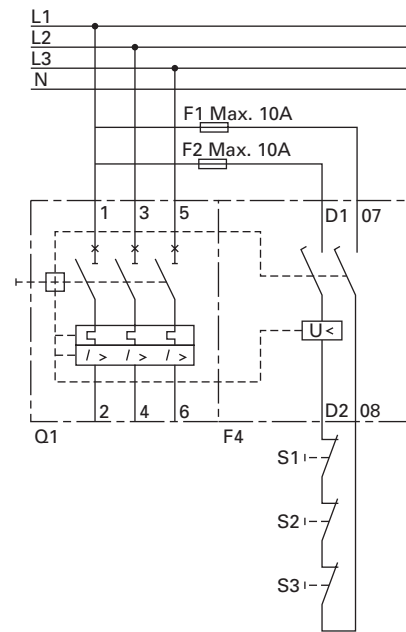


H1: "Short-Circuit" Signal  
H2: "Tripped" Signal  
(MMP can be tripped by overload, short-circuit, or auxiliary releases)

H1; H2 Indicator Lights  
F1 Fuses  
Q1 MMP  
S1 Signalling Contact



Manual Motor Protectors with pushbutton or EMERGENCY-STOP button in the system.



The undervoltage release with leading auxiliary contact prevents formation of parasitic voltages in the control when the MMP position is "OFF". In the tripped position the MMP, opening of these contacts is not assured.

F1; F2 Fuses  
Q1 MMP  
F4 Undervoltage Release  
S1; S2; S3 OFF Pushbuttons in the System

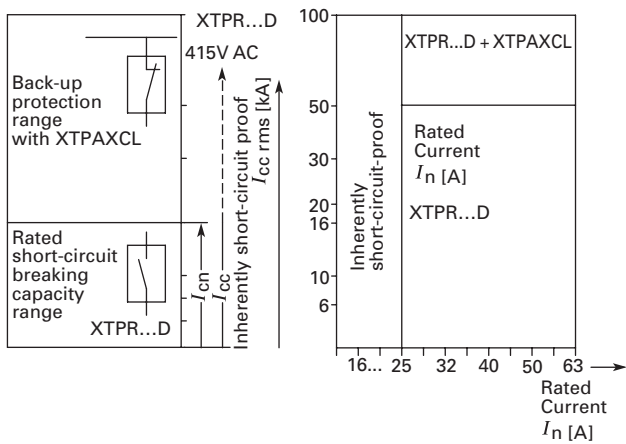
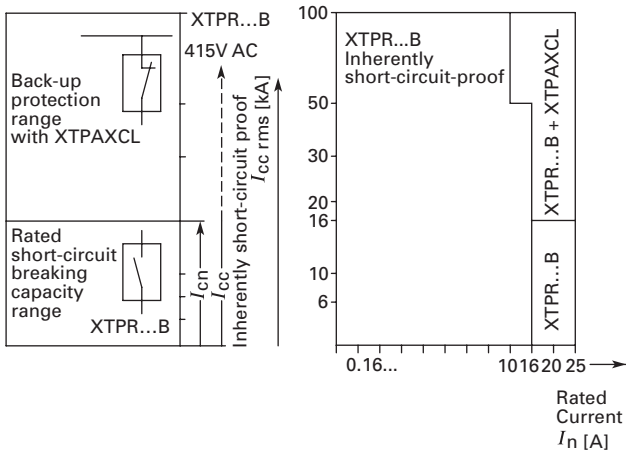
Manual Motor Protectors, XTPB, XTPR 1P and 2P Circuits with DC and AC Current

## Manual Motor Protectors, Protection of PVC insulated cables against thermal overload at Short Circuit

Min. Cross-Section Protected 380-415V, 50 Hz, Cu mm <sup>2</sup>					Device	
4	2.5	1.5	1	0.75	Type	
					XTPRP16BC1	
					⋮	
						XTPR6P3BC1
						XTPR010BC1
						XTPR016BC1
						XTPR020BC1
						XTPR025BC1
						XTPR016DC1
						XTPR025DC1
						XTPR032DC1
						XTPR040DC1
						XTPR050DC1
						XTPR058DC1
						XTPR063DC1

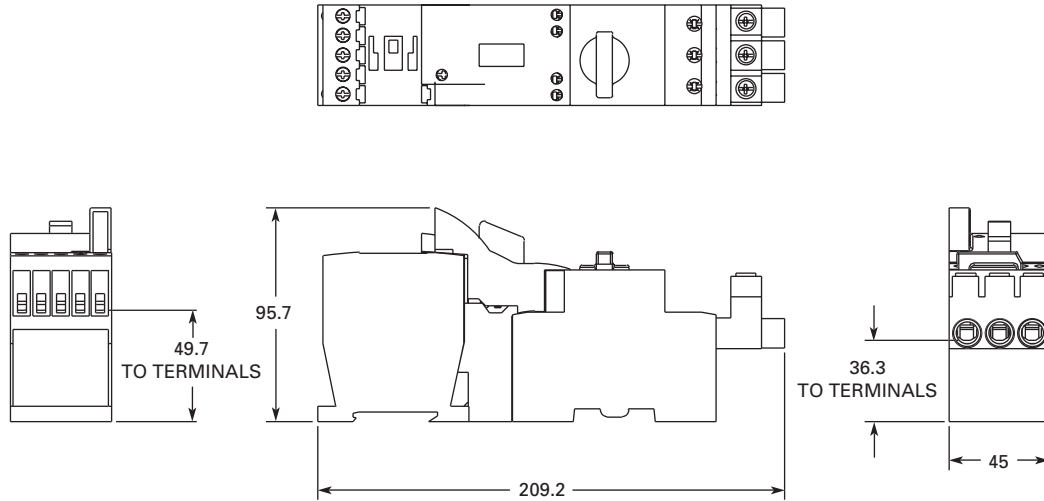
The table indicates which minimum cable cross-sections are protected by XTPR motor protective circuit breakers up to their rated conditional short circuit current  $I_q$ .

## Manual Motor Protectors, Fuseless Installation with XTPR, Back-Up Protection Diagrams





#### Manual Motor Controllers Frame B, Dimensional drawing



#### Manual Motor Controllers Frames B and D, technical data and Specifications

##### Factory Assembled Motor Protective Device with Thermal and Magnetic Trip + Contactor(s)

Eaton list number		FLA Adjustment Range / Overload Release — $I_r$ (Amps)	Maximum Motor Ratings — $P^1$ Maximum Motor kW Rating AC-3 — P (kW) Three-Phase				
Assembled Manual/ Motor Controller — Non-reversing <sup>4)</sup>	Manual/ Motor Controller — Reversing <sup>4)</sup>		220-240V	380-415V	440V	500V	660-690V

##### XTSC & XTSR Manual Motor Controllers (MMC) / Starter Combinations

XTSCP25BB_	XTSRP25BB_	0.16 – 0.25	—	0.06	0.06	0.06	0.12
XTSCP40BB_	XTSRP40BB_	0.25 – 0.4	0.06	0.09	0.12	0.12	0.18
XTSCP63BB_	XTSRP63BB_	0.4 – 0.63	0.09	0.18	0.18	0.25	0.25
XTSC001BB_	XTSR001BB_	0.63 – 1	0.12	0.25	0.25	0.37	0.55
XTSC1P6BB_	XTSR1P6BB_	1 – 1.6	0.25	0.55	0.55	0.75	1.1
XTSC2P5BB_	XTSR2P5BB_	1.6 – 2.5	0.37	0.75	1.1	1.1	1.5
XTSC004BB_	XTSR004BB_	2.5 – 4	0.75	1.5	1.5	2.2	3
XTSC6P3BB_	XTSR6P3BB_	4 – 6.3	1.1	2.2	3	3	4
XTSC010BB_	XTSR010BB_	6.3 – 10	2.2	4	4	4	7.5
XTSC012BB_	XTSR012BB_	8 – 12	3	5.5	5.5	5.5	11
XTSC016BC_	XTSR016BC_	10 – 16	4	7.5	9	9	12.5
XTSC020BC_	XTSR020BC_	16 – 20	5.5	9	11	12.5	15
XTSC025BC_	XTSR025BC_	20 – 25	5.5	11	12.5	15	22
XTSC032BC_	XTSR032BC_	25 – 32	7.5	15	15	22	30
XTSC016DC_	XTSR016DC_	10 – 16	4	7.5	9	9	12.5
XTSC025DC_	XTSR025DC_	16 – 25	5.5	12.5	12.5	12.5	22
XTSC032DC_	XTSR032DC_	25 – 32	7.5	15	17.5	17.5	22
XTSC040DD_	XTSR040DD_	32 – 40	11	20	22	22	30
XTSC050DD_	XTSR050DD_	40 – 50	14	25	30	30	45
XTSC058DD_	XTSR058DD_	50 – 58	17	30	37	37	55
XTSC063DD_	XTSR063DD_	55 – 63	18.5	34	37	37	55

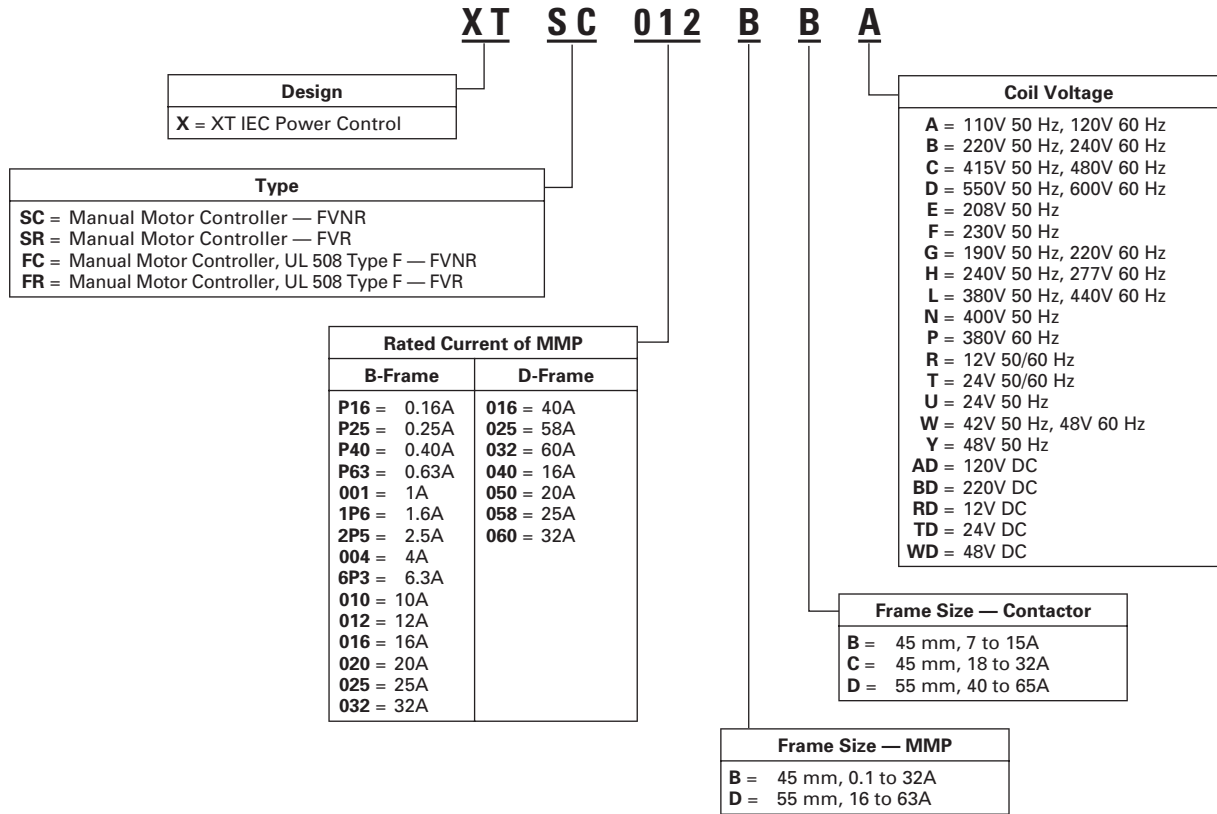
<sup>1)</sup> Select Manual Motor Protectors by full load amperes. Maximum Motor Ratings (kW) are for reference only.

<sup>2)</sup> In this range, calculate motor rating according to rated current. Specified values to NEC Table 430-150.

<sup>3)</sup> Ratings pending UL approval. Contact Eaton for availability.

<sup>4)</sup> Underscore ( \_ ) indicates Coil Suffix required.







#### What is it?

The International Electrotechnical Commission (IEC) developed short circuit performance criteria for contactors and starters called Type 1 coordination and Type 2 coordination. This defines motor controller protection levels following a short circuit fault. In order to achieve this performance, the combination of a motor controller (contactor or starter) and short circuit protective device (manual motor protector, circuit breaker or fuse) must meet the following criteria as specified by IEC 60947-4-1 — Low voltage switchgear and controlgear — Part 4-1: Contactors and motor-starters — Electromechanical contactors and motor-starters:

**Type 1 Coordination** requires that under short circuit conditions, the contactor or starter shall cause no danger to persons or installation and may not be suitable for further service without repair and replacement of parts.

In this case, *significant damage is allowed* to the contactor/starter (e.g. contact welding, burning, or disintegration) and the overload relay (e.g. component harm or heater element burn-out).

**Type 2 Coordination** requires that under short circuit conditions, the contactor or starter shall cause no danger to persons or installation and shall be suitable for further use. The risk of contact welding is recognized, in which case the manufacturer shall indicate the measures to be taken as regards to the maintenance of the equipment.

In this case, the contactor/starter is *able to continue use* after the occurrence of a short circuit fault. Light contact burning or tack welding may occur provided the contacts are easily separable.

#### Who benefits and why?

Achieving an acceptable level of short circuit coordination requires knowledge about the application, product standards, installation codes and the attributes of the many short circuit protective devices (SCPDs) that are available. Extensive testing must be completed and certified in order to achieve a Type 1 or 2 rating. IEC 60947-4-1 offers precise definitions of allowable damage in order to guide users to the right product with the right protection.

Generally speaking, most users expect Type 2 protection in their applications. With certifying agencies varying from country-to-country and continent-to-continent, users will sometimes mistakenly assume that Type 2 coordination has been achieved if their motor branch circuit components are CE marked, UL Listed Type E or F and/or CSA Certified. This is not necessarily true.

At the forefront of Type 2 benefits comes the assurance that the device poses no threat of danger to the person or installation. Furthermore, with increased emphasis placed on reducing downtime to increase productivity, proper application and selection of motor branch circuit devices is more important than ever. By selecting the proper type of protection, the working environment and employees can be protected against hazardous fault conditions and the performance of contactors and overload relays in the branch circuit can be maximized.

Type 2 protection provides confidence that motor control components will be operable following a short circuit fault. This reusability translates into hundreds or even thousands of pounds in savings due to reduced downtime and replacement costs.

**TYPE 2 Coordination = Safety + Less Downtime =Pounds**

#### How does Eaton comply?

It is important to understand the short circuit testing pass/fail criteria of the applicable product standards (UL 508, CSA C22.2 No. 14 and IEC 60947) when specifying products for each application. Each standard requires that devices are capable of withstanding minimum short circuit currents (based on the starter's rating). UL and CSA refer to the minimum rating as the Standard Fault Short Circuit Current Rating. IEC 60947-4-1 and 60947-6-2 refer to these ratings as  $I_f$  and  $I_{cr}$  respectively.

*Standard Fault Short Circuit Current Rating (Derived from UL 508):* The minimum short circuit current, based on horsepower rating, that a starter must be capable of withstanding in accordance with the applicable pass/fail criteria. Denoted as  $I_f$  by IEC 60947-4-1 and  $I_{cr}$  by IEC 60947-6-2.

Manufacturers may also specify short circuit ratings exceeding the minimum ratings required by standards. UL and CSA refer to these as the High-Available Fault Short Circuit Current Rating. IEC 60947-4-1 and 60947-6-2 refer to these ratings as  $I_q$  and  $I_{cs}$  respectively.

*High-Available Fault Short Circuit Current Rating (Derived from UL 508):* The short circuit current rating specified by the manufacturer of a motor controller, which is greater than the standard short circuit current rating. The motor controller is capable of withstanding the high-available short circuit current in accordance with the applicable pass/fail criteria. Denoted as  $I_q$  by IEC 60947-4-1 and  $I_{cs}$  by IEC 60947-6-2.

Following is a summary of short circuit testing pass/fail criteria applicable to magnetically operated direct-on-line contactors and starters. Standards should be referenced for exact wording and all specific pass/fail criteria. UL and IEC criteria are summarized for standard and high-available short circuit currents. CSA criteria are summarized for high-available short circuit currents.

## Defining Pass/Fail Criteria: UL 508/CSA C22.2 No. 14 and IEC 60947-4-1

	UL and CSA	IEC 60947-4-1 Type 1	Type 2
Fault Current	Fault current is successfully interrupted and no arcing to enclosure or proximity barrier is indicated by an open ground wire or fuselink.		
Enclosure	No substantial damage to the enclosure. It may be deformed but it must be possible to open the door. Live parts shall not be accessible.		
Terminals and Conductors	No damage to conductors or terminals. Conductors must not be separated from the terminals.		
Contactors/Starter Housing	No cracking or breaking of the contactor/starter housing that impairs the integrity of the mounting of live parts.		
Short Circuit Protective Device (SCPD)	The circuit breaker or switch must be capable of being operated manually. SCPD is not separated from its mounting means. Fuses must not rupture.		
Contactors/Starter Contacts	Welding and complete disintegration acceptable.	Welding acceptable.	Welding acceptable provided contacts can be easily separated.
Overload Relay	Electronic overload relays must be operable; tripping characteristics must be verified (UL). Mechanical overload relays may be damaged, if so, device must include markings indicating that (UL).	Damage acceptable.	No damage, tripping characteristics must be verified.
Contactors/Starter Operation	May be inoperable.	May be inoperable.	Must be operable, verified by 10 operations after short circuit test.
Other	No discharge of parts from enclosure. No risk of fire.	No discharge of parts from enclosure. Must pass 2X rated voltage, 1000V minimum dielectric test.	No discharge of parts from enclosure. Must pass 2X rated voltage, 1000V minimum dielectric test.

## What feeder circuit devices do you need for Type 2?

Achieving Type 2 is straightforward when using the following selection tables. Follow these steps to ensure that Type 2 coordination is in place:

Step 1: Determine the motor kW (single or three phase) or full load motor current from the motor nameplate.

Step 2: Verify the motor full load amps are less than or equal to the operational current ( $I_e$ ) listed next to the kW in the table.

Step 3: **Manual Motor Controllers (MMC):** Read across the tables horizontally for catalogue numbers of the Manual Motor Protector (MMP) and contactor (customer assembly) or pre-assembled Manual Motor Controller.

**Note:** For certain kW ratings at 480V and 600V, a current limiter must be used to achieve the maximum Type 2 rating (shown in the following tables). Customers can either order the MMP and Current Limit Contactors or an assembled MMC and current limiter.

**Circuit breaker combination controllers:** Read across the tables horizontally to determine the catalogue numbers of the circuit breaker to be used in conjunction with the contactor and overload relay listed (customer assembly) or the pre-assembled motor starter.

**Fused combination controllers:** Read across the tables horizontally to determine what amperage size fuse (customer to specify brand) and the catalogue numbers of the contactor and overload relay or the pre-assembled motor starter.

### Manual Motor Controller Combinations

#### 400/415V Type 2 Coordination, MMC

P (kW)	$I_e$ (A)	$I_q$ (kA)	MMP Eaton list number	Contactor Eaton list number <sup>2)</sup>	MMC Eaton list number <sup>2)</sup>
0.06	0.21	50.00 (150.00) <sup>1)</sup>	XTPRP25BC1	XTCE007B10_	XTSCP25BB_
0.09	0.31	50.00 (150.00) <sup>1)</sup>	XTPRP40BC1	XTCE007B10_	XTSCP40BB_
0.12	0.41	50.00 (150.00) <sup>1)</sup>	XTPRP63BC1	XTCE007B10_	XTSCP63BB_
0.18	0.60	50.00 (150.00) <sup>1)</sup>	XTPRP63BC1	XTCE007B10_	XTSCP63BB_
0.25	0.80	50.00 (150.00) <sup>1)</sup>	XTPR001BC1	XTCE007B10_	XTSC001BB_
0.37	1.10	50.00 (150.00) <sup>1)</sup>	XTPR1P6BC1	XTCE007B10_	XTSC1P6BB_
0.55	1.50	50.00 (150.00) <sup>1)</sup>	XTPR1P6BC1	XTCE007B10_	XTSC1P6BB_
0.75	1.90	50.00 (150.00) <sup>1)</sup>	XTPR2P5BC1	XTCE007B10_	XTSC2P5BB_
1.10	2.60	50.00 (150.00) <sup>1)</sup>	XTPR004BC1	XTCE007B10_	XTSC004BB_
1.50	3.60	50.00 (150.00) <sup>1)</sup>	XTPR004BC1	XTCE007B10_	XTSC004BB_
2.20	5.00	50.00 (150.00) <sup>1)</sup>	XTPR6P3BC1	XTCE007B10_	XTSC6P3BB_
3.00	6.60	50.00 (150.00) <sup>1)</sup>	XTPR010BC1	XTCE018C10_	XTSC010BC_
4.00	8.50	50.00 (150.00) <sup>1)</sup>	XTPR010BC1	XTCE018C10_	XTSC010BC_
5.50	11.30	50.00	XTPR012BC1	XTCE018C10_	XTSC012BC_
7.50	16.00	50.00	XTPR016BC1	XTCE018C10_	XTSC016BC_
11.00	21.70	50.00	XTPR025BC1	XTCE025C10_	XTSC025BC_
15.00	29.30	50.00	XTPR032BC1	XTCE032C10_	XTSC032BC_
5.50	11.30	50.00	XTPR016DC1	XTCE018C10_	XTSC016DC_
7.50	16.00	50.00	XTPR016DC1	XTCE018C10_	XTSC016DC_
11.00	21.70	50.00	XTPR025DC1	XTCE025C10_	XTSC025DC_
15.00	29.30	50.00	XTPR032DC1	XTCE032C10_	XTSC032DC_
18.50	36.00	50.00	XTPR040DC1	XTCE040D00_	XTSC040DD_
22.00	41.00	50.00	XTPR050DC1	XTCE050D00_	XTSC050DD_
30.00	55.00	50.00	XTPR058DC1	XTCE065D00_	XTSC058DD_
34.00	63.00	50.00	XTPR063DC1	XTCE065D00_	XTSC063DD_

<sup>1)</sup> Values in parentheses ( ) are for Type 1 Coordination.

<sup>2)</sup> Underscore ( \_ ) indicates coil suffix required.

## 400/415V Contactor and Overload Relay (Motor Starter) with Fused Disconnect

P (kW)	I <sub>e</sub> (A)	I <sub>q</sub> (kA)	Fuses Class gG/gL	Contactor Eaton list number <sup>1)</sup>	Overload Relay Eaton list number	Assembled Starter Eaton list number <sup>1)</sup>
0.12	0.41	100.00	2	XTCE007B10_	XTOBP60BC1	XTAE007B10_P60
0.18	0.60	100.00	2	XTCE007B10_	XTOB001BC1	XTAE007B10_001
0.25	0.80	100.00	4	XTCE007B10_	XTOB001BC1	XTAE007B10_001
0.37	1.10	100.00	4	XTCE007B10_	XTOB1P6BC1	XTAE007B10_1P6
0.55	1.50	100.00	4	XTCE007B10_	XTOB1P6BC1	XTAE007B10_1P6
0.75	1.90	100.00	6	XTCE007B10_	XTOB2P4BC1	XTAE007B10_2P4
1.10	2.60	100.00	6	XTCE007B10_	XTOB004BC1	XTAE007B10_004
1.50	3.60	100.00	6	XTCE007B10_	XTOB004BC1	XTAE007B10_004
2.20	5.00	100.00	10	XTCE007B10_	XTOB006BC1	XTAE007B10_006
3.00	6.60	100.00	16	XTCE007B10_	XTOB010BC1	XTAE007B10_010
4.00	8.50	100.00	20	XTCE009B10_	XTOB010BC1	XTAE009B10_010
5.50	11.30	100.00	25	XTCE018C10_	XTOB016CC1	XTAE018C10_016
7.50	16.00	100.00	32	XTCE018C10_	XTOB016CC1	XTAE018C10_016
11.00	21.70	100.00	40	XTCE025C10_	XTOB024CC1	XTAE032C10_024
15.00	29.30	100.00	63	XTCE032C10_	XTOB032CC1	XTAE032C10_032
18.50	36.00	100.00	63	XTCE040D00_	XTOB040DC1	XTAE040D00_040
22.00	41.00	100.00	80	XTCE050D00_	XTOB057DC1	XTAE065D00_057
30.00	55.00	100.00	100	XTCE065D00_	XTOB057DC1	XTAE065D00_057
37.00	68.00	100.00	125	XTCE080F00_ <sup>2)</sup>	XTOB070GC1 <sup>2)</sup>	XTAE080F00_070 <sup>2)</sup>
45.00	81.00	100.00	160	XTCE095F00_ <sup>2)</sup>	XTOB100GC1 <sup>2)</sup>	XTAE095F00_100 <sup>2)</sup>
55.00	99.00	100.00	200	XTCE115G00_ <sup>2)</sup>	XTOB100GC1 <sup>2)</sup>	XTAE115G00_100 <sup>2)</sup>
75.00	134.00	100.00	200	XTCE150G00_ <sup>2)</sup>	XTOB150GC1 <sup>2)</sup>	XTAE150G00_150 <sup>2)</sup>
90.00	161.00	100.00	250	XTCE185L22_	XTOB220LC1	XTAE185L22_220
110.00	196.00	100.00	315	XTCE225L22_	XTOB220LC1	XTAE225L22_220
132.00	231.00	100.00	400	XTCE250L22_	XTOB250LC1	XTAE250L22_250

<sup>1)</sup> Underscore ( ) indicates coil code required.

<sup>2)</sup> Contactor frames F and G to be released in June 2006. Contact Eaton for final Type 2 combinations.

## 500V Type 2 Coordination, Contactor and Overload Relay (Motor Starter) with Fused Disconnect

P (kW)	I <sub>e</sub> (A)	I <sub>q</sub> (kA)	Fuses Class gG/gL	Contactor Eaton list number <sup>1)</sup>	Overload Relay Eaton list number	Assembled Starter Eaton list number <sup>1)</sup>
0.12	0.33	100.00	2	XTCE007B10_	XTOBP40BC1	XTAE007B10_P40
0.18	0.48	100.00	2	XTCE007B10_	XTOBP60BC1	XTAE007B10_P60
0.25	0.70	100.00	2	XTCE007B10_	XTOB001BC1	XTAE007B10_001
0.37	0.90	100.00	2	XTCE007B10_	XTOB001BC1	XTAE007B10_001
0.55	1.20	100.00	4	XTCE007B10_	XTOB1P6BC1	XTAE007B10_1P6
0.75	1.50	100.00	4	XTCE007B10_	XTOB1P6BC1	XTAE007B10_1P6
1.10	2.10	100.00	6	XTCE007B10_	XTOB2P4BC1	XTAE007B10_2P4
1.50	2.90	100.00	6	XTCE007B10_	XTOB004BC1	XTAE007B10_004
2.20	4.00	100.00	10	XTCE007B10_	XTOB006BC1	XTAE007B10_006
3.00	5.30	100.00	16	XTCE009B10_	XTOB006BC1	XTAE009B10_006
4.00	6.80	100.00	16	XTCE009B10_	XTOB010BC1	XTAE009B10_010
5.50	9.00	100.00	20	XTCE012B10_	XTOB010BC1	XTAE012B10_010
7.50	12.10	100.00	25	XTCE018C10_	XTOB016CC1	XTAE018C10_016
11.00	17.40	100.00	32	XTCE025C10_	XTOB024CC1	XTAE025C10_024
15.00	23.40	100.00	50	XTCE040D00_	XTOB024DC1	XTAE040D00_024
18.50	28.90	100.00	50	XTCE040D00_	XTOB040DC1	XTAE040D00_040
22.00	33.00	100.00	63	XTCE050D00_	XTOB040DC1	XTAE050D00_040
30.00	44.00	100.00	80	XTCE065D00_	XTOB057DC1	XTAE065D00_057
37.00	54.00	100.00	100	XTCE080F00_ <sup>2)</sup>	XTOB070GC1 <sup>2)</sup>	XTAE080F00_070 <sup>2)</sup>
45.00	65.00	100.00	125	XTCE095F00_ <sup>2)</sup>	XTOB070GC1 <sup>2)</sup>	XTAE095F00_070 <sup>2)</sup>
55.00	79.00	100.00	160	XTCE115G00_ <sup>2)</sup>	XTOB100GC1 <sup>2)</sup>	XTAE115G00_100 <sup>2)</sup>
75.00	107.00	100.00	200	XTCE185L22_	XTOB125LC1	XTAE185L22_125
90.00	129.00	100.00	200	XTCE185L22_	XTOB125LC1	XTAE185L22_125
110.00	157.00	100.00	250	XTCE185L22_	XTOB160LC1	XTAE185L22_160
132.00	184.00	100.00	250	XTCE185L22_	XTOB220LC1	XTAE185L22_220
160.00	224.00	100.00	315	XTCE225L22_	XTOB250LC1	XTAE225L22_250

<sup>1)</sup> Underscore ( ) indicates coil code required.

<sup>2)</sup> Contactor frames F and G to be released in June 2006. Contact Eaton for final Type 2 combinations.

## 690V Type 2 Coordination, Contactor and Overload Relay (Motor Starter) with Fused Disconnect

P (kW)	I <sub>e</sub> (A)	I <sub>q</sub> (kA)	Fuses Class gG/gL	Contactor Eaton list number <sup>1)</sup>	Overload Relay Eaton list number	Assembled Starter Eaton list number <sup>1)</sup>
0.12	0.24	100.00	1	XTCE007B10_	XTOBP40BC1	XTAE007B10_P40
0.18	0.35	100.00	2	XTCE007B10_	XTOBP40BC1	XTAE007B10_P40
0.25	0.50	100.00	2	XTCE007B10_	XTOBP60BC1	XTAE007B10_P60
0.37	0.70	100.00	2	XTCE007B10_	XTOB001BC1	XTAE007B10_001
0.55	0.90	100.00	4	XTCE007B10_	XTOB001BC1	XTAE007B10_001
0.75	1.10	100.00	4	XTCE007B10_	XTOB1P6BC1	XTAE007B10_1P6
1.10	1.50	100.00	4	XTCE007B10_	XTOB1P6BC1	XTAE007B10_1P6
1.50	2.10	100.00	6	XTCE007B10_	XTOB2P4BC1	XTAE007B10_2P4
2.20	2.90	100.00	10	XTCE007B10_	XTOB004BC1	XTAE007B10_004
3.00	3.80	100.00	10	XTCE007B10_	XTOB004BC1	XTAE007B10_004
4.00	4.90	100.00	16	XTCE009B10_	XTOB006BC1	XTAE009B10_006
5.50	6.50	100.00	16	XTCE012B10_	XTOB010BC1	XTAE012B10_010
7.50	8.80	100.00	20	XTCE018C10_	XTOB010CC1	XTAE018C10_010
11.00	12.60	100.00	25	XTCE025C10_	XTOB016CC1	XTAE025C10_016
15.00	17.00	100.00	32	XTCE032C10_	XTOB024CC1	XTAE032C10_024
18.50	20.90	100.00	32	XTCE040D00_	XTOB024DC1	XTAE040D00_024
22.00	23.80	100.00	50	XTCE040D00_	XTOB040DC1	XTAE040D00_040
30.00	32.00	100.00	63	XTCE065D00_	XTOB040DC1	XTAE065D00_040
37.00	39.00	100.00	80	XTCE080F00_ <sup>2)</sup>	XTOB050GC1 <sup>2)</sup>	XTAE080F00_050 <sup>2)</sup>
45.00	47.00	100.00	80	XTCE080F00_ <sup>2)</sup>	XTOB050GC1 <sup>2)</sup>	XTAE080F00_050 <sup>2)</sup>
55.00	58.00	100.00	100	XTCE080F00_ <sup>2)</sup>	XTOB070GC1 <sup>2)</sup>	XTAE080F00_070 <sup>2)</sup>
75.00	78.00	100.00	160	XTCE095F00_ <sup>2)</sup>	XTOB100GC1 <sup>2)</sup>	XTAE095F00_100 <sup>2)</sup>
90.00	93.00	100.00	160	XTCE115G00_ <sup>2)</sup>	XTOB100GC1 <sup>2)</sup>	XTAE115G00_100 <sup>2)</sup>
110.00	114.00	100.00	200	XTCE185L22_	XTOB125LC1	XTAE185L22_125
132.00	134.00	100.00	250	XTCE185L22_	XTOB160LC1	XTAE185L22_160
160.00	162.00	100.00	250	XTCE185L22_	XTOB220LC1	XTAE185L22_220

<sup>1)</sup> Underscore ( \_ ) indicates coil code required.

<sup>2)</sup> Contactor frames F and G to be released in June 2006. Contact Eaton Corporation for final Type 2 combinations.

## 400/415V Contactor and Overload Relay (Motor Starter) with Circuit Breaker <sup>1)</sup>

P (kW)	I <sub>e</sub> (A)	I <sub>q</sub> (kA)	Circuit Breaker	Contactor Eaton list number <sup>2)</sup>	Overload Relay Eaton list number	Assembled Starter Eaton list number <sup>2)</sup>
0.12	0.41	15.00	HMCPE003A0C	XTCE018C10_	XTOBP60CC1	XTAE018C10_P60
0.18	0.60	15.00	HMCPE003A0C	XTCE018C10_	XTOB001CC1	XTAE018C10_001
0.25	0.80	15.00	HMCPE003A0C	XTCE018C10_	XTOB001CC1	XTAE018C10_001
0.37	1.10	15.00	HMCPE003A0C	XTCE018C10_	XTOB1P6CC1	XTAE018C10_1P6
0.55	1.50	15.00	HMCPE003A0C	XTCE018C10_	XTOB1P6CC1	XTAE018C10_1P6
0.75	1.90	15.00	HMCPE007C0C	XTCE018C10_	XTOB2P4CC1	XTAE018C10_2P4
1.10	2.60	15.00	HMCPE007C0C	XTCE018C10_	XTOB004CC1	XTAE018C10_004
1.50	3.60	15.00	HMCPE007C0C	XTCE018C10_	XTOB004CC1	XTAE018C10_004
2.20	5.00	15.00	HMCPE007C0C	XTCE018C10_	XTOB006CC1	XTAE018C10_006
3.00	6.60	15.00	HMCPE015E0C	XTCE018C10_	XTOB010CC1	XTAE018C10_010
4.00	8.50	15.00	HMCPE015E0C	XTCE018C10_	XTOB010CC1	XTAE018C10_010
5.50	11.30	15.00	HMCPE015E0C	XTCE018C10_	XTOB016CC1	XTAE018C10_016
7.50	16.00	15.00	HMCPE030H1C	XTCE018C10_	XTOB024CC1	XTAE032C10_024
11.00	21.70	15.00	HMCPE030H1C	XTCE025C10_	XTOB024CC1	XTAE032C10_024
15.00	29.30	15.00	HMCPE050K2C	XTCE032C10_	XTOB032CC1	XTAE032C10_032
18.50	36.00	15.00	HMCPE100R3C	XTCE040D00_	XTOB040DC1	XTAE040D00_040
22.00	41.00	15.00	HMCPE100R3C	XTCE050D00_	XTOB057DC1	XTAE065D00_057
30.00	55.00	15.00	HMCPE100R3C	XTCE065D00_	XTOB065DC1	XTAE065D00_065
37.00	68.00	50.00	HMCPEJ250D5L	XTCE080F00_ <sup>3)</sup>	XTOB070GC1 <sup>3)</sup>	XTAE080F00_070 <sup>3)</sup>
45.00	81.00	50.00	HMCPEJ250F5L	XTCE095F00_ <sup>3)</sup>	XTOB100GC1 <sup>3)</sup>	XTAE095F00_100 <sup>3)</sup>
55.00	99.00	50.00	HMCPEJ250G5L	XTCE115G00_ <sup>3)</sup>	XTOB125GC1 <sup>3)</sup>	XTAE115G00_125 <sup>3)</sup>
75.00	134.00	50.00	HMCPEJ250W5L	XTCE150G00_ <sup>3)</sup>	XTOB150GC1 <sup>3)</sup>	XTAE150G00_150 <sup>3)</sup>
90.00	161.00	50.00	HMCPEJ250W5L	XTCE185L22_	XTOB220LC1	XTAE185L22_220
110.00	196.00	50.00	HMCPL600N	XTCE300M22_	XTOT240C3S	XTAE300M22_240
132.00	231.00	50.00	HMCPL600R	XTCE300M22_	XTOT290C3S	XTAE300M22_290
160.00	279.00	50.00	HMCPL600X	XTCE300M22_	XTOT400C3S	XTAE300M22_400

<sup>1)</sup> All Type 2 circuit breaker combinations are pending KEMA certification.

<sup>2)</sup> Underscore (\_) indicates coil code required.

<sup>3)</sup> Contactor frames F and G to be released in June 2006. Contact Eaton for final Type 2 combinations.

## Master Coil Suffix Selection Table

Frame Size	Coil Voltage 50Hz	60Hz	DC	Suffix Code <sup>2)</sup>
<b>Frame A – B</b>				
	110V	120V		A
	220V	240V		B
	230V			F
	24V	24V		T
	415V	480V		C
	550V	600V		D
		208V		E
	190V	220V		G
	240V	277V		H
	380V	440V		L
	400V			N
		380V		P
	12V	12V		R
	24V			U
	42V	48V		W
	48V			Y
			120V	AD <sup>1)</sup>
			220V	BD <sup>1)</sup>
			12V	RD <sup>1)</sup>
			24V	TD <sup>1)</sup>
			48V	WD <sup>1)</sup>
<b>Frame C – F</b>				
	110V	120V		A
	220V	240V		B
	230V			F
	24V	24V		T
	415V	480V		C
	550V	600V		D
		208V		E
	190V	220V		G
	240V	277V		H
	380V	440V		L
	400V			N
		380V		P
	12V	12V		R
	24V			U
	42V	48V 60 Hz		W
	48V			Y
			110 – 130V	AD <sup>1)</sup>
			200 – 240V	BD <sup>1)</sup>
			12 – 14V	RD <sup>1)</sup>
			24 – 27V	TD <sup>1)</sup>
			48 – 60V	WD <sup>1)</sup>
<b>Frame G</b>				
	100 – 120V	100 – 120V		A
	190 – 240V	190 – 240V		B
	24V	24V		T
	480 – 500V	480 – 500V		C
	380 – 440V	380 – 440V		L
	42 – 48V	42 – 48V		W
			24 – 27V	TD <sup>1)</sup>
			110 – 130V	AD <sup>1)</sup>
			200 – 240V	BD <sup>1)</sup>
			48 – 60V	WD <sup>1)</sup>
<b>Frame L – N</b>				
	110 – 250V	110 – 250V	110 – 250V	A
	250 – 500V	250 – 500V		C
	48 – 110V	48 – 110V	48 – 110V	Y <sup>1)</sup>
			24 – 48V	TD <sup>1)</sup>
<b>Frame P – R</b>				
	220 – 250V	220 – 250V	250 – 500V	B

<sup>1)</sup> With DC operation: Integrated diode-resistor combination, coil rating 2.6W.

<sup>2)</sup> Add suffix in place of underscore (\_) to Eaton List number.



XTAE007B01_	38	XTCE032C10_	44	XTCEC10N22_	47
XTAE007B10_	38	XTCE040D00_	20	XTCEC10N22_	47
XTAE009B01_	38	XTCE040D00_	45	XTCEC14P22_	21
XTAE009B10_	38	XTCE040D00_	45	XTCEC20R22_	21
XTAE012B01_	38	XTCE040D00_	45	XTCERENARC185	34
XTAE012B10_	38	XTCE040D00_	45	XTCERENARC225	34
XTAE015B01_	38	XTCE040D10_	45	XTCERENARC250	34
XTAE015B10_	38	XTCE050D00_	20	XTCERENARC300	34
XTAE018C01_	38	XTCE050D00_	45	XTCERENARC400	34
XTAE018C10_	38	XTCE050D00_	45	XTCERENARC500	34
XTAE025C01_	38	XTCE050D10_	45	XTCERENARCILCA	33
XTAE025C10_	38	XTCE065D00_	20	XTCERENARCILCAD	33
XTAE032C01_	38	XTCE065D00_	45	XTCERENARCILCB	33
XTAE032C10_	38	XTCE065D00_	45	XTCERENARCILCBD	33
XTAE040D00_	38	XTCE065D10_	45	XTCERENARCILCC	33
XTAE050D00_	38	XTCE080F00_	20	XTCERENARCILCD	33
XTAE065D00_	38	XTCE080F00_	45	XTCERENARCILCE	33
XTAE080F00_	39	XTCE080F00_	45	XTCERENARCILCF	33
XTAE095F00_	39	XTCE080F00_	45	XTCERENARCILCG	33
XTAE115G00_	39	XTCE080F10_	45	XTCERENARCILCH	33
XTAE150G00_	39	XTCE095F00_	20	XTCERENARCILCL	33
XTAE185L22_	39	XTCE095F00_	45	XTCERENARCILCN	33
XTAE225L22_	39	XTCE095F10_	45	XTCERENARCILCP	33
XTAE250L22_	39	XTCE115G00_	20	XTCERENARCILCR	33
XTAE300M22_	39	XTCE115G00_	45	XTCERENARCILCRD	33
XTAE400M22_	39	XTCE115G00_	46	XTCERENARCILCT	33
XTAE500M22_	39	XTCE115G10_	45	XTCERENARCILCTD	33
XTAE580N22_	39	XTCE150G00_	20	XTCERENARCILCU	33
XTAE650N22_	39	XTCE150G00_	45	XTCERENARCILCW	33
XTAR007B21_	40	XTCE150G00_	46	XTCERENARCILCWD	33
XTAR009B21_	40	XTCE150G10_	45	XTCERENARCILCY	33
XTAR012B21_	40	XTCE185L00_	46	XTCERENARCILDA	33
XTAR018C21_	40	XTCE185L22_	20	XTCERENARCILDAD	33
XTAR025C21_	40	XTCE185L22_	46	XTCERENARCILDB	33
XTAR032C21_	40	XTCE185L22_	46	XTCERENARCILDBD	33
XTAR040D11_	40	XTCE185L22_	46	XTCERENARCILDC	33
XTAR050D11_	40	XTCE225L22_	20	XTCERENARCILDD	33
XTAR065D11_	40	XTCE225L22_	46	XTCERENARCILDE	33
XTAR115G11_	40	XTCE225L22_	46	XTCERENARCILDF	33
XTAR150G11_	40	XTCE250L00_	46	XTCERENARCILDG	33
XTCE007B01_	19	XTCE250L22_	20	XTCERENARCILDH	33
XTCE007B01_	44	XTCE250L22_	46	XTCERENARCILDL	33
XTCE007B01_	44	XTCE250L22_	46	XTCERENARCILDN	33
XTCE007B10_	19	XTCE300M00_	46	XTCERENARCILDP	33
XTCE007B10_	44	XTCE300M22_	21	XTCERENARCILDR	33
XTCE009B01_	19	XTCE300M22_	46	XTCERENARCILDRD	33
XTCE009B01_	44	XTCE300M22_	46	XTCERENARCILDT	33
XTCE009B01_	44	XTCE400M00_	47	XTCERENARCILDTD	33
XTCE009B10_	19	XTCE400M00_	47	XTCERENARCILDU	33
XTCE009B10_	44	XTCE400M22_	21	XTCERENARCILDW	33
XTCE012B01_	19	XTCE400M22_	46	XTCERENARCILDWD	33
XTCE012B01_	44	XTCE400M22_	46	XTCERENARCILDY	33
XTCE012B01_	44	XTCE500M22_	21	XTCERENARCILFA	33
XTCE012B10_	19	XTCE500M22_	46	XTCERENARCILFAD	33
XTCE012B10_	44	XTCE500M22_	46	XTCERENARCILFB	33
XTCE015B01_	19	XTCE580N00_	47	XTCERENARCILFBD	33
XTCE015B10_	19	XTCE580N00_	47	XTCERENARCILFC	33
XTCE018C01_	19	XTCE580N22_	21	XTCERENARCILFD	33
XTCE018C01_	44	XTCE580N22_	47	XTCERENARCILFE	33
XTCE018C01_	44	XTCE580N22_	47	XTCERENARCILFF	33
XTCE018C10_	19	XTCE650N00_	47	XTCERENARCILFG	33
XTCE018C10_	44	XTCE650N22_	21	XTCERENARCILFH	33
XTCE025C01_	19	XTCE650N22_	47	XTCERENARCILFL	33
XTCE025C01_	44	XTCE650N22_	47	XTCERENARCILFN	33
XTCE025C01_	44	XTCE750N22_	21	XTCERENARCILFP	33
XTCE025C10_	19	XTCE750N22_	47	XTCERENARCILFR	33
XTCE025C10_	44	XTCE750N22_	47	XTCERENARCILFT	33
XTCE032C01_	19	XTCE820N22_	21	XTCERENARCILFTD	33
XTCE032C01_	44	XTCE820N22_	47	XTCERENARCILFU	33
XTCE032C01_	44	XTCE820N22_	47	XTCERENARCILFW	33
XTCE032C10_	19	XTCEC10N22_	21	XTCERENARCILFWD	33



XTCEXVIGW	29	XTMCXFAL11	10	XTOB 125 LC1	50
XTCEXVSBA	28	XTMCXFAL11	15	XTOB 150 GC1	49
XTCEXVSBB	28	XTMCXFAL22	10	XTOB 150 GC1S	50
XTCEXVSBC	28	XTMCXFAL22	15	XTOB 160 LC1	50
XTCEXVSBW	28	XTMCXFC02	14	XTOB 1P6 BC1	48
XTCEXVSCA	28	XTMCXFC02	15	XTOB 1P6 CC1	49
XTCEXVSCB	28	XTMCXFC22	14	XTOB 220 LC1	50
XTCEXVSCC	28	XTMCXFC22	15	XTOB 250 LC1	50
XTCEXVSCW	28	XTMCXFC22	15	XTOB 2P4 BC1	48
XTCEXVSFA	28	XTMCXFCLC22	10	XTOB 2P4 CC1	49
XTCEXVSFB	28	XTMCXFCLC22	15	XTOB P16 BC1	48
XTCEXVSFC	28	XTMCXFD11	15	XTOB P16 CC1	49
XTCEXVSFW	28	XTMCXFD11	15	XTOB P24 BC1	48
XTCEXVSLBB	28	XTMCXML	17	XTOB P24 CC1	49
XTCEXVSLBW	28	XTMCXPLK	17	XTOB P40 BC1	48
XTCEXVSLCB	28	XTMCXRL	17	XTOB P40 CC1	49
XTCEXVSLCW	28	XTMCXRSA	16	XTOB P60 BC1	48
XTCEXVSLFB	28	XTMCXRSB	16	XTOB P60 CC1	49
XTCEXVSLFW	28	XTMCXRSCA	16	XTOB...BC1	44
XTCF020B00	22	XTMCXRSCB	16	XTOB...BC1	44
XTCR007B21	23	XTMCXRSCW	16	XTOB...BC1	44
XTCR009B21	23	XTMCXRSW	16	XTOB...CC1	44
XTCR012B21	23	XTMCXSDB	16	XTOB...CC1	44
XTCR018C21	23	XTMCXSDL	16	XTOB...CC1	44
XTCR025C21	23	XTMCXSHROUD	17	XTOB...DC1	45
XTCR032C21	23	XTMCXVSA	16	XTOB...DC1	45
XTCR040D11	23	XTMCXVSB	16	XTOB...DC1	45
XTCR050D11	23	XTMCXVSCA	16	XTOB...FC1	45
XTCR065D11	23	XTMCXVSCB	16	XTOB...FC1	45
XTCR080F11	24	XTMCXVSCW	16	XTOB...GC1	45
XTCR095F11	24	XTMCXVSN	16	XTOB...GC1	45
XTCR115G11	24	XTMCXVSW	16	XTOB...LC1	46
XTCR150G11	24	XTMF9A00	13	XTOB...LC1	46
XTMC6A01	13	XTMR6A21	13	XTOB...LC1	46
XTMC6A10	13	XTMR9A21	13	XTOB001BC1	35
XTMC9A01	13	XTMT6A30S11B	12	XTOB001CC1	35
XTMC9A01	14	XTMT6A60H11B	12	XTOB004BC1	35
XTMC9A10	14	XTMT6A60H70B	12	XTOB004CC1	35
XTMC9A10	14	XTMXCFAC22	10	XTOB006BC1	35
XTMC9A10	13	XTMXCFAC22	15	XTOB006CC1	35
XTMCC6A0	13	XTOB 001 BC1	48	XTOB010BC1	35
XTMCC6A1	13	XTOB 001 CC1	49	XTOB010CC1	35
XTMCC9A0	13	XTOB 004 BC1	48	XTOB010DC1	35
XTMCC9A1	13	XTOB 004 CC1	49	XTOB012BC1	35
XTMCXCN	17	XTOB 006 BC1	48	XTOB016BC1	35
XTMCXFA02	10	XTOB 006 CC1	49	XTOB016CC1	35
XTMCXFA02	15	XTOB 010 BC1	48	XTOB016DC1	35
XTMCXFA04	10	XTOB 010 CC1	49	XTOB024CC1	35
XTMCXFA04	15	XTOB 010 DC1	49	XTOB024DC1	35
XTMCXFA11	10	XTOB 012 BC1	48	XTOB032CC1	35
XTMCXFA11	15	XTOB 016 BC1	48	XTOB035GC1	36
XTMCXFA13	10	XTOB 016 CC1	49	XTOB035GC1S	36
XTMCXFA13	15	XTOB 016 DC1	49	XTOB040DC1	35
XTMCXFA20	10	XTOB 024 CC1	49	XTOB050GC1	36
XTMCXFA20	15	XTOB 024 DC1	49	XTOB050GC1S	36
XTMCXFA22	10	XTOB 032 CC1	49	XTOB057DC1	35
XTMCXFA22	15	XTOB 035 GC1	49	XTOB065DC1	35
XTMCXFA31	10	XTOB 035 GC1S	50	XTOB070GC1	36
XTMCXFA31	15	XTOB 040 DC1	49	XTOB070GC1S	36
XTMCXFA40	10	XTOB 050 GC1	49	XTOB070LC1	36
XTMCXFA40	15	XTOB 050 GC1S	50	XTOB100GC1	36
XTMCXFAC04	10	XTOB 057 DC1	49	XTOB100GC1S	36
XTMCXFAC04	15	XTOB 065 DC1	49	XTOB100LC1	36
XTMCXFAC11	10	XTOB 070 GC1	49	XTOB125GC1	36
XTMCXFAC11	15	XTOB 070 GC1S	50	XTOB125GC1S	36
XTMCXFAC13	10	XTOB 070 LC1	50	XTOB125LC1	36
XTMCXFAC13	15	XTOB 100 GC1	49	XTOB150GC1	36
XTMCXFAC31	10	XTOB 100 GC1S	50	XTOB150GC1S	36
XTMCXFAC31	15	XTOB 100 LC1	50	XTOB160LC1	36
XTMCXFAC40	10	XTOB 125 GC1	49	XTOB1P6BC1	35
XTMCXFAC40	15	XTOB 125 GC1S	50	XTOB1P6CC1	35

XTOB220LC1	36	XTPAXENC555RY	62	XTPAXTPCD	66
XTOB250LC1	36	XTPAXENC65B	62	XTPAXTPCPB	66
XTOB2P4BC1	35	XTPAXENC65RY	62	XTPAXTPCRB	66
XTOB2P4CC1	35	XTPAXENCSD65B	62	XTPAXTPCRC	66
XTOBP16BC1	35	XTPAXENCSD65RY	62	XTPAXTPCRD	66
XTOBP16CC1	35	XTPAXENCSEM55B	62	XTPAXTPCRPB	66
XTOBP24BC1	35	XTPAXENCSEM55RY	62	XTPAXUTS	60
XTOBP24CC1	35	XTPAXENCSEM65B	62	XTPAXUTSD	60
XTOBP40BC1	35	XTPAXENCSEM65RY	62	XTPAXUVR110V50H	58
XTOBP40CC1	35	XTPAXFA10	56	XTPAXUVR120V60H	58
XTOBP60BC1	35	XTPAXFA11	56	XTPAXUVR208V60H	58
XTOBP60CC1	35	XTPAXFAC01	56	XTPAXUVR220V50H	58
XTOBXDINC	37	XTPAXFAC10	56	XTPAXUVR230V50H	58
XTOBXDIND	37	XTPAXFAEM20	57	XTPAXUVR240V50H	58
XTOBXTSCL	37	XTPAXILGB	60	XTPAXUVR240V60H	58
XTOBXTSL	37	XTPAXILGC	60	XTPAXUVR24V50H	58
XTOM001AC1	18	XTPAXILGN	60	XTPAXUVR24V60H	58
XTOM004AC1	18	XTPAXILRB	60	XTPAXUVR380V50H	58
XTOM006AC1	18	XTPAXILRC	60	XTPAXUVR400V50H	58
XTOM009AC1	18	XTPAXILRN	60	XTPAXUVR415V50H	58
XTOM012AC1	18	XTPAXILWB	60	XTPAXUVR440V60H	58
XTOM1P6AC1	18	XTPAXILWC	60	XTPAXUVR480V60H	58
XTOM2P4AC1	18	XTPAXILWN	60	XTPAXUVR48V50H	58
XTOMP16AC1	18	XTPAXIT	61	XTPAXUVR60V50H	58
XTOMP24AC1	18	XTPAXMCG20	59	XTPAXUVR60V50H	58
XTOMP40AC1	18	XTPAXMCG25	59	XTPB001BC1	51
XTOMP60AC1	18	XTPAXMCG32	59	XTPB004BC1	51
XTOT 063 C3S	50	XTPAXMCG32G	59	XTPB010BC1	51
XTOT 090 C3S	50	XTPAXMDG20	59	XTPB012BC1	51
XTOT 125 C3S	50	XTPAXMDG25	59	XTPB016BC1	51
XTOT 160 C3S	50	XTPAXMDG32	59	XTPB020BC1	51
XTOT 240 C3S	50	XTPAXNT	63	XTPB025BC1	51
XTOT 290 C3S	50	XTPAXPL1	63	XTPB1P6BC1	51
XTOT 400 C3S	50	XTPAXPL2	63	XTPB2P5BC1	51
XTOT 540 C3S	50	XTPAXPL3	63	XTPB6P3BC1	51
XTOT...C3S	46	XTPAXRHM165B	59	XTPBP16BC1	51
XTOT...C3S	46	XTPAXRHM265RY	59	XTPBP25BC1	51
XTOT...C3S	46	XTPAXRHM365B	59	XTPBP40BC1	51
XTOT...C3S	47	XTPAXSA11	56	XTPBP63BC1	51
XTOT...C3S	47	XTPAXSA12	56	XTPBXENCF40	61
XTOT...C3S	47	XTPAXSA21	56	XTPBXENCF55	61
XTOT...C3S	47	XTPAXSAC11	56	XTPBXENCF55	61
XTOT...C3S	47	XTPAXSATR02	57	XTPBXENCSEK55	61
XTOT063C3S	36	XTPAXSATR20	57	XTPBXENCSES55	61
XTOT090C3S	36	XTPAXSR110V50H	58	XTPBXENCSEK55	61
XTOT125C3S	36	XTPAXSR110VDC	58	XTPBXENCSEK55	61
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XTOT540C3S	36	XTPAXSR220VDC	58	XTPBXENCSEK55	61
XTPAXCL	59	XTPAXSR230V50H	58	XTPBXENCSEK55	61
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XTPAXCLKB5	60	XTPAXSR48V50H	58	XTPBXENCSEK55	61
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XTPAXCLKC4	60	XTPAXSR60VDC	58	XTPBXENCSEK55	61
XTPAXENCF40	63	XTPAXSRC230V50H	58	XTPBXENCSEK55	61
XTPAXENCF55B	63	XTPAXSRC24VDC	58	XTPBXENCSEK55	61
XTPAXENCF55RY	63	XTPAXSW	60	XTPBXENCSEK55	61
XTPAXENC540	62	XTPAXTEA	59	XTPBXENCSEK55	61
XTPAXENC541	62	XTPAXTPCB	66	XTPBXENCSEK55	61
XTPAXENC555B	62	XTPAXTPCC	66	XTPBXENCSEK55	61

XTPR016BC1	52	XTSC012BB_	64
XTPR016DC1	52	XTSC016BC_	65
XTPR020BC1	52	XTSC016DC_	65
XTPR025BC1	52	XTSC020BC_	65
XTPR025DC1	52	XTSC025BC_	65
XTPR032BC1	52	XTSC025DC_	65
XTPR032DC1	52	XTSC032BC_	65
XTPR040DC1	52	XTSC032DC_	65
XTPR050DC1	52	XTSC040DD_	65
XTPR058DC1	52	XTSC050DD_	65
XTPR063DC1	52	XTSC058DD_	65
XTPR1P6BC1	52	XTSC063DD_	65
XTPR2P5BC1	52	XTSC1P6BB_	64
XTPR6P3BC1	52	XTSC2P5BB_	64
XTPRC001BC1	53	XTSC6P3BB_	64
XTPRC001BC1	54	XTSCP25BB_	64
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XTPRC004BC1	54	XTSCP63BB_	64
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XTPRCP63BC1	53	XTSRP63BB_	67
XTPRCP63BC1	54	XTTR6A60S51B	12
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XTPRP25BC1	52	XTTR6A60S51B	44
XTPRP40BC1	52	XTTR6A60S51B	44
XTPRP63BC1	52	XTTR6A60S51B	44
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XTPRSCP40BC1	53	XTTR6A60S51B	46
XTPRSCP63BC1	53	XTTR6A60S51B	46
XTRE10B22_	9	XTTR6A60S51B	46
XTRE10B31_	9	XTTR6A60S51B	46
XTRE10B40_	9	XTTR6A60S51B	46
XTREC10B22_	9	XTTR6A60S51B	46
XTREC10B31_	9	XTTR6A60S51B	47
XTREC10B40_	9	XTTR6A60S51B	47
XTRM10A22_	9	XTTR6A60S51B	47
XTRM10A31_	9	XTTR6A60S51B	47
XTRM10A40_	9	XTTR6A60S51B	47
XTRMC10A22_	9		
XTRMC10A31_	9		
XTRMC10A40_	9		
XTSC001BB_	64		
XTSC004BB_	64		
XTSC010BB_	64		





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