

2009/2010 OEM Product Guide

Circuit & Motor Protection
Motor Control
Industrial Logic

Machine Display & Interface
Sensors & Limit Switches
Machine Integration

Comprehensive Solutions

EATON

Powering Business Worldwide

Protect

The Most Compact & Globally Certified
Circuit Protection Solutions in the Market

Control

The Smallest Footprint Motor Control Products
with the Highest Power vs. Performance

Automate

The Broadest Line of Logic &
Process Control Components in the Industry

Interface

More Ways to Put a Flexible Face
on Your Machine

Sense

Industrial Grade Sensing with
Instrumentation Performance

Integrate

Tie it All Together with Buses,
Blocks & Power Supplies



Every piece of the puzzle for comprehensive protection and control.

Through continuing investments, Eaton's electrical business has grown into a world-class provider of power protection and control products. Unmatched breadth of product and depth of support are no less than you deserve. Meeting your specific needs means offering a complete line of motor protection, control and logic devices — all the latest in technology. Each piece of our portfolio comes together to give you the edge when it comes to customer-centric solutions.

A strong OEM product offering.

To meet your most demanding application needs, Eaton continues to expand its offering of OEM-focused UL® and IEC power protection and control components. To address your most common needs, Eaton offers globally-rated circuit and motor protection products, including everything from miniature and industrial circuit breakers to overload relays and other motor protection devices. With the most comprehensive array of adjustable frequency drives, soft starters, and NEMA® and IEC contactors, Eaton meets and exceeds motor control requirements for applications worldwide. Our broad selection of industrial logic products is unmatched in the industry — from process controllers to display and interface products — our solutions integrate seamlessly with one another, and with dozens of competitive products. What's more, our full array of pushbuttons, sensors and terminal blocks are the most configurable of any in the industry. Eaton's complete offering of feature-rich product solutions enables you to maximize the efficiency of your processes, from protection and control to wiring, termination and display.

The support you need, when you need it.

Having a comprehensive portfolio of components for machinery applications is only part of the story; expanding and deepening technical and commercial support services ensures that Eaton is able to assist with both technical and commercial issues quickly and efficiently.

Parameters shift. Specs get tweaked. Deadlines grow bolder. From application assistance to purchase order receipt to post order technical support, EatonCare OEM Support manages orders with the care and confidentiality you depend on.

To reach an EatonCare representative for customer and sales support, please contact us at **877 ETN CARE (877 386 2273)**.

The ultimate goal is to offer you a high-quality, differentiated experience — backed with solid Eaton products and support. Quite simply, Eaton offers every piece of the puzzle — as a supplier you can trust.

How to Use This Product Guide

Product tabs and categories

This product guide contains the following product groupings:

Tab 1 — Circuit & Motor Protection

- Fuse Blocks & Fuse Holders
- Circuit Breakers
- Manual Motor Protectors & Controllers
- Rotary Disconnect Switches
- Overload Relays

Tab 2 — Motor Control

- Contactors
- Soft Starters
- Drives

Tab 3 — Industrial Logic

- Preset Counters
- Ratemeters
- Hour Meters
- Totalizers
- Encoders
- Relays
- Programmable Logic Controllers

Tab 4 — Machine Display & Interface

- Pushbuttons & Pilot Devices
- Stacklights
- Panel Meters
- Operator Interfaces & Programming Software

Tab 5 — Sensors & Limit Switches

- Limit Switches
- Photoelectric Sensors
- Inductive Sensors
- Connectivity

Tab 6 — Machine Integration

- Modular Bus System for Hydraulic Magnetic Circuit Breakers
- General Purpose & Industrial Control Transformers
- Power Supplies
- Terminal Blocks & Accessories

Locating a product in this product guide

There are two primary methods to locate a product in this guide:

1. By product family:

If you already know the product family you need, you can find it by turning to the first page of the appropriate Tab, where you will find a table of contents for locating the appropriate product family. For example, to find the M-Max drive, you would go to Tab 2, which begins on page 71. You are then shown that the M-Max product family begins on page 112.

2. If you are not sure of the product you need:

First, determine the category of the product you require (refer to the product categories list at left). Each product category includes a Product Overview table on the second page (example shown at right) that allows you to easily compare specific features of each family to narrow your search down to one or more types. A page reference will then direct you to detailed information, so you can select the specific model you need. For application assistance, call 866-ETN CARE (386-2273).

The main Table of Contents on the first page of this product guide shows all of the Tabs, as well as an overview of the product categories contained in each.

How product information is presented

This product guide has been designed for ease of use. It presents detailed information for a wide variety of products in a consistent manner. Products are arranged as follows:

A. Product Categories:

A product category is a group of products that share common functions (for example, Pushbuttons & Pilot Devices, Limit Switches, Power Supplies, etc.). Several product categories are combined to make a Tab. Each product category is made up of one or more product families.

B. Product Families:

A product family is a line of products within a product category (for example, the XT IEC Contactor family is within the Contactors product category in Tab 2). The first page of a typical product family is shown at right. This page provides a great deal of information concerning product features and selection.

Circuit & Motor Protection
Overload Relays
PRODUCT OVERVIEW

Overload Relays Product Overview

Overload Relay	XT IEC Miniature Overload Relay	XT IEC Thermal Overload Relay	CSB Compact Thermal Relay	Mini Ingot Overload Relay
Page	Page 67	Page 67	Page 67	Page 68
Motor Type	General 0-Motor	Thermal 0-Motor	Electronic	Electronic
Direct Connect to Motor	No, NTC	No, NTC	No, NTC	No, NTC
Current Motor	No, Motor	No, Motor	No	No
Full Load	0.1 - 10A	0.1 - 100A	0.1 - 100A	0.1 - 100A with 2P
Full Motor Motor	Class 1.0	Class 1.0	0.1	0.1
Motor Overload Protection	No	Yes	No	Yes
Electronic Protection	...	...	Yes	Yes
Supply Protection	...	...	Yes	Yes
Control Phase Loss Protection	...	...	Yes	Yes
Control Phase Imbalance Protection	...	...	Yes	Yes
Tri Class	ISA	ISA	Reference 1: 10, 20, 30	1 - 3
Reset Type	Manual/Manual	Manual/Manual	Automatic/Manual	Automatic/Manual
Communication with IO	...	...	...	Yes (Modbus, Profibus, RS485)
Alarm Status	...	...	...	Yes (Modbus, Profibus, RS485)
Control Panel	...	...	...	Yes (Modbus, RS485)
Alarm No Trip	...	...	...	Yes (Modbus, RS485)
Alarm	...	...	Yes	Yes (Modbus)
Programmable Reset Times	...	...	...	Yes
Programmable Reset Delays	...	...	...	Yes
Current Monitoring	...	...	...	Yes
Voltage Monitoring	...	...	...	Yes
Phase Monitoring	...	...	...	Yes
Thermal Capacity Monitoring	...	...	...	Yes
Motor No-Start Monitoring	...	...	...	Yes

Product Overview Table

- This area shows a representative product photo, the product family name and the page reference.
- This area provides applicable product information for a quick comparison to help you narrow down your search.
- Once you select a product, proceed to the page indicated in the chart for specific product details and selection (see below for information on product pages).

Circuit & Motor Protection
Overload Relays
CATALOG SELECTION / PRODUCT SELECTION

4 XT IEC Miniature Overload Relay - Catalog Numbering System

5 XT IEC Miniature Overload Relay

- Trip Class: ISA
- Ambient temperature compensated: 0° to 50°C (32° to 122°F)
- Selection manual / automatic reset
- TMO-TMC auxiliary contact as standard
- Direct connect with XTMC contactors

6

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8 Mini Overload Relay (0.1)

Overload Relay	Current Rating	Current Rating (2P)	Current Rating (3P)	Current Rating (4P)	Current Rating (5P)	Current Rating (6P)	Current Rating (7P)	Current Rating (8P)	Current Rating (9P)	Current Rating (10P)	Current Rating (11P)	Current Rating (12P)	Current Rating (13P)	Current Rating (14P)	Current Rating (15P)	Current Rating (16P)	Current Rating (17P)	Current Rating (18P)	Current Rating (19P)	Current Rating (20P)
0.1 - 0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A	0.1A
0.1 - 0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A
0.1 - 0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A
0.1 - 0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A	0.4A
0.1 - 0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A	0.5A
0.1 - 0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A	0.6A
0.1 - 0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A	0.7A
0.1 - 0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A	0.8A
0.1 - 0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A	0.9A
0.1 - 1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A	1.0A

9 For our complete product offering, see the Control Products Catalog (CAMP1000-01).

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Product Family Page

- Tab Name
- Product Category Name
- Page Description Name
- Product Family Catalog Numbering System (shows the breakdown of the catalog number to better understand product offering) Note that in some cases this system can be found on the preceding page
- Product Family Name
- Key Product Family Features
- Representative Product Photograph
- Product Selection Table
- The reference to the catalog where complete product selection, technical information, drawings and other specifications for the product can be found.
- Page Number

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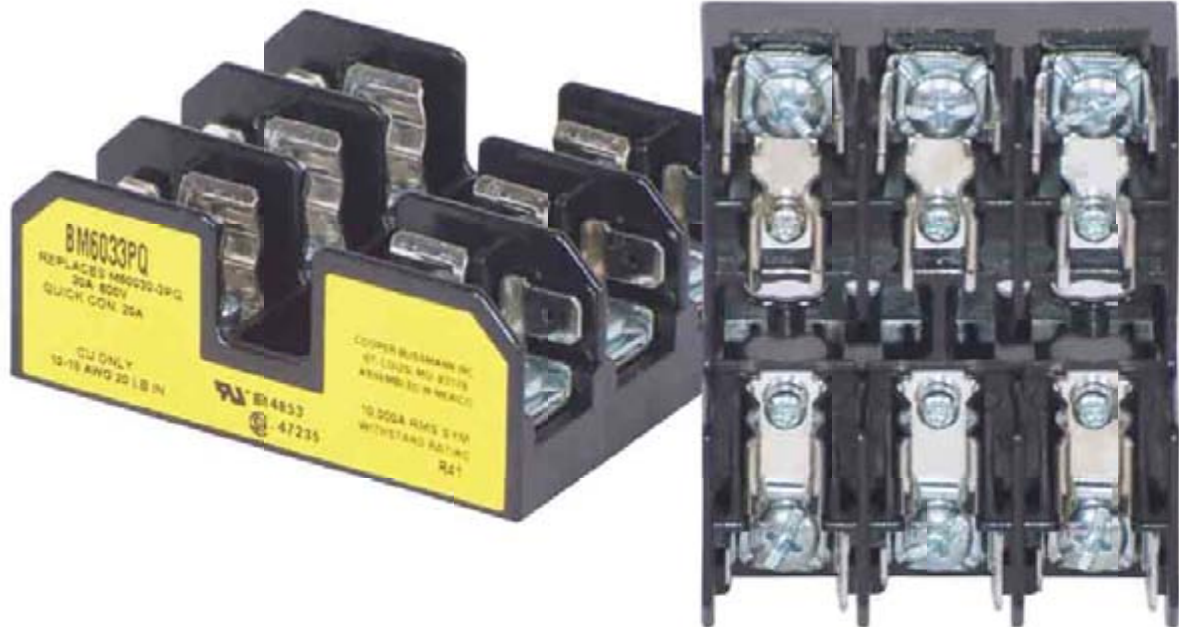
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Circuit & Motor Protection

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Higher AIC, Less Space



EATON

Powering Business Worldwide

- Secure higher AIC with these space-saving solutions for circuit protection
- Interlocking DIN mount fuse blocks provide multiple poles with one part
- Improper fuse rejection feature prevents insertion of lower interruption fuses

Circuit & Motor Protection

Fuse Blocks & Fuse Holders

PRODUCT OVERVIEW

Fuse Blocks & Fuse Holders Product Overview

	
Description	C350
Page	Page 4
Number of Poles	Up to 3
Mounting	35 mm Flat or 32 mm Asymmetrical DIN-Rail (with optional adapter)
Terminal Ratings	600V, 30A
Housing Construction	Thermoplastic UL 94V0 Flammability Rating
Clip / Terminal Construction	Tin-Plated Copper Alloy
Screw / Pressure Plate Construction	Zinc-Plated Steel
Certifications	UL, CSA
Dielectric Strength	1200V

Circuit & Motor Protection

Fuse Blocks & Fuse Holders

PRODUCT SELECTION

C350 Series Fuse Blocks & Fuse Holders

- Space-saving design
- Rated 600V, 30A
- UL approved for motor loads



Fuse Blocks & Fuse Holders

Wire Termination	No. of Poles	250V				600V			
		30A		60A		30A		60A	
		Catalog Number	Carton Qty.	Catalog Number	Carton Qty.	Catalog Number	Carton Qty.	Catalog Number	Carton Qty.

Class H Fuse Holders

Single Collar (Box Lug) — Sized to Ampere Rating	1	W231HA	10	W261HA	10	W631HA	10	W661HA	1
	2	W232HA	5	W262HA	5	W632HA	5	W662HA	1
	3	W233HA	5	W263HA	5	W633HA	1	W663HA	2

Class M Fuse Holders

Combination of Double Quick-Connect, 20A Max., and Binding Head Screw, #10 Max., Cu/Al	1	—	—	—	—	WM631F	10	—	—
	2	—	—	—	—	WM632F	8	—	—
	3	—	—	—	—	WM633F	6	—	—
Combination of Double Quick-Connect, 20A Max., and Pressure Plate Screw, #10 Max., Cu Only	1	—	—	—	—	WM631G	10	—	—
	2	—	—	—	—	WM632G	8	—	—
	3	—	—	—	—	WM633G	6	—	—

Class R Fuse Holders

Single Collar (Box Lug) — Sized to Ampere Rating	1	WR231HA	10	—	—	WR631HA	10	—	—
	2	—	—	—	—	WR632HA	5	—	—
	3	WR233HA	5	WR263HA	1	WR633HA	5	WR663HA	5
Combination of Double Quick-Connect, 20A Max., and Binding Head Screw, #10 Max., Cu/Al	1	—	—	—	—	—	—	—	—
	2	—	—	—	—	WMR632F	1	—	—
	3	—	—	—	—	WMR633F	6	—	—
Combination of Double Quick-Connect, 20A Max., and Pressure Plate Screw, #10 Max., Cu Only	1	—	—	—	—	WMR631G	10	—	—
	3	—	—	—	—	WMR633G	6	—	—

Class R Fuse Holder, Type WRR Control Transformer Fuse Block

Combination of Double Quick-Connect, 20A Max., and Pressure Plate Screw, #14 – #10 Cu Only	3	—	—	—	—	WRR633G	6	—	—
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Smaller Size, Greater Power



Powering Business Worldwide




- High interruption power breakers for high performance equipment
- Compact and globally certified molded case circuit breakers for main feeds
- Broadest line of industrial miniature circuit breakers for branch applications
- AC/DC hydraulic magnetic circuit breakers for extreme environmental conditions
- Broadest set of SCCR combinations ratings listed under UL 508A

Circuit & Motor Protection

Circuit Breakers

PRODUCT OVERVIEW

Circuit Breakers Product Overview

					
Description	Universal Molded Case Circuit Breaker		Series G Molded Case Circuit Breaker		QUICKLAG Type QC Miniature Circuit Breaker
Page	Page 9		Page 12		Page 18
General Applications	Line protection — feeder and branch thermal-magnetic trip unit.		Line protection — molded case switch, motor circuit protection (combination tested with Eaton starters and contactors) thermal-magnetic and electronic trip units.		Used to provide branch circuit protection in cable-in/out panel or DIN-Rail mount applications.
Maximum Current Rating	400A		630A		100A
Maximum Voltage — ac	480/277V ac		690V ac		240V ac
Maximum Voltage — dc	—		125/250V dc		80V dc
Poles	1, 2, 3		1, 2, 3, 4		QC = 1, 2, 3, 4 QCD = 1, 2, 3 QCR/QCF = 1, 2, 3
Approvals	UL 489 IEC 60947-2 CE CSA		UL 489 IEC 60947-2 CE CSA KEMA-KEUR CCC		UL 489 CSA 22.2
Max. Interrupting Capacities (see individual catalogs for limitations and back-up protection requirements)	@ 240V G = 25 kA (480/277) F = 25 kA J = 25 kA K = 25 kA	@ 480V G = 14 kA (480/277) F = 18 kA J = 20 kA K = 20 kA	@ 240V E = 200 kA J = 200 kA L = 200 kA	@ 480V E = 100 kA J = 200 kA L = 200 kA	65 kA @ 240V ac 5 kA @ 80V dc




Environmental Data

Humidity	—	—	—
Shock	—	—	—
Vibration	—	—	—
Operating Temperature	-20°C to +70°C (-4°F to +158°F)	-20°C to +70°C (-4°F to +158°F)	40°C (104°F)
Dielectric Strength	8 kV	8 kV	1960V ac (acc. to UL 489)
Insulation Resistance	—	—	—
Endurance / Life	250A: 10,000 Operations 400A: 8,000 Operations	250A: 10,000 Operations 630A: 8,000 Operations	>10,000 Operations
Approximate Weight	G 3-Pole – 2.10 lbs (0.95 kg) F 3-Pole – 4.5 lbs (2.0 kg) J 3-Pole – 12.50 lbs (5.7 kg) K 3-Pole – 11.50 lbs (5.2 kg)	E 3-Pole – 2.88 lbs (1.04 kg) J 3-Pole – 5.06 lbs (2.30 kg) L 3-Pole – 12.36 lbs (5.61 kg)	QC 1-Pole – 0.36 lbs (162.8 g) QC 2-Pole – 0.61 lbs (274.9 g) QC 3-Pole – 1.14 lbs (518.3 g) QCD 1-Pole – 0.43 lbs (195.3 g) QCD 2-Pole – 0.89 lbs (401.9 g) QCD 3-Pole – 1.34 lbs (605.6 g) QCR 1-Pole – 0.22 lbs (97.9 g) QCR 2-Pole – 0.48 lbs (215.8 g) QCR 3-Pole – 0.70 lbs (315.6 g) QCF 1-Pole – 0.24 lbs (109.9 g) QCF 2-Pole – 0.50 lbs (225.2 g) QCF 3-Pole – 0.74 lbs (335.1 g)
Mounting Configuration	Backpan, DIN-Rail (G)	Backpan, Plug-In Adapter, 35 mm DIN-Rail (E)	Panel Mount, Front Mount, 35 mm DIN-Rail Mountable
For more detailed information, see Distribution Products Catalog, CA08101001E.	Tab 12	Tab 12	Tab 11

Circuit & Motor Protection

Circuit Breakers PRODUCT OVERVIEW

Circuit Breakers Product Overview

			
Description	WMZT DIN-Rail UL 489 Miniature Circuit Breaker	WMS Supplementary Protectors	SPHM Hydraulic Magnetic Circuit Breaker
Page	Page 25	Page 26	Page 29
General Applications	Used to provide branch circuit protection in cable-in / out DIN-Rail mount applications.	Used to provide overcurrent protection where branch protection (for example UL 489 MCCB) is already provided or not required. Replacement for fuses used as supplementary protectors.	Replacement for fuses used as supplementary protectors.
Maximum Current Rating	40A	60A	63A
Maximum Voltage — ac	480/277V ac (240/415V ac IEC)	480/277V ac	480V ac
Maximum Voltage — dc	48V dc	65V ac 1-Pole 130V ac 2-Pole	80V dc
Poles	1, 2, 3	1, 2, 3	1, 2, 3, 4
Approvals	UL 489 CE; IEC / EN 60947-2 CSA 22.2	UL 1077 CE; IEC / EN 60947-2; IEC/EN 60898 CSA 22.2 235	UL 1077 CE; EN 60947-2 CSA 22.2
Max. Interrupting Capacities (see individual catalogs for limitations and back-up protection requirements)	10 kA UL / CSA; 15 kA IEC / EN 60947-2	IEC 240/415V 10 kA UL/CSA 120V 10 kA 240V 10 kA 277V 6 kA 480V 6 kA	277V ac – 5000A 480V ac – 3000A 80V dc – 5000A

Environmental Data





Humidity	acc. IEC 60068-2 (25.. 55°C / 77...131°F, 90...95% RH)	—	IEC 68-2-3 and MIL-STD 202 Method 103 Test A
Shock	acc. IEC 60068-2-27 (40 g Half Sine Wave for 10 ms – 3 axes) (15 g Half Sine Wave for 20 ms – 3 axes)	—	IEC 68-2-27 MIL-STD 202, Method 213 Cond 1 (50 G, 6 ms)
Vibration	acc. to IEC 60068-2-6 5...100 Hz / 1.0 mm / 0.7 g (3 axes)	—	IEC 68-2-6 MIL-STD 202, Method 204 (10 to 500 Hz, 10 G Amplitude .06")
Operating Temperature	30°C / 86°F	—	-40°C to +85°C (-40°F to +185°F)
Dielectric Strength	1960V ac (acc. to UL 489)	—	3750V ac — 50/60 Hz
Insulation Resistance	100 MΩ at 500V dc	—	100 MΩ under 500V dc
Endurance / Life	>20,000 Operations	—	10,000 Switching Operations with 6,000 at Rated Current
Approximate Weight	1-Pole – 0.27 lbs (121.0 g) 2-Pole – 0.53 lbs (242.0 g) 3-Pole – 0.80 lbs (363.0 g)	1-Pole – 0.26 lbs (120.0 g) 2-Pole – 0.54 lbs (244.9 g) 3-Pole – 0.83 lbs (376.5 g)	1-Pole – .32 lbs (145.0 g) 2-Pole – .65 lbs (295.0 g) 3-Pole – .97 lbs (440.0 g) 4-Pole – 1.30 lbs (590.7 g)
Mounting Contribution	35 mm DIN-Rail Mountable	35 mm DIN-Rail Mountable	35 mm DIN-Rail Mountable
For more detailed information, see Distribution Products Catalog, CA08101001E	Tab 11	Tab 11	Tab 11

Circuit & Motor Protection

Circuit Breakers

PRODUCT OVERVIEW

Circuit Breakers Product Overview

				
Description	J Series Hydraulic Magnetic Circuit Breaker	AMR Hydraulic Magnetic Circuit Breaker	Series NRX Power Circuit Breaker	Magnum Power Circuit Breaker
Page	Page 30	Page 31	Page 32	Page 35
General Applications	Well suited for use where equipment must be kept as small as possible, like in crowded control panels. For use as a supplemental protector. No change in tripping performance in extreme ambient temperatures from -40°C to 85°C.	Most versatile hydraulic magnetic breaker for use in branch circuit applications or as a supplemental protector. No change in tripping performance in extreme ambient temperatures from -40°C to 85°C.	Solution for where space is at a premium or when equipment dimensions are critical when upgrading or retrofitting current systems. Offering the power and performance of a power breaker in the compact size of a molded case breaker. With its reduced weight and compact dimensions, you can mount two times as many feeder breakers and reduce the overall enclosure density up to 50%.	Designed and engineered for use in low voltage metal enclosed switchgear and power distribution enclosures of nominal voltage up to 600V ac.
Maximum Current Rating	50A	100A 300A (3 paralleled poles to operate as single pole)	630 – 1600A	800 – 6300A
Maximum Voltage — ac	415V ac	480V ac	220 – 690V ac	up to 635V ac
Maximum Voltage — dc	80V dc	125V dc	—	—
Poles	1, 2, 3, 4	1, 2, 3, 4	3, 4	3, 4
Approvals	UL 1077 / UL 489A CE; EN 60947-2 CSA 22.2	UL 1077 / UL 489 / UL 489A CE; EN 60934 CSA 22.2	UL 1006 Component UL 489 Component IEC 60947-2	UL 1066 ANSI 637 NEMA SG3 CSA 22.2
Max. Interrupting Capacities (see individual catalogs for limitations and back-up protection requirements)	277V ac – 5000A 415 V ac – 1500A (3 – 4-Pole) 80V dc – 1000A (UL 1077) 80V dc – 5000A (UL 489A)	UL 1077 – 80V dc – 7500A UL 1077 – 125V dc – 5000A UL 1077 – ac – 5000A UL 489 – 80V dc – 10,000A UL 489 – ac – 10,000A	65 kAIC at 480V ac Maximum Withstand Capacities 42 kAIC	100 kA at 635V ac 200 kA at 508V ac CL Fuseless 200 kA at 600V ac w/ Integral Limiters

Environmental Data

Humidity	IEC 68-2-3 and MIL-STD 202 Method 103 Test A	IEC 68-2-3 and MIL-STD 202 Method 103 Test A	—	—
Shock	IEC 68-2-27 MIL-STD 202, Method 213 Cond 1 (100 G, 6 ms or 50 G, 11 ms)	IEC 68-2-27 MIL-STD 202, Method 213 Cond 1 (100 G, 6 ms)	—	—
Vibration	IEC 68-2-6 MIL-STD 202, Method 204 (10 to 500 Hz, 10 G Amplitude .06")	IEC 68-2-6 MIL-STD 202, Method 204 (10 to 500 Hz, 10 G Amplitude .06")	—	—
Operating Temperature	-40°C to +85°C	-40°C to +85°C	—	—
Dielectric Strength	3750V ac – 50/60 Hz	3750V ac – 50/60 Hz	—	—
Insulation Resistance	100 MΩ under 500V dc	100 MΩ under 500V dc	—	—
Endurance / Life	10,000 Switching Operations with 6,000 at Rated Current	10,000 Switching Operations with 6,000 at Rated Current	10,000 Electrical Operations 20,000 Mechanical Operations	—
Approximate Weight	1-Pole – .143 lbs (65 g) 2-Pole – .309 lbs (140 g) 3-Pole – .463 lbs (210 g) 4-Pole – .617 lbs (280 g)	1-Pole – .220 lbs (100 g) 2-Pole – .441 lbs (200 g) 3-Pole – .661 lbs (300 g) 4-Pole – .882 lbs (400 g)	3-Pole Breaker + Cassette — 85 lbs (39 kg) 3-Pole Breaker — 53 lbs (24 kg) 4-Pole Breaker + Cassette — 104 lbs (47 kg) 4-Pole Breaker — 67 lbs (30 kg)	—
Mounting Contribution	Panel Mount, Snap-In Mount	Panel Mount, Snap-In Mount	Rear-Connected, Front-Connected, Surface Mounting, Mounting Bracket, Fixed, Drawout Breaker with Cassette	Fixed or Drawout (with cassette)
For more detailed information, see Distribution Products Catalog, CA08101001E.	Tab 11	Tab 11	Tab 13	Tab 13

Universal Molded Case Circuit Breakers

- Universal design for both NEMA (UL 489) and IEC (IEC 947-2) standards
- Suitable for 50°C application
- Factory-sealed thermal magnetic trip unit
- Standard interrupting ratings



Universal Molded Case Circuit Breaker — 3-Pole

Product Description	Amperes	Catalog Number ①
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Series C G-Frame

3"W x 4-7/8"H x 2-13/16"D (includes mounting hardware and terminals) (optional DIN-Rail kit available catalog number GDIN, package of ten)	15	Gi3015						
	20	Gi3020						
	25	Gi3025						
	30	Gi3030						
	35	Gi3035						
	40	Gi3040						
	45	Gi3045						
	50	Gi3050						
	60	Gi3060						
	<table border="1"> <thead> <tr> <th>Voltage</th> <th>Interrupting Rating</th> </tr> </thead> <tbody> <tr> <td>380 – 415</td> <td>18/5K</td> </tr> <tr> <td>480/277</td> <td>14K</td> </tr> </tbody> </table>			Voltage	Interrupting Rating	380 – 415	18/5K	480/277
Voltage	Interrupting Rating							
380 – 415	18/5K							
480/277	14K							

Series C F-Frame

4-1/8"W x 6"H x 3-3/8"D (includes mounting hardware and terminals)	15	Fi3015L						
	20	Fi3020L						
	25	Fi3025L						
	30	Fi3030L						
	35	Fi3035L						
	40	Fi3040L						
	50	Fi3050L						
	60	Fi3060L						
	70	Fi3070L						
	80	Fi3080L						
	90	Fi3090L						
	100	Fi3100L						
	125	Fi3125L						
	150	Fi3150L						
	175	Fi3175L						
	200	Fi3200L						
225	Fi3225L							
<table border="1"> <thead> <tr> <th>Voltage</th> <th>Interrupting Rating</th> </tr> </thead> <tbody> <tr> <td>415V</td> <td>18/9K</td> </tr> <tr> <td>480</td> <td>14K</td> </tr> </tbody> </table>			Voltage	Interrupting Rating	415V	18/9K	480	14K
Voltage	Interrupting Rating							
415V	18/9K							
480	14K							

① Metric mounting hardware.

Product Description	Amperes	Catalog Number ①
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Series C J-Frame

4-1/8"W x 10"H x 4-1/16"D (includes mounting hardware and terminals)	225	Ji3225L						
	250	Ji3250L						
<table border="1"> <thead> <tr> <th>Voltage</th> <th>Interrupting Rating</th> </tr> </thead> <tbody> <tr> <td>415</td> <td>25/13K</td> </tr> <tr> <td>480</td> <td>20K</td> </tr> </tbody> </table>			Voltage	Interrupting Rating	415	25/13K	480	20K
Voltage	Interrupting Rating							
415	25/13K							
480	20K							

Series C K-Frame

5-1/2"W x 10-1/8"H x 4-1/16"D (includes mounting hardware and terminals)	300	Ki3300L						
	350	Ki3350L						
	400	Ki3400L						
<table border="1"> <thead> <tr> <th>Voltage</th> <th>Interrupting Rating</th> </tr> </thead> <tbody> <tr> <td>415</td> <td>25/13K</td> </tr> <tr> <td>480</td> <td>20K</td> </tr> </tbody> </table>			Voltage	Interrupting Rating	415	25/13K	480	20K
Voltage	Interrupting Rating							
415	25/13K							
480	20K							

① Metric mounting hardware

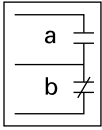
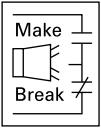
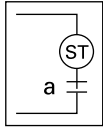
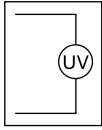
Circuit & Motor Protection

Circuit Breakers

PRODUCT SELECTION

Universal Molded Case Circuit Breakers — Accessories

Internal Accessories

							
Auxiliary Switch (Right-Pole Mounted)		Bell Alarm (Right-Pole Mounted)		Shunt Trip (Left-Pole Mounted)		UVR (Left-Pole Mounted)	
Configuration	Add This Suffix to Catalog No.	Configuration	Add This Suffix to Catalog No.	Voltage Range	Add This Suffix to Catalog No.	Voltage Range	Add This Suffix to Catalog No.

Series C G-Frame

1NO / 1NC 2NO / 2NC	A3 A6	1 Make / 1 Break	B3	24V ac 120V ac 240V ac 12V dc 24V dc 120V ac (GMCP) 240V ac (GMCP)	S7 S1 S2 S3 S4 S5 S6	24V ac 50/60 Hz 48V ac 50/60 Hz 60V ac 50/60 Hz 120V ac 50/60 Hz 240V ac 50/60 Hz 220V ac 50 Hz 440V ac 50 Hz 480V ac 60 Hz	T2 T3 T4 T1 T8 T7 T11 T12
If both an auxiliary switch and bell alarm are required, add B13 to the catalog number (right-pole mounted). Auxiliary switch and bell alarm are 240V rated.				(Not available for GMCP)			

Series C F-Frame

1NO / 1NC 2NO / 2NC	A06 A13	1 Make / 1 Break	B06	12 – 24V ac/dc 48 – 127V ac or 48 – 60V dc 208 – 380V ac 110 – 127V dc 415 – 600V ac or 220 – 250V dc	S02 S06 S10 S14	12V ac 24V ac 48V ac/dc 110 – 127V ac 208 – 240V ac 380 – 480V ac 525 – 600V ac 12V dc 24V dc 125V dc 220 – 250V dc	U02 U06 U38 U14 U18 U22 U26 U30 U34 U42 U46
If both an auxiliary switch and bell alarm are required, add C05 to the catalog number (right-pole mounted). Auxiliary switch and bell alarm are 600V rated.							

Series C J-Frame



1NO / 1NC 2 NO / 2NC	A06 A13	1 Make / 1 Break	B06	12 – 24V ac/dc 48 – 60V ac/dc 110 – 240V ac or 110 – 125V dc 380 – 440V ac/or 220 – 250V dc 480 – 600V ac	S42 S50 S10 S14 S18	12V ac 24V ac 48 – 60V ac 110 – 127V ac 208 – 240V ac 380 – 480V ac 12V dc 24V dc 48 – 60V dc 110 – 125V dc 220 – 250V dc	U06 U10 U14 U18 U22 U26 T02 T06 T10 T14 T18
If both an auxiliary switch and bell alarm are required, add C05 to the catalog number (right-pole mounted). Auxiliary switch and bell alarm are 600V rated.							

Series C K-Frame

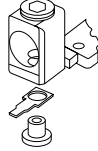
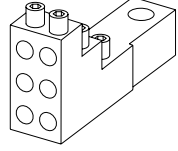
1NO / 1NC 2NO / 2NC	A06 A13	1 Make / 1 Break	B06	12 – 24V ac/dc 48 – 60V ac/dc 110 – 240V ac or 110 – 125V dc 380 – 440V ac/or 220 – 250V dc 480 – 600V ac	S42 S50 S10 S14 S18	12V ac 24V ac 48 – 60V ac 110 – 127V ac 208 – 240V ac 380 – 480V ac 12V dc 24V dc 48 – 60V dc 110 – 125V dc 220 – 250V dc	U06 U10 U14 U18 U22 U26 T02 T06 T10 T14 T18
If both an auxiliary switch and bell alarm are required, add C05 to the catalog number (right-pole mounted). Auxiliary switch and bell alarm are 600V rated.							

Universal Molded Case Circuit Breakers — Accessories

Handle Mechanisms

	
Variable Depth / Thru Door UL Recognized and IEC Versions	Flange Flex Shaft ①

Terminals and Termination Accessory Devices

	
Terminals (Included with Breaker)	Multiwire

Series C G-Frame

Type 1 Version: Order HRGCV11L Type 3R, 4, 12 Version: Order HRGCV14L For GMCP Use: Type 1 Version: Order HRGMV11L Type 3R, 4, 12 Version: Order HRGMV14L (for 8-inch to 18-inch deep enclosure)	Type 1, 3R, 12 Versions: 3-Foot length; Order F0S03C 4-Foot length; Order F0S04C 5-Foot length; Order F0S05C 6-Foot length; Order F0S06C
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Series C G-Frame

15 – 20 Ampere 14-2 AWG Cu/Al 2.5-4 mm ² Cu/Al 25 – 100 Ampere 10-1/0 AWG Cu/Al 4-50 mm ² Cu/Al (GMCP uses copper only terminals)	3-Hole Version: (3) 14-2 AWG Order 3TA100G3K 6-Hole Version: (6) 14-6 AWG Order 3TA100G6K
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Series C F-Frame

Type 1, 3R, 12 Versions: For 6-inch and 10-inch deep enclosures, order HM1R06 . For 10-inch and 12-inch deep enclosures, order HM1R12 . For 16-inch and 18-inch deep enclosures, order HM1R16 . (add X to end for 4X version) (add W to beginning for IEC label on handle)	Type 1, 3R, 12 Versions: 3-Foot length; Order F1S03C 4-Foot length; Order F1S04C 5-Foot length; Order F1S05C 6-Foot length; Order F1S06C 7-Foot length; Order F1S07C 8-Foot length; Order F1S08C 9-Foot length; Order F1S09C 10-Foot length; Order F1S10C
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Series C F-Frame

10 – 20 Ampere 14-10 AWG Cu/Al 2.5-4 mm ² Cu/Al 25 – 100 Ampere 14-1/0 AWG Cu/Al 2.5-50 mm ² Cu/Al 110 – 225 Ampere 4-4/0 AWG Cu/Al 25-95 mm ² Cu/Al (HMCP uses copper only terminals)	3-Hole Version: (3) 14-2 AWG Order 3TA150F3K 6-Hole Version: (6) 14-6 AWG Order 3TA150F6K
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Series C J-Frame

Type 1, 3R, 12 Versions: For 6-inch and 10-inch deep enclosures, order HM2R06 . For 12-inch and 16-inch deep enclosures, order HM2R12 . For 18-inch and 20-inch deep enclosures, order HM2R16 . (add X to end for 4X version) (add W to beginning for IEC label on handle)	Type 1, 3R, 12 Versions: 3-Foot length; Order F2S03C 4-Foot length; Order F2S04C 5-Foot length; Order F2S05C 6-Foot length; Order F2S06C 7-Foot length; Order F2S07C 8-Foot length; Order F2S08C 9-Foot length; Order F2S09C 10-Foot length; Order F2S10C
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Series C J-Frame

70 – 250 Ampere 4-350 MCM AWG Cu/Al 25-150 mm ² Cu/Al (HMCP uses copper only terminals)	3-Hole Version: (3) 14-2 AWG Order 3TA250J3K 6-Hole Version: (6) 14-6 AWG Order 3TA250J6K
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Series C K-Frame

Type 1, 3R, 12 Versions: For 6-inch and 10-inch deep enclosures, order HM3R06 . For 12-inch and 16-inch deep enclosures, order HM3R12 . For 18-inch and 20-inch deep enclosures, order HM3R16 . (add X to end for 4X version) (add W to beginning for IEC label on handle)	Type 1, 3R, 12 Versions: 3-Foot length; Order F3S03C 4-Foot length; Order F3S04C 5-Foot length; Order F3S05C 6-Foot length; Order F3S06C 7-Foot length; Order F3S07C 8-Foot length; Order F3S08C 9-Foot length; Order F3S09C 10-Foot length; Order F3S10C
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Series C K-Frame

300 – 350 Ampere 250-500 MCM AWG Cu/Al 120-240 mm ² Cu/Al 400 Ampere 3/0-200 (2) AWG Cu/Al 95-120 mm ² Cu/Al (HMCP uses copper only terminals)	3-Hole Version: (3) 12-2/0 AWG Order 3TA400K3K 6-Hole Version: (6) 14-2/0 AWG Order 3TA400K6K
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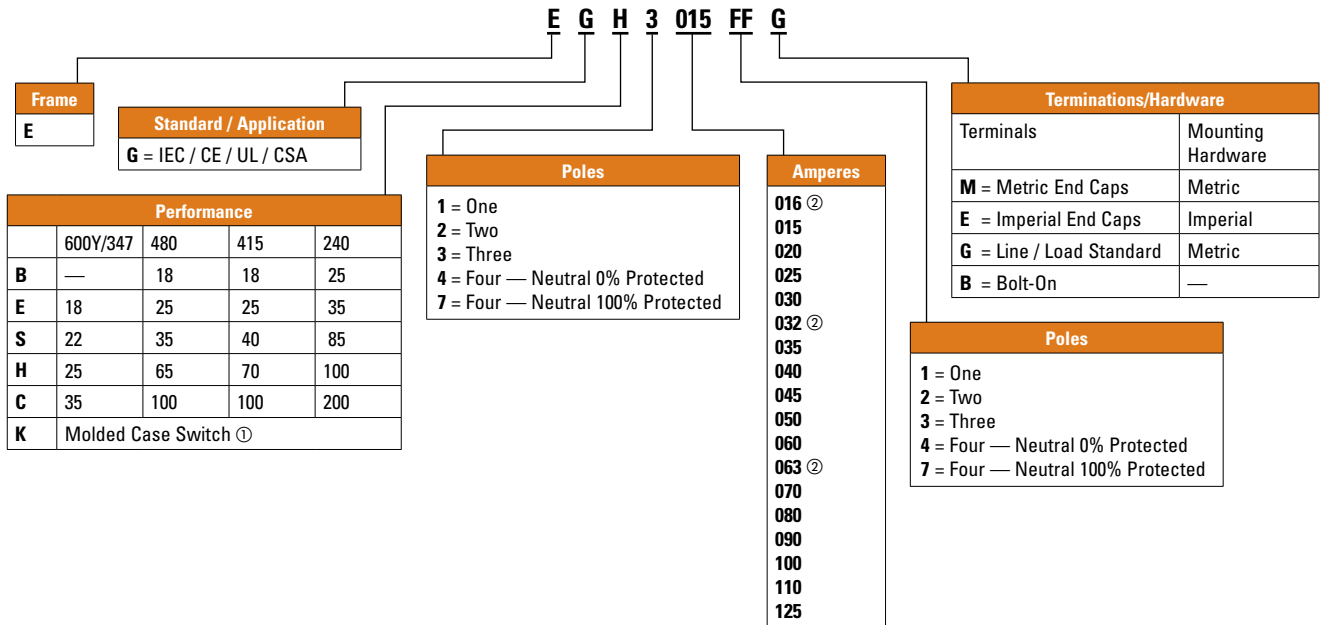
① Type 4/4X handle mechanisms are available. Add Suffix X to complete catalog number. Add Suffix I to complete catalog number for IEC handle. Original narrow handle design (No C Suffix) is available.

Circuit & Motor Protection

Circuit Breakers

CATALOG SELECTION

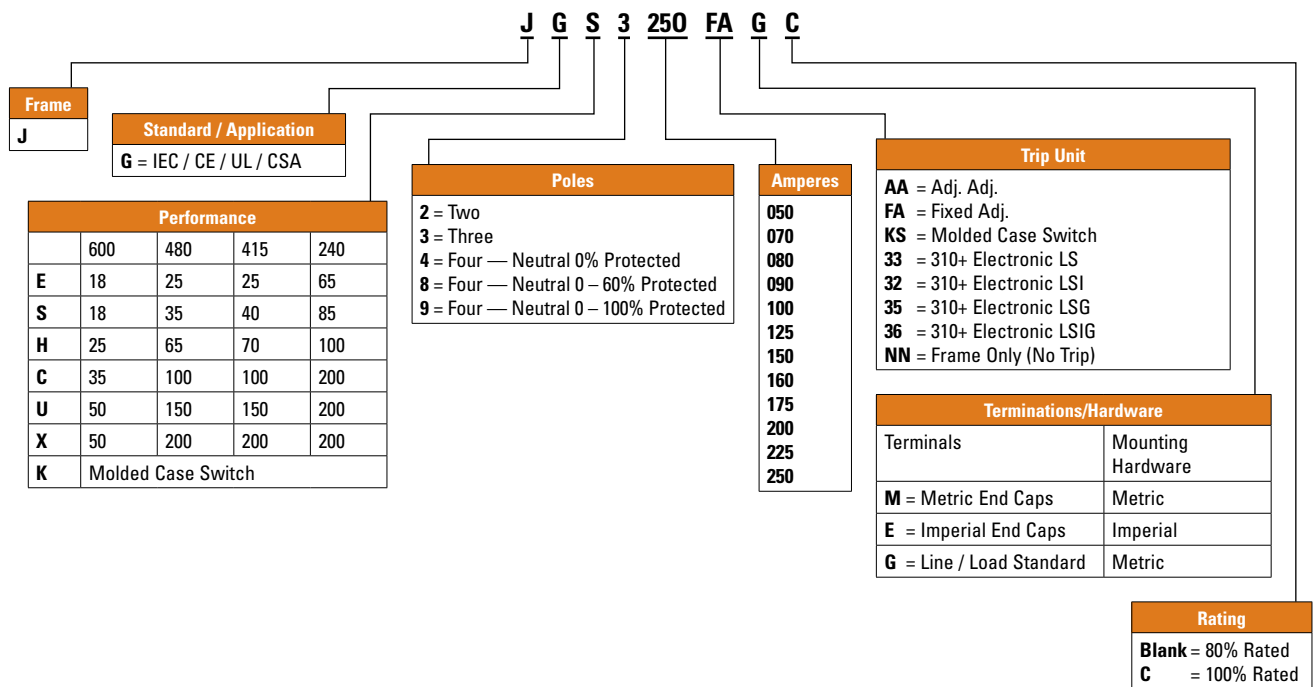
Series G® Molded Case Circuit Breakers — EG-Frame — Catalog Numbering System



① Available only in 125 and 160A sizes.

② Is not UL rated.

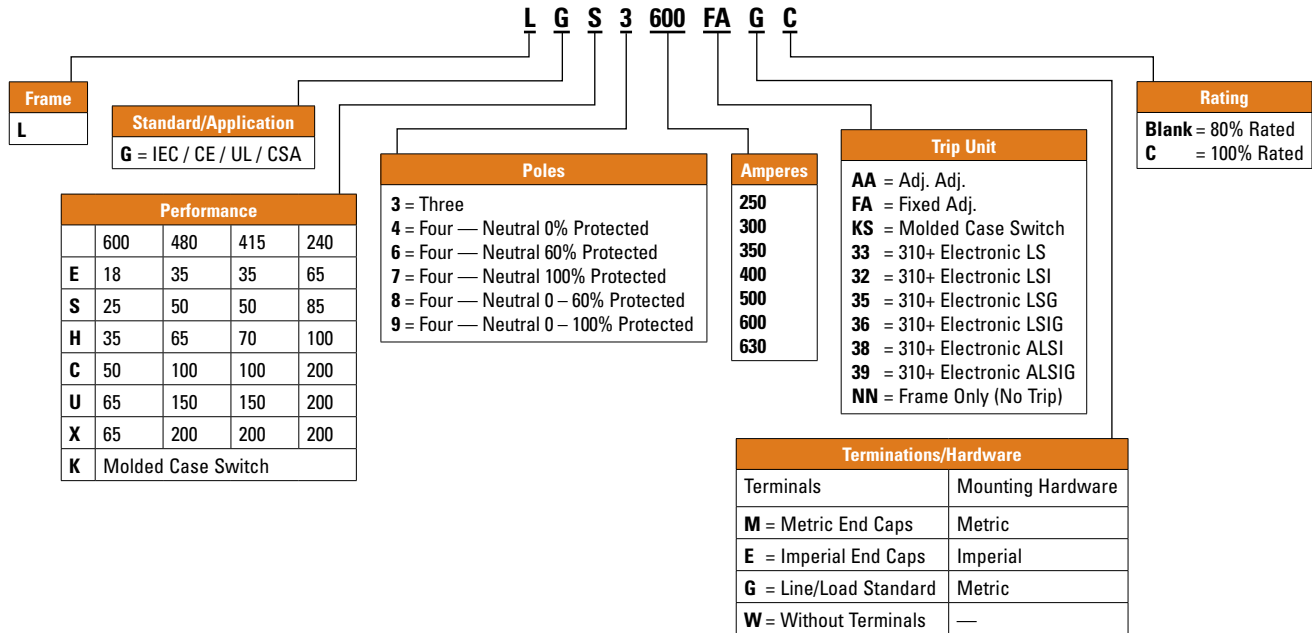
Series G Molded Case Circuit Breakers — JG-Frame — Catalog Numbering System



Circuit & Motor Protection

Circuit Breakers CATALOG SELECTION

Series G Molded Case Circuit Breakers — LG-Frame — Catalog Numbering System



Circuit & Motor Protection

Circuit Breakers

PRODUCT SELECTION

Series G Molded Case Circuit Breakers

- Field-fit accessories
- Common accessories through 630A
- Space-saving footprint
- High-performance rating up to 200 kAIC at 480V
- Global ready: UL, CSA, CE, IEC, KEMA-KEUR listings



EG-Frame

Max. Cont. Amps at 40°C ①	3-Pole
	Fixed Thermal Fixed Magnetic

IC Rating: 25 kAIC at 415 and 480V ac

15	EGE3015FFG
16	EGE3016FFG
20	EGE3020FFG
25	EGE3025FFG
30	EGE3030FFG
32	EGE3032FFG
35	EGE3035FFG
40	EGE3040FFG
45	EGE3045FFG

50	EGE3050FFG
60	EGE3060FFG
63	EGE3063FFG
70	EGE3070FFG
80	EGE3080FFG
90	EGE3090FFG
100	EGE3100FFG
125	EGE3125FFG

IC Rating: 70 kAIC at 415V ac, 65 kAIC at 480V ac

15	EGH3015FFG
16	EGH3016FFG
20	EGH3020FFG
25	EGH3025FFG
30	EGH3030FFG
32	EGH3032FFG
35	EGH3035FFG
40	EGH3040FFG
45	EGH3045FFG

50	EGH3050FFG
60	EGH3060FFG
63	EGH3063FFG
70	EGH3070FFG
80	EGH3080FFG
90	EGH3090FFG
100	EGH3100FFG
125	EGH3125FFG

① 16, 32, 63A are not UL listed ratings.

Note: Complete breaker includes frame, trip unit, standard terminals and mounting hardware.

JG-Frame

Maximum Continuous Amperes	Magnetic Range	3-Pole
		Fixed Thermal Adjustable Magnetic

IC Rating: 25 kAIC at 415 and 480V ac

70	350 – 700	JGE3070FAG
90	450 – 900	JGE3090FAG
100	500 – 1000	JGE3100FAG
125	625 – 1250	JGE3125FAG
150	750 – 1550	JGE3150FAG
175	875 – 1750	JGE3175FAG
200	1000 – 2000	JGE3200FAG
225	1125 – 2250	JGE3225FAG
250	1250 – 2500	JGE3250FAG

IC Rating: 70 kAIC at 415V ac, 65 kAIC at 480V ac

70	350 – 700	JGH3070FAG
90	450 – 900	JGH3090FAG
100	500 – 1000	JGH3100FAG
125	625 – 1250	JGH3125FAG
150	750 – 1550	JGH3150FAG
175	875 – 1750	JGH3175FAG
200	1000 – 2000	JGH3200FAG
225	1125 – 2250	JGH3225FAG
250	1250 – 2500	JGH3250FAG

LG Frame ①

Ampere Rating	3-Pole ②
	Fixed Thermal Adj. Magnetic

IC Rating: 35 kAIC at 415 and 480V ac

250	LGE3250FAG
300	LGE3300FAG
350	LGE3350FAG
400	LGE3400FAG
500	LGE3500FAG
600	LGE3600FAG

IC Rating: 70 kAIC at 415V ac, 65 kAIC at 480V ac

250	LGH3250FAG
300	LGH3300FAG
350	LGH3350FAG
400	LGH3400FAG
500	LGH3500FAG
600	LGH3600FAG

① Replace suffix "G" with "W" for no line or load terminals.

② For 2-pole applications, use two outer poles.

Circuit & Motor Protection

Circuit Breakers PRODUCT SELECTION

Series G Molded Case Circuit Breakers

EG-Frame — 480V ac, 600Y / 347V ac Maximum

Continuous Amperes	Cam Setting	Motor Full Load Current Amperes ①	MCP Trip Setting ②	MCP Catalog Number
3	A	.69 – .91	9	HMCPE003A0C
	B	1.1 – 1.3	15	
	C	1.6 – 1.7	21	
	D	2.0 – 2.2	27	
	E	2.3 – 2.5	30	
	F	2.6 – 2.8	33	
7	A	1.5 – 2.0	21	HMCPE007C0C
	B	2.6 – 3.1	35	
	C	3.7 – 3.9	49	
	D	4.8 – 5.2	63	
	E	5.3 – 5.7	70	
	F	5.8 – 6.1	77	
15	A	3.4 – 4.5	45	HMCPE015E0C
	B	5.7 – 6.8	75	
	C	8.0 – 9.1	105	
	D	10.4 – 11.4	135	
	E	11.5 – 12.6	150	
	F	12.7 – 13.0	165	
30	A	3.9 – 9.1	90	HMCPE030H1C
	B	11.5 – 13.7	150	
	C	16.1 – 18.3	210	
	D	20.7 – 22.9	270	
	E	23.0 – 25.2	300	
	F	25.3 – 26.1	330	
50	A	11.5 – 15.2	150	HMCPE050K2C
	B	19.2 – 22.9	250	
	C	26.9 – 30.6	350	
	D	34.6 – 38.3	450	
	E	38.4 – 42.1	500	
	F	42.2 – 43.5	550	
70	A	16.1 – 30.6	210	HMCPE070M2C
	B	26.9 – 32.2	350	
	C	37.6 – 42.9	490	
	D	48.4 – 53.7	630	
	E	53.8 – 59.1	700	
	F	59.2 – 60.9	770	
100	A	23.0 – 30.6	300	HMCPE100R3C
	B	38.4 – 46.0	500	
	C	53.8 – 61.4	700	
	D	69.2 – 76.8	900	
	E	76.9 – 84.5	1000	
	F	84.6 – 87.0	1100	
100	A	38.4 – 46.0	500	HMCPE100T3C
	B	57.6 – 65.2	750	
	C	76.9 – 84.5	1000	
	D	③	1250	
	E	③	1375	
	F	③	1500	

① Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

② For dc applications, actual trip levels are approximately 40% higher than values shown.

③ Settings above 10 x In are for special applications. Where the ampere rating of the disconnecting means cannot be less than 115% of the motor full load ampere rating.

JG-Frame — 600V ac Maximum, 250V dc Maximum

Continuous Amperes	MCP Trip Range Amperes	MCP Catalog Number
250	500 – 1000 625 – 1250 750 – 1500	HMCPEJ250D5L HMCPEJ250F5L HMCPEJ250G5L
	875 – 1750 1000 – 2000 1125 – 2250 1250 – 2500	HMCPEJ250J5L HMCPEJ250K5L HMCPEJ250L5L HMCPEJ250W5L

LG-Frame — 600V ac Maximum, 250V dc Maximum ①

Continuous Amperes	MCP Trip Range Amperes	MCP Catalog Number
600	1250 – 2500 1500 – 3000 1750 – 3500	HMCPL600L6G HMCPL600N6G HMCPL600R6G
	2000 – 4000 2250 – 4500 2500 – 5000 3000 – 6000	HMCPL600X6G HMCPL600Y6G HMCPL600P6G HMCPL600M6G

① Equipped with an electromechanical trip device.

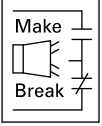
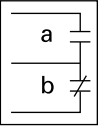
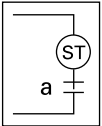
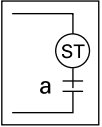
Circuit & Motor Protection

Circuit Breakers

PRODUCT SELECTION

Series G Molded Case Circuit Breakers — Accessories

Field Fit Kit Catalog Numbers

Description		Pole Location	Frame — EG, JG & LG
Alarm Lockout 	Make / Break	Right	ALM1M1BEPK ①
	2 Make / 2 Break	Right	ALM2M2BEPK ②
Auxiliary Switch 	1A, 1B	Right	AUX1A1BPK
	2A, 2B	Right	AUX2A2BPK
Auxiliary Switch / Alarm Lockout		Right	AUXALRMEPK ③
Shunt Trip — Standard 	120V ac	Left	SNT120CPK ④
	240V ac	Left	SNT120CPK ④
	12V dc	Left	SNT012CPK
	24V dc	Left	SNT060CPK
	48V dc	Left	SNT060CPK
	380 – 600V ac	Left	SNT480CPK ⑤
Undervoltage Release Mechanism 	110 – 127V ac	Left	UVR120APK
	208 – 240V ac	Left	UVR240APK
	24V dc, ac	Left	UVR024CPK
	48 – 60V dc	Left	UVR048DPK
	12V dc, ac	Left	UVR012CPK
	48 – 60V ac	Left	UVR048APK
	120V dc	Left	UVR125DPK
	220 – 250V dc	Left	UVR250DPK
	380 – 500V ac	Left	UVR480APK
	525 – 600V ac	Left	UVR600APK

① Part number for JG and LG is ALM1M1BJPK.

② Part number for JG and LG is ALM2M2BJPK.

③ Part number for JG and LG is AUXALRMJPK.

④ 110 – 125V dc, 50/60 Hz.

⑤ 380 – 600V dc, 50/60 Hz.

Multewire Connectors Ordering Information (Package of 3)

Max. Amps	Wires per Terminal	Wire Size Range AWG Cu	Frame	Kit Catalog Number
125	3	14 – 2	EG	3TA125E3K
125	6	14 – 6	EG	3TA125E6K
250	3	14 – 2	JG	3TA250FJ3
250	6	14 – 6	JG	3TA250FJ6

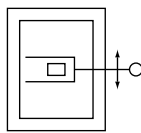

Terminal Shields

Location	Number of Poles	Frame	IP30 Protection
			Catalog Numbers
Line	3	EG	EFTS3K
Line	4	EG	EFTS4K
Line or Load	2, 3	JG	FJTS3K
Line or Load	4	JG	FJTS4K

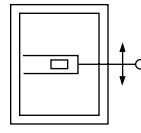

Interphase Barriers

Package of 2		
Number of Poles	Frame	Catalog Number
3 or 4	EG	EIPBK
3	JG	FJIPBK
4	JG	FJIPBK4
3 or 4	LG	IPB3

Flex Shaft Handle Mechanisms

	Breaker Frame	Flexible Shaft Length in Feet (m)	
		4 (1.2)	7 (2.1)
		Catalog Number	Catalog Number
 	EG	EHMFS04	EHMFS07
	JG	JHMFS04	JHMFS07
	LG	LHMFS04	LHMFS07

Universal Rotary Handle Mechanism

	Shaft Length in Inches (mm)	Handle Color	NEMA Rating	Complete Catalog Number
	EG-Frame			
	12.00 (304.8) 12.00 (304.8)	Black Black	1, 12 4, 4X, 3R	EHMVD12B EHMVD12BX
	JG-Frame			
	12.00 (304.8) 12.00 (304.8)	Black Black	1, 12 4, 4X, 3R	FJHMVD12B FJHMVD12BX
	LG-Frame			
	12.00 (304.8) 12.00 (304.8)	Black Black	1, 12 4, 4X, 3R	KLHMVD12B KLHMVD12BX

Series G Molded Case Circuit Breakers — Accessories

External Accessories

Description	Fit Type	Frame		
		EG	JG	LG
Non-Padlockable Handle Block	Field	EFHB	—	—
Padlockable Handle Block	Field	EFPHB	—	—
Padlockable Handle Block Off-Only	Field	EFPHBOFF	FJPHBOFF	LBHPOFF
Padlockable Handle Lock Hasp	Field	EFPHL	FJPHL	LPHL
Padlockable Handle Lock Hasp Off-Only	Field	EFPHLOFF	FJPHLOFF	LPHLOFF
Kirk Key Interlock Kit ①②	Field	—	KYKJG	KYKLG
Castell Key Interlock Kit ②③	Field	—	CTKJG	CTKLG
Slide Bar Interlock ④	Field	EFSBI	FJSBI	LGSBI
Walking Beam Interlock	3-Pole	EG3WBI	JG3WBI	LG3WBI
	4-Pole	EG4WBI	JG4WBI	LG4WBI
Electrical Operator	120/240V ac	MOPEG240C	MOPJG240C	MOPLG240C
	125V dc	MOPEG240C	MOPJG240C	MOPLG240C
Plug-In Adapters	3-Pole	PAD3E	PAD3J	PAD3L
	4-Pole	PAD4E	PAD4J	PAD4L
Rear Connecting Studs	Field	EFRCSDL	FJRCSDL	3P-LRCS3WK
		EFRCSDS	FJRCSDS	4P-LRCS4WK
		EFRCSWL	FJRCSWL	—
		EFRCSWS	FJRCSWS	—

① Provision only.

② See Tab 12 of the Distribution Products Catalog, CA08101001E, for bolt projection dimensions.

③ Castell bolt mounting hole must be 10 mm.

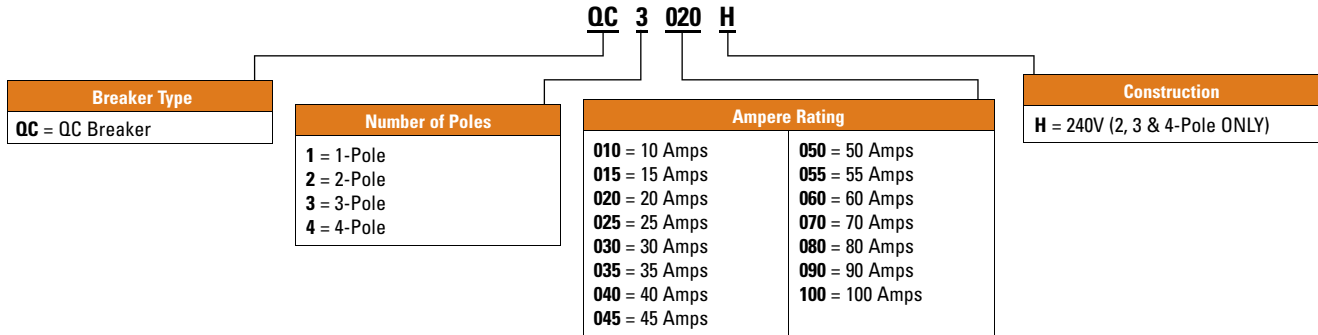
④ Requires two breakers.

Circuit & Motor Protection

Circuit Breakers

CATALOG SELECTION / PRODUCT SELECTION

Type QC Miniature Circuit Breakers — Cable-In / Cable-Out Type QC — Catalog Numbering System



Type QC Miniature Circuit Breakers — Cable-In / Cable-Out Type QC

For Cable-In / Cable-Out Panel Mount Applications

- 1 – 4-pole options
- Built and listed to UL 489
- All products UL and CSA listed
- All products 10 – 100A are HACR rated



QUICKLAG Type QC 10,000 Ampere I.C. Thermal-Magnetic Breakers

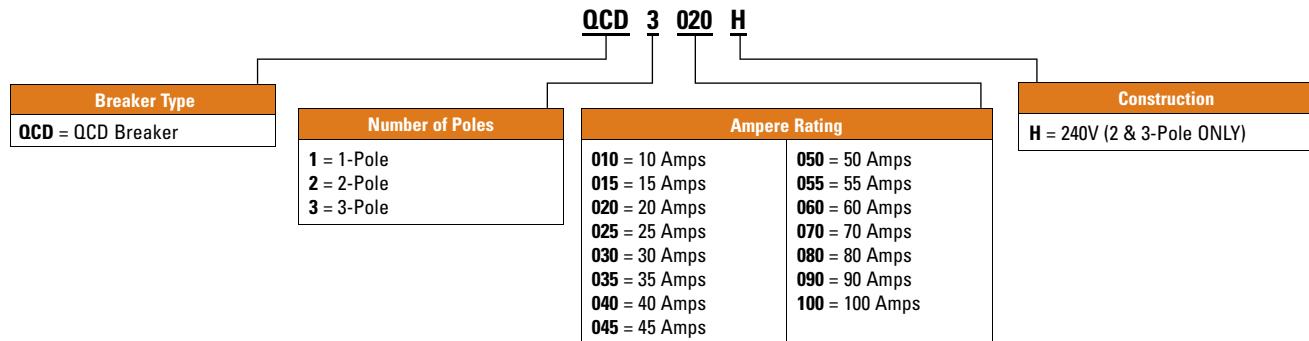
Continuous Ampere Rating at 40°C	1-Pole	2-Pole	3-Pole
	120/240V ac	120/240V ac	240V ac
	Catalog Number	Catalog Number	Catalog Number
10	QC1010	QC2010	—
15	QC1015 ① ②	QC2015	QC3015H
20	QC1020 ① ②	QC2020	QC3020H
30	QC1030	QC2030	QC3030H
40	QC1040	QC2040	QC3040H
50	QC1050	QC2050	QC3050H
60	—	QC2060	QC3060H
70	—	QC2070	QC3070H
100	QC1100	QC2100	QC3100H

① Switching duty rated for 120V ac fluorescent light applications only.

② For special low-magnetic breaker, order QC1015L1 or QC1020L1.

Note: For non-automatic switches, see Distribution Products Catalog, CA08101001E, Tab 11.

Type QC Miniature Circuit Breakers — Cable-In / Cable-Out Type QCD — Catalog Numbering System



Type QC Miniature Circuit Breakers — Cable-In / Cable-Out Type QCD

For Cable-In / Cable-Out DIN-Rail Mount HVAC Applications

- 1 – 3-pole options
- Modular construction
- DIN mounted (symmetrical rail 35 x 7.5 DIN / EN 50 022)
- Flexible power feed connection: wire size, position
- Same breaker size for entire rating range
- Field-mountable accessories: finger-shroud proof, quick connect terminals, jumper units



QUICKLAG Type QCD 10,000 Ampere I.C. Thermal-Magnetic Breakers

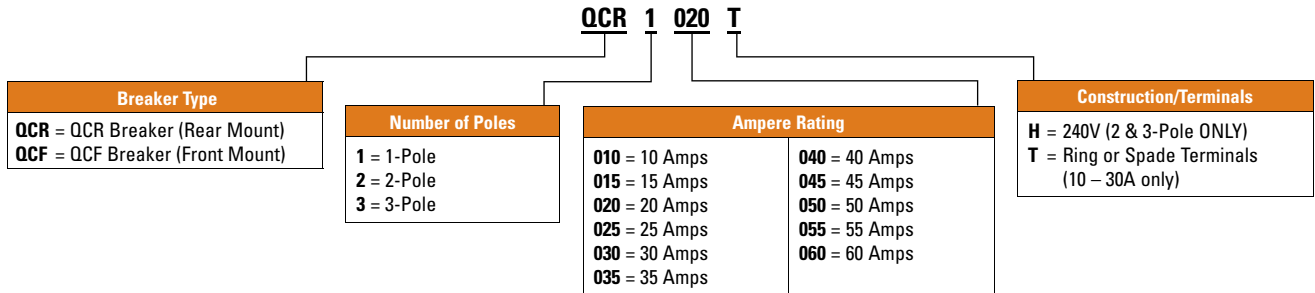
Continuous Ampere Rating at 40°C	1-Pole	2-Pole	3-Pole
	120/240V ac	120/240V ac	240V ac
	Catalog Number	Catalog Number	Catalog Number
10	QCD1010	QCD2010	—
15	QCD1015	QCD2015	QCD3015H
20	QCD1020	QCD2020	QCD3020H
30	QCD1030	QCD2030	QCD3030H
40	QCD1040	QCD2040	QCD3040H
50	QCD1050	QCD2050	QCD3050H
60	QCD1060	QCD2060	QCD3060H
70	—	QCD2070	QCD3070H
100	—	QCD2100	QCD3100H

Circuit & Motor Protection

Circuit Breakers

CATALOG SELECTION / PRODUCT SELECTION

Type QC Miniature Circuit Breakers — Cable-In / Cable-Out 1/2-Inch Wide Types QCR, QCF — Catalog Numbering System



Type QC Miniature Circuit Breakers — Cable-In / Cable-Out 1/2-Inch Wide Types QCR, QCF

When Space is at a Premium

- QCR: For DIN-Rail mount cable-in / cable-out applications
- QCF: For front-mount through-the-door cable-in / cable-out applications
- 1/2-inch (12.7 mm) wide per pole
- Three-position handle: ON, Tripped (center), OFF
- Thermal-magnetic protection
- 1, 2 and 3-pole
- 10 kAIC at 120/240V ac, 10 – 60A
- 10 kAIC at 240V ac, 10 – 30A



QUICKLAG Type QCR Breaker 10 kAIC Interrupting Ratings ①②③④

Continuous Ampere Rating at 40°C	1-Pole	2-Pole	3-Pole
	120/240V ac	120/240V ac	240V ac
	Catalog Number	Catalog Number	Catalog Number
10	QCR1010 QCR1010T	QCR2010 QCR2010T	— —
15	QCR1015 ⑤ QCR1015T ⑤	QCR2015 QCR2015T	QCR3015H QCR3015HT
20	QCR1020 ⑤ QCR1020T ⑤	QCR2020 QCR2020T	QCR3020H QCR3020HT
25	QCR1025 —	QCR2025 —	QCR3025H QCR3025HT
30	QCR1030 —	QCR2030 —	QCR3030H QCR3030HT
35	QCR1035	QCR2035	—
40	QCR1040	QCR2040	—
45	QCR1045	QCR2045	—
50	QCR1050	QCR2050	—
55	QCR1055	—	—
60 ⑥	QCR1060	QCR2060	—

- ① Standard breaker terminals are box type lugs.
- ② Breakers with "T" catalog number suffix are suitable for line and load side ring terminal connection (#10 – 32 plus/minus terminal screw provided).
- ③ Breakers with "P" catalog number suffix are suitable for terminating two 10 AWG Quick-Connect Type Terminals per phase on breaker load side.
- ④ Breakers with shunt trip (extra pole required on breaker right-hand side) are available on 1, 2 and 3-pole.
- ⑤ All 15 and 20 ampere single-pole breakers are SWD (switching duty) rated for fluorescent lighting applications.
- ⑥ 60/75°C Cu/Al wire on all ratings except 60 amperes, which requires Cu only conductor.

Type QC Miniature Circuit Breakers — Cable-In / Cable-Out 1/2-Inch Wide, Types QCR, QCF

QUICKLAG Type QCF Breaker 10 kAIC Interrupting Ratings ①②③

Continuous Ampere Rating at 40°C	1-Pole	2-Pole	3-Pole
	120/240V ac	120/240V ac	240V ac
	Catalog Number	Catalog Number	Catalog Number
10	QCF1010 QCF1010T	QCF2010 QCF2010T	— —
15	QCF1015 ④ —	QCF2015 —	QCF3015H QCF3015HT
20	QCF1020 ④ —	QCF2020 —	QCF3020H QCF3020HT
25	QCF1025 —	QCF2025 —	QCF3025H QCF3025HT
30	QCF1030 —	QCF2030 —	QCF3030H QCF3030HT
40	QCF1040	QCF2040	—
50	QCF1050	QCF2050	—
60 ⑤	QCF1060	QCF2060	—

① Standard breaker terminals are box type lugs.



② Breakers with "T" catalog number suffix are suitable for line and load side ring terminal connection (#10 – 32 plus/minus terminal screw provided).

③ Breakers with shunt trip attachment (extra pole required on breaker right-hand side) are available.

④ All 15 and 20 ampere single-pole breakers are SWD (switching duty) rated for fluorescent lighting applications.

⑤ 60/75°C Cu/Al wire on all ratings except 60 amperes, which requires Cu only conductor.

Accessories

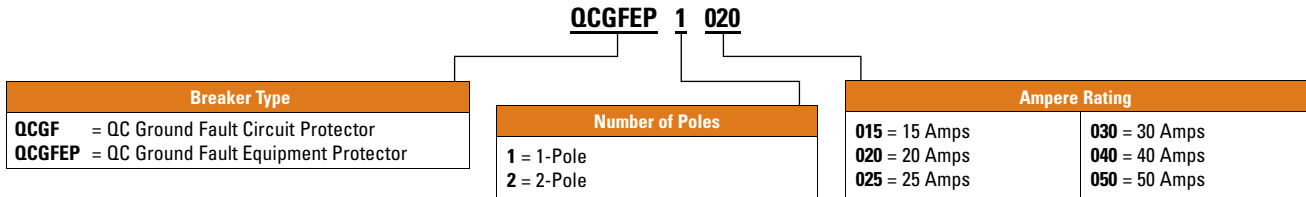
	Description	Catalog Number
	Steel mounting clip mounts QCR breaker if individual mounting is required. Quantity two required for 1- and 2-pole and four required for 3-pole breakers.	QCRMTGFT
	Removable padlock device for single-pole QCR or QCF breaker.	QCRFPL1P
	Removable padlock device for multi-pole QCR or QCF breaker.	QCRFPLMP
	Padlock bracket assembly for QCR or QCF single- or multi-pole breakers (OFF only).	QCRFLOFF
	Padlock bracket for QCR, lock-off only.	QCRPLOFF
	QUICKLAG Type C Spacer	QCRSPACER
	QCR and QCF Ring or Spade Lug Terminals (10 – 30A ratings only) Factory installed line and load side terminals each equipped with a #10-32 screw suitable for terminating one 10 AWG wire with insulated ring or spade type terminal as shown.	Suffix "T"

Circuit & Motor Protection

Circuit Breakers

CATALOG SELECTION / PRODUCT SELECTION

Type QC Miniature Circuit Breakers — Cable-In / Cable-Out Ground Fault and Equipment Protector Types QCGF, QCGFEP — Catalog Numbering System



Type QC Miniature Circuit Breakers — Cable-In / Cable-Out 1/2-Inch Wide Types QCGF, QCGFEP

For Cable-In / Cable-Out Panel-Mount Applications

- QUICKLAG ground fault circuit breakers, Class A GFCI:
 - Built and tested to UL 943
 - 5 mA trip sensitivity
- QUICKLAG ground fault equipment protectors:
 - Built and tested to UL 1053
 - 30 mA trip sensitivity
- All products UL and CSA listed



Types QCGF and QCGFEP Thermal-Magnetic Breakers

Continuous Ampere Rating at 40°C	1-Pole	2-Pole
	120/240V ac	120/240V ac
	Catalog Number	Catalog Number

Ground Fault Circuit Breakers — 5 mA Sensitivity QUICKLAG Type: QCGF 10,000 Ampere I.C.

Ampere Rating	1-Pole	2-Pole
15	QCGF1015	QCGF2015
20	QCGF1020	QCGF2020
30	QCGF1030	QCGF2030
40	QCGF1040	QCGF2040
50	—	QCGF2050

Ground Fault Equipment Protectors — 30 mA Sensitivity QUICKLAG Type: QCGFEP 10,000 Ampere I.C.

Ampere Rating	1-Pole	2-Pole
15	QCGFEP1015	QCGFEP2015
20	QCGFEP1020	QCGFEP2020
30	QCGFEP1030	QCGFEP2030
40	QCGFEP1040	QCGFEP2040
50	—	QCGFEP2050

Type QC Miniature Circuit Breakers

Accessories

	Accessory ①	Description	Catalog Number
 <p>QL1NPL QL23NPL</p>	Handle Locks: Non-Padlockable ②	QUICKLAG Type P, B, C — 1-Pole QUICKLAG Type P, B, C — 2, 3-Pole	QL1NPL QL23NPL
 <p>QL1PL QC123PL</p>	Handle Locks: Padlockable	QUICKLAG Type P, B, C — 1-Pole QUICKLAG Type C — 1, 2, 3-Pole QUICKLAG Type C — 1, 2, 3-Pole (off only)	QL1PL QC123PL QCD123PLOFF
 <p>QL1HT</p>	Handle Tie	QUICKLAG Handle Tie — 1-Pole QUICKLAG Handle Tie — 3-Pole	QL1HT QL3HT
 <p>QCFCLIP QC1FP</p> <p>QC2FP QC3FP</p> <p>QCBCLIP</p>	Mounting Hardware	QUICKLAG Type C Face Mounting Clip QUICKLAG Type C Face Mounting Plate — 1-Pole QUICKLAG Type C Face Mounting Plate — 2-Pole QUICKLAG Type C Face Mounting Plate — 3-Pole QUICKLAG Type C Face Mounting Plate and Lock-off (off only) — 2-Pole ③ QUICKLAG Type C Face Mounting Plate and Lock-off (off only) — 3-Pole QUICKLAG Type C Base Mounting Clamp	QCFCLIP QC1FP QC2FP QC3FP QC2FPLOFF QC3FPLOFF QCBCLIP

① See Page 21 for QCR and QCF accessories.

② Can lock in ON or OFF position.

③ Suitable for ground fault breakers.





Circuit & Motor Protection

Circuit Breakers

PRODUCT SELECTION

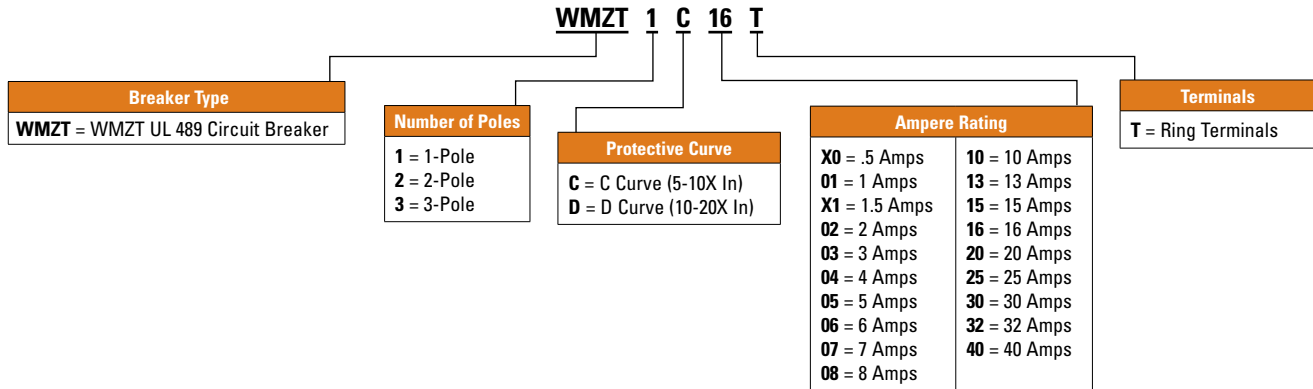
Type QC Miniature Circuit Breakers

Accessories (Continued)

	Accessory ①	Description	Catalog Number
 <p>QC6BP</p>	Mounting Hardware	QUICKLAG Base Mounting Plate — 6 Poles Total QUICKLAG Type C Base Mounting Plate — 6 Poles Total — Heavy-Duty Screw-Secured QUICKLAG Type C (QCD) 2-Way Jumper Unit with Cover QUICKLAG Type C (QCD) 4-Way Jumper Unit with Cover QUICKLAG Type C (QCD) 6-Way Jumper Unit with Cover QUICKLAG Type C (QCD) 2-Way Jumper Unit, no Cover QUICKLAG Type C (QCD) 4-Way Jumper Unit, no Cover QUICKLAG Type C (QCD) 6-Way Jumper Unit, no Cover QUICKLAG Type QCD Finger Protection Attachment QUICKLAG Type C DIN-Rail Adapter	QC6BP QC6BPS
 <p>QCDJ4</p>			QCDJ2 QCDJ4 QCDJ6 QCDJ2T QCDJ4T QCDJ6T QCDFP QCDINADAPT
 <p>QCDINADAPT</p>			
 <p>QCDFP</p>			

① See Page 21 for QCR and QCF accessories.

WMZT UL 489 Miniature Circuit Breakers — Catalog Numbering System



WMZT UL 489 Miniature Circuit Breakers

- UL 489 listed DIN-Rail mounted miniature circuit breakers up to 40 ampere current rating
- Current limiting design provides fast short circuit interruption that reduces let-through energy
- Thermal-magnetic overcurrent protection available with C and D curve level of protection
 - C Curve — 5 to 10X In — for medium inrush startup currents
 - D Curve — 10 to 20X In — provides a magnetic range to allow for high inrush levels
- Ring-tongue terminals available
- Complete line of accessories



WMZT UL 489 Circuit Breakers

Ampere Rating	C Curve (5 – 10X In Current Rating)			D Curve (10 – 20X In Current Rating)		
	1-Pole ①	2-Pole ①	3-Pole ①	1-Pole ①	2-Pole ①	3-Pole ①
	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
0.5	WMZT1CX0	WMZT2CX0	WMZT3CX0	WMZT1DX0	WMZT2DX0	WMZT3DX0
1	WMZT1C01	WMZT2C01	WMZT3C01	WMZT1D01	WMZT2D01	WMZT3D01
1.5	WMZT1CX1	WMZT2CX1	WMZT3CX1	WMZT1DX1	WMZT2DX1	WMZT3DX1
2	WMZT1C02	WMZT2C02	WMZT3C02	WMZT1D02	WMZT2D02	WMZT3D02
3	WMZT1C03	WMZT2C03	WMZT3C03	WMZT1D03	WMZT2D03	WMZT3D03
4	WMZT1C04	WMZT2C00	WMZT3C04	WMZT1D04	WMZT2D04	WMZT3D04
5	WMZT1C05	WMZT2C05	WMZT3C05	WMZT1D05	WMZT2D05	WMZT3D05
6	WMZT1C06	WMZT2C06	WMZT3C06	WMZT1D06	WMZT2D06	WMZT3D06
7	WMZT1C07	WMZT2C07	WMZT3C07	WMZT1D07	WMZT2D07	WMZT3D07
8	WMZT1C08	WMZT2C08	WMZT3C08	WMZT1D08	WMZT2D08	WMZT3D08
10	WMZT1C10	WMZT2C10	WMZT3C10	WMZT1D10	WMZT2D10	WMZT3D10
13	WMZT1C13	WMZT2C13	WMZT3C13	WMZT1D13	WMZT2D13	WMZT3D13
15	WMZT1C15	WMZT2C15	WMZT3C15	WMZT1D15	WMZT2D15	WMZT3D15
16	WMZT1C16	WMZT2C16	WMZT3C16	WMZT1D16	WMZT2D16	WMZT3D16
20	WMZT1C20	WMZT2C20	WMZT3C20	WMZT1D20	WMZT2D20	WMZT3D20
25	WMZT1C25	WMZT2C25	WMZT3C25	WMZT1D25	WMZT2D25	WMZT3D25
30	WMZT1C30	WMZT2C30	WMZT3C30	WMZT1D30	WMZT2D30	WMZT3D30
32	WMZT1C32	WMZT2C32	WMZT3C32	WMZT1D32	WMZT2D32	WMZT3D32
40	WMZT1C40	WMZT2C40	WMZT3C40	WMZT1D40	WMZT2D40	WMZT3D40

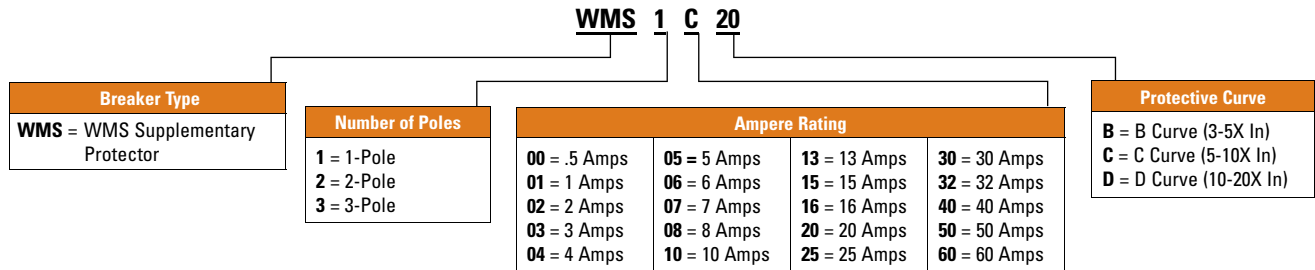
① For ring-tongue terminals, ADD Suffix "T" to above catalog number.

Circuit & Motor Protection

Circuit Breakers

CATALOG SELECTION / PRODUCT SELECTION

WMS UL 1077 Miniature Circuit Breakers — Supplementary Protectors — Catalog Numbering System



WMS UL 1077 Miniature Circuit Breakers — Supplementary Protectors

- UL 1077 recognized DIN-Rail mounted supplemental protectors up to 60A
- Current limiting design provides fast short circuit interruption that reduces let-through energy
- Thermal-magnetic overcurrent protection available with B, C and D curve levels of protection
 - B Curve — 3 to 5X In — for maximum protection of control circuit wiring from low-level short circuit faults
 - C Curve — 5 to 10X In — for medium inrush startup currents
 - D Curve — 10 to 20X In — provides a magnetic range to allow for high inrush levels
- Ideal replacement for fuses that are applied as supplemental protection
- Complete line of accessories



WMS UL 1077 Supplementary Protectors

Ampere Rating	B Curve (3 – 5X In Current Rating)			C Curve (5 – 10X In Current Rating)			D Curve (10 – 20X In Current Rating)		
	1-Pole	2-Pole	3-Pole	1-Pole	2-Pole	3-Pole	1-Pole	2-Pole	3-Pole
	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
0.5	—	—	—	WMS1C00	WMS2C00	WMS3C00	WMS1D00	WMS2D00	WMS3D00
1	—	—	—	WMS1C01	WMS2C01	WMS3C01	WMS1D01	WMS2D01	WMS3D01
2	—	—	—	WMS1C02	WMS2C02	WMS3C02	WMS1D02	WMS2D02	WMS3D02
3	—	—	—	WMS1C03	WMS2C03	WMS3C03	WMS1D03	WMS2D03	WMS3D03
4	—	—	—	WMS1C04	WMS2C04	WMS3C04	WMS1D04	WMS2D04	WMS3D04
5	—	—	—	WMS1C05	WMS2C05	WMS3C05	WMS1D05	WMS2D05	WMS3D05
6	WMS1B06	WMS2B06	WMS3B06	WMS1C06	WMS2C06	WMS3C06	WMS1D06	WMS2D06	WMS3D06
7	WMS1B07	WMS2B07	WMS3B07	WMS1C07	WMS2C07	WMS3C07	WMS1D07	WMS2D07	WMS3D07
8	WMS1B08	WMS2B08	WMS3B08	WMS1C08	WMS2C08	WMS3C08	WMS1D08	WMS2D08	WMS3D08
10	WMS1B10	WMS2B10	WMS3B10	WMS1C10	WMS2C10	WMS3C10	WMS1D10	WMS2D10	WMS3D10
13	WMS1B13	WMS2B13	WMS3B13	WMS1C13	WMS2C13	WMS3C13	WMS1D13	WMS2D13	WMS3D13
15	WMS1B15	WMS2B15	WMS3B15	WMS1C15	WMS2C15	WMS3C15	WMS1D15	WMS2D15	WMS3D15
16	WMS1B16	WMS2B16	WMS3B16	WMS1C16	WMS2C16	WMS3C16	WMS1D16	WMS2D16	WMS3D16
20	WMS1B20	WMS2B20	WMS3B20	WMS1C20	WMS2C20	WMS3C20	WMS1D20	WMS2D20	WMS3D20
25	WMS1B25	WMS2B25	WMS3B25	WMS1C25	WMS2C25	WMS3C25	WMS1D25	WMS2D25	WMS3D25
30	WMS1B30	WMS2B30	WMS3B30	WMS1C30	WMS2C30	WMS3C30	WMS1D30	WMS2D30	WMS3D30
32	WMS1B32	WMS2B32	WMS3B32	WMS1C32	WMS2C32	WMS3C32	WMS1D32	WMS2D32	WMS3D32
40	WMS1B40	WMS2B40	WMS3B40	WMS1C40	WMS2C40	WMS3C40	WMS1D40	WMS2D40	WMS3D40
50	WMS1B50	WMS2B50	WMS3B50	WMS1C50	WMS2C50	WMS3C50	—	—	—
60	WMS1B60	WMS2B60	WMS3B60	WMS1C60	WMS2C60	WMS3C60	—	—	—

Miniature Circuit Breakers — Accessories

WMZT UL 489 Breakers

Accessory / Description	Catalog Number
2-Pole Contact or Auxiliary Contact/Trip Indicating Contact	WMZTAUXTRIP
Auxiliary Contact	WMZTAUX
Shunt Trip 110 – 415V ac Shunt Trip 12 – 110V ac	WMZTST415 WMZTST110
Padlock Hasp	WMZPLK
Bus Bar — 1-Pole 6 Terminals	WMZT1P6T
Bus Bar — 1-Pole 12 Terminals	WMZT1P12T
Bus Bar — 1-Pole 18 Terminals	WMZT1P18T
Bus Bar — 2-Pole 6 Terminals	WMZT2P6T
Bus Bar — 2-Pole 12 Terminals	WMZT2P12T
Bus Bar — 2-Pole 18 Terminals	WMZT2P18T
Bus Bar — 3-Pole 6 Terminals	WMZT3P6T
Bus Bar — 3-Pole 12 Terminals	WMZT3P12T
Bus Bar — 3-Pole 18 Terminals	WMZT3P18T
3-Pole Bus Bar Shroud	WMZT3PSHROUD
Extension Terminal — 35 mm (2 – 14 AWG)	WMZT35EXT
Bus Connector — Conductors up to 50 mm ² (~1/0 AWG)	WMZTBCON

WMS UL 1077 Supplementary Protectors

Accessory / Description	Module Width	Catalog Number
Auxiliary Switch		
Number of Contacts: 1A/1B	1/2	WAX1A1B
Alarm Switch		
Number of Contacts: 1A/1B	1/2	WAL1A1B
Shunt Trip		
Voltage: 110/220V ac	1	WST220A
240/415V ac	1	WST415A
12/48V dc	1	WST48D
Undervoltage Release		
Voltage: 240V ac	1	WUVR240A
48V dc	1	WUVR48D
24V dc	1	WUVR24D
ID Labels		
Identification Labels	—	WIDL
Padlock Accessories		
Padlocking Attachment Padlock Key	—	WPLK WPKEY
Lockoff		
Lockoff for 1 – 4-Pole Supplementary Protector	—	WAMPLK

Bus Bar Combs

Phases	Configuration	Length	Actual Length (mm)	Number of Devices	Bus Bar Catalog Number ①	End Cap Catalog Number
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Fork Connection

1-Phase	Device	Short	210	12 Unit	WBC1F12	Not Required
	Device	Long	100	57 Unit	WBC1F57	Not Required
	Device + Aux	Short	315	12 Unit	WBC1F12A	Not Required
	Device + Aux	Long	1000	37 Unit	WBC1F37A	Not Required
2-Phase	Device	Short	210	6 Unit	WBC2F6	WBCCAP10UL
	Device	Long	100	28 Unit	WBC2F28	WBCCAP10UL
	Device + Aux	Short	255	6 Unit	WBC2F6A	WBCCAP10UL
	Device + Aux	Long	1000	22 Unit	WBC2F22A	WBCCAP10UL
3-Phase	Device	Short	210	4 Unit	WBC3F4	WBCCAP10UL
	Device	Long	106	19 Unit	WBC3F19	WBCCAP10UL
	Device + Aux	Short	235	4 Unit	WBC3F4A	WBCCAP10UL
	Device + Aux	Long	1000	16 Unit	WBC3F16A	WBCCAP10UL

Pin Connection

1-Phase	Device	Short	210	12 Unit	WBC1P12	Not Required
	Device	Long	100	57 Unit	WBC1P57	Not Required
	Device + Aux	Short	315	12 Unit	WBC1P12A	Not Required
	Device + Aux	Long	1000	37 Unit	WBC1P37A	Not Required
2-Phase	Device	Short	210	6 Unit	WBC2P6	WBCCAP10CE
	Device	Long	100	28 Unit	WBC2P28	WBCCAP10CE
	Device + Aux	Short	210	6 Unit	WBC2P6A	WBCCAP10CE
	Device + Aux	Long	1000	22 Unit	WBC2P22A	WBCCAP10CE
3-Phase	Device	Short	210	4 Unit	WBC3P4	WBCCAP10CE
	Device	Long	106	19 Unit	WBC3P19	WBCCAP10CE
	Device + Aux	Short	235	4 Unit	WBC3P4A	WBCCAP10CE
	Device + Aux	Long	1000	16 Unit	WBC3P16A	WBCCAP10CE

① Each 2- and 3-phase bus bar comb is supplied complete with two end caps; additional end caps are available as an accessory.

Circuit & Motor Protection

Circuit Breakers

PRODUCT SELECTION

Miniature Circuit Breakers — Accessories

Bus Bar

Description	Pack Quantity	Catalog Number
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End Caps ^①

For Use with 2- and 3-Phase Fork Bus Bars	10	WBCCAP10UL
For Use with 2- and 3-Phase Pin Bus Bars	10	WBCCAP10CE

Power Feed Lugs

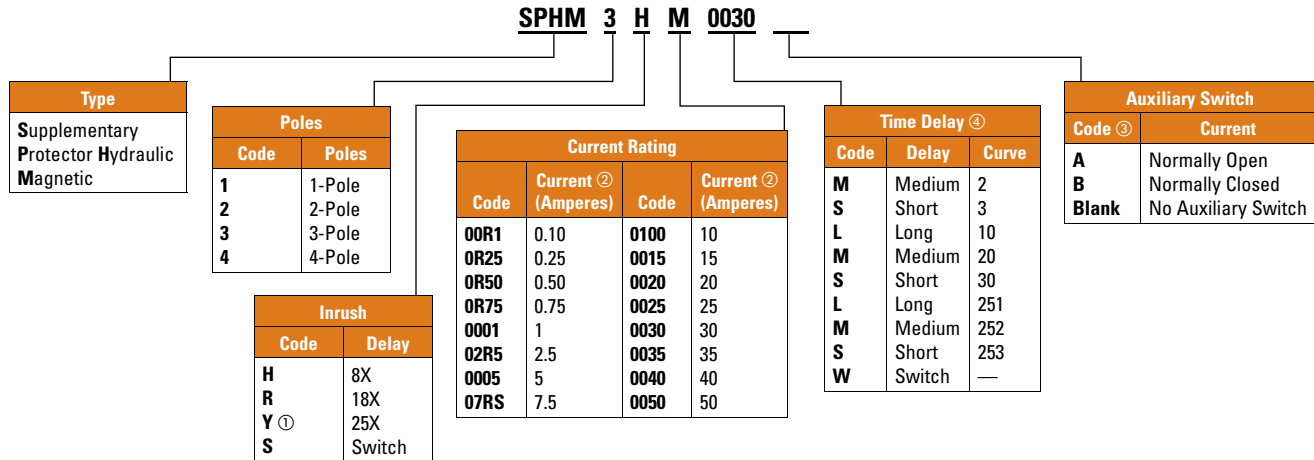
Connection of Oversized Wires to Feed Bus Bar (50 mm ² / 10-1 AWG)	4	WBCPPL
Direct Connection to Feed Fork Bus Bar (35 mm ²)	4	WBCFPL

Bus Bar Tooth Cap

Shroud Unused Bus Bar Connection	10	WBCTCAP10
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^① Each 2- and 3-phase bus bar comb is supplied complete with two end caps.

SPHM Series Hydraulic Magnetic Circuit Breakers — Catalog Numbering System



- ① Maximum of 40 amperes available at 25X inrush.
- ② UL recognized to 250V ac, 5 kA above 30 amperes.
- ③ One A or B contact maximum per pole. Contacts will be arranged left to right (e.g., BAB suffix on 3-pole breaker).
- ④ Specific data on trip curves can be found at www.eaton.com/heinemann.

SPHM Series Hydraulic Magnetic Circuit Breakers

- DIN-Rail mountable
- Optional integral auxiliary switch
- Bus bar for common feed and isolated connectors available
- Precision custom calibration
- Requires no derating (100% rated)
- Ambient compensating (-40°C to +85°C)
- Immediate reset after fault
- Provides equipment and wire protection



SPHM Standard

Poles	Current (Amperes)	Curve	Catalog Number
1	1	2	SPHM1RM0001
1	2.5	2	SPHM1RM02R5
1	5	2	SPHM1RM0005
1	7.5	2	SPHM1RM07R5
1	10	2	SPHM1RM0010
1	15	2	SPHM1RM0015
1	20	2	SPHM1RM0020
1	25	2	SPHM1RM0025
1	30	2	SPHM1RM0030
1	35	2	SPHM1RM0035
1	40	2	SPHM1RM0040
1	50	2	SPHM1RM0050
2	1	2	SPHM2RM0001
2	2.5	2	SPHM2RM02R5
2	5	2	SPHM2RM0005
2	7.5	2	SPHM2RM07R5
2	10	2	SPHM2RM0010
2	15	2	SPHM2RM0015

Poles	Current (Amperes)	Curve	Catalog Number
2	20	2	SPHM2RM0020
2	25	2	SPHM2RM0025
2	30	2	SPHM2RM0030
2	35	2	SPHM2RM0035
2	40	2	SPHM2RM0040
2	50	2	SPHM2RM0050
3	1	2	SPHM3RM0001
3	2.5	2	SPHM3RM02R5
3	5	2	SPHM3RM0005
3	7.5	2	SPHM3RM07R5
3	10	2	SPHM3RM0010
3	15	2	SPHM3RM0015
3	20	2	SPHM3RM0020
3	25	2	SPHM3RM0025
3	30	2	SPHM3RM0030
3	35	2	SPHM3RM0035
3	40	2	SPHM3RM0040
3	50	2	SPHM3RM0050

Circuit & Motor Protection

Circuit Breakers

CATALOG SELECTION / PRODUCT SELECTION

J Series Hydraulic Magnetic Circuit Breakers — Catalog Numbering System

JA1S A 3 A 0015 01 E

Style ①	Number of Poles	Description	Handle Color	Mounting
JA_S	1 to 4	Toggle Handle	White ON / OFF	6-32
JB_S	1 to 4	Snap-In Mount	White ON / OFF	N/A
JC_S	1 to 4	Rocker Handle	White ON / OFF	6-32
JE_S	1 to 3	Sealed Toggle	N/A	3/8-32

Voltage, Terminal and Frequency Code			
Code	Frequency	Terminal Location	Maximum Voltage
A	50/60 Hz	Push-On	277 ac
T	50/60 Hz	8-32 Screw	277 ac
K	50/60 Hz	10-32 Screw	277 ac
B	dc	Push-On	65 dc
V	dc	8-32 Screw	65 dc
L	dc	10-32 Screw	65 dc
D	60 Hz/dc	Push-On	250 ac/65 dc
E	60 Hz/dc	8-32 Screw	250 ac/65 dc
R	60 Hz/dc	10-32 Screw	250 ac/65 dc
C	400 Hz	Push-On	250 ac
W	400 Hz	8-32 Screw	250 ac
N	400 Hz	10-32 Screw	250 ac

Approval Code	
A	Up to 250V ac UL 1077 Up to 65V dc UL 1077
L	277V ac UL 1077

Internal Circuit Type and Inrush Catalog Code				
N/A	STD	18X	25X	Internal Circuit
0	—	—	—	Switch Only
3	89	38	—	Series Trip
2	—	39	—	Series Trip w/Aux.
5	—	—	—	Shunt/Tap
6	—	—	—	Relay Trip

Current Rating ②	
Code	Current (Amperes)
0R02	0.02
0R10	0.10
0R25	0.25
0R50	0.50
0R75	0.75
0001	1
02R5	2.5
0005	5
07R5	7.5
0010	10
0015	15
0020	20
0025	25
0030	30
0040	40
0050	50

Voltage Rating	
E	0 – 250V ac
F	251 – 277V ac
G	415V ac ③
N	0 – 65V dc

Time Delay Curve ④	
0P	Instant
01	Long Delay Std. Inrush
02	Medium
03	Short
10	Long Delay 18X Inrush
20	Medium Delay 18X Inrush
30	Short Delay 18X Inrush
251	Long Delay 25X Inrush
252	Medium Delay 25X Inrush
253	Short Delay 25X Inrush

- ① Choose style and select from 1 to 4 poles, and enter the number in position 3 of the catalog number. For example, a JA1S would identify a 1-pole JA Series breaker.
- ② Enter the four digit current rating. For example, use code "0015" for a 15 ampere current rating. For fractional amperages, use an "R" to designate the decimal point. For 0.10 ampere, enter the code "0R10."
- ③ Non-standard.
- ④ Specific data on trip curves can be found at www.eaton.com/heinemann.

J Series Hydraulic Magnetic Circuit Breakers

- Small, lightweight UL 1077 circuit breaker
- Precision custom calibration
- Requires no derating (100% rated)
- Ambient compensating (-40°C to +85°C)
- Immediate reset after fault
- Broad range of integral internal accessories
- Provides equipment and wire protection

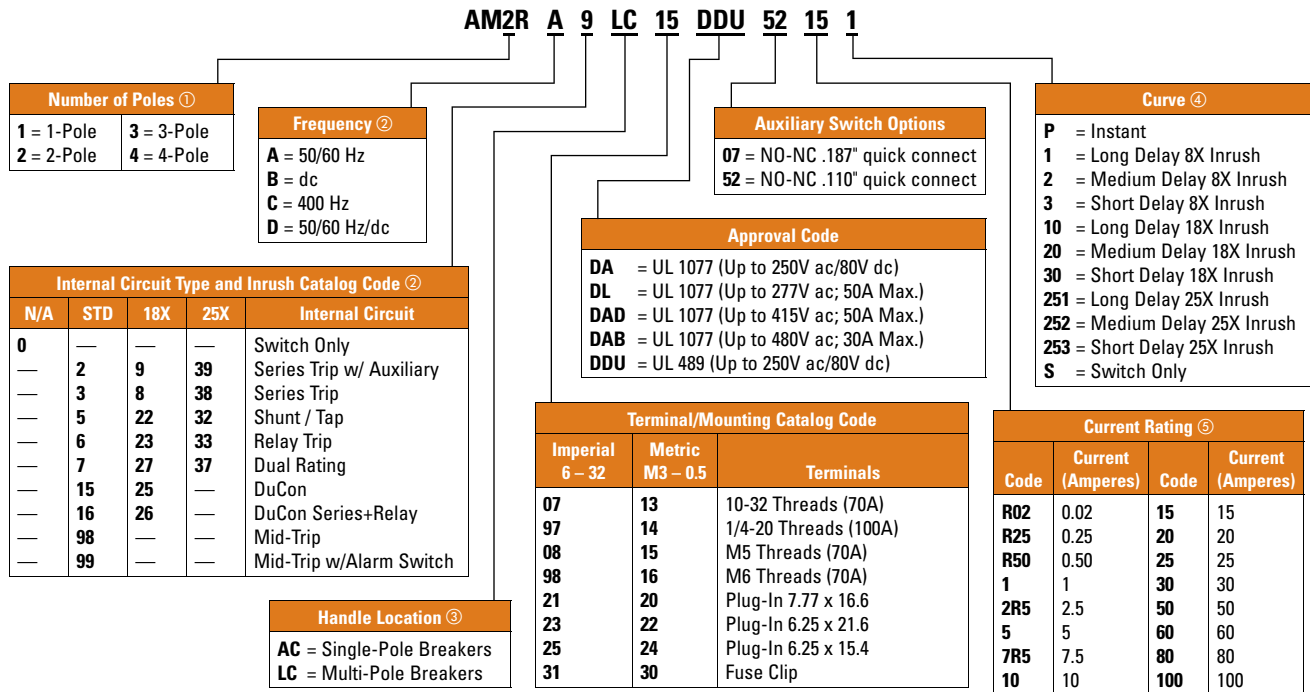


J Series Standard — 250V ac / 65V dc Push-On Terminals

Poles	Current (Amperes)	Curve	Catalog Number
1	1	2	JA1SD3A000102E
1	2.5	2	JA1SD3A02R502E
1	5	2	JA1SD3A000502E
1	7.5	2	JA1SD3A07R502E
1	10	2	JA1SD3A001002E
1	15	2	JA1SD3A001502E
1	20	2	JA1SD3A002002E
1	25	2	JA1SD3A002502E
1	30	2	JA1SD3A003002E
2	1	2	JA2SD3A000102E
2	2.5	2	JA2SD3A02R502E
2	5	2	JA2SD3A000502E
2	7.5	2	JA2SD3A07R502E
2	10	2	JA2SD3A001002E
2	15	2	JA2SD3A001502E

Poles	Current (Amperes)	Curve	Catalog Number
2	20	2	JA2SD3A002002E
2	25	2	JA2SD3A002502E
2	30	2	JA2SD3A003002E
3	1	2	JA3SD3A000102E
3	2.5	2	JA3SD3A02R502E
3	5	2	JA3SD3A000502E
3	7.5	2	JA3SD3A07R502E
3	10	2	JA3SD3A001002E
3	15	2	JA3SD3A001502E
3	20	2	JA3SD3A002002E
3	25	2	JA3SD3A002502E
3	30	2	JA3SD3A003002E

AMR Series Hydraulic Magnetic Circuit Breakers — Catalog Numbering System



- ① Select from 1 to 4 poles, and enter the number in position 3 of the catalog number. For example, an AM3RL would identify a 3-pole AMRL breaker.
- ② On multi-pole breakers, Steps 2 and 3 can be repeated if subsequent poles are different than the first. Identification starts from left-hand side when viewing the front of the breaker.
- ③ These will provide a handle on each pole.
- ④ Specific data on trip curves can be found at www.eaton.com/heinemann.
- ⑤ Enter the whole number current rating. For example, use code "15" for a 15 A current rating. For fractional amperages, use an "R" to designate the decimal point. For 0.10 A, enter the code "R10." Current range up to 100 amperes 50/60 Hz, 60 amperes 400 Hz, 100A dc.

AMR Series Hydraulic Magnetic Circuit Breakers

- Precision custom calibration
- Requires no derating (100% rated)
- Ambient compensating (-40°C to +85°C)
- Immediate reset after fault
- Broad range of integral internal accessories
- Provides equipment and wire protection



AMR Standard Black Toggle

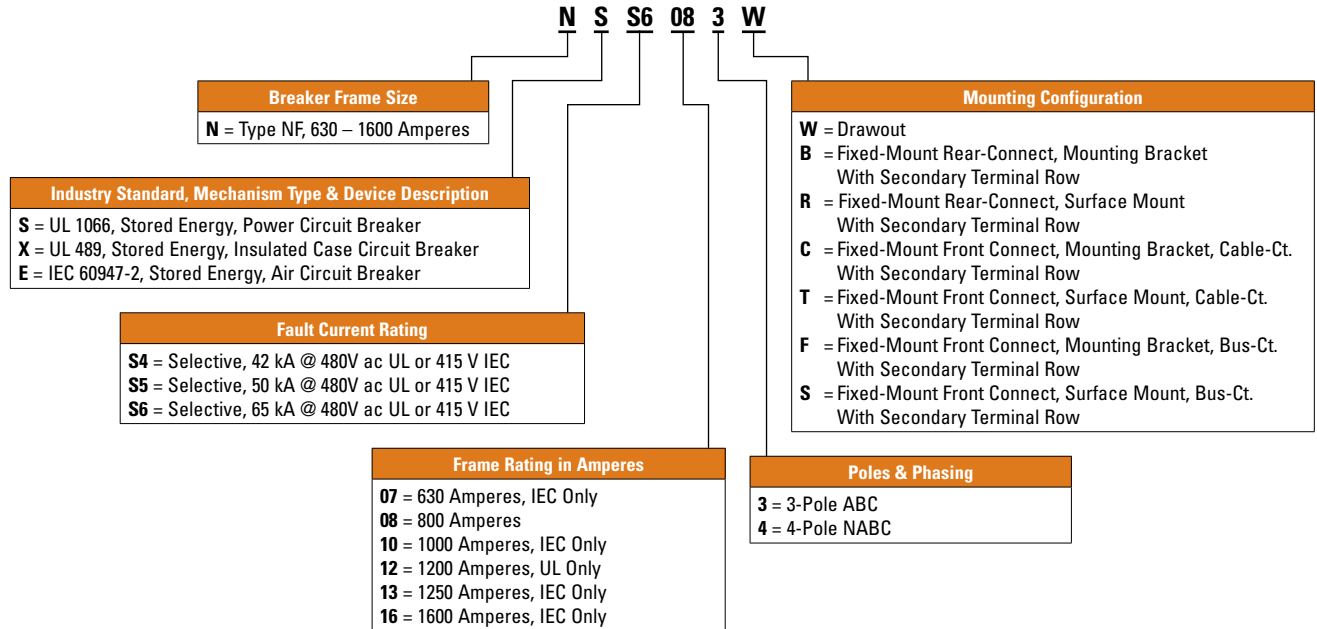
Current (Amperes)	Curve	1-Pole Catalog Number	2-Pole Catalog Number	3-Pole Catalog Number
1	2	AM1RA3AC07DA12	AM2RA3AC07DA12	AM3RA3AC07DA12
2.5	2	AM1RA3AC07DA2R52	AM2RA3AC07DA2R52	AM3RA3AC07DA2R52
5	2	AM1RA3AC07DA52	AM2RA3AC07DA52	AM3RA3AC07DA52
7.5	2	AM1RA3AC07DA7R52	AM2RA3AC07DA7R52	AM3RA3AC07DA7R52
10	2	AM1RA3AC07DA102	AM2RA3AC07DA102	AM3RA3AC07DA102
15	2	AM1RA3AC07DA152	AM2RA3AC07DA152	AM3RA3AC07DA152
20	2	AM1RA3AC07DA202	AM2RA3AC07DA202	AM3RA3AC07DA202
30	2	AM1RA3AC07DA302	AM2RA3AC07DA302	AM3RA3AC07DA302
50	2	AM1RA3AC07DA502	AM2RA3AC07DA502	AM3RA3AC07DA502
80	2	AM1RA3AC97DA802	AM2RA3AC97DA802	AM3RA3AC97DA802

Circuit & Motor Protection

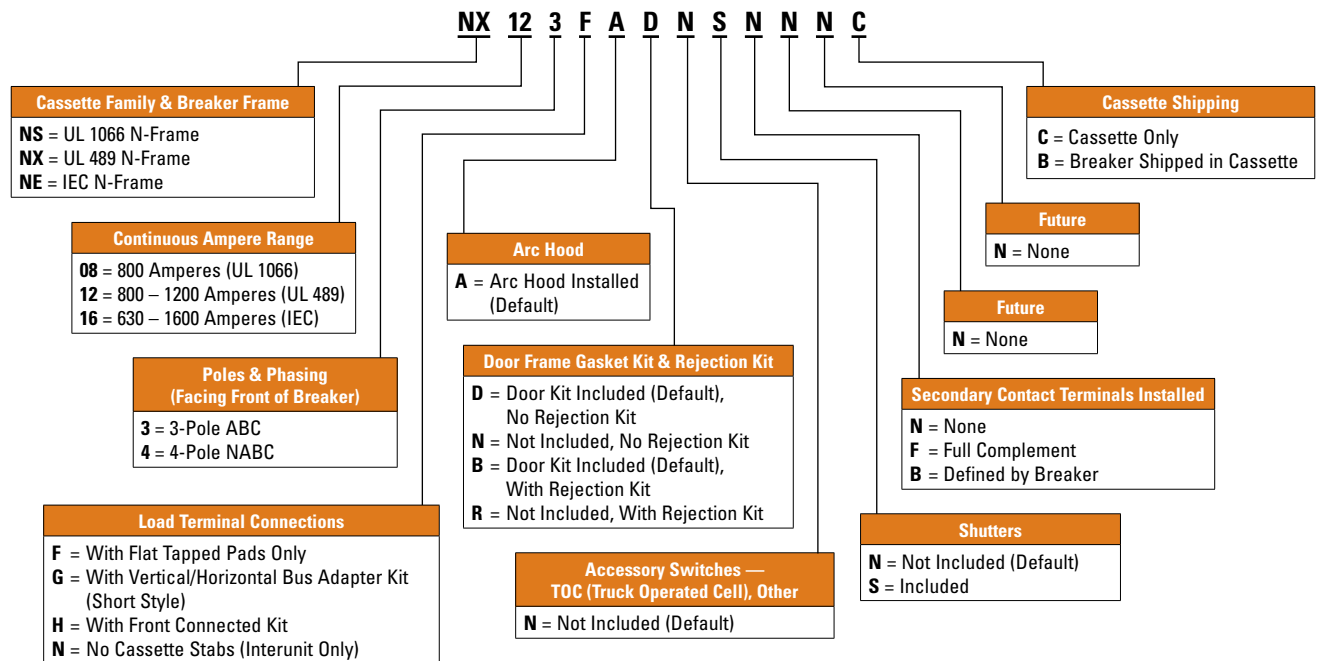
Circuit Breakers

CATALOG SELECTION

Series NRX Low Voltage Power Breaker — Positions 1 – 8 — Catalog Numbering System



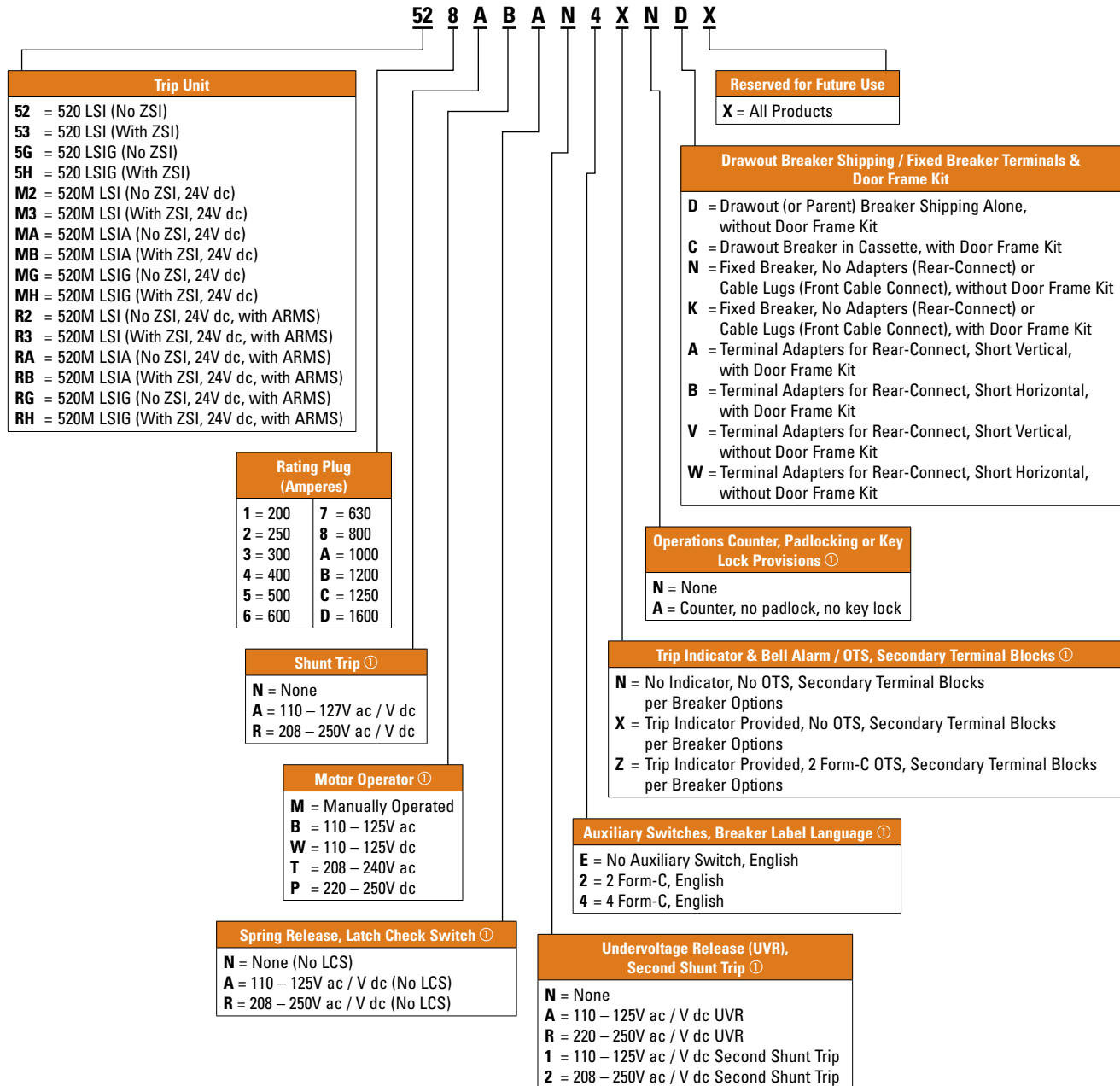
Series NRX Low Voltage Cassette — Catalog Numbering System



Circuit & Motor Protection

Circuit Breakers CATALOG SELECTION

Series NRX Low Voltage Power Breaker — Positions 9 – 20 — Catalog Numbering System



① Contact Eaton for available voltages. Not all voltages are currently available.

Circuit & Motor Protection

Circuit Breakers

PRODUCT SELECTION

Series NRX™ Low Voltage Power Breaker

- Rogowski coil does not saturate like iron core sensors, and one sensor accommodates 200 – 1600 amp range. Never change a sensor, and NO CTs are required.
- Tension clamp secondary terminals — 10A continuous rating at 600V meets UL / CSA / RoHS and UL-94 V0. Mounted directly to fixed breaker or drawout cassette they reduce wiring and provide clean, organized wiring schemes.
- Breaker mounted communication modules for INCOM, Modbus and PROFIBUS mount directly to the cassette, reducing the space and room required for communication capability.
- With the patent pending simple design of the fold-up cassette, all items in a cassette are replaceable without removing the cassette from the cell.
- Plug-and-play accessories — No special tools needed. Accessories come with plug and wires ready to install.



Series NRX Low Voltage Power Breaker

Breaker Frame	Industry Standard	Fault Current Rating (kAIC)	Frame Rating in Amperes	Poles	Mounting	Trip Unit	Rating Plug	Part Number
N	UL 1066	42	800	3	Drawout ②	520 LSI (No ZSI)	800	NSS4083W528 ①
N	UL 1066	42	800	4	Fixed	520 LSI (No ZSI)	800	NSS4084B528 ①
N	UL 1066	50	800	3	Drawout ②	520 LSI (No ZSI)	800	NSS5083W528 ①
N	UL 1066	50	800	4	Fixed	520 LSI (No ZSI)	800	NSS5084B528 ①
N	UL 1066	65	800	3	Drawout ②	520 LSI (No ZSI)	800	NSS6083W528 ①
N	UL 1066	65	800	3	Fixed	520 LSI (No ZSI)	800	NSS6083B528 ①
N	UL 1066	65	800	4	Drawout ②	520 LSI (No ZSI)	800	NSS6084W528 ①
N	UL 1066	65	800	4	Fixed	520 LSI (No ZSI)	800	NSS6084B528 ①
N	UL 489	42	800	3	Drawout ②	520 LSI (No ZSI)	800	NXS4083W528 ①
N	UL 489	42	1200	4	Drawout ②	520 LSI (No ZSI)	1200	NXS4124W52B ①
N	UL 489	50	800	3	Fixed	520 LSI (No ZSI)	800	NXS5083B528 ①
N	UL 489	50	1200	4	Fixed	520 LSI (No ZSI)	1200	NXS5124B528 ①
N	UL 489	65	800	3	Drawout ②	520 LSI (No ZSI)	800	NXS6083W528 ①
N	UL 489	65	800	4	Fixed	520 LSI (No ZSI)	800	NSS6084B528 ①
N	UL 489	65	1200	3	Drawout ②	520 LSI (No ZSI)	1200	NXS6123W52B ①
N	UL 489	65	1200	4	Fixed	520 LSI (No ZSI)	1200	NXS6124B52B ①
N	IEC	42	630	3	Drawout ②	520 LSI (No ZSI)	630	NES4073W527 ①
N	IEC	42	1600	4	Drawout ②	520 LSI (No ZSI)	1600	NES4164W52D ①
N	IEC	50	630	3	Fixed	520 LSI (No ZSI)	630	NES5073B527 ①
N	IEC	50	1600	4	Fixed	520 LSI (No ZSI)	1600	NES5164B52D ①
N	IEC	65	630	3	Drawout ②	520 LSI (No ZSI)	630	NES6073W527 ①
N	IEC	65	800	4	Fixed	520 LSI (No ZSI)	800	NES6084B528 ①
N	IEC	65	1250	3	Fixed	520 LSI (No ZSI)	1250	NES6133B52C ①
N	IEC	65	1600	4	Drawout ②	520 LSI (No ZSI)	1600	NES6164W52D ①

① See Page 33 for selection of accessories in positions 12 – 20.

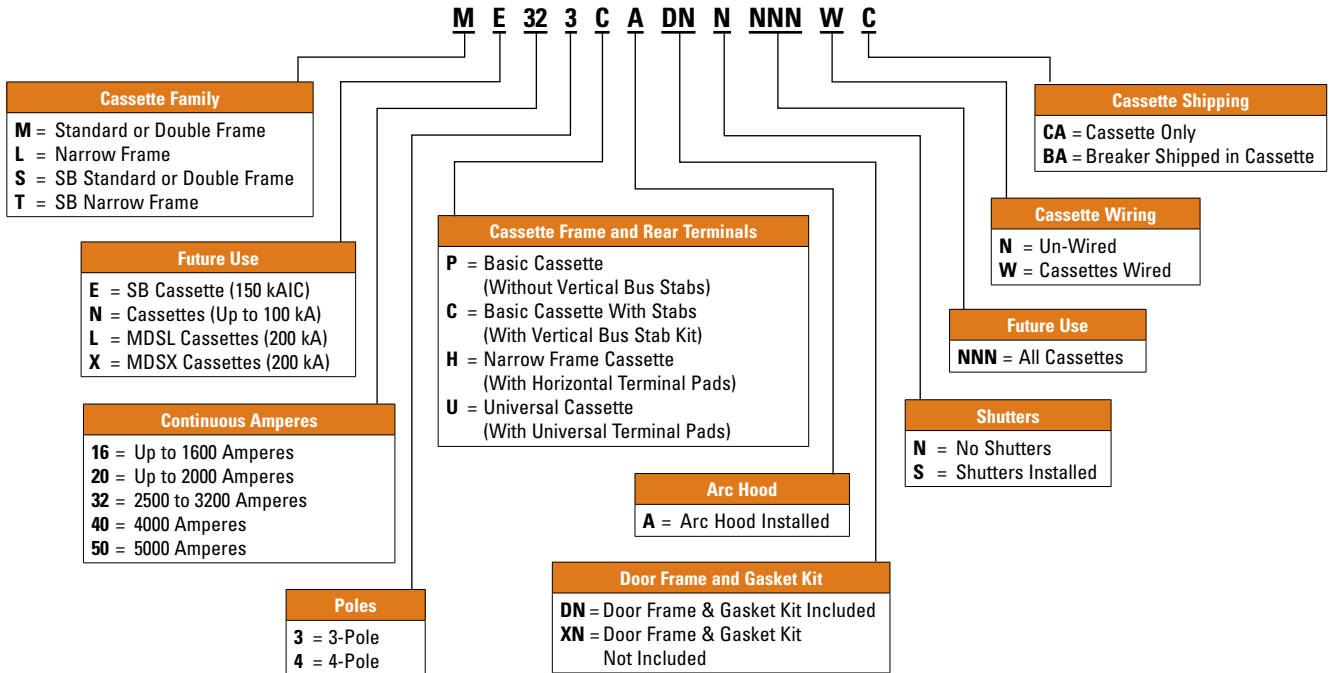
② See Page 32 for cassette selection for drawout breakers.

Circuit & Motor Protection

Circuit Breakers

CATALOG SELECTION

Magnum Low Voltage Power Breaker Cassette — Catalog Numbering System



Magnum® Low Voltage Power Breaker

- Rated up to 6300A with interrupting ratings up to 200 kAIC and withstand ratings up to 100 kAIC
- Magnum DS is UL 1066 listed for one-half second short-time withstand rating, and rated for 30 cycles. It is a switchgear class product to meet UL 1558 switchgear standards
- Magnum SB is a UL 1066 listed product with one-half second short-time withstand rating at 3 cycles to meet switchboard class product specifications, such as UL 891
- Magnum DS MDDX is the highest interrupting performance in a non-current limiting breaker construction rated up to 200 kAIC with 100 kAIC short-time withstand
- The Magnum DS, Magnum SB and Magnum IEC lines all offer the smallest double narrow 4000A frame available



Magnum DS Switchgear Class UL 1066 Low Voltage Power Circuit Breakers

Frame Type	RMS Symmetrical Current Ratings kA 50/60 Hz ①			Short Time Current Rating	Frame Amperes	Breaker Type ②
	Interrupting at 254V ac	Interrupting at 508V ac	Interrupting at 635V ac			
Narrow	42	42	42	42	800	MDN-408
Narrow	50	50	50	50		MDN-508
Narrow	65	65	65	65		MDN-608
Narrow	100	100	65	20		MDN-C08
Standard	42	42	42	42	800	MDS-408
Standard	65	65	65	65		MDS-608
Standard	85	85	85	85		MDS-808
Standard	100	100	100	85		MDS-C08
Standard	200	200	200	—		MDS-L08 ④
Standard	200	200	③	30		MDS-X08 ⑤⑥
Narrow	42	42	42	42	1600	MDN-416
Narrow	50	50	50	50		MDN-516
Narrow	65	65	65	65		MDN-616
Narrow	100	100	65	30		MDN-C16
Standard	65	65	65	65	1600	MDS-616
Standard	85	85	85	85		MDS-816
Standard	100	100	100	85		MDS-C16
Standard	200	200	200	—		MDS-L16 ④
Standard	200	200	③	30		MDS-X16 ⑤
Narrow	65	65	65	65	2000	MDN-620
Narrow	100	100	65	35		MDN-C20
Standard	65	65	65	65	2000	MDS-620
Standard	85	85	85	85		MDS-820
Standard	100	100	100	85		MDS-C20
Standard	200	200	200	—		MDS-L20 ④
Standard	200	200	③	30		MDS-X20 ⑤
Standard	65	65	65	65	3200	MDS-632
Standard	85	85	85	85		MDS-832
Standard	100	100	100	85		MDS-C32
Double	200	200	③	50	3200	MDS-X32 ⑤

① Interrupting ratings shown based on breaker equipped with integral Digitrip RMS Trip Unit. Interruption ratings for non-automatic breakers are equal to the published Short Time Current Rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

① See Page 35 for selection of trip unit and accessories. See Page 36 for cassette selection for drawout breakers.

② Product to be tested. Contact Eaton for product rating.

③ Magnum MDSL current limiting power circuit breaker with integral current limiters. Current limiter selected determines short time and maximum instantaneous trip rating. Maximum voltage rating is 600V ac.

④ Magnum MDSX current limiting power circuit breaker with fast opening contacts.

⑤ Check with Eaton for availability.

Circuit & Motor Protection

Circuit Breakers

PRODUCT SELECTION

Magnum Low Voltage Power Breaker

Magnum DS Switchgear Class UL 1066 Low Voltage Power Circuit Breakers (Continued)

Frame Type	RMS Symmetrical Current Ratings kA 50/60 Hz ①			Short Time Current Rating	Frame Amperes	Breaker Type ②
	Interrupting at 254V ac	Interrupting at 508V ac	Interrupting at 635V ac			
Double (N)	85	85	③	85	4000	MDN-840 MDN-C40
Double (N)	100	100		100		
Double	85	85	85	85	4000	MDS-840 MDS-C40 MDS-X40 ④
Double	100	100	100	100		
Double	200	200	③	50		
Double	200	200	③	100	4000	MDD-X40
Double	85	85	85	85	5000	MDS-850 MDS-C50 MDS-X50 ④⑤
Double	100	100	100	100		
Double	200	200	③	50		
Double	200	200	③	100	5000	MDD-X50
Double	100	100	100	100	6000	MDS-C60 ⑤
Double	200	200	③	100	6000	MDD-X60

① Interrupting ratings shown based on breaker equipped with integral Digitrip RMS Trip Unit. Interruption ratings for non-automatic breakers are equal to the published Short Time Current Rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

② See Page 35 for selection of trip unit and accessories. See Page 36 for cassette selection for drawout breakers.

③ Product to be tested. Contact Eaton for product rating.

④ Magnum MDSX current limiting power circuit breaker with fast opening contacts.

⑤ Breaker applied in a tested fan-cooled enclosure.

Magnum SB Switchboard Class UL 1066 Insulated Case Low Voltage Power Circuit Breakers

Frame Type	RMS Symmetrical Current Ratings kA 50/60 Hz ①			Short Time Current Rating	Frame Amperes	Breaker Type
	Interrupting at 254V ac	Interrupting at 508V ac	Interrupting at 635V ac			
Narrow	50	50	35	20	800	SBN-508 SBN-608 SBN-C08
Narrow	65	65	42	20		
Narrow	100	100	65	20		
Standard	65	65	65	20	800	SBS-608 SBS-C08 SBS-E08 ③
Standard	100	100	85	20		
Standard	200	150	②	30		
Narrow	50	50	35	25	1200	SBN-512 SBN-612 SBN-C12
Narrow	65	65	42	25		
Narrow	100	100	65	25		
Standard	65	65	65	25	1200	SBS-612 SBS-C12 SBS-E12 ③
Standard	100	100	85	25		
Standard	200	150	②	30		
Narrow	50	50	35	30	1600	SBN-516 SBN-616 SBN-C16
Narrow	65	65	42	30		
Narrow	100	100	65	30		
Standard	65	65	65	30	1600	SBS-616 SBS-C16 SBS-E16 ③
Standard	100	100	85	30		
Standard	200	150	②	30		
Narrow	65	65	65	35	2000	SBN-620 SBN-C20
Narrow	100	100	65	35		
Standard	65	65	65	35	2000	SBS-620 SBS-C20 SBS-E20 ③
Standard	100	100	85	35		
Standard	200	150	②	30		

① Interrupting ratings shown based on breaker equipped with integral Digitrip RMS Trip Unit. Interruption ratings for non-automatic breakers are equal to the published Short Time Current Rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

② Product to be tested. Contact Eaton for product rating.

③ Magnum SBSE current limiting power circuit breaker with fast opening contacts.

Magnum Low Voltage Power Breaker

Magnum SB Switchboard Class UL 1066 Insulated Case Low Voltage Power Circuit Breakers (Continued)

Frame Type	RMS Symmetrical Current Ratings kA 50/60 Hz ①				Frame Amperes	Breaker Type
	Interrupting at 254V ac	Interrupting at 508V ac	Interrupting at 635V ac	Short Time Current Rating		
Standard	65	65	65	45	2500	SBS-625
Standard	100	100	85	45		SBS-C25
Double	200	150	②	50		SBS-E25 ③
Standard	65	65	65	50	3000	SBS-630
Standard	100	100	85	50		SBS-C30
Double	200	150	②	50		SBS-E30 ③
Double (N)	85	85	③	85	4000	SBN-840
Double (N)	100	100	③	100		SBN-C40
Double	85	85	85	85		SBS-840
Double	100	100	100	100	5000	SBS-C40
Double	200	150	②	50		SBS-E40 ③
Double	85	85	85	85		SBS-850
Double	100	100	100	100	6000	SBS-C50
Double	200	150	②	50		SBS-E50 ③④
Double	100	100	100	100		SBS-C60 ④

① Interrupting ratings shown based on breaker equipped with integral Digitrip RMS Trip Unit. Interruption ratings for non-automatic breakers are equal to the published Short Time Current Rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

② Product to be tested. Contact Eaton for product rating.

③ Magnum SBSE current limiting power circuit breaker with fast opening contacts.

④ Breaker applied in a tested fan-cooled enclosure

Compact All-in-One Solutions



EATON

Powering Business Worldwide





- Eliminate the overload relay with a manual motor protector or combination motor controller
- Get a disconnect, starter, and overload and motor protection in one compact device
- A complete motor protector and remote control solution easily assembled
- UL 508F ratings means no need for protection upstream when using a combination motor controller

Circuit & Motor Protection

Manual Motor Protectors & Controllers

PRODUCT OVERVIEW

Manual Motor Protectors & Controllers Product Overview

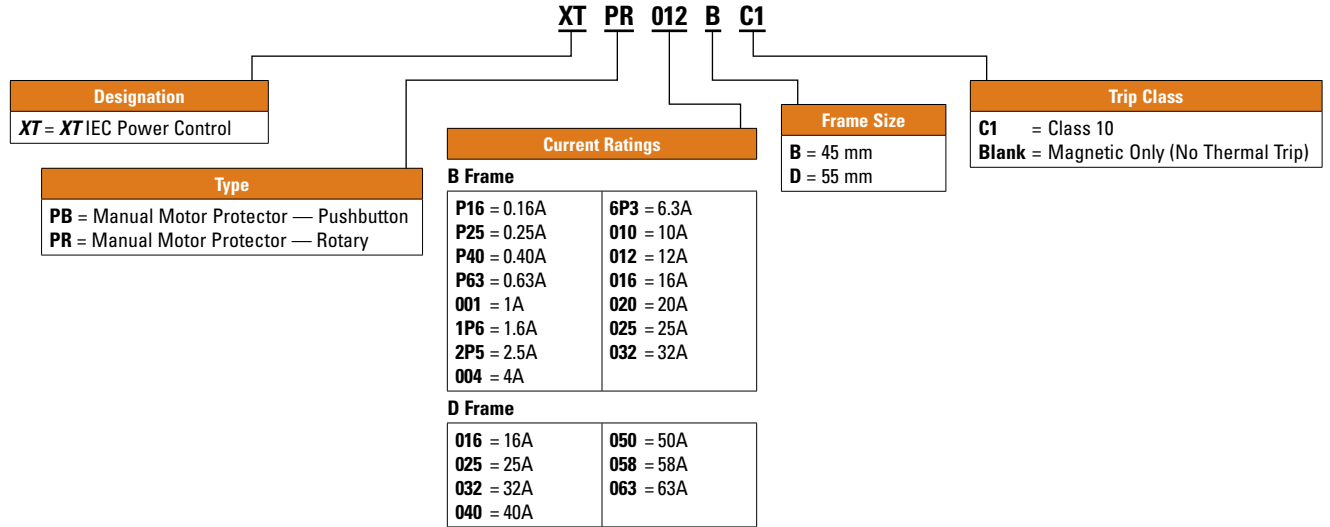
				
Description	XTPB Pushbutton Manual Motor Protector	XTPR Rotary Manual Motor Protector	XTSC Manual Motor Controller	XTFC Combination Motor Controller
Page	Page 42	Page 42	Page 49	Page 49
Operator Style	Pushbutton	Rotary	Rotary	Rotary
Components	Manual Motor Protector	Manual Motor Protector	Manual Motor Protector Contactor Connector Kit	Manual Motor Protector Contactor Connector Kit Line Side Adapter
UL 508 Type E	—	Yes, Line Side Adapter	—	—
UL 508 Type F	—	—	—	Yes, Line Side Adapter
Branch Motor Circuit Functions	Disconnect Controller (manual) Short Circuit Protection Motor Overload Protection	Disconnect Controller (manual) Short Circuit Protection Motor Overload Protection	Disconnect Controller (manual & remote) Short Circuit Protection Motor Overload Protection	Disconnect Controller (manual & remote) Short Circuit Protection Motor Overload Protection
FLA Range	0.1 – 25A	0.1 – 65A	0.1 – 65A	0.1 – 65A

Circuit & Motor Protection

Manual Motor Protectors & Controllers

CATALOG SELECTION

XT IEC Manual Motor Protectors — Catalog Numbering System



Circuit & Motor Protection

Manual Motor Protectors & Controllers

PRODUCT SELECTION

XT IEC Manual Motor Protectors

- ON / OFF rotary handle with lockout provision
- Class 10 overload protection
- Motor applications from 0.1A to 63A
- Built-in heater and magnetic trip elements to protect the motor
- Adjustment dial for setting motor FLA
- XTPR Rotary MMP with a lineside adapter is rated for UL 508 Type E



XTPB Pushbutton Manual Motor Protectors — Global and North American Ratings

Motor Protective Device with Thermal and Magnetic Trip

Rated Uninterrupted Current — $I_u = I_c$ (Amps)	FLA Adjustment Range / Overload Release — I_r (Amps)	Short Circuit Release — I_m (Amps)	Maximum Motor Ratings ①										Catalog Number — Screw Terminals
			Maximum kW Rating AC-3 — P (kW)					Maximum hp Rating — P (hp) UL 508 / CSA C 22.2 No. 14					
			3-Phase					3-Phase					
			220 – 240V	380 – 415V	440V	500V	660 – 690V	200V	240V	480V	600V		

Frame B

0.16	0.1 – 0.16	2.2	—	—	—	—	0.06	②	②	②	②	XTPBP16BC1
0.25	0.16 – 0.25	3.5	—	0.06	0.06	0.06	0.12	②	②	②	②	XTPBP25BC1
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	0.12	0.18	②	②	②	②	XTPBP40BC1
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	0.25	0.25	②	②	②	②	XTPBP63BC1
1	0.63 – 1	14	0.12	0.25	0.25	0.37	0.55	②	②	1/2	1/2	XTPB001BC1
1.6	1 – 1.6	22	0.25	0.55	0.55	0.75	1.1	②	②	3/4	1	XTPB1P6BC1
2.5	1.6 – 2.5	35	0.37	0.75	1.1	1.1	1.5	1/2	1/2	1	1-1/2	XTPB2P5BC1
4	2.5 – 4	56	0.75	1.5	1.5	2.2	3	1	1	2	3	XTPB004BC1
6.3	4 – 6.3	88	1.1	2.2	3	3	4	1-1/2	1-1/2	3	5	XTPB6P3BC1
10	6.3 – 10	140	2.2	4	4	4	7.5	3	3	7-1/2	10	XTPB010BC1
12	8 – 12	168	3	5.5	5.5	5.5	11	3	3	7-1/2	10	XTPB012BC1
16	10 – 16	224	4	7.5	9	9	12.5	3	5	10	10	XTPB016BC1
20	16 – 20	280	5.5	9	11	12.5	15	5	5	10	15	XTPB020BC1
25	20 – 25	350	5.5	12.5	12.5	15	22	5	7-1/2	15	20	XTPB025BC1

① Select manual motor protectors by full load amperes. Maximum motor ratings (kW, hp) are for reference only.

② In this range, calculate motor rating according to rated current. Specified values to NEC 430.6(A)(1).

Note: Service Factor (SF) — Setting I_r of current scale in dependence of load factor:

$$SF = 1.15 \rightarrow I_r = 1 \times I_n \text{ mot}$$

$$SF = 1 \rightarrow I_r = 0.9 \times I_n \text{ mot}$$

Circuit & Motor Protection

Manual Motor Protectors & Controllers

PRODUCT SELECTION

XT IEC Manual Motor Protectors

XTPR Rotary Manual Motor Protectors with Screw Terminals — Global Ratings and North American Ratings

Motor Protective Device with Thermal and Magnetic Trip

Rated Uninterrupted Current — $I_n = I_r$ (Amps)	FLA Adjustment Range / Overload Release — I_r (Amps)	Short Circuit Release — I_{rm} (Amps)	Maximum Motor Ratings ①										Catalog Number — Screw Terminals ③
			Maximum kW Rating AC-3 — P (kW)					Maximum hp Rating — P (hp) UL 508 / CSA C 22.2 No. 14					
			3-Phase					3-Phase					
			220 – 240V	380 – 415V	440V	500V	660 – 690V	200V	240V	480V	600V		

Frame B

0.16	0.1 – 0.16	2.2	—	—	—	—	0.06	②	②	②	②	XTPRP16BC1
0.25	0.16 – 0.25	3.5	—	0.06	0.06	0.06	0.12	②	②	②	②	XTPRP25BC1
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	0.12	0.18	②	②	②	②	XTPRP40BC1
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	0.25	0.25	②	②	②	②	XTPRP63BC1
1	0.63 – 1	14	0.12	0.25	0.25	0.37	0.55	②	②	1/2	1/2	XTPR001BC1
1.6	1 – 1.6	22	0.25	0.55	0.55	0.75	1.1	②	②	3/4	1	XTPR1P6BC1
2.5	1.6 – 2.5	35	0.37	0.75	1.1	1.1	1.5	1/2	1/2	1	1-1/2	XTPR2P5BC1
4	2.5 – 4	56	0.75	1.5	1.5	2.2	3	1	1	2	3	XTPR004BC1
6.3	4 – 6.3	88	1.1	2.2	3	3	4	1-1/2	1-1/2	3	5	XTPR6P3BC1
10	6.3 – 10	140	2.2	4	4	4	7.5	3	3	7-1/2	10	XTPR010BC1
12	8 – 12	168	3	5.5	5.5	5.5	11	3	3	7-1/2	10	XTPR012BC1
16	10 – 16	224	4	7.5	9	9	12.5	3	5	10	10	XTPR016BC1
20	16 – 20	280	5.5	9	11	12.5	15	5	5	10	15	XTPR020BC1
25	20 – 25	350	5.5	12.5	12.5	15	22	5	7-1/2	15	20	XTPR025BC1
32	25 – 32	448	7.5	15	15	22	30	7-1/2	10	25	30	XTPR032BC1

Frame D

16	10 – 16	224	4	7.5	9	9	12.5	3	5	10	15	XTPR016DC1
25	16 – 25	350	5.5	12.5	12.5	15	22	7-1/2	7-1/2	20	25	XTPR025DC1
32	25 – 32	448	7.5	15	17.5	22	22	10	10	25	30	XTPR032DC1
40	32 – 40	560	11	20	22	24	30	10	15	30	40	XTPR040DC1
50	40 – 50	700	14	25	30	30	45	10	15	30	40	XTPR050DC1
58	50 – 58	812	17	30	37	37	55	—	—	40	—	XTPR058DC1
65	55 – 65	882	18.5	34	37	45	55	—	—	—	—	XTPR063DC1

① Select manual motor protectors by full load amperes. Maximum motor ratings (kW, hp) are for reference only.

② In this range, calculate motor rating according to rated current. Specified values to NEC 430.6(A)(1).

③ Catalog number shown comes with screw terminals. For Frame B devices up to 16A, spring cage terminals are available.

For spring cage terminals on line and load sides, insert a "C" into the catalog number in the 5th position — Example: XTPRC_C_BC1.

For spring cage terminals on the load side only, insert an "SC" into the catalog number in the 5th and 6th positions — Example: XT_{SC}PRSC_C_BC1.

Note: Service Factor (SF) — Setting I_r of current scale in dependence of load factor:

$$SF = 1.15 \rightarrow I_r = 1 \times I_{n \text{ mot}}$$

$$SF = 1 \rightarrow I_r = 0.9 \times I_{n \text{ mot}}$$

Circuit & Motor Protection

Manual Motor Protectors & Controllers

PRODUCT SELECTION

XT IEC Manual Motor Protectors

XTPR Manual Self-Protected Motor Starters — North American Ratings, UL 508 Type E ①

Motor Protective Device with Thermal and Magnetic Trip

Rated Uninterrupted Current — I_n (Amps)	FLA Adjustment Range / Overload Release — I_r (Amps)	Short Circuit Release — I_m (Amps)	Maximum Motor Ratings ②				Rated Short-Circuit Breaking Capacity (kA)			Line Side Adapter ①	Manual Motor Protector — Screw Terminals
			Maximum hp Rating — P (hp)				240V	480/277V	600/347V		
			3-Phase								
			200V	240V	480V/277V	600V/247V	240V	480/277V	600/347V	Catalog Number	Catalog Number

Frame B

0.16	0.1 – 0.16	2.2	③	③	1/2	1/2	50	50	50	XTPAXLSA	XTPRP16BC1
0.25	0.16 – 0.25	3.4	③	③	1/2	1/2	50	50	50	XTPAXLSA	XTPRP25BC1
0.4	0.25 – 0.4	5.6	③	③	1/2	1/2	50	50	50	XTPAXLSA	XTPRP40BC1
0.63	0.4 – 0.63	8.8	③	③	1/2	1/2	50	50	50	XTPAXLSA	XTPRP63BC1
1	0.63 – 1	14	③	③	1/2	1/2	50	50	50	XTPAXLSA	XTPR001BC1
1.6	1 – 1.6	22	③	③	3/4	3/4	50	50	50	XTPAXLSA	XTPR1P6BC1
2.5	1.6 – 2.5	35	1/2	1/2	1	1-1/2	50	50	50	XTPAXLSA	XTPR2P5BC1
4	2.5 – 4	56	3/4	1	2	3	50	50	50	XTPAXLSA	XTPR004BC1
6.3	4 – 6.3	88	1	1-1/2	3	5	50	50	50	XTPAXLSA	XTPR6P3BC1
10	6.3 – 11	140	3	3	7-1/2	10	50	50	50	XTPAXLSA	XTPR10BC1
12	8 – 12	168	3	3	7-1/2	—	42	42	—	XTPAXLSA	XTPR012BC1
16	10 – 16	224	3	5	10	—	42	42	—	XTPAXLSA	XTPR016BC1
20	16 – 20	280	5	5	—	—	42	42	—	XTPAXLSA	XTPR020BC1
25	20 – 25	350	5	7-1/2	15	—	18	18	—	XTPAXLSA	XTPR025BC1
32	25 – 32	448	7-1/2	10	25	—	18	18	—	XTPAXLSA	XTPR032BC1

Frame D

16	10 – 16	224	3	5	10	10	50	50	50	XTPAXLSAD	XTPR016DC1
25	16 – 25	350	7-1/2	7-1/2	20	25	50	50	50	XTPAXLSAD	XTPR025DC1
32	25 – 32	448	10	10	25	30	50	50	50	XTPAXLSAD	XTPR032DC1
40	32 – 40	560	10	10	30	40	50	50	50	XTPAXLSAD	XTPR040DC1
50	40 – 50	700	10	15	30	—	65	65	—	XTPAXLSAD	XTPR050DC1
58	50 – 58	812	15	15	40	—	65	65	—	XTPAXLSAD	XTPR058DC1
65	55 – 65	882	15	15	40	—	65	65	—	XTPAXLSAD	XTPR063DC1

① UL 508 Type E starters are assembled from a standard XTPR and a special incoming terminal line side adapter (XTPAXLSA or XTPAXLSAD).

② Select manual motor protectors by full load amperes. Maximum motor ratings (kW, hp) are for reference only.

③ In this range, calculate motor rating according to rated current. Specified values to NEC 430.6(A)(1).

Note: A UL 508 Type E self-protected manual combination starter (XTPR) consists of a manual motor protector (XTPR) and a UL listed line side adapter (e.g., XTPAXLSA). The Type E self-protected manual combination starter alone is a legitimate short-circuit protective device and disconnect means for the downstream motor, while the contactor has been added to provide remote operation of the motor circuit.


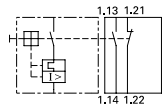
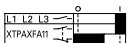
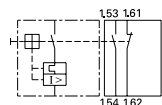
Circuit & Motor Protection

Manual Motor Protectors & Controllers


PRODUCT SELECTION

XT IEC Manual Motor Protectors — Accessories

Auxiliary Contacts

Contact Configuration	Contact Sequence	Screw Terminals	
		Pkg. Qty.	Catalog Number
Side-Mount			
1NO-1NC	 	5	XTPAXSA11
Front-Mount			
1NO-1NC	 	5	XTPAXFA11

IP65 Rotary Handle Mechanism ①②③

Description	Pkg. Qty.	Catalog Number
Complete Kits — Includes Handle, Shaft and Required Hardware		
 Rotary Handle Mechanism IP65 Black — For use on main switches to IEC / EN 60204.	1	XTPAXRHMB
Rotary Handle Mechanism IP65 Red / Yellow — For use on main switch with Emergency-Stop function to IEC / EN 60204.	1	XTPAXRHMR
Rotary Handle Mechanism IP65 Black — For use on main switches to IEC / EN 60204 where XTPR is mounted 90° from vertical.	1	XTPAXRHM90B
Rotary Handle Mechanism IP65 Red / Yellow — For use on main switch with Emergency-Stop function to IEC / EN 60204 where XTPR is mounted 90° from vertical.	1	XTPAXRHM90RY

- ① With ON/OFF switch position and "+" (tripped), lockable with 3 padlocks, 4 – 8 mm hasp. Can be locked in the OFF position, if required.
- ② Rotary handle mechanisms ship with door interlock disabled. See instruction publication with product for how to enable door interlock.
- ③ Not for use with XTPAXFAEM20 early-make front-mount auxiliary contact.

Shunt Release





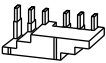
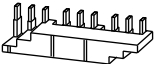

Catalog Number — Screw Terminals	Pkg. Qty.
XTPAXSR120V60H	2
XTPAXSR240V60H	2
XTPAXSR480V60H	2
XTPAXSR24VDC	2

Undervoltage Release

Catalog Number — Screw Terminals	Pkg. Qty.
XTPAXUVR120V60H	2
XTPAXUVR240V60H	2
XTPAXUVR480V60H	2


XT IEC Manual Motor Protectors — Accessories

Three-Phase Commoning Links ①

	For Use with...	Qty MMP	Length of Link (mm)	Unit Width (mm)	Pkg Qty.	Catalog Number
Frame B						
	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
Frame D						
	MMP With No Side-Mounted Auxiliaries or Voltage Releases	2	110	55	1	XTPAXCLKA2D
		3	165	55	1	XTPAXCLKA3D
		4	220	55	1	XTPAXCLKA4D



① Protected against accidental contact. B-Frame short circuit proof $U_e = 690V$, $I_u = 63A$; D-Frame short circuit proof $U_e = 690V$, $I_u = 128A$. Frame B links can be combined by rotating mounting. Frame D links cannot be combined.

Incoming Terminal for Three-Phase Commoning Link ①

	For Use with...	Pkg Qty.	Catalog Number
	B-Frame XTPR, XTPB	5	XTPAXIT

① For three-phase commoning link, protected against accidental contact, $U_e = 690V$, $I_u = 63A$; for conductor cross-sections: 2.5 – 25 mm² stranded; 2.5 – 16 mm² flexible with ferrules, AWG 14-6.

Line-Side Adapter ①

	For Use with...	Pkg Qty.	Catalog Number
	B-Frame XTPR to Create a UL 508 Type E/F Manual Combination Starter	5	XTPAXLSA
	D-Frame XTPR to Create a UL 508 Type E/F Manual Combination Starter	1	XTPAXLSAD ②

① XTPAXLSA is for three-phase commoning link, finger- and back-of-hand proof, $U_e = 690V$, $I_u = 60A$; for conductor cross sections: 2.5 – 25 mm² stranded, 2.5 – 16 mm² flexible with ferrule, AWG 14-6.

② XTPAXLSAD cannot be combined with three-phase commoning links.

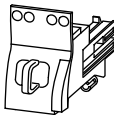
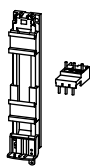
Circuit & Motor Protection

Manual Motor Protectors & Controllers

PRODUCT SELECTION

XT IEC Manual Motor Protectors — Accessories

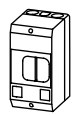
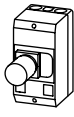
Combination Connection Kits for Connection of XTPR MMP with XTCE Contactor

	For Use with...	Description	Std. Pack	Catalog Number
Non-Reversing Starters				
	XTPR...B + XTCE...B	Comprised of: <ul style="list-style-type: none"> • Mechanical connection element for XTPR...B and contactor • Main current wiring between XTPR...B and contactor in tool-less plug connection • Cable guidance Use contactor auxiliary switch XTCEXFAT_. Control cable guidance: max. 6 cables up to 2.5 mm ² external diameter or 4 cables up to 3.5 mm ² external diameter.	1	XTPAXTPCB
	XTPR...B + XTCE...C	Comprised of: <ul style="list-style-type: none"> • DIN-Rail adapter plate • Main current wiring between XTPR and contactor 	1	XTPAXTPCC
	XTPR...D + XTCE...D		1	XTPAXTPCD


Insulated Enclosures for Surface Mounting

	Degree of Protection	For Use with...	Description	Catalog Number
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XTPB Pushbutton Manual Motor Protectors — North American Usage ①②

	IP65 NEMA 3R, 4X, 12, 13	XTPB MMP Only or with: XTPAXFA..., XTPBXFAEM20, XTPAXSA..., XTPAXUVR..., XTPAXSR..., XTPAXCL	With actuating diaphragm	XTPBXENAS65
	IP65 NEMA 3R, 4X, 12, 13	XTPB MMP Only or with: XTPAXFA..., XTPBXFAEM20, XTPAXUVR..., XTPAXSR..., XTPAXCL	With Emergency-Stop (E-Stop) pushbutton actuator, Red-Yellow	XTPBXENASE65

B-Frame (0.1 – 32A) XTPR Rotary Manual Motor Protectors — North American Usage ③

	IP55 NEMA 1, 12, 3R	B-Frame XTPR Only or with: XTPAXSA... and XTPAXFA..., XTPAXUVR... and XTPAXFA..., XTPAXSR... and XTPAXFA..., XTPAXCL	With red/yellow rotary handle for use as Emergency-Stop switch to VDE 0113	XTPAXENAS55RY
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D-Frame (10 – 65A) XTPR Rotary Manual Motor Protectors ④⑤

	IP65 NEMA 1, 12, 3R, 4X	D-Frame XTPR Only or with: XTPAXFA..., XTPAXFAEM20, XTPAXSA..., XTPAXSATR..., XTPAXUVR..., XTPAXSR..., XTPAXCL	With red/yellow rotary handle for use as Emergency-Stop switches to IEC / EN 60204	XTPAXENCSD65RY
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① Built-in terminal for PE(N).

② North American enclosures come with conduit adapters for use with 1/2" NPT.

③ Built-in N and PE terminal, lower part without knockouts.

④ Integrated terminal for PE(N) connection.

⑤ % Metric knockouts:

Top ÷ bottom: M25/M32

In backplate: M25/M32

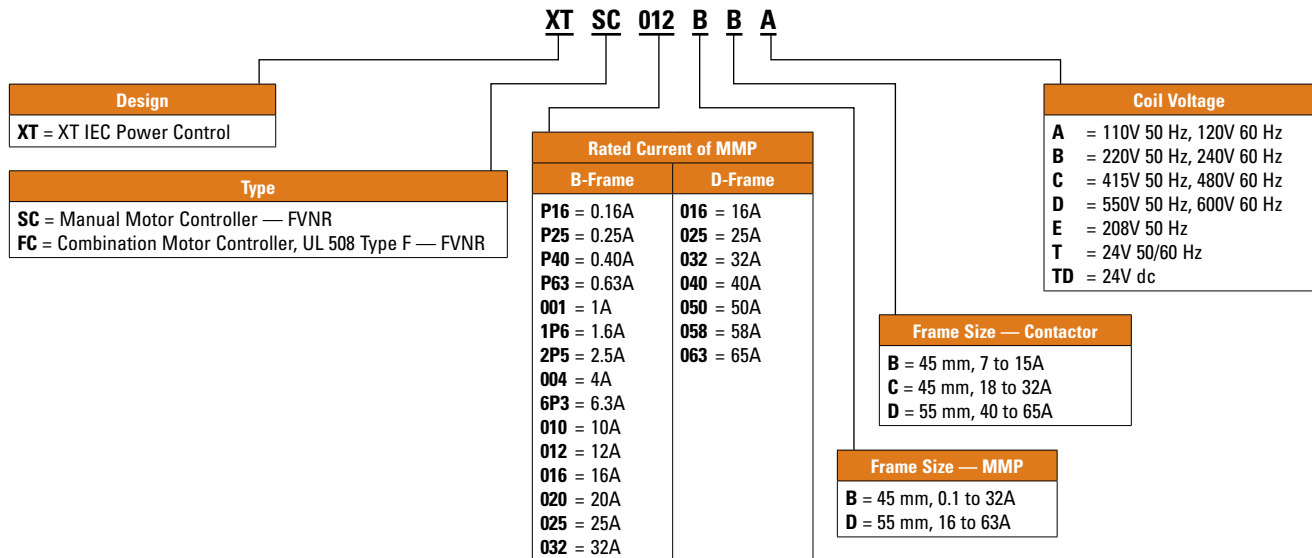
Control cable entry: M20

Circuit & Motor Protection

Manual Motor Protectors & Controllers

CATALOG SELECTION

XT IEC Combination Motor Controllers — Catalog Numbering System



Circuit & Motor Protection

Manual Motor Protectors & Controllers

PRODUCT SELECTION

XTIEC Manual and Combination Motor Controllers

- ON/OFF rotary handle with lockout provision
- Class 10 overload protection
- Adjustment dial for setting motor FLA
- Built-in surge suppression on dc coils as standard
- Assembled manual motor controllers consist of manual motor protector, contactor, connector kit and 1NO-1NC auxiliary contact for MMP
- Assembled combination motor controllers consist of manual motor protector, contactor, connector kit, 1NO-1NC auxiliary contact for MMP and line side adapter
- Combination motor controllers are UL 508 Type F rated, and provide the following functions in a single device
 - Disconnect
 - Short circuit protection
 - Motor overload protection
 - Motor controller



XTSC Manual Motor Controllers (MMC) / Starter Combinations

Factory Assembled Motor Protective Device with Thermal and Magnetic Trip + Contactor										
FLA Adjustment Range (Amps) ①	Short-Circuit Release — I _m (Amps)	Maximum Motor Ratings — P ②								Assembled Manual Motor Controller ③
		Maximum Motor kW Rating AC-3 — P (kW)				Maximum hp Rating — P (hp)				Non-Reversing
		Three-Phase				Three-Phase				Catalog Number
		220 – 240V	380 – 415V	500V	660 – 690V	200V	240V	480V	600V	

Frame B MMP + Frame B Contactor

0.1 – 0.16	3.2	—	—	—	0.06	④	④	1/2	1/2	XTSC016BB_
0.16 – 0.25	3.5	—	0.06	0.06	0.12	④	④	1/2	1/2	XTSC025BB_
0.25 – 0.4	5.6	0.06	0.09	0.12	0.18	④	④	1/2	1/2	XTSC040BB_
0.4 – 0.63	8.82	0.09	0.18	0.25	0.25	④	④	1/2	1/2	XTSC063BB_
0.63 – 1	14	0.12	0.25	0.37	0.55	④	④	1/2	1/2	XTSC001BB_
1 – 1.6	22.4	0.25	0.55	0.75	1.1	④	④	3/4	1	XTSC1P6BB_
1.6 – 2.5	35	0.37	0.75	1.1	1.5	1/2	1/2	1	1-1/2	XTSC2P5BB_
2.5 – 4	56	0.75	1.5	2.2	3	1	1	2	3	XTSC004BB_
4 – 6.3	88.2	1.1	2.2	3	4	1-1/2	1-1/2	3	5	XTSC6P3BB_
6.3 – 10	140	2.2	4	4	7.5	3	3	7-1/2	10	XTSC010BB_
8 – 12	168	3	5.5	5.5	11	3	3	7-1/2	10	XTSC012BB_
10 – 16	224	4	7.5	9	12.5	3	3	10	10	XTSC016BB_

Frame B MMP + Frame C Contactor

10 – 16	224	4	7.5	9	12.5	3	3	10	10	XTSC016BC_
16 – 20	280	5.5	9	12.5	15	5	5	10	15	XTSC020BC_
20 – 25	350	5.5	11	15	22	5	7-1/2	15	20	XTSC025BC_
25 – 32	448	7.5	15	22	30	7-1/2	10	20	25	XTSC032BC_

Frame D MMP + Frame C Contactor

10 – 16	224	4	7.5	9	12.5	3	5	10	15	XTSC016DC_
16 – 25	350	5.5	12.5	12.5	22	7-1/2	7-1/2	20	25	XTSC025DC_
25 – 32	448	7.5	15	17.5	22	10	10	25	30	XTSC032DC_

Frame D MMP + Frame D Contactor

32 – 40	560	11	20	22	30	10	—	30	30	XTSC040DD_
40 – 50	700	14	25	30	45	15	15	30	40	XTSC050DD_
50 – 58	812	17	30	37	55	—	—	40	—	XTSC058DD_
55 – 65	882	18.5	34	37	55	—	—	40	—	XTSC063DD_

① Overload release — I_r

② Select manual motor protectors by full load amperes. Maximum motor ratings (kW, hp) are for reference only.

③ Underscore (_) indicates magnet coil suffix required. See Page 51.

④ In this range, calculate motor rating according to rated current. Specified values to NEC 430.6(A)(1).

Note: The assembled Manual Motor Controller (MMC) consists of an XTPR Manual Motor Protector (MMP) and an XTCE contactor. For Frame B MMP + Frame B Contactor assemblies, the XTSC 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 (XTPAXTPCC, XTPAXTPCD) and the electrical connection is made with electrical contact modules (XTPAXECMC, XTPAXECMD), both included in XTPAXTPCC and XTPAXTPCD. Service Factor Settings: Setting I_r of current scale in dependence of load factor:
 SF = 1.15 — I_r = 1 x I_n mot
 SF = 1 — I_r = 0.9 x I_n mot

XTIEC Manual and Combination Motor Controllers

XTFC Combination Motor Controllers (CMC), UL508 Type F

Factory Assembled Motor Protective Device with Thermal and Magnetic Trip + Contactor + Required Line Side Adapter										
FLA Adjustment Range (Amps) ①	Short-Circuit Release — I _{rm} (Amps)	Maximum Motor Ratings ②								Assembled Combination Motor Controller ③
		Maximum Motor kW Rating AC-3 — P (kW)				Maximum hp Rating — P (hp)				
		Three-Phase				Three-Phase				Non-reversing
		220 – 240V	380 – 415V	500V	660 – 690V	200V	240V	480V	600V	Catalog Number

Frame B MMP + Frame B Contactor

0.1 – 0.16	2.2	—	—	—	0.06	④	④	1/2	1/2	XTFCP16BB_
0.16 – 0.25	3.5	—	0.06	0.06	0.12	④	④	1/2	1/2	XTFCP25BB_
0.25 – 0.4	5.6	0.06	0.09	0.12	0.18	④	④	1/2	1/2	XTFCP40BB_
0.4 – 0.63	8.82	0.09	0.18	0.25	0.25	④	④	1/2	1/2	XTFCP63BB_
0.63 – 1	14	0.12	0.25	0.37	0.55	④	④	1/2	1/2	XTFC001BB_
1 – 1.6	22.4	0.25	0.55	0.75	1.1	④	④	3/4	1	XTFC1P6BB_
1.6 – 2.5	35	0.37	0.75	1.1	1.5	1/2	1/2	1	1-1/2	XTFC2P5BB_
2.5 – 4	56	0.75	1.5	2.2	3	1	1	2	3	XTFC004BB_
4 – 6.3	88.2	1.1	2.2	3	4	1-1/2	1-1/2	3	5	XTFC6P3BB_
6.3 – 10	140	2.2	4	4	7.5	3	3	7-1/2	10	XTFC010BB_
8 – 12	168	3	5.5	5.5	11	3	3	7-1/2	—	XTFC012BB_
10 – 16	224	4	7.5	9	12.5	3	5	10	—	XTFC016BB_

Frame B MMP + Frame C Contactor

10 – 16	224	4	7.5	9	12.5	3	5	10	—	XTFC016BC_
16 – 20	280	5.5	9	12.5	15	5	5	—	—	XTFC020BC_
20 – 25	350	5.5	11	15	22	5	7-1/2	15	—	XTFC025BC_
25 – 32	448	7.5	15	22	30	7-1/2	10	20	—	XTFC032BC_

Frame D MMP + Frame C Contactor

10 – 16	224	4	7.5	9	12.5	3	5	10	10	XTFC016DC_
16 – 25	350	5.5	12.5	12.5	22	7-1/2	7-1/2	20	25	XTFC025DC_
25 – 32	448	7.5	15	17.5	22	10	10	25	30	XTFC032DC_

Frame D MMP + Frame D Contactor

32 – 40	560	11	20	22	30	10	10	30	40	XTFC040DD_
40 – 50	700	14	25	30	45	10	15	30	—	XTFC050DD_
50 – 58	812	17	30	37	55	15	15	40	—	XTFC058DD_
55 – 65	882	18.5	34	37	55	15	15	40	—	XTFC063DD_

① Overload release — I_r

② Select combination motor controllers by full load amperes. Maximum motor ratings (kW, hp) are for reference only.

③ Underscore (_) indicates magnet coil suffix required. See table to the right.

④ In this range, calculate motor rating according to rated current. Specified values to NEC 430.6(A)(1).

Note: The assembled Combination Motor Controller (CMC) consists of an XTPR Manual Motor Protector (MMP) and an XTCE contactor and a required Line Side Adapter. For Frame B MMP + Frame B Contactor assemblies, the XTFC and XTFR can be mounted directly on DIN-Rail without an adapter. The contactors are supported mechanically with a mechanical connection element (included in XTPAXTPCB, XTPAXRPCRB). For 16A and above, the assembly is mounted via a DIN-Rail Adapter Plate (XTPAXTPCPC, XTPAXTPCPD) and the electrical connection is made with electrical contact modules (XTPAXECMC, XTPAXECMD), both included in XTPAXTPCC and XTPAXTPCD.

Service Factor Settings: Setting I_r of current scale in dependence of load factor:

$$SF = 1.15 \rightarrow I_r = 1 \times I_n \text{ mot}$$

$$SF = 1 \rightarrow I_r = 0.9 \times I_n \text{ mot}$$

Magnet Coil Suffixes

Coil Voltage	Suffix Code
110V 50 Hz, 120V 60 Hz	A
220V 50 Hz, 240V 60 Hz	B
24V 50/60 Hz	T
24V dc	TD ①
415V 50 Hz, 480V 60 Hz	C
550V 50 Hz, 600V 60 Hz	D
208V 60 Hz	E

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

Providing Essential Isolation



Powering Business Worldwide






- Arc quenching quick-make quick-break disconnects for galvanic isolation
- Fusible and non-fusible disconnects with rotary and pistol handle options
- Complete switch door mount options for UL 98 and UL 508 offerings

Circuit & Motor Protection

Rotary Disconnect Switches

PRODUCT OVERVIEW

Rotary Disconnect Switches Product Overview

					
Description	C362 (M Frame)	C362 (R Frame)	C362 (W Frame)	C362 (C Frame)	C362 (V & S Frame)
Page	Page 55	Page 55	Page 55	Page 56	Page 56
Current Rating	16A – 30A	30A – 60A	60A – 125A	30A	60A – 1200A
Non-Fusible	X	X	X	X	X
Fusible	—	—	—	—	—
Open Device	X	X	X	X	X
Enclosed Device	—	—	—	—	—
Customized Enclosed Product Available ①	X	X	X	X	X

Standards

UL 508	X	X ②	X ②	—	—
UL 98	—	—	—	—	X
UL 489	—	—	—	X	—
Clear On / Off Indication	X	X	X	X	X
Padlockable in the Off Position	X	X	X	X	X
Visible Blade Indication	—	—	—	X	X
Toggle Operation Available	—	30A & 40A	60A – 125A	—	—
Electrical Endurance (operation cycles)	6,000	6,000	6,000	6,000	③
Mechanical Endurance (operation cycles)	6,000	6,000	6,000	10,000	④
Fuse Type (if applicable)	RK5	RK5	RK5	CC/J	J (thru 600A); L (800A+)
Short Circuit Rating	5 kA	10 kA	10 kA	50 kA	200 kA (J); 100 kA (L)
Terminal Lugs (wire size / wire type)	#16 – #10/Cu	#14 – #8/Cu	#14 – #3/Cu	#14 – #10/Cu #14 – #10/Cu	⑤
Direct Handle Operation	X	X	X	—	—
Through-the-Door Operation	X	X	X	X	X
Full Range of Handles & Shafts	Pages 59 – 60	Pages 59 – 60	Pages 59 – 60	Page 60	Page 60
Accessories Available	Page 58	Page 58	Page 58	Page 59	Page 59

① Contact the Flex Center (1-888-329-9272).

② Suitable for use as a motor disconnect (30A – 100A only).

③ 6,000 (60A – 200A); 1,000 (400A – 600A); 500 (800A – 1200A).

④ 10,000 (60A – 100A); 8,000 (200A); 6,000 (400A – 600A); 3,500 (800A – 1200A).





⑤ #10 – #3/Cu (60A); #10 – 2/0/Cu (100A); #6 – 3/0/Cu (200A); #2 – 600MCM (400A – 1200A).

Circuit & Motor Protection

Rotary Disconnect Switches

PRODUCT OVERVIEW

Rotary Disconnect Switches Product Overview

				
Description	C363 (C Frame)	C363 (V & F Frame)	DR	SDR
Page	Page 56	Page 56	Page 57	Page 57
Current Rating	30A	30A – 800A	16A – 125A	30A & 60A
Non-Fusible	—	—	X	X
Fusible	X	X	—	—
Open Device	X	X	—	—
Enclosed Device	—	—	X	X
Customized Enclosed Product Available ①	X	X	X	—

Standards

UL 508	—	—	X	X
UL 98	—	X	—	—
UL 489	X	—	—	—
Clear On / Off Indication	X	X	X	X
Padlockable in the Off Position	X	X	X	X
Visible Blade Indication	—	—	—	—
Toggle Operation Available	—	—	—	—
Electrical Endurance (operation cycles)	6,000	②	6,000	6,000
Mechanical Endurance (operation cycles)	10,000	③	6,000	6,000
Fuse Type (if applicable)	CC/J	CC (30A); J (30 – 600A); L (800A)	RK5	RK5
Short Circuit Rating	50 kA	65 kA (CC); 200 kA (J); 100 kA (L)	⑤	⑥
Terminal Lugs (wire size / wire type)	#10 – #14/Cu	④	⑦	⑧
Direct Handle Operation	—	—	—	X
Through-the-Door Operation	X	X	X	—
Full Range of Handles & Shafts	Pages 59 – 60	Page 60	—	—
Accessories Available	Page 58	Page 58	Page 58	Page 58 ⑨

① Contact the Flex Center (1-888-329-9272).

② 6,000 (60A – 200A); 1,000 (400A – 600A); 500 (800A – 1200A).

③ 10,000 (60A – 100A); 8,000 (200A); 6,000 (400A – 600A); 3,500 (800A – 1200A).

④ #10 – #3/Cu (60A); #10 – 2/0/Cu (100A); #6 – 3/0/Cu (200A); #2 – 600MCM (400A – 1200A).

⑤ 5kA (16 – 25A); 10kA (30A – 125A).

⑥ 5kA (30A); 10kA (60A).

⑦ #16 – #10/Cu (16A – 25A); #14 – #8/Cu (30A – 40A); #14 – #3/Cu (60A – 125A).

⑧ #16 – #10/Cu (30A); #14 – #8/Cu (60A).

⑨ 60A products do not accept auxiliary contacts due to enclosure size.

Open Rotary Disconnect Switches

- Compact design to minimize panel space requirements
- Suitable for equipment or machinery as motor disconnects or industrial control panel disconnects
- Seven frame sizes to cover 16 – 1200A, 600V applications
- Direct handle or front through-the-door operation
- Base mounting or DIN-Rail mounting
- Visible blade indication (non-fusible C- and V-Frames)



When ordering, specify:

- Catalog Number of switch (see Pages 55 – 56)
- Catalog Number of operating handle (see Pages 59 – 60)
- Catalog Number of required shaft (see Pages 59 – 60)
- Catalog Number of (optional) accessories (see Page 58)

Non-Fusible Switches — UL 508, UL 98 and UL 489 ①②③

Ampere Rating	Maximum 3-Phase Horsepower Rating		Catalog Number	Frame	UL Standard	Operation (Rotary / Toggle)	No. of Poles	Switch Mounting
	240V	480V						
16	2	7-1/2	C362NM16	M	UL 508	Rotary	3	Base (low end)
20	3	7-1/2	C362NM20	M	UL 508	Rotary	3	Base (low end)
25	5	10	C362NM25	M	UL 508	Rotary	3	Base (low end)
30	7-1/2	15	C362NM30	M	UL 508	Rotary	3	Base (low end)
30	7-1/2	15	C362NR30	R	UL 508	Rotary	3	Base / DIN-Rail (high end) ④
40	10	20	C362NR40	R	UL 508	Rotary	3	Base / DIN-Rail (high end) ④
60	15	30	C362NR60	R	UL 508	Rotary	3	Base / DIN-Rail (high end) ④
60	15	30	C362NW60	W	UL 508	Rotary	3	Base / DIN-Rail (high end) ④
80	20	40	C362NW80	W	UL 508	Rotary	3	Base / DIN-Rail (high end) ④
100	25	50	C362NW100	W	UL 508	Rotary	3	Base / DIN-Rail (high end) ④
125	25	50	C362NW125	W	UL 508	Rotary	3	Base / DIN-Rail (high end) ④
30	7-1/2	15	C362TR30	R	UL 508	Toggle	3	Base / DIN-Rail
40	10	20	C362TR40	R	UL 508	Toggle	3	Base / DIN-Rail
60	15	30	C362TW60	W	UL 508	Toggle	3	Base / DIN-Rail
80	20	40	C362TW80	W	UL 508	Toggle	3	Base / DIN-Rail
100	25	50	C362TW100	W	UL 508	Toggle	3	Base / DIN-Rail
125	25	50	C362TW125	W	UL 508	Toggle	3	Base / DIN-Rail
16	2	7-1/2	C362NM16D	M	UL 508	Rotary	3	Back or Door Mounted w/o Handle ⑤
20	3	7-1/2	C362NM20D	M	UL 508	Rotary	3	Back or Door Mounted w/o Handle ⑤
25	5	10	C362NM25D	M	UL 508	Rotary	3	Back or Door Mounted w/o Handle ⑤
30	7-1/2	15	C362NM30D	M	UL 508	Rotary	3	Back or Door Mounted w/o Handle ⑤
30	7-1/2	15	C462NR30	R	UL 508	Rotary & Toggle	4	Base / DIN-Rail
40	10	20	C462NR40	R	UL 508	Rotary & Toggle	4	Base / DIN-Rail
30	7-1/2	15	C462TR30	R	UL 508	Rotary & Toggle	4	Base / DIN-Rail
40	10	20	C462TR40	R	UL 508	Rotary & Toggle	4	Base / DIN-Rail

① Back / door mounting M Frame: Will need to order selector handle separately (see Accessories UL 508 Accessories — M-, R-, W-Frames); see Page 58.

① Back / door mounting R & W Frame: Will need to order door mounting kit and selector handle separately (see Accessories UL 508 Accessories — M-, R-, W-Frames); see Pages 58 – 60.

② Back / door mounting UL 98 switches cannot be back-of-door mounted.

① Can be door mounted using catalog number **CTRFC** (Page 58).

② Includes door mounting kit and 55 mm selector shaft.

Circuit & Motor Protection

Rotary Disconnect Switches

PRODUCT SELECTION

Open Rotary Disconnect Switches

Non-Fusible and Fusible Switches — UL 98 and UL 489

Ampere Rating	Maximum 3-Phase Horsepower Rating		Catalog Number	Frame	UL Standard	Operation (Rotary / Toggle)	No. of Poles	Switch Mounting
	240 V	480 V						

Non-Fusible Switches — UL 98 and UL 489 ①

30	7-1/2	15	C362UC30	C	UL 98 and UL 489	Rotary	3	Base / DIN-Rail
400	125	250	C362US400	S	UL 98 and UL 489	Rotary	3	Base Mounted
600	250	500	C362US600	S	UL 98 and UL 489	Rotary	3	Base Mounted
800	250	500	C362US800	S	UL 98 and UL 489	Rotary	3	Base Mounted
1000	250	500	C362US1000	S	UL 98 and UL 489	Rotary	3	Base Mounted
1200	250	500	C362US1200	S	UL 98 and UL 489	Rotary	3	Base Mounted
60	15	30	C362UV60	V	UL 98 and UL 489	Rotary	3	Base Mounted
100	30	60	C362UV100	V	UL 98 and UL 489	Rotary	3	Base Mounted
200	60	125	C362UV200	V	UL 98 and UL 489	Rotary	3	Base Mounted

Fusible Switches — UL 98 and UL 489 ②

30	7-1/2	15	C363UC30CT	C	UL 98 and UL 489	Rotary	3	Base / DIN-Rail
30	7-1/2	15	C363UC30JT	C	UL 98 and UL 489	Rotary	3	Base Mounted
30	7-1/2	15	C363UV30CT	V	UL 98 and UL 489	Rotary	3	Base Mounted
30	7-1/2	15	C363UV30JT	V	UL 98 and UL 489	Rotary	3	Base Mounted
60	15	30	C363UV60JT	V	UL 98 and UL 489	Rotary	3	Base Mounted
100	30	60	C363UV100JT	V	UL 98 and UL 489	Rotary	3	Base Mounted
200	60	125	C363UV200JT	V	UL 98 and UL 489	Rotary	3	Base Mounted
400	125	250	C363UV400JT	V	UL 98 and UL 489	Rotary	3	Base Mounted
30	7-1/2	15	C363UV30C	V	UL 98	Rotary	3	Base Mounted
30	7-1/2	15	C363UV30J	V	UL 98	Rotary	3	Base Mounted
60	15	30	C363UV60J	V	UL 98	Rotary	3	Base Mounted
100	30	60	C363UV100J	V	UL 98	Rotary	3	Base Mounted
200	60	125	C363UV200J	V	UL 98	Rotary	3	Base Mounted
400	125	250	C363UV400J	V	UL 98	Rotary	3	Base Mounted
600	250	500	C363UF600J	F	UL 98	Rotary	3	Base Mounted
800	250	500	C363UF800L	F	UL 98	Rotary	3	Base Mounted

① Back / door mounting UL 98 switches cannot be back-of-door mounted.

② "T" suffix denotes test position is provided. Test handle is required only if test function is required.

Circuit & Motor Protection

Rotary Disconnect Switches

PRODUCT SELECTION

Enclosed Rotary Disconnect Switches

- 16 – 125 amperes
- 600V, 3 – 4-pole, non-fusible devices
- Accepts auxiliary contacts
- Ground lug connection provided



UL 508 Type Rated Enclosed Non-Fusible Rotary Disconnects ①

Ampere Rating	Maximum 3-Phase Horsepower Rating			Switch Frame Size	UL Standard	Number of Poles	Type 1 Enclosure Indoor	Type 12 ② Enclosure Dust-Tight / Rainproof	Type 4X Enclosure Corrosion-Resistant Stainless Steel	Type 4X Enclosure Corrosion-Resistant Non-Metallic
	240	480	600				Catalog Number	Catalog Number	Catalog Number	Catalog Number
16	2	7.5	7.5	M	UL 508	3	DR3016UG	DR3016UD	DR3016UW	DR3016UX
25	5	10	15	M	UL 508	3	DR3025UG	DR3025UD	DR3025UW	DR3025UX
30	7.5	15	25	R	UL 508	3	DR3030UG	DR3030UD	DR3030UW	DR3030UX
40	10	20	30	R	UL 508	3	DR3040UG	DR3040UD	DR3040UW	DR3040UX
60	15	30	40	W	UL 508	3	DR3060UG	DR3060UD	DR3060UW	DR3060UX
80	20	40	50	W	UL 508	3	DR3080UG	DR3080UD	DR3080UW	DR3080UX
100	25	50	60	W	UL 508	3	DR3100UG	DR3100UD	DR3100UW	DR3100UX
125	25	50	60	W	UL 508	3	DR3125UG	DR3125UD	DR3125UW	DR3125UX
16	2	7.5	7.5	M	UL 508	4	DR4016UG	DR4016UD	DR4016UW	DR4016UX
25	5	10	15	M	UL 508	4	DR4025UG	DR4025UD	DR4025UW	DR4025UX
30	7.5	15	25	R	UL 508	4	DR4030UG	DR4030UD	DR4030UW	DR4030UX
40	10	20	30	R	UL 508	4	DR4040UG	DR4040UD	DR4040UW	DR4040UX

① Auxiliary contacts can be found on Page 58.

② NEMA Type 12 enclosures (16 – 125 amperes) can be field modified to meet NEMA Type 3R rainproof requirements when a factory-provided drain hole is opened.

IP65 Rated Enclosed Non-Fusible Rotary Disconnects ①

Ampere Rating	Maximum 3-Phase Horsepower Rating			Switch Frame Size	UL Standard	Number of Poles	Color	IP65 Rated Enclosure Corrosion-Resistant Non-Metallic
	240	480	600					Catalog Number
30	7.5	15	25	M	UL 508	3	White w/ Black Selector Handle	SDR3030UIP65BW
30	7.5	15	25	M	UL 508	3	Yellow w/ Red Selector Handle	SDR3030UIP65RY
60	15	30	40	R	UL 508	3	White w/ Black Selector Handle	SDR3060UIP65BW
60	15	30	40	R	UL 508	3	Yellow w/ Red Selector Handle	SDR3060UIP65RY

① Auxiliary contacts can be found on Page 58.

Note: Contact the Flex Center (1-888-329-9272) for factory-installed accessories or other special modifications.

Circuit & Motor Protection

Rotary Disconnect Switches

PRODUCT SELECTION

Rotary Disconnect Switches — Accessories

UL 508, M-, R-, W-Frames

Description		Catalog Number
Base Mounted 4th Pole Module for M-Frame		CM16BP CM20BP CM25BP
Toggle Cover Plates	For use with C362TR30 & TR40 For use with C362TW60 — TW125 For use with C462TR30 & TR40	CRP3 CWP3 CRP4
Auxiliary Contacts Kit (holder and contact)	1NO/1NC 3-Pole M-Frame (base mounted) 1NO/1NC 3-Pole M-Frame (door mounted) 1NO 3-Pole R-Frame 1NO 3-Pole W-Frame 1NO 4-Pole R-Frame	CMAC CMACD CRAC3 ① CWAC3 ① CRAC4 ①
Auxiliary Contacts (additional contacts)	1NO 3-, 4-Pole R-, W-Frame 1NC 3-, 4-Pole R-, W-Frame	CRAB ① CRAA ①
Protective Earth Module M-Frame Back / Door Mounted Extension Support		CNMFP C362SS1
Door Mounting Kit R- and W-Frame Rotary Switches Includes Selector Shaft and Hardware / Adapter to Mount to Door		CTRFC

① The mechanism is reversed on these contacts.

UL 98, C-, S-, V-, F-Frames

Description		Catalog Number
Auxiliary Contact Holders	V-Frame (for 1-8) C-Frame (for 5-8) ① S-Frame (for 1-4)	CUVU CUCU CUSU
Auxiliary Contacts	1NO, Type U 1NC, Type U, C-, V-, S- & F-Frames	CUSAA CUSAB
	1NO/NC, Type S-, V-Frames 2NO/NC, Type S-, V-Frames	CUVAC CUVAD
	1NO/NC, Type ST for Fusible, V-Frame w/ Test 2NO/NC, Type ST for Fusible, V-Frame w/ Test 1NO/NC, Type MS, F-Frame 2NO/NC, Type MS, F-Frame	CUVXC CUVXD CUFAC CUVAD
	Line-Side Terminal Shrouds for Non-Fusible V- and S-Frames ②	CUV200T CUS600T CUS1200T
Terminal Shrouds for Fusible V- and F-Frames ③	3-Pole, V-Frame (200A)	CUV200T
	3-Pole, for Non-Fusible S-Frame (400 – 600A)	CUS600T
	3-Pole, for Non-Fusible S-Frame (800 – 1200A)	CUS1200T
	3-Pole, for Fusible V-Frame (100A) 3-Pole, V-Frame (200A) 3-Pole, for Fusible V-Frame (400A) 3-Pole, for Fusible F-Frame (600 & 800A)	CUV100T CUV200T CUV400T CUF800T
Terminal Lugs for Non-Fusible and Fusible V-, S- and F-Frames, for Line or Load Side ④	1 Wire / Lug, Wire Size 12-2/0, for Fusible V-Frame (100A) ⑤	CUV100LN
	1 Wire / Lug, Wire Size #6-3/0, V-Frame (200A) ⑤	CUV200LN
	2 Wires / Lug, Wire Size 2-600, V-, S- & F-Frames (400 & 600A) ⑤	CUS600LN
	2 Wires / Lug, Wire Size 2-600, S- & F-Frames (800 – 1200A) ⑤	CUS1200LN
NFPA 79 Kit	Suitable for Use with V&S Switches	C362VSNFPA

① C-Frames hold 1 – 4 auxiliary contacts without holder.

② Load-side terminal shrouds provided as standard on all ratings. Line-side terminal shrouds standard on C- and V-Frames up through 100A.

③ Load-side terminal shrouds provided as standard on all ratings. Line-side terminal shrouds standard on fusible switches up through 60A.

④ Standard on fusible up through 60A and non-fusible up through 100A.

⑤ Kit of 6.

Circuit & Motor Protection

Rotary Disconnect Switches

PRODUCT SELECTION

Rotary Disconnect Switches — Accessories

Handles and Shafts

		Black Selector Handle				Red/Yellow Selector Handle				Selector Shafts	
NEMA Rating	Defeatable	Padlockable	Color	Operation	IEC Type	Dimensions		Catalog Number			
						Inches	mm				

Selector Handle for Type CSSA_ Shaft and M-, R- and W-Frames or CSCSA_ Shaft and C-Frames

1	No	No	Black	ON / OFF	IP54	①	—	CSBR5
1, 3R, 12	No	Yes	Red / Yellow	ON / OFF, I/O	IP65	—	—	CSYR6
1, 3R, 12	No	Yes	Black	ON / OFF, I/O	IP65	—	—	CSBR6

Rotary Switch Selector Shaft 5 x 5 mm (for selector handle and M-, R- and W-Frames)

	2.2	55	CSSA055
	4.3	110	CSSA110
	5.9	150	CSSA150
	7.1	180	CSSA180
	7.9	200	CSSA200
	11.8	305	CSSA300

Rotary Switch Selector Shaft 5 x 5 mm (for selector handle and C-Frames)

	4.7	120	CSCSA120
	7.9	200	CSCSA200
	11.8	300	CSCSA320
	15.7	400	CSCSA400

		Black Pistol Handle (Type D)				Red/Yellow Pistol Handle (Type D)				Type D Pistol Shafts	
NEMA Rating	Defeatable	Padlockable	Color	Operation	IEC Type	Dimensions		Catalog Number			
						Inches	mm				

Pistol Handle Type D (for use with CPDSA_ shafts and M-, R- and W-Frames)

1, 3R, 12	No	Yes	Black	ON / OFF, I/O	IP54	①	—	CPBR5N
1, 3R, 12	No	Yes	Red / Yellow	ON / OFF, I/O	IP54	—	—	CPYR5N
1, 3R, 12	Yes	Yes	Black	ON / OFF, I/O	IP54	—	—	CPBR5D
1, 3R, 12	Yes	Yes	Red / Yellow	ON / OFF, I/O	IP54	—	—	CPYR5D

Type D Shafts 5 x 5 mm (for use with Type D pistol handles and M-, R- and W-Frames)

	4.7	120	CPDSA120
	7.9	200	CPDSA200
	12.6	320	CPDSA320
	15.7	400	CPDSA400

Direct Handle M-Frame (for direct mounting — no separate shaft required)

1, 3R, 12	No	Yes	Black	ON / OFF	IP54	①	—	CNMBH
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Direct Handle R-, W-Frames (for direct mounting — no separate shaft required)

1, 3R, 12	No	Yes	Black	ON / OFF	IP54	a	—	CRRR3
1, 3R, 12	No	Yes	Black	ON / OFF	IP54	—	—	CDRW3
1, 3R, 12	No	Yes	Black	ON / OFF	IP54	—	—	CRRR4

① Please refer to the Distribution Products Catalog (CA08101001E).

Circuit & Motor Protection

Rotary Disconnect Switches

PRODUCT SELECTION

Rotary Disconnect Switches — Accessories

Handles and Shafts (Continued)



Black Pistol Handle (Type G)



Red/Yellow Pistol Handle (Type G)



Type G Pistol Shafts

NEMA Rating	Defeatable	Padlockable	Color	Operation	IEC Type	Dimensions		Catalog Number
						Inches	mm	

Pistol Handle Type G (for use with M-, R-, W- and C-Frames with 5 x 5 shaft and V-Frame below 100A with 10 x 10 shaft)

1, 3R, 12	Yes	Yes	Black	ON / OFF, I/O	IP54	①	—	CPBR5
1, 3R, 12	Yes	Yes	Red / Yellow	ON / OFF, I/O	IP54	—	—	CPYR5
1, 3R, 12, 4, 4X	Yes	Yes	Black	ON / OFF, I/O	IP65	—	—	CPBW6
1, 3R, 12, 4, 4X	Yes	Yes	Red / Yellow	ON / OFF, I/O	IP65	—	—	CPYW6
1, 3R, 12, 4, 4X	Yes	Yes	Black	TEST / ON / OFF	IP65	①	—	CPBW6T
1, 3R, 12, 4, 4X	Yes	Yes	Red / Yellow	TEST / ON / OFF	IP65	—	—	CPYW6T

Long Pistol Handle Type GL (for use with V-Frame 100A and above with 10 x 10 shaft)

1, 3R, 12	Yes	Yes	Black	ON / OFF, I/O	IP54	①	—	CPBVR5
1, 3R, 12	Yes	Yes	Red / Yellow	ON / OFF, I/O	IP54	—	—	CPYVR5
1, 3R, 12, 4, 4X	Yes	Yes	Black	ON / OFF, I/O	IP65	—	—	CPBVW6
1, 3R, 12, 4, 4X	Yes	Yes	Red / Yellow	ON / OFF, I/O	IP65	—	—	CPYVW6
1, 3R, 12	Yes	Yes	Black	TEST / ON / OFF	IP65	—	—	CPBVW6T
1, 3R, 12	Yes	Yes	Red / Yellow	TEST / ON / OFF	IP65	—	—	CPYVW6T

Type G Shafts 5 x 5 mm (for use with Type G pistol handle and M-, R- and W-Frames)

	4.7	120	CPGSA120
	7.9	200	CPGSA200
	12.6	320	CPGSA320
	15.7	400	CPGSA400

Type G Shafts 5 x 5 mm (for use with Type G pistol handle and C-Frames)

	4.7	120	CPGCSA120
	7.9	200	CPGCSA200
	12.6	320	CPGCSA320
	15.7	400	CPGCSA400

Type G Shafts 10 x 10 mm (for use with Type G and GL pistol handles and V-Frames)

	7.9	200	CPGSB200
	12.6	320	CPGSB320
	15.7	400	CPGSB400



Pistol Handle (Type H)

NEMA Rating	Defeatable	Padlockable	Color	Operation	IEC Type	Dimensions		Catalog Number
						Inches	mm	

Pistol Handle Type H (for use with S-Frames with 15 x 15 shaft)

1, 3R, 4, 4X, 12	Yes	Yes	Black	ON / OFF, I/O	IP65	①	—	CPBSW6D
1, 3R, 4, 4X, 12	Yes	Yes	Red / Yellow	ON / OFF, I/O	IP65	—	—	CPYSW6D
1, 3R, 4, 4X, 12	No	Yes	Black	ON / OFF, I/O	IP65	—	—	CPBSW6N
1, 3R, 4, 4X, 12	No	Yes	Red / Yellow	ON / OFF, I/O	IP65	—	—	CPYSW6N

Pistol Handle Type H (for use with F-Frames with 15 x 15 shaft)

1, 3R, 4, 4X, 12	Yes	Yes	Black	ON / OFF, I/O	IP65	①	—	CPBFW6D
1, 3R, 4, 4X, 12	Yes	Yes	Red / Yellow	ON / OFF, I/O	IP65	—	—	CPYFW6D
1, 3R, 4, 4X, 12	No	Yes	Black	ON / OFF, I/O	IP65	—	—	CPBFW6N
1, 3R, 4, 4X, 12	No	Yes	Red / Yellow	ON / OFF, I/O	IP65	—	—	CPYFW6N

Type H Shafts 15 x 15 mm (for use with Type H pistol handles and S- and F-Frames)

	7.9	200	CPHSC200
	15.7	400	CPHSC400

① Please refer to the Distribution Products Catalog (CA08101001E).

Fewer Frames with Wider Ranges



Powering Business Worldwide

- Direct connect cost-effective thermal overload relays to protect your motors
- More accurate electronic overload relays react to phase loss fast
- Fewer frames covering a wider range of classes and protection with fewer parts
- Protect it right — fight premature motor failure with Motor Insight™

Circuit & Motor Protection

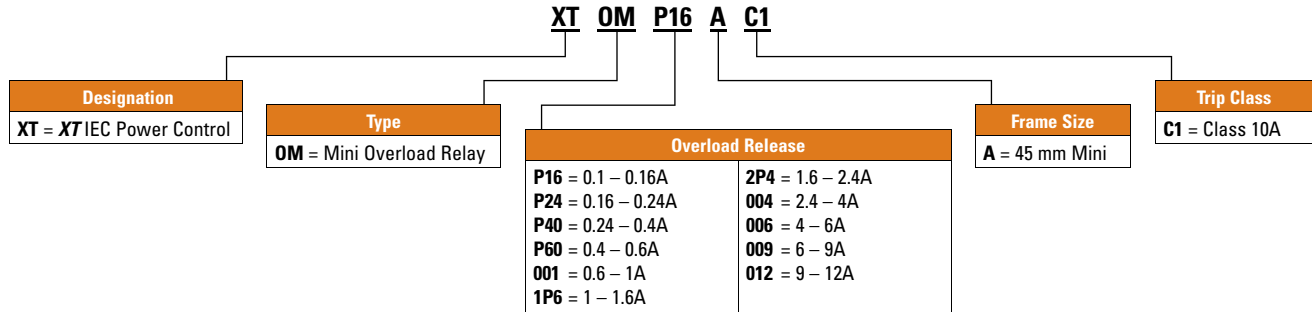
Overload Relays

PRODUCT OVERVIEW

Overload Relays Product Overview

				
Description	XT IEC Mini Overload Relays	XTOB, XTOT Thermal Overload Relays	C396 Electronic Overload Relays	Motor Insight Overload and Monitoring Relays
Page	Page 63	Page 64	Page 67	Page 69
Relay Type	Thermal Bi-Metallic	Thermal Bi-Metallic	Electronic	Electronic
Direct Connect to XT Contactor	Yes, XTMC	Yes, XTCE	Yes, XTCE	—
Separate Mount	—	Yes, Adapter	Yes	Yes
FLA Range	0.1 – 12A	0.1 – 630A	0.1 – 1500A	1 – 540A (with CTs)
FLA Max.:Min. Ratio	Approx. 1.5:1	Approx. 1.5:1	5:1	—
Motor Overload Protection	Yes	Yes	Yes	Yes
Underload Protection	—	—	—	Yes
Supply Protection	—	—	—	Yes
Enhanced Phase Loss Protection	—	—	Yes	Yes
Enhanced Phase Imbalance Protection	—	—	Yes	Yes
Trip Class	10A	10A	Selectable 5 / 10 / 20 / 30	5 – 30
Reset Type	Selectable Manual / Automatic	Selectable Manual / Automatic	Selectable Manual / Automatic	Selectable Manual / Automatic / Programmable / Remote
Communications with I/O	—	—	—	Yes (Modbus, DeviceNet, PROFIBUS)
Remote Display	—	—	—	Yes (NEMA 3R available)
Ground Fault	—	—	—	Yes
Alarm No Trip	—	—	—	Yes (voltage and ground faults)
Jam	—	—	Yes	Yes
Programmable Reset Timers	—	—	—	Yes
Programmable Reset Attempts	—	—	—	Yes
Current Monitoring	—	—	—	Yes
Voltage Monitoring	—	—	—	Yes
Power Monitoring	—	—	—	Yes
Thermal Capacity Monitoring	—	—	—	Yes
Motor Run Hours Monitoring	—	—	—	Yes

XT IEC Miniature Overload Relays — Catalog Numbering System



XT IEC Miniature Overload Relays

- Trip Class 10A
- Ambient temperature compensated -5° to 50°C (23° to 122°F)
- Selectable manual / automatic reset
- 1NO-1NC auxiliary contact as standard
- Direct mount with XTMC contactors



Mini Overload Relays ①②

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

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

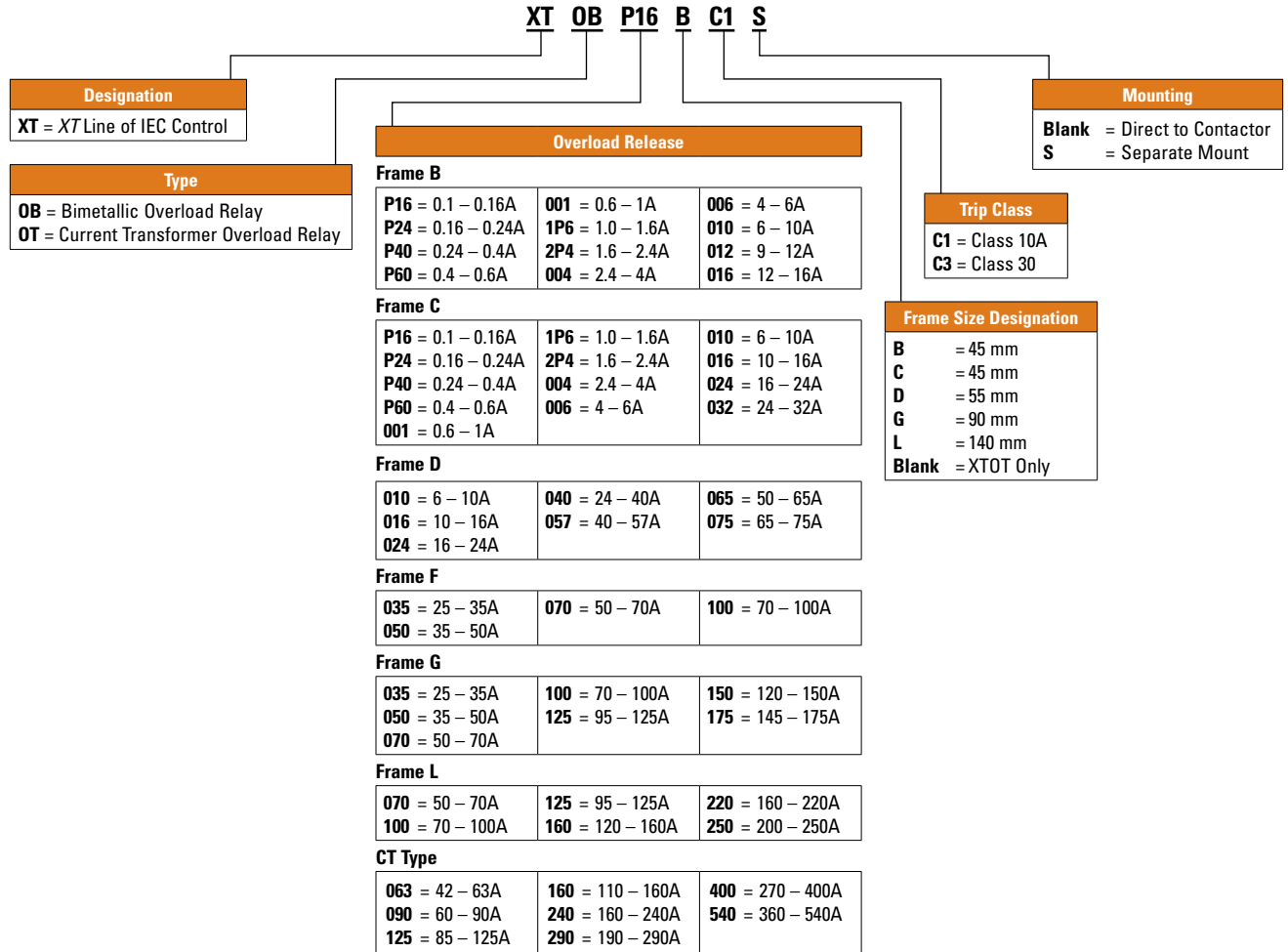
② When fitted directly to the contactor, a clearance of at least 5 mm is required between the overload relays.

Circuit & Motor Protection

Overload Relays

CATALOG SELECTION

XTOB, XTOT Thermal Overload Relays — Catalog Numbering System



XTOB, XTOT Thermal Overload Relays

- Direct mount to XT contactors or separate mount
- Class 10A
- Up to 630A



Overload Relay

Overload Releases, I _n	Contact Sequence	Contact Configuration	For Use with Contactor Ampere Range	Short-Circuit Protection (A)		Catalog Number
				Maximum Circuit Breaker	CEC / NEC Fuse	

Frame B — Direct Mount to XTCE...B Contactor

0.1 – 0.16 0.16 – 0.24 0.24 – 0.4 0.4 – 0.6		1NO-1NC	7 – 15A	25	3	XTOBP16BC1
		1NO-1NC	7 – 15A	25	3	XTOBP24BC1
		1NO-1NC	7 – 15A	25	3	XTOBP40BC1
		1NO-1NC	7 – 15A	25	3	XTOBP60BC1
0.6 – 1 1 – 1.6 1.6 – 2.4 2.4 – 4		1NO-1NC	7 – 15A	25	3	XTOB001BC1
		1NO-1NC	7 – 15A	25	6	XTOB1P6BC1
		1NO-1NC	7 – 15A	25	6	XTOB2P4BC1
		1NO-1NC	7 – 15A	25	15	XTOB004BC1
4 – 6 6 – 10 9 – 12 12 – 16		1NO-1NC	7 – 15A	25	20	XTOB006BC1
		1NO-1NC	7 – 15A	25	35	XTOB010BC1
		1NO-1NC	9 – 15A	25	45	XTOB012BC1
		1NO-1NC	12 – 15A	30	45	XTOB016BC1

Frame C — Direct Mount to XTCE...C Contactor

0.6 – 1 1 – 1.6 1.6 – 2.4 2.4 – 4		1NO-1NC	18 – 32A	25	3	XTOB001CC1
		1NO-1NC	18 – 32A	25	6	XTOB1P6CC1
		1NO-1NC	18 – 32A	25	6	XTOB2P4CC1
		1NO-1NC	18 – 32A	25	15	XTOB004CC1
4 – 6 6 – 10 10 – 16 16 – 24 24 – 32		1NO-1NC	18 – 32A	25	20	XTOB006CC1
		1NO-1NC	18 – 32A	25	25	XTOB010CC1
		1NO-1NC	18 – 32A	30	25	XTOB016CC1
		1NO-1NC	18 – 32A	30	25	XTOB024CC1
		1NO-1NC	25 – 32A	30	25	XTOB032CC1

Frame D — Direct Mount to XTCE...D Contactor

6 – 10 10 – 16 16 – 24		1NO-1NC	40 – 72A	25	25	XTOB010DC1
		1NO-1NC	40 – 72A	25	25	XTOB016DC1
		1NO-1NC	40 – 72A	30	25	XTOB024DC1
24 – 40 40 – 57 50 – 65 65 – 75		1NO-1NC	40 – 72A	125	125	XTOB040DC1
		1NO-1NC	50 – 72A	150	150	XTOB057DC1
		1NO-1NC	65 – 72A	150	200	XTOB065DC1
		1NO-1NC	72A	150	200	XTOB075DC1

Frame F – G — Direct Mount to XTCE...F or XTCE...G Contactor

35 – 50 50 – 70 70 – 100		1NO-1NC	80 – 170A	150	200	XTOB050GC1
		1NO-1NC	80 – 170A	150	200	XTOB070GC1
		1NO-1NC	80 – 170A	400	400	XTOB100GC1
95 – 125 120 – 150 145 – 175		1NO-1NC	80 – 170A	500	400	XTOB125GC1
		1NO-1NC	80 – 170A	600	600	XTOB150GC1
		1NO-1NC	150 – 170A	600	600	XTOB175GC1

Note: Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting. See MN03402001E for more information on overload relays for Frame B – G.

Trip Class: 10A

Suitable for protection of EEx e-motors. EC prototype test certificate available upon request.

Observe manuals MN03402001E and MN03407001E. See Documentation — Manuals for Overload Monitoring of EEx e-motors.

Circuit & Motor Protection

Overload Relays

PRODUCT SELECTION

XTOB, XTOT Thermal Overload Relays

Overload Relay (Continued)

Overload Releases, I _r	Contact Sequence	Contact Configuration	For Use with Contactor Ampere Range	Short-Circuit Protection (A)		Catalog Number
				Maximum Circuit Breaker	CEC / NEC Fuse	

Frame F – G — Separate Mount

35 – 50 50 – 70 70 – 100		1NO-1NC	80 – 170A	150	200	XTOB050GC1S
		1NO-1NC	80 – 170A	150	200	XTOB070GC1S
		1NO-1NC	80 – 170A	400	400	XTOB100GC1S
95 – 125 120 – 150 145 – 175		1NO-1NC	80 – 170A	500	400	XTOB125GC1S
		1NO-1NC	80 – 170A	600	600	XTOB150GC1S
		1NO-1NC	150 – 170A	600	600	XTOB175GC1S

Frame L — Direct Mount to XTC(EORS)...L or Separate Mount

50 – 70 70 – 100 95 – 125		1NO-1NC	185 - 250A	150	200	XTOB070LC1
		1NO-1NC	185 - 250A	400	400	XTOB100LC1
		1NO-1NC	185 - 250A	500	400	XTOB125LC1
120 – 160 160 – 220 200 – 250		1NO-1NC	185 - 250A	600	600	XTOB160LC1
		1NO-1NC	185 - 250A	800	800	XTOB220LC1
		1NO-1NC	225 - 250A	600	700	XTOB250LC1

Note: Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting. See MN03402001E for more information on overload relays for Frame B – G. Trip Class: 10A
Suitable for protection of EEx e-motors. EC prototype test certificate available upon request.
Observe manuals MN03402001E and MN03407001E. See Documentation — Manuals for Overload Monitoring of EEx e-motors.

Current Transformer Operated Overload Relay

Overload Releases, I _r	Contact Sequence	Contact Configuration	For Use with Contactor Ampere Range	Short-Circuit Protection (A)		Catalog Number
				Circuit Breaker	CEC / NEC Fuse	

Frame M – N — Separate Mount

160 – 240 190 – 290 270 – 400 360 – 540 420 – 630		1NO-1NC	300 – 500A	600	700	XTOT240C3S
		1NO-1NC	300 – 500A	600	700	XTOT290C3S
		1NO-1NC	300 – 500A	1000	1000	XTOT400C3S
		1NO-1NC	500A	600	1000	XTOT540C3S
		1NO-1NC	630A	600	1000	XTOT630C3S

DIN-Rail or Panel-Mount Adapter, Frame C – D — Accessories ①

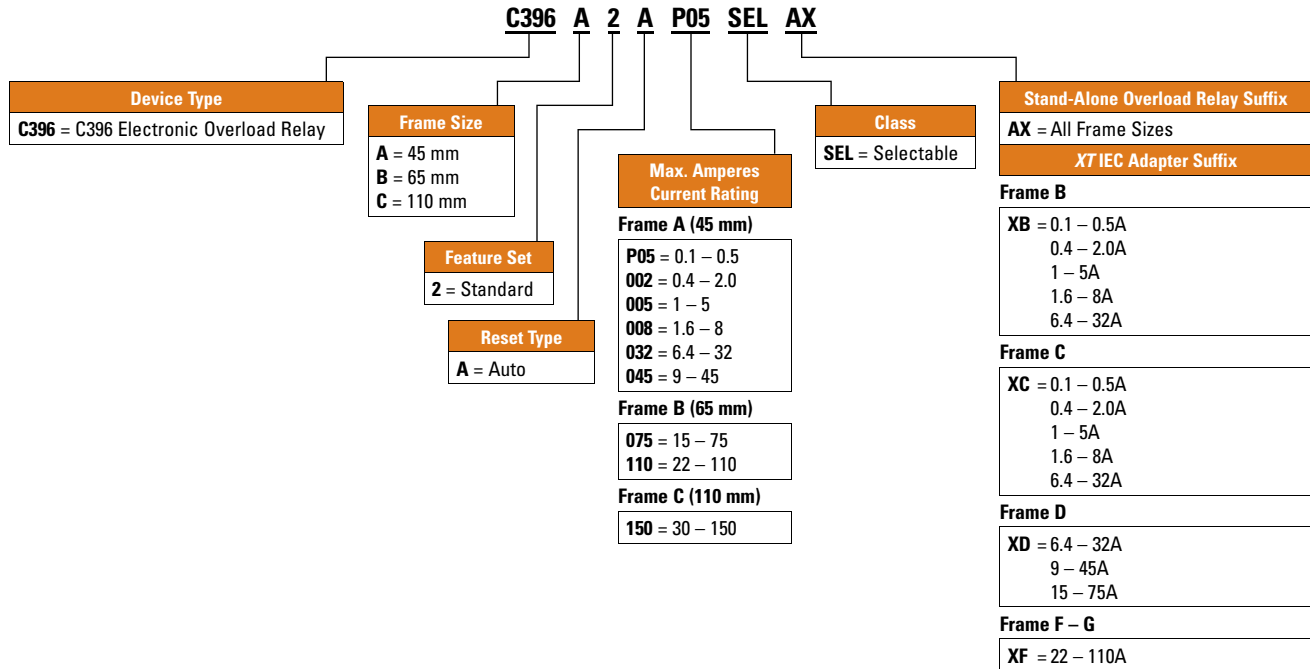
	For Use with...	Pkg. Qty.	Catalog Number
	XTOB...CC1	5	XTOBXDINC
	XTOB...DC1	2	XTOBXDIND

① Can be snap fitted on a top hat rail (DIN-Rail) or can be screw fitted.

Terminal Lug Kit – Set of (3) Lugs — Accessories

Description	For Use with...	Pkg. Qty.	Catalog Number
Set of 3 Lugs #6 AWG-350MCM	XTOB...LC1	1	XTOBXTLL

C396 Electronic Overload Relays — Catalog Numbering System



C396 Electronic Overload Relays

- Direct mount to XT contactors or separate mount
- Standard version: selectable trip class (5, 10, 20, 30) with selectable manual or auto reset
- Broad 5:1 FLA range
- Self-powered design, will accept ac voltages from 12 – 690V 50/60 Hz
- Electrically isolated 1NO-1NC contacts (Push-to-Test)
- FLA range of 0.1 – 1500 amps



C396 Overload for Integrated Use with XT IEC Contactors

FLA Range (Amps)	XT IEC Contactor Frame Size / Width	Catalog Number
Direct Mount to XTCE...B Contactor		
0.4 – 2.0	B / 45 mm	C396A2A002SELXB
1 – 5	B / 45 mm	C396A2A005SELXB
1.6 – 8	B / 45 mm	C396A2A008SELXB
6.4 – 32	B / 45 mm	C396A2A032SELXB
Direct Mount to XTCE...C Contactor		
1.6 – 8	C / 45 mm	C396A2A008SELXC
6.4 – 32	C / 45 mm	C396A2A032SELXC
Direct Mount to XTCE...D Contactor		
6.4 – 32	D / 55 mm	C396A2A032SELXD
9 – 45	D / 55 mm	C396A2A045SELXD
15 – 75	D / 55 mm	C396B2A075SELXD
Direct Mount to XTCE...F or XTCE...G Contactor		
22 – 110	F – G / 90 mm	C396B2A110SELXF

C396 Stand-Alone Overload Relay

FLA Range (Amps)	Description	Catalog Number
0.4 – 2.0 1 – 5 1.6 – 8 6.4 – 32 9 – 45	45 mm Frame Overload Relay ①	C396A2A002SELAX C396A2A005SELAX C396A2A008SELAX C396A2A032SELAX C396A2A045SELAX
15 – 75 22 – 110	65 mm Frame Overload Relay ①	C396B2A075SELAX C396B2A110SELAX
30 – 150	110 mm Frame Overload Relay ②	C396C2A150SELAX

① Overload comes with a panel / DIN-Rail mounting adapter assembled. No separate mounting adapter accessory offered.

② Panel-mount only! Overload comes with integrated pass-through holes for power wires. Bus Bar Kit (C396CBAR or C396CBARXT, see Page 68) and Lug Kit (C396CLUG) must be purchased separately if customer refers not to use pass-through capability.

Circuit & Motor Protection

Overload Relays

PRODUCT SELECTION





C396 Overload Relays

Current Transformer Kits for Use with Stand-Alone Overload Relay C396A2A005SELAX ①

FLA Range (Amps)	Description	Catalog Number
60 – 300	300: 5 Panel-mount CT kit with integrated, pass-through holes. Kit includes CT, bus bars, lugs and hardware to mount C396A2A005SELAX(not included).	C396CTK300
120 – 600	600: 5 Panel-mount CT kit with integrated, pass-through holes. Kit includes CT, bus bars, lugs and hardware to mount C396A2A005SELAX (not included).	C396CTK600
200 – 1000	1000: 5 Panel-mount CT kit with integrated, pass-through holes. Kit includes CT, bus bars, lugs and hardware to mount C396A2A005SELAX (not included).	C396CTK1000
300 – 1500	1500: 5 Panel-mount CT kit with integrated, pass-through holes. Kit includes CT, bus bars, lugs and hardware to mount C396A2A005SELAX (not included).	C396CTK1500

① C396A2A005SELAX is not included in the current transformer kits. This item must be ordered separately.

Accessories

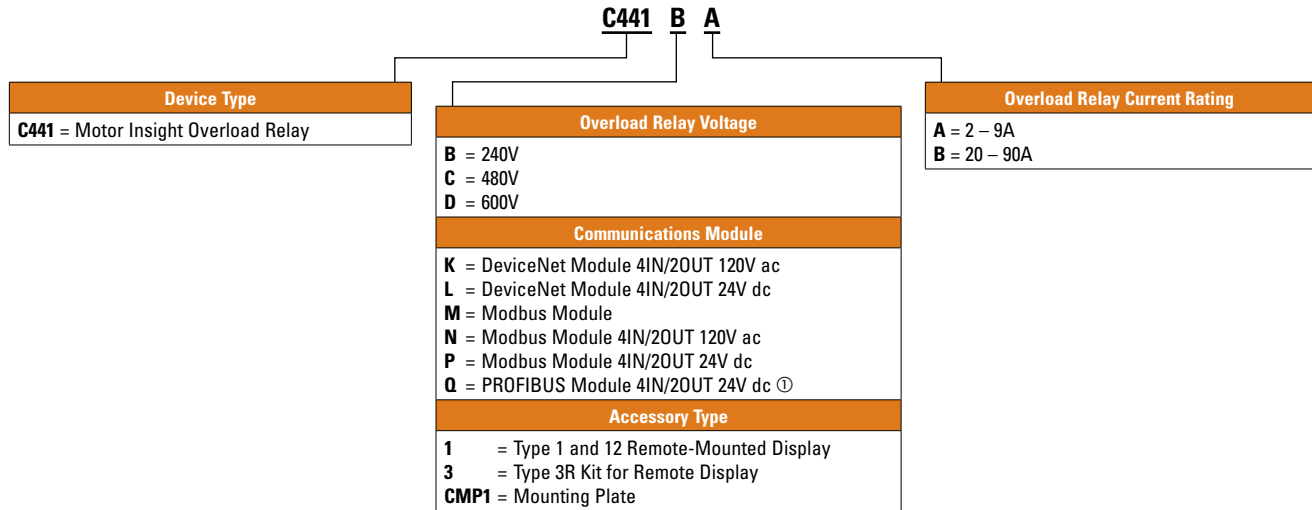
	Description	Catalog Number
	Reset Bar Kit assembles to the top of the overload to increase reset area	C396ARST
	110 mm XT Bus Bar Kit ①	C396CBARXT
 C396ARST + C396RR_ _ _ _ _ Assembled to a C396 Overload Relay	Remote Reset 24V dc ②	C396RR024DC
	Remote Reset 24V ac ②	C396RR024AC
	Remote Reset 120V ac ②	C396RR120AC
	Remote Reset 240V ac ②	C396RR240AC
	Mechanical Reset with E22 Flush Pushbutton and Mechanical Push Rod ③ Plastic Black Bezel Chrome Bezel	E22PB6N29L E22P6N29L

① Bus bar kits do not include lugs. Order C396CLUG if lugs are needed (3 lugs per kit).

② Reset Bar Kit (C396ARST) required to use the Remote Reset modules.

③ The operator button is blue with the letters "RESET" printed in white. The push rod is 4.72" long and can be cut to the desired length. This kit can be used alone or in conjunction with the C396 Reset Bar Kit, C396ARST, to increase the size of the reset area on the overload.

Motor Insight Overload and Monitoring Relays — Catalog Numbering System



① PROFIBUS module with I/O will be available in 2nd Quarter 2009.

Circuit & Motor Protection

Overload Relays

PRODUCT SELECTION

Motor Insight™ Overload and Monitoring Relays

- Power, voltage and current monitoring, ground fault, flexible communications, motor, load and line protection in a single package
- Enhanced surge / sag withstand capacity ensures reliable operation
- Finger proof IP20 rated terminals provide extra safety by reducing shock hazard
- Adjustments to overload settings can be made without disconnecting power
- User Interface
 - Bright LED display
 - Intuitive and highly customizable parameter configuration
- Remote display allows for configuration without opening the panel, providing additional operator safety



Motor Insight

Voltage	Current Range	Catalog Number
240V ac (170 – 264)	2 – 9 Amps	C441BA
240V ac (170 – 264)	20 – 90 Amps	C441BB
480V ac (323 – 528)	2 – 9 Amps	C441CA
480V ac (323 – 528)	20 – 90 Amps	C441CB
600V ac (489 – 660)	2 – 9 Amps	C441DA
600V ac (489 – 660)	20 – 90 Amps	C441DB

Motor Insight CT Multiplier and Wire Wrap Schedule

Motor FLA	Number of Loops	Number of Conductors Through CT Primary	CT Multiplier Setting	Catalog Number ①
-----------	-----------------	---	-----------------------	------------------

Current Range: 20 – 90A

5 – 22.5	3	4	4	C441_B
6.67 – 30	2	3	3	
10 – 45	1	2	2	
20 – 90	0	1	1	

Current Range: 2 – 9A

1 – 5	1	2	2	C441_A
2 – 9	0	1	1	
60 – 135	0	1	150 – (150:5)	
120 – 270	0	1	300 – (300:5)	
240 – 540	0	1	600 – (600:5)	

① Underscore indicates operating voltage code required.
Operating Voltage Codes:

Code	Voltage
B	240V ac
C	480V ac
D	600V ac

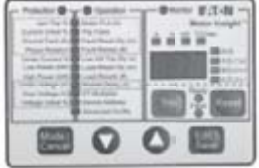

Modbus Communication Module

Description	I/O	Catalog Number
Modbus Communication Module	None	C441M
Modbus Communication Module 4IN / 2OUT	120V ac	C441N
Modbus Communication Module 4IN / 2OUT	240V dc	C441P

DeviceNet Modules

Description	I/O	Catalog Number
DeviceNet Communication Module	120V ac	C441K
DeviceNet Communication Module	24V dc	C441L

Motor Insight — Accessories

	Description	Catalog Number
	Remote Display Type 1	C4411
	Type 3R Kit for Remote Display (remote display not included)	C4413
	Adaptive Mounting Plate	C441CMP1

Motor Control

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MV811 Medium Voltage Soft Starter	105
Drives	110
M-Max Machinery Drive	112
SVX9000 Drive	113




Higher Power, More Options



Powering Business Worldwide

- Smallest and most rugged definite purpose contactors in the market
- Mount using any other manufacturer's mounting plate or on a DIN-Rail
- Compact contactors are globally certified for superior operating performance and life
- A wide variety of accessories is key to solving all your application needs

Contactors Product Overview

			
Description	C25 DP Contactors	XT IEC Miniature Contactors	XT IEC Contactors
Page	Page 74	Page 78	Page 80
Type	Definite Purpose	IEC	IEC
Standards and Certifications	UL Recognized, CSA, CE, ARI, RoHS	UL, IEC EN 60947, CE, CSA, RoHS	UL, IEC EN 60947, CE, CSA, RoHS
Pole Configurations	1P, 2P, 3P, 4P	3P, 4P	3P, 4P
Inductive Amp Ratings	to 360A	to 8.8A (AC-3)	to 1600A (AC-3)
Resistive Amp Ratings	to 360A	to 20A (AC-1)	to 2450A (AC-1)
Typical Electrical Operations	to 300,000	to 750,000	to 1,400,000

Motor Control

Contactors

CATALOG SELECTION

Definite Purpose Contactors — Catalog Numbering System

C 25 D N A 2 15 A A

Model
C = Contactor
A = Three-Phase Starter
B = Single-Phase Starter

Type
25 = Non-Reversing Contactors
27 = Non-Reversing Starters
29 = Non-Reversing Starters
65 = Reversing Contactors

Contactors Frame Size
A = Compact 1-Pole
B = Compact 2-Pole
C = Compact 1-Pole w/Shunt
D = 15 – 50A, 2- and 3-Pole
E = 25 – 40A, 4-Pole
F = 60 – 75A, 2- and 3-Pole
G = 90A, 2- and 3-Pole
H = 120A, 2- and 3-Pole
K = 200 and 300A, 3-Pole
L = 360A, 3-Pole

For Starters Only
C = Common Control Wiring
S = Separate Control Wiring

Enclosure Type
N = Open with Metal Mounting Plate
R = Open with DIN-Rail Mounting Adapter (2- and 3-Pole, 15 – 50A Contactors Only)
G = NEMA Type 1 Enclosed

No. of Poles
1 = 1-Pole
2 = 2-Pole
3 = 3-Pole
4 = 4-Pole

Current Rating	
15 = 15A	75 = 75A
25 = 25A	90 = 90A
30 = 30A	120 = 120A
40 = 40A	200 = 200A
50 = 50A	300 = 300A
60 = 60A	360 = 360A

Coil Selection	
A = 110 – 120V ac, 50/60 Hz	R = 12V ac, 50/60 Hz
B = 208 – 240V ac, 50/60 Hz	T = 24V ac, 50/60 Hz
C = 440 – 480V ac, 50/60 Hz	1R = 12V dc
D = 550 – 600V ac, 50/50 Hz	1T = 24V dc
H = 277V ac, 60 Hz	1W = 48V dc
J = 220 – 240 V ac, 50/60 Hz	1A = 120V dc
L = 380 – 415V ac, 50 Hz	

Auxiliary Contacts (Side Mount)
A = 1NO Pressure Plate
B = 1NC Pressure Plate
C = 1NO-1NC Pressure Plate
L = 1NO-1NC Snap Switch QC Only
M = 2NO-2NC Snap Switch QC Only

Power Terminals
A = Binding Head Screw
B = Binding Head Screw and Quick Connect Terminals (side by side)
C = Screw/Pressure Plate ①
D = Screw/Pressure Plate and Quick Connect Terminals (side by side) ①
E = Box Lugs (Posidrive Setscrew)
F = Box Lugs (Posidrive Setscrew) and Quick Connect Terminals (side by side)
G = Binding Head Screw and Quick Connect Terminals (vertical in-line)
H = Screw/Pressure Plate and Quick Connect ZZ Terminals (vertical in-line) ①
J = Box Lugs (Posidrive Setscrew) and Quick Connect Terminals (vertical in-line)
K = Box Lugs (Hex Socket Allen Head Setscrew)
L = Box Lugs (Hex Socket Allen Head Setscrew) and Quick Connect Terminals (side by side)
M = Box Lugs (Hex Socket Allen Head Setscrew) and Quick Connect Terminals (vertical in-line)

① Not available on 50A devices.

Compact Definite Purpose Contactors

- Insulation voltage: 690V
- Current rated and hp/kW rated
- Magnet coil: Class F, 155°C
- Contact arc covers are standard on all contactors



Compact Contactors — Open Type

Ampere Ratings ①					Catalog Number ②
Inductive Full Load	Resistive	Locked Rotor			
		240 – 277V	480V	600V	

Single-Pole

30	40	150	75	50	C25ANB130_
40	50	240	200	160	C25ANB140_

Single-Pole with Shunt

30	40	150	75	50	C25CNB130_
40	50	240	200	160	C25CNB140_

Double-Pole

25	35	150	125	100	C25BNB225_
30	40	150	125	100	C25BNB230_
40	50	240	200	160	C25BNB240_

① Rating per pole.

② Replace underscore (_) in catalog number with coil suffix letter from table below.

Magnet Coil Selection

AC Coil Voltage 50/60 Hz	Coil Suffix
24	T
110 – 120	A
208 – 240	B

Motor Control

Contactors

PRODUCT SELECTION

50 mm C25 Definite Purpose Contactors

- Contactors are dual-rated with inductive and resistive ratings, as well as horsepower and kilowatt ratings
- Contactors rated 15 – 50A are available with DIN-Rail mount as a factory installed option
- Magnet coil: Class B (C25E, F, G, H and K), 130°C
- Ambient temperature: 150°F (65°C) maximum



C25 Contactors — Open Type

Rating, Amperes				Maximum Motor Horsepower		Open Type with Metal Mounting Plate	Open Type with DIN-Rail Adapter
Inductive Full Load	Resistive per Pole	Line Voltage	Locked Rotor	1-Phase	3-Phase	Catalog Number ①②	Catalog Number ①②
15	20	230	90	2	3	C25DND315_	C25DRD315_
		460	75	—	5		
		575	60	—	5		
25	35	230	150	3	7-1/2	C25DND325_ C25END425_	C25DRD325_
		460	125	—	10		
		575	100	—	10		
30	40	230	180	5	10	C25DND330_ C25END430_	C25DRD330_
		460	150	—	15		
		575	120	—	15		
40	50	230	240	7-1/2	10	C25DNF340_ C25ENF440_	C25DRF3340_
		460	200	—	20		
		575	160	—	20		
50	65	230	300	10	15	C25DNJ350_	C25DRJ350_
		460	250	—	30		
		575	200	—	30		
60	75	230	360	10	20	C25FNF360_	—
		460	300	—	40		
		575	240	—	40		
75	90	230	450	15	20	C25FNF375_	—
		460	375	—	50		
		575	300	—	50		

- ① Replace underscore (_) in catalog number with magnet coil suffix from table at right.
- ② Carton quantities including 20 individually packaged units are available for 2- and 3-pole units through 60A inductive.
- ③ Contactors with DC coils (only available up to 75A) include an early break NC auxiliary contact, C320KGD1.
- ④ Available through 120A.
- ⑤ 104 – 120V 50/60 Hz for 60A, 75A and all 4-pole contactors (25A – 40A).
- ⑥ Class H AC Coils available as option for 15A – 50A contactor. Add 2 before AC coil suffix letter.

Magnet Coil Selection

Voltage		Coil Suffix
60 Hz	50 Hz	
AC ④		
24 ④ 110 – 120 ⑤ 208 – 240 ⑤	24 110 – 120 ⑤ 208 – 240	T A B
DC ③		
24		1T

50 mm C25 Definite Purpose Contactors

Reversing and 2-Speed Contactors — Open Type — Unwired, Mechanically Interlocked Only

Rating, Amperes				Maximum Motor Horsepower		Open Type with Metal Mounting Plate
Inductive Full Load	Resistive per Pole	Line Voltage	Locked Rotor	1-Phase	3-Phase	Catalog Number ①
15	20	230	90	2	3	C65DND315_
		460	75	—	5	
		575	60	—	5	
25	35	230	150	3	7-1/2	C65DND325_
		460	125	—	10	
		575	100	—	10	
30	40	230	180	5	10	C65DND330_
		460	150	—	15	
		575	120	—	15	
40	50	230	240	7-1/2	10	C65DNF340_
		460	200	—	20	
		575	160	—	20	
50	65	230	300	10	15	C65DNJ350_
		460	250	—	30	
		575	200	—	30	

① Replace underscore (_) with magnet coil suffix from table below.

Magnet Coil Selection

Volts		Coil Suffix ①
60 Hz	50 Hz	
24	24	T
110 – 120 ②	110 – 120 ②	A
208 – 240 ③	208 – 240	B

① Class H AC coils available as option for 15A – 50A contactor. Add 2 before AC coil suffix letter.

② 104 – 120V 50/60 Hz for 60A, 75A.

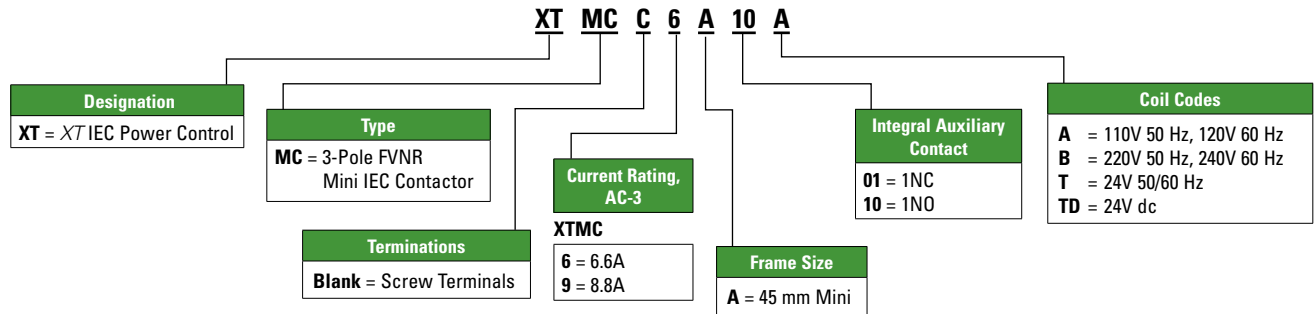
③ Available through 50A.

Motor Control

Contactors

CATALOG SELECTION / PRODUCT SELECTION

XT IEC Miniature Contactors — Catalog Numbering System



XT IEC Miniature Contactors

- 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
- Direct mount with XTOM Miniature Overload Relays



Full Voltage Non-reversing 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				Maximum 3-Phase Motor Rating								No. of Power Poles	Aux. Contacts	Catalog Number — Screw Terminals ①
		3-Phase Motors 50 – 60 Hz				1-Phase Horsepower Ratings			3-Phase Horsepower Ratings							
		220 – 240V	380 – 400V	550V	660/ 690V	115V	200V	230V	200V	230V	460V	575V				
6.6	20	1.5	3	3	3	1/4	3/4	1	1-1/2	2	3	3	3	3	1NO	XTMC6A10_
6.6	20	1.5	3	3	3	1/4	3/4	1	1-1/2	2	3	3	3	3	1NC	XTMC6A01_
8.8	20	2.2	4	4	4	1/2	1	1-1/2	2	3	5	5	3	1NO	XTMC9A10_	
8.8	20	2.2	4	4	4	1/2	1	1-1/2	2	3	5	5	3	1NC	XTMC9A01_	
8.8	20	2.2	4	4	4	1/2	1	1-1/2	2	3	5	5	4	—	XTMF9A00_	

① Underscore () indicates magnet coil suffix required. See table below.

Magnet Coil Suffix

Coil Voltage	Suffix Code
110V 50 Hz, 120V 60 Hz	A
220V 50 Hz, 240V 60 Hz	B
24V 50/60 Hz	T
24V dc	TD ①
415V 50 Hz, 480V 60 Hz	C
550V 50 Hz, 600V 60 Hz	D
208V 60 Hz	E





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

Note: IEC Utilization Categories

- 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.

XT IEC Miniature Contactors

Front Mount Auxiliary Contacts

Conventional Free Air Thermal Current, $I_{th} = I_e$, AC-1 in Amps	Contact Configuration	Contact Sequence	Package Qty.	Catalog Number — Screw Terminals
10	1NO-1NC		5	XTMCXFA11
10	2NO-2NC		5	XTMCXFA22
10	3NO-1NC		5	XTMCXFA31
10	4NO		5	XTMCXFA40

Accessories

Description	Package Qty.	Catalog Number
Mechanical Interlock	5	XTMCXML
Reversing Link Kit — Main current wiring for reversing contactors and starters	1	XTMCXRL ②
Connector — For mechanically arranging contactors and timing relays in combinations	50	XTMCXCN ①

① 0 mm distance between contactors.

② Reversing Link Kit does not include mechanical interlock.

Note: For two contactors with AC or DC operated magnet system that are horizontally or vertically mounted, the distance between contactors is 0 mm, and the mechanical lifespan is 2.5×10^6 operations. The following control cables are integrated as part of the electrical interlock: K1M: A1 — K2M: 21; K1M: 21 — K2M: A1.

Motor Control

Contactors

CATALOG SELECTION

XT IEC Contactors — Catalog Numbering System

XT CE 007 B 01 A

Designation
XT = XT Line of IEC Control

Type
CE = 3-Pole FVNR IEC Contactor
CS = 3-Pole FVNR S Series IEC Contactor

Current Ratings, AC-3	
007 = 7A	185 = 185A
009 = 9A	225 = 225A
012 = 12A	250 = 250A
015 = 15A	300 = 300A
018 = 18A	400 = 400A
025 = 25A	500 = 500A
032 = 32A	570 = 580A
040 = 40A	580 = 580A
050 = 50A	650 = 650A
065 = 65A	750 = 750A
072 = 72A	820 = 820A
080 = 80A	C10 = 1000A
095 = 95A	C14 = 1400A, AC-1
115 = 115A	C16 = 1600A, AC-3
150 = 150A	C20 = 2000A, AC-1
170 = 170A	

Built-In Auxiliary Contact
01 = 1NC **00** = 0NO-0NC
10 = 1NO **22** = 2NO-2NC

Frame Size Designation

B = 45 mm	L = 140 mm
C = 45 mm	M = 160 mm
D = 55 mm	N = 250 mm
F = 90 mm	P = 260 mm
G = 90 mm	R = 515 mm

Coil Codes
 See Page 83.

XT IEC Contactors

- Reversing or non-reversing contactors
- AC-3 contactor ratings to 1600A and AC-1 contactor ratings to 2000A
- Panel or DIN-Rail mounting to 65A
- IP20 finger and back-of-hand proof
- Built-in NO or NC auxiliary contacts to 32A
- Built-in surge suppression on DC coils XTCE Frame B-G and AC or DC coils on XTCE Frame L-R
- Can be used with XT or C396 Overload Relays
- Can be used with XTPR MMPs for Manual Motor Controllers or UL508 Type F Combination Motor Controllers



Full Voltage Non-Reversing 3-Pole Contactors, Frame B – Frame G

UL/CSA Ratings								IEC Ratings							Catalog Number — Screw Terminals ①②
UL General Purpose Amp Rating	1-Phase hp Ratings			3-Phase hp Ratings				AC-3 I _e (A)	AC-1 (40°C) I _e = I _{th} (A)	Maximum kW Ratings AC-3 3-Phase Motors 50 – 60 Hz				Aux. Contacts	
	115V	200V	230V	200V	230V	460V	575V			220/230V	380/400V	415V	660/690V		

Frame B

20	1/4	3/4	1	1-1/2	2	3	5	7	20	2.2	3	4	3.5	1NO	XTCE007B10_
20	1/4	3/4	1	1-1/2	2	3	5	7	20	2.2	3	4	3.5	1NC	XTCE007B01_
20	1/2	1	1-1/2	3	3	5	7-1/2	9	20	2.5	4	5.5	4.5	1NO	XTCE009B10_
20	1/2	1	1-1/2	3	3	5	7-1/2	9	20	2.5	4	5.5	4.5	1NC	XTCE009B01_
20	1	2	2	3	3	10 ③	10	12	20	3.5	5.5	7	6.5	1NO	XTCE012B10_
20	1	2	2	3	3	10 ③	10	12	20	3.5	5.5	7	6.5	1NC	XTCE012B01_
20	1	2	3	5	5	10 ③	10	15.5	20	4	7.5	8	7	1NO	XTCE015B10_
20	1	2	3	5	5	10 ③	10	15.5	20	4	7.5	8	7	1NC	XTCE015B01_

Frame C

40	2	2	3	5	5	10 ③	15	18	35	5	7.5	10	11	1NO	XTCE018C10_
40	2	2	3	5	5	10 ③	15	18	35	5	7.5	10	11	1NC	XTCE018C01_
40	2	3	5	7-1/2	10	15	20	25	40	7.5	11	14.5	14	1NO	XTCE025C10_
40	2	3	5	7-1/2	10	15	20	25	40	7.5	11	14.5	14	1NC	XTCE025C01_
40	3	5	5	10	10	20	25	32	40	10	15	18	17	1NO	XTCE032C10_
40	3	5	5	10	10	20	25	32	40	10	15	18	17	1NC	XTCE032C01_

Frame D

63	3	5	7-1/2	10	15	30	40	40	50	12.5	18.5	24	23	—	XTCE040D00_
80	3	7-1/2	10	15	20	40	50	50	65	15.5	22	30	30	—	XTCE050D00_
88	5	10	15	20	25	50	60	65	80	20	30	39	35	—	XTCE065D00_
88	5	10	15	20	25	50	60	72	80	22	37	41	35	—	XTCE072D00_

Frame F

125	7-1/2	15	15	25	30	60	75	80	90	25	37	48	63	—	XTCE080F00_
125	7-1/2	15	15	25	40	75	110	95	110	30	45	57	75	—	XTCE095F00_

Frame G

160	10	25	25	40	50	100	100	115	130	37	55	70	90	—	XTCE115G00_
180	10	25	30	40	60	125	125	150	160	48	75	91	96	—	XTCE150G00_
225 ⑤	10	25	30	40	60	125	125	170	275 ④	52	90	100	96	—	XTCE170G00_

① Underscore (_) indicates magnet coil suffix required. See Page 83.

② For spring cage terminals, insert C after the fourth digit of the catalog number. Example: XTCE C 007B10A. For 7 – 12A XTCEC contactors, the power, auxiliary and coil terminals are spring cage. For 18 – 32A XTCEC contactors, the auxiliary and coil terminals are spring cage. For 40 – 150A XTCEC contactors, the coil terminals only are spring cage.

③ For electrical life contactor application data, see Tab 34 of the Control Products Catalog (CA08102001E).

④ For 225 – 275A, use 2 x 70 mm² wire.

⑤ For 180 – 225A, use 2 x 3/0 AWG wire.

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.

DC operated contactors (Frames B – G, 7 – 150A) have a built-in suppressor circuit. Frame B – C contactors with 1NC built-in auxiliary are mirror contacts (XTCE...B01_ – XTCE...C01_).

Motor Control

Contactors

PRODUCT SELECTION

XT IEC Contactors

Full Voltage Non-Reversing 3-Pole Contactors, Frame L – Frame R

UL/CSA Ratings					IEC Ratings							Aux. Contacts	Catalog Number ①
UL General Purpose Amp Rating	3-Phase hp Ratings				AC-3 I _e (A)	AC-1 (40°C) I _e = I _{th} (A)	Maximum kW Ratings AC-3						
	200V	230V	460V	575V			3-Phase Motors 50 – 60 Hz						
							220/230V	380/400V	415V	660/690V ②	1000V ②		

Frame L — Standard Coil (110/120V, 230/240V ac Coil Only)

225	50	60	125	150	185	337	55	90	110	175	108	2NO-2NC	XTCS185L22_
250	60	75	150	200	225	386	70	110	132	215	108	2NO-2NC	XTCS225L22_
300	75	100	200	250	250	429	75	132	148	240	108	2NO-2NC	XTCS250L22_

Frame L — Electronic Coil

225	50	60	125	150	185	337	55	90	110	175	108	2NO-2NC	XTCE185L22_
250	60	75	150	200	225	386	70	110	132	215	108	2NO-2NC	XTCE225L22_
300	75	100	200	250	250	429	75	132	148	240	108	2NO-2NC	XTCE250L22_

Frame M — Standard Coil (110/120V, 230/240V ac Coil Only)

350	100	125	250	300	300	490	90	160	180	286	132	2NO-2NC	XTCS300M22_
450	125	150	300	400	400	612	125	200	240	344	132	2NO-2NC	XTCS400M22_
550	150	200	400	500	500	857	155	250	300	344	132	2NO-2NC	XTCS500M22_
550	150	200	400	500	580	980	155	315	—	344	132	2NO-2NC	XTCS570M22_

Frame M — Electronic Coil

350	100	125	250	300	300	490	90	160	180	286	132	2NO-2NC	XTCE300M22_
450	125	150	300	400	400	612	125	200	240	344	132	2NO-2NC	XTCE400M22_
550	150	200	400	500	500	857	155	250	300	344	132	2NO-2NC	XTCE500M22_
550	150	200	400	500	580	980	155	315	350	344	132	2NO-2NC	XTCE570M22_

Frame N — Electronic Coil

630	200	200	400	600	580	980	185	315	348	560	600	2NO-2NC	XTCE580N22_ ③
700	200	250	500	600	650	1041	205	355	390	630	600	2NO-2NC	XTCE650N22_ ③
800	250	300	600	700	750	1102	240	400	455	720	800	2NO-2NC	XTCE750N22_ ③
850	290	350	700	860	820	1225	260	450	500	750	800	2NO-2NC	XTCE820N22_ ③
1100	350	420	850	980	1000	1225	315	560	610	1000	1000	2NO-2NC	XTCE10N22_ ③

Frame P — Electronic Coil

1400	—	—	—	—	—	1714	—	—	—	—	—	2NO-2NC	XTCEC14P22_ ③
------	---	---	---	---	---	------	---	---	---	---	---	---------	---------------

Frame R — Electronic Coil

1600	560	640	1200	1300	1600	2200	500	900	900	1600	1700	2NO-2NC	XTCEC16R22_ ③
2000	—	—	—	—	—	2450	—	—	—	—	—	2NO-2NC	XTCEC20R22_ ③

① Underscore (_) indicates magnet coil suffix required. See Page 83.

② For 185 – 500A contactors at 660/690V or 1000V: Do not reverse directly.

③ 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 — see Pub51204, Pub51209.

Contactor Application Data

Catalog Prefix	Electrical Life (Operations) for 10 hp, 480V (14.2A) Applications
XTCE012B	1 million
XTCE015B	1.2 million
XTCE018C	2 million

Note: AC and DC operated contactors have a built-in suppressor circuit (Frames L – R, 185 – 2000A).

Full Voltage Non-Reversing 3-Pole Contactors — Contact Sequence (Circuit Symbols) — Standard Offering

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

XT IEC Contactors

Magnet Coil Suffix

Coil Voltage	Suffix Code
Frame B – F	
110V 50 Hz, 120V 60 Hz	A
220V 50 Hz, 240V 60 Hz	B
24V 50/60 Hz	T
24V dc	TD
415V 50 Hz, 480V 60 Hz	C
550V 50 Hz, 600V 60 Hz	D
208V 60 Hz	E

Frame G

100 – 120V 50/60 Hz	A
190 – 240V 50/60 Hz	B
24V 50/60 Hz	T
24 – 27V dc	TD
480 – 500V 50/60 Hz	C

Magnet Coil Suffix (Continued)

Coil Voltage	Suffix Code
Frame L – N	
110 – 250V 40 – 60 Hz/DC	A
250 – 500V 40 – 60 Hz	C
24 – 48V dc	TD

Frame L – M, S-Series

110 – 120V 50/60 Hz	A
220 – 240V 50/60 Hz	B

Frame P – R

220 – 250V 50 – 60 Hz/DC	B
--------------------------	----------

XTCR Reversing Contactor Components

Qty	Frame	B	C	D	F	G
2	Contactors	XTCE...B01_	XTCE...B01_	XTCE...D00_	XTCE...F00_	XTCE...G00_
2	Auxiliary Contact	XTCEXFAC20	XTCEXFAC20	XTCEXFBG11	XTCEXFBG11	XTCEXFBG11
1	Mechanical Interlock	XTCEXMLB	XTCEXMLC	XTCEXMLD	XTCEXMLG	XTCEXMLG
1	Reversing Link Kit	XTCEXRLB	XTCEXRLC	XTCEXRLD	XTCEXRLG	XTCEXRLG

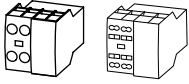


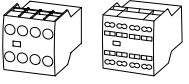


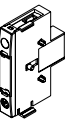


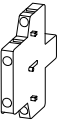




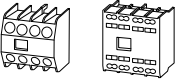


Motor Control

Contactors

PRODUCT SELECTION

XT IEC Contactors

Auxiliary Contacts

	Conventional Thermal Current, Open at 60°C $I_{th} = I_{e'}$ AC-1 in Amps	Poles	Contact Configuration	Circuit Symbol	Pkg. Qty.	Catalog Number — Screw Terminals
Frame B – C — Front (Top) Mount						
	16	2	2NO		5	XTCEXFAC20
	16	2	1NO-1NC		5	XTCEXFAC11
	16	4	4NO		5	XTCEXFAC40
	16	4	2NO-2NC		5	XTCEXFAC22
Frame B — Side Mount ①						
	16	1	1NO		1	XTCEXSAB10
	16	1	1NC		1	XTCEXSAB01
Frame C — Side Mount						
	10	2	1NO-1NC		1	XTCEXSACC11 ①
Frame D — G						
	16	2	2NO		5	XTCEXFBG20
	16	2	1NO-1NC		5	XTCEXFBG11
	16	4	4NO-0NC		5	XTCEXFBG40
	16	4	2NO-2NC		5	XTCEXFBG22

① Can be mounted to the left side of contactor only. Cannot be used in combination with front (top) mount auxiliary contacts or mechanical interlocks.

Note: Interlocked opposing contacts, to IEC/EN 60947-5-1 Annex L (positively driven), within the auxiliary contact modules (not NO (early make) and NC (late break) contacts) and for the built-in auxiliary contacts of the XTCE007B... – XTCE032C... Auxiliary break contact can be used as mirror contact to IEC/EN 60947-4-1 Annex F (not NC (late break) contact). No auxiliary contacts can be fitted between two contactors.

XT IEC Contactors

Side Mount Auxiliary Contacts for Frame D – R, 40 – 2000A

Conventional Free Air Thermal Current, $I_{th} = I_c$, AC-1 in Amps	Poles	Contact Configuration	Circuit Symbol	Pkg. Qty.	Catalog Number — Screw Terminals
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Frame D – R

	10	2	1NO-1NC		1	XTCEXSBN11
--	----	---	---------	--	---	-------------------

Frame D – R (Screw Mount)

	10	2	1NO-1NC		1	XTCEXSBR11
--	----	---	---------	--	---	-------------------

Note: For Frames B – C, cannot use both a side AND a top mount auxiliary contact at the same time.
 For Frame D, 6 auxiliary contacts maximum (can be a combination of side and top mount units)
 For Frames F – R, 8 auxiliary contacts maximum (can be a combination of side and top mount units)

Accessories

For Use with...	Pkg. Qty.	Catalog Number
-----------------	-----------	----------------

Mechanical Interlock ①

	XTCE007B – XTCE015B, XTCE020B	5	XTCEXMLB
	XTCE018C – XTCE032C XTCE032C – XTCE045C XTCE040D – XTCE072D	1	XTCEXMLC
	XTCE063D – XTCE080D	1	XTCEXMLD
	XTCE080F – XTCE170G XTCE125G – XTCE200G	1	XTCEXMLG ②
	XTCE185L – XTCE570M	1	XTCEXMLM
	XTCE580N – XTCEC10N	1	XTCEXMLN ②
	XTCE500M – XTCE570M with XTCE500N – XTCEC10N	1	XTCEXMLNM ②

Reversing Link Kits

	XTCE007B – XTCE015B	1	XTCEXRLB ③
	XTCE018C – XTCE032C	1	XTCEXRLC
	XTCE040D – XTCE065D	1	XTCEXRLD
	XTCE080F – XTCE150G	1	XTCEXR LG
	XTCE185L – XTCE250L	1	XTCEXRLL
	XTCE300M – XTCE400M	1	XTCEXR LM400

① For two contactors with AC or DC operated magnet system which are horizontally or vertically mounted. For B – G frames, mechanical lifespan is 2.5×10^6 operations and the distance between contactors is 0 mm. For L – N frames, mechanical lifespan is 5×10^6 operations and no auxiliary contact can be mounted between the mechanical interlock and the contactor — the distance between contactors is 15 mm.

② XTCEXMLG, XTCEXMLN and XTCEXMLNM consist of an interlock element and mounting plate.

③ Also includes Interlocking Bridge (XTCEXLBB). The following control cables are integrated for electrical interlock: K1M: A1 – K2M: 21; K1M: 21 – K2M: A1; K1M: A2 – K2M: A2.

Less System Stress, Longer Life






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- Sophisticated solid-state overload protection maximizes the uptime of your machine

Soft Starters Product Overview

			
Description	Torque Limiter	S701	S801
Page	Page 89	Page 90	Page 92

Power

Current Range (A)	Up to 25	Up to 25 and up to 30 with Bypass	37-1000
Phases	3-Phase and 1-Phase Motors	2-Phase Control	3
Input Voltage (Line Voltage)	Up to 600V	Up to 600V	0-600V; 690V on V and T Frame
Horsepower Range	Up to 20 hp	Up to 25 hp	230V: 10 – 400 hp; 20 – 800 hp 460V: 575V:30 – 1000 hp
Internal Run-Bypass	—	Can Have Bypass with Auxiliary Contact	Yes
Inside-the-Delta Control	—	—	Yes

Control

User Interface	Non-Digital Interface	Non-Digital Interface	DIP Switches and Rotary Dials
Control Voltage	—	24 – 300 ac/dc	24V dc
Communications	—	—	—
Program Relays	—	—	—

Soft Start

Voltage Ramp Initial Current	5 – 85% LRT	5 – 85% LRT	5 – 85% LRT
Voltage Ramp Time	0.5 – 5 sec.	0.5 – 20 sec.	0.5 – 180 sec.
Current Limit	—	—	5 – 85% LRT
Current Limit Time	—	—	0.5-180 sec.
Kick Start Current	—	0 – 85% LRT	5 – 85% LRT
Kick Start Time	—	0 – 200 ms	0 – 2 sec.
Jog	—	—	Yes

Soft Stop

Stop Ramp Time	—	0 – 20 sec.	0 – 60 sec.
Electronic DC Injection Braking	—	Yes	—
Preset Slow Speed	—	—	—
Pump Control	—	—	Optional

Environmental

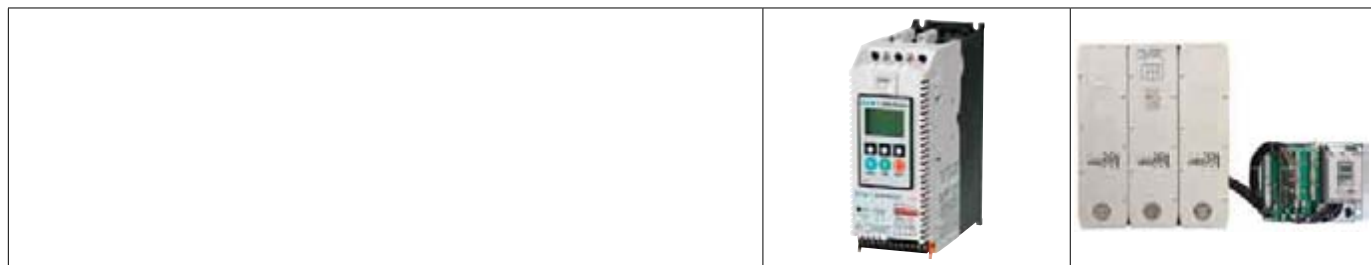
Operating Temperature °C	-30 to +40°C	-30 to +40°C	-30 to +50°C
Humidity	0 – 95% Non-condensing	0 – 95% Non-Condensing	0 – 95% Non-Condensing
Altitude	< 2000M	< 2000M	< 2000M

Motor Control

Soft Starters

PRODUCT OVERVIEW

Soft Starters Product Overview (Continued)



Description	S811	MV811
Page	Page 98	Page 105

Power

Current Range (A)	37 – 1000	37 – 420
Phases	3	3
Input Voltage (Line Voltage)	0 – 600V; 690V on V and T Frame	2.5 kV, 5 kV, 7.2 kV
Horsepower Range	230V: 10 – 400 hp; 20 – 800 hp 460V: 575V:30 – 1000 hp	5000 hp
Internal Run-Bypass	Yes	Yes
Inside-the-Delta Control	Yes	—

Control

User Interface	LCD and Keypad	LCD and Keypad
Control Voltage	24V dc	24V dc
Communications	EtherNet/IP; Ethernet Modbus; Serial Modbus; PROFIBUS DP	EtherNet/IP; Ethernet Modbus; Serial Modbus; PROFIBUS DP
Program Relays	Yes	Yes

Soft Start

Voltage Ramp Initial Current	5 – 85% LRT	5 – 85% LRT
Voltage Ramp Time	0.5 – 180 sec.	0.5 – 180 sec.
Current Limit	5 – 85% LRT	5 – 85% LRT
Current Limit Time	0.5 – 180 sec.	0.5 – 180 sec.
Kick Start Current	5 – 85% LRT	5 – 85% LRT
Kick Start Time	0 – 2 sec.	0 – 2 sec.
Jog	Yes	Yes

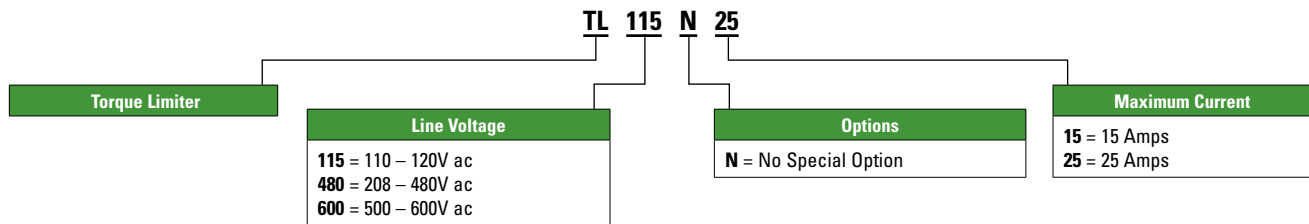
Soft Stop

Stop Ramp Time	0 – 60 sec.	0 – 60 sec.
Electronic DC Injection Braking	—	—
Preset Slow Speed	—	—
Pump Control	Optional	Optional

Environmental

Operating Temperature °C	-30 to +50°C	-30 to +40°C
Humidity	0 – 95% Non-Condensing	0 – 95% Non-Condensing
Altitude	< 2000M	< 2000M

TL Torque Limiter — Catalog Numbering System



TL Torque Limiter

- Rated operational voltage up to 600V ac
- Adjustable ramp times (0.5 – 5 seconds)
- Adjustable initial torque control (0 – 85%)
- Unlimited number of START/STOP operations per hour
- IP20 finger protection



TL Torque Limiter

Max. Current	Line Voltage	kW Rating (50 Hertz)				Horsepower Rating								Catalog Number
		110/120V	230V	380 – 400V	440V	200V		230V		460V		575V		
						1.0 SF	1.15 SF	1.0 SF	1.15 SF	1.0 SF	1.15 SF	1.0 SF	1.15 SF	

1-Phase Motor — 115V Versions

15	110 – 120	0.5	N/A	N/A	N/A	3/4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TL115N15
25	110 – 120	1.5	N/A	N/A	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TL115N25

3-Phase Motor

15	208 – 480	N/A	4	5.5	7.5	N/A	3	3	3	3	10	7-1/2	N/A	N/A	TL480N15
15	500 – 600	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10	10	TL600N15
25	208 – 480	N/A	7.5	12.5	12.5	N/A	5	5	7-1/2	5	15	15	N/A	N/A	TL480N25
25	500 – 600	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	TL600N25

1-Phase Motor

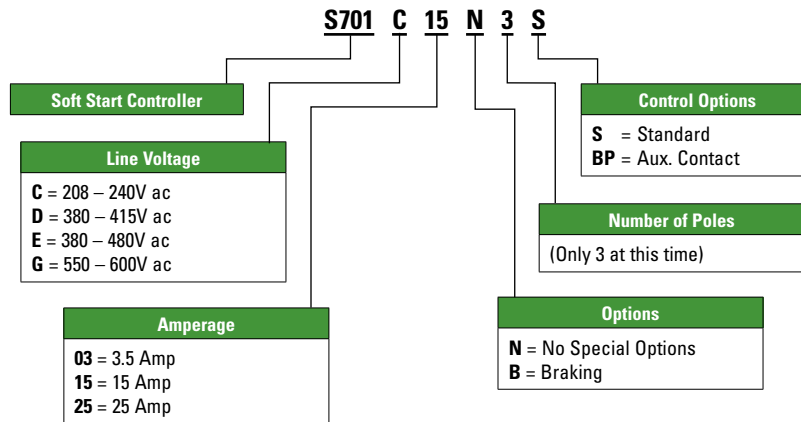
15	208 – 240	N/A	2.2	N/A	N/A	N/A	2	2	3	3	N/A	N/A	N/A	N/A	TL480N15
15	380 – 480	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5	5	N/A	N/A	TL480N15
25	208 – 240	N/A	4	7.5	N/A	N/A	3	3	5	5	N/A	N/A	N/A	N/A	TL480N25
25	380 – 480	N/A	N/A	7.5	N/A	N/A	N/A	N/A	N/A	N/A	10	10	N/A	N/A	TL480N25

Motor Control

Soft Starters

CATALOG SELECTION / PRODUCT SELECTION

S701 Soft Start Controller — Catalog Numbering System



S701 Soft Start Controller

- Rated operational voltage up to 600V ac
- Control voltage range from 24 to 480V ac/dc, 24 to 300V ac/dc with auxiliary contact or brake
- Adjustable ramp times
- Adjustable initial torque control (0 – 85%)
- Kick start feature



Soft Start Controllers

Max. Current	Line Voltage	Control Voltage (V ac/V dc)	3-Phase Motor											Catalog Number
			kW Rating (50 Hertz)			Horsepower Rating (60 Hertz)								
			230V	380 – 400V	440V	200V		230V		460V		575V		
						1.0 SF	1.15 SF	1.0 SF	1.15 SF	1.0 SF	1.15 SF	1.0 SF	1.15 SF	
3.5	208 – 240	24 – 240	7.5	N/A	N/A	1	1	1	1	N/A	N/A	N/A	N/A	S701C03N3S
3.5	380 – 415	24 – 300	N/A	1.1	N/A	N/A	N/A	N/A	N/A	1-1/2	1-1/2	N/A	N/A	S701D03N3S
3.5	440 – 480	24 – 300	N/A	N/A	1.5	N/A	N/A	N/A	N/A	2	2	N/A	N/A	S701E03N3S
3.5	500 – 600	24 – 300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	2	S701G03N3S
15	208 – 240	24 – 240	4	N/A	N/A	3	3	3	3	N/A	N/A	N/A	N/A	S701C15N3S
15	380 – 480	24 – 300	N/A	5.5	7.5	N/A	N/A	N/A	N/A	10	7-1/2	N/A	N/A	S701E15N3S
15	500 – 600	24 – 300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10	10	S701G15N3S
25	208 – 240	24 – 240	7.5	N/A	N/A	5	5	7-1/2	5	N/A	N/A	N/A	N/A	S701C25N3S
25	380 – 480	24 – 300	N/A	11	12.5	N/A	N/A	N/A	N/A	15	15	N/A	N/A	S701E25N3S
25	500 – 600	24 – 300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	S701G25N3S

5701 Soft Start Controller

Soft Start Controller with Auxiliary Contact

Max. Current	Line Voltage	Control Voltage (V ac/V dc)	3-Phase Motor											Catalog Number
			kW Rating (50 Hertz)			Horsepower Rating								
						200V		230V		460V		575V		
			230V	380 – 400V	440V	1.0 SF	1.15 SF	1.0 SF	1.15 SF	1.0 SF	1.15 SF	1.0 SF	1.15 SF	

Ratings without Bypass

25	208 – 240	24 – 240	5.5	N/A	N/A	5	5	7-1/2	5	N/A	N/A	N/A	N/A	S701C25N3BP
25	380 – 480	24 – 300	N/A	12.5	12.5	N/A	N/A	N/A	N/A	15	15	N/A	N/A	S701E25N3BP
25	500 – 600	24 – 300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	S701G25N3BP

Ratings with Bypass

30	208 – 240	24 – 240	7.5	N/A	N/A	7-1/2	7-1/2	10	7-1/2	N/A	N/A	N/A	N/A	S701C25N3BP
30	380 – 480	24 – 300	N/A	15	15	N/A	N/A	N/A	N/A	20	15	N/A	N/A	S701E25N3BP
30	500 – 600	24 – 300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25	20	S701G25N3BP

Soft Start Controller with Brake

Max. Current	Line Voltage	Control Voltage (V ac/V dc)	3-Phase Motor											Catalog Number
			kW Rating (50 Hertz)			Horsepower Rating								
						200V		230V		460V		575V		
			230V	380 – 400V	440V	1.0 SF	1.15 SF	1.0 SF	1.15 SF	1.0 SF	1.15 SF	1.0 SF	1.15 SF	

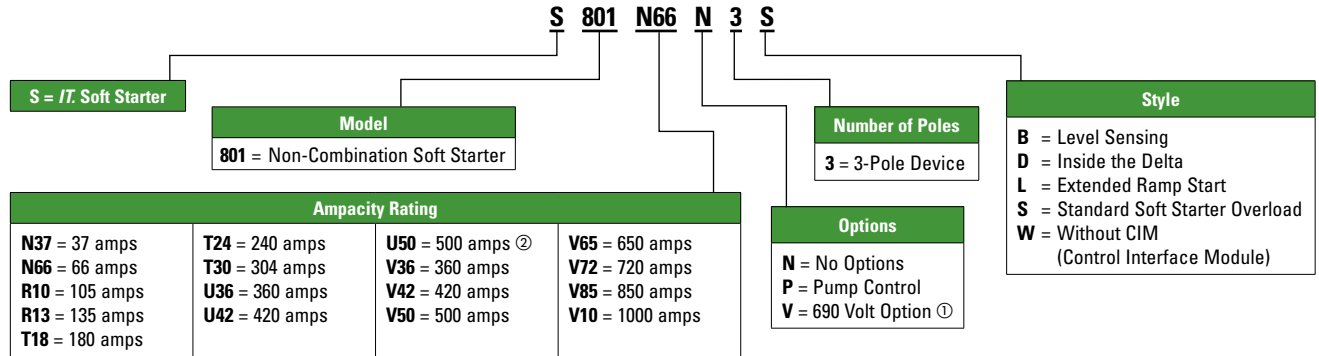
25	208 – 240	24 – 240	5.5	N/A	N/A	5	5	7-1/2	5	N/A	N/A	N/A	N/A	S701C25B3S
25	380 – 480	24 – 300	N/A	12.5	12.5	N/A	N/A	N/A	N/A	15	15	N/A	N/A	S701E25B3S

Motor Control

Soft Starters

CATALOG SELECTION

S801 Soft Starter — Catalog Numbering System



① Not available on U-Frame.

② U-Frame 500 Amp unit does not have IEC Certification.

S801 Soft Starter

- Built-in overload protection
- Built-in run bypass contactor
- Adjustable torque control
- Physically fits in place of most NEMA and IEC starters
- Optional pump control



Standard Duty Ratings

Starting Method	Ramp Current % of FLA	Ramp Time Seconds	Starts per Hour	Ambient Temperature
vs. Soft Start	300%	30 sec.	3	50°C
vs. Full Voltage	500%	10 sec.	3	50°C
vs. Wye-Delta	350%	20 sec.	3	50°C
vs. 80% RVAT	480%	20 sec.	2	50°C
vs. 65% RVAT	390%	20 sec.	3	50°C
vs. 50% RVAT	300%	20 sec.	4	50°C

Note: Motor applications and customer needs come in many different varieties. With the standard and severe duty rating tables, we have attempted to provide guidelines on what the **IT** Soft Starter is capable of. If the application falls under these categories, you can use these charts.

Standard Duty Rated Open Soft Starters

Max. Current	3-Phase Motor											Catalog Number ①
	kW Rating (50 Hertz)			hp Rating (60 Hertz)								
	230 Volt	380 – 400 Volt	440 Volt	200V		230V		460V		575V		
			1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF		

Frame Size N

37	10	18.5	18.5	10	10	10	10	25	20	30	30	S801N37N3S
66	18.5	30	37	20	15	20	20	50	40	60	50	S801N66N3S

Frame Size R

105	30	55	59	30	25	40	30	75	60	100	75	S801R10N3S
135	40	63	80	40	30	50	40	100	75	125	100	S801R13N3S

Frame Size T

180	51	90	110	60	50	60	60	150	125	150	150	S801T18N3S
240	75	110	147	75	60	75	75	200	150	200	200	S801T24N3S
304	90	160	185	100	75	100	100	250	200	300	250	S801T30N3S

Frame Size U

360	110	185	220	125	100	150	125	300	250	350	300	S801U36N3S
420	129	220	257	150	125	175	150	350	300	450	350	S801U42N3S
500	150	257	300	150	150	200	150	400	350	500	450	S801U50N3S ②③

Frame Size V

360	110	185	220	125	100	150	125	300	250	350	300	S801V36N3S
420	129	220	257	150	125	175	150	350	300	450	350	S801V42N3S
500	150	257	300	150	150	200	150	400	350	500	450	S801V50N3S
650	200	355	425	250	200	250	200	500	450	600	500	S801V65N3S
720	220	400	450	—	—	300	250	600	500	700	600	S801V72N3S
850	257	475	500	—	—	350	300	700	600	900	700	S801V85N3S
1000	315	560	600	—	—	400	350	800	700	1000	800	S801V10N3S ④

① For 2-wire (level sensing) control, change the last digit from S to 2.

② 15 sec. start, 300% inrush, 40°C, 1 start every 15 minutes. If these start parameters are exceeded, please refer to 290 mm V-Frame, 500A starter.

③ U-Frame 500 Amp does not have IEC Certification.

④ For more information on optimum performance of the 1000A Frame Size V S801, see Appendix C of MN03902008E.

Motor Control

Soft Starters

PRODUCT SELECTION

S801 Soft Starter

Severe Duty Ratings

Starting Method	Ramp Current % of FLA	Ramp Time Seconds	Starts per Hour	Ambient Temperature
vs. Soft Start	450%	30 sec.	4	50°C
vs. Full Voltage	500%	10 sec.	10	50°C
vs. Wye-Delta	350%	65 sec.	3	50°C
vs. 80% RVAT	480%	25 sec.	4	50°C
vs. 65% RVAT	390%	40 sec.	4	50°C
vs. 50% RVAT	300%	60 sec.	4	50°C

Note: Severe Duty Ratings are defined as any combination of parameters that exceed the Standard Duty Ratings where the ramp time is over 30 seconds, the number of starts per hour exceeds 4, or the current limit set is over 300%. Example: 35-Second Ramp, 5 Starts per Hour, 350% Current Limit @ 40°C Ambient.

Severe Duty Rated Open Soft Starters

Max. Current	3-Phase Motor											Catalog Number ①
	kW Rating (50 Hertz)			hp Rating (60 Hertz)								
	230	380 – 400	440	200V		230V		460V		575V		
	Volt	Volt	Volt	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	

Frame Size N

22	5.5	10	11	5	5	7-1/2	5	15	10	20	15	S801N37N3S
42	11	18.5	22	10	10	15	10	30	25	40	30	S801N66N3S

Frame Size R

65	15	30	33	15	15	20	15	50	40	50	50	S801R10N3S
80	22	40	45	25	20	30	25	60	50	75	60	S801R13N3S

Frame Size T

115	33	59	63	30	30	40	30	75	75	100	100	S801T18N3S
150	45	80	90	50	40	50	50	100	100	150	125	S801T24N3S
192	55	100	110	60	50	75	60	150	125	200	150	S801T30N3S

Frame Size U

240	75	110	147	75	60	75	75	200	150	200	200	S801U36N3S
305	90	160	185	100	75	100	100	250	200	300	250	S801U42N3S
365	110	185	220	125	100	150	125	300	250	350	300	S801U50N3S ②

Frame Size V

240	75	110	147	75	60	75	75	200	150	200	200	S801V36N3S
305	90	160	185	100	75	100	100	250	200	300	250	S801V42N3S
365	110	185	220	125	100	150	125	300	250	350	300	S801V50N3S
420	129	220	257	150	125	150	150	350	300	450	350	S801V65N3S
480	147	257	295	150	150	200	150	400	350	500	450	S801V72N3S
525	160	280	335	150	150	200	150	450	350	500	450	S801V85N3S
600	185	315	375	200	150	250	200	500	450	600	500	S801V10N3S ③

① For 2-wire (level sensing) control, change the last digit from S to 2.

② U-Frame 500A unit does not have IEC Certification.

③ For more information on optimum performance of the 1000A Frame Size V S801, see Appendix C of MN03902008E.

S801 Soft Starter

15-Second Ramp, 4 Starts per Hour, 300% Current Limit @ 40°C Ambient, Inside-the-Delta Ratings

Max. Continuous Motor Line Current	3-Phase Motor											Catalog Number
	kW Rating (50 Hertz)			hp Rating (60 Hertz)								
	230	380 – 400	440	200V		230V		460V		575V		
	Volt	Volt	Volt	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	

Frame Size N

65	10	18.5	18.5	15	15	15	15	40	30	50	50	S801N37N3D S801N66N3D
114	18.5	30	37	30	25	30	30	75	60	100	75	

Frame Size R

182	30	55	59	50	40	60	50	125	100	150	125	S801R10N3D S801R13N3D
234	40	63	80	60	50	75	60	150	125	200	150	

Frame Size T

311	51	90	110	100	75	100	100	250	200	250	250	S801T18N3D S801T24N3D S801T30N3D
415	75	110	147	125	100	125	125	300	250	300	300	
526	90	160	185	150	125	150	150	400	300	400	400	

Frame Size U

623	110	185	220	200	150	250	200	450	400	550	450	S801U36N3D S801U42N3D S801U50N3D ①②
727	129	220	257	250	200	300	250	550	450	700	550	
865	150	257	300	250	250	300	250	600	550	750	700	

Frame Size V

623	110	185	220	200	150	250	200	450	400	550	450	S801V36N3D S801V42N3D S801V50N3D S801V65N3D S801V72N3D S801V85N3D S801V10N3D ③
727	129	220	257	250	200	300	250	550	450	700	550	
865	150	257	300	250	250	300	250	600	550	750	700	
1125	200	355	425	400	300	400	300	750	700	900	750	
1246	—	—	—	—	—	—	—	—	—	—	—	
1471	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	

① 15-sec. start, 300% inrush, 40°C, 1 start every 15 minutes. If these start parameters are exceeded, please refer to 290 mm V-Frame, 865A Inside-the-Delta Starter.

② U-Frame 500A unit does not have IEC Certification.

③ For more information on optimum performance of the 1000A Frame Size V Inside-the-Delta S801, see Appendix C of MN03902009E.

Motor Control

Soft Starters

PRODUCT SELECTION

S801 Soft Starter

Severe Duty Inside-the-Delta Ratings

Max. Continuous Motor Line Current	3-Phase Motor											Catalog Number
	kW Rating (50 Hertz)			hp Rating (60 Hertz)								
	230	380 – 400	440	200V		230V		460V		575V		
	Volt	Volt	Volt	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	

Frame Size N

39	5.5	10	11	7-1/2	7-1/2	10	7-1/2	25	15	30	25	S801N37N3D S801N66N3D
73	11	18.5	22	15	15	25	15	50	40	60	50	

Frame Size R

111	15	30	33	25	25	30	25	75	60	75	75	S801R10N3D S801R13N3D
138	22	40	45	40	30	50	40	100	75	120	100	

Frame Size T

199	33	59	63	50	50	60	50	125	125	150	150	S801T18N3D S801T24N3D S801T30N3D
257	45	80	90	75	60	75	75	150	150	250	200	
324	55	100	110	100	75	100	100	250	200	300	250	

Frame Size U

415	75	110	147	125	100	125	125	300	250	300	300	S801U36N3D S801U42N3D S801U50N3D ①
526	90	160	185	150	120	150	150	400	300	450	400	
623	110	185	220	200	150	250	200	450	400	550	450	

Frame Size V

415	75	110	147	125	100	125	125	300	250	300	300	S801V36N3D S801V42N3D S801V50N3D S801V65N3D S801V72N3D S801V85N3D S801V10N3D ②
526	90	160	185	150	120	150	150	400	300	450	400	
623	110	185	220	200	150	250	200	450	400	550	450	
727	129	220	257	250	200	250	250	550	450	700	550	
816	147	257	295	250	250	300	250	600	550	750	700	
908	160	280	335	250	250	300	250	700	550	750	700	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	

① U-Frame 500A unit does not have IEC Certification.

② For more information on optimum performance of the 1000A Frame Size V Inside-the-Delta S801, see Appendix C of MN03902009E.


S801 Soft Starter — Accessories

Pump Control Option

Frame Size	Max. Current	Catalog Number
N	37	S801N37P3S
	66	S801N66P3S
R	105	S801R10P3S
	135	S801R13P3S
T	180	S801T18P3S
	240	S801T24P3S
	304	S801T30P3S
U	360	S801U36P3S
	420	S801U42P3S
	500	S801U50P3S ①
V	360	S801V36P3S
	420	S801V42P3S
	500	S801V50P3S
	650	S801V65P3S
	720	S801V72P3S
	850	S801V85P3S
	1000	S801V10P3S

① U-Frame 500A unit does not have IEC Certification.


Surge Suppressors

	Description	Catalog Number
	600V MOV for 65 mm and 110 mm Units	EMS38
	600V MOV for 200 mm and 290 mm Units	EMS39
	690V MOV for 200 mm and 290 mm Units ①	EMS41

① T-Frame only.

Note: The surge suppressor can mount on either the line or load side of the **IT** Soft Starter. It is designed to clip the line voltage (or load side induced voltage).

Lug Kits

	Frame Size	Frame Designation	Description	Catalog Number
	200 mm SSRV	T, U	2 Cable Connections, 4 AWG to 1/0 Cable	EML22
			1 Cable Connection, 4/0 to 500 MCM Cable	EML23
			2 Cable Connections, 4/0 to 500 MCM Cable	EML24
			1 Cable Connection, 2/0 to 300 MCM Cable	EML25
			2 Cable Connections, 2/0 to 300 MCM Cable	EML26
	290 mm SSRV	V	2 Cable Connections, 4/0 to 500 MCM Cable	EML28
			4 Cable Connections, 4/0 to 500 MCM Cable	EML30
			6 Cable Connections, 4/0 to 500 MCM Cable	EML32
			4 Cable Connections, 2/0 to 300 MCM Cable	EML33 ①

① The EML33 does not have a CSA Listing.

Note: The 200 mm and 290 mm soft starters each have different lug options based on your wiring needs. Each lug kit contains three lugs which can be mounted on either the load or line side.

Power Supplies

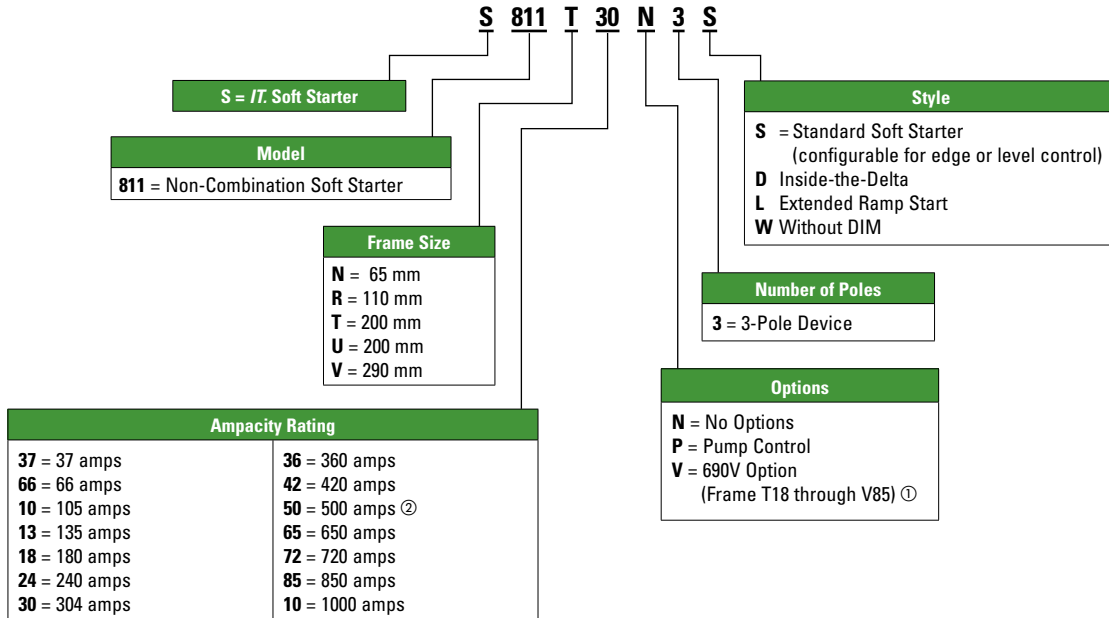
Description	Catalog Number
115V ac Input 24V dc Output	PSS55A
230V ac Input 24V dc Output	PSS55B
380 – 480V ac Input 24V dc Output	PSS55C

Motor Control

Soft Starters

CATALOG SELECTION

S811 Communicating Soft Starter — Catalog Numbering System



① Not available on U-Frame.

② U-Frame 500A unit does not have IEC Certification.

S811 Communicating Soft Starter

- Door or device mounted digital interface module enables users to safely configure, commission, monitor and troubleshoot the system without opening the enclosure door, eliminating the possibility of an arc flash incident
- System operating parameters can be monitored enterprise-wide through a communications network
- Run bypass mode greatly reduces internal heating created by the greater power dissipation in the SCRs
- Internal solid-state overload protection provides accurate current measurement and trip settings
- Advanced selectable protective features safeguard the motor and system against a variety of system faults
- Pump control option maximizes the life of the pump and piping systems while minimizing the downtime caused by system failure
- Smallest in industry, minimizing panel/enclosure size



Motor Control

Soft Starters

PRODUCT SELECTION

S811 Communicating Soft Starter

Standard Duty Ratings

Starting Method	Ramp Current % of FLA	Ramp Time Seconds	Starts per Hour	Ambient Temperature
vs. Soft Start	300%	30 sec.	3	50°C
vs. Full Voltage	500%	10 sec.	3	50°C
vs. Wye-Delta	350%	20 sec.	3	50°C
vs. 80% RVAT	480%	20 sec.	2	50°C
vs. 65% RVAT	390%	20 sec.	3	50°C
vs. 50% RVAT	300%	20 sec.	4	50°C

Note: Motor applications and customer needs come in many different varieties. With the standard and severe duty rating tables, we have attempted to provide guidelines on what the **IT** Soft Starter is capable of. If the application falls under these categories, you can use these charts.

15-Second Ramp, 4 Starts per Hour, 300% Current Limit @ 40°C

Max. Current	3-Phase Motors											Catalog Number
	kW Rating (50 Hz)			hp Rating (60 Hz)								
	230V	380 – 400V	440V	200V		230V		460V		575V		
				1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	
37	10	18.5	18.5	10	10	10	10	25	20	30	30	S811R10N3S
66	18.5	30	37	20	15	20	20	50	40	60	50	S811N66N3S

Frame Size N

37	10	18.5	18.5	10	10	10	10	25	20	30	30	S811R10N3S
66	18.5	30	37	20	15	20	20	50	40	60	50	S811N66N3S

Frame Size R

105	30	55	59	30	25	40	30	75	60	100	75	S811R10N3S
135	40	63	80	40	30	50	40	100	75	125	100	S811R13N3S

Frame Size T

180	51	90	110	60	50	60	60	150	125	150	150	S811T18N3S
240	75	110	147	75	60	75	75	200	150	200	200	S811T24N3S
304	90	160	185	100	75	100	100	250	200	300	250	S811T30N3S

Frame Size U

360	110	185	220	125	100	150	125	300	250	350	300	S811U36N3S
420	129	220	257	150	125	175	150	350	300	450	350	S811U42N3S
500	150	257	300	150	150	200	150	400	350	500	450	S811U50N3S ②

Frame Size V

360	110	185	220	125	100	150	125	300	250	350	300	S811V36N3S
420	129	220	257	150	125	175	150	350	300	450	350	S811V42N3S
500	150	257	300	150	150	200	150	400	350	500	450	S811V50N3S
650	200	355	425	250	200	250	200	500	450	600	500	S811V65N3S
720	220	400	450	—	—	300	250	600	500	700	600	S811V72N3S
850	257	475	500	—	—	350	300	700	600	900	700	S811V85N3S
1000	277	525	50	—	—	400	350	800	700	900	800	S811V10N3S ①

① For more information on optimum performance of the 1000A Frame Size V S811, see Appendix E of MN03902002E.

② 500A rating does not have IEC certification.

S811 Communicating Soft Starter

Severe Duty Ratings

Starting Method	Ramp Current % of FLA	Ramp Time Seconds	Starts per Hour	Ambient Temperature
vs. Soft Start	450%	30 sec.	4	50°C
vs. Full Voltage	500%	10 sec.	10	50°C
vs. Wye-Delta	350%	65 sec.	3	50°C
vs. 80% RVAT	480%	25 sec.	4	50°C
vs. 65% RVAT	390%	40 sec.	4	50°C
vs. 50% RVAT	300%	60 sec.	4	50°C

Note: Severe Duty Ratings are defined as any combination of parameters that exceed the Standard Duty Ratings where the ramp time is over 30 seconds, the number of starts per hour exceeds 4, or the current limit set is over 300%. Example: 35-second ramp, 5 starts per hour, 350% current limit @ 40°C ambient.

>30-Second Ramp, >4 Starts per Hour or >300% Current Limit

Max. Current	3-Phase Motors											Catalog Number
	kW Rating (50 Hz)			hp Rating (60 Hz)								
	230V	380 – 400V	440V	200V		230V		460V		575V		
				1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	
22	5.5	10	11	5	5	7-1/2	5	15	10	20	15	S811N37N3S
42	11	18.5	22	10	10	15	10	30	25	40	30	S811N66N3S

Frame Size N

22	5.5	10	11	5	5	7-1/2	5	15	10	20	15	S811N37N3S
42	11	18.5	22	10	10	15	10	30	25	40	30	S811N66N3S

Frame Size R

65	15	30	33	15	15	20	15	50	40	50	50	S811R10N3S
80	22	40	45	25	20	30	25	60	50	75	60	S811R13N3S

Frame Size T

115	33	59	63	30	30	40	30	75	75	100	100	S811T18N3S
150	45	80	90	50	40	50	50	100	100	150	125	S811T24N3S
192	55	100	110	60	50	75	60	150	125	200	150	S811T30N3S

Frame Size U

240	75	110	147	75	60	75	75	200	150	200	200	S811U36N3S
305	90	160	185	100	75	100	100	250	200	300	250	S811U42N3S

Frame Size V

240	75	110	147	75	60	75	75	200	150	200	200	S811V36N3S
305	90	160	185	100	75	100	100	250	200	300	250	S811V42N3S
365	110	185	220	125	100	150	125	300	250	350	300	S811V50N3S
420	129	220	257	150	125	150	150	350	300	450	350	S811V65N3S
480	147	257	295	150	150	200	150	400	350	500	450	S811V72N3S
525	160	280	335	150	150	200	150	450	350	500	450	S811V85N3S
575	172	303	370	200	150	250	200	500	450	600	500	S811V10N3S

① For more information on optimum performance of the 1000A Frame Size V S811, see Appendix E of MN03902002E.

Motor Control

Soft Starters

PRODUCT SELECTION

S811 Communicating Soft Starter

15-Second Ramp, 4 Starts per Hour, 300% Current Limit @ 40°C Ambient, Inside-the-Delta Standard Duty Ratings

Max. Continuous Motor Line Current	3-Phase Motor											Catalog Number
	kW Rating (50 Hertz)			hp Rating (60 Hertz)								
	230	380 – 400	440	200V		230V		460V		575V		
	Volt	Volt	Volt	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	

Frame Size N

65	10	18.5	18.5	15	15	15	15	40	30	50	50	S811N37N3D S811N66N3D
114	18.5	30	37	30	25	30	30	75	60	100	75	

Frame Size R

182	30	55	59	50	40	60	50	125	100	150	125	S811R10N3D S811R13N3D
234	40	63	80	60	50	75	60	150	125	200	150	

Frame Size T

311	51	90	110	100	75	100	100	250	200	250	250	S811T18N3D S811T24N3D S811T30N3D
415	75	110	147	125	100	125	125	300	250	300	300	
526	90	160	185	150	125	150	150	400	300	400	400	

Frame Size U

623	110	185	220	200	150	250	200	450	400	550	450	S811U36N3D S811U42N3D S811U50N3D ①②
727	129	220	257	250	200	300	250	550	450	700	550	
865	150	257	300	250	250	300	250	600	550	750	700	

Frame Size V

623	110	185	220	200	150	250	200	450	400	550	450	S811V36N3D S811V42N3D S811V50N3D S811V65N3D S811V72N3D S811V85N3D S811V10N3D ③
727	129	220	257	250	200	300	250	550	450	700	550	
865	150	257	300	250	250	300	250	600	550	750	700	
1125	200	355	425	400	300	400	300	750	700	900	750	
1246	—	—	—	—	—	—	—	—	—	—	—	
1471	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	

① 15 sec. start, 300% inrush, 40°C, 1 start every 15 minutes. If these start parameters are exceeded, please refer to 290 mm V-Frame, 865A Inside-the-Delta Starter.

② U-Frame 500A unit does not have IEC Certification.

③ For more information on optimum performance of the 1000A Frame Size V S811, see Appendix E of MN03902002E.

S811 Communicating Soft Starter

Inside-the-Delta Severe Duty Ratings

Max. Continuous Motor Line Current	3-Phase Motor											Catalog Number
	kW Rating (50 Hertz)			hp Rating (60 Hertz)								
	230	380 – 400	440	200V		230V		460V		575V		
	Volt	Volt	Volt	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	1.0SF	1.15SF	

Frame Size N

39	5.5	10	11	7-1/2	7-1/2	10	7-1/2	25	15	30	25	S811N37N3D S811N66N3D
73	11	18.5	22	15	15	25	15	50	40	60	50	

Frame Size R

111	15	30	33	25	25	30	25	75	60	75	75	S811R10N3D S811R13N3D
138	22	40	45	40	30	50	40	100	75	120	100	

Frame Size T

199	33	59	63	50	50	60	50	125	125	150	150	S811T18N3D S811T24N3D S811T30N3D
257	45	80	90	75	60	75	75	150	150	250	200	
324	55	100	110	100	75	100	100	250	200	300	250	

Frame Size U

415	75	110	147	125	100	125	125	300	250	300	300	S811U36N3D S811U42N3D S811U50N3D ①
526	90	160	185	150	120	150	150	400	300	450	400	
623	110	185	220	200	150	250	200	450	400	550	450	

Frame Size V

415	75	110	147	125	100	125	125	300	250	300	300	S811V36N3D S811V42N3D S811V50N3D S811V65N3D S811V72N3D S811V85N3D S811V10N3D ②
526	90	160	185	150	120	150	150	400	300	450	400	
623	110	185	220	200	150	250	200	450	400	550	450	
727	129	220	257	250	200	250	250	550	450	700	550	
816	147	257	295	250	250	300	250	600	550	750	700	
908	160	280	335	250	250	300	250	700	550	750	700	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	

① U-Frame 500A unit does not have IEC Certification.

② For more information on optimum performance of the 1000A Frame Size V S811, see Appendix E of MN03902002E.

Motor Control

Soft Starters

PRODUCT SELECTION


S811 Communicating Soft Starter — Accessories

Pump Control Option

Frame Size	Max. Current	Catalog Number
N	37	S811N37P3S
	66	S811N66P3S
R	105	S811R10P3S
	135	S811R13P3S
T	180	S811T18P3S
	240	S811T24P3S
	304	S811T30P3S
U	360	S811U36P3S
	420	S811U42P3S
	500	S811U50P3S
V	360	S811V36P3S
	420	S811V42P3S
	500	S811V50P3S
	650	S811V65P3S
	720	S811V72P3S
	850	S811V85P3S
	1000	S811V10P3S

① U-Frame 500A unit does not have IEC Certification.


Surge Suppressors

	Description	Catalog Number
	600V MOV for 200 mm and 290 mm Units	EMS39
	690V MOV for 200 mm ①	EMS41

① T-Frame only.

Note: The surge suppressor can mount on either the line or load side of the **IT** Soft Starter. It is designed to clip the line voltage (or load side induced voltage).

Lug Kits

	Frame Size	Frame Designation	Description	Catalog Number
	200 mm SSRV	T, U	2 Cable Connections, 4 AWG to 1/0 Cable 1 Cable Connection, 4/0 to 500 MCM Cable 2 Cable Connections, 4/0 to 500 MCM Cable 1 Cable Connection, 2/0 to 300 MCM Cable 2 Cable Connections, 2/0 to 300 MCM Cable	EML22 EML23 EML24 EML25 EML26
	290 mm SSRV	V	2 Cable Connections, 4/0 to 500 MCM Cable 4 Cable Connections, 4/0 to 500 MCM Cable 6 Cable Connections, 4/0 to 500 MCM Cable 4 Cable Connections, 2/0 to 300 MCM Cable	EML28 EML30 EML32 EML33

① The EML33 does not have a CSA Listing.

Note: The 200 mm and 290 mm soft starters do not include lugs.

The 200 mm and 290 mm soft starters each have different lug options based on your wiring needs. Each lug kit contains three lugs which can be mounted on either the load or line side.

Digital Interface Module

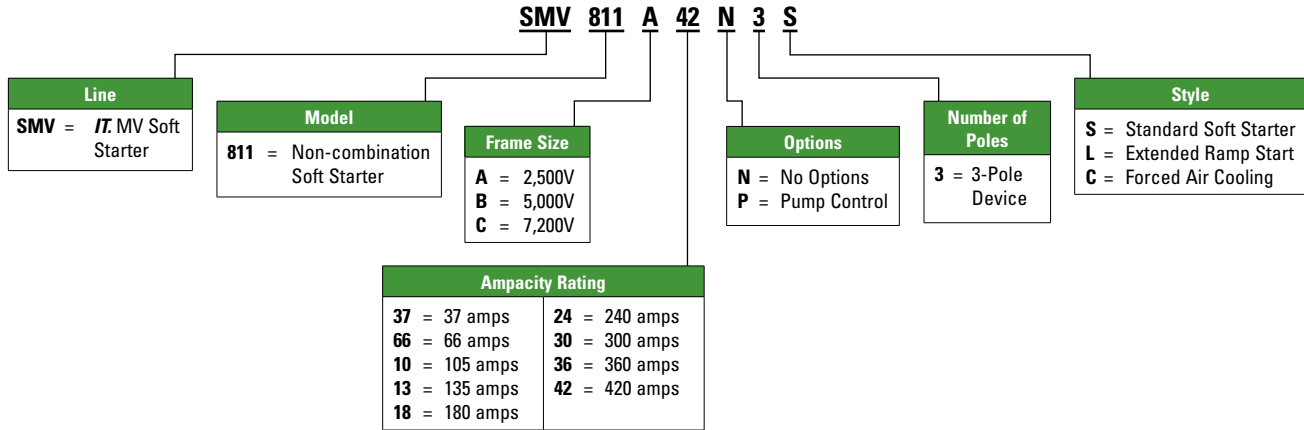
Description	Catalog Number
Blank Cover (Filler)	EMA68
DIM	EMA91
Panel Mounting Kit — 3 ft. Cable 5 ft. Cable 8 ft. Cable 10 ft. Cable	EMA69A EMA69B EMA69C EMA69D

Note: The Digital Interface Module (DIM) is available as a replacement part. 24V dc Power Supply can be used with the S811 SSRV or as a stand-alone device.

Power Supplies

Description	Catalog Number
115V ac Input 24V dc Output	PSS55A
230V ac Input 24V dc Output	PSS55B
380 – 480V AC Input 24V dc Output	PSS55C

MV811 Medium Voltage Soft Starter — Catalog Numbering System



Motor Control

Soft Starters

PRODUCT SELECTION

MV811 Medium Voltage Soft Starter

- Door or device mounted digital interface module enables users to safely configure, commission, monitor and troubleshoot the system without opening the enclosure door, eliminating the possibility of an arc flash incident
- System operating parameters can be monitored enterprise-wide through a communications network
- Built-in run bypass contactor significantly reduces the heat generated by the starter, minimizing enclosure sizes and costs
- Provides accurate current measurement and trip settings
- Advanced selectable protective features safeguard the motor and system against a variety of system faults
- Sophisticated pump algorithm on both starting and stopping minimize the pressure surges that cause water hammer
- Electronic overload protection



15-Second Ramp, 4 Starts per Hour, 300% Current Limit @ 40°C — Frames A and B

Frame	Max Current	3-Phase Motor												Catalog Number	
		kW Rating (50 – 60 Hertz)						hp Rating (50 – 60 Hertz)							
		2300 Volt	3000 Volt	3300 Volt	3600 Volt	4160 Volt	4800 Volt	2300V 1.15SF	3000V 1.15SF	3300V 1.15SF	3600V 1.15SF	4160V 1.15SF	4800V 1.15SF		
A	37	125	—	—	—	—	—	125	—	—	—	—	—	—	SMV811A37N3S
B	37	125	163	200	219	253	261	125	150	200	200	250	300	—	SMV811B37N3S
A	66	223	—	—	—	—	—	250	—	—	—	—	—	—	SMV811A66N3S
B	66	223	291	320	391	451	521	250	350	400	400	450	500	—	SMV811B66N3S
A	105	355	—	—	—	—	—	400	—	—	—	—	—	—	SMV811A105N3S
B	105	355	463	510	621	718	828	400	500	600	600	700	800	—	SMV811B105N3S
A	135	457	—	—	—	—	—	500	—	—	—	—	—	—	SMV811A135N3S
B	135	457	596	655	799	923	1065	500	700	800	800	900	1000	—	SMV811B135N3S
A	180	609	—	—	—	—	—	700	—	—	—	—	—	—	SMV811A180N3S
B	180	609	794	873	1065	1231	1420	700	1000	1000	1100	1200	1400	—	SMV811B180N3S
A	240	812	—	—	—	—	—	900	—	—	—	—	—	—	SMV811A240N3S
B	240	812	1059	1165	1420	1641	1893	900	1300	1400	1500	1600	1800	—	SMV811B240N3S
A	304	1028	—	—	—	—	—	1200	—	—	—	—	—	—	SMV811A304N3S
B	304	1028	1341	1475	1799	2087	2398	1200	1600	1800	2000	2000	2300	—	SMV811B304N3S
A	360	1218	—	—	—	—	—	1300	—	—	—	—	—	—	SMV811A360N3S
B	360	1218	1588	1747	2130	2461	2840	1300	2000	2100	2300	2400	2800	—	SMV811B360N3S
A	420	1421	—	—	—	—	—	1600	—	—	—	—	—	—	SMV811A420N3S
B	420	1421	1853	2038	2485	2872	3313	1600	2300	2500	2700	2800	3300	—	SMV811B420N3S

MV811 Medium Voltage Soft Starter

15-Second Ramp, 4 Starts per Hour, 300% Current Limit @ 40°C — Frame C

Max Current	3-Phase Motor												Catalog Number
	kW Rating (50 – 60 Hertz)						hp Rating (50 – 60 Hertz)						
	5500	6000	6300	6600	6900	7200	5500	6000	6300	6600	6900	7200	
	Volt	Volt	Volt	Volt	Volt	Volt	1.15SF	1.15SF	1.15SF	1.15SF	1.15SF	1.15SF	
37	299	326	343	359	375	392	300	350	350	400	400	400	SMV811C37N3S
66	534	582	611	641	670	699	500	600	600	700	700	700	SMV811C66N3S
105	849	926	973	1019	1065	1112	900	1000	1000	1100	1100	1250	SMV811C10N3S
135	1092	1191	1251	1310	1370	1429	1200	1300	1300	1400	1500	1600	SMV811C13N3S
180	1456	1588	1668	1747	1862	1906	1600	1700	1800	1900	2000	2100	SMV811C18N3S
240	1941	2118	2223	2329	2435	2541	2100	2300	2400	2500	2700	2800	SMV811C24N3S
304	2459	2682	2816	2950	3085	3219	2700	2900	3100	3200	3400	3600	SMV811C30N3S
360	2912	3176	3335	3494	3653	3812	3200	3500	3700	3800	4000	4200	SMV811C36N3S
420	3397	3706	3891	4076	4262	4447	3700	4100	4300	4500	4700	5000	SMV811C42N3S

Severe Duty Ratings, >30-Second Ramp, >4 Starts per Hour or >300% Current Limit — Frames A and B

Frame	Max Current	3-Phase Motor												Catalog Number	
		kW Rating (50 – 60 Hertz)						hp Rating (50 – 60 Hertz)							
		2300	3000	3300	3600	4160	4800	2300V	3000V	3300V	3600V	4160V	4800V		
		Volt	Volt	Volt	Volt	Volt	Volt	1.15SF	1.15SF	1.15SF	1.15SF	1.15SF	1.15SF		
A	22	—	—	—	107	116	135	155	—	—	125	125	150	150	SMV811A37N3S
B	22	—	—	—	107	116	135	155	—	—	125	125	150	150	SMV811B37N3S
A	42	142	—	—	—	—	—	—	150	—	—	—	—	—	SMV811A66N3S
B	42	142	185	204	222	257	296	—	150	200	200	200	250	300	SMV811B66N3S
A	65	220	—	—	—	—	—	—	250	—	—	—	—	—	SMV811A10N3S
B	65	220	278	315	344	398	495	—	250	300	350	350	400	500	SMV811B10N3S
A	80	271	—	—	—	—	—	—	300	—	—	—	—	—	SMV811A13N3S
B	80	271	353	388	424	489	565	—	300	400	400	450	500	600	SMV811B13N3S
A	115	389	—	—	—	—	—	—	400	—	—	—	—	—	SMV811A18N3S
B	115	389	507	558	609	703	812	—	400	500	600	600	800	900	SMV811B18N3S
A	150	507	—	—	—	—	—	—	500	—	—	—	—	—	SMV811A24N3S
B	150	507	662	728	794	918	1059	—	500	700	800	800	1000	1100	SMV811B24N3S
A	192	649	—	—	—	—	—	—	700	—	—	—	—	—	SMV811A30N3S
B	192	649	847	932	1016	1175	1355	—	700	900	1000	1100	1300	1500	SMV811B30N3S
A	240	812	—	—	—	—	—	—	900	—	—	—	—	—	SMV811A36N3S
B	240	812	1059	1165	1271	1468	1694	—	900	1200	1300	1400	1600	1800	SMV811B36N3S
A	305	1032	—	—	—	—	—	—	1100	—	—	—	—	—	SMV811A42N3S
B	305	1032	1346	1480	1615	1866	2153	—	1100	1500	1600	1800	2100	2400	SMV811B42N3S

Motor Control

Soft Starters

PRODUCT SELECTION

MV811 Medium Voltage Soft Starter

Severe Duty Ratings, >30-Second Ramp, >4 Starts per Hour or >300% Current Limit — Frame C

Max Current	3-Phase Motor												Catalog Number
	kW Rating (50 – 60 Hertz)						hp Rating (50 – 60 Hertz)						
	5500	6000	6300	6600	6900	7200	5500	6000	6300	6600	6900	7200	
	Volt	Volt	Volt	Volt	Volt	Volt	1.15SF	1.15SF	1.15SF	1.15SF	1.15SF	1.15SF	
22	178	194	204	214	223	233	200	200	200	200	250	250	SMV811C37N3S
42	340	371	389	408	426	445	350	400	400	450	450	500	SMV811C66N3S
65	526	573	602	631	660	688	500	600	600	700	700	700	SMV811C10N3S
80	647	705	741	776	812	847	600	700	800	800	900	900	SMV811C13N3S
115	930	1015	1065	1116	1167	1218	1000	1100	1100	1200	1300	1300	SMV811C18N3S
150	1213	1323	1390	1456	1522	1588	1300	1400	1500	1600	1600	1700	SMV811C24N3S
192	1553	1694	1779	1863	1948	2033	1700	1800	1900	2000	2100	2200	SMV811C30N3S
240	1941	2118	2223	2329	2435	2541	2100	2300	2400	2500	2700	2800	SMV811C36N3S
305	2467	2691	2826	3200	3096	3229	2700	2900	3100	3200	3400	3600	SMV811C42N3S

Pump Control

Max. Voltage	Max. Current Rating	Catalog Number
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A-Frame

2,500	37	SMV811A37P3S SMV811A66P3S SMV811A10P3S SMV811A13P3S SMV811A18P3S
	66	
	105	
	135	
	180	
	240	SMV811A24P3S SMV811A30P3S SMV811A36P3S SMV811A42P3S
	304	
	360	
	420	

B-Frame

5,000	37	SMV811B37P3S SMV811B66P3S SMV811B10P3S SMV811B13P3S SMV811B18P3S
	66	
	105	
	135	
	180	
	240	SMV811B24P3S SMV811B30P3S SMV811B36P3S SMV811B42P3S
	304	
	360	
	420	

C-Frame

7,200	37	SMV811C37P3S SMV811C66P3S SMV811C10P3S SMV811C13P3S SMV811C18P3S
	66	
	105	
	135	
	180	
	240	SMV811C24P3S SMV811C30P3S SMV811C36P3S SMV811C42P3S
	304	
	360	
	420	

Power Pole Cooling Kit

Description	Catalog Number
Cooling Kit	MW02A

Remote DIM Mounting Kit

Description	Catalog Number
Remote Mounting Kit with 3 ft. Cable	EMA69A
Remote Mounting Kit with 5 ft. Cable	EMA69B
Remote Mounting Kit with 8 ft. Cable	EMA69C
Remote Mounting Kit with 10 ft. Cable	EMA69D


Power Supplies

Line Voltage	Catalog Number	Steady State Wattage	Inrush Wattage	Input Voltage	List Pricing
2.5 kV	PSS300E	300W	500W	110 – 240V ac	631.00
2.5 kV	PSS600C	600W	1000W	380 – 480V ac	1054.00
5 kV	PSS600C	600W	1000W	380 – 480V ac	1054.00
7.2 kV	PSS600C	600W	1000W	380 – 480V ac	1054.00

Note: A minimum wire size of 14 AWG (2.5 mm²) should be used between the power supply and the 24V dc + and - terminals.

MV811 Medium Voltage Soft Starter

Terminal Pad Kits

	Description	Conductor Type	Catalog Number
	Terminal Pad Kit to Accept 3/8-16 Bolt, 1.12 Inch Max Ring Tang (28.5 mm)	Ring lug	MW01A
	Terminal Pad Kit to Accept 3/8-16 Bolt, 2.0 Inch Max Width Bus Bar (50.8 mm) Horizontal	Bus bar	MW01B
	Terminal Pad Kit to Accept 3/8-16 Bolt, 1.5 Inch Max Width Bus Bar (38.1 mm) Vertical	Bus bar	MW01C
	Terminal Pad Kit to Accept 1/2-13 Bolt, 2.0 Inch Max Width Bus Bar (50.8 mm) Horizontal	Bus bar	MW01D

Note: The soft starter power modules are supplied without terminal pads. Terminal pads are fastened to the soft starter power bus and provide a threaded hole for customer connection. Kits are available to accept either a bus bar or a ring terminal connection. Each kit includes instructions, three terminal pads, hardware to fasten to either the line or line side power bus, and hardware for customer connections.



Pre-Configured, Highly Programmable



Powering Business Worldwide

- Compact fractional and integral adjustable frequency drives, out of the box and ready to run
- Startup wizard and advanced diagnostic capabilities for ease of use
- Aftermarket support organization with industry-leading drive specialists for pre- and post-sale support
- Custom software available to meet the unique application requirements

Drives Product Overview

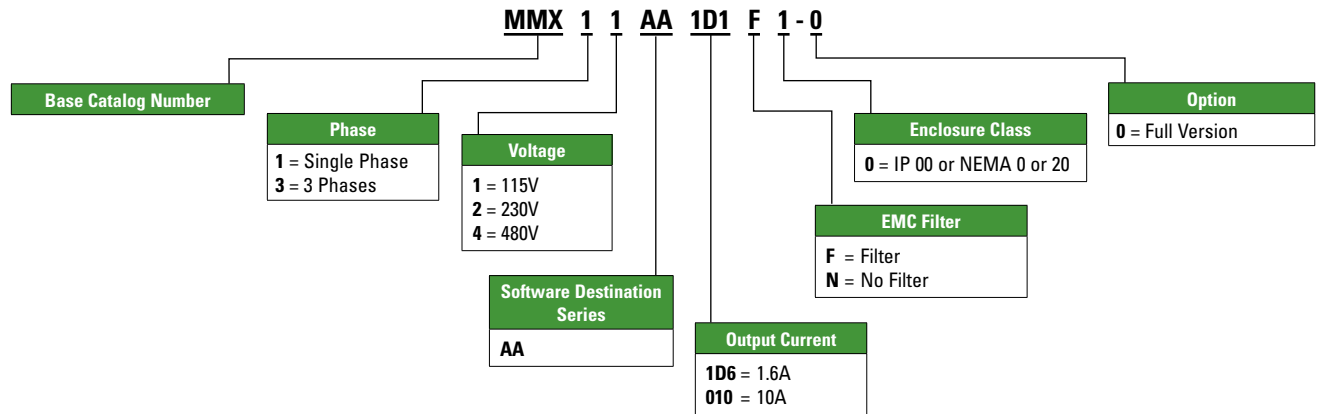
									
Description	M-Max Machinery Drive			SVX9000 Drive					
Page	Page 112			Page 113					
Frame	MI-1	MI-2	MI-3	FR4	FR5	FR6	FR7	FR8	FR9
Height (Inches)	6.2	7.7	10.3	12.9	16.5	2.2	24.8	30.1	45.3
Width (Inches)	2.6	3.5	3.9	5.0	5.6	7.6	9.3	11.5	18.9
Depth (Inches)	3.9	4	4.3	7.5	8.4	9.3	10.1	13.5	13.4
I/O	<ul style="list-style-type: none"> • 6 Digital Inputs • 2 Analog Inputs (V and mA) • 1 Analog Output • 2 Relay Outputs • RS-485 Interface (Modbus RTU) 			<ul style="list-style-type: none"> • 6 Digital Inputs • 2 Analog Inputs (V and mA) • 2 Digital Outputs, Form C Relays • 1 Digital Output, Open Collector • 1 Analog Output • Varied Communication Options 					

Motor Control

Drives

CATALOG SELECTION / PRODUCT SELECTION

M-Max™ Machinery Drive — Catalog Numbering System



M-Max Machinery Drive

- Ease of use — plug and play, start-up wizard, advanced diagnostic capability, copy/paste parameters without powering drive
- Compact, space-saving design
- Availability — short lead-times, stocked at multiple locations
- Aftermarket support organization with industry-leading drive specialists for pre- and post-sale support
- Rugged and reliable — 50°C rating, 150% overload for 1 min., 200% starting current for 2 secs. in every 20 sec. period, conformal coated boards, 2 year warranty
- RoHS compliance



M-Max Machinery Drive

P(kW)	P(hp)	I _N (A)	Catalog Number
Input 115V 1-phase		Out 230V 3-phase ①	
0.25	0.33	1.7	MMX11AA1D7F0-0
0.37	0.5	2.4	MMX11AA2D4F0-0
0.55	0.75	2.8	MMX11AA2D8F0-0
0.75	1	3.7	MMX11AA3D7F0-0
1.1	1.5	4.8	MMX11AA4D8F0-0
Input 230V 1-phase		Out 230V 3-phase ②	
0.25	0.33	1.7	MMX12AA1D7F0-0
0.37	0.5	2.4	MMX12AA2D4F0-0
0.55	0.75	2.8	MMX12AA2D8F0-0
0.75	1	3.7	MMX12AA3D7F0-0
1.1	1.5	4.8	MMX12AA4D8F0-0
1.5	2	7	MMX12AA007F0-0
2.2	3	9.6	MMX12AA9D6F0-0
Input 230V 3-phase		Out 230V 3-phase ①	
0.25	0.33	1.7	MMX32AA1D7F0-0
0.37	0.5	2.4	MMX32AA2D4F0-0
0.55	0.75	2.8	MMX32AA2D8F0-0
0.75	1	3.7	MMX32AA3D7F0-0
1.1	1.5	4.8	MMX32AA4D8F0-0
1.5	2	7	MMX32AA007F0-0
2.2	3	11	MMX32AA011F0-0

① Available May 2009.

② Available April 2009.

M-Max Machinery Drive (Continued)

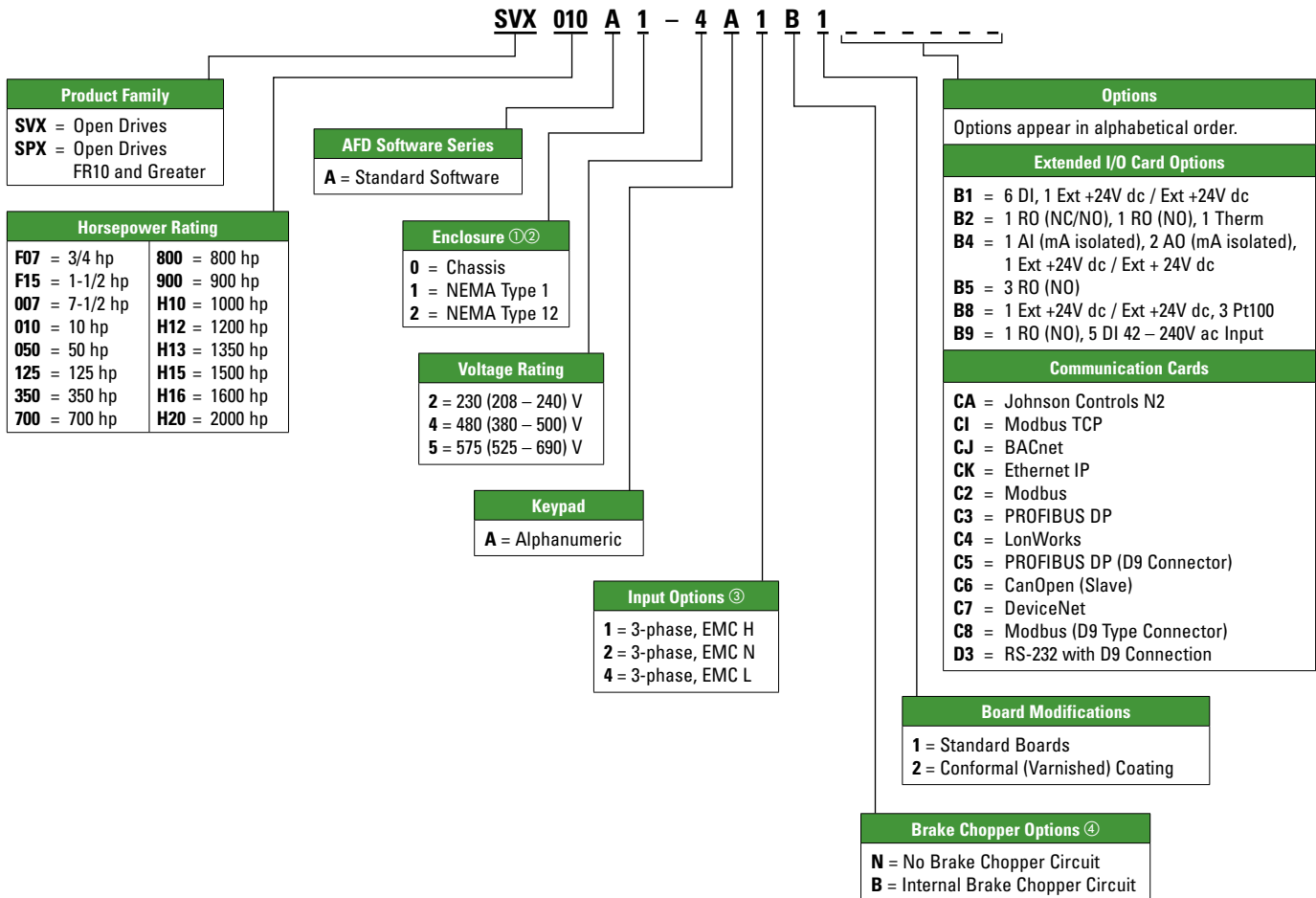
P(kW)	P(hp)	I _N (A)	Catalog Number
Input 480V 3-phase		Out 480V 3-phase ①	
0.37	0.5	1.3	MMX34AA1D3F0-0
0.55	0.75	1.9	MMX34AA1D9F0-0
0.75	1	2.4	MMX34AA2D4F0-0
1.1	1.5	3.3	MMX34AA3D3F0-0
1.5	2	4.3	MMX34AA4D3F0-0
2.2	3	5.6	MMX34AA5D6F0-0
3	4	7.6	MMX34AA7D6F0-0
4	5.5	9	MMX34AA009F0-0
5.5	7.5	12	MMX34AA012F0-0
7.5	10	14	MMX34AA014F0-0

① Available April 2009.

Kits

Description	Catalog Number
NEMA -1 KIT for Frame MI-1	MMX-IP21-FS1
NEMA -1 KIT for Frame MI-2	MMX-IP21-FS2
NEMA -1 KIT for Frame MI-3	MMX-IP21-FS3
Drive to PC Communication Module	MMX-COM-PC

SVX9000 Drive — Catalog Numbering System



- ① 480V Drives 250 hp (IH) and larger are available with enclosure style **0** (Chassis); 690V Drives 200 hp (IH) and larger are available with enclosure style **0** (Chassis).
- ② 480V and 690V FR10 Freestanding Drives are available with enclosure style **1** (NEMA Type 1) and enclosure style **2** (NEMA Type 12). FR11 Freestanding Drives only available with enclosure style **1** (NEMA Type 1).
- ③ All 230V Drives and 480V Drives up to 200 hp (IH) are only available with Input Option **1** (EMC Level H). 480V Drives 250 hp (IH) or larger are available with Input Option **2** (EMC Level N). 480V Drives are available with Input Option **4** (EMC Level L). 575V Drives 200 hp (IH) or larger are only available with Input Option 2. 575V Drives up to 150 hp (IH) are only available with Input Option **4** (EMC Level L).
- ④ 480V Drives up to 30 hp (IH) are only available with Brake Chopper Option **B**. 480V Drives 40 hp (IH) or larger come standard with Brake Chopper Option **N**. 230V Drives up to 15 hp (IH) are only available with Brake Chopper Option **B**. 230V Drives 20 hp or larger come standard with Brake Chopper Option N. All 575V Drives come standard without Brake Chopper Option (**N**).
Note: N = No Brake Chopper.

Motor Control

Drives

PRODUCT SELECTION

SVX9000 Drive

- Integrated 3% line reactors standard on drives from FR4 through FR9
- EMI/RFI filters standard up to 200 hp I_H 480V, 100 hp I_H 230V
- Quick start wizard built into the programming of the drive ensures a smooth start-up
- LOCAL/REMOTE operation from keypad
- Copy / paste function allows transfer of parameter settings from one drive to the next
- Standard Type 12 keypad on all drives
- Hand-held auxiliary 240V power supply allows programming / monitoring of control module without applying full power to the drive



Drives

208 – 240V, Type 1 Drive

Frame Size	Delivery Code	hp (I _H)	Current (I _L)	hp (I _L)	Current (I _L)	Catalog Number
FR4	W	3/4	3.7	1	4.8	SVXF07A1-2A1B1
		1	4.8	1-1/2	6.6	SVX001A1-2A1B1
		1-1/2	6.6	2	7.8	SVXF15A1-2A1B1
		2	7.8	3	11	SVX002A1-2A1B1
		3	11	—	12.5	SVX003A1-2A1B1
FR5	W	—	12.5	5	17.5	SVX004A1-2A1B1
		5	17.5	7-1/2	25	SVX005A1-2A1B1
		7-1/2	25	10	31	SVX007A1-2A1B1
FR6	W	10	31	15	48	SVX010A1-2A1B1
		15	48	20	61	SVX015A1-2A1B1
FR7	W	20	61	25	75	SVX020A1-2A1N1
		25	75	30	88	SVX025A1-2A1N1
		30	88	40	114	SVX030A1-2A1N1
FR8	W	40	114	50	140	SVX040A1-2A1N1
		50	140	60	170	SVX050A1-2A1N1
		60	170	75	205	SVX060A1-2A1N1
FR9	W	75	205	100	261	SVX075A1-2A1N1
		100	261	—	—	SVX100A1-2A1N1

380 – 500V, Type 1 Drive

Frame Size	Delivery Code	hp (I _H)	Current (I _H)	hp (I _L)	Current (I _L)	Catalog Number
FR4	W	1	2.2	1-1/2	3.3	SVX001A1-4A1B1
		1-1/2	3.3	2	4.3	SVXF15A1-4A1B1
		2	4.3	3	5.6	SVX002A1-4A1B1
		3	5.6	5	7.6	SVX003A1-4A1B1
		5	7.6	—	9	SVX005A1-4A1B1
		—	9	7-1/2	12	SVX006A1-4A1B1
FR5	W	7-1/2	12	10	16	SVX007A1-4A1B1
		10	16	15	23	SVX010A1-4A1B1
		15	23	20	31	SVX015A1-4A1B1
FR6	W	20	31	25	38	SVX020A1-4A1B1
		25	38	30	46	SVX025A1-4A1B1
		30	46	40	61	SVX030A1-4A1B1
FR7	W	40	61	50	72	SVX040A1-4A1N1
		50	72	60	87	SVX050A1-4A1N1
		60	87	75	105	SVX060A1-4A1N1
FR8	W	75	105	100	140	SVX075A1-4A1N1
		100	140	125	170	SVX100A1-4A1N1
		125	170	150	205	SVX125A1-4A1N1
FR9	W	150	205	200	261	SVX150A1-4A1N1
		200	245	250	300	SVX200A1-4A1N1

525 – 690V, Type 1 Drive

Frame Size	Delivery Code	hp (I _H)	Current (I _H)	hp (I _L)	Current (I _L)	Catalog Number		
FR6	W	2	3.33	3	4.5	SVX002A1-5A4N1		
		3	4.5	—	5.5	SVX003A1-5A4N1		
		—	5.5	5	7.5	SVX004A1-5A4N1		
		5	7.5	7-1/2	10	SVX005A1-5A4N1		
		7-1/2	10	10	13.5	SVX007A1-5A4N1		
		10	13.5	15	18	SVX010A1-5A4N1		
		15	18	20	22	SVX015A1-5A4N1		
		20	22	25	27	SVX020A1-5A4N1		
		25	27	30	34	SVX025A1-5A4N1		
		FR7	W	30	34	40	41	SVX030A1-5A4N1
				40	41	50	52	SVX040A1-5A4N1
FR8	W	50	52	60	62	SVX050A1-5A4N1		
		60	62	75	80	SVX060A1-5A4N1		
		75	80	100	100	SVX075A1-5A4N1		
FR9	W	100	100	125	125	SVX100A1-5A4N1		
		125	125	150	144	SVX125A1-5A4N1		
		150	144	—	170	SVX150A1-5A4N1		
		—	170	200	208	SVX175A1-5A4N1		

SVX9000 Drive — Accessories

Option Board Kits

Option Kit Description ①	Allowed Slot Locations ②	Field Installed	Factory Installed	SVX Ready Programs
		Catalog Number	Option Designator	Basic

Standard I/O Cards

2 RO (NC/NO)	B	OPTA2	—	X
6 DI, 1 DO, 2 AI, 1AO, 1 +10V dc Ref, 2 Ext +24V dc / EXT +24V dc	A	OPTA9	—	X

Extended I/O Card Options

2 RO, Therm — SPX Only	B	OPTA3	A3	—
Encoder Low Volt +5V/15V/24V — SPX Only	C	OPTA4	A4	—
Encoder High Volt +15V/24V — SPX Only	C	OPTA5	A5	—
Double Encoder — SPX Only	C	OPTA7	A7	X
6 DI, 1 DO, 2 AI, 1 AO — SPX Only	A	OPTA8	A8	—
3 DI (Encoder 10 – 24V), Out +15V/+24V, 2 DO (pulse+direction) — SPX Only	C	OPTAE	AE	X
6 DI, 1 Ext +24V dc / Ext +24V dc	B, C, D , E	OPTB1	B1	—
1 RO (NC/NO), 1 RO (NO), 1 Therm	B, C, D , E	OPTB2	B2	—
1 AI (mA isolated), 2 AO (mA isolated), 1 ext +24V dc / Ext +24V dc	B, C, D , E	OPTB4	B4	X
3 RO (NO)	B, C, D , E	OPTB5	B5	—
1 Ext +24V dc / Ext +24V dc, 3 Pt100	B, C, D , E	OPTB8	B8	—
1 RO (NO), 5 DI 42 – 240V ac Input	B, C, D , E	OPTB9	B9	—

Communication Cards

Modbus	D, E	OPTC2	C2	X
Johnson Controls N2 ③	D, E	OPTC2	CA	—
Modbus TCP	D, E	OPTCI	CI	X
BACnet	D, E	OPTCJ	CJ	X
Ethernet IP	D, E	OPTCK	CK	X
PROFIBUS DP	D, E	OPTC3	C3	X
LonWorks	D, E	OPTC4	C4	X
PROFIBUS DP (D9 Connector)	D, E	OPTC5	C5	X
DeviceNet	D, E	OPTC7	C7	X
Modbus (D9 Type Connector)	D, E	OPTC8	C8	X
Adapter — SPX Only	D, E	OPTD1	D1	X
Adapter — SPX Only	D, E	OPTD2	D2	X
RS-232 with D9 Connection	D, E	OPTD3	D3	X

Keypad

9000X Series Local / Remote Keypad (Replacement Keypad)	—	KEYPAD-LOC/REM	—	—
9000X Series Remote Mount Keypad Unit (Keypad not included, includes 10 ft. cable, keypad holder, mounting hardware)	—	OPTRMT-KIT-9000X	—	—
9000X Series RS-232 Cable, 13 ft.	—	PP00104	—	—

① AI = Analog Input; AO = Analog Output, DI = Digital Input, DO = Digital Output, RO = Relay Output.

② Option card must be installed in one of the slots listed for that card. Slot indicated in Bold is the preferred location.

③ OPTC2 is a multi-protocol option card.

Motor Control

Drives

PRODUCT SELECTION

SVX9000 Drive — Accessories

Miscellaneous Options

Description	Catalog Number
9000XDrive — A PC-based tool for controlling and monitoring of the SVX9000. Features include: loading parameters that can be saved to a file or printed, setting references, starting and stopping the motor, monitoring signals in graphical or text form, and real-time display. To avoid damage to the drive or computer, SVDrivecable must be used.	9000XDRIVE
SVDrivecable — 6 ft. (1.8 m) RS-232 cable (22 gauge) with a 7-pin connector on each end. Should be used in conjunction with the 9000XDrive option to avoid damage to the SVX9000 or computer. The same cable can be used for downloading specialized applications to the drive.	SVDRIVECABLE

NEMA Type 12 Conversion Kit

Frame Size	Delivery Code	Approximate Dimensions in Inches (mm)			Approximate Weight in Lb. (kg)	Catalog Number
		Length	Width	Height	Weight	
FR4	W	13 (330)	7 (178)	4 (102)	4 (1.8)	OPTN12FR4
FR5	W	16 (406)	8 (203)	7 (178)	5 (2.3)	OPTN12FR5
FR6	W	21 (533)	10 (254)	5 (127)	7 (3.2)	OPTN12FR6

Note: The NEMA Type 12 kit option is used to convert a NEMA Type 1 to a NEMA Type 12 drive. The NEMA Type 12 Kit consists of a metal drive shroud, fan kit for some frames, adapter plate and plugs.

Industrial Logic

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Counting On Your Process



Powering Business Worldwide

A broad mechanical, electromechanical and electronic product line for every application requirement

Preset Counters Product Overview

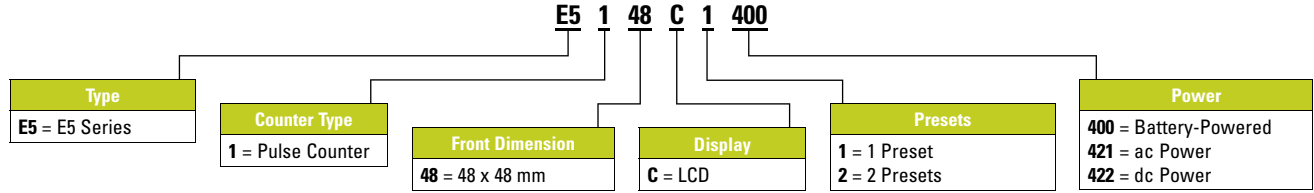
			
Description	E5-148-C1400	E5-148-Cx42X Series	Eclipse Series
Page	Page 120	Page 120	Page 121
Display	2-Line LCD	2-Line LCD	LED
Power Supply	Replaceable Lithium Batteries	10 – 30V dc or 90 – 260V ac	9 – 30V dc or 85 – 265V ac
Number of Digits	6	6	6
Panel Cut-Out Size	45 x 45 mm (1/16 DIN)	45 x 45 mm (1/16 DIN)	92 x 45 mm (1/8 DIN)
Scaling Capability	—	Yes	Yes
Number of Presets	1	1 or 2	2
Max Counting Speed	25 Hz	10 kHz (900 Hz w/ Auto Reset)	Up to 8,250 Hz
Front Panel Protection	IP65	IP65	Type 4X
Other Features / Functions	—	Timer / Rate Indicator	Analog Retransmission / RS-485 Communications
Relay Rating(s)	2A	3A	5A

Industrial Logic

Preset Counters

CATALOG SELECTION / PRODUCT SELECTION

1/16 DIN LCD Preset Counter — Catalog Numbering System



1/16 DIN LCD Preset Counter

Battery-Powered

- 2-line LC displays count, preset and level of the output
- Replacement for electromechanical preset counters
- No power supply necessary (battery operated)
- Count and reset input electrically separated from counter through optocoupler input range 12 – 250V ac/DC

AC/DC-Powered

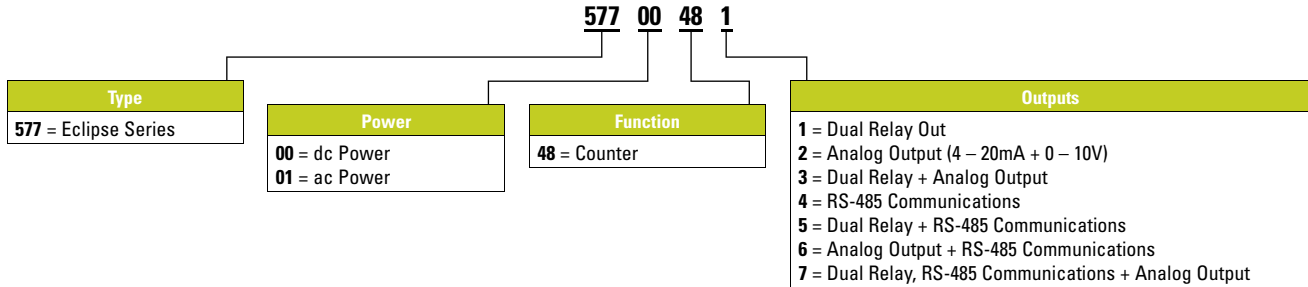
- 2-line LCD display
- Programmable as impulse counter, frequency meter or time meter with sign and zero blanking
- Batch mode



1/16 DIN LCD

Description	Catalog Number
Battery-Powered 1 Preset LCD	
Battery Power 1.89 x 1.89 Inch (48 x 48 mm)	E5-148-C1400
AC/DC-Powered 1 Preset LCD	
90 – 260V ac Power 1.89 x 1.89 Inch (48 x 48 mm))	E5-148-C1421
10 – 30V dc Power 1.89 x 1.89 Inch (48 x 48 mm)	E5-148-C1422
AC/DC-Powered 2 Preset LCD	
90 – 260V ac Power 1.89 x 1.89 Inch (48 x 48 mm)	E5-148-C2421
10 – 30V dc Power 1.89 x 1.89 Inch (48 x 48 mm)	E5-148-C2422

1/8 DIN Eclipse Series Preset Counter — Catalog Numbering System



1/8 DIN Eclipse Series Preset Counter

- 1/8 DIN cutout
- Type 4X front panel protection
- 7-segment LED Display



LED Count Control, 6-Digit

Description	Catalog Number
Relay Out, 9 – 30V dc Power Relay Out, 85 – 265V ac Power	57700481 57701481
Relay & Analog Out, 9 – 30V dc Power Relay & Analog Out, 85 – 265V ac Power	57700483 57701483
Relay & RS-485 Out, 9 – 30V dc Power Relay & RS-485 Out, 85 – 265V ac Power	57700485 57701485
Relay, Analog & RS-485 Out, 9 – 30V dc Power Relay, Analog & RS-485 Out, 85 – 265V ac Power	57700487 57701487



Bright, Readable Displays



Powering Business Worldwide

Measure process or machine speed, displayed with backlit LCD or super bright LED

Ratemeters Product Overview

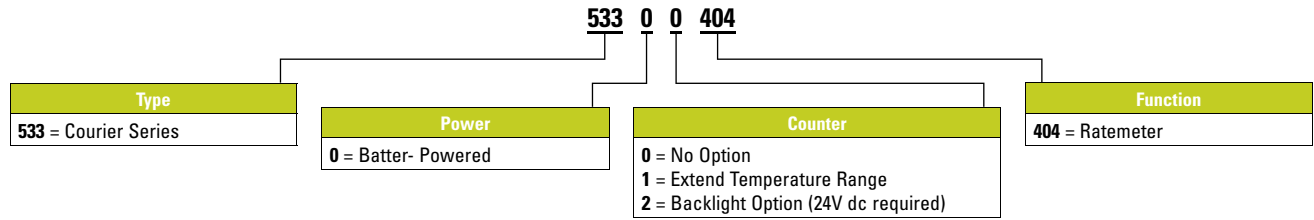
		
Description	Courier	Eclipse
Page	Page 124	Page 125
Display	LCD	LED
Power Supply	Replaceable Lithium Battery	9 – 30V dc or 85 – 265V ac
Number of Digits	5	6
Panel Cut-Out Size	68 x 33 mm	92 x 45 mm (1/8 DIN)
Scaling Capability	Yes	Yes
Number of Presets	—	2 (with optional relay out model)
Update Time	700 ms	500 ms
Front Panel Protection	Type 4X	Type 4X
Other Features / Functions	Optional Backlight, Optional Extended Temperature Range	Analog Retransmission / RS-485 Communications
Relay Rating(s)	—	5A

Industrial Logic

Ratemeters

CATALOG SELECTION / PRODUCT SELECTION

Courier Series Battery-Powered Ratemeter — Catalog Numbering System



Courier Series Battery-Powered Ratemeter

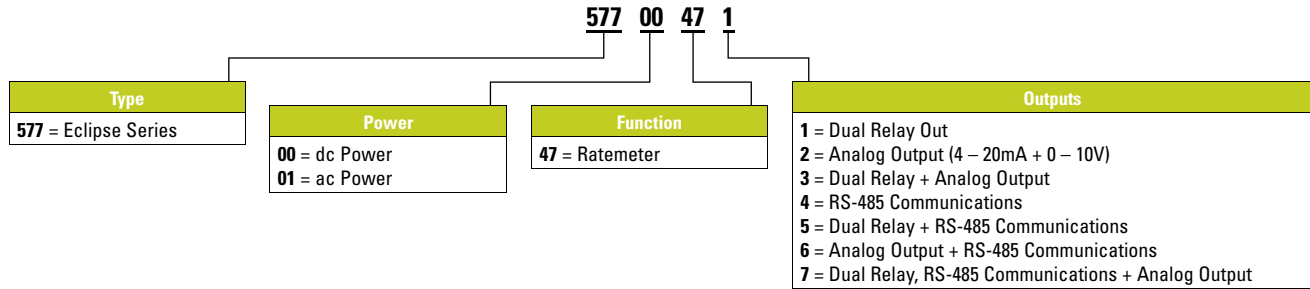
- 1/Tau ratemeter
- Scaling capabilities
- Type 4X protection
- Internal battery: 3V, Lithium



1/Tau LCD Ratemeter

Description	Catalog Number
Battery-Powered	53300404

Eclipse Series 1/8 DIN LED Ratemeter — Catalog Numbering System



Eclipse Series 1/8 DIN LED Ratemeter

- 1/8 DIN cutout
- Type 4X front panel protection
- Front panel programming



Eclipse Series 5-Digit LED Ratemeter

Description	Catalog Number
9 – 30V dc	57700470
9 – 30V dc, Alarms	57700471
9 – 30V dc, Analog Out	57700472
9 – 30V dc, Alarms, Analog Out	57700473
9 – 30V dc, RS-485	57700474
9 – 30V dc, Alarms, RS-485	57700475
9 – 30V dc, Analog Out, RS-485	57700476
9 – 30V dc, Alarms, Analog Out, RS-485	57700477
85 – 265V ac	57701470
85 – 265V ac, Alarms	57701471
85 – 265V ac, Analog Out	57701472
85 – 265V ac, Alarms, Analog Out	57701473
85 – 265V ac, RS-485	57701474
85 – 265V ac, Alarms, RS-485	57701475
85 – 265V ac, Analog Out, RS-485	57701476
85 – 265V ac, Alarms, Analog Out, RS-485	57701477

Let Time Take Control



Powering Business Worldwide

Know exactly how many hours have elapsed,
and take action when it's time

Hour Meters Product Overview

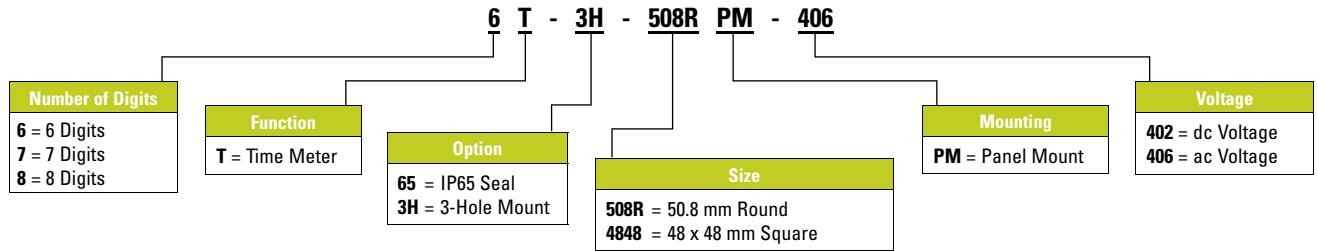
				
Description	T48 Series	6-T-3H Series	E5-224 Series	E42 Series
Page	Page 128	Page 128	Page 129	Page 129
Panel Cut-Out Size	45 x 45 mm (1/16 DIN)	50.8 mm (2") round	22 x 45 mm (1/32 DIN)	52.3 mm (2.06") round OR 24 x 36.8 mm
Display Type	Mechanical	Mechanical	LCD	LCD
Number of Digits	7 for ac Versions, 8 for dc Versions	6	8	6
Power Supply	10 – 30V dc or 100 – 130V ac	115V ac	Internal Battery	12 – 60V dc or 48 – 230V ac
Timing Method	Synchronous Motor	Quartz	Solid-State	Solid-State
Front Panel Protection	IP65	Type 4X	IP65	No Protection Ratings
Resolution	0.1 Hour	0.1 Hour	0.1 Second	0.1 Hour

Industrial Logic

Hour Meters

CATALOG SELECTION / PRODUCT SELECTION

Electromechanical Hour Meters — Catalog Numbering System



Electromechanical Hour Meters

1/16 DIN

- High shock-resistance
- Without reset
- Data retention if power is lost

71.1 mm Round


- 6-digit hour meter for round panel cut-out
- Low cost
- Waterproof
- Type 4X protection



Electromechanical Hour Meters

Description	Catalog Number
1/16 DIN	
10 – 30V dc, 1.89 x 1.89 Inch (48 x 48 mm)	8-T-65-4848PM-402
100 – 130V ac, 1.89 x 1.89 Inch (48 x 48 mm)	7-T-65-4848PM-406
71.1 mm Round	
115V ac, 2.80 Inch (71.1 mm) Round	6-T-3H-508RPM-406
10 – 80V dc, 2.80 Inch (71.1 mm) Round	6-T-3H-508RPM-402

DIN-Rail Adapter — Accessory

Description	Catalog Number
 DIN-Rail Adapter for DIN Electromechanical Hour Meter	T4848DINADAPT

Electronic LCD Hour Meters

Battery-Powered

- Low price and high efficiency
- Large 8-digit LCD display, height of the figures 0.31 inch (8 mm)
- Different time ranges from 0.1 second to 100,000 hours
- Lifetime of the battery is approximately 8 years

AC/DC-Powered

- Solid-state hour meters
- Record and display up to 99,999.9 hours, rollover and continue timing
- EEPROM memory can retain data for 25+ years
- Time accumulation indicated by flashing hourglass icon



Electronic LCD Hour Meter

Description	Catalog Number
Battery-Powered 1/32 DIN 8-digit LCD	
Hours / Minutes, 0.94 x 1.89 Inch (24 x 48 mm)	E5-224-C0440
Hours / Minutes, 10 – 260V Input, 0.94 x 1.89 Inch (24 x 48 mm)	E5-224-C0448
Minutes / Seconds, 0.94 x 1.89 Inch (24 x 48 mm)	E5-224-C0450
Minutes / Seconds, 10 – 260V Input 0.94 x 1.89 Inch (24 x 48 mm)	E5-224-C0458
AC/DC-Powered Round LCD	
Elapsed Hour Meter, 48 – 150V dc / 100 – 230V ac	E42DIR48230
Elapsed Hour Meter w/ Reset, 48 – 150V dc / 100 – 230V ac	E42DIR48230R
Elapsed Hour Meter, 12 – 48V dc / 20 – 60V ac	E42DIR1260
AC/DC-Powered Compact Rectangular LCD	
Elapsed Hour Meter, 48 – 150V dc / 100 – 230V ac	E42DI2448230
Elapsed Hour Meter, w/ Reset, 48 – 150V dc / 100 – 230V ac	E42DI2448230R
Elapsed Hour Meter, 12 – 48V dc / 20 – 60V ac	E42DI241260





Modes of Flow Control



Powering Business Worldwide

Continuously monitor to know which of many modes to control the flow

Totalizers Product Overview

				
Description	Electromechanical Micro	SE Series	E5-024-C Series	E5-x24-E Series
Page	Page 132	Page 132	Page 133	Page 133
Display Type	Mechanical	Mechanical	LCD	LED
Number of Digits	7	6	8	6
Power Supply	12V dc	12 or 24V dc, 120 or 240V ac	Internal Battery	10 – 30V dc
Mounting Configuration(s)	Front Panel (13 x 30 mm Cut-Out)	Base Mount, Bottom Mount, Top Mount, or Front Panel Mount	Front Panel 22 x 45 mm (1/32 DIN)	Front Panel 22 x 45 mm (1/32 DIN)
Maximum Counting Speed	25 Hz	10 Hz	12 kHz	20 kHz
Count Reset Method(s)	—	—	Front Panel or Electronic, Can Be Locked Out	Front Panel or Electronic, Can Be Locked Out
Front Panel Protection	IP65	—	IP65	IP65

Totalizers Product Overview

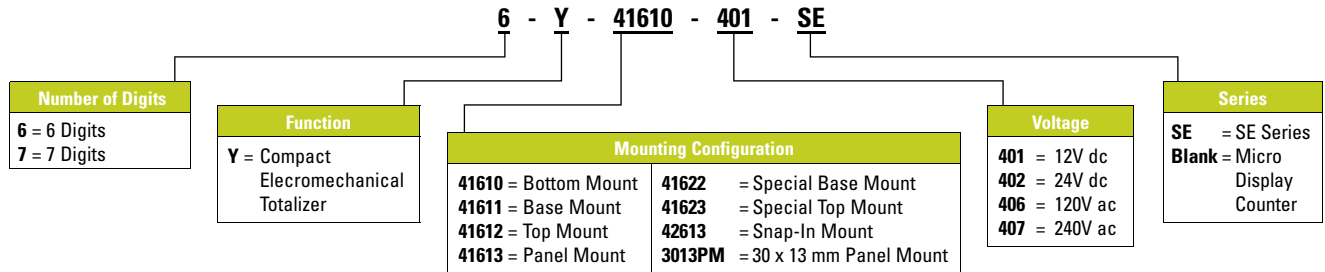
			
Description	Courier Series	E5-496 Series	Eclipse Series
Page	Page 134	Page 135	Page 135
Display Type	LCD	LED	LED
Number of Digits	8	6	6
Power Supply	Replaceable Battery	10 – 30V dc or 90 – 260V ac	9 – 30V dc or 85 – 265V ac
Mounting Configuration(s)	Front Panel 68 x 33 mm	Front Panel 92 x 45 mm (1/8 DIN)	Front Panel 92 x 45 mm (1/8 DIN)
Maximum Counting Speed	10 kHz	60 kHz	8.2 kHz
Count Reset Method(s)	Front Panel or Electronic, Can Be Locked Out	Front Panel or Electronic, Can Be Locked Out	Front Panel or Electronic, Can Be Locked Out
Front Panel Protection	Type 4X	IP65	Type 4X

Industrial Logic

Totalizers

CATALOG SELECTION / PRODUCT SELECTION

Electromechanical Totalizer — Catalog Numbering System



Electromechanical Totalizer

Micro Display

- Low power consumption; suitable for battery consumption
- Small dimensions
- Long service life

SE Series

- Low-cost electromechanical counter
- Multiple voltage ranges for almost any application
- Compact with various mounting options



Micro Display Counter

Description	Catalog Number
Micro Display Counter — 12V dc	7-Y-3013PM-401

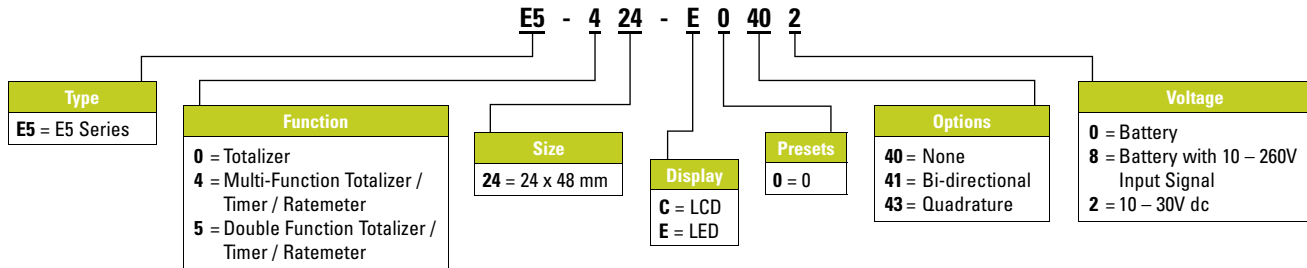
SE Series Electromechanical Totalizer

Description	Catalog Number	Order Number
-------------	----------------	--------------

6-Digit Counter

Bottom Mount Sub-Miniature 12V dc	6-Y-41610-401-SE	41610401
Bottom Mount Sub-Miniature 24V dc	6-Y-41610-402-SE	41610402
Bottom Mount Sub-Miniature 120V ac	6-Y-41610-406-SE	41610406
Bottom Mount Sub-Miniature 240V ac	6-Y-41610-407-SE	41610407
Base Mount Sub-Miniature 12V dc	6-Y-41611-401-SE	41611401
Base Mount Sub-Miniature 24V dc	6-Y-41611-402-SE	41611402
Base Mount Sub-Miniature 120V ac	6-Y-41611-406-SE	41611406
Base Mount Sub-Miniature 240V ac	6-Y-41611-407-SE	41611407
Top Mount Sub-Miniature 12V dc	6-Y-41612-401-SE	41612401
Top Mount Sub-Miniature 24V dc	6-Y-41612-402-SE	41612402
Top Mount Sub-Miniature 120V ac	6-Y-41612-406-SE	41612406
Top Mount Sub-Miniature 240V ac	6-Y-41612-407-SE	41612407
Panel Mount Sub-Miniature 12V dc	6-Y-41613-401-SE	41613401
Panel Mount Sub-Miniature 24V dc	6-Y-41613-402-SE	41613402
Panel Mount Sub-Miniature 120V ac	6-Y-41613-406-SE	41613406
Panel Mount Sub-Miniature 240V ac	6-Y-41613-407-SE	41613407
Special Base Mount Sub-Miniature 12V dc	6-Y-41622-401-SE	41622401
Special Base Mount Sub-Miniature 24V dc	6-Y-41622-402-SE	41622402
Special Base Mount Sub-Miniature 120V ac	6-Y-41622-406-SE	41622406
Special Base Mount Sub-Miniature 240V ac	6-Y-41622-407-SE	41622407
Special Top Mount Sub-Miniature 12V dc	6-Y-41623-401-SE	41623401
Special Top Mount Sub-Miniature 24V dc	6-Y-41623-402-SE	41623402
Special Top Mount Sub-Miniature 120V ac	6-Y-41623-406-SE	41623406
Special Top Mount Sub-Miniature 240V ac	6-Y-41623-407-SE	41623407
Snap-In Mount Sub-Miniature 12V dc	6-Y-42613-401-SE	42613401
Snap-In Mount Sub-Miniature 24V dc	6-Y-42613-402-SE	42613402
Snap-In Mount Sub-Miniature 120V ac	6-Y-42613-406-SE	42613406
Snap-In Mount Sub-Miniature 240V ac	6-Y-42613-407-SE	42613407

Electronic 1/32 DIN Totalizer — Catalog Numbering System



Electronic 1/32 DIN Totalizer

Battery-Powered LCD

- Low price and high efficiency
- Large 8-digit LCD display, height of the figures 0.31 inch (8 mm)
- Lifetime of the battery is approximately 8 years

DC-Powered LED

- Display counter adding and subtracting
- Position display
- Frequency counter / ratemeter
- Timer
- Supply voltage: 10 – 30V dc with reverse polarity protection
- Polarity of inputs: programmable, NPN or PNP



1/32 DIN LCD Totalizer

Description	Catalog Number
Battery-Powered 8-Digit LCD Totalizer	
0.94 x 1.89 Inch (24 x 48 mm) LCD Totalizer	E5-024-C0400
10 – 260V Input 0.94 x 1.89 Inch (24 x 48 mm) LCD Totalizer	E5-024-C0408
Count Up / Down 0.94 x 1.89 Inch (24 x 48 mm) LCD Totalizer	E5-024-C0410

DC-Powered 6-Digit LED Totalizer

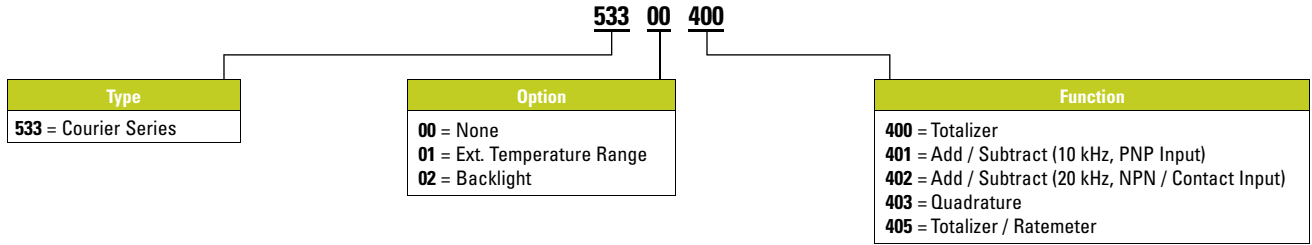
LED Single Channel Totalizer, 10 – 30V dc Power 0.94 x 1.89 Inch (24 x 48 mm)	E5-024-E0402
LED Multifunction Totalizer / Timer / Ratemeter, 10 – 30V dc Power 0.94 x 1.89 Inch (24 x 48 mm)	E5-424-E0402
LED Double-Function Totalizer / Timer / Ratemeter, 10 – 30V dc Power 0.94 x 1.89 Inch (24 x 48 mm)	E5-524-E0402
LED Totalizer with Quadrature, 10 – 30V dc Power 0.94 x 1.89 Inch (24 x 48 mm)	E5-024-E0432

Industrial Logic

Totalizers

CATALOG SELECTION / PRODUCT SELECTION

Electronic Courier Series Battery-Powered LCD Totalizer — Catalog Numbering System



Electronic Courier Series Battery-Powered LCD Totalizer

- 8-digit totalizer
- 1/Tau ratemeter is an additional capability on the 53300405 only
- Scaling capabilities
- Remote reset terminal
- Type 4X protection
- Internal battery: 3V, lithium, replaceable battery



Courier Series, 8-Digit LCD

Description	Catalog Number
Totalizer, Battery	53300400
Add / Subtract (10k Hz, PNP Input) Totalizer, Battery	53300401
Add / Subtract (20 Hz, NPN / Contact Input) Totalizer, Battery	53300402
Quadrature (10k Hz, PNP Input) Totalizer, Battery	53300403
Totalizer / Ratemeter, Battery	53300405

Electronic 1/8 DIN LED Totalizers

LED Multifunction

- Display counter adding and subtracting
- Position display
- Frequency counter / ratemeter
- Display: 6-digit red, 7-segment LED display; 0.55 inch (14 mm) high
- Polarity of inputs: programmable, NPN or PNP for all inputs

Eclipse Series

- 1/8 DIN cutout
- Type 4X front panel protection
- Front panel programming



1/8 DIN LED

Description	Catalog Number
-------------	----------------

LED Multifunction Counter / Timer / Ratemeter

90 – 260V ac Power 3.78 x 1.89 Inch (96 x 48 mm)	E5-496-E0401
10 – 30V dc Power 3.78 x 1.89 Inch (96 x 48 mm)	E5-496-E0402

Eclipse Series LED Totalizer

9 – 30V dc Power	57700480
85 – 265V ac Power	57701480
Analog Out, 9 – 30V dc Power	57700482
Analog Out, 85 – 265V ac Power	57701482
RS-485 Out, 9 – 30V dc Power	57700484
RS-485 Out, 85 – 265V ac Power	57701484
RS-485 Out and Analog Out, 9 – 30V dc Power	57700486
RS-485 Out and Analog Out, 85 – 265V ac Power	57701486

Know Your Position Exactly



Powering Business Worldwide

Precisely position your motor, with rotary single and quadrature shaft encoders

Encoders Product Overview

		
Description	Cube	Right-Angled
Page	Page 138	Page 138
Power Supply	5 – 28V dc	5 – 28V dc
Output Signal	NPN Transistor	NPN Transistor
Pulses per Revolution	Up to 600	Up to 1,800
Maximum Shaft Speed	6000 RPM	8000 RPM
Mounting Configuration(s)	Face or Base Mounted	Flange Mounted
Shaft Size	3/8"	3/8"
Maximum Axial Loading	10 lbs	80 lbs
Quadrature Output Available	Yes	Yes

Industrial Logic

Encoders

PRODUCT SELECTION

Shaft Encoders

Cube Style

- 5 – 28V dc input power
- Single channel and quadrature models
- 3/8" (9.5 mm) double-ended shaft

Right-Angled

- 5 – 28V dc input power
- Quadrature output, 2 square waves
- Flange mounting
- 3/8" (9.5 mm) shaft diameter



Cube Shaft Encoders

Description	Catalog Number
Single Channel	
60 Pulses per Revolution	38150060
100 Pulses per Revolution	38150100
120 Pulses per Revolution	38150120
600 Pulses per Revolution	38150600

Quadrature

60 Pulses per Revolution	38151060
100 Pulses per Revolution	38151100
120 Pulses per Revolution	38151120
600 Pulses per Revolution	38151600

Right-Angled Shaft Encoder, Size 20

Description	Catalog Number
100 Pulses per Revolution	38159100
120 Pulses per Revolution	38159120
600 Pulses per Revolution	38159600
1000 Pulses per Revolution	381591000
1800 Pulses per Revolution	381591800

React to Multiple Events



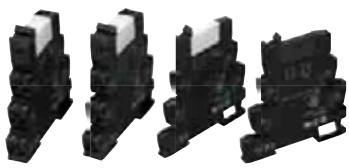





Multiple purpose relays, with dozens of timing, sensing and monitoring capabilities

Industrial Logic

Relays

PRODUCT OVERVIEW

Relays Product Overview

			
Description	XR Series Terminal Block Relays	D2 Series	D3 Series
Page	Page 144	Page 145	Page 147
Approvals			
Features	<ul style="list-style-type: none"> • Pluggable relay allows easy field replacement, LED indicator standard, functional plug-in bridges available • Only 6.2 mm wide for SP and 14 mm wide for DP • DIN-Rail mounting 	<ul style="list-style-type: none"> • Polycarbonate Cover • Indicator Lamp and Pushbutton Available • Panel, DIN and Flange Mounting • Latching 	<ul style="list-style-type: none"> • Polycarbonate Cover • Indicator Lamp and Pushbutton Available • Panel and DIN Mounting • 8- or 11-Pin Octal Plug-In • Latching (D3PR version)

Contact Data

Configuration	SPDT — 6A or 10A, DPDT — 6A OptoCoupler — 2A	DPDT	DPDT Latching	4PDT	SPDT	DPDT	3PDT
Maximum Allowable Load	Available on request	D2PF: 10A at 120V ac D2PR: 5A at 240V ac	3A at 220V ac	3A at 240V ac	12A at 120V ac	12A at 120V ac	10A at 240V ac
Material	—	Ag (Au flashed)			AgCdO (Au flashed)		
Resistance	—	50 Milliohms (initial)			50 Milliohms (initial)		
Dielectric Strength	4000V	1500V			1500V		







Coil Data

AC	24V ac, 120V ac	6 – 240V ac	24 – 240V ac (D3PF) / 6 – 240V ac (D3PR)
DC	12V dc, 24V dc, 110V dc	6 – 110V ac	12 – 110V dc (D3PF) / 6 – 110V dc (D3PR)
Power VA (V ac) Watts (V dc)	1500 VA, 120 mW	1.2 VA 1.1 Watts	2.75 VA 1.2 Watts

General Data

Ambient Temperature Operational Storage	-20° – 60°C	-40 – 158°F (-40° – 70°C) -40 – 221°F (-40° – 105°C)	-49 – 131°F (-45° – 55°C) -40 – 221°F (-40° – 105°C)
Maximum Pick-Up	Available on request	20/25 Milliseconds	15 Milliseconds
Maximum Release	Available on request	20/25 Milliseconds	10 Milliseconds
Life Mechanical Operations Electrical Operations	20 Million —	10 Million 200,000	5 Million (D3PF) / 10 Million (D3PR) 200,000 (D3PF) / 100,000 (D3PR)

Relays Product Overview

			
Description	D4 Series	D5 Series	D7 Series
Page	Page 149	Page 150	Page 152
Approvals			
Features	<ul style="list-style-type: none"> • Polycarbonate Cover • Indicator Lamp Available • Panel and DIN Mounting • Socket Has Built-In Hold Down Spring 	<ul style="list-style-type: none"> • Polycarbonate Cover • Indicator Lamp and Pushbutton Available • Panel, DIN and PC Board Mounting 	<ul style="list-style-type: none"> • Polycarbonate Cover • Indicator Lamp and Pushbutton Available • Panel, DIN and Flange Mounting

Contact Data

Configuration	SPDT	DPDT	SPDT	DPDT	3PDT	SPDT	DPDP	3PDT	4PDT
Maximum Allowable Load	10A at 250V ac	5A at 240V ac	15A at 240V ac	15A at 240V ac	15A at 240V ac	20A at 277V ac	15A at 120V ac	15A at 240V ac	15A at 120V ac
Material	AgCdO		AgCdO (Au flashed)			AgCdO			
Resistance	100 Milliohms (initial)		50 Milliohms (initial)			50 Milliohms (initial)			
Dielectric Strength	5000V		1500V (D5PF) / 2000V (D5PR)			1000V (D7PF1, D7PF2, D7PF3) / 1500V			

Coil Data

AC	6 – 240V ac	24 – 110V ac (D5PF) 6 – 240V ac (D5PR)	6 – 240V ac
DC	6 – 110V ac	24 – 110V ac (D5PF) 6 – 110V ac (D5PR)	6 – 110V ac
Power VA (V ac) Watts (V dc)	0.9 VA 0.5 Watts	2.75 VA 1.2 Watts	3.0 VA (D7PF3, D7PF4) / 2.55 VA 2.3 Watts (D7PF1, D7PF2, D7PF4); 3.4 Watts (D7PF3) / 1.5 Watts

General Data











Ambient Temperature Operational Storage	-40 – 158°F (-40 – 70°C) -40 – 158°F (-40 – 70°C)	-22 – 122°F (-30 – 50°C) -22 – 212°F (-30 – 100°C)	-40 – 158°F (-40 – 70°C) -40 – 212°F (-40 – 100°C)
Maximum Pick-Up	15 Milliseconds	24 Milliseconds	20 Milliseconds (D7PF1, D7PF4) 25 Milliseconds (All Others)
Maximum Release	10 (AC) / 5 (DC) Milliseconds	26 Milliseconds	20 Milliseconds / 25 Milliseconds
Life Mechanical Operations Electrical Operations	10 Million 100,000	5 Million 200,000 (D5PF) / 100,000 (D5PR)	10 Million 100,000 (D7PR3, D7PR4, D7PF1) 150,000 (D7PF3, D7PF4) 200,000 (D7PF2, D7PR1, D7PR2)

Industrial Logic

Relays

PRODUCT OVERVIEW

Relays Product Overview

					
Description	D8 Series	D9 Series	Type AA Series	XTRE Series	E5-248 Series
Page	Page 154	Page 155	Page 156	Page 157	Page 159
Approvals					
Features	<ul style="list-style-type: none"> Dust Cover Panel, DIN and Flange Mounting Quick-Connect and Screw Terminals 	<ul style="list-style-type: none"> Dust Cover Pushbutton Available Panel Mounting Screw Terminals 	<ul style="list-style-type: none"> Available Blowout Magnets for High dc Switching Available Auxiliary Switches Combo Head Screws for Simple Hook-Up Riveted Construction for Long Service Life 	<ul style="list-style-type: none"> 4-Pole Configurations IP20 Finger & Back-of-Hand Proof Positively Driven Contacts Between the Relay and Auxiliary Contact Modules as well as within the Auxiliary Contact Modules 	<ul style="list-style-type: none"> 9 Timing Ranges and 8 Timing Functions in One Unit Battery-Powered, No Need for External Power Source Contacts Programmable as NO or NC High-Contrast 2-Line LCD Display

Contact Data

Configuration	SPST-NO	DPST-NO	4PST NO, NC		DPDT	NO-NC Variations in a 4-Pole Relay Plus 4-Pole Aux. Module	SPST
Maximum Allowable Load	30A at 220V ac	25A at 220V ac	25A at 220V ac	8A at 220V ac	40A	16A (I_{th})	8A
Material	AgCdO		AgCdO		Silver Cadmium Oxide, Gold Flashed	—	—
Resistance	50 Milliohms (initial)		50 Milliohms (initial)		—	—	—
Dielectric Strength	4000V		4000V		1500V (between contacts)	6000V ac (U_{imp})	—









Coil Data

AC	6 – 240V ac	6 – 240V ac	6 – 600V ac	12 – 600V ac	—
DC	12 – 24V ac	12 – 110V ac	6 – 220V dc	24 – 240V dc	3V (battery supplied)
Power VA (V ac) Watts (V dc)	2.5 VA 1.9 Watts	2.6 VA 2.0 Watts	10 VA 4 Watts	3.3 VA 3 Watts	—

General Data

Ambient Temperature Operational Storage	-4 – 185°F (-20 – 85°C) -4 – 185°F (-20 – 85°C)	-13 – 140°F (-25 – 60°C) -13 – 140°F (-25 – 60°C)	-40 – 131°F (-40 – 55°C) -40 – 185°F (-40 – 85°C)	-13 – 140°F (-25 – 60°C) -40 – 176°F (-40 – 80°C)	14 – 122°F (-10 – 50°C) -4 – 158°F (-20 – 70°C)
Maximum Pick-Up	30 Milliseconds	50 Milliseconds	50 Milliseconds	21 Milliseconds (ac) 31 Milliseconds (dc)	—
Maximum Release	30 Milliseconds	50 Milliseconds	35 Milliseconds	18 Milliseconds (ac) 12 Milliseconds (dc)	20 Milliseconds
Life Mechanical Operations Electrical Operations	5 Million 100,000	1 Million 100,000	— 6000	20 Million 100,000	5 Million 100,000

Relays Product Overview

				
Description	TR Series	TMR5 Series	D65 Series	D65C Series
Page	Page 160	Page 161	Page 162	Page 164
Approvals				
Features	<ul style="list-style-type: none"> Available in Octal Pin or Blade Plug-In Configurations 20 Timing Ranges and 10 Timing Functions in One Unit Space-Saving, Compact Design LED Indicator for Quick Troubleshooting 	<ul style="list-style-type: none"> Various Configurations Available with Fixed or Adjustable Time Delays Single Operating Voltage for Simple Set-Up Plugs in Standard 8- or 11-pin Octal Sockets 	<ul style="list-style-type: none"> Various Combinations of Protection Available Compact Cases for Easy Mounting LED Indicators for Quick Troubleshooting 	<ul style="list-style-type: none"> Monitors AC Single-Phase Currents from 0.1 – 10 A External CT can be Used to Extend Ranges LED Indicates Output Relay Status Choice of Fixed or User-Adjustable Settings

Contact Data

Configuration	DPDT	DPDT	SPDT or DPDT	—
Maximum Allowable Load	10A	10A	10A	Less than 5 VA
Material	—	—	—	—
Resistance	—	—	—	—
Dielectric Strength	2000V (between poles)	2001V	2000V	—

Coil Data

AC	24 – 240V ac	12 – 240V ac	24 – 480V ac	—
DC	24V dc	12 – 240V dc	24 – 120V dc	—
Power VA (V ac) Watts (V dc)	— 11.6 Watts (max)	2 VA —	5 VA —	— —

General Data

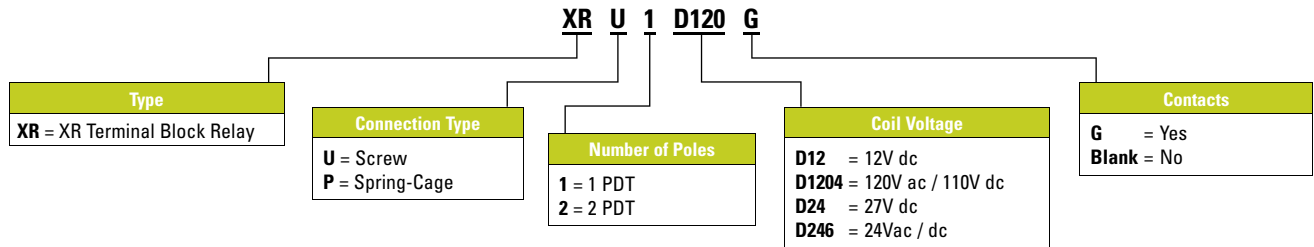
Ambient Temperature Operational Storage	-4 – 149°F (-20 – 65°C)	-4 – 149°F (-20 – 65°C)	-4 – 149°F (-20 – 65°C)	-20° to 131°F (-28° to 55°C)
Maximum Pick-Up	—	80 Milliseconds	<= 500 Milliseconds	Overcurrent: Adjustable through-out current range monitored / Undercurrent: Fixed at 5% above adjustable drop-out setting
Maximum Release	100 Milliseconds	100 Milliseconds	<= 500 Milliseconds	Overcurrent: Fixed at 95% of pick-up setting for D65CE; adjustable from 50 – 95% of pick-up setting for D65CEK / Undercurrent: Adjustable throughout current range monitored
Life Mechanical Operations Electrical Operations	50 Million 500,000	10 Million 100,000	10 Million 100,000	10 Million 100,000

Industrial Logic

Relays

CATALOG SELECTION / PRODUCT SELECTION

Terminal Block Relays — Catalog Numbering System



Terminal Block Relays

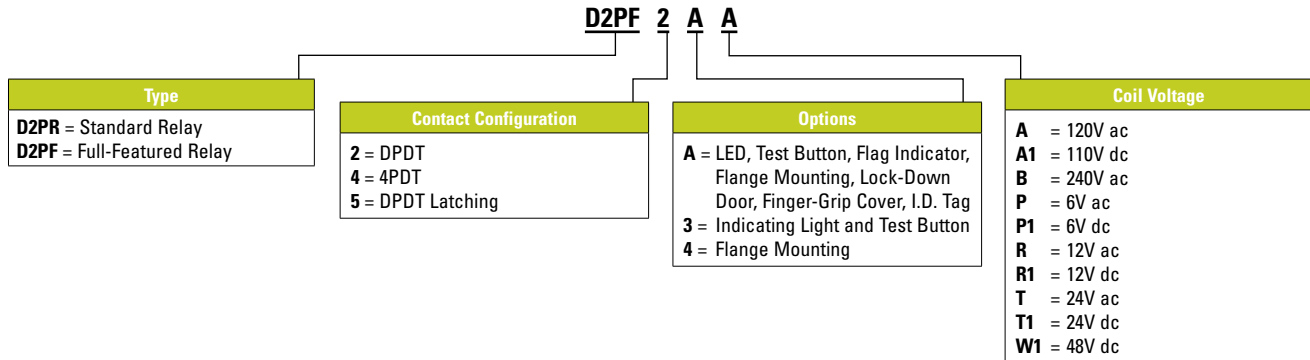
- Pluggable relay allows for field replacement
- Functional plug-in bridges
- LED status indication
- Only 6.2 mm wide for single pole versions, 14 mm wide for double pole



Standard Terminal Block Relays

Contacts	Rated Current	Supply Voltage	Standard Pack	Catalog Number
1PDT Screw Connection				
No	6A	12V dc	10	XRU1D12
No	6A	120V ac / 110V dc	10	XRU1D120U
Yes	6A	120V ac / 110V dc	10	XRU1D120UG
No	6A	24V dc	10	XRU1D24
No	6A	24V ac/DC	10	XRU1D24U
Yes	6A	24V ac/DC	10	XRU1D24UG
1PDT Spring-Cage Connection				
No	6A	12V dc	10	XRP1D12
No	6A	120V ac / 110V dc	10	XRP1D120U
No	6A	24V dc	10	XRP1D24
No	6A	24V ac/DC	10	XRP1D24U
DPDT Screw Connection				
No	6A	12V dc	10	XRU2D12
No	6A	120V ac / 110V dc	10	XRU2D120U
No	6A	24V dc	10	XRU2D24
No	6A	24V ac/DC	10	XRU2D24U

General Purpose Plug-in Relays — D2 Series — Catalog Numbering System ①



① For deciphering Catalog Numbers. Do not use for ordering as not all combinations are readily available.

General Purpose Plug-In Relays — D2 Series

- Ultra-high sensitivity relay with quick response
- Designed small, 2-pole type break 5A load and 4-pole type, 3A load
- High reliability, long life
- Panel, DIN-Rail and flange mounting
- Small size



D2PR Relay / Socket Quick Reference

Relay Type	Socket	Hold Down Spring/Clip
D2PR2	D2PA6	PMC-A1
D2PR4	D2PA6	PMC-A1
D2PR5	D2PA4	PYC-A1

D2PR Standard Relays

Coil Voltage	Catalog Number
--------------	----------------

Standard DPDT

24V ac 110V ac 240V ac 12V dc 24V dc	D2PR2T D2PR2A D2PR2B D2PR2R1 D2PR2T1
--	---

DPDT with Indicating Light and Test Button

24V ac 110V ac 24V dc	D2PR23T D2PR23A D2PR23T1
-----------------------------	---

DPDT Flange Mount

110V ac	D2PR24A
---------	----------------

Standard 4PDT

24V ac 110V ac 12V dc 24V dc 110V dc	D2PR4T D2PR4A D2PR4R1 D2PR4T1 D2PR4A1
--	--

D2PR Standard Relays (continued)

Coil Voltage	Catalog Number
--------------	----------------

4PDT with Indicating Light and Test Button

24V ac 110V ac 12V dc 24V dc 110V dc	D2PR43T D2PR43A D2PR43R1 D2PR43T1 D2PR43A1
--	---

4PDT Flange Mount

110V ac	D2PR44A
---------	----------------

DPDT Latching

110V ac 24V dc	D2PR5A D2PR5T1
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D2PR Sockets and Accessories

Description	Standard Pack	Catalog Number
-------------	---------------	----------------

DIN-Rail or Panel Mount Socket and Accessories

4-Pole Socket	10	D2PA6
Spring Clip	100	PMC-A1
DIN Rail End Stop	100	PFP-M

DIN-Rail or Panel Mount Socket and Accessories for D2PR5 Latching Relays

4-Pole Socket	10	D2PA4
Hold-Down Spring	100	PYC-A1
DIN-Rail End Stop	100	PFP-M

Industrial Logic

Relays

PRODUCT SELECTION

General Purpose Plug-In Relays — D2 Series

D2PF Relay/Socket Quick Reference

Relay Type	Socket	Socket Type	Hold Down Clip
D2PF2	D2PA6	Screw Terminal	PQC-1342
	D2PA7	Screw Terminal, Finger-Safe	Included with Socket
D2PF4	D2PA6	Screw Terminal	PQC-1342
	D2PA7	Screw Terminal, Finger-Safe	Included with Socket

D2PF Sockets and Accessories

Description	Standard Pack	Catalog Number
4-Pole DIN or Panel Mount Socket	10	D2PA6
Hold Down Clip	10	PQC-1342
4-Pole DIN or Panel Mount Socket — Finger-Safe	10	D2PA7
DIN-Rail End Stop	200	PPF-M

D2PF Full-Featured Relays

Coil Voltage	Catalog Number
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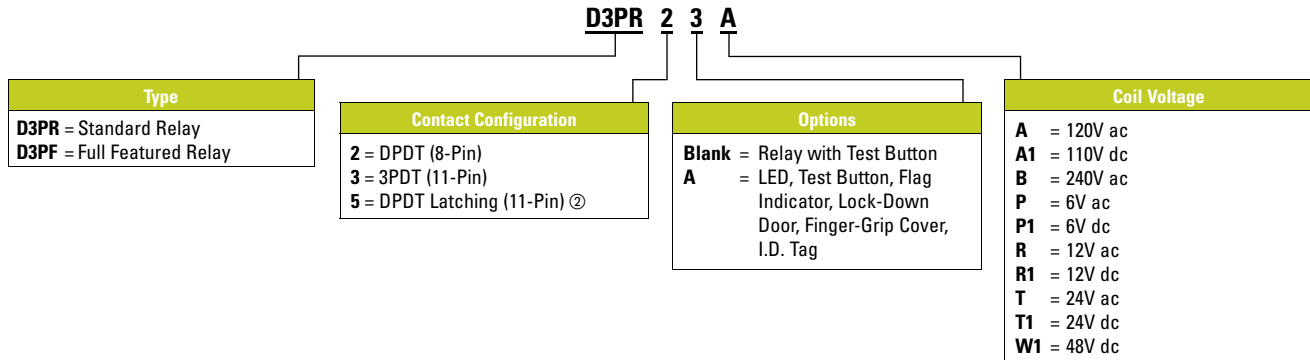
DPDT

6V ac 6V dc 12V ac 12V dc 24V ac	D2PF2AP D2PF2AP1 D2PF2AR D2PF2AR D2PF2AT
24V dc 48V dc 110V dc 120V ac 240V ac	D2PF2AT1 D2PF2AW1 D2PF2AA1 D2PF2AA D2PF2AB

4PDT

6V ac 12V ac 12V dc 24V ac 24V dc	D2PF4AP D2PF4AR D2PF4AR1 D2PF4AT D2PF4AT1
48V dc 110V dc 120V ac 240V ac	D2PF4AW1 D2PF4AA1 D2PF4AA D2PF4AB

General Purpose Plug-In Relays — D3 Series — Catalog Numbering System ①



① For deciphering Catalog Numbers. Do not use for ordering as not all combinations are readily available.

② D3PR only.

General Purpose Plug-in Relays — D3 Series

- Compact relay capable of breaking relatively large load currents
- The contact operation can be easily checked by push-to-test button
- Panel and DIN-Rail mounting
- 8- or 11-pin octal plug-in



Relay / Socket Quick Reference

Relay Type	Socket Type	Socket	Hold Down Spring/Clip
D3PR2	8-Pin Octal	D3PA2 D3PA4 D3PA6	PQC-1344 Not Available PQC-1332
D3PF2	8-Pin Octal	D3PA2	PQC-1344
	8-Pin Octal — Finger-Safe Terminals	D3PA6	PQC-1332
D3PR3	11-Pin Octal	D3PA3-A2 D3PA5 D3PA7	PQC-1351 Not Available PQC-1332
D3PF3	11-Pin Octal	D3PA3-A2	PQC-1351
	11-Pin Octal — Finger-Safe Terminals	D3PA7	PQC-1332
D3PR5	11-Pin Octal	D3PA3-A2 D3PA5 D3PA7	PQC-1351 Not Available PQC-1332

Industrial Logic

Relays

PRODUCT SELECTION

General Purpose Plug-In Relays — D3 Series

D3 Series

Coil Voltage	Catalog Number
--------------	----------------

Standard DPDT with Test Button

12V ac	D3PR2R
24V ac	D3PR2T
120V ac	D3PR2A
240V ac	D3PR2B
12V dc	D3PR2R1
24V dc	D3PR2T1
110V dc	D3PR2A1

DPDT Full Featured Relay

24V ac	D3PF2AT
120V ac	D3PF2AA
240V ac	D3PF2AB
12V dc	D3PF2AR1
24V dc	D3PF2AT1
110V dc	D3PF2AA1

Standard 3PDT with Test Button

24V ac	D3PR3T
120V ac	D3PR3A
240V ac	D3PR3B
12V dc	D3PR3R1
24V dc	D3PR3T1
110V dc	D3PR3A1

3PDT Full Featured Relay

24V ac	D3PF3AT
120V ac	D3PF3AA
240V ac	D3PF3AB
24V dc	D3PF3AT1
110V dc	D3PF3AA1

DPDT Latching ^①

24V ac	D3PR5T
120V ac	D3PR5A

^① CSA approval is not applicable to D3PR5 Latching Relays.

D3 Series Sockets and Accessories

Description	Standard Pack	Catalog Number
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DIN-Rail Sockets

2-Pole (8-Pin)	10	D3PA2
2-Pole (8-Pin) Finger-Safe ^①	10	D3PA6
3-Pole (11-Pin)	10	D3PA3-A2
3-Pole (11-Pin) Finger-Safe ^①	10	D3PA7

Panel Mount Sockets

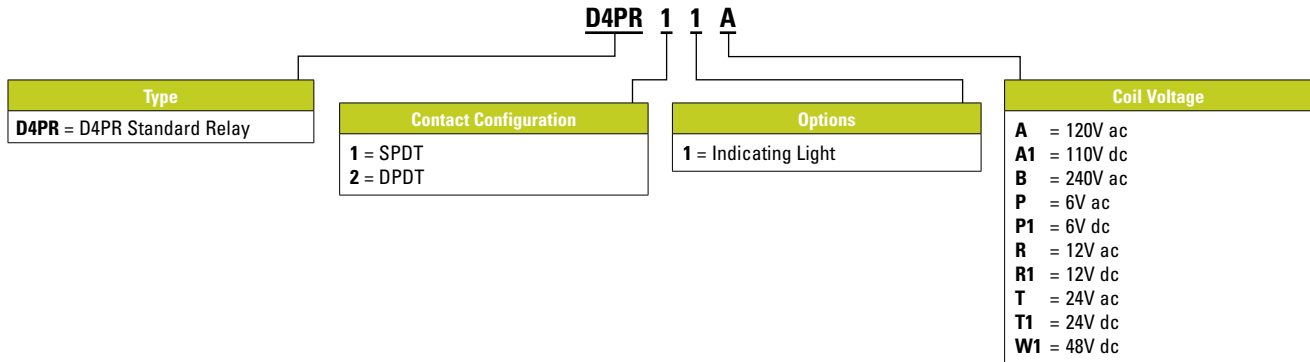
2-Pole	10	D3PA4
3-Pole	10	D3PA5

Accessories

Hold Down Clip	10	PQC-1344
Hold Down Clip	25	PQC-1332
Hold Down Clip	10	PQC-1351
Hold Down Clip	100	PWC-1325
Coil Buss Jumper for D3PA6 & D3PA7	25	D3PJ1
DIN-Rail End Stop	100	FFP-M

^① IP20 rated.

General Purpose Plug-In Relays — D4 Series — Catalog Numbering System ①



① For deciphering Catalog Numbers. Do not use for ordering as not all combinations are readily available.

General Purpose Plug-In Relays — D4 Series

- Slim-styled power relay
- Socket has built-in hold-down clip
- Panel or DIN-Rail mounting



Relay / Socket Quick Reference

Relay Type	Socket	Hold Down Clip
D4PR1	D4PA1	①
D4PR2	D4PA2	①

① Socket has built-in hold down spring.

D4 Series

Coil Voltage	Catalog Number
Standard SPDT	
24V ac 120V ac	D4PR1T D4PR1A
24V dc	D4PR1T1
SPDT with Indicating Light	
24V ac 120V ac	D4PR11T D4PR11A
24V dc	D4PR11T1
Standard DPDT	
24V ac 120V ac	D4PR2T D4PR2A
12V dc 24V dc	D4PR2R1 D4PR2T1
DPDT with Indicating Light	
120V ac	D4PR21A
24V dc	D4PR21T1
DIN-Rail Sockets	
1-Pole 2-Pole	D4PA1 D4PA2
Accessories	
DIN-Rail End Stop	PFP-M

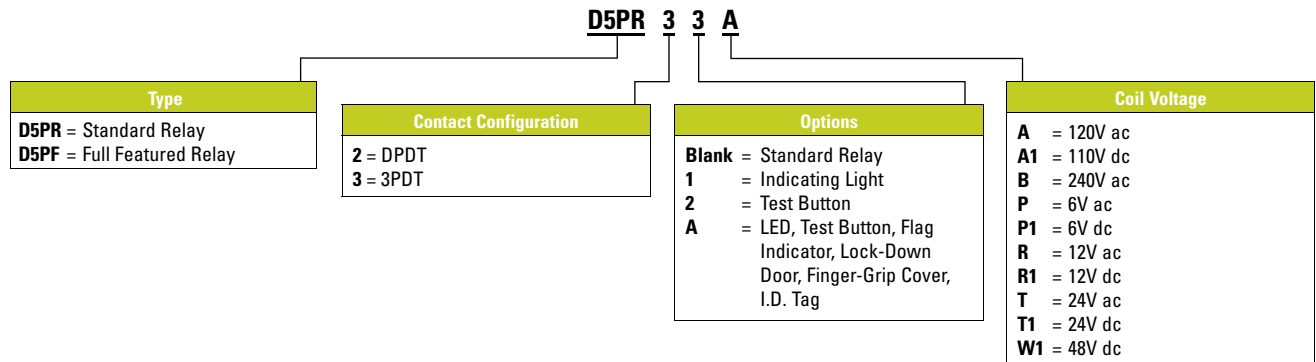
② Additional coil voltages available — consult Sales Office or Customer Support Center.

Industrial Logic

Relays

CATALOG SELECTION / PRODUCT SELECTION

General Purpose Plug-In Relays — D5 Series — Catalog Numbering System ①



① For deciphering Catalog Numbers. Do not use for ordering as not all combinations are readily available.

General Purpose Plug-In Relays — D5 Series

- Industrial rated 300V, 15A relay in 2-pole and 3-pole configurations
- Compact design can be panel or DIN-Rail mounted



Relay / Socket Quick Reference

Relay Type	Socket Type	Socket	Hold Down Spring
D5PR2	11-Pin Screw	D5PA2	D5PB2
	11-Pin Solder	D5PA3S or D5PA3L	D5PB2
D5PR3	11-Pin Screw	D5PA2	D5PB2
	11-Pin Solder	D5PA3S or D5PA3L	D5PB2
D5PF2/D5PF3	11-Pin Screw	D5PA2	PWC-1351
	11-Pin Solder	D5PA3S or D5PA3L	PWC-1325

General Purpose Plug-In Relays

D5 Series

Coil Voltage	Catalog Number
--------------	----------------

DPDT

24V ac 120V ac 240V ac	D5PR2T D5PR2A D5PR2B
12V dc 24V dc 110V dc	D5PR2R1 D5PR2T1 D5PR2A1

DPDT with Indicating Light

120V ac	D5PR21A
---------	---------

DPDT with Test Button

120V ac	D5PR22A
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3PDT

24V ac 120V ac 240V ac	D5PR3T D5PR3A D5PR3B
12V dc 24V dc 110V dc	D5PR3R1 D5PR3T1 D5PR3A1

3PDT with Indicating Light

120V ac	D5PR31A
24V dc	D5PR31T1

3PDT with Test Button

120V ac	D5PR32A
---------	---------

DPDT — 11-Pin Screw

24V ac 120V ac 240V ac 12V dc 24V dc 110V dc	D5PF2AT D5PF2AA D5PF2AB D5PF2AR1 D5PF2AT1 D5PF2AA1
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3PDT — 11-Pin Solder

24V ac 120V ac 240V ac 12V dc 24V dc 110V dc	D5PF3AT D5PF3AA D5PF3AB D5PF3AR1 D5PF3AT1 D5PF3AA1
---	---

D5 Series Sockets and Accessories

Description	Standard Pack	Catalog Number
-------------	---------------	----------------

DIN-Rail or Panel Mounting

Screw Terminal Socket	10	D5PA2
Hold Down Spring	100	D5PB2
Hold Down Clip	100 100	PMC-1325 PMC-1351
End Clamp with Mounting Screw (use with track below, one at each end)	100	PPF-M
35 mm x 7.5 mm Aluminum DIN Mounting Track (1 meter lengths)	20	D5PD2-20

Panel Mount Socket — Square Base

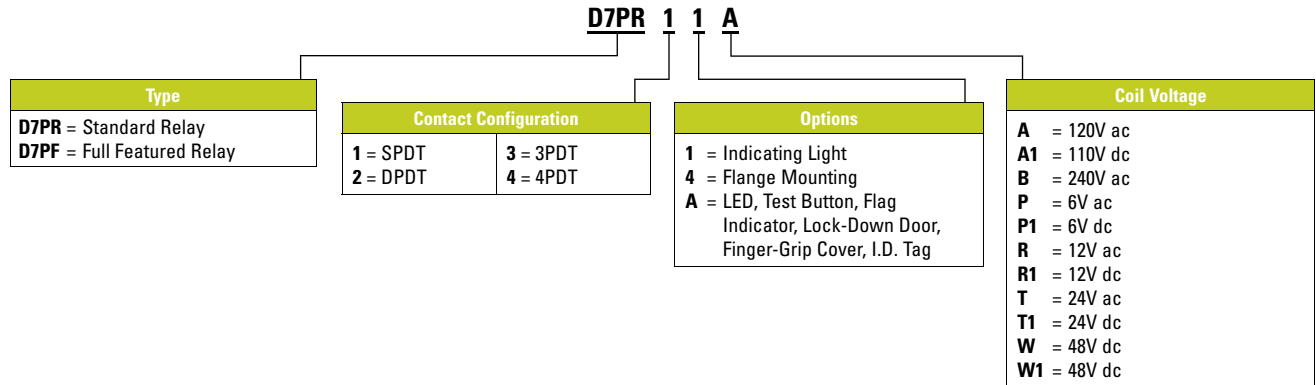
Long 0.130" Solder	10	D5PA3L
Standard 0.130" Solder	10	D5PA3S

Industrial Logic

Relays

CATALOG SELECTION / PRODUCT SELECTION

General Purpose Plug-In Relays — D7 Series — Catalog Numbering System ①



① For deciphering Catalog Numbers. Do not use for ordering as not all combinations are readily available.

General Purpose Plug-In Relays — D7 Series

- Arc barrier equipped relay with high dielectric strength
- Panel, DIN-Rail and flange mounting



Relay / Socket Quick Reference

Relay Type	Socket	Hold Down Spring
D7PR1	D7PA2 / D7PA5	PMC-A1
D7PR2	D7PA2 / D7PA5	PMC-A1
D7PR3	D7PA3	PYC-B2
D7PR4	D7PA4	PYC-B2
D7PF1 / D7PF2	D7PA9 / D7PA5	PQC-1342
D7PF1 / D7PF2	D7PAA	PQC-1349
D7PF3	D7PA3	N/A
D7PF4	D7PA4	N/A
D7PF3	D7PAB	PQC-1350
D7PF4	D7PAD	PQC-1351

General Purpose Plug-In Relays

D7 Series

Coil Voltage	Catalog Number
--------------	----------------

Standard SPDT

24V ac 120V ac 240V ac	D7PR1T D7PR1A D7PR1B
6V dc 12V dc 24V dc	D7PR1P1 D7PR1R1 D7PR1T1

SPDT with Indicating Light

24V ac 120V ac	D7PR11T D7PR11A
24V dc	D7PR11T1

SPDT Flange Mount

120V ac	D7PR14A
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SPDT Full Featured Relay

120V ac 110V dc 12V dc 24V ac 24V dc	D7PF1AA D7PF1AA1 D7PF1AR1 D7PF1AT D7PF1AT1
--	--

Standard DPDT

24V ac 120V ac 240V ac	D7PR2T D7PR2A D7PR2B
12V dc 24V dc 48V dc 110V dc	D7PR2R1 D7PR2T1 D7PR2W1 D7PR2A1

DPDT Full Featured Relay

120V ac 110V dc 240V ac 12V dc 24V ac 24V dc	D7PF2AA D7PF2AA1 D7PF2AB D7PF2AR1 D7PF2AT D7PF2AT1
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DPDT Flange Mount

24V ac 120V ac	D7PR24T D7PR24A
-------------------	--------------------

Standard 3PDT

120V ac	D7PR3A
12V dc 24V dc	D7PR3R1 D7PR3T1

3PDT with Indicating Light

120V ac	D7PR31A
12V dc 24V dc	D7PR31R1 D7PR31T1

D7 Series (Continued)

Coil Voltage	Catalog Number
--------------	----------------

3PDT Flange Mount

120V ac	D7PR34A
---------	---------

3PDT Full Featured Relay

120V ac 110V dc 240V ac 12V dc 24V ac 24V dc	D7PF3AA D7PF3AA1 D7PF3AB D7PF3AR1 D7PF3AT D7PF3AT1
---	---

Standard 4PDT

Coil Voltage: 24V ac 120V ac	D7PR4T D7PR4A
24V dc 110V dc	D7PR4T1 D7PR4A1

4PDT Full Featured

Coil Voltage: 120V ac 240V ac 12V ac 12V dc 24V ac 24V dc 48V dc	D7PF4AA D7PF4AB D7PF4AR D7PF4AR1 D7PF4AT D7PF4AT1 D7PF4AW1
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4PDT Flange Mount

120V ac	D7PR44A
24V dc	D7PR44T1

D7 Series Sockets and Accessories

Description	Standard Pack	Catalog Number
-------------	---------------	----------------

DIN-Rail Mount Sockets

1- and 2-Pole	10	D7PA2
1- and 2-Pole Finger-Safe ①	10	D7PAA
3-Pole	10	D7PA3
3-Pole Finger-Safe ①	10	D7PAB
4-Pole	10	D7PA4
4-Pole Finger-Safe ①	10	D7PAD

Panel Mount Sockets

1- and 2-Pole	10	D7PA5
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Accessories

Spring Clip	100	PMC-A1
DIN-Rail End Stop	100	PPF-M
Hold Down Spring	100	PYC-B2

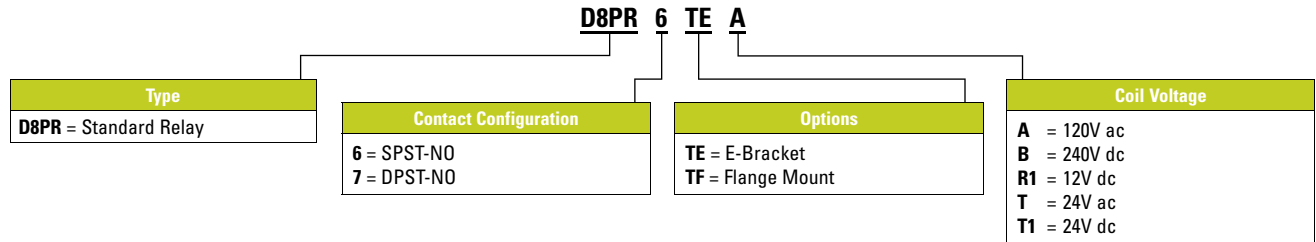
① IP20 rated.

Industrial Logic

Relays

CATALOG SELECTION / PRODUCT SELECTION

General Purpose Plug-In Relays — D8 Series — Catalog Numbering System ①



① For deciphering Catalog Numbers. Do not use for ordering as not all combinations are readily available.

General Purpose Plug-in Relays — D8 Series

- Allows switching of 25A and 30A loads
- A high-capacity, high-withstand voltage relay compatible with momentary voltage drops
- No contact chattering for momentary voltage drops up to 50% of rated voltage



Relay/Socket Quick Reference

Relay Type	Mounting Bracket	Adapter Track/ Panel Mount	Front Connecting Sockets Track/ Panel Mount
D8PR6TE	D8PA5	D8PA1	D8PA2
D8PR7TE	D8PA5	D8PA1	D8PA2

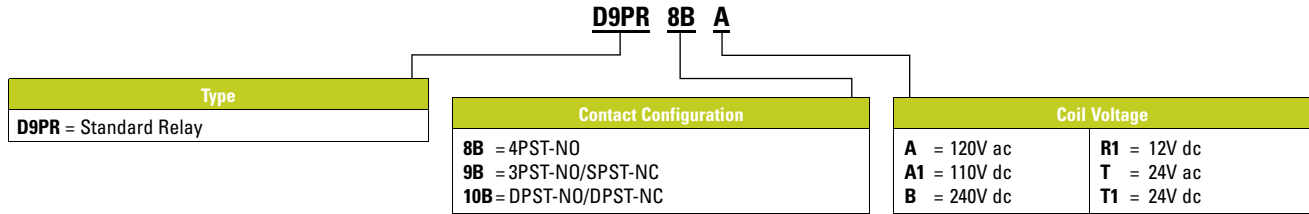
D8 Series Sockets and Accessories

Description	Standard Pack	Catalog Number
Sockets		
DIN-Rail Adapter	10	D8PA1
Screw Terminal Adapter	10	D8PA2
Bracket Adapter	10	D8PA5
Accessory		
DIN-Rail End Stop	100	PPF-M

D8 Series

Coil Voltage	Catalog Number
SPST E-Bracket	
24V ac	D8PR6TET
24V dc	D8PR6TET1
SPST Flange Mount	
120V ac	D8PR6TFA
24V dc	D8PR6TFT1
DPST E-Bracket	
120V ac	D8PR7TEA
DPST Flange Mount	
120V ac	D8PR7TFA
24V dc	D8PR7TFT1

General Purpose Plug-In Relays — D9 Series — Catalog Numbering System ①



① For deciphering Catalog Numbers. Do not use for ordering as not all combinations are readily available.

General Purpose Plug-In Relays — D9 Series

- Ideal for 3-phase motor control applications
- No contact chattering for momentary voltage drops up to 50% of rated voltage
- Push-to-test button is a standard feature to check contact operation



D9 Series

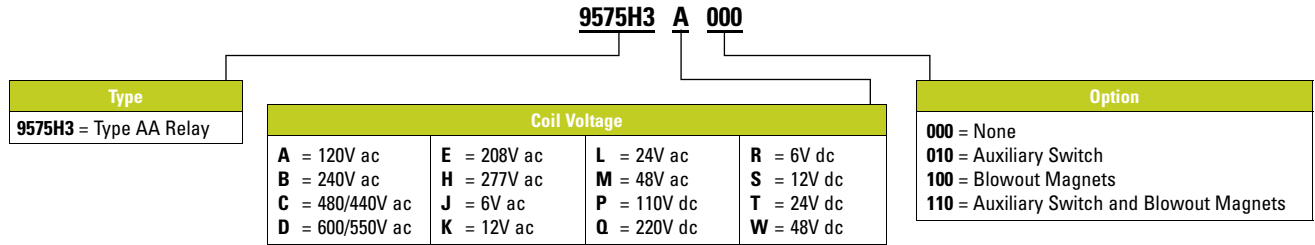
Coil Voltage	Catalog Number
4PST-NO-Power Relay	
24V ac	D9PR8BT
120V ac	D9PR8BA
240V ac	D9PR8BB
24V dc	D9PR8BT1
3PST-NO/SPST-NC Power Relay	
120V ac	D9PR9BA
DPST-NO/DPST-NC Power Relay	
24V ac	D9PR10BT
120V ac	D9PR10BA
24V dc	D9PR10BT1

Industrial Logic

Relays

CATALOG SELECTION / PRODUCT SELECTION

General Purpose Type AA Relays — Catalog Numbering System



General Purpose Type AA Relays

- Type AA panel mounted relays are rated (each pole) 40A up to 300V ac, 50/60 Hz; 5A @ 480/600V ac, 50/60 Hz and 40A @ 28V dc
- 9575H Series 3000 relays are ideal for applications when controlling smaller loads such as single-phase motors



Type AA Relays

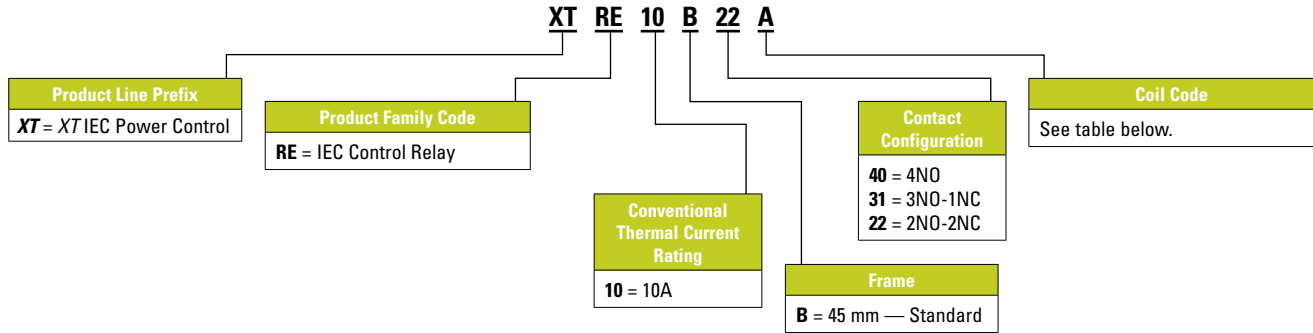
Relay Style	Catalog Number ①
Relay (DPDT)	9575H3_000
Relay with Auxiliary Switch	9575H3_010
Relay with Blowout Magnets	9575H3_100
Relay with Auxiliary Switch and Blowout Magnets	9575H3_110

① Underscore indicates missing coil voltage suffix code. See table below.

Coil Voltage Selection Table

Coil Voltage	Hz	Suffix Code
Volts AC		
120	50/60	A
240	50/60	B
480/440	60/50	C
600/550	60/50	D
208	50/60	E
277	50/60	H
6	50/60	J
12	50/60	K
24	50/60	L
48	50/60	M
Volts DC		
110	—	P
220	—	Q
6	—	R
12	—	S
24	—	T
48	—	W

XTRE Control Relays — Catalog Numbering System



XTRE Control Relays

- 16A conventional thermal current (open at 60°C I_{th})
- 4-pole configurations
 - 4NO
 - 3NO – 1NC
 - 2NO – 2NC
- Expandable to 8-pole with add-on front-mount auxiliary contacts
- Built-in surge suppression on dc coils



Control Relays

Conventional Thermal Current I_{th} (A), Open at 60°C	Contact Configuration	Rated Operational Current AC-15 I_e (A)			Circuit Symbol	Catalog Number — Screw Terminals ①
		220 – 240V	380 – 414V	500V		
16	4NO	6	4	1.5		XTRE10B40_
16	3NO-1NC	6	4	1.5		XTRE10B31_
16	2NO-2NC	6	4	1.5		XTRE10B22_ ②

① Underscore (_) indicates magnet coil suffix required. See table below.

② DC operated control relays XTRE(C)10B22_ can only be combined with 2-pole auxiliary contacts.

Coil Voltage Suffix

Coil Voltage	Suffix Code
110V 50 Hz, 120V 60 Hz	A
220V 50 Hz, 240V 60 Hz	B
24V 50/60 Hz	T
24V dc	TD
415V 50 Hz, 480V 60 Hz	C
550V 50 Hz, 600V 60 Hz	D
208V 60 Hz	E





Industrial Logic

Relays

PRODUCT SELECTION

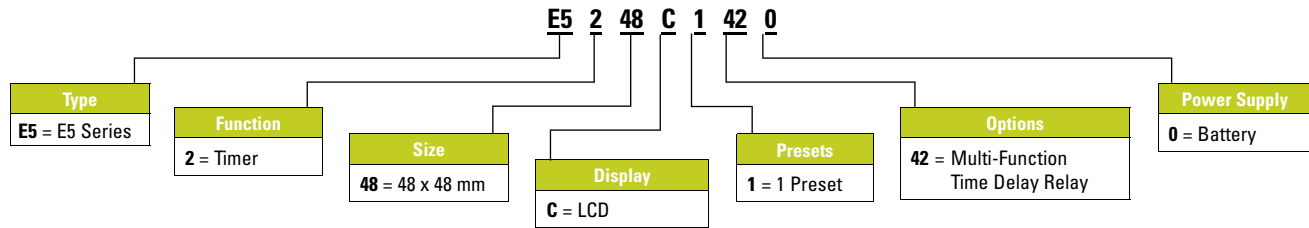
XTRE Control Relays

Front Mount Auxiliary Contacts for Use with XTRE Control Relays ①

Conventional Thermal Current I_{th} (A), Open at 60°C	Poles	Rated Operational Current AC-15 I_e (A)			Contact Configuration	Circuit Symbol	Package Quantity	Catalog Number — Screw Terminals
		220V 230V 240V	380V 400V 415V	500V				
16	2	6	3	1.5	2NO		5	XTCEXFAC20
16	2	6	3	1.5	1NC-1NC		5	XTCEXFAC11
16	4	6	3	1.5	4NO		5	XTCEXFAC40
16	4	6	3	1.5	2NO-2NC		5	XTCEXFAC22

① Interlocked opposing contacts, to IEC/EN 60947-5-1 Annex L (positively driven), within the auxiliary contact modules (not NOE and NCL contacts) and between the auxiliary contacts and built-in contacts of the XTRE control relays.

Battery-Powered LCD Time Control — Catalog Numbering System



Battery-Powered LCD Time Control

- No external voltage supply, because of internal replaceable lithium battery
- High contrast, 2-line LCD display, 5-digit with many symbols for easy operation and reading
- 9 programmable time ranges from 0.20 seconds up to 99.999 hours
- 8 timing modes —
 - ON Delay, OFF Delay, One Shot and Single Shot
 - Repeat cycle modes: Delay, Cycle, Symmetrical Delay



Battery-Powered Time Control

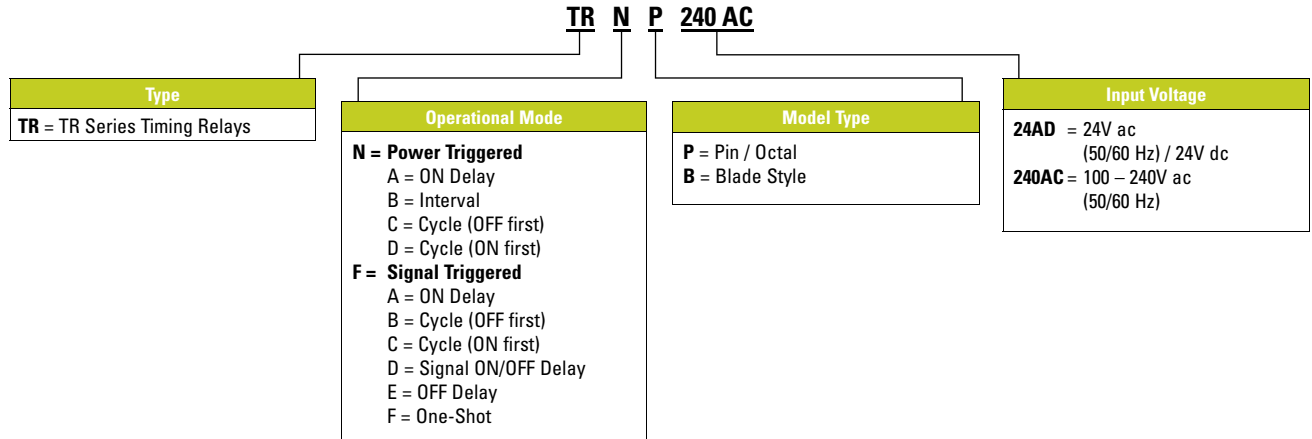
Description	Catalog Number
Battery-Powered LCD Time Control, 1.89 x 1.89 Inch (48 x 48 mm)	E5-248-C1420

Industrial Logic

Relays

CATALOG SELECTION / PRODUCT SELECTION

TR Series Timing Relays — Catalog Numbering System



TR Series Timing Relays

- 20 time ranges and 10 timing functions
- Time delays from 0.1 sec to 600 hrs
- Space-saving, compact package
- 2 Form C DPDT delayed output contacts
- 10A contact rating



TR Plug-In Timing Relays

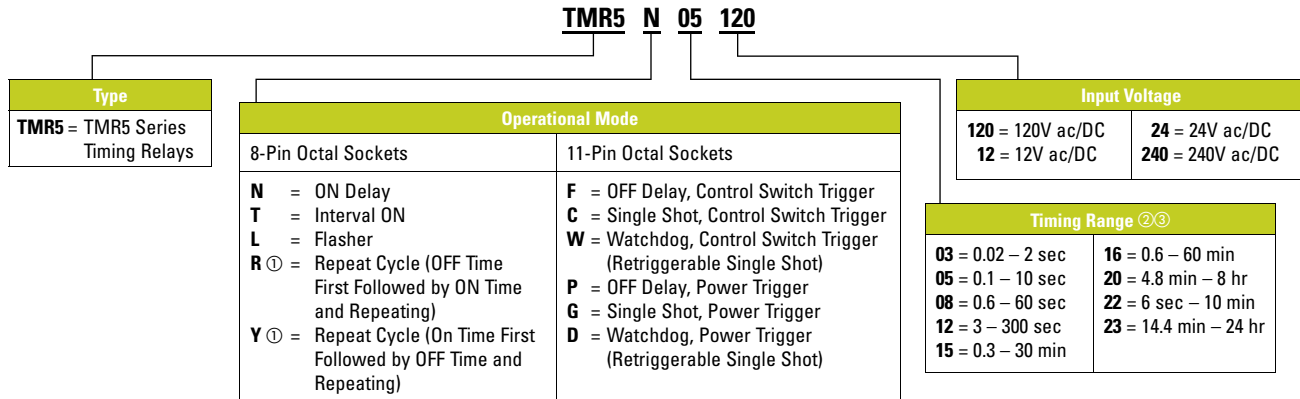
Coil Voltage	Octal	Blade
	Catalog Number	Catalog Number
Power Triggered		
24V ac/dc	TRNP24AD	TRNB24AD
100 – 240V ac	TRNP240AC	TRNB240AC
Signal Triggered		
24V ac/dc	TRFP24AD	TRFB24AD
100 – 240V ac	TRFP240AC	TRFB240AC

Socket for Use with TR Timers — Accessories

Timing Relay	Terminal Style	Catalog Number ①
TRNP	8-Pin Octal	D3PA2
TRFP	11-Pin Octal	D3PA3
TRNB, TRFB	0.187" Solder / QC Terminals (blade style)	D5PA2

① Standard pack of 10.

TMR5 Series Timing Relays — Catalog Numbering System



① Indicates DUAL knob unit. All dual knob units can have independently selectable and adjustable ON and OFF times. If different ON and OFF times are desired, add two codes for time ranges in the part number. The first code listed indicates the first timing range of the unit (OFF time for R, ON time for Y) and the second code indicates the second timing range (ON time for R, OFF Time for Y).

② Any time range can be created as a custom unit. Contact Eaton for details.

③ Fixed Time Delay settings are available for orders of 50 pieces or more.

TMR5 Series Timing Relays

- Single timing range for each unit
- Ranges available from 0.02 sec to 24 hours
- Wide variety of functions available
- 10A DPDT output contacts



TMR5 Time Delay Relays

Input Voltage	Socket	Timing Range	Catalog Number
ON Delay			
120V ac/DC	8-Pin	0.1 – 10 sec	TMR5N05120
120V ac/DC		0.6 – 60 sec	TMR5N08120
24V ac/DC		0.1 – 10 sec	TMR5N0524
24V ac/DC		0.6 – 60 sec	TMR5N0824

OFF Delay, Control Switch Trigger

120V ac/DC	11-Pin	0.1 – 10 sec	TMR5F05120
120V ac/DC		0.6 – 60 sec	TMR5F08120
24V ac/DC		0.1 – 10 sec	TMR5F0524
24V ac/DC		0.6 – 60 sec	TMR5F0824

Interval ON

120V ac/DC	8-Pin	0.1 – 10 sec	TMR5T05120
120V ac/DC		0.6 – 60 sec	TMR5T08120
24V ac/DC		0.1 – 10 sec	TMR5T0524
24V ac/DC		0.6 – 60 sec	TMR5T0824

TMR5 Time Delay Relays (Continued)

Input Voltage	Socket	Timing Range	Catalog Number
Single Shot, Control Switch Trigger			
120V ac/DC	11-Pin	0.1 – 10 sec	TMR5C05120
120V ac/DC		0.6 – 60 sec	TMR5C08120
24V ac/DC		0.1 – 10 sec	TMR5C0524
24V ac/DC		0.6 – 60 sec	TMR5C0824

Repeat Cycle (OFF Time First Followed by ON Time and Repeating)

120V ac/DC	8-Pin	0.1 – 10 sec	TMR5R05120
120V ac/DC		0.6 – 60 sec	TMR5R08120
24V ac/DC		0.1 – 10 sec	TMR5R0524
24V ac/DC		0.6 – 60 sec	TMR5R0824

Repeat Cycle (ON Time First Followed by OFF Time and Repeating)

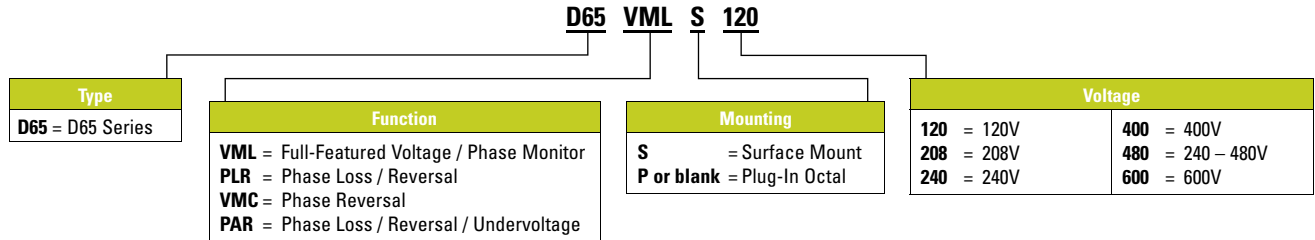
120V ac/DC	8-Pin	0.1 – 10 sec	TMR5Y05120
120V ac/DC		0.6 – 60 sec	TMR5Y08120
24V ac/DC		0.1 – 10 sec	TMR5Y0524
24V ac/DC		0.6 – 60 sec	TMR5Y0824

Industrial Logic

Relays

CATALOG SELECTION / PRODUCT SELECTION

D65 Series Monitoring Relays — Catalog Numbering System



D65 Series Full-Featured Monitoring Relays

- Full-featured voltage / phase monitoring relays
- Undervoltage, overvoltage, phase imbalance, phase loss (single-phasing), phase reversal
- Universal voltage range of 208 – 480V provides the flexibility to cover a variety of applications; 120V and 600V units also available
- Automatic or manual reset after the fault condition is corrected
- User-adjustable settings include nominal voltage, percent phase imbalance, undervoltage drop-out, time delay on undervoltage and time delay on restart after fault



D65VML Series

Style	Operating Voltage, 50/60 Hz	Catalog Number
Surface-Mount (DIN-Rail or Panel)	120V 208 – 480V 600V	D65VMLS120 D65VMLS480 D65VMLS600
Plug-In (DIN-Rail)	120V 208 – 480V	D65VMLP120 D65VMLP480 ①
8-Pin Socket	—	D3PA2
8-Pin IP20 Rated Socket	—	D3PA6

① Requires a 600V rated socket when used on system voltages greater than 300V. The D3PA2 socket is rated 10A, 600V.

D65 Series Phase Reversal Monitoring Relays

- Protects against phase reversal
- One version works on 208 – 480V three-phase systems
- 10A SPDT output contacts



D65VMC Series

Mounting Style	Nominal Voltage 50/60 Hz	Catalog Number
Plug-in	120V	D65VMC120
Plug-in	208 – 480V	D65VMC480 ①

① Requires a 600V rated socket when used on system voltages greater than 300V.

D65 Series Phase Loss and Reversal Monitoring Relays

- Protects against phase loss and phase reversal
- LED indicates both normal and fault conditions
- 10A SPDT output contacts



D65PLR Series

Mounting Style	Nominal Voltage 50/60 Hz	Catalog Number
Plug-In	120V	D65PLR120
Plug-In	208V	D65PLR208
Plug-In	240V	D65PLR240
Plug-In	400V	D65PLR400 ①
Plug-In	480V	D65PLR480 ①

① Requires a 600V rated socket when using on system voltages greater than 300V.

D65 Series Phase Loss, Reversal and Undervoltage

- Protects against phase loss, phase reversal and undervoltage
- Undervoltage setting is adjustable from 75% to 95% of nominal
- LED indicates both normal and fault conditions
- 10A SPDT output contacts



D65PAR Series

Mounting Style	Nominal Voltage 60 Hz	Undervoltage Range	Catalog Number
Plug-In	120V	90 – 115V	D65PAR120
Plug-In	208V	156 – 198V	D65PAR208
Plug-In	240V	180 – 230V	D65PAR240
Plug-In	400V	300 – 380V	D65PAR400 ①
Plug-In	480V	360 – 460V	D65PAR480 ①

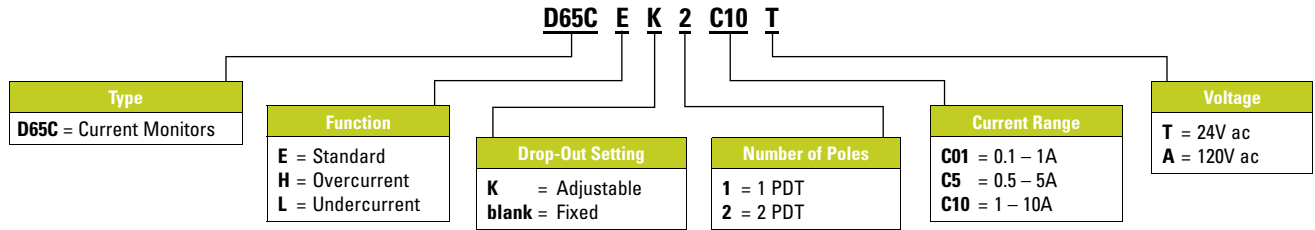
① Requires a 600V rated socket when using on system voltages greater than 300V.

Industrial Logic

Relays

CATALOG SELECTION / PRODUCT SELECTION

D65C Series Current Monitoring Relays — Catalog Numbering System



D65C Standard Current Monitoring Relays

- Monitors AC single-phase currents
- Three separate current monitoring ranges covering 0.1 – 10 amperes
- External CT can be used to extend ranges
- Fixed 100ms pick-up and drop-out time delay



D65C Series, Standard Current Monitors

Pick-Up Setting	Drop-Out Setting	Input Voltage	Current Range Monitored	Catalog Number
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SPDT — 8-Pin Plug-In

Adjustable	Fixed (at 95% of pick-up)	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CE1C01T D65CE1C5T D65CE1C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CE1C01A D65CE1C5A D65CE1C10A
Adjustable	Adjustable (50 – 95% of pick-up)	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CEK1C01T D65CEK1C5T D65CEK1C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CEK1C01A D65CEK1C5A D65CEK1C10A

DPDT — 11-Pin Plug-In

Adjustable	Fixed (at 95% of pick-up)	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CE2C01T D65CE2C5T D65CE2C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CE2C01A D65CE2C5A D65CE2C10A
Adjustable	Adjustable (50 – 95% of pick-up)	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CEK2C01T D65CEK2C5T D65CEK2C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CEK2C01A D65CEK2C5A D65CEK2C10A



D65C Overcurrent Monitoring Relays

- Monitors AC single-phase currents for overcurrent conditions
- Three separate current monitoring ranges covering 0.1 – 10 amperes
- External CT can be used to extend ranges
- Adjustable pick-up setting with either fixed or adjustable drop-out setting
- Adjustable time delay of 0.1 – 10 seconds on pick-up
- Fixed 100ms time delay on drop-out
- LED indicates output

D65C Series, Overcurrent Monitors

Pick-Up Setting	Drop-Out Setting	Input Voltage	Current Range Monitored	Catalog Number
-----------------	------------------	---------------	-------------------------	----------------

SPDT — 8-Pin Plug-In

Adjustable	Fixed (at 95% of pick-up)	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CH1C1T D65CH1C5T D65CH1C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CH1C1A D65CH1C5A D65CH1C10A
Adjustable	Adjustable (50 – 95% of pick-up)	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CHK1C1T D65CHK1C5T D65CHK1C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CHK1C1A D65CHK1C5A D65CHK1C10A

DPDT — 11-Pin Plug-In

Adjustable	Fixed (at 95% of pick-up)	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CH2C1T D65CH2C5T D65CH2C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CH2C1A D65CH2C5A D65CH2C10A
Adjustable	Adjustable (50 – 95% of pick-up)	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CHK2C1T D65CHK2C5T D65CHK2C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CHK2C1A D65CHK2C5A D65CHK2C10A

Industrial Logic

Relays

PRODUCT SELECTION

D65C Undercurrent Monitoring Relays

- Monitors AC single-phase currents for undercurrent conditions
- Three separate current monitoring ranges covering 0.1 – 10 amperes
- External CT can be used to extend ranges
- Adjustable drop-out setting with fixed pick-up setting
- Adjustable time delay of 0.1 – 10 seconds on drop-out
- Fixed 100ms time delay on pick-up



D65C Series, Undercurrent Monitors

Pick-Up Setting	Drop-Out Setting	Input Voltage	Current Range Monitored	Catalog Number
-----------------	------------------	---------------	-------------------------	----------------

SPDT — 8-Pin Plug-In

Fixed (at 5% of drop-out)	Adjustable	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CL1C1T D65CL1C5T D65CL1C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CL1C1A D65CL1C5A D65CL1C10A

SPDT — 11-Pin Plug-In

Fixed (at 5% of drop-out)	Adjustable	24V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CL2C1T D65CL2C5T D65CL2C10T
		120V ac	0.1 – 1A 0.5 – 5A 1 – 10A	D65CL2C1A D65CL2C5A D65CL2C10A

Modularly Manage More I/O



EATON
Powering Business Worldwide

- Machine operator interface, logic and high-speed counting in one integrated controller
- Lower costs using intelligent relays to replace timers, relays and expandable I/O
- Small, yet scalable controllers with multiple I/O options and multi-vendor communications
- Low cost add-on I/O and communications enables creation of distributed control systems

Industrial Logic

Programmable Logic Controllers

PRODUCT OVERVIEW

Programmable Logic Controllers — Product Overview

				
Description	Fusion Integrated Machine Controller	EZ Relay EZ500 / EZ700 / EZ800	EZ Relay EZD	ELC PA / PB / PC / PH / PV
Page	Page 171	Page 172	Page 174	Page 175

User Interface

LCD Display (text / graphics)	3, 4 or 5-Line Text (embedded)	4-Line Text (embedded)	4-Line Text & Graphics (embedded)	Text & Graphics thru HMI or ELC-GP (external)
7-Segment Display	—	—	4 Characters (simulated)	PA Only = 2 Digital
Keypad for Programming	Yes	Optional	Optional	—
Hand-Held Programmer	—	—	—	Available for All
Potentiometers	Simulated Using Display	Simulated Using Optional Display	Simulated Using Optional Display	PC / PH = 2 Embedded

I/O Digital

Embedded Digital Input Types	3.5 – 30V dc	12V dc / 24V dc 24V ac or 110/240V ac	24V ac / 110/240V ac (using EZD I/O)	24V dc or 110/240V ac
Embedded Digital Output Types	24V dc Transistor or High Current Relay (5A resistive)	24V dc Transistor or High Current Relay (8A resistive)	24V dc Transistor or High Current Relay (8A resistive) (using EZD I/O)	24V dc Transistor or Relay
Embedded Digital Inputs / Outputs per Unit	10 Control Inputs 3 Counter Inputs / 2 Transistor 5 Relay	EZ500 = 8 / 4 EZ700 / 800 = 12 (6 or 8)	12 / 4 (using EZD I/O)	PA = 4 / 2 PB = 8 / 6 PC / PH = 8 / 4 PV = 16 / 12
Expansion Digital Input Types	—	24V dc or 110/240V ac	24V dc or 110/240V ac	24V dc or 110/240V ac
Expansion Digital Output Types	—	24V dc Transistor or High Current Relay (8A resistive)	24V dc Transistor or High Current Relay (8A resistive)	24V dc Transistor, Relay or High Current Relay (6A resistive)
Max. Digital I/O Includes Embedded & Expansion	20	EZ500 = 12 EZ700 / 800 = 40 EZ800 (link up to 8 expanded units using EZ-NET) = 320	(link up to 8 expanded units with EZ-NET) = 320	PA / PB / PC / PH = 112 In / 112 Out and Embedded PV = 240 In / 240 Out Embedded

I/O Analog

Embedded Analog Input Quantity and Types	2 @ 4-20 mA 2 @ 0-10V dc	Optional on DC Input Units EZ500 = 2 EZ700 = 4 EZ819 / 821 = N/A EZ820 / 822 = 1 All 0 to +10V dc	Optional on DC Input Units = 4 All 0 to +10V dc	PA = 2 @ Either -10 to +10V dc or -20 to +20 mA
Embedded Analog Input Resolution	6.5 Bit	10 Bit	10 Bit	12 Bit
Embedded Analog Outputs Quantity and Types	1 @ 4-20 mA 1 @ 0-10V dc	Optional EZ820 / 822 = 1 All 0 to +10V dc	Available Using EZD-RA17 or EZD-TA17 EZD I/O Modules = 1 All 0 to +10V dc	PA = 2 @ Either -10 to +10V dc or -20 to +20 mA
Embedded Analog Output Resolution	6.5 Bit	10 Bit	10 Bit	12 Bit
Expansion Analog Input Types	—	0	0	-10 to +10V dc or -20 to +20 mA
Expansion Analog Input Resolution	—	—	—	V = 12 Bits, I = 13 Bits ①
Expansion Analog Outputs Types	—	0	0	0 to +20 mA, +4 to +20 mA 0 to +10V dc, +2 to +10V dc ①

① Combo modules have slightly different specifications.

Programmable Logic Controllers — Product Overview

				
Description	Fusion Integrated Machine Control	EZ Relay EZ500 / EZ700 / EZ800	EZ Relay EZD	ELC PA / PB / PC / PH / PV

I/O Analog

Expansion Analog Output Resolution	—	—	—	Voltage = 14 Bit Current = 12 Bit
Max. Expansion Analog Inputs / Outputs	—	0 / 0	0 / 0	Up to 32 / Up to 32 (max. using 8 combo modules = 32 in + 16 out)

I/O Specialty Inputs

RTD PT100	—	—	—	4 Point Expansion Module
Thermocouple	—	—	—	4 Point Expansion Module

Programming

Programming Tools	Software or Front Panel	Software; On-Board Keypad; Memory Module Transfer	Software; On-Board Keypad; Memory Module Transfer	Software; Memory Module Transfer; Hand-Held Programmer
Program Size	100 Rungs with up to 6 Contacts and 1 Coil per Rung	EZ500 / 700 = 128 Rungs EZ800 = 256 Rungs	EZ800 = 256 Rungs	PB = 4k Steps PA / PC / PH = 8k Steps PV = 16k Steps
Programming Languages	Ladder	Ladder; Function Block	Ladder; Function Block	Instructions, Ladder, Sequential Function Chart
Timers	8	EZ500 / 700 = 16 EZ800 = 32	32	PB = 128 PA / PC / PH / PV = 244 Standard with Additional Timers for Subroutine and Retentive Applications
General Counters	8	EZ500 / 700 = 16 EZ800 = 32	32	PB = 128 PA / PC / PH = 235 PV = 253
High Speed Counters Quantity at Max Speed (pulse train output use may limit maximum counter frequency)	Up to 14 kHz with 5 Presets and Prewarn	<1 kHz	<3 kHz	PB = Up to 4, 2 at 20 kHz PA / PC = Up to 6, 1 at 30 kHz and 1 at 10 kHz PH = Up to 8, 1 at 100 kHz and 1 at 30 kHz PV = Up to 8, 2 at 200 kHz 2 at 20 kHz; and 2 at 10 kHz
Pulse Train Outputs Quantity at Max Speed (high speed input use may limit maximum speed for outputs)	—	—	—	PB = 2 at 10 kHz PA / PC = 1 at 30 kHz; and 1 at 10 kHz PH = 1 at 100 kHz; and 1 at 30 kHz PV = Up to 2 at 200 kHz; and 1 at 40 kHz
Real Time Clock	Yes	EZ500 = Optional EZ700 / 800 = Yes	Yes	PA / PC / PH / PV = Yes Not Available on PB

Industrial Logic

Programmable Logic Controllers

PRODUCT OVERVIEW

Programmable Logic Controllers — Product Overview

				
Description	Fusion Integrated Machine Control	EZ Relay EZ500 / EZ700 / EZ800	EZ Relay EZD	ELC PA / PB / PC / PH / PV

Communications

Ports	1 RS-232 / RS-485	Programming Only	Programming Only	1 RS-232 Slave or Programming 1 RS-485 Master or Slave
DeviceNet	—	EZ700 / 800 = Slave Only	EZ700 / 800 = Slave Only	PA / PB / PC / PH = Slave Only PV = Master and Slave
Ethernet Modbus	—	EZ700 / 800 = Slave Only	EZ700 / 800 = Slave Only	PA / PB / PC / PH = Slave Only PV = Limited Master and Slave
ASi	—	EZ700 / 800 = Slave Only	EZ700 / 800 = Slave Only	—
PROFIBUS	—	EZ700 / 800 = Slave Only	EZ700 / 800 = Slave Only	—
CanOpen	—	EZ700 / 800 = Slave Only	EZ700 / 800 = Slave Only	—
Modbus Serial	Slave Only	—	—	ASCII / RTU Master and Slave

General Specifications

Hazardous Location Class I, Division 2	—	Yes	—	Yes
Agency Certifications	UL / CUL / CE	UL / CSA / CE / C-Tick	UL / CSA / CE / C-Tick	UL / CUL / CE / C-Tick
Operating Temperature Range	0 to +50 °C (32 to 122 °F)	-25 to +55 °C (-13 to 131 °F)	-25 to +55 °C (-13 to 131 °F) Display -5 to +50 °C	0 to +55 °C (32 to 131 °F)
Storage / Transport Temperature Range	-20 to 70 °C (-4 to 158 °F)	-40 to 70 °C (-40 to 158 °F)	-40 to 70 °C (-40 to 158 °F)	-25 to 70 °C (-13 to 158 °F)
Nominal Operating Power	100 / 240V ac 24V dc 12V dc	100 / 240V ac 24V dc 12V dc	100 / 240V ac 24V dc	24V dc 110 / 240V ac using ELC Power Supply

Fusion® Integrated Machine Controller

- User-configurable operator interface with back-lit LCD display and 18-button tactile feedback keypad
- High-speed counter with 5 presets and prewarn, totalizer, batch counter and ratemeter
- 10 parameter sets
- 13 digital inputs
- (2) 4 – 20 mA inputs
- (2) 0 – 10V input
- (3) Form C, 2 Form A, 2 NPN transistor, (1) 4 – 20 mA, and (1) 0 – 10V output
- RS-232 and RS-485 serial communications
- 100-line ladder logic processor for ultimate flexibility
- Configuration software included
- Type 4X enclosure



Fusion Integrated Machine Control

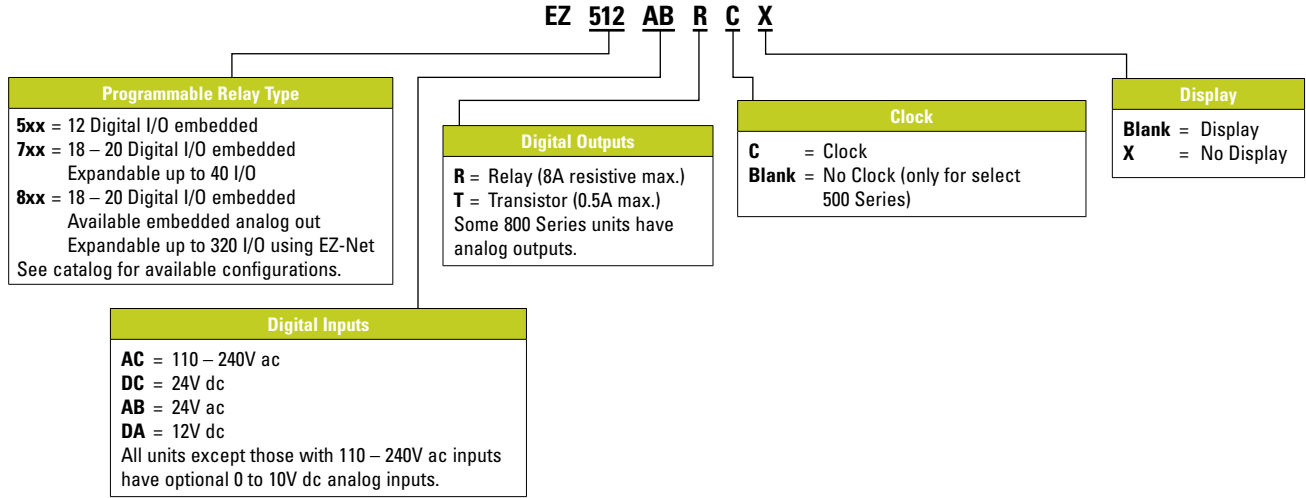
Description	Catalog Number
Fusion Integrated Machine Control — 10 – 30V dc Power	57550400
Fusion Integrated Machine Control — 85 – 265V ac Power	57551400

Industrial Logic

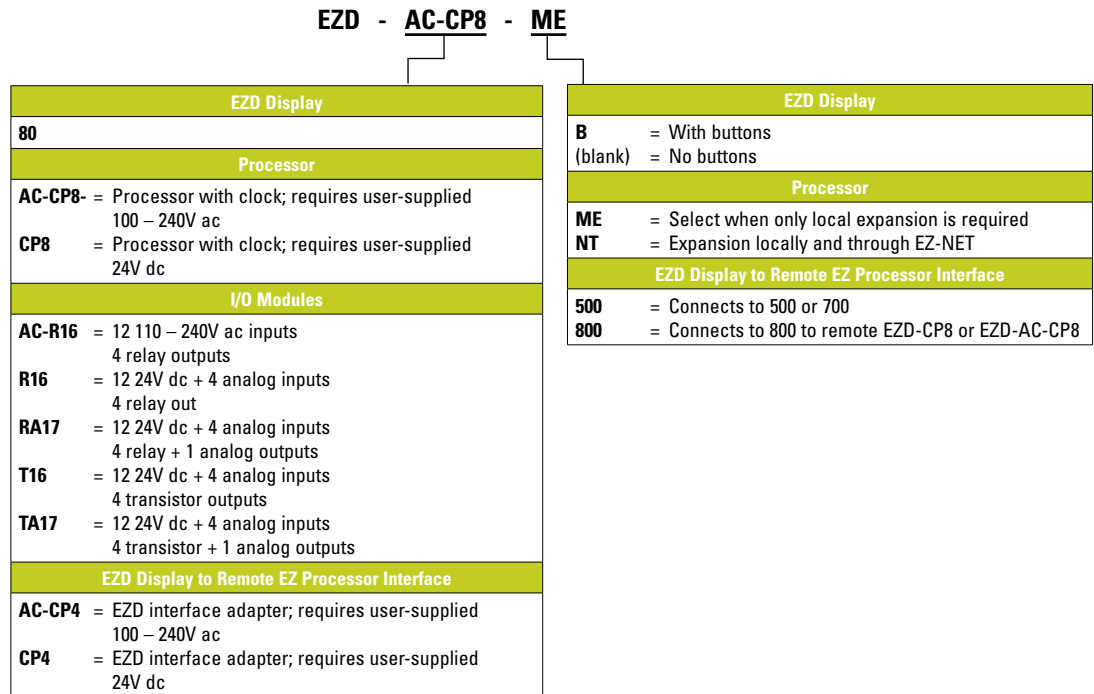
Programmable Logic Controllers

CATALOG SELECTION

EZ Intelligent Relay — Catalog Numbering System



EZD Intelligent Relay Displays and Controllers — Catalog Numbering System



EZ Intelligent Relays

- EZ500 Series — for controlling small applications with up to 12 input / output signals
- EZ700 Series — for controlling medium-sized applications with up to 40 input / output signals
- EZ800 Series — for controlling large-scale applications with up to 320 input / output signals; use EZ-NET for applications beyond 40 I/O
- EZD Series — for controlling applications with visualization. The EZD display can be linked to the EZ500 / 700 / 800 models for text only; graphics capabilities are available when using the CP8 modules



EZ500 Intelligent Relays

Description	Inputs					Outputs		Catalog Number
	24V ac	110 – 240V ac	12V dc	24V dc	Analog	Relay	Transistor	
12 I/O, Clock, Display	8	—	—	—	2	4	—	EZ512-AB-RC
12 I/O, Clock, No Display	8	—	—	—	2	4	—	EZ512-AB-RCX
12 I/O, No Clock, Display	—	8	—	—	—	4	—	EZ512-AC-R
12 I/O, Clock, Display	—	8	—	—	—	4	—	EZ512-AC-RC
12 I/O, Clock, No Display	—	8	—	—	—	4	—	EZ512-AC-RCX
12 I/O, Clock, Display	—	—	8	—	2	4	—	EZ512-DA-RC
12 I/O, Clock, No Display	—	—	8	—	2	4	—	EZ512-DA-RCX
12 I/O, No Clock, Display	—	—	—	8	2	4	—	EZ512-DC-R
12 I/O, Clock, Display	—	—	—	8	2	4	—	EZ512-DC-RC
12 I/O, Clock, No Display	—	—	—	8	2	4	—	EZ512-DC-RCX
12 I/O, Clock, Display	—	—	—	8	2	—	4	EZ512-DC-TC
12 I/O, Clock, No Display	—	—	—	8	2	—	4	EZ512-DC-TCX

Note: Analog inputs optional; use of analog inputs will result in a decrease in the same number of available digital inputs.

EZ700 Intelligent Relays

Description	Inputs					Outputs		Catalog Number
	24V ac	110 – 240V ac	12V dc	24V dc	Analog	Relay	Transistor	
18 I/O, Clock, Display	12	—	—	—	4	6	—	EZ719-AB-RC
18 I/O, Clock, No Display	12	—	—	—	4	6	—	EZ719-AB-RCX
18 I/O, Clock, Display	—	12	—	—	—	6	—	EZ719-AC-RC
18 I/O, Clock, No Display	—	12	—	—	—	6	—	EZ719-AC-RCX
18 I/O, Clock, Display	—	—	12	—	4	6	—	EZ719-DA-RC
18 I/O, Clock, No Display	—	—	12	—	4	6	—	EZ719-DA-RCX
18 I/O, Clock, Display	—	—	—	12	4	6	—	EZ719-DC-RC
18 I/O, Clock, No Display	—	—	—	12	4	6	—	EZ719-DC-RCX
20 I/O, Clock, Display	—	—	—	12	4	—	8	EZ721-DC-TC
20 I/O, Clock, No Display	—	—	—	12	4	—	8	EZ721-DC-TCX

Note: Analog inputs optional; use of analog inputs will result in a decrease in the same number of available digital inputs.

EZ800 Intelligent Relays

Description	Inputs			Outputs			Catalog Number
	110 – 240V ac	24V dc	Analog	Relay	Transistor	Analog	
18 I/O, Clock, Display	12	—	—	6	—	—	EZ819-AC-RC
18 I/O, Clock, No Display	12	—	—	6	—	—	EZ819-AC-RCX
18 I/O, Clock, Display	—	12	4	6	—	—	EZ819-DC-RC
18 I/O, Clock, No Display	—	12	4	6	—	—	EZ819-DC-RCX
19 I/O, Clock, Display	—	12	4	6	—	1	EZ820-DC-RC
19 I/O, Clock, No Display	—	12	4	6	—	1	EZ820-DC-RCX
20 I/O, Clock, Display	—	12	4	—	8	—	EZ821-DC-TC
20 I/O, Clock, No Display	—	12	4	—	8	—	EZ821-DC-TCX
21 I/O, Clock, Display	—	12	4	—	8	1	EZ822-DC-TC
21 I/O, Clock, No Display	—	12	4	—	8	1	EZ822-DC-TCX

Note: Analog inputs optional; analog outputs optional; use of analog inputs will result in a decrease in the same number of available digital inputs.

Industrial Logic

Programmable Logic Controllers

PRODUCT SELECTION

EZ Intelligent Relays

EZD Displays (EZD-80) and EZD Controllers (EZD-CP8)

Description	Catalog Number
EZD, No Buttons	EZD-80
EZD, Buttons	EZD-80-B
EZD CPU with 24V dc, Power Supply, Clock	EZD-CP8-ME
EZD CPU with 24V dc, Power Supply, Clock, EZ-Net	EZD-CP8-NT
EZD CPU with 100 – 240V ac, Power Supply, Clock	EZD-AC-CP8-ME
EZD CPU with 100 – 240V ac, Power Supply, Clock, EZ-Net	EZD-AC-CP8-NT

EZD Display to EZ Communication Modules (EZD-CP4)

Description	Catalog Number
EZD Display to EZ500/700 DC Communication Module. Use with EZ800 Communication Cable (EZD-CP4-800-CAB5)	EZD-CP4-500
EZD Display to EZ800 or EZD DC Powered Communication Module. Use with EZ800 Communication Cable (EZD-CP4-800-CAB5)	EZD-CP4-800
EZD Display to EZ500/700 AC Communication Module with EZ500/700 Communication Cable (EZD-CP4-500-CAB5)	EZD-AC-CP4-500
EZD Display to EZ800 or EZD AC Powered Communication Module. Use with EZ800 Communication Cable (EZD-CP4-800-CAB5)	EZD-AC-CP4-800

EZD Controller I/O Modules

Description	Inputs			Outputs			Catalog Number
	110 – 240V ac	24V dc	Analog	Relay	Transistor	Analog	
16 I/O	12	—	—	4	—	—	EZD-AC-R16 EZD-R16 EZD-RA17
16 I/O	—	12	4	4	—	—	
17 I/O	—	12	4	4	—	1	
16 I/O	—	12	4	—	4	—	EZD-T16
17 I/O	—	12	4	—	4	1	EZD-TA17

Note: Analog inputs optional; use of analog inputs will result in a decrease in the same number of available digital inputs.

EZ / EZD I/O Expansion Modules ①

Description	Inputs		Outputs		Catalog Number
	110 – 240V ac	24V dc	Relay	Transistor	
2 I/O Expansion	—	—	2	—	EZ202-RE
18 I/O Expansion	12	—	6	—	EZ618-AC-RE
18 I/O Expansion	—	12	6	—	EZ618-DC-RE
20 I/O Expansion	—	12	—	8	EZ620-DC-TE
Coupling Module for Remote Mounting of Expansion Modules					EZ200-EZ

① All expansion modules include one EZ-LINK-DS.

EZ / EZD Communication Interface Modules

Description	Catalog Number
PROFIBUS-DP Slave Interface Module	EZ204-DP
AS-Interface Slave with 4 In and 4 Out Interface Module	EZ205-ASI
CANopen Interface Module	EZ221-CO
DeviceNet Slave Interface Module	EZ222-DN
Ethernet / IP Gateway	EZ209-SE

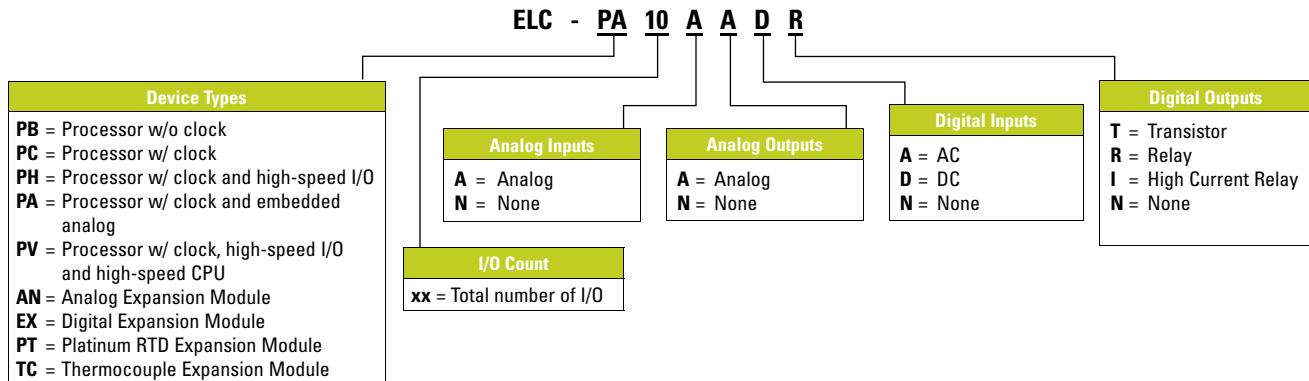
EZ / EZD-CP8 Power Supplies and Software

Description	Catalog Number
Programming Software for EZ500 / 700 / 800 and EZD	EZSOFT
100 – 240V ac Input to 12V dc at 20 mA / 24V dc at 250 mA	EZ200-POW
100 – 240V ac Input to 24V dc at 1.25A	EZ400-POW

EZ / EZD Cables and Connectors

EZ500 / 700 to EZD-CP4 Communication Cable, 5 m	EZD-CP4-500-CAB5
EZ800 to EZD-CP8 Communication Cable, 2 m	EZD-800-CAB EZD-800-CAB5 EZD-CP4-800-CAB5
EZ800 to EZD-CP8 Communication Cable, 5 m	
EZ800 to EZD-CP4 Communication Cable, 5 m	
EZ800 / EZD EZ-NET Cable, 0.3 m	EZ-NT-30 EZ-NT-80 EZ-NT-150 EZ-NT-R
EZ800 / EZD EZ-NET Cable, 0.8 m	
EZ800 / EZD EZ-NET Cable, 1.5 m	
EZ800 / EZD Network Termination Resistor, 2/Pack	
EZ800 / EZD EZ-NET Cable (cable only, no connectors, see EZ-NT-RJ45), 100 m	EZ-NT-CAB
RJ45 Network Connectors for EZ-NET Cable (EZ-NT-CAB), 10/Pack	EZ-NT-RJ45

ELC Eaton Logic Controller — Catalog Numbering System



ELC Eaton Logic Controller

- Sophisticated PLC logic with an extensive set of I/O and communication capabilities, in packages as small as 1" W x 24" D x 3.5" H



ELC Controllers (PB, PC, PH, PA, PV)

Description	Inputs			Outputs			Max. Current Consumption (at 24V dc)	Catalog Number
	AC	DC	Analog	Relay	Transistor	Analog		
14 I/O PB Series	—	8	—	6	—	—	150 mA	ELC-PB14NDR
14 I/O PB Series	—	8	—	—	6	—	150 mA	ELC-PB14NNDT
12 I/O PC Series	8	—	—	4	—	—	150 mA	ELC-PC12NNAR
12 I/O PC Series	—	8	—	4	—	—	150 mA	ELC-PC12NNDR
12 I/O PC Series	—	8	—	—	4	—	150 mA	ELC-PC12NNDT
12 I/O PH Series	—	8	—	—	4	—	170 mA	ELC-PH12NNDT
10 I/O PA Series	—	4	2	2	—	2	210 mA	ELC-PA10ADR
10 I/O PA Series	—	4	2	—	2	2	210 mA	ELC-PA10AADT
28 I/O PV Series	—	16	—	12	—	—	220 mA	ELC-PV28NDR
28 I/O PV Series	—	16	—	—	12	—	220 mA	ELC-PV28NNDT

Industrial Logic

Programmable Logic Controllers

PRODUCT SELECTION

ELC Eaton Logic Controller

Right Side Digital Expansion Modules

Description	Inputs		Outputs		Max. Current Consumption (at 24V dc)	Catalog Number
	AC	DC	Relay	Transistor		
6 Relay OUT (6 Amp)	—	—	6	—	70 mA	ELC-EX06NNNI
AC IN	8	—	—	—	50 mA	ELC-EX08NNAN
DC IN	—	8	—	—	50 mA	ELC-EX08NNDN
Relay OUT	—	—	8	—	70 mA	ELC-EX08NNNR
Transistor OUT	—	—	—	8	70 mA	ELC-EX08NNNT
IN / OUT Combo	—	4	4	—	70 mA	ELC-EX08NNDR
IN / OUT Combo	—	4	—	4	70 mA	ELC-EX08NNDT
16 I/O Expansion — IN / OUT Combo	—	8	8	—	90 mA	ELC-EX16NNDR
16 I/O Expansion — IN / OUT Combo	—	8	—	8	90 mA	ELC-EX16NNDT
8 I/O Expansion — Switch Input	—	8	—	—	20 mA	ELC-EX08NNSN

Right Side Analog and Specialty Modules

Description	Analog In	Analog Out	Mac. Current Consumption (at 24V dc)	Catalog Number
Analog In	4	—	90 mA	ELC-AN04ANNN
Analog Out	—	2	125 mA	ELC-AN02NANN
Analog Out	—	4	170 mA	ELC-AN04NANN
Analog In/Out	4	2	90 mA	ELC-AN06AANN
Thermocouple J, K, R, S, T	4	—	90 mA	ELC-TC04ANNN
Platinum RTD, PT100	4	—	90 mA	ELC-PT04ANNN

Other Right Side Specialty Expansion Modules

Description	Catalog Number
PROFIBUS-DP (Slave)	ELC-COPBDP
DeviceNet (Slave)	ELC-CODNET
RS-485 Easy Connect Adapter, DB9, RJ-12, 2-Pin Connections to RS-485	ELC-485APTR
Motion Control, 1 Axis Module (up to 8 modules per controller)	ELC-MC01

Left Side Specialty Expansion Modules (Require a PV Series Controller)

Description	Catalog Number
Ethernet Modbus TCP (Master / Slave)	ELC-COENETM
DeviceNet Scanner (Master / Slave)	ELC-CODNETM

ELC Accessories and Software

Description	Catalog Number
ELC Programming Software	ELCSOFT
24 Watt, 1 Amp Power Supply	ELC-PS01
48 Watt, 2 Amp Power Supply	ELC-PS02
Hand-held Programmer (includes ELC-CBHHELC15)	ELC-HHP
Cable to Connect a PC or a GP Mnit to ELC, 3 Meters (DB9 pin female to 8-pin DIN)	ELC-CBPCELC3
Cable to Connect a PC to a GP Unit, 3 Meters (DB9 pin female to DB9 pin female)	ELC-CBPCEGP3
Program Transfer Module for GP Units	ELC-GPXFERMOD
Program Transfer Module for ELC Controllers	ELC-ACPGMXFR
Plate Mount for Specialty Modules, Qty. 10	ELC-ACCOVER
ELC Starter Kit (includes ELC-PA10AADT, ELC-PS01, ELC-GP04, ELC-CBPCELC3, ELC-CBPCEGP3, ELCSOFT, ELCSOFT GP)	ELCSTARTKIT1

Machine Display & Interface

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Reliable, Modular, Customizable



Powering Business Worldwide



- Mix, match and customize modular plastic or metal pushbuttons, pilot lights and control stations
- Pushbutton operators can be converted in the field from maintained to momentary status with the simple flip of a switch.
- Buttonless pushbuttons allow for the flexibility to use the appropriate button without committing to a color when placing an order

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT OVERVIEW

Pushbuttons & Pilot Devices Product Overview

		
Description	Eaton M22	Eaton EM22
Page	Page 181	Page 187

Ease of Use

Mounting Nut on Operator Installation	Yes	Yes
Mounting Adapter Installation / Removal	Easy	Hard
Removable Snap-Lock Contact Blocks	Yes	Yes
Contact Block / Light Unit Installation / Removal	Easy	Easy
Visible Actuator Indication from Rear	Yes	Yes
Optional Spring-Cage Terminations	Yes	—
Optional Quick-Connect Terminations	Yes	Yes
Built-In or Separate Anti-Rotation Locking Ring Installation	Built-In	Ring
Mounting Time	Low	Medium
Removal Time	Low	Medium

Flexibility and Modularity

Field Convertible Pushbuttons — Color or Inscribed Button Caps	Yes	—
Field Convertible Pushbuttons — Maintained to Momentary	Yes	—
Field Convertible Selector Switches — Momentary to Maintained	Yes	—
Field Convertible Key Selector Switches — Key Removal Position	Yes	—
Universal Voltage Range LED Light Units ①	Yes	—
Stackable Contact Blocks	Yes	—
Enclosed Limit Switch Contacts ②	Yes	—

Safety and Security

ISO / EN 13850 / EN 418 Rated E-Stops	Yes	Yes
Safety Yellow E-Stop Enclosures	Yes	Yes
Key Release E-Stop with 3 Levels of Master Keys	Yes	—
Master Key Access — Number of Levels of Master Keys	3	1
Secure Anti-Rotation Mounting	Good	Poor
Self-Monitoring Contact Blocks	—	Yes

Communications

ASi Bus Network Communications	Yes	—
DeviceNet Network Communications	—	—
PROFIBUS-DP Network Communications	—	—

Esthetics and Ergonomics

Low Profile Design	Yes	—
Low Power Integrated LED Illuminated Devices	Yes	—
Permanent and Wear-Resistant Markings	Yes	—
Silver and Black Colored Bezels on Plastic Operators	Yes	Yes
Square Bezel Pushbuttons and Pilot Lights	—	—

① Eaton's M22 LED light units come in two convenient universal ranges: 12 – 30V ac/dc and 85 – 244V ac.


② Eaton's M22 pushbutton, selector switch, and E-Stop operators can be attached directly to Eaton's LS Series miniature limit switches.

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT OVERVIEW

Pushbuttons & Pilot Devices Product Overview

		
Description	Eaton M22	Eaton EM22

Esthetics and Ergonomics

Positive Detent on Selector Switches	Very Good	Fair
Ergonomic Dome Shaped E-Stop and Palm Switches	Yes	—

Specialty Operator Types

Acoustic Indicators (buzzers)	Yes	—
Double Pushbutton Operators	Yes	Yes
Elevator E-Stops (with mechanical flag indication) ①	Yes	—
EMO E-Stops	—	Yes
Four-Way Pushbutton Operators	Yes	—
Joysticks	Yes	—
Potentiometers	Yes	Yes
Reset Pushbutton Operators	Yes	Yes
Selector Pushbutton (roto-push) Operators	—	—
Selector Switches with Key Monitoring	—	—
Toggle Switches	—	—

Standards and Certifications

China Compulsory Certification — CCC (China)	Yes	—
Conformité Européenne — CE (Europe)	Yes	Yes
Canadian Standard Association — CSA (Canada)	Yes	Yes
Gosudarstvennyy Standart Russia — GOST R (Russia)	Yes	—
Underwriter's Laboratories — UL (United States)	Yes	Yes

Marine Classification Societies

American Bureau of Shipping — ABS (United States)	—	—
Bureau Veritas — BV (France)	Yes	—
Det Norske Veritas — DNV (Norway)	Yes	—
Germanischer Lloyd — GL (Germany)	Yes	—
Lloyd's Register — LR (United Kingdom)	Yes	—
Polski Registre Statkow — PRS (Poland)	—	—
Registro Italiano Navale — RINA (Italy)	—	—
Russian Maritime Register of Shipping — RMRS (CIS)	—	—

Accessories

USB Socket Bulkhead Interface	Yes	—
RJ45 Socket Bulkhead Interface	Yes	—
Padlock Attachments for Pushbuttons	—	Yes
Padlock Attachments for Selector Switches	—	Yes
Padlock Attachments for E-Stops	Yes	—
Protective Shrouds for E-Stops	Yes	Yes
DIN-Rail Mounting Adapter	Yes	—

① Available in Fall 2009.

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION

M22 Modular Pushbuttons

- Highly modular and versatile line
 - Field convertible functions (pushbuttons: maintained to momentary; selector switches: momentary to maintained)
 - Customizable laser engraving
- LED indicators
 - 100,000 hours of life in high vibration environments
 - Lenses specifically designed for LED technology
- Rugged design
 - Most pushbutton operators and contact blocks exceed 5 million mechanical operations
 - All components have IP66 ratings and some carry IP67 and IP69K for wash down environments, high pressure and high temperature applications
- Innovative and unique technologies
 - ASi communicating devices
 - Palm switches
- Type 4X, 13 on most operators
IP66 (IP67) on most operators



Non-Illuminated Pushbuttons, Silver Bezel — Complete Devices

Button Color	Contact Block Configuration	Catalog Number
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Flush — Momentary

Black	NC	M22-D-S-K01
	NO	M22-D-S-K10
	NO-NC	M22-D-S-K11
	2NC	M22-D-S-K02
	2NO	M22-D-S-K20
Red	NC	M22-D-R-K01
	NO	M22-D-R-K10
	NO-NC	M22-D-R-K11
	2NC	M22-D-R-K02
	2NO	M22-D-R-K20
Green	NC	M22-D-G-K01
	NO	M22-D-G-K10
	NO-NC	M22-D-G-K11
	2NC	M22-D-G-K02
	2NO	M22-D-G-K20

Mushroom — Momentary

Red	NC	M22-DP-R-K01
	NO-NC	M22-DP-R-K11
	2NC	M22-DP-R-K02
	1NO/2NC	M22-DP-R-K12

Button Color	Contact Block Configuration	Catalog Number
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Mushroom — Maintained

Red	NC	M22-DRP-R-K01
	NO-NC	M22-DRP-R-K11
	2NC	M22-DRP-R-K02
	1NO/2NC	M22-DRP-R-K12

Emergency Stops — Push-Pull

Red	NC	M22-PV-K01
	2NC	M22-PV-K02
	1NO/2NC	M22-PV-K12

Emergency Stops — Twist-to-Release

Red	NC	M22-PVT-K01
	2NC	M22-PVT-K02
	1NO/2NC	M22-PVT-K12



Note: Supplied with operator.

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION

M22 Modular Pushbuttons

Illuminated Pushbuttons, Silver Bezel — Complete Devices

Button Color	Contact Block Configuration	Light Unit Voltage	Catalog Number
Flush — Momentary			
Red	NC	12 – 30V ac/dc 85 – 264V ac	M22-DL-R-K01-R M22-DL-R-K01-230R
	NO-NC	12 – 30V ac/dc 85 – 264V ac	M22-DL-R-K11-R M22-DL-R-K11-230R
	2NC	12 – 30V ac/dc 85 – 264V ac	M22-DL-R-K02-R M22-DL-R-K02-230R
Green	NO	12 – 30V ac/dc 85 – 264V ac	M22-DL-G-K10-G M22-DL-G-K10-230G
	NO-NC	12 – 30V ac/dc 85 – 264V ac	M22-DL-G-K11-G M22-DL-G-K11-230G
	2NO	12 – 30V ac/dc 85 – 264V ac	M22-DL-G-K20-G M22-DL-G-K20-230G
White	NO	12 – 30V ac/dc 85 – 264V ac	M22-DL-W-K10-W M22-DL-W-K10-230W
	NC	12 – 30V ac/dc 85 – 264V ac	M22-DL-W-K01-W M22-DL-W-K01-230W
	NO-NC	12 – 30V ac/dc 85 – 264V ac	M22-DL-W-K11-W M22-DL-W-K11-230W
	2NO	12 – 30V ac/dc 85 – 264V ac	M22-DL-W-K20-W M22-DL-W-K20-230W

Emergency Stops — Push-Pull

Red	NC	12 – 30V ac/dc 85 – 264V ac	M22-PVL-K01-R M22-PVL-K01-230R
	1NO-2NC	12 – 30V ac/dc 85 – 264V ac	M22-PVL-K12-R M22-PVL-K12-230R
	2NC	12 – 30V ac/dc 85 – 264V ac	M22-PVL-K02-R M22-PVL-K02-230R

Emergency Stops — Twist-to-Release

Red	NC	12 – 30V ac/dc 85 – 264V ac	M22-PVLT-K01-R M22-PVLT-K01-230R
	1NO-2NC	12 – 30V ac/dc 85 – 264V ac	M22-PVLT-K12-R M22-PVLT-K12-230R
	2NC	12 – 30V ac/dc 85 – 264V ac	M22-PVLT-K02-R M22-PVLT-K02-230R

Machine Display & Interface

Pushbuttons & Pilot Devices




PRODUCT SELECTION

M22 Modular Pushbuttons

LED Indicating Lights, Silver Bezel — Complete Devices

Color	Light Unit Voltage	Catalog Number
Flush		
White	12 – 30V ac/dc	M22-L-W-W
Red	12 – 30V ac/dc	M22-L-R-R
Green	12 – 30V ac/dc	M22-L-G-G
Yellow	12 – 30V ac/dc	M22-L-Y-W
Blue	12 – 30V ac/dc	M22-L-B-B
White	85 – 264V ac/dc	M22-L-W-230W
Red	85 – 264V ac/dc	M22-L-R-230R
Green	85 – 264V ac/dc	M22-L-G-230G
Yellow	85 – 264V ac/dc	M22-L-Y-230W
Blue	85 – 264V ac/dc	M22-L-B-230B

Non-Illuminated Selector Switches, Silver Bezel — Complete Devices

Type	Contact Block Configuration	Catalog Number	Symbols
2-Position Thumb Grip Operator			
Maintained ①	NO NO-NC 2NO-2NC	M22-WRK-K10 M22-WRK-K11 M22-WRK-K22	 Center Right
Maintained V	NO NO-NC 2NO-2NC	M22-WKV-K10 M22-WKV-K11 M22-WKV-K22	 Maintained, V-Position
3-Position Thumb Grip Operator			
Maintained ①	2NO-2NC 2NO	M22-WRK3-K22 M22-WRK3-K20	 Momentary or Maintained

① Maintained selector switches can be field converted to momentary by utilizing coding adapters.

Plunger Bridge

Description	Catalog Number
Plunger needed to actuate center-mounted contact blocks. Used for non-illuminated 3-position selector switches only.	M22-XW

Coding Adapters

Description	Catalog Number
Used to convert maintained operation to momentary operation. Used for non-illuminated 3-position selector switches only.	M22-XC-Y

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION

M22 Modular Pushbuttons

Non-Illuminated Pushbuttons, Silver Bezel — Operators Only

Color	Catalog Number
Flush — Momentary	
Black	M22-D-S
Red	M22-D-R
Green	M22-D-G
White	M22-D-W
Blue	M22-D-B
Yellow	M22-D-Y
Buttonless Operator with: 6-Pack 3-Pack	M22-D-X-SWRGYB M22-D-X-SRG

Mushroom — Momentary

Red	M22-DP-R
Black	M22-DP-S
Green	M22-DP-G
Yellow	M22-DP-Y

Mushroom — Maintained

Red	M22-DRP-R
Black	M22-DRP-S
Green	M22-DRP-G
Yellow	M22-DRP-Y

Illuminated Pushbuttons, Silver Bezel — Operators Only

Color	Catalog Number
Emergency Stops — Push-Pull	
Red	M22-PVL
Emergency Stops — Twist-to-Release	
Red	M22-PVLT

Non-Illuminated Selector Switches, Silver Bezel — Operators Only

Type	Catalog Number	Symbols
2-Position Thumb Grip Operator		
Maintained	M22-WRK	
Maintained V	M22-WKV	
3-Position		
Maintained	M22-WRK3	

Illuminated Selector Switches, Silver Bezel — Operators Only

Type	Color	Catalog Number	Symbols
2-Position Thumb Grip Operator			
Maintained V	White Red Green Yellow Blue	M22-WLKV-W M22-WLKV-R M22-WLKV-G M22-WLKV-Y M22-WLKV-B	
3-Position Thumb Grip Operator			
Momentary ①	White Red Green Yellow Blue	M22-WLK3-W M22-WLK3-R M22-WLK3-G M22-WLK3-Y M22-WLK3-B	
Maintained	White Red Green Yellow Blue	M22-WRLK3-W M22-WRLK3-R M22-WRLK3-G M22-WRLK3-Y M22-WRLK3-B	

① Momentary selector switches are field convertible to maintained by removing coding adapters.

Joysticks — Operators Only

Position	Direction	Catalog Number	Symbol
Momentary			
2-Position	Horizontal	M22-WJ2H	Two-Way Horizontal Actuator
	Vertical	M22-WJ2V	
4-Position	Dual	M22-WJ4	
Maintained			
2-Position	Horizontal	M22-WRJ2H	Two-Way Vertical Actuator
	Vertical	M22-WRJ2V	
4-Position	Dual	M22-WRJ4	
			Four-Way Actuator

Potentiometers

Resistance R kΩ	Catalog Number
1k	M22-R1K
4.7k	M22-R4K7
10k	M22-R10K
47k	M22-R47K
100k	M22-R100K
470k	M22-R470K

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION

M22 Modular Pushbuttons

Acoustic Devices

Description	Catalog Number
BA9s, 18 – 30V ac/dc Buzzer, Continuous Tone	M22-AMC-XAM
BA9s, 24V dc -15% / +10% Buzzer, Pulsed Tone	M22-AMC-XAMP

Flush Pushbutton Operators with Mechanical Push Rod (Overload Relay Reset)

Button Color	Inscription	Catalog Number
Blue	RESET	M22-DZ-B-GB14
		M22-DZ-B-X6
Red	STOP	M22-DZ-R-GB0
		M22-DZ-R-X0

Contact Blocks

Terminal Type	Contact Block Configuration	Catalog Number
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Front Mounted

Screw	NO	M22-K10
	NC	M22-K01
Spring-Cage	NO	M22-CK10
	NC	M22-CK01

Base Mounted

Screw	NO	M22-KC10
	NC	M22-KC01
Spring-Cage	NO	M22-CKC10
	NC	M22-CKC01

Button Plates and Lenses

Description	Color	Catalog Number	
Flush Non-Illuminated Pushbutton Plate	Black	M22-XD-S	
	White	M22-XD-W	
	Red	M22-XD-R	
	Green	M22-XD-G	
	Yellow	M22-XD-Y	
	Blue	M22-XD-B	
	6-Pack	M22-XD-SWRGYB	
	3-Pack	M22-XD-SRG	
	Mushroom Head Button Plate	Black	M22-XDP-S
		White	M22-XDP-W
Red		M22-XDP-R	
Green		M22-XDP-G	
Yellow		M22-XDP-Y	
Flush Indicating Light Lens	White	M22-XL-W	
	Red	M22-XL-R	
	Green	M22-XL-G	
	Yellow	M22-XL-Y	
	Blue	M22-XL-B	
Flush Illuminated Pushbutton Lens	White	M22-XDL-W	
	Red	M22-XDL-R	
	Green	M22-XDL-G	
	Yellow	M22-XDL-Y	
	Blue	M22-XDL-B	

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION

M22 Modular Pushbuttons

Legend Plates

Inscription	Catalog Number
For Standard Pushbuttons and Indicating Lights	
STOP	M22S-ST-GB0
START	M22S-ST-GB1
OFF	M22S-ST-GB5
ON	M22S-ST-GB6
RUN	M22S-ST-GB7
FAULT	M22S-ST-GB8
OFF ON	M22S-ST-GB10
MAN. AUTO	M22S-ST-GB11
HAND O AUTO	M22S-ST-D12
MAN. O AUTO	M22S-ST-GB12
For Emergency Stop Buttons	
EMERGENCY STOP	M22-XZK-GB99
SQUARE FOUR LANGUAGES	M22-XYK1
ROUND YELLOW NAME PLATE 90 mm, FOUR LANGUAGES	M22-XAK1
ROUND YELLOW NAME PLATE 60 mm, FOUR LANGUAGES	M22-XBK1
ENGLISH	M22-XYK5
ENGLISH	M22-XAK5
ENGLISH	M22-XBK5

Surface Mounting Enclosures

Description	Catalog Number
Yellow Top, Black Base for Emergency Stop Operators	M22-IY1-PG
1 Element	M22-I1-PG
2 Element	M22-I2-PG
3 Element	M22-I3-PG
4 Element	M22-I4-PG
6 Element	M22-I6-PG
Connecting Screw (connecting cables to enclosure knockouts)	M22-XI

Accessories

Description	Catalog Number
Plug to Close Mounting Holes	M22-B
Diaphragm for Pushbuttons and Indicating Lights — Flat	M22-T-D
Diaphragm for Double Pushbutton	M22-T-DD
Diaphragm for Key Operated Switches	M22-XWS
IVS Mounting Rail Adapter	M22-IVS
Plunger Bridge	M22-XW
Threaded Ring	M22-GR
Set of Adapter Rings	M22S-R30
Mounting Tool	M22-MS
Dust Protection for Contact Blocks	M22-XKDP
Mounting Adapter with Dust Protection	M22-ADC
Mounting Adapter with Dust Protection, 4-f	M22-ADC4
Contact Block Mounting Adapter	M22-A
Contact Block Mounting Adapter — Holds up to 8 Contact Blocks	M22-A4
Sealable Shroud	M22-PL-PV
Emergency-Stop Protective Collar	M22-XGPV
Protective Collar, Grey	M22G-XGPV
Connecting Screw	M22-XI

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION

EM22 Metal Pushbuttons

EM22 Operators:

- Heavy-duty zinc die-cast construction
- Metal mounting nut doubles as grounding and anti-rotation device
- Chrome-plated metal bezel (matte black not available)

EM22 Features:

- Reliability nibs on contact blocks
- Plain or notched hole mounting
- Direct opening action normally closed contacts
- Fingerproof terminals
- Type 3, 3R, 4, 4X, 12, 13



Pushbutton Units — Metal Operators (Chrome Bezel)

Button Color	Contact Block Circuit				
	NO	NC	NO – NC	2NO	2NC
	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number

Flush — Momentary

Black	EM22P1A	EM22P1B	EM22P1C	EM22P1D	① EM22P2E
Red	EM22P2A	EM22P2B	EM22P2C	① EM22P3D	①
Green	EM22P3A	①	EM22P3C		①

40 mm Mushroom — Momentary

Red	EM22L2A	EM22L2B	EM22L2C	①	EM22L2E
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40 mm Twist-to-Release Mushroom — Latching

Red	EM22LL2A	EM22LL2B	EM22LL2C	①	EM22LL2E
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50 mm Jumbo Mushroom — Momentary

Red	EM22JP2A	EM22JP2B	EM22JP2C	EM22JP2D	EM22JP2E
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50 mm Jumbo Mushroom — Maintained

Red EMERGENCY STOP (Metal)	EM22JL2N8A	EM22JL2N8B	EM22JL2N8C	EM22JL2N8D	EM22JL2N8E
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① See Control Catalog (CA08102001E) for ordering other complete devices not shown.

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION

EM22 Metal Pushbuttons

Momentary Contact Pushbuttons, Non-Illuminated

Color	EM22 Series — Metal Operators
	Chrome Bezel
	Catalog Number

25 mm Diameter Flush Button

Black	EM22P1
Red	EM22P2
Green	EM22P3
Yellow	EM22P4
White	EM22P5
Blue	EM22P6
Gray	EM22P7
Orange	EM22P8

Momentary Contact Pushbuttons, Non-Illuminated (Continued)

Color	EM22 Series — Metal Operators
	Chrome Bezel
	Catalog Number

28 mm Dia. Mushroom Head Button

Black	EM22M1
Red	EM22M2
Green	EM22M3
Yellow	EM22M4
Blue	EM22M6

40 mm Dia. Mushroom Head Button

Black	EM22L1
Red	EM22L2
Green	EM22L3
Yellow	EM22L4
Blue	EM22L6

50 mm Dia. Mushroom Head Button — Plastic

Black	EM22JP1
Red	EM22JP2
Green	EM22JP3
Yellow	EM22JP4
Blue	EM22JP6
Red (Metal)	EM22J2
Red (Metal) Engraved Emergency Stop	EM22J2N8

Ordering Example — A complete pushbutton unit consists of the following:



Operator



Operator Plug
E22BA2
required if
third contact
block is
used



Legend
Plate or
Print Option



Mounting
Adapter
E22BA1
(supplied
with
operator)
for 5-way
adapter



Contact
Blocks

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION

EM22 Metal Pushbuttons

Metal Illuminated Pushbutton Units

Button Color	NO Contact Block		NC Contact Block	
	Incandescent	LED	Incandescent	LED
	Catalog Number	Catalog Number	Catalog Number	Catalog Number

24V ac/dc Full Voltage

Red	EM22T2X4A	EM22T2X40A	EM22T2X4B	EM22T2X40B
Green	EM22T3X4A	EM22T3X41A	EM22T3X4B	EM22T3X41B
White	EM22T5X4A	EM22T5X90A	EM22T5X4B	EM22T5X90B
Blue	EM22T6X4A	EM22T6X52A	EM22T6X4B	EM22T6X52B
Amber	EM22T9X4A	EM22T9X95A	EM22T9X4B	EM22T9X95B
Clear	EM22T0X4A	EM22T0X90A	EM22T0X4B	EM22T0X90B

120V ac Full Voltage

Red	—	EM22T2X43A	—	EM22T2X43B
Green	—	EM22T3X44A	—	EM22T3X44B
White	—	EM22T5X92A	—	EM22T5X92B
Blue	—	EM22T6X61A	—	EM22T6X61B
Amber	—	EM22T9X96A	—	EM22T9X96B
Clear	—	EM22T0X92A	—	EM22T0X92B

Maintained Contact Mushroom Head Operators, Non-Illuminated

EM22 Series — Metal Operators	
	Chrome Bezel
Color	Catalog Number

Twist-to-Release — 28 mm Diameter Button (Push to Latch — Twist to Release)

Black	EM22ML1
Red	EM22ML2
Green	EM22ML3
Yellow	EM22ML4
Blue	EM22ML6

Twist-to-Release — 40 mm Diameter Button (Push to Latch — Twist to Release)

Black	EM22LL1
Red	EM22LL2
Green	EM22LL3
Yellow	EM22LL4
Blue	EM22LL6

Push-Pull — 40 mm Diameter Button (Push to Latch — Pull to Release)

Black	EM22LP1
Red	EM22LP2
Green	EM22LP3
Yellow	EM22LP4
Blue	EM22LP6

Push-Pull — 50 mm Diameter Button (Push to Latch — Pull to Release)

Black	EM22JPL1
Red	EM22JPL2
Green	EM22JPL3
Yellow	EM22JPL4
Blue	EM22JPL6
Red (Metal)	EM22JL2
Red (Metal) Emergency Stop	EM22JL2N8

Indicating and PresTest Light Units — Metal Operators

Color	Indicating Light		PresTest
	LED	Incandescent	Incandescent
	Catalog Number	Catalog Number	Catalog Number

24V ac/dc Full Voltage

Red	EM22H2X40	EM22H2X4	EM22T2X20
Green	EM22H3X41	EM22H3X4	EM22T3X20
White	EM22H5X90	EM22H5X4	EM22T5X20
Blue	EM22H6X52	EM22H6X4	EM22T6X20
Amber	EM22H9X95	EM22H9X4	EM22T9X20
Clear	EM22H0X90	EM22H0X4	EM22T0X20

120V ac Full Voltage

Red	EM22H2X43	EM22H2X8	EM22T2X26 ①
Green	EM22H3X44	EM22H3X8	EM22T3X26 ①
White	EM22H5X92	EM22H5X8	EM22T5X26 ①
Blue	EM22H6X61	EM22H6X8	EM22T6X26 ①
Amber	EM22H9X96	EM22H9X8	EM22T9X26 ①
Clear	EM22H0X92	EM22H0X8	EM22T0X26 ①

① 120V ac/dc resistor unit.



Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION




EM22 Metal Pushbuttons

Two-Position Push-Pull Units — Metal Operators (Chrome Bezel)

Operator Position ①		Non-Illuminated		Illuminated — Tall Incandescent Bulb		
Pull	Push	Button Color	Catalog Number	Lens Color	120V ac Transformer	120V ac/dc Resistor
					Catalog Number	Catalog Number
X	0	Red Red – EMERG. STOP	EM22ED2B EM22ED2N8B	Red Red – EMERG. STOP	EM22GD2X11B EM22GD2N8X11B	EM22GD2X10B EM22GD2N8X10B

① X = closed circuit, 0 = open circuit.

Three-Position Push-Pull Units — Metal Operators (Chrome Bezel)

Operator Position ①			Non-Illuminated		Illuminated — Tall Incandescent Bulb		
Pull	Intermediate	Push	Button Color	Catalog Number	Lens Color	120V ac Transformer	120V ac/dc Resistor
						Catalog Number	Catalog Number

3-Position Momentary Push and Pull — 1NC and 1LONO Contact Block






X	0	0	Red	EM22FD2T	Red	EM22HD2X11T	EM22HD2X10T
0	0	X					

3-Position Momentary Push and Pull — 1NC and IECNC Contact Block

X	X	0	Red	EM22FD2S	Red	EM22HD2X11S	EM22HD2X10S
X	0	0					

① X = closed circuit, 0 = open circuit.

Two-Position Selector Switch Units — 60° Throw — Cam 2 — Metal Operators (Chrome Bezel)

Operator Action ②	Operator Type	Operator Position ① 			
		Cam 2			
		0 X	X 0 O X	O X O X	O X X 0 O X X 0
		Catalog Number ③	Catalog Number ③	Catalog Number ③	Catalog Number ③
	Knob Lever	EM22X561A EM22V561A	EM22X561C EM22V561C	EM22X561D EM22V561D	EM22X561WW EM22V561WW
	Knob Lever	EM22X661A EM22V661A	EM22X661C EM22V661C	EM22X661D EM22V661D	EM22X661WW EM22V661WW
	Knob Lever	EM22XF61A EM22VF61A	EM22XF61C EM22VF61C	EM22XF61D EM22VF61D	EM22XF61WW EM22VF61WW
	Knob Lever	EM22XE61A EM22VE61A	EM22XE61C EM22VE61C	EM22XE61D EM22VE61D	EM22XE61WW EM22VE61WW

① X = closed circuit, 0 = open circuit.


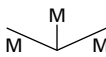
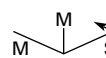
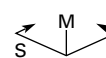
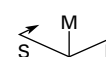
② M = maintained. S = spring return in direction of arrow (→).

③ To order with an alternate color, replace underlined digit (1) of listed catalog number with code number from table below. Example: 2-position operator with red knob, E22XB1F62A. Example: 2-position operator with red knob. E22XB1F62A

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	<u>1</u>	Red	<u>2</u>	Green	<u>3</u>	Yellow	<u>4</u>	White	<u>5</u>	Blue	<u>6</u>	Gray	<u>7</u>	Orange	<u>8</u>

EM22 Metal Pushbuttons

Three-Position Selector Switch Units — 60° Throw — Metal Operators (Chrome Bezel)

Operator Action ②	Operator Type	Operator Position ① 		
		Cam 1	Cam 2	Cam 3
		X O O O O X	X O X O O X	X O O O X O O O X
Operator Action ②	Operator Type	Catalog Number ③	Catalog Number ③	Catalog Number ③
	Knob Lever	EM22XG61D EM22VG61D	EM22XH61D EM22VH61D	EM22XG61RR EM22VG61RR
	Knob Lever	EM22XN61D EM22VN61D	EM22XP61D EM22VP61D	EM22XN61RR EM22VN61RR
	Knob Lever	EM22XL61D EM22VL61D	EM22XM61D EM22VM61D	EM22XL61RR EM22VL61RR
	Knob Lever	EM22XJ61D EM22VJ61D	EM22XK61D EM22VK61D	EM22XJ61RR EM22VJ61RR

① X = closed circuit, O = open circuit.

② M = maintained. S = spring return in direction of arrow (→).

③ To order with an alternate color, replace underlined digit (1) of listed catalog number with code number from table below. Example: 3-position operator with red knob, E22XBG62D.
Example: 3-position operator with red knob, E22XBG62D

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	1	Red	2	Green	3	Yellow	4	White	5	Blue	6	Gray	7	Orange	8

Specialty Operator — Potentiometers with Knob Operator ①

0.5 Watt Max. / 120V Max.	2 Watt Max. / 120V Max.
EM22 Metal — Chrome Bezel	EM22 Metal — Chrome Bezel
Catalog Number	Catalog Number
EM22PX1C1 EM22PX1C2 EM22PX1C5	EM22PX1F1 EM22PX1F2 EM22PX1F5
EM22PX1C10 EM22PX1C25 EM22PX1C50	EM22PX1F10 EM22PX1F25 EM22PX1F50
EM22PX1C0	EM22PX1F0

① Potentiometers are not IP1X or IP2X rated.

Specialty Operator — Potentiometer Legend Plate

Description	Catalog Number
Potentiometer Legend Plate	E22NJP99

Specialty Operator — Flush Pushbutton Operators with Mechanical Push Rod

Description	Color	Plastic — Chrome Bezel
		Catalog Number
25 mm diameter flush pushbutton operators supplied with mechanical push rod — suitable for external mechanical reset of overload relays. Push cord must be cut to desired length.	Gray Blue Red Blue (RESET)	E22P7L E22P6L E22P2L E22P6N29L

Joystick Switches

Position	Description	Catalog Number
2-Position	Momentary Joystick Switch	EM22JS2Y2X
	Momentary Joystick Switch with Center Lock	EM22JS2Y4X
2-Position	Maintained Joystick Switch	EM22JS2Y3X
	Maintained Joystick Switch with Center Lock	EM22JS2Y5X
4-Position	Momentary Joystick Switch	EM22JS4Y2X
	Momentary Joystick Switch with Center Lock	EM22JS4Y4X
4-Position	Maintained Joystick Switch	EM22JS4Y3X
	Maintained Joystick Switch with Center Lock	EM22JS4Y5X




Machine Display & Interface


Pushbuttons & Pilot Devices

PRODUCT SELECTION











EM22 Metal Pushbuttons

Contact Blocks

	Description	Suffix Code ①	Catalog Number
	1NC 1NO 1NO Early Make 1NC Late Break 1NC (logic) 1NO (logic) 1NC Added Spring Pressure	B A — — — — —	E22B1 ② E22B2 E22B3 E22B4 ③ E22B1E ④ E22B2E ④ E22BR1
	1NO-1NC 2NO	W V	E22B11 ② E22B20
	1 Self Monitoring 1NC	—	E22CB1M ②⑤

- ① Add suffix to operator catalog number to order as a complete device. Example E22PB1B = flush black pushbutton with 1NC contact block.
- ② Marked with Direct Opening Action (DOA) Symbol  per IEC 60947-5-1 (Annex K) and NEMA ICS 5 (Part 6).
- ③ E22B4 contact block not available for use with 5-way mounting adapter.
- ④ For low voltage applications.
- ⑤ For use with Trigger Action Emergency Stop (E22LTA2) Operators.

EM22 Series — Accessories

	Description	Catalog Number
	Octagonal Wrench — For easy tightening of back-of-panel mounting nut on EM22 (metal) operators.	E22CWM
	Oversize Yellow Legend Plates ① — 1.77-inch (45 mm) Blank 1.77-inch (45 mm) Printed EMERGENCY STOP 2.56-inch (65 mm) Printed EMERGENCY STOP 2.56-inch (65 mm) Printed EMERGENCY OFF 2.56-inch (65 mm) Printed EMO 2.76-inch (70 mm) Blank 2.76-inch (70 mm) Printed EMERGENCY STOP 2.76-inch (70 mm) Printed EMERGENCY OFF 2.76-inch (70 mm) Printed EMO	E22VA2 E22VA9 E22VA7 E22VA6 E22VA3 E22VA1 E22VA8 E22VA4 E22VA5
	Mounting Adapter with Barrier — Supplied as standard with EM22 Trigger Action Emergency Stop Operators. Provides contact block unit mounting only.	E22BA7A
	Auto Latch Mounting Adapter	E22BA1A
	Locating Ring — Provides additional anti-rotation features when using optional panel mounting hole notch — minimum order quantity 10 pieces (metal).	E22LRM
	Padlockable Transparent Cover — Suitable for use with 25 mm Flush and Extended Pushbutton operators only.	E22PCM
	Padlockable Transparent Cover — Suitable for use with 25 mm Extended Pushbutton operators only. Enables NC circuit to be held open.	E22PCPM
	Quick Connect Terminals — For easy installation of wired connections. 300V clearance. Minimum order quantity 10 pieces.	E22AT
	Mushroom Shroud ② — Protects against inadvertent operation. Chrome shroud (cut-away type for use with push/pull pushbuttons). Black shroud (cut-away type for use with push/pull pushbuttons).	E22MSP E22MBSP
	Mushroom Shroud ② — Protects against inadvertent operation. Chrome shroud (cut-away type) Black shroud (cut-away type)	E22MS E22MBFS
	Mushroom Shroud ② — Protects against inadvertent operation. Chrome shroud (full type) Black shroud (full type)	E22MSF E22MBFSF
	Mushroom Guard — For 40 mm Trigger Action Switch — To be used with E22LTA2 and E22LTA2N123 operators.	E22MGTA

- ① Yellow plates comply with EN418 Machine Safety Standard background requirements for E-Stops.
- ② For use with 28 mm and 40 mm diameter mushroom pushbutton operators.

Machine Display & Interface

Pushbuttons & Pilot Devices

PRODUCT SELECTION

EM22 Metal Pushbuttons

Engraved Legend Plates — Accessories

Nameplate Type	Standard Aluminum with Plastisol Backing Type 3, 3R, 4, 4X, 12, 13 and Self-Adhesives Used on Enclosures ①②	
Letter Color	Black	Black
Background Color	Silver	Silver
Field Color	Black	Red

Pushbutton

(no engraving) EMERG. STOP	E22NS36 —	E22NS37 E22NS13
FAST	E22NS14	—
FORWARD JOG	E22NS15 E22NS19	— —

2-Position Selector Switch

MAN/AUTO ↙ MAN/AUTO ↘ OFF/ON ↙	E22NS118 E22NS67 E22NS105	— — —
OFF/ON ↘ RUN/JOG ↙ RUN/JOG ↘	E22NS42 E22NS107 E22NS44	— — —
START/JOG ↙	E22NS109	—
START/STOP ↙ START/STOP ↘ STOP/RESET ↙ STOP/RESET ↘	E22NS110 E22NS47 — —	— — E22NS112 E22NS58





3-Position Selector Switch

AUTO/OFF/HAND FOR/OFF/REV FOR/SAFE/REV HAND/OFF/AUTO	E22NS49 E22NS50 E22NS69 E22NS51	— — — —
---	--	------------------

① To order jumbo legend plates, replace the 5th character with an L. For example, E22NL87 is an aluminum Jumbo Legend Plate marked "FASTER."

② To order self-adhesive legend plates, replace the 5th character with a C. For example, E22NC87 is a Self-Adhesive Legend Plate marked "FASTER."

Enclosures — Type 4, 4X, 12, 13

Cover Holes, Centerlines and Legend Plate Selection	Usable Depth Inches (mm)	Catalog Number
 Will Accommodate 2.65 Inch (65 mm) Legend Plates With Conduit Opening in Rear of Enclosure	2.5 (64) 3.4 (87)	E22CSP1 E22CDP1
		E22CDP1R
 With Safety Yellow Cover With Conduit Opening in Rear of Enclosure	2.2 (57) 3.15 (80)	E22CSP1Y ① E22CDP1Y ①
		E22CDP1RY
 1.42 inch (36 mm) Will Accommodate Self-Adhesive Legend Plates	2.2 (57) 3.15 (80)	E22CSP2 E22CDP2
 1.42 inch (36 mm) Will Accommodate Self-Adhesive Legend Plates	2.2 (57) 3.15 (80)	E22CSP3 E22CDP3

① Yellow covers comply with background requirements for EN418 Safety of Machinery Standard.

Mix Lamps & Alarms



Powering Business Worldwide

Stack a variety of audible alarms with lamps that light steady, flash or strobe

Stacklights Product Overview



Description	E26
Page	Page 196

Standards and Certifications

	CE 60947-5-1 UL 508 — File #E131568 cUL C22.2 No. 14 — File #E131568
Ingress Protection	Stacklight Base and Light Units: IP65, Type 4, 4X and 13 Alarm Units: IP20, Type 1
Electrical Shock Protection	Stacklight Base and Light Unit : IP2X Alarm Units: IP0X

Technical Data and Specifications

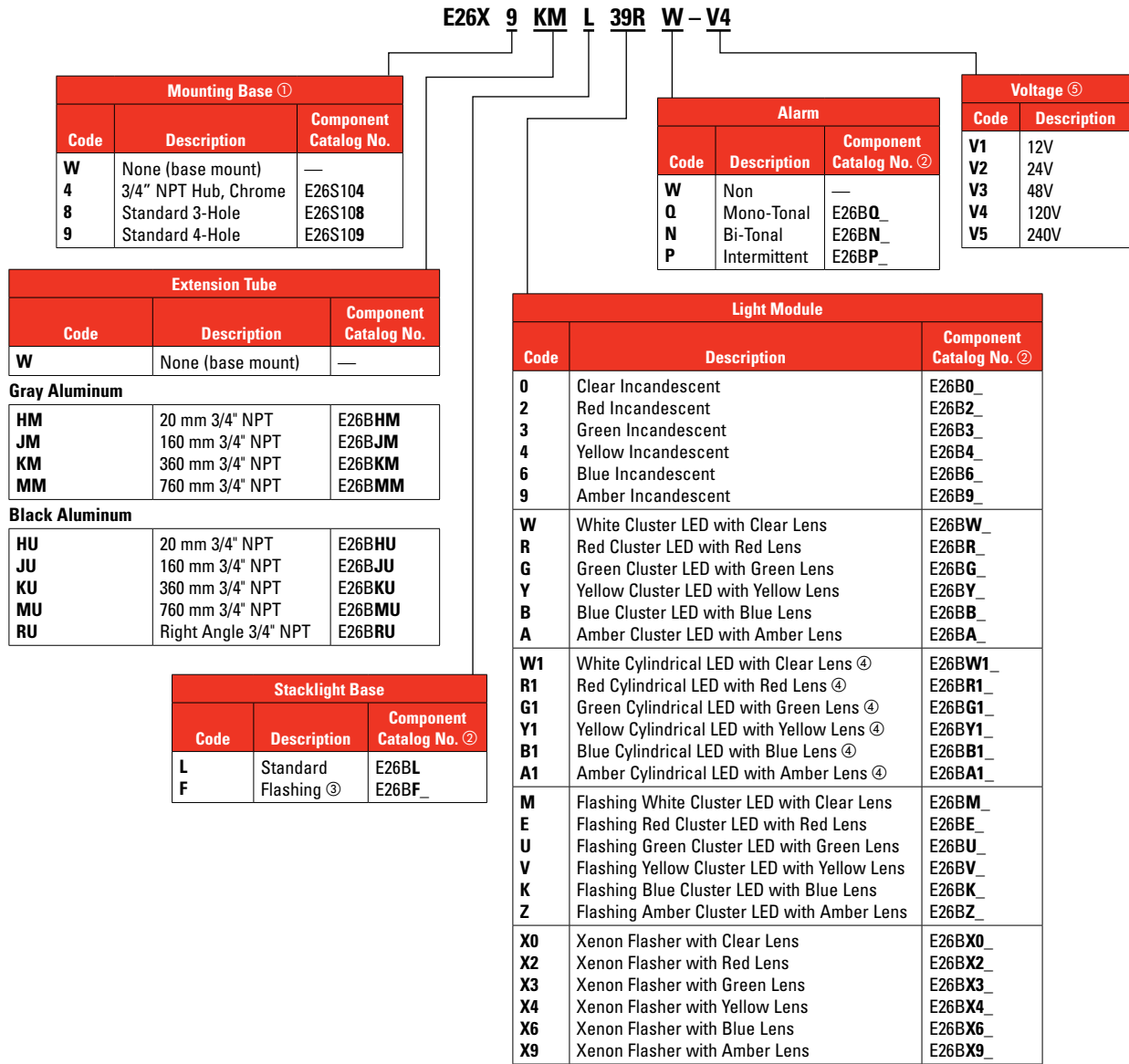
Mechanical Ratings	Shock (IEC 68-2-27): 11 mS, 15g Vibration (IEC 68-2-6): 10 sweeps 10 – 150 Hz, 2g Bump (IEC 68-2-29): 1000 pulses, 6mS, 15g
Climate Conditions	Operating: maximum 104°F (40°C) at 95% RH, Temperature -4° to 140°F (-20° to 60°C) Storage: Temperature -40° to 176°F (-40° to 80°C)
Materials	Cover: Polycarbonate Lenses: Polycarbonate Stacklight Base: Nylon Extension Tubes: Aluminum Mounting Base: Zinc die cast
Terminals	14 – 30 AWG (2.5 – 0.05 mm ²) for single conductors and 18 – 26 AWG (0.75 – 0.14 mm ²) for two conductors of the same size. Do not mix solid and stranded wire in the same terminal. Recommended tightening torque is 4.4 – 5.3 lb-in (0.5 – 0.6 Nm).
Electrical Ratings	Insulation Voltage (U _i): 690V Operational Voltage (U _o): 250V Impulse Withstand Voltage (U _{imp}): 1.5 kV
Bulb Specifications	Incandescent Lamp Type: BA15d Maximum Lamp Wattage: 6W Bulbs — Average Life: Incandescent: 7,000 to 12,000 hrs. (based on voltage) Xenon Flasher: 20,000 hrs. LED: 60,000 to 100,000 hrs. (based on colors)
LED/Incandescent Comparison	Incandescent Lamps Average operating life of 7,000 hours Each lamp can be used with any color lens Low cost results in short-term savings
	LED Lamps Average operating life of 60,000 to 100,000 hours Low power consumption Extended life results in long-term savings

Machine Display & Interface

Stacklights

CATALOG SELECTION

E26 Stacklights — Catalog Numbering System



① Unless Base Mount is specified, an extension tube must be selected for a complete unit.

② Component catalog numbers for flashing bases, alarm units and light modules are incomplete and require the addition of a suffix code to specify the required voltage rating. See table below.

③ Flashing base is for use with incandescent lamps.

④ 240V not available for cylindrical LEDs.

⑤ If no voltage is specified, assembled stacklight will be supplied without lamps or LEDs.

Voltage Codes

Voltage Code	Incandescent Lamp	Cluster LED	Cylindrical LED	Xenon Flasher	Flasher Base/Alarm
(blank)	No Lamp Supplied	No LED Supplied	No LED Supplied	—	—
V1	12V ac/dc	12V ac/dc	12V ac/dc	12V ac/dc	12V ac/dc
V2	24V ac/dc	24V ac/dc	24V ac/dc	24V ac/dc	24V ac/dc
V3	48V ac/dc	48V ac/dc	48V ac/dc	48V ac/dc	48V ac/dc
V4	120V ac/dc	120V ac	120V ac	120V ac	120V ac/dc
V5	240V ac/dc	240V ac	—	240V ac	240V ac/dc

E26 Stacklights

- Modular construction
- Six lens colors
- Variety of lamp types and voltages
- Mono-tonal, bi-tonal and intermittent audible alarms
- Combination of visible and audible alarms
- Modular components reduce inventory requirements, increase flexibility
- Steady and flashing modes allow one light to signal multiple conditions
- No-tools assembly permits easy lamp replacement

One, Two and Three-Light Assembled Stacklights:

- Base mountable
- Incandescent or LED versions
- 24V and 120V versions



One-Light Unit Stacklight — Assembled

Volts AC/DC	Alarm	First Level Color	Illumination Type	Catalog Number
24V	None	Red	Incandescent — Steady	E26XWWL2W-V2
24V	None	Red	Cylindrical LED — Steady	E26XWWLR1W-V2
24V	None	Green	Incandescent — Steady	E26XWWL3W-V2
24V	None	Green	Cylindrical LED — Steady	E26XWWLG1W-V2
24V	None	Amber	Incandescent — Steady	E26XWWL9W-V2
24V	None	Amber	Cylindrical LED — Steady	E26XWWLA1W-V2
120V	None	Red	Incandescent — Steady	E26XWWL2W-V4
120V ①	None	Red	Cylindrical LED — Steady	E26XWWLR1W-V4
120V	None	Green	Incandescent — Steady	E26XWWL3W-V4
120V ①	None	Green	Cylindrical LED — Steady	E26XWWLG1W-V4
120V	None	Amber	Incandescent — Steady	E26XWWL9W-V4
120V ①	None	Amber	Cylindrical LED — Steady	E26XWWLA1W-V4

① LED modules have very low current draw and should not be used with triac output devices like PLC triac output modules. It is recommended that dry contact outputs be used to switch 120V ac modules.

Two-Light Unit Stacklight — Assembled

Volts AC/DC	Alarm	First Level Color	Illumination Type	Second Level Color	Illumination Type	Catalog Number
24V	None	Green	Incandescent — Steady	Red	Incandescent — Steady	E26XWWL32W-V2
24V	None	Green	Cylindrical LED — Steady	Red	Cylindrical LED — Steady	E26XWWLG1R1W-V2
120V	None	Green	Incandescent — Steady	Red	Incandescent — Steady	E26XWWL32W-V4
120V ①	None	Green	Cylindrical LED — Steady	Red	Cylindrical LED — Steady	E26XWWLG1R1W-V4

① LED modules have very low current draw and should not be used with triac output devices like PLC triac output modules. It is recommended that dry contact outputs be used to switch 120V ac modules.

Three-Light Unit Stacklight — Assembled

Volts AC/DC	Alarm	First Level Color	Illumination Type	Second Level Color	Illumination Type	Third Level Color	Illumination Type	Catalog Number
24V	None	Green	Incandescent — Steady	Amber	Incandescent — Steady	Red	Incandescent — Steady	E26XWWL392W-V2
24V	None	Green	Cylindrical LED — Steady	Amber	Cylindrical LED — Steady	Red	Cylindrical LED — Steady	E26XWWLG1A1R1W-V2
120V	None	Green	Incandescent — Steady	Amber	Incandescent — Steady	Red	Incandescent — Steady	E26XWWL392W-V4
120V ①	None	Green	Cylindrical LED — Steady	Amber	Cylindrical LED — Steady	Red	Cylindrical LED — Steady	E26XWWLG1A1R1W-V4

① LED modules have very low current draw and should not be used with triac output devices like PLC triac output modules. It is recommended that dry contact outputs be used to switch 120V ac modules.

Machine Display & Interface

Stacklights

PRODUCT SELECTION

E26 Stacklights

Replacement Accessories

	Description	Notes	Diagram	Catalog Number
<p>Typical Stacklight Assembly (Exploded View)</p> <p>Alternate Conduit Hub</p>	Replacement Cover	Normally Included with Stacklight Base	1	E26S68
	Replacement Lens O-Ring	Normally Included with Light Modules	2	E26S106 ①
	Replacement Lenses	Clear Red Green Yellow Blue Amber	3	E26S38 E26S39 E26S40 E26S41 E26S42 E26S43
	Replacement Xenon Strobe Dual High (does not include lenses)	12V ac/dc 24V ac/dc 48V ac/dc 120V ac 240V ac	4	E26S33 E26S34 E26S35 E26S36 E26S37
	Replacement Diffusers	White — Normally Supplied with Incandescent Light Modules	4	E26S31
		Clear — Normally Supplied with LED Light Modules	4	E26S32
	Replacement Lamps	12V 24V 48V 120V 240V	5	E26S8 E26S9 E26S10 E26S11 E26S12
	Replacement Extension Tube O-Rings	Normally Included with Extension Tubes	6	E26S107 ②
	Replacement Mounting Gasket ③	Normally Included with Stacklight Base	7	E26S105
	Lamp Removal Tool	For E26 and E22 Incandescent Lamps		E22BA3

① Sold in packages of 5 pieces.

② Sold in packages of 10 pieces.

③ Mounting gaskets have two sets of mounting holes — one set with center-to-center spacing of 1.75 in. (44.5 mm) and another set with center-to-center spacing of 1.65 in. (42 mm).

Monitor Multiple Functions



Powering Business Worldwide



Flexible line of panel meters that perform multiple functions with one part

Machine Display & Interface

Panel Meters

PRODUCT OVERVIEW

Panel Meters Product Overview

		
Description	E5	Eclipse
Page	Page 201	Page 201
Number of Digits	5	4
Display Technology	7-Segment LED	7-Segment LED
Display Character Height	8 mm	14 mm
Panel Cut-Out Size	1/32 DIN (25 x 50 mm)	1/8 DIN (45 x 92 mm)
Available Outputs	None	Dual Relay, Analog, RS-485
Available Inputs	0 – 10V / 2 – 10V / 0 – 20 mA / 4 – 20 mA	dc Volt, ac Volt, dc Amp, ac Amp, 5A ac, Temperature (J, K, T, PT100 RTD), 4 – 20 mA / 0 – 10V / 1 – 5V
Front Panel Protection	IP65	NEMA 4X
Connection Method	Screw Terminal	Depluggable Screw Terminals
Scaling	Programmable End Points, Linear Interpolation	Programmable End Points, Linear Interpolation
Input Power Options	10 – 30V dc	9 – 30V dc or 85 – 264V ac
Update Time	500 ms	400 ms
Automatic MIN / MAX Capture	Yes	Yes
Input for Display-Hold	Yes	—

Machine Display & Interface

Panel Meters

CATALOG SELECTION / PRODUCT SELECTION

Digital Panel Meters — E5-324-E

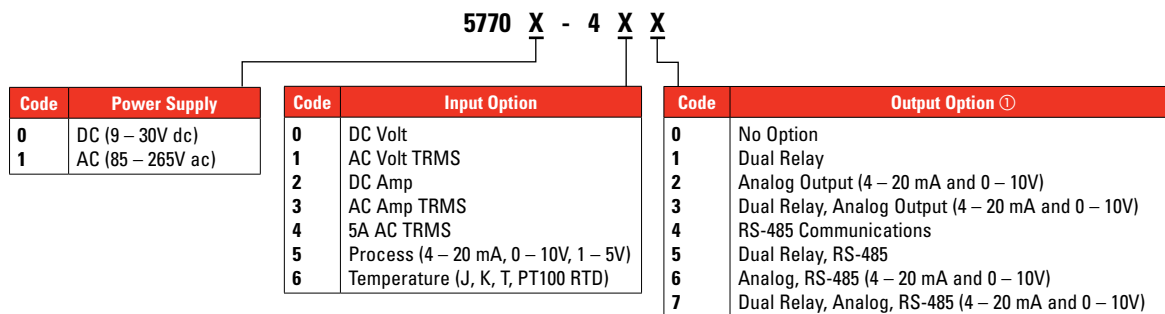
- Galvanic isolation with protection against incorrect polarity
- Automatic min. / max. value detection
- Freely programmable characteristic curve end points
- Input range:
 - 1 current measuring input (0/4 – 20 mA)
 - 1 voltage measuring input (0/2 – 10V)



E5-324-E0402

Description	Catalog Number
LED Digital Panel Meter, 24 x 48 mm	E5-324-E0402

Digital Panel Meters — Eclipse Series — Catalog Numbering System



① Output Options 0, 2, 4 are not available for models -41X and -43X.

Digital Panel Meters — Eclipse Series

- 4 full digits
- 1/8 DIN size
- Red, LED display
- Scalable display
- Flashing alarms
- Min. / max. data hold
- Optional analog, relay and RS-485 outputs
- Type 4X



Eclipse Series

Description	Catalog Number
Digital Ammeter — 5A AC, 85 – 264V ac Power	57701440
Digital Ammeter — 5A AC, 85 – 264V ac Power, 2 Relay Outputs	57701441
Digital Process Meter — 4 – 20mA / 0 – 10V, 85 – 264V ac Power	57701450
Digital Process Meter — 4 – 20mA / 0 – 10V, 85 – 264V ac Power, 2 Relay Outputs	57701451
Digital Process Meter — 4 – 20mA / 0 – 10V, 85 – 264V ac Power, 2 Relay Outputs and Analog Retransmission	57701453
Digital Temperature Meter, 85 – 264V ac Power	57701460
Digital Temperature Meter, 85 – 264V ac Power, 2 Relay Outputs	57701461

Effective and Flexible



Powering Business Worldwide

- Low cost graphic panels for basic at machine monitoring and control
- Competitively priced hardened displays with embedded programmable logic control
- Windows®-based displays with multi-vendor communications capabilities
- Solid-state memory means rugged displays that ride-through machine wear and tear
- Create your ideal machine interface with Canvas™ SCADA software

Machine Display & Interface

Operator Interfaces & Programming Software

PRODUCT OVERVIEW

Operator Interfaces & Programming Software Product Overview

			
Description	ELC-GP Graphics Panel	HM/Operator Interface	PanelMate ePro PS
Page	Page 205	Page 206	Page 207
Screen Size	2-Line and 4-Line	4", 6", 8", and 10"	8", 10", 12", 15" and Blind Node (no screen)
Screen Options	Monochrome	Blue Mode, Grey Scale, 256 Color STN or 65k Color TFT	16 Million Color TFT; Indoor and Outdoor; Selectable Resolutions from VGA (640 x 480) to UXGA (1600 x 1200)
Interface	Keypad Only	Touchscreen and Keypad	Touchscreen Only
Bezel Options	Standard	Standard; Customer Logo	Standard; Stainless Steel; Customer Logo; Custom Color
Communication Ports	2 Serial	3 Serial; 1 or 2 USB; Expansion Port for Ethernet Modbus TCP or Local I/O	2 serial; 1 Ethernet; 2 PCMCIA; 1 Removable CompactFlash; 4 USB; VGA
Three Simultaneous Protocols	—	Yes	Yes
Ethernet Drivers	—	Modbus TCP	Modbus TCP, Ethernet IP, ProfiNet, and more
Upload / Download	Serial Cable	Ethernet; USB	Ethernet; USB
Operating System	Proprietary	Proprietary	Windows XP Embedded (protected)
Third-Party Software Support	—	—	Yes
Screen Saver	—	Yes	Yes

Machine Display & Interface

Operator Interfaces & Programming Software

PRODUCT OVERVIEW

Operator Interfaces & Programming Software Product Overview

			
Description	ELCSoftGP	HM iSoft	Canvas
Overview	Use ELCSoftGP to create, edit, upload and download applications to ELC Graphics Panels	Use HM iSoft to create, edit, upload and download applications to the HM i family of operator interfaces	Feature-rich software package with SCADA functionality that can be run on ePro PS operator interfaces or personal computers

Catalog ID

Development Software Seat License	ELCSOFTGP	HMISOFT	CANVASPRO ①
Development Software Site License	N/A	N/A	CANVASPROSL ②
Runtime Software for a PC	N/A	N/A	CANVASPC ③

Development Software System Requirements

Operating Systems	Microsoft® Windows 98, Windows ME, Windows 2000, Windows XP	Microsoft Windows 2000 and Windows XP	Microsoft Windows XP (SP1 or later) or Microsoft Windows Vista (Canvas V3.3 or later)
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Time-Saving Editor Features

On and Off-Line Simulation		•	•
Macro Capability		•	•
Math and Logic		•	•
Multi-Language		•	•
System Variables		•	•
Auto-Scale Application to Different Resolution / Screen Size		•	•
Scripting (IF, THEN, ELSE, GOTO)		•	•
Symbol Factory / Library		•	•
Master Pages		•	Multiple Master Pages
User-Created Controls			•
Action Lists			•
Reusable Controls, Images and Pages via Index Lists and Client Observer			•
Advanced Search and Replace			•
Advanced Context Sensitive Help			•

Runtime Features

Clock Synchronization	•	•	•
Sound Actions or Control	•	•	•
Security	•	Multi-Level	Advanced Multi-Level
Pop-Up Screens		•	•
Animated Graphics		•	•
Recipes		•	•
Timer Schedule		•	•
Data Archiving		•	•
Real-Time and Historical Alarms / Events and Data Archiving / Trending		•	•
Notification of Data and Events via e-mail			•
Store Data on Shared Network Drive			•
Import / Export from XML			•
DVT and Cognex Vision System Interface			•
Secure Document and Web Network Browser			•
Launch / Control Third-Party Applications			•
2-Touch Controls for Safety			•
Embedded Logic		•	

① Includes Canvas software for developing applications, runtime software for the PanelMate ePro PS Series and supporting OPC servers/drivers. Single User License on CD-ROM.

② Site License — see CANVASPRO (for all users at 1 site location).

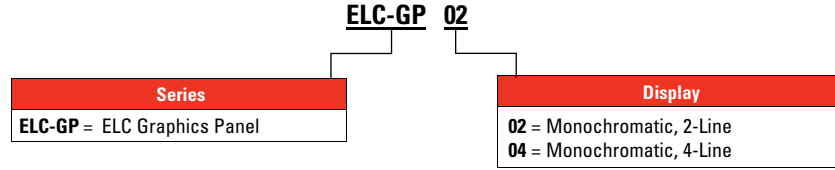
③ Installation CD and licensing to run Canvas runtime software on a PC with Windows XP Professional and Vista OS. Licenses for Kepware OPC servers are included.

Machine Display & Interface

Operator Interfaces & Programming Software

CATALOG SELECTION / PRODUCT SELECTION

ELC-GP Graphics Panel — Catalog Numbering System



ELC-GP Graphics Panel

- Simple to program and easily connect to ELC products
- Protocols — include Modbus ASCII/RTU, ASCII Slave and vendor-specific protocols from Allen-Bradley®, Siemens®, Mitsubishi®, Koyo® and many more



Graphics Panels

Description	Catalog Number
160 x 32 Pixels, 10 Function Keys, Monochrome	ELC-GP02
128 x 64 Pixels, 10 Function Keys, Monochrome	ELC-GP04

Software and Accessories

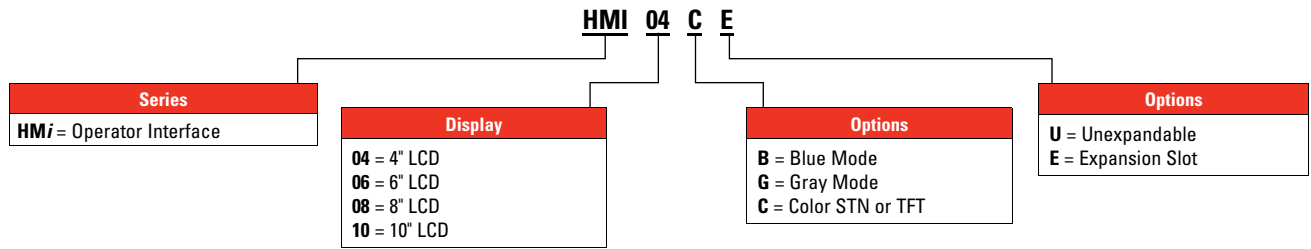
Description	Catalog Number
Programming Software for GP Units	ELCSOFTGP
Program Transfer Module	ELC-GPXFERMOD
Cable, PC to ELC-GPxx, 9.8 ft. (3 m)	ELC-CBPCGP3
Power Supply, 24 Watt, 1 Amp	ELC-PS01
Power Supply, 48 Watt, 2 Amp	ELC-PS02

Machine Display & Interface

Operator Interfaces & Programming Software

CATALOG SELECTION / PRODUCT SELECTION

HMI Operator Interface — Catalog Numbering System



HMI Operator Interface

- All units feature an analog touchscreen and function keys to suit all environments and applications
- True analog touchscreen
- Retentive internal data storage



HMI

Description	Catalog Number
4-Inch Blue Mode Touchscreen	HMI04BU
6-Inch Blue Mode with Expansion Slot	HMI06BE
6-Inch Gray Scale Mode with Expansion Slot	HMI06GE
6-Inch Color STN with Expansion Slot	HMI06CE
8-Inch Color TFT with Expansion Slot	HMI08CE
10-Inch Color TFT with Expansion Slot	HMI10CE

Software and Accessories

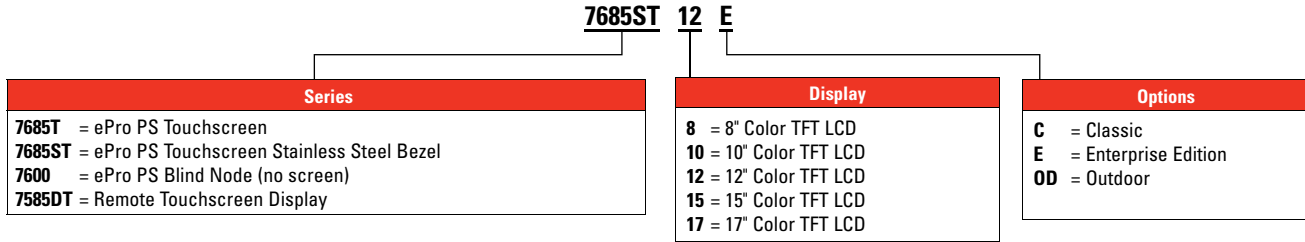
Description	Catalog Number
Programming Software	HMISOFT
Ethernet Modbus TCP Expansion Module	HMIECENT
I/O Expansion Module, 8 In / 6 Out	HMIEC0806
I/O Expansion Module, 16 In / 12 Out	HMIEC1612
6-Inch Adapter Plate for PM1000	APPM1HMI6

Machine Display & Interface

Operator Interfaces & Programming Software

CATALOG SELECTION / PRODUCT SELECTION

PanelMate® ePro™ PS Operator Interface — Catalog Numbering System



PanelMate ePro PS Operator Interface

- High-performance yet cost-effective operator interface with Microsoft® Windows® XP embedded operating system
- Exclusive Protect Mode™ that provides protection for the operating system and software



PanelMate ePro PS Operator Interface (76xx Series)

Description	Catalog Number
PanelMate ePro PS	
8.4-Inch Color TFT Display, Touchscreen (acrylic), OPC, DC, User Manual on CD-ROM	7685T-8
10.4-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-10
10.4-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-10
12.1-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-12
12.1-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-12
15.0-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-15
15.0-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-15
Blind Node (no display, see table below for display options), OPC, DC, User Manual on CD-ROM	7600
PanelMate ePro PS EE (Enterprise Edition)	
8.4-Inch Color TFT Display, Touchscreen (acrylic), OPC, DC, User Manual on CD-ROM	7685T-8E
10.4-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-10E
10.4-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-10E
12.1-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-12E
12.1-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-12E
15.0-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-15E
15.0-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-15E
Blind Node (no display, see table below for display options), OPC, DC, User Manual on CD-ROM	7600E
PanelMate ePro PS OD (Outdoor)	
8.4-Inch Color TFT Display, Touchscreen (acrylic), OPC, DC, User Manual on CD-ROM	7685T-8OD
12.1-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-12OD
12.1-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-12OD
15.0-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-15OD
15.0-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-15OD

Note: Customs available upon request.

Machine Display & Interface

Operator Interfaces & Programming Software

PRODUCT SELECTION

PanelMate ePro PS Operator Interface

PanelMate ePro PS Operator Interface (76xx Series) (Continued)

Description	Catalog Number
PanelMate ePro PS Classic	
8.4-Inch Color TFT Display, Touchscreen (acrylic), OPC, DC, User Manual on CD-ROM	7685T-8C
10.4-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-10C
10.4-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-10C
12.1-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-12C
12.1-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-12C
15.0-Inch Color TFT Display, Touchscreen (glass), OPC, Painted Steel, DC, User Manual on CD-ROM	7685T-15C
15.0-Inch Color TFT Display, Touchscreen (glass), OPC, Stainless Steel, DC, User Manual on CD-ROM	7685ST-15C
Blind Node (no display, see table below for display options), OPC, DC, User Manual on CD-ROM	7600C

Note: Customs available upon request.

Stand-Alone Touchscreen Displays

Description	Catalog Number
12.1-Inch Color TFT Display, ELO Touchscreen (glass), AC	7585DT-12
15.0-Inch Color TFT Display, ELO Touchscreen (glass), AC	7585DT-15
17.0-Inch Color TFT Display, ELO Touchscreen (glass), AC	7585DT-17

Accessories

Description	Catalog Number
8.4-Inch Anti-Glare Overlay Kit, 5 Overlays / Kit	17AGT
10.4-Inch Anti-Glare Overlay Kit, 5 Overlays / Kit	39AG
12.1-Inch Anti-Glare Overlay Kit, 5 Overlays / Kit	AG-12
15.0-Inch Anti-Glare Overlay Kit, 5 Overlays / Kit	AG-15
17.0-Inch Anti-Glare Overlay Kit, 5 Overlays / Kit	AG-17
Kit to Restore ePro PS, OD and Classic Units to the Current Factory Image Load	76MLPS
Kit to Restore ePro PS EE Units to the Current Factory Image Load	76MLEE

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Small, Modular and Rugged



Powering Business Worldwide

- Dependable and accurate performance
- Pre-cabled and encapsulated to protect against extreme 6P conditions and contaminants
- Mini-metal limit switches designed small and tough with machinery OEMs in mind
- Modular plug-in components provide greater flexibility and reduced inventory
- Eaton's sensor business specializes in providing modified or fully custom products direct to OEMs — call (800) 426-9184 x1

Limit Switches Product Overview

				
Description	E47 Precision Switches	Compact Prewired Switches	E49 Mini Metal Switches	E50 Heavy-Duty Plug-in Switches
Page	Page 212	Page 213	Page 214	Page 215
Overview	Specified when accurate repeatability, choice of operating forces and travel characteristics and tightly controlled action of cam or target in space restricted areas is of prime importance. Cost effective and compact	Designed to be a versatile, slim device for hard-to-fit applications where sealing integrity is required	Suitable for OEMs who require a small, cost-effective solution but cannot sacrifice durability and mechanical life as would be the case with a plastic IEC style switch	Versatile in design. High reliability. Low maintenance costs with installation ease. Best choice for heavy-duty limit switch applications. Withstands physical and chemical abuse of harsh industrial environments
Applications	Overhead, folding and elevator doors, sliding gates, automated guided vehicles and commercial instrumentation	Machine tool, food processing and packaging	Automatic vending machines, electronic assembly machines, elevators and lifts, injection molding, packaging	Punch presses, waste water treatment, machine tool, automotive, retrieval systems, industrial truck, car wash lines
Product Features	<ul style="list-style-type: none"> • Self-contained switches or with an enclosed cast housing for increased durability and conduit connection (1/2" NPT) • High current capacity for power load switching and motor handling capability • Screw and solder terminations 	<ul style="list-style-type: none"> • Rugged aluminum alloy die cast housing • Sealed construction with enclosure ratings of Type 4, 6 and 13 • Prewired with 3m of 18 AWG, AWM 2517, 300V cable 	<ul style="list-style-type: none"> • Long life — rated for 10 million operations • Pre-wired units with custom cable lengths available for high volume customers • "Fingerproof" terminals protect against accidental shock 	<ul style="list-style-type: none"> • Modular operating heads, switch bodies and receptacles are interchangeable without field adjustment • Order as complete assemblies or components for stocking and manufacturing flexibility • 90 degree total travel, 5 degree pretravel characteristics are standard features
Contact Ratings	NEMA A600, R300, AC-15, DC-13 15A/20A, 125 or 250V ac	NEMA B300	5A @ 250V ac 5A @ 30V dc	NEMA A600, R300 Lighted Versions A150, R150 6A, 120V ac; 10A Continuous
Enclosure Ratings	Enclosed — Type 1	Type 4, 6 and 13 IP67	IP65	Type 1, 3, 3S, 4, 4X, 6, 6P, 13 IP67
Construction	Basic — Phenolic Enclosed — Aluminum Die Cast	Aluminum Alloy Die Cast	Zinc Alloy	Zinc Die Cast
Approvals	UL Recognized CSA Certified	cULus	UL Recognized	UL Listed CSA Certified IEC 947-5-1 TUV

Sensors & Limit Switches

Limit Switches

PRODUCT SELECTION

E47 Precision

- The cost-effective solution for highly accurate switching applications
- Compact housings are ideal for use where space is restricted
- Precision, snap-action operators provide accurate repeatability of electrical and mechanical operating characteristics
- High current capacity (up to 20A) allows power load switching and motor handling capability
- Enclosed booted versions shield actuators from debris
- Solder and spade terminals available
- 15A models shown, 20A models also available



Basic Switches

Description	Type	Catalog Number	Specifications ①
		15A	
Straight Lever	Screw Terminal	E47BMS22	OF Max. — 2.47 oz (70g) RF Min. — 0.49 oz (14g) PT Max. — 0.394 in (10 mm) OT Max. — 0.220 in (5.6 mm) MD Max. — 0.051 in (1.3 mm) FP Max. — 1.11 in (28.2 mm) OP — 0.748 in (19 mm)
Standard Lever	Screw Terminal	E47BMS20	OF Max. — 3.53 oz (100g) RF Min. — 0.99 oz (28g) PT Max. — 0.197 in (5.0 mm) OT Max. — 0.079 in (2.0 mm) MD Max. — 0.039 in (1.0 mm) FP Max. — 0.976 in (24.8 mm) OP — 0.748 in (19 mm)
Cross Roller Plunger	Screw Terminal	E47BMS11	OF Max. — 12.3 oz (350g) RF Max. — 4.02 oz (114g) PT Max. — 0.016 in (0.4 mm) OT Max. — 0.14 in (3.58 mm) MD Max. — 0.002 in (0.05 mm) OP — 1.315 in (33.4 mm)
Extended Roller Lever	Screw Terminal	E47BMS42	OF Max. — 5.64 oz (160g) RF Min. — 0.78 oz (22g) PT Max. — 0.28 in (7.1 mm) OT Max. — 0.16 in (4 mm) MD Max. — 0.04 in (1.02 mm) FP Max. — 1.437 in (36.5 mm) OP — 1.189 in (30.2 mm)
Roller Lever	Screw Terminal	E47BMS30	OF Max. — 5.64 oz (160g) RF Min. — 1.48 oz (42g) PT Max. — 0.106 in (2.7 mm) OT Max. — 0.094 in (2.4 mm) MD Max. — 0.02 in (0.5 mm) FP Max. — 1.28 in (32.5 mm) OP — 1.189 in (30.2 mm)

① OF = Operating Force; RF = Return Force; PT = Pre-travel; OT = Overtravel; MD = Movement Differential; FP = Free Position; OP = Operating Position.

Enclosed Switches

Description	Catalog Number	Specifications ①
Roller Lever	E47BLS32	OF Max. — 20.1 oz (570g) RF Min. — 6.0 oz (1700g) PT Max. — 0.157 in (4.0 mm) OT Max. — 0.236 in (6.0 mm) MD Max. — 0.016 in (0.4 mm)
Booted Roller Lever	E47BLS33	OF Max. — 22.57 oz (640g) RF Min. — 8.11 oz (230g) PT Max. — 0.197 in (5.0 mm) OT Max. — 0.236 in (6.0 mm) MD Max. — 0.016 in (0.4 mm)
Booted Roller Plunger	E47BLS08	OF Max. — 17.64 oz (500g) RF Min. — 3.53 oz (100g) PT Max. — 0.039 in (1.0 mm) OT Max. — 0.138 in (3.5 mm) MD Max. — 0.005 in (0.12 mm) OP — 1.957 in (49.7 mm)
	E47BLS12 (Cross Roller Unit)	OF Max. — 17.64 oz (500g) RF Min. — 3.53 oz (100g) PT Max. — 0.039 in (1.0 mm) OT Max. — 0.138 in (3.5 mm) MD Max. — 0.005 in (0.12 mm) OP — 1.957 in (49.7 mm)
Booted Wobble	E47BLS14	OF Max. — 2.11 oz (60g) RF Min. — 0.88 oz (25g) PT Max. — 0.520 in (13.2 mm) OT Max. — 0.315 in (8.0 mm) MD Max. — 0.039 in (1.0 mm)

① OF = Operating Force; RF = Return Force; PT = Pre-travel; OT = Overtravel; MD = Movement Differential; FP = Free Position; OP = Operating Position.

Compact Prewired

- Rugged and dependable compact limit switch
- Rugged aluminum alloy die cast housing
- Sealed construction with enclosure ratings of Type 4, 6 and 13
- Prewired with 3m of 18 AWG, AWM 2517, 300V cable
- Stackable ridge for ganged operation



Compact Prewired

Actuator Type	Operating Force (Maximum)	Reset Force (Minimum)	Overtravel (Minimum)	Pre-travel	Movement Differential (Maximum)	Operating Position	Catalog Number
Pin Plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 inch (3 mm)	0.07 inch (1.8 mm)	0.008 inch (0.2 mm)	0.62 ± 0.04 inch (15.7 ± 1 mm)	E47BCC05
Sealed Plunger	63.5 oz (1.8 kg)	15.9 oz (450g)	0.118 inch (3 mm)	0.07 inch (1.8 mm)	0.008 inch (0.2 mm)	0.99 ± 0.04 inch (24.9 ± 1 mm)	E47BCC06
Roller Plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 inch (3 mm)	0.07 inch (1.8 mm)	0.008 inch (0.2 mm)	1.12 ± 0.04 inch (28.5 ± 1 mm)	E47BCC07
Sealed Roller Plunger	63.5 oz (1.8 kg)	15.9 oz (450g)	0.118 inch (3 mm)	0.07 inch (1.8 mm)	0.008 inch (0.2 mm)	1.35 ± 0.04 inch (34.3 ± 1 mm)	E47BCC08
Cross Roller Plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 inch (3 mm)	0.07 inch (1.8 mm)	0.008 inch (0.2 mm)	1.12 ± 0.04 inch (28.5 ± 1 mm)	E47BCC11
Sealed Cross Roller Plunger	63.5 oz (1.8 kg)	15.9 oz (450g)	0.118 inch (3 mm)	0.07 inch (1.8 mm)	0.008 inch (0.2 mm)	1.35 ± 0.04 inch (34.3 ± 1 mm)	E47BCC12
Bevel Plunger	42.3 oz (1.2 kg)	15.9 oz (450g)	0.118 inch (3 mm)	0.07 inch (1.8 mm)	0.008 inch (0.2 mm)	1.12 ± 0.04 inch (28.5 ± 1 mm)	E47BCC13
Roller Lever	20.5 oz (580g)	5.3 oz (150g)	40°	25° max.	3°	—	E47BCC15
Wobble Stick	5.3 oz (150g)	—	—	15° max.	—	—	E47BCC20

Sensors & Limit Switches

Limit Switches

PRODUCT SELECTION

E49 Mini Metal

- Long life — rated for 10 million operations
- “Fingerproof” terminals protect against accidental shock
- Double-spring mechanism for contact reliability
- Captive screws on enclosure cover make wiring hassle-free
- SPDT double break



E49 Mini Metal

Operating Head Type	Specifications					Catalog Numbers
	Travel to Operate Contacts	Travel to Reset Contacts	Total Travel	Force to Operate Contacts	Minimum Return Force	Assembled Units (Switch Body and Head) 1NO-1NC Contacts
Side Rotary Lever	20°	12°	70°	750 g	100 g	E49G31AP3
Adjustable Side Rotary Lever	20°	12°	70°	750 g	100 g	E49G31UP3
Top Pushbutton	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900 g	150 g	E49G31BP3
Top Push Roller	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900 g	150 g	E49G31CP3
Top Push Roller (90 Degree Roller)	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900 g	150 g	E49G31C1P3
Adjustable Rod Lever	20°	12°	70°	750 g	100 g	E49G31DP3
Wobble Stick (Nylon Coil)	1.18 in (30 mm)	—	—	150 g	—	E49G31NP3
Wobble Stick (Metal Coil)	1.18 in (30 mm)	—	—	150 g	—	E49G31VP3
Wobble Stick (Metal Rod)	1.18 in (30 mm)	—	—	150 g	—	E49G31MP3
Wobble Stick (Whisker)	1.18 in (30 mm)	—	—	150 g	—	E49G31XM3

E50 Heavy-Duty Plug-In

- Modular, plug-in components (head, body and receptacle) provide application flexibility, reduced inventory and less downtime
- Manufactured to take the physical and environmental abuse (including cutting fluids and chemicals) of harsh industrial environments
- Chemical-resistant Viton® gaskets, seals and boots are standard, and so are captive, posi-drive screws
- 600V rating, ridge-topped contacts and wiping action assure continuity even to logic level circuits
- Rotary heads are field convertible clockwise, counterclockwise or both, without special tools



Assembled Switches — Standard

Operating Head Type		Catalog Number
Side Rotary (requires an operating lever)	Standard Spring Return — E50DR1 ①	E50AR1
	Low Force Spring Return — E50DL1 ①	E50AL1
	Maintained Two-Position — E50DM1	E50AM1
Side Pushbutton, Spring Return — E50DS1		E50AS1
Side Pushbutton, Adjustable Spring Return — E50DS2		E50AS2
Side Push Roller, Spring Return — E50DS3 ②		E50AS3
Side Pushbutton, Maintained — E50DH1		E50AH1
Top Pushbutton, Spring Return — E50DT1		E50AT1
Top Pushbutton, Adjustable Spring Return — E50DT2		E50AT2
Top Push Roller, Spring Return — E50DT3 ②		E50AT3
Wobble Head, Spring Return (requires a wobble operator)	Standard Duty — E50DW1	E50AW1
	Heavy-Duty High Strength Steel — E50DW2	E50AW2

① CW (clockwise) and CCW (counterclockwise) operation, easily convertible to CW only or CCW only operation.

② Roller can be converted in the field between horizontal and vertical.

Note: Order assembled (as shown in this product guide) or as head, body, receptacle and lever components.





Detect Tough Targets



Powering Business Worldwide

- A full family of compact sensors with high optical performance and built-in relays
- Light / dark switch and gain control provides quick adjustment and peak optical performance
- Detect targets of different color, reflectance, contrast or surface shape at the same range
- Harsh-duty sensors withstand the harshest electrical, chemical or physical environments
- Eaton's sensor business specializes in providing modified or fully custom products direct to OEMs — call (800) 426-9184 x1

Photoelectric Sensors Product Overview

				
Description	Enhanced 50 Series	SM Series	Comet Series	E58 Harsh-Duty Series
Page	Page 218	Page 220	Page 221	Page 223
Overview	Provides outstanding optical performance and application flexibility in a self-contained, industry-standard package	Provides high performance and ease of use in an economical, compact package	This high-performance, 18 mm tubular sensor family features a wide variety of models in all sensing modes	Designed to withstand your harshest physical, chemical and optical environments, 18 and 30 mm tubular enclosures
Sensing Types and Ranges	<ul style="list-style-type: none"> • Thru-Beam: 200 and 500 feet • Reflex: 30 feet • Polarized Reflex: 16 feet • Diffuse Reflective: 5 and 10 feet • Clear Object Detector: 45 inches • Infrared Fiber Optic: range varies with fiber • Visible Fiber Optic: range varies with fiber 	<ul style="list-style-type: none"> • Thru-Beam: 50 feet • Polarized Reflex: 10 feet • Diffuse Reflective: 8 inches • Perfect Prox® Background rejection: 2 and 4 inches 	<ul style="list-style-type: none"> • Thru-Beam: 20 and 80 feet • Reflex: 25 feet • Polarized Reflex: 15 and 10 feet • Diffuse Reflective: 8 and 24 inches • Focused Diffuse Reflective: 1.6 inches • Wide Angle Diffuse: 6 inches • Fine spot Perfect Prox: 2 inches • Perfect Prox Background Rejection: 2, 4, 6 and 9 inches • Glass and Plastic Fiber Optic: range varies with fiber 	<ul style="list-style-type: none"> • Thru-Beam: 800 feet • Reflex: 59 feet • Polarized Reflex: 34 feet • Perfect Prox background rejection: 2, 4, 6 and 11 inches
Product Features	<ul style="list-style-type: none"> • High optical performance, including 10-foot Diffuse and 500-foot Thru-Beam versions • Output options include a high-current 10 amp SPDT relay • Built-in Light/Dark selection on all models 	<ul style="list-style-type: none"> • Highly visible LED indicators for power, output and alignment (TargetLock™) • TargetLock simplifies setup and ensures that the sensor operates at the highest level of reliability possible • Perfect Prox models sense different colored targets at the same range and ignore objects in the background 	<ul style="list-style-type: none"> • The 18 mm tubular body has flat sides for added mounting flexibility • Available in universal voltage ac/dc versions as well as dc only models • Short circuit protection on all models 	<ul style="list-style-type: none"> • Designed to be the most rugged photoelectric sensor available • Perfect Prox background rejection technology for unmatched optical performance • Output status indicator is the brightest available and is visible from any angle and in any lighting condition
Operating Voltage	24 – 240V ac and 12 – 240V dc, 10 – 40V dc	18 – 264V ac and 18 – 50V dc 10 – 30V dc	90 – 132V ac and 18 – 50V dc 20 – 264V ac and 15 – 30V dc 10 – 30V dc	2-wire models: 90 – 132V ac and 18 – 50V ac 3- and 4-wire models: 20 – 132V ac and 15 – 30V dc 10 – 30V dc
Output Function	Selectable Light or Dark Operate	Light and Dark Operate models available	Selectable Light or Dark Operate	Light and Dark Operate models available
Maximum Load Current	dc units: 250 mA ac/dc units: 300 mA to 10A	ac/dc units — 200 mA dc units — 100 mA (NPN or PNP)	ac/dc units — 300 mA dc units — 250 mA (NPN), 100 mA (PNP)	ac/dc units — 300 mA (100 mA for 18 mm diameter units) dc units — 250 mA (NPN), 100 mA (PNP)
Enclosure Ratings	IP67	Type 1, 3, 4, 4X, 6, 6P, 12 and 13 IP68	Type 1, 2, 3, 4, 4X, 6, 12 and 13	Type 1, 2, 3, 3R, 3S, 4, 4X, 6, 6P, 12, 12K and 13
Response Time Range	dc operation: 2 ms ac operation: 15 ms	dc operation: 1 ms ac operation: 16 ms	dc operation: 1 ms ac operation: 10 ms 2W ac/dc Operation: 32 ms	2 ms to 35 ms
Approvals	CSA Approved Certified to UL Standard, UL 508	UL Listed cUL Listed	UL Recognized cUL Recognized	UL Listed cUL Listed

Sensors & Limit Switches

Photoelectric Sensors

PRODUCT SELECTION

Enhanced 50 Series

- High-performance sensors for demanding applications
- High-optical performance models, including a 500-foot (152 m) thru-beam and a 10-foot (3 m) diffuse reflective unit
- Output options include a 3 amp SPDT relay
- All units offer light/dark selection
- Logic options include ON-delay, OFF-delay and One-Shot delay
- Fully potted construction for use in areas subject to washdown, high shock and/or vibration
- Choice of pre-wired power cable, built-in mini-connector, built-in micro-connector and pigtail micro-connector versions; standard pre-wired cable length is 6 feet (1.8 m)



Enhanced 50 Series Sensors

Description	Voltage Range	Sensing Range	Optimum Range	Sensing Beam	Thru-Beam Component	Output Type	Time Delay	Connection Type	Catalog Number
Thru-Beam Standard Range	10 – 40V dc	200 ft. (61 m)	0.1 – 100 ft. (0.03 – 31 m)	Infrared	Source	N/A	N/A	4-pin Euro (Micro) Connector	1150E-6547
					Detector	NPN/PNP 250 mA	no		1250E-6547
	12 – 240V dc 24 – 240V ac	200 ft. (61 m)	0.1 – 100 ft. (0.03 – 31 m)	Infrared	Source	N/A	N/A	4-pin Micro Connector	1150E-6543
					Detector	Isolated Output Solid-State Relay 300 mA @ 240V ac/dc	no		1250E-6543
					Source	N/A	N/A	4-pin Mini-Connector	1150E-6504
					Detector	SPDT EM Relay 3A @ 120V ac	no	5-pin Mini-Connector	1250E-6504
Thru-Beam Extended Range	10 – 40V dc	500 ft. (152 m)	0.1 – 250 ft. (0.03 – 77 m)	Infrared	Source	N/A	N/A	4-pin Euro (Micro) Connector	1151E-6547
					Detector	NPN/PNP 250 mA	no		1251E-6547
	12 – 240V dc 24 – 240V ac	500 ft. (152 m)	0.1 – 250 ft. (0.03 – 77 m)	Infrared	Source	N/A	N/A	4-pin Micro Connector	1151E-6543
					Detector	Isolated Output Solid-State Relay 300 mA @ 240V ac/dc	no		1251E-6543
					N/A	N/A	4-pin Mini-Connector	1151E-6504	
					SPDT EM Relay 3A @ 120V ac	no	5-pin Mini-Connector	1251E-6504	

Enhanced 50 Series

Enhanced 50 Series Sensors

Description	Voltage Range	Sensing Range ①	Optimum Range ①	Sensing Beam	Output Type	Time Delay	Connection Type	Catalog Number
Standard Reflex	10 – 40V dc	30 ft. (9 m)	0.5 – 15 ft. (0.2 – 4.6 m)	Visible Red	NPN/PNP 250 mA	no	4-pin Euro (Micro) Connector	1450E-6547
	12 – 240V dc 24 – 240V ac	30 ft. (9 m)	0.5 – 15 ft. (0.2 – 4.6 m)	Visible Red	Isolated Output Solid-State Relay 300 mA @ 240V ac/dc	no	4-pin Micro Connector	1450E-6543
					SPDT EM Relay 3A @ 120V ac	no	5-pin Mini-Connector	1450E-6504
Polarized Reflex ②	10 – 40V dc	16 ft. (4.9 m)	0.5 – 8 ft. (0.2 – 2.5 m)	Visible Red	NPN/PNP 250 mA	no	4-pin Euro (Micro) Connector	1451E-6547
					yes			1451E-8547
	12 – 240V dc 24 – 240V ac	16 ft. (4.9 m)	0.5 – 8 ft. (0.2 – 2.5 m)	Visible Red	Isolated Output Solid-State Relay 300 mA @ 240V ac/dc	no	4-pin Micro Connector	1451E-6543
SPDT EM Relay 3A @ 120V ac					no	5-pin Mini-Connector	1451E-6504	
Diffuse Reflective Extended Range	10 – 40V dc	10 ft. (3 m) ③	1 – 60 in. (25 – 1520 mm) ③	Infrared	NPN/PNP 250 mA	no	4-pin Euro (Micro) Connector	1351E-6547
	12 – 240V dc 24 – 240V ac	10 ft. (3 m) ③	1 – 60 in. (25 – 1520 mm) ③	Infrared	Isolated Output Solid-State Relay 300 mA @ 240V ac/dc	no	4-pin Micro Connector	1351E-6543
					SPDT EM Relay 3A @ 120V ac	no	5-pin Mini-Connector	1351E-6504
Clear Object Detector	10 – 40V dc	45 in. (1.2 m)	1 – 24 in. (25 – 610 mm)	Visible Red	NPN/PNP 250 mA	no	4-pin Euro (Micro) Connector	1452E-6547
	12 – 240V dc 24 – 240V ac	45 in. (1.2 m)	1 – 24 in. (25 – 610 mm)	Visible Red	Isolated Output Solid-State Relay 300 mA @ 240V ac/dc	no	4-pin Micro Connector	1452E-6543
					SPDT EM Relay 3A @ 120V ac	no	5-pin Mini-Connector	1452E-6504

① Ranges based on 3-inch retroreflector for reflex sensors.

② Polarized sensors may not operate with reflective tape. Test tape selection before installation.

③ Ranges based on 90% reflectance white card for diffuse reflective sensors.

Sensors & Limit Switches

Photoelectric Sensors

PRODUCT SELECTION

SM Series

- SM Series™ with TargetLock™ — the *easiest* photoelectric sensor to set up and use
- Highly visible LED indicators for power, output and TargetLock
- TargetLock simplifies setup and ensures the sensor operates at the highest level of reliability possible
- Perfect Prox® models sense different colored targets at the same range and ignore objects in the background
- Visible beam on all models lets you see exactly where the sensor is pointing
- Compact size to fit in tight spaces
- Multiple mounting options, including industry-standard 18 mm threads
- Reverse polarity, overload and short circuit protection
- Full family includes thru-beam, polarized reflex, diffuse reflective and Perfect Prox background rejection



SM Series

Description	Operating Voltage	Sensing Range	Optimum Range	Cutoff Range	Field of View	Thru-Beam Component	Connection Type	Catalog Number	
								Light Operate	Dark Operate

3-Wire and 4-Wire Sensors

Thru-Beam	10 – 30V dc	50 feet (15 m)	0.1 to 25 feet (30 mm to 7.5m)	—	10 inch (254 mm) diameter at 10 feet (3 m)	Source	4-pin Micro dc Connector	E65-SMTS15-HAD	
						Detector	4-pin Micro dc Connector	—	E65-SMTD15-HDD
Polarized Reflex	18 – 264V ac 50/60 Hz or 18 – 50V dc	10 feet (3 m)	0.1 to 5 feet (30 mm to 1.5m)	—	1 inch (25 mm) diameter at 50 inches (1.3 m)	—	4-pin Micro ac Connector	—	E65-SMPR3-GDD
	10 – 30V dc	10 feet (3 m)	0.1 to 5 feet (30 mm to 1.5m)	—	1 inch (25 mm) diameter at 50 inches (1.3 m)	—	4-pin Micro dc Connector	—	E65-SMPR3-HDD
Diffuse Reflective	18 – 264V ac 50/60 Hz or 18 – 50V dc	8 inches (200 mm)	0.25 to 5 inches (6 mm to 127 mm)	—	2 inch (50 mm) diameter at 5 inches (127 mm)	—	4-pin Micro ac Connector	E65-SMSD200-GLD	—
	10 – 30V dc	8 inches (200 mm)	0.25 to 5 inches (6 mm to 127 mm)	—	2 inch (50 mm) diameter at 5 inches (127 mm)	—	4-pin Micro dc Connector	E65-SMSD200-HLD	—
Perfect Prox	18 – 264V ac 50/60 Hz or 18 – 50V dc	2 inches (50 mm)	0.4 to 1.8 inches (10 mm to 45 mm)	2.3 inches (58 mm) and beyond	0.25 inch (6 mm) diameter at 2.25 inches (57 mm)	—	4-pin Micro ac Connector	E65-SMPP050-GLD	—
	10 – 30V dc	2 inches (50 mm)	0.4 to 1.8 inches (10 mm to 45 mm)	2.3 inches (58 mm) and beyond	0.25 inch (6 mm) diameter at 2.25 inches (57 mm)	—	4-pin Micro dc Connector	E65-SMPP050-HLD	—

① Sensor will detect a 90% reflectance white card at this range.

② Sensor will ignore a 90% reflectance white card at this range.

Sensors & Limit Switches

Photoelectric Sensors

PRODUCT SELECTION

Comet Series

- Industry-standard 18 mm diameter threaded body has flat sides allowing it to be mounted like a tubular sensor or against any flat surface
- Right-angle viewing models mount in a depth of only 6/10th of an inch
- Perfect Prox technology provides exceptional background rejection and application problem-solving
- Visible sensing beams let you see where the beam is aimed for quick setup and alignment
- Solid polyurethane housing completely encapsulates internal circuits for high resistance to shock and vibration



Reflex Sensors

Description	Operating Voltage	Sensing Range ①	Optimum Range ①	Field of View	Sensing Beam	Connection Type	Catalog Number
3-Wire and 4-Wire Sensors							
Standard Reflex Forward Viewing	20 – 264V ac 50/60 Hz or 15 – 30V dc (NPN)	25 feet (7.6 m)	0.1 to 15 feet (0.03 – 4.5 m)	1 inch (25 mm) diameter at 50 inches (1.3 m)	Visible Red Beam	4-pin Micro ac Connector	14102AQD03
	10 – 30V dc (NPN and PNP)	25 feet (7.6 m)	0.1 to 15 feet (0.03 – 4.5 m)	1 inch (25 mm) diameter at 50 inches (1.3 m)	Visible Red Beam	4-pin Micro dc Connector	14102AQD07
Polarized Reflex Forward Viewing②	20 – 264V ac 50/60 Hz or 15 – 30V dc (NPN)	15 feet (4.5 m)	0.1 to 15 feet (0.03 – 4.5 m)	1 inch (25 mm) diameter at 50 inches (1.3 m)	Visible Red Beam	4-pin Micro ac Connector	14101AQD03
	10 – 30V dc (NPN and PNP)	15 feet (4.5 m)	0.1 to 10 feet (0.03 – 4.5 m)	1 inch (25 mm) diameter at 50 inches (1.3 m)	Visible Red Beam	4-pin Micro dc Connector	14101AQD07
Polarized Reflex Right-Angle Viewing ②③	20 – 264V ac 50/60 Hz or 15 – 30V dc (NPN)	10 feet (3 m)	0.1 to 15 feet (0.03 – 4.5 m)	1 inch (25 mm) diameter at 50 inches (1.3 m)	Visible Red Beam	4-pin Micro ac Connector	14101RQD03
	15 – 30V dc	10 feet (3 m)	0.1 to 15 feet (0.03 – 1.5 m)	1 inch (25 mm) diameter at 50 inches (1.3 m)	Visible Red Beam	4-pin Micro dc Connector	14101RQD07

① Ranges based on a 3-inch diameter retroreflector.

② Polarized reflex sensors may not operate with retroreflective tape. Test selected tape prior to installation.

③ Right-angle viewing polarized reflex models are rated Type 1 only.

Diffuse Reflective and Focused Diffuse Reflective Sensors

Description	Operating Voltage	Sensing Range ①	Optimum Range	Field of View	Sensing Beam	Connection Type	Catalog Number
3-Wire and 4-Wire Sensors							
Diffuse Reflective Forward Viewing	20 – 264V ac 50/60 Hz or 15 – 30V dc (NPN)	24 inches (610 mm)	0.1 to 15 inches (3 to 380 mm)	5 inch (127 mm) diameter at 15 inches (380 mm)	Infrared Beam	4-pin Micro ac Connector	13100AQD03
	10 – 30V dc (NPN and PNP)						13100AQD07
Diffuse Reflective Right-Angle Viewing	20 – 264V ac 50/60 Hz or 15 – 30V dc (NPN)	24 inches (610 mm)	0.1 to 15 inches (3 to 380 mm)	5 inch (127 mm) diameter at 15 inches (380 mm)	Infrared Beam	4-pin Micro ac Connector	13100RQD03
	10 – 30V dc (NPN and PNP)						13100RQD07

① Sensor will detect a 90% reflective white card at this range.

Sensors & Limit Switches

Photoelectric Sensors

PRODUCT SELECTION

Comet Series

Perfect Prox Background Rejection Sensor

Description	Operating Voltage	Nominal Range ①	Optimum Range	Cutoff Range ②	Field of View	Sensing Beam Type	Connection Type	Catalog Number
3-Wire and 4-Wire Sensors								
Perfect Prox Forward Viewing	20 – 264V ac 50/60 Hz or 15 – 30V dc (NPN)	2 inches (50 mm) Sharp Cutoff	0.4 to 1.8 inches (10 to 45 mm)	2.25 inches (57 mm) and beyond	0.25 inch (6 mm) diameter at 2.25 inches (64 mm)	Visible Red	4-pin Micro AC Connector	13104AQD03
		4 inches (100 mm) Sharp Cutoff	0.5 to 3 inches (13 to 76 mm)	5 inches (127 mm) and beyond	0.35 inch (9 mm) diameter at 5 inches (127 mm)	Visible Red		13101AQD03
	10 – 30V dc (NPN and PNP)	2 inches (50 mm) Sharp Cutoff	0.4 to 1.8 inches (10 to 45 mm)	2.25 inches (57 mm) and beyond	0.25 inch (6 mm) diameter at 2.25 inches (64 mm)	Visible Red	4-pin Micro dc Connector	13104AQD07
		4 inches (100 mm) Sharp Cutoff	0.5 to 3 inches (13 to 76 mm)	5 inches (127 mm) and beyond	0.35 inch (9 mm) diameter at 5 inches (127 mm)	Visible Red		13101AQD07
Perfect Prox Right-Angle Viewing	20 – 264V ac 50/60 Hz or 15 – 30V dc (NPN)	2 inches (50 mm) Sharp Cutoff	0.4 to 1.8 inches (10 to 45 mm)	2.25 inches (57 mm) and beyond	0.25 inch (6 mm) diameter at 2.25 inches (64 mm)	Visible Red	4-pin Micro ac Connector	13104RQD03
		4 inches (100 mm) Sharp Cutoff	0.5 to 3 inches (13 to 76 mm)	5 inches (127 mm) and beyond	0.35 inch (9 mm) diameter at 5 inches (127 mm)	Visible Red		13104RS5003
	10 – 30V dc (NPN and PNP)	2 inches (50 mm) Sharp Cutoff	0.4 to 1.8 inches (10 to 45 mm)	2.25 inches (57 mm) and beyond	0.25 inch (6 mm) diameter at 2.25 inches (64 mm)	Visible Red	4-pin Micro dc Connector	13104RQD07
		4 inches (100 mm) Sharp Cutoff	0.5 to 3 inches (13 to 76 mm)	5 inches (127 mm) and beyond	0.35 inch (9 mm) diameter at 5 inches (127 mm)	Visible Red		13104RS5007
Fine Spot Perfect Prox Forward Viewing	20 – 264V ac 50/60 Hz or 15 – 30V dc (NPN)	2 inches (50 mm) Sharp Cutoff	0.9 to 1.8 inches (23 to 45 mm)	2.25 inches (57 mm) and beyond	0.05 inch (1.3 mm) diameter at 1.7 inches (43 mm)	Visible Red	4-pin Micro ac Connector	13105AQD03
	10 – 30V dc (NPN and PNP)	2 inches (50 mm) Sharp Cutoff	0.9 to 1.8 inches (23 to 45 mm)	2.25 inches (57 mm) and beyond	0.05 inch (1.3 mm) diameter at 1.7 inches (43 mm)	Visible Red	4-pin Micro dc Connector	13105AQD07

① Sensor will detect a 90% reflectance card at this range.

② Sensor will ignore a 90% reflectance card at this range.

E58 Harsh-Duty Series

- Sensors are available in 18 mm and 30 mm diameters
- Highly refined optics for long sensing ranges and to see through high levels of contamination — unmatched optical performance
- Perfect Prox technology provides exceptional background rejection and extremely high excess gain
- Resistant to the wide range of chemicals used in the automotive, food processing and forest products industries
- Suitable for high-temperature, high-pressure washdown (1200 psi)
- Visible sensing beam on all models lets you see where the beam is aimed for quick setup and alignment
- Output status indicator is the brightest available and is visible from any angle and in any lighting condition



Thru-Beam and Reflex Sensors

Description	Operating Voltage	Sensing Range	Optimum Range	Field of View	Thru-Beam Component	Connection Type	Catalog Number Dark Operate
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3-Wire and 4-Wire Sensors

30 mm Diameter Thru-Beam	20 – 132V ac 50/60 Hz or 15 – 30V dc	800 feet (250 m)	0.1 to 300 feet (0.03 – 90 m)	33 inches (830 mm) diameter at 25 feet (7.6 m)	Source	4-pin Micro ac Connector	E58-30TS250-GAP
	Detector				4-pin Micro ac Connector	E58-30TD250-GDP	
	10 – 30V dc	800 feet (250 m)	0.1 to 300 feet (0.03 – 90 m)	33 inches (830 mm) diameter at 25 feet (7.6 m)	Detector	4-pin Micro dc Connector	E58-30TD250-HDP
30 mm Diameter Reflex	20 – 132V ac 50/60 Hz or 15 – 30V dc	59 feet (18 m)	1 to 40 feet (0.03 – 12m)	6 inches (150 mm) diameter at 20 feet (6 m)	—	4-pin Micro ac Connector	E58-30RS18-GDP
	10 – 30V dc				59 feet (18 m)	1 to 40 feet (0.03 – 12m)	6 inches (150 mm) diameter at 20 feet (6 m)	—	4-pin Micro dc Connector	E58-30RS18-HDP
30 mm Diameter Polarized Reflex	20 – 132V ac 50/60 Hz or 15 – 30V dc	34 feet (10 m)	1 to 20 feet (0.03 – 6 m)	6 inches (150 mm) diameter at 20 feet (6 m)	—	4-pin Micro ac Connector	E58-30RP10-GDP
	10 – 30V dc				34 feet (10 m)	1 to 20 feet (0.03 – 6 m)	6 inches (150 mm) diameter at 20 feet (6 m)	—	4-pin Micro dc Connector	E58-30RP10-HDP

Sensors & Limit Switches

Photoelectric Sensors

PRODUCT SELECTION

E58 Harsh-Duty Series

Perfect Prox Background Rejection Sensors

Description	Operating Voltage	Nominal Range	Optimum Range	Cutoff Range	Field of View	Connection Type	Catalog Number Light Operate
2-Wire Sensors							
18 mm Diameter Perfect Prox	90 – 132V ac 50/60 Hz or 18 – 50V dc	4 inches (100 mm)	0.5 to 3 inches (13 to 76 mm)	5 inches (127 mm) and beyond	0.38 inch (10 mm) diameter at 4 inches (100 mm)	2-meter Cable	E58-18DP100-EL
3-Wire and 4-Wire Sensors							
18 mm Diameter Perfect Prox	10 – 30V dc	4 inches (100 mm)	0.5 to 3 inches (13 to 76 mm)	5 inches (127 mm) and beyond	0.38 inch (10 mm) diameter at 4 inches (100 mm)	4-pin Micro dc Connector	E58-18DP100-HLP
30 mm Diameter Perfect Prox	20 – 132V ac 50/60 Hz or 15 – 30V dc	11 inches (280 mm)	1 to 9 inches (26 to 228 mm)	12.5 inches (318 mm)	1.0 inch (26 mm) diameter at 11 inches (280 mm)	4-pin Micro ac Connector	E58-30DPS280-GLP
	10 – 30V dc	11 inches (280 mm)	1 to 9 inches (26 to 228 mm)	12.5 inches (318 mm)	1.0 inch (26 mm) diameter at 11 inches (280 mm)	4-pin Micro dc Connector	E58-30DPS280-HLP

① Sensor will detect a 90% reflectance card at this range.

② Sensor will ignore a 90% reflectance card at this range.

One Part, Many Applications



Powering Business Worldwide




- Programmable prox provides dozens of competitive sensors with just one part in inventory
- Put in a proximity sensor with an analog output that signals proportional to position
- Designed for high temperature, high pressure washdown, and intense shock and vibration
- Sensors for global ac and dc applications, in 8 mm, 12 mm, 18 mm and 30 mm sizes
- Industry standard cubes with long sensing and Eaton's auto-configure output technology
- Eaton's sensor business specializes in providing modified or fully custom products direct to OEMs — call (800) 426-9184 x1

Sensors & Limit Switches



Inductive Sensors

PRODUCT OVERVIEW

Inductive Sensors Product Overview

			
Description	iProx®	E57 Premium+ Series	E57 Premium+ Series Short Barrel
Page	Page 228	Page 229	Page 230
Overview	Standard features include extended sensing ranges, high noise-immunity, extreme durability and includes autoconfigure technology. Optional advanced features include output delay, speed detection and cloning with the ProxView Software	High-performance inductive sensors include stainless steel models, extended ranges and right-angle sensing	Full featured sensors with shorter overall length than standard tubular sensors
Applications	Automotive, machine tool, material handling where high sensing performance and inventory consolidation is an issue	A wide variety of applications, including those where customers require ac/dc universal inventory sensors	Automation, robotics, transfer lines, conveyors, material handling
Product Features	<ul style="list-style-type: none"> Auto-configure technology automatically detects a sinking (NPN) or sourcing (PNP) connection and switches the sensor accordingly, without any user intervention Optional computer programming cable and Windows-based ProxView configuration software makes it easy to customize sensors Clone the sensor to match the characteristics of more than 4,800 competitive models, or configure it to match your specific application needs 	<ul style="list-style-type: none"> 12, 18 and 30 mm diameters 2-wire and 3-wire ac and dc sensors ac/dc models operate on 20 – 250V ac or dc 	<ul style="list-style-type: none"> Available in 12, 18 and 30 mm diameters 2-wire sensors offer 20 – 250V ac or dc operation; ac only 20 – 135V ac 3-wire models operate on 6 – 30V dc
Output Ratings	ac — 250 – 500 mA dc — 300 – 500 mA	ac mode — 250 – 500 mA dc mode — 200 mA	ac — 200 – 500 mA continuous dc — 500 mA continuous
Enclosure Ratings	Type 4, 4X, 6, 6P, 12, 13 IEC — IP67	Type 4, 4X, 6, 6P, 12, 13 IEC — IP67	Type 4, 4X, 6, 6P, 12, 13 IEC — IP67
Construction	Stainless steel	Stainless steel	Stainless steel Semi-shielded models: nickel-plated brass
Approvals	cUL Listed	cUL Listed	UL Listed CSA Certified

Inductive Sensors Product Overview

		
Description	Global Proximity	E52 Cube Style
Page	Page 231	Page 232
Overview	This full-line, tubular proximity sensor family provides a cost-effective solution for high volume OEM use	A family of industry-standard, cube-sized inductive sensors with long range capabilities
Applications	Machine tool detection, press applications, cam detection, material handling, valve and shaft position, automotive assembly	Automotive, manufacturing, machinery OEMs
Product Features	<ul style="list-style-type: none"> • 8, 12, 18 and 30 mm diameters • 2-wire sensors available in ac or dc versions • 3-wire sensors available in dc versions 	<ul style="list-style-type: none"> • Long inductive proximity ranges available (up to 40 mm sensing distance) • 4-wire dc models have complementary outputs (1NO-1NC) • 4-wire dc models use auto-configure technology, which allows the sensor to automatically adapt for NPN or PNP without user intervention
Output Ratings	ac mode — 200 mA dc mode — 100 mA	ac — 400 mA maximum dc — 300 mA maximum
Enclosure Ratings	IP67	Type 4, 4X, 6, 6P, 12, 13 IEC — IP67
Construction	Nickel-plated brass 8 mm Nano Stainless steel	Zinc Alloy PPS, PL
Approvals	cCSAus	—

Sensors & Limit Switches

Inductive Sensors

PRODUCT SELECTION

iProx®

- Available in ac 2-wire, dc 3-wire and unique dc 4-wire with complementary (NO-NC) or dual NO outputs
- Reliably detect metal targets at up to three times the range of conventional shielded or unshielded tubular inductive sensors
- Quality construction using a stainless steel barrel, 360-degree dual-color LED indicator, Ryton® impact-resistant face cap and vibration-absorbing potting compound
- Auto-configure technology automatically detects a sinking (NPN) or sourcing (PNP) connection and switches the sensor accordingly, without any user intervention
- Resistant to extreme temperatures (-40°C)



iProx

Description	Operating Voltage	Sensing Range	Shielding	Connection Type	Catalog Number NO Output ①
3-Wire Sensors					
12 mm Diameter	6 – 48V dc	4 mm	Shielded	4-pin Micro dc Connector	E59-M12A105D01-D1
		10 mm	Unshielded	4-pin Micro dc Connector	E59-M12C110D01-D1
18 mm Diameter	6 – 48V dc	8 mm	Shielded	4-pin Micro dc Connector	E59-M18A108D01-D1
		18 mm	Unshielded	4-pin Micro dc Connector	E59-M18C116D01-D1
30 mm Diameter	6 – 48V dc	15 mm	Shielded	4-pin Micro dc Connector	E59-M30A115D01-D1
		29 mm	Unshielded	4-pin Micro dc Connector	E59-M30C129D01-D1

① Sensors are ordered with pre-set outputs from the factory, but can be later programmed either NO or NC using ProxView software.

iProx Complementary and Dual Output

Description	Operating Voltage	Sensing Range	Shielding	Output Type	Connection Type	Catalog Number
						Complementary Outputs (1NO-1NC)
4-Wire Sensors						
12 mm Diameter	6 – 48V dc	4 mm	Shielded	NPN (Sinking)	4-pin Micro dc Connector	E59-M12A105D01-D3NN
				PNP (Sourcing)	4-pin Micro dc Connector	E59-M12A105D01-D3PP
18 mm Diameter	6 – 48V dc	18 mm	Unshielded	NPN (Sinking)	4-pin Micro dc Connector	E59-M18C116D01-D3NN
				PNP (Sourcing)	4-pin Micro dc Connector	E59-M18C116D01-D3PP

E57 Premium+ Series

- High-performance inductive sensors include stainless steel models, extended ranges and right angle sensing
- New expanded offering of 2-wire, 3-wire, ac, dc, and ac/dc multiple range sensor models
- Designed with stainless steel barrel and new potting compound for robust, high-temperature, high-pressure washdown, as well as intense shock and vibration applications
- 360° output status indicator is visible from any angle and in any light condition
- Resettable short circuit protection and reverse polarity in select models
- Wide temperature range -13 to 158°F (-25 to 70°C) on cable, micro-style connections



E57 Premium+ Series

Description	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type ①	Catalog Number N.O. Output
3-Wire Sensors					
12 mm Diameter End Sensing	6 – 48V dc	2 mm (Standard Range)	Shielded (NPN)	4-pin Micro dc Connector	E57LAL12T110SD
		2 mm (Standard Range)	Shielded (PNP)	4-pin Micro dc Connector	E57LAL12T111SD
		4 mm (Standard Range)	Unshielded (NPN)	4-pin Micro dc Connector	E57LAL12T110ED
		4 mm (Standard Range)	Unshielded (PNP)	4-pin Micro dc Connector	E57LAL12T111ED
18 mm Diameter End Sensing	6 – 48V dc	5 mm (Standard Range)	Shielded (NPN)	4-pin Micro dc Connector	E57LAL18T110SD
		5 mm (Standard Range)	Shielded (PNP)	4-pin Micro dc Connector	E57LAL18T111SD
		8 mm (Standard Range)	Unshielded (NPN)	4-pin Micro dc Connector	E57LAL18T110ED
		8 mm (Standard Range)	Unshielded (PNP)	4-pin Micro dc Connector	E57LAL18T111ED
		20 mm (Extended Range)	Non-embeddable (PNP)	4-pin Micro dc Connector	E57-18LE20-BD
		5 mm	Shielded (PNP)	4-pin Micro dc Connector	E57RAL18T111SD
30 mm Diameter End Sensing	6 – 48V dc	10 mm (Standard Range)	Shielded (PNP)	4-pin Micro dc Connector	E57LAL30T111SD
		15 mm (Standard Range)	Unshielded (PNP)	4-pin Micro dc Connector	E57LAL30T111ED

① For cable lengths longer than 2 meters, add the number of the desired length in meters to the end of the listed catalog number (for catalog numbers ending with a number, add an S and then the length). Examples for a 5-meter cable: E57-18LE12-A becomes E57-18LE12-A5 ; E57LAL12A2 becomes E57LAL12A2S5.

Sensors & Limit Switches

Inductive Sensors

PRODUCT SELECTION

E57 Premium+ Series Short Barrel

- These sensors feature a short barrel length to fit into tight locations
- Designed with stainless steel barrel and impact-absorbing new potting compound for robust, high-temperature, high-pressure washdown, as well as intense shock and vibration applications
- 360° output status indicator is visible from any angle and in any light condition
- Resettable short circuit protection in ac/dc and dc models
- Reverse polarity protection in 3-wire dc versions
- Small size to fit in tight spaces



Short Barrel Length Proximity Sensors

Description	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type ①	Catalog Number N.O. Output
3-Wire Sensors					
12 mm Diameter	6 – 48V dc	2 mm	Shielded (NPN)	4-pin Micro dc Connector	E57SAL12T110SD
			Shielded (PNP)	4-pin Micro dc Connector	E57SAL12T111SD
		4 mm	Unshielded (NPN)	4-pin Micro dc Connector	E57SAL12T110ED
			Unshielded (PNP)	4-pin Micro dc Connector	E57SAL12T111ED
18 mm Diameter	6 – 48V dc	5 mm	Shielded (NPN)	4-pin Micro dc Connector	E57SAL18T110SD
			Shielded (PNP)	4-pin Micro dc Connector	E57SAL18T111SD
		8 mm	Unshielded (NPN)	4-pin Micro dc Connector	E57SAL18T110ED
			Unshielded (PNP)	4-pin Micro dc Connector	E57SAL18T111ED
30 mm Diameter	6 – 48V dc	10 mm	Shielded (NPN)	4-pin Micro dc Connector	E57SAL30T110SD
			Shielded (PNP)	4-pin Micro dc Connector	E57SAL30T111SD
		15 mm	Unshielded (NPN)	4-pin Micro dc Connector	E57SAL30T110ED
			Unshielded (PNP)	4-pin Micro dc Connector	E57SAL30T111ED

① Cable models are supplied as standard with a 2-meter cable. A 5-meter cable is available by adding **S5** to the catalog number. Example: E57SAL12T110 becomes E57SAL12T110S5.

Global Proximity

- Features solid performance and a basic feature set for reliable, cost-effective sensing
- Available in a variety of sizes to fit all applications: 8 mm, 12 mm, 18 mm and 30 mm diameters
- dc sensors operate on 10 – 30V dc in 2-wire and 3-wire (NPN or PNP) configurations
- Switching frequency of 2 kHz for dc models
- Shielded and unshielded versions available
- Terminations include 2-meter cable, micro-connector and Nano-connector



Global Proximity Sensors

Description	Operating Voltage	Sensing Range	Shielding	Output Type	Connection Type	Catalog Number
3-Wire Sensors						
8 mm Diameter	10 – 30V dc	3 mm (Extended Range)	Shielded	NO (NPN)	4-pin Micro dc Connector	E57-08GE03-CDB
				NO (PNP)	4-pin Micro dc Connector	E57-08GE03-GDB
		6 mm (Extended Range)	Unshielded	NO (NPN)	4-pin Micro dc Connector	E57-08GE06-CDB
				NO (PNP)	4-pin Micro dc Connector	E57-08GE06-GDB
12 mm Diameter	10 – 30V dc	5 mm (Extended Range)	Shielded	NO (NPN)	4-pin Micro dc Connector	E57-12GE05-CDB
				NO (PNP)	4-pin Micro dc Connector	E57-12GE05-GDB
		10 mm (Extended Range)	Unshielded	NO (NPN)	4-pin Micro dc Connector	E57-12GE10-CDB
				NO (PNP)	4-pin Micro dc Connector	E57-12GE10-GDB
18 mm Diameter	10 – 30V dc	8 mm (Extended Range)	Shielded	NO (NPN)	4-pin Micro dc Connector	E57-18GE08-CDB
				NO (PNP)	4-pin Micro dc Connector	E57-18GE08-GDB
		18 mm (Extended Range)	Unshielded	NO (NPN)	4-pin Micro dc Connector	E57-18GE18-CDB
				NO (PNP)	4-pin Micro dc Connector	E57-18GE18-GDB
30 mm Diameter	10 – 30V dc	15 mm (Extended Range)	Shielded	NO (NPN)	4-pin Micro dc Connector	E57-30GE15-CDB
				NO (PNP)	4-pin Micro dc Connector	E57-30GE15-GDB
		29 mm (Extended Range)	Unshielded	NO (NPN)	4-pin Micro dc Connector	E57-30GE29-CDB
				NO (PNP)	4-pin Micro dc Connector	E57-30GE29-GDB

Sensors & Limit Switches

Inductive Sensors

PRODUCT SELECTION

E52 Cube

- Rugged inductive sensors in industry-standard cube package
- Long inductive proximity ranges available (up to 40 mm sensing distance)
- 4-wire dc models have complementary outputs (1NO-1NC)
- 4-wire dc models use auto-configure technology, which allows the sensor to automatically adapt for NPN or PNP without user intervention
- Robust design featuring vibration and impact-absorbing potting compound
- Ideal for extreme temperatures or high-pressure washdown environments



E52 Cube Inductive Proximity Sensors

Description	Voltage Type	Output Configuration	Shielding	Output Type	Sensing Range	Connector Style	Catalog Number
dc 4-Wire Sensors							
Cube Package (40 x 40 x 40 mm)	10 – 48V dc	NPN / PNP Autoconfigure ①	Shielded	1NO-1NC	15 mm	dc 4-Pin Micro	E52Q-DL15SAD01
			Unshielded	1NO-1NC	15 mm	dc 4-Pin Micro	E52Q-DL15UAD01
			Shielded	1NO-1NC	20 mm	dc 4-Pin Micro	E52Q-DL20SAD01
			Unshielded	1NO-1NC	20 mm	dc 4-Pin Micro	E52Q-DL20UAD01
			Unshielded	1NO-1NC	25 mm	dc 4-Pin Micro	E52Q-DL25UAD01
			Unshielded	1NO-1NC	30 mm	dc 4-Pin Micro	E52Q-DL30UAD01
			Unshielded	1NO-1NC	35 mm	dc 4-Pin Micro	E52Q-DL35UAD01
			Unshielded	1NO-1NC	40 mm	dc 4-Pin Micro	E52Q-DL40UAD01

① Autoconfigure technology allows the sensor to automatically adapt to NPN or PNP without user intervention.

Note: Micro-connector models shown; mini-connector models also available.

Connect to Controls Quickly



Powering Business Worldwide


- Rugged cables quickly connect sensors to a control system
- Eaton's sensor business specializes in providing modified or fully custom products direct to OEMs — call (800) 426-9184 x1

Sensors & Limit Switches

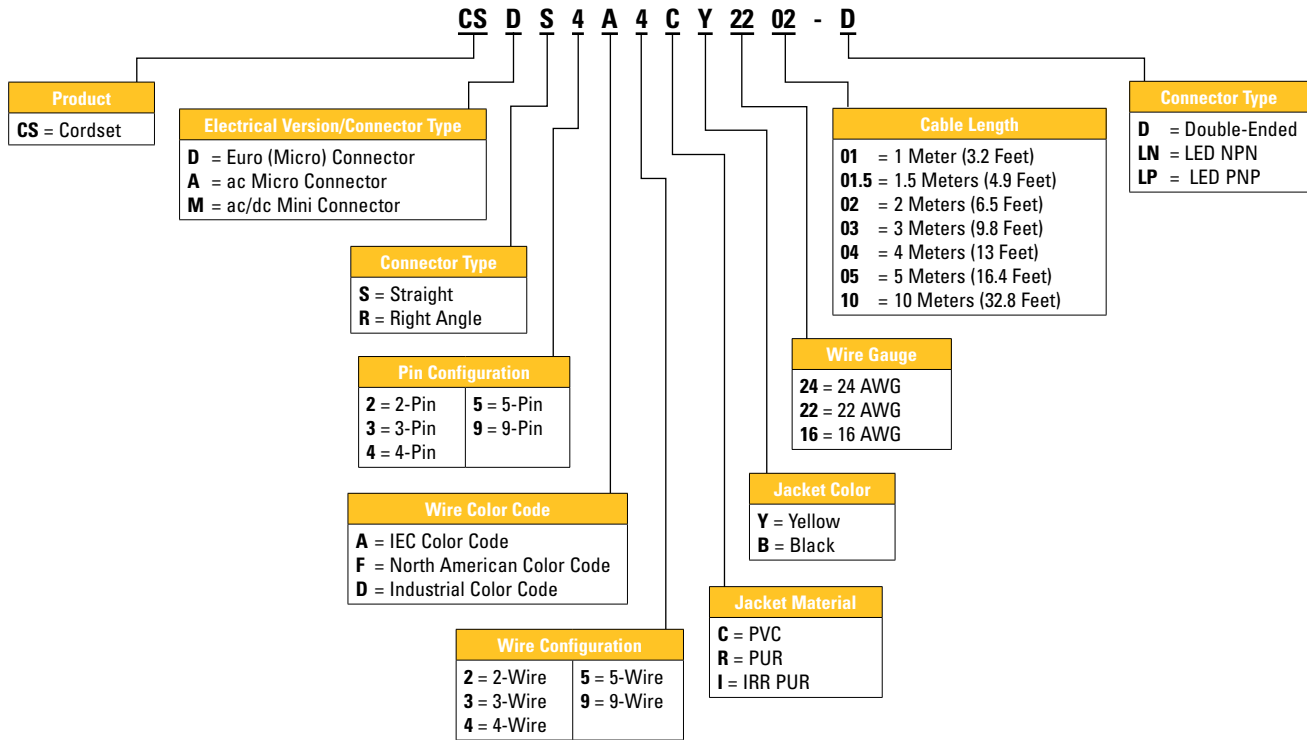
Connectivity

PRODUCT OVERVIEW

Connectivity Product Overview

	
Description	Global Plus Connector Cables
Page	Page 235
Overview	Includes a wide variety of single- and double-connector cables in a variety of sizes (mini, micro, nano), lengths and jacket materials to fit any application
Sensing Types and Ranges	<ul style="list-style-type: none"> • Nano (M8) • Micro (M12) • Mini
Product Features	<ul style="list-style-type: none"> • Industry standard connector types • Industrial-duty polymer jackets consisting of PVC, PUR, or irradiated PUR • Stranded copper conductors and polymer jackets provide a high resistance to bending motions • Right angle units for applications that have constricted space
Enclosure Ratings	Type 6P, IP68
Approvals	UL, cUL, CSA

Global Plus Connector Cables — Catalog Numbering System



① This is a representative guide to the catalog numbering system. All possible combinations may not be available for ordering.

Sensors & Limit Switches

Connectivity

PRODUCT SELECTION

Global Plus Connector Cables

- High-performance cost-effective quick-disconnect cable products for flexible wiring solutions
- A wide variety of single- and double-connector cables available
- Custom lengths are available upon request from the factory
- A full offering of Nano, micro and mini connector cables in a variety of lengths and jacket materials available
- Field wireable accessories
- Straight and right-angle connector ends





Micro Style, Single-Connector Cables


Description	Voltage Style	Number of Pins	Gauge	Length	Catalog Number PVC Jacket	Pin Configuration/Wire Colors (Face View Female Shown)
Micro Style Straight Female	dc	4-pin 3-wire	22 AWG	6.0 feet (2 m)	CSDS4A3CY2202	1-Brown 2-No Wire 3-Blue 4-Black
		4-pin 4-wire	22 AWG	6.0 feet (2 m)	CSDS4A4CY2202	1-Brown 2-White 3-Blue 4-Black
		5-pin 5-wire	22 AWG	6.0 feet (2 m)	CSDS5A5CY2202	1-Brown 2-White 3-Blue 4-Black 5-Green/Yellow
Micro Style Straight Female	dc	4-pin 3-wire	22 AWG	6.0 feet (2 m)	CSDR4A3CY2202	1-Brown 2-No Wire 3-Blue 4-Black
		4-pin 4-wire	22 AWG	6.0 feet (2 m)	CSDR4A4CY2202	1-Brown 2-White 3-Blue 4-Black
		5-pin 5-wire	22 AWG	6.0 feet (2 m)	CSDR5A5CY2202	1-Brown 2-White 3-Blue 4-Black 5-Green/Yellow
Micro Style Right Angle Female with 2 LED Indicators	dc NPN	4-pin 3-wire	22 AWG	16.4 feet (5 m)	CSDR4A3CY2205-LN	1-Brown 2-No Wire 3-Blue 4-Black
	dc PNP	4-pin 3-wire	22 AWG	16.4 feet (5 m)	CSDR4A3CY2205-LP	

Global Plus Connector Cables

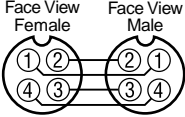
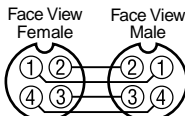
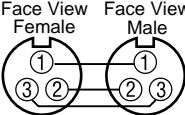
Mini Style, Single-Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	Catalog Number	Pin Configuration/Wire Colors (Face View Female Shown)
Mini Style Straight Female	ac/dc	4-pin 4-wire	16 AWG	6 feet (2 m)	CSMS4A4CY1602	 1-Black 2-Blue 3-Brown 4-White
		5-pin 5-wire	16 AWG	6 feet (2 m)	CSMS5D5CY1602	 1-White 2-Red 3-Green 4-Orange 5-Black

Nano Style, Single-Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	Catalog Number PVC Jacket	Pin Configuration/Wire Colors (Face View Female Shown)
Nano Style Straight Female	—	3-pin 3-wire	24 AWG	6.0 feet (2 m)	CSNS3A3CY2402	 1-Brown 3-Blue 4-Black
Nano Style Right Angle Female	—	3-pin 3-wire	24 AWG	6.0 feet (2 m)	CSNR3A3CY2402	

Micro and Mini Style, Double-Ended Connector Cables

Description	Voltage Style	Number of Pins	Gauge	Length	Catalog Number PVC Jacket	Pin Configuration/Wire Colors (Face View Female Shown)
Micro Style Straight Female/Male	dc	4-pin	22 AWG	6.0 feet (2 m)	CSDS4A4CY2202-D	
Micro Style Straight Female/ Right Angle Male	dc	4-pin	22 AWG	6.0 feet (2 m)	CSDR4A4CY2202-D	
Mini Style Straight Female/Male	ac/dc	3-pin	16 AWG	6.0 feet (2 m)	CSMS3F3CY1602-DP	

Sensors & Limit Switches

Machine Integration

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Machine Integration

Modular Bus System for Hydraulic Magnetic Circuit Breakers

Modular Bus System



EATON

Powering Business Worldwide

Modularly distribute high current ac and dc customizable hydraulic magnetic breaker busbar

Machine Integration

Modular Bus System for Hydraulic Magnetic Circuit Breakers

PRODUCT OVERVIEW

Modular Bus System for Hydraulic Magnetic Circuit Breakers Product Overview

Description		Modular Distribution Busbar System (MDBS)	Power Distribution Busbar Module (PDBM)
Page		Page 242	Page 242
Voltage	Type V dc V ac	ac or dc to 110V dc Nominal (77 – 137.5V dc) to 380V ac Nominal (342 – 424V ac); 50/60 Hz	dc to 72V dc Nominal (55 – 90V dc) —
Busbars Busbar Rating		4 Busbars 300 Ampere Output	1, Additional Negative Return Busbar Possible 100A Total Output (up to 30A per breaker)
Mounting		Front Panel	Front or Rear Panel
Breaker Specifications	Type Series Ratings Terminals Number of Breakers Auxiliary Contact Dual Control	Hydraulic-Magnetic AMR, AM1P (3-pole AMR in parallel) to 100A (1-pole), 300A (3-pole) Plug-In Bullet Terminals 3 and 5 Breaker Modules (any combination) Via Individual Connections via Trim Trio Connector Available	Hydraulic-Magnetic J Series to 30A Fast-on Maximum 12 Positions (using 4-position modules) Individual Signals via SMS, SUBD, or DT Connectors Available
Dimensions Module Only [H x W x D — inches (mm)]	3-Breaker 4-Breaker 5-Breaker	3.31 x 2.25 x 4.095 (84 x 57.15 x 104) — 3.31 x 3.74 x 4.095 (84 x 95 x 104)	— 3.94 x 3.00 x 1.10 (100 x 76 x 28) —
Dimensions (including mounting blade, busbar, auxiliary switch) [H x W x D — inches (mm)]	3-Breaker 4-Breaker 5-Breaker	4.53 x 2.25 x 5.52 (115 x 57.15 x 140) — 4.53 x 3.74 x 5.52 (84 x 95 x 104)	— 3.94 x 3.00 x 1.46 (100 x 76 x 37) —
Weight (without busbars)	3-Breaker 4-Breaker ① 5-Breaker	200 g (7 oz.) — 300 g (10.6 oz.)	— 160 g (5.65 oz.) —

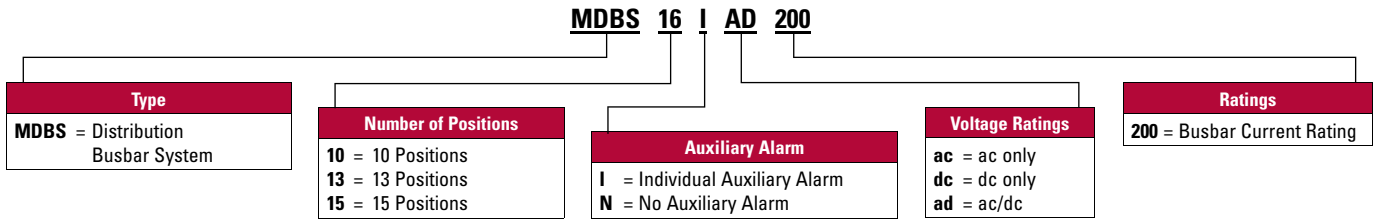
① With busbars.

Machine Integration

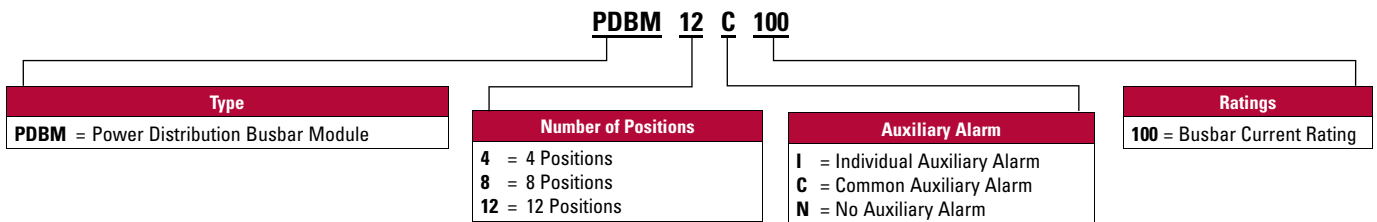
Modular Bus System for Hydraulic Magnetic Circuit Breakers

CATALOG SELECTION / PRODUCT SELECTION

Modular Bus System for Hydraulic Magnetic Circuit Breakers — MDBS Model — Catalog Numbering System



Modular Bus System for Hydraulic Magnetic Circuit Breakers — PDBM Model — Catalog Numbering System



Modular Bus System for Hydraulic Magnetic Circuit Breakers

- Compact power distribution bus system design
- Number, type (ac vs. dc), and location of loads can be easily changed by adjusting the busbar components
- Saves installation time
- Available with or without individual alarm auxiliary switches
- Utilizes pluggable breakers for quick connection and ability to disconnect



Modular Distribution Busbar System

Number of Breaker Positions (Poles)	Individual Auxiliary Alarm	Voltage	Catalog Number
10	Yes	ac and dc	MDBS-10-I-AD-200
13	Yes	ac and dc	MDBS-13-I-AD-200
15	Yes	ac and dc	MDBS-15-I-AD-200
10	No	ac only	MDBS-10-N-AC-200
13	No	ac only	MDBS-13-N-AC-200
15	No	ac only	MDBS-15-N-AC-200

Power Distribution Bus Module

Number of Breaker Positions (Poles)	Auxiliary Alarm	Busbar Current Rating	Catalog Number
4	Common	100A	PDBM-4-C-100
8	Common	100A	PDBM-8-C-100
12	Common	100A	PDBM-12-C-100
4	Individual	100A	PDBM-4-I-100
8	Individual	100A	PDBM-8-I-100
12	Individual	100A	PDBM-12-I-100
4	No Auxiliary Alarm	100A	PDBM-4-N-100
8	No Auxiliary Alarm	100A	PDBM-8-N-100
12	No Auxiliary Alarm	100A	PDBM-12-N-100

Note: These are typical catalog numbers that could be built using the modular system. Products are built to order according to specifications and can be provided with any number of positions.

Key Panel Components



Powering Business Worldwide

Monitor and measure your panel's performance with general-purpose and industrial control transformers

Machine Integration

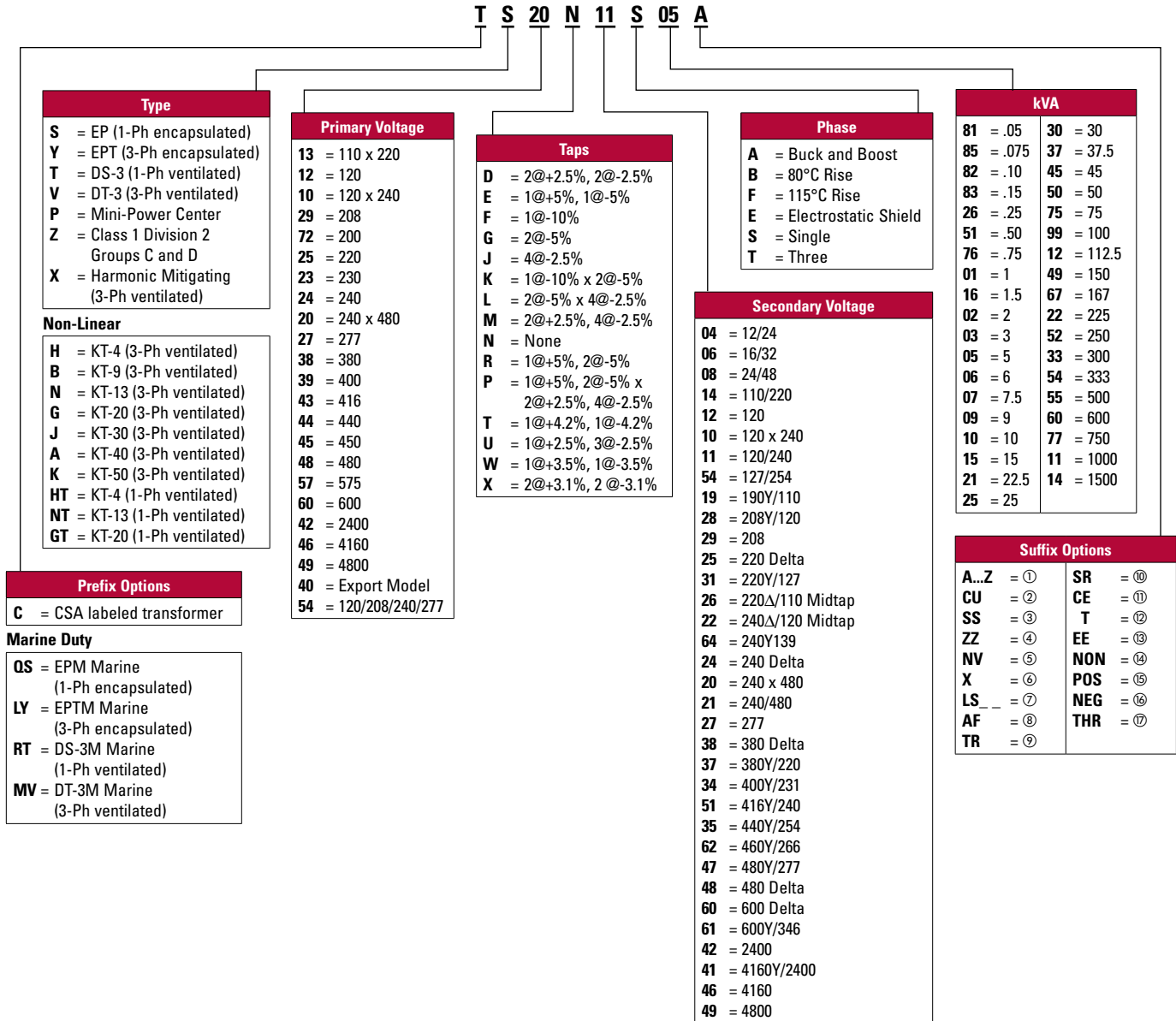
General Purpose & Industrial Control Transformers

PRODUCT OVERVIEW

General Purpose & Industrial Control Transformers Product Overview

Description	General Purpose Encapsulated Transformers	Industrial Control Transformers
Page	Page 245	Page 247
General Applications	Typically used to step-down voltage from a high voltage to a lower, safer voltage. Commonly installed in or on other electrical equipment, such as machinery, switchboards, and motor control centers. Also installed as loose equipment.	Typically used to step-down voltage to a level suitable to operate a variety of electrically controlled devices. Must be installed inside an enclosure, panel, or other structure to provide protection from the surroundings.
Maximum Primary Voltage Rating	600V ac	600V ac
Frequency	60 Hz Standard (50/60 Hz optional)	50/60 Hz
Enclosure Rating	Type 3R Raintight	Open
Insulation System	180°C (356°F)	105°C (221°F) / 130°C (266°F) / 180°C (356°F)
Temperature Rise	115°C (239°F) Standard 80°C (176°F) Optional	55°C (131°F) / 80°C (176°F) / 120°C (248°F)
Approvals	UL 506, UL 1561, CSA C22.2	UL 506, CSA C22.2
Ratings	50 VA – 37.5 kVA 1-Phase 3 kVA – 75 kVA 3-Phase	50 to 5,000 VA

General Purpose Transformers — Catalog Numbering System



- ① Model number is not used on newly designed/redesigned transformers.
- ② Copper windings.
- ③ Stainless steel enclosure (utilizes 316 stainless steel, does not imply a NEMA 4X rating).
- ④ Open type core and coil assembly.
- ⑤ Totally enclosed non-ventilated DS-3 or DT-3.
- ⑥ 50/60 Hz.
- ⑦ Low sound design. LS47 indicates low sound equal to 47 dB; LS42 indicates 42 dB.
- ⑧ Fungus proof.
- ⑨ Certified test report of standard production tests for the specific serial number to be shipped.
- ⑩ Certified sound level report.

- ⑪ CE marked.
- ⑫ Thermal indicator embedded in center coil. Suffix "TT" indicates two thermal indicators of different temperature ratings are installed.
- ⑬ NEMA TP-1/Energy Star Energy Efficient.
- ⑭ 0° phase-shift (used with HMTs).
- ⑮ +15° phase-shift (used with HMTs).
- ⑯ -15° phase-shift (used with HMTs).
- ⑰ -30° phase-shift (used with HMTs).

Machine Integration

General Purpose & Industrial Control Transformers

PRODUCT SELECTION

General Purpose Transformers

- Totally enclosed non-ventilated Type 3R enclosure
- 180°C insulation system
- Suitable for indoor or outdoor applications
- UL Listed and CSA Certified



Single-Phase Encapsulated, 240 x 480 – 120/240, 115°C Rise

kVA	Catalog Number	Outline #	Wiring Diagram
0.05	S20N11S81N	52	3A
0.075	S20N11S85N	53	3A
0.1	S20N11S82N	54	3A
0.15	S20N11S83N	55	3A
0.25	S20N11S26N	56	3A
0.5	S20N11S51N	57	3A
0.75	S20N11S76N	58A	3A
1	S20N11S01N	59A	3A
1.5	S20N11S16N	67	3A
2	S20N11S02N	68	3A
3	S20N11S03N	176	3A
5	S20N11S05N	177	3A
7.5	S20N11S07N	178	3A
10	S20N11S10N	179	3A
15	S20N11S15N	180	3A
25	S20L11S25N	182	23A
37.5	S20L11S37	300A	248A

Single-Phase Transformer Sizing Chart

kVA	Rated Line Voltage									
	120	208	240	277	480	600	2400	4160	4800	
0.5	4.2	2.4	2.1	1.8	1.0	0.8	0.2	0.1	0.1	
1	8.3	4.8	4.2	3.6	2.1	1.7	0.4	0.2	0.2	
1.5	12.5	7.2	6.3	5.4	3.1	2.5	0.6	0.4	0.3	
2	16.7	9.6	8.3	7.2	4.2	3.3	0.8	0.5	0.4	
3	25.0	14.4	12.5	10.8	6.3	5.0	1.3	0.7	0.6	
5	41.7	24.0	20.8	18.1	10.4	8.3	2.1	1.2	1.0	
7.5	62.5	36.1	31.3	27.1	15.6	12.5	3.1	1.8	1.6	
10	83.3	48.1	41.7	36.1	20.8	16.7	4.2	2.4	2.1	
15	125.0	72.1	62.5	54.2	31.3	25.0	6.3	3.6	3.1	
25	208.3	120.2	104.2	90.3	52.1	41.7	10.4	6.0	5.2	
37.5	312.5	180.3	156.3	135.4	78.1	62.5	15.6	9.0	7.8	
50	416.7	240.4	208.3	180.5	104.2	83.3	20.8	12.0	10.4	
75	625.0	360.6	312.5	270.8	156.3	125.0	31.3	18.0	15.6	
100	833.3	480.8	416.7	361.0	208.3	166.7	41.7	24.0	20.8	
167	1391.7	802.9	695.8	602.9	347.9	278.3	69.6	40.1	34.8	
250	2083.3	1201.9	1041.7	902.5	520.8	416.7	104.2	60.1	52.1	
333	2775.0	1601.0	1387.5	1202.2	693.8	555.0	138.8	80.0	69.4	

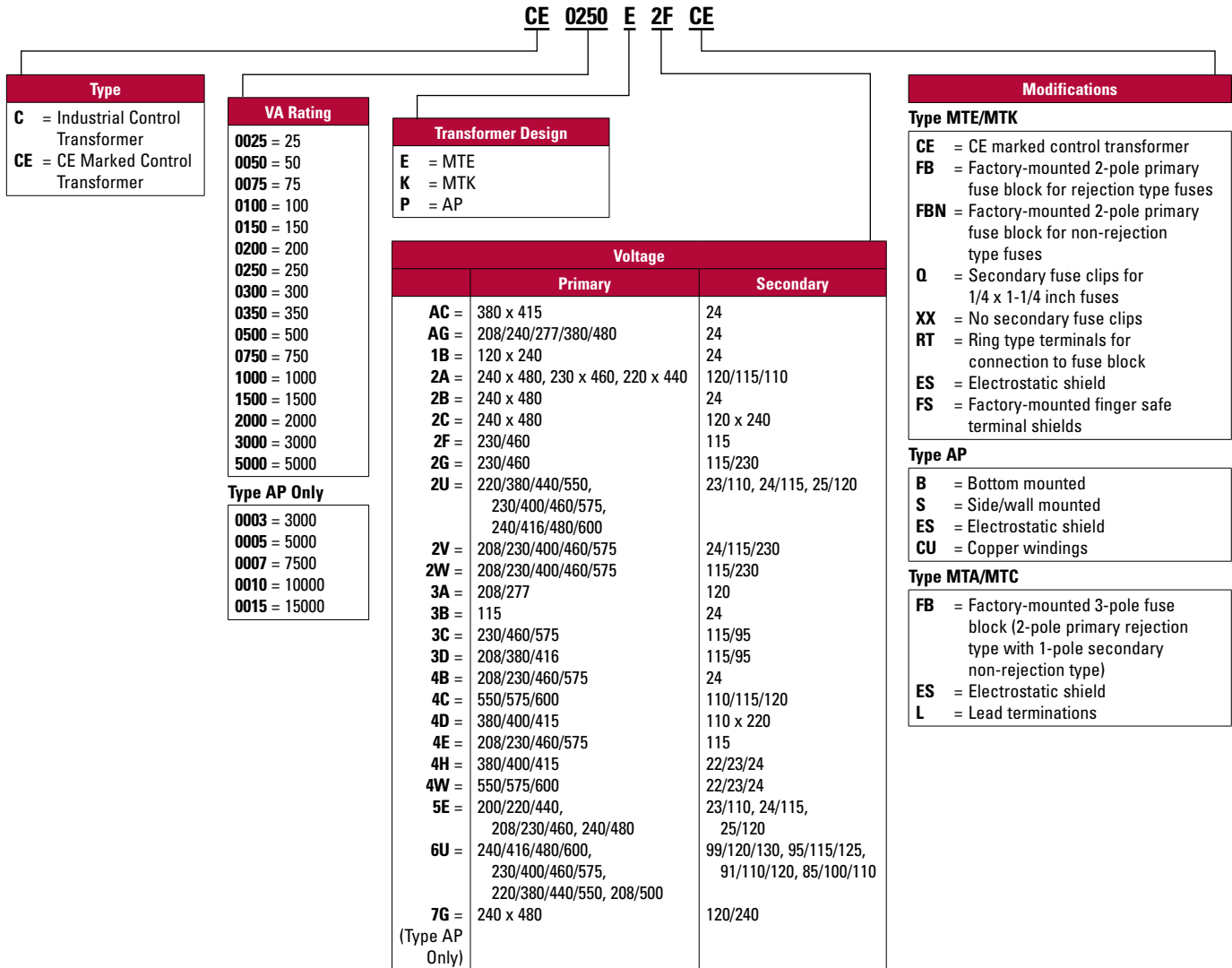
Line Current = (kVA x 1000) / Line Voltage

Machine Integration

General Purpose & Industrial Control Transformers

CATALOG SELECTION

Industrial Control Transformers — Catalog Numbering System



Machine Integration

General Purpose & Industrial Control Transformers

PRODUCT SELECTION

Industrial Control Transformers

- Epoxy encapsulated
- 130°C insulation system
- 50/60 Hz operation
- UL Listed and CSA Certified



Industrial Control Transformers

VA	Catalog Number
----	----------------

Primary 240 x 480, 230 x 460, 220 x 440 — Secondary 120/115/110

25	C0025E2A
50	C0050E2A
75	C0075E2A
100	C0100E2A
150	C0150E2A
200	C0200E2A
250	C0250E2A
300	C0300E2A
350	C0350E2A
500	C0500E2A
750	C0750E2A
1000	C1000E2A
1500	C1500E2A

Primary 240 x 480 — Secondary 24

50	C0050E2B
75	C0075E2B
100	C0100E2B
150	C0150E2B
200	C0200E2B
250	C0250E2B
300	C0300E2B
350	C0350E2B
500	C0500E2B
750	C0750E2B

Primary 120 x 240 — Secondary 24

50	C0050E1B
75	C0075E1B
100	C0100E1B
150	C0150E1B
200	C0200E1B
250	C0250E1B
300	C0300E1B
350	C0350E1B
500	C0500E1B

Performance for Every Power Application



Powering Business Worldwide

- High-performance, high-quality, highly-protected power supplies for 24V dc applications
- Wide input voltage range, high outrush and long ride-through capabilities
- Compact and globally certified for machinery that work over a wide temperature range

Machine Integration

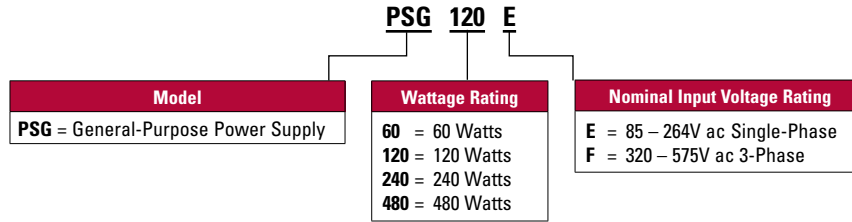
Power Supplies

PRODUCT OVERVIEW

Power Supplies Product Overview

			
Description	PSG	PSS	ELC
Page	Page 251	Page 252	Page 253
Output Voltage	24V dc	24V dc	24V dc
Input Voltage	85 – 264V ac / 120 – 375V dc or 320 – 575V ac / 450 – 800V dc	115V ac / 230V ac / 380 – 480V ac / 480 – 600V ac	85 – 264V ac
Mounting	DIN-Rail	DIN-Rail / Panel	DIN-Rail / Panel
Outrush Current (current boost / surge)	150% of Nominal	Up to 600% of Nominal	110% of Nominal
Class 1, Division 2	Yes	—	Yes
Semi 47 Approved	—	Yes	—
Housing Material	Metal	Plastic (10W and 25W), All Others Metal	Plastic
Adjustable Output Voltage	22 – 28V dc	Up to 55W — None 160W and Above — 22.5 – 28.5V dc	—
Loadsharing	—	Available	—
Redundancy Allowed	Yes	Available	—
Connection	Large Screw Terminals	Depluggable Screw Terminals	Large Screw Terminals
Overload / Short Circuit Protection	Yes	Yes	Yes

PSG Power Supply — Catalog Numbering System



PSG Power Supply

- Universal input voltages:
 - 85 – 264V ac for single-phase units, 320 – 575V ac for 3-phase units
 - Rugged aluminum housing stands up to harsh environments
- Compact size, with common depth and height across all models allows for common panel depths and family consistency
- Heavy-duty screw terminals with finger-safe protective cover allow use of ring-lug terminals
- Class 1, Division 2 hazardous location rated



PSG Power Supply

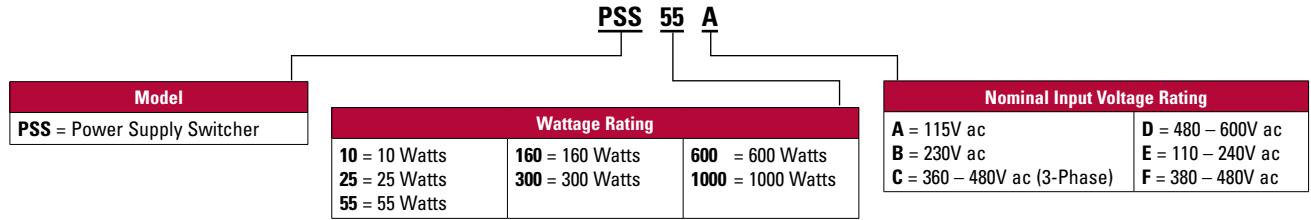
Description	Catalog Number
Single-Phase 85 – 264V ac Input, 24V dc / 2.5A Output	PSG60E
3-Phase 320 – 575V ac Input, 24V dc / 2.5A Output	PSG60F
Single-Phase 85 – 264V ac Input, 24V dc / 5A Output	PSG120E
3-Phase 320 – 575V ac Input, 24V dc / 5A Output	PSG120F
Single-Phase 85 – 264V ac Input, 24V dc / 10A Output	PSG240E
3-Phase 320 – 575V ac Input, 24V dc / 10A Output	PSG240F
Single-Phase 85 – 264V ac Input, 24V dc / 20A Output	PSG480E
3-Phase 320 – 575V ac Input, 24V dc / 20A Output	PSG480F

Machine Integration

Power Supplies

CATALOG SELECTION / PRODUCT SELECTION

PSS Power Supply — Catalog Numbering System



PSS Power Supply

- High current outrush capability in all units
- Designed with long ride-through capability
- Semiconductor F47 approved



PSS Power Supply

Steady-State Current (Amps)	Steady-State Wattage	Input Voltage	Catalog Number
0.4	10W	110 – 240	PSS10E
		380 – 480	PSS10F
1.0	25W	110 – 240	PSS25E
		380 – 480	PSS25F
2.3	55W	110 – 240	PSS55A
		190 – 264	PSS55B
		360 – 480	PSS55C
		480 – 600	PSS55D
6.5	160W	110 – 240	PSS160E
		380 – 480	PSS160C
12.5	300W	90 – 264	PSS300E
		380 – 480	PSS300C
25.0	600W	380 – 480	PSS600C
40.0	1000W	380 – 480	PSS1000C

Machine Integration

Power Supplies

CATALOG SELECTION / PRODUCT SELECTION

ELC Power Supply

- Compact and low-cost source for 24V dc power
- Universal input voltage: 85 – 264V ac
- Compact size, with common depth and height across models allows for common panel depths and family consistency
- Power On indication LED
- Integrated mounting hardware for panel mounting or DIN-Rail mounting



ELC Power Supply

Description	Catalog Number
24 Watt, 1 Amp Power Supply	ELC-PS01
48 Watt, 2 Amp Power Supply	ELC-PS02


Quick, Flexible Interconnection



Powering Business Worldwide

- Designed to enable quick system interconnection
- Forget the wire stripping and save 60% time and labor with IDC terminal blocks
- Accelerate assembly time with plug-in switches, relays, fuse blocks and circuit protectors
- Configurable plug-in bridges quickly distribute power in the panel
- Color codes enable visual coordination and organization of complex panel wiring

Terminal Blocks and Accessories Product Overview

	
Description	<i>XB</i>
Page	Page 256
Available Connections	Screw Terminal, Spring Cage, Insulation Displacement (IDC)
Insulation Material	Polyamide 6.6
Dielectric Strength	600 kV/cm
Creep Resistance	600 CTI
Flammability Rating	UL 94 V0
Continuous Operating Temperature	-40° to +257°F (-40° to +125°F)
UL Recognized	Yes
CE Approved	Yes
ATEX Approved	Yes
Jumpers / Bridging	Flexible Jumper System with Dual Channel Configurations

Machine Integration

Terminal Blocks and Accessories

PRODUCT SELECTION

XB Series IEC Terminal Blocks

- Maintenance-free connections
- Multi-conductor connections
- Flexible plug-in bridge system
- UL and cUL recognized, CE approved
- LVD 1 (Not all standards apply to all terminal blocks. Contact Eaton for details):
 - EN 60947-7-1
 - EN 60947-7-2
 - EN 60998-2-3
 - EN 60352-4/A1
- ATEX approval (EExe applications)



Screw Connection Single Level — Through-Feed Terminal Blocks

Terminal Width Maximum Wire Size IEC 60 947-7-1 in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG	5.2 mm 12 AWG / 2.5 mm ² 800 / 32 / 26-12 750 / 22/28 / 26-12 600 / 20 / 26-12	6.2 mm 10 AWG / 4 mm ² 800 / 41 / 26-10 750 / 30/38 / 26-10 600 / 30 / 26-10	8.2 mm 8 AWG / 6 mm ² 800 / 57 / 24-8 750 / 40/50 / 24-8 600 / 50 / 24-8
Description	Color	Number of Positions	Catalog Number

Product Selection

Screw Connection Single Level — Through-Feed	Gray	—	XBUT25	XBUT4	XBUT6
	Blue	—	XBUT25BU	XBUT4BU	XBUT6BU
	Orange	—	—	XBUT4OR	—
	Yellow	—	—	XBUT4YE	—
	Red	—	—	XBUT4RD	—
	White	—	—	XBUT4WH	—
	Black	—	—	XBUT4BK	—
	Green	—	—	XBUT4GN	—

Accessories

End Cover	Gray	—	XBACUT10	XBACUT10	XBACUT10
Partition Plate	Gray	—	XBATUT10	XBATUT10	XBATUT10
Plug-In Bridge — for cross connections in the bridge shaft	Red	2	XBAFBS25	XBAFBS26	XBAFBS28
		3	XBAFBS35	XBAFBS36	—
		5	XBAFBS55	XBAFBS56	—
		10	XBAFBS105	XBAFBS106	—
		50	XBAFBS505	XBAFBS506	—
Reducing Bridge — for connection from XBUT10 to XBUT4 or XBUT25	Red	—	—	—	—
Test Adapter			XBATSPA14	XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS-^②	XBATSMPS-^②	—
Modular Test Plug			XBATSPS5	XBATSPS6	XBATSPS8
Blank Marker Strip (strip of 10)	White	—	XBMZB5^③	XBMZB6^③	XBMZB8^③
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P	XBANS3575P	XBANS3575P
			XBANS3575U	XBANS3575U	XBANS3575U
			XBANS3515P	XBANS3515P	XBANS3515P
			XBANS3515U	XBANS3515U	XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C	XBAES35C	XBAES35C
			XBAES35T	XBAES35T	XBAES35T
			XBAES35N	XBAES35N	XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2158 U.

② For ordering information, see Page 274.

③ For information on Printed Marking Tag Options, see Page 275.

Screw Connection Single Level — Through-Feed Terminal Blocks (Continued)

Terminal Width Maximum Wire Size IEC 60 947-7-1 in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG	10.2 mm 6 AWG / 10 mm ² 1000 / 76 / 20-6 750 / 54/63 / 20-6 600 / 65 / 20-6	12 mm 4 AWG / 16 mm ² 1000 / 101 / 17-4 600 / 85 / 16-4	16 mm 0 AWG / 35 mm ² 1000 / 150 / 15-0 600 / 150 / 14-1/0
Description	Color	Number of Positions	Catalog Number

Product Selection

Screw Connection Single Level — Through-Feed	Color	Number of Positions	Catalog Number	Catalog Number	Catalog Number
	Gray	—	XBUT10	XBUT16	XBUT35
	Blue	—	XBUT10BU	XBUT16BU	XBUT35BU
	Orange	—	XBUT10OR	—	—
	Yellow	—	XBUT10YE	—	—
	Red	—	XBUT10RD	—	—
	White	—	—	—	—
	Black	—	—	—	—
	Green	—	—	—	—

Accessories

End Cover	Gray	—	XBACUT10	XBACUT16	④
Partition Plate	Gray	—	XBATUT10	—	—
Plug-In Bridge — for cross connections in the bridge shaft	Red	2 3 5 10 50	XBAFBS210 — — — —	XBAFBS212 — — — —	XBAFBS216 — — — —
Reducing Bridge — for connection from XBUT10 to XBUT4 or XBUT25	Red	—	XBARBUT10	—	—
Test Adapter			—	—	—
2.3 mm Dia. Test Plug			—	—	—
Modular Test Plug			—	—	—
Blank Marker Strip (strip of 10)	White	—	XBMZB10 ③	XBMZB12 ③	XBMZB15 ③
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2158 U.

② For more information on Printed Marking Tag Options, see Page 275.

③ XBUT35 has an enclosed design. The use of an end cover is not required.

Machine Integration

Terminal Blocks and Accessories

PRODUCT SELECTION

XB Series IEC Terminal Blocks

Screw Connection Single Level — Ground Blocks

Terminal Width Maximum Wire Size IEC 60 947-7-2 in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG	10.2 mm 12 AWG / 2.5 mm ² — / — / 26-12 — / — / 26-12 — / — / 26-12	6.2 mm 10 AWG / 4 mm ² — / — / 26-10 — / — / 26-10 — / — / 26-10	8.2 mm 8 AWG / 6 mm ² — / — / 24-8 — / — / 24-8 — / — / 24-8
Description	Color	Number of Positions	Catalog Number

Product Selection

Screw Connection Single Level Ground Block	Green / Yellow	—	XBUT25PE	XBUT4PE	XBUT6PE
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Accessories

End Cover	Gray	—	XBACUT10	XBACUT10	XBACUT10
Partition Plate			XBATUT10	XBATUT10	XBATUT10
Plug-In Bridge — for cross connections in the bridge shaft	Red	2 3 5 10 50	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506	XBAFBS28 — — — —
Test Adapter			XBATSPA14	XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS- ②	XBATSMPS- ②	—
Modular Test Plug			XBATSPS5	XBATSPS6	XBATSPS8
Blank Marker Strip (strip of 10)	White	—	XBMZB5 ③	XBMZB6 ③	XBMZB8 ③
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2158 U.

② For more information, see Page 274.

③ For more information on Printed Marking Tag Options, see Page 275.

XB Series IEC Terminal Blocks

Screw Connection Single Level — Ground Blocks (Continued)

Terminal Width Maximum Wire Size IEC 60 947-7-2 in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG		10.2 mm 6 AWG / 10 mm ² — / 76 / 20-6 — / 54/69 / 20-6 — / — / 20-6	12 mm 4 AWG / 16 mm ² — / 101 / 15-4 — / — / 16-4	16 mm 2 AWG / 35 mm ² — / 125 / 15-2 — / — / 14-1/0
Description	Color	Number of Positions	Catalog Number	

Product Selection

Screw Connection Single Level Ground Block	Green / Yellow	—	XBUT10PE	XBUT16PE	XBUT35PE
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Accessories

End Cover	Gray	—	XBACUT10	XBACUT16	③
Partition Plate			XBATUT10	—	—
Plug-In Bridge — for cross connections in the bridge shaft	Red	2	XBAFBS210	XBAFBS212	XBAFBS212
		3	—	—	—
		5	—	—	—
		10	—	—	—
		50	—	—	—
Test Adapter			—	—	—
2.3 mm Dia. Test Plug			—	—	—
Modular Test Plug			—	—	—
Blank Marker Strip (strip of 10)	White	—	XBMZB10 ②	XBMZB12 ②	XBMZB15 ②
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2158 U.

② For more information on Printed Marking Tag Options, see Page 275.

③ XBUT35PE has an enclosed design. The use of an end cover is not required.

Machine Integration

Terminal Blocks and Accessories

PRODUCT SELECTION

XB Series IEC Terminal Blocks

Screw Connection Multi-Conductor Terminal Blocks

Terminal Width		5.2 mm	6.2 mm
Maximum Wire Size		12 AWG / 2.5 mm ²	10 AWG / 4 mm ²
IEC 60 947-7-1 in V / A / AWG		500 / 28 / 26-12	500 / 39 / 26-10
UL-cUL Ratings in V / A / AWG		150 / 20 / 26-12	150 / 30 / 26-10
Description	Color	Number of Positions	Catalog Number

Product Selection

Screw Connection Multi-Conductor	Color	Number of Positions	Catalog Number	Catalog Number
Screw Connection Multi-Conductor	Gray	—	XBUT25D12	XBUT4D12
	Gray	—	XBUT25D22	XBUT4D22
	Blue	—	XBUT25D12BU	XBUT4D12BU
	Blue	—	XBUT25D22BU	XBUT4D22BU

Accessories

End Cover	Gray	—	XBACUT4D12 XBACUT4D22	XBACUT4D12 XBACUT4D22
End Cover Segment	Gray	—	XBASUT4	XBASUT4
Partition Plate			XBATUTD12 XBATUTD22	XBATUTD12 XBATUTD22
Plug-In Bridge — for cross connections in the bridge shaft	Red	2	XBAFBS25	XBAFBS26
		3	XBAFBS35	XBAFBS36
		5	XBAFBS55	XBAFBS56
		10	XBAFBS105	XBAFBS106
		50	XBAFBS505	XBAFBS506
Test Adapter			XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS-₁	XBATSMPS-₁
Modular Test Plug			XBATSPS5	XBATSPS6
Blank Marker Strip (strip of 10)	White	—	XBMZB5 ②	XBMZB6 ②
DIN-Rail				
35 mm x 7.5 mm x 2 m (slotted)			XBANS3575P	XBANS3575P
35 mm x 7.5 mm x 2 m (solid)			XBANS3575U	XBANS3575U
35 mm x 15 mm x 2 m (slotted)			XBANS3515P	XBANS3515P
35 mm x 15 mm x 2 m (solid)			XBANS3515U	XBANS3515U
End-Stop				
One-Screw Mounted			XBAES35C	XBAES35C
Three-Screw Mounted			XBAES35T	XBAES35T
Snap-On			XBAES35N	XBAES35N

① For ordering information, see Page 274.

② For information on Printed Marking Tag Options, see Page 275.

Screw Connection Multi-Conductor Ground Blocks

Terminal Width		5.2 mm	6.2 mm
Maximum Wire Size		12 AWG / 2.5 mm ²	10 AWG / 4 mm ²
IEC 60 947-7-2 in V / A / AWG		— / — / 26-12	— / — / 26-10
UL-cUL Ratings in V / A / AWG		— / — / 26-12	— / — / 26-10
Description	Color	Number of Positions	Catalog Number

Product Selection

Screw Connection Multi-Conductor Ground Block	Color	Number of Positions	Catalog Number	Catalog Number
Screw Connection Multi-Conductor Ground Block	Green / Yellow	—	XBUT25D12PE XBUT25D22PE	XBUT4D12PE XBUT4D22PE

Accessories

End Cover	Gray	—	XBACUT4D12 XBACUT4D22	XBACUT4D12 XBACUT4D22
End Cover Segment	Gray	—	XBASUT4	XBASUT4
Partition Plate			XBATUTD12	XBATUTD12
Plug-In Bridge — for cross connections in the bridge shaft	Red	2	XBAFBS25	XBAFBS26
		3	XBAFBS35	XBAFBS36
		5	XBAFBS55	XBAFBS56
		10	XBAFBS105	XBAFBS106
		50	XBAFBS505	XBAFBS506
Test Adapter			XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS-₁	XBATSMPS-₁
Modular Test Plug			XBATSPS5	XBATSPS6
Blank Marker Strip (strip of 10)	White	—	XBMZB5 ②	XBMZB6 ②
DIN-Rail				
35 mm x 7.5 mm x 2 m (slotted)			XBANS3575P	XBANS3575P
35 mm x 7.5 mm x 2 m (solid)			XBANS3575U	XBANS3575U
35 mm x 15 mm x 2 m (slotted)			XBANS3515P	XBANS3515P
35 mm x 15 mm x 2 m (solid)			XBANS3515U	XBANS3515U
End-Stop				
One-Screw Mounted			XBAES35C	XBAES35C
Three-Screw Mounted			XBAES35T	XBAES35T
Snap-On			XBAES35N	XBAES35N

① For ordering information, see Page 274.

② For information on Printed Marking Tag Options, see Page 275.

XB Series IEC Terminal Blocks

Screw Connection Double Level Terminal Blocks

Terminal Width		6.2 mm	6.2 mm
Maximum Wire Size		10 AWG / 4 mm ²	10 AWG / 4 mm ²
IEC 60 947-7-1 in V / A / AWG		800 / 36 / 26-10	— / — / 26-10
UL-cUL Ratings in V / A / AWG		300 / 30 / 26-10	— / — / 26-10
Description	Color	Number of Positions	Catalog Number

Product Selection

Screw Connection Double Level	Gray Blue Red	—	XBUTT4 XBUTT4BU XBUTT4RD	—
Screw Connection Double Level — terminal block with potential distribution between the levels	Gray	—	XBUTT4PV	—
Screw Connection Double Level — Ground Block	Green/ Yellow	—	—	XBUTT4PE

Accessories

End Cover	Gray	—	XBACUTT4	XBACUTT4
Spacer Plate	Gray	—	XBDPUTT4	XBDPUTT4
Partition Plate			XBATUTT4	XBATUTT4
Plug-In Bridge — for cross connections in the bridge shaft	Red	2 3 5 10 50	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506
Test Adapter			XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS-₁	XBATSMPS-₁
Modular Test Plug			XBATSPS6	XBATSPS6
Blank Marker Strip (strip of 10)	White	—	XBMZB6₂	XBMZB6₂
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① For ordering information, see Page 274.

② For information on Printed Marking Tag Options, see Page 275.

Screw Connection Triple Level Sensor/ Actuator Terminal Blocks

Terminal Width		6.2 mm	6.2 mm
Maximum Wire Size		14 AWG / 2.5 mm ²	14 AWG / 2.5 mm ²
Connection Data in V / A / AWG		250 / 26 / 24-12	—
IEC 60 947-7-1 in V / A / AWG		—	250 / 30 / 24-12
UL-cUL Ratings in V / A / AWG		300 / 15 / 30-14	300 / 15 / 30-14
Description	Color	Number of Positions	Catalog Number

Product Selection

Screw Connection Triple Level	Gray Blue	—	XB3UKA25	XB3UKF25
Screw Connection Triple Level w/Red LED, 15 – 30V dc, 2.5 – 7.5A	Gray	—	XB3UKA25L24	—
Screw Connection with Ground Connection	Gray	—	XB3UKA24PE	XB3UKF24PE
Screw Connection with Ground Connection and LED Indicator	Gray	—	XB3UKA24PEL24	—

Accessories

Insertion Bridge	Blue Red Blue Red	80 80 10 10	XBAEB80DIKB XBAEB80DIKR XBAEB10DIKB XBAEB10DIKR	XBAEB80DIKB XBAEB80DIKR XBAEB10DIKB XBAEB10DIKR
Blank Marker Strip (strip of 10)	White	—	XBMZB6₁	XBMZB6₁
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① For information on Printed Marking Tag Options, see Page 275.

Machine Integration

Terminal Blocks and Accessories

PRODUCT SELECTION

XB Series IEC Terminal Blocks

Screw Connection Fuse Terminal Blocks

Terminal Width Maximum Wire Size IEC 60 947-7-3 in V / A / AWG IEC 60 947-7-3 as disconnected t.b. in V / A / AWG UL-cUL Ratings in V / A / AWG	6.2 mm 10 AWG / 4 mm ² ① / 6.3 / 26-10 — 600 / 6.3 / 26-10	8.2 mm 8 AWG / 6 mm ² ① / 10 / 24-8 — 400 / 10 / 24-8	12 mm 6 AWG / 16 mm ² ⑤ / ⑤ / 20-4 800 / 10 / 20-6 300 / 20 / 22-6
Description	Color	Number of Positions	Catalog Number

Product Selection

Fuse Terminal Block for 5 x 20 mm fuse	Black	—	XBUT4FBE	—	XBUK10FBCE
Fuse Terminal Block for 6.3 x 32 mm (1/4" x 1-1/4") fuse	Black	—	—	XBUT6FBN	XBUK10FBCN
Fuse Terminal Block w/ LED 12 – 30V, 1 – 2.5 mA	Black	—	XBUT4FBEL24	XBUT6FBNL24	—
Fuse Terminal Block w/ LED 30 – 60V, 0.8 – 2.0 mA	Black	—	XBUT4FBEL60	XBUT6FBNL60	—
Fuse Terminal Block w/ LED 110 – 250V, 0.5 – 2.5 mA	Black	—	XBUT4FBEL250	XBUT6FBNL250	—
Fuse Terminal Block w/ LED 15 – 30V, 1 – 2.5 mA, 5 x 20 mm	Black	—	—	—	XBUK10FBCEL24
Fuse Terminal Block w/ LED 15 – 30V, 1 – 2.5 mA, 6.3 x 32 mm	Black	—	—	—	XBUK10FBCNL24
Fuse Terminal Block w/ LED 110 – 250V, 0.5 – 1.1A, 5 x 20 mm	Black	—	—	—	XBUK10FBCEL250
Fuse Terminal Block w/ LED 110 – 250V, 0.5 – 1.1A, 6.3 x 32 mm	Black	—	—	—	XBUK10FBCNL250

Accessories

End Cover	—	—	②	②	—
Plug-In Bridge — for cross connections in the bridge shaft	Red	2 3 5 10 50	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506	XBAFBS28 XBAFBS38 XBAFBS58 XBAFBS108 XBAFBS508	— — — — —
Fixed Bridge	—	2	—	—	XBAFB1212
Screw Heads with Insulating Collar	—	10	—	—	XBAFB11012
Blank Marker Strip Center Labeling (strip of 10)	White	—	XBMBZB5 ③	XBMBZB6 ③	—
Blank Marker Strip External Labeling (strip of 10)	White	—	XBMBZB6 ③	XBMBZB8 ③	—
Blank Marker Strip (strip of 10)	White	—	—	—	XBMBZB6 ③
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① As disconnect terminal block 400V, as fuse terminal block 250V.

② XBUT4FBE and XBUT6FBN have an enclosed design. The use of an end cover is not required.

③ For information on Printed Marking Tag Options, see Page275.

④ As disconnect terminal block 500V, as fuse terminal block 400V.

⑤ The current is determined by the fuse used, the voltage by the selected light indicator.

Note: Max. power dissipation at 23°C (based on DIN EN 60 947-7-3: 2003-7. When selecting cartridge fuse inserts, please ensure that the maximum power dissipation specified above is not exceeded. Details can be obtained from the fuse suppliers. Cartridge Fuse Inserts 5 x 20 mm based on DIN EN 60 947-7-3: 2003-7.

Terminal Block	U (V)	Overload Protection		I _{max.} (A)
		Individual	Interconnected	
XBUT4FBE	250	1.6W	1.6W	6.3

Note: If the fuse is defective, the downstream circuit is not off load.

XB Series IEC Terminal Blocks

Spring Cage Single Level — Through-Feed Terminal Blocks

Terminal Width Maximum Wire Size IEC 60 947-7-1 in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG	5.2 mm 12 AWG / 2.5 mm ² 800 / 31 / 28-12 550 / 25/21 / 24-12 600 / 20 / 26-12	6.2 mm 10 AWG / 4 mm ² 800 / 40 / 28-10 550 / 34/30 / 24-10 600 / 30 / 20-10	8.2 mm 8 AWG / 6 mm ² 800 / 52 / 24-8 550 / 45/36 / 20-8 600 / 50 / 20-8
Description	Color	Number of Positions	Catalog Number

Product Selection

Spring Cage Single Level — Through-Feed	Color	Number of Positions	Catalog Number	Catalog Number	Catalog Number
	Gray	—	XBPT25	XBPT4	XBPT6
	Blue	—	XBPT25BU	XBPT4BU	XBPT6BU
	White	—	XBPT25WH	—	—
	Red	—	XBPT25RD	—	—
	Black	—	XBPT25BK	—	—

Accessories

End Cover	Gray	—	XBACPT25	XBACPT4	XBACPT6
Partition Plate			XBATPT4	XBATPT4	XBATPT6
Plug-In Bridge — for cross connections in the terminal center	Red	2 3 5 10 50	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506	XBAFBS28 — — — —
Reducing Bridge	Red	—	—	—	—
Test Adapter			XBATSPA14	XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS- ^②	XBATSMPS- ^②	XBATSMPS- ^②
Modular Test Plug			XBATSPS5	XBATSPS6	XBATSPS8
Blank Marker Strip External Labeling Blank Marker Strip Center Labeling (strip of 10)	White White	— —	XBMZBF5 ^③ XBMZB5 ^③	XBMZBF6 ^③ XBMZB6 ^③	XBMZBF8 ^③ XBMZB8 ^③
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2154 U (XBPT25), KEMA 05ATEX2155 U (XBPT4), KEMA 05ATEX2155 U (XBPT6), KEMA 05ATEX2156 U (XBPT10).

② For ordering information, see Page 274.

③ For information on Printed Marking Tag Options, see Page 275.

Machine Integration

Terminal Blocks and Accessories

PRODUCT SELECTION

XB Series IEC Terminal Blocks

Spring Cage Single Level — Through-Feed Terminal Blocks (Continued)

Terminal Width Maximum Wire Size IEC 60 947-7-1 in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG	10.2 mm 6 AWG / 10 mm ² 800 / 65 / 24-6 550 / 50/63 / 16-6 600 / 65 / 16-6	12 mm 4 AWG / 16 mm ² 800 / 90 / 24-4 550 / 65/82 / 16-4 600 / 50 / 16-4	16 mm 2 AWG / 35 mm ² 800 / 125 / 14-2 750 / 108 / 14-2 600 / 115 / 14-2
Description	Color	Number of Positions	Catalog Number

Product Selection

Description	Color	Number of Positions	Catalog Number	Catalog Number	Catalog Number
Spring Cage Single Level — Through-Feed	Gray	—	XBPT10	XBPT16	XBPT35
	Blue	—	XBPT10BU	XBPT16BU	XBPT35BU
	White	—	—	—	—
	Red	—	—	—	—
	Black	—	—	—	—

Accessories

End Cover	Gray	—	XBACPT10	XBACPT16	④
Partition Plate			—	—	—
Plug-In Bridge — for cross connections in the terminal center	Red	2 3 5 10 50	XBAFBS210 — — — —	XBAFBS212 — — — —	XBAFBS216 — — — —
Reducing Bridge	Red	—	XBARBST10	XBARBST16	—
Test Adapter			—	—	—
2.3 mm Dia. Test Plug			XBATSMPS-₂	XBATSMPS-₂	XBATSMPS-₂
Modular Test Plug			—	—	—
Blank Marker Strip External Labeling	White	—	XBMZBF10 ③	XBMZBF12 ③	XBMZBF15 ③
Blank Marker Strip Center Labeling (strip of 10)	White	—	XBMZB10 ③	XBMZB12 ③	XBMZB15 ③
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2154 U (XBPT25), KEMA 05ATEX2155 U (XBPT4), KEMA 05ATEX2155 U (XBPT6), KEMA 05ATEX2156 U (XBPT10).

② For ordering information, see Page 274.

③ For information on Printed Marking Tag Options, see Page 275.

④ XBPT35 has an enclosed design. The use of an end cover is not required.

XB Series IEC Terminal Blocks

Screw Connection Single Level — Ground Blocks

Terminal Width Maximum Wire Size IEC 60 947-7-2 in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG		5.2 mm 12 AWG / 2.5 mm ² — / — / 28-12 — / — / 24-12 — / — / 26-12	6.2 mm 10 AWG / 4 mm ² — / — / 28-10 — / — / 24-10 — / — / 20-10	8.2 mm 8 AWG / 6 mm ² — / — / 24-8 — / — / 20-8 — / — / 20-8
Description	Color	Number of Positions	Catalog Number	

Product Selection

Spring Cage Single Level Ground Block	Green / Yellow	—	XBPT25PE	XBPT4PE	XBPT6PE
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Accessories

End Cover	Gray	—	XBACPT25	XBACPT4	XBACPT6
Plug-in Bridge — for cross connections in the terminal center		2	—	—	—
Blank Marker Strip External Labeling Blank Marker Strip Center Labeling (strip of 10)	White White	— —	XBMBZF5 ② XBMBZ5 ②	XBMBZF6 ② XBMBZ6 ②	XBMBZF8 ② XBMBZ8 ②
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2154 U (XBPT25PE), KEMA 05ATEX2155 U (XBPT4PE, XBPT6PE), KEMA 05ATEX2156 U (XBPT10PE).

② For information on Printed Marking Tag Options, see Page 275.

Screw Connection Single Level — Ground Blocks (Continued)

Terminal Width Maximum Wire Size IEC 60 947-7-2 in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG		10.2 mm 6 AWG / 10 mm ² — / 65 / 24-6 — / — / 16-6 — / — / 16-6	12 mm 4 AWG / 16 mm ² — / 90 / 24-4 — / — / 16-4 — / — / 16-4	16 mm 2 AWG / 35 mm ² — / 125 / 14-2 — / — / 14-2 — / — / 14-2
Description	Color	Number of Positions	Catalog Number	

Product Selection

Spring Cage Single Level Ground Block	Green / Yellow	—	XBPT10PE	XBPT16PE	XBPT35PE
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Accessories

End Cover	Gray	—	XBACPT10	XBACPT16	③
Plug-in Bridge — for cross connections in the terminal center		2	XBAFBS210	XBAFBS212	XBAFBS216
Blank Marker Strip External Labeling Blank Marker Strip Center Labeling (strip of 10)	White White	— —	XBMBZF10 ② XBMBZ10 ②	XBMBZF12 ② XBMBZ12 ②	XBMBZF15 ② XBMBZ15 ②
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2154 U (XBPT25PE), KEMA 05ATEX2155 U (XBPT4PE, XBPT6PE), KEMA 05ATEX2156 U (XBPT10PE).

② For information on Printed Marking Tag Options, see Page 275.

③ XBPT35PE has an enclosed design. The use of an end cover is not required.

Machine Integration

Terminal Blocks and Accessories

PRODUCT SELECTION

XB Series IEC Terminal Blocks

Spring Cage Multi-Conductor Terminal Blocks

Terminal Width	5.2 mm	6.2 mm
Maximum Wire Size	12 AWG / 2.5 mm ²	10 AWG / 4 mm ²
IEC 60 947-7-1 in V / A / AWG	800 / 28 / 28-12	800 / 40 / 28-10
EN 50 019 ① in V / A / AWG	550 / 25/21 / 24-12	550 / 34/29 / 24-10
UL-cUL Ratings in V / A / AWG	600 / 20 / 26-12	600 / 30 / 20-10

Description	Color	Number of Positions	Catalog Number
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Product Selection

Spring Cage Multi-Conductor	Gray	—	XBPT25D12	XBPT4D12
	Gray	—	XBPT25D22	XBPT4D22
	Blue	—	XBPT25D12BU	XBPT4D12BU
	Blue	—	XBPT25D22BU	XBPT4D22BU
Spring Cage Multi-Conductor with interrupted busbar	Gray	—	XBPT25D22U	XBPT4D22U

Accessories

End Cover	Gray	—	XBACPT25D12 XBACPT24D22	XBACPT4D12 XBACPT4D22
End Cover Segment	Gray	—	XBASPT25	XBASPT4
Partition Plate			XBATPTD12 XBATPTD22	XBATPTD12 XBATPTD22
Plug-in Bridge — for cross connections in the terminal center	Red	2	XBAFBS25	XBAFBS26
		3	XBAFBS35	XBAFBS36
		5	XBAFBS55	XBAFBS56
		10	XBAFBS105	XBAFBS106
		50	XBAFBS505	XBAFBS506
Test Adapter			XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS-^②	XBATSMPS-^②
Modular Test Plug			XBATSPS5	XBATSPS6
Blank Marker Strip External Labeling	White	—	XBMZBF5^③	XBMZBF6^③
	White	—	XBMZB5^③	XBMZB6^③
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2154 U (XBPT25D12, XBPT25D22), KEMA 05ATEX2155 U (XBPT4D12, XBPT4D22).

② For ordering information, see Page 274.

③ For information on Printed Marking Tag Options, see Page 275.

Spring Cage Multi-Conductor Ground Blocks

Terminal Width	5.2 mm	6.2 mm
Maximum Wire Size	12 AWG / 2.5 mm ²	10 AWG / 4 mm ²
IEC 60 947-7-2 in V / A / AWG	— / — / 28-12	— / — / 28-10
EN 50 019 ① in V / A / AWG	— / — / 24-12	— / — / 24-10
UL-cUL Ratings in V / A / AWG	— / — / 26-12	— / — / 20-10

Description	Color	Number of Positions	Catalog Number
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Product Selection

Spring Cage Multi-Conductor Ground Block	Green / Yellow	—	XBPT25D12PE XBPT25D22PE	XBPT4D12PE XBPT4D22PE
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Accessories

End Cover	Gray	—	XBACPT25D12 XBACPT25D22	XBACPT4D12 XBACPT4D22
End Cover Segment	Gray	—	XBASPT25	XBASPT4
Blank Marker Strip External Labeling	White	—	XBMZBF5^②	XBMZBF6^②
	White	—	XBMZB5^②	XBMZB6^②
Blank Marker Strip Center Labeling (strip of 10)				
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2154 U (XBPT25D12PE, XBPT25D22PE), KEMA 05ATEX2155 U (XBPT4D12PE, XBPT4D22PE).

② For information on Printed Marking Tag Options, see Page 275.

XB Series IEC Terminal Blocks

Spring Cage Double Level Blocks

Terminal Width Maximum Wire Size IEC 60 947-7-1 in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG		5.2 mm 12 AWG / 2.5 mm ² 500 / 26 / 28-12 420 / 23/19 / 24-12 600 / 20 / 26-12	6.2 mm 10 AWG / 4 mm ² 500 / 32 / 28-10 420 / 32/27 / 24-10 300 / 30 / 20-10
Description	Color	Number of Positions	Catalog Number

Product Selection

Description	Color	Number of Positions	Catalog Number	Catalog Number
Spring Cage Double Level Block	Gray Blue	—	XBPTT25 XBPTT25BU	XBPTT4 XBPTT4BU
Spring Cage Double Level Ground Block	Green/ Yellow	—	XBPTT25PE	XBPTT4PE
Spring Cage Double Level — terminal block with potential distribution between the levels	Gray	—	XBPTT25PV	XBPTT4PV

Accessories

End Cover	Gray	—	XBACPTT25	XBACPTT4
Partition Plate			XBATPTT4	XBATPTT4
Plug-In Bridge — for cross connections in the terminal center	Red	2 3 5 10 50	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506
Test Adapter			XBATSPA14	XBATSPA14
Modular Test Plug			XBATSPS5	XBATSPS6
Blank Marker Strip (strip of 10)	White	—	XBMZBF5 ②	XBMZBF6 ②
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2154 U (XBPTT25, XBPTT25PE), KEMA 05ATEX2155 U (XBPTT4, XBPTT4PE).

② For information on Printed Marking Tag Options, see Page 275.

Spring Cage Triple Level Blocks

Terminal Width Maximum Wire Size IEC 60 947-7-1 in V / A / AWG UL-cUL Ratings in V / A / AWG		5.2 mm 12 AWG / 2.5 mm ² 500 / 28 / 28-12 600 / 20 / 26-12	
Description	Color	Number of Positions	Catalog Number

Product Selection

Spring Cage Triple Level Block	Gray	—	XBPTK25
Spring Cage Triple Level — terminal block with potential distribution between the levels	Gray	—	XBPTK25PV

Accessories

End Cover	Gray	—	XBACPT25K
Plug-In Bridge — for cross connections in the terminal center	Red	2 3 5 10 50	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505
Test Adapter			XBATSPA14
Modular Test Plug			XBATSPS5
Blank Marker Strip (strip of 10)	White	—	XBMZBF5 ①
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N

① For information on Printed Marking Tag Options, see Page 275.

Machine Integration

Terminal Blocks and Accessories

PRODUCT SELECTION

XB Series IEC Terminal Blocks

Spring Cage Fuse Terminal Block

Terminal Width Maximum Wire Size IEC 60 947-7-3 with Fuse in V / A / AWG IEC 60 947-7-3 as Disconnect Terminal Block in V / A / AWG UL-cUL Ratings in V / A / AWG	6.2 mm 10 AWG / 4 mm² ① / ① / 28-10 250 / 6.3 / 28-10 300 / 6.3 / 24-10	8.2 mm 10 AWG / 4 mm² 400 / 10 / 28-10 400 / 10 / 28-10 300 / 10 / 24-10	
Description	Color	Number of Positions	Catalog Number

Product Selection

Fuse Terminal Block for 5 x 20 mm fuse	Black	—	XBPT4FBE	—
Fuse Terminal Block w/ LED 15 – 30V, 3.5 – 8.1A	Black	—	XBPT4FBEL24	—
Fuse Terminal Block w/ LED 30 – 60V, 0.8 – 2.0A	Black	—	XBPT4FBEL60	—
Fuse Terminal Block w/ LED 110 – 250V, 0.5 – 1.0A	Black	—	XBPT4FBEL250	—
Fuse Terminal Block for 6.3 x 32 mm (1/4" x 1-1/4") fuse	Black	—	—	XBPT4FBN
Fuse Terminal Block w/ LED 12 – 30V, 1.0 – 2.5 mA	Black	—	—	XBPT4FBNL24
Fuse Terminal Block w/ LED 110 – 250V, 0.5 – 2.5 mA	Black	—	—	XBPT4FBNL250

Accessories

Partition Plate			XBATPT4	XBATQTD12
Plug-In Bridge — for cross connections in the terminal center	Red	2 3 5 10	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106	XBAFBS28 — — —
Blank Marker Strip External Labeling Blank Marker Strip Center Labeling (strip of 10)	White White	— —	XBMZBF6 ② XBMZB5 ②	XBMZBF8 ② XBMZB6 ②
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① See table below (the current is determined by the fuse used, the voltage by the selected light indicator).

② For information on Printed Marking Tag Options, see Page 275.

Note: The cartridge fuse holders should be selected according to the maximum power dissipation (self-heating) of the cartridge fuse inserts. The thermal conditions in closed fuse holes should be checked according to the application and installation. Higher ambient temperatures are an additional strain on fuse inserts. In applications of this kind, the shift of the rated current should be taken into consideration accordingly. Max. power dissipation at 23°C (in acc. with IEC 60 947-7-3). When selecting cartridge fuse inserts, please ensure that the maximum power dissipation specified at right is not exceeded. Details can be obtained from the fuse suppliers. Cartridge Fuse Inserts 5 x 20 and 6.3 x 32 mm in acc. with IEC 60 947-7-3.

Terminal Block	U (V)	Individual	Interconnected
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Overload Protection

XBPT4FBN	400	1.6W	1.6W
XBPT4FBE	250	1.6W	1.6W

Short Circuit Protection Only

XBPT4FBN	400	4W	2.5W
XBPT4FBE	250	4W	2.5W

XB Series IEC Terminal Blocks

Insulation Displacement Connection — Single Level Terminal Blocks

Terminal Width Maximum Wire Size Connection Data ① in V / A / AWG EN 50 019 in V / A / AWG UL-cUL Ratings in V / A / AWG	5.2 mm 16 AWG / 1.5 mm ² 800 / 17.5 / 24-16	5.2 mm 16 AWG / 1.5 mm ² — / — / 24-16	6.2 mm 14 AWG / 2.5 mm ² 800 / 24 / 20-14	6.2 mm 14 AWG / 2.5 mm ² — / — / 20-14	
	550 / 16 / 24-16	— / — / 24-16	—	—	
	600 / 10 / 24-16	— / — / 24-16	600 / 15 / 20-14	— / — / 20-14	
Description	Color	Number of Positions	Catalog Number		

Product Selection

IDC Terminal Block — Single Level	Gray Blue	—	XBQT15 XBQT15BU	—	XBQT25 XBQT25BU	—
IDC Ground Block — Single Level	Green / Yellow	—	—	XBQT15PE	—	XBQT25PE

Accessories

End Cover	Gray	—	XBACQT15	XBACQT15	XBACQT25	XBACQT25
Partition Plate			XBATQT25	XBATQT25	XBATQT25	XBATQT25
Plug-In Bridge	Red	2 3 5 10 50	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506
Test Adapter			XBATSPA14	XBATSPA14	XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS- ②	XBATSMPS- ②	XBATSMPS- ②	XBATSMPS- ②
Modular Test Plug			XBATSPS5	XBATSPS5	XBATSPS6	XBATSPS6
Blank Marker Strip Center and External Marking Blank Marker Strip Center Labeling (strip of 10)	White White	— —	XBMZBF5 ③ XBMZB5 ③	XBMZBF5 ③ XBMZB5 ③	XBMZBF6 ③ XBMZB6 ③	XBMZBF6 ③ XBMZB6 ③
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2157 U (XBQT15, XBQT15PE), KEMA 05ATEX2160 U (XBQT25, XBQT25PE).

② For ordering information, see Page 274.

③ For information on Printed Marking Tag Options, see Page 275.

Machine Integration

Terminal Blocks and Accessories

PRODUCT SELECTION

XB Series IEC Terminal Blocks

Insulation Displacement Connection — Multi-Conductor

Terminal Width Maximum Wire Size Connection Data in V / A / AWG EN 50 019 ① in V / A / AWG UL-cUL Ratings in V / A / AWG	5.2 mm 16 AWG / 1.5 mm ² 800 / 17.5 / 24-16 550 / 16 / 24-16 600 / 10 / 24-16	5.2 mm 16 AWG / 1.5 mm ² — / — / 24-16 — / — / 24-16 — / — / 24-16	6.2 mm 14 AWG / 2.5 mm ² 800 / 24 / 20-14 — 600 / 15 / 20-14	6.2 mm 14 AWG / 2.5 mm ² — / — / 20-14 — — / — / 20-14
Description	Color	Number of Positions	Catalog Number	

Product Selection

IDC Terminal Block — Multi-Conductor	Gray Blue	— —	XBQT15D12 XBQT15D22 XBQT15D12BU XBQT15D22BU	— —	XBQT25D12 XBQT25D12BU	— —
IDC Ground Block — Multi-Conductor	Green / Yellow	—	—	XBQT15D12PE XBQT15D22PE	—	XBQT25D12PE

Accessories

End Cover	Gray	—	XBACQT15D12 XBACQT15D22	XBACQT15D12 XBACQT15D22	XBACQT25D12	XBACQT25D12
End Cover Segment	Gray	—	XBASQT15	XBASQT15	XBASQT25	XBASQT25
Partition Plate			XBATQTD12 XBATQTD22	XBATQTD12 XBATQTD22	XBATQTD12	XBATQTD12
Plug-In Bridge	Red	2 3 5 10 50	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106 XBAFBS506
Test Adapter			XBATSPA14	XBATSPA14	XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS-_②	XBATSMPS-_②	XBATSMPS-_②	XBATSMPS-_②
Modular Test Plug			XBATSPS5	XBATSPS5	XBATSPS6	XBATSPS6
Blank Marker Strip Center and External Marking Blank Marker Strip Center Labeling (strip of 10)	White White	— —	XBMZBF5_③ XBMZB5_③	XBMZBF5_③ XBMZB5_③	XBMZBF6_③ XBMZB6_③	XBMZBF6_③ XBMZB6_③
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2157 U (XBQT15D12, XBQT15D12PE), KEMA 05ATEX2160 U (XBQT25D12, XBQT25D12PE).

② For ordering information, see Page 274.

③ For information on Printed Marking Tag Options, see Page 275.

XB Series IEC Terminal Blocks

Insulation Displacement Connection — Double Level

Terminal Width	5.2 mm	5.2 mm
Maximum Wire Size	16 AWG / 1.5 mm ²	16 AWG / 1.5 mm ²
Connection Data in V / A / AWG	800 / 17.5 / 24-16	— / — / 24-16
EN 50 019 ① in V / A / AWG	420 / 15 / 24-16	— / — / 24-16
UL-cUL Ratings in V / A / AWG	600 / 10 / 24-16	— / — / 24-16
Description	Color	Number of Positions
Catalog Number		

Product Selection

IDC Terminal Block — Double Level	Gray Blue	— —	XBQTT15 XBQTT15BU	— —
IDC Ground Block — Double Level	Green / Yellow	—	—	XBQTT15PE

Accessories

End Cover	Gray	—	XBACQTT15	XBACQTT15
Partition Plate			XBATQTT15	XBATQTT15
Plug-In Bridge	Red	2 3 5 10 20	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105 XBAFBS505
Test Adapter			XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS-^②	XBATSMPS-^②
Modular Test Plug			XBATSPS5	XBATSPS5
Blank Marker Strip	White	—	XBMZBF5^③	XBMZBF5^③
DIN-Rail				
35 mm x 7.5 mm x 2 m (slotted)			XBANS3575P	XBANS3575P
35 mm x 7.5 mm x 2 m (solid)			XBANS3575U	XBANS3575U
35 mm x 15 mm x 2 m (slotted)			XBANS3515P	XBANS3515P
35 mm x 15 mm x 2 m (solid)			XBANS3515U	XBANS3515U
End-Stop				
One-Screw Mounted			XBAES35C	XBAES35C
Three-Screw Mounted			XBAES35T	XBAES35T
Snap-On			XBAES35N	XBAES35N

① EU type — examination certificate number: KEMA 05ATEX2157 U.

② For ordering information, see Page 274.

③ For information on Printed Marking Tag Options, see Page 275.

Insulation Displacement Connection Fuse Terminal Blocks

Terminal Width	6.2 mm
Maximum Wire Size	14 AWG / 2.5 mm ²
Connection Data in V / A / AWG	① / 6.3 / 20-14
UL-cUL Ratings in V / A / AWG	300 / 15 / 20-14
Description	Color
	Number of Positions
Catalog Number	

Product Selection

IDC Fuse Terminal Block	Black	—	XBQT25FBE
IDC Fuse Terminal Block With LED 12 – 30V, 1 – 2.5 mA With LED 30 – 60V, 0.8 – 2.0 mA With LED 110 – 250, 0.5 – 2.5 mA	Black	—	XBQT25FBEL24 XBQT25FBEL60 XBQT25FBEL250

Accessories

End Cover	Gray	—	XBACQT25D12
Partition Plate			XBATQTD12
Plug-In Bridge	Red	2 3 5 10	XBAFBS26 XBAFBS36 XBAFBS56 XBAFBS106
Test Adapter			XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS-^②
Modular Test Plug			XBATSPS5
Blank Marker Strip Center and External Marking	White	—	XBMZBF6^③
Blank Marker Strip Lever Labeling	White	—	XBMZB5^③
Blank Marker Strip Center Labeling (strip of 10)	White	—	XBMZB6^③
DIN-Rail			
35 mm x 7.5 mm x 2 m (slotted)			XBANS3575P
35 mm x 7.5 mm x 2 m (solid)			XBANS3575U
35 mm x 15 mm x 2 m (slotted)			XBANS3515P
35 mm x 15 mm x 2 m (solid)			XBANS3515U
End Stop			
One-Screw Mounted			XBAES35C
Three-Screw Mounted			XBAES35T
Snap-On			XBAES35N

① As disconnect terminal block, 400V; as fuse terminal block, 250V.

② For ordering information, see Page 274.

③ For information on Printed Marking Tag Options, see Page 275.

Machine Integration

Terminal Blocks and Accessories

PRODUCT SELECTION

XB Series IEC Terminal Blocks

Insulation Displacement Connection Disconnect and Component Terminal Blocks

Terminal Width	5.2 mm	5.2 mm
Maximum Wire Size	16 AWG / 1.5 mm ²	16 AWG / 1.5 mm ²
Connection Data in V / A / AWG	400 / 16 / 24-16	400 / 16 / 24-16
UL-cUL Ratings in V / A / AWG	600 / 10 / 24-16	600 / 10 / 24-16

Description	Color	Number of Positions	Catalog Number
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Product Selection

Description	Color	Number of Positions	Catalog Number
IDC Disconnect and Component Terminal Block	Gray	—	XBQT15MT XBQT15TG

Accessories

End Cover	Gray	—	XBACQT15D12	XBACQT15D12
End Cover Segment	Gray	—	XBASQT15	XBASQT15
Partition Plate			XBATQTD12	XBATQTD12
Plug-In Bridge	Red	2 3 5 10	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105	XBAFBS25 XBAFBS35 XBAFBS55 XBAFBS105
Test Adapter			XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS- ^①	XBATSMPS- ^①
Modular Test Plug			XBATSPS5	XBATSPS5
Component Plug	Gray	—	—	XBPCO
Fuse Plug	Black	—	—	XBPFU
Fuse Plug with light indicator for 12 – 30V	Black	—	—	XBPFUL24
Fuse Plug with light indicator for 110 – 250V	Black	—	—	XBPFUL250
Blank Marker Strip Center and External Marking	White	—	XBMZBF5 ^②	XBMZBF5 ^②
Blank Marker Strip Center Labeling (strip of 10)	White	—	XBMZB5 ^②	XBMZB5 ^②
DIN-Rail 35 mm x 7.5 mm x 2 m (slotted) 35 mm x 7.5 mm x 2 m (solid) 35 mm x 15 mm x 2 m (slotted) 35 mm x 15 mm x 2 m (solid)			XBANS3575P XBANS3575U XBANS3515P XBANS3515U	XBANS3575P XBANS3575U XBANS3515P XBANS3515U
End-Stop One-Screw Mounted Three-Screw Mounted Snap-On			XBAES35C XBAES35T XBAES35N	XBAES35C XBAES35T XBAES35N

^① For ordering information, see Page 274.

^② For information on Printed Marking Tag Options, see Page 275.

Miniature Circuit Breakers

Connection Data in V ac / V dc			250 / 65
Description	Color	Number of Positions	Catalog Number

Product Selection

Thermal Miniature Circuit Breaker	Black	—	XBATCPT
Nominal Current 0.1A	Black	—	XBATCPQ
Nominal Current 0.25A	Black	—	XBATCPH
Nominal Current 0.5A	Black	—	XBATCP1
Nominal Current 1.0A	Black	—	XBATCP2
Nominal Current 2.0A	Black	—	XBATCP3
Nominal Current 3.0A	Black	—	XBATCP4
Nominal Current 4.0A	Black	—	XBATCP6
Nominal Current 6.0A	Black	—	XBATCP8
Nominal Current 8.0A	Black	—	XBATCP10
Nominal Current 10.0A	Black	—	

Accessories

Blank Marker Strip	White	—	XBMZBF5 ^①
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^① For information on Printed Marking Tag Options, see Page 275.

Flat-Type Fuse Terminal Blocks

Terminal Width	8.2 mm	8.2 mm
Maximum Wire Size	8 AWG / 6 mm ²	8 AWG / 6 mm ²
Connection Data in V / A / AWG	250 / — / 24-8	250 / — / 24-8
UL-cUL Ratings in V / A / AWG	300 / 30 / 26-8	300 / 30 / 26-8

Description	Color	Number of Positions	Catalog Number
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Product Selection

Flat-Type Fuse Terminal Block	Black	—	XBUK6FSI	—
Flat-Type Fuse Terminal Block With LED Red 12V dc, 2.0 mA	Black	—	—	XBUK6FSIL12
With LED Red 24V dc, 2.0 mA	Black	—	—	XBUK6FSIL24

Accessories

Blank Marker Strip (strip of 10)	White	—	XBMZB8	XBMZB8
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^① For information on Printed Marking Tag Options, see Page 275.

XB Series IEC Terminal Blocks

Spring Cage Fuse Terminal Blocks

Terminal Width	8.2 mm	8.2 mm
Maximum Wire Size	10 AWG / 4 mm²	10 AWG / 4 mm²
Connection Data in V / A / AWG	400 / 30 / 28-10	400 / 30 / 28-10
UL-cUL Ratings in V / A / AWG	300 / 30 / 24-10	300 / 30 / 24-10
Description	Color	Number of Positions
Catalog Number		

Product Selection

Spring Cage Fuse Terminal Block	Black	—	XBPT4FSI	—
Spring Cage Fuse Terminal Block With LED Red 12V dc, 2.0 mA	Black	—	—	XBPT4FSIL12
Spring Cage Fuse Terminal Block With LED Red 24V dc, 2.0 mA	Black	—	—	XBPT4FSIL24

Accessories

Test Adapter			XBATSPA14	XBATSPA14
2.3 mm Dia. Test Plug			XBATSMPS-^①	XBATSMPS-^①
Modular Test Plug			XBATSPS8	XBATSPS8
Blank Marker Strip External Marking	White	—	XBMZBF8^②	XBMZBF8^②
Blank Marker Strip Center Labeling (strip of 10)	White	—	XBMZB8^②	XBMZB8^②

① For ordering information, see Page 274.

② For information on Printed Marking Tag Options, see Page 275.


Machine Integration

Terminal Blocks and Accessories


PRODUCT SELECTION

XB Series IEC Terminal Block Accessories


End-Stops

	Description	Std. Pack	Size	Catalog Number
	Snap-On End Stops	50	35 mm	XBAES35N
	Universal End Stops	50 50	35 mm 35 mm	XBAES35T XBAES35C

DIN-Rails — 35 x 7.5 mm x 2 m



	Std. Pack	Size	Catalog Number
	Slotted	25	XBANS3575P

Marker Strips (Strip of 10)


	Terminal Width (mm)	Std. Pack	Catalog Number	
	5.2	10	XBMZB5	
	6.2	10	XBMZB6	
	8.2	10	XBMZB8	
	10.2	10	XBMZB10	
	12	10	XBMZB12	
	16	10	XBMZB15 ①	
	Flat			
	5.2	10	XBMZBF5	
	6.2	10	XBMZBF6	
	8.2	10	XBMZBF8	
10.2	10	XBMZBF10		
12	10	XBMZBF12		
16	10	XBMZBF15		

① All markers are strips of 10, except XBMZB15 which is a strip of 5.

Marker Sheets



	Terminal Width (mm)	Color	Std. Pack	Catalog Number
	Marker Sheets (10 rows of 12)			
	5.2	White	50	XBMPZB5
	5.2	Blue	50	XBMPZB5BU
	5.2	Red	50	XBMPZB5RD
	5.2	Yellow	50	XBMPZB5YE
	5.2	Green	50	XBMPZB5GN
	Marker Sheets (10 rows of 10)			
	6.2	White	50	XBMPZB6
	6.2	Blue	50	XBMPZB6BU
	6.2	Red	50	XBMPZB6RD
	6.2	Yellow	50	XBMPZB6YE
	6.2	Green	50	XBMPZB6GN
	Flat Marker Sheets (10 rows of 10)			
	5.2	White	10	XBMPZBF5
	5.2	Orange	10	XBMPZBF5OG
	6.2	White	10	XBMPZBF6
6.2	Orange	10	XBMPZBF6OG	
8.2	White	10	XBMPZBF8	

Test Plugs

	Std. Pack	Color	Catalog Number
	2.3 mm		
	10	—	XBATSMPSMT
	10	Blue	XBATSMPSIHBU
	10	White	XBATSMPSIHHW
	10	Red	XBATSMPSIHRD
	10	Black	XBATSMPSIHBK
	4 mm		
	10	—	XBATSPSMT
	10	Blue	XBATSPSIHBU
	10	White	XBATSPSIHHW
10	Red	XBATSPSIHRD	
10	Black	XBATSPSIHBK	

XB Series IEC Terminal Block Accessories

Printed Marking Tags

Description		Catalog Number
 Terminal Block Marking Tags	Marking Tags for 5.2 mm Wide Terminal Blocks	
	ZB5 Tags Vertically Numbered	1 – 10 ① XBMZB5V/1 11 – 20 XBMZB5V/11 21 – 30 XBMZB5V/21 31 – 40 XBMZB5V/31 41 – 50 XBMZB5V/41 51 – 60 XBMZB5V/51 61 – 70 XBMZB5V/61 71 – 80 XBMZB5V/71 81 – 90 XBMZB5V/81 91 – 100 XBMZB5V/91
 Horizontally Printed Marking Tags	Marking Tags for 6.2 mm Wide Terminal Blocks	
	ZB6 Tags Vertically Numbered	1 – 10 ① XBMZB6V/1 11 – 20 XBMZB6V/11 21 – 30 XBMZB6V/21 31 – 40 XBMZB6V/31 41 – 50 XBMZB6V/41 51 – 60 XBMZB6V/51 61 – 70 XBMZB6V/61 71 – 80 XBMZB6V/71 81 – 90 XBMZB6V/81 91 – 100 XBMZB6V/91
ZBF5 Tags Vertically Numbered		1 – 10 ① XBMZBF5V/1 11 – 20 XBMZBF5V/11 21 – 30 XBMZBF5V/21 31 – 40 XBMZBF5V/31 41 – 50 XBMZBF5V/41 51 – 60 XBMZBF5V/51 61 – 70 XBMZBF5V/61 71 – 80 XBMZBF5V/71 81 – 90 XBMZBF5V/81 91 – 100 XBMZBF5V/91

① For text printed horizontally, change "V" in Catalog Number to "H."

Printed Marking Tags (Continued)

Description		Catalog Number
Marking Tags for 8.2 mm Wide Terminal Blocks		
ZB8 Tags Vertically Numbered	1 – 10 ① XBMZB8V/1 11 – 20 XBMZB8V/11 21 – 30 XBMZB8V/21 31 – 40 XBMZB8V/31 41 – 50 XBMZB8V/41 51 – 60 XBMZB8V/51 61 – 70 XBMZB8V/61 71 – 80 XBMZB8V/71 81 – 90 XBMZB8V/81 91 – 100 XBMZB8V/91	
ZBF8 Tags Vertically Numbered	1 – 10 ① XBMZBF8V/1 11 – 20 XBMZBF8V/11 21 – 30 XBMZBF8V/21 31 – 40 XBMZBF8V/31 41 – 50 XBMZBF8V/41 51 – 60 XBMZBF8V/51 61 – 70 XBMZBF8V/61 71 – 80 XBMZBF8V/71 81 – 90 XBMZBF8V/81 91 – 100 XBMZBF8V/91	
Marking Tags for 10.2 mm Wide Terminal Blocks		
ZB10 Tags Vertically Numbered	1 – 10 ① XBMZB10V/1 11 – 20 XBMZB10V/11 21 – 30 XBMZB10V/21	
ZBF10 Tags Vertically Numbered	1 – 10 ① XBMZBF10V/1 11 – 20 XBMZBF10V/11 21 – 30 XBMZBF10V/21	
Marking Tags for 12 mm Wide Terminal Blocks		
ZB12 Tags Vertically Numbered	1 – 10 ① XBMZB12V/1 11 – 20 XBMZB12V/11 21 – 30 XBMZB12V/21	
ZBF12 Tags Vertically Numbered	11 – 10 ① XBMZBF12V/1 11 – 20 XBMZBF12V/11 21 – 30 XBMZBF12V/21	
Marking Tags for 16 mm Wide Terminal Blocks		
ZB15 Tags Vertically Numbered	11 – 10 ① XBMZB15V/1 11 – 20 XBMZB15V/11 21 – 30 XBMZB15V/21	
ZBF15 Tags Vertically Numbered	1 – 10 ① XBMZBF15V/1 11 – 20 XBMZBF15V/11 21 – 30 XBMZBF15V/21	

① For text printed horizontally, change "V" in Catalog Number to "H."

Machine Integration