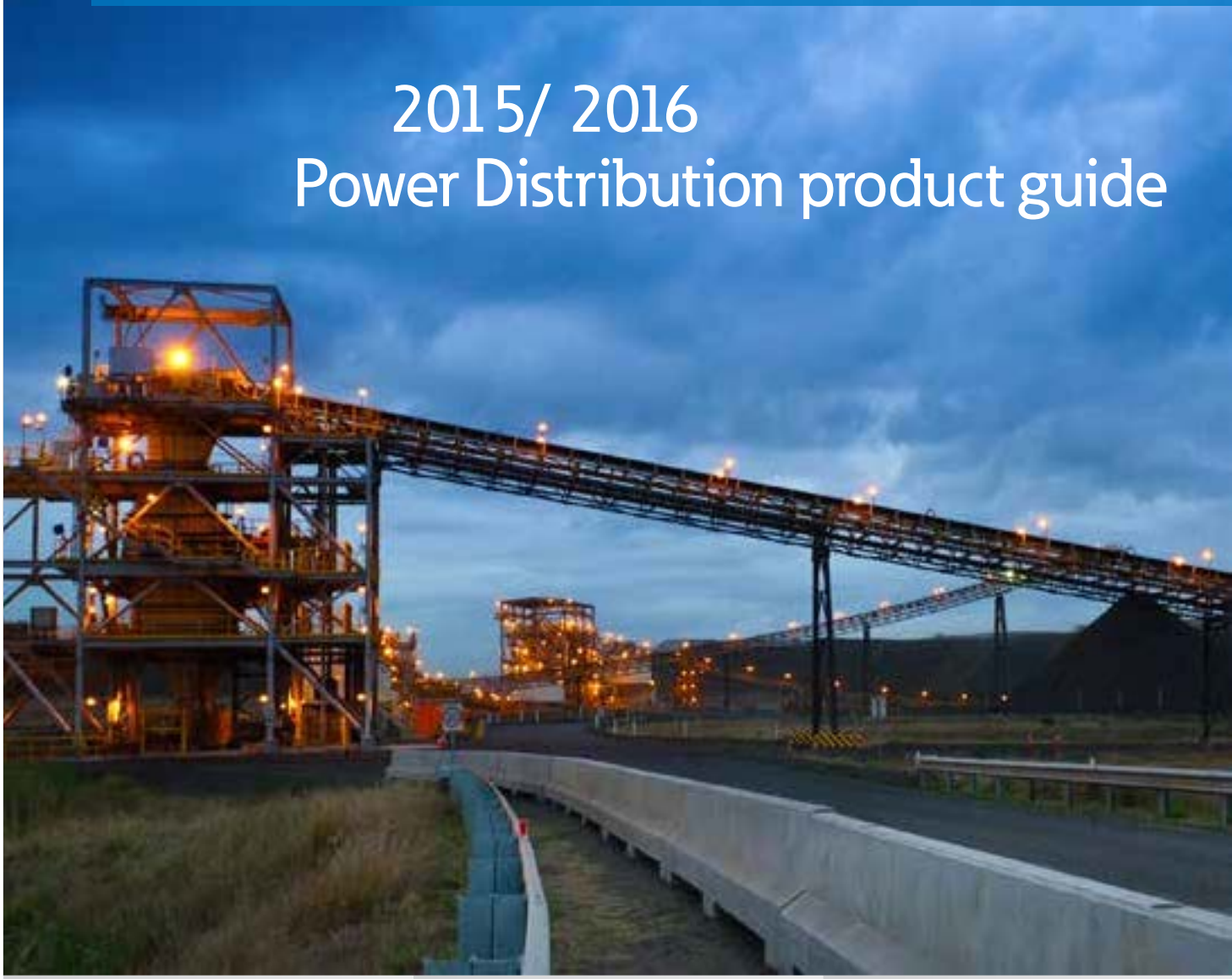
Australian product guide
2015/2016

2015/ 2016
Power Distribution product guide



Powering Business Worldwide

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Powering Business Worldwide

Eaton has been serving the power management needs of our customers for more than a century. Over the years, we have expanded our expertise and portfolio of products and services by uniting some of the world's most respected names with Eaton's strong heritage of innovation.

Our goal is simple; to provide unique solutions across a wide range of markets that keep businesses on the leading edge of change. That's the power of One Eaton.

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Energising a world that demands more.

We deliver:

- **Electrical solutions** that use less energy, improve power reliability and make the places we live and work safer and more comfortable
- **Hydraulic and electrical solutions** that enable machines to deliver more productivity without wasting power
- **Aerospace solutions** that make aircraft lighter, safer and less costly to operate, and help airports operate more efficiently
- **Vehicle drivetrain and powertrain solutions** that deliver more power to cars, trucks and buses, while reducing fuel consumption and emissions

Discover today's Eaton.

Powering business worldwide

As a global power management company, we help customers worldwide manage the power needed for buildings, aircraft, trucks, cars, machinery and businesses.

Eaton's innovative technologies help customers manage electrical, hydraulic and mechanical power more reliably, efficiently, safely and sustainably.

We provide integrated solutions that help make energy, in all its forms, more practical and accessible.

With 2014 sales of $22.6 billion, Eaton has approximately 100,000 employees around the world and sells products in more than 175 countries.

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Eaton's electrical business:

Offers end-to-end solutions to better

- Meet the demands of new construction projects
- Modernise aging infrastructure
- Manage energy consumption
- Protect people, equipment and data

Provides stronger

- Global networks
- Application and specialised expertise
- Market segment reach
- Portfolios of products, services and solutions

We work closely with our customers to understand and solve the challenges they face today and those that come tomorrow. Our proven technologies increase productivity, reduce energy consumption and help us all build a more sustainable world. At Eaton, that's how we're powering business worldwide.

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Circuit protection.

Eaton's global range of high quality low voltage and medium voltage circuit protection products cover a vast array of solutions ideally suitable for residential, commercial, industrial, alternative energy and utility market segments offering both advanced circuit breaker and fuse protection technologies to maximise the operational availability, safety and integrative capacity of your system. Combined with Eaton's world class assembly solutions no matter whether you need an individual electrical application or a fully integrated system, Eaton has the best solution to increase your electricity related performance to cut your operating costs.

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IEC DIN MCB

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IEC MCCB

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Air circuit breakers

xEnergy

LV Switchgear

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Quicklag MCB

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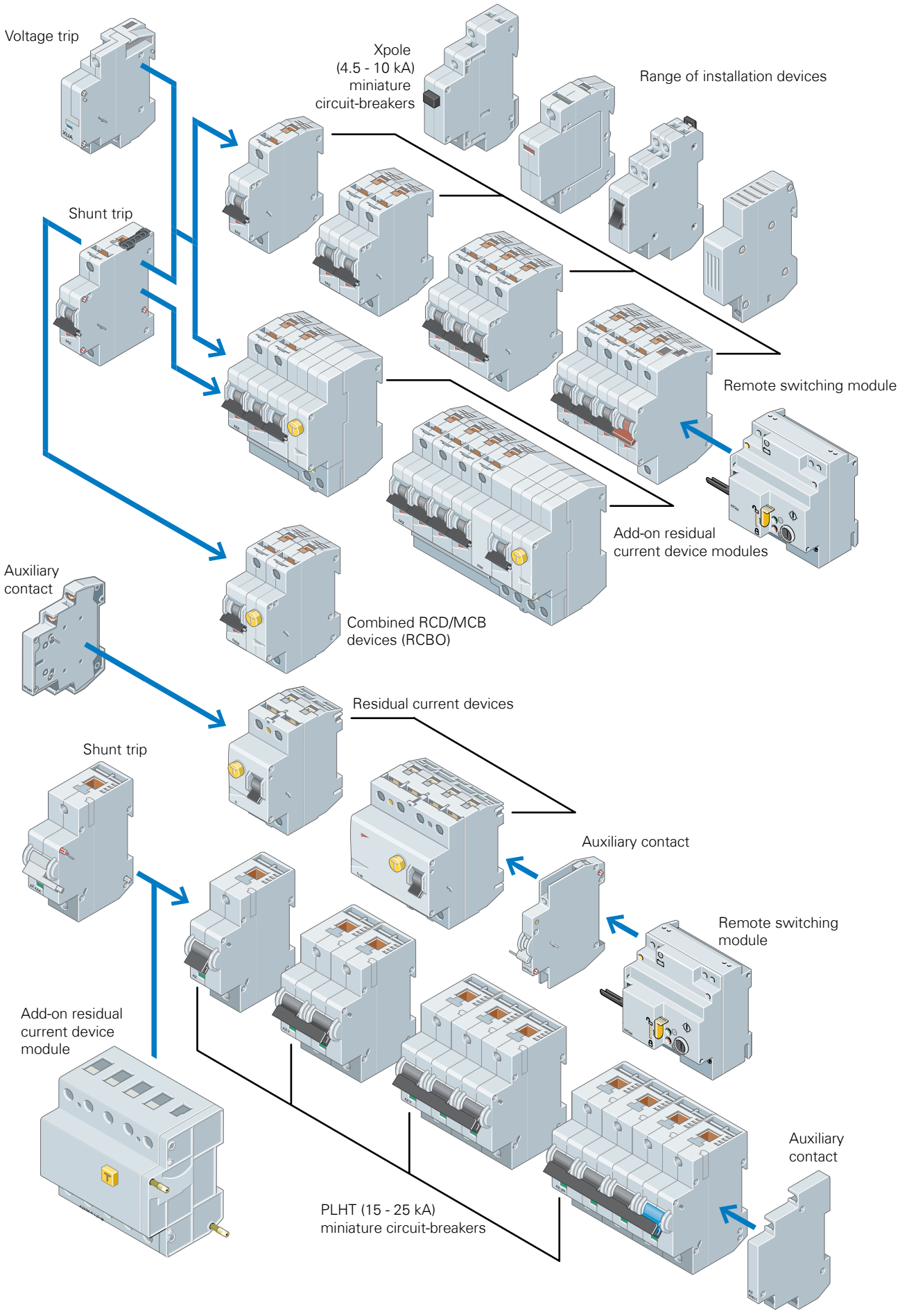

Voltage trip
Xpole
(4.5 - 10 kA)
miniature
circuit-breakers
Range of installation devices
Shunt trip
Remote switching module
Add-on residual
current device modules
Auxiliary
contact
Combined RCD/MCB
devices (RCBO)
Residual current devices
Shunt trip
Auxiliary contact
Remote switching
module
Add-on residual
current device
module
Auxiliary
contact
PLHT (15 - 25 kA)
miniature circuit-breakers

Residential/commercial/industrial MCBs, RCDs & RCBOs

Main switches/isolating switches IS

Rated uninterrupted current	Poles	Item no.
Iu, A		
40	1	**IS-40/1**
63	1	**IS-63/1**
80	1	**IS-80/1**
100	1	**IS-100/1**
125	1	**IS-125/1**
40	2	**IS-40/2**
63	2	**IS-63/2**
80	2	**IS-80/2**
100	2	**IS-100/2**
125	2	**IS-125/2**
40	3	**IS-40/3**
63	3	**IS-63/3**
80	3	**IS-80/3**
100	3	**IS-100/3**
125	3	**IS-125/3**
40	4	**IS-40/4**
63	4	**IS-63/4**
80	4	**IS-80/4**
100	4	**IS-100/4**
125	4	**IS-125/4**

IS-63/1

IS-63/2

IS-63/3

IS-63/4

Miniature circuit breakers PLS4

- High-quality miniature circuit breakers for household applications
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Terminal capacity 1-25mm^2
- Rated currents up to 63A
- Tripping characteristics C
- Rated breaking capacity 4.5kA according to IEC/EN 60898-1
- Australian Standards AS/NZS60898 Approval Number NSW16860

PLS4-C50/1-AU

PLS4-C6/2-AU

PLS4-C10/3-AU

Rated current In, A	1-Pole Item no.	2-Pole Item no.	3-Pole Item no.
4.5 kA, trip curve C: Rated current up to 63 A, Rated breaking capacity 4.5 kA to IEC/EN 60898 6			
6	**PLS4-C6/1-AU**	**PLS4-C6/2-AU**	**PLS4-C6/3-AU**
10	**PLS4-C10/1-AU**	**PLS4-C10/2-AU**	**PLS4-C10/3-AU**
16	**PLS4-C16/1-AU**	**PLS4-C16/2-AU**	**PLS4-C16/3-AU**
20	**PLS4-C20/1-AU**	**PLS4-C20/2-AU**	**PLS4-C20/3-AU**
25	**PLS4-C25/1-AU**	**PLS4-C25/2-AU**	**PLS4-C25/3-AU**
32	**PLS4-C32/1-AU**	**PLS4-C32/2-AU**	**PLS4-C32/3-AU**
40	**PLS4-C40/1-AU**	**PLS4-C40/2-AU**	**PLS4-C40/3-AU**
50	**PLS4-C50/1-AU**	**PLS4-C50/2-AU**	**PLS4-C50/3-AU**
63	**PLS4-C63/1-AU**	**PLS4-C63/2-AU**	**PLS4-C63/3-AU**

Residential/commercial/industrial MCBs, RCDs & RCBOs

Miniature circuit breakers PLS6

PLS6-C50/1-AU

PLS6-C63/2-AU

PLS6-C25/3-AU

- High-quality miniature circuit breakers for commercial & industrial applications
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Terminal capacity 1-25mm^2
- Rated currents up to 63 A
- Tripping characteristics B, C
- Rated breaking capacity 6 kA according to IEC/EN 60898-1
- Australian Standards AS/NZS60898 Approval Number NSW16860

Rated current In, A	1-Pole Item no.	2-Pole Item no.	3-Pole Item no.	4-Pole Item no.
6 kA, trip curve B: Rated current up to 63 A, Rated breaking capacity 6 kA to IEC/EN 60898				
6	**PLS6-B6/1-AU**	**PLS6-B6/2-AU**	**PLS6-B6/3-AU**	**PLS6-B6/4-AU**
10	**PLS6-B10/1-AU**	**PLS6-B10/2-AU**	**PLS6-B10/3-AU**	**PLS6-B10/4-AU**
16	**PLS6-B16/1-AU**	**PLS6-B16/2-AU**	**PLS6-B16/3-AU**	**PLS6-B16/4-AU**
20	**PLS6-B20/1-AU**	**PLS6-B20/2-AU**	**PLS6-B20/3-AU**	**PLS6-B20/4-AU**
25	**PLS6-B25/1-AU**	**PLS6-B25/2-AU**	**PLS6-B25/3-AU**	**PLS6-B25/4-AU**
32	**PLS6-B32/1-AU**	**PLS6-B32/2-AU**	**PLS6-B32/3-AU**	**PLS6-B32/4-AU**
40	**PLS6-B40/1-AU**	**PLS6-B40/2-AU**	**PLS6-B40/3-AU**	**PLS6-B40/4-AU**
50	**PLS6-B50/1-AU**	**PLS6-B50/2-AU**	**PLS6-B50/3-AU**	**PLS6-B50/4-AU**
63	**PLS6-B63/1-AU**	**PLS6-B63/2-AU**	**PLS6-B63/3-AU**	**PLS6-B63/4-AU**
6 kA, trip curve C: Rated current up to 63 A, Rated breaking capacity 6 kA to IEC/EN 60898				
1	**PLS6-C1/1-AU**	**PLS6-C1/2-AU**	**PLS6-C1/3-AU**	**PLS6-C1/4-AU**
2	**PLS6-C2/1-AU**	**PLS6-C2/2-AU**	**PLS6-C2/3-AU**	**PLS6-C2/4-AU**
3	**PLS6-C3/1-AU**	**PLS6-C3/2-AU**	**PLS6-C3/3-AU**	**PLS6-C3/4-AU**
4	**PLS6-C4/1-AU**	**PLS6-C4/2-AU**	**PLS6-C4/3-AU**	**PLS6-C4/4-AU**
6	**PLS6-C6/1-AU**	**PLS6-C6/2-AU**	**PLS6-C6/3-AU**	**PLS6-C6/4-AU**
10	**PLS6-C10/1-AU**	**PLS6-C10/2-AU**	**PLS6-C10/3-AU**	**PLS6-C10/4-AU**
16	**PLS6-C16/1-AU**	**PLS6-C16/2-AU**	**PLS6-C16/3-AU**	**PLS6-C16/4-AU**
20	**PLS6-C20/1-AU**	**PLS6-C20/2-AU**	**PLS6-C20/3-AU**	**PLS6-C20/4-AU**
25	**PLS6-C25/1-AU**	**PLS6-C25/2-AU**	**PLS6-C25/3-AU**	**PLS6-C25/4-AU**
32	**PLS6-C32/1-AU**	**PLS6-C32/2-AU**	**PLS6-C32/3-AU**	**PLS6-C32/4-AU**
40	**PLS6-C40/1-AU**	**PLS6-C40/2-AU**	**PLS6-C40/3-AU**	**PLS6-C40/4-AU**
50	**PLS6-C50/1-AU**	**PLS6-C50/2-AU**	**PLS6-C50/3-AU**	**PLS6-C50/4-AU**
63	**PLS6-C63/1-AU**	**PLS6-C63/2-AU**	**PLS6-C63/3-AU**	**PLS6-C63/4-AU**

Miniature circuit breakers PLN6

PLN6-B6/1N

- Top-quality miniature circuit breakers 1P+N with a width of 1 module unit requiring little space for installation
- Contact position indicator red - green
- Guide for secure terminal connection
- Comprehensive range of accessories for subsequent installation
- Rated currents up to 40 A
- Tripping characteristics B, C
- Rated breaking capacity 6 kA according to IEC/EN 60898
- Terminal capacity 1-16mm^2
- Australian Standards AS/NZS60898 Approval Number NSW25330

Rated current In, A	1+N-Pole item no.
6 kA, trip curve B	
6	**PLN6-B6/1N**
10	**PLN6-B10/1N**
13	**PLN6-B13/1N**
16	**PLN6-B16/1N**
20	**PLN6-B20/1N**
25	**PLN6-B25/1N**
32	**PLN6-B32/1N**
40	**PLN6-B40/1N**
6 kA, trip curve C	
6	**PLN6-C6/1N**
10	**PLN6-C10/1N**
13	**PLN6-C13/1N**
16	**PLN6-C16/1N**
20	**PLN6-C20/1N**
25	**PLN6-C25/1N**
32	**PLN6-C32/1N**
40	**PLN6-C40/1N**

Residential/commercial/industrial MCBs, RCDs & RCBOs

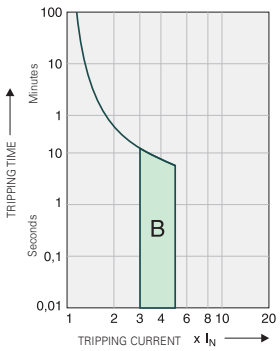
Miniature circuit breakers PLSM

- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Terminal capacity 1-25mm²
- Rated currents up to 63 A
- Tripping characteristics B, C, D
- Rated breaking capacity 10 kA according to IEC/EN 60898-1
- Australian Standards AS/NZS60898 Approval Number NSW16860

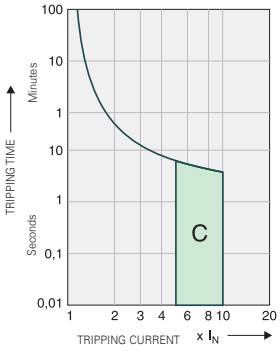
PLSM-C32/1-AU

Rated current In, A	1-Pole Item no.	2-Pole Item no.	3-Pole Item no.	4-Pole Item no.
10 kA, trip curve B: Rated current up to 63 A, Rated breaking capacity 10 kA to IEC/EN 60898, Colour-coded toggle switch indicates current rating				
1	**PLSM-B1/1-AU**	**PLSM-B1/2-AU**	**PLSM-B1/3-AU**	**PLSM-B1/4-AU**
2	**PLSM-B2/1-AU**	**PLSM-B2/2-AU**	**PLSM-B2/3-AU**	**PLSM-B2/4-AU**
3	**PLSM-B3/1-AU**	**PLSM-B3/2-AU**	**PLSM-B3/3-AU**	**PLSM-B3/4-AU**
4	**PLSM-B4/1-AU**	**PLSM-B4/2-AU**	**PLSM-B4/3-AU**	**PLSM-B4/4-AU**
6	**PLSM-B6/1-AU**	**PLSM-B6/2-AU**	**PLSM-B6/3-AU**	**PLSM-B6/4-AU**
10	**PLSM-B10/1-AU**	**PLSM-B10/2-AU**	**PLSM-B10/3-AU**	**PLSM-B10/4-AU**
16	**PLSM-B16/1-AU**	**PLSM-B16/2-AU**	**PLSM-B16/3-AU**	**PLSM-B16/4-AU**
20	**PLSM-B20/1-AU**	**PLSM-B20/2-AU**	**PLSM-B20/3-AU**	**PLSM-B20/4-AU**
25	**PLSM-B25/1-AU**	**PLSM-B25/2-AU**	**PLSM-B25/3-AU**	**PLSM-B25/4-AU**
32	**PLSM-B32/1-AU**	**PLSM-B32/2-AU**	**PLSM-B32/3-AU**	**PLSM-B32/4-AU**
40	**PLSM-B40/1-AU**	**PLSM-B40/2-AU**	**PLSM-B40/3-AU**	**PLSM-B40/4-AU**
50	**PLSM-B50/1-AU**	**PLSM-B50/2-AU**	**PLSM-B50/3-AU**	**PLSM-B50/4-AU**
63	**PLSM-B63/1-AU**	**PLSM-B63/2-AU**	**PLSM-B63/3-AU**	**PLSM-B63/4-AU**
10 kA, trip curve C: Rated current up to 63 A, Rated breaking capacity 10 kA to IEC/EN 60898, Colour-coded toggle switch indicates current rating				
1	**PLSM-C1/1-AU**	**PLSM-C1/2-AU**	**PLSM-C1/3-AU**	**PLSM-C1/4-AU**
2	**PLSM-C2/1-AU**	**PLSM-C2/2-AU**	**PLSM-C2/3-AU**	**PLSM-C2/4-AU**
3	**PLSM-C3/1-AU**	**PLSM-C3/2-AU**	**PLSM-C3/3-AU**	**PLSM-C3/4-AU**
4	**PLSM-C4/1-AU**	**PLSM-C4/2-AU**	**PLSM-C4/3-AU**	**PLSM-C4/4-AU**
6	**PLSM-C6/1-AU**	**PLSM-C6/2-AU**	**PLSM-C6/3-AU**	**PLSM-C6/4-AU**
10	**PLSM-C10/1-AU**	**PLSM-C10/2-AU**	**PLSM-C10/3-AU**	**PLSM-C10/4-AU**
16	**PLSM-C16/1-AU**	**PLSM-C16/2-AU**	**PLSM-C16/3-AU**	**PLSM-C16/4-AU**
20	**PLSM-C20/1-AU**	**PLSM-C20/2-AU**	**PLSM-C20/3-AU**	**PLSM-C20/4-AU**
25	**PLSM-C25/1-AU**	**PLSM-C25/2-AU**	**PLSM-C25/3-AU**	**PLSM-C25/4-AU**
32	**PLSM-C32/1-AU**	**PLSM-C32/2-AU**	**PLSM-C32/3-AU**	**PLSM-C32/4-AU**
40	**PLSM-C40/1-AU**	**PLSM-C40/2-AU**	**PLSM-C40/3-AU**	**PLSM-C40/4-AU**
50	**PLSM-C50/1-AU**	**PLSM-C50/2-AU**	**PLSM-C50/3-AU**	**PLSM-C50/4-AU**
63	**PLSM-C63/1-AU**	**PLSM-C63/2-AU**	**PLSM-C63/3-AU**	**PLSM-C63/4-AU**
10 kA, trip curve D: Rated current up to 40 A, Rated breaking capacity 10 kA to IEC/EN 60898, Colour-coded toggle switch indicates current rating				
1	**PLSM-D1/1-AU**	**PLSM-D1/2-AU**	**PLSM-D1/3-AU**	**PLSM-D1/4-AU**
2	**PLSM-D2/1-AU**	**PLSM-D2/2-AU**	**PLSM-D2/3-AU**	**PLSM-D2/4-AU**
3	**PLSM-D3/1-AU**	**PLSM-D3/2-AU**	**PLSM-D3/3-AU**	**PLSM-D3/4-AU**
4	**PLSM-D4/1-AU**	**PLSM-D4/2-AU**	**PLSM-D4/3-AU**	**PLSM-D4/4-AU**
6	**PLSM-D6/1-AU**	**PLSM-D6/2-AU**	**PLSM-D6/3-AU**	**PLSM-D6/4-AU**
10	**PLSM-D10/1-AU**	**PLSM-D10/2-AU**	**PLSM-D10/3-AU**	**PLSM-D10/4-AU**
16	**PLSM-D16/1-AU**	**PLSM-D16/2-AU**	**PLSM-D16/3-AU**	**PLSM-D16/4-AU**
20	**PLSM-D20/1-AU**	**PLSM-D20/2-AU**	**PLSM-D20/3-AU**	**PLSM-D20/4-AU**
25	**PLSM-D25/1-AU**	**PLSM-D25/2-AU**	**PLSM-D25/3-AU**	**PLSM-D25/4-AU**
32	**PLSM-D32/1-AU**	**PLSM-D32/2-AU**	**PLSM-D32/3-AU**	**PLSM-D32/4-AU**
40	**PLSM-D40/1-AU**	**PLSM-D40/2-AU**	**PLSM-D40/3-AU**	**PLSM-D40/4-AU**

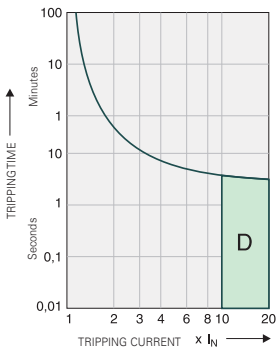
Tripping characteristic B



Tripping characteristic C



Tripping characteristic D



Residential/commercial/industrial MCBs, RCDs & RCBOs

Miniature circuit breakers PLHT

PLHT-B20/1-AA

PLHT-B25/2-AA

PLHT-B32/3-AA

PLHT-B25/4-AA

- High-quality miniature circuit breakers for commercial & industrial applications
- Contact position indicator red - green
- Accessories suitable for subsequent installation
- Terminal capacity 2.5-50mm^2
- 1.5 DIN modules per pole
- Rated currents up to 125 A
- Tripping characteristics B, C, D
- Rated breaking capacity up to 25 kA according to EN 60947-2

Rated current In, A	kA rating	1-Pole Item no.	2-Pole Item no.	3-Pole Item no.	4-Pole Item no.
Trip Curve B					
20	25	**PLHT-B20/1-AA**	**PLHT-B20/2-AA**	**PLHT-B20/3-AA**	**PLHT-B20/4-AA**
25	25	**PLHT-B25/1-AA**	**PLHT-B25/2-AA**	**PLHT-B25/3-AA**	**PLHT-B25/4-AA**
32	25	**PLHT-B32/1-AA**	**PLHT-B32/2-AA**	**PLHT-B32/3-AA**	**PLHT-B32/4-AA**
40	25	**PLHT-B40/1-AA**	**PLHT-B40/2-AA**	**PLHT-B40/3-AA**	**PLHT-B40/4-AA**
50	25	**PLHT-B50/1-AA**	**PLHT-B50/2-AA**	**PLHT-B50/3-AA**	**PLHT-B50/4-AA**
63	25	**PLHT-B63/1-AA**	**PLHT-B63/2-AA**	**PLHT-B63/3-AA**	**PLHT-B63/4-AA**
80	20	**PLHT-B80/1-AA**	**PLHT-B80/2-AA**	**PLHT-B80/3-AA**	**PLHT-B80/4-AA**
100	20	**PLHT-B100/1-AA**	**PLHT-B100/2-AA**	**PLHT-B100/3-AA**	**PLHT-B100/4-AA**
125	15	**PLHT-B125/1-AA**	**PLHT-B125/2-AA**	**PLHT-B125/3-AA**	**PLHT-B125/4-AA**
Trip Curve C					
20	25	**PLHT-C20/1-AA**	**PLHT-C20/2-AA**	**PLHT-C20/3-AA**	**PLHT-C20/4-AA**
25	25	**PLHT-C25/1-AA**	**PLHT-C25/2-AA**	**PLHT-C25/3-AA**	**PLHT-C25/4-AA**
32	25	**PLHT-C32/1-AA**	**PLHT-C32/2-AA**	**PLHT-C32/3-AA**	**PLHT-C32/4-AA**
40	25	**PLHT-C40/1-AA**	**PLHT-C40/2-AA**	**PLHT-C40/3-AA**	**PLHT-C40/4-AA**
50	25	**PLHT-C50/1-AA**	**PLHT-C50/2-AA**	**PLHT-C50/3-AA**	**PLHT-C50/4-AA**
63	25	**PLHT-C63/1-AA**	**PLHT-C63/2-AA**	**PLHT-C63/3-AA**	**PLHT-C63/4-AA**
80	20	**PLHT-C80/1-AA**	**PLHT-C80/2-AA**	**PLHT-C80/3-AA**	**PLHT-C80/4-AA**
100	20	**PLHT-C100/1-AA**	**PLHT-C100/2-AA**	**PLHT-C100/3-AA**	**PLHT-C100/4-AA**
125	15	**PLHT-C125/1-AA**	**PLHT-C125/2-AA**	**PLHT-C125/3-AA**	**PLHT-C125/4-AA**
Trip Curve D					
20	25	**PLHT-D20/1-AA**	**PLHT-D20/2-AA**	**PLHT-D20/3-AA**	**PLHT-D20/4-AA**
25	25	**PLHT-D25/1-AA**	**PLHT-D25/2-AA**	**PLHT-D25/3-AA**	**PLHT-D25/4-AA**
32	25	**PLHT-D32/1-AA**	**PLHT-D32/2-AA**	**PLHT-D32/3-AA**	**PLHT-D32/4-AA**
40	25	**PLHT-D40/1-AA**	**PLHT-D40/2-AA**	**PLHT-D40/3-AA**	**PLHT-D40/4-AA**
50	25	**PLHT-D50/1-AA**	**PLHT-D50/2-AA**	**PLHT-D50/3-AA**	**PLHT-D50/4-AA**
63	25	**PLHT-D63/1-AA**	**PLHT-D63/2-AA**	**PLHT-D63/3-AA**	**PLHT-D63/4-AA**
80	20	**PLHT-D80/1-AA**	**PLHT-D80/2-AA**	**PLHT-D80/3-AA**	**PLHT-D80/4-AA**
100	15	**PLHT-D100/1-AA**	**PLHT-D100/2-AA**	**PLHT-D100/3-AA**	**PLHT-D100/4-AA**

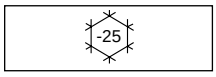
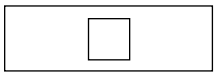
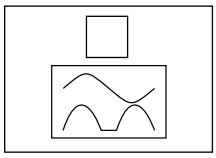
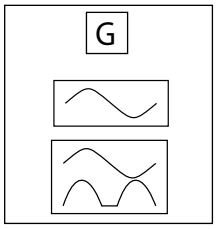
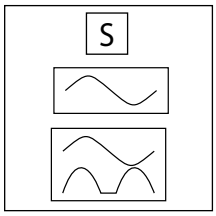
Miniature circuit breakers PLHT accessories

Z-LHASA/230

Description	Item no.
Auxiliary switch (0.5 MU)	**Z-LHK**
Shunt trip release 110-415 Vac (1.5 MU)	**Z-LHASA/230**
Shunt trip release 12-60 Vac (1.5 MU)	**Z-LHASA/24**

Residential/commercial/industrial MCBs, RCDs & RCBOs

Short description of the most important RCD types:

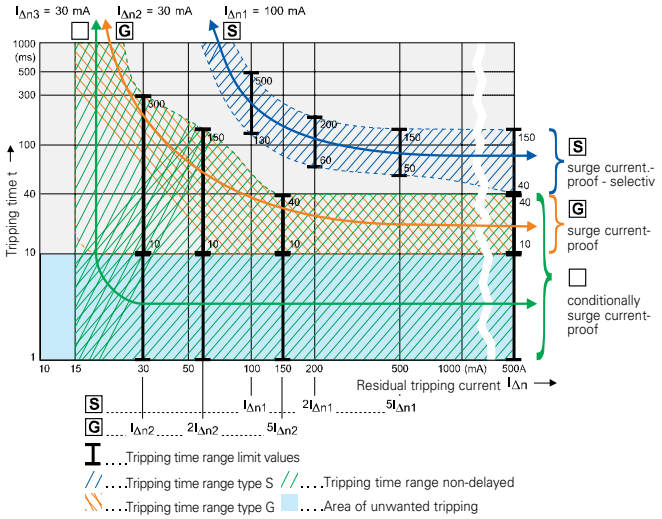
	Eaton standard. Suitable for outdoor installation (distribution boxes for outdoor installation and building sites) up to -25° C.
 AC	Conditionally surge-current proof (>250 A, 8/20 µs) for general application.
 A	RCD sensitive to pulsating DC for application where residual pulsating DC may occur. Non-selective, instantaneous. Protects only against special forms of residual pulsating DC which have not been smoothed.
 G	RCD of type G (min 10 ms time delay) surge current-proof up to 3 kA. For system components where protection against unwanted tripping is compulsory to avoid personal injury and damage to property. Also for systems involving long lines and high line capacity. Some versions are sensitive to pulsating DC.
 S	RCD of type S (selective, min 40 ms time delay) surge current-proof up to 5 kA. Mainly used as main switch according to ÖVE/ÖNORM E 8001-1 § 12.1.5, as well as in combination with surge arresters. This is the only RCD suitable for series connection with other types if the rated tripping current of the downstream RCD does not exceed one third of the rated tripping current of the device of type S. Some versions are sensitive to pulsating DC.
R	"X-ray-proof", for avoiding unwanted tripping caused by x-ray devices.
U	"Frequency converter-proof", for avoiding unwanted tripping caused by frequency converters, speed-controlled drives, etc.

Tripping characteristics (IEC/EN 61008)

AS/NZS 3000 - 2.6 deals with additional protection and provides essentially the following: In circuits with outlets and lighting points up to 20A with fault current/residual current protection by protective earthing, protective multiple earthing or residual current devices (RCDs), additional residual current protection devices with a rated tripping current of 0.03A must be installed.

Testing:
RCDs with tripping time delay (Types -G and -S) may be function tested with conventional testing equipment which must be set according to the instructions for operation of the testing device. Due to reasons inherent in the measuring process, the tripping time determined in this way may be longer than expected in accordance with the specifications of the manufacturer of the measuring instrument. However, the device is ok if the result of measurement is within the time range specified by the manufacturer of the measuring instrument.

Tripping characteristics, tripping time range and selectivity of instantaneous, surge current-proof "G" and surge current-proof - selective "S" residual current devices.



Residential/commercial/industrial MCBs, RCDs & RCBOs

eRB6 range

eRB6-32/1/C/003-AU

- Rated breaking capacity 6kA
- Single module electronic RCBO
- More compact and easier wiring
- Fully conforms to AS/NZS61009.1:2004 +A1
- Approval number NSW25350
- Terminal capacity 1-25mm²
- Complete with 950mm long pigtail
- Type AC

Description 1-Pole	Rating (A)	Width (mm)	Trip curve	Sensitivity (mA)	Item no.
eRB6 RCBO 6A 1P 6kA C curve 30mA	6	18	C	30	**eRB6-6/1/C/003-AU**
eRB6 RCBO 10A 1P 6kA C curve 30mA	10	18	C	30	**eRB6-10/1/C/003-AU**
eRB6 RCBO 16A 1P 6kA C curve 30mA	16	18	C	30	**eRB6-16/1/C/003-AU**
eRB6 RCBO 20A 1P 6kA C curve 30mA	20	18	C	30	**eRB6-20/1/C/003-AU**
eRB6 RCBO 25A 1P 6kA C curve 30mA	25	18	C	30	**eRB6-25/1/C/003-AU**
eRB6 RCBO 32A 1P 6kA C curve 30mA	32	18	C	30	**eRB6-32/1/C/003-AU**
eRB6 RCBO 40A 1P 6kA C curve 30mA	40	18	C	30	**eRB6-40/1/C/003-AU**
eRB6 RCBO 45A 1P 6kA C curve 30mA	45	18	C	30	**eRB6-45/1/C/003-AU**

* 10mA version available - consult Eaton for details

eRBM range

eRBM-20/1/C/003-A-AU

- Rated breaking capacity 10kA
- Single module electronic RCBO
- More compact and easier wiring
- Fully conforms to AS/NZS61009.1:2004 +A1
- Approval number NSW25350
- Terminal capacity 1-25mm²
- Complete with 950mm long pigtail
- Type A - pulsating DC

Description 1-Pole	Rating (A)	Width (mm)	Trip Curve	Sensitivity (mA)	Item no.
eRBM RCBO 6A 1P 10kA C-curve 30mA	6	18	C	30	**eRBM-6/1/C/003-A-AU**
eRBM RCBO 10A 1P 10kA C-curve 30mA	10	18	C	30	**eRBM-10/1/C/003-A-AU**
eRBM RCBO 16A 1P 10kA C-curve 30mA	16	18	C	30	**eRBM-16/1/C/003-A-AU**
eRBM RCBO 20A 1P 10kA C-curve 30mA	20	18	C	30	**eRBM-20/1/C/003-A-AU**
eRBM RCBO 25A 1P 10kA C-curve 30mA	25	18	C	30	**eRBM-25/1/C/003-A-AU**
eRBM RCBO 32A 1P 10kA C-curve 30mA	32	18	C	30	**eRBM-32/1/C/003-A-AU**
eRBM RCBO 40A 1P 10kA C-curve 30mA	40	18	C	30	**eRBM-40/1/C/003-A-AU**
eRBM RCBO 45A 1P 10kA C-curve 30mA	45	18	C	30	**eRBM-45/1/C/003-A-AU**
eRBM RCBO 6A 1P 10kA D-curve 30mA	6	18	D	30	**eRBM-6/1/D/003-A-AU**
eRBM RCBO 10A 1P 10kA D-curve 30mA	10	18	D	30	**eRBM-10/1/D/003-A-AU**
eRBM RCBO 16A 1P 10kA D-curve 30mA	16	18	D	30	**eRBM-16/1/D/003-A-AU**
eRBM RCBO 20A 1P 10kA D-curve 30mA	20	18	D	30	**eRBM-20/1/D/003-A-AU**

* 10mA, 100mA and 300mA versions available - consult Eaton for details

Residential/commercial/industrial MCBs, RCDs & RCBOs

Combined residual current devices/miniature circuit breaker device PKNM, 1 pole + N (RCBO)

- High-quality residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 40A
- Tripping characteristics B, C
- Type AC
- Rated breaking capacity 10kA
- Australian Standards AS/NZS 61009.1 Approval Number NSW21900
- Terminal capacity 1-25mm^2

A	mA	2-Pole Item no.
10 kA, trip curve C		
6	10	**PKNM-6/1N/C/001-AU**
10	10	**PKNM-10/1N/C/001-AU**
16	10	**PKNM-16/1N/C/001-AU**
6	30	**PKNM-6/1N/C/003-AU**
10	30	**PKNM-10/1N/C/003-AU**
16	30	**PKNM-16/1N/C/003-AU**
20	30	**PKNM-20/1N/C/003-AU**
25	30	**PKNM-25/1N/C/003-AU**
32	30	**PKNM-32/1N/C/003-AU**
40	30	**PKNM-40/1N/C/003-AU**
6	100	**PKNM-6/1N/C/01-AU**
10	100	**PKNM-10/1N/C/01-AU**
16	100	**PKNM-16/1N/C/01-AU**
20	100	**PKNM-20/1N/C/01-AU**
25	100	**PKNM-25/1N/C/01-AU**
32	100	**PKNM-32/1N/C/01-AU**
40	100	**PKNM-40/1N/C/01-AU**
6	300	**PKNM-6/1N/C/03-AU**
10	300	**PKNM-10/1N/C/03-AU**
16	300	**PKNM-16/1N/C/03-AU**
20	300	**PKNM-20/1N/C/03-AU**
25	300	**PKNM-25/1N/C/03-AU**
32	300	**PKNM-32/1N/C/03-AU**
40	300	**PKNM-40/1N/C/03-AU**

PKNM-16/1N/C/001-AU

Combined residual current devices/miniature circuit breaker devices PKNM (RCBO)

- High-quality residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 40 A
- Tripping characteristics B, C
- Type A-pulsating DC
- Rated breaking capacity 10 kA
- Australian Standards AS/NZS 61009.1 Approval Number NSW21900
- Terminal capacity 1-25mm^2

A	mA	2-Pole Item no.
10 kA, trip curve C		
6	10	**PKNM-6/1N/C/001-A-AU**
10	10	**PKNM-10/1N/C/001-A-AU**
16	10	**PKNM-16/1N/C/001-A-AU**
6	30	**PKNM-6/1N/C/003-A-AU**
10	30	**PKNM-10/1N/C/003-A-AU**
16	30	**PKNM-16/1N/C/003-A-AU**
20	30	**PKNM-20/1N/C/003-A-AU**
25	30	**PKNM-25/1N/C/003-A-AU**
32	30	**PKNM-32/1N/C/003-A-AU**
40	30	**PKNM-40/1N/C/003-A-AU**
6	100	**PKNM-6/1N/C/01-A-AU**
10	100	**PKNM-10/1N/C/01-A-AU**
16	100	**PKNM-16/1N/C/01-A-AU**
20	100	**PKNM-20/1N/C/01-A-AU**
25	100	**PKNM-25/1N/C/01-A-AU**
32	100	**PKNM-32/1N/C/01-A-AU**
40	100	**PKNM-40/1N/C/01-A-AU**
6	300	**PKNM-6/1N/C/03-A-AU**
10	300	**PKNM-10/1N/C/03-A-AU**
16	300	**PKNM-16/1N/C/03-A-AU**
20	300	**PKNM-20/1N/C/03-A-AU**
25	300	**PKNM-25/1N/C/03-A-AU**
32	300	**PKNM-32/1N/C/03-A-AU**
40	300	**PKNM-40/1N/C/03-A-AU**

PKNM-16/1N/C/001-A-AU

Residential/commercial/industrial MCBs, RCDs & RCBOs

Residual current devices PFIM

PFIM-16/2/001-AU

PFIM-40/4/003-AU

- A complete spectrum of compact residual current devices for a wide range of applications
- For residual current protection & additional protection
- Wide variety of nominal currents
- Comprehensive range of accessories
- Contact position indicator red-green
- Automatic re-setting possible
- Australian Standards AS/NZS61008.1 Approval Number NSW21900
- Terminal capacity 1.5-35mm²

A	mA	2-Pole Item no.	A	mA	4-Pole Item no.
Conditionally surge current-proof 250 A, type AC					
16	10	**PFIM-16/2/001-AU**	40	30	**PFIM-40/4/003-AU**
			40	100	**PFIM-40/4/01-AU**
25	30	**PFIM-25/2/003-AU**	40	300	**PFIM-40/4/03-AU**
25	100	**PFIM-25/2/01-AU**			
25	300	**PFIM-25/2/03-AU**	63	30	**PFIM-63/4/003-AU**
			63	100	**PFIM-63/4/01-AU**
40	30	**PFIM-40/2/003-AU**	63	300	**PFIM-63/4/03-AU**
40	100	**PFIM-40/2/01-AU**			
40	300	**PFIM-40/2/03-AU**	80	30	**PFIM-80/4/003-AU**
			80	100	**PFIM-80/4/01-AU**
63	30	**PFIM-63/2/003-AU**	80	300	**PFIM-80/4/03-AU**
63	100	**PFIM-63/2/01-AU**	80	500	**PFIM-80/4/05-AU**
63	300	**PFIM-63/2/03-AU**			
			100	30	**PFIM-100/4/003**
80	30	**PFIM-80/2/003-AU**	100	100	**PFIM-100/4/01**
80	100	**PFIM-80/2/01-AU**	100	300	**PFIM-100/4/03**
80	300	**PFIM-80/2/03-AU**	100	500	**PFIM-100/4/05**
100	30	**PFIM-100/2/003**			
100	100	**PFIM-100/2/01**			
100	300	**PFIM-100/2/03**			
Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A					
16	10	**PFIM-16/2/001-A-AU**	25	300	**PFIM-25/4/03-A-AU**
25	30	**PFIM-25/2/003-A-AU**	40	30	**PFIM-40/4/003-A-AU**
25	100	**PFIM-25/2/01-A-AU**	40	100	**PFIM-40/4/01-A-AU**
25	300	**PFIM-25/2/03-A-AU**	40	300	**PFIM-40/4/03-A-AU**
40	30	**PFIM-40/2/003-A-AU**	63	30	**PFIM-63/4/003-A-AU**
40	100	**PFIM-40/2/01-A-AU**	63	100	**PFIM-63/4/01-A-AU**
40	300	**PFIM-40/2/03-A-AU**	63	300	**PFIM-63/4/03-A-AU**
63	30	**PFIM-63/2/003-A-AU**	80	30	**PFIM-80/4/003-A-AU**
63	100	**PFIM-63/2/01-A-AU**	80	300	**PFIM-80/4/03-A-AU**
63	300	**PFIM-63/2/03-A-AU**			
			100	30	**PFIM-100/4/003-A**
100	100	**PFIM-100/2/01-A**	100	100	**PFIM-100/4/01-A**
100	300	**PFIM-100/2/03-A**	100	300	**PFIM-100/4/03-A**
			100	500	**PFIM-100/4/05-A**

Residential/commercial/industrial MCBs, RCDs & RCBOs

Residual current devices PFIM

- A complete spectrum of compact residual current devices for a wide range of applications
- For residual current protection & additional protection
- Wide variety of nominal currents
- Comprehensive range of accessories
- Contact position indicator red-green
- Automatic re-setting possible
- Australian Standards AS/NZS61008.1 Approval Number NSW21900
- Terminal capacity 1.5-35mm²

PFIM-40/2/003-G-AU

PFIM-63/4/003-G-AU

A	mA	2-Pole Item no.	A	mA	4-Pole Item no.
Surge current-proof 3 kA, type G					
			40	30	**PFIM-40/4/003-G-AU**
			40	100	**PFIM-40/4/01-G-AU**
40	30	**PFIM-40/2/003-G-AU**	63	30	**PFIM-63/4/003-G-AU**
40	100	**PFIM-40/2/01-G-AU**	63	100	**PFIM-63/4/01-G-AU**
			100	30	**PFIM-100/4/003-G**
			100	300	**PFIM-100/4/03-G**
Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A					
40	30	**PFIM-40/2/003-G/A-AU**	40	30	**PFIM-40/4/003-G/A-AU**
63	30	**PFIM-63/2/003-G/A-AU**	63	30	**PFIM-63/4/003-G/A-AU**
100	30	**PFIM-100/2/003-G/A-AU**	100	30	**PFIM-100/4/003-G/A-AU**
100	300	**PFIM-100/2/03-G/A-AU**	100	300	**PFIM-100/4/03-G/A-AU**
Surge current-proof 3 kA, X-ray application, type R					
			63	30	**PFIM-63/4/003-R**
			100	30	**PFIM-100/4/003-R**
Selective + surge current-proof 5 kA, type S					
			63	300	**PFIM-63/4/03-S/A-AU**
			80	300	**PFIM-80/4/03-S/A-AU**
Selective + surge current-proof 5 kA, frequency converter-proof, type U					
			40	100	**PFIM-40/4/01-U**
			40	300	**PFIM-40/4/03-U**
			63	100	**PFIM-63/4/01-U**
			63	300	**PFIM-63/4/03-U**
			80	300	**PFIM-80/4/03-U**
			100	300	**PFIM-100/4/03-U**
Short-time delayed + surge current-proof 3 kA, frequency converter-proof, type U					
			63	30	**PFIM-63/4/003-U**

Residential/commercial/industrial MCBs, RCDs & RCBOs

Accessories

- Auxiliary switch
- RCD tripping module
- Shunt release
- U/V release
- Remote control & automatic switching device

ZP-IHK

Auxiliary switches

For protective device/function	Item no.	For protective device/function	Item no.
Auxiliary Switch Z-HK, Z-AHK, Tripping Signal Switch Z-NHK.	Design: for screw fixing	Auxiliary Switch ZP-IHK, ZP-WHK, Tripping Signal Switch ZP-NHK.	Design: snap fixing
PFIM 1NO+1NC	**Z-HK**	PLS, PKN, 1NO+1NC	**ZP-IHK**
PLS 1NO+1NC	**Z-AHK**	PLS, PKN, 1CO	**ZP-WHK**
PLS, PFIM, 2CO	**Z-NHK**	PLS, PKN, 2CO	**ZP-NHK**

Z-ASA/24

RCD-tripping module Z-..AM

For protective device	Item no.
PFIM, RCD	**Z-FAM**
PKNM, RCBO	**Z-KAM**

Shunt trip release Z-ASA, ZP-ASA

Operational voltage range (V~)	Item no.
12 - 110 Vac - screw fixing	**Z-ASA/24**
110 - 415 Vac - screw fixing	**Z-ASA/230**
12 - 110 Vac - snap on fixing	**ZP-ASA/24**
110 - 415 Vac - snap on fixing	**ZP-ASA/230**

Z-FAM

Undervoltage release Z-USA, Z-USD

Operational voltage range (V~)/function	Item no.
115 Vac non-delayed	**Z-USA/115**
230 Vac non-delayed	**Z-USA/230**
400 Vac non-delayed	**Z-USA/400**
115 Vac delayed 0.4s	**Z-USD/115**
230 Vac delayed 0.4s	**Z-USD/230**

Z-USA/115

Remote control & automatic switching device Z-FW

Function	Item no.
Automatic restarting 230VAC	**Z-FW-LP**
Automatic restarting 24-48VDC	**Z-FW-LPD**
+ Remote control ON/OFF/TEST	**Z-FW-MO**

Remote control & automatic switching device Z-FW

Function	Item no.
Pre-mounted sets Z-FW: Set consisting of automatic switching device Z-FW-LP. & switching module Z-FW-MO	
230 VAC	**Z-FW-LP/MO**
24-48 VDC	**Z-FW-LPD/MO**

Z-FW-LP

Remote control & automatic switching device Z-FW

Function	Item no.
Remote Testing Module Z-FW (for Z-FW-LP./MO set use only)	
0,01 A	**Z-FW/001**
0,03 A	**Z-FW/003**
0,1 A	**Z-FW/010**
0,3 A	**Z-FW/030**
0,5 A	**Z-FW/050**

Z-FW-LP/MO

Controlling & switching devices

Installation relays for light & power distribution

- Installation relays & contactors
- Impulse relays
- Signalling devices

Rated current In A (AC1)	A (AC3)	Contacts	Actuating voltage V AC	Item no.
Rated current 20 A AC1, 18 mm modules: 1, Finger & hand touch safe to VGB 4, Low switching noise, no humming, Easy coil feed connection with Pozidrive screws				
20	–	1 N/O	240 V AC	**Z-R230/S**
		2 N/O		**Z-R230/SS**
		1 N/O, 1 N/C		**Z-R230/SO**
		2 N/C		**Z-R230/OO**
20	–	1 N/O	24 V AC	**Z-R24/S**
		2 N/O		**Z-R24/SS**
		1 N/O, 1 N/C		**Z-R24/SO**
		2 N/C		**Z-R24/OO**
Suitable for auxiliary contacts Z-SC, 18 mm modules: 2				
25	9	3 N/O, 1 N/C	240 V AC	**Z-SCH230/25-31**
		2 N/O, 2 N/C		**Z-SCH230/25-22**
		4 N/O		**Z-SCH230/25-40**
		4 N/C		**Z-SCH230/25-04**
		4 N/O	24 V AC	**Z-SCH24/25-40**
		2 N/O, 2 N/C	24 V AC	**Z-SCH24/25-22**

Z-R230/S

Z-SCH230/25-31

Installation contactors for light & power distribution

Rated current In A (AC1)	A (AC3)	Contacts	Actuating voltage V AC	Item no.
Suitable for auxiliary contacts Z-SC, 18 mm modules: 4				
40	27	3 N/O, 1 N/C	240 V AC	**Z-SCH230/40-31**
		2 N/O, 2 N/C		**Z-SCH230/40-22**
		4 N/O		**Z-SCH230/40-40**
		2 N/O		**Z-SCH230/40-20**
63	30	4 N/O	240 V AC	**Z-SCH230/63-40**
		3 N/O,1 N/C		**Z-SCH230/63-31**
		2 N/O, 2 N/C		**Z-SCH230/63-22**
		2 N/O		**Z-SCH230/63-20**
Accessories				
Sealing cover 25 A, 2 modules wide				**Z-SCHAK-2TE**
Sealing cover 40, 63 A, 3 modules wide				**Z-SCHAK-3TE**
Auxiliary switch				**Z-SC**
Spacer				**Z-DST**

Z-SCH230/25-31

Z-S230/SO

Impulse relays

Rated current In AC1	Contacts	Actuating voltage V AC	Item no.
Rated current 16 A AC1, 18 mm modules: 1			
16	1 N/O	240 V AC	**Z-S230/S**
	1 N/O, 1 N/C		**Z-S230/SO**
	2 N/O		**Z-S230/SS**
	1 N/O	24 V AC	**Z-S24/S**
	1 N/O, 1 N/C		**Z-S24/SO**
	2 N/O		**Z-S24/SS**
Accessories			
Twin diode block			**Z-SC/GP**

Z-SC/GP

Technical application data within technical section refer to pages 394-397

Z-EL/R230

Z-S/WM

Z-EMER-E

Z-EMER-DIN

Controlling & switching devices

Description	Colour push button	Item no.
Signal lamps		
○ White	–	**Z-EL/WH230**
● Red	–	**Z-EL/R230**
● Green	–	**Z-EL/G230**
● Orange	–	**Z-EL/OR230**
● Blue	–	**Z-EL/BL230**
Pushbuttons		
16 A, 1 N/O	●	**Z-PU/S**
16 A, 2 N/O	●	**Z-PU/SS**
16 A, 1 N/O + 1 N/C	●	**Z-PU/SO**
16 A, 1 N/C	●	**Z-PU/OO**
Illuminated Pushbuttons		
16 A, 2 N/O	●	**Z-PUL230/SS**
16 A, 1 N/O + 1 N/C	●	**Z-PUL230/SO**
Changeover switch		
2 C/O, I – O – II		**Z-S/WM**
2 C/O, DAY – O – NIGHT		**Z-S/WTN**
Hour run counter: display 5 + 2 digit		
230 V, 50 Hz		**BSZ/24**
		BSZ/230
Emergency lighting test kit		
Enclosed		**Z-EMER-E**
DIN rail mounting		**Z-EMER-DIN**
General accessories		
Padlocking attachment for Xpole PLS & eRB devices		**Z-IS/SPE-1TE**
Padlocking attachment for Xpole PKNM, PFIM & IS devices		**IS/SPE-1TE**
Pole filler 1 strip = 6 poles		**AP-45-W**

Busbar combs

Commoning busbars

Description	No. of poles		A Max. no. of devices	Rated operational current, Ie, A	Item no.
Commoning busbars, 1.25 mm thick For miniature circuit-breakers without auxiliary contacts with fork connectors, for combination box terminal	1	–	2 x1P	85	**EVG-16/1PHAS/2MODUL**
	1	–	6 x1P	85	**EVG-16/1PHAS/6MODUL**
	1	–	12 x1P	85	**EVG-16/1PHAS/12MODUL**
	2	2 & 4 pole version can be used for PFIM	2 x 2P	100	**EVG-16/2PHAS/4MODUL**
	2		3 x 2P	100	**EVG-16/2PHAS/6MODUL**
	2		6 x 2P	100	**EVG-16/2PHAS/12MODUL**
	3	–	2 x 3P	100	**EVG-16/3PHAS/6MODUL**
	3	–	4 x 3P	100	**EVG-16/3PHAS/12MODUL**
	4	2 & 4 pole version can be used for PFIM	2 x 4P	100	**EVG-16/4PHAS/8MODUL**
	4		3 x 4P	100	**EVG-16/4PHAS/12MODUL**
For miniature circuit-breakers with auxiliary contacts	1	–	2 x1P	85	**EVG-16/1PHAS/2MODUL/HI**
	1	–	6 x1P	85	**EVG-16/1PHAS/6MODUL/HI**
	1	–	9 x1P	85	**EVG-16/1PHAS/9MODUL/HI**
	2	2 pole version can be used for PFIM	2 x 2P	100	**EVG-16/2PHAS/4MODUL/HI**
	2		3 x 2P	100	**EVG-16/2PHAS/6MODUL/HI**
	2		5 x 2P	100	**EVG-16/2PHAS/10MODUL/HI**
	3	–	2 x 3P	100	**EVG-16/3PHAS/6MODUL/HI**
	3	–	4 x 3P	100	**EVG-16/3PHAS/12MODUL/HI**
	3	–	6 x1P	100	**EVG-16/3X1PHAS/6MODUL/HI**
	3	–	8 x1P	100	**EVG-16/3X1PHAS/8MODUL/HI**
	3	–	9 x1P	100	**EVG-16/3X1PHAS/9MODUL/HI**

Controlling & switching devices

ETR2 electronic timing relays, 17.5 mm wide

Description	Rated operational current AC-11 230 V Ie A	Rated operational current AC-11 400 V Ie A	Conventional thermal current Ith A	Time Range	Item no.
One changeover contact					
On-delayed timing functions	3	-	6	0.05 - 1 s 0.5 - 10 s 5 - 100 s 0.5 - 10 min 5 - 100 min 0.5 - 10 h 5 - 100	**ETR2-11**
Off-delayed timing functions	3	-	6		**ETR2-12**
Fleeting contact on energization timing functions	3	-	6		**ETR2-21**
Flashing, pulse initiating timing functions	3	-	6		**ETR2-42**
Flashing, 2 speeds (ON/OFF times variable) timing functions	3	-	6		**ETR2-44**
Multifunction relay timing functions	3	-	6		**ETR2-69**
Two changeover contacts					
On-delayed timing functions	3	-	6	0.05 - 1 s 0.5 - 10 s 5 - 100 s 0.5 - 10 min 5 - 100 min 0.5 - 10 h 5 - 100 h	**ETR2-11-D**
Off-delayed timing functions	3	-	6		**ETR2-12-D**
Multifunction relay timing functions	3	0.75	6		**ETR2-69-D**

ETR2-44

ETR2-11-D

PE Consumer boards

No. of poles	Type of mounting	Type of door	Item no.
PE consumer boards Protection rating IP40			
1	Flush	Opaque	**PE1E**
2	Flush	Opaque	**PE2E**
4	Flush	Opaque	**PE4E**
8	Flush	Opaque	**PE8E**
12	Flush	Transparent	**PE12FT**
12	Flush	Opaque	**PE12FW**
12	Surface	Transparent	**PE12ST**
12	Surface	Opaque	**PE12SW**
18	Flush	Transparent	**PE18FT**
18	Flush	Opaque	**PE18FW**
18	Surface	Transparent	**PE18ST**
18	Surface	Opaque	**PE18SW**
24	Flush	Transparent	**PE24FT**
24	Flush	Opaque	**PE24FW**
24	Surface	Transparent	**PE24ST**
24	Surface	Opaque	**PE24SW**
36	Flush	Transparent	**PE36FT**
36	Flush	Opaque	**PE36FW**
36	Surface	Transparent	**PE36ST**
36	Surface	Opaque	**PE36SW**
Protection rating IP55			
4	Surface	Transparent	**PE4ST-IP55**
6	Surface	Transparent	**PE6ST-IP55**
8	Surface	Transparent	**PE8ST-IP55**
12	Surface	Transparent	**PE12ST-IP55**
18	Surface	Transparent	**PE18ST-IP55**
24	Surface	Transparent	**PE24ST-IP55**

PE18SW

P1E

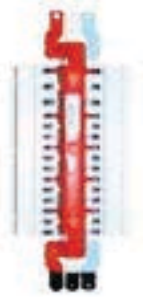
PE12SW

PE12ST

PE24ST

Available complete with MCCBs & RCDs fitted.

NEW PRODUCTS COMING SOON



DIN MCB chassis

Miniature circuit-breaker chassis

- Rated current 250 A
- Fault rating 25 kA for 0.1 s
- Hybrid versions accommodate MCB from 0.5 A to 125 A
- Suits PLS & PLHT MCB and eRB RCBO's
- 4 pole versions suits PFIM/PKNM RCD & RCBO
- Rated current 400 A
- Fault rating 30 kA for 0.1 s

No. of poles	Pitch between fingers	Width mm	Length mm	Height with MCB	No. of poles 18 mm	No. of poles 27 mm	250A Item no.	400A Item no.
3-phase, 250 A, 1 module, suits 6 & 10 kA miniature circuit breakers and RCBO's								
12	18	230	258	95	-	-	**XCH3/12**	**XCH4003/12**
18			312		-	-	**XCH3/18**	**XCH4003/18**
24			366		-	-	**XCH3/24**	**XCH4003/24**
30			420		-	-	**XCH3/30**	**XCH4003/30**
36			474		-	-	**XCH3/36**	**XCH4003/36**
42			528		-	-	**XCH3/42**	**XCH4003/42**
48			582		-	-	**XCH3/48**	**XCH4003/48**
60			690		-	-	**XCH3/60**	**XCH4003/60**
72			798		-	-	**XCH3/72**	**XCH4003/72**
84			852		-	-	**XCH3/84**	**XCH4003/84**
96			1040		-	-	**XCH3/96**	**XCH4003/96**
3-phase hybrid, 1 & 1.5 module, suits 6, 10, 15, 20 & 25 kA miniature circuit breakers and RCBO's								
12	18 + 27	230	282	95	6	6	**XCHE3/12**	**XCH400E3/12**
18			336		12	6	**XCHE3/18**	**XCH400E3/18**
24			390		18	6	**XCHE3/24**	**XCH400E3/24**
30			444		24	6	**XCHE3/30**	**XCH400E3/30**
36			498		30	6	**XCHE3/36**	**XCH400E3/36**
42			581		30	12	**XCHE3/42**	**XCH400E3/42**
48			635		36	12	**XCHE3/48**	**XCH400E3/48**
60			743		48	12	**XCHE3/60**	**XCH400E3/60**
72			851		60	12	**XCHE3/72**	**XCH400E3/72**
3-phase & neutral, 250 A, suits 2 or 4-pole combinations RCD/MCB ①								
12	18 + N	230	258	95	-	-	**XCHA4_/12**	**XCH400A4_/12**
20			330		-	-	**XCHA4_/20**	**XCH400A4_/18**
24			366		-	-	**XCHA4_/24**	**XCH400A4_/24**
32			438		-	-	**XCHA4_/32**	**XCH400A4_/30**
36			474		-	-	**XCHA4_/36**	**XCH400A4_/36**
48			582		-	-	**XCHA4_/48**	**XCH400A4_/48**
60			690		-	-	**XCHA4_/60**	**XCH400A4_/60**
72			798		-	-	**XCHA4_/72**	**XCH400A4_/72**
3-phase, 250 A, 1.5 module, suits 15, 20 & 25kA miniature circuit-breakers								
12	27	230	306	95	-	-	**XCHC3/12**	**XCH400C3/12**
18			388		-	-	**XCHC3/18**	**XCH400C3/18**
24			471		-	-	**XCHC3/24**	**XCH400C3/24**
30			553		-	-	**XCHC3/30**	**XCH400C3/30**
36			636		-	-	**XCHC3/36**	**XCH400C3/36**
42			718		-	-	**XCHC3/42**	**XCH400C3/42**
48			801		-	-	**XCHC3/48**	**XCH400C3/48**
60			966		-	-	**XCHC3/60**	**XCH400C3/60**
72			1131		-	-	**XCHC3/72**	**XCH400C3/72**

① Please replace _ underscore symbol in Item No. with either 1 (for 2 pole devices) or 3 (for 4 pole devices).

Main switches for chassis

Poles	Current rating	Item no.
For direct connection to 250A XCH 3 or 4 pole chassis & mounting in XDBP distribution boards		
3	250	**70039930**
4	250	**25E04025**
Main Switch For direct connection to 400A XCH 3 pole chassis & mounting in XDBP distribution boards		
3	400	**PB400MS3PD**

Accessories

For Switch	Description	Item no.
70039930 & 25E04025	Handle (padlockable)	**70022491**
70039930	Line side shroud	**70019564**
70039930	Load side shroud	**70036193**

DIN MCB chassis

xCap chassis

- Rated current I_n 250A
- Rated short-time current Icw 25kA for 0.1s
- Rated short-time current Icw 10kA for 1.0s
- Encapsulated busbar housing made from halogen-free material
- Testing limited to relevant clauses of IEC 61439.1 Ed. 2.0 and IEC 61439-2 Ed. 2.0
- Tests also satisfy the relevant requirements of AS/NZS 3439.1
- Rated impulse withstand voltage Uimp 6kV
- Rated voltage Un 415V
- Tee-offs 100% capped
- Top feed as standard configuration and duel feed also available
- Direct retrofit replacement for Eaton 250A XCH3 chassis series

Description	Item no.
xCap 250A chassis 12 pole DIN 18mm top feed	**XCAP3/12** ①
xCap 250A chassis 18 pole DIN 18mm top feed	**XCAP3/18** ①
xCap 250A chassis 24 pole DIN 18mm top feed	**XCAP3/24** ①
xCap 250A chassis 30 pole DIN 18mm top feed	**XCAP3/30** ①
xCap 250A chassis 36 pole DIN 18mm top feed	**XCAP3/36** ①
xCap 250A chassis 42 pole DIN 18mm top feed	**XCAP3/42** ①
xCap 250A chassis 48 pole DIN 18mm top feed	**XCAP3/48** ①
xCap 250A chassis 60 pole DIN 18mm top feed	**XCAP3/60** ①
xCap 250A chassis 72 pole DIN 18mm top feed	**XCAP3/72** ①
xCap 250A chassis 84 pole DIN 18mm top feed	**XCAP3/84** ①
xCap 250A chassis 96 pole DIN 18mm top feed	**XCAP3/96** ①
xCap 250A chassis 12 pole DIN 18mm sticker kit	**XCAP3/12PRSK**
xCap 250A chassis 18 pole DIN 18mm sticker kit	**XCAP3/18PRSK**
xCap 250A chassis 24 pole DIN 18mm sticker kit	**XCAP3/24PRSK**
xCap 250A chassis 30 pole DIN 18mm sticker kit	**XCAP3/30PRSK**
xCap 250A chassis 36 pole DIN 18mm sticker kit	**XCAP3/36PRSK**
xCap 250A chassis 42 pole DIN 18mm sticker kit	**XCAP3/42PRSK**
xCap 250A chassis 48 pole DIN 18mm sticker kit	**XCAP3/48PRSK**
xCap 250A chassis 60 pole DIN 18mm sticker kit	**XCAP3/60PRSK**
xCap 250A chassis 72 pole DIN 18mm sticker kit	**XCAP3/72PRSK**
xCap 250A chassis 84 pole DIN 18mm sticker kit	**XCAP3/84PRSK**
xCap 250A chassis 96 pole DIN 18mm sticker kit	**XCAP3/96PRSK**
xCap LOAD side shroud for Eaton 3P 250A isolator	**61267792** ②

① For 'duel feed' arrangement; add a -DF suffix to part number e.g. XCAP3/12-DF

② New shroud is required when replacing old 250A XCH3 series chassis

xCap
Increased flexibility options.

Select the two standard chassis required e.g. XCAP3/12 and XCAP3/18

If no loss of pole space is required, use a screwdriver to unclip the end cap mouldings from both chassis

Apply sticker kit to the chassis to be positioned in the lower part of the assembly e.g. item XCAP3/12PRSK is shown applied

Mount both chassis units into the assembly and butt the housings together to ensure no lost pole spaces

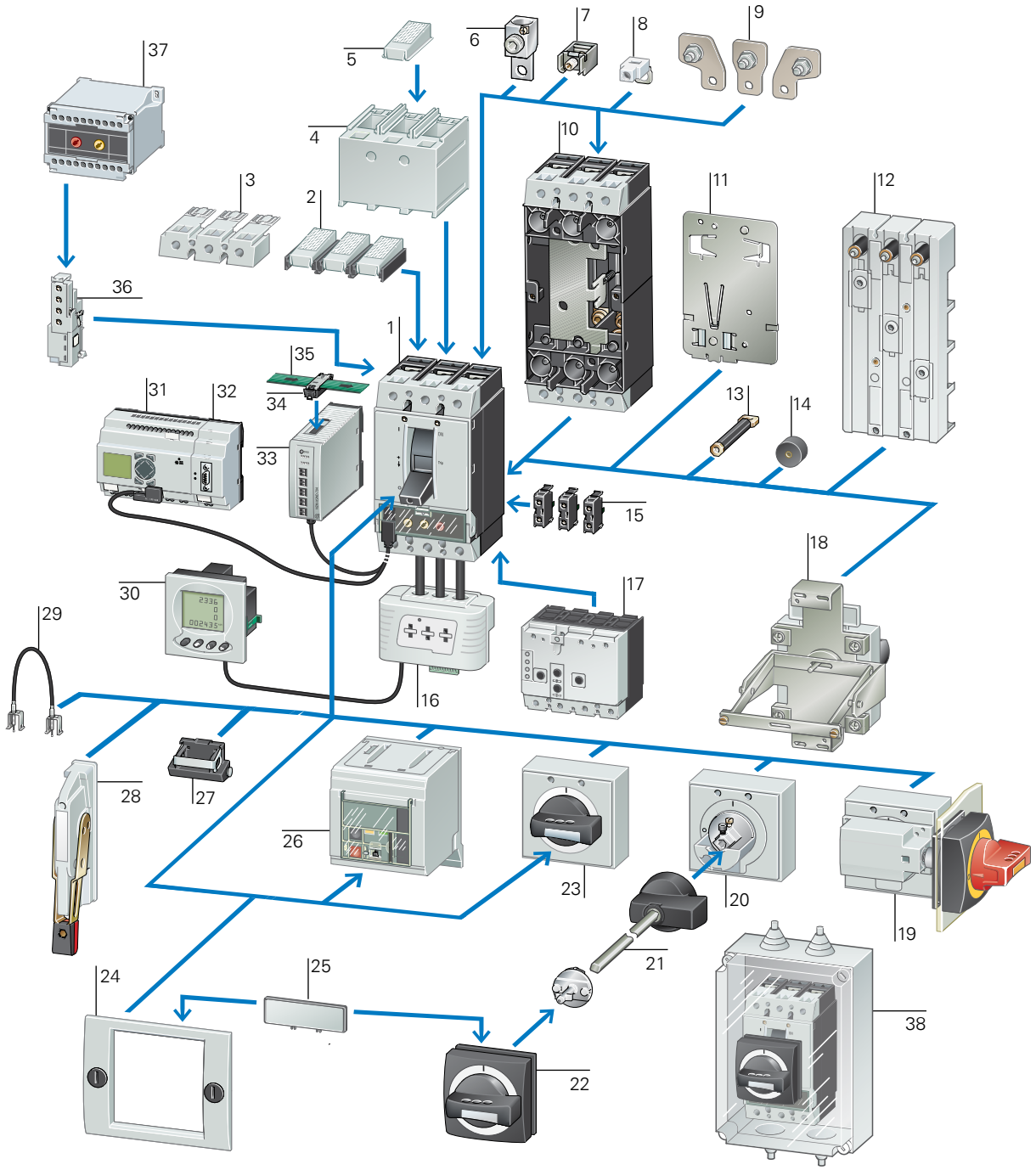
Powering Business Worldwide

Split chassis simplicity.

The new Eaton xCap busbar chassis system is design verified to relevant clauses of IEC61439, suitable for Eaton xPole IEC DIN MCBs and RCBOs and features a fully encapsulated busbar housing. The new xCap product allows the user to quickly configure split chassis arrangements with standard parts making complex installation requirements highly flexible with added ease of installation.

NZM range

System overview
Circuit-breakers, Switch-disconnectors



1. Switch-disconnetor, circuit-breaker, circuit-breaker for North America; Moulded case switches for North America
2. IP2X protection against contact with a finger
3. Terminal cover, knockout
4. Terminal cover
5. IP2X protection against contact with a finger
6. Tunnel terminal
7. Box terminals
8. Control circuit terminal
9. Connection width extension
10. Plug-in and withdrawable unit
11. Adapter plate
12. Busbar adapters
13. Connection on rear
14. Spacers
15. Standard auxiliary contact (HIV), trip-indicating auxiliary switch (HIA), voltage release
16. Measuring and communication module
17. Residual-current protection device
18. Rear driver
19. Main switch rotary handle for side panel mounting
20. Door coupling rotary handle
21. Extension shaft
22. Door coupling rotary handle
23. Rotary handle
24. Insulating surrounds
25. External warning plate/ marking plate
26. Remote operator
27. Toggle lever locking device
28. Side operator handle
29. Mechanical interlock
30. Display
31. Data management interface (DMI module)
32. PROFIBUS-DP interface
33. NZM communication module
34. NZM communication module
35. NZM communication module for Smartwire-DT
36. Early-make auxiliary contacts
37. Delay unit for undervoltage releases
38. Insulated enclosures

NZM range

**The new range up to 1600 A –
New ideas for better circuit-breakers**

The new Eaton circuit-breakers cover a range from 15 to 1600 A with just four frame sizes. And they are optimally matched to one another. The wide application spectrum covers every requirement as Eaton has closely examined what every customer needs and implemented the appropriate solutions. Outstanding, for example, is the continuous switching power range – which extends from the smallest to the largest circuit-breaker or the modular system which can be matched without difficulty to suit the specific application. Thus, the circuit-breakers can be used universally – from the smallest of service distribution boards, to machine controls or motor starter combinations, up to large energy distribution systems with a short-circuit breaking capacity of up to 150 kA.

1-pole 3-pole circuit-breaker

**Excellent under load –
Switch-disconnector's for safe switching under load**

Even under load conditions the Eaton switch-disconnector operates safely. The reason: the 3- or 4-pole snap-action closing mechanism which is also applied with circuit-breakers.

That's why the rated short time withstand current is so high and can handle currents up to 150 000 A. The long lifetime with up to 7 500 switching operations in AC3 mode enables usage as a motor switch, in order to switch large motors during operation. Application as a main switch with an emergency-stop function via a remote pushbutton is easily implemented in conjunction with the double early-make auxiliary contacts and undervoltage release. This in conjunction with the UL/CSA approvals is a prerequisite for use in process and processing machines which are destined for export.

4-pole circuit-breaker

Control circuit terminals
The control circuit terminals are simply screwed onto the respective connection type. The tap-offs for voltage meters, control transformers and undervoltage releases are implemented quickly.

The spacer – saving time and expense
All switches including the accessories fitted on them were designed with the grid spacing of the spacer. Different depths of switches are evened-out simply by means of inexpensive, rapidly fitted spacers.
The result is a cost-effective alternative to the door coupling rotary handle with extension shaft for external operation of the circuit-breaker. This worldwide innovation gains time and saves expense.

Clever installation and terminations
Fast and efficient top-hat rail installation with the use of a clip plate. Just simply attach the clip plate from the rear onto the circuit-breaker and clip it onto the top-hat rail. No need to drill holes in the mounting plate.
The particular advantage of the small NZM1: the "standard dimension" enables side-by-side installation with miniature circuit breakers in service distribution boards.

Thermomagnetic release

Rated current = rated uninterrupted current	Overload release 1-pole	Overload release Setting range overload release	Short-circuit release 1-pole	Short-circuit release adjustable 3-pole
In=Iu A	Ir A	Ir A	Ii A	Ii A
Supplied with box terminals				
16	16	-	350	-
20	20	15-20	350	350
25	25	20-25	350	350
32	32	25-32	350	350
40	40	32-40	350	320-400
50	50	40-50	600	300-500
63	63	50-63	600	380-630
80	80	63-80	1000	480-800
100	100	80-100	1000	600-1000
125	125	100-125	1000	750-1250
160	160	125-160	-	1280
Supplied with screw terminals				
20		15-20		350
25		20-25		350
32		25-32		350
40		32-40		320-400
50		40-50		300-500
63		50-63		380-630
80		63-80		480-800
100		80-100		600-1000
125		100-125		750-1250
160		125-160		960-1600
160		125-160		960-1600
200		160-200		1280-2000
200		160-200		1280-2000
250		200-250		1500-2500
250		200-250		1500-2500
300		240-300		2000-2500
300		240-300		2000-2500
Supplied with screw terminals				
320		250-320		1920-3200
320		250-320		1920-3200
400		320-400		2400-4000
400		320-400		2400-4000
500		400-500		3000-5000
500		400-500		3000-5000

① Applies for NZM1
② Applies for NZM2 and NZM3
③ 60% release on neutral pole

Thermomagnetic release

Circuit-breaker with Basic switching capacity 25 kA at 415 V 50/60 Hz	Circuit-breaker with Basic switching capacity 25 kA at 415 V 50/60 Hz		Circuit-breaker with Normal switching capacity 50 kA at 415 V 50/60 Hz		Circuit-breaker with High switching capacity 100①/150②kA at 415 V 50/60 Hz	
Part no. 1-pole	Part no. 3-pole	Part no. 4-pole	Part no. 3-pole	Part no. 4-pole	Part no. 3-pole	Part no. 4-pole
Supplied with box terminals						
NZMB1-1-AF16	-	-	-	-	-	-
NZMB1-1-AF20	NZMB1-A20	NZMB1-4-A20	NZMN1-A20	NZMN1-4-A20	NZMH1-A20	NZMH1-4-A20
NZMB1-1-AF25	NZMB1-A25	NZMB1-4-A25	NZMN1-A25	NZMN1-4-A25	NZMH1-A25	NZMH1-4-A25
NZMB1-1-AF32	NZMB1-A32	NZMB1-4-A32	NZMN1-A32	NZMN1-4-A32	NZMH1-A32	NZMH1-4-A32
NZMB1-1-AF40	NZMB1-A40	NZMB1-4-A40	NZMN1-A40	NZMN1-4-A40	NZMH1-A40	NZMH1-4-A40
NZMB1-1-AF50	NZMB1-A50	NZMB1-4-A50	NZMN1-A50	NZMN1-4-A50	NZMH1-A50	NZMH1-4-A50
NZMB1-1-AF63	NZMB1-A63	NZMB1-4-A63	NZMN1-A63	NZMN1-4-A63	NZMH1-A63	NZMH1-4-A63
NZMB1-1-AF80	NZMB1-A80	NZMB1-4-A80	NZMN1-A80	NZMN1-4-A80	NZMH1-A80	NZMH1-4-A80
NZMB1-1-AF100	NZMB1-A100	NZMB1-4-A100	NZMN1-A100	NZMN1-4-A100	NZMH1-A100	NZMH1-4-A100
NZMB1-1-AF125	NZMB1-A125	NZMB1-4-A125	NZMN1-A125	NZMN1-4-A125	NZMH1-A125	NZMH1-4-A125
-	NZMB1-A160	NZMB1-4-A160	NZMN1-A160	NZMN1-4-A160	NZMH1-A160	NZMH1-4-A160
Supplied with screw terminals						
	-	-	-	-	NZMH2-A20	NZMH2-4-A20
	-	-	-	-	NZMH2-A25	NZMH2-4-A25
	-	-	-	-	NZMH2-A32	NZMH2-4-A32
	-	-	-	-	NZMH2-A40	NZMH2-4-A40
	-	-	-	-	NZMH2-A50	NZMH2-4-A50
	-	-	-	-	NZMH2-A63	NZMH2-4-A63
	-	-	-	-	NZMH2-A80	NZMH2-4-A80
	-	-	-	-	NZMH2-A100	NZMH2-4-A100
	-	-	-	-	NZMH2-A125	NZMH2-4-A125
	NZMB2-A160	NZMB2-4-A160	NZMN2-A160	NZMN2-4-A160	NZMH2-A160	NZMH2-4-A160
	-	NZMB2-4-A160/100③	-	NZMN2-4-A160/100③	-	NZMH2-4-A160/100③
	NZMB2-A200	NZMB2-4-A200	NZMN2-A200	NZMN2-4-A200	NZMH2-A200	NZMH2-4-A200
	-	NZMB2-4-A200/125③	-	NZMN2-4-A200/125③	-	NZMH2-4-A200/125③
	NZMB2-A250	NZMB2-4-A250	NZMN2-A250	NZMN2-4-A250	NZMH2-A250	NZMH2-4-A250
	-	NZMB2-4-A250/160③	-	NZMN2-4-A250/160③	-	NZMH2-4-A250/160③
	NZMB2-A300	NZMB2-4-A300	NZMN2-A300	NZMN2-4-A300	NZMH2-A300	NZMH2-4-A300
	-	NZMB2-4-A300/200③	-	NZMN2-4-A300/200③	-	NZMH2-4-A300/200③
Supplied with screw terminals						
			NZMN3-A320	NZMN3-4-A320	NZMH3-A320	NZMH3-4-A320
			-	NZMN3-4-A320/200③	-	NZMH3-4-A320/200③
			NZMN3-A400	NZMN3-4-A400	NZMH3-A400	NZMH3-4-A400
			-	NZMN3-4-A400/250③	-	NZMH3-4-A400/250③
			NZMN3-A500	NZMN3-4-A500	NZMH3-A500	NZMH3-4-A500
			-	NZMN3-4-A500/320③	-	NZMH3-4-A500/320③

① Applies for NZM1
② Applies for NZM2 and NZM3
③ 60% release on neutral pole

Circuit breakers with electronic trip units

Rated current = rated uninterated current In = Iu A	Overload release Setting range overload release Ir A	Short circuit release Non-Delayed Ii = In x A	Circuit breaker with normal switching capacity 50kA at 415V 50/60Hz	Circuit breaker with high switching capacity 150①/85kA② at 415V 50/60Hz
Protection of systems and cables 3 pole				
250	125-250	500-2750	**NZMN3-AE250**	**NZMH3-AE250**
400	200-400	800-4400	**NZMN3-AE400**	**NZMH3-AE400**
630	315-630	1260-5040	**NZMN3-AE630**	**NZMH3-AE630**
630	315-630	1260-7560	**NZMN4-AE630**	**NZMH4-AE630**
800	400-800	1600-9600	**NZMN4-AE800**	**NZMH4-AE800**
1000	500-1000	2000-12000	**NZMN4-AE1000**	**NZMH4-AE1000**
1250	630-1250	2500-15000	**NZMN4-AE1250**	**NZMH4-AE1250**
1600	800-1600	3200-19200	**NZMN4-AE1600**	**NZMH4-AE1600**
Protection of systems and cables 4 pole				
400	200-400	800-4400	**NZMN3-4-AE400**	**NZMH3-4-AE400**
630	315-630	1260-5040	**NZMN3-4-AE630**	**NZMH3-4-AE630**
800	400-800	1600-9600	**NZMN4-4-AE800**	**NZMH4-4-AE800**
1000	500-1000	2000-12000	**NZMN4-4-AE1000**	**NZMH4-4-AE1000**
1250	630-1250	2500-15000	**NZMN4-4-AE1250**	**NZMH4-4-AE1250**
1600	800-1600	3200-19200	**NZMN4-4-AE1600**	**NZMH4-4-AE1600**
Systems protection, cable protection, selectivity, generator protection, 3 pole				
100	50-100	1200A fixed	**NZMN2-VE100**	**NZMH2-VE100**
160	80-160	1920A fixed	**NZMN2-VE160**	**NZMH2-VE160**
250	125-250	3000A fixed	**NZMN2-VE250**	**NZMH2-VE250**
250	125-250	500-2750	**NZMN3-VE250**	**NZMH3-VE250**
400	200-400	800-4400	**NZMN3-VE400**	**NZMH3-VE400**
630	315-630	1260-5040	**NZMN3-VE630**	**NZMH3-VE630**
630	315-630	1260-7560	**NZMN4-VE630**	**NZMH4-VE630**
800	400-800	1600-9600	**NZMN4-VE800**	**NZMH4-VE800**
1000	500-1000	2000-12000	**NZMN4-VE1000**	**NZMH4-VE1000**
1250	630-1250	2500-15000	**NZMN4-VE1250**	**NZMH4-VE1250**
1600	800-1600	3200-19200	**NZMN4-VE1600**	**NZMH4-VE1600**
Systems protection, cable protection, selectivity, generator protection, 4 pole				
100	50-100	1200A fixed	**NZMN2-4-VE100**	**NZMH2-4-VE100**
160	80-160	1920A fixed	**NZMN2-4-VE160**	**NZMH2-4-VE160**
250	125-250	3000A fixed	**NZMN2-4-VE250**	**NZMH2-4-VE250**
400	200-400	800-4400	**NZMN3-4-VE400**	**NZMH3-4-VE400**
630	315-630	1260-5040	**NZMN3-4-VE630**	**NZMH3-4-VE630**
800	400-800	1600-9600	**NZMN4-4-VE800**	**NZMH4-4-VE800**
1000	500-1000	2000-12000	**NZMN4-4-VE1000**	**NZMH4-4-VE1000**
1250	630-1250	2500-15000	**NZMN4-4-VE1250**	**NZMH4-4-VE1250**
1600	800-1600	3200-19200	**NZMN4-4-VE1600**	**NZMH4-4-VE1600**

① Applies for NZM2 and NZM3
② Applies for NZM4

Circuit breakers motor protection

Rated operational current = rated uninterrupted current $I_n = I_u$ A	Overload releases Setting range I_r A	Short-circuit releases Non-delayed $I_i = I_n$ x ...	Rated operating power AC-3 50/60 Hz 400 V P kW	Rated operational current AC-3 50/60 Hz 400 V I_e A	Basic switching capacity 25 kA 400/415V 50/60 Hz Item no.	Normal switching capacity 50 kA 400/415V 50/60 Hz Item no.	High switching capacity 85 kA ① / 100kA ② / 150kA ③ 400/415V 50/60 Hz Item no.
Motor protection, thermomagnetic releases NZM...1-M...: with phase failure sensitivity, tripping class 10 A							
Box Terminals standard - Terminal screws as accessories							
40	32-40	8 - 14	18.5	36	**NZMB1-M40**	**NZMN1-M40**	**NZMH1-M40**
50	40-50	8 - 14	22	41	**NZMB1-M50**	**NZMN1-M50**	**NZMH1-M50**
63	50-63	8 - 14	30	55	**NZMB1-M63**	**NZMN1-M63**	**NZMH1-M63**
80	63-80	8 - 14	37	68	**NZMB1-M80**	**NZMN1-M80**	**NZMH1-M80**
100	800-100	8 - 12.5	45	81	**NZMB1-M100**	**NZMN1-M100**	**NZMH1-M100**
Terminal screws standard - Box terminals as accessories							
125	100-125	8 - 14	55	99	**NZMB2-M125**	**NZMN2-M125**	**NZMH2-M125**
160	125-160	8 - 14	75	134	**NZMB2-M160**	**NZMN2-M160**	**NZMH2-M160**
200	160-200	8 - 14	110	196	**NZMB2-M200**	**NZMN2-M200**	**NZMH2-M200**
Motor protection, electronic releases with phase failure sensitivity, tripping class adjustable							
Terminal screws standard - Box terminals as accessories							
220	110-220	2 - 14	110	196		**NZMN3-ME220**	**NZMH3-ME220**
350	175-350	2 - 14	200	349		**NZMN3-ME350**	**NZMH3-ME350**
450	225-450	2 - 12	250	437		**NZMN3-ME450**	**NZMH3-ME450**
550	275-550	2 - 14	315	544		**NZMN4-ME550**	**NZMH4-ME550**
875	483-875	2 - 14	500	820		**NZMN4-ME875**	**NZMH4-ME875**
400	700-1400	2 - 14	630	1066		**NZMN4-ME1400**	**NZMH4-ME1400**

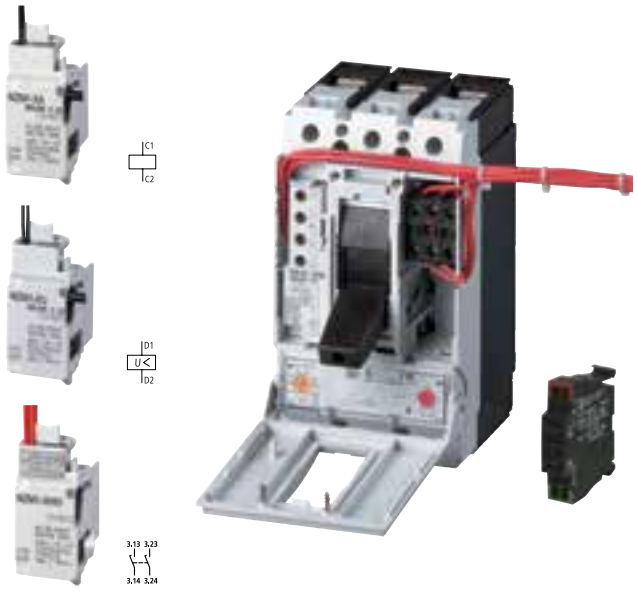
① Applies for NZMH4
② Applies for NZMH1
③ Applies for NZMH2 & NZMH3

Switch disconnectors

Switch-disconnectors	3-pole IEC		4-pole IEC	
Rated current = Rated uninterupted current $I_n = I_u$ A	2 switch positions ①	3 switch positions ②	2 switch positions ①	3 switch positions ②
Box terminals standard - Terminal screws as accessories				
63	**PN1-63**	**N1-63**	**PN1-4-63**	**N1-4-63**
100	**PN1-100**	**N1-100**	**PN1-4-100**	**N1-4-100**
125	**PN1-125**	**N1-125**	**PN1-4-125**	**N1-4-125**
160	**PN1-160**	**N1-160**	**PN1-4-160**	**N1-4-160**
Terminal screws standard - Box terminals screws as accessories				
200	**PN2-200**	**N2-200**	**PN2-4-200**	**N2-4-200**
250	**PN2-250**	**N2-250**	**PN2-4-250**	**N2-4-250**
400	**PN3-400**	**N3-400**	**PN3-4-400**	**N3-4-400**
630	**PN3-630**	**N3-630**	**PN3-4-630**	**N3-4-630**
800		**N4-800**		**N4-4-800**
1000		**N4-1000**		**N4-4-1000**
1250		**N4-1250**		**N4-4-1250**
1600		**N4-1600**		**N4-4-1600**

① 2 switch positions I,0; cannot be tripped remotely

② 3 switch position I,+,0; can be tripped remotely with undervoltage or shunt trip devices



System benefits – the universal accessory range

The method of functioning and fitting of the accessories is identical for every size. Contact elements from the RMQ-Titan® range of control circuit devices are used for the entire NZM range of circuit-breakers.

This has many advantages: it ensures a reduction in the variety of types, a decrease in ordering expense and effort and consequently, simpler inventory management. The contact elements can be simply clipped-on from the front. The position determines the function: signalling contact or trip-indicating auxiliary contact, and like all auxiliary contacts and releases, they are available with terminal bolts or spring-loaded connections, for circuit-breakers or switch-disconnector's.

The new twin contacts provide twice as many auxiliary and signalling contacts in the same amount of space. They feature spring-loaded terminal connections.

Flexible solutions for safety and interlock functions
Effective shunt or undervoltage releases, combined also with early-make auxiliary contacts for Emergency-Stop functions or load-shedding circuits, offer elegant solutions for a wide range of functioning applications. All contact points are available with sturdy bolt connection.

Auxiliary contacts

Item no.	Version	For use with	Max no. of auxilary contacts per switch	Contacts N/O = normally open N/C = normally closed	
Standard auxiliary contact (HIN). Switching with the main contacts. Used for indicating and interlocking tasks.			N(S)1, PN1, NZM1: 1		
			N(S)2, PN2, NZM2: 2		
			N(S)3, PN3, NZM3: 3		
			N(S)4, NZM4: 3		
M22-K10	With bolt connection	NZM1(-4), 2(-4), 3(-4), 4(-4)		1 N/O	–
M22-K01		PN1(-4), 2(-4), 3(-4)		-	1 N/C
		N(S)1(-4), 2(-4), 3(-4), 4(-4)			
M22-CK11	With cage clamp connection.	NZM1(-4), 2(-4), 3(-4), 4(-4)		1 N/O	1 N/C
M22-CK20		PN1(-4), 2(-4), 3(-4)		2 N/O	–
M22-CK02		N(S)1(-4), 2(-4), 3(-4), 4(-4)		–	2 N/C
Early-make auxiliary contacts For interlock and load-shedding circuits,as well as for early-make switching of the undervoltage release with main switch / emergency-Stop applications					
NZM1-XHIV	With clamp terminal on the left-hand switch side.	NZM1(-4)		2 N/O	–
		PN1(-4)			
		N(S)1(-4)			
NZM1-XHIVR	With clamp terminal on the right-hand switch side.	NZM1(-4)		2 N/O	–
		PN1(-4)			
		N(S)1(-4)			
NZM1-XHIVL	With 3 m connecting cables instead of bolt connection.	NZM1(-4)		2 N/O	–
		PN1(-4)			
		N(S)1(-4)			
NZM2/3-XHIV	With bolt connection	NZM2(-4), 3(-4)	N(S)1, NZM1: 1	2 N/O	–
		PN2(-4), 3(-4)	N(S)2, NZM2: 1		
		N(S)2(-4), 3(-4)	N(S)3, NZM3: 1		
			N(S)4, NZM4: 2		
NZM4-XHIV		NZM4(-4)		2 N/O	–
		N(S)4(-4)			
Trip indicating auxiliary contact (HIA)[1] General trip indication "+" with trip by voltage release, overload release or short-circuit release					
M22-K10	With bolt connection	NZM1(-4), 2(-4), 3(-4), 4(-4)		1 N/O	–
M22-K01		N(S)1(-4), 2(-4), 3(-4), 4(-4)		-	1 N/C
M22-CK11	With cage clamp connection.	NZM1(-4), 2(-4), 3(-4), 4(-4)		1 N/O	1 N/C
M22-CK20		N(S)1(-4), 2(-4), 3(-4), 4(-4)		2 N/O	–
M22-CK02				–	2 N/C

[1] not in conjunction with switch-disconnector PN

Undervoltage & shunt trip release devices

Release		Undervoltage release ①		Shunt trip release ②	
		without auxiliary contact			
Version	For use with	Item no.	Rated control voltage U_s V	Item no.	Rated control voltage U_s V
With clamp terminal on the left-hand side	NZM1 (-4), N(S)1(-4)	**NZM1-XU24AC**	24 V 50/60 Hz	**NZM1-XA12AC/DC**	12V AC/DC
		NZM1-XU110-130AC	110V-130V 50/60 Hz	**NZM1-XA24AC/DC**	24V AC/DC
		NZM1-XU208-240AC	208V-240V 50/60 Hz	**NZM1-XA110-130AC/DC**	110V-130V AC/DC
		NZM1-XU380-440AC	380V-440V 50/60 Hz	**NZM1-XA208-250AC/DC**	208V-250V AC/DC
		NZM1-XU12DC	12V DC	**NZM1-XA380-440AC/DC**	380V-440V AC/DC
		NZM1-XU24DC	24V DC		
		NZM1-XU110-130DC	110V-130V DC		
		NZM1-XU220-250DC	220V-250V DC		
With 3m connection cable instead of screw termination	NZM1(-4), N(S)1(-4)	**NZM1-XUL24AC**	24 V 50/60 Hz	**NZM1-XAL12AC/DC**	12V AC/DC
		NZM1-XUL110-30AC	110V-130V 50/60 Hz	**NZM1-XAL24AC/DC**	24V AC/DC
		NZM1-XUL208-40AC	208V-240V 50/60 Hz	**NZM1-XAL110-130AC/DC**	110V-130V AC/DC
		NZM1-XUL380-440AC	380V-440V 50/60 Hz	**NZM1-XAL208-250AC/DC**	208V-250V AC/DC
		NZM1-XUL12DC	12V DC	**NZM1-XAL380-440AC/DC**	380V-440V AC/DC
		NZM1-XUL24DC	24V DC		
		NZM1-XUL110-130DC	110V-130V DC		
		NZM1-XUL220-250DC	220V-250V DC		
With clamp-type terminals	NZM2(-4), N2(-4), NZM3(-4), n(s)3(-4)	**NZM2/3-XU24AC**	24 V 50/60 Hz	**NZM2/3-XA12AC/DC**	12V AC/DC
		NZM2/3-XU110-130AC	110V-130V 50/60 Hz	**NZM2/3-XA24AC/DC**	24V AC/DC
		NZM2/3-XU208-240AC	208V-240V 50/60 Hz	**NZM2/3-XA110-130AC/DC**	110V-130V AC/DC
		NZM2/3-XU380-440AC	380V-440V 50/60 Hz	**NZM2/3-XA208-250AC/DC**	208V-250V AC/DC
		NZM2/3-XU12DC	12V DC	**NZM2/3-XA380-440AC/DC**	380V-440V AC/DC
		NZM2/3-XU24DC	24V DC		
		NZM2/3-XU110-130DC	110V-130V DC		
		NZM2/3-XU220-250DC	220V-250V DC		
With clamp-type terminals	NZM4(-4), N(S)4(-4)	**NZM4-XU24AC**	24 V 50/60 Hz	**NZM4-XA12AC/DC**	12V AC/DC
		NZM4-XU110-130AC	110V-130V 50/60 Hz	**NZM4-XA24AC/DC**	24V AC/DC
		NZM4-XU208-240AC	208V-240V 50/60 Hz	**NZM4-XA110-130AC/DC**	110V-130V AC/DC
		NZM4-XU380-440AC	380V-440V 50/60 Hz	**NZM4-XA208-250AC/DC**	208V-250V AC/DC
		NZM4-XU12DC	12V DC	**NZM4-XA380-440AC/DC**	380V-440V AC/DC
		NZM4-XU24DC	24V DC		
		NZM4-XU110-130DC	110V-130V DC		
		NZM4-XU220-250DC	220V-250V DC		

① non-delayed shut down of circuit-breaker NZM or switch-disconnector N with drop of the control voltage below 35 – 70% U_s. For use with Emergency-Stop devices in conjunction with Emergency-Stop button.
② switches are tripped by a voltage pulse or by the application of uninterrupted voltage.

Door coupling rotary handles

Item no.	For use with	Version
NZM1-XTVDV	NZM1(-4), PN1(-4), N(S)1(-4)	Black/Grey Lockable on handle and switch. Can be locked in 0 position, with adequate modification also in I position. Lockable door as additional feature, locking facility on circuit-breaker in 0 position.
NZM2-XTVDV	NZM2(-4), PN2(-4), N(S)2(-4)	
NZM3-XTVDV	NZM3(-4), PN3(-4), N(S)3(-4)	
NZM4-XTVDV	NZM4(-4), N(S)4(-4)	
NZM1-XTVDVR	NZM1(-4), PN1(-4), N(S)1(-4)	Red-yellow for Emergency-Stop Lockable on handle and switch. Can be locked in 0 position, with adequate modification also in I position. Lockable door as additional feature, locking facility on circuit-breaker in 0 position.
NZM2-XTVDVR	NZM2(-4), PN2(-4), N(S)2(-4)	
NZM3-XTVDVR	NZM3(-4), PN3(-4), N(S)3(-4)	
NZM4-XTVDVR	NZM4(-4), N(S)4(-4)	

NZM1/2-XV4	NZM1(-4), PN1(-4), N(S)1(-4), NZM2(-4), PN2(-4), N(S)2(-4)	**Extension shaft** 400 mm Max. mounting depth
NZM3/4-XV4	NZM3(-4), PN3(-4), N(S)3(-4), NZM4(-4), N(S)4(-4)	
NZM1/2-XV6	NZM1(-4), PN1(-4), N(S)1(-4), NZM2(-4), PN2(-4), N(S)2(-4)	600 mm Max. mounting depth
NZM3/4-XV6	NZM3(-4), PN3(-4), N(S)3(-4), NZM4(-4), N(S)4(-4)	

Rotary handles direct mount

Item no.	For use with	Version
NZM1-XDV	NZM1(-4), PN1(-4), N(S)1(-4)	Black/Grey Lockable in 0 position on switch with up to 3 padlocks.
NZM2-XDV	NZM2(-4), PN2(-4), N(S)2(-4)	
NZM3-XDV	NZM3(-4), PN3(-4), N(S)3(-4)	
NZM4-XDV	NZM4(-4), N(S)4(-4)	
NZM1-XDVR	NZM1(-4), PN1(-4), N(S)1(-4)	Red-yellow for Emergency-Stop Lockable in 0 position on switch with up to 3 padlocks.
NZM2-XDVR	NZM2(-4), PN2(-4), N(S)2(-4)	
NZM3-XDVR	NZM3(-4), PN3(-4), N(S)3(-4)	
NZM4-XDVR	NZM4(-4), N(S)4(-4)	

* other handle options available contact Eaton for details.

Toggle leaver locking devices

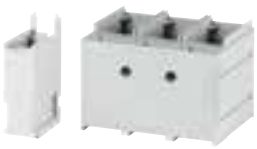
Item no.	For use with	Version
NZM1-XKAV	NZM1(-4), PN2(-4), N(S)1(-4)	**Toggle lever locking facilities**
NZM2/3-XKAV	NZM2/3(-4), PN2/3(-4), (S)2/3(-4)	

Fixed Padlocking devices

For use with	Item no.
NZM1, PN1, N1	**PADLOCK-BRKT-NZM1**
NZM2, PN2, N2	**PADLOCK-BRKT-NZM2**
NZM3, PN3, N3	**PADLOCK-BRKT-NZM3**
NZM4, N4	**PADLOCK-BRKT-NZM4**

Shrouds & connection kits

Item no.	For use with	No. of poles	Comments
Terminal shrouds			
NZM1-1-XKSA	NZM1-1	1 pole	Contains enough items for either LINE or LOAD side only
NZM1-XKSA	NZM1, PN1, N1	3 pole	Contains enough items for either LINE or LOAD side only
NZM1-4-XKSA	NZM1-4, PN1-4, N1-4	4 pole	Contains enough items for either LINE or LOAD side only
NZM2-XKSA	NZM2, PN2. N2	3 pole	Contains enough items for either LINE or LOAD side only
NZM2-4-XKSA	NZM2-4, PN2-4. N2-4	4 pole	Contains enough items for either LINE or LOAD side only
NZM3-XKSA	NZM3, PN3, N3	3 pole	Contains enough items for either LINE or LOAD side only
NZM3-4-XKSA	NZM3-4, PN3-4, N3-4	4 pole	Contains enough items for either LINE or LOAD side only
NZM4-XKSA	NZM4, N4	3 pole	Contains enough items for either LINE or LOAD side only
NZM4-4-XKSA	NZM4-4, N4-4	4 pole	Contains enough items for either LINE or LOAD side only
Tunnel terminals			
NZM1-XKA	NZM1, PN1, N1	3 pole	Contains enough items for either LINE or LOAD side only
NZM1-4-XKA	NZM1-4, PN1-4, N1-4	4 pole	Contains enough items for either LINE or LOAD side only
NZM2-XKA	NZM2, PN2. N2	3 pole	Contains enough items for either LINE or LOAD side only
NZM2-4-XKA	NZM2-4, PN2-4. N2-4	4 pole	Contains enough items for either LINE or LOAD side only
NZM3-XKA2	NZM3, PN3, N3	3 pole	Contains enough items for either LINE or LOAD side only
NZM3-4-XKA2	NZM3-4, PN3-4, N3-4	4 pole	Contains enough items for either LINE or LOAD side only
NZM4-XKA	NZM4, N4	3 pole	Contains enough items for either LINE or LOAD side only
NZM4-4-XKA	NZM4-4, N4-4	4 pole	Contains enough items for either LINE or LOAD side only
Rear connection kits			
NZM1-XKR	NZM1, PN1, N1	3 pole	Contains enough items for either LINE or LOAD side only
NZM1-4-XKR	NZM1-4, PN1-4, N1-4	4 pole	Contains enough items for either LINE or LOAD side only
NZM2-XKR	NZM2, PN2. N2	3 pole	Contains enough items for either LINE or LOAD side only
NZM2-4-XKR	NZM2-4, PN2-4. N2-4	4 pole	Contains enough items for either LINE or LOAD side only
NZM3-XKR	NZM3, PN3, N3	3 pole	Contains enough items for either LINE or LOAD side only
NZM3-4-XKR	NZM3-4, PN3-4, N3-4	4 pole	Contains enough items for either LINE or LOAD side only
NZM4-XKR	NZM4, N4	3 pole	Contains enough items for either LINE or LOAD side only
NZM4-4-XKR	NZM4-4, N4-4	4 pole	Contains enough items for either LINE or LOAD side only
Control cable terminals			
NZM1-XSTS	NZM1, PN1, N1 & NZM1-4, PN1-4, N1-4	3 & 4 pole	Contains only 2 pieces
NZM2-XSTS	NZM2, PN2. N2 & NZM2-4, PN2-4. N2-4	3 & 4 pole	Contains only 2 pieces
NZM3/4-XSTS	NZM3, PN3, N3 & NZM3-4, PN3-4, N3-4 & NZM4, N4 & NZM4-4, N4-4	3 & 4 pole	Contains only 2 pieces



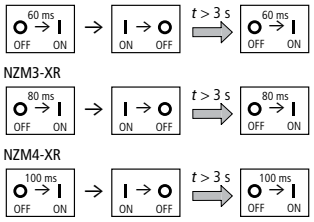
Remote operators

Description	For use with	Rated control voltage Us, V	Item no.
Remote operators, for remote switching of circuit-breakers & switch-disconnectors ON & OFF switching & resetting by means of 2-wire or 3-wire control Can be synchronised. Local switching by hand possible. Lockable in the 0 position of the remote operator with up to 3 padlocks (hasp thickness: 4 – 8 mm)	NZM2 N2	110 – 130 V 50/60 Hz	**NZM2-XR110-130AC**
		208 – 240 V 50/60 Hz	**NZM2-XR208-240AC**
		380 – 440 V 50/60 Hz	**NZM2-XR380-440AC**
		24 – 30 V DC	**NZM2-XR24-30DC**
	NZM3 N3	110 – 130 V 50/60 Hz	**NZM3-XR110-130AC**
		208 – 240 V 50/60 Hz	**NZM3-XR208-240AC**
		380 – 440 V 50/60 Hz	**NZM3-XR380-440AC**
		24 – 30 V DC	**NZM3-XR24-30DC**
	NZM4 N4	110 – 130 V 50/60 Hz	**NZM4-XR110-130AC**
		208 – 240 V 50/60 Hz	**NZM4-XR208-240AC**
		380 – 440 V 50/60 Hz	**NZM4-XR380-440AC①**
		24 – 30 V DC	**NZM4-XR24-30DC**

① Not UL/CSA approved.
Remote operators are combinable with NZM circuit-breakers & N switch-disconnectors but not with PN switch-disconnectors. A standard auxiliary contact (HIN) for the switch position detection is supplied.
Switching cycle: NZM2-XR.

The time interval between OFF & ON is 3 seconds.

On commands received during the time interval are ignored within the first 3 seconds after switch off.



Accessories, mechanical interlock

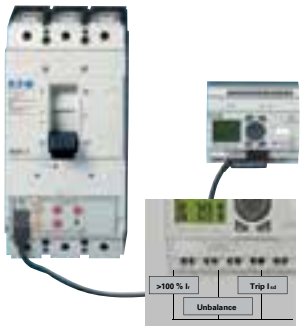
Description	For use with	Item no.
Spacers Enables fast & low-priced adjustment of differing frame sizes with/without rotary handle to the same front depth	NZM1, PN1, N1, NZM2, PN2, N2	**NZM1/2-XAB**
	NZM3, PN3, N3, NZM4, N4	**NZM3-XAB**
Interpole phase barriers - 2 pieces per set	NZM1, PN1, N1	**NZM1-XKP**
	NZM2, PN2, N2	**NZM2-XKP**
	NZM3, PN3, N3	**NZM3-XKP**
	NZM4, N4	**NZM4-XKP**
Mechanical interlocking of (door coupling) rotary handles	NZM1, PN1, N1	**NZM1-XMV**
	NZM2, PN2, N2	**NZM2-XMV**
	NZM3, PN3, N3	**NZM3-XMV**
	NZM4, N4	**NZM4-XMV**
Bowden cables For mechanical interlocking of (door coupling) rotary handles	NZM1, PN1, N1	**NZM-XBZ225**
	NZM2, PN2, N2	**NZM-XBZ600**
	NZM3, PN3, N3, NZM4, N4	**NZM-XBZ1000**
Mechanical interlock for remote operator For 2 switches of the same or next frame size with each other. Mounting beside one another. Type contains parts for both switches	NZM2(-4), N2(-4) +NZM2(-4), N2(-4)	**NZM2-XMVR**
	NZM2(-4), N2(-4) +NZM3(-4), N3(-4)	**NZM2/3-XMVR**
	NZM3(-4), N3(-4) +NZM3(-4), N3(-4)	**NZM3-XMVR**
	NZM3(-4), N3(-4) +NZM4(-4), N4(-4)	**NZM3/4-XMVR**
	NZM4(-4), N4(-4) +NZM4(-4), N4(-4)	**NZM4-XMVR**
Mechanical interlock for remote operator For 2 switches of the same or next frame size with each other. Extra long Bowden cables for mounting in neighbouring control panel fields. Type contains parts for both switches	NZM2(-4), N2(-4) +NZM2(-4), N2(-4)	**NZM2-XMVRL**
	NZM2(-4), N2(-4) +NZM3(-4), N3(-4)	**NZM2/3-XMVRL**
	NZM3(-4), N3(-4) +NZM3(-4), N3(-4)	**NZM3-XMVRL**
	NZM3(-4), N3(-4) +NZM4(-4), N4(-4)	**NZM3/4-XMVRL**
	NZM4(-4), N4(-4) +NZM4(-4), N4(-4)	**NZM4-XMVRL**

Paralleling mechanisms, energy metering and communication

Description	For use with	Item no.
Paralleling mechanisms, simultaneous actuation of 2 PN switch-disconnectors of the same type mounted side-by-side	PN1 + PN1	**PN1-XPA**①
	PN2 + PN2	**PN2-XPA**①
	PN3 + PN3	**PN3-XPA**①②

① A non-lockable rotary handle is supplied (necessary due to the double torque).
② Rotary handle on switch or door coupling rotary handle per PN... is additionally required. Combinations as required are also possible. Cannot be combined with mechanical interlock, insulating surrounds, side wall operators or remote operators.
PN3-XPA: Only in conjunction with non lockable rotary handles or door coupling rotary handles.
Rotary handle on switch: NZM3...-XD • Door coupling rotary handle: NZM3...-XTD Not suitable for use as a main switch.

Description	Item no.
Diagnostic & configurator software for NZM & DMI (at the machine) PC software for direct connection to all new NZM circuit-breakers with electronic releases (IEC & UL/CSA devices) or for direct connection to the DMI module, including the connection cable. Protection parameters: Online display & characteristic representation, export option to "CurveSelect" characteristics program. Warning & trip messages: Read of the diagnostics memory even in a no-voltage state. Load currents: Display & trend representation. Recording & export feature to MS-Excel for load currents & diagnostic messages. Configuration of the DMI: motor starter, remote operator, assignment of the DMI inputs & outputs & displays.	**NZM-XPC-KIT**
Data Management Interface (DMI Module)	
Query of diagnostics & operational data, display of currents, motor starter function, parameterisation & control of the circuit-breaker with electronic release. Comprehensive remote diagnostic options & remote operation via fieldbus in combination with fieldbus connection. Inclusive NZM-XDMI-CAB connection cable between NZM & DMI (length: 2m).	**NZM-XDMI612**
Expansion unit, networking Connection to the DMI module for transfer of the phase currents, parameter-, status- & diagnostics data as well as the position of the circuit-breaker (wiring of the auxiliary contact to the DMI inputs). DMI configuration via field bus. Actuation of the DMI motor starter function & the NZM remote operator (via DMI output wiring). Detection of digital inputs & actuation of the outputs via the fieldbus.	
Fieldbus interface: to PROFIBUS-DPV1 slave. Can be operated with class 1 & class 2 masters. Addresses available: 1 to 126	**NZM-XDMI-DPV1**
Fieldbus connection to CANopen Addresses available: 1 to 127	**EASY221-CO**
Fieldbus connection to DeviceNet Addresses available: 0 to 63	**EASY222-DN**



Flexible fault current protection

The new Eaton relay/transducer combination covers operating currents in a range from 1 to 1800 A. The wide spectrum of applications ranges from general power distribution tasks to individual Motor controls. The fault currents which are detected and processed by the relay range from 30 mA to 5 A. The adjustable relay provides a pre-warn function which alerts before the set fault current is exceeded. The prewarning allows preventative action to be taken to prevent shutdown of the electrical energy.

The application range of the relay/transducer combinations extend – depending on the regulations which apply – from personnel protection to fire protection, and even extends up to protection of systems for 1 to 4 pole power grids. The current relay signals that the set fault current has been exceeded with a changeover contact. Depending on the application, the contact signal can be subsequently processed in the controls, as well as by the shunt or undervoltage releases of a circuit-breaker which initiate the trip. The relay and transducer can be combined with every circuit-breaker. The compact ring-type transducer with no particular space requirement is placed at a suitable position on the cable run. The relay simply requires a free electrical cable connection.

Compact, safe, adaptable... just as it should be, the fault current protection which is particularly suited for cramped spaces such as for example in service distribution systems. Ring-type transducers which are arranged in a space saving manner on the cabling run and the measuring relay which is simply snapped onto the DIN mounting rail, combine to form a functional unit.

After a critical fault current has been exceeded, the output signal can be optionally channelled to an acoustic/optical signalling device, upstream control or directly to the shunt or undervoltage release of a motor-protective circuitbreaker/ circuit-breaker for instantaneous shutdown. Three different relay variants are available for different protective tasks: 30 mA as well as 300 mA sensitivity with a fixed setting and 30 mA to 5 A adjustable in fixed steps, which can be combined with a time delay of 20 ms to 5 s.

The non-delayed standard devices are particularly suited for protection of systems. The time-delayed variants are intended for discriminative series connection of multiple switch/relay combinations. This ensures, that only the switch in the direct vicinity of the fault will trip.

Two colour LED's signal operating and fault states Possible wiring faults between relay and transducers are indicated by illumination of both LED's. Diagnostics function with adjustable PFR-5 relay:

If the set fault current is exceeded by more than 25, 50 or 75%, the red LED will flash at different frequencies. This alert feature ensures that trouble-shooting for the cause of the fault can commence before a critical state is reached.

Two pushbuttons enable test and reset of the relay Test: The function of the relay electronics is tested and the trip signal can be used to control the shunt or undervoltage release of the connected circuit-breaker. This test checks the operation of the entire function chain comprised of measured value input, processing, signal routing as well as switch release. Reset: The release signal is reset regardless of if it is received from a fault current or by operation of the test button.

Description		Item no.
Residual current relay Pulse current sensitive	Rated control voltage: Us = 230V A.C. (50/60 Hz) Integrated auxiliary switch (1 changeover contact)	
Rated fault current I n = 0.03 A		**PFR-003**
Rated fault current I n = 0.3 A		**PFR-03**
Rated fault current I n = 0.03...5 A Adjustable fault current and delay time Fault current prewarning by flashing red LED	PFR-5: Adjustable fault current: 0.03 - 0.1 - 0.3 - 0.5 - 1 - 3 - 5 A Adjustable delay time: 0.02 - 0.1 - 0.3 - 0.5 - 1 - 3 - 5 s	**PFR-5**
Ring-type transducer		
Internal diameter 20 mm	PFR-W-20 and PFR-W-30 incl. attachment clip for DIN top-hat rail	**PFR-W-20**
Internal diameter 30 mm		**PFR-W-30**
Internal diameter 35 mm	PFR-W-35 and all larger transducers incl. screw tting Engineering note: The transducer diameter must be selected to be 1.5 times larger than the diameter of the conductor lead through (see Technical Data).	**PFR-W-35**
Internal diameter 70 mm		**PFR-W-70**
Internal diameter 105 mm		**PFR-W-105**
Internal diameter 140 mm		**PFR-W-140**
Internal diameter 210 mm		**PFR-W-210**

Flexible fault current protection

The residual-current protection modules can be connected to the bottom of the circuit-breaker NZM1 and NZM2, and on the NZM1 also on the right hand side with the same contour design. A compact and mounting friendly solution. An external auxiliary voltage is not required. The residual current protection module of the NZM2 is independent of the mains voltage. It is available in pulse current sensitive and also in AC/DC current sensitive devices. In almost every mains configuration 3-pole and 4-pole variants as well as rated fault currents from 30 mA to time-discriminating 3 A are on offer.

During a fault the rising fault current will initially be indicated by an LED on the RCCB for the NZM1. The circuit breaker trips via the residual-current release only after the set fault current is exceeded, i.e. the main contacts will be opened. The cause of the fault is indicated mechanically on the device with the NZM1 and 2. Optional auxiliary contacts can be clipped on in order to remotely indicate the trip. The circuit breaker and the residual-current release must be reset and switched back on in order to restore the power supply.

Accessories

Earth-fault release

Rated fault current	For use with	3 pole Item no.	For use with	4 pole Item no.
Not UL/CSA approved. Suitability for use in three- & single-phase systems. Pulse current sensitive acc. to core-balance principle				
For 3 & 4 pole circuit-breakers NZM1(-4) & switch-disconnectors N1(-4), dependant on mains power Ue= 200 – 415 V 50/60 Hz, lateral mounting on the right hand side up to 125 A				
Rated fault current IΔn = 0.03 A	NZM1 N1	**NZM1-XFI30R**	NZM1-4 N1-4	**NZM1-4-XFI30R**
Rated fault current IΔn = 0.3 A		**NZM1-XFI300R**		**NZM1-4-XFI300R**
Rated fault current IΔn = 0.03 – 0.1 – 0.3 – 0.5 – 1 – 3 A		**NZM1-XFIR**		
Delay time tv = 10 – 60 – 150 – 300 – 450 ms.			NZM1-4 N1-4	**NZM1-4-XFIR**
For 3 & 4 pole circuit-breakers NZM1(-4) & switch-disconnectors N1(-4), dependant on mains power Ue = 200 – 415 V 50/60 Hz, bottom mounting up to 100 A				
Rated fault current IΔn = 0.03 A	NZM1 N1	**NZM1-XFI30U**	NZM1-4 N1-4	**NZM1-4-XFI30U**
Rated fault current IΔn = 0.3 A		**NZM1-XFI300U**		**NZM1-4-XFI300U**
Rated fault current IΔn = 0.03 – 0.1 – 0.3 – 0.5 – 1 – 3 A, delay time tv = 10 – 60 – 150 – 300 – 450 ms.		**NZM1-XFIU**		**NZM1-4-XFIU**
Pulse current sensitive acc. to core-balance principle				
For 4 pole circuit-breakers NZM2-4 & switch-disconnectors N2-4, independent of mains voltage Ue = 280 – 690 V 50/60 Hz, bottom mounting up to 250 A				
Rated fault current IΔn = 0.03 A			NZM2-4 N2-4	**NZM2-4-XFI30**
Rated fault current IΔn 0.1 - 0.3 - 1 - 3 A, delay time tv = 60 - 150 - 300 - 450 ms				**NZM2-4-XFI**
Core-balance principle with AC/DC current sensitivity (in range 0 – 100 kHz)				
For 4 pole circuit-breakers NZM2-4 & switch-disconnectors N2-4, internal power supply Ue = 50 – 400 V, bottom mounting up to 250 A				
Rated fault current IΔn = 0.03 A			NZM2-4 N2-4	**NZM2-4-XFIA30**
Rated fault current IΔn 0.1 - 0.3 - 1 A, delay time tv = 60 - 150 - 300 - 450 ms				**NZM2-4-XFIA**

Moulded case circuit breaker chassis for NZM

High current chassis

Description	Rating	Item no.
High current Chassis Tested to: • 50 kA for 0.1 second • 40 kA for 1 second		
630 A, NZM1 Chassis		
Chassis 630A NZM1 6 Pole	630A 40kA 1 sec	**CH06NZM1-6P**
Chassis 630A NZM1 12 Pole	630A 40kA 1 sec	**CH06NZM1-12P**
Chassis 630A NZM1 18 Pole	630A 40kA 1 sec	**CH06NZM1-18P**
Chassis 630A NZM1 24 Pole	630A 40kA 1 sec	**CH06NZM1-24P**
Chassis 630A NZM1 30 Pole	630A 40kA 1 sec	**CH06NZM1-30P**
Chassis 630A NZM1 36 Pole	630A 40kA 1 sec	**CH06NZM1-36P**
Chassis 630A NZM1 42 Pole	630A 40kA 1 sec	**CH06NZM1-42P**
Chassis 630A NZM1 48 Pole	630A 40kA 1 sec	**CH06NZM1-48P**
Chassis 630A NZM1 60 Pole	630A 40kA 1 sec	**CH06NZM1-60P**
Chassis 630A NZM1 72 Pole	630A 40kA 1 sec	**CH06NZM1-72P**
630A, NZM2 Chassis		
Chassis 630A NZM2 6 Pole	630A 40kA 1 sec	**CH06NZM2-6P**
Chassis 630A NZM2 12 Pole	630A 40kA 1 sec	**CH06NZM2-12P**
Chassis 630A NZM2 18 Pole	630A 40kA 1 sec	**CH06NZM2-18P**
Chassis 630A NZM2 24 Pole	630A 40kA 1 sec	**CH06NZM2-24P**
Chassis 630A NZM2 30 Pole	630A 40kA 1 sec	**CH06NZM2-30P**
Chassis 630A NZM2 36 Pole	630A 40kA 1 sec	**CH06NZM2-36P**
Chassis 630A NZM2 42 Pole	630A 40kA 1 sec	**CH06NZM2-42P**
Chassis 630A NZM2 48 Pole	630A 40kA 1 sec	**CH06NZM2-48P**
630A NZM1 - NZM2 Hybrid Chassis		
Chassis 630A Hybrid NZM1 6 Pole NZM2 6 Pole	630A 40kA 1 sec	**CH06NZM1-6P/NZM2-6P**
Chassis 630A Hybrid NZM1 6 Pole NZM2 12 Pole	630A 40kA 1 sec	**CH06NZM1-6P/NZM2-12P**
Chassis 630A Hybrid NZM1 12 Pole NZM2 6 Pole	630A 40kA 1 sec	**CH06NZM1-12P/NZM2-6P**
Chassis 630A Hybrid NZM1 12 Pole NZM2 12 Pole	630A 40kA 1 sec	**CH06NZM1-12P/NZM2-12P**
Chassis 630A Hybrid NZM1 18 Pole NZM2 6 Pole	630A 40kA 1 sec	**CH06NZM1-18P/NZM2-6P**
Chassis 630A Hybrid NZM1 18 Pole NZM2 12 Pole	630A 40kA 1 sec	**CH06NZM1-18P/NZM2-12P**
1000A NZM1 Chassis		
Chassis 1000A NZM1 6 Pole	1000A 50kA 1 sec	**CH10NZM1-6P**
Chassis 1000A NZM1 12 Pole	1000A 50kA 1 sec	**CH10NZM1-12P**
Chassis 1000A NZM1 18 Pole	1000A 50kA 1 sec	**CH10NZM1-18P**
Chassis 1000A NZM1 24 Pole	1000A 50kA 1 sec	**CH10NZM1-24P**
Chassis 1000A NZM1 30 Pole	1000A 50kA 1 sec	**CH10NZM1-30P**
Chassis 1000A NZM1 36 Pole	1000A 50kA 1 sec	**CH10NZM1-36P**
Chassis 1000A NZM1 42 Pole	1000A 50kA 1 sec	**CH10NZM1-42P**
Chassis 1000A NZM1 48 Pole	1000A 50kA 1 sec	**CH10NZM1-48P**
Chassis 1000A NZM1 60 Pole	1000A 50kA 1 sec	**CH10NZM1-60P**
Chassis 1000A NZM1 72 Pole	1000A 50kA 1 sec	**CH10NZM1-72P**
1000A NZM2 Chassis		
Chassis 1000A NZM2 6 Pole	1000A 50kA 1 sec	**CH10NZM2-6P**
Chassis 1000A NZM2 12 Pole	1000A 50kA 1 sec	**CH10NZM2-12P**
Chassis 1000A NZM2 18 Pole	1000A 50kA 1 sec	**CH10NZM2-18P**
Chassis 1000A NZM2 24 Pole	1000A 50kA 1 sec	**CH10NZM2-24P**
Chassis 1000A NZM2 30 Pole	1000A 50kA 1 sec	**CH10NZM2-30P**
Chassis 1000A NZM2 36 Pole	1000A 50kA 1 sec	**CH10NZM2-36P**
Chassis 1000A NZM2 42 Pole	1000A 50kA 1 sec	**CH10NZM2-42P**
Chassis 1000A NZM2 48 Pole	1000A 50kA 1 sec	**CH10NZM2-48P**

Custom built chassis to suit NZM breakers are available on request, contact Eaton.

Moulded case circuit breaker chassis for NZM

High current chassis

Description	Rating	Item no.
1000A NZM1 - NZM2 Hybrid Chassis		
Chassis 1000A Hybrid NZM1 6 Pole NZM2 6 Pole	1000A 50kA 1 sec	**CH10NZM1-6P/NZM2-6P**
Chassis 1000A Hybrid NZM1 6 Pole NZM2 12 Pole	1000A 50kA 1 sec	**CH10NZM1-6P/NZM2-12P**
Chassis 1000A Hybrid NZM1 12 Pole NZM2 6 Pole	1000A 50kA 1 sec	**CH10NZM1-12P/NZM2-6P**
Chassis 1000A Hybrid NZM1 12 Pole NZM2 12 Pole	1000A 50kA 1 sec	**CH10NZM1-12P/NZM2-12P**
Chassis 1000A Hybrid NZM1 18 Pole NZM2 6 Pole	1000A 50kA 1 sec	**CH10NZM1-18P/NZM2-6P**
Chassis 1000A Hybrid NZM1 18 Pole NZM2 12 Pole	1000A 50kA 1 sec	**CH10NZM1-18P/NZM2-12P**
1000A NZM3 Chassis		
Chassis 1000A NZM3 3 Pole	1000A 50kA 1 sec	**CH10NZM3-3P**
Chassis 1000A NZM3 6 Pole	1000A 50kA 1 sec	**CH10NZM3-6P**
Chassis 1000A NZM3 9 Pole	1000A 50kA 1 sec	**CH10NZM3-9P**
Chassis 1000A NZM3 12 Pole	1000A 50kA 1 sec	**CH10NZM3-12P**
2000A NZM1 Chassis		
Chassis 2000A NZM1 6 Pole	2000A 50kA 1 sec	**CH20NZM1-6P**
Chassis 2000A NZM1 12 Pole	2000A 50kA 1 sec	**CH20NZM1-12P**
Chassis 2000A NZM1 18 Pole	2000A 50kA 1 sec	**CH20NZM1-18P**
Chassis 2000A NZM1 24 Pole	2000A 50kA 1 sec	**CH20NZM1-24P**
Chassis 2000A NZM1 30 Pole	2000A 50kA 1 sec	**CH20NZM1-30P**
Chassis 2000A NZM1 36 Pole	2000A 50kA 1 sec	**CH20NZM1-36P**
Chassis 2000A NZM1 42 Pole	2000A 50kA 1 sec	**CH20NZM1-42P**
Chassis 2000A NZM1 48 Pole	2000A 50kA 1 sec	**CH20NZM1-48P**
Chassis 2000A NZM1 60 Pole	2000A 50kA 1 sec	**CH20NZM1-60P**
Chassis 2000A NZM1 72 Pole	2000A 50kA 1 sec	**CH20NZM1-72P**
Chassis 2000A NZM2 6 Pole	2000A 50kA 1 sec	**CH20NZM2-6P**
Chassis 2000A NZM2 12 Pole	2000A 50kA 1 sec	**CH20NZM2-12P**
Chassis 2000A NZM2 18 Pole	2000A 50kA 1 sec	**CH20NZM2-18P**
Chassis 2000A NZM2 24 Pole	2000A 50kA 1 sec	**CH20NZM2-24P**
Chassis 2000A NZM2 30 Pole	2000A 50kA 1 sec	**CH20NZM2-30P**
Chassis 2000A NZM2 36 Pole	2000A 50kA 1 sec	**CH20NZM2-36P**
Chassis 2000A NZM2 42 Pole	2000A 50kA 1 sec	**CH20NZM2-42P**
Chassis 2000A NZM2 48 Pole	2000A 50kA 1 sec	**CH20NZM2-48P**
Chassis 2000A NZM3 3 Pole	2000A 50kA 1 sec	**CH20NZM3-3P** ①
Chassis 2000A NZM3 6 Pole	2000A 50kA 1 sec	**CH20NZM3-6P** ①
Chassis 2000A NZM3 9 Pole	2000A 50kA 1 sec	**CH20NZM3-9P** ①
Chassis 2000A NZM3 12 Pole	2000A 50kA 1 sec	**CH20NZM3-12P** ①
Chassis 2000A NZM3 15 Pole	2000A 50kA 1 sec	**CH20NZM3-15P** ①
Chassis 2000A NZM3 18 Pole	2000A 50kA 1 sec	**CH20NZM3-18P** ①
Chassis 2000A NZM3 21 Pole	2000A 50kA 1 sec	**CH20NZM3-21P** ①
Chassis 2000A NZM3 24 Pole	2000A 50kA 1 sec	**CH20NZM3-24P** ①

Description	Rating	Item no.
2000A NZM1 - NZM2 - NZM3 Hybrid Chassis		
Chassis 2000A HYBRID NZM1 6 Pole NZM2 6 Pole NZM3 6 Pole	2000A 50kA 1 sec	**CH20NZM1-6P/NZM2-6P/NZM3-6P** ①
Chassis 2000A HYBRID NZM1 6 Pole NZM2 12 Pole NZM3 6 Pole	2000A 50kA 1 sec	**CH20NZM1-6P/NZM2-12P/NZM3-6P** ①
Chassis 2000A HYBRID NZM1 12 Pole NZM2 6 Pole NZM3 6 Pole	2000A 50kA 1 sec	**CH20NZM1-12P/NZM2-6P/NZM3-6P** ①
Chassis 2000A HYBRID NZM1 12 Pole NZM2 12 Pole NZM3 3 Pole	2000A 50kA 1 sec	**CH20NZM1-12P/NZM2-12P/NZM3-3P** ①
Chassis 2000A HYBRID NZM1 18 Pole NZM2 6 Pole NZM3 3 Pole	2000A 50kA 1 sec	**CH20NZM1-18P/NZM2-6P/NZM3-3P** ①
Chassis 2000A HYBRID NZM1 18 Pole NZM2 12 Pole NZM3 3 Pole	2000A 50kA 1 sec	**CH20NZM1-18P/NZM2-12P/NZM3-3P** ①

Custom built chassis to suit NZM breakers are available on request, contact Eaton.

① Connection block NZM3-XKR13 required for fitting NZM3 to CH20 chassis.

BBS-3/FL

BBC-FL10

BBA-TP3-120

NZM2-XAD250

Eaton SASY 60i busbar system

The Eaton SASY 60i busbar system is a cost effective and flexible system allowing easy connection of Eaton's extensive world class circuit protection and Motor control components into your own custom requirements.

Description	Item no.
Busbar system components.	
IEC busbar support 3 pole 630A suitable for 12-30mm x 5/10mm copper profiles.	**BBS-3/FL**
End cover, to cover the busbar ends for BBS-3/FL	**ES-BBS-3/FL**
Busbar cover, suitable for 12-30mm x 5mm busbar - 1000mm long	**BBC-FL5**
Busbar cover, suitable for 12-30mm x 10mm busbar - 1000mm long	**BBC-FL10**
Incoming connection kit components.	
300A rated connection kit suitable for 6-50mm2 conductor; 54mm wide	**BBA-TP3/50** ①
440A rated connection kit suitable for 35-120mm2 conductor; 81mm wide	**BBA-TP3/120** ①
560A rated connection kit suitable for 120-300mm2 conductor; 180-240mm wide	**BBA-TP3/300** ②
800A rated connection kit suitable for 30x25 solid conductor; 180-240mm wide	**BBA-TP3/CU-BAND** ③
Busbar adaptors NZM breakers	
Busbar adapter for mounting NZM1 MCCBs to busbar system, 90mm wide	**NZM1-XAD160**
Busbar adapter for mounting NZM2 MCCBs to busbar system, 106mm wide	**NZM2-XAD250**
Busbar adapter for mounting NZM3 MCCBs to busbar system, 140mm wide	**NZM3-XAD630**
Adaptor terminal cover	
NZM2 terminal cover for connection end when using NZM2-XAD250	**NZM2-XRK4**
NZM3 terminal cover for connection end when using NZM3-XAD630	**NZM3-XKR13**

① Suitable for 12-30mm x 5/10mm copper busbar.
② Suitable for 20-30mm x 5/10mm copper busbar.
③ Suitable for 20-30mm x 5/10mm copper busbar, flexible copper conductor can also be used as incomer, please consult Eaton for details.

For adaptors suitable to mount Eaton Motor control devices please refer to page 219

Arcflash Reduction Maintenance System.

EATON
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A circuit breaker equipped with an Arcflash Reduction Maintenance System can improve safety by providing a simple and reliable method of reduce fault clearing time. Work locations downstream of a circuit breaker with an Arcflash Reduction Maintenance system unit can have a significantly lower indecent energy level.

Eaton LV switchgear is now available in the innovative PowerCad electrical engineering design software.

Eaton products that are featured on PowerCad-5™ :

- Eaton Magnum MWI Series Air Circuit Breakers – up to 6300A.
- Eaton NZM Series Moulded Case Circuit Breakers – up to 1600A including the B, N & H type breaking capacity options and the A, M, AE, VE & ME type trip units.
- Eaton PLS6, PLSM and PLHT MCB ranges.
- Eaton eRB6, eRBM and PKNM RCBO ranges.
- Eaton Dumeco Load Break Switches ranging from 160A to 3150A

EATON
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Air circuit breakers

IZMX16

The IZMX16 of the NRX series is the smallest 1600 A air circuit breaker (ACB) worldwide: With a volume of only 0.024 m³ and a front surface of only 0.092 m², it is just slightly bigger than the size of a A4 sheet of paper! And all this without any loss in terms of performance.

The innovative concept allows the user to install two circuit breakers side by side in withdrawable design, in a 600 mm wide section. This fact provides for a more cost-effective setup of the section and, in addition, it helps to save operating space. And where remote switching is required, this volume can even accommodate a motor for charging the stored-energy spring mechanism and releases for electrical operation. High performance combined with reduced space is exceptional value to customer.

IZMX40

The IZMX40 of the NRX series is a circuit breaker for up to 4000 A with depth less than 400mm for the drawout version, without the need to install any additional “copper mines” in the connection area. Tests to integrate it into Eaton switchgear systems, such as Modan, xEnergy, Power Xpert and Capitol 40 confirm its outstanding technical data and optimal compatibility thanks to the flexible connection system.

The modular structure, integrated solutions as well as a complete range of accessories and additional functions make it easy to adapt the circuit breaker to any of the required applications. Optionally it can be configured right at the factory – without any extra cost for additional installation work at the circuit breaker.

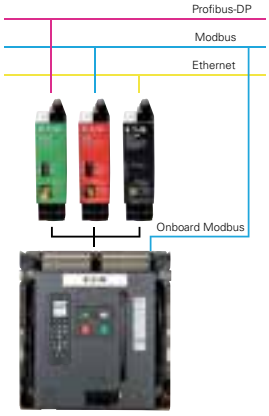
The next generation trip unit platform: Power Xpert Release (PXR)

- LCD display with multilingual capability
- Current metering on PXR20 and power metering on PXR25
- Extended range for pickup value and delay timing setting
- "OFF" setting available for ground fault(G) and non-delayed instantaneous trip(I)
- Onboard Modbus communication(standard on PXR25 and optional on PXR20)
- MicroUSB for computer connection
- PXR Configuration and Test Tool to remotely configure and test the trip unit
- Trip test
- Waveform capture
- Diagnostics
- Long trip curve setting
- ZSI/Thermal Memory on/off

Increased operating safety and flexibility based on communication

With the respective communication module - PCAM, MCAM or ECAM (Profibus-DP / Modbus / Ethernet Communications Adapter Module) - every circuit breaker of the NRX series is equipped for modern communication and is fit for the future. The databus not only allows to transmit information, but also to receive commands/settings.

Onboard Modbus communication is standard on the PXR25 (U type) trip unit and optional on the PXR20(V type) trip unit upon order. Additional PCAM, MCAM or ECAM module can be installed externally for PXR25 to expand the communication capability. (No more than one external CAM module can be installed)



Arcflash Reduction Maintenance System™

Eaton's patented Arcflash Reduction Maintenance System technology provides maintenance staff improved safety of downstream maintenance locations using a simple and reliable method to reduce fault clearing times and energy in an arc flash event (radiation, sound, pressure, temperature).

Arcflash Reduction Maintenance System uses a separate analog trip circuit providing faster signal processing and interruption times than the standard (digital) "instantaneous" protection.

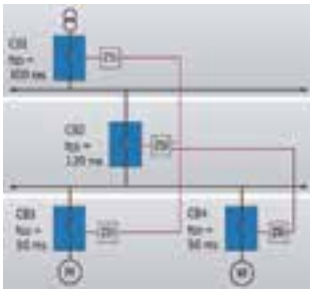
The Arcflash Reduction Maintenance System function is activated either directly on the circuit breaker through a local switch or remotely through communications or a contact input. Arcflash Reduction Maintenance System is optional on both PXR20 and PXR25 trip units.

Zone selectivity ZSI

Circuit breakers are directly connected to a signal line, without any additional modules. So, in case of a malfunction, they ensure that only the circuit breaker immediately upstream the point of failure will break a short-circuit without delay.

The advantage of the zone selectivity feature - compared to ordinary time selectivity - is the significantly reduced time until switch-off and the reduced amount of energy released in case of a short-circuit.

For additional safety of maintenance staff we recommend combining ZSI functionality with Arcflash Reduction Maintenance System.



Easy maintenance and service

Maintenance and service can be conveniently performed on the draw-out breaker as the primary finger clusters (blue) and levering mechanism are part of the breaker instead of the cassette. Eaton also offers many field installable accessories and parts, extending the life of the breaker.

xEnergy

IEC/EN 61439

Eaton implements the new series of standards for low voltage switchgear assemblies as early as NOW – and makes it significantly easier for panel builders to do their job. To ensure the safety of low voltage switchgear assemblies, many and the most varied characteristics of the individual components need to be harmonized and defined in a generally applicable standard. So far the IEC/EN60439 series of standards covered this requirement. As of 2014, it has been replaced by the new standard in Europe and this will be adopted in the future in ANZ.

Innovations at a glance
The new standard makes a difference between the manufacturers – as usually practiced – between the original manufacturers on the one hand and the panel builders on the other hand. These two parties involved in building a switchboard system have to separately provide evidence of conformity to show that the part each one is responsible for meets the requirements of the standard.

This actually means that the panel builder now has to pay a lot more attention to providing the evidence of conformity for his part of the technical execution.

- The distinction between "type-tested assembly TTA" and "partially type-tested assembly PTTA" no longer exists in the new standard.
- Evidence of conformity with the standard is provided through design verifications, they include tests, calculations and the verification of whether the design rules have been respected – i.e. that from now on the systems will be design verified. Panel builders who already build TTAs now do not have to expect many changes.
- The panel builder can- depending on the type of system – choose between three different ways of providing evidence of conformity: Verification by testing, Verification by design rules or Verification by calculation. All of them are equally valid, as defined by the standard.
- The term "TTA Switchgear assembly and controlgear assembly according to IEC/EN 60439-1" will be replaced by: "Power switchgear and controlgear assembly according to IEC/EN 61439-2, design verification by testing".
- If the panel builder carries out changes in the original system of a switchgear and controlgear assembly that are not covered in the design verification, these changes must be specified in a separate design-verification document.
- The new standard also includes requirements of the standard for empty enclosures, such as resistance to corrosion, resistance to heat of enclosure parts made of insulating material and protection against mechanical impacts.

xEnergy, in conformity with the standard
As an original manufacturer, we will continue to provide evidence of conformity for the system in the future as well. In order to make it easier for the panel builder to provide evidence of conformity for his part of the responsibility, a large number of applications have been split up into standardized modules and the design verification by testing has been carried out for them to provide the evidence of conformity.

These modules, assembled in accordance with the corresponding instructions, will enable you to carry out your projects in a cost-effective way and in compliance with the requirements of the standard.

xEnergy

XP Power Sections

- Incoming supplies, outgoers and couplings with circuit breakers
- Internal separation up to form 4
- Cable connection from the top or bottom
- Incoming supply system for drill-free cable connection

XF Fixed

- Power outgoers with circuit breakers and fuse switch disconnectors up to 630 A
- Internal separation up to form 4
- Individual outgoers, such as controlgear, motor starters, small power outgoers etc

XR Removable

- Power outgoers with circuit breakers and strip type switch-disconnector-fuse, up to 630 A
- Empty modules for individual applications
- Plug-in modules and strip type switch-disconnector-fuse can be replaced under live-line working conditions
- Internal separation up to form 4
- Easy maintenance and reduced down times

XG General

- Power factor correction
- Fitting systems for sub-distribution with devices for modular installation
- Control technology with SASY 60i and xStart
- Individual fixed units on a mounting plate

XW Withdrawable

- Power outgoers with circuit breakers up to 630 A
- Outgoers for motor starters up to 250 KW
- Empty drawers for individual applications
- Easy and uniform handling for all drawer sizes
- Drawers can be replaced under live-line working conditions
- Internal separation up to form 4
- Unambiguous position indicator for operating, test or de-energized status
- Easy maintenance without the need of using any special tools for replacement jobs
- Minimum down times

Eaton Partner program

The key to your success with xEnergy switchboard systems is the Eaton Partner program. Joining the program is well worth it: Not only will you receive a wealth of insider information, you will also be the fi rst to get informed about facts and innovations regarding xEnergy.

After you register under www.xenergy-partner.com first you will be given a login and all the benefits of the Eaton Partner program will instantly be available to you. For more information visit us at www.xenergy-partner.com

Benefits

- Listing as a Licensed Partner on the Eaton website
- Access to BAs, AWAs (building and assembly instructions), configurator, certificates and technical data sheets
- Continuously up-dated product information
- Software downloads
- Installation instructions
- Information material for your customers,such as catalogues and flyers
- Certificates of conformity and guidelines regarding IEC standards

Proven solutions for switching and isolation.

Eaton has earned a worldwide reputation for reliable, high quality switches and fusegear products – an area we are clear market leaders.

Incorporating the latest technological advances, our switches are the result of a comprehensive ongoing development program and fully complies with the industry's most rigorous standards. This all serves to make Eaton an industry benchmark, with unsurpassed quality and performance guaranteed.

Our extensive product range, together with our lengthy experience and specialist knowledge serves to make Eaton the only source for your panel mounting switch requirements. Eaton switches for panel mounting can be used for any type of load, including motor loads and capacitive loads. They can be applied for:

- All isolating & disconnecting applications such as incoming and outgoing feeders.
- Bus couplers in switchgear and control gear assemblies.
- Safety switches with interlocking facilities.
- Motor emergency switches in motor starter units.
- **Dumeco switch-disconnectors and isolators.**
- **QSA switch-disconnector fuse switches.**
- **K-Line handle and knobs.**
- **Bussmann fuse protection products.**

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Powering Business Worldwide

Switches & disconnectors

QM switch disconnectors

Designed for general & industrial applications, Eaton QM Switch Disconnectors features:

- Safe operation, IP20 terminals
- Snap-on DIN rail mounting
- Compliance to IEC 60947-3
- QM63 have tunnel terminals suitable for 2.5mm - 16mm2 conductor
- QM100 have tunnel terminals suitable for 10mm - 35mm2 conductor

QM version D: base mount multi-pole (switch only)

Current rating	AC-23A kW 415V	Description	Handle type	Shaft X-section mm	Item no.
50A	22kW	QM 63 Load Break 6P, base mtg, Ver D	K2SD	6 x 6	**1319806**
80A	37kW	QM 100 Load Break 6P, base mtg, Ver D	K2SD	6 x 6	**1319814**
50A	22kW	QM 63 Load Break 8P, base mtg, Ver D	K2SD	6 x 6	**1319904**
80A	37kW	QM 100 Load Break 8P, base mtg, Ver D	K2SD	6 x 6	**1319905**

QM version E: base mount changeover 1-0-2 (switch only)

Current rating	AC-23A kW 415V	Description	Handle type	Shaft X-section mm	Item no.
63A	22kW	QM 63 Load Break 3+3P, base mtg, Ver E	K02SD	6 x 6	**1319807**
100A	37kW	QM 100 Load Break 3+3P, base mtg, Ver E	K02SD	6 x 6	**1319815**
63A	22kW	QM 63 Load Break 4+4P, base mtg, Ver E	K02SD	6 x 6	**1319915**
100A	37kW	QM 100 Load Break 4+4P, base mtg, Ver E	K02SD	6 x 6	**1319916**

QM switch accessories

Description	Item no.
Handle, K-Line K1D - Compact type, with 6mm coup, IP65 for Version D switches	**1818031**
Handle, K-Line K2SD - Larger type, with 6mm coup, IP65 for Version D switches	**1818034**
Handle, K-Line K02SD - 3 Position, with 6mm door coup, IP65 for Version E switches	**1818072**
Handle, Direct mount, for Version D & E switches	**1818002**
Extension clamp 6 x 6mm (Required for Version D & E when using K-Line Handles)	**1319833**
Extension shaft 300mm long, 6 x 6mm (Required for version D & E when using K-Line handles)	**1319831**
QM63 Aux. contact 1NO & 1NC, Version D & E	**1319851**
QM100 Aux. contact 1NO & 1NC, Version D & E	**1319853**
Terminal cover 3 Pole QM63	**1319870**
Terminal cover 3 Pole QM100	**1319872**
Terminal cover 4 Pole QM63	**1319871**
Terminal cover 4 Pole QM100	**1319873**
Busbar connection kit, QM63 Version E	**1319969**
Busbar connection kit, QM100 Version E	**1319967**

Typical Ordering Examples (100A Switch Options Shown):
QM100D Type = 1319905 + 1319833 + 1319831 + 1818034
QM100E Type = 1319815 + 1319833 + 1319831 + 1818071

Dumeco panelboard switches

- Fault-make/load-break isolators for fitting in panelboards as main switches
- Provides visible indication of contact position.
- Lockable in the ON & OFF Position
- 4 Pole units available on request

Dumeco panelboard switches

Description	Item no.
Main switch 3 pole 250A - DIN Cutout	**PB250MS3PD**
Main switch 3 pole 400A - DIN Cutout	**PB400MS3PD**
Terminal Cover for 250A/400A Main Switches	**1314735**
Main switch to DIN chassis link kit 250A	**PB250LINK**
Replacement handle with shaft	**4102003**

Dumeco switches & disconnectors

Dumeco switch disconnectors 125-3150A

Designed for general & industrial applications - switchboard industries Eaton Dumeco switch disconnectors feature:

- Safe operation, Visible Contact Separation (160-3150A)
- Add-on Aux contacts, for remote indication
- Shallow design to fit in low depth and compact spaces
- 690V AC, KEMA certified
- Compliance to IEC 60947-3
- Utilisation Categories AC21A, AC22A & AC23A
- Excellent Technical Specifications

NEW 2500A + 3150A MODELS COMING SOON

Dumeco: 3 pole base mount (switch only)

Current rating	AC-23A kW 415V	Rated shortime withstand - Icw	Description	Handle type	Shaft X-section mm	Item no.
125A	30kW	2.5kA - 1 Sec	DMM125 3P+ Solid Neutral Switch	K2SD	6 x 6	**1314203**
160A	90kW	8kA - 0.2 Sec	DMV160 3P Switch	K2SD	6 x 6	**1814178**
160A	90kW	8kA - 0.2 Sec	DMV160 3P Switch, with tunnel terminals	K2SD	6 x 6	**1814175**
250A	147kW	12kA - 0.3 Sec	DMV250 3P Switch	K3KD	10 x 10	**1814408**
400A	180kW	12kA - 0.3 Sec	DMV400 3P Switch	K3KD	10 x 10	**1814411**
630A	375kW*	36kA - 0.3 Sec	DMV630 3P Switch	K5D	14 x 14	**1814442**
1000A	425kW*	36kA - 0.3 Sec	DMV1000 3P Switch	K5D	14 x 14	**1814445**
1250A	750kW	50kA - 1 Sec	DMV1250 3P Switch	K6D	14 x 14	**1814590**
1600A	750kW	50kA - 1 Sec	DMV1600 3P Switch	K6D	14 x 14	**1814595**
2000A	750kW	50kA - 1 Sec	DMV2000 3P Switch	K6D	14 x 14	**1814065**
2500A	-	65kA - 1 Sec	DMV2500 3P Switch complete with shaft and handle kit	K6D	14 x 14	**6093244**
3150A	-	65kA - 1 Sec	DMV3150 3P Switch complete with shaft and handle kit	K6D	14 x 14	**6084848**

Dumeco: 4 pole base mount (switch 0nly)

Current rating	AC-23A kW 415V	Rated shortime withstand - Icw	Description	Handle type	Shaft X-section mm	Item no.
125A	30kW	2.5kA - 1 Sec	DMM125 4P Switch	K2SD	6 x 6	**1314204**
160A	90kW	8kA - 0.2 Sec	DMV160 4P Switch	K2SD	6 x 6	**1814179**
250A	147kW	12kA - 0.3 Sec	DMV250 4P Switch	K3KD	10 x 10	**1814410**
400A	180kW	12kA - 0.3 Sec	DMV400 4P Switch	K3KD	10 x 10	**1814413**
630A	375kW*	36kA - 0.3 Sec	DMV630 4P Switch	K5D	14 x 14	**1814444**
1000A	425kW*	36kA - 0.3 Sec	DMV1000 4P Switch	K5D	14 x 14	**1814447**
1250A	750kW	50kA - 1 Sec	DMV1250 4P Switch	K6D	14 x 14	**1814592**
1600A	750kW	50kA - 1 Sec	DMV1600 4P Switch	K6D	14 x 14	**1814597**
2500A	-	65kA - 1 Sec	DMV2500 4P Switch complete with shaft and handle kit	K6D	14 x 14	**6093242**
3150A	-	65kA - 1 Sec	DMV3150 4P Switch complete with shaft and handle kit	K6D	14 x 14	**6084846**

* Products have an AC-23B kW rating.

Dumeco: handles & shafts

Description	Item no.
Shaft, DMM125, 6x6mm, 172mm long	**1314334**
Shaft, DMV160, 6x6mm, 270mm long	**1314692**
Shaft, DMV250/400, 10x10mm, 245mm long	**1050242**
Shaft, DMV630/1000, 14x14mm, 300mm long	**1050246**
Shaft, DMV1250/1600/2000, 14x14mm, 280mm long	**1050249**
Shaft, DMV2500/3150, 14x14mm, 200mm long, with clamp	**1050257**
Handle, K-Line K2SD, with 6mm coup, IP65 for DMM125/DMV160	**1818034**
Handle, K-Line K3KD, with 10mm coup, IP65 for DMV250/400	**1818069**
Handle, K-Line K5D, with 14mm coup, IP65 for DMV630/1000	**1818058**
Handle, K-line K6D, with 14mm coup, IP65 for DMV1250/1600/2000/2500/3150	**1818064**

Typical Ordering Example (630A 3 pole Switch Option Shown): DMV630 Type = 1814442 + 1050246 + 1818058.

Dumeco switches & disconnectors

Dumeco manual changeover/multi-pole Accessories

Required parts for changeover switches (160A - 1000A):

- 2 Switch Disconnectors
- 1 Changeover driving mechanism with position indication 1-0-2
- 1 Handle operating shaft
- 1 K-line operating handle (Changeover type)

Required parts for changeover switches (1250A - 2000A):

- 2 Switch Disconnectors
- 1 Changeover driving mechanism with position indication 1-0-2
- 2 Handle operating shafts
- 2 K-line operating handles (Changeover type)

Required parts for multi-pole switches:

- 2 Switch disconnectors
- 1 Multipole driving mechanism with position indication I/O
- 1 Handle operating shaft
- 1 K-line operating handle

All mechanisms are supplied with shafts to connect the switches to the mechanism. Shaft is required to join mechanism to handle.

Changeover/multi-pole mechanisms

Description	Item no.
Dumeco changeover mechanism, 1-0-2, DMV160	**1314314**
Dumeco changeover mechanism, 1-0-2, DMV250/400	**1314884**
Dumeco changeover mechanism, 1-0-2, DMV630/1000	**1314682**
Dumeco changeover mechanism, 1-0-2, DMV1250/1600/2000	**1314336**
Dumeco multipole mechanism, DMV160	**1314337**
Dumeco multipole mechanism, DMV250/400A	**1314039**
Dumeco multipole mechanism, DMV630/1000	**1314040**
Shaft, to suit 160A mechanisms	**1314322**
Shaft, to suit 250/400A mechanisms	**1050252**
Shaft, to suit 630/1000A mechanisms	**1050253**
Shaft, to suit 1250/1600/2000A mechanisms	**1050255***
Handle, K-Line K02SD - 3 Position changeover, with 6mm door coup, IP65 for DMV160	**1818072**
Handle, K-Line K03KD - 3 Position changeover, with 10mm door coup, IP65 for DMV250/400	**1818115**
Handle, K-Line K05D - 3 Position changeover, with 14mm door coup, IP65 for DMV630/1000	**1818075**
Handle, K-Line K6D - 2 position changeover, with 14mm door coup, IP65 for DMV1250/1600/2000	**1818077***
Handle, K-Line K2SD - Multipole, with 6mm coup, IP65 for DMV160	**1818034**
Handle, K-Line K3KD - Multipole, with 10mm coup, IP65 for DMV250/400	**1818069**
Handle, K-Line K5D - Multipole, with 14mm coup, IP65 for DMV630/1000	**1818058**

* Two of these items required for each DMV1250/1600/2000 Changeover arrangement.

Typical Ordering Example (400A 3 pole / 400A 3 pole Changeover Arrangement Shown):
DMV400 Type = 2 x 1814411 + 1 x 1314884 + 1 x 1050252 + 1 x 1818115.

QSA switches & disconnectors

QSA switch disconnector fuses - SDFs

Eaton QSA Switch Disconnector Fuses 40-800A. Designed for general & industrial applications.

Switch Fuse Disconnectors features:

- Add-on Aux. contacts, for remote indication
- High withstand strength, 80kA
- Self extinguishing material
- 690V AC, KEMA certified
- Compliance to IEC 60947-3
- Ideal for motor protection, AC23 Rating
- Unique moving contact systems

Q-Line QSA: 3 pole base mount with BS88 fuse posts (switch only)

Frame size	Current rating	AC-23B Amp 415V	AC-23B kW 415V	Fuse type	Description	Handle type	Shaft X-section mm	Item no.
0	40A	40A*	22kW*	A3	QSA40N0 3P Fuse Switch BS	K2SD	6 x 6	**1320200**
0	63A	63A*	30kW*	A3	QSA63N0 3P Fuse Switch BS	K2SD	6 x 6	**1320202**
1	63A	63A	30kW	A3	QSA63N1 3P Fuse Switch BS	K2D	8 x 8	**1318011**
1	100A	100A	55kW	A4	QSA100N1 3P Fuse Switch BS	K2D	8 x 8	**1318016**
1	125A	125A	59kW	B1-B2	QSA125N1 3P Fuse Switch BS	K2D	8 x 8	**1318020**
1	160A	160A	90kW	B1-B2	QSA160N1 3P Fuse Switch BS	K2D	8 x 8	**1318023**
2	200A	200A	110kW	B1-B2	QSA200N 3P Fuse Switch BS	K3KD	10 x 10	**1319065**
2	250A	250A	147kW	B1-B4	QSA250N 3P Fuse Switch BS	K3KD	10 x 10	**1319074**
2	315A	315A	184kW	B1-B4	QSA315N 3P Fuse Switch BS	K3KD	10 x 10	**1319095**
2	400A	400A	220kW	B1-B4	QSA400N 3P Fuse Switch BS	K3KD	10 x 10	**1319103**
3	630A	630A	375kW	C1-C3	QSA630 3P Fuse Switch BS	K4D	12 x 12	**1318544**
3	800A	800A	500kW	C1-C3	QSA800 3P Fuse Switch BS	K4D	12 x 12	**1319175**

Q-Line QSA: 3 pole base mount with DIN fuse posts (switch only)

Frame size	Current rating	AC-23B Amp 415V	AC-23B kW 415V	Fuse type	Description	Handle type	Shaft X-section mm	Item no.
0	40A	40A*	22kW*	000-00	QSA40N0 3P Fuse Switch DIN	K2SD	6 x 6	**1320201**
0	63A	63A*	30kW*	000-00	QSA63N0 3P Fuse Switch DIN	K2SD	6 x 6	**1320203**
1	63A	63A	30kW	000-00	QSA63N1 3P Fuse Switch DIN	K2D	8 x 8	**1318027**
1	125A	125A	59kW	000-00	QSA125N1 3P Fuse Switch DIN	K2D	8 x 8	**1318030**
1	160A	160A	90kW	000-00	QSA160N1 3P Fuse Switch DIN	K2D	8 x 8	**1318033**
2	200A	200A	110kW	1-2	QSA200N 3P Fuse Switch DIN	K3KD	10 x 10	**1318547**
2	250A	250A	147kW	1-2	QSA250N 3P Fuse Switch DIN	K3KD	10 x 10	**1318526**
2	315A	315A	184kW	1-2	QSA315N 3P Fuse Switch DIN	K3KD	10 x 10	**1318548**
2	400A	400A	220kW	1-2	QSA400N 3P Fuse Switch DIN	K3KD	10 x 10	**1318533**
3	630A	630A	375kW	3	QSA630 3P Fuse Switch DIN	K4D	12 x 12	**1318542**

* Products have AC-23A rating.

Q-Line QSA: handles & shafts

Description	Item no.
Shaft, QSA40N0/63N0, 6x6mm, 300mm Long	**1319831**
Shaft, QSA63N1-QSA160N1, 8x8mm, 300mm Long	**1319311**
Shaft, QSA200N-QSA400N, 10x10mm, 300mm Long	**1319319**
Shaft, QSA630/800, 12x12mm, 115mm Long	**1319331***
Shaft, QSA630/800, 12x12mm, 300mm Long	**1319326***
Shaft Link, 12mmx12mm, required for QSA630/800	**1319336***
Handle, K-Line K2SD, with 6mm coup, IP65 for QSA40N0/QSA63N0	**1818034**
Handle, K-Line K2D, with 8mm coup, IP65 for QSA63N1-QSA160N1	**1818037**
Handle, K-Line K3KD, with 10mm coup, IP65 for QSA200N-QSA400N	**1818069**
Handle, K-Line K4D, with 12mm coup, IP65 for QSA630/800	**1818052**

*Frame size 3 switches require 2 shafts and 1 link.
Typical Ordering Example (QSA160 BS88 Switch Option Shown): QSA160 = 1318023 + 1319311 + 1818037.

QSA switches & disconnectors

QSA plug-in switch disconnector fuses

Eaton QSA Switch Disconnector Fuses 63-800A
Designed for general & industrial applications.

Switch Disconnector Fuses features:

- Add-on Aux. contacts, for remote indication
- Plug-in, for easy replacement on site
- Self extinguishing material
- 690V AC, KEMA certified
- Compliance to IEC 60947-3
- Ideal for Motor Isolation AC23 Rating
- Unique moving contact systems

Q-Line QSA: 3 pole plug-in with BS88 fuse posts (switch only)

Frame size	Current rating	AC-23B Amp 415V	AC-23B kW 415V	Fuse type	Description	Handle type	Shaft X-section mm	Item no.
1	63A	63A	30kW	A3	QSA63N1 3P Fuse Switch BS	K2D	8 x 8	**1318046**
1	125A	125A	59kW	B1-B2	QSA125N1 3P Fuse Switch BS	K2D	8 x 8	**1318047**
1	160A	160A	90kW	B1-B2	QSA160N1 3P Fuse Switch BS	K2D	8 x 8	**1318048**
2	250A	250A	147kW	B1-B4	QSA250N 3P Fuse Switch BS	K3KD	10 x 10	**1319084**
2	400A	400A	220kW	B1-B4	QSA400N 3P Fuse Switch BS	K3KD	10 x 10	**1319114**
3	630A	630A	375kW	C1-C3	QSA630 3P Fuse Switch BS	K4D	12 x 12	**4100004**
3	800A	800A	500kW	C1-C3	QSA800 3P Fuse Switch BS	K4D	12 x 12	**4100005**

Q-Line QSA: 3 pole plug-in with DIN fuse posts (switch only)

Frame size	Current rating	AC-23B Amp 415V	AC-23B kW 415V	Fuse type	Description	Handle type	Shaft X-section mm	Item no.
1	160A	160A	90kW	000-00	QSA160N1 3P Fuse Switch DIN	K2D	8 x 8	**1318052**
2	400A	400A	220kW	1-2	QSA400N 3P Fuse Switch DIN	K3KD	10 x 10	**1319113**
3	630A	630A	375kW	3	QSA630 3P Fuse Switch DIN	K4D	12 x 12	**4100006**

Q-Line QSA: handles/shafts

Description	Item no.
Shaft, QSA63N1-QSA160N1, 8x8mm, 300mm Long	**1319311**
Shaft, QSA200N-QSA400N, 10x10mm, 300mm Long	**1319319**
Shaft, QSA630/800, 12x12mm, 115mm Long	**1319331***
Shaft, QSA630/800, 12x12mm, 300mm Long	**1319326***
Shaft Link, 12mmx12mm, required for QSA630/800	**1319336***
Handle, K-Line K2D, with 8mm coup, IP65 for QSA40N1-QSA160N1	**1818037**
Handle, K-Line K3KD, with 10mm coup, IP65 for QSA200N-QSA400N	**1818069**
Handle, K-Line K4D, with 12mm coup, IP65 for QSA630/800	**1818052**

*Frame size 3 switches require 2 shafts and 1 link.
Typical Ordering Example (QSA250 BS88 Switch Option Shown): QSA250 = 1319084 + 1319319 + 1818069.

QA switches & disconnectors

Switch disconnectors type QA

Eaton QA Switch Disconnectors 125A-1000A. Ideal for the switching of 3 phase AC motors.

QA Switch Disconnectors feature:

- Add-on Aux contacts, for remote indication
- Self extinguishing material
- 690V AC, KEMA certified
- Compliance to IEC 60947-3
- Ideal for Motor Duty
- High isolation level

Q-Line QA: 3 pole base mount (switch only)

Frame size	Current rating	AC-23B Amp 415V	AC-23B kW 415V	Rated shortime withstand - Icw	Description	Handle type	Shaft X-section (mm)	Item no.
1	125A	125A	59kW	4kA - 1 Sec	QA125N1 Load Break Switch	K2D	8 x 8	**1318001**
1	160A	160A	90kW	4kA - 1 Sec	QA160N1 Load Break Switch	K2D	8 x 8	**1318005**
1	200A	200A	110kW	4kA - 1 Sec	QA200N1 Load Break Switch	K2D	8 x 8	**1318008**
2	400A	400A	220kW	15kA - 1 Sec	QA400N Load Break Switch	K3KD	10 x 10	**1318504**
2	630A	630A	375kW	15kA - 1 Sec	QA630N Load Break Switch	K3KD	10 x 10	**1318506**
3	1000A	1000A	600kW	50kA - 1 Sec	QA1000 Load Break Switch	K4D	12 x 12	**1319128**

Q-Line QA, QP and QE: handles and shafts

Description	Item no.
Shaft, QA125N1-200N1, 8x8mm, 300mm Long	**1319311**
Shaft, QA400N/630N, 10x10mm, 300mm Long	**1319319**
Shaft, QA1000, 12x12mm, 115mm Long	**1319331***
Shaft, QA1000, 12x12mm, 300mm Long	**1319326***
Shaft Link, 12mmx12mm, required for QA1000	**1319336***
Handle, K-Line K2D, with 8mm coup, IP65 for QA125N1-200N1	**1818037**
Handle, K-Line K3KD, with 10mm coup, IP65 for QA400N/630N	**1818069**
Handle, K-Line K4D, with 12mm coup, IP65 for QA1000	**1818052**

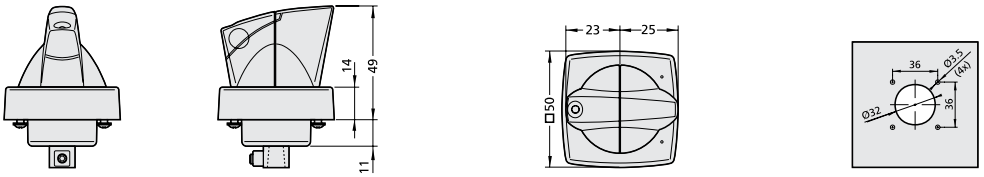
*Frame size 3 switches require 2 shafts and 1 link.
Typical Ordering Example (QA400 Switch Option Shown): QA400 = 1318504 + 1319319 + 1818069.

K-Line handles

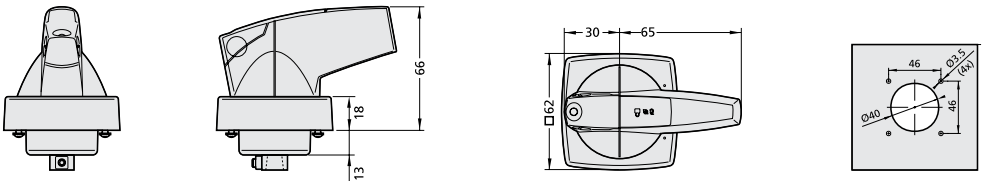
The K-Line handle was designed to enable a uniform handle design to be used with both the Dumeco & Q-Line switch products. The design & range of product variations within the K-Line product range also allows it to be used on other manufactures switch products including circuit breakers to give a uniform appearance to the switchboard. Importantly a higher level of safety is achieved because all switches are operated & locked in identical & familiar fashion.

Features of the K-Line range are:

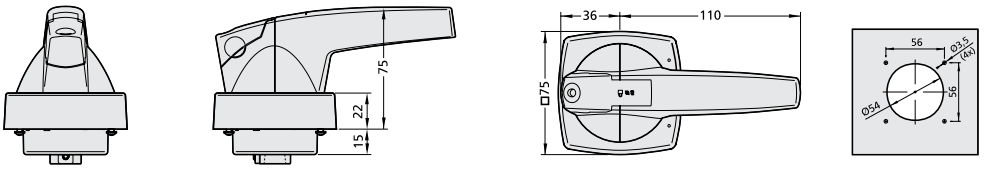
- The K-Line range of product can be fitted to products with a shaft diameter of 6, 8, 10, 12 & 14mm square
- IP65 Ingress protection rating
- Various locking applications e.g. padlock in ON position
- Fixed position of the handle when the door is open



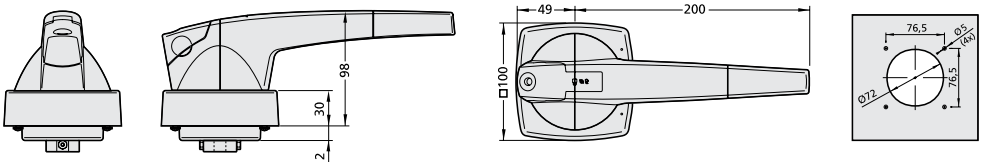
Type K1D - suitable for 6mm square shafts



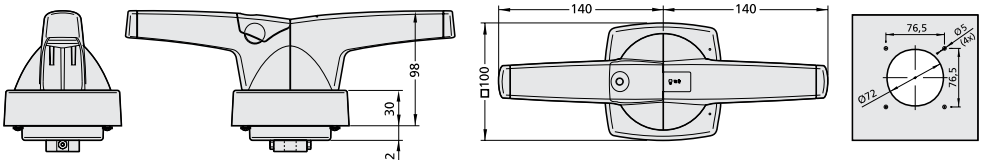
Type K2D & K2SD - versions available for both 6mm + 8mm square shafts



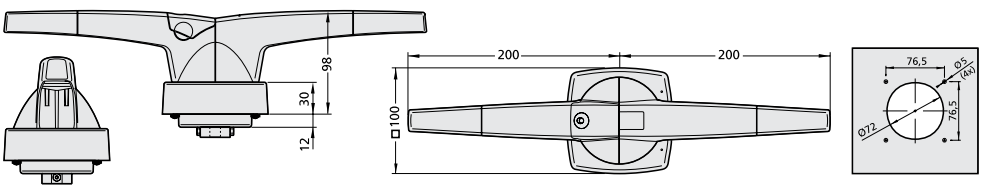
Type K3KD - suitable for 10mm square shafts



Type K4D - suitable for 12mm square shafts



Type K5D - suitable for 14mm square shafts



Type K6D - versions available for both 12mm + 14mm square shafts

Q-line/Dumeco accessories

Auxiliary contacts: Dumeco & Q-Line switches

Description	Max per switch	Pack qty	Item no.
Auxiliary contact to suit DMM125 1NO + 1NC	1	1	**1314300**
Auxiliary contact to suit DMM125 2NO + 2NC	1	1	**1314301**
Auxiliary contact to suit DMV160 1NO + 1 NC	2	1	**1314398**
Auxiliary contact to suit DMV250-DMV2000 1NO + 1 NC	2	1	**1314736**
Auxiliary contact to suit Q-Line switches - Frame Size 0, 1, 2, 1NO + 1NC	2	1	**1319448**
Auxiliary contact to suit Q-Line switches - Frame Size 0, 1, 2, 2NO	2	1	**1319452**

Terminal covers: Dumeco & Q-Line switches

Description	Pack qty	Item no.
Dumeco terminal cover to suit DMM125	1	**1314330**
Dumeco terminal cover to suit DMV160	1	**1314230**
Dumeco terminal cover to suit DMV250/400	1	**1314735**
Dumeco terminal cover to suit DMV630/1000	1	**1314830**
Q-Line 1 Pole, fully shrouded for M6 Connection bolt	1	**1319409**
Q-Line 1 Pole, fully shrouded for M8 Connection bolt	1	**1319411**
Q-Line 1 Pole, fully shrouded for M10 Connection bolt	1	**1319413**
Q-Line 1 Pole, fully shrouded for M12 Connection bolt	1	**1319415**
Q-Line 3 Pole, front terminal protection for Frame Size 0 Switches	1	**1320239**
Q-Line 3 Pole, front terminal protection for Frame Size 1 Switches	1	**1319432**
Q-Line 3 Pole, front terminal protection for Frame Size 2 Switches	1	**1319418**

Switch covers: Q-Line switches

Description	Pack qty	Item no.
Q-Line Fuse Switch front cover, suit QSA40N0/63N0 BS, QSA63N1 BS & QSA100N1 DIN	1	**1320237**
Q-Line Fuse Switch front cover, suit QSA63N1-QSA125N1 DIN	1	**1319435**
Q-Line Fuse Switch front cover, suit QSA160N1 DIN	1	**1318476**
Q-Line Fuse Switch front cover, suit QSA100N1 BS	1	**1319423**
Q-Line Fuse Switch front cover, suit QSA125N1/160N1 BS	1	**1319438**
Q-Line Fuse Switch front cover, suit QSA200N-QSA400N BS & DIN	1	**1319429**
Q-Line Fuse Switch front cover, suit QSA630/800 BS & DIN	1	**1319426**
Q-Line 3 Pole kit, front or rear cover set, suit QA125N1-200N1	3	**1319439**
Q-Line 3 Pole kit, rear cover set, suit QSA63N1-160N1	3	**1319439**
Q-Line 3 Pole kit, front or rear cover set, suit QA400N	3	**1319441**
Q-Line 3 Pole kit, rear cover set, suit QSA200N-400N	3	**1319441**
Q-Line Front cover shroud, QA400N/630N	1	**1319425**
Q-Line Rear cover kit, suit QSA630/800, QA1000	1	**1319417**

Loose busplug units 3+4 pole

Description	Pack Qty	Item no.
Plug assembly 3 Pole 125/160A, Plug onto 60mm dropper busbars	1 x 3P	**1318268**
Plug assembly 3 Pole 250/400A, Plug onto 60mm dropper busbars	1 x 3P	**1319635**
Plug assembly 3 Pole 630/800A, Plug onto 60mm dropper busbars	2 x 3P	**1318902**
Plug assembly 4 Pole 125/160A, Plug onto 60mm dropper busbars	2 x 2P	**1318269**
Plug assembly 4 Pole 630/800A, Plug onto 60mm dropper busbars	4 x 2P	**1318903**

Q-line/Dumeco accessories

Handles & shafts: Q-line & Dumeco switches

Description	Item no.
Direct mount knob handle, K1A, Red, for 6mm shaft	**1818002**
Direct mount knob handle, K2A, Red, for 8mm shaft	**1818006**
Direct mount knob handle, K3A, Red, for 10mm shaft	**1818111**
Direct mount knob handle, K4A, Red, for 12mm shaft	**1818010**
Direct mount knob handle, K5A, Red, for 14mm shaft	**1818012**
Handle, K-Line K2S, Red/yellow, with 6mm coup, IP65 for 6mm shaft	**1818033**
Handle, K-Line K2, Red/yellow, with 8mm coup, IP65 for 8mm shaft	**1818036**
Handle, K-Line K3, Red/yellow, with 10mm coup, IP65 for 10mm shaft	**1818096**
Handle, K-Line K4, Red/yellow, with 12mm coup, IP65 for 12mm shaft	**1818051**
Handle, K-Line K5, Red/yellow, with 14mm coup, IP65 for 14mm shaft	**1818057**
Handle, K-Line K6, Red/yellow, with 14mm coup, IP65 for 14mm shaft	**1818063**
Handle with Cylinder locking, K2S, Grey, with coup for 6mm shaft	**1818040**
Handle with Cylinder locking, K2, Grey, with coup for 8mm shaft	**1818043**
Handle with Cylinder locking, K3, Grey, with coup for 10mm shaft	**1818070**
Handle with Cylinder locking, K4, Grey, with coup for 12mm shaft	**1818055**
Handle with Cylinder locking, K5, Grey, with coup for 14mm shaft	**1818061**
Handle with Cylinder locking, K6, Grey, with coup for 14mm shaft	**1818067**
Padlock ON Conversion kit for K1	**1818103**
Padlock ON Conversion kit for K2	**1818104**
Padlock ON Conversion kit for K3	**1818105**
Padlock ON Conversion kit for K4-K5-K6	**1818106**
Extension shaft 6x6mm, 300mm long, suit QM & Q-Line	**1319831**
Extension shaft 8x8mm, 300mm long, suit Q-Line	**1319311**
Extension shaft 10x10mm, 300mm long, suit Q-Line	**1319319**
Extension shaft 12x12mm, 300mm long, suit Q-Line	**1319326**
Extension shaft 12x12mm, turn 45 degrees, 115mm long, suit Q-Line	**1319331**
Extension clamp for 6x6mm shafts	**1319833**
Extension clamp for 8x8mm shafts	**1319332**
Extension clamp for 10x10mm shafts	**1319334**
Extension clamp for 12x12mm shafts	**1319336**
Extension shaft 6x6mm, 400mm long, suit DMV160	**1314693**
Extension shaft 10x10mm, 400mm long, suit DMV250/400	**1050243**
Extension shaft 14x14mm, 400mm long, suit DMV630/1000	**1050247**
Extension shaft 14x14mm, 400mm long, suit DMV1250/1600/2000	**1050250**
Extension shaft, with clamp, 14x14mm, 200mm long, suit DMS	**1050257**
Shaft transition link, 10x10mm to 12x12mm	**1319398**
Shaft transition link, 12x12mm to 14x14mm	**1318685**
K2 retrofit kit to replace old H1 & H2 handles	**K2ADAPTKIT**
K3 retrofit kit to replace old H3 handle	**K3ADAPTKIT**
K4, K5 & K6 retrofit kit to replace old H4, H5 & H6 handles	**K4ADAPTKIT**

1818111

1818033

1818055

1818104

1319831

1319332

1050247

1319398

K3ADAPTKIT

Q-line/Dumeco accessories

Side termination kits: QA & QSA switches

Description	Pack qty	Item no.
160A - Left side line connection, suit QA125N1/160N1 + QSA63N1/160N1	1	**1319502**
160A - Right side line connection, suit QA125N1/160N1 + QSA63N1/160N1	1	**1319508**
250A - Left side line connection, suit QSA200N/250N	1	**1319509**
250A - Right side line connection, suit QSA200N/250N	1	**1319511**
400A - Left side line connection, suit QA400N + QSA315N/400N	1	**1319513**
400A - Right side line connection, suit QA400N + QSA315N/400N	1	**1319515**

Note: Above products cannot be used with Plug-In type QSA switches.

Switched Neutral

Solid Neutral

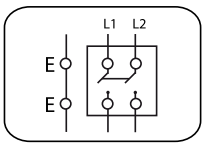
4th pole & neutral link kits: Q-Line switches

Description	Pack qty	Item no.
63 Amp Switched neutral, suit QSA40N0/63N0 + QSA63N1	1	**1319462**
125 Amp Switched neutral, suit QA125N1 + QSA100N1/125N1	1	**1319467**
200 Amp Switched neutral, suit QA160N1/200N1 + QSA160N1	1	**1319474**
200 Amp Switched neutral, suit QSA200N	1	**1319476**
500 Amp Switched neutral, suit QA400N/630N, QSA250N-400N	1	**1319482**
630 Amp Switched neutral, suit QA1000, QSA630/800	1	**1319662**
63 Amp Solid neutral, suit QSA40N0/63N0 + QSA63N1	1	**1319460**
125 Amp Solid neutral, suit QA125N1 + QSA100N1/125N1	1	**1319466**
200 Amp Solid neutral, suit QA160N1/200N1 + QSA160N1	1	**1319472**
200 Amp Solid neutral, suit QSA200N	1	**1319473**
400 Amp Solid neutral, suit QA400N/630N, QSA250N-400N	1	**1319480**
1000 Amp Solid neutral, suit QA1000 + QSA630/800	1	**1319486**

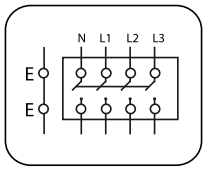
MEMPROOF Enclosed weather/dust proof isolators 20-63A

Can be used for spa & pool pumps, air conditioning, commercial kitchen exhaust fans. MEM Isolators have the following features:

- Suitable for isolating all types of circuit
- Available in 2 & 4 pole versions
- Dust & weatherproof to IP56
- Cable capacity up to 25mm2
- Tested to IEC 947.3 240/415Vac 50/60Hz
- 4 conduit/cable entries
- High Impact Strength
- Padlocking in the OFF position
- Includes double screw earth terminal



Double pole



Triple pole and Switched Neutral

Triple pole & switched neutral

Current rating	kW rating AC-23A	Dimensions (WxHxD)	Item no.
20A	9kW	82x165x81mm	**MP203N**
35A	15kW	82x165x81mm	**MP353N**
45A	21kW	82x165x81mm	**MP453N**
63A	29kW	82x165x81mm	**MP633N**

Double pole

Current rating	kW rating AC-23A	Dimensions (WxHxD)	Item no.
20A	3kW	82x165x81mm	**MP202**
35A	5kW	82x165x81mm	**MP352**

House service fuse chassis

Fuse chassis

Description	Item no.
12 pole HSF chassis 315A, 262 x 252mm	HSF12P
18 pole HSF chassis 315A, 391 x 252mm	HSF18P
24 pole HSF chassis 315A, 520 x 252mm	HSF24P
36 pole HSF chassis 315A, 778 x 252mm	HSF36P

Suitable for front wire fuse-base versions only.

Power industry products

Street lighting fuse-links

Eaton Street Lighting fuse-links for use in single phase of street light cut-outs or similar installations. Eaton street lighting fuse-links feature:

- Fuse-links with low watts loss, cooler running
- ASTA 20 Certified, ISO 9002
- AC Rating, 50kA, 240V to BS88 - 1

Street lighting fuse-links

Description	Item no.
Lighting fuse-link 2A 240Vac 38mm	**LST2**
Lighting fuse-link 4A 240Vac 38mm	**LST4**
Lighting fuse-link 6A 240Vac 38mm	**LST6**
Lighting fuse-link 10A 240Vac 38mm	**LST10**
Lighting fuse-link 16A 240Vac 38mm	**LST16**
Lighting fuse-link 20A 240Vac 38mm	**LST20**
Lighting fuse-link 25A 240Vac 38mm	**LST25**

Eaton Bill street cut-outs

Designed for the thermal & short circuit protection of all street lights. Bill street light cut-outs features:

- High impact strength, improved safety during accidental pole damage
- Easy to connect, reduced installation time
- Made in Australia
- Compact dimensions, fit into small pole designs
- High degree of protection, increased operator safety

Eaton Bill street cut-outs

Description	Item no.
Single circuit + double pole, PVC grommets	**SLA3D1**
Double circuit + double pole, PVC grommets	**SLA3D2**

Photo electric controllers

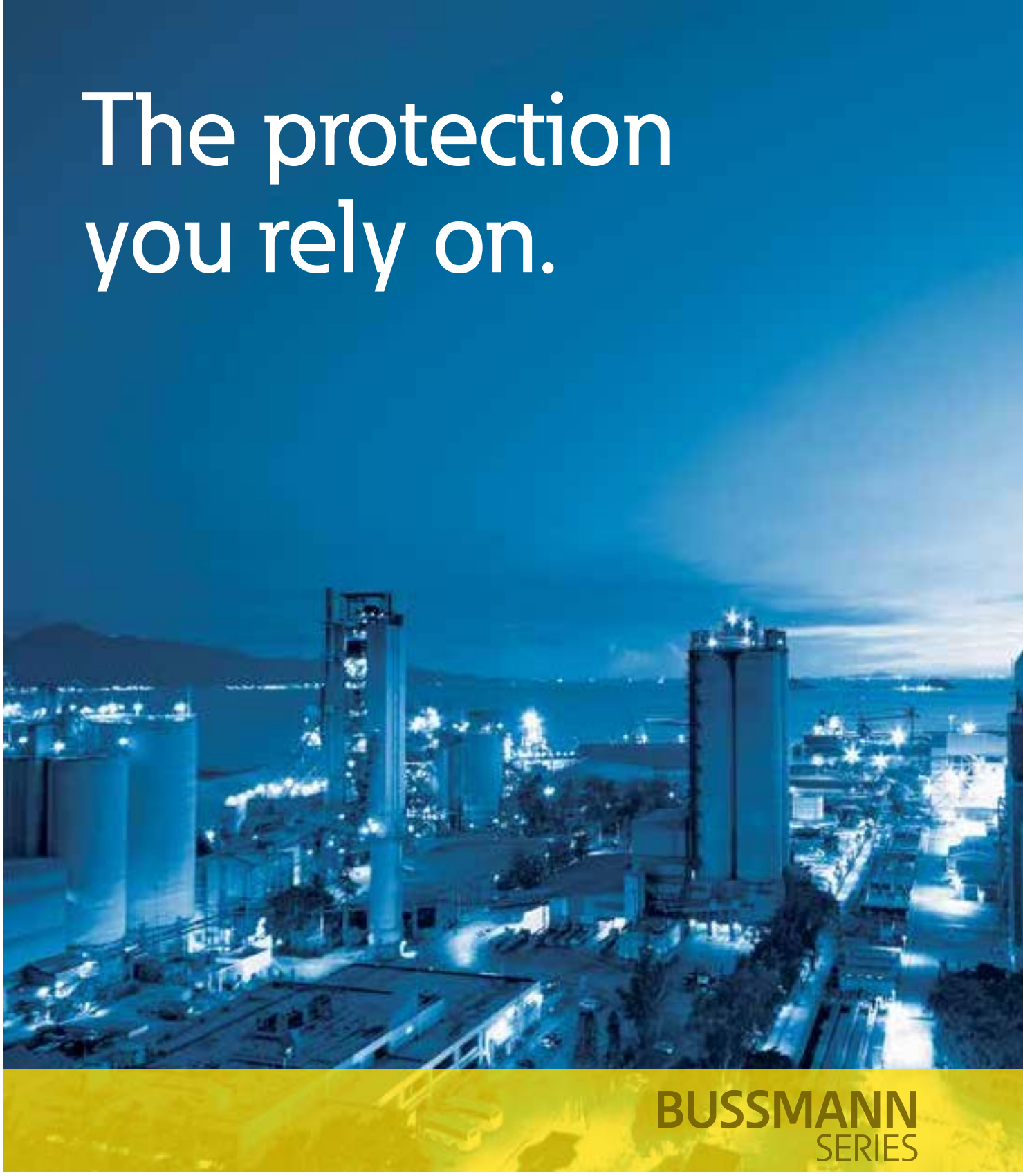
SELC street light controllers

- A highly regulated transformer power supply
- State-of-the-art mirco-controlled circuitry for control, R.A.T. switch sequencing
- Relay Assisted Triac (R.A.T.) sold state switching circuit.
- All SELC PECU's are fitted with mains transient suppressors so as to increase both the life of the unit & lantern
- The hard-wired configuration for high vandalism areas

Photo electric controllers

Description	Item no.
SELC 841 20 LUX 1:2 230Vac PE Cell	**841077**
SELC 841-H hardwire 20LUX 1:2 230Vac PE	**841078**
SELC 841 20A 20LUX 1:2 230Vac PE Cell	**841079**
SELC 844 Wall mount NEMA socket	**844001**
SELC 843 NEMA socket	**843002**
SELC 843 NEMA socket C/W studs	**843003**
SELC 849 1P 20LUX 1:2 230Vac PE Cell	**849031**
SELC 849 2P 20LUX 1:2 230Vac PE Cell	**849032**

The protection you rely on.



BUSSMANN
SERIES

EATON
Powering Business Worldwide

Our Bussmann series products reflect a longstanding tradition of leading fusible circuit protection and electrical safety solutions that protect equipment and enable reliable, efficient power distribution.

With Eaton you get the industry's top innovator in fuse technology and unmatched expertise in circuit breakers.

Our heritage in circuit breaker development coupled with the number one name in fuses means the choice is no longer fuse or breaker. It's fuse and breaker—it's leadership in circuit protection.

Expanding our products.
Expanding our thinking.
Energising your business.

Eaton.com/bussmannseries

Bussmann series BS88 industrial fuse links

Item no.	Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Clip in type.						
NSD2	**NS2**	2	32NNS* SC32*	550	58.5mm	20
NSD4	**NS4**	4				
NSD6	**NS6**	6				
NSD10	**NS10**	10				
NSD16	**NS16**	16				
NSD20	**NS20**	20				
NSD25	**NS25**	25				
NSD32	**NS32**	32				
NSD20M25	**NS20M25**	20M25	32NNS* SC32*	415	58.5mm	20
NSD20M32	**NS20M32**	20M32				
NSD32M36	**NS32M36**	32M36				
NSD32M40	**NS32M40**	32M40				
NSD32M50	**NS32M50**	32M50				
NSD32M63	**NS32M63**	32M63				
SSD2	**SS2**	2		240	47.0mm	20
SSD4	**SS4**	4				
SSD6	**SS6**	6				
SSD10	**SS10**	10				
SSD16	**SS16**	16				
SSD20	**SS20**	20				
SSD25	**SS25**	25				
SSD32	**SS32**	32				
ESD2		2	63ENS* SC63*	550	68.0mm	20
ESD4		4				
ESD6		6				
ESD10		10				
ESD16		16				
ESD20		20				
ESD25		25				
ESD32		32				
ESD40	**ES40**	40				
ESD50	**ES50**	50				
ESD63	**ES63**	63				
ESD63M80	**ES63M80**	63M80	63ENS* SC63*	415	68.0mm	20
ESD63M100		63M100				
Offset bolted tags						
STD2	**LST2**	2		240	35.0mm	20
STD4	**LST4**	4				
STD6	**LST6**	6				
STD10	**LST10**	10				
STD16	**LST16**	16				
STD20	**LST20**	20				
STD25	**LST25**	25				
STD32	**LST32**	32				

NSD32

SSD32

ESD63

STD10

Bussmann series BS88 industrial fuse links

NITD6

AAO32

BAO63

OSD100

DEO200

Item no.	Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Offset bolted tags						
NITD2	**NIT2L**	2	CM-32FC RS20*	550	44.5mm	20
NITD4	**NIT4L**	4				
NITD6	**NIT6L**	6				
NITD10	**NIT10L**	10				
NITD16	**NIT16L**	16				
NITD20	**NIT20L**	20				
NITD25	**NIT25L**	25				
NITD32	**NIT32L**	32				
NITD20M25	**NIT20M25L**	20M25	CM-32FC RS20*	415	44.5mm	20
NITD20M32	**NIT20M32L**	25M32				
NITD32M40	**NIT32M40L**	32M40				
NITD32M50	**NIT32M50L**	32M50				
NITD32M63	**NIT32M63L**	32M63				
AAO2	**TIA2L**	2	CM32F RS32 RS63	550	73.5mm	20
AAO4	**TIA4L**	4				
AAO6	**TIA6L**	6				
AAO10	**TIA10L**	10				
AAO16	**TIA16L**	16				
AAO20	**TIA20L**	20				
AAO25	**TIA25L**	25				
AAO32	**TIA32L**	32				
AAO32M40	**TIA32M40L**	32M40				
AAO32M50	**TIA32M50L**	32M50				
AAO32M63	**TIA32M63L**	32M63				
BAO35	**TIS35L**	35	CM63F RS63	550	73.5mm	20
BAO40	**TIS40L**	40				
BAO50	**TIS50L**	50				
BAO63	**TIS63L**	63				
BAO63M80	**TIS63M80L**	63M80				
BAO63M100	**TIS63M100L**	63M100				
OSD80	**OS80**	80	CM100F	415	73.0mm	20
OSD100	**OS100**	100				
OSD100M125	**OS100M125**	100M125				
OSD100M160		100M160				
CEO32		32	RS100*	550	94.0mm	10
CEO40		40				
CEO50		50				
CEO63		63				
CEO80	**TCP80L**	80				
CEO100	**TCP100L**	100				
CEO100M125	**TCP100M125L**	100M125	RS100*	415	94.0mm	10
CEO100M160	**TCP100M160L**	100M160				
CEO100M200	**TCP100M200L**	100M200				
DEO125	**TFP125L**	125		415	94.0mm	5
DEO160	**TFP160L**	160				
DEO200	**TFP200L**	200				
DEO200M250	**TFP200M250L**	200M250				
DEO200M315	**TFP200M315L**	200M315				

Bussmann series BS88 industrial fuse links

Item no.	Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Centre bolted tags - 2 hole fixing.						
AC2		2				
AC4		4				
AC6		6				
AC10		10				
AC16		16				
AC20		20				
AC25		25		550	97.5mm	20
AC32		32				
AC40		40				
AC50		50				
BC63		63				
BC63M80		63M80				
BC63M100		63M100				
AD2		2				
AD4		4				
AD6		6				
AD10		10				
AD16		16				
AD20		20	RS200*	550	111.5mm	20
AD25		25				
AD32		32				
BD40		40				
BD50		50				
BD63		63				
CD80	**TC80L**	80	RS200*	550	111.0mm	10
CD100	**TC100L**	100				
CD100M125		100M125				
CD100M160		100M160	RS200*	415	111.0mm	10
CD100M160		100M200				
DD125	**TF125L**	125				
DD160	**TF160L**	160				
DD200	**TF200L**	200	RS200*	415	111.0mm	5
DD200M250	**TF200M250L**	200M250				
DD200M315	**TF200M315L**	200M315				
ED250	**TKF250L**	250				
ED315	**TKF315L**	315				
ED355	**TMF355L**	355		415	111mm	1
ED400	**TMF400L**	400				
ED315M400	**TKF315M400L**	315M400				
ED400M500		400M500		550	111mm	1
EFS125		125				
EFS160		160	RS400*	415	133mm	1
EFS200		200				
EFS250	**TKM250L**	250				
Centre bolted tags - 4 hole fixing.						
EFS315	**TKM315L**	315		415	133/ 184mm	1
EF355	**TM355L**	355		415	133/ 184mm	1
EF400	**TM400L**	400				
EF400M500		400M500		550		

AC32

AD32

DD200

ED315

EFS315

Bussmann series BS88 industrial fuse links

FF630

GG710

200N20

NITD6

Item no.	Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Centre bolted tags - 4 hole fixing.						
FF450	**TTM450L**	450		550	133/ 184mm	1
FF500	**TTM500L**	500				
FF560	**TTM560L**	560				
FF630	**TTM630L**	630				
FG450		450		550	133/ 184mm	1
FG500		500				
FG560		560				
FG630		630				
GF710	**TLM710L**	710		550	133/ 184mm	1
GF800	**TLM800L**	800				
GG710		710		550	167/ 231mm	1
GG800		800				
GG1000		1000				
GG1250		1250				
GH710		710		550	149mm	1
GH800		800				
GH1000		1000				
GH1250		1250				
Special tag arrangements - 660Vac / 400Vdc.						
125N20		125		660	92.5mm	1
160N20		160				
200N20		200				
250N20		250				
315N20		315				
355P20		355				
400P20		400				
450R20		450				
500R20		500				
560R20		560				
630R20		630				
710S20		710		550	92.5mm	1
800S20		800				
Offset bolted tags						
	NIT2	2	CM-32FC RS20*	550	44.5mm	20
	NIT4	4				
	NIT6	6				
	NIT10	10				
	NIT16	16				
	NIT20	20				
	NET25	25	CM32FC RS20*	440	44.5mm	20
	NET32	32				
	NIT20M25	20M25	CM-32FC RS20*	415	44.5mm	20
	NIT32M40	32M40				
	NIT32M50	32M50				
	NIT32M63	32M63				

Bussmann series BS88 industrial fuse links

Item no.	Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Offset bolted tags - 660V.						
2H07-660	**TIA2**	2	CM32F RS32*	660	73.5mm	20
4H07-660	**TIA4**	4				
6H07-660	**TIA6**	6				
10H07-660	**TIA10**	10				
16H07-660	**TIA16**	16				
20H07-660	**TIA20**	20				
25H07-660	**TIA25**	25				
32H07-660	**TIA32**	32				
	TIA32M35	32M35				
	TIA32M40	32M40				
	TIA32M50	32M50				
	TIA32M63	32M63				
	TIS35	35	CM63F RS63*	660	73.5mm	20
40K07-660	**TIS40**	40				
50K07-660	**TIS50**	50				
63K07-660	**TIS63**	63				
	TIS63M80	63M80				
	TIS63M100	63M100				
80L14-660	**TCP80**	80	RS100*	660	94mm	20
100L14-660	**TCP100**	100				
	TCP100M125	100M125				
	TCP100M160	100M160				
	TCP100M200	100M200				
125M14-660	**TFP125**	125		550	94mm	10
160M14-660	**TFP160**	160				
200M14-660	**TFP200**	200				
Centre bolted tags - 660V.						
2K08-660	**TB2**	2		660	97.5mm	1
4K08-660	**TB4**	4				
6K08-660	**TB6**	6				
10K08-660	**TB10**	10				
16K08-660	**TB16**	16				
20K08-660	**TB20**	20				
25K08-660	**TB25**	25				
32K08-660	**TB32**	32				
40K08-660	**TB40**	40				
50K08-660	**TB50**	50				
63K08-660	**TB63**	63				

H07-660

K07-660

L14-660

K08-660

Bussmann series BS88 industrial fuse links

L09-660

M09-660

Item no.	Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Centre bolted tags - 660V.						
2K09-660	**TBC2**	2	RS200*	660	111mm	1
4K09-660	**TBC4**	4				
6K09-660	**TBC6**	6				
10K09-660	**TBC10**	10				
16K09-660	**TBC16**	16				
20K09-660	**TBC20**	20				
25K09-660	**TBC25**	25				
32K09-660	**TBC32**	32				
40K09-660	**TBC40**	40				
50K09-660	**TBC50**	50				
63K09-660	**TBC63**	63				
	TBC63M100	63M100				
80L09-660	**TC80**	80	RS200*	660	111mm	20
100L09-660	**TC100**	100				
125M09-660	**TF125**	125		660	111mm	20
160M09-660	**TF160**	160				
200M09-660	**TF200**	200				
	TF200M250	200M250				
	TF200M315	200M315				
250N09-660	**TKF250**	250		660	111mm	1
315N09-660	**TKF315**	315				
	TKF315M355	315M355				
355P09-660	**TMF355**	355		660	111mm	1
400P09-660	**TMF400**	400				
125N11-660		125		660	133mm	1
160N11-660		160				
200N11-660		200				
250N11-660	**TKM250**	250				
315N11-660	**TKM315**	315				
355P11-660	**TM355**	355		660	184 / 133mm	1
400P11-660	**TM400**	400				
450R11-660	**TTM450**	450		550	184 / 133mm	1
500R11-660	**TTM500**	500				
560R11-660	**TTM560**	560				
630R11-660	**TTM630**	630				
450R12-660	**TT450**	450		550	231 / 167mm	1
500R12-660	**TT500**	500				
560R12-660	**TT560**	560				
630R12-660	**TT630**	630				
	TLM670	670		660	184 / 133mm	1
	TLM710	710				
	TLM750	750				
	TLM800	800				

Bussmann series BS88 industrial fuse links

Item no.	Description	Fuse holder	Amps	Volts	Box qty
SAFEloc fuse holders					
32NNSF	Front wired	NS / NSD	32	690	10
32NNSR	Back wired				
32NNSBS	Back stud				
32NNSFBS	Front wired / back stud				
32NNSFWHITE	Front wired, white				
32NNSFBSWHITE	F. Wired / b. Stud, white				
32NNSBSWHITE	Back stud, white				
63ENSF	Front wired	ES / ESD	63	690	10
63ENSR	Back wired				
63ENSBS	Back stud				
63ENSFBS	Front wired / back stud				
63ENSFWHITE	Front wired, white				
63ENSFBSWHITE	Front wired / back stud, white				
63ENSBSWHITE	Back stud, white				
32NNL	Neutral link	32NNS*		690	10
63ENL	Neutral link	63ENS*			
CAMaster fuse holders					
CM32FC	Front wired	NITD	32	690	10
CM32F	Front wired	AAO	32		
CM63F	Front wired	BAO	63		5
CM100F	Front wired	OSD	100		
CM32FCW	Front wired, white	NITD	32	690	10
CM32FW	Front wired, white	AAO	32		
CM63FW	Front wired, white	BAO	63		5
CM100FW	Front wired, white	OSD	100		

SAFEloc

CAMaster

Part no	Description	Fuse holder to suit.	Volts	Box qty
CAMaster accessories.				
32CMLC	Bolted neutral link	CM32FC	690	10
32CML	Bolted neutral link	CM32F		1
63-100CML	Bolted neutral link	CM63F & CM100F		1
32BS	Back stud conversion kits	CM32FC & CM32F	690	10
63/100BS	Back stud conversion kits	CM63F & CM100F		5
32LSCC	Lockable safety carrier	CM32FC	690	3
32LSC	Lockable safety carrier	CM32F		3
63-100LSC	Lockable safety carrier	CM63F & CM100F		3

CAMaster accessories - Studs

Safeclip fuseholder - black

Safeclip fuseholder - white

Red spot fuseholder - black

Red spot fuseholder - white

Bussmann series BS88 industrial fuse links

Item no.	Description	Fuse	Amps	Volts	Box qty
Safeclip fuse holders					
SC20H	Front wired	NS / NSD	20	415	10
SC20P	Back stud				
SC20BH	Busbar connect / front connect				
SC20HWH	Front wired, white				
SC32H-D	Front wired	NS / NSD	32	415	10
SC32PH-D	Front wired / back stud				
SC32BH	Busbar connect / front connect				
SC32P	Back stud				
SC32H-DWH	Front wired, white				
SC32PWH	Back stud, white				
SC32PH-DWH	Front wired / back stud - white				
SC63H-D	Front wired	ES / ESD	63	415	10
SC63BH	Busbar connect / front connect				
SC63P	Back stud				
SC63H-DWH	Back stud, white				
Red spot fuse holders					
RS20H	Front wired	NIT / NITD	20	690	10
RS20BW	Back wired				
RS20P-G	Back stud				
RS20PH-G	Front wired / back stud				
RS20H-WH	Front wired, white				
RS20PG-WH	Back stud, white				
RS32H	Front wired	TIA / AAO	32	690	10
RS32BW	Back wired				
RS32P	Back stud				
RS32PH	Front wired / back stud				
RS32HWH	Front wired, white				
RS32PWH	Back stud, white				
RS63H	Front wired	TIA / TIS AAO / BAO	63	690	5
RS63BW	Back wired				
RS63P	Back stud				
RS63PH	Front wired / back stud				
RS63HWH	Front wired, white				
RS63PWH	Back stud, white				
RS100H	Front wired	TCP / CEO	100	690	5
RS100BW	Back wired				
RS100P	Back stud				
RS100PH	Front wired / back stud				
RS100HWH	Front wired, white				
RS100PWH	Back stud, white				
RS200H	Front wired	TC / TF CD / DD	200	690	1
RS200P	Back stud				
RS200PH	Front wired / back stud				
RS200HWH	Front wired, white				
RS200PWH	Back stud, white				
RS400H	Front wired	TKM /TM EFS / EF	400	690	1
RS400P	Back stud				
RS400PH	Front wired / back stud				

Bussmann series BS88 industrial fuse links

Item no.	Description		Amps	Volts	Box qty
Redspot accessories.					
RS20LOCK	Pad lockable inserts		20	690	3
RS32LOCK	Pad lockable inserts		32		
RS63LOCK	Pad lockable inserts		63		
RS100LOCK	Pad lockable inserts		100		
RS20RED	Red isolation carriers		20	690	5
RS32RED	Red isolation carriers		32		
RS63RED	Red isolation carriers		63		
RS100RED	Red isolation carriers		100		
P110151-10	RS20CLINK	Bolted Neutral Links	20	690	5
P110152-10	RS32CLINK		32		
P110153-10	RS63CLINK		63		
P110154-10	RS100CLINK		100		
AA	Fuse link adapters			690	1
BA	Fuse link adapters				
CA	Fuse link adapters				
GSA-1	Fuse link adapters				
GSA-2	Fuse link adapters				
GSD-2	Fuse link adapters				

RS63LOCK

P110154-10

Part no	Amps	Fuse Holder	Volts	Dim	Box qty
"J" type fuse links.					
20MJ25-6	20		415	46 x 39 mm	5
32MJ25-6	32				
40MJ25-6	40				
63MJ25-6	63				
80MJ25-6	80				
100MJ25-6	100				
125MJ25-6	125				
160MJ25-6	160				
200MJ25-6	200				
250MJ25-6	250				
63MJ26-6	63		415	76mm	5
80MJ26-6	80				
100MJ26-6	100				
125MJ26-6	125				
160MJ26-6	160				
200MJ26-6	200				
250MJ26-6	250				
20MJ30-8	20		415	82mm	5
32MJ30-8	32				
40MJ30-8	40				
50MJ30-8	50				
63MJ30-8	63				
80MJ30-7	80				

MJ30-8

Bussmann series BS88 industrial fuse links

MJ31-7

SJ28

Item no.	Amps	Fuse holder	Volts	Dim	Box qty
"J" type fuse links.					
100MJ30-7	100		415	82mm	5
125MJ30-7	125				
160MJ30-7	160				
200MJ30-7	200				
250MJ30-7	250				
315MJ30-7	315				
355PJ30-7	355				
400PJ30-7	400				
20MJ31-8	20		415	92mm	5
25MJ31-8	25				
32MJ31-8	32				
40MJ31-8	40				
50MJ31-8	50				
63MJ31-8	63				
80MJ31-7	80				
100MJ31-7	100				
125MJ31-7	125				
160MJ31-7	160				
200MJ31-7	200				
250MJ31-7	250				
315MJ31-7	315				
355PJ31-7	355				
400PJ31-7	400				
450RJ31-7	450		415	92mm	1
500RJ31-7	500				
560SJ31-6	560				
630SJ31-6	630				
800SJ28	800				

100KR85

80LR85

Part no	Amps	Fuse holder	Volts	Dim	Box qty
House service fuse links.					
5KR85	5	HSB22*	415	22 X 57 mm	20
10KR85	10				
15KR85	15				
20KR85	20				
25KR85	25				
30KR85	30				
40KR85	40				
45KR85	45				
50KR85	50				
60KR85	60				
80KR85	80				
100KR85	100				
30LR85	30	HSB30*	415	30 X 57 mm	20
40LR85	40				
50LR85	50				
60LR85	60				
80LR85	80				
100LR85	100				

Bussmann series BS88 industrial fuse links

Item no.	Description	Amps	Fuse	Volts	Box qty
House service fuse holders.					
HSB30BWI	Front wire	100	LR85	415	10
HSB30FWI	Back wire				
HSB30BWCLI	Front wire, clear				
HSB30FWCLI	Back wire, clear				
HSB22BW	Front wire	100	KR85	415	10
HSB22FW	Back wire				
HSB22BWCL	Front wire, clear				
HSB22FWCL	Back wire, clear				
HSB22BWCL-Q*	Front wire, clear	125		415	10
HSB22FWCL-Q*	Back wire, clear				
Complete with link and fixing screws - Queensland only					
HSB22BW-V	Back wired	100	KR85	415	10
Complete with two-hole fixing - Victoria only					

House service fuse holder - clear

House service fuse holder - black

Part no	Amps	Volts	Dim	Box qty
Consumer fuse links.				
C180-1A	1	250	6.3 X 25 mm	10
C180-2A	2			
C180-3A	3			
C180-5A	5			
C180-7A	7			
C180-10A	10			
C180-13A	13			
SMD2	2	415	12.7 x 29 mm	10
SMD4	4			
SMD6	6			
SMD8	8			
SMD10	10			
SMD16	16			
SMD20	20			
SMD25	25			
SMD32	32			
C55	5	415	6.3 x 25mm	20
C1515	15	415	10.3 x 26mm	
C1520	20	415		
C3030	30	415	12.7 x 29mm	
C4545	45	415	16.7 x 35mm	

C180-5A

C1520

Bussmann series BS88 industrial fuse links

059-0144

059-0114

059-0148

059-0123

Item no.	Description	Amps	Volts	Dim	Box qty
Joint service / nato fuse links					
059-0107	Ferrule	0.25	440	6.3 x 32mm	25
059-0108	Ferrule	0.5			
059-0109	Ferrule	1			
059-0110	Ferrule	2			
059-0111	Ferrule	3			
059-0112	Ferrule	5			
059-0113	Ferrule	7			
011-9925	Ferrule	10			
011-9926	Ferrule	15			
059-0140	Ferrule	0.5	440	12 x 33.6 mm	25
059-0141	Ferrule	1			
059-0142	Ferrule	2			
059-0143	Ferrule	3			
059-0144	Ferrule	5			
059-0145	Ferrule	7			
059-0146	Ferrule	10			
059-0147	Ferrule	15			
011-9483	Ferrule	20			
059-0114	Offset bolted tag	0.5	440	Tag 45mm Fix Ctr	25
059-0115	Offset bolted tag	1			
059-0116	Offset bolted tag	2			
059-0117	Offset bolted tag	3			
059-0118	Offset bolted tag	5			
059-0119	Offset bolted tag	7			
059-0120	Offset bolted tag	10			
059-0121	Offset bolted tag	15			
011-9679	Offset bolted tag	20			
012-0140	Offset bolted tag	30			
059-0148	Ferrule	10	440	16.7 X 38 mm	25
059-0149	Ferrule	15			
059-0150	Ferrule	20			
059-0151	Ferrule	30			
059-0122	Offset bolted tag	10	440	Tag 56mm Fix Ctr	25
059-0123	Offset bolted tag	15			
059-0124	Offset bolted tag	20			
059-0125	Offset bolted tag	30			
012-0067	Offset bolted tag	40			
011-9127	Offset bolted tag	50			
012-0141	Offset bolted tag	60			

Bussmann series mining & traction fuses & fuse holders - 1200V

Item no.	Item no.	Amps		Volts	Fix ctrs	Box qty
Mining / traction fuse links - 1200V.						
1HD36		1		1200 Vac 750 Vdc	122 mm	10
2HD36	TAC2	2				
4HD36	TAC4	4				
6HD36	TAC6	6				
10HD36	TAC10	10				
15HD36	TAC16	15				
20HD36	TAC20	20				
25HD36	TAC25	25				
30HD36	TAC32	30				
35KC36	TSC35	35		1200 Vac 750 Vdc	122 mm	10
40KC36		40				
50KC36	TSC50	50				
60KC36	TSC63	60				
NBC-80	TFC80	80		1200 Vac 1000 Vdc	168 mm	1
NBC-100	TFC100	100				
NBC-125	TFC125	125				
NBC-150	TFC150	150				
NBC-200	TFC200	200				
RSL63H	Front wired	63	50mm	1200 Vac 750 Vdc		1
RSL63P	F-wired / b-stud					
RSL63PH	Back stud					

HD36

RSL63H

Bussmann series DIN industrial fuses & fuse holders

C08G

C10G

C14G

C22M

Item no.	Amps	Type	Fuse holder	Volts	Dim	Box qty
Cylindrical fuses.						
C08G (A)	2, 4, 6, 10, 16, 20, 25, 32	gG		400	8.5 X 31mm	10
C08M(A)	2, 4, 6, 10, 16, 20, 25, 33	aM				
C10G (A)	0.5, 1, 2, 4, 6, 8, 10, 16, 20, 25, 32	gG	CHM-1DU	500	10 X 38mm	10
C10M(A)	0.5, 1, 2, 4, 6, 8, 10, 16, 20, 25, 33	aM				
C14G (A)	0.5, 1, 2, 4, 6, 8, 10, 16, 20, 25, 32, 40, 50	gG	CH141B	690	14 X 51mm	10
C14GM(A)	0.5, 1, 2, 4, 6, 8, 10, 16, 20, 25, 32, 40, 51	aM				
C22G (A)	0.5, 1, 2, 4, 6, 8, 10, 16, 20, 25, 32, 40, 50, 63, 80, 100	gG	CH221B	690	22 X 51mm	10
C22M(A)	0.5, 1, 2, 4, 6, 8, 10, 16, 20, 25, 32, 40, 50, 63, 80, 100	aM				

CHM1DU

Item no.	Amps	Fuse size	Volts	Box qty
Cylindrical fuse holders.				
CHM1DU	32	10 x 38mm	690	12
CH141B	50	14 x 51mm	690	8
CH221B	125	22 x 58mm	690	6
CHCC1DU	32	10 x 38mm Rejection	690	12
AL-D	Multi pole fuseholder connectors - 10 x 38		Pack	12
CH14-HP	Multi pole fuseholder connectors - 14 x 51		Pack	12

CCP - compact circuit protector

Item no.	Suits fuse links	Amps	Volts	Poles	Dox qty
CCP - compact circuit protector.					
CCP-1-30CC	LP-CC, KTK-R, FNQ-R	30	600 Vac	1	12
CCP-3-30CC				3	
CCP-1-30M	KTK, FNQ			1	8
CCP-3-30M	C10G, C10M			3	
CCP-1-DCM	PVM		80Vdc	1	
CCP-PLC-IND					
CCP-AUX					

Bussmann series DIN industrial fuses & fuse holders

Item no.	Type			Amps	Volts	Size	Box qty
DIN industrial fuse links - 500V - gG.							
10NHG000B	gG/gL (Standard)		SD00-D TD00-D	10	500	000	3
16NHG000B				16			
20NHG000B				20			
25NHG000B				25			
32NHG000B				32			
40NHG000B				40			
50NHG000B				50			
63NHG000B				63			
80NHG000B				80			
100NHG000B				100			
125NHG00B	gG/gL (Standard)		SD00-D TD00-D	125	500	00	3
160NHG00B				160			
10NHG01B	gG/gL (Standard)		SD1-D TD1-D	10	500	1	3
16NHG01B				16			
20NHG01B				20			
25NHG01B				25			
32NHG01B				32			
40NHG01B				40			
50NHG01B				50			
63NHG01B				63			
80NHG01B				80			
100NHG01B				100			
125NHG01B				125			
160NHG01B				160			
200NHG1B				200			
224NHG1B				224			
250NHG1B				250			
50NHG02B	gG/gL (Standard)		SD2-D TD2-D	50	500	2	3
63NHG02B				63			
80NHG02B				80			
100NHG02B				100			
125NHG02B				125			
160NHG02B				160			
200NHG02B				200			
224NHG02B				224			
250NHG02B				250			
315NHG2B				315			
355NHG2B				355			
400NHG2B				400			
250NHG03B	gG/gL (Standard)		SD3-D TD3-D	250	500	3	3
315NHG03B				315			
355NHG03B				355			
400NHG03B				400			
500NHG3B				500			
630NHG3B				630			

NHG000B

NHG01B

NHG02B

NHG03B

Bussmann series DIN industrial fuses & fuse holders

NHG000B-690

NHG1B-690

6NHM000B-690

Item no.	Type			Amps	Volts	Size	Box qty
DIN industrial fuse links - 690V - gG.							
10NHG000B-690	gG/gL (Standard)		SD00-D TD00-D	10	690	000	3
16NHG000B-690				16			
20NHG000B-690				20			
25NHG000B-690				25			
32NHG000B-690				32			
40NHG000B-690				40			
50NHG00B-690				50			
63NHG00B-690	gG/gL (Standard)		SD00-D TD00-D	63	690	00	3
80NHG00B-690				80			
100NHG00B-690				100			
50NHG1B-690	gG/gL (Standard)		SD1-D TD1-D	50	690	1	3
63NHG1B-690				63			
80NHG1B-690				80			
100NHG1B-690				100			
125NHG1B-690				125			
160NHG1B-690				160			
63NHG2B-690	gG/gL (Standard)		SD2-D TD2-D	63	690	2	3
80NHG2B-690				80			
100NHG2B-690				100			
125NHG2B-690				125			
160NHG2B-690				160			
200NHG2B-690				200			
224NHG2B-690				224			
250NHG2B-690				250			
315NHG2B-690				315			
250NHG3B-690	gG/gL (Standard)		SD3-D TD3-D	250	690	3	3
315NHG3B-690				315			
355NHG3B-690				355			
400NHG3B-690				400			
500NHG3B-690				500			
DIN industrial fuse links - 690V - aM - motor start.							
6NHM000B-690	aM (Motor start)		SD00-D TD00-D	6	690	000	3
10NHM000B-690				10			
16NHM000B-690				16			
20NHM000B-690				20			
25NHM000B-690				25			
32NHM000B-690				32			
40NHM000B-690				40			
50NHM00B-690				50			
63NHM00B-690	aM (Motor start)		SD00-D TD00-D	63	690	00	3
80NHM00B-690				80			
100NHM00B-690				100			
50NHM1B-690	aM (Motor start)		SD1-D TD1-D	50	690	1	3
63NHM1B-690				63			
80NHM1B-690				80			
100NHM1B-690				100			
125NHM1B-690				125			
160NHM1B-690				160			

Bussmann series DIN industrial fuses & fuse holders

Item no.	Type			Amps	Volts	Size	Box qty
DIN industrial fuse links - 690V - aM - motor start.							
125NHM2B-690	aM (Motor start)		SD2-D TD2-D	125	690	2	3
160NHM2B-690				160			
200NHM2B-690				200			
224NHM2B-690				224			
250NHM2B-690				250			
315NHM2B-690				315			
355NHM2B-690							
250NHM3B-690	aM (Motor start)		SD3-D TD3-D	250	690	3	3
315NHM3B-690				315			
355NHM3B-690				355			
400NHM3B-690				400			
500NHM3B-690				500			

NHM2B-690

Part no	Description	Poles	Amps	Volts	Size	Box qty
Fuse holders to suit DIN industrial fuse links						
SD00-D	Single pole base		160	690	00	1
SD1-D			250		1	
SD2-D			400		2	
SD3-D			630		3	
TD00-D	Triple pole base		160	690	00	1
TD1-D			250		1	
TD2-D			400		2	
TD3-D			630		3	
FC00	Fuse cover to suit '00'				00	1
FC01	Fuse cover to suit '1'				1	
FC1-2	Fuse cover to suit '2'				2	
FC3	Fuse cover to suit '3'				3	
CS00	Terminal cover '00'				00	1
CS1	Terminal cover '1'				1	
CS2	Terminal cover '2'				2	
CS3	Terminal cover '3'				3	
BC00	Connector "00"				00	1
BC1-2	Connector"1 & 2"				1 & 2	1
BC3	Connector "3"				3	1
TD00-IP20	Triple pole protect kit "00"				00	1
TD1-IP20	Triple pole protect kit "1"				1	1
TD2-IP20	Triple pole protect kit "2"				2	1
TD3-IP20	Triple pole protect kit "3"				3	1
SDL00	Neutral link "00"				00	1
SDL1	Neutral link "1"				1	1
SDL2	Neutral link "2"				2	1
SDL3	Neutral link "3"				3	1
BVL50	Micro switch					1
FEH	Extraction handle					1
BFH00-3A-F	Horizontal disconnect		3 160	690	00	
BFH1-3A-F			3 250		1	
BFH2-3A-F			3 400		2	
BFH3-3A-F			3 630		3	

TD00-D

TD00-IP20

BFH00-3A-F

NZ01

Bussmann series DIN industrial fuses & fuse holders

Item no.	Description	Body dim	Amps	Volts	Size	Box qty
Neozed fuse links.						
2NZ01		36 X 11mm	2	440	D01	5
4NZ01			4			
6NZ01			6			
10NZ01			10			
16NZ01			16			
20NZ02		36 X 15mm	20	440	D02	5
25NZ02			25			
35NZ02			35			
50NZ02			50			
63NZ02			63			
80NZ03		43 X 22.5mm	80	440	D03	5
100NZ03			100			
Neozed fuse links - ultra rapid.						
2NZ01R		36 X 11mm	2	440	D01	5
4NZ01R			4			
6NZ01R			6			
10NZ01R			10			
16NZ01R			16			
20NZ02R		36 X 15mm	20	440	D02	5
25NZ02R			25			
35NZ02R			35			
50NZ02R			50			
63NZ02R			63			

16D27

Item no.	Description	Body dim	Amps	Volts	Size	Box qty
Diazed fuse links - standard.						
2D16		50 x 13mm	2	500	D1	5
4D16			4			
6D16			6			
10D16			10			
16D16			16			
20D16			20			
25D16			25			
2D27		50 x 21.5mm	2	500	D11	5
4D27			4			
6D27			6			
10D27			10			
16D27			16			
20D27			20			
25D27			25			
35D33		50 x 27mm	35	500	D111	5
50D33			50			
63D33			63			
80D125		50 x 33mm	80	500	D1V	1
100D125			100			
125D200		50 x 46mm	125	500	DV	1
160D200			160			
200D200			200			

Bussmann series DIN industrial fuses & fuse holders

Item no.	Description	Body dim	Amps	Volts	Size	Box qty
Diazed fuse links - quick.						
2D16Q		50 x 13mm	2	500	D1	5
4D16Q			4			
6D16Q			6			
10D16Q			10			
16D16Q			16			
20D16Q			20			
25D16Q			25			
2D27Q		50 x 21.5mm	2	500	D11	5
4D27Q			4			
6D27Q			6			
10D27Q			10			
16D27Q			16			
20D27Q			20			
25D27Q			25			
35D33Q		50 x 27mm	35	500	D111	5
50D33Q			50			
63D33Q			63			
Diazed fuse links - ultra rapid.						
2D16R		50 x 13mm	2	500	D1	5
4D16R			4			
6D16R			6			
10D16R			10			
16D16R			16			
20D16R			20			
25D16R			25			
2D27R		50 x 21.5mm	2	500	D11	5
4D27R			4			
6D27R			6			
10D27R			10			
16D27R			16			
20D27R			20			
25D27R			25			
35D33R		50 x 27mm	35	500	D111	5
50D33R			50			
63D33R			63			

6D16Q

25D16R

Fuse bases & gauge rings are available, please contact customer sevice - 02 8787 2730.

FWA-5A10F

FWA-45A21F

FWX-15A14F

FWH-.500A6F

Bussmann series high speed fuse links.

Item no.	Description	Body dim	Amps	Volts	I²T	Box qty
High speed fuse links - ferrule type.						
FWA-5A10F		10 x 38mm	5	150 Vac / Vdc	8	10
FWA-10A10F			10		16	
FWA-15A10F			15		55	
FWA-20A10F			20		130	
FWA-25A10F			25		220	
FWA-30A10F			30		400	
FWA-35A21F		21 x 51mm	35	150 Vac / Vdc	800	10
FWA-40A21F			40		1000	
FWA-45A21F			45		1300	
FWA-50A21F			50		1600	
FWA-60A21F			60		2400	
FWX-1A14F		14 x 51mm	1	250 Vac / Vdc	0.4	10
FWX-2A14F			2		0.1	
FWX-3A14F			3		0.26	
FWX-4A14F			4		0.23	
FWX-5A14F			5		13	
FWX-10A14F			10		24	
FWX-15A14F			15		83	
FWX-20A14F			20		200	
FWX-25A14F			25		300	
FWX-30A14F			30		500	
FWX-50A14F			50		1800	
FWH-.250A6F		6.3 x 32mm	0.25	500 Vac	0.05	10
FWH-.500A6F			0.5		0.25	
FWH-001A6F			1		2	
FWH-002A6F			2		3.5	
FWH-3.15A6F			3.15		7.7	
FWH-005A6F			5		40	
FWH-6.30A6F			6.3		90	
FWH-007A6F			7		125	
FWH-010A6F			10		51	
FWH-12.5A6F			12.5		60	
FWH-015A6F			15		146	
FWH-016A6F			16		177	
FWH-020A6F			20		259	
FWH-025A6F			25		345	
FWH-030A6F			30		430	
FWH-1A14F		14 x 51mm	1	500 Vac/ Vdc	0.04	10
FWH-2A14F			2		0.1	
FWH-3A14F			3		0.23	
FWH-4A14F			4		0.23	
FWH-5A14F			5		6.4	
FWH-6A14F			6		6.4	
FWH-10A14F			10		13	
FWH-12A14F			12		-	
FWH-15A14F			15		40	
FWH-20A14F			20		105	
FWH-25A14F			25		191	
FWH-30A14F			30		232	

Bussmann series high speed fuse links.

Item no.	Description	Body dim	Amps	Volts	I²T	Box qty
High speed fuse links - ferrule type.						
FWC-6A10F		10 x 38mm	6	600 Vac / Vdc	30	10
FWC-8A10F			8		50	
FWC-10A10F			10		70	
FWC-12A10F			12		120	
FWC-16A10F			16		150	
FWC-20A10F			20		260	
FWC-25A10F			25		390	
FWC-30A10F			32		600	
FWP-1A14F		14 x 51	1	700 Vac / Vdc	0.41	10
FWP-2A14F			2		0.11	
FWP-2.5A14F			2.5		-	
FWP-3A14F			3		0.26	
FWP-4A14F			4		0.23	
FWP-5A14F			5		11	
FWP-10A14F			10		22	
FWP-15A14F			15		75	
FWP-20A14F			20		180	
FWP-25A14F			25		320	
FWP-30A14F			30		450	
FWP-32A14F			32		600	
FWP-40A14F			40		750	
FWP-50A14F			50		1800	
FWP-20A22F		22 x 58	20	700 Vac / Vdc	260	
FWP-25A22F			25		410	
FWP-32A22F			32		605	
FWP-40A22F			40		750	
FWP-50A22F			50		1600	
FWP-63A22F			63		3080	
FWP-80A22F			80		6600	
FWP-100A22F			100		12500	
FWP-10A14FI	With indicator	14 x 51	10	700 Vac / Vdc	22	10
FWP-15A14FI			15		75	
FWP-20A14FI			20		180	
FWP-25A14FI			25		320	
FWP-30A14FI			30		450	
FWP-32A14FI			32		600	
FWP-40A14FI			40		750	
FWP-50A14FI			50		1800	
FWP-20A22FI	With indicator	22 x 58	20	700 Vac / Vdc	260	10
FWP-25A22FI			25		410	
FWP-32A22FI			32		605	
FWP-40A22FI			40		750	
FWP-50A22FI			50		1600	
FWP-63A22FI			63		3080	
FWP-80A22FI			80		6600	
FWP-100A22FI			100		12500	
FWJ-20A14F		14 x 67		1000Vac / 800Vdc		10
FWJ-25A14F						
FWJ-30A14F						

FWC-6A10F

FWP-1A14F

FWP-25A22F

FWJ-25A14F

Bussmann series high speed fuse links.

FWS-6A20F

FWS-12A20FI

Item no.	Description	Body dim	Amps	Volts	I²T	Box qty
High speed fuse links - ferrule type.						
FWS-2A20F		20 x 127mm	2	2000Vac 1000Vdc	2.4	10
FWS-6A20F			6		81	
FWS-8A20F			8	1500Vac 1000Vdc	192	
FWS-10A20F			10		277	
FWS-12A20F			12		380	
FWS-15A20F			15		500	
FWL-20A20F			20	1250Vac 1000Vdc	1550	
FWL-25A20F			25		2760	
FWL-30A20F			30		4300	
FWS-2A20FI	With indicator	20 x 127mm	2	2000Vac 1000Vdc	2.4	10
FWS-6A20FI			6		81	
FWS-8A20FI			8	1500Vac 1000Vdc	192	
FWS-10A20FI			10		277	
FWS-12A20FI			12		380	
FWS-15A20FI			15		500	
FWL-20A20FI			20	1250Vac 1000Vdc	1550	
FWL-25A20FI			25		2760	
FWL-30A20FI			30		4300	

10LTC

100LET

400LMMT

Item no.	Description	Fix ctrs	Amps	Volts	I²T	Box qty
High speed fuse links - British standard.						
6LCT	GSA5	38mm	6	240Vac 150Vdc	9	10
10LCT	GSA10		10		22	
12LCT			12		32	
16LCT	GSA15		16		100	
20LCT	GSA20		20		160	
25LET	GSA25	42mm	25	240Vac 150Vdc	250	10
32LET			32		450	
35LET	GSA35		35		600	
50LET	GSA50		50		1400	
63LET			63		2200	
80LET	GSA75		80		3800	
100LET	GSA100		100		7500	
125LET			125		7500	
160LET			160		16000	
180LET			180		29000	
160LMT	GSA150	59mm	160	240Vac 150Vdc	16000	1
200LMT	GSA200		200		20000	
250LMT	GSA50		250		40000	
315LMT	GSA300		315		75000	
355LMT	GSA350		355		100000	
400LMT	GSA400		400		160000	
450LMT			450		220000	
400LMMT		59mm	400	240Vac 150Vdc	80000	1
500LMMT	GSA500		500		170000	
630LMMT	GSA630		630		300000	
710LMMT			710		460000	
800LMMT			800		600000	
900LMMT			900		800000	

Bussmann series high speed fuse links.

Item no.	Description	Fix ctrs	Amps	Volts	I²T	Box qty
High speed fuse links - British standard.						
6CT	GSB5	64mm	6	690Vac 500Vdc	12	20
10CT	GSB10		10		48	
12CT			12		65	
16CT	GSB15		16		110	
20CT	GSB20		20		220	
25ET	GSB25	64mm	25	690Vac 500Vdc	250	10
32ET	GSGB30		32		350	
35ET	GSGB35		35		500	
40ET	GSGB40		40		900	
45ET	GSB45		45		1100	
56ET	GSGB55		56		1500	
63ET	GSGB63		63		2000	
80ET	GSGB80		80		4000	
35FE	GSGB35	64mm	35	690Vac 500Vdc	200	10
40FE	GSGB40		40		300	
45FE	GSGB45		45		450	
50FE	GSGB50		50		600	
63FE	GSGB55		63		750	
71FE			71		950	
80FE	GSGB80		80		1500	
90FE	GSGB85		90		2100	
100FE			100		2800	
75EET	GSGB75	70mm	75	690Vac 500Vdc		5
90EET	GSGB85		90		4500	
110EET	GSGB110		110		6500	
140EET	GSGB150		140		12000	
160EET	GSG160		160		17000	
100FEE		70mm	100	690Vac 500Vdc	2400	5
120FEE	GSGB125		120		3100	
140FEE	GSGB125		140		3800	
160FEE	GSGB160		160		5700	
180FEE			180		8400	
200FEE			200		11400	
180FM	GSGB170	85mm	180	690Vac 500Vdc	13500	1
200FM	GSGB200		200		18500	
225FM	GSGB225		225		26500	
250FM	GSGB250		250		37500	
280FM			280		55000	
315FM	GSGB315		315		77000	
350FM	GSGB325		350		105000	
400FMM	GSGB400	85mm	400	690Vac 500Vdc	72500	1
450FMM			450		105000	
500FMM	GSGB500		500		150000	
550FMM			550		215000	
630FMM			630		310000	
700FMM			700		420000	

20CT

35ET

90EET

180FM

400FMM

200MT

315MMT

FWA-400B

Bussmann series high speed fuse links.

Item no.	Description	Fix ctrs	Amps	Volts	I²T	Box qty
High speed fuse links - British standard.						
335MT	GSGB150	85mm	160	690Vac 350Vdc	25000	
180MT			180		38000	
200MT	GSGB200		200		58000	
250MT	GSGB250		250		110000	
280MT			280		150000	
315MT			315		180000	
355MT			355		200000	
700MMT		85mm	180	690Vac 350Vdc	18000	
200MMT			200		23000	
250MMT			250		40000	
280MMT			280		70000	
315MMT			315		91000	
355MMT			355		140000	
400MMT	GSGB400		400		220000	
450MMT	GSGB450		450		320000	
500MMT	GSGB500		500		450000	
550MMT			550		640000	
630MMT			630		720000	
700MMT			700		850000	

High speed fuse links - British standard accessories.					
MAI	Microswitch and Adaptor		250		1
MC-250	Trip Indicator Fuse Link and clips to suit LMT LMMT				
MC-600	Trip Indicator Fuse Link and clips to suit FM FMM				
MCLIP	Clips to suit FM FMM LMT LMMT				
TI250	Trip Indicator Fuse		250		1
TI500	Trip Indicator Fuse		500		
TI600	Trip Indicator Fuse		600		
TI700	Trip Indicator Fuse		700		
TI1100	Trip Indicator Fuse		1100		
TI2000	Trip Indicator Fuse		1200		
TI1500	Trip Indicator Fuse		1500		
TI2500	Trip Indicator Fuse		2500		
LSCR1-K	General Purpose Fuse Blocks		400	1000	2
LSCR2-K			800		

Item no.	Description		Fix ctrs	Amps	Volts	I²T	Box qty
High speed fuse links - North American standard.							
FWA -70B	A15QS L15S		52mm	70	150 Vac / Vdc	4000	1
FWA -80B				80		6000	
FWA -100B				100		12000	
FWA -125B				125		18000	
FWA -150B				150		26000	
FWA -200B				200		45000	
FWA-225B				225		-	
FWA -250B				250		70000	
FWA -300B				300		100000	
FWA -350B				350		140000	
FWA -400B				400		180000	

Bussmann series high speed fuse links.

Item no.	Description	Fix ctrs	Amps	Volts	I²T	Box qty
High speed fuse links - North American standard.						
FWA -450B	A15QS L15S	62mm	450	150 Vac / Vdc	-	1
FWA -500A			500		120000	
FWA -600A			600		140000	
FWA -700A			700		220000	
FWA -800A			800		280000	
FWA -1000A			1000		510000	
FWA-1000AH		48 x 51	1000	150 Vac / Vdc	460000	
FWA-1200AH			1200		730000	
FWA-1500AH			1500		1400000	
FWA-2000AH			2000		2400000	
FWA-2500AH		48 X 75	2500		4100000	
FWA-3000AH			3000		5700000	
FWA-4000AH		48 x 89	4000		9200000	
FWX-35A	A30QS A25P(A)-4 L25S	61mm	35	250 Vac / Vdc	230	1
FWX-40A			40		310	
FWX-45A			45		390	
FWX-50A			50		520	
FWX-60A			60		740	
FWX-70A		58mm	70		1400	
FWX-80A			80		1850	
FWX-90A			90		2450	
FWX-100A			100		3150	
FWX-125A			125		4850	
FWX-150A			150		6950	
FWX-175A			175		9300	
FWX-200A			200		12000	
FWX-225A		66mm	225		14700	
FWX-250A			250		18100	
FWX-275A			275		21600	
FWX-300A			300		27300	
FWX-350A			350		48600	
FWX-400A			400		66100	
FWX-450A			450		101000	
FWX-500A			500		128000	
FWX-600A			600		188000	
FWX-700A		69mm	700		190000	
FWX-800A			800		230000	
FWX-1000AH		66 x 89	1000	250 Vac / Vdc	360000	
FWX-1200AH			1200		750000	
FWX-1500AH		66 x 75	1500		880000	
FWX-1600AH			1600		1200000	
FWX-2000AH			2000		2300000	
FWX-2500AH			2500		4700000	

FWA-20000AH

FWX-600A

FWX-160AH

Bussmann series high speed fuse links.

FWH-150B

FWP-100B

Item no.	Description	Fix ctrs	Amps	Volts	I²T	Box qty
High speed fuse links - North American standard.						
FWH-35B	A50QS A50P L50S	58mm	35	500 Vac / Vdc	150	
FWH-40B		58mm	40		320	
FWH-45B		58mm	45		450	
FWH-50B		58mm	50		670	
FWH-60B		58mm	60		900	
FWH-70B		73mm	70		900	
FWH-80B		73mm	80		1400	
FWH-90B		73mm	90		1600	
FWH-100B		73mm	100		2000	
FWH-125B		73mm	125		3500	
FWH-150B		73mm	150		4600	
FWH-175B		73mm	175		6200	
FWH-200B		73mm	200		8500	
FWH-225A	A50QS A50P L50S	77mm	225	500 Vac / Vdc	23300	
FWH-250A		77mm	250		32200	
FWH-275A		77mm	275		40300	
FWH-300A		77mm	300		49800	
FWH-325A		77mm	325		63800	
FWH-350A		77mm	350		72900	
FWH-400A		77mm	400		96700	
FWH-450A		81mm	450		127000	
FWH-500A		81mm	500		149000	
FWH-600A		81mm	600		206000	
FWH-700A		108mm	700		298000	
FWH-800A		108mm	800		409000	
FWH-1000A		126mm	1000		450000	
FWH-1200A		126mm	1200		600000	
FWH-1400A		158/ 228mm	1400		1000000	
FWH-1600A		158/ 228mm	1600		1400000	
FWP-5B	A70QS A70P L70S	64mm	5	700 Vac / Vdc	10	
FWP-10B		64mm	10		20	
FWP-15B		64mm	15		75	
FWP-20B		64mm	20		180	
FWP-25B		64mm	25		340	
FWP-30B		64mm	30		450	
FWP-35B		89mm	35		160	
FWP-40B		89mm	40		320	
FWP-50B		89mm	50		600	
FWP-60B		89mm	60		950	
FWP-70B		98mm	70		2000	
FWP-80B		98mm	80		2400	
FWP-90B		98mm	90		2700	
FWP-100B		98mm	100		3500	
FWP-125A		98mm	125		7300	
FWP-150A		98mm	150		11700	

Bussmann series high speed fuse links.

Item no.	Description	Fix ctrs	Amps	Volts	I²T	Box qty
High speed fuse links - North American standard.						
FWP-175A	A70QS A70P L70S	98mm	175	700 Vac / Vdc	16700	
FWP-200A		98mm	200		22000	
FWP-225A		98mm	225		31300	
FWP-250A		98mm	250		42500	
FWP-300A		98mm	300		71200	
FWP-350A		98mm	350		95600	
FWP-400A		98mm	400		125000	
FWP-450A		127mm	450		137000	
FWP-500A		127mm	500		170000	
FWP-600A		127mm	600		250000	
FWP-700A		133mm	700		300000	
FWP-800A		133mm	800		450000	
FWP-900A		140mm	900		530000	
FWP-1000A		140mm	1000		600000	
FWP-1200A		174/ 224mm	1200		1100000	
FWJ-35A	A100P	109mm	35	1000 Vac / 800Vdc	2000	
FWJ-40A		109mm	40		2500	
FWJ-50A		109mm	50		3500	
FWJ-60A		109mm	60		5000	
FWJ-70A		109mm	70		6900	
FWJ-80A		109mm	80		9700	
FWJ-90A		109mm	90		12000	
FWJ-100A		109mm	100		17500	
FWJ-125A		112mm	125		35000	
FWJ-150A		112mm	150		45000	
FWJ-175A		112mm	175		65000	
FWJ-200A		112mm	200		80000	
FWJ-250A		112mm	250		112000	
FWJ-300A		112mm	300		164000	
FWJ-350A		112mm	350		231000	
FWJ-400A		112mm	400		330000	
FWJ-500A		130mm	500		329000	
FWJ-600A		130mm	600		520000	
FWJ-800A		130mm	800		500000	
FWJ-1000A		135mm	1000		1100000	
FWJ-1200A		135mm	1200		2100000	
FWJ-1400A		135mm	1400		2700000	
FWJ-1600A		135mm	1600		4000000	
FWJ-1800A		135mm	1800		5300000	
FWJ-2000A		135mm	2000		7600000	

FWP-400A

FWJ-300A

Bussmann series high speed fuse links.

170M1558D

170M3808D

170M5808D

170M6808D

Item no.	Description		Size	Amps	Volts	I²T	Box qty
High speed fuse links - DIN standard - blade - aR.							
170M1558D	aR		000	10	690	25.5	10
170M1559D				16		48	
170M1560D				20		78	
170M1561D				25		130	
170M1562D				32		270	
170M1563D				40		460	
170M1564D				50		770	
170M1565D				63		1450	
170M1566D				80		2550	
170M1567D				100		4650	
170M1568D				125		8500	
170M1569D				160		16000	
170M1570D				200		28000	
170M1571D				250		51500	
170M1572D	aR		00	315	690	80500	10
170M3808D	aR		1	40	690	285	
170M3809D				50		550	
170M3810D				63		850	
170M3811D				80		1350	
170M3812D				100		2600	
170M3813D				125		3900	
170M3814D				160		8250	
170M3815D				200		16500	
170M3816D				250		31000	
170M3817D				315		52000	
170M3818D				350		73000	
170M3819D				400		115000	
170M4863D				450		155000	
170M4864D				500		190000	
170M4865D				550		240000	
170M4866D				630		345000	
170M4867D				700		495000	
170M5808D	aR		2	400	690	79000	
170M5809D				450		115000	
170M5810D				500		155000	
170M5811D				550		215000	
170M5812D				630		295000	
170M5813D				700		430000	
170M5814D				800		610000	
170M5815D				900		895000	
170M5816D				1000		1300000	
170M5817D				1100		1750000	
170M6808D	aR		3	500	690	99500	
170M6809D				550		140000	
170M6810D				630		220000	
170M6811D				700		320000	
170M6812D				800		490000	
170M6813D				900		720000	
170M6814D				1000		985000	
170M6892D				1100		1400000	
170M8554D				1250		2150000	
170M8555D				1400		2700000	
170M8556D				1500		3350000	
170M8557D				1600		4150000	

Bussmann series high speed fuse links.

Item no.	Description	Size	Amps	Volts	I²T	Box qty
High speed fuse links - DIN standard - blade - gR.						
170M2691	gR	00	10	690	20	
170M2692			16		38	
170M2693			20		70	
170M2694			25		125	
170M2695			32		275	
170M2696			40		490	
170M2697			50		1000	
170M2698			63		1800	
170M2699			80		3600	
170M2700			100		6650	
170M2701			125		12000	
170M2702			160		22500	
170M4176	gR	1	50	690	705	
170M4177			63		1300	
170M4178			80		2600	
170M4179			100		4850	
170M4180			125		9500	
170M4181			160		18000	
170M4182			200		34500	
170M4183			250		70500	
170M4184			315		135000	
170M4185			350		175000	
170M4186			400		250000	
170M5881	gR	00	200	690	29000	
170M5882			250		52500	
170M5883			315		105000	
170M5884			350		135000	
170M5885			400		205000	
170M5886			450		290000	
170M5887			500		375000	
170M5888			550		515000	
170M5889			630		770000	
170M6080	gR	00	350	690	120000	
170M6081			400		175000	
170M6082			450		250000	
170M6083			500		330000	
170M6084			550		435000	
170M6085			630		645000	
170M6086			700		840000	
170M6087			800		1300000	

170M2691

170M4176

170M5881

170M6080

Bussmann series high speed fuse links.

170M1480

170M4116

170M5108

Item no.	Description		Size	Amps	Volts	I²T	Box qty
High speed fuses - DIN standard - 80mm fixing.							
170M1408	aR		000	10	690	25.5	
170M1409				16		48	
170M1410				20		78	
170M1411				25		130	
170M1412				32		270	
170M1413				40		460	
170M1414				50		770	
170M1415				63		1450	
170M1416				80		2550	
170M1417				100		4650	
170M1418				125		8500	
170M1419				160		16000	
170M1420				200		28000	
170M1421				250		51500	
170M1422				315		80500	
170M2670	aR		00	350	690	91500	
170M2671				400		125000	
170M3108	aR		1*	40	690	270	
170M3109				50		515	
170M3110				63		770	
170M3111				80		1250	
170M3112				100		2450	
170M3113				125		3700	
170M3114				160		7500	
170M3115				200		15000	
170M3116				250		28500	
170M3117				315		46500	
170M3118				350		68500	
170M3119				400		105000	
170M3120				450		140000	
170M3121				500		180000	
170M3122				550		230000	
170M3123				630		325000	
170M4108	aR		1	200	690	11500	
170M4109				250		21000	
170M4110				315		42000	
170M4111				350		59000	
170M4112				400		91500	
170M4113				450		120000	
170M4114				500		170000	
170M4115				550		230000	
170M4116				630		350000	
170M4117				700		465000	
170M4118				800		725000	
170M4119	aR		1	900	550	850000	
170M5108	aR		2	400	690	74000	
170M5109				450		105000	
170M5110				500		145000	
170M5111				550		190000	
170M5112				630		275000	
170M5113				700		405000	
170M5114				800		575000	
170M5115				900		840000	
170M5116				1000		1250000	
170M5117				1100		1600000	
170M5118				1250		2400000	

Bussmann series high speed fuse links.

Item no.	Description		Size	Amps	Volts	I²T	Box qty
High speed fuses - DIN standard - 80mm fixing.							
170M6108				500		95000	
170M6109				550		135000	
170M6110				630		210000	
170M6111				700		300000	
170M6112				800		465000	
170M6113	aR		3	900	690	670000	
170M6114				1000		945000	
170M6115				1100		1300000	
170M6116				1250		1950000	
170M6117				1400		2450000	
170M6118				1500		3100000	
170M6119				1600		3900000	
170M6120	aR		3	1800	600	5250000	
170M6121	aR		3	2000	550	6350000	

170M6109

High speed fuses - DIN standard - 110mm fixing.							
170M3258				40		270	
170M3259				50		515	
170M3260				63		770	
170M3261				80		1250	
170M3262				100		2450	
170M3263				125		3700	
170M3264				160		7500	
170M3265	aR		1*	200	690	15000	
170M3267				250		28500	
170M3268				315		46500	
170M3269				350		68500	
170M3270				400		105000	
170M3271				450		140000	
170M3272				500		180000	
170M3273				550		230000	
170M3274				630		325000	

170M3258

170M4258				200		11500	
170M4259				250		21000	
170M4260				315		42000	
170M4261				350		59000	
170M4262				400		91500	
170M4263	aR		1	450	690	120000	
170M4264				500		170000	
170M4265				550		230000	
170M4266				630		350000	
170M4267				700		465000	
170M4268				800		725000	
170M4269	aR		1	900	550	850000	

170M4258

Bussmann series high speed fuse links.

170M5258

170M6258

170M2758

170M3462

Item no.	Description		Size	Amps	Volts	I²T	Box qty
High speed fuse links - DIN standard - 110mm fixing.							
170M5258				400		74000	
170M5259				450		105000	
170M5260				500		145000	
170M5261				550		190000	
170M5262				630		275000	
170M5263	aR		2	700	690	405000	
170M5264				800		575000	
170M5265				900		840000	
170M5266				1000		1250000	
170M5267				1100		1600000	
170M5268				1250		2400000	
170M6258				500		95000	
170M6259				550		135000	
170M6260				630		210000	
170M6261				700		300000	
170M6262				800		465000	
170M6263	aR		3	900	690	670000	
170M6264				1000		945000	
170M6265				1100		1300000	
170M6266				1250		1950000	
170M6267				1400		2450000	
170M6268				1500		3100000	
170M6269				1600		3900000	
170M6270	aR		3	1800	600	5250000	
170M6271	aR		3	2000	550	6350000	
High speed fuse links - DIN standard - flush end contact.							
170M2758				25		130	
170M2759				32		270	
170M2760				40		460	
170M2761				50		770	
170M2762				63		1450	
170M2763				80		2550	
170M2764	aR		00	100	690	4650	
170M2765				125		8500	
170M2766				160		16000	
170M2767				200		28000	
170M2768				250		51500	
170M2769				315		80500	
170M2770				350		91500	
170M2771				400		125000	
High speed fuse links - DIN standard - flush end contact.							
170M3458				40		270	
170M3459				50		515	
170M3460				63		770	
170M3461				80		1250	
170M3462				100		2450	
170M3463	aR		1*	125	690	3700	
170M3464				160		7500	
170M3465				200		15000	
170M3466				250		28500	
170M3467				315		46500	
170M3468				350		68500	
170M3469				400		105000	

Bussmann series high speed fuse links.

Item no.	Description	Size	Amps	Volts	I²T	Box qty
High speed fuse links - DIN standard - flush end contact.						
170M3470	aR	1	450	690	140000	
170M3471			500		180000	
170M3472			550		230000	
170M3473			630		325000	
170M4458			200		11500	
170M4459			250		21000	
170M4460			315		42000	
170M4461			350		59000	
170M4462			400		91500	
170M4463			450		120000	
170M4464			500		170000	
170M4465			550		230000	
170M4466			630		350000	
170M4467			700		465000	
170M4468			800		725000	
170M4469	aR	1	900	550	850000	
170M5458	aR	2	400	690	74000	
170M5459			450		105000	
170M5460			500		145000	
170M5461			550		190000	
170M5462			630		275000	
170M5463			700		405000	
170M5464			800		575000	
170M5465			900		840000	
170M5466			1000		1250000	
170M5467			1100		1600000	
170M5468			1250		2400000	
170M6458	aR	3	500	690	95000	
170M6459			550		135000	
170M6460			630		210000	
170M6461			700		300000	
170M6462			800		465000	
170M6463			900		670000	
170M6464			1000		945000	
170M6465			1100		1300000	
170M6466			1250		1950000	
170M6467			1400		2450000	
170M6468			1500		3100000	
170M6469			1600		3900000	
170M6470	aR	3	1800	600	5250000	
170M6471	aR	3	2000	550	6350000	

170M4458

170M5458

170M6462

Item no.	Description	Amps	Volts	Box qty
Fuse holders to suit High speed fuse links				
170H3003	To suit 80mm	630	1000	1
170H3004		1250	1000	
170H3005	To suit 110mm	630	1400	
170H3006		1250	1400	
170H0235	Micro switch	To suit Type 'T' Indicator		
170H0236		To suit Type 'K' Indicator		
170H0069		To suit Type 'K' Indicator		

170H3004

Bussmann series solar products.

PV-1A10F

Item no.	Description	Body dim	Amps	Volts	I²T	Box qty
Photovoltaic fuse links						
PV-1A10F	Solar fuse - ferrule	10 X 38mm	1	1000 Vdc		10
PV-2A10F			2			
PV-3A10F			3			
PV-4A10F			4			
PV-5A10F			5			
PV-6A10F			6			
PV-8A10F			8			
PV-10A10F			10			
PV-12A10F			12			
PV-15A10F			15			
PV-20A10F			20			
PV-15A14F	Solar fuse - ferrule	14 X 51mm	15			
PV-20A14F			20			
PV-25A14F			25			
PV-32A14F			32			
PV-15A14LF	Solar fuse - ferrule	14 X 65mm	15	1300 Vdc		10
PV-20A14LF			20			
PV-25A14LF			25			
PV-32A14LF			32			

Photovoltaic fuse links - ferrule fuse holders.						
CHPV1U		10 X 38mm	30	1000 Vdc		12
CHPV2U						6
CHPV1IU	With indicator	10 X 38mm	30	1000		12
CHPV2IU						6
CH141D-PV		10 X 38mm	30	1000 Vdc		6

PV-160ANH1

Photovoltaic fuse links.						
PV-32ANH1	Solar fuse - blade		32	1000 Vdc	1	1
PV-40ANH1			40			
PV-50ANH1			50			
PV-63ANH1			63			
PV-80ANH1			80			
PV-100ANH1			100			
PV-125ANH1			125			
PV-160ANH1			160			
PV-63A-01XL	Solar fuse - blade		50	1000 Vdc	01	1
PV-80A-01XL			63			
PV-100A-01XL			80			
PV-125A-01XL			100			
PV-160A-01XL			125			
PV-200A-1XL	Solar fuse - blade		200	1000 Vdc	1	1
PV-160A-2XL	Solar fuse - blade		160	1000 Vdc	2	1
PV-200A-2XL			200			
PV-250A-2XL			250			
PV-315A-2XL			315			
PV-355A-2XL			355			
PV-350A-3L	Solar fuse - blade		350	1000 Vdc	3	1
PV-400A-3L			400			
PV-500A-3L			500			
PV-600A-3L			600			

Bussmann series solar products.

Item no.	Description	Amps	Volts	Body size	Box qty
Photovoltaic fuse links.					
PV-63A-01XL-D	Solar fuse - bolted	63	1000 Vdc	01	
PV-80A-01XL-D		80			
PV-100A-01XL-D		100			
PV-125A-01XL-D		125			
PV-160A-01XL-D		160			
PV-200A-1XL-D	Solar fuse - bolted	100	1000 Vdc	1	
PV-160A-2XL-D	Solar fuse - bolted	160	1000 Vdc	2	
PV-200A-2XL-D		200			
PV-250A-2XL-D		250			
PV-315A-2XL-D		350			
PV-355A-2XL-D		400			
PV-350A-3L-D	Solar fuse - bolted	350	1000 Vdc		
PV-400A-3L-D		400			
PV-500A-3L-D		500			
PV-600A-3L-D		600			

PV-250A2XL-D

Item no.	Description	Amps	Volts	Poles	Box qty
Photovoltaic fuse links - blade fuse holders.					
SD1-D-PV	For PV-NH1	250	1500 Vdc	1	1
SD2-D-PV	For PV-NH2	400			1
SD3-D-PV	For PV-NH3	630			1
SD1XL-S	For 01 & 1XL	250			1
SD2XL-S	For 2XL	400			1
SD3L-S	For 3L	630			1

Item no.	Description	Applic	Volts	Poles	Box qty
Surge protection.					
BSPM1275TN	Without remote signalling	Indust Class II	275Vac	1	1
BSPM1275TNR	With remote signalling				
BSPM1375TN	Without remote signalling		275Vac	3	1
BSPM1375TNR	With remote signalling				
BPM275IEC	Replacement module		275Vac	1	1
BSPS3255TNC	Without remote signalling	Indust Class 1	275Vac	3	1
BSPS3255TNCR	With remote signalling				
BPS255IEC	Replacement module				
BSPH31000YPV	Without remote signalling	Solar	1000Vdc	1	1
BSPH31000YPVR	With remote signalling				
BSPS31000YPV	Without remote signalling				
BPH500YPV	Replacement module (outer)				
BPM500YPV	Replacement module (inner)				

BSPM1275TN

Bussmann series North American fuse links & fuse holders.

BAF

Item no.	Amp rating	Size	Volts	Type	Box qty
Supplementary power fuse links (ferrule)					
BBS (A)	1/10 to 5	10 x 35mm	600	Fast	10
	6, 7, 8, 10		250		
	12, 15, 20, 25, 30		48		
KTQ (A)	1, 1.6, 2, 3, 4, 5, 6		250	T/Delay	
BAF (A)	2/10 to 15	10 x 38mm	250	Fast	10
	20, 25, 30		125		
BAN (A)	1, 2, 4, 6, 8, 10, 12, 15, 20, 25, 30		250	Fast	
KTK (A)	1/10 to 50		600	Fast	
DCM (A)	1/10 to 30		600V ac / dc	Fast	
KLM (A)	1/10 to 30		690	Fast	
FNM (A)	0.1, 0.125, 0.15, 0.2, 0.25, 0.3, 0.4, 0.5, 0.6, 0.75, 1, 1.125, 1.25, 1.5, 2, 2.25, 2.5, 2.8, 3, 3.25, 3.5, 4, 4.5, 5, 5.8, 6, 6.25, 7, 8, 9, 10,		250	T/Delay	
	12, 15		125		
	20, 25, 30		32		
FNQ (A)	1/10 to 30		500	T/Delay	
FNA (A)	1/10 to 8/10		250	T/Delay	
	1 to 15		125		
	20 to 30		32		
DMM-D-(A)	44/100 & 11		1000	Fast	

FNM

FNA

Item no.	Amp	Volts	Poles	Box qty
Fuseholders to suit supplementary power fuse links.				
BM6031SQ	30	600	1	1
BM6033SQ			3	

Item no.	Amp rating	Size	Volts	Type	Box qty
Supplementary power fuse links - rejection - Class CC.					
KTK-R (A)	1/10 to 30	10 X 38mm	600	Fast	10
LP-CC (A)	1/4 to 30			T/Delay	
FNQ-R (A)	1/4 to 30				

KTK-R

Item no.	Amp	Volts	Poles	Box qty
Fuseholders to suit supplementary power fuse links - Class CC.				
BC6031SQ	30	600	1	1
BC6033SQ			3	

Item no.	Amp rating	Size	Volts	Type	Box qty
Supplementary power fuse links - Class G.					
SC	1/2 to 20	10 X 33	480	T/Delay	
	25, 30	10 X 42			
	35 to 60	10 X 57			

SC

Bussmann series North American fuse links & fuse holders.

Item no.	Amp rating	Size	Volts	Type	Box qty
Power fuse links - Class T.					
JJN (A)	1, 2, 3, 6, 10, 15, 20, 25, 30	22 X 10	300	Very Fast	10
	35, 40, 45, 50, 60	23 X 14			
	70, 80, 90, 100	40.0	300	Very Fast	1
	110, 125, 150, 175, 200	43.0			
	225, 250, 300, 350, 400	47.0			
	450, 500, 600	52.0			
	700, 800	56.0			
	1000, 1200	64.0			
JJS (A)	1, 2, 3, 6, 10, 15, 20, 25, 30	38 X 14	600	Very Fast	10
	35, 40, 45, 50, 60	40 X 21			
	70, 80, 90, 100	60.0	600	Very Fast	1
	110, 125, 150, 175, 200	64.0			
	225, 250, 300, 350, 400	69.0			
	450, 500, 600	75.0			
	800	81.0			

JJN

JJS

Item no.	Amp	Volts	Poles	Box qty
Fuse holders to suit power fuse links - Class T.				
T30030-2CR	30	300	2	1
T30030-3CR			3	
T30060-2CR	60	300	2	
T30060-3CR			3	
T30100-1CR	100	300	1	
T30100-3CR			3	
T60030-1CR	30	600	1	1
T60030-3CR			3	
T60060-1CR	60	600	1	
T60060-3CR			3	
T60100-1CR	100	600	1	
T60100-3CR			3	

T60030-3CR

Item no.	Amp rating	Size	Volts	Type	Box qty
Power fuse links - general purpose					
NON (A)	0.125, 0.5, .75, 1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 10,12, 15, 20, 25, 30	10 x 51	250	Non Delay	10
	35, 40, 45, 50, 60	21 x 76			
	70, 80, 90, 100	149.0	250	Non Delay	1
	110, 125, 150, 175, 200	181.0			
	225, 250, 300, 350, 400	219.0			
	450, 500, 600	264.0			
NOS (A)	1, 2, 2.5, 3, 4, 5, 6, 7, 8, 10, 12, 15, 20, 25, 30	21 x 127	600	Non Delay	10
	35, 40, 45, 50, 60	27 x 140			
	70, 80, 90, 100	200.0	600	Non Delay	1
	110, 125, 150, 175, 200	244.0			
	225, 250, 300, 350, 400	295.0			
	450, 500, 600	340.0			

Bussmann series North American fuse links & fuse holders.

H30100-1SR

Item no.	Amp	Volts	Poles	Box qty
Fuse holders to suit power fuse links - general purpose.				
H30030-2SR	30	300	1	1
H30030-3SR			3	
H30060-2SR	60	300	2	
H30060-3SR			3	
H30100-1SR	100	300	1	
H30100-3SR			3	
H60030-1SR	30	600	1	
H60030-3SR			3	
H60060-1SR	60	600	1	
H60060-3SR			3	
H60100-1SR	100	600	1	
H60100-3SR			3	

LPN-RK

LPS-RK

KTN-R

KTS-R

FRN-R

FRS-R

Item no.	Amp rating	Size	Volts	Type	Box qty
Power fuse links - Class RK1.					
LPN-RK (A) SP	1/10 to 30	14 x 51	250	Dual element, time delay	10
	35, 40, 45, 50, 60	21 x 76			
	70, 80, 90, 100	149.0	250		1
	110, 125, 150, 175, 200	181.0			
	225, 250, 300, 350, 400	219.0			
	450, 500, 600	264.0			
LPS-RK (A) SP	1/10 to 30	21 X 127	600	Dual element, time delay	10
	35, 40, 45, 50, 60	27 X 140			
	70, 80, 90, 100	200.0	600		1
	110, 125, 150, 175, 200	245.0			
	225, 250, 300, 350, 400	295.0			
	450, 500, 600	340.0			
KTN-R (A)	1 to 30	14 x 51	250	Fast acting	10
	35, 40, 45, 50, 60	21 x 76			
	70, 80, 90, 100	149.0	250		1
	110, 125, 150, 175, 200	181.0			
	225, 250, 300, 350, 400	219.0			
	450, 500, 600	264.0			
KTS-R (A)	1 to 30	21 X 127	600	Fast acting	10
	35, 40, 45, 50, 60	27 X 140			
	70, 80, 90, 100	200.0	600		1
	110, 125, 150, 175, 200	245.0			
	225, 250, 300, 350, 400	295.0			
	450, 500, 600	340.0			
FRN-R (A)	100mA to 30A	14 x 51	250	Dual element, time delay	10
	35, 40, 45, 50, 60	21 x 76			
	70, 80, 90, 100	149.0			1
	110, 125, 150, 175, 200	181.0			
	225, 250, 300, 350, 400	219.0			
	450, 500, 600	264.0			
FRS-R (A)	100mA to 30A	21 X 127	600	Dual element, time delay	10
	35, 40, 45, 50, 60	27 X 140			
	70, 80, 90, 100	200.0			1
	110, 125, 150, 175, 200	245.0			
	225, 250, 300, 350, 400	295.0			
	450, 500, 600	340.0			

Bussmann series North American fuse links & fuse holders.

Item no.	Amp	Volts	Poles	Box qty
Fuse holders to suit power fuse links - Class RK1 & RK5.				
R30030-1SR	30	300	1	1
R30030-3SR			3	
R30060-2CR	60	300	2	
R30060-3CR			3	
R30100-1CR	100	300	1	
R30100-3CR			3	
R60030-1CR	30	600	1	
R60030-3CR			3	
R60060-1CR	60	600	1	
R60060-3CR			3	
R60100-1CR	100	600	1	
R60100-3CR			3	

R300

Item no.	Amp rating	Size	Volts	Type	Box qty
Power fuse links - Class J low peak.					
LPJ- (A) SP	1 to 30	21 X 58	600	Dual element, time delay	10
	35, 40, 45, 50, 60	27 X 60			
	70, 80, 90, 100	92.0			1
	110, 125, 150, 175, 200	111.0			
	225, 250, 300, 350, 400	133.0			
	450, 500, 600				
JKS- (A)	1 to 30	21 X 58	600	Quick acting	10
	35, 40, 45, 50, 60	27 X 60			
	70, 80, 90, 100	92.0			1
	110, 125, 150, 175, 200	111.0			
	225, 250, 300, 350, 400	133.0			
	450, 500, 600	152.0			

LPJ

JKS

Item no.	Amp	Volts	Poles	Box qty
Fuse holders to suit power fuse links - Class RK1 & RK5.				
J60030-1CR	30	600	1	1
J60030-3CR			3	
J60060-1CR	60	600	1	
J60060-3CR			3	
J60100-1CR	100	600	1	
J60100-3CR			3	

J600

Power fuse links - Class L low peak.					
KTU (A)	601 to 1200	Contact cooper electrical for size	600	Fast acting type	1
	1500, 2000				
	2500, 3000				
	3500, 4000				
	4500, 5000				
	6000				
KLU (A)	601 to 1200	Contact cooper electrical for size	600	Time delay type	
	1500, 1600				
	1800, 2000				
	2500, 3000				
	4000				
KRP-C (A) SP	601 to 1200	Contact cooper electrical for size	600	Time delay type	
	1350, 1400, 1500, 1600, 1800, 1900, 2000				
	2001, 2400, 2500, 3000				
	3500, 3800, 4000				
	4500, 5000				
	6000				

KTU

KRP-C

Bussmann series medium voltage fuse links.

24ADIHA25

Item no.		Amp	Volts	Lth	Dia	MOQ
Medium voltage fuse links for use in air.						
12BDGHA6.3		6.3	12kV	359	51	3
12BDGHA10		10				
12BDGHA16		16				
12BDGHA20		20				
12BDGHA25		25				
12BDGHA31.5		31.5				
12BDGHA40		40				
12BDGHA50		50				
12BFGHA63		63	12kV	359	76	3
12BFGHA71		71				
12BFGHA80		80				
12BFGHA90		90				
12BFGHA100		100				
12AKGHA125		125				
24ADIHA3.15		3.15	24kV	565	51	3
24ADIHA6.3		6.3				
24ADIHA10		10				
24ADIHA16		16				
24ADIHA20		20				
24ADIHA25		25				
24ADIHA31.5		31.5				
24AFIHA40		40	24kV	565	76	3
24AFIHA50		50				
24AFIHA63		63				
24AFIHA80		80				
24AFIHA90		90				
Medium voltage fuse links for use in oil.						
12OEFMA6.3	**KEBXO5**	6.3	12kV	254	63.5	3
12OEFMA10	**KEBXO10**	10				
12OEFMA16	**KEBXO16**	16				
12OEFMA20	**KEBXO20**	20				
12OEFMA25	**KEBXO25**	25				
12OEFMA31.5		31.5				
12OEFMA40	**KEBXO40**	40				
12OEFMA50	**KEBXO50**	50				
12OEFMA63	**KEBXO63**	63				
12OHFMA71		71				
12OHFMA80	**KEBXO80**	80				
12OHFMA90		90				
12OHFMA100		100				
12OHGMA6.3	**KEMXO5**	6.3	12kV	359	63.5	3
12OHGMA10	**KEMXO10**	10				
12OHGMA16	**KEMXO16**	16				
12OHGMA20	**KEMXO20**	20				
12OHGMA25	**KEMXO25**	25				
12OHGMA31.5		31.5				
12OHGMA40	**KEMXO40**	40				
12OHGMA50	**KEMXO50**	50				
12OHGMA63	**KEMXO63**	63				
12OHGMA71		71				
12OHGMA80	**KEMXO80**	80				
12OHGMA90	**KEMXO90**	90				
12OHGMA100	**KEMXO100**	100				
12OLGMA125	**KEMXO120**	125				

120EFMA820

Bussmann series medium voltage fuse links.

Item no.		Amp	Volts	Lth	Dia	MOQ
Medium voltage fuse links - DIN standard.						
12TDLEJ6.3		6.3				
12TDLEJ10		10				
12TDLEJ16		16				
12TDLEJ20		20				
12TDLEJ25		25	12kV	292	51	3
12TDLEJ31.5		31.5				
12TDLEJ40		40				
12TDLEJ50		50				
12TDLEJ63		63				
12THLEJ80		80	12kV	292	67	3
12THLEJ100		100				
12TKLEJ125		125	12kV	292	76	3
12TXLEJ160		160	12kV	292	88	3
12TXLEJ200		200				
24TDMEJ6.3		6.3				
24TDMEJ10		10				
24TDMEJ16		16				
24TDMEJ20		20	24kV	442	51	3
24TDMEJ25		25				
24TDMEJ31.5		31.5				
24TDMEJ40		40				
24TDMEJ50		50				
24THMEJ63		63	24kV	442	67	3
24THMEJ80		80				
24THMEJ100		100				
24TXMEJ125		125	24kV	442	88	3
24TXMEJ160		160				
Medium voltage fuse links - BS motor start.						
3.6WDFHO50		50				
3.6WDFHO63		63				
3.6WDFHO80		80	3.6kV	254a	51	3
3.6WDFHO100	**K81PEX100**	100				
3.6WDFHO125	**K81PEX125**	125				
3.6WFFHO160	**K81PEX160**	160				
3.6WFFHO200	**K81PEX200**	200				
3.6WKFHO250	**K81PEX250**	250				
3.6WKFHO315	**K81PEX315**	315	3.6kV	254a	76	3
3.6WKFHO355	**K81PEX350**	355				
3.6WKFHO400		400				
	K81PRX450	450				

12TDLEJ25

24TDMEJ20

3.6WKFHO250

Bussmann series medium voltage fuse links.

7.2WFNHO125

Item no.		Amp	Volts	Lth	Dia	MOQ
Medium voltage fuse links - BS motor start.						
7.2WFNHO25		25	7.2kV	403	76	3
7.2WFNHO31.5		31.5				
7.2WFNHO40		40				
7.2WFNHO50	**K81SDX50**	50				
7.2WFNHO63	**K81SDX63**	63				
7.2WFNHO80	**K81SDX80**	80				
7.2WFNHO100	**K81SDX100**	100				
7.2WFNHO125	**K81SDX125**	125				
7.2WFNHO160	**K81SDX160**	160				
7.2WKNHO200	**K81SDX200**	200				
7.2WKNHO224	**K81SDX225**	224				
7.2WKNHO250	**K81SDX250**	250				
7.2WKNHO315	**K81SDX315**	315				
Medium voltage fuse links - BS motor start.						
3.6WJON65	**K3PGX5**	5	3.6kV	192	35	3
3.6WJON610	**K3PGX10**	10				
3.6WJON616	**K3PGX16**	16				
3.6WJON620	**K3PGX20**	20				
3.6WJON625	**K3PGX25**	25				
3.6WJON632	**K3PGX32**	32				
3.6WJON640	**K3PGX40**	40				
3.6WDOH650	**K3PGX50**	50	3.6kV	192	51	3
3.6WDOH663	**K3PGX63**	63				
3.6WDOH680	**K3PGX80**	80				
3.6WDOH6100	**K3PGX100**	100				
3.6WDOH6125	**K3PGX125**	125				
3.6WFOH6160	**K4PHX 160**	160	3.6kV	192	76	3
3.6WFOH6200	**K4PHX 200**	200				
Medium voltage fuse links - DIN motor start.						
3.6WDLSJ50		50	3.6kV	292	51	3
3.6WDLSJ63		63				
3.6WDLSJ80		80				
3.6WDLSJ100		100				
3.6WDLSJ125		125				
3.6WFLSJ160		160				
3.6WFLSJ200		200				
3.6WKLSJ250		250	3.6kV	292	76	3
3.6WKLSJ315		315				
3.6WKLSJ400		400				
7.2WFMSJ25		25	7.2kV	442	76	3
7.2WFMSJ31.5		31.5				
7.2WFMSJ40		40				
7.2WFMSJ50		50				
7.2WFMSJ63		63				
7.2WFMSJ80		80				
7.2WFMSJ100		100				
7.2WFMSJ125		125				
7.2WFMSJ160		160				
7.2WKMSJ200		200				
7.2WKMSJ224		224				
7.2WKMSJ250		250				
7.2WKMSJ315		315				
7.2WKMSJ355		355				

3.6WDLSJ50

Bussmann series medium voltage fuse links.

Item no.		Amp	Volts	Lth	Dia	MOQ
Medium voltage fuse links - VT for use in air.						
3.6ABWNA3.15	**AIR3.3/3**	3.15	3.6kV	142	25.4	1
3.6ABWNA6.3		6.3				
3.6ABCNA3.15		3.15	3.6kV	195	25.4	1
3.6ABCNA6.3		6.3				
3.6ABCNA10		10				
7.2VTDNN1		1	7.2Kv	142		1
7.2ABWNA3.15	**VTF6.6/3**	3.15			25.4	1
7.2ABWNA6.3		6.3			25.4	1
7.2VTDNN0.62		0.62				
7.2ABCNA3.15		3.15			25.4	1
7.2ABCNA6.3		6.3				
12VTDNN0.5	**VTF11/0.5**	0.5	12kV	195	25.4	1
12VTDNN1	**VTF11/1**	1				
12ABCNA3.15	**VTF11/3**	3.15				
24ABGNA3.15		3.15	24kV	359	25.4	1
Medium voltage fuse links - VT for use in oil.						
	OIR6.6/0.62	0.62	7.2kV	142	22	1
7.2OBWNA3.15		3.15	7.2kV	142	25.4	1
7.2OBWNA6.3		6.3				
7.2OBCNA3.15	**OIR6.6/3**	3.15	7.2kV	195	25.4	1
7.2OBCNA6.3		6.3				
	OIR11/0.62	0.62	7.2kV		25.4	1
12OBCNA3.15		3.15	12kV	195	25.4	1
24OBGNA3.15		3.15	24kV	359	25.4	1
36OBGNA3.15		3.15	36kV			

3.6ABWNA6.3

7.20BCNA3.15

Item no.	Description	MOQ
Medium voltage fuse links - mounting clips.		
1A1873	To Suit 20mm	2
A3354705	To Suit 25.4mm	
A3354710	To Suit 51.0mm	
A3354720	To Suit 63.5mm	
A3354730	To Suit 76.0mm	
A3354745	To Suit 45mm DIN	
270303	To Suit 45mm DIN	

Mounting clips

Bussmann series miniature & automotive fuse links.

AGC-(A)

Item no.	Amp rating	Volts	Type		MOQ
M205 fuse links - 5 X 20mm.					
S500-(A)-R / **S506-(A)-R**	32 to 10A	250	Glass	Fast / T/Delay	10
S501-(A)-R / **S505-(A)-R**	32 to 10A	250	Ceramic	Fast / T/Delay	10
3AG fuse links - 6.3 X 32mm.					
AGC-(A)	1/4 to 10A	250	Glass	Fast / T/Delay	5
	15 to 50A	32			
MDL-(A)	1/4 to 8A	250			
	15, 20, 25, 30, 35, 40, 50	32			
ABC-(A)	1/4 to 30A	250	Ceramic	Fast / T/Delay	5
MDA-(A)	1/4 to 30A				
1AG fuse links - 6.3 X 16mm.					
AGA-(A)	630mA to 5A	250	Glass	Fast	5
	6 to 30A	32			
7AG fuse links - 6.3 X 22mm.					
AGW-(A)	1 to 30A	250	Glass	Fast	5
8AG fuse links - 6.3 X 25mm.					
AGX-(A)	1/1 to 2A	250	Glass	Fast	5
	2.5 to 7A	125			
	8 to 30A	32			
5AG fuse links - 10.3 X 38mm.					
AGU-(A)	1 to 3A	250	Glass	Fast	5
	4 to 30A	32			
Fuse holders.					
HTC-55M	6.3	250	Panel mount	M205 / 3AG	1
HKP	30	250			

HKP

Item no.	Description
Fuse kits.	
NO-140	3AG fuses, glass, fast & time delay, 140pcs
NO-220	M205 fuses, glass, fast & time delay, 220pcs
NO-270	3AG & M205 fuses, glass, fast & time delay, 270pcs
GSK-260	3AG & M205 fuses, glass & ceramic, fast & time delay, 260pcs

ATC-(A)

Item no.	Amp rating	Volts	Type		MOQ
Automotive.					
ATM-(A)	2, 3, 4, 5, 7.5, 10, 15, 20, 25, 30	32	Fast	Mini	5
ATM-(A)LP	5, 7.5, 10, 15, 20, 25, 30	32	Fast	Lo Profile	5
ATC-(A)	1, 2, 3, 4, 5, 7.5, 10, 15, 20, 25, 30, 40	32	Fast	Std	5
MAX-(A)	20, 30, 40, 50, 60, 70, 80	32	Fast	Large	1
AMI-(A)	100-300A	32			
AMG-(A)	50-100A				
HMID	Fuseholder to suit AMI				1
HMEG	Fuseholder to suit AMG				1
ANL (A)	35, 40, 50, 60, 100, 130, 150	32	Non Delay		1
	175, 200, 225, 250, 275				
	300, 325, 350, 400, 500				
ANN (A)	10, 35, 40, 50, 60, 100, 130, 150, 175, 200, 225, 250, 275, 300	32	Very Fast		1
	325, 350, 400, 500, 600, 675, 700, 800				
4164	Fuse Base to Suit ANL & ANN				1

Quicklag.
Safe and reliable.

The Quicklag range of miniature circuit breakers was originally released in Australia by Email-Westinghouse in 1957 before the company changed its name to Cutler-Hammer and then to Eaton.

Through the years, the Quicklag has been widely recognised as setting the electrical industry bench mark for Miniature Circuit Breakers. Some of the reasons include toggle centre position indication, ratings up to 100A in the one frame size, the ability to be mounted side by side without de-rating and fully integrated surge protection solutions with the use of Quickmov surge diverters.

Quicklag is the largest and most complete family of industrial thermal magnetic miniature circuit breakers. They provide the feature of steel frame calibration and arc chutes in every pole. Quicklag circuit breakers are provided in ranges from 8 to 100 amperes continuous in one, two, three and four pole configurations.

With close to 60 years of service to the Australian electrical industry, Quicklag circuit breakers have a proven track records of reliability and safety making Quicklag the ideal choice for industrial and commercial applications.

EATON

Powering Business Worldwide

Quicklag Miniature circuit breakers

Quicklag Miniature circuit breakers are used in a variety of circuit protection applications that range from protection for submain circuits & light & power circuits through to various motor starting applications.

Key Features

- Breaking capacity 6kA at 415VAC/2,3,4 pole & 6kA at 240VAC/1 pole
- Extensive range of accessories
- Non-Auto breakers available
- Centre trip indication
- Complies with AS3111 & AS2184, Lloyd's approved

Quicklag MCB

Rating (A)	Item no. 1 pole	Item no. 2 pole	Item no. 3 pole	Item no. 4 pole
8	**Q108**	**Q208**	**Q308**	**Q408**
10	**Q110**	**Q210**	**Q310**	**Q410**
16	**Q116**	**Q216**	**Q316**	**Q416**
20	**Q120**	**Q220**	**Q320**	**Q420**
25	**Q125**	**Q225**	**Q325**	**Q425**
32	**Q132**	**Q232**	**Q332**	**Q432**
40	**Q140**	**Q240**	**Q340**	**Q440**
50	**Q150**	**Q250**	**Q350**	**Q450**
63	**Q163**	**Q263**	**Q363**	**Q463**
80	**Q180**	**Q280**	**Q380**	**Q480**
100	**Q1100**	**Q2100**	**Q3100**	**Q4100**
80*	**Q180N**	**Q280N**	**Q380N**	**Q480N**
100*	**Q1100N**	**Q2100N**	**Q3100N**	**Q4100N**

* Non-Auto Breaker.

Quicklag MCB fitted with 240V AC shunt trip (intermittent rated) - factory fitted only

Rating (A)	Item no. 1 pole	Item no. 2 pole	Item no. 3 pole	Item no. 4 pole
8	**Q108-ST2**	**Q208-ST2**	**Q308-ST2**	**Q408-ST2**
10	**Q110-ST2**	**Q210-ST2**	**Q310-ST2**	**Q410-ST2**
16	**Q116-ST2**	**Q216-ST2**	**Q316-ST2**	**Q416-ST2**
20	**Q120-ST2**	**Q220-ST2**	**Q320-ST2**	**Q420-ST2**
25	**Q125-ST2**	**Q225-ST2**	**Q325-ST2**	**Q425-ST2**
32	**Q132-ST2**	**Q232-ST2**	**Q332-ST2**	**Q432-ST2**
40	**Q140-ST2**	**Q240-ST2**	**Q340-ST2**	**Q440-ST2**
50	**Q150-ST2**	**Q250-ST2**	**Q350-ST2**	**Q450-ST2**
63	**Q163-ST2**	**Q263-ST2**	**Q363-ST2**	**Q463-ST2**
80	**Q180-ST2**	**Q280-ST2**	**Q380-ST2**	**Q480-ST2**
100	**Q1100-ST2**	**Q2100-ST2**	**Q3100-ST2**	**Q4100-ST2**
80*	**Q180N-ST2**	**Q280N-ST2**	**Q380N-ST2**	**Q480N-ST2**
100*	**Q1100N-ST2**	**Q2100N-ST2**	**Q3100N-ST2**	**Q4100N-ST2**

* Non-Auto Breaker.
ST2 operates on 90-440 Vac, 60-250 Vdc
Some other voltage shunt trips available consult Eaton

ELQ Earth Leakage breaker

The ELQ Earth Leakage breaker combines overload, short circuit & residual current (earth leakage) protection in one compact unit.

Features & Benefits

- Overload, short circuit & residual current protection in one compact unit
- 6kA at 240V AC/Sym (AS2184)
- Sensitivity available in 10, 30 & 100mA models
- Approval No. NSW20187
- Trip indication window
- Test button with preventative accidental push design

LKDELQTW

ELQ-E-KIT

ELQ Earth leakage breaker

Sensitivity (mA)	Rating (A)	Item no. 1 pole
30mA	10	**ELQ110C3TW**
	16	**ELQ116C3TW**
	20	**ELQ120C3TW**
	25	**ELQ125C3TW**
	32	**ELQ132C3TW**
10mA	10	**ELQ110C1TW**
	16	**ELQ116C1TW**
	20	**ELQ120C1TW**
	25	**ELQ125C1TW**
	32	**ELQ132C1TW**
100mA	10	**ELQ110C10TW**
	16	**ELQ116C10TW**
	20	**ELQ120C10TW**
	25	**ELQ125C10TW**
	32	**ELQ132C10TW**

ELQ Accessories

Description	Item no.
ELQ to E-Frame Adaptor Kit	**ELQ-E-KIT** ①
Lockdog Kit ELQ (No Padlock, 1-Pole)	**LKDELQTW**①

① suitable for panel mount applications only

Quicklag accessories

Quicklag's extensive range of accessories extends its features & benefits to many applications. Moulded covers & polycentres allow for retrofit installations where space is limited.
A wide range of locking devices can easily provide extra security & safety in situations where it is required.

Quicklag accessories

Description	Item no.
1-Pole Moulded Cover	**S1Q** ①
3-Pole Moulded Cover	**S3Q** ①
Quicklag Polycentre 6-Pole	**QPC** ①
Sealing Screws for Quicklag Covers (Kit of 10)	**QSEALKIT** ①
Quicklag Pole Filler	**QPF**
Sliding Clip Tray 3-Pole	**SC3Q** ①
Sliding Clip Tray 6-Pole	**SC6Q** ①
Sliding Clip Tray 12-Pole	**SC12Q** ①
Sliding Clip Tray 24-Pole	**SC24Q** ①
Standard Clip Tray 36-Pole	**C36Q**
50A Terminal 25mm²	**T50Q**
100A Terminal 50mm²	**T100Q**
Tunnel Kit 35mm² - 3 pieces	**QLUGKIT** ①
Handle Lock 1-Pole + Padlock	**PLKQ1** ①
Handle Lock 2 or 4-Pole + Padlock	**PLKQ24** ①
Handle Lock 3-Pole + Padlock	**PLKQ3** ①
Single Lock Off/On Device	**1517-1281/1** ①
Lock Off/On device (opposing breaker)	**1517-1290/1** ①
Lock Off device (opposing breaker)	**1517-1277/1** ①
Quicklag DIN Adaptor (Pack of 6)	**QLDINADAPT**
Lockdog Quicklag (Pack of 10)	**LKDQ**
MCB Lock Off Bracket Kit (Pack of 10)	**1517-1299/1** ①
ELQ Lock Off Bracket Kit (Pack of 10)	**1517-2129/1**
Tee-off Insulation Cap	**1521-1287/1**
Busbar Comb 24-Pole	**1521-0070/15**

① Not suitable for ELQ.

S1Q

S3Q

QPC

SC3Q, SC6Q, SC12Q, SC24Q

T50Q

T100Q

QLUGKIT

PLKQ1

PLKQ24

PLKQ3

1517-1281/1

1517-1290/1

1517-1277/1

QLDINADAPT

QSEALKIT

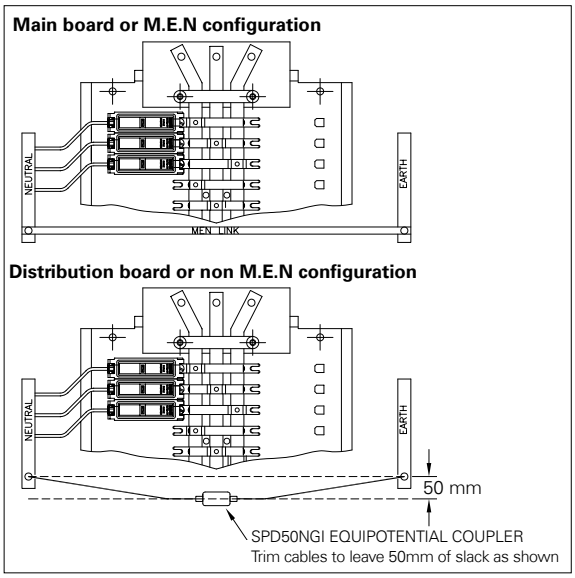
QPF

C36Q

1521-0070/15

LKDQ

1517-1299/1



Quickmov™ surge protection device

Quickmov™ is an integrated Surge Protection Device (SPD), designed to protect single & multiphase electrical distribution systems against the damaging effects of voltage spikes & surges.

Key Features

- Surge rating 30kA Inom & 60kA Imax
- Integrated surge protection solution
- In-built HRC fusing
- Safe thermal disconnect
- Dual barrier flame retardant housing
- Fail safe status indicator
- Protection for M.E.N. & non-M.E.N. applications
- Designed in Australia Quickmov Surge Protection Device
- Mounts directly in any Quicklag™ panelboard
- Compatible with most Quicklag™ accessories (SPD50NGI is required for installations remote from the M.E.N. link).

Dimensions

Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
71	25	93	0.3

Quickmov™ surge protection device

Description	Surge rating	Item no.
1Pole 60kA Quickmov™ Surge Diverter	60kA	**SPDQM1**
50kA Neutral to Earth Surge Protector / Equipotential Coupler	50kA	**SPD50NGI**

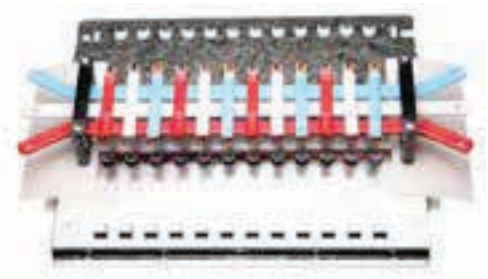
One Quickmov™ per phase is required for multi-phase installations.

Quicklag Chassis

Designed & tested to the requirements of AS1136.1, Quicklag chassis assemblies are available in a number of configurations, They are used by Eaton in Quicklag panelboards & by Original Equipment Manufacturer's in their own panelboard & switchboard assemblies throughout the electrical industry.

Short circuit withstand ratings

	Rating	Withstand
Standard	250A	20kA for 0.1 sec
Non-standard	400A	20kA for 1.0 sec



Chassis vertical & horizontal type

Pole capacity	Item no. Vertical	Height * (mm)	Width (mm)	Item no. Horizontal	Height * (mm)	Width (mm)
12	**Q12PV①**	229	332	**Q12PH**	229	332
18	**Q18PV①**	305	332	**Q18PH**	305	332
24	**Q24PV①**	381	332	**Q24PH**	381	332
30	**Q30PV①**	457	332	**Q30PH**	457	332
36	**Q36PV①**	534	332	**Q36PH**	534	332
42	**Q42PV①**	610	332	**Q42PH**	610	332
48	**Q48PV①**	686	332	**Q48PH**	686	332
60	**Q60PV①**	838	332	**Q60PH**	838	332
72	**Q72PV①**	991	332	**Q72PH**	991	332
78	**Q78PV①**	1067	332			
84	**Q84PV①**	1143	332			
96	**Q96PV①**	1291	332			
108	**Q108PV①**	1444	332			

* Busbars extend 42mm over top & bottom of mounting pan on Vertical type & left & right on horizontal.

① For 400A option add -400 to end of item no. (example Q36PV-400)

Chassis with 100A main switch

Pole capacity	Height (mm)	Width (mm)	Item no.
12	305	332	**Q12PVQT**
24	457	332	**Q24PVQT**
36	610	332	**Q36PVQT**

Non standard variations are available on request. Prices on application.

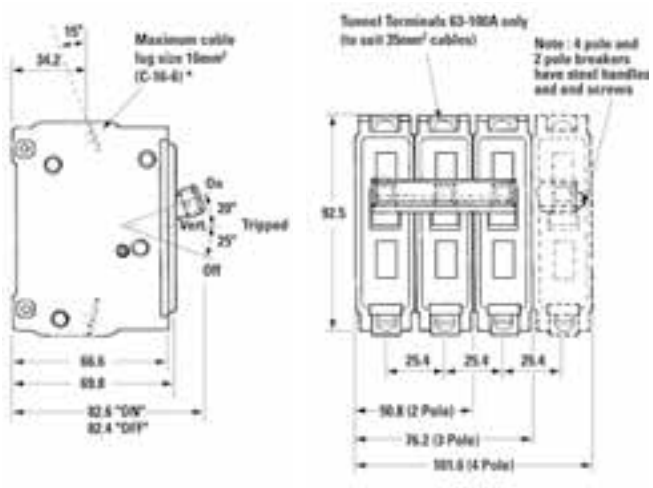
Chassis half-width type

Pole capacity	Item no. Vertical	Height x Width* (mm)	Item no. Horizontal	Height x Width* (mm)
12	**1521-1560/1**	381* x 230	**1521-1561/1**	230 x 381*
18	**1521-1560/2**	534* x 230	**1521-1561/2**	230 x 534*
24	**1521-1560/3**	686* x 230	**1521-1561/3**	230 x 686*
30	**1521-1560/4**	838* x 230	**1521-1561/4**	230 x 838*

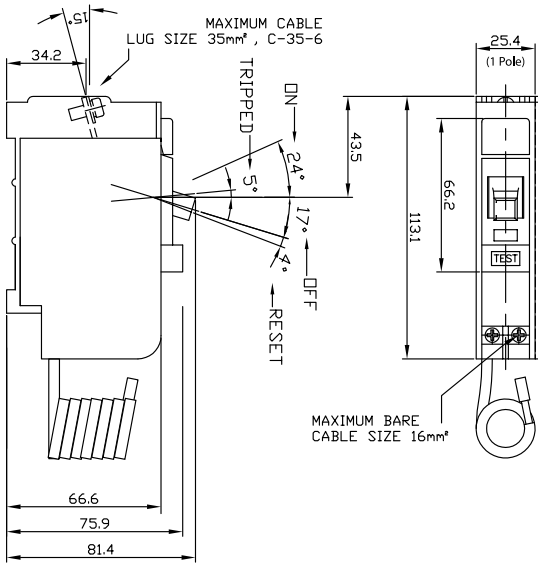
* Busbars extend 42mm over both sides of mounting pan.
* Half-Width Chassis are made to order.

Dimensional data

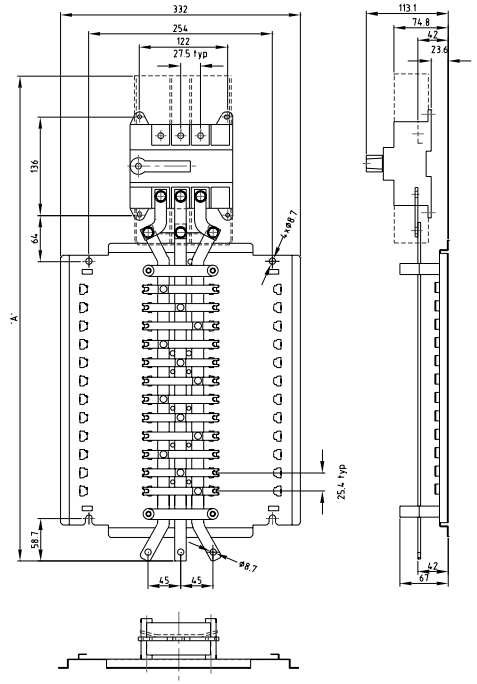
Quicklag dimensions



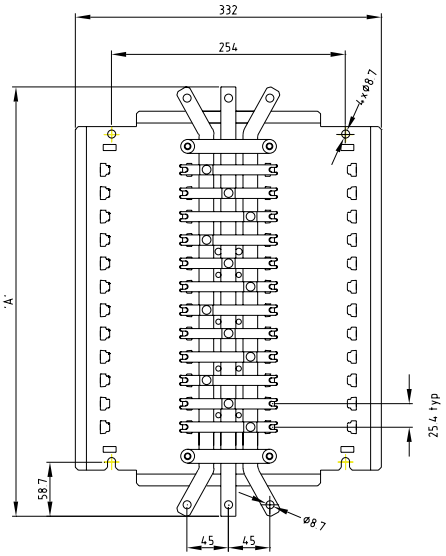
ELQ dimensions



Chassis with main switch dimensions

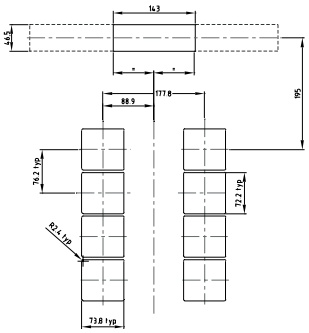


Chassis dimensions



Quicklag Chassis

Poles	Dimension A (mm)
24	671
36	823
48	976
60	1128
72	1281
84	1433
96	1585
108	1738

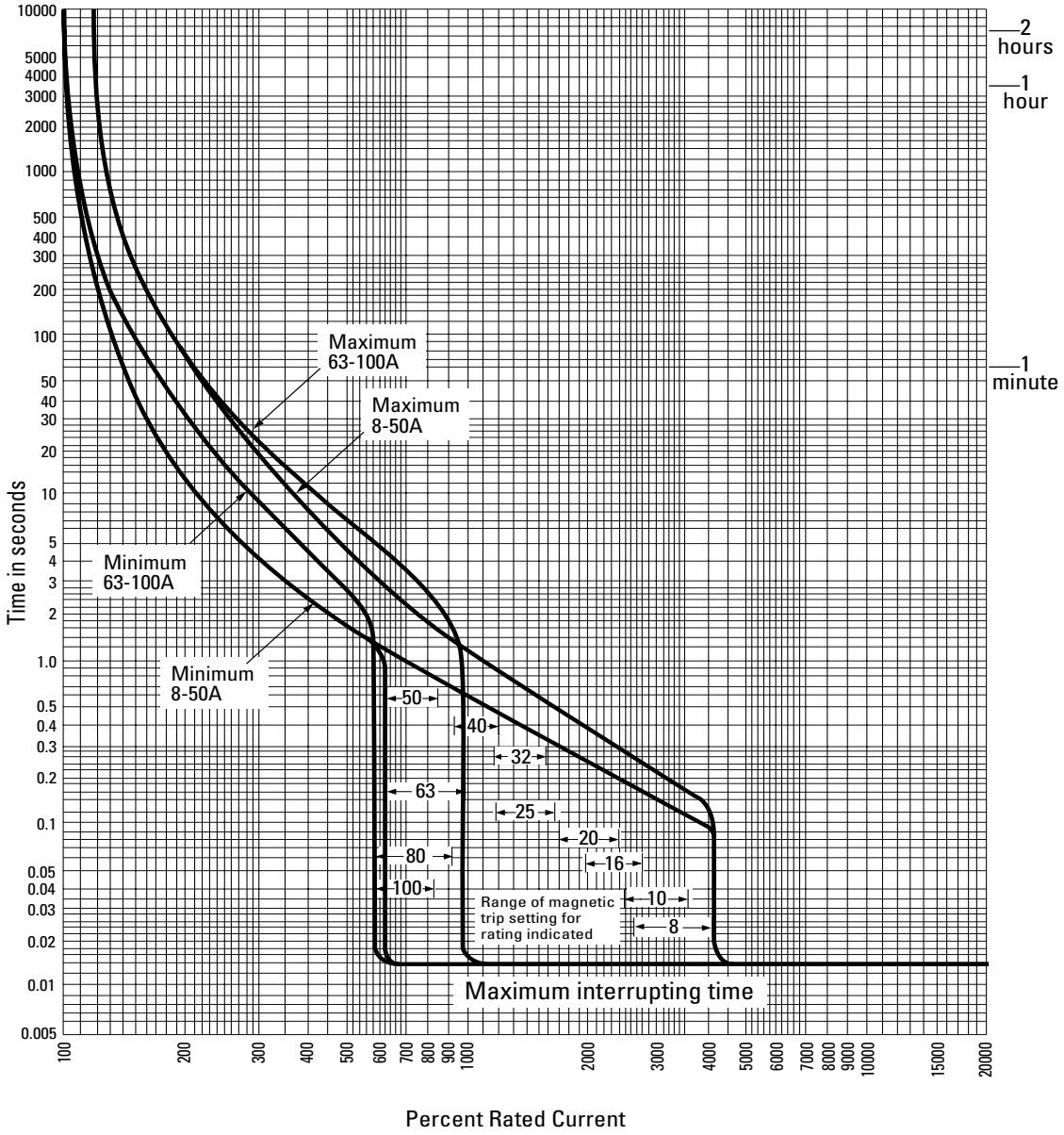


Quicklag Chassis

Poles	Chassis vertical height Dim A (mm)	Chassis horizontal width Dim A (mm)
12	313	313
18	389	389
24	465	465
30	541	541
36	618	618
42	694	694
48	770	770
60	922	922
72	1075	1075
78	1151	-
84	1127	-
96	1375	-
108	1528	-

Technical data

Quicklag MCB time current curve



Time current curves show response times in seconds for applied overcurrent expressed in percentages of rated current. The values are for breakers operating in open air in ambient of 40°C, or inside an enclosure in an ambient of 25°C with no current through the breaker before application of over current.

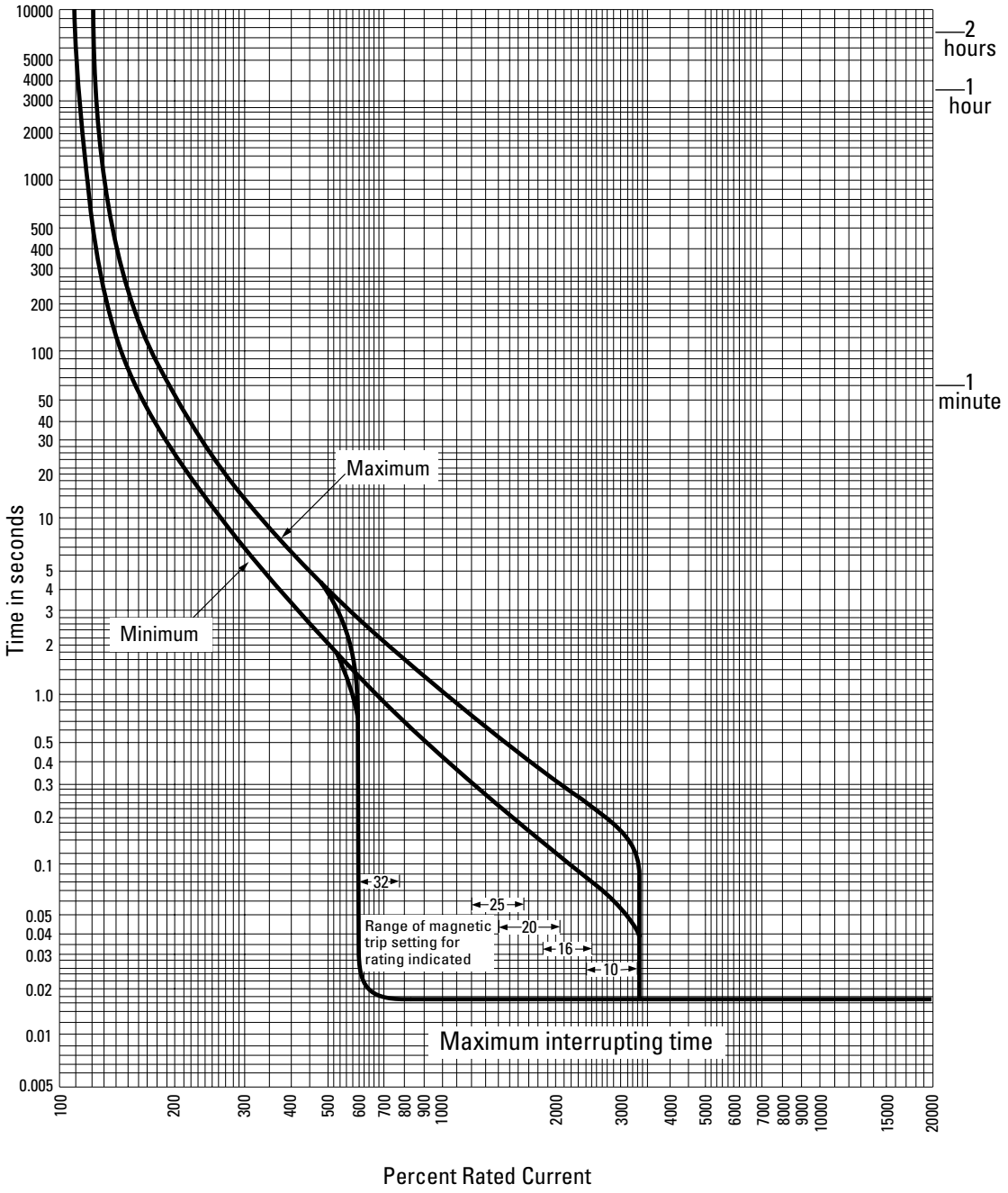
The characteristics are presented not as a single curve but as a band defined by maximum and minimum curves. The characteristics curve for any particular breaker will lie within this band. However, this does not imply that its tolerance band is as wide as the plotted band, which allows for manufacturing and calibrating variations for the range overall.

Specifications - The specifications in this publication were correct at the time the publication went to press. Eaton reserves the right to change the specifications of its products without notice.

Installation and use - The products described in this publication should only be installed and used in accordance with any accompanying instruction sheets. The full extent permitted by law, Eaton expressly excludes all and any liability arising from installation or use of products which is not in accordance with the relevant instruction manual.

Technical data

Quicklag ELQ time current curve



Technical data

Fuse backup

Fuse brands recommended are based on exhaustive type testing conducted at the Australia Electrical Test Centre, University of South Australia, in accordance with the relevant subclauses under clause 8.2.3 of Australian Standard AS3439.1-1993. Peak let-through current and energy, as stated by the respective fuse suppliers, have been detailed in the technical data grid below to assist in choosing a replacement fuse. The recommended back-up fuse ratings are valid for prospective system fault levels up to 50kA rms, 415VAC, 3-phase. The minimum fuse size which can be used for such applications is based on grading under overload, one breaker with one fuse. Minimum BS88/DIN fuse sizes recommended for use with Eaton circuit breakers is as follows: Quicklag 8-16A: 63A; Quicklag 20-40A: 80A; Quicklag 50-63A: 100A; Quicklag 80-100A: 160A.

Fault current limiting fuses for series connected protection of Eaton Quicklag circuit breakers

Ratings (Amps)	BS88 fuse (Quicklag)	DIN fuse (Quicklag)
8	160	160
10	160	160
16	160	200
20	200	200
25	200	200
32	200	250
40	200	250
50	200	250
63	200	250
80	200	250
100	200	250

AS3000-1991 - Attention is drawn to clause 2.19.4.4 of AS3000-1991 requiring that fault current limiters protecting fire and life equipment shall not be affected by a fault on the general installation
AS/NZS3000-2000 - Attention is drawn to clause 7.10.4.4 of AS/NZS3000-2000 requiring that fault current limiters protecting fire and life shall not be affected by a fault on the general installation.

D.O.L starting

Recommend circuit breaker type and continuous current rating for motors with start times

FLC (Amps)	Approximate motor (kW)	Approximate motor (HP)	Quicklag (5 sec start)	Quicklag (10 sec start)
1.8	0.75	1	8 *	8 *
3	1.1	1.5	10	16 *
4	1.5	2	16 *	16 *
5	2.2	3	16 *	20 *
6-7	3	4	20 *	25 *
8	4	5.5	20	25 *
9	4.5	6	25	32 *
11	5.5	7.5	40 *	50 *
12-16	7.5	10	50 *	63 *
17-20	9	12.5	63 *	63 *
21-24	11	15	63	63
25-30	15	20	63	80 *
31-40	18.5	25	80	100
41-44	22	30	100	-
45-52	25	35	100	-
53-56	30	40	100	-

This table is based on average 3-phase, 415VAC motors only, holding 125% FLC continuously and 600% motor FLC for at least 5 and at least 10 seconds as shown. The breakers listed in this table, have either solid state or thermal/magnetic trip releases. The breaker having adjustable thermal and/or magnetic settings must be set at their minimum values.
AS/NZS3000:2007
*These breakers do not provide protection against short time overload currents in accordance with AS/NZS3000:2007, section 2.5.3.
*A separate overload protection device should be used in conjunction with this breaker
(refer AS/NZS3000:2007, section 2.5).Attention is drawn to AS/NZS3000:2007, section 2.5.3 which requires coordination between the conductors and the protective device. Note that this may involve provision of additional overload protection or appropriate cable size selection.

Star Delta, auto-transformer, resistor or reactance motor starting

Recommend circuit breaker type and continuous current rating for motors with start times

FLC (Amps)	Approximate Motor (kW)	Approximate Motor (HP)	Quicklag (20 sec start)
3	1.1	1.5	8 *
4	1.5	2	8
5	2.2	3	10
6-7	3	4	16 *
8	4	5.5	16
9	4.5	6	20 *
11	5.5	7.5	25 *
12-16	7.5	10	32 *
17-20	9	12.5	40
21-24	11	15	50 *
25-30	15	20	50
31-40	18.5	25	63 *
41-44	22	30	63
45-52	25	35	80
53-56	30	40	80
57-60	34	45	100
61-70	37	50	100

This table is based on average 3-phase, 415VAC motors only, holding 115% FLC continuously and 350% motor FLC for at least 20 seconds as shown. The breakers listed in this table, have either solid state or thermal/magnetic trip releases. The breaker having adjustable thermal and/or magnetic settings must be set at their minimum values.
AS/NZS3000:2007
*These breakers do not provide protection against short time overload currents in accordance with AS/NZS3000:2007, section 2.5.3.
*A separate overload protection device should be used in conjunction with this breaker (refer AS/NZS3000:2007, section 2.5).Attention is drawn to AS/NZS3000:2007, section 2.5.3 which requires coordination between the conductors and the protective device. Note that this may involve provision of additional overload protection or appropriate cable size selection.

Fire pump motor starting

Recommend circuit breaker type and continuous current rating for motors with start times

FLC (Amps)	Approximate motor (kW)	Approximate motor (HP)	Quicklag (20 sec start)
1.5	0.55	0.75	10 *
1.8	0.75	1	10 *
3	1.1	1.5	10 *
4	1.5	2	16 *
5	2.2	3	20 *
6-7	3	4	25 *
8	4	5.5	32 *
9	4.5	6	32 *
11	5.5	7.5	40 *
12-16	7.5	10	63 *
17-20	9	12.5	63 *
21-24	11	15	63 *
25-30	15	20	80 *

This table is based on average 3-phase, 415VAC motors only, holding 125% FLC continuously and 600% motor FLC for at least 20 seconds as shown. The breakers listed in this table, have either solid state or thermal/magnetic trip releases. The breaker having adjustable thermal and/or magnetic settings must be set at their minimum values.
AS/NZS3000:2007 The recommended breaker ratings are based on AS/NZS3000:2007, section 7.2.9 and that only one fire-pump motor is protected by each recommended circuit-breaker rating.
* These breakers do not provide protection against short time overload currents in accordance with AS/NZS3000:2007, section 2.5.3.
* A separate overload protection device should be used in conjunction with this breaker (refer AS/NZS3000:2007, section 2.5). Attention is drawn to AS/NZS3000:2007, section 2.5.3 which requires coordination between the conductors and the protective device. Note that this may involve provision of additional overload protection or appropriate cable size selection.

Technical data

Earth fault loop impedance

Maximum values of Earth Fault-Loop impedance (Zs at 230V). Quicklag equivalent to table 8.1 from AS/NZS3000:2007.

Quicklag rating, In (A)	Mean automatic operation current, Ia (A)	Maximum circuit impedance, Zs (Ohms)
8	135	1.70
10	170	1.35
16	270	0.85
20	335	0.69
25	355	0.65
32	440	0.52
40	425	0.54
50	390	0.59
63	520	0.44
80	590	0.39
100	700	0.33

This table was calculated using the formula defined in clause B4.5

$$Z_s = \frac{U_O}{I_a}$$

Where:

Uo = 230V

Ia = Known Value (derived from published Quicklag trip curves)

Maximum circuit lengths, in metres, for different size of conductors & protective devices using approximate mean tripping currents (Ia)*. Quicklag Equivalent to Table B1 from AS/NZS3000:2007

Conductor size	Conductor size	Quicklag rating	Mean automatic operation current	Maximum circuit length (Copper)	Maximum circuit length (Aluminum)
Active Sph (mm^2)	Earth Spe (mm^2)	In (A)	Ia (A)	Lmax (m)	Lmax (m)
1	1	8	135	30	18
1	1	10	170	24	15
1.5	1.5	10	170	36	22
1.5	1.5	16	270	22	14
2.5	2.5	16	270	37	23
2.5	2.5	20	335	30	19
4	2.5	25	355	35	22
4	2.5	32	440	28	17
6	2.5	40	425	33	21
10	4	50	390	59	37
16	6	63	520	68	42
16	6	80	590	60	37
25	6	80	590	67	41
25	6	100	700	56	35
35	10	100	700	90	56

This table was calculated using the formula defined in clause B5.2.2

$$L_{max} = \frac{0.8 U_O S_{ph} S_{pe}}{I_a \rho (S_{ph} + S_{pe})}$$

Where:
Uo = 230V
Ia = Known Value (derived from published Quicklag trip curves)
ρ = Resistivity values shown in the standard
Sph & Spe = Cross sectional Areas of Conductors

Cascading & discrimination tables

Cascading & Discrimination of series connected Eaton Quicklag MCB & moulded case circuit breakers

	Breaker Upstream	FWF 40kA			FW 40kA			HFWF 70kA			HFW 70kA		
Breaker Downstream	-	-	-	-	160A	200A	225A	160A	200A	225A	160A	200A	225A
Quicklag MCB	X/Y	1.2/18	1.6/18	1.8/18	1.6/18	2/18	2.2/18	1.2/18	1.6/18	1.8/18	1.2/18	1.6/18	1.8/18

X= Discrimination up to 4kA Y = Cascading up to 40kA
This table is based on circuit breakers installed on a system with a voltage of 415Vac, 50Hz,
3-Phase Upstream circuit breakers must have their thermal & magnetic characteristics set at their maximum values to obtain the stated discrimination level.
4/40 means that up to 4kA, only the downstream circuit breaker will trip. Above this level, either or both circuit breaker will trip.
This combination has been tested in series for cascading at 40kA

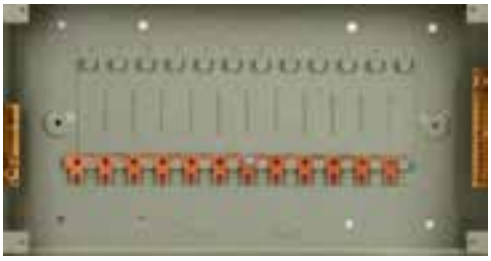
Fuse backup let-through energies

Technical data on HRC fuses type tested for back-up protection of Eaton Quicklag circuit breakers

Fuse Manufacturer	Fuse Type	Fuse Item No.	Fuse Rating (A)	i^2-t Value Pre-Arcing (AMP^2-sec)	i^2-t Value Total @ 415VAC (AMP^2-sec)	i^2-t Value Total @ 550VAC (AMP^2-sec)	i^2-t Value Total @ 600VAC (AMP^2-sec)	Peak Cut-Off Current @ 50kA (kA)	Watts Loss (W)
Bovara-Crady	DIN	AC-1	160	0.52 x 105	N/A	1.00 x 105	N/A	15.00	13.12
	DIN	AC-1	200	1.00 x 105	N/A	2.00 x 105	N/A	17.00	17.00
	DIN	AC-1/2	250	1.50 x 105	N/A	3.50 x 105	N/A	20.00	20.00
Siemens Ltd	BS88	3NWTF	160	0.52 x 105	1.42 x 105	1.96 x 105	N/A	17.50	13.00
	BS88	-	200	1.16 x 105	3.30 x 105	4.56 x 105	N/A	21.00	15.20

LCQ Metal loadcentres

The LCQ loadcentre range is designed for Quicklag breakers and is most suitable for small & compact industrial installations & is available in capacities ranging from 6 pole to 18 pole in a single row. The LCQ range is constructed from robust steel & is dimensioned so that ample space for wiring is available. The standard LCQ is supplied with 100A active link & earth bar & a neutral link that can accommodate 35mm² incoming cable. For 3 phase requirements, 12 pole & 18 pole 100A busbars are available for line side termination.



Surface Mount LCQ Loadcentres

Key Features

- Available in 6 to 18 poles
- Complete with active busbar, earth bar & neutral link
- Metal construction & Ripple Grey finish as standard
- Designed to meet IP40 requirements as standard
- Flushed mounting kit and door kit available as additional items

Dimensions

Height (mm)	Width (mm)	Depth (mm)
234	below	70

Quicklag LCQ metal loadcentres

Pole capacity	Width x depth x height (mm)	Item no. surface mount	Item no. flush mount kit	Item no. door kit
6	284 x 70 x 234	**LCQ6S**	**LCQ6FKIT**	**LCQDRKIT6**
9	360 x 70 x 234	**LCQ9S**	**LCQ9FKIT**	**LCQDRKIT9**
12	436 x 70 x 234	**LCQ12S**	**LCQ12FKIT**	**LCQDRKIT12**
18	589 x 70 x 234	**LCQ18S**	**LCQ18FKIT**	**LCQDRKIT18**

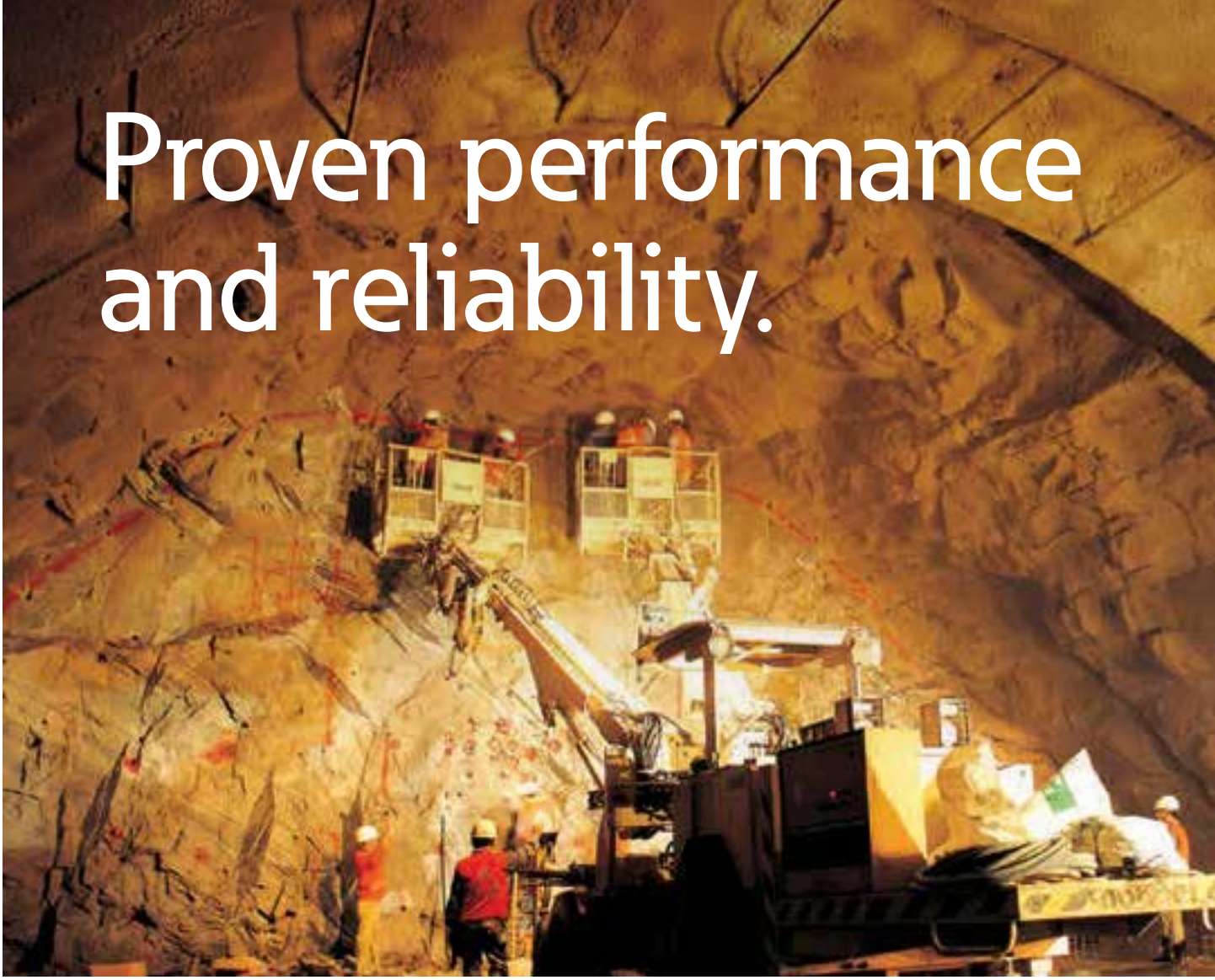
Flush cover = + 50mm extra for height & depth..

Typical Ordering Examples (12 pole):
Surface mount: LCQ12S
Flush mount: LCQ12S + LCQ12FKIT
Surface mount with door: LCQ12S + LCQDRKIT12
Flush mount with door: LCQ12S + LCQ12FKIT + LCQDRKIT12

Accessories

Description	Item no.
Spare pole fillers	**QPF**
Designation labels, neutral, earth	**1521-0031/14**
Designation labels, 1-20, main switch	**1521-0175/1**
12 pole, 3 phase busbar kit	**LCQ12PBB**
18 pole, 3 phase busbar kit	**LCQ18PBB**
Coin lock for door version only	**LCQCLK**

Proven performance and reliability.



With Eaton's mining service circuit breakers, we're continuing a 40 year tradition of being the undisputed leader in electric power distribution to the mining industry.

Widely recognised in the mining industry for their features – and their distinctive orange cover, E2 Rock mining circuit breakers are still are renowned for their proven performance and reliability.

Some features of the Rock breakers that make them ideal for mining applications include:

- Widest range of protection available with thermal ratings from 16A up to 2000A
- Wide range of low magnetic trip units to protect applications with long trailing cables and low fault levels
- A voltage present LED for phase failure sensitive applications
- Optional LED indication for undervoltage release to confirm breaker can be safely reset
- Common accessories with the Series C range of 415VAC Moulded Case Circuit Breakers including shunt trips, undervoltage releases, auxiliary contacts, alarm switches, rotary handles and terminal shields

EATON

Powering Business Worldwide

Series C, moulded case circuit breakers - FW/HFW

225A F frame World Series C -
supplied with chassis mounting screws for the line side & terminals fitted on the load side. Trip units are non-interchangeable.

Thermal setting	fixed (FWF), adjustable (FW: 80-100%) fixed (HFWF), adjustable (HFW: 80-100%)		
Magnetic setting	fixed (8 x I_n)		
Interrupting capacity	FW	40kA at 415Vac 10kA at 250Vdc/2,3,4 pole	
	HFWF, HFW	70kA at 415Vac 20kA at 250Vdc/2,3,4 pole	
Approvals	IEC947-2		
Dimensions		**H x W x D (mm)**	**Weight (kg)**
	1 pole	153 x 35 x 86	0.9
	2 pole	153 x 70 x 86	1.6
	3 pole	153 x 105 x 86	2.3
	4 pole	153 x 140 x 86	3.0

40kA (225AF thermal magnetic circuit breakers)

Ampere rating	1 pole* item no.	2 pole item no.	3 pole item no.	4 pole ① item no.
16	**FWF1016**	**FWF2016**	**FWF3016**	**FWF4016**
20	**FWF1020**	**FWF2020**	**FWF3020**	**FWF4020**
25	**FWF1025**	**FWF2025**	**FWF3025**	**FWF4025**
32	**FWF1032**	**FWF2032**	**FWF3032**	**FWF4032**
40	**FWF1040**	**FWF2040**	**FWF3040**	**FWF4040**
50	**FWF1050**	**FWF2050**	**FW3050**	**FWF4050**
63	**FWF1063**	**FWF2063**	**FW3063**	**FWF4063**
80	**FWF1080**	**FWF2080**	**FW3080**	**FWF4080**
100	**FWF1100**	**FWF2100**	**FW3100**	**FWF4100**
125	**FWF1125**	**FWF2125**	**FW3125**	**FWF4125**
160	**FWF1160**	**FWF2160**	**FW3160**	**FWF4160**
200	-	**FWF2200**	**FW3200**	**FWF4200**
225	-	**FWF2225**	**FWF3225**	**FWF4225**

① 4 pole with unprotected neutral. 100% & 60% protected neutral available on application.

70kA (225AF thermal magnetic circuit breakers)

Ampere rating	1 pole* item no.	2 pole item no.	3 pole item no.
16	**HFWF1016**	**HFWF2016**	**HFWF3016**
20	**HFWF1020**	**HFWF2020**	**HFWF3020**
25	**HFWF1025**	**HFWF2025**	**HFWF3025**
32	**HFWF1032**	**HFWF2032**	**HFWF3032**
40	**HFWF1040**	**HFWF2040**	**HFWF3040**
50	**HFWF1050**	**HFWF2050**	**HFW3050**
63	**HFWF1063**	**HFWF2063**	**HFW3063**
80	**HFWF1080**	**HFWF2080**	**HFW3080**
100	**HFWF1100**	**HFWF2100**	**HFW3100**
125	**HFWF1125**	**HFWF2125**	**HFW3125**
160	**HFWF1160**	**HFWF2160**	**HFW3160**
200	-	-	**HFW3200**
225	-	-	**HFWF3225**

*No internal accessories can be used with the 1 pole F frame.

"The Rock" 1100V mining circuit breakers - F frame

1100V mining circuit breakers - F frame

Current rating	PSCC at 1000V	PSCC at 1100V	Item no.
16	10kA	7.5kA	**E2FM3016**
20	10kA	7.5kA	**E2FM3020**
25	10kA	7.5kA	**E2FM3025**
32	10kA	7.5kA	**E2FM3032**
40	10kA	7.5kA	**E2FM3040**
50	10kA	7.5kA	**E2FM3050**
63	10kA	7.5kA	**E2FM3063**
80	10kA	7.5kA	**E2FM3080**
100	10kA	7.5kA	**E2FM3100**
125	10kA	7.5kA	**E2FM3125**
160	10kA	7.5kA	**E2FM3160**

Magnetic only adjustable - F frame

Description	Item no.
Magnetic only trip 150 to 500A	**E2FM100KM**
Magnetic only trip 300 to 1000A	**E2FM100RM**
Magnetic only trip 450 to 1500A	**E2FM150TM**
Magnetic only trip 750 to 2500A	**E2FM150UM**

Series C, moulded case circuit breakers - FW/HFW and E2FM Rock

Accessory - F frame

Description	Item no.
Alarm switch with pigtail lead connection	**A1L1LPK** ①
Auxiliary switch with pigtail lead connection	**A1X1PK** ①
Auxiliary switch, 2 pole, Left Hand mount with pigtail lead connection	**A2X1LPK** ①
Auxiliary switch, 2 pole, Right Hand mount with pigtail lead connection	**A2X1RPK** ①
Combination auxiliary/alarm switch, Left hand mount with pigtail lead connection	**AAL1LPK** ①
Shunt trip, 9-24Vac, 12-24Vdc, Right hand mount with pigtail lead connection	**SNT1RP03K** ①
Shunt trip, 48-127Vac, 48-60Vdc, Right hand mount with pigtail lead connection	**SNT1RP08K** ①
Shunt trip, 208-380Vac, 110-127Vdc, Right hand mount with pigtail lead connection	**SNT1RP12K** ①
Shunt trip, 415-600Vac, 220-250Vdc, Right hand mount with pigtail lead connection	**SNT1RP18K** ①
Under-voltage release fixed breaker 24Vac with pigtail lead connection	**UVH1RP03K** ①
Under-voltage release fixed breaker 48-60Vac/dc with pigtail lead connection	**UVH1RP05K** ①
Under-voltage release fixed breaker 110-127Vac with pigtail lead connection	**UVH1RP08K** ①
Under-voltage release fixed breaker 208-240Vac with pigtail lead connection	**UVH1RP11K** ①
Under-voltage release fixed breaker 380-480Vac with pigtail lead connection	**UVH1RP15K** ①
Under-voltage release fixed breaker 24Vdc with pigtail lead connection	**UVH1RP21K** ①
Under-voltage release fixed breaker 48Vdc with pigtail lead connection	**UVH1RP22K** ①
Under-voltage release fixed breaker 110-127Vdc with pigtail lead connection	**UVH1RP26K** ①
Under-voltage release adjustable breaker 208-240Vac with pigtail lead connection	**WUVH1RP11K** ①
Under-voltage release adjustable breaker 380-480Vac with pigtail lead connection	**WUVH1RP15K** ①
Under-voltage release adjustable breaker 24Vdc with pigtail lead connection	**WUVH1RP21K** ①
Under-voltage release adjustable breaker 60Vac/dc with pigtail lead connection	**WUVH1RP24K** ①
Under-voltage release adjustable breaker 110-127Vdc with pigtail lead connection	**WUVH1RP26K** ①
Solenoid operator, 240Vac,	**EOP1T11** ②
Padlockable handle lock, 1 pole (PHL1)	**373/1128**
Padlockable handle lock hasp (2,3,4 pole only) (Padlock not included) (PLK1)	**373/1121**
Non-padlockable handle block (LKD1 Lockdog)	**373/1126**
F LH Lock OFF only hasp	**PLK1LOFF**
E-to-F frame conversion kit, 1 pole, F frame on E Frame Chassis	**E-FB1P** ③
E-to-F frame conversion kit, 3 pole	**E-FB3P** ③
Terminal kit, 6mm² (kit of 3)	**T32FB**
Terminal Kit (3T150FB), 25-95mm² 160A (kit of 3)	**T160FB**
Terminal kit, 225A (kit of 3)	**3TA225FD**
General purpose connector - Rear stud (kit of 2), 1 x long, 1 x short	**1517-2013/1** ③
Terminal extension kit - (set of 1 straight busbars + fasteners)	**1517-2082/1** ④
Terminal extension spreader kit - offset tag - 3 tags	**FOST3** ④
Keeper nut kit FW/HFW/HFB	**1517-2021/1**
Interphase barriers (2)	**IPB1**
Terminal shields, plastic (2), 3-pole	**TSF**
Rotary handle kit - metal handle with mechanism & 30cm shaft - IP66	**WHM1R12X**
F Frame VariDepth mechanism	**373/1120**
Handle only, VariDepth	**1517-0488/1**
Weatherproof handle, VariDepth	**1517-0488/2**
Shaft, 165mm for VariDepth	**368/187**
Shaft, 260mm for VariDepth	**368/186**
Pole Filler - F frame	**FPF**
Mounting Hardware - 1 Pole F Frame	**4218B80G15**

① Factory fitted only. No internal accessories can be used with the 1-pole F-frame.
② Can only be fitted to 3+4-pole Moulded Case Circuit Breakers.
③ Cannot be used on Rock breakers.
④ Not recommended on Rock breakers due to impacting insulation clearance distances.

A1X1PK

SNT1RP08K

E-FB3P

WHM1R12X

FAQ's

Alarm switches will signal only closed + tripped positions

Auxiliary switches will signal only open + closed positions

Under-voltage release must be energised before closing breaker

Series C, moulded case circuit breakers - JW

250A J frame World Series C -

Thermal magnetic breaker is made up of two units:
frame & interchangeable trip unit.
3 pole versions standard, 4 pole versions available on request.

Thermal setting	adjustable		
Magnetic setting	adjustable (5 to 10 x In)		
Interrupting capacity	see below		
Approvals	IEC947-2		
Dimensions		**H x W x D (mm)**	**Weight (kg)**
	3 pole	254 x 105 x 103	5.0
	4 pole	254 x 140 x 103	6.8

J frame + Trip unit = Breaker

J frame (only)

Interrupting capacity	Item no.
40kA at 415Vac	**JW3250F**
70kA at 415Vac	**HJW3250F**
70kA at 415Vac (4 pole)	**HJW4250F**
100kA at 415Vac	**JWC3250F**
30kA at 500Vdc	**HJDDC3250F**

Trip unit - (thermal magnetic)

Ampere rating	Item no.
100-125	**JT3125TA**
125-160	**JT3160TA**
160-200	**JT3200TA**
200-250	**JT3250TA**
4 pole 160-200A	**JT4200TA**
4 pole 200-250A	**JT4250TA**

"The Rock" 1100V mining circuit breakers - J frame

1100V mining circuit breaker - J frame

Description	PSCC at 1000V	PSCC at 1100V	Item no.
100-250A J Frame	10kA	8kA	**E2JM3250F**

Trip unit - (thermal magnetic)

Ampere rating	Item no.
100-125	**JT3125TA**
125-160	**JT3160TA**
160-200	**JT3200TA**
200-250	**JT3250TA**

J Frame magnetic only trip unit

Motor FLC	Max. current	HMCP magnetic trip settings - selected position & current ratings									Item no.
		A	B	C	D	E	F	G	H	I	
27.0 - 57.2A	250	350	400	440	480	525	570	610	660	700	**HMCP250A**
34.7 - 73.5A	250	450	505	565	620	680	735	790	845	900	**HMCP250C**
38.5 - 81.6A	250	500	565	625	690	750	810	875	935	1000	**HMCP250D**
48.1 - 102.0A	250	625	700	780	860	940	1020	1090	1170	1250	**HMCP250F**
57.7 - 122.4A	250	750	840	935	1030	1125	1220	1315	1410	1500	**HMCP250G**
67.4 - 142.8A	250	875	980	1090	1200	1310	1420	1530	1640	1750	**HMCP250J**
77.0 - 163.3A	250	1000	1125	1250	1375	1500	1625	1750	1875	2000	**HMCP250K5**
86.6 - 183.6A	250	1125	1265	1410	1545	1690	1830	1970	2110	2250	**HMCP250L5**
96.2 - 204.0A	250	1250	1405	1560	1720	1875	2030	2185	2340	2500	**HMCP250W5**

Series C, moulded case circuit breakers - JW and E2JM Rock

Accessory - J frame

Description	Item no.
Alarm switch with pigtail lead connection	**A1L2RPK** ①
Auxiliary switch with pigtail lead connection	**A1X2PK** ①
Auxiliary switch, 2 pole with pigtail lead connection	**A2X2PK** ①
Combination auxiliary/alarm switch with pigtail lead connection	**AAL2RPK** ①
Shunt trip, 12-24Vac, 12-24Vdc with pigtail lead connection	**SNT2P04K** ①
Shunt trip, 110-240Vac, 110-125Vdc with pigtail lead connection	**SNT2P11K** ①
Shunt trip, 380-440Vac, 220-250Vdc with pigtail lead connection	**SNT2P14K** ①
Under-voltage release, 24Vac with pigtail lead connection	**UVH2LP03K** ①
Under-voltage release, 110-127Vac with pigtail lead connection	**UVH2LP08K** ①
Under-voltage release, 208-240Vac with pigtail lead connection	**UVH2LP11K** ①
Under-voltage release, 380-480Vac with pigtail lead connection	**UVH2LP15K** ①
Under-voltage release, 24Vdc with pigtail lead connection	**UVH2LP21K** ①
Under-voltage release, 220-250Vdc with pigtail lead connection	**UVH2LP28K** ①
Solenoid operator, 240Vac	**EOP2T11** ①
Handle extension	**HEX3**
Padlockable handle lock hasp	**PLK3**
Non-padlockable handle block	**LKD3**
Plug Nut kit (6)	**PLN2M**
Terminal extension kit (3) Straight	**1517-2024/1**
General purpose rear connector (kit of 2) - 1 x long, 1 x short (bolt)	**1517-2009/1** ③
Rear connecting studs (kit of 2) - 1 x long, 1 x short (M12 nut)	**1517-2004/1** ②
Metric End Cap Kit (3P)	**KPEKM2**
J Frame Terminal Hardware Kit (3 pole)	**JTH**
Terminal lug (1)	**T250KB**
Terminal shields, plastic (2)	**TSJ**
Interphase barriers (2)	**IPB3**
Rotary handle kit - metal handle with mechanism & 30cm shaft - IP66	**WHM2R12X**
J Frame VariDepth mechanism	**392/1024**
Handle only, VariDepth	**1517-0488/1**
Weatherproof handle, VariDepth	**1517-0488/2**
Shaft, 165mm - VariDepth	**368/187**
Shaft, 260mm - VariDepth	**368/186**

① Field mountable. If factory fitting required, add $100 for each accessory.
② Cannot be used on Rock breakers.
③ Not recommended on Rock breakers due to impacting insulation clearance distances.

AAL2RPK

UVH2LP03K

PLK3

T250KB

FAQ's

Alarm switches will signal only closed + tripped positions

Auxiliary switches will signal only open + closed positions

Under-voltage release must be energised before closing breaker

Series C, moulded case circuit breakers - KW

400A K frame World Series C -
Thermal magnetic or electronic breaker with interchangeable trip units. Thermal magnetic type has adjustable thermal (80-100%) & adjustable magnetic settings (5-10 x In). Electronic type has interchangeable rating plugs.

Approvals	IEC947-2	
Dimensions	**H x W x D (mm)**	**Weight (kg)**
	257 x 140 x 103	6.0

K Frame + Thermal Magnetic Trip Unit = Thermal Magnetic Breaker
K Frame + Digitrip Unit = Electronic Breaker

K Frame (400AF thermal magnetic & electronic circuit breakers)

Interrupting capacity	Thermal magnetic	Electronic	Item no.
45kA at 415Vac	✓	✓	**KW3400F**
70kA at 415Vac	✓	✓	**HKW3400F**
70kA at 415Vac - 4 pole	✓	✓	**HKW4400F**
100kA at 415Vac	✓	✓	**KWC3400F**

Thermal magnetic trip units

Ampere rating	Item no.
160-200	**KT3200TA**
200-250	**KT3250TA**
250-315	**KT3315TA**
315-400	**KT3400TA**
160-200 4 pole	**KT4200TA**
200-250 4 pole	**KT4250TA**
250-315 4 pole	**KT4315TA**
315-400 4 pole	**KT4400TA**

Electronic trip units

Ampere rating	Digitrip 310+ item no.	Ampere rating
Electronic trip units		
125	**KES3125LSI**	55, 60, 70, 80, 90, 100, 110, 125
250	**KES3250LSI**	100, 125, 150, 160, 175, 200, 225, 250
400	**KES3400LSI**	160, 200, 225, 250, 300, 315, 350, 400

"The Rock" 1100V mining circuit breakers - K frame

1100V mining circuit breaker - K frame

Description	PSCC at 1000V	PSCC at 1100V	Item no.
125-400A K Frame	14kA	12kA	**E2KM3400F**

1100V mining circuit breaker thermal magnetic trip units - K frame

Ampere rating	Item no.
250	**E2K3250T**
300	**E2K3300T**
350	**E2K3350T**
400	**E2K3400T**

1100V mining circuit breaker electronic trip units - K frame

Ampere rating	Digitrip 310+ item no.
125	**KEM3125T**
200	**KEM3200T**
400	**KEM3400T2**

Magnetic only trip, K Frame HMCP - Trip Unit only, all ratings (for use with K frame 3 pole circuit breakers)

Motor FLC	Max. current	HMCP magnetic trip settings - selected position & current ratings									Item no.
		A	B	C	D	E	F	G	H	I	
48.1-102.0A	400	625	700	780	860	940	1020	1090	1170	1250	**HMCP400F5**
67.4-142.8A	400	875	980	1090	1200	1310	1420	1530	1640	1750	**HMCP400J5**
77.0-163.3A	400	1000	1125	1250	1375	1500	1625	1750	1875	2000	**HMCP400K5**
86.6-183.6A	400	1125	1265	1410	1545	1690	1830	1970	2110	2250	**HMCP400L5**
96.2-204.0A	400	1250	1405	1560	1720	1875	2030	2185	2340	2500	**E2K3400TMW**
153.9-326.9A	400	2000	2250	2500	2750	3000	3250	3500	3750	4000	**HMCP400X5**

* ARMS enabled 1100V mining circuit breakers are now available. contact Eaton for more details.

Series C, moulded case circuit breakers - KW and E2KM Rock

Accessory - K frame

Accessory	Item no.
Alarm Switch with pigtail lead connection	**A1L3RPK** ①
Auxiliary Switch - 1 pole with pigtail lead connection	**A1X3PK** ①
Auxiliary Switch - 2 pole with pigtail lead connection	**A2X3PK** ①
Alarm + Auxiliary Combination Switch with pigtail lead connection	**AAL3RPK** ①
Shunt Trip Device 12-24V ac/ac with pigtail lead connection	**SNT3P04K** ①
Shunt Trip Device 110-240Vac with pigtail lead connection	**SNT3P11K** ①
Shunt Trip Device 380-440Vac with pigtail lead connection	**SNT3P14K** ①
Shunt trip device 48Vdc with pigtail lead connection	**SNT3P06K** ①
Under-voltage Trip Device 24Vac with pigtail lead connection	**UVH3LP03K** ①
Under-voltage Trip Device 48-60Vac with pigtail lead connection	**UVH3LP05K** ①
Under-voltage Trip Device 110-127Vac with pigtail lead connection	**UVH3LP08K** ①
Under-voltage Trip Device 208-240Vac with pigtail lead connection	**UVH3LP11K** ①
Under-voltage Trip Device 380-480Vac with pigtail lead connection	**UVH3LP15K** ①
Under-voltage Trip Device 24Vdc with pigtail lead connection	**UVH3LP21K** ①
Under-voltage Trip Device 48-60V DC (left) c/w Pigtail Leads with pigtail lead connection	**UVH3LP23K** ①
Under-voltage Trip Device 48-60V DC (right) c/w Pigtail Leads with pigtail lead connection	**UVH3RP23K** ①
Under-voltage Trip Device 110-125V DC with pigtail lead connection	**UVH3LP26K** ①
Under-voltage Trip Device 220-250V DC with pigtail lead connection	**UVH3LP28K** ①
Electrical Motor Operator - 240Vac	**EOP3T11**
Toggle Extension Handle	**HEX3**
Lockdog JW/KW	**LKD3**
Handle Padlock Hasp	**PLK3**
Handle, Lock OFF only	**PLK3ROFF**
Metric End Cap Kit (3 pole)	**KPEKM3**
Keeper Nut Kit - Line side	**KPR3AM**
Keeper Nut Kit - Load side	**KPR3BM**
Terminal Hardware Kit (3 Pole)	**KTH**
T300K Terminal	**T300K**
T350K Terminal	**T350K**
Terminal L Adapter Kit	**TAD3**
Rear Connection Stud Kit (2) - 1 x long, 1 x short	**1517-2006/1** ②
HKW General Purpose Connection Kit (1 x Long + Short)	**1517-2010/1** ③
Terminal Extension Link Kit (3)	**1517-2032/1** ③
Inter Phase Barrier	**IPB3**
Terminal Shield (Pair)	**TSK**
Rotary Metal Handle IP66 Black 30cm Shaft with mechanism	**WHM3R12X**
K Frame VariDepth mechanism	**393/1128**
Handle only, VariDepth	**1517-0488/1**
Weatherproof handle, VariDepth	**1517-0488/2**
Shaft, 165mm, VariDepth	**368/187**
Shaft, 260mm, VeriDepth	**368/186**

① Field mountable. If factory fitting required, add $100 for each accessory.
② Cannot be used on Rock breakers.
③Not recommended on Rock breakers due to impacting insulation clearance distances.

A1L3RPK

SNT3P11K

KPEKM3

TAD3

FAQ's

Alarm switches will signal only closed + tripped positions

Auxiliary switches will signal only open + closed positions

Under-voltage release must be energised before closing breaker

Series C, moulded case circuit breakers - LW

630A & 800A L frame World Series C -
Available in thermal magnetic or electronic types.

Trip units	630A interchangeable, 800A fixed
Thermal setting	adjustable 80-100% x In
Magnetic setting	adjustable (5-10 x In)
Approvals	IEC947-2

Dimensions			**H x W x D (mm)**	**Weight (kg)**
	3 pole	630A	273 x 210 x 103	9.0
	3 pole	800A	406 x 210 x 103	10.0
	4 pole	630A	273 x 280 x 103	11.0

L Frame + Thermal Magnetic Trip Unit = Thermal Magnetic Breaker.
L Frame + Digitrip Unit + Rating Plug = Electronic Breaker

L frame (only) (630AF & 800A thermal magnetic & electronic breakers)

Interrupting Capacity	Thermal Magnetic	Electronic	Item no.
45kA at 15Vac	✓	✓	**LW3630F**
45kA at 15Vac	✓	-	**LW4630F**
70kA at 15Vac	✓	✓	**HLW3630F**
70kA at 15Vac	✓	-	**HLW4630F**
100kA at 415Vac	✓	✓	**LWC3630F**
22kA at 500Vdc	✓	-	**HLDDC3600F**
50kA at 415Vac	✓	-	**LW3800W (800A) trip unit installed**
50kA at 415Vac	-	✓	**LW3800T33W (400 - 800A trip unit + rating plug installed)**

Thermal magnetic trip units

Adjustable Ampere Rating	Item no.
250 - 315	**LT3315TA**
315 - 400	**LT3400TA**
400 - 500	**LT3500TA**
500 - 630	**LT3630TA**
400 - 500 4 pole	**LT4500TA**
500 - 630 4 pole	**LT4630TA**

Electronic trip units

Digitrip Item no.	Ampere Rating	Rating plug Item no.
LES3630LSI	315, 400, 500, 630	**A6LES630T2**

"The Rock" 1100V mining circuit breakers - L frame

1100V mining circuit breaker - L frame

Current rating	PSCC at 1000V	PSCC at 1100V	Item no.
300-600A L Frame	18kA	12kA	**E2LM3600F**

1100V mining circuit breaker thermal magnetic trip units - L frame

Ampere rating	Item no.
300	**E2L3300T**
400	**E2L3400T**
500	**E2L3500T**
600	**E2L3600T**

1100V mining circuit breaker electronic trip units - L frame

Ampere rating	Digitrip 310+ item no.
300	**LEM3300T**
400	**LEM3400T**
600	**LEM3600T**

Magnetic Only Trip, L Frame HMCP - Trip Unit only, all ratings (for use with L frame 3 pole circuit breakers)

Motor FLC	Max. current	HMCP magnetic trip settings - selected position & current ratings									Item no.
		A	B	C	D	E	F	G	H	I	
86.6-183.6A	600	1125	1266	1406	1547	1688	1828	1969	2109	2250	**E2L3600TML**
115.4-244.9A	600	1500	1688	1875	2063	2250	2438	2625	2813	3000	**E2L3600TMN**
134.7-285.7A	600	1750	1969	2188	2406	2625	2844	3063	3281	3500	**E2L3600TMR**
153.9-326.9A	600	2000	2250	2500	2750	3000	3250	3500	3750	4000	**E2L3600TMX**
192.3-408.2A	600	2500	2813	3125	3438	3750	4063	4375	4688	5000	**E2L3600TMP**
230.8-489.8A	600	3000	3375	3750	4125	4500	4875	5250	5625	6000	**E2L3600TM**

The recommended full load current range is based on the breaker having continuous current rating of not less than 115% of the motor full load current.

* ARMS enabled 1100V mining circuit breakers are now available. contact Eaton for more details.

Series C, moulded case circuit breakers - LW and E2LM Rock

Accessory - L frame

Description	Item no.
Alarm switch with pigtail lead connection	**A1L4RPK** ①
Auxiliary switch with pigtail lead connection	**A1X4PK** ①
Auxiliary switch, 2 pole with pigtail lead connection	**A2X4PK** ①
Auxiliary switch, 3 pole with pigtail lead connection	**A3X4PK** ①
Combination auxiliary/alarm switch with pigtail lead connection	**AA214RPK** ①
Shunt trip, 9-24Vac/dc with pigtail lead connection	**SNT4LP03K** ①
Shunt trip, 110-240Vac, 110-125Vdc with pigtail lead connection	**SNT4LP11K** ①
Shunt trip, 380-440Vac, 220-250Vdc with pigtail lead connection	**SNT4LP14K** ①
Under-voltage release, 24Vdc with pigtail lead connection	**UVH4LP21K** ①
Under-voltage release, 110-127Vac with pigtail lead connection	**UVH4LP08K** ①
Under-voltage release, 208-240Vac with pigtail lead connection	**UVH4LP11K** ①
Under-voltage release, 380-480Vac with pigtail lead connection	**UVH4LP15K** ①
Under-voltage release, 110-125Vdc with pigtail lead connection	**UVH4LP26K** ①
Motor operator 240Vac	**EOP4MT11A** ①
Handle (Toggle) Extension	**HEX4**
Padlockable handle lock hasp	**HLK4**
Busbar mounting kit (3)	**1514-1011/1** ②
Terminal extension kit (3)	**1517-0692/1** ③
Rear connecting stud - threaded stud SA800	**1518-0310/2** ②
Metric End Cap Kit (3 pole)	**KPEKM4**
Interphase barriers (2)	**IPB4**
Terminal shields, plastic (2)	**TSL**
Rotary Metal Handle IP66 Black 30cm Shaft with mechanism	**WHM4R12X**
L Frame VariDepth mechanism	**394/1246**
Handle only, VariDepth mechanism	**1517-0488/1**
Weatherproof handle, VariDepth	**1517-0488/2**
Shaft, 165mm, VariDepth	**368/187**
Shaft, 260mm, VariDepth	**368/186**

① Field mountable. If factory fitting required, add $100 for each accessory.
② Cannot be used on Rock breakers.
③ Not recommended on Rock breakers due to impacting insulation clearance distances.

A3X4PK

1517-0692/1

IPB4

TSL

FAQ's

Alarm switches will signal only closed + tripped positions

Auxiliary switches will signal only open + closed positions

Under-voltage release must be energised before closing breaker

Series G, moulded case circuit breaker -

N frame 1600 Ampere

Digitrip 310+ Electronic trip unit is standard. Non-auto switch versions available.

Dimensions		H x W x D (mm)	Weight (kg)
	3 pole	406 x 210 x 140	21.3
	4 pole	406 x 280 x 140	28.3

LSI trip unit, interrupting capacity (Icu/Ics) = 50/50kA @ 415Vac. rating plug included

Ampere rating	3 pole item no.	4 pole item no.
400 ~ 800A	**NGS308032M**	**NGS408032M**
630 ~ 1250A	**NGS312532M**	**NGS412532M**
800 ~ 1600A Front	**NGSF316032M**	**NGSF416032M**
800 ~ 1600A Rear	**NGS316032M**	**NGS416032M**

LSI trip unit, interrupting capacity (Icu/Ics) = 70/50kA @ 415Vac. rating plug included

Ampere rating	3 pole item no.	4 pole item no.
400 ~ 800A	**NGH308032M**	**NGH408032M**
630 ~ 1250A	**NGH312532M**	**NGH412532M**
800 ~ 1600A Front	**NGHF316032M**	**NGHF416032M**
800 ~ 1600A Rear	**NGH316032M**	**NGH416032M**

Note: 4 pole breakers are not offered with neutral protection or ground fault protection. i.e. these are 0% protection on neutral.

LSIG trip unit, Interrupting capacity (Icu/Ics) = 50/50kA @ 415Vac. rating plug included

Ampere rating	3 pole item no.	4 pole item no.
400 ~ 800A	**NGS308036M**	**NGS408036M**
630 ~ 1250A	**NGS312536M**	**NGS412536M**
800 ~ 1600A Front	**NGSF316036M**	**NGSF416036M**
800 ~ 1600A Rear	**NGS316036M**	**NGS416036M**

LSIG trip unit, interrupting capacity (Icu/Ics) = 70/50kA @ 415Vac. rating plug included

Ampere rating	3 pole item no.	4 pole item no.
400 ~ 800A	**NGH308036M**	**NGH408036M**
630 ~ 1250A	**NGH312536M**	**NGH412536M**
800 ~ 1600A Front	**NGHF316036M**	**NGHF416036M**
800 ~ 1600A Rear	**NGH316036M**	**NGH416036M**

Moulded case switches (non-auto)

Ampere rating	3 pole item no.	4 pole item no.
800	**NGK3080KSM**	**NGK4080KSM**
1250	**NGK3125KSM**	**NGK4125KSM**

"The Rock" 1100V mining circuit breakers - N frame 1200 Ampere

1100V mining circuit breaker - N frame with 310+ mining electronic trip unit fitted

Current rating	PSCC at 1000V	PSCC at 1100V	Item no.
800A N Frame	25kA	20kA	**E2NM3800W**
1200A N Frame	25kA	20kA	**E2NM312W**

* ARMS enabled 1100V mining circuit breakers are now available. contact Eaton for more details.

Series G, moulded case circuit breaker - N frame 1600 Ampere and E2NM Rock

Accessory - N frame

Description	Item no.
Alarm Lockout (L) 1M1B with pigtail lead connection	**A1L5LPK** ①
Alarm Lockout (R) 1M1B with pigtail lead connection	**A1L5RPK** ①
Alarm Lockout (L) 2M2B with pigtail lead connection	**A2L5LPK** ①
Alarm Lockout (R) 2M2B with pigtail lead connection	**A2L5RPK** ①
Auxiliary switch (Right Side Mount) with pigtail lead connection	**A1X5PK** ①
Aux. SW 2A2B with pigtail lead connection	**A2X5PK** ①
Aux. SW (L) 3A3B with pigtail lead connection	**A3X5LPK** ①
Aux. SW (R) 3A3B with pigtail lead connection	**A3X5RPK** ①
Aux. SW + AL (L) 1A1B with pigtail lead connection	**AA115LPK** ①
Aux. SW + AL (R) 1A1B with pigtail lead connection	**AA115RPK** ①
Auxiliary alarm switch (2pole aux. + 1pole alarm) with pigtail lead connection	**AA215RPK** ①
Shunt trip, 24Vac/dc with pigtail lead connection	**SNT5LP03K** ①
Shunt trip, 48-60Vac with pigtail lead connection	**SNT5LP05K** ①
Shunt trip, 110-240Vac with pigtail lead connection	**SNT5LP11K** ①
Shunt trip, 380-440Vac , 220-250Vdc with pigtail lead connection	**SNT5LP14K** ①
Shunt Trip (L) 480-600VAC with pigtail lead connection	**SNT5LP18K** ①
Shunt trip, 48-60Vdc with pigtail lead connection	**SNT5LP23K** ①
Shunt trip, 110-125Vdc with pigtail lead connection	**SNT5LP26K** ①
Shunt Trip (L) Low Energy with pigtail lead connection	**LST5LPK** ①
Under-voltage release, 110-127Vac with pigtail lead connection	**UVH5LP08K** ①
Undervoltage Trip (L) 24VAC/DC with pigtail lead connection	**UVH5LP21K** ①
Under-voltage release, 208-240Vac with pigtail lead connection	**UVH5LP11K** ①
Under-voltage release, 380-440Vac with pigtail lead connection	**UVH5LP29K** ①
Electrical operator, 240V AC	**EOP5T11** ①
Handle Extension (Spare)GN or NW Frame	**HEX5**
Handle Block-Non padlockable GN or NW Frame	**LKD4**
Key Interlock provision N Frame Series G	**KYK4**
Padlockable lockdog	**PLK5**
Mech interlock sliding Bar 3-4P N frame series G	**SBK5**
NG 1250A 3P metric conductor extension kit	**5104A24G04**
NG 1600A 3P term extn kit (1 side)	**N16TE3**
NG 1600A 4P term extn kit (1 side)	**N16TE4**
Busbar mounting kit	**1517-2055/1** ②
Interphase barriers (2)	**IPB5**
Test Kit-230Vac-DT310 trip unit	**STK2**
Handle Assy Direct Mount Black N Frame Series G	**HMVD5B**
Rotary Metal Handle IP65 Black 12" Shaft with mechanism	**WHM5R12**

① Field mountable. If factory fitting required, add $100 for each accessory.
② Cannot be used on Rock breakers.

A1X5PK

AA215RPK

HEX5

EOP5T11

FAQ's

Alarm switches will signal only closed + tripped positions

Auxiliary switches will signal only open + closed positions

Under-voltage release must be energised before closing breaker

Series G, moulded case circuit breaker -

R frame 2500 Ampere

Dimensions		H x W x D (mm)	Weight (kg)
	3 pole	406 x 394 x 229	47
	4 pole	406 x 508 x 229	54

LSI 310+ trip unit, interrupting capacity (Icu/Ics) = 70/50kA @ 415Vac

Ampere rating	3 pole item no.	4 pole item no.
800 ~ 1600A	**RGH316032M**	**RGH416032M**
1000 ~ 2000A	**RGH320032M**	**RGH420032M**
1250 ~ 2500A	**RGH325032M**	**RGH425032M**

Electronic trip unit characteristics
Parameter

L Adjustable Long Delay Pickup (A)
S Short Time Range (A)
I Short Time Delay (sec)
G Ground Fault Pickup (A)
Ground Fault Time (sec)

LSIG 310+ trip unit, interrupting capacity (Icu/Ics) = 70/50kA @ 415Vac

Ampere rating	3 pole item no.	4 pole item no.
800 ~ 1600A	**RGH316036M**	**RGH416036M**
1000 ~ 2000A	**RGH320036M**	**RGH420036M**
1250 ~ 2500A	**RGH325036M**	**RGH425036M**

Moulded case switches (non-auto)

Ampere rating	3 pole item no.	4 pole item no.
1600	**RGK3160KSM**	**RGK4160KSM**
2000	**RGK3200KSM**	**RGK3200KSM**

Note: 4 pole breakers are not offered with neutral protection or ground fault protection. i.e. these are 0% protection on neutral.

"The Rock" 1100V mining circuit breakers - R frame 2000 Ampere

1100V mining circuit breaker - R frame with 310+ mining electronic trip unit fitted

Current rating	PSCC at 1000V	PSCC at 1100V	Item no.
1600A R Frame	25kA	20kA	**E2RM316W**
2000A R Frame	25kA	20kA	**E2RM320W**

* ARMS enabled 1100V mining circuit breakers are now available. contact Eaton for more details.

Series G, moulded case circuit breaker - GR and E2RM Rock

Accessory - R frame

Description	Item no.
Alarm switch with pigtail lead connection	**A1L6RPK** ①
Alarm switch, 2 pole with pigtail lead connection	**A2L6RPK** ①
Auxiliary switch, 2 pole with pigtail lead connection	**A2X6RPK** ①
Auxiliary switch, 4 pole with pigtail lead connection	**A4X6RPK** ①
Shunt trip, 24Vdc with pigtail lead connection	**SNT6P03K** ①
Shunt trip, 120 to 240Vac with pigtail lead connection	**SNT6P11K** ①
Shunt Trip (R) 480-600VAC with pigtail lead connection	**SNT6P18K** ①
Shunt trip, 440Vac with pigtail lead connection	**SNT6P14K** ①
Shunt trip, 48 to 60Vdc with pigtail lead connection	**SNT6P23K** ①
Shunt Trip (R) Low Energy with pigtail lead connection	**LST6RPK** ①
Under-voltage Trip (R) 208-240VAC with pigtail lead connection	**UVH6RP11K** ①
Under-voltage Trip (R) 24VDC with pigtail lead connection	**UVH6RP21K** ①
Under-voltage Trip (R) 300-500VAC with pigtail lead connection	**UVH6RP29K** ①
Electrical Operator 240Vac GR or RW Frame	**EOP6T11K** ①
Handle extension	**HEX6**
Key interlock provision	**KYK6**
Padlockable handle lock hasp	**HLK6**
Test KIT-230Vac-DT310 trip unit	**STK2**
Terminal Cable (1) 4 x 50-300mm^2 R Frame Series G	**T1600RDM** ②
Terminal Cable (1) 4 x 300-500mm^2 R Frame Series G	**TA1600RDM** ②
Terminal Cable (1) 6 x 35-300mm^2 R Frame Series G	**TA2000RDM** ②
Vari-Depth Handle Mech R Frame Series G	**HMVD6B**
Terminal Rear (1) 2000A R Frame Series G	**B2016RDLM** ②

① Field mountable. If factory fitting required, add $100 for each accessory.
② Cannot be used on Rock breakers.

STK2

FAQ's

Alarm switches will signal only closed + tripped positions

Auxiliary switches will signal only open + closed positions

Under-voltage release must be energised before closing breaker

Replacement moulded case circuit breakers for previous Westinghouse & Cutler-Hammer moulded case circuit breakers

In all cases fitted accessories must also be changed with exception to NEMA Series C & IEC Series C where all accessories are common within same frame sizes.

Model	Notes	Replacement	Notes
G-frame			
GC/GHC/ GCH	US BREAKER	GW	Direct physical replacement
GD	NEMA VERSION GW	GW	Direct physical replacement
GB/GHB/ GC/GHC	NEMA VERSION GW	GW	Direct physical replacement
F-frame			
MCP	US BREAKER	HMCP (Series C)	Direct physical replacement
ED	NEMA SERIES C	FW	Direct physical replacement
EDH	NEMA SERIES C	HFW	Direct physical replacement
EDC	NEMA SERIES C	FWC	Direct physical replacement
EHD	NEMA SERIES C	FW	Direct physical replacement
FDB	NEMA SERIES C	FW	Direct physical replacement
EB	US BREAKER	FW	Direct physical replacement
EHB	US BREAKER	FW	Direct physical replacement
FB	EX.NZ.MADE	FW	Direct physical replacement
HFB	EX.NZ.MADE	FW	Direct physical replacement
FD	NEMA VERSION FW	FW	Direct physical replacement
HFD	NEMA VERSION HFW	HFW	Direct physical replacement
FDC	NEMA VERSION FWC	FWC	Direct physical replacement
J-frame			
JDB	NEMA SERIES C	JW	Direct physical replacement
JB/KB	US BREAKER	JW	Direct physical replacement
HKB	US BREAKER	JW	Direct physical replacement
JD	NEMA VERSION JW	JW	Direct physical replacement
HJD	NEMA VERSION HJW	HJW	Direct physical replacement
JDC	NEMA VERSION JWC	JWC	Direct physical replacement
K-frame			
KDB	NEMA SERIES C	KW	Terminals slightly higher
JA/KA	US BREAKER	KW	Terminals slightly higher
HKA	US BREAKER	KW	Terminals slightly higher
LB/LLB	US BREAKER	KW	Terminals slightly higher
HLB	EX.AUST.MADE	KW	Terminals slightly higher
DA	US BREAKER	KW	Terminals slightly higher
DK	NEMA SERIES C	KW	Terminals slightly higher
KD	NEMA VERSION KW	KW	Direct physical replacement
HKD	NEMA VERSION HKW	HKW	Direct physical replacement
KDC	NEMA VERSION KWC	KWC	Direct physical replacement

Model	Notes	Replacement	Notes
L-frame			
LDB	NEMA SERIES C	LW	Thread changes from imperial to metric
LA/LAB/HLA 400	US BREAKER	LW	Thread changes from imperial to metric
LA/HLA 600	US BREAKER	LW	Thread changes from imperial to metric
LC/LCC/HLC	US BREAKER	LW+DIGI310	Thread changes from imperial to metric
LD	NEMA VERSION LW	LW	Thread changes from imperial to metric
HLD	NEMA VERSION HLW	HLW	Thread changes from imperial to metric
LDC	NEMA VERSION LWC	LWC	Thread changes from imperial to metric
M-frame			
MA/HMA	US BREAKER	LW3800T33W	Replacement physically smaller
MC/HMC	US BREAKER	LW3800T33W	Replacement physically smaller
N-frame			
NB/NC	US BREAKER	NGS312532M	Thread changes from imperial to metric
HNB/HNC	US BREAKER	NGS312532M	Thread changes from imperial to metric
ND	NEMA VERSION NW	NGS312532M	Thread changes from imperial to metric
HND	NEMA VERSION HNW	NGH312532M	Thread changes from imperial to metric
HDC	NEMA VERSION NWC	GNC3125T32WP09	Thread changes from imperial to metric
R-frame		1600A	
RD	NEMA VERSION RW	RGH316032M	Thread changes from imperial to metric
RDC	NEMA VERSION RWC	GRC316T32WP09	Thread changes from imperial to metric
		2000A	
RD	NEMA VERSION RW	RGH320032M	Thread changes from imperial to metric
RDC	NEMA VERSION RWC	GRC320T32WP17	Thread changes from imperial to metric
		2500A	
RD	NEMA VERSION RW	RGH325032M	Thread changes from imperial to metric
RDC	NO IEC VERSION	GRC325T32WP40	N/A

"The Rock" 1100V mining circuit breaker application data

Adapter plates

Description	Item no.
Adaptor NZM to E2FM	**ROCKLBSTRF**
Adaptor NZM to E2JM	**ROCKLBSTRJ**
Adaptor NZM to E2LM	**ROCKLBSTRL**
Adaptor NZM to E2NM	**ROCKLBSTRN**

Retrofit is only possible if Enclosure Dimensions comply with Rock Installation Instructions
(see below).

Installation instructions for the complete line of E2 mining service circuit breakers

The state of the art E² Mining Breakers have been designed to meet stringent standards developed by Eaton to suit mining industry needs. In order to maintain system integrity,
the following additional installation requirements must be met.

Warning: failure to comply with the following installation requirements & instructions will reduce the ability of the circuit breaker to conform to its ratings & void any warranty claims.

Requirements

The circuit breaker must be installed with insulation sheets & inter-phase barriers. The installation must confirm to & maintain the clearance & creepage distances detailed.

Additional insulation part numbers

1. Circuit breakers must be mounted with a phase barrier between each phase on the line end of the breaker, or with a terminal shield on the line end. Refer note 3.
2. All breakers must be mounted with an insulation sheet between them & the mounting plate. The size of the sheet & sheet material is shown overleaf. For mounting details refer to the figure overleaf.
3. If J & R frame breakers are installed behind a non-insulating escutcheon which is located within 50mm from the face of the breaker, a terminal shroud must be used.

Breaker frame	Phase barrier*	Terminal shield*	Rear panel insulation sheet
F	**IPB1**	**TSF**	**1543-0245/1**
J	**IPB3**	**TSJ**	**1543-0246/1**
K	**IPB3**	**TSK**	**1543-0247/1**
L	**IPB4**	**TSL**	**1543-0248/1**
N	**IPB5**		**1543-0249/1**
R	refer Eaton		**1543-0252/1**

*Select either phase barriers or terminal shields. Both come in sets of two. Insulation sheets supplied with each complete Moulded Case Circuit Breaker.

Insulation sheet material:

The additional insulation provided with the circuit breakers is a polyester fill with a thickness of 250 microns.
If the insulation is damaged or lost, a replacement insulation sheet may be obtained from Eaton, or must have
the following characteristics:

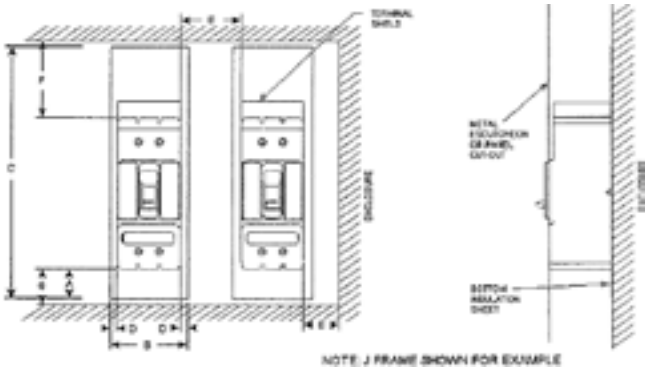
Thermal class:	E (120°C)	Dielectric strength:	80kV/mm
Service temperature:	-70 to +130°C	Breakdown voltage:	20kV
Resistivity @ 25°C:	$1.8x10^{16}$ ohm-cm		

Insulation sheet & minimum mounting dimensions

Replacement insulation sheets must have the following dimensions & be mounted so that the following minimum clearances are maintained.

Breaker frame	Item no.	Sheet Dim A (mm)	Sheet Dim B (mm)	Sheet Dim C (mm)	Mounting Dim D (mm)	Mounting Dim E (mm)	Mounting Dim F (mm)	Mounting Dim G (mm)
F	**1543-0245/1**	50	115	322	5	30	120	50
J	**1543-0246/1**	50	115	424	5	30	120	50
K	**1543-0247/1**	50	149	427	5	30	120	50
L	**1543-0248/1**	50	220	443	5	30	120	50
N**	**1543-0249/1**	120	220	210	5	30	120	120
R**	**1543-0252/1**	200	404	300	5	30	200	200

**Two identical sheets listed to be used at line & load ends.



① Must have 50mm clearance from breaker or terminal shield must be used.

Clearance & creepage distances

The circuit breakers should be mounted with the additional equipment listed above, as well as maintaining clearance & creepage distances in accordance with AS60947.1-2004 cl 7.2.3 & AS3000:2007 cl 2.9.3.3

xBoard panelboards safety,

xBoard Weatherproof (xDBW) panelboard

Heavy-duty design and robustly constructed to handle arduous requirements and harsh environments.

To handle more arduous requirements, the xBoard Weatherproof (xDBW) is the right choice. It offers greater flexibility and more configuration options with an even wider (650mm) and deeper enclosure (231mm) than the xBoard Plus (xDBP) to allow room for more components such as contactors and Motor controls to fit. The xDBW has a robust 1.6mm sheet steel fully welded enclosure, with door mount gaskets. The xDBW also offers the choice of no main switch, 250A isolator or can be adopted for MCCB or higher rated incomer options.

NEW PRODUCT COMING SOON

Features and benefits

- IP66 rated
- 650 x 253mm (W x D) external dimension
- Hinged escutcheon deep dished
- Lift-off door with pintle hinges
- Earth and neutral link with double screws mounted on both sides
- Removable 3mm thick aluminum gland plates as standard
- 3 mm rear gear tray as standard pre-punched for all equipment options.
- Fully shrouded, 250A main isolator with safety interlock to the escutcheon
- Space for up to 9 x 18mm DIN rail control components on top of the panelboard either side of main switch
- 2 colour choices – grey RAL7035 or orange RAL2000

EATON

Powering Business Worldwide

effectively combining reliability and performance.

xBoard Plus (xDBP) panelboard

Superior and versatile design to suit all commercial and industrial electrical applications.

For applications requiring a modular electrical distribution system to meet more complex requirements, the xBoard Plus (xDBP) is the ideal solution. The xBoard Plus are available to suit either DIN or Quicklag MCBs and has a robust 1.6mm sheet steel enclosure construction with flushed conduit knockouts on either side to allow for modular arrangements with the xEquipment Box (xEB), which is suitable for more complex lighting and Motor control installations.

Features and benefits

- IP42 rated
- 580 x 223mm (W x D external dimension)
- Field reversible hinged escutcheon and door
- Removable 3mm thick aluminum gland plates
- Fully shrouded, 250A main isolator with safety interlock to the escutcheon
- 2 colour choices - Grey RAL7035 or Orange RAL2000

xBoard (xDB) panelboard

Economical and compact design for easy installations in commercial and light industrial applications.

The xBoard (xDB) comes available in two box sizes with the choice from 24 to 60 poles. With two options - no main switch allowing user flexibility to elect different main incomer preference or with a 250A main isolator pre-fitted saving valuable time and money. The xDB is fitted with a type tested chassis – DIN, 25kA for 0.1sec to suit DIN MCBs and RCBOs.

Features and benefits

- IP40 rated
- 500 x 130.5mm (W x D) external dimension
- CL001 key lockable door with pintle hinges
- Lift-off escutcheon and door
- Fully rated neutral
- Slotted top rail for ease of cable management

xBoard panelboards (xDB)

Eaton's xDB xBoard is a compact and versatile panelboard. It delivers an efficient energy distribution system for commercial and light industrial applications.

The xDB xBoard comes available in two box sizes with the choice from 24 to 60 poles. With two options - no main switch allowing user flexibility to elect different main incomer preference or with a 250A main isolator pre-fitted saving valuable time and money.

Other key features include a fully rated 250A neutral link, lift-off door with pintle hinges and a slotted chassis pan assembly for easier cabling with incoming and outgoing cables. Safety is a key focus in the new design, with the advantage of a fully shrouded main isolator and a handle that interlocks the escutcheon when it is in the 'ON' position which prevents removal of the escutcheon adding personnel safety.

xDB specifications

- 24, 36, 48, 60 poles
- 500 x 130.5mm (W x D - external dimensions)
- IP40 rating
- No main switch or 250A isolator options
- 1.2mm zincseal construction
- DIN chassis
- Grey (RAL7035)
- Removable lift-off escutcheon and door

Features and benefits

- Choice between no main switch or pre-fitted with 250A main switch
- Type tested chassis – DIN, 25kA for 0.1sec
- CL001 Key Lockable door with pintle hinges
- Lift-off escutcheon & door
- Designed and manufactured in Australia
- 7 pole DIN space either side of main switch to fit emergency light test kit, surge protection, control devices and more
- Fully rated 250A neutral link with double screws
- Slotted top rail for ease of cable management
- White escutcheon

XDB 250 M - 36 ONEKIT

Range	Main Incomer	Chassis Size	ONEKIT
xBoard	BLANK = No main switch M = 250A isolator	24 = 24 pole chassis 36 = 36 pole chassis 48 = 48 pole chassis 60 = 60 pole chassis	Supplied with RCBO's on 24 + 36 Pole configurations

Z-EMER-DIN

XDBP-SDK

Description	Poles	Height	Item no.
No main switch Grey RAL7035 IP40	24	750	**XDB250-24**
	36	1000	**XDB250-36**
	48	1000	**XDB250-48**
	60	1000	**XDB250-60**
250A main switch isolator Grey RAL7035 IP40	24	750	**XDB250M-24**
	36	1000	**XDB250M-36**
	48	1000	**XDB250M-48**
	60	1000	**XDB250M-60**
One Kit with 250A main switch Grey RAL7035	24	750	**XDB250M-24ONEKIT**
	36	1000	**XDB250M-36ONEKIT**

*One Kit options include 25% capacity of Eaton's compact eRB6 RCBOs included in the delivery to aid a "ready to go bolt to wall and wire solution"

Kits and accessories	Item no.
Emergency light test kit	**Z-EMER-DIN**
Surge diverter kit (includes fuses)	**XDBP-SDK**
Pole fillers 6 pack	**AP-45-W**
Flush mounting kit 750mm high enclosures	**XDB750-FMK**
Flush mounting kit 1000mm high enclosures	**XDB1000-FMK**

xBoard Plus panelboards (xDBP)

For applications requiring a modular electrical distribution system to meet more complex requirements, the xBoard Plus is the ideal solution. It offers greater flexibility and more configuration options with a deeper enclosure (200mm) to allow room for components such as contactors and Motor controls to fit. The xBoard Plus is available from 24 to 96 poles and is supplied complete with a type tested 3 phase, colour encapsulated DIN chassis, rated for 250A and 25kA for 0.1 second. The panelboards are also fitted with a fully rated, 250A neutral link, an earth link, a hinged escutcheon, and a pintle hinged door with a circuit schedule card and card holder.

Manufactured in Australia, the xBoard Plus has a robust 1.6mm sheet steel enclosure construction and has flushed conduit knockouts on either side to allow for modular arrangements with the xEquipment Box (xEB), which is suitable for more complex lighting and Motor control installations.

The xBoard Plus also offers the choice of no main switch, 250A isolator or a 250A MCCB as the main incomer. The padlockable MCCB as a main switch, allows for selectivity and higher fault protection.

xDBP specifications

- 24 to 96 poles
- 580 x 223 mm (W x D - external dimensions)
- IP42 rating
- No main switch, 250A isolator or MCCB incomer
- Removable gland plates
- 1.6mm sheet steel construction
- DIN or Quicklag chassis
- Grey or orange enclosure colour
- Field-reversible hinged escutcheon and door

Features and benefits

- Field reversible hinged escutcheon
- Field reversible lift-off door with pintle hinges
- Fully rated 250A neutral link with double screws
- Removable 3mm thick aluminum gland plates
- Space for up to 8 x18mm DIN rail control components on top of the panelboard either side of main switch
- Wider troughs on both sides of the chassis for cable looms or ducts
- Fully shrouded, 250A Main Isolator with safety interlock to the escutcheon
- Different main incomer options
- 2 colour choices - grey RAL7035 or orange RAL2000
- Gloss white escutcheon
- Designed and manufactured in Australia

XDBP Q 250 M - 48 - RO - CT

Range	Chassis type	Main incomer	Chassis size	Colour	Metering option
xBoard Plus	BLANK = DIN Q = QUICKAG	BLANK = No Main Switch M = 250A Isolator NZM = 250A MCCB	24 = 24 pole 72 = 72 pole 36 = 36 pole 84 = 84 pole 48 = 48 pole 96 = 96 pole 60 = 60 pole 108 = 108 pole*	BLANK = Grey RO = Orange	BLANK = Standard CT = Metering*

* Only for Quicklag chassis

* Only available with 250A isolator

xBoard Plus DIN panelboards			No mainswitch	250A isolator mainswitch			250A MCCB mainswitch
Description	Poles	Height	Item no.	Item no.	Poles	Height	Item no.
xBoard Plus DIN chassis Grey RAL7035 IP42	24	1000	**XDBP250-24**	**XDBP250M-24**	24	1000	**XDBP250NZM-24**
	36	1000	**XDBP250-36**	**XDBP250M-36**	36	1000	**XDBP250NZM-36**
	48	1000	**XDBP250-48**	**XDBP250M-48**	48	1000	**XDBP250NZM-48**
	60	1000	**XDBP250-60**	**XDBP250M-60**	60	1500	**XDBP250NZM-60**
	72	1500	**XDBP250-72**	**XDBP250M-72**	72	1500	**XDBP250NZM-72**
	84	1500	**XDBP250-84**	**XDBP250M-84**	84	1500	**XDBP250NZM-84**
	96	1500	**XDBP250-96**	**XDBP250M-96**	96	1500	**XDBP250NZM-96**

For ripple orange RAL2000, add –RO to each item no above. For metering option add –CT at end of each XDBP250M-xx item no. Only available on xDBP with 250A isolator models.

xBoard Plus - xEquipment extension boxes			Blank mounting plate & blank escutcheon	DIN rail(s) & blank escutcheon	Raised DIN Rail(s) & slotted escutcheon
Description	Height	No. of DIN rails	Item no.	Item no.	Item no.
xEquipment boxes Grey RAL7035 IP42	250	1	**XEB250-B**	**XEB250-D1**	**XEB250-D1S**
	500	2	**XEB500-B**	**XEB500-D2**	**XEB500-D2S**
	1000	4	**XEB1000-B**	**XEB1000-D4**	**XEB1000-D4S**
	1500	8	**XEB1500-B**	**XEB1500-D8**	**XEB1500-D8S**

For ripple orange RAL2000, add –RO to each item no above. DIN rails are not fitted on xEB with blank mounting plate & blank escutcheon i.e. XEBxxx-B item no. Note : xBoard Plus panelboard accessories details on page 129.

NEW PRODUCT COMING SOON

xDBW specifications

- 650 x 253 mm (W x D - external dimensions)
- IP66 rating
- Removable gland plates
- 1.6mm sheet steel fully welded construction
- DIN or Quicklag chassis
- Grey or orange enclosure colour
- Hinged escutcheon and door
- Available assembled or self assembly

xBoard Weatherproof panelboards (xDBW)

For applications requiring a modular electrical distribution system to meet more arduous requirements, the xBoard Weatherproof is the ideal solution. It offers greater flexibility and more configuration options with a deeper enclosure (231mm) to allow room for components such as contactors and Motor controls to fit.
The xDBW is supplied complete with a type tested 3 phase, colour encapsulated chassis, rated for 250A in DIN 25kA for 0.1 sec and Quicklag 20kA for 0.1 sec. The panelboards are also fitted with 2 neutral links, 2 earth links, a hinged escutcheon, and a pintle hinged door with a circuit schedule card and card holder.

The xDBW has a robust 1.6mm sheet steel fully welded enclosure, with door mount gaskets. The xDBW also offers the choice of no main switch, 250A isolator or can be adopted for MCCB or higher rated incomer options.

Features and benefits

- Hinged escutcheon deep dished
- Lift-off door with pintle hinges
- Earth Neutral link with double screws mounted on both sides
- Removable 3mm thick aluminum gland plates as standard
- 3 mm rear gear tray as standard pre-punched for all equipment options.
- Fully shrouded, 250A Main Isolator with safety interlock to the escutcheon
- Space for up to 9 x 18mm DIN rail control components on top of the panelboard either side of main switch
- 2 colour choices - grey RAL7035 or orange RAL2000
- Gloss white escutcheon

XDBW Q 250 M - 48 - RO L

Range	Chassis type	Main incomer	Chassis size	Colour	Hinge
xBoard Weatherproof	BLANK = DIN Q = QUICKLAG	BLANK = No Main Switch M = 250A Isolator	24 = 24 pole 72 = 72 pole 36 = 36 pole 84 = 84 pole 48 = 48 pole 96 = 96 pole 60 = 60 pole 108 = 108 pole*	BLANK = Grey RAL7035 RO = Orange RAL2000	BLANK = Right hand side L = Left hand side hinged door and escutcheon

* Only for Quicklag chassis

xBoard Weatherproof DIN panelboard Description	Poles	Height	No mainswitch Item no.	250A isolator mainswitch Item no.
xBoard Weatherproof DIN chassis Grey RAL7035 IP66	24	1000	**XDBW250-24**	**XDBW250M-24**
	36	1000	**XDBW250-36**	**XDBW250M-36**
	48	1000	**XDBW250-48**	**XDBW250M-48**
	60	1000	**XDBW250-60**	**XDBW250M-60**
	72	1500	**XDBW250-72**	**XDBW250M-72**
	84	1500	**XDBW250-84**	**XDBW250M-84**
	96	1500	**XDBW250-96**	**XDBW250M-96**

For ripple orange RAL2000, add -RO to each item no. above. For Left hand side hinged door and escutcheon add 'L'

xBoard Weatherproof Quicklag panelboard Description	Poles	Height	No mainswitch Item no.	250A isolator mainswitch Item no.
xBoard Weatherproof Quicklag chassis Grey RAL7035 IP66	24	1000	**XDBWQ250-24**	**XDBWQ250M-24**
	36	1000	**XDBWQ250-36**	**XDBWQ250M-36**
	48	1500	**XDBWQ250-48**	**XDBWQ250M-48**
	60	1500	**XDBWQ250-60**	**XDBWQ250M-60**
	72	1500	**XDBWQ250-72**	**XDBWQ250M-72**
	84	2000	**XDBWQ250-84**	**XDBWQ250M-84**
	96	2000	**XDBWQ250-96**	**XDBWQ250M-96**
	108	2000	**XDBWQ250-108**	**XDBWQ250M-108**

For ripple orange RAL2000, add -RO to each item no. above. For Left hand side hinged door and escutcheon add 'L'

xBoard Weatherproof panelboards (xDBW)

Self assembly options

Empty box no escutcheon with door	Item no.
xDBW grey, 500mm blank mounting tray	**XDBWB500-NE**
xDBW grey, 1000mm blank mounting tray	**XDBWB1000-NE**
xDBW grey, 1500mm blank mounting tray	**XDBWB1500-NE**
xDBW grey, 2000mm blank mounting tray	**XDBWB2000-NE**
xDBW orange, 500mm blank mounting tray	**XDBWB500-NE-RO**
xDBW orange, 1000mm blank mounting tray	**XDBWB1000-NE-RO**
xDBW orange, 1500mm blank mounting tray	**XDBWB1500-NE-RO**
xDBW orange, 2000mm blank mounting tray	**XDBWB2000-NE-RO**

For left hand side hinged door, add 'L' to each item no. above.

Escutcheons loose	Item no.
500mm 2 din horizontal rails 7 poles	**XDBWED500-2S**
1000mm Main switch slot and vertical DIN Cutout 60P + sticker and hindges	**XDBWED1000**
1500mm Main switch slot and vertical DIN Cutout 96P + sticker and hindges	**XDBWED1500**
1000mm Main switch slot and vertical Quicklag Cutout 36P + sticker and hindges	**XDBWEQ1000**
1500mm Main switch slot and vertical Quicklag Cutout 72P + sticker and hindges	**XDBWEQ1500**
2000mm Main switch slot and vertical Quicklag Cutout 108P + sticker and hindges	**XDBWEQ2000**
500mm blank	**XDBWEB500**
1000mm blank	**XDBWEB1000**
1500mm blank	**XDBWEB1500**
2000mm blank	**XDBWEB2000**

For left hand side hinged escutcheon, add 'L' to each item no. above.

xDBW accessories

Earth and neutral bars	Item no.
E&N KIT 24 WAY 250A N 165A E	**XDBPEN250KIT24**
E&N KIT 48 WAY 250A N 165A E	**XDBPEN250KIT48**
E&N KIT 72 WAY 250A N 165A E	**XDBPEN250KIT72**
E&N KIT 84 WAY 250A N 165A E	**XDBPEN250KIT84**
E&N KIT 96 WAY 250A N 165A E	**XDBPEN250KIT96**
E&N KIT 108 WAY 250A N 165A E	**XDBPEN250KIT108**
E&N bar odd 165A 12 way	**XDBWEN165KIT-12-O**
E&N bar odd 165A 18 way	**XDBWEN165KIT-18-O**
E&N bar odd 165A 24 way	**XDBWEN165KIT-24-O**
E&N bar odd 165A 30 way	**XDBWEN165KIT-30-O**
E&N bar odd 165A 36 way	**XDBWEN165KIT-36-O**
E&N bar odd 165A 42 way	**XDBWEN165KIT-42-O**
E&N bar odd 165A 48 way	**XDBWEN165KIT-48-O**
E&N bar odd 165A 54 way	**XDBWEN165KIT-54-O**
E&N bar even 165A 12 way	**XDBWEN165KIT-12-E**
E&N bar even 165A 18 way	**XDBWEN165KIT-18-E**
E&N bar even 165A 24 way	**XDBWEN165KIT-24-E**
E&N bar even 165A 30 way	**XDBWEN165KIT-30-E**
E&N bar even 165A 36 way	**XDBWEN165KIT-36-E**
E&N bar even 165A 42 way	**XDBWEN165KIT-42-E**
E&N bar even 165A 48 way	**XDBWEN165KIT-48-E**
E&N bar even 165A 54 way	**XDBWEN165KIT-54-E**

Metering kits	Part number
CT metering kit (3 off 250/5A CT's, Isolator and Brackets Links etc.)	**XDBWCTKIT250**

Other accessories	Item no.
DIN Label Kit (Circuit Card, Cover, Escutcheon label, Accessory label, E*N labels, Nylon Bush, Esc Hinges)	**XBMISCKIT-DIN**
Quicklag Label Kit (Circuit Card, Cover, Escutcheon label, Accessory label, E*N labels, Esc Hinges)	**XBMISCKIT-QL**
xDBW Chrome swing handle with L001	**A/HS741/CL/3001**
xDBW Insert C4 to be rekeyed to E NSW Public works department	**A/IF742/C4KA8/6**
xDBW Insert 268 - 92268 QLD stateworks	**A/IF741-2/01/3268**
xDBW Insert padlock	**I/F743-CP**
xDBW Rod with roller 1200mm	**1049-U9**
xDBW Rod guide	**1001-U12**
xDBW Rod adaptors	**1000_U49**
xDBW 3 pt cam	**P/CAM/3A**
Sealing washer for gland plate screws (set of 12)	**XDBWGPSEALKIT**
xDBW Wall mounting kit	**XDBWDMTGKIT**
XDBW Plith Full Channel - 1 Tier Painted BLACK	**XDBWPLTH1**
XDBW Plith Full Channel - 2 Tier Painted BLACK	**XDBWPLTH2**
XDBW Plith Full Channel - 3 Tier Painted BLACK	**XDBWPLTH3**
XDBW Plith Full Channel - 4 Tier Painted BLACK	**XDBWPLTH4**
XDBW Plith Full Channel - 1 Tier GALVANISED	**XDBWPLTHG1**
XDBW Plith Full Channel - 2 Tier GALVANISED	**XDBWPLTHG2**
XDBW Plith Full Channel - 3 Tier GALVANISED	**XDBWPLTHG2**
XDBW Plith Full Channel - 4 Tier GALVANISED	**XDBWPLTHG4**
XDBW DIN chassis mounting bracket	**1521-3044/1**
XDBW QUICKLAG chassis mounting bracket	**1521-3096/1**
XDBW accessory DIN Rail kit	**XDBWDRTH**
XDBP/XDBW main switch kit to suit XCAP DIN	**XDBPW-M/S-XCAP**
XDBP/XDBW main switch kit to suit Quicklag	**XDBPQ-M/S**
XDBP/XDBW mounting bracket kit for contactor DILM (Up to 250A)	**XDBPWCONTA**

xBoard Plus Quicklag panelboards (xDBPQ)

The xBoard Plus Quicklag (xDBPQ) panelboard extends the xBoard Plus range to accommodate the renowned Quicklag miniature circuit breakers. The xDBPQ panelboards are available in 24 to 108 poles and are fitted with the Quicklag chassis, which has an active busbar rating of 250A and 20kA for 0.1 sec. Using the same enclosure design and construction, the xDBPQ shares the same characteristics as the xDBP DIN panelboards.

xDBPQ overview

- 24 to 108 poles
- 580 x 223mm (W x D external dimension)
- IP42 rating
- 1.6mm sheet steel construction
- No main switch, 250A isolator or MCCB incomer
- Quicklag chassis
- Grey or orange enclosure colour
- Field-reversible hinged escutcheon and door
- Removable gland plates

Features and benefits

- 250A Quicklag chassis
- Fault withstand rating: 20kA for 0.1s
- Neutral link: 250A double screws
- Field reversible door
- Flushed door handle with CL001 key lock
- Field reversible, hinged escutcheon
- 3mm aluminium gland plates
- Grey RAL 7035 or orange RAL2000
- Escutcheon colour: white (gloss finish)

xBoard Plus Quicklag Panelboards			No mainswitch item no.	250A isolator mainswitch item no.			250A MCCB mainswitch item no.
Description	**Poles**	**Height**			**Poles**	**Height**	
xBoard Plus Quicklag chassis Grey RAL7035	24	1000	**XDBPQ250-24**	**XDBPQ250M-24**	24	1000	**XDBPQ250NZM-24**
	36	1000	**XDBPQ250-36**	**XDBPQ250M-36**	36	1500	**XDBPQ250NZM-36**
	48	1500	**XDBPQ250-48**	**XDBPQ250M-48**	48	1500	**XDBPQ250NZM-48**
	60	1500	**XDBPQ250-60**	**XDBPQ250M-60**	60	1500	**XDBPQ250NZM-60**
	72	1500	**XDBPQ250-72**	**XDBPQ250M-72**	72	1500	**XDBPQ250NZM-72**
	84	2000	**XDBPQ250-84**	**XDBPQ250M-84**	84	2000	**XDBPQ250NZM-84**
	96	2000	**XDBPQ250-96**	**XDBPQ250M-96**	96	2000	**XDBPQ250NZM-96**
	108	2000	**XDBPQ250-108**	**XDBPQ250M-108**			**-**

For ripple orange RAL2000, add –RO to each item no. above. For metering option add –CT at end of each XDBP250M-xx item no. Only available on xDBP with 250A isolator models.

Z-EMER-DIN

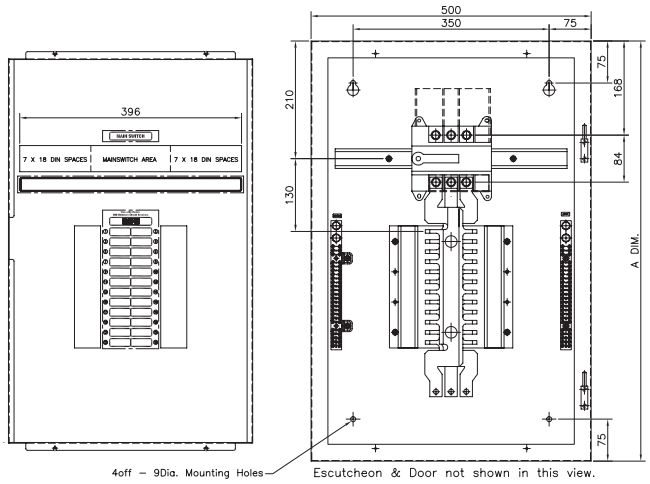
XDBP-SDK

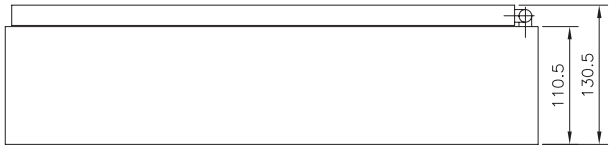
xBoard Plus Panelboard accessories	Item no.
250 A main switch kit for xBoard Plus DIN XCH	**XDBP-M/S**
250 A main switch kit for xBoard Plus Quicklag (xDBPQ)	**XDBPQ-M/S**
250 A main switch kit for xBoard Plus DIN XCAP	**XDBPW-M/S-XCAP**
Emergency light test kit	**Z-EMER-DIN**
Surge diverter kit (includes fuses)	**XDBP-SDK**
Pole fillers DIN (6/pack)	**AP-45 -W**
Pole fillers Quicklag (each)	**QPF**
Flush surround kit for xBoard Plus	**1521-1981/****
E-Lock field fittable kit	**ECELOCK**
XEB DIN Rail mounting bracket	**1521-1935/1**
XEB Chassis mounting bracket DIN	**1521-1935/2**
XEB Chassis mounting bracket QUICKLAG	**1521-1935/3**
XDBP Quicklag chassis adaptor	**1521-2869/2**
XDBP NZM mounting bracket	**1521-1942/1**
XDBP NZM to DIN connecting link kit	**XDBPLINKKIT-NZM-DIN**
XDBP NZM to QUICKLAG connecting kit	**XDBPLINKKIT-NZM-QL**
XDBP/XDBW mounting bracket kit for contactor DILM (Up to 250A)	**XDBPWCONTA**

** Various heights available in grey or orange. Ask your Eaton sales representative.

Technical data

xBoard panelboard

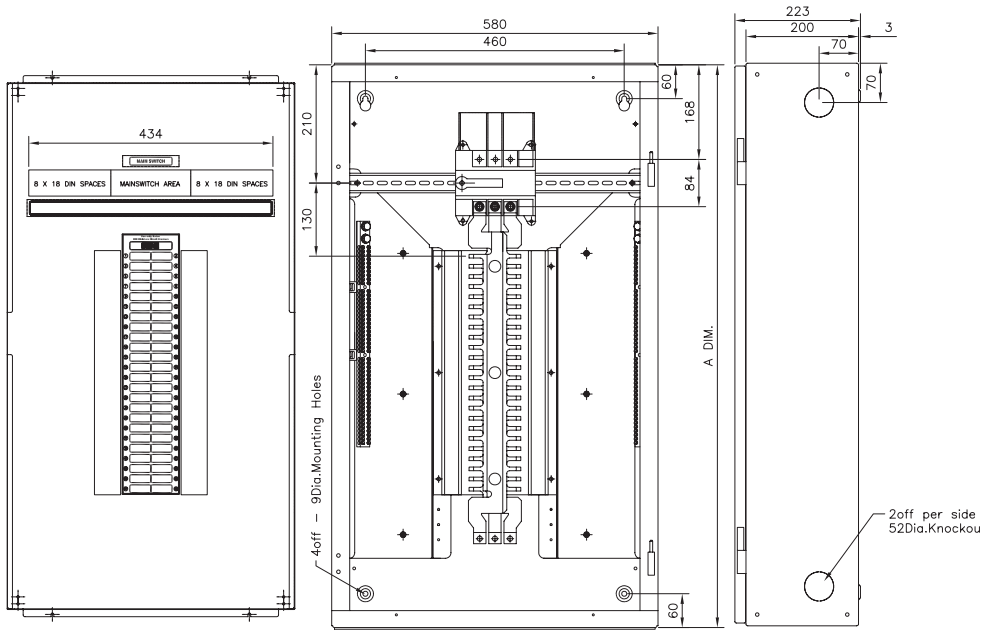




No mainswitch item no.	250A MCCB mainswitch item no.	Pole size	A DIM. (mm)
XDB250-24	XDB250M-24	24	750
XDB250-36	XDB250M-36	36	1000
XDB250-48	XDB250M-48	48	1000
XDB250-60	XDB250M-60	60	1000

Note: 750 high box shown with 24 pole chassis and 250A main switch.

xBoard Plus panelboard



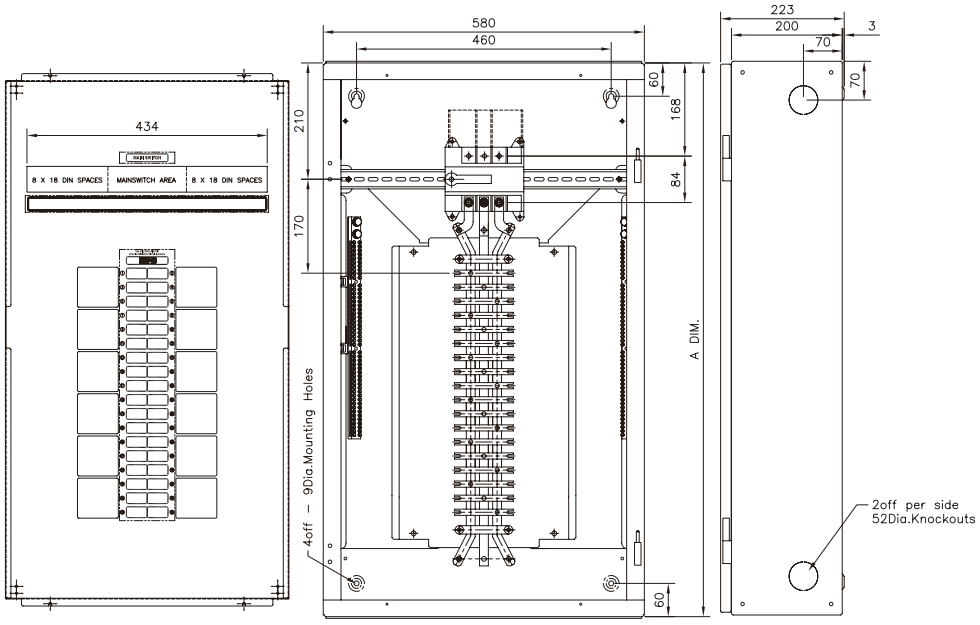
Note: 1000 high box shown with 48 pole chassis and 250A switch

No mainswitch item no.	250A mainswitch item no.	A DIM. (mm)	250A MCCB mainswitch item no.	A DIM. (mm)	Pole size
XDBP250-24	XDBP250M-24	1000	XDBP250NZM-24	1000	24
XDBP250-36	XDBP250M-36	1000	XDBP250NZM-36	1000	36
XDBP250-48	XDBP250M-48	1000	XDBP250NZM-48	1000	48
XDBP250-60	XDBP250M-60	1000	XDBP250NZM-60	1500	60
XDBP250-72	XDBP250M-72	1500	XDBP250NZM-72	1500	72
XDBP250-84	XDBP250M-84	1500	XDBP250NZM-84	1500	84
XDBP250-96	XDBP250M-96	1500	XDBP250NZM-96	1500	96

Orange board (–RO suffix) dimensions same as corresponding pole size above.

Technical data

xBoard Plus Quicklag panelboard

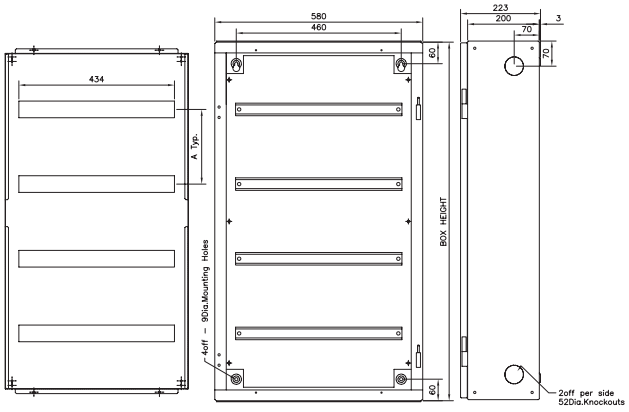


Note: 1000 high box shown with 36 pole chassis and 250A switch

No mainswitch item No.	250A mainswitch item No.	A DIM. (mm)	250A MCCB mainswitch item No.	A DIM. (mm)	Pole size
XDBPQ250-24	XDBPQ250M-24	1000	XDBPQ250NZM-24	1000	24
XDBPQ250-36	XDBPQ250M-36	1000	XDBPQ250NZM-36	1500	36
XDBPQ250-48	XDBPQ250M-48	1500	XDBPQ250NZM-48	1500	48
XDBPQ250-60	XDBPQ250M-60	1500	XDBPQ250NZM-60	1500	60
XDBPQ250-72	XDBPQ250M-72	1500	XDBPQ250NZM-72	1500	72
XDBPQ250-84	XDBPQ250M-84	2000	XDBPQ250NZM-84	2000	84
XDBPQ250-96	XDBPQ250M-96	2000	XDBPQ250NZM-96	2000	96
XDBPQ250-108	XDBPQ250M-108	2000	-		108

Orange board (–RO suffix) dimensions same as corresponding pole size above.

xBoard Plus extension (xEquipment) boxes



Note: 1000 high box shown

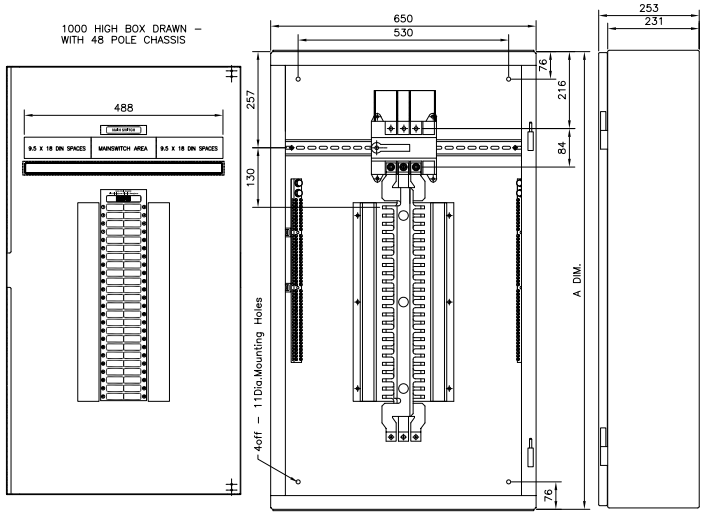
Blank mount. Plate & escutcheon item no.	DIN rail(s) & blank escutcheon item no.	Raised DIN rail(s) & slotted escutcheon item no.	Box height (mm)	A DIM. (mm)	No. of DIN rails
XEB250-B	XEB250-D1	XEB250-D1S	250	-	1
XEB500-B	XEB500-D2	XEB500-D2S	500	155	2
XEB1000-B	XEB1000-D4	XEB1000-D4S	1000	208	4
XEB1500-B	XEB1500-D8	XEB1500-D8S	1500	161	8

1. A DIM. and No. of DIN Rails information only applies to extension boxes with DIN rail(s) fitted.

2. Orange boxes (–RO suffix) model dimensions same as corresponding box heights above.

Technical data

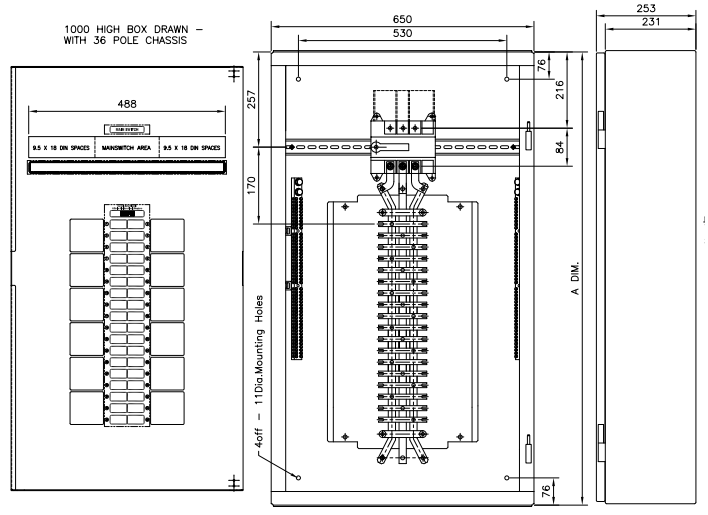
xBoard Weatherproof DIN panelboard



No mainswitch Item no.	250A isolator mainswitch Item no.	A DIM. (mm)	Pole size
XDBW250-24	XDBW250M-24	1000	24
XDBW250-36	XDBW250M-36	1000	36
XDBW250-48	XDBW250M-48	1000	48
XDBW250-60	XDBW250M-60	1000	60
XDBW250-72	XDBW250M-72	1500	72
XDBW250-84	XDBW250M-84	1500	84
XDBW250-96	XDBW250M-96	1500	96

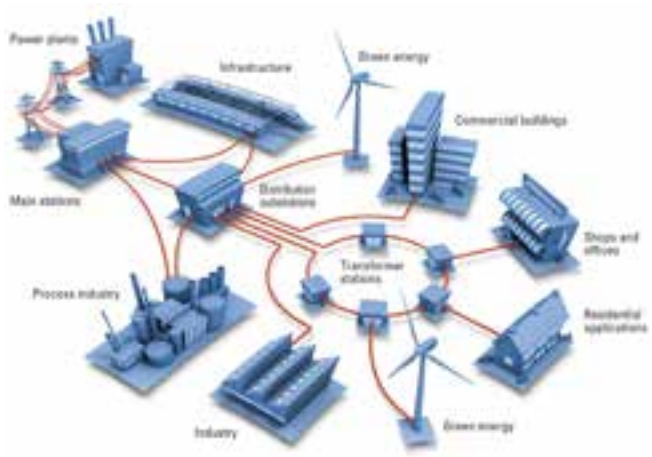
Orange board (–RO suffix) dimensions same as corresponding pole size above.

xBoard Weatherproof Quicklag panelboard



No mainswitch Item no.	250A isolator mainswitch Item no.	A DIM. (mm)	Pole size
XDBWQ250-24	XDBWQ250M-24	1000	24
XDBWQ250-36	XDBWQ250M-36	1000	36
XDBWQ250-48	XDBWQ250M-48	1500	48
XDBWQ250-60	XDBWQ250M-60	1500	60
XDBWQ250-72	XDBWQ250M-72	1500	72
XDBWQ250-84	XDBWQ250M-84	2000	84
XDBWQ250-96	XDBWQ250M-96	2000	96
XDBWQ250-108	XDBWQ250M-108	2000	108

Orange board (–RO suffix) dimensions same as corresponding pole size above.



The energy line

Reliable and safe electrical energy is one of the corner stones of today's industrialised society. Its continuous availability and everyday use have become a matter of course for all of us. Industrial and business activities, transport, communication and data processing are inconceivable without the 'energy supply line', the extensive electricity network between power stations and end-users. Products and services of Eaton's Electrical Group play an important role in medium and low voltage applications in the Energy Line. At all nodal points of the network electrical solutions of Eaton guarantee a safe and reliable power supply. All Eaton's solutions are based on the latest insulation and interruption technologies and manufactured in compliance with IEC safety and ISO quality standards.

Energy distribution

The activities of Eaton for applications in distribution networks (main feeder, sub-distribution and transformer stations), are directed towards switchgear installations and components. The switchgear systems are air or epoxy-resin insulated and are, in most cases, equipped with circuit breakers based on Eaton vacuum interrupters. Eaton offers an extensive range of switchgear systems and switchgear components, ensuring a safe and reliable distribution of electrical energy.

Magnefix MD4

12 kV ring main unit:

Magnefix switchgear is a fully epoxy resin insulated Ring Main Unit switchgear for application in 12-15 kV distribution networks. Due to its compact construction and the fully insulated design, it can be installed in very small areas in transformer stations, high rise buildings and wind turbine connections.

- Extremely compact (91 mm per switch panel)
- Safe and reliable, with full insulation
- Flexible design, high level of modularity
- User friendly
- Environmentally friendly (No SF6)
- Cost effective
- The system complies with the most recent IEC regulations:
  IEC 62271-100 for the circuit-breakers
  IEC 62271-102 for the earthing switches
  IEC 62271-103 for the load break switches
  IEC 62271- 201 for insulation enclosed switchgear

Technical highlights

Switching
As standard, the various switches are manually operated with single phase switch caps. The operator can remove and replace these switch caps with a separable operating handle. A three phase design is also available.

Safe insulation
All parts are fully surrounded by insulating material in such a way that discharges are avoided and making it impossible to come into contact with live parts.

Recycling
Magnefix switchgear can be completely recycled after its service life. No harmful materials are used.

Protection
Fused T-offs are used for the protection of the power transformers in the network. Alternatively a circuit-breaker with a self-powered electronic protection relay type WIC1 is available.

Magnefix arrangements

It is possible to assemble switchboards with a wide variety of combinations for various applications.

Typical modules and functions are:

- Cable unit (A)
- Fuse protected tee-off (Switch Fuse unit) (BC)
- Busbar sectionaliser (BE)
- Busbar Connection Unit (D)
- Blind connection block (E)
- Circuit Breaker protected t-off (BV)

A complete range of accessories and cable termination kits is also available.

Technical specifications

Description		
Rated Voltage	kV	12
Impulse withstand voltage	kVp	95
Power frequency withstand voltage	kV	28
Frequency	Hz	50-60
Busbar system		
Normal current	A	400
Short-time withstand current 1 s.	kA	14.4
Peak withstand current	kA	31
Switch-disconnector		
Earth fault breaking current	A	240
Cable charging breaking current	A	25

Description		
Switch-disconnector		
Normal current	A	400
Mainly active load breaking current	A	400
Circuit-breaker (for automatic tripping only)		
Normal current	A	400
Short-circuit breaking current peak value	kA	14.4
DC component	%	20
Fuse-links		
Normal current	A	57.7
Fuse-links according to DIN 43625	kV	12

Dimensions Magnefix MD4

Description	Width (mm)
Cable unit	91
Busbar connection unit	91
Blind connection block	91
Busbar sectionaliser	182
Fuse protected tee-off	230
Circuit-breaker protected tee-off	230
Total width = S unit widths + 72	

XIRIA

12-24 kV ring main unit

Xiria switchgear is a new generation of environmentally friendly Ring Main Unit switchgear for application in 12-24 kV medium voltage distribution networks.
As sustainability becomes more and more important, this criterion has been taken as a starting point for the design in terms of production and for the entire service life of the switchgear.

- The system complies with the most recent IEC regulations:
  IEC 62271-100 for the circuit-breakers
  IEC 62271-102 for the change-over switches and earthing switches
  IEC 62271-103 for the load break switches
  IEC 62271-200 for metal enclosed switchgear

Technical highlights

High operational safety

Safe visible ON/OFF position, isolation and earthing
The ON/OFF position of the main vacuum interrupters and the position of the integrated earthing are clearly visible through inspection windows at the front. Earthing can be safely effected via the load break switch or circuit-breaker. Xiria is designed with a fully enclosed metal housing combined with single phase insulation of all primary live parts, reducing the risk of an internal fault to an absolute minimum, thereby providing a high degree of safety and availability.

Maintenance free
The vacuum interrupters, the main busbars and the change-over/earthing switches are mounted inside a fully sealed metal enclosure for protection against the ingress of moisture and dust. The switching mechanism has been designed with a minimum number of parts to maximise reliability. As it is maintenance-free, Xiria significantly reduces inspection and maintenance costs without adversely affecting the operational safety of your distribution network.

Environmentally friendly (No SF6)

Vacuum technology
Xiria is made exclusively of environmentally-friendly materials. The insulation medium is clean, dry air and the switching medium is vacuum. Thus Xiria responds to the demand for sustainability in energy distribution. The unit is easy to dismantle at the end of its service life as the materials used are clearly labelled and can be recycled.

Compact
Xiria is one of the smallest ring main units of its kind. This high degree of compactness is a direct result of the combination of technologies used by Eaton - electrical field control, solid insulation and the use of extremely compact vacuum interrupters.

Designed for substation automation (remote control)
Xiria is completely ready for use in fully-automated networks. There are various options available for the system, depending on the level of remote signalling and remote control required. These options are modular, so they can be quickly and easily added in the future.

Xiria arrangements

Xiria units can be supplied in two, three, four- or five-panel versions. Both the primary part of the unit and the mechanisms are housed in a fully enclosed housing which protects the system against environmental influences.

There is a choice of two basic panel versions in our product range:

- A vacuum load break switch for ring cable connections
- A vacuum circuit-breaker for protecting transformers and cable connections

Both versions can be supplied in a unit in any desired combination and order.

Technical specifications

Description			
General			
Rated voltage	kV	12	24
Impulse withstand voltage	kV	75/95	125
Power frequency withstand voltage	kV	28	50
Rated frequency	Hz	50/60	50/60
Internal arc resistance	kA/s	20/1	16/1
Busbar system			
Rated normal current	A	630	630
Rated short-time withstand current	kA/s	20/3	16/3
Rated peak withstand current	kA	50	40
Circuit-breaker			
Rated normal current	A	200/ 500	200/ 500
Rated breaking current	kA	20	16
Rated short-circuit making current	kA	50	40
Rated short-time withstand current	kA/s	20/3	16/3

Description			
Load break switch			
Rated normal current	A	630	630
Rated mainly active load breaking current at cos. phi 0.7	A	630	630
Rated short-circuit making current	kA	50	40
Rated short-time withstand current	kA/s	20/3	16/3

Dimensions

	2-way	3-way	4-way	5-way
Width (mm)	760	1110	1460	1810
Height (mm)	1305	1305	1305	1305
Depth (mm)	600	600	600	600

Low initial cost
- Panels width only 500 mm
- Cable connection from the front
- Integrated arc channel with absorber
- 12 and 24 kV panels in the same housing

Low service cost during operation
- Robust “lean” design with minimum number of parts
- Product quality guaranteed by routine testing in the factory
- Primary parts and mechanism installed in a fully sealed for life enclosed housing
- Maintenance free vacuum circuit-breaker
- No SF6 pressure checks

Low end of life disposal cost
- Fully recycling or re-use of materials
- Vacuum switching technologies
- Solid insulation with air as isolating medium

Description		
Rated voltage	12 kV	24 kV
Power frequency withstand voltage	28 kV	50 kV
Impulse withstand voltage	75 / 95 kV	125 kV
Rated current busbars	630 A	630 A
Short-time current * optional 3 s	20 kA-1s*	20 kA-1s*
Rated normal current (max.)		
circuit-breaker panel	630 A	630 A
transformer panel	200 A	200 A
load-break switch panel	630 A	630 A
busbar sectionaliser panel	630 A	630 A
direct busbar panel	630 A	630 A
metering panel	630 A	630 A
Degree of protection	IP 31D	IP 31D
Classification according to IEC 62271-200:		
Loss of service continuity	LSC 2B	LSC 2B
Partition class	PM	PM
Internal arc	IAC AFL	IAC AFL

XIRIA -E

Metal enclosured single busbar solid and air insulated switchgear

Safe in Use
- Compartments protected against penetration by objects
- Capacitive voltage detection system for verification of safe isolation from supply
- Operation only possible with closed compartment
- Logical mechanical and electrical interlocks prevent incorrect operation
- Smooth contemporary design
- Visible isolation by means of inspection windows in the front

Environmental friendly design
- Use of minimized number of components
- Materials with no/less impact on the environment
- No use of SF6 gas for insulation or switching

Efficient use of material
- Low production waste material
- Use of modern machines

No service checks on site
- Maintenance free switchgear
- Environmental friendly insulation and switching medium

Re-use or recycle of materials
- Use of environmental friendly materials
- Cooperation with specialized partners

User friendly
- Cable connection and user interfaces for operation on the same front side of the panel
- Ergonomic cable connection height
- Cable (secondary) entry points on both sides of the low voltage compartment top plate
- Secondary cable terminals positioned on a good reachable place in low voltage compartment clear and simple straight forward operation panels

Reliable and safe in operaion
- complete design certified in accordance with IEC standards
- Arc fault tested according to IEC 62271-200
- Quality assurance in acordance with DIN EN 9001

Preventing an Internal Arc
- Use of electrical field control, with protected voltage transformers and single pole insulated parts
- Sealed for life fully enclosed housing

Sealed for life fully enclosed housing
- Protects primary parts against environmental influences and provides a maintenance free mechanism

Controlling an Internal Arc
- No phase-to-phase short circuit minimizes pressure with integrated compartments reduce pressure and integrated arc absorber reduces output impact

Arc absorber
- Ceramic block, breaks and filters the fire and gasses significantly

Innovac SVS

Metal enclosured single busbar solid and air insulated switchgear

Modular switchgear to 24kV

The Innovac SVS system is ideally suited for use in distribution networks and as industrial and building switchgear. The system provides reliable switching, protection, metering and distribution of electrical energy. The SVS system is based on vacuum technology combined with solid insulation. This makes the SVS system especially suitable for application in infrastructural projects (i.e. tunnels and subways) and industrial or commercial environments (i.e. processing industry, food industry and hospitals) where a clean and safe environment is necessary.

The SVS system is used in:

- Utility: Distribution stations, compact secondary substations, wind turbines
- Infrastructure: Vacuum switching is especially suitable for tunnels, subways and other infrastructure applications
- Industries: Connection to ring cable or LVS system
- Commercial: Hospitals, stadiums, shopping centres, hotels, etc.

Technical highlights

Reliable and safe in operation
Epoxy resin is used in the SVS system as high-quality primary insulation material around live parts. The same level of insulation is maintained throughout the entire switchgear therefore preventing internal arcs.

Safe in use
The earthed metal enclosure of the SVS system provides personal safety during normal operation and the live primary parts and primary component connections are fully insulated, removing risk of contact with live parts during maintenance or testing.

Flexible
The SVS system is modular in construction. This means that any panel combination and sequence is possible. Several sections can easily be connected to the requirements of the switchboard. Existing SVS switchgear can also be easily extended by one or more panels. The panels in the SVS system are compact (min. 420 mm wide), resulting in considerable savings in installation space.

User friendly
The SVS system features uniform and straightforward operation. Each panel has an easy-to-understand and clearly set out mimic diagram, showing every switching action. The cable termination area is very easy to access. Cables are connected at the front of the panels with ample space for finishing off and securing the cables.

Environmentally friendly
Eaton selects its materials with care and consideration for the safety of people and the environment - not just during use, but at the end of their service life, too. For this reason the SVS system does not contain SF6 insulation gas and all materials used are environmentally friendly.

SVS arrangements

It is possible to assemble switchboards with a wide variety of combinations for various applications.

Typical modules and functions are:

- Load Break Switch
- Circuit Breaker
- Direct Busbar connection
- Busbar sectionaliser with load break switch or circuit breaker
- Metering

Technical specifications

Description			SVS/08		SVS/12	
Rated voltage	Ur	kV	12	24	12	24
Impulse withstand voltage	Up	kV	75/95	125	75/95	125
Power frequency withstand voltage	Ud	kV	28	50	28	50
Rated frequency	fr	Hz	50/60	50/60	50/60	50/60
Busbar system						
Rated current	Ir	A	800	800	1250	1250
Rated short-time withstand current ①	Ik	kA/s	20/3	20/3	25/1.5	25/1.5
Rated peak withstand current	Ip	kA	50	50	63	63
Circuit-breaker						
Rated breaking current	Ir	A	630	630	630/ 1250	630/ 1250
Rated short circuit breaking current	Isc	kA	16-20	16-20	16-25	16-25

Description			SVS/08		SVS/12	
Circuit-breaker						
Rated short-circuit making current	Ima	kA	40-50	40-50	40-63	40-63
Rated short-time withstand current ①	Ik	kA/s	16/1- 20/3	16/1- 20/3	16/1- 25/1.5	16/1- 25/1.5
Load-break switch						
Rated breaking current	Ir / Isc	A	630	630	630	630
Rated short-circuit making current	Ima	kA	50	50	50	50
Rated short-time withstand current ①	Ik	kA/s	16/1- 20/3	16/1- 20/3	16/1- 20/3	16/1- 20/3
Fused load-break switch						
Rated current ②	Ir	A	57/61	36	57/61	36

① Depending on type of vacuum interrupter used.

② 57 A at 12 kV with 12 kV fuse holders and 10/12 kV fuses; 61 A at max. 17.5 kV with 24 kV fuse holders and 10/12 kV fuses; 36 A at 24 kV fuse holders and 20/24 kV fuses.

W-VACi medium voltage vacuum circuit breakers

Features and benefits

- Industry leading vacuum and solid insulation technology
- Fixed and withdrawable versions available
- Environmentally friendly design - no SF6 - gas
- Conformance to the latest IEC standards - IEC 62271-100 and IEC 62271-1
- Numerous safety features for maximum protection
- User friendly operation with easy access and minimal inspection
- Compact and cost effective
- Flexible with a full line of accessories and OEM components

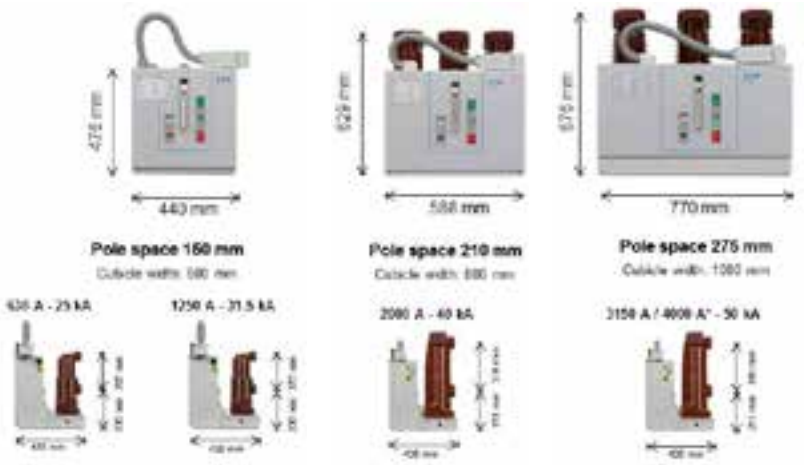
Applications

- Serving both 50 Hz and 60 Hz end-user segments of the electrical industry: industrial, commercial, utility, mining, marine and off-shore
- Protecting transformers, capacitor banks, motors, busbar sections and cables
- Suitable for special environment conditions: high altitude, shock, vibration and high ambient temperature

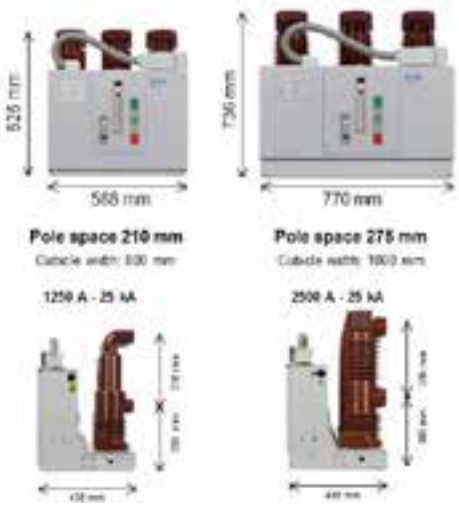
Description										
Circuit breaker designation			12 kV			17.5 kV			24 kV	
Rated voltage	Ur	kV	12			17.5			24	
Rated frequency	fr	Hz	50 / 60			50 / 60			50 / 60	
Rated normal current	Ir	A	630 / 800 / 1250 / 1600 / 2000 / 2500 / 3150 / 4000 ①						800 / 1250 / 1600 / 2000 / 2500	
Rated short-time withstand current	Ik	kA rms	25 / 26.3 / 31.5 / 40 / 50			25 / 31.5 / 40 / 50			20 / 25	
Rated duration of short circuit	tk	s	3			3			3	
Rated supply voltage		V	24 - 48 - 60 - 110 - 125 - 220 - 250 VDC / 120 - 220 - 230 VAC							
Pole-center distance		mm	150	210	275	150	210	275	210	275
Upper-to-lower terminal spacing		mm	205 / 275	310	310	205 / 275	275	310	310	310

① 4000 A rating with forced cooling

W-VACi 12kV and 17.5kV family



W-VACi 24kV family



T-VAC(R) medium voltage vacuum circuit breakers

Available in a fixed version (T-VACR) as well as a withdrawable unit (T-VAC) with corresponding cassette, these breakers are ideal for applications such as mine power centres, portable power substations, fixed breaker switchgear, shipboard use and portable generators.

Standard features

- Metallic safety barrier - 3 mm steel barrier between mechanism and primary conductors.
- Silver-plated primary connections (fixed version)
- Spring loaded primary finger disconnect (drawout version)
- Silver plated primary cassette stabs (drawout version)
- Manual charging (includes shunt trip)
- Integral charging handle
- Auxiliary switch (5a and 5b), heavy duty, double break, wipe type
- Mechanical operations counter
- 24, 48, 125, 250 VDC, 120, 240 VAC Control options
- ON and OFF pushbuttons
- Two-step stored energy mechanism
- O – 0.3s – CO – 15s - CO Duty cycle
- Secondary umbilical cord (drawout version)
- Anti-pump
- Trip free
- Visible contact erosion indicator
- Visible contact wipe indicator

Options

- Electrical Motor Charging (Includes shunt trip and spring release, field installable)
- Shunt Trip (2nd)
- Spring Release
- Undervoltage Release
- ON and OFF Pushbutton Cover, Limits access to pushbuttons, metal or plastic
- Prevent Manual Close Cover (Prevents access to ON pushbutton - used in conjunction with pushbutton cover)
- Secondary Screw Type Terminal Block (Fixed version)
- Integral Trip Unit

Technical specifications

Ur (kV)	Ud (kV)	Up (kVp)	Isc (kA)	Ip (kAp)	Ir (fixed version)					Ir (drawout version)		
					630A	1250A	1600A	2000A	2500A	630A	1250A	2000A
7.2	20	60	16	40	●	●	●	-	-	●	●	-
			20	50	●	●	●	-	-	●	●	-
			25	63	●	●	●	●	●	●	●	●
			31.5	82	●	●	-	●	●	●	●	●
			40	104	●	●	-	●	●	●	●	●
12	28	75	16	40	●	●	●	-	-	●	●	-
			20	50	●	●	●	-	-	●	●	-
			25	63	●	●	●	●	●	●	●	●
			31.5	82	●	●	-	●	●	●	●	●
			40	104	●	●	-	●	●	●	●	●
17.5	38	95	16	40	●	●	●	-	-	●	●	-
			20	50	●	●	●	-	-	●	●	-
			25	63	●	●	●	●	●	●	●	●
			31.5	82	●	●	-	●	●	●	●	●
			40	104	●	●	-	●	●	●	●	●

Ur: Rated voltage
Ud: Rated short-duration power-frequency withstand voltage
Up: Rated lightning impulse withstand voltage

Isc: Rated short-circuit breaking current
Ip: Rated peak withstand current
Ir: Rated normal current

SL medium voltage vacuum contactors

The "SL" family of medium voltage vacuum contactors is designed and engineered specifically for the OEM, combining the highest ratings available in a cost-saving, reduced-size package that's lighter and easier to install.

"SL" Contactors are ideal for full and reduced voltage starting of squirrel-cage induction, wound-rotor, and synchronous motors. Other applications include power and capacitor switching. They're especially recommended for heavy duty applications and harsh environments found in many industries including mining, pulp and paper, HVAC, petrochemical, and automotive.

Technical highlights

Long Contactor Life
No adjustment or replacement of vacuum interrupters is required to achieve 300,000 electrical operations.
Fewer moving parts enhance longevity and reliability while decreasing maintenance, resulting in a mechanical life of 2.5 million operations.

Field-Adjustable Settings
Field adjustable coil voltages & drop-out times enable the installer to adjust to specific requirements and make last minute changes to standard units.

Field-Installable Kits Provide Added Flexibility (160-400A versions)
Auxiliary Contact Kits provide for up to six extra auxiliary contacts.
Mechanical Latch Kits available in many coil voltages with a wide range of AC and DC selections.
Mechanical Interlock Kit prevents unintentional energizing.

Easy Installation
Can be mounted horizontally or vertically when space is an issue.
Built-in mounting tabs provide for pedestal or panel mounting.

3 different altitude versions
Low altitude rating of -3500 to -1001 meters.
Standard altitude rating of -1000 to +2000 meters.
High altitude rating of +2001 to +4000 meters.

High interrupting capability
160A, 200A, 360A : 4500A interrupting rating.
400A : 8500A interrupting rating.
800A : 13200A interrupting rating.

Global Acceptability
Meets NEMA/ANSI ICS 3 Part 2.
KEMA tested to IEC 60470 (160-400A).
UL 347 recognised, File #E63257.
CSA Certified T.I.L. D-21, File #LR28548.

Technical specifications

Contactor size	Voltage, V	Interrupting rating, kA	Induction motor, kW	Synchronous motor (1.0 PF), kW	Transformer kVA	Capacitor switching * kVAR/A
160A	2200 – 2500V	4.5	450	600	600	480/120
	3000 – 3600V		675	750	800	640/120
	3800 – 4800V		900	1050	1000	960/120
	6000 – 6900V		1350	1650	1600	1320/120
200A	2200 – 2500V	4.5	600	750	750	600/150
	3000 – 3600V		825	950	1000	800/150
	3800 – 4800V		1100	1300	1250	1200/150
	6000 – 6900V		1675	2050	2000	1650/150
360A	2200 – 2500V	4.5	1100	1300	1200	1000/270
	3000 – 3600V		1500	1850	1600	1475/270
	3800 – 4800V		1850	2250	2500	2150/270
	6000 – 6900V		3000	3750	3200	2950/270
400A	2200 – 2500V	8.5	1300	1500	1500	1200/295
	3000 – 3600V		1675	1850	2000	1650/295
	3800 – 4800V		2250	2600	2500	2400/295
	6000 – 6900V		3350	4100	4000	3300/295
800A	2200 – 2500V	13.2	2250	2600	2500	2400/550
	3000 – 3600V		3000	3750	3500	3200/550
	3800 – 4800V		3750	4500	4500	4000/550
	6000 – 6900V		6000	7500	6000	4800/550

* Ratings not applicable for back-to-back switching. Consult factory.

Power Xpert Ux

Air insulated withdrawable switchgear

Eaton's Power Xpert UX system is a metal-enclosed, internal arc-proof, air-insulated switchgear system with withdrawable vacuum circuit-breakers, switches and/or contactors. It is a modular system, which has been developed for medium voltage single busbar applications up to 24 kV, for the Oil and Gas market and petrochemical industry.

Ratings: 12/24kV, … 3150A (5000A), … 50kA
24kV, … 2000A, … 25kA

Technical highlights

- Metal-clad, air-insulated switchgear
- Certified in accordance with IEC
- Compact design
- Environmentally-friendly design with respect to the materials used
- Arc fault tested according to IEC 62271-200
- Modular structure, easily configurable for specific applications and installations
- Vacuum circuit breakers offering
  Low VI Contact erosion design.
  Higher Interruption Ratings.
  Universal Mechanism, Encapsulated Poles.

Applications in:

- Utilities and Power Plants:
  Power generation stations, Transformer stations, Switching stations, Main and auxiliary switchboards.
- Industry:
  Pulp and Paper, Cement, Textiles, Chemicals, Food, Automotive, Petrochemical, Quarrying, Oil and gas pipelines, Metallurgy, Rolling mills, Mines.
- Marine applications:
  Rigs, Drilling platforms, Off-shore oil rigs, Tender ships, Passenger ships, Container ships, Tankers, Cable ships, Ferries.
- Transport:
  Airports, Ports, Railways, Underground transport.
- Commercial Services:
  Supermarkets, Shopping malls, Hospitals, Large infrastructures and civil works.

Technical specifications

Description		
Rated voltage	kV	12/17.5
Rated current busbar	A	1250, 2000, 3150/(4000FC)
Rated short-time current	kA-3s	25, 26.3, 31.5, 40, 50
IAC circuit breakers		
Rated current (max)	A	630, 1250, 2000, 3150, 4000FC
Short time current	kA-3s	25, 31.5, 40, 50
Panel width	mm	600, 800, 1000
Panel heigh	mm	2200 / 2760*

* Height over the arc chamber

Description		
	kV	24
Busbar rated current	A	1250, 2500
Short time current	kA-3s	20, 25
IAC	kA-1s	25
Circuit-Breakers		
Rated current max	A	800,1250, 2000, 2500
Short time current	kA-3s	25
Panel width	mm	800,1000
Panel height	mm	2200 / 2760

* Height over the arc chamber

Panel width	600 mm	800mm	1000mm
12 kV and 17.5 kV			
Max. rating	630 A / 1250 A	2000A	3150 A / 4000 A (FC)
Depth	1320	1320 / 1500*	1500
Height (A)	2200	2200	2200
Height including Arc Chamber (B)	2750	2750	2750
* 1500 mm for IAC classification ratings of 40 kA-1s and 50 kA-0.5s only			

Panel width	800mm	1000mm
24 kV		
Max. rating	800 A / 1250 A	2000 A / 2500 A
Depth	1570	1570
Height (A)	2320	2320
Height including Arc Chamber (B)	2870	2870

Power Xpert FMX

IEC MV, single busbar, fixed switchgear for application in substations (24 kV, 630 - 2000 A)

The new system is a modern, high quality design based on Eaton's long experience and established technology with new innovations in application. It provides an environmentally-friendly alternative for energy distribution requirements in primary and distribution substations, in the industrial sector for specific customer connections or as a substation.

Technical highlights

General

- State-of-the-art design certified in accordance with IEC
- Compact design
- Environmentally-friendly design with respect to the materials used
- Maintenance-free design
- Ergonomic cable termination and operator interface

Safety

- All high-voltage parts including the cable terminations, busbars and voltage transformers are metal enclosed
- Capacitive voltage detection system for verification of safe isolation

Operating safety

- Arc fault tested according to IEC 62271-200: 25 kA - 1 s
- Operating mechanisms of switching devices accessible from the front
- Operation is only possible with closed enclosure
- Logical mechanical interlocks prevent maloperation
- Cable earthing via the vacuum circuit-breaker

Medium voltage generator circuit breakers

Eaton's Cutler-Hammer VCP-WG line of Vacuum Generator breakers were designed and tested to the specific ANSI / IEEE C.37.013 standard. These breakers are designed to handle the rigorous and unique characteristics needed when applied in close proximity to a Generator and Transformer configuration.

Ratings of our VCP-WG line include 5 and 15kV, 50, 63 and 75kA, and up to 4000A continuous current with natural convection cooling. Higher current ratings can be achieved with the use of fan cooling packages.

Eaton Corporation has dedicated years of research, design, enhancement and testing to create Cutler-Hammer VCP-WG Circuit Breakers that meet, and even exceed, these rigorous service duty requirements of generator circuit application defined by IEEE.

Technical specifications

Description		50VCP-WG50	50VCP-WG63	50VCP-WG75	150VCP-WG50	150VCP-WG63	150VCP-WG75
Rated voltage	kV	4.76	4.76	4.76	15	15	15
Power frequency withstand voltage	kV-1min	19	19	19	36	36	36
Impulse withstand voltage	kVp	60	60	60	95	95	95
Rated current	A	1200, 2000, 3000	1200, 2000, 3000	1200, 2000, 3000, 4000	1200, 2000, 3000	1200, 2000, 3000	1200, 2000, 3000, 4000
Rated short circuit breaking current	kA	50	63	75	50	63	75

Ratings referenced to 60Hz.

These breakers are integrated into the VCP-W Metal-Clad Switchgear cubicles to provide a total solution.

VCP-W metal-clad switchgear with type VCP-W vacuum breakers provides centralised control and protection of medium voltage power equipment and circuits in industrial, commercial and utility installations involving generators, motors, feeder circuits and transmission and distribution lines.

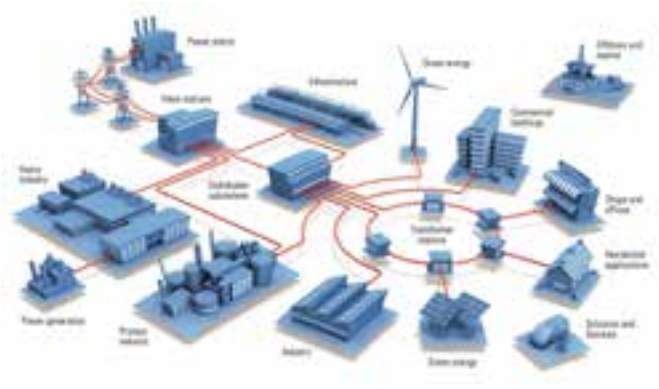
VCP-W switchgear is available in maximum voltage ratings from 4.76 kV through 38 kV and interrupting ratings up to 63kA depending on voltage. VCP-W offers a total design concept of cell, breaker and auxiliary equipment, which can be assembled in various combinations to satisfy user application requirements. Two-high breaker arrangements are standard up to 15 kV. One-high arrangements can be furnished when required.

Technical specifications

Description					
Rated voltage	kV	5	15	27	38
Impulse withstand voltage	kVp	60	95	125	170
Main bus rating	A	1200, 2000, 3000, 4000	1200, 2000, 3000, 4000	1200, 2000	1200, 2000, 3000 Depending on kA Rating
Circuit breaker rating	A	1200, 2000, 3000	1200, 2000, 3000	1200, 2000	1200, 1600, 2500 A Depending on kA Rating
Short circuit interrupting capacity	kA	29, 41, 63	18, 28, 37, 63	16, 22, 25, 40	16, 21, 25, 32, 40

Ratings referenced to 60Hz.

A greener form of power.



Eaton's sustainable SF6-free switchgear solutions for medium voltage power distribution.

Eaton's medium voltage switchgear systems are based on its long standing experience in the core technologies of vacuum interrupters, vacuum switching and cast resin insulation and encapsulation, enabling an environmentally-friendly solution. Eaton is well-positioned across all of our businesses to deliver effective power management technologies that help our customers control cost and reduce their energy requirements.

EATON

Powering Business Worldwide

Power control.

Eaton significantly speeds time to market for machine builders and reduces the footprint and operating costs of machines without compromising performance. We reduce the time and expense of machine wiring, testing and commissioning up to 85% with our unique Smartwire-DT panel-wiring solution.
Increase energy efficiency with Eaton solutions that enable advanced control of electric motors and hydraulic pumps. Eaton's safety solutions safeguard people, machines and systems, by reducing the risk of machine overload, damage and fire.

EATON
Powering Business Worldwide

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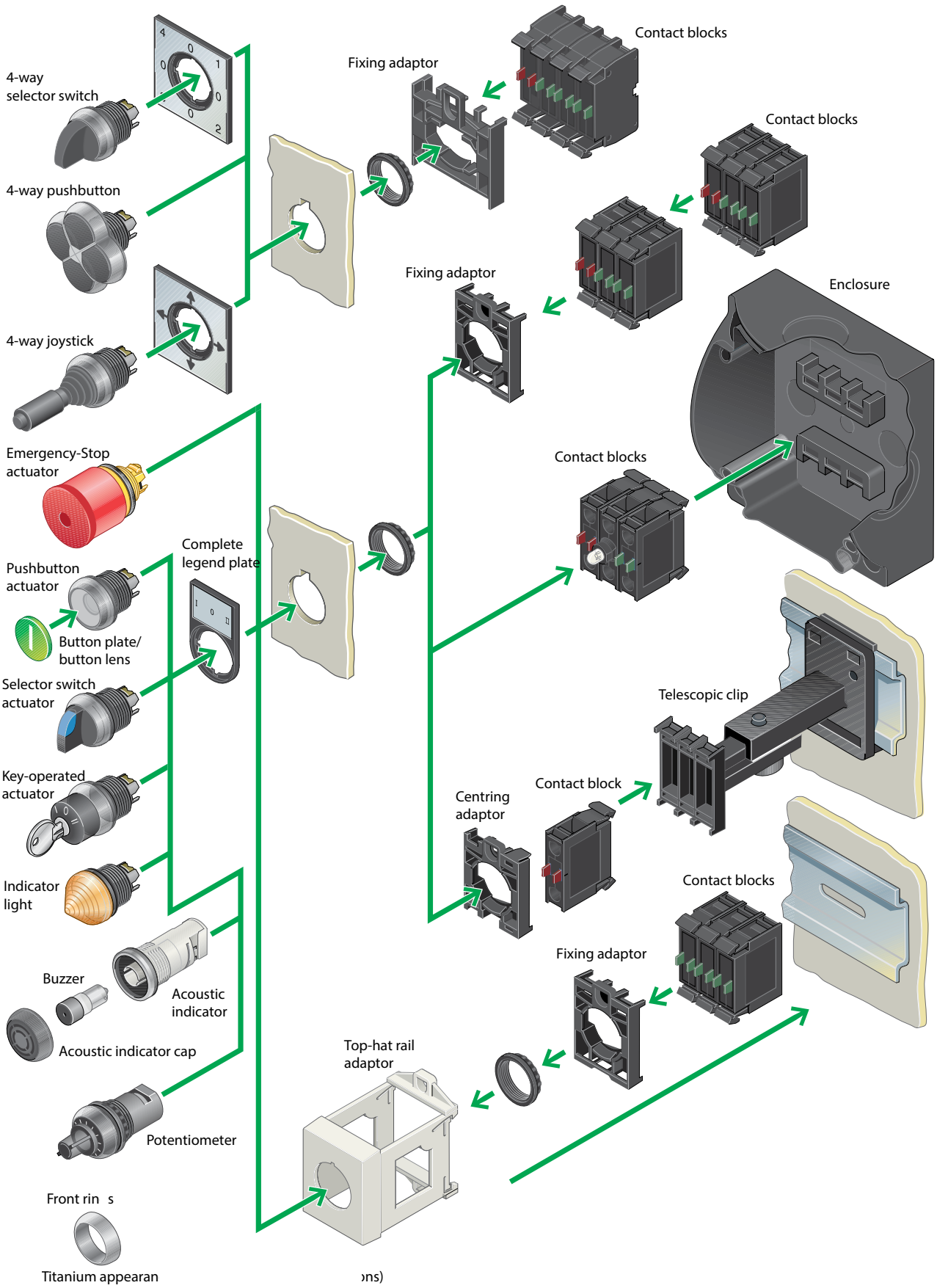
22.5mm Pushbuttons

RMQ - Titan, system overview



22.5mm Pushbuttons

RMQ - Titan

Competitively priced, Eaton's RMQ-Titan range comprises pushbuttons, selector switches, joysticks, Emergency-Stop & key-operated actuators. The system includes a variety of indicator lights & illuminated pushbuttons in white, red, yellow, blue & green. They are available in two voltage ranges 12 – 30 V AC/DC & 85 – 264 V AC covering all standard applications.

Meeting all relevant international standards, this attractive, co-ordinated product range will add significant value to any machine or system.

Features & benefits:

- Ergonomic design ensuring ease of operation & bright illumination
- IP66 degree of protection as standard (many devices IP67, IP69K) for use in the harshest of industrial environments
- Vibration resistant LEDs giving a minimum life of 100,000 hours for improved reliability & high integrity
- Fitting in the standard 22.5 mm hole, the snap fitting modular system saves both assembly & fitting time

Colour	Description	Contact blocks	LED light unit	Legend plate(s)	Item no.
Pushbutton					
●	Flush	1NO/1NC	-	Run, 1	**M22-D-S-K11-P**
●	Extended	1NO/1NC	-	Stop, off	**M22-DH-R-K11-P**
●	Flush	1NO/1NC	-	Start, on	**M22-D-G-K11-P**
Illuminated pushbutton					
●	Extended	1NO/1NC	12-30V AC/DC	Stop, off	**M22-DLH-R-K11-R-P**
●	Extended	1NO/1NC	85-264VAC	Stop, off	**M22-DLH-R-K11-230R-P**
○	Flush	1NO/1NC	12-30V AC/DC	Run, 1	**M22-DRL-W-K11-W-P**
○	Flush	1NO/1NC	85-264VAC	Run, 1	**M22-DRL-W-K11-230W-P**
Indicating light					
●	-	-	12-30V AC/DC	Stop, off, fault	**M22-L-R-R-P**
●	-	-	12-30V AC/DC	Start, on, run	**M22-L-G-G-P**
●	-	-	85-264VAC	Stop, off, fault	**M22-L-R-230R-P**
●	-	-	85-264VAC	Start, on, run	**M22-L-G-230G-P**
Emergency stop					
●	Non-illuminated twist-to-release	1NO/2NC	-	Emergency stop	**M22-PVT-K12-P**
●	Illuminated push-pull	1NO/2NC	12-30V AC/DC	Emergency stop	**M22-PVL-K12-R-P**
●	Illuminated push-pull	1NO/2NC	85-264VAC	Emergency stop	**M22-PVL-K12-230R-P**
Selector switch					
●	2 Position momentary	1NO/1NC	-	0 I, man auto	**M22-WKV-K11-P**
●	3 Position momentary	1NO/1NC	-	I 0 II, hand 0 auto	**M22-WK3-K22-P**

M22-DLH-R-K11-R-P

M22-L-G-G-P

M22-PVL-K12-R-P

M22-D-G-X1/K10

M22-DDL-GR-X1/X0/K11/230-W

M22-PV/K01

M22-WRK/K10

M22-WRS/K11

22.5mm Pushbuttons

RMQ - Titan

Complete units

Description		Button plate	Contacts	Item no.
Complete units for front mounting				
Pushbutton actuators	Start	I	1NO	**M22-D-G-X1/K10**
	Stop	◉	1NC	**M22-D-R-X0/K01**
Double actuators	With white LED element lens, 85 – 264 V AC	I □ 0	1NO/1NC	**M22-DDL-GR-X1/X0/K11/230-W**
Emergency-stop actuators	Key-release mushroom button with 1 key, MS1 individual lock mechanism	◉	1NC	**M22-PVS/K01**
	Pull to release	◉	1NC	**M22-PV/K01**
	Pull to release	◉	1NO/1NC	**M22-PV/K11**
Selector switch actuators	Two positions, stay-put	–	1NO	**M22-WRK/K10**
	Three positions, stay-put	–	2NO	**M22-WRK3/K20**
Key-operated actuators	Two positions, stay-put, with 1 key	–	1NO/1NC	

Enclosed units

Description		Button plate	Contacts	Item no.
Enclosed units for surface mounting				
Pushbutton actuators	Start	I	1NO/1NC	**M22-D-G-X1/KC11/I**
	Stop	◉	1NO/1NC	**M22-D-R-X0/KC11/I**
Emergency-stop actuator	Pull to release, yellow enclosure	–	1NO/1NC	**M22-PV/KC11/IY**
Emergency-stop key-release mushroom button	Red actuator with 1 key	–	1NO/1NC	**M22-PVS/KC11/IY**
Key-operated selector switch	2 positions, stay-put, with 1 key	–	1NO/1NC	**M22-WRS/KC11/I**
Two-way pushbutton stations	Without indicator light	–	-	**M22-I2-M1**
	With indicator light, white LED element, 85 – 264 V AC	–	-	**M22-I3-M2**
Three-way pushbutton station	Without indicator light	–	-	**M22-I3-M1**
Four-way pushbutton station	Without indicator light	–	-	**M22-I4-M1**

M22-D-G-X1/KC11/I

M22-PV/KC11/IY

M22-WRS/KC11/I

M22-I2-M1

M22-I3-M1

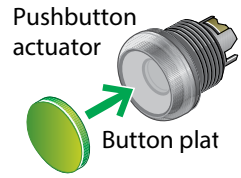
22.5mm Pushbuttons

RMQ - Titan
Pushbutton actuators, IP67

- Front ring titanium, also available in black
- Snap-fitting modular system
- Mounting diameter 22.3 mm
- Minimum grid dimensions 30 x 40 mm
- Up to six contacts per location
- Switching of different potentials
- Worldwide approval

Actuators

Description		Colour of button plate/mushroom head	Item no.
Flush design			
Flush actuator	Spring-return	●	**M22-D-G**
		●	**M22-D-R**
		● I	**M22-D-G-X1**
		◉	**M22-D-R-X0**
		●	**M22-D-S**
		●	**M22-D-Y**
		○	**M22-D-W**
		●	**M22-D-B**
Flush actuator	Spring-return	Without button plate	**M22-D-X**
button plate	for use with M22-D-X	●	**M22-XD-S**
		○	**M22-XD-W**
		●	**M22-XD-R**
		●	**M22-XD-G**
		●	**M22-XD-Y**
		●	**M22-XD-B**
Extended Design			
Extended actuator	Spring-return	●	**M22-DH-S**
		●	**M22-DH-R**
		●	**M22-DH-G**
	Spring-return, with guard ring	Without	**M22-DG-X**
Mushroom actuators, IP67			
	Spring-return	●	**M22-DP-G**
		●	**M22-DP-R**
		●	**M22-DP-S**
		●	**M22-DP-Y**
	Stay-put	●	**M22-DRP-S**
		●	**M22-DRP-R**
		●	**M22-DRP-G**
Double actuator, IP66			
	Stop-start button plate. Optional indicator light M22-LED230-W	I □ 0	**M22-DDL-GR-X1/X0**



M22-XD-G

M22-DH-R

M22-DP-R

M22-DDL-GR-X1/X0

M22-PV

M22-PVL

M22-PVS

M22-PL-PV

FAK-R/V/KC01/IY

FAK-R/V/KC11/IY

22.5mm Pushbuttons

RMQ - Titan

Actuators

Description	Colour of mushroom head	Item no.
Emergency-stop actuators, IP66. Snap-action & positive non-tease action, yellow base		
Pull to release. After actuation, plunger remains in the actuated position.	●	**M22-PV**
Twist to release. One or two contact blocks can be fitted.	●	**M22-PVT**
Illuminated. Pull to release. After actuation, plunger remains in the actuated position. One or two contact blocks can be fitted.	●	**M22-PVL**
Key-operated, with 1 key	●	**M22-PVS**
Sealable shroud. Transparent with collapse point, reusable after Emergency-stop operation. Suitable for M22-PV & M22-PVL Emergency-stop actuators & M22-PVS key-release mushroom actuator.	–	**M22-PL-PV**
Foot & palm switches, IP67		
Spring-return mushroom head	●	**FAK-R/KC11/I**
	●	**FAK-S/KC11/I**
Emergency-stop actuators, IP67		
Stay-put, pull to release	●	**FAK-R/V/KC01/IY**
Stay-put, pull to release	●	**FAK-R/V/KC11/IY**

Fixing adapters, contact blocks

M22-A

M22K10

M22-AK11

Description	Contacts	Item no.
Fixing adapters		
Front fixing, for 3 M22-K... contact elements & M22-LED... LED elements.	–	**M22-A**
For 4 contact blocks	–	**M22-A4**
Contact blocks with screw terminals		
Front fixing	1 NO	**M22-K10**
	1 NC	**M22-K01**
Base fixing	1 NO	**M22-KC10**
	1 NC	**M22-KC01**
Complete modules. Combination of contact elements with screw terminals & fixing adapter		
Front fixing	1 NO, 1 NC	**M22-AK11**
	1 NO	**M22-AK10**
	1 NC	**M22-AK01**

22.5mm Pushbuttons

RMQ - Titan

LED elements

Description	Rated operational voltage, U_e, V	Colour	Item no.
LED elements with screw terminals			
Front fixing	12 – 30 V AC/DC	○	**M22-LED-W**
		●	**M22-LED-R**
		●	**M22-LED-G**
		●	**M22-LED-B**
	85 – 264 V AC, 50/60 Hz	○	**M22-LED230-W**
		●	**M22-LED230-R**
		●	**M22-LED230-G**
		●	**M22-LED230-B**
Base fixing	12 – 30 V AC/DC	○	**M22-LEDC-W**
		●	**M22-LEDC-R**
		●	**M22-LEDC-G**
		●	**M22-LEDC-B**
	85 – 264 V AC, 50/60 Hz	○	**M22-LEDC230-W**
		●	**M22-LEDC230-R**
		●	**M22-LEDC230-G**
		●	**M22-LEDC230-B**
LED test elements			
For non-interacting function test (lamp test) for connection to:	12 – 240 V AC/DC	–	**M22-XLED-T**
	85 – 264 V AC	–	**M22-XLED230-T**

M22-A

M22-A

Illuminated pushbutton actuators, indicator lights

Description		Colour	Item No.
Illuminated pushbutton actuators, IP67			
Flush design	Spring-return	○	**M22-DL-W**
		●	**M22-DL-G**
		●	**M22-DL-R**
		●	**M22-DL-Y**
		●	**M22-DL-B**
	Stay-put, press again to release.	○	**M22-DRL-W**
		●	**M22-DRL-G**
		●	**M22-DRL-R**
		●	**M22-DRL-Y**
		●	**M22-DRL-B**
Extended design	Spring-return	○	**M22-DLH-W**
		●	**M22-DLH-G**
		●	**M22-DLH-R**
		●	**M22-DLH-Y**
		●	**M22-DLH-B**
Indicator lights, IP67			
Flush	-	○	**M22-L-W**
		●	**M22-L-G**
		●	**M22-L-R**
		●	**M22-L-Y**
		●	**M22-L-B**
Extended, conical	-	○	**M22-LH-W**
		●	**M22-LH-G**
		●	**M22-LH-R**
		●	**M22-LH-Y**
		●	**M22-LH-B**

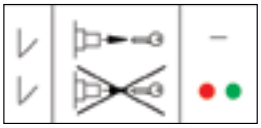
M22-DL-R

M22-DRL-G

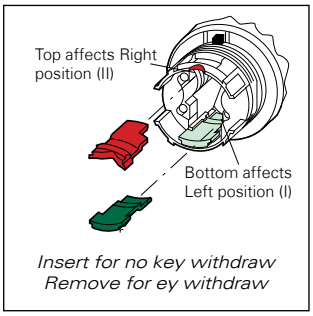
M22-DLH-W

M22-L-R

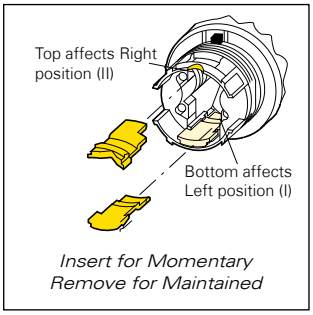
M22-LH-B



M22-XC-R



M22-XC-Y



22.5mm Pushbuttons

RMQ - Titan

Set of coding adapters for selector switches

Description	For use with	Colour	Item no.
Used to convert key withdraw position to non-key withdrawn position	M22(S)-WRS(3)	-	**M22-XC-R**
Supplied with standard switches Used to convert maintained operation to momentary operation	M22(S)-WR(L)(K)(3) M22(S)-WRS(3)	-	**M22-XC-Y**

The same slots on keyed sector switches are shared between these two difference sets of coding adapters.

All possible combinations and their effects are detailed in the tables below.

Two position adapter configurations

Two position adapter configurations	Switching positions		
	0 I maintained	0 I maintained	0 I momentary
	Key withdraw positions		
	O I	**O** I	**O** I
Two slot affects right position	–		

Bottom slot not implemented with two position switches

Shading indicates standard switch configuration

Three position adapter configurations

Three position adapter configurations	Switching positions								
	maintained	maintained	maintained	maintained	momentary				
	Key withdraw positions								
	I O II	**I O II**	**I O II**	**I O II**	**I O II**	**I O II**	**I O II**	**I O II**	**I O II**
Two slot affects right position	–			–				–	
Bottom slot affects left position	–		–			–			

Shading indicates standard switch configuration

22.5mm Pushbuttons

RMQ - Titan

Selector switch actuators

Description	Function: ⌊ = Stay-put ⌵ = V position	⌊› = Spring-return		Button plate	Front ring: titanium Item no.
Selector switch actuators, 2 positions, IP66					
Rotary button	–	⌊›	40°	●	**M22-W**
	–	⌊	60°	●	**M22-WR**
Thumb-grip	–	⌊›	40°	–	**M22-WK**
	–	⌊	60°	–	**M22-WRK**
Thumb-grip, V position	–	⌵	60°	–	**M22-WKV**
Selector switch actuators, 3 positions, IP66					
Rotary button	40°	⌊⌊›	40°	●	**M22-W3**
	60°	⌊⌊	60°	●	**M22-WR3**
Thumb-grip	40°	⌊⌊›	40°	–	**M22-WK3**
	60°	⌊⌊	60°	–	**M22-WRK3**
Selector switch actuators, 4 positions, IP66.					
Rotary button	45°	✳	–	◔	**M22-WR4**
Thumb-grip	45°	✳	–	◔	**M22-WRK4**
Key-operated actuators, IP66, with 1 key					
2 positions, 60° turn, stay-put	–	⌊	60°	–	**M22-WRS**
3 positions, 60° turn, stay-put	60°	⌊⌊	60°	–	**M22-WRS3**
Key for MS1 individual lock mechanism	–	–	–	–	**M22-ES-MS1**

Illuminated selector switch actuators, key-operated actuators

Description		Function: ⌊ = Stay-put ⌊› = Spring-return			Colour of thumb-grip	Item No.
Illuminated selector switch actuators, IP66. Thumb grip handle						
2 positions						
–	Spring-return	–	⌊›	40°	○	**M22-WLK-W**
		–	⌊›	40°	●	**M22-WLK-G**
		–	⌊›	40°	●	**M22-WLK-R**
		–	⌊›	40°	●	**M22-WLK-Y**
		–	⌊›	40°	●	**M22-WLK-B**
	Stay-put	–	⌊	60°	○	**M22-WRLK-W**
		–	⌊	60°	●	**M22-WRLK-G**
		–	⌊	60°	●	**M22-WRLK-R**
		–	⌊	60°	●	**M22-WRLK-Y**
		–	⌊	60°	●	**M22-WRLK-B**
3 positions						
–	Spring-return	40°	⌊⌊›	40°	○	**M22-WLK3-W**
		40°	⌊⌊›	40°	●	**M22-WLK3-G**
		40°	⌊⌊›	40°	●	**M22-WLK3-R**
		40°	⌊⌊›	40°	●	**M22-WLK3-Y**
		40°	⌊⌊›	40°	●	**M22-WLK3-B**
	Stay-put	60°	⌊⌊	60°	○	**M22-WRLK3-W**
		60°	⌊⌊	60°	●	**M22-WRLK3-G**
		60°	⌊⌊	60°	●	**M22-WRLK3-R**
		60°	⌊⌊	60°	●	**M22-WRLK3-Y**
		60°	⌊⌊	60°	●	**M22-WRLK3-B**

M22-W

M22-WK

M22-WKV

M22-W3

M22-WK3

M22-WR4

M22-WRK4

M22-WRS

M22-WRLK-R

M22-WJ2H

M22-WRJ4

M22-D4-S

M22-XCK

M22-XCK2

M22-I2

M22-I4

M22-EY1

M22-E6

22.5mm Pushbuttons

RMQ - Titan

Four-way operators

Description	Inscription	Function: = Stay-put = Spring-return	For use with	Front ring: titanium Item no.
Joysticks, IP66				
2 positions	–		–	**M22-WJ2H**
	–		–	**M22-WJ2V**
4 positions	–		–	**M22-WRJ4**
	–		–	**M22-WJ4**
Pushbuttons, 4-way, IP66				
No inscription, actuator colour black			–	**M22-D4-S**
Inscription with direction arrows, actuator colour: black			–	**M22-D4-S-X7**
Inscription with direction arrows, actuator colour: black, opposing buttons mechanically interlocked			–	**M22-DI4-S-X7**
Labels				
–	Blank	–	Joystick 4-way selector switch actuators	**M22-XCK**
	Direction arrows	–	Joystick 4 positions	**M22-XCK1**
			Joystick 2 positions	**M22-XCK3**
	0-1-0-2-0-3-0-4	–	4-way selector switch actuators	**M22-XCK2**

Surface mounting enclosures, flush mounting plates

Number of ways Qty.	Colour	Item no.
Surface mounting enclosures		
1		**M22-I1**
2		**M22-I2**
3	●	**M22-I3**
4		**M22-I4**
6		**M22-I6**

Description	Number of ways Qty.	Colour	Item no.
Flush mounting plates Legend plates cannot be used if pushbuttons are fitted in vertical column without apertures, if required.			
Aluminium with yellow paint finish for emergency-stop buttons	1	●	**M22-EY1**
Aluminium, light anodized	1	●	**M22-E1**
	2		**M22-E2**
	3		**M22-E3**
	4		**M22-E4**
	5		**M22-E5**
	6		**M22-E6**

22.5mm Pushbuttons

RMQ - Titan, Accessories

Description		Number of ways	Item no.
Shrouds, IP55	Plastic, light grey	1	**M22-H1**
	Plastic, light grey	2	**M22-H2**
Blanking plugs, IP66. Round style, for blanking off reserve locations	Grey	–	**M22-B**
	Black	–	**M22S-B**
Actuator diaphragms, IP67. Transparent diaphragms for severe environmental conditions & use in the food industry. Do not use with legend plates since degree of protection is not guaranteed			
For use with M22(S)-D(R)-... pushbutton actuators, M22(S)-DL-..., M22(S)-DRL-..., illuminated pushbutton actuators, M22-D(C)-... flush indicator lights		–	**M22-T-D**
For use with M22(S)-DD(L)-... double actuators		–	**M22-T-DD**
Telescopic clips. For adjusting depth of rear mounting devices in CI enclosures & panels with a mounting depth of 115 – 155 mm. Stepless adjustment, screw fixing & snap fitting (top hat rails to IEC/EN 60715). Maximum of 10 x M22-TC per enclosure, 5 of which can hold stay-put actuators. Do not use with Emergency-Stop actuators			
For 3 contacts/LED elements, base fixing, with centering adapter		–	**M22-TC**
Extension for telescopic clip; for mounting depths up to 205 mm		–	**M22-TCV**
Adapter rings. Set of adapter rings 30/22.3 mm, black, consists of adapter ring & lock nut			
For fitting 22.3 mm diameter buttons into 30.5 mm diameter holes		–	**M22S-R30**
Threaded ring	M22 x 1.5 mm	–	**M22-GR**
Acoustic indicator housing IP40 ① Black front, without buzzer		-	**M22-AMC**
Buzzer - for use with M22-AMC 18 - 30 V AC/DC, 83 dB / 10 cm, 100 % DF, Positive pole connected to X1	Continuous tone	-	**M22-XAM**
	Pulsed tone	-	**M22-XAMP**

① NEMA/UL Type 1.

Description		Item no.
Combination box spanner	For threaded ring	**M22-MS**
Top-hat rail adapter	IEC/EN 60715 top-hat rail, for front fixing	**M22-IVS**
Plunger bridge. For actuating the middle contact element of the M22-W...3 non-illuminated 3-position selector switch actuator	Middle contact of 3-position selector switch, non-illuminated, (1 off) black	**M22-XW**
Guard ring, IP66. To protect against accidental operation	For pushbutton & selector switch actuators	**M22-XGWK**
Front ring: gold (24 carat). Front ring not supplied individually:		**M22-FR-AU**
IP65 external reset button		**M22-DZ-B-GB14**

Description		Circuit symbol	Resistance, R, kW	Item no.
Potentiometers, IP66	3 individual screw terminals, Pmax = 0.5 W Accuracy of resistance value: ±10% (linear)		1	**M22-R1K**
			4.7	**M22-R4K7**
			10	**M22-R10K**
			47	**M22-R47K**
			100	**M22-R100K**
			470	**M22-R470K**

Description		Inscription	Colour	Item no.
Emergency-stop labels, IP66	Lettering black, 30 X 50 mm	Emergency-stop	●	**M22-XZK-GB99**
		Blank	●	**M22-XZK**
	Diameter = 90 mm	Emergency-stop in 4 languages	●	**M22-XAK1**
Legend holders without label, IP66. Round, black	For actuators, 30 x 50 mm	–	●	**M22S-ST-X**
	For double actuators, 30 x 75 mm	–	●	**M22S-STDD-X**
	Insert plate for legend holder	Blank	Aluminium	**M22-XST**

M22-H1

M22-B

M22-T-D

M22-T-DD

M22-TC

M22-R30

M22-GR

M22-AMC

M22-MS

M22-IVS

M22-XW

M22-XGWK

M22-DZ-B-GB14

M22-R10K

M22-XAK1

30.5mm Pushbuttons

Eaton's 30.5mm pushbuttons are versatile, durable, rugged, & stand the test of time in even the most hostile environments.

The range includes momentary, illuminated & mushroom head pushbuttons, selector switches, indicating lights & push-pull units.

The T Series Chrome 30.5 mm pushbutton line features a zinc die cast construction with chrome-plated housing & mounting nut. The same durable construction is also available with the corrosive resistant E34 line of pushbuttons.

All operators are IP66 rated to protect against dirt & moisture. Additionally, most devices come complete with grounding hardware to prevent electrical shock. Rugged metal construction, handsome appearance, extra features, & competitive prices makes Eaton's 30.5mm range of pushbuttons the logical choice for OEM's & board builders looking for value, durability, & reliability.

Features

- Die-cast metal housings create robust & heavy-duty devices that can endure repetitive & heavy handed use in industrial environments.
- IP66 rated for protection against dirt & moisture.
- The corrosion resistant E34 range can with stand extremely harsh environments.
- Contact blocks are colour coded (green for N.O. & red for N.C.) to permit easy identification & troubleshooting.
- Up to 6 contact blocks can stack on each other, allowing for up to 12 circuits per operator.
- Heavy-duty zinc die cast construction
- Enclosed silver contacts with reliability nibs
- All normally closed contacts have positive opening operation, i.e., normally closed contacts are forced open in the event of contact weld or spring breakage.
- Diaphragm seals with drainage holes
- Grounding nibs on the operator casing.
- Logic level contact blocks have palladium tipped contacts to ensure circuit integrity down to 1mA @ 5V AC/DC.
- Bright, long-lasting & vibration-proof LED's are available for illuminated operators.

Standards

- CE EN60947-5-1
- UL 508 — File No. 131568
- CSA C22.2 No. 14 — File No. LR68551

Contact blocks

Eaton's contact blocks feature enclosed silver contacts with pointed "reliability nibs" for reliable performance from logic level up to 600V. To ensure reliable switching, nibs bite through oxide which can form on silver contacts, eliminating the need for expensive logic level blocks for most applications. Reliability nibs improve performance in dry circuit, corrosive, fine dust & other contaminated atmospheres. Under normal environmental conditions, the minimum operational voltage is 5V & the minimum operational current is 1 mA, AC/DC. For operation under a wider range of environmental conditions, logic level contact blocks with inert palladium tipped contacts are recommended. Diaphragm Seal with Drainage Holes Eaton's pushbutton operators offer front-of-panel drainage via holes in the operator bushing. Hidden from view by the mounting nut, these holes prevent buildup of liquid inside the operator, which can prevent operation in freezing environments. The holes also provide a route for escaping liquid in high pressure washdowns, effectively relieving pressure from the internal diaphragm seal, ensuring reliable sealing every time.

Grounding nibs

Most operators have green earthing screws to prevent electrical shock. Operators also have "grounding nibs" — four metal points on the operator casting designed to bite through most paints & other coatings on metal panels to enhance the ground connection when the operator is securely tightened.

Standard Pushbuttons

Chrome, T Series pushbuttons

Chrome

The 30.5 mm pushbutton line features a zinc die cast construction with chrome-plated housing & mounting nut.

Applications for the chrome operators:

- Aggregate
- Automotive
- Construction Vehicles
- Industrial Equipment
- Material Handling
- Metal Forming
- Metal Stamping
- Mining
- Petrochemical
- Pulp & Paper

Corrosion Resistant, E34 Pushbuttons

Corrosion resistant

Eaton's Corrosion Resistant E34 Range of 30.5 mm pushbuttons features the same rugged die cast construction of our T Series with an additional two-layer 100% solid thermosetting cathodic epoxy coating. This coating provides a smooth flat black smooth, flat back, corrosion resistant surface that has passed a demanding 600 hour salt spray test.

Applications for corrosion resistant operators:

- Automotive
- Chemical Plants
- Food & Beverage
- Food Service Equipment
- Industrial Equipment
- Mining
- Pulp & Paper
- Waste Water Treatment Plants

Ultraviolet light

E34 cathodic coating is not recommended for use in applications where exposure to ultraviolet light exists, use chrome operators.

30.5mm Pushbuttons

Standard Pushbuttons, flush, extended & half-shrouded buttons,

Flush button

Colour	Chrome	Corrosion resistant
Black	**T101**	**E34PB1**
Red	**T102**	**E34PB2**
Green	**T103**	**E34PB3**
Yellow	**T104**	**E34PB4**
Grey	**T105**	**-**
White	**T106**	**E34PB5**
Brown	**T107**	**-**
Blue	**T108**	**E34PB6**

Extended button

Colour	Chrome	Corrosion resistant
Black	**T111**	**E34EB1**
Red	**T112**	**E34EB2**
Green	**T113**	**E34EB3**
Yellow	**T120**	**E34EB4**
White	**T116**	**-**
Blue	**T118**	**E34EB6**

Half-shrouded

Colour	Chrome	Corrosion resistant
Black	**T501**	**E34EVB1**
Red	**T502**	**E34EVB2**
Green	**T503**	**E34EVB3**
Yellow	**T504**	**E34EVB4**
Blue	**T508**	**E34EVB6**

Base mounted contact blocks

Description	Item no.
1NO 1NC	**T6**
2NO	**T7**
2NC	**T8**
1NC	**T52**
1NO	**T54**
1LONC 1ECNO	**T56**
1LONC 1ECNO	**T58**

Logic level contact blocks

Description	Item no.
1NO 1NC	**T1E**
2NO	**T2E**
2NC	**T3E**
1NC	**T51E**
1NO	**T53E**

Standard contact blocks

Description	Item no.
1NO 1NC	**T1P**
2NO	**T2P**
2NC	**T3P**
1NC	**T51P**
1NO	**T53P**
2NO 2NC	**T44**
1LONC 1ECNO	**T55**
1ECNO 1NO	**T57**
1LONC	**T71**
2LONC	**T45**

T1P

T44

T57

NO = Normally Open, NC = Normally Closed, LONC = Late Open Normally Closed,
ECNO = Early Close Normally Open, Logic Level contact blocks have palladium contacts.

STEP 1

Select Pushbutton operator above.

STEP 2

Select contact block above

30.5mm Pushbuttons

Mushroom operators momentary

Mushroom button 38.1mm

Colour	Chrome	Corrosion resistant
Black	**T121**	**E34LB1**
Red	**T122**	**E34LB2**
Green	**T123**	**E34LB3**
Yellow	**T124**	**E34LB4**
Blue	**T129**	**E34LB6**

Palm head button 63.5mm zinc

Colour	Chrome	Corrosion resistant
Black	**T171**	**E34JB1**
Red	**T172**	**E34JB2**
Red (Emergency Stop)	**T17213**	**E34JB2N**
Green	**T173**	**E34JB3**

Accessories for complete push-pull operators*

Description	Item no.
Padlock Assembly Kit	**6-A474**
Replacement Locking Tongue	**6-A475**
Padlock with Chain	**52-A1617**

Legend Plates

Engraving	Material	Item no.
STOP Pull to reset	Metal	**D2179-53CP**
STOP Pull to reset	Plastic	**E34LP179**

* For use with push-pull mushroom operators maintained.

STEP 1

Select Pushbutton operator above.

STEP 2

Select contact block.

(previous page)

Mushroom operators components

Bare shaft operator for mushroom or palm pushbutton

Description	Item no.
Momentary, Spring Return	**T100**
Auto-Latch - Twist Base to Release	**T140**

38.1 Mushroom button for bare shaft operators

Colour	Item no.
Black	**T281**
Red	**T282**
Green	**T283**
Yellow	**T284**
Blue	**T288**

63.5Mm palm button (anodized aluminium) for bare shaft operators

Colour	Item no.
Black	**T291**
Red	**T292**
Green	**T293**

STEP 1

Select bare shaft operator above.

STEP 2

Select mushroom button above

STEP 3

Select contact block.

(previous page)

30.5mm Pushbuttons

Push-pull mushroom operators maintained

T129P

T176P

T129M

E34129S

Push-pull operators complete padlockable

Head diameter	Colour	Material	Chrome	Corrosion resistant
45mm	Red	Zinc	**T129P**	**E34129P**
63.5mm	Red	Zinc	**T176P**	**E34176P**

Push-pull operators complete non-padlockable

Head diameter	Colour	Material	Chrome	Corrosion resistant
38mm	Red	Plastic	**T129S**	**E34129S**
45mm	Red	Zinc	**T129M**	**E34129M**
63.5mm	Red	Zinc	**T176M**	**E34176M**

STEP 1

Select Pushbutton operator above.

STEP 2

Select contact block.

(previous page)

Push-Pull operators components

Push-pull operators

Description	Position	Chrome	Corrosion resistant
Maintained Push & Pull	2	**T5**	**E34GDB**
Momentary Push & Pull	3	**T4**	**E34GEB**
Maintained Push & Momentary Pull	3	**T9**	**E34GFB**

38.1Mm mushroom button for push-pull operators

Description	Colour	Item no.
Operator Head	● Black	**E34C1**
Operator Head	● Red	**E34C2**
Operator Head	● Red (Emergency Stop)	**10250TB63**
Operator Head	● Green	**E34C3**

63.5Mm palm button (anodized aluminium) for push-pull operators

description	Colour	Item no.
Operator Head	● Red	**E34J2**
Operator Head	● Red (Emergency Stop)	**E34J2N8**

STEP 1

Select push-pull operator above.

STEP 2

Select mushroom button above

STEP 3

Select contact block.

(previous page)

30.5mm Pushbuttons

Illuminated operators, indicating light lenses

Plastic lenses

Colour	Plastic
Red	**E34H2**
Green	**E34H3**
Amber	**E34H9**
Clear	**E34H0**
Yellow	**E34H4**
White	**E34H5**
Blue	**E34H6**

Glass lenses (chrome)

colour	Glass (chrome)
Red	**TC7N**
Green	**TC8N**
Amber	**TC9N**
Clear	**TC11N**
White	**TC12N**
Blue	**TC10N**

Glass lenses (corrosion resistant)

Colour	Glass (corrosion resistant)
Red	**E34G2**
Green	**E34G3**
Amber	**E34G9**
Clear	**E34G0**
Yellow	**E34G4**
White	**E34G5**
Blue	**E34G6**

Indicating Light Units

Direct voltage indicating light unit

Description	Voltage	Chrome	Corrosion resistant
Direct voltage - order bulb separately	6 - 240V	**T197N**	**E34FB 197L***

See next page for bulbs.
Can be used with LEDs.
*LED only 6-240V

Resistor type indicating light units

Description	Voltage	Chrome	Corrosion resistant
Resistor Type 120V bulb supplied	110/120	**T201N**	**E34RB120**
	220/240	**T202N**	**E34RB240**

Incandescent bulb indicating light units

Description	Voltage	Chrome	Corrosion resistant
With incandescent bulb supplied	6	**T197N/2**	**E34FB06**
	12	**T197N/3**	**E34FB12**
	24	**T197N/4**	**E34FB24**
	48	**T197N/5**	**E34FB48**
	110	**T197N/7**	**E34FB110**
	240	**T197N/8**	**E34FB240**

Transformer type indicating light units

Description	Voltage	Chrome	Corrosion resistant
Transformer Type 6V Secondary bulb supplied	110/120	**T181N**	**E34TB120**
	220/240	**T182N**	**E34TB240**
	380/415	**T183N**	**E34TB380**
	440/480	**T184N**	**E34TB480**
	550/600	**T185N**	**E34TB600**
	415	**-**	**E34TB415**

STEP 1

Select a lens from above.

STEP 2

Select indicating light above

STEP 3

Select bulb (if not supplied)

(next page)

STEP 4

Select contact block.

(previous page)

30.5mm Pushbuttons

Illuminated operators, illuminated pushbutton lenses

Plastic illuminated lenses

Colour	Plastic
Red	**E34V2**
Green	**E34V3**
Amber	**E34V9**
Clear	**E34V0**
Yellow	**E34V4**
White	**E34V5**
Blue	**E34V6**

Glass illuminated lenses (chrome)

Colour	Glass (chrome)
Red	**TC13N**
Green	**TC14N**
Amber	**TC15N**
Clear	**TC17N**
White	**TC18N**
Blue	**TC16N**

Glass illuminated lenses (chrome) (corrosion resistant)

Colour	Glass (chrome)
Red	**E34P2**
Green	**E34P3**
Amber	**E34P9**
Clear	**E34P0**
Yellow	**E34P4**
White	**E34P5**
Blue	**E34P6**

Press-to-test light units

Press-To-Test Indicating Lights - Direct Voltage

Description	Supply voltage	Chrome	Corrosion resistant
Direct voltage order bulb separately	6-240V	**T230N**	**E34FPB**
	380/415	**T413**	**E34XB380**

See next page for bulbs.
Can be used with LEDs.

Press-to-test indicating lights - transformer type

Description	Supply voltage	Chrome	Corrosion resistant
Transformer Type 6V, 1W secondary bulb supplied	110/120	**T221N**	**E34TPB120**
	220/240	**T222N**	**E34TPB240**
	380/415	**T223N**	**E34TPB380**

Press-to-test indicating lights - resistor type

Description	Supply voltage	Chrome	Corrosion resistant
Resistor Type 120V, bulb supplied	110/120	**T231N**	**E34RPB120**
	220/240	**T240N**	**E34RPB240**

Illuminated pushbutton light units

Illuminated pushbuttons - transformer type

Description	Supply voltage	Chrome	Corrosion resistant
Transformer type 6V secondary bulb supplied	110/120	**T411**	**E34XB120**
	220/240	**T412**	**E34XB1240**
	380/415	**T413**	**E34XB380**
	440/480	**T414**	**E34XB480**

Direct Voltage Indicating Light Unit

Description	Supply voltage	Chrome	Corrosion resistant
Direct voltage - order bulb separately	6 - 240V	**T441**	**E34CB 497L***

See next page for bulbs.
Can be used with LEDs.
*LED only 6-240V

STEP 1

Select a lens from above.

STEP 2

Select light from above

STEP 3

Select bulb (if not supplied)

(next page)

STEP 4

Select contact block.

(previous page)

30.5Mm pushbuttons

Illuminated operators, push-pull mushroom lenses

Illuminated push-pull operators

Standard push-pull lenses

Colour	Item no.
Red	**E34M2**
Red (Emergency Stop)	**E34M2N8**
Green	**E34M3**
Amber	**E34M9**
Clear	**E34M0**
White	**E34M5**
Blue	**E34M6**

Side lighted anodised aluminium lenses

Colour	Item no.
Red	**10250TC57**
Red (Emergency Stop)	**10250TC63**
Green	**10250TC58**
Amber	**10250TC64**
Clear	**10250TC62**
White	**10250TC61**
Blue	**10250TC59**

Illuminated push-pull operators

Description	Supply voltage	Chrome	Corrosion resistant
Maintained Push & Pull	2	**T5**	**E34GDB**
Momentary Push & Pull	3	**T4**	**E34GEB**
Maintained Push & Momentary Pull	3	**T9**	**E34GFB**

Light units for illuminated push-pull operators

Direct voltage light modules for push-pull operators

Description	Voltage	Item no.
Direct Voltage	6-240V	**10250T70**

Order bulb separately - see next page for bulbs.
Can be used with LEDs.

Transformer type light modules for push-pull operators

Description	Voltage	Item no.
Transformer Type 6V secondary bulb supplied	110/120	**10250T63**
	220/240	**10250T65**
	380/415	**10250T66**
	440/480	**10250T67**

Resistor type light modules for push-pull operators

Description	Voltage	Item no.
Resistor Type 120V bulb supplied	120	**10250T80**
	240	**10250T81**

STEP 1

Select a lens from above.

STEP 2

Select push-pull operator from above

STEP 3

Select light unit from above

STEP 4

Select bulb (if not supplied)

STEP 5

Select contact block.

(previous page)

30.5Mm pushbuttons

Illuminated operators, bulbs

Incandescent bulbs

Supply voltage	Watts	Item no.
6.3V	0.9W	**28-2225-33**
12V	1.2W	**BA9S12**
24V	1.2W	**28-2225-13**
30V	1.2W	**BA9S30**
130V	2.2W	**28-2225-24**

Super bright LED bulbs
(recognisable in outdoor daylight applications - ac/dc)

Colour	6-12V	24V	120V
Red	**E22LED612RN**	**E22LED024RN**	**E22LED120RN**
Green	**E22LED612GN**	**E22LED024GN**	**E22LED120GN**
Yellow	**E22LED612YN**	**E22LED024YN**	**E22LED120YN**
White	**E22LED612WN**	**E22LED024WN**	**E22LED120WN**

Bright LED bulbs - single chip (ac/dc)

Colour	6V	12V	24V
Red	**21BA9SL6R**	**21BA9SL12R**	**21BA9SL24R**
Green	**21BA9SL6V**	**21BA9SL12V**	**21BA9SL24V**
Yellow	**21BA9SL6G**	**21BA9SL12G**	**21BA9SL24G**
White	**21BA9SL6W**	**21BA9SL12W**	**21BA9SL24W**

Bright LED bulbs - single chip (ac/dc)

Colour	110V	240V
Red	**21BA9SL110R**	**21BA9SL240R**
Green	**21BA9SL110V**	**21BA9SL240V**
Yellow	**21BA9SL110Y**	**21BA9SL240A**
White	**21BA9SL110W**	**21BA9SL240W**

Neon bulbs

Supply voltage	Colour	Item no.
110V	Clear	**BA9S110N**
240V	Clear	**BA9S240N**
240V	Green	**BA9S240NG**
240V	Red	**BA9S240NR**

30.5Mm pushbuttons

Selector switch operators,

2 Position selector switches

Description (M = Maintained, S = Spring Return)	Chrome	Corrosion resistant
M M	**T4011**	**E34VFB**
M S	**T4081**	**E34VEB**

3 Position selector switches

Description (M = Maintained S = Spring Return)	Cam code*	Chrome	Corrosion resistant
M M M	2	**T4022**	**E34VGB**
	3	**T4023**	**E34VHB**
	4	**T4024**	**-**
	6	**T4026**	**-**
S M M	2	**T4032**	**E34VJB**
	3	**T4033**	**E34VKB**
S M S	2	**T4042**	**E34VLB**
	3	**T4043**	**E34VMB**
M M S	2	**T4052**	**E34VNB**
	3	**T4053**	**E34VPB**

4 Position selector switches

Description (M = Maintained, S = Spring Return)	Cam code*	Chrome	Corrosion resistant
Maintained	7	**T4067**	**E34VTB**

* See cam selection chart to determine cam code.

E34K1

T341M

E34L1

E34A1

Selector switch knobs & levers

Knobs & levers

Description	Material	Item no.
Knob	Plastic	**E34K1**
	Metal	**T341M**
Lever	Plastic	**E34L1**
	Plastic	**E34A1***

* For maintained operators only.

Selector switches & joystick operators, cam selection guide

Cam selection chart showing contact sequence

Item No. of contact block	Circuit ①	Position selector switch 2	3	3	3	3	4
		Cam code no. 1	Cam code no. 2	Cam code no. 3	Cam code no. 4	Cam code no.6	Cam code no.7
T1P	A.N.C.	XO	OXO	OXX	XOO	XOO	XOOO
	B.N.O.	OX	OOX	OOX	OXO	OXO	OXOO
T1P	A.N.O.	OX	XOX	XOO	OXX	OOX	OOXO
	B.N.C.	XO	XXO	XXO	XOX	OOX	OOOX
T2P	A.N.O.	OX	XOX	XOO	OXX	OOX	OOXO
	B.N.O.	OX	OOX	OOX	OXO	OXO	OXOO
T3P	A.N.C.	XO	OXO	OXX	XOO	XOO	XOOO
	B.N.C.	XO	XXO	XXO	XOX	OOX	OOOX

Switching angle 60° between each position. Rated for ac only. Refer to actual installation instructions given with each switch for additional switching combinations. To determine the number of the cam you require & the correct contact block, select the contact sequence desired from table above. O = contacts open, x = contacts closed. The cam number is shown at top of column. The item number of the appropriate contact block is shown in column 1. At extreme left of table.

① Each contact block contains two contact circuits. The top set of contacts is identified as 'circuit a' & the lower set as 'circuit b' is indicated in the table. The chart shows the contact arrangements with the three contact blocks available & in each operator position. Additional contacts are obtainable by stacking contact blocks up to a maximum of 6 blocks (12 circuits). A maximum of 2 can be used with cam 6.

STEP 1

Select bare shaft operator

(previous page)

STEP 2

Choose cam based on contact sequence from cam selection guide table above (applies to 3 position selector switches only)

STEP 3

Select knob or lever

STEP 3

Select contact block.

(previous page)

30.5mm Pushbuttons

Key operated selector switches

2 Position key operated selector switches

2 Position	Cam	Key removal	Chrome	Corrosion resistant
M M	-	Right & Left	**T15113**	**E34KFB3**
M S	-	Left Only	**T15712**	**E34KEB2**

3 Position key operated selector switches

3 Position	Cam	Key removal	Chrome	Corrosion resistant
M M M	2	Left Right & Centre	**T15227**	**E34KGB7**
	3	Left Right & Centre	**T15237**	**E34KHB7**
	4	Left Right & Centre	**T15247**	**-**
	6	Left Right & Centre	**T15267**	**-**
S M M	2	Right & Centre	**T15325**	**E34KJB5**
	3	Right & Centre	**T15335**	**E34KKB5**
S M S	2	Centre Only	**T15424**	**E34KLB4**
	3	Centre Only	**T15434**	**E34KMB4**

Spare key

Description	Item no.
Replacement Keys (2)	**TA152**

Other key codes are available contact eaton for more information.

STEP 1

Select switch operator

STEP 2

Choose cam based on contact sequence from cam selection guide table above (applies to 3 position selector switches only)

STEP 3

Select contact block.

(previous page)

30.5Mm pushbuttons

Selector switches & joystick operators, joystick operators

2 position Operator

Latched Operator

4 position without latch

Two-Position Joystick Operators
The device mounts in the standard 30.5 mm mounting hole.

Four-Position Joystick Operators
The joystick operated control unit is intended for AC application only. The panel area required for the 4-position operator is equivalent to two standard pushbutton operators.

Latched Joystick Operators
The latch holds the lever in the centre position. The trigger latch must be released before lever can moved into any position.

2 Position joystick operator

Description	Item no.
2 position operator - Momentary Up & Down	**T452**

4 Position joystick operators (spring return only)

Description	Item no.
4 position - Without Latch	**T450**
4 position - With Latch	**T460**

4 Position joystick operators (maintained)

Description	Item no.
4 position - Without Latch	**10250 T451_***
4 position - With Latch	**10250 T461_***

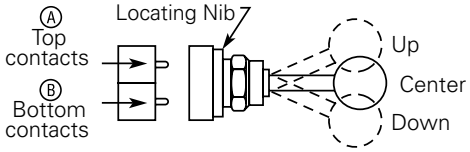
*Maintained Position
For maintained position (non-spring return), locate required maintained position or positions of operating lever in the Maintained table below & add appropriate Suffix Number to the Item Number selected from the table above.

Maintained positions

Up	Down	Left	Right	Suffix No.*
X	—	—	—	1
—	X	—	—	2
—	—	X	—	3
—	—	—	X	4
X	X	—	—	5
X	—	X	—	6
X	—	—	X	7
—	X	X	—	8
—	X	—	X	9
—	—	X	X	10
X	X	X	—	11
X	X	—	X	12
X	—	X	X	13
—	X	X	X	14
X	X	X	X	15

Two-position joystick operators - contact block operation

Figure 1, A and B Mounting Location



Up
NC contact at the top is closed
NO at the bottom is closed

Centre
All NC and NO contacts are open (1/2 Way) late Opening NC is closed

Down
NC contact at the bottom is closed
NO at the top is closed

Contact block selection & mounting

Handle position			Contact block		Mounting location	
Up	Centre	Down			Top	Bottom
Left	Centre	Right	Item no.	Type	A	B
X	O	O	T51P	1NC		
O	O	X	T51P	1NC		
O	X	O	T45	2LONC		
X O	O O	O X	T3P	1NC 1NC		
X O	X X	O X	T45	1LONC 1LONC		
X O O V	O O O O	O X X O	T44	1NC 1NO 1NC 1NO		

X = closed circuit, O = open circuit.

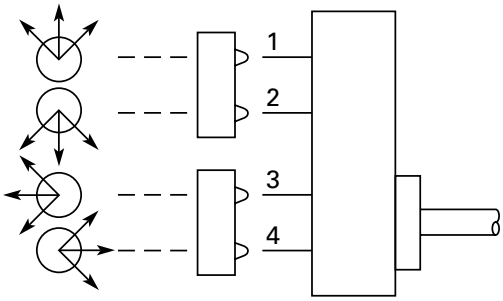
NO = Normally Open, NC = Normally Closed, LONC = Late Opening Normally Closed.

Four circuits in single block depth — rated 300V max.

Four-position joystick operators - contact block operation

Contact blocks mount directly on the back of the operator. For reliable operation, the maximum number of contact blocks that should be installed behind each operator lever is 2 (4 contacts total). Figure 2 identifies the circuits activated by each of the eight possible lever positions. Contact block plungers 1, 2, 3, 4 are depressed (change state) when handle is in the position indicated by arrows in Figure 2.

Figure 2, Circuit Activation



Application caution

Joystick operators are not recommended on certain DC applications above 24V DC which may involve lightly engaging the contacts (teasing) to achieve speed control, positioning, jogging, etc. Excessive arcing & deterioration of the contacts will occur.

30.5Mm pushbuttons control station and enclosures

Standard pushbuttons, flush, extended & half-shrouded buttons,

Diecast aluminium enclosures

Standard

No. Of holes	Single - depth T series	Corrosion resistant
1	**TN1**	**E34N1**
2	**TN2**	**E34N2**
3	**TN3**	**E34N3**
4	**TN4**	**E34N4**

Corrosion resistant

No. of holes	Double depth T series	Corrosion resistant
1	**TN11**	**E34N11**
2	**TN12**	**E34N12**
3	**TN13**	**E34N13**
4	**TN14**	**E34N14**
6	**TN15**	**-**

1-2 Hole: 3/4 inch conduit entry hole, 2-6 hole: 1 inch conduit bottom-entry hole, 1.5 Inch unf thread IP66.

TN4

TN2

TN11

Stainless steel enclosures

Stainless steel

No. of holes	316 Stainless
1	**XBS130**
2	**XBS230**
3	**XBS330**
4	**XBS430**
6	**XBS630**
8	**XBS830**
9	**XBS930**

Fibreglass enclosures

Fibreglass

No. of holes	Item no.
1	**TFG11**
2	**TFG12**
3	**TFG13**

20mm non-threaded conduit bottom-entry hole IP66, UV stabilised.

XBS330

TFG12

Assembled control stations

Push-pull stop stations (padlockable)

Operator head	Contacts	Item no.
Metal mushroom 45mm	1LONC	**10250T700M**
	1ECNO,1LONC	**10250T701M**
Metal palm 63.5mm	1LONC	**10250T700P**
	1ECNO,1LONC	**10250T701P**

10250T700P

"Staylock" push-pull stop stations (non-padlockable)

Operator head	Contacts	Padlock included	Item no.
Metal Mushroom 45mm	1LONC	NO	**ESM9/5**
	1LONC	YES	**ESM9/5P**
	1ECNO,1LONC	NO	**ESM9/6**
	1ECNO,1LONC	YES	**ESM9/6P**
Metal Palm 63.5mm	1LONC	NO	**ESP6/5**
	1LONC	YES	**ESP6/5P**
	1ECNO,1LONC	NO	**ESP6/6**
	1ECNO,1LONC	YES	**ESP6/6P**

ESM9/6

Stop start pushbutton station

Description	Item no.
Fibreglass Enclosure. Start: green pushbutton with boot Stop: red padlockable mushroom with boot	**T3500**

T3500

30.5mm Pushbuttons accessories

TA38

TA2

TA26

10250TA64

TA48

TA85

TA25

10250TA6
E34TA6

10250TA12
E34TA12

10250TA15
E34TA15

TA56
10250TA56Y

10250ED1241

TA8

TA22

Padlock attachments	Description	Item no.
With hinged transparent flap. For flush or extended pushbuttons, & knob-operated selector switches	Plastic Cover	**TA38**
For flush stop button. Permits locking NC contacts in open position with padlock. Prevents operation of button. Will not lock NO contact	Chrome	**TA2**
	Corrosion resistant	**E34TA2**
For extended pushbutton. Permits locking NC contacts in open position with padlock	Chrome	**TA26**
For illuminated pushbuttons. Locks in down position only	Chrome	**10250TA64**

Boots	Colour	Item no.
Protective boot for flush pushbutton operators	Clear	**10250TA46**
	Black	**TA47**
	Red	**TA48**
	Green	**TA49**
	Yellow	**TA50**
Protective boot for extended pushbutton operators	Black	**TA3**
	Red	**TA4**
	Green	**TA10**
	Clear	**TA85**
Protective boot for illuminated pushbuttons.	Clear	**TA25**
Protective boot for momentary mushroom operators on page 295. Not suitable for use with T140 operator.	Black	**TA88**

Shrouds & guards	Description	Item no.
Shroud for Mushroom Head Operator	Prevents accidental operation. Not for push-pull operators. Momentary operators only	**10250TA6 E34TA6**
Extended Retaining Nut	Replaces standard nut & provides guard for flush head pushbutton operators.	**10250TA12 E34TA12**
Guard for Illuminated Pushbutton	Guard for Illuminated Pushbutton	**10250TA15 E34TA15***
Shroud	For jumbo mushroom head operator. Available in Grey & Yellow (Not for push-pull operators, momentary operators only.)	**TA56 10250TA56Y**
Half Shroud – Yellow	For jumbo mushroom head operator.	**10250ED1241**

Hardware & kits	Description	Item no.
Fingerproof Shroud	10 per Package Fits new style contact blocks & light units.	**10250TA101**
Spacer Ring	Used when legend plate is not required. Set of 5	**TA8**
Base Mounting Spacers	Equivalent to contact block in depth — Complete with screws, washers, etc. For use in pushbutton stations for base mounting contact blocks. 1 Block Deep 2 Blocks Deep	**TA22** **TA23**

30.5mm Pushbuttons accessories

Special operators & attachments	Description	Item no.
Wobble Stick	Complete with retaining nut — fits standard button.	**TA5**
Maintained Contact Attachment	Mechanically interlocks two buttons & provides position indication for one. Use with two pushbutton operators & one or more contact blocks.	**TA1**

TA5

TA1

Hole plugs	Description	Item no.
Plug	For unused holes — Steel, painted grey	**10250TA7**
Stainless Steel Plug	For unused holes — Stainless Steel - Square	**E30KT5**

10250TA7

Tools	Description	Item no.
Octagonal Tool	Octagonal notched to fit over selector switch lever	**10250TA95**
Tool for Tightening Boots	Used to install boot	**TA96**
Allen Key	Used for removal of jumbo mushroom head.	**10250TA102**

10250TA95

TA96

10250TA102

Special light modules	Description	Item no.
Flasher Module	Changes any AC illuminated device to a controlled flashing light. 24V s 120V	**TFL2** **TFL1**

TFL2

Legend Plates

Description	Item no.
Aluminium T-Range, large size, black unless marked “red”	**TJ_ _**
Custom Legends	**TJ36X***
Aluminium T-Range, medium size, black unless marked “red”	**TM_ _**
Custom Legends	**TM36X***
Stainless steel T-Range, medium size, black, blank	**TM36S**
Stainless steel T-Range, medium size, red, blank	**TM37S**
Plastic E34 range universal size, black unless marked “red”	**E34SP_ _**

*Specify text on order.

TJ34

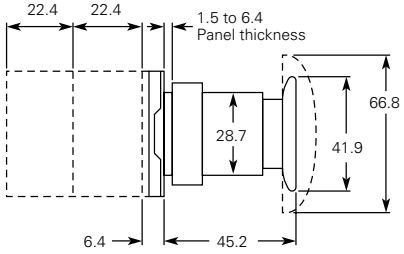
TM31

E34SP34

Legend	T-Range large Item no.	T-Range medium Item no.	E34 universal Item no.
Blank	**TJ36**	**TM36**	**TSP76**
Blank (red)	**TJ37**	**TM37**	**TSP77**
Off (red)	**TJ24**	**TM24**	**E34SP24**
On	**TJ25**	**TM25**	**E34SP25**
Run	**TJ31**	**TM31**	**E34SP31**
Start	**TJ33**	**TM33**	**E34SP33**
Stop (red)	**TJ34**	**TM34**	**E34SP34**

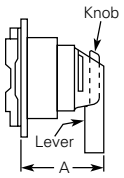
30.5mm Pushbuttons

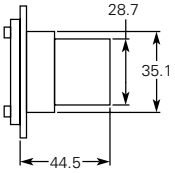
30.5mm Pushbuttons, dimensions & technical data



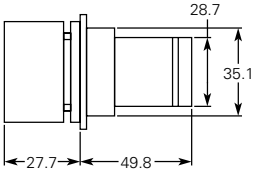
Push-Pull Switch

Operator	Dim. A
Knob	35.1
Lever	38.1

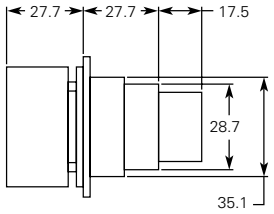




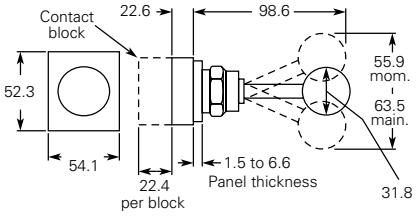
Key operated selector switch



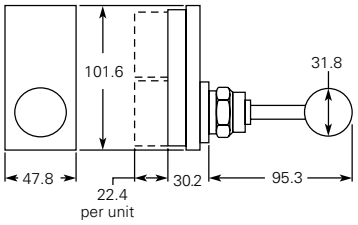
Illuminated Selector Switch



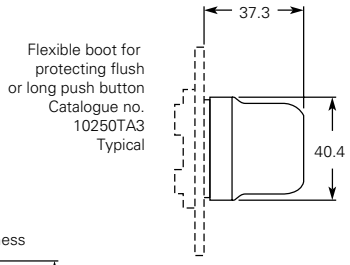
Illuminated Pushbutton

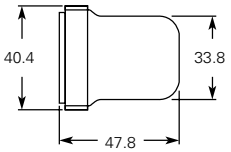


2-position joystick operator

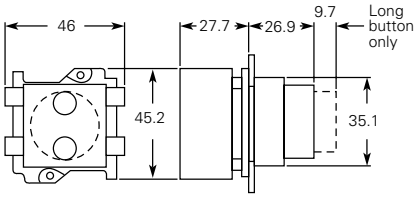


4-position joystick operator

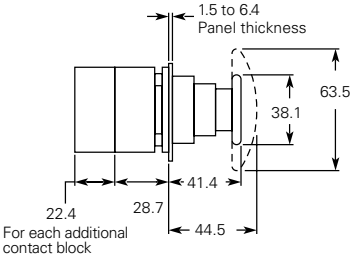




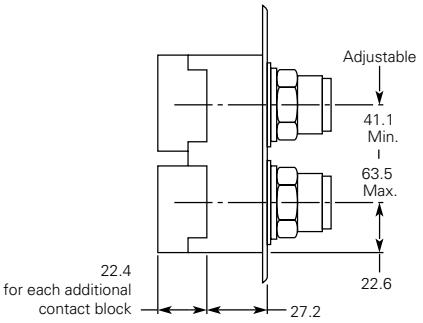
Transparent flexible boot for illuminated pushbutton
Catalogue no. 10250TA25



Flush and long pushbutton half shroud is the same as the long pushbutton with lower half of guard ring cut back



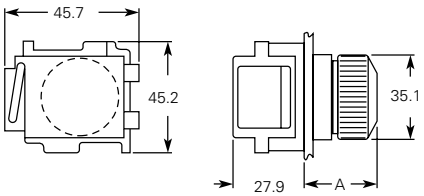
Mushroom and jumbo head pushbutton



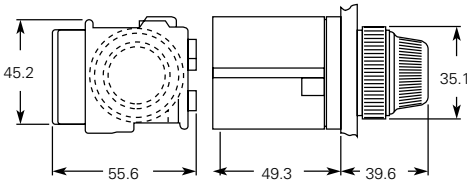
Maintained Pushbutton Catalog No. 10250TA66 Typical

Lens	Dimension A
Plastic	35.1
Glass	39.6

Approximate Dimensions in mm



Indicating Light – Transformer Type



Press-To-Test Indicating Light – Transformer Type

Diecast aluminium enclosure dimensions

	Wide	High	Single depth	Double depth
1	98.6	101.6	57.2	76.3
2	98.6	149.4	57.2	76.3
3	98.6	196.9	57.2	76.3
4	98.6	244.6	57.2	76.3

Fibreglass enclosure dimensions

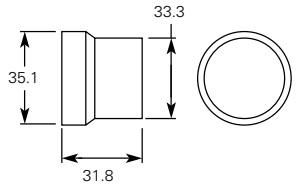
	Wide	High	Deep
1	97	100	75
2	97	150	75
3	97	200	75

316 Stainless steel enclosure dimensions

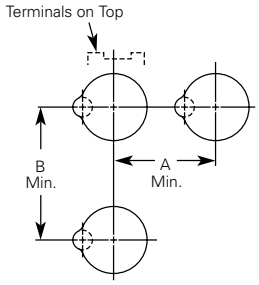
	Wide	High	Deep
1	120	120	84
2	120	160	84
3	120	220	84
4	120	280	84

30.5mm Pushbuttons

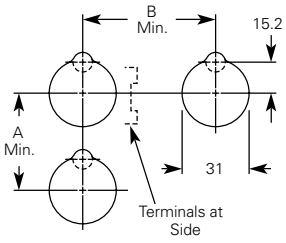
30.5mm Pushbuttons, dimensions & technical data



Extended Retaining Nut
Catalog No. 10250TA12



Horizontal Rows



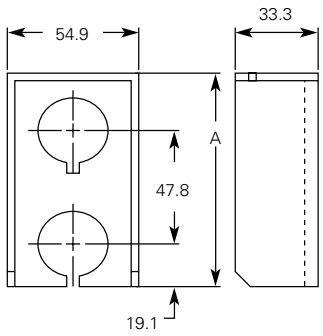
Vertical Rows

Panel drilling and minimum spacing

Legend plate	Dim. in mm A Min	B Min.
1 or 2 Circuit contact blocks		
Small or None	41.4	57.2
Standard	44.5	57.2
Jumbo ①	57.2	57.2
Extra Large	63.5	66
4 Circuit contact block 10250T44		
Small or None	47.8	57.2
Standard	47.8	57.2
Jumbo ①	57.2	57.2
Extra Large	63.5	66

① If Jumbo plates are to be placed one above the other vertically, add 3.3 to minimum dimensions listed.

Note: Locating nib hole or notch is 3.45 - 3.56 mm #29 drill.



Multiple Button Guard

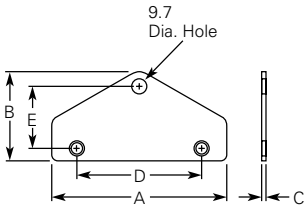
Number of elements	Dimension A
2	101.6
3	149.4
4	202.2
7	339.9

Legend plate	Dim. in mm A	B
1/2 Round Legend Plates		
Small	39.6	23.1
Standard	40.4	27.2
Jumbo	52.3	38.9
Square Legend Plates		
Small	40.4 Sq.	22.9
Standard	44.5 Sq.	26.9②
Jumbo	55.6 Sq.	38.1
Extra Large	62.0 Sq.	41.4

② For plastic legend plate, Dimension B is 28.4

Enclosure size (No. of elements)	Dimensions in inches (mm) Wide A	High B	Deep C	Mounting D	E
2, 3, & 4	95.3	49.3	3.3	68.3	35.1
6 & 7	101.6	55.6	3.3	73.2	41.4

Approximate Dimensions in mm



Chain Hook Bracket

30.5mm Pushbuttons, dimensions & technical data

Features

- Heavy-duty zinc die cast construction
- Enclosed silver contacts with reliability nibs
- Diaphragm seals with drainage holes
- Grounding nibs on the operator casing

Benefits

- Reliability nibs improve contact reliability even under dry circuit & fine dust conditions
- Drainage holes prevent buildup of liquid inside the operator which can prevent operation in freezing environments
- Grounding nibs bite through paint & other coatings to provide secure ground

Contact operation

Slow make & break. All normally closed contacts have positive opening operation, i.e., normally closed contacts are forced open in the event of contact weld or spring breakage.

Standards & certifications

- CE EN60947-5-1
- UL 508 — File No. 131568
- CSA C22.2 No. 14 — File No. LR68551

Ingress protection (when mounted in similarly rated enclosure):

- Standard Indicating Lights: UL (NEMA) Type 1, 2, 3, 3R, 3S, 4, 4X, 12, 13, IEC IP65
- All Other Operators: UL (NEMA) Type 1, 2, 3, 3R, 4, 4X, 12, 13, IEC IP65

Technical data & specifications

Mechanical ratings:

- Frequency of operation: All pushbuttons 6000 operations/hr, Key & lever selector switches 3000 operations/hr, Auto-latch devices 1200 operations/hr.
- Life: Pushbuttons 10 x 106 operations, Contact blocks: 10 x 106 operations, PresTest units 10 x 106 operations, Lever & key selector switches 0.25 x 106 operations, Twist to release pushbuttons 0.3 x 106 operations,
- Shock resistance: Duration 20 mS 5g

Climate conditions:

- Operating Temperature (-17° to 66°C), Storage Temperature (-40° to 80°C), Altitude 2,000m (6,562 ft.), Humidity Max. 95% RH @ 60°C

Terminals:

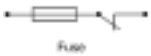
- Marking: NC-NO on the contact block to meet the NEMA requirements. Dual marking system 1 – 2 for normally closed, 3 – 4 for normally open to meet BS5472 (Cenelec EN50 005)
- Clamps: Terminals are saddle clamp type for 1 x 22 AWG (0.34 mm2) to 2 x 14 AWG (2.5 mm2) conductors
- Torque = 7 lb-in (0.8 Nm)
- Degree of protection against direct electrical contact: IP2X with fingerproof shroud

Light units:

- Transformers: will withstand short circuit for 1 hour per IEC 60997-5-1
- Bulbs — average life: Transformer type 20,000 hrs., Resistor/ direct voltage type 2500 hrs. minimum @ rated V, LED 60,000 to 100,000 hrs.

Electrical ratings:

- Insulation: Ui = 660V AC or DC
- Thermal: Ith = 10A
- Short Circuit Coordination to IEC/EN 60947-5-1:
- Rated conditional short circuit current: 1 kA
- Fuse type: GE Power Controls TIA 10, Red Spot Type gG, 10A, 660V AC, 460V DC, BS88-2, IEC 60269-2-1



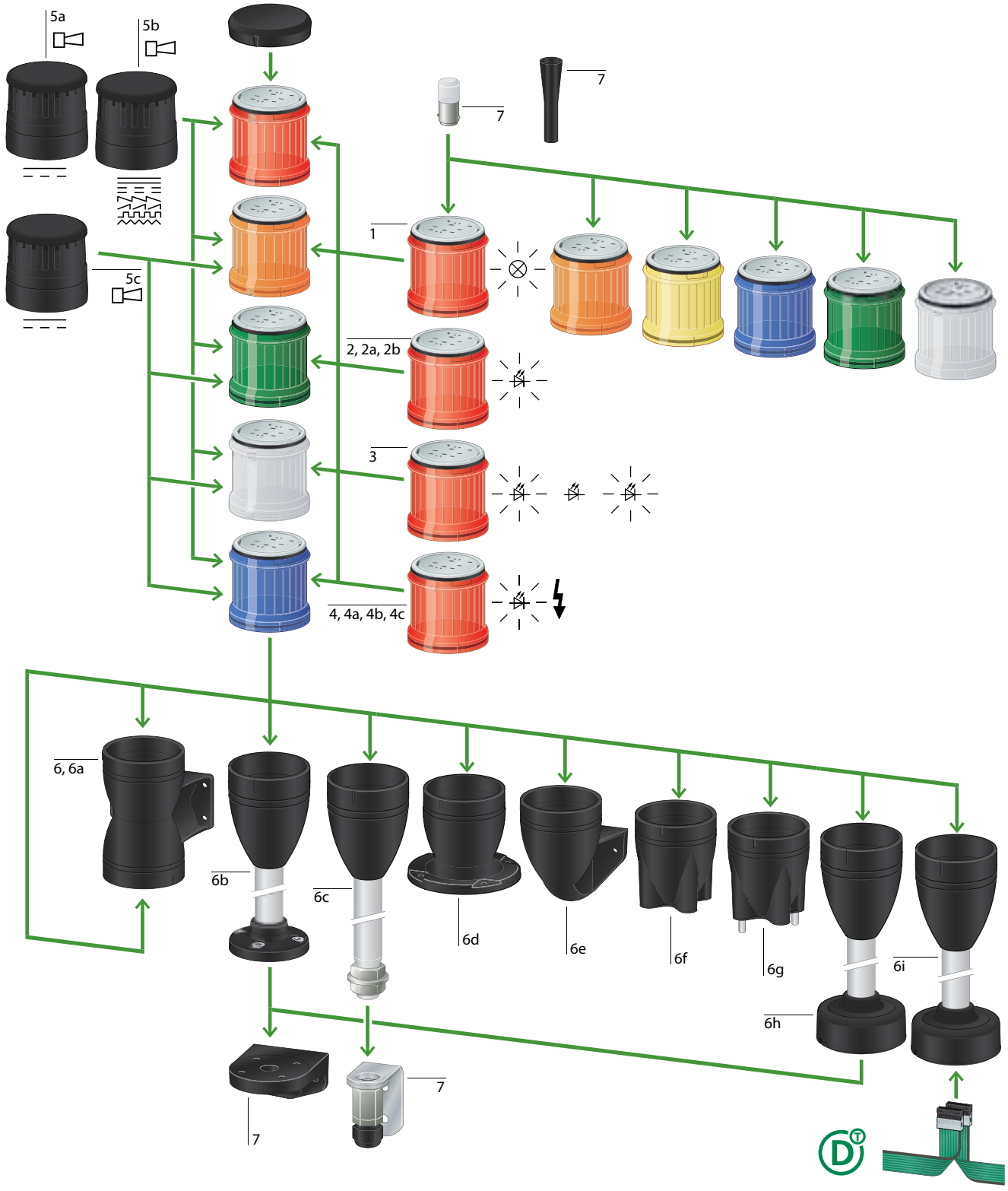
-
- UL rating: A600, P600: AC load life duty cycle 1200 operations/ hour (– 10A: 110V pf 0.4 – 1 x 106 operations, – 5A: 250V pf 0.4 – 1 x 106 operations, – 2A: 660V pf 0.4 – 1 x 106 operations)
- Switching capacity: AC15 rated make/break (11 x Ie at 1.1 x Ue),
  (– 6A: 120V pf 0.3, – 4A: 240V pf 0.3, – 2A: 660V pf 0.3).
  DC13 rated make/break (1.1 x Ie at 1.1 x Ue), (– 1.0A: 125V L/R 0.95 at 300 mS, – .55A: 250V L/R 0.95 at 300 mS, – .1A: 660V L/R 0.95 at 300 mS, – 10A: 110V pure resistive)
- Maximum ratings for logic level & hostile atmosphere application: Maximum amperes: 0.5A
  Maximum volts: 120V AC/DC

Contact block

Meet or exceed NEMA rating designations **A600, A300 and B300 AC P600 DC**

Description	Volts SC 50 or 60 Hz				Volts DC		
	120	240	480	60	24	125	250
Make and Emerg. Interruptimng capacity (Amp)	60	30	15	12	5.7	1.1	0.55
Normal load break (Amp)	6	3	1.5	1.2	5.7	1.1	0.55
Thermal current (Amp)	10	10	10	10	5.0	5.0	5.0
Voltampress(VA)							
Make and Emerg. Interruptimng capacity	7200	7200	7200	7200	138	138	138
Normal load break	720	720	720	720	138	138	138

Stacklights - SL7 range



Stacklights - SL7 range

SL7-100-L-RG-24LED

Complete devices

Continuous light, LED, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Number of modules	Color	Function	Standard pack	Item no.
Base Module with Foot and 100 mm Tube					
24 Vac/Vdc	2	Red/Green		1	**SL7-100-L-RG-24LED**
	3	Red/Amber/ Green			**SL7-100-L-RAG-24LED**

Light Module with LED

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	**SL7-L24-B**
	Green			**SL7-L24-G**
	Red			**SL7-L24-R**
	White			**SL7-L24-W**
	Yellow			**SL7-L24-Y**
	Amber			**SL7-L24-A**
110/120 Vac	Blue		1	**SL7-L120-B**
	Green			**SL7-L120-G**
	Red			**SL7-L120-R**
	White			**SL7-L120-W**
	Yellow			**SL7-L120-Y**
	Amber			**SL7-L120-A**
230/240 Vac	Blue		1	**SL7-L230-B**
	Green			**SL7-L230-G**
	Red			**SL7-L230-R**
	White			**SL7-L230-W**
	Yellow			**SL7-L230-Y**
	Amber			**SL7-L230-A**

White

Amber

Yellow

Flashing light, UL type 4/4X/13, IP66, 2 Hz

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	**SL7-BL24-B**
	Green			**SL7-BL24-G**
	Red			**SL7-BL24-R**
	White			**SL7-BL24-W**
	Yellow			**SL7-BL24-Y**
	Amber			**SL7-BL24-A**
110/120 Vac	Blue		1	**SL7-BL120-B**
	Green			**SL7-BL120-G**
	Red			**SL7-BL120-R**
	White			**SL7-BL120-W**
	Yellow			**SL7-BL120-Y**
	Amber			**SL7-BL120-A**
230/240 Vac	Blue		1	**SL7-BL230-B**
	Green			**SL7-BL230-G**
	Red			**SL7-BL230-R**
	White			**SL7-BL230-W**
	Yellow			**SL7-BL230-Y**
	Amber			**SL7-BL230-A**

Green

Blue

Red

Stacklights - SL7 range

Light module with LED

Strobe light, UL type 4/4X/13, IP66, 1.4 Hz

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	**SL7-FL24-B**
	Green			**SL7-FL24-G**
	Red			**SL7-FL24-R**
	White			**SL7-FL24-W**
	Yellow			**SL7-FL24-Y**
	Amber			**SL7-FL24-A**
110/120 Vac	Blue		1	**SL7-FL120-B**
	Green			**SL7-FL120-G**
	Red			**SL7-FL120-R**
	White			**SL7-FL120-W**
	Yellow			**SL7-FL120-Y**
	Amber			**SL7-FL120-A**
230/240 Vac	Blue		1	**SL7-FL230-B**
	Green			**SL7-FL230-G**
	Red			**SL7-FL230-R**
	White			**SL7-FL230-W**
	Yellow			**SL7-FL230-Y**
	Amber			**SL7-FL230-A**

White

Amber

Yellow

SL7 Light module with high-output LED

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
High-performance LED for maximum signaling effect				
24 Vac/Vdc	Blue		1	**SL7-L24-B-HP**
	Green			**SL7-L24-G-HP**
	Red			**SL7-L24-R-HP**
	White			**SL7-L24-W-HP**
	Yellow			**SL7-L24-Y-HP**
	Amber			**SL7-L24-A-HP**

Green

Strobe light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
High-performance LED for maximum signaling effect, 1.4 Hz				
24 Vac/Vdc	Blue		1	**SL7-FL24-B-HP**
	Green			**SL7-FL24-G-HP**
	Red			**SL7-FL24-R-HP**
	White			**SL7-FL24-W-HP**
	Yellow			**SL7-FL24-Y-HP**
	Amber			**SL7-FL24-A-HP**

Blue

Multi-Strobe light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
High-performance LED for maximum signaling effect, 1–2.6 Hz				
24 Vac/Vdc	Blue		1	**SL7-FL24-B-HPM**
	Green			**SL7-FL24-G-HPM**
	Red			**SL7-FL24-R-HPM**
	White			**SL7-FL24-W-HPM**
	Yellow			**SL7-FL24-Y-HPM**
	Amber			**SL7-FL24-A-HPM**

Red

Stacklights - SL7 range

SL7 Light module for incandescent bulb

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
Without Light Elements, Incandescent Bulb, Maximum 7W				
<250 Vac/Vdc	Blue		1	**SL7-L-B**
	Green			**SL7-L-G**
	Red			**SL7-L-R**
	White			**SL7-L-W**
	Yellow			**SL7-L-Y**
	Amber			**SL7-L-A**

SL7 Acoustic modules

Continuous tone or pulsed tone, UL type 4/4X/13, IP66 ①

SL7-AP24

Rated operational voltage (Ue V)	Rated operational current (Ie mA)	Color	Function	Sound type	Standard pack	Item no.
Adjustable with internal DIP switches. Sound pressure 100 dB, adjustable with internal potentiometer. f = 2800 Hz.						
24 Vac/Vdc	Maximum 92					**SL7-AP24**
110/120 Vac	Maximum 41	Black			1	**SL7-AP120**
230/240 Vac	Maximum 43					**SL7-AP230**

Continuous tone or pulsed tone, external actuation, UL type 4/4X/13, IP66 ①

SL7-AP120-E

Rated operational voltage (Ue V)	Rated operational current (Ie mA)	Color	Function	Sound type	Standard pack	Item no.
Assigned two inputs (two modules). Sound pressure 100 dB, adjustable with internal potentiometer. f = 2800 Hz.						
24 Vac/Vdc	Maximum 92					**SL7-AP24-E**
110/120 Vac	Maximum 41	Black			1	**SL7-AP120-E**
230/240 Vac	Maximum 43					**SL7-AP230-E**

Continuous tone or pulsed tone, external actuation, UL type 4/4X/13, IP66 ①

SL7-AP230-M

Rated operational voltage (Ue V)	Rated operational current (Ie mA)	Color	Function	Sound type	Standard pack	Item no.
Adjustable with internal DIP switch. Sound pressure 100 dB, adjustable with internal potentiometer. f = 500–2700 Hz.						
24 Vac/Vdc	Maximum 115					**SL7-AP24-M**
110/120 Vac	Maximum 45	Black			1	**SL7-AP120-M**
230/240 Vac	Maximum 43					**SL7-AP230-M**

① Place only at the highest position on a pole.

Stacklights - SL7 range

SL7 Base modules

For horizontal mounting—Includes cover, maximum 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Base with aluminum tube and plastic foot Spring-loaded terminals	100 mm	Black aluminum color tube	1	SL7-L-… SL7-BL-… SL7-FL-… SL7-AP-…	**SL7-CB-100**
	250 mm				**SL7-CB-250**
	400 mm				**SL7-CB-400**
Base with aluminum tube and 3/4 in NPT threaded base Spring-loaded terminals	100 mm	Black aluminum color tube	1	SL7-L-… SL7-BL-… SL7-FL-… SL7-AP-…	**SL7-CB-T-100**
	250 mm				**SL7-CB-T-250**
	400 mm				**SL7-CB-T-400**
Base with internal (on the inside) fixing holes Spring-loaded terminals		Black	1	SL7-L-… SL7-BL-… SL7-FL-… SL7-AP-…	**SL7-CB-IMH**
Base with built-in (pre-assembled) fixing screws Spring-loaded terminals		Black	1	SL7-L-… SL7-BL-… SL7-FL-… SL7-AP-…	**SL7-CB-IMS**
Base with external fixing holes Spring-loaded terminals		Black	1	SL7-L-… SL7-BL-… SL7-FL-… SL7-AP-…	**SL7-CB-EMH**
Base with base adapter for slipping onto place (rapid mounting and wiring system) Screw terminals	100 mm	Black aluminum color tube	1	SL7-L-… SL7-BL-… SL7-FL-… SL7-AP-…	**SL7-FMS-100**
	250 mm				**SL7-FMS-250**
	400 mm				**SL7-FMS-400**
Base with base adapter for slipping onto place (rapid mounting and wiring system) Blade terminal SWD4-8MF2 Maximum 0.3A per module External power supply connectable (24 Vdc) Configurable with SWD-Assist (planning and ordering help)	100 mm		1	SL7-L-… SL7-BL-… SL7-FL-… SL7-AP-…	**SL7-SWD**

SL7-CB-250

Red

Red

For vertical mounting—includes cover, maximum 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Vertical base with bracket Spring-loaded terminals		Black	1	SL7-L-… SL7-BL-… SL7-FL-… SL7-AP-…	**SL7-CB-FW**

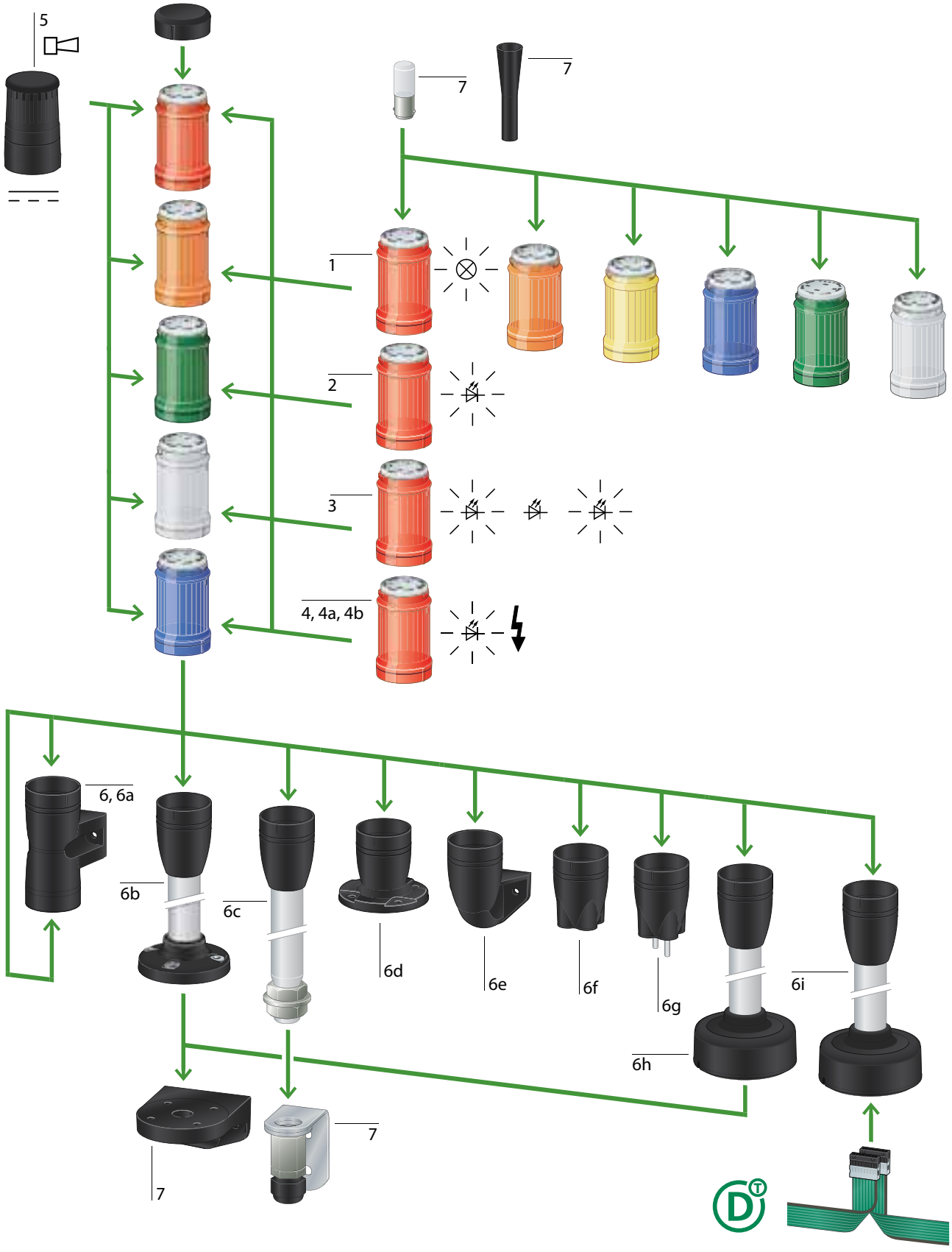
Red

For mounting on both sides—includes cover, maximum 2 x 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Base with external fixing holes Spring-loaded terminals		Black	1	SL7-L-… SL7-BL-… SL7-FL-… SL7-AP-…	**SL7-CB-D**

Red

Stacklights - SL4 range



Stacklights - SL4 range

Complete devices

Continuous light, LED, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Number of modules	Color	Function	Standard pack	Item no.
Base Module with Foot and 100 mm Tube					
24 Vac/Vdc	2	Red/Green		1	**SL4-100-L-RG-24LED**
	3	Red/Amber/ Green			**SL4-100-L-RAG-24LED**

SL7-100-L-RG-24LED

Light module with LED

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	**SL4-L24-B**
	Green			**SL4-L24-G**
	Red			**SL4-L24-R**
	White			**SL4-L24-W**
	Yellow			**SL4-L24-Y**
	Amber			**SL4-L24-A**
110/120 Vac	Blue		1	**SL4-L120-B**
	Green			**SL4-L120-G**
	Red			**SL4-L120-R**
	White			**SL4-L120-W**
	Yellow			**SL4-L120-Y**
	Amber			**SL4-L120-A**
230/240 Vac	Blue		1	**SL4-L230-B**
	Green			**SL4-L230-G**
	Red			**SL4-L230-R**
	White			**SL4-L230-W**
	Yellow			**SL4-L230-Y**
	Amber			**SL4-L230-A**

White

Amber

Yellow

Flashing light, UL type 4/4X/13, IP66, 2 Hz

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	**SL4-BL24-B**
	Green			**SL4-BL24-G**
	Red			**SL4-BL24-R**
	White			**SL4-BL24-W**
	Yellow			**SL4-BL24-Y**
	Amber			**SL4-BL24-A**
110/120 Vac	Blue		1	**SL4-BL120-B**
	Green			**SL4-BL120-G**
	Red			**SL4-BL120-R**
	White			**SL4-BL120-W**
	Yellow			**SL4-BL120-Y**
	Amber			**SL4-BL120-A**
230/240 Vac	Blue		1	**SL4-BL230-B**
	Green			**SL4-BL230-G**
	Red			**SL4-BL230-R**
	White			**SL4-BL230-W**
	Yellow			**SL4-BL230-Y**
	Amber			**SL4-BL230-A**

Green

Blue

Red

Stacklights - SL4 range

Light module with LED

Strobe light, UL type 4/4X/13, IP66, 1.4 Hz

White

Amber

Yellow

Green

Blue

Red

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
24 Vac/Vdc	Blue		1	**SL4-FL24-B**
	Green			**SL4-FL24-G**
	Red			**SL4-FL24-R**
	White			**SL4-FL24-W**
	Yellow			**SL4-FL24-Y**
	Amber			**SL4-FL24-A**
110/120 Vac	Blue		1	**SL4-FL120-B**
	Green			**SL4-FL120-G**
	Red			**SL4-FL120-R**
	White			**SL4-FL120-W**
	Yellow			**SL4-FL120-Y**
	Amber			**SL4-FL120-A**
230/240 Vac	Blue		1	**SL4-FL230-B**
	Green			**SL4-FL230-G**
	Red			**SL4-FL230-R**
	White			**SL4-FL230-W**
	Yellow			**SL4-FL230-Y**
	Amber			**SL4-FL230-A**

Multi-strobe light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
LED for effective signaling effect with various strobe sequences, 1–2.6 Hz				
24 Vac/Vdc	Blue		1	**SL4-FL24-B-M**
	Green			**SL4-FL24-G-M**
	Red			**SL4-FL24-R-M**
	White			**SL4-FL24-W-M**
	Yellow			**SL4-FL24-Y-M**
	Amber			**SL4-FL24-A-M**

SL4 Light module for Incandescent bulb

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Standard pack	Item no.
Without light elements, incandescent bulb, maximum 4W				
<250 Vac/Vdc	Blue		1	**SL4-L-B**
	Green			**SL4-L-G**
	Red			**SL4-L-R**
	White			**SL4-L-W**
	Yellow			**SL4-L-Y**
	Amber			**SL4-L-A**

SL4 Acoustic modules

Continuous tone or pulsed tone, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Rated operational current (Ie mA)	Color	Function	Sound type	Standard pack	Item no.
Adjustable with internal DIP switches. Sound pressure 80 dB, adjustable with internal potentiometer. f = 4000 Hz.						
24 Vac/Vdc	Maximum 39	Black			1	**SL4-AP24**
110/120 Vac	Maximum 21					**SL4-AP120**
230/240 Vac	Maximum 21					**SL4-AP230**

Stacklights - SL4 range

SL7 Base modules

For horizontal mounting—Includes cover, maximum 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Base with aluminum tube and plastic foot Spring-loaded terminals	100 mm	Black aluminum color tube	1	SL4-L-… SL4-BL-… SL4-FL-… SL4-AP-…	**SL4-PIB-100**
	250 mm				**SL4-PIB-250**
	400 mm				**SL4-PIB-400**
Base with aluminum tube and 3/4 in NPT threaded base Spring-loaded terminals	100 mm	Black aluminum color tube	1	SL4-L-… SL4-BL-… SL4-FL-… SL4-AP-…	**SL4-PIB-T-100**
	250 mm				**SL4-PIB-T-250**
	400 mm				**SL4-PIB-T-400**
Base with internal (on the inside) fixing holes Spring-loaded terminals		Black	1	SL4-L-… SL4-BL-… SL4-FL-… SL4-AP-…	**SL4-PIB-IMH**
Base with built-in (pre-assembled) fixing screws Spring-loaded terminals		Black	1	SL4-L-… SL4-BL-… SL4-FL-… SL4-AP-…	**SL4-PIB-IMS**
Base with external fixing holes Spring-loaded terminals		Black	1	SL4-L-… SL4-BL-… SL4-FL-… SL4-AP-…	**SL4-PIB-EMH**
Base with base adapter for slipping onto place (rapid mounting and wiring system) Screw terminals	100 mm	Black aluminum color tube	1	SL4-L-… SL4-BL-… SL4-FL-… SL4-AP-…	**SL4-FMS-100**
	250 mm				**SL4-FMS-250**
	400 mm				**SL4-FMS-400**
Base with base adapter for slipping onto place (rapid mounting and wiring system) Blade terminal SWD4-8MF2 Maximum 0.3A per module External power supply connectable (24 Vdc) Configurable with SWD-Assist (planning and ordering help)	100 mm		1	SL4-L-… SL4-BL-… SL4-FL-… SL4-AP-…	**SL4-SWD**

For vertical mounting—includes cover, maximum 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
One-sided base with bracket Spring-loaded terminals		Black	1	SL4-L-… SL4-BL-… SL4-FL-… SL4-AP-…	**SL4-PIB-FW**

For mounting on both sides—includes cover, maximum 2 x 5 modules

Description	Tube length	Color	Standard pack	For use with..	Item no.
Base with external fixing holes Spring-loaded terminals		Black	1	SL4-L-… SL4-BL-… SL4-FL-… SL4-AP-…	**SL4-PIB-D**

Stacklights - SL range accessories

SL7/4-FW

Mounting brackets

Description	Standard pack	For use with..	Item no.
Mounting brackets for vertical Mounting, plastic	1	SL4-PIB.. SL7-CB..	**SL7/4-FW**
M20 cable gland for vertical mounting, Metal (includes mounting bracket)	1	SL4-PIB-T... SL7-CB-T...	**SL7/4-FW-T**

SL7/4-FW-T

Incandescent bulb tool

Description	Standard pack	For use with..	Item no.
Tool for replacing incandescent bulb	1	SL7-L... SL4-L...	**SL7/4-BET**

SL7/4-BET

Incandescent bulbs

Mounting: Ba15d - SL7 series

Lifespan (h)	Rated operational voltage (Ue V)	Power (Watts)	Standard pack	For use with..	Item no.
3000	12	5	1	SL7-L...	**SL7-L12**
	24	6.5			**SL7-L24**
	120	7			**SL7-L120**
	230	6.5			**SL7-L230**

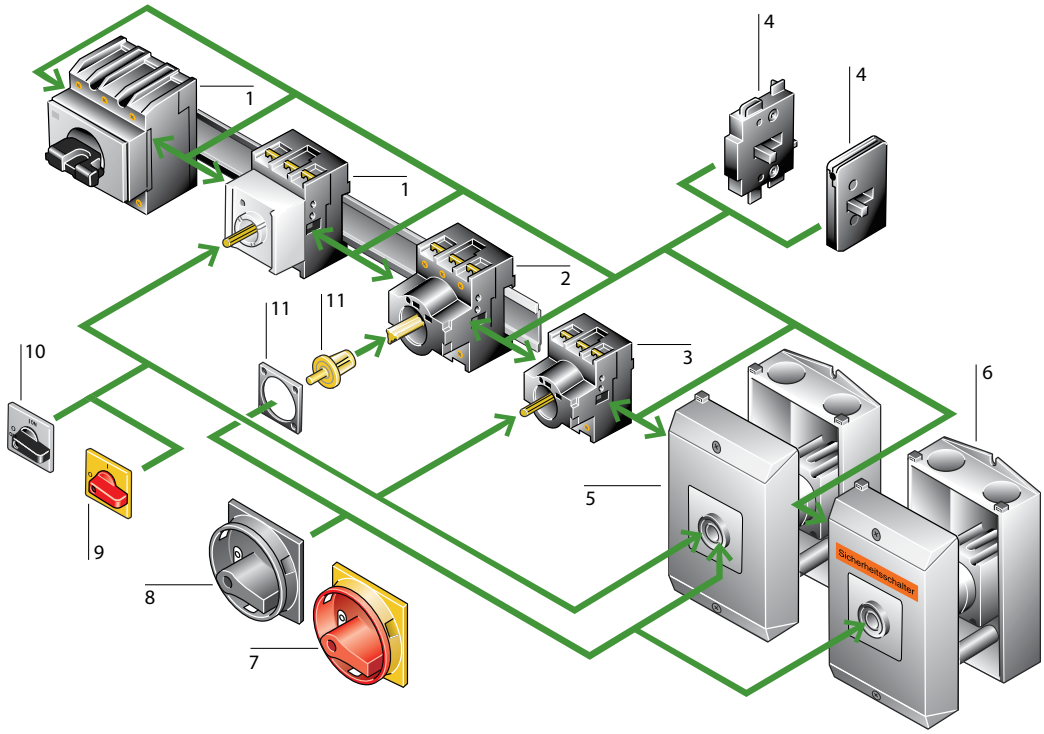
SL7-L12

Mounting: Ba15d - SL4 series

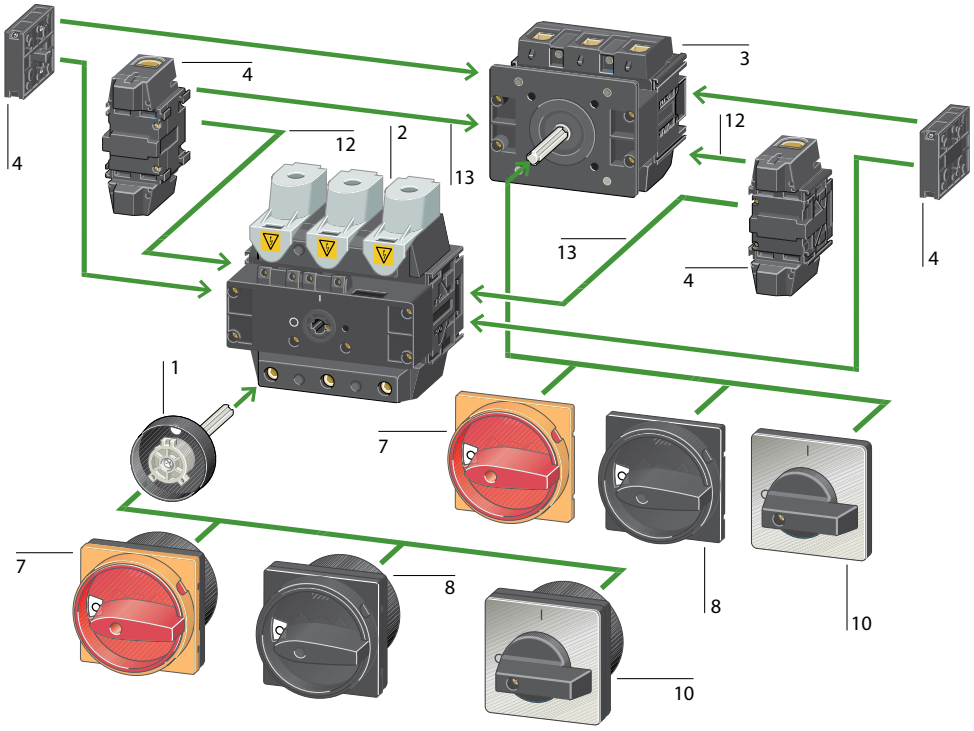
Lifespan (h)	Rated operational voltage (Ue V)	Power (Watts)	Standard pack	For use with..	Item no.
3000	12	4	1	SL4-L...	**SL4-L12**
	24				**SL4-L24**
	120				**SL4-L120**
	230				**SL4-L230**

Cam switches

ON-OFF switches - P1, P3



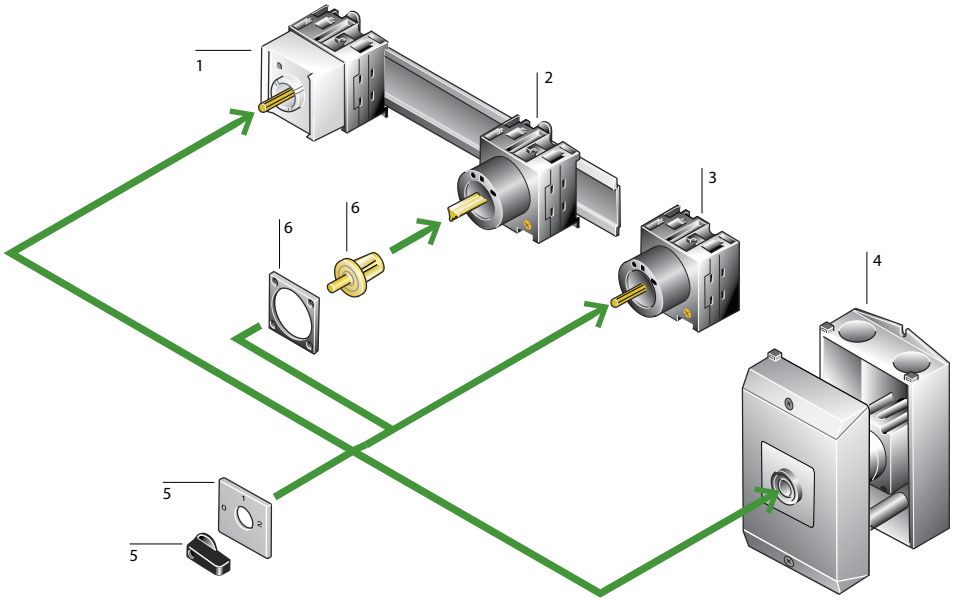
ON-OFF switches - P5



1 Service distribution board mounting
2 Rear mounting
3 Flush mounting
4 Neutral conductors, auxiliary contacts
5 Surface mounting
6 Safety switch
7 Main switch (kit) for use as emergency switching off device
8 Main switch (kit)
9 Thumb-grip, for use as emergency switching off device
10 Thumb-grip
11 Coupling drive
12 Protective conductor terminal
13 Neutral terminal

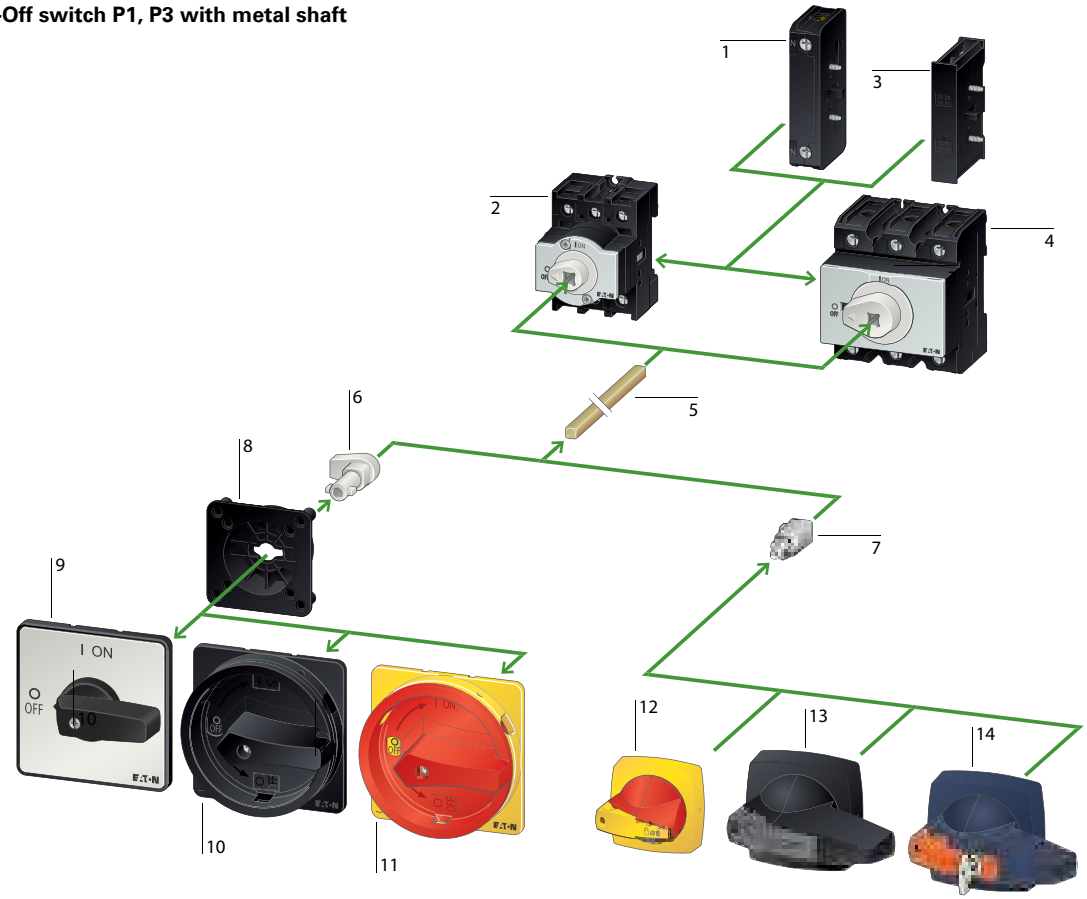
Cam switches

Control switches - T0, T3, T5B, T5



1 Service distribution board mounting
2 Rear mounting
3 Flush mounting
4 Surface mounting
5 Thumb-grip
6 Coupling drive

On-Off switch P1, P3 with metal shaft



1 Neutral conductor
2 P1 rear-mounting switch
3 Auxiliary contact
4 P3 rear-mounting switch
5 Metal shaft
6 Centring tip
7 Centring tip
8 Centring adapter
9 Thumb-grip
10 Main switch kit (black)
11 Main switch kit for use as emergency switching off device (red)
12 Thumb-grip kit, for use as emergency switching off device (red)
13 Thumb-grip kit for padlock (grey)
14 Thumb-grip kit with cylinder lock (blue)

Cam switches

The high-performance, robust and compact T rotary switches and P switch-disconnectors are used in industry, trade and building engineering applications. The degree of protection IP65 with the switch mounts and the switch front enables use in harsh environments. Ten basic switch types in four different construction types, in a whole range of standard switches and across a wide performance range are available. Customised circuits can also be implemented in addition to the standard configurations. The possibilities are almost unlimited. A comprehensive accessory range complements the switch range and rounds off the range of applications. All contacts feature double breaking contacts.

With the metal extension shafts our reliable P1 and P3 switches can be mounted in electrical cabinets of up to 600 mm deep and with several Handle and Shaft options a solution can be found for every application. Also the most common types are available as a complete switch/shaft/handle package.

T0-1-8200..

T0-1-8210..

T0-1-8240..

T0-3-8212..

T0-2-8400..

T0-3-8622...

T0-3-8048...

Main circuit poles			Flush mounting Front IP65	Centre mounting Front IP65	Surface mounting IP65	Service distribution board mounting Front IP30	Rear mounting Front IP65
	N/O	B	Item no.	Item no.	Item no.	Item no.	Item no.
On-Off switches							
1	-	-	**T0-1-8200/E**	**T0-1-8200/EZ**	**T0-1-8200/I1**	**T0-1-8200/IVS**	**T0-1-8200/Z**
2	-	-	**T0-1-102/E**	**T0-1-102/EZ**	**T0-1-102/I1**	**T0-1-102/IVS**	**T0-1-102/Z**
3	-	-	**T0-2-1/E**	**T0-2-1/EZ**	**T0-2-1/I1**	**T0-2-1/IVS**	**T0-2-1/Z**
3	1	0	**T0-2-15679/E**	**T0-2-15679/EZ**	**T0-2-15679/I1**	**T0-2-15679/IVS**	**T0-2-15679/Z**
3 + N	-	-	**T0-2-8900/E**	**T0-2-8900/EZ**	**T0-2-8900/I1**	**T0-2-8900/IVS**	**T0-2-8900/Z**
Changeover switches							
1	-	-	**T0-1-8210/E**	**T0-1-8210/EZ**	**T0-1-8210/I1**	**T0-1-8210/IVS**	**T0-1-8210/Z**
2	-	-	**T0-2-8211/E**	**T0-2-8211/EZ**	**T0-2-8211/I1**	**T0-2-8211/IVS**	**T0-2-8211/Z**
3	-	-	**T0-3-8212/E**	**T0-3-8212/EZ**	**T0-3-8212/I1**	**T0-3-8212/IVS**	**T0-3-8212/Z**
4	-	-	**T0-4-8213/E**	**T0-4-8213/EZ**	**T0-4-8213/I1**	**T0-4-8213/IVS**	**T0-4-8213/Z**
1	-	-	**T0-1-8220/E**	**T0-1-8220/EZ**	**T0-1-8220/I1**	**T0-1-8220/IVS**	**T0-1-8220/Z**
2	-	-	**T0-2-8221/E**	**T0-2-8221/EZ**	**T0-2-8221/I1**	**T0-2-8221/IVS**	**T0-2-8221/Z**
3	-	-	**T0-3-8222/E**	**T0-3-8222/EZ**	**T0-3-8222/I1**	**T0-3-8222/IVS**	**T0-3-8222/Z**
4	-	-	**T0-4-8223/E**	**T0-4-8223/EZ**	**T0-4-8223/I1**	**T0-4-8223/IVS**	**T0-4-8223/Z**
1	-	-	**T0-1-8214/E**	**T0-1-8214/EZ**	**T0-1-8214/I1**	**T0-1-8214/IVS**	**T0-1-8214/Z**
2	-	-	**T0-2-8215/E**	**T0-2-8215/EZ**	**T0-2-8215/I1**	**T0-2-8215/IVS**	**T0-2-8215/Z**
3	-	-	**T0-3-8216/E**	**T0-3-8216/EZ**	**T0-3-8216/I1**	**T0-3-8216/IVS**	**T0-3-8216/Z**
Reversing switches							
3	-	-	**T0-3-8401/E**	**T0-3-8401/EZ**	**T0-3-8401/I1**	**T0-3-8401/IVS**	**T0-3-8401/Z**
ON-OFF switches							
1	-	-	**T0-1-15401/E**	**T0-1-15401/EZ**	**T0-1-15401/I1**	**T0-1-15401/IVS**	**T0-1-15401/Z**
2	-	-	**T0-1-15402/E**	**T0-1-15402/EZ**	**T0-1-15402/I1**	**T0-1-15402/IVS**	**T0-1-15402/Z**
3	-	-	**T0-2-15403/E**	**T0-2-15403/EZ**	**T0-2-15403/I1**	**T0-2-15403/IVS**	**T0-2-15403/Z**
Voltmeter selector switches							
3 + N	-	-	**T0-3-8007/E**	**T0-3-8007/EZ**	**T0-3-8007/I1**	**T0-3-8007/IVS**	**T0-3-8007/Z**
Ammeter selector switches							
3	-	-	**T0-3-8048/E**	**T0-3-8048/EZ**		**T0-3-8048/IVS**	**T0-3-8048/Z**
Step switches							
1	-	-	**T0-2-8231/E**	**T0-2-8231/EZ**	**T0-2-8231/I1**	**T0-2-8231/IVS**	**T0-2-8231/Z**
1	-	-	**T0-2-8241/E**	**T0-2-8241/EZ**	**T0-2-8241/I1**	**T0-2-8241/IVS**	**T0-2-8241/Z**
Changeoverswitches							
1	-	-	**T0-1-15431/E**	**T0-1-15431/EZ**	**T0-1-15431/I1**	**T0-1-15431/IVS**	**T0-1-15431/Z**
2	-	-	**T0-2-15432/E**	**T0-2-15432/EZ**	**T0-2-15432/I1**	**T0-2-15432/IVS**	**T0-2-15432/Z**
3	-	-	**T0-3-15433/E**	**T0-3-15433/EZ**	**T0-3-15433/I1**	**T0-3-15433/IVS**	**T0-3-15433/Z**

Cam switches

Main circuit poles	Auxiliary circuits N/O	Auxiliary circuits B	Rated uninterupted current I A	Main switches surface mounting IP65 Item no.	Main switches flush mounting front IP65 Item no.	Main switches rear mounting front IP65 Item no.	Main switches rear mounting front IP65 IP20 with terminal cover Item no.
Main switches, maintenance switches, repair switches With red rotary handle and yellow locking ring Note: All types are available with a black thumb-grip Lockable in the 0 (Off) position							
1	-	-	20	**T0-1-8200/I1/SVB**	**T0-1-8200/EA/SVB**	**T0-1-8200/V/SVB**	-
			32	**T3-1-8200/I2/SVB**	**T3-1-8200/EA/SVB**	**T3-1-8200/V/SVB**	-
			63	**T5B-1-8200/I4/SVB**	**T5B-1-8200/EA/SVB**	**T5B-1-8200/V/SVB**	-
			100	-	**T5-1-8200/EA/SVB**	**T5-1-8200/V/SVB**	-
2	-	-	20	**T0-1-102/I1/SVB**	**T0-1-102/EA/SVB**	**T0-1-102/V/SVB**	-
			32	**T3-1-102/I2/SVB**	**T3-1-102/EA/SVB**	**T3-1-102/V/SVB**	-
			63	**T5B-1-102/I4/SVB**	**T5B-1-102/EA/SVB**	**T5B-1-102/V/SVB**	-
			100	**T5-1-102/I5/SVB**	**T5-1-102/EA/SVB**	**T5-1-102/V/SVB**	-
3	-	-	20	**T0-2-1/I1/SVB**	**T0-2-1/EA/SVB**	**T0-2-1/V/SVB**	-
			25	**P1-25/I2/SVB**	**P1-25/EA/SVB**	**P1-25/V/SVB**	**P1-25/M4/SVB**
			32	**P1-32/I2/SVB**	**P1-32/EA/SVB**	**P1-32/V/SVB**	**P1-32/M4/SVB**
			63	**P3-63/I4/SVB**	**P3-63/EA/SVB**	**P3-63/V/SVB**	**P3-63/M4/SVB**
			100	**P3-100/I5/SVB**	**P3-100/EA/SVB**	**P3-100/V/SVB**	**P3-100/M4/SVB**
			125	-	**P5-125/EA/SVB**	**P5-125/V/SVB**	-
			160	-	**P5-160/EA/SVB**	**P5-160/V/SVB**	-
			250	-	**P5-250/EA/SVB**	**P5-250/V/SVB**	-
			315	-	**P5-315/EA/SVB**	**P5-315/V/SVB**	-
			400	-	-	-	-
3 + N	-	-	20	**T0-2-8900/I1/SVB**	-	-	-
			25	**P1-25/I2/SVB/N**	**P1-25/EA/SVB/N**	**P1-25/V/SVB/N**	**P1-25/M4/SVB/N**
			32	**P1-32/I2/SVB/N**	**P1-32/EA/SVB/N**	**P1-32/V/SVB/N**	**P1-32/M4/SVB/N**
			63	**P3-63/I4/SVB/N**	**P3-63/EA/SVB/N**	**P3-63/V/SVB/N**	**P3-63/M4/SVB/N**
			100	**P3-100/I5/SVB/N**	**P3-100/EA/SVB/N**	**P3-100/V/SVB/N**	**P3-100/M4/SVB/N**
			125	-	**P5-125/EA/SVB/N**	**P5-125/V/SVB/N**	-
			160	-	**P5-160/EA/SVB/N**	**P5-160/V/SVB/N**	-
			250	-	**P5-250/EA/SVB/N**	**P5-250/V/SVB/N**	-
			315	-	**P5-315/EA/SVB/N**	**P5-315/V/SVB/N**	-
			400	-	-	-	-
3	1	0	20	**T0-2-15679/I1/SVB**	**T0-2-15679/EA/SVB**	**T0-2-15679/V/SVB**	-
	1	1	25	**P1-25/I2/SVB/HI11**	**P1-25/EA/SVB/HI11**	**P1-25/V/SVB/HI11**	**P1-25/M4/SVB/HI11**
			32	**P1-32/I2/SVB/HI11**	**P1-32/EA/SVB/HI11**	**P1-32/V/SVB/HI11**	**P1-32/M4/SVB/HI11**
			63	**P3-63/I4/SVB/HI11**	**P3-63/EA/SVB/HI11**	**P3-63/V/SVB/HI11**	**P3-63/M4/SVB/HI11**
			100	**P3-100/I5/SVB/HI11**	**P3-100/EA/SVB/HI11**	**P3-100/V/SVB/HI11**	**P3-100/M4/SVB/HI11**
3 + N	1	1	20	**T0-3-15680/I1/SVB**	**T0-3-15680/EA/SVB**	**T0-3-15680/V/SVB**	-
			25	-	**P1-25/EA/SVB/N/HI11**	**P1-25/V/SVB/N/HI11**	**P1-25/M4/SVB/N/HI11**
			32	**T3-3-15680/I2/SVB**	**P1-32/EA/SVB/N/HI11**	**P1-32/V/SVB/N/HI11**	**P1-32/M4/SVB/N/HI11**
			63	**P3-63/I4/SVB/N/HI11**	**P3-63/EA/SVB/N/HI11**	**P3-63/V/SVB/N/HI11**	**P3-63/M4/SVB/N/HI11**
			100	**P3-100/I5/SVB/N/HI11**	**P3-100/EA/SVB/N/HI11**	**P3-100/V/SVB/N/HI11**	**P3-100/M4/SVB/N/HI11**
3	2	1	20	**T0-3-15683/I1/SVB**	**T0-3-15683/EA/SVB**	**T0-3-15683/V/SVB**	-
6	-	-	20	**T0-3-8342/I1/SVB**	**T0-3-8342/EA/SVB**	**T0-3-8342/V/SVB**	-
			32	**T3-3-8342/I2/SVB**	**T3-3-8342/EA/SVB**	**T3-3-8342/V/SVB**	-
			63	**T5B-3-8342/I4/SVB**	**T5B-3-8342/EA/SVB**	**T5B-3-8342/V/SVB**	-
			100	**T5-3-8342/I5/SVB**	**T5-3-8342/EA/SVB**	**T5-3-8342/V/SVB**	-

Cam switches

Description	Emergency switching off/emergency stop	For use with	Item no.
Main switch assembly kits			
With red rotary handle and yellow locking collar	As an emergency switching off/emergency stop device To IEC/EN 60204-1, VDE 0113 Part 1	T0-…/E, …/Z, …/I1 T3-…/E, …/Z, …/I2 P1-…/E, …/Z, …/I2	**SVB-T0**
		T5B-…/E, …/Z, …/I4 T5-.../E, .../Z, .../I5 P3-63/E, …/Z, …/I4 P3-100/E, …/Z, …/I5	**SVB-P3**
With black rotary handle and black locking collar	Without emergency switching off/emergency stop function	T0-…/E, …/Z, …/I1 T3-…/E, …/Z, …/I2 P1-…/E, …/Z, …/I2	**SVB-SW-T0**
		T5B-…/E, …/Z, …/I4 T5-.../E, .../Z, .../I5 P3-63/E, …/Z, …/I4 P3-100/E, …/Z, …/I5	**SVB-SW-P3**
Main switch assembly kits with PE terminal and N terminal			
With red rotary handle and yellow locking collar	As an emergency switching off/ emergency stop device To IEC/EN 60204-1, VDE 0113 Part 1	T0-…/E, …/Z T3-…/E, …/Z	**V/EA/SVB-T0**
		T5(B)-…/E, …/Z	**V/EA/SVB-T5**
With black rotary handle and black locking collar	Without emergency switching off/ emergency stop function	T0-…/E, …/Z T3-…/E, …/Z	**V/EA/SVB-SW-T0**
		T5(B)-…/E, …/Z	**V/EA/SVB-SW-T5**
Thumb-grips			
Black		T0-…/E, …/EZ, …/IVS, …/Z, …/I1 T3-…/E, …/EZ, …/IVS, …/Z, …/I2 P1-…/E, …/EZ, …/IVS, …/Z, …/I2	**KNB-T0**
Red	Only for emergency switching off/ emergency stop switches To IEC/EN 60204-1, VDE 0113 Part 1	T0-…/E, …/IVS, …/Z, …/I1 T3-…/E, …/IVS, …/Z, …/I2 P1-…/E, …/IVS, …/Z, …/I2	**KNB-RT-T0**
Black		T5(B)-…/E, …/Z, …/I4 P3-63/E, …/Z, …/I4 P3-100/E, …/Z, …/I5	**KNB-P3**
Red	Only for emergency switching off/ emergency stop switches To IEC/EN 60204-1, VDE 0113 Part 1	T5(B)-…/E, …/Z, …/I4 P3-63/E, …/Z, …/I4 P3-100/E, …/Z, …/I5	**KNB-RT-P3**
Maintenance key for interlocked main switches			
		T0… P1…	**KNK-T0**
		P3…	**KNK-P3**
ATEX type			
With metric knock-outs M20		T0-…/I1	**+ATEX-I1**
With solid side walls		T3-…/I2 P1-…/I2	**+ATEX-I2**
		T5B-…/I4 P3-…/I4	**+ATEX-I4**
		T5-…/I5 P3-…/I5	**+ATEX-I5**

SVB-T0

SVB-SW-T0

V/EA/SVB-T0

V/EA/SVB-SW-T0

KNB-T0

KNB-RT-P3

Power control
Control and indication

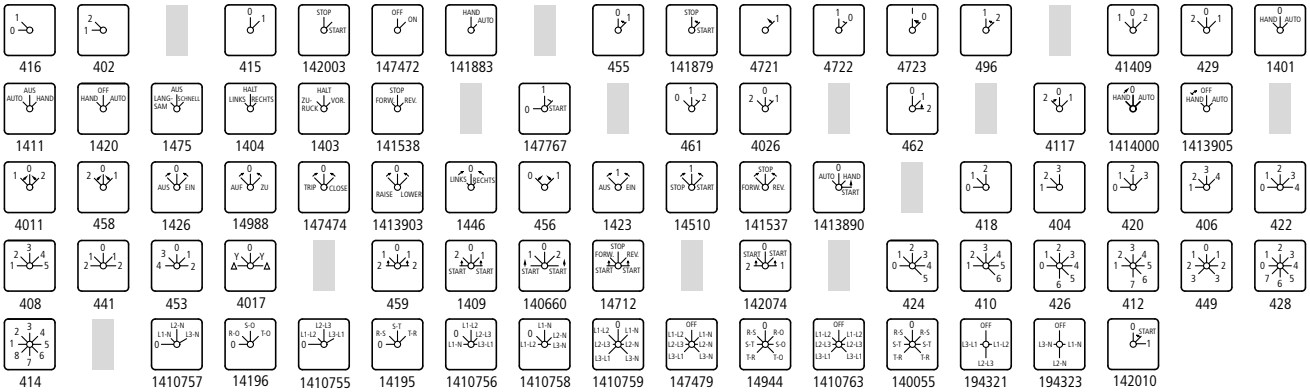
Cam switches

Switch size	Dimensions mm (w x h x d)	For use with	Item no.
Standard front plate			
T0, T3, P1	45 x 45	for frame 48 x 48)	**FS(*)-T0**
P3, T5, T5B	84 x 84	(for frame 88 x 88)	**FS(*)-P3**
Emergency switching off/emergency stop front plates			
T0, T3, P1	45 x 45	for frame 48 x 48)	**FS908GE-T0**
P3, T5, T5B	84 x 84	(for frame 88 x 88)	**FS908GE-P3**
Blank plate			
P3, T5, T5B	84 x 84	(for frame 88 x 88)	**FS-ALU980-P3**
T0, T3, P1	45 x 45	for frame 48 x 48)	**FS-ALU980-T0**

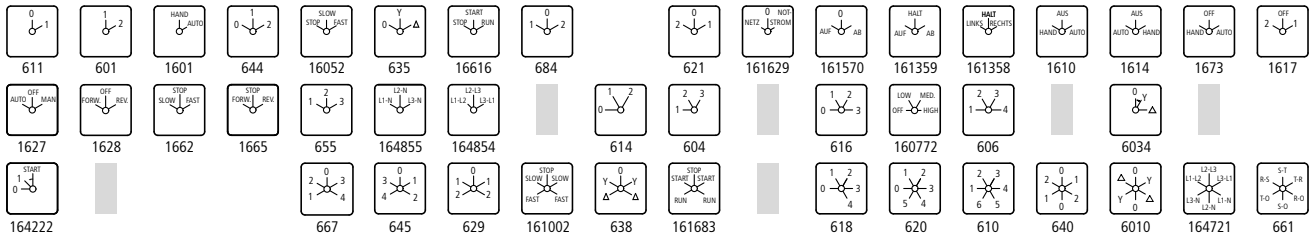
Notes
Standard front plate
For standard switches the normal front plate can be replaced if required with the front plate shown here (not with T6, T8 and TM). This is provided the switching angle, number of positions and the position of the 0 position are the same.

Switching angle 30°

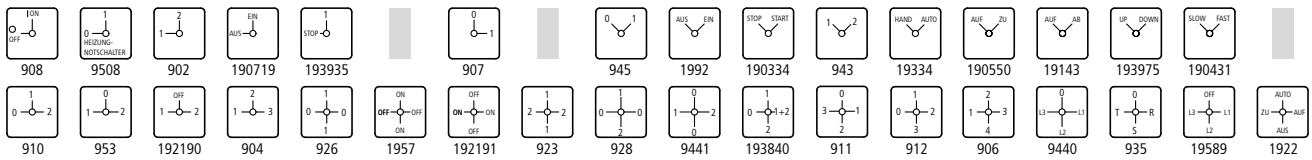
Switching angle 45°



Switching angle 60°



Switching angle 90°



Cam switches

Description	For use with	Withdrawability	Item no.
S-T0 key operated lock mechanism, front IP53			
KMS 1 lock mechanism: individual lock mechanism, not suitable for master key systems Key withdrawable in all positions	T0-1.../I1 to T0-4.../I1 T0-1.../E to T0-6.../E T0-1.../Z to T0-6.../Z	Withdrawable positions can be programmed by user	**S-T0**
KMS 2-10, KMS 201-400 lock mechanisms: individual lock mechanisms, not suitable for master key systems. Key withdrawable in all positions			**S-SOND-KMS(*)-T0**
Lock KMS1: Switches with FS908 are possible as main switch. Key can be withdrawn in positions as specified	T3-1.../E to T3-5.../E T3-1.../Z to T3-5.../Z T3-1.../I2 to T3-4.../I2 P1-.../E P1-.../I2 P1-.../Z	Withdrawable positions programmed at factory as ordered	**S(*)-T0**
SA(...) = master key system (master-key facility) with security certificate. Ordering only with lock plan filled out with the full configuration of the envisaged lock system. When reordering state item number from the lock plan, e.g (A 6294-1.2). Key can be withdrawn in positions as specified			**S(*)-SOND-SA(*)-T0**
SVA-T3 cylinder lock, front IP65			
KMS 1 lock mechanism: individual lock mechanism, not suitable for master key systems Key withdrawable in all positions	T0-…/E, T0-…/I1, T0-…/Z T3-…/E, T3-…/I2, T3-…/Z P1-…/E, P1-…/I2, P1-…/Z	Withdrawable positions can be programmed by user	**SVA-T3**
KMS 2-10, KMS 201-400 lock mechanisms: individual lock mechanisms, not suitable for master key systems. Key withdrawable in all positions			**SVA-SOND-KMS(*)-T3**
Lock KMS1: Switches with FS908 are possible as main switch. Key can be withdrawn in positions as specified	T0-1-… to T0-4-…/I1 T0-1-.../E to T0-4-.../E T3-1-... to T3-5-.../I2 T3-1-... to T3-6-.../E P1-.../I2, P1-.../E	Withdrawable positions programmed at factory as ordered	**SVA(*)-T3**
SA(...) = master key system (master-key facility) with security certificate. Ordering only with lock plan filled out with the full configuration of the envisaged lock system. When reordering state item number from the lock plan, e.g (A 6294-1.2). Key can be withdrawn in positions as specified			**SVA(*)-SOND-SA(*)-T3**
SVC-T3 padlocking feature, front IP65			
II positions can be locked	T0-…/E, T0-…/I1, T0-…/Z T3-…/E, T3-…/I2, T3-…/Z P1-…/E, P1-…/I2, P1-…/Z	The positions that can be locked can be programmed by the user	**SVC-T3**
Specific positions or ranges can be locked	Switches with FS908 can be used as main switches for: T0-1-... to T0-4-.../I1, .../E T3-1-... to T3-5-.../I2 T3-1-... to T3-6-.../E P1-.../I2, P1-.../E	The positions that can be locked are programmable at the factory as ordered	**SVC(*)-T3**

S-T0

SVA-T3

SVC-T3

N-P1E

PE-P5-125/160Z

HI21-P5-125/160Z

IVS-T0

UV-T0

ZVV-T0

SAV-T0

Cam switches

Description		For use with	Item no.
Neutral conductor	For left or right side mounting	P1-…/E, …/EA, …/EZ	**N-P1E**
	For P1-…/I2: optionally, N-P1Z or HI11-P1/P3Z, can only be fitted on the left	P1-…/Z, …/V, …/I2, …/IVS	**N-P1Z**
		P3-…/E, …/EA…	**N-P3E**
		P3-…/Z, …/V, …/IVS P3-63…/Z, …/I4 P3-100…/Z, …/I5	**N-P3Z**
Neutral terminal		P5-125(160)/E(EA)	**N-P5-125/160E**
		P5-125(160)/Z(V)	**N-P5-125/160Z**
		P5-250(315)/E(EA)	**N-P5-250/315E**
		P5-250(315)/Z(V)	**N-P5-250/315Z**
Ground terminal		P5-125(160)/E(EA)	**PE-P5-125/160E**
		P5-125(160)/Z(V)	**PE-P5-125/160Z**
		P5-250(315)/E(EA)	**PE-P5-250/315E**
		P5-250(315)/Z(V)	**PE-P5-250/315Z**
Auxiliary contacts	1 normally open (N/O), 1 normally close contact (N/C) - For left and/or right side mounting	P1-…/E, …/EA…, …/EZ P3-…/E, …/EA	**HI11-P1/P3E**
	For P1…/I2: optionally, HI11-P1/P3Z or N-P1Z, can only be fitted on the left	P1-…/Z, …/V, …/I2, …/IVS P3-63/Z, …/V, …/I4, …/IVS P3-100/Z, …/V, …/I5, …/IVS	**HI11-P1/P3Z**
	2 normally open (N/O), 1 normally close contact (N/C) - For left and/or right side mounting	P5-125(160)/E(EA)	**HI21-P5-125/160E**
		P5-125(160)/Z(V)	**HI21-P5-125/160Z**
		P5-250(315)/E(EA)	**HI21-P5-250/315E**
		P5-250(315)/Z(V)	**HI21-P5-250/315Z**
Center mounting accessories	For cam switches with existing front plate - quick installation with snap fitting system	T0-…/E T3-…/E	**EZ-T0**
	Mounting diameter 22.3 mm, one man mounting with screw fixing	T0-…/E T3-…/E P1-…/E	**EZ-P1**
Service distribution board mounting accessories	For retrofitting in service distribution board mounting T0-…/IVS design. Use the basic switch's front plate.	0-…/XZ	**IVS-T0**
Coupling drive	For the retrofitting of switch T0(T3)-.../XZ as rear mounting, spare part for T0(T3)/(P1)-.../Z		**DE-T0**
	For the conversion of T5(B)-.../E flush mounting switch to rear mounting, spare part for T5(B)/(P3)-...Z		**DE-P3**
Interlock sections		T0-…/E, …EZ, …Z T3-…/E, …EZ, …Z P1-…/E, …EZ, …Z	**UV-T0**
		T5(B)-…/E, …Z P3-…/E, …Z	**UV-P3**
Interlock extensions	Use only with T0/T3-… and P3-…/Z designs	UV-T0	**ZVV-T0**
	Use only with T5(B)-…/Z and P3-…/Z designs	UV-P3	**ZVV-P3**
Shaft extensions		T0-…/Z, T0-…/V T3-…/Z, T3-…/V P1-…/Z, P1-…/V	**ZAV-T0**
		T5(B)-…/Z P3-…/Z P3-…/V	**ZAV-P3**
Shaft	Aluminum, length: 480 mm	P5-…/V… P5-…/Z	**ZAV-P5**
Interlock extensions und shaft extensions, complete	Extension to 25 mm When ordering with basic unit		**+ZAV(X1)+ZV-V(X1)-T0/P3**
Control cable terminal		P5-250/315	**ST-P5-250/315**

Cam switches

Description		For use with	Item no.
Shrouds	For flush mounting switches with up to 4 contact units	T0-…/E T3-…/E	**H3-T0**
	For covering the connection terminals of up to 2 contact units	T5(B)-…/E, …/Z	**H1-T5**
	Extension for H1-T5 protective shroud on 3 - 8 contact units	H1-T5	**HZ-T5**
	For covering the connection terminals on 3 pole switch-disconnectors	P1-…/E, …/EZ, …/Z, …/EA, …/V	**H-P1**
	For covering the connection terminals on 4 pole switch-disconnectors	P1-…N, …HI11, …N…HI11	**H-P14**
	For covering the connection terminals on 3 pole open switchdisconnectors with N neutral conductor and/or HI11 auxiliary contact	P3-…/E, …/Z, …/EA, …/V P3-…N, …HI11, …N…HI11	**H-P3**
	For covering the terminals	P5	**H-P5-125/160**
			H-P5-250/315
	Set (6 units) for covering the connection terminals	T8-3-8342/…	**H-T8**
Key	For KMS 1 individual lock mechanism		**ES-KMS1-T0**
	For KMS 2 - 10 or KMS 201 - 400 individual lock mechanism		**ES-KMS(*)-T0**
	Individual key, stainless, for master key system and stored individual lock mechanisms, state lock plan no. and key.		**HS-SA(*)-T0**
Locking cams (2 cams per set)	For later change of key withdrawability in the engagement positions	S-T0 for all switching angles	**VR-T0**
	For changing the blocked positions/ ranges	SVA-T3 SVC-T3	**VR-T3**
Mounting plate shield	To connect the shielding CI-K2		**MBS-I2**
	To connect the shielding CI-K4		**MBS-I4**

H1-t5

VR-T0

MBS-12

Description			For use with	Item no.
IP65 insulated enclosures	1 - 2 contact units	With pushthrough cable entry diaphragm.	T0-…/Z	**CI-K1-T0-2**
	3 - 4 contact units		T0-…/Z	**CI-K1-T0-4**
	1 - 2 contact units		T3-…/Z	**CI-K2-T3-2**
	3 - 4 contact units		T3-…/Z	**CI-K2-T3-4**
	5 contact units		T3-…/Z	**CI-K2-T3-5**
	1 - 2 contact units	With metric knockouts	T0-…/Z	**CI-K1H-T0-2**
	3 - 4 contact units		T0-…/Z	**CI-K1H-T0-4**
	1 - 2 contact units		T3-…/Z	**CI-K2H-T3-2**
	3 - 4 contact units		T3-…/Z	**CI-K2H-T3-4**
	5 contact units		T3-…/Z	**CI-K2H-T3-5**
	1 - 2 contact units		T5B-…/E	**CI-K4-T5B-2**
	3 - 4 contact units		T5B-…/E	**CI-K4-T5B-4**
	1 - 2 contact units		T5-…/Z	**CI-K5-T5-2**
	3 - 4 contact units		T5-…/Z	**CI-K5-T5-4**
	Only available together with basic unit		T0-…/I1	**+I1H**
	Only available together with basic unit		T3-…/I2 P1-…/I2	**+I2H**
Neutral terminals			CI-K2-PKZ0-...	**K-CI-K1/2**
			T5B-…/I4, CI-K4-T5B-… P3-…/I4, CI-K4	**K-CI-K4**
			T5-…/I5, CI-K5-T5-… P3-…/I5, CI-K5	**K-CI-K5**
Set of external fixing brackets			T5B-…/I4, T5-…/I5, P3-63/I4, P3-100/I5	**AB-CI-K4/5**
Set of extension terminals	For the bottom contact unit		T5B-…/I4 T5-…/I5	**AW-T5-1/2**
	For the second contact unit from the bottom		T5-…/I5	**AW-T5-3/4**

C1-K1-T0-2

K-C1-K5

Cam switches

Cam switches can be used for many switching and control applications. For example as ON-OFF switches, main switches, main/control switches, instrument switches. The switches consist of a hand actuator, the switch unit and the mounting accessories. The contact chamber (contact unit = BE) contains 1 or 2 contacts.

Our "T Cam Switches" catalog has over 800 popular standard contact sequences.The following pages feature a selection of our standard contact sequences. T cam switches and P switch-disconnectors are manufactured without PCB, CFC, asbestos and silicon.The contacts are cadmium free. The CI-K... insulated enclosures are silicon and halogen free.

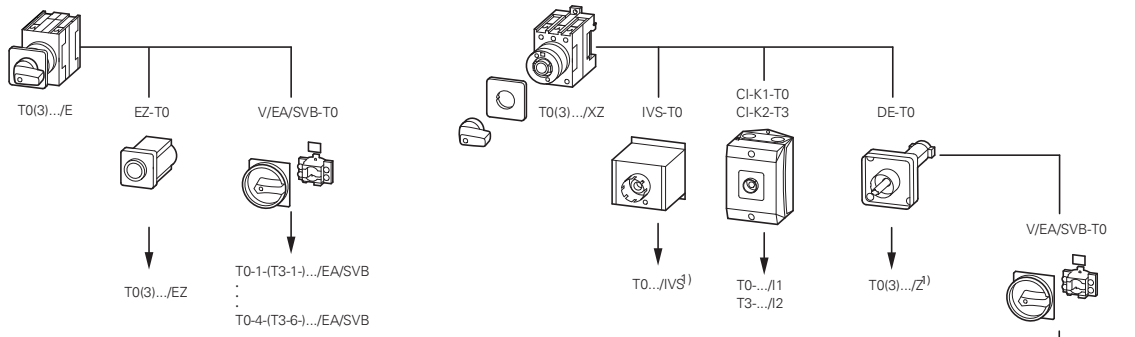
Cam switches T0 and T3

Key to part numbers

T..... ... - .....- ..../ ....

↑	↑	↑	↑
Switch size T0 or T3	Number of contact chambers = contact units	Contact sequence number	Mounting form

Using the modular sustem to convert the mounting form



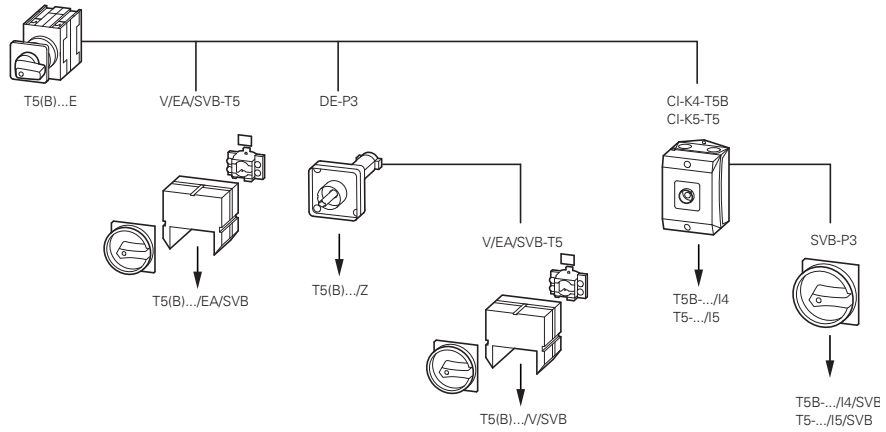
Cam switches TB5

Key to part numbers

T..... ... - .....- ..../ ....

↑	↑	↑	↑
Switch size T5(B)	Number of contact chambers = contact units	Contact sequence number	Mounting form

Using the modular sustem to convert the mounting form T5B



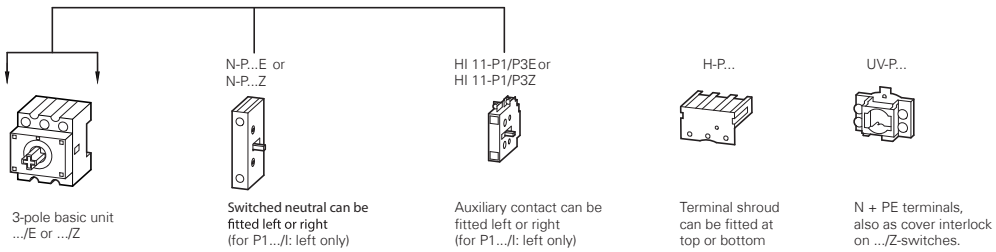
Switch-disconnectors P1 and P3

Key to part numbers

P..... ... - ...../ .... - ..... / .....

↑	↑	↑	↑	↑
Switch size P1 or P3	Rated uninterrupted current	Mounting form	Part no. suffix (if required)	Accessories

Add-on functions due to modular systems



Cam switches

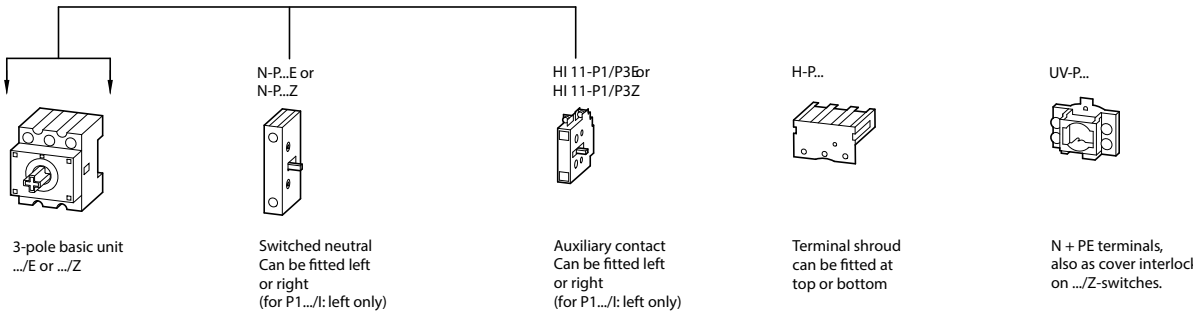
Switch-disconnectors P1 and P3

Key to part numbers

P. . . . . - . . . . . / . . . . . - . . . . . / . . . . .

Switch size P1 or P3	Rated uninterrupted current	Mounting form	Part no. suffix (if required)	Accessories

Add-on functions due to modular system



3-pole basic unit .../E or .../Z	Switched neutral Can be fitted left or right (for P1.../I: left only)	Auxiliary contact Can be fitted left or right (for P1.../I: left only)	Terminal shroud can be fitted at top or bottom	N + PE terminals, also as cover interlocl on .../Z-switches.

TM mini cam switches

The TM mini cam switch is a particularly small switch with a small space requirement. It is ideally suited for small voltages and currents such as electronic controls. For greater safety the contacts are gold plated.

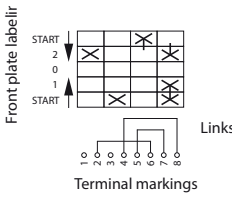
TM switches have consecutive terminal markings starting with 1.

Key to part numbers

TM-. . . . . - . . . . / . . . . + ...

Number of contact chambers = contact units	Contact sequence number	Mounting form	Accessories

Circuit representation



(see also ordering example in the electronic catalogue)

Switch from 0 to 1

Contact 1 – 2 open,
Contact 3 – 4 open,
Contact 5 – 6 open,
Contact 7 – 8 closed

Switch from 1 to START with automatic return to 1

Contact 1 – 2 open,
Contact 3 – 4 closed,
Contact 5 – 6 open,
Contact 7 – 8 remains closed

Switch from 1 to 0

Contact 1 – 2 open,
Contact 3 – 4 open,
Contact 5 – 6 open,
Contact 7 – 8 open

Switch from 0 to 2

Contact 1 – 2 closed,
Contact 3 – 4 open,
Contact 5 – 6 open,
Contact 7 – 8 closed

Switch from 2 to START with automatic return to 2

Contact 1 – 2 open,
Contact 3 – 4 open,
Contact 5 – 6 closes with early make,
Contact 7 – 8 opens with late break

Switch from 2 to 0

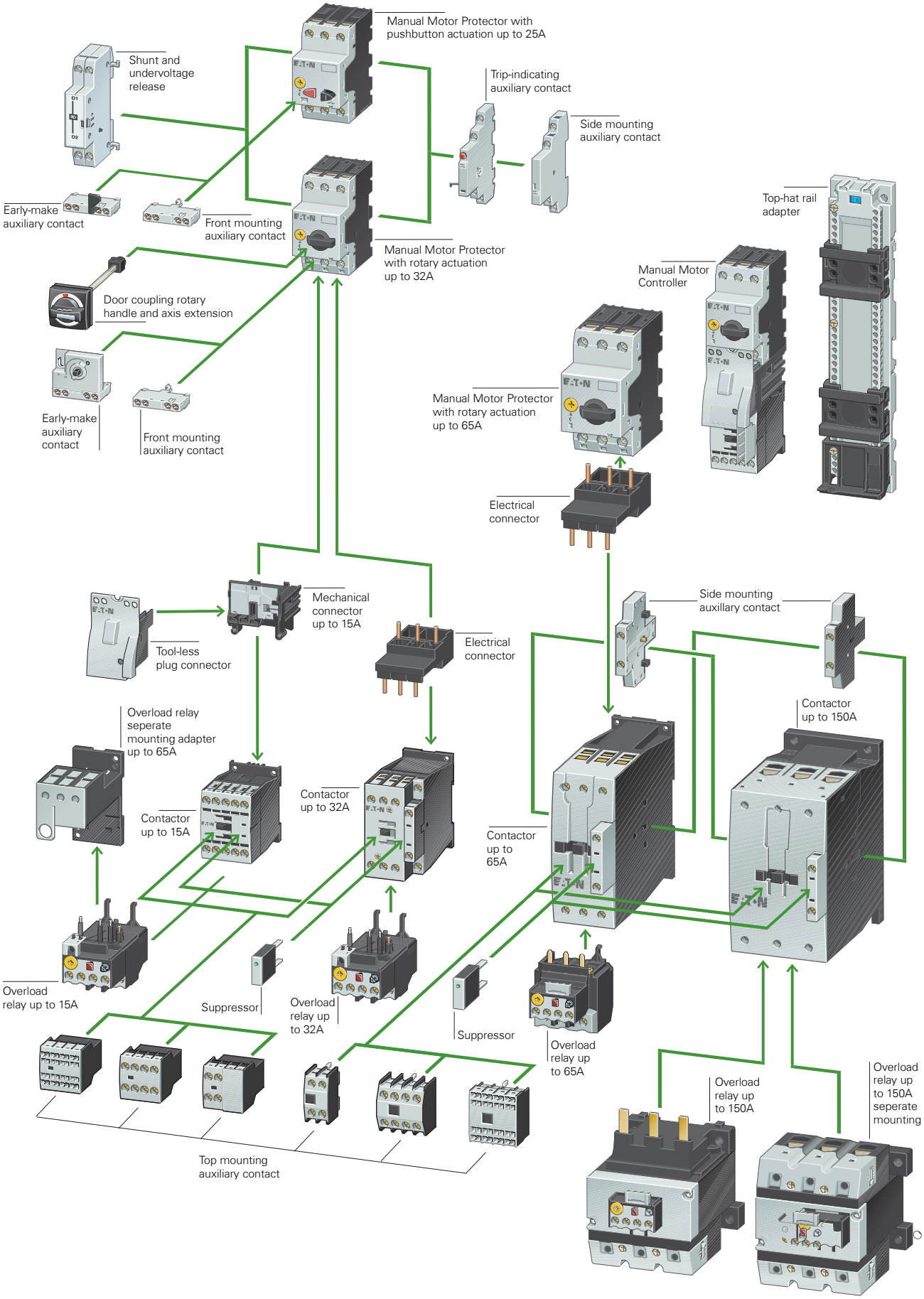
Contact 1 – 2 open,
Contact 3 – 4 open,
Contact 5 – 6 open,
Contact 7 – 8 open

Reliable, accurate, intelligent motor protection.

Powering Business Worldwide

Motor failure has the potential to cause production downtime, costly repair bills and numerous safety concerns for plant personnel. For these reasons, motor protection should be a key element in protecting your organization's most valuable assets. Selecting accurate and reliable motor overload protection is the best way to manage your costs and maintain system integrity.

Xstart IEC Motor control



Xstart IEC Motor control

The XStart range of contactors, overloads & manual motor protectors is a complete range of IEC Motor control. XStart is an efficient & effective solution for applications from 7-2600A.

Feature	Benefit
AC & DC devices with the same dimensions achieved with an electronically controlled coil system.	Space savings, reduced engineering design time.
Twin terminals with separate sockets in contactors up to 400A.	Offers installation & application flexibility when using different size wires. The improved integrity of the connections reduces cabling faults.
Reduced sealing power consumption for DC contactors due to an electronic coil controller that uses less power.	With sealing wattage as low as 0.5W, XStart contactors reduce power consumption & generate less heat. This results in lower cooling requirements, & the ability to mount more contactors per cabinet.
Integrated suppressors in DC controlled contactors from 7–1000A. Integrated surge suppressors in all contactors from 115A & above.	Offers reductions in total logistics & inventory costs by limiting the number of products ordered & stocked. Increased installation & maintenance efficiency, as wiring is not required.

Xstart IEC Mini contactors

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

DILER-40

Mini contactor relays

Rated operational current AC-15		Conventional free air thermal current	Aux. contact		Item no.
220 V, 230 V, 240 V I_e A	380 V, 400 V, 415 V I_e A	I_{th} A			
6	3	10	4 N/O	-	**DILER-40(...)**
			3 N/O	1 NC	**DILER-31(...)**
			2 N/O	2 NC	**DILER-22(...)**

DILEEM-10

IEC Miniature controls

Operational current AC-3 Amp rating	Thermal current AC-1	Maximum kW ratings AC-3, 3-Phase Motors, 50 – 60 Hz 240V	415V	No. of power poles	Aux. contacts	Item no.
6.6	20	1.5	3	3	1NO	**DILEEM-10(...)**
6.6	20	1.5	3	3	1NC	**DILEEM-01(...)**
9	20	2.2	4	3	1NO	**DILEM-10(...)**
9	20	2.2	4	3	1NC	**DILEM-01(...)**
12	20	3.5	5.5	3	1NO	**DILEM12-10(...)**
12	20	3.5	5.5	3	1NC	**DILEM12-01(...)**
9	20	2.2	4	4	-	**DILEM4(...)**

ZE-0,16

IEC Miniature overload relays

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

Motor full load current (FLC)	Trip class	Contact configuration	Item no.
0.1 – 0.16A 0.16 – 0.24A 0.24 – 0.4A 0.4 – 0.6A	10A	1NO-1NC	**ZE-0,16** **ZE-0,24** **ZE-0,4** **ZE-0,6**
0.6 – 1A 1 – 1.6A 1.6 – 2.4A	10A	1NO-1NC	**ZE-1,0** **ZE-1,6** **ZE-2,4**
2.4 – 4A 4 – 6A 6 – 9A 9 – 12A	10A	1NO-1NC	**ZE-4** **ZE-6** **ZE-9** **ZE-12**

Xstart IEC Mini contactors

IEC Miniature controls accessories
(auxiliary contacts for mini contactors, front (top) mounted)

Contact configuration	Poles	Item no.
1NO/1NC	2	**11DILE**
2NO	2	**20DILE**
2NC	2	**02DILE**
2NO2NC	4	**22DILE**
1NO/3NC	4	**13DILE**
3NO1NC	4	**31DILE**
4NO	4	**40DILE**
4NC	4	**04DILE**
1ECNO/1LONC	2	**11DDILE**
2ECNO/2LONC	2	**22DDILE**

Note: Auxiliary contacts are rated for 10A AC-1.

11DILE

Coil selection chart

Coil Voltage (50Hz)	Suffix code
415 AC	(415V50HZ, 480V60HZ)
230-240 AC	(240V50HZ)
110 AC	(110V50HZ/120V60HZ)
24 AC	(24V50HZ)
24 DC	(415V50HZ, 480V60HZ)

Note: Mini Contactor Coils are not interchangeable.
For additional coil voltages contact Eaton.

RC-suppressor

Description	Item no.
Mini contactor relay. 110-250 AC. For use with DILE...	**RCDILE250**

Note: For AC operated contactors 50-60 Hz. DC operated contactor relays have an integrated suppressor.

RCDILE250

Mechanical interlock

Description	Item no.
Mechanical Interlock	**MVDILE**

Note: For two contactors with AC or DC operated coils that are horizontally or vertically mounted, the distance between contactors is 0 mm

Reversing link kit

Description	Item no.
Main current wiring for reversing contactors & starters.	**MVS-WB-EM**

Note: Reversing Link Kit does not include mechanical interlock. Order part No. MVDILE for Mechanical Interlock.

Star-delta link kit

Description	Item no.
Main current wiring for star-delta combinations. Includes the Star-Delta Bridge.	**MVS-SB-EM**

Other accessories

Description	Item no.
Connector for mechanically arranging contactors in combinations.	**V0DILE**
Shroud IP40 Sealable Shroud, snap fit	**HDILE**

Note: 0 mm distance between contactors with connector.

Xstart IEC control relays

Basic devices with positively driven contacts

Rated operational current AC-15 240 V I_e A	Rated operational current AC-15 415 V I_e A	Conventional free air thermal current I_{th} A	Aux. contact		Item no.
4	4	16	4 N/O	-	**DILA-40(...)**
			3 N/O	1 NC	**DILA-31(...)**
			2 N/O	2 NC	**DILA-22(...)**

Xstart IEC Contactors

IEC Contactors

- AC-3 contactor ratings to 1600A & AC-1 contactor ratings to 2600A
- Panel or DIN-Rail mounting to 72A
- IP20 finger & back-of-hand proof
- Built-in NO or NC auxiliary contacts to 38A
- Built-in surge suppression on DC coils Frame B-G & AC or DC coils on Frame L-R
- Can be used with ZB or ZEB overload relays
- Can be used with PKZM or PKE for manual Motor controllers

Frame B

Frame C

Frame D

Frame F & G

Frame L

Full voltage non-reversing 3-pole contactors

IEC ratings AC-3 Ie (A)	AC-1 (60°C) Ie = Ith (A)	Maximum kW ratings AC-3 3-Phase Motors 50 – 60 Hz 400V	660/ 690V	Aux. contacts	Item no.
Frame B					
7	20	3	3.5	1NO	**DILM7-10(…)**
7	20	3	3.5	1NC	**DILM7-01(…)**
9	20	4	4.5	1NO	**DILM9-10(…)**
9	20	4	4.5	1NC	**DILM9-01(…)**
12	20	5.5	6.5	1NO	**DILM12-10(…)**
12	20	5.5	6.5	1NC	**DILM12-01(…)**
15.5	20	7.5	7	1NO	**DILM15-10(…)**
15.5	20	7.5	7	1NC	**DILM15-01(…)**
Frame C					
18	35	7.5	11	1NO	**DILM17-10(…)**
18	35	7.5	11	1NC	**DILM17-01(…)**
25	40	11	14	1NO	**DILM25-10(…)**
25	40	11	14	1NC	**DILM25-01(…)**
32	40	15	17	1NO	**DILM32-10(…)**
32	40	15	17	1NC	**DILM32-10(…)**
38	40	18.5	21	1NO	**DILM38-10(...)**
38	40	18.5	21	1NC	**DILM38-01(...)**
Frame D					
40	50	18.5	23	—	**DILM40(…)**
50	65	22	30	—	**DILM50(…)**
65	80	30	35	—	**DILM65(…)**
72	80	37	35	—	**DILM72(...)**
Frame F					
80	90	37	63	—	**DILM80(…)**
95	110	45	75	—	**DILM95(…)**
Frame G					
115	130	55	90	—	**DILM115(…)**
150	160	75	96	—	**DILM150(…)**
170	185	90	96	—	**DILM170(...)**

Note: The 7 – 38A contactors have positively driven contacts between the integrated auxiliary contact & the auxiliary contact module as well as within the auxiliary contact modules.
The 40 – 72A contactors have positively driven contacts within the auxiliary contact module. 6 auxiliary contacts are possible with a combination of side mounted & front mount auxiliary contacts.
DC operated contactors (Frames B – G, 7 – 170A) have a built-in suppressor circuit. Frame B – C contactors with 1NC built-in auxiliary are mirror contacts.

IEC ratings AC-3 Ie (A)	AC-1 (60°C) Ie = Ith (A)	Maximum kW ratings AC-3 3-Phase Motors 50 – 60 Hz 400V	660/ 690V	1000V	Aux. contacts	Item no.
Frame L — Electronic Coil						
185	275	90	140	108	2NO-2NC	**DILM185A/22(…)**
225	315	110	150	108	2NO-2NC	**DILM225A/22(…)**
250	330	132	195	108	2NO-2NC	**DILM250/22(…)**
Frame M — Electronic Coil						
300	350	160	195	132	2NO-2NC	**DILM300A/22(…)**
400	500	200	344	132	2NO-2NC	**DILM400/22(...)**
500	700	250	344	132	2NO-2NC	**DILM500/22(…)**

Contactors Frame L - R; Electronic Coil: Wide range of control voltages, Can be controlled by a PLC output, Can be controlled by a low power command device, like a limit switch or sensor.

Xstart IEC Contactors

Full voltage non-reversing 3-pole contactors

IEC ratings						
AC-3 Ie (A)	AC-1 (60°C) Ie = Ith (A)	Maximum kW ratings AC-3 3-Phase Motors 50 – 60 Hz 400V	660/ 690V	1000V	Aux. contacts	Item no.
Frame M — Standard coil (110/120V, 230/240V AC coil only)						
300	430	160	195	-	2NO-2NC	**DILM300A-S/22(...)**
400	612	200	344	-	2NO-2NC	**DILM400-S/22(...)**
500	857	250	344	-	2NO-2NC	**DILM500-S/22(...)**
Frame N — Electronic coil						
580	800	315	560	600	2NO-2NC	**DILM580/22(...)**
650	850	355	630	600	2NO-2NC	**DILM650/22(...)**
750	900	400	720	800	2NO-2NC	**DILM750/22(...)**
820	1000	450	750	800	2NO-2NC	**DILM820/22(...)**
1000	1000	560	1000	1100	2NO-2NC	**DILM1000/22(...)**
Frame R — Electronic coil						
1600	1800	900	1600	1770	2NO-2NC	**DILM1600/22(...)**
-	1400	-	-	-	-	**DILH1400/22(...)**
-	2000	-	-	-	-	**DILH2000/22(...)**
-	2200	-	-	-	-	**DILH2200/22(...)**
-	2600	-	-	-	-	**DILH2600/22(...)**

Note: AC & DC operated contactors have a built-in suppressor circuit.
(Frames L – R, 185 – 2600A).

Frame M

Frame N

Frame R

Coil suffix tables

Coil voltage (suffix)	DILM7-15	DILM17-65, DILM80-95	DILM72	DILM115-225A
24V AC	**24V50HZ**	**24V50HZ**	**24V50/60HZ**	**RAC24**
110V AC	**110V50HZ,120V60HZ**	**110V50HZ,120V60HZ**	**110V50HZ,120V60HZ**	**RAC120**
240V AC	**240V50HZ**	**240V50HZ**	**240V50HZ**	**RAC240**
415VAC	**415V50HZ,480V60HZ**	**415V50HZ,480V60HZ**	**400V50HZ,440V60HZ**	**RAC440**
24V DC	**24VDC**	**RDC24**	**RDC24**	**RDC24**
48V DC	**48VDC**	**RDC60**	**-**	**RDC60**
110V DC	**110VDC**	**RDC130**	**-**	**RDC130**
230V DC	**220VDC**	**RDC240**	**RDC240**	**RDC240**

Coil voltage (suffix)	DILM250-500	DILM580-820	DILM1000	DILM1600
24V AC	**-**	**-**	**-**	**-**
110V AC	**RA110**	**RA110**	**-**	**-**
240V AC	**RA250**	**RA250**	**RA250**	**RAW250**
415VAC	**RAC500**	**RAC500**	**-**	**-**
24V DC	**RDC48**	**-**	**-**	**-**
48V DC	**RDC48**	**-**	**-**	**-**
110V DC	**RA110**	**RA110**	**-**	**-**
230V DC	**RA250**	**RA250**	**RA250**	**RAW250**

Xstart IEC Contactors

IEC 4-Pole Contactors, frame B – frame G

Ie (A) AC-3	Ie = Ith (A) (40°C) AC-1	Maximum kW ratings AC-3 3 Ph Motors 50 – 60 Hz 400V, kW	Item no.
Frame B			
12	20	5.5	**DILMP20(...)**
Frame C			
18	32	7.5	**DILMP32-10(...)**
25	45	11	**DILMP45-10(...)**
Frame D			
40	63	18.5	**DILMP63(...)**
50	80	22	**DILMP80(...)**
Frame G			
80	125	37	**DILMP125(...)**
95	160	45	**DILMP160(...)**
115	200	55	**DILMP200(...)**

IEC Capacitor contactors, frame C – Frame D

Switching duty in kvar - Group compensation, without reactor				Item no.
230V	400V	525V	690V	
Frame C				
7.5	12.5	16.7	20	**DILK12-11(...)**
11	20	25	33.3	**DILK20-11(...)**
15	25	33.3	40	**DILK25-11(...)**
Frame D				
20	33.3	40	55	**DILK33-10(...)**
25	50	65	85	**DILK50-10(...)**

Note: Weld resistant contactors for capacitors, with inrush current peaks up to 180 I_n

Frame B-C

Frame B

Frame C

Frame D-G

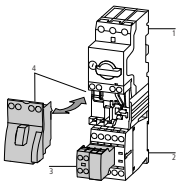
Accessories - Auxiliary contacts

Conventional thermal current, Open at 60°C Ith = Ie, AC-1 in Amps	Poles	Contact configuration	Item no.
Frame B – C — Front (Top) Mount			
16	2	2NO	**DILA-XHI20**
16	2	2NC	**DILA-XHI02**
16	2	1NO-1NC	**DILA-XHI11**
16	2	1ECNO-1LONC	**DILA-XHIV11**
16	2	2NO	**DILA-XHIT20** ①
16	2	1NO-1NC	**DILA-XHIT11** ①
16	2	2NC	**DILA-XHIT02** ①
16	4	2NO-2NC	**DILA-XHIT22** ①
16	4	4NO	**DILA-XHI40**
16	4	4NC	**DILA-XHI04**
16	4	2NO-2NC	**DILA-XHI22**
16	4	3NO-1NO	**DILA-XHI31**
16	4	1NO-3NC	**DILA-XHI13**
16	4	1NO-1NC, 1ECNO-1LONC	**DILA-XHIV22**
Frame B — Side mount			
16	1	1NO	**DILA-XHI10-S**
16	1	1NC	**DILA-XHI01-S**
Frame C — Side mount			
10	2	1NO-1NC	**DILM32-XHI11-S**
Frame D — G Front (top) mount			
16	2	2NO	**DILM150-XHI20**
16	2	2NC	**DILM150-XHI02**
16	2	1NO-1NC	**DILM150-XHI11**
16	4	4NO	**DILM150-XHI40**
16	4	4 NC	**DILM150-XHI04**
16	4	2NO-2NC	**DILM150-XHI22**
16	4	3NO-1NC	**DILM150-XHI31**
16	4	1NO-3NC	**DILM150-XHI13**
16	4	1NO-1NC, 1ECNO-ILONC	**DILM150-XHIV22**

Fram B - side mount: 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) & NC (late break) contacts) & for the built-in auxiliary contacts of the DILM7 - DILM38... 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.

①Suitable for the combination with electrical wiringlinks in tool-less plug connection usable with: DILM12-XSL, DILM12-XRL, DILM12-XS1, PKZM0-XDM12, PKZM0-XRM12, PKZM0-XSM12



Xstart IEC Contactors

Accessories

Side mount auxiliary contacts for frame D – R, 40 – 2600A

Conventional free air thermal current, Ith = Ie, AC-1 in Amps	Poles	Contact configuration	Item no.
Frame D – L (40 - 225A)			
10	2	1NO-1NC	**DILM1000-XHI11-SI**
10	2	IECNO-ILONC	**DILM1000-XHIV11-SI**
Frame L – R (250 - 2600A)			
10	2	1NO-1NC	**DILM820-XHI11-SI**
10	2	IECNO-ILONC	**DILM820-XHI11V-SI**

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

DILM1000-XHI11-SI

DILM12-XMV

Mechanical interlock ①

For use with...	Pkg. qty.	Item no.
DILM7 - 15 DILMP20 DILA	5	**DILM12-XMV**
DILM17 - 38	1	**DILM32-XMV**
DILM40 - 72	1	**DILM65-XMV**
DILM80 - 170	1	**DILM150-XMV②**
DILM185A - 500	1	**DILM500-XMV**
DILM580 - 1000	1	**DILM820-XMV②**

DILM32-XMV

DILM500-XMV

Reversing link kits

For use with...	Pkg. qty.	Item no.
DILM7 - 12	1	**DILM12-XRL③**
DILM17 - 32	1	**DILM32-XRL**
DILM40 - 65	1	**DILM65-XRL**
DILM80 - 150	1	**DILM150-XRL**

DILM12-XRL

DILM32-XRL

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 x 106 operations & the distance between contactors is 0 mm. For L – N frames, mechanical lifespan is 5 x 106 operations & no auxiliary contact can be mounted between the mechanical interlock & the contactor — the distance between contactors is 15 mm.

② DILM150-XMV and DILM820-XMV consist of an interlock element & mounting plate.

③ Also includes Interlocking Bridge (DILM12-XEV).

DILM12-XSPR48

DILM12-XSPV48

DILM12-XSPVL48

DILM12-XSPD

Accessories

Suppressor circuit

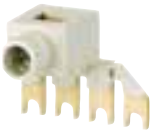
Voltage U_s V	For use with	Item no.
RC suppressors		
24 - 48 AC	DILM7 - DILM15 DILMP20 DILA	**DILM12-XSPR48**
110 - 240 AC		**DILM12-XSPR240**
240 - 500 AC		**DILM12-XSPR500**
24 - 48 AC	DILM17 - DILM32 DILK12 - DILK25 DILL.. DILMP32 - DILMP45	**DILM32-XSPR48**
110 - 240 AC		**DILM32-XSPR240**
240 - 500 AC		**DILM32-XSPR500**
24 - 48 AC	DILM40 - DILM95 DILK33 - DILK50 DILMP63 - DILMP200	**DILM95-XSPR48**
110 - 240 AC		**DILM95-XSPR240**
240 - 500 AC		**DILM95-XSPR500**
Varistor suppressors		
24 - 48 AC	DILM7 - DILM15 DILMP20 DILA	**DILM12-XSPV48**
48 - 130 AC		**DILM12-XSPV130**
130 - 240 AC		**DILM12-XSPV240**
240 - 500 AC		**DILM12-XSPV500**
24 - 48 AC	DILM17 - DILM32 DILK12 - DILK25 DILL.. DILMP32 - DILMP45	**DILM32-XSPV48**
48 - 130 AC		**DILM32-XSPV130**
130 - 240 AC		**DILM32-XSPV240**
240 - 500 AC		**DILM32-XSPV500**
24 - 48 AC	DILM40 - DILM95 DILK33 - DILK50 DILMP63 - DILMP200	**DILM95-XSPV48**
48 - 130 AC		**DILM95-XSPV130**
130 - 240 AC		**DILM95-XSPV240**
240 - 500 AC		**DILM95-XSPV500**
Varistor suppressors with integrated LED		
24 - 48 AC	DILM7 - DILM15 DILMP20 DILA	**DILM12-XSPVL48**
130 - 240 AC		**DILM12-XSPVL240**
24 - 48 AC	DILM17 - DILM32 DILK12 - DILK25 DILL.. DILMP32 - DILMP45	**DILM32-XSPVL48**
130 - 240 AC		**DILM32-XSPVL240**
24 - 48 AC	DILM40 - DILM95 DILK33 - DILK50 DILMP63 - DILMP200	**DILM95-XSPVL48**
130 - 240 AC		**DILM95-XSPVL240**
Diode suppressor		
12 - 250 DC	DILM7 - DILM15 DILMP20 DILA	**DILM12-XSPD**

Accessories

Paralleling links for main contacts*

For use with	Item no.
DILM7 - DILM15	**DILM12-XP1**
DILM17 - DILM32	**DILM32-XP1**
DILM40 -DILM72	**DILM65-XP1**
DILM80 - DILM72	**DILM150-XP1**
DILM185A	**DILM185-XP1**

* Consisting of 2 paralleling links



DILM12-XP1

DILM32-XP1

Star-point bridges

For use with	Item no.
DILM7 - DILM15	**DILM12-XS1**
DILM17 - DILM32	**DILM32-XS1**
DILM40 - DILM72	**DILM65-XS1**
DILM80 - DILM170	**DILM150-XS1**
DILM185A - DILM400	**DILM400-XS1**
DILM500	**DILM500-XS1**

DILM150-XP1

DILM12-XS1

DILM400-XS1

Star-delta wiring kit

For use with	Item no.
DILM7, DILM9, DILM12, DILM15	**DILM12-XSL**
DILM17, DILM25, DILM32	**DILM32-XSL**
DILM40, DILM50, DILM65	**DILM65-XSL**
DILM80, DILM95	**DILM95-XSL**
DILM115, DILM150	**DILM150-XSL**

DILM12-XSL

DILM32-XSL

IP2X cover set

For use with	Item no.
DILM17, DILM25, DILM32, DILM38, DILMP32, DILMP45	**DILM32-XIP2X**
DILM40, DILM50, DILM65, DILM72, DILMP63, DILMP80	**DILM65-XIP2X**
DILM80, DILM95, DILM115, DILM150, DILM170, DILMP125, DILMP160, DILMP200, ZB150	**DILM150-XIP2X**

DILM32-XIP2X

DILM65-XIP2X

DILM32-XTEE11(RA24)

DILM32-XTED11-1(RA24)

DILM32-XTEY20(RA24)

Accessories

Electronic timer modules

Description	For use with	Item no.
On-delayed		
Cannot be combined with top mounting auxiliary contacts. Incl. suppressor circuits		
24V AC/DC	DILM7 - DILM32 DILMP20 DILMP32 - DILMP45 DILA	**DILM32-XTEE11(RA24)**
100 ... 130 V AC		**DILM32-XTEE11(RA130)**
200 ... 240 V AC		**DILM32-XTEE11(RAC240)**
Off-delayed, auxiliary voltage-free		
Cannot be combined with top mounting auxiliary contacts. Incl. suppressor circuits		
24V AC/DC	DILM7 - DILM32 DILMP20 DILMP32 - DILMP45 DILA	**DILM32-XTED11-1(RA24)**
		DILM32-XTED11-10(RA24)
		DILM32-XTED11-100(RA24)
100 ... 130 V AC		**DILM32-XTED11-1(RAC130)**
		DILM32-XTED11-10(RAC130)
		DILM32-XTED11-100(RAC130)
200 ... 240 V AC		**DILM32-XTED11-1(RAC240)**
		DILM32-XTED11-10(RAC240)
		DILM32-XTED11-100(RAC240)
For star-delta applications		
Cannot be combined with top mounting auxiliary contacts. Incl. suppressor circuits		
24V AC/DC	DILM7 - DILM32 DILMP20 DILMP32 - DILMP45 DILA	**DILM32-XTEY20(RA24)**
100 ... 130 V AC		**DILM32-XTEY20(RAC130)**
200 ... 240 V AC		**DILM32-XTEY20(RAC240)**

DIL-SWD-32-001

DILM12-XMCP/E

Accessories

Description	For use with	Item no.
SmartWire-Darwin module for installation on contactors. One module per contactor		
Two digital inputs for potential-free contacts. 1 electrical interlock for the surface mounting of reversing starters. Messages: Contactor switch status, status of the digital inputs 1 and 2.	DILM7... - DILM32 DILM38 DILA	**DIL-SWD-32-001**
Two digital inputs for potential-free contacts. 1 electrical interlock for the surface mounting of reversing starters. 1-0-A switch for manual or automatic operation. Messages: contactor switching position, status of the digital inputs 1 and 2, 1-0-A switch position.	DILM7... - DILM32 DILM38 DILA	**DIL-SWD-32-002**
Wiring set for motor feeder plug		
PE module with contact plate	DILM7 DILM9 DILM12 DILM15	**DILM12-XMCE**
Motor plate with PE module and contact plate	DILM7 DILM9 DILM12 DILM15	**DILM12-XMCP/E**
	PKZM0/PKE + DILM7 PKZM0/PKE + DILM9 PKZM0/PKE + DILM12 PKZM0/PKE + DILM15	**DILM12-XMCP/T**

Accessories

Sealable shrouds - Transparent

For use with	Item no.
DILM32-XTE...	**DILM32-XTEPLH**

DILM32-XTEPLH

Suppressor circuits for vacuum contactors (on load side)

For use with	Item no.
DILM580 DILM650 DILM750 DILM820 DILM1000	**DILM1000-XSM**
DILH2000 DILH2200 DILH2600	**DILH2600-XSM**

DILM1000-XSM

Terminal Cover

For use with	Item no.
DILM185A DILM225A	**DILM225A-XHB**
DILM250 DILM300A DILM400	**DILM400-XHB**
DILM500	**DILM500-XHB**
DILM580 DILM650	**DILM650-XHB**
DILM750 DILM820 DILM1000	**DILM820-XHB**

DILM225A-XHB

Amplifier module for separate mounting

Rated operational current AC-15 AC-15 230V I_e A	400V I_e A	DC 220V I_e A	Actuating voltage U_s A DC	For use with	Item no.
2	2	0.03	24	...DILM DILMP... DILL... DILK...	**ETS4-VS3**

ETS4-VS3

Notes: Contactor coils with rated operational current > 2 A must be actuated via the DILER-G mini contactor relay.
Rated operational current DC: Making and breaking conditions DC-13, time L/R 300ms

Replacement coils for DILM contactors

For use with	DC voltage Item no.	AC voltage Item no.
DILM17 DILM25 DILM32 DILM38	**DILM32-XSP (RDC24) ***	**DILM32-XSP (240V50HZ)**
DILM40 DILM50 DILM65 DILM72	**DILM65-XSP (RDC24) ***	**DILM65-XSP (240V50HZ)**
DILM80 DILM95	**DILM95-XSP (RDC24) ***	**DILM95-XSP (240V50HZ)**
DILM115 DILM150 DILM170	**DILM150-XSP (RDC24) ***	**DILM150-XSP (RAC240)**
DILM185A DILM225A	**DILM225A-XSP (RDC24) ***	**DILM225A-XSP (RAC240)**

For use with	DC voltage Item no.	AC voltage Item no.
DILM250 DILM300A	**DILM250-XSP/E (RA250)**	**DILM250-XSP/E (RA250)**
DILM400 DILM500	**DILM500-XSP/E (RA250)**	**DILM500-XSP/E (RA250)**
DILM580 DILM650 DILM750 DILM820 DILM1000	**DILM1000-XSP/E (RA250)**	**DILM1000-XSP/E (RA250)**
DILH1400	-	**DILH1400-XSP/E (RAW250)**
DILM250-S DILM300A-S	-	**DILM250-S-XSP/E (220-240V50/60HZ)**
DILM400-S DILM500-S	-	**DILM500-S-XSP/E (220-240V50/60HZ)**

DILM32-XSP(RDC24)

* (Includes electronic module)

Contactor monitoring device

CMD

Application

The function of the CMD is to monitor the main contacts of a contactor against welding. For this the control voltage of the contactor is compared with the state of the main contacts which is reliably monitored using a mirror contact (IEC EN60947-4-1 Annex F). If the coil is deenergized and the contactor does not drop out the CMD trips the upstream circuit-breaker/motor protective circuit breaker/switch-disconnector via a shunt release.

Safety

The CMD has a safety-compliant design so that in safety combinations with a circuit-breaker/motor protective circuit breaker/switch disconnector the reliable switch off in the case of a "welded contactor" can be guaranteed. In this application it replaces the series connection of a second contactor. As a component it conforms to safety category 3 according to EN 954-1 and EN ISO 13849.

CMD(24VDC)

Description	Item no.
Contactor monitoring device	**CMD(24VDC)**
Contactor monitoring device	**CMD(220-240VAC)**

Thermal overload relays

Electronic overload relays

Motor insight overload and motor protection relays

Overload relays

Product overview

Description	Thermal overload relays	Electronic overload relays	Motor insight overload and motor protection relays
Type	ZB	ZEB	C441
Relay type	Thermal Bi-Metallic	Electronic	Electronic
Direct connect to contactor	Yes, (DILM)	Yes, (DILM)	—
Separate mount	Yes, Adapter	Yes	Yes
FLC Range	0.1 – 630A	0.1 – 1500A	1 – 540A (with CTs)
FLC max.:min. ratio	Approx. 1.5:1	5:1	—
Motor overload protection	Yes	Yes	Yes
Underload protection	—	—	Yes
Supply protection	—	—	Yes
Enhanced phase loss protection	—	Yes	Yes
Enhanced phase imbalance protection	—	Yes	Yes
Trip class	10A	Selectable 10 / 20 / 30	5 – 30
Reset type	Selectable manual / automatic	Selectable manual / automatic	Selectable manual / automatic / programmable / remote
Communications with I/O	—	Yes	Yes (Modbus, ETHERNET/IP, DeviceNet, PROFIBUS)
Remote display	—	—	Yes
Ground fault	—	Yes	Yes
Alarm no trip	—	—	Yes (voltage & ground faults)
Jam	—	Yes	Yes
Programmable reset timers	—	—	Yes
Progammable reset attempts	—	—	Yes
Current monitoring	—	Yes	Yes
Voltage monitoring	—	—	Yes
Power monitoring	—	—	Yes
Thermal capacity monitoring	—	Yes	Yes
Motor run hours monitoring	—	—	Yes

Overload relays

ZB bi-metallic overload relays

- Direct mount to DILM contactors or separate mount
- Class 10A, up to 630A motors
- Ambient - compensated bi-metallic
- Test/off pushbutton
- Reset pushbutton mannual/auto
- Tripfree release

Setting range overload release, Ir	Aux contact configuration	For use with contactor Ampere range	Item no.
Frame B — Direct mount to contactor (DILM7-15)			
0.1 – 0.16	1NO-1NC	7 – 15A	**ZB12-0,16**
0.16 – 0.24	1NO-1NC	7 – 15A	**ZB12-0,24**
0.24 – 0.4	1NO-1NC	7 – 15A	**ZB12-0,4**
0.4 – 0.6	1NO-1NC	7 – 15A	**ZB12-0,6**
0.6 – 1	1NO-1NC	7 – 15A	**ZB12-1**
1 – 1.6	1NO-1NC	7 – 15A	**ZB12-1,6**
1.6 – 2.4	1NO-1NC	7 – 15A	**ZB12-2,4**
2.4 – 4	1NO-1NC	7 – 15A	**ZB12-4**
4 – 6	1NO-1NC	7 – 15A	**ZB12-6**
6 – 10	1NO-1NC	7 – 15A	**ZB12-10**
9 – 12	1NO-1NC	9 – 15A	**ZB12-12**
12 – 16	1NO-1NC	12 – 15A	**ZB12-16**
Frame C — Direct mount to contactor (DILM17-38)			
0.1 – 0.16	1NO-1NC	17 – 38A	**ZB32-0,16**
0.16 – 0.24	1NO-1NC	17 – 38A	**ZB32-0,24**
0.24 – 0.4	1NO-1NC	17 – 38A	**ZB32-0,4**
0.4 – 0.6	1NO-1NC	17 – 38A	**ZB32-0,6**
0.6 – 1	1NO-1NC	17 – 38A	**ZB32-1**
1 – 1.6	1NO-1NC	17 – 38A	**ZB32-1,6**
1.6 – 2.4	1NO-1NC	17 – 38A	**ZB32-2,4**
2.4 – 4	1NO-1NC	17 – 38A	**ZB32-4**
4 – 6	1NO-1NC	17 – 38A	**ZB32-6**
6 – 10	1NO-1NC	17 – 38A	**ZB32-10**
10 – 16	1NO-1NC	17 – 38A	**ZB32-16**
16 – 24	1NO-1NC	17 – 38A	**ZB32-24**
24 – 32	1NO-1NC	17 – 38A	**ZB32-32**
32 - 38	1NO-1NC	17 – 38A	**ZB32-38**
Frame D — Direct mount to contactor (DILM40-72)			
6 – 10	1NO-1NC	40 – 72A	**ZB65-10**
10 – 16	1NO-1NC	40 – 72A	**ZB65-16**
16 – 24	1NO-1NC	40 – 72A	**ZB65-24**
24 – 40	1NO-1NC	40 – 72A	**ZB65-40**
40 – 57	1NO-1NC	40 - 72 A	**ZB65-57**
50 – 65	1NO-1NC	40 – 72A	**ZB65-65**
65 – 75	1NO-1NC	40 - 72 A	**ZB65-75**
Frame F – G — Direct mount to contactor (DILM80-170)			
35 – 50	1NO-1NC	80 – 170A	**ZB150-50**
50 – 70	1NO-1NC	80 – 170A	**ZB150-70**
70 – 100	1NO-1NC	80 – 170A	**ZB150-100**
95 – 125	1NO-1NC	80 – 170A	**ZB150-125**
120 – 150	1NO-1NC	80 – 170A	**ZB150-150**
145 – 175	1NO-1NC	80 – 170A	**ZB150-175**
Frame F – G — Separate mount to contactor (DILM80-170)			
35 – 50	1NO-1NC	80 – 170A	**ZB150-50/KK**
50 – 70	1NO-1NC	80 – 170A	**ZB150-70/KK**
70 – 100	1NO-1NC	80 – 170A	**ZB150-100/KK**
95 – 125	1NO-1NC	80 – 170A	**ZB150-125/KK**
120 – 150	1NO-1NC	80 – 170A	**ZB150-150/KK**
145 – 175	1NO-1NC	80 – 170A	**ZB150-175/KK**

Overload Relays

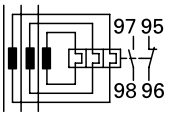
ZB bi-metallic Overload Relays

Setting range Overload release, Ir	Aux contact configuration	For use with contactor Ampere range	Item no.
Frame L — Direct mount or separate mount (DILM185A-300A)			
50 – 70	1NO-1NC	185 - 225A	**Z5-70/FF225A**
70 – 100	1NO-1NC	185 - 225A	**Z5-100/FF225A**
95 – 125	1NO-1NC	185 - 225A	**Z5-125/FF225A**
120 – 160	1NO-1NC	185 - 225A	**Z5-160/FF225A**
160 – 220	1NO-1NC	185 - 225A	**Z5-220/FF225A**
200 – 250	1NO-1NC	185 - 225A	**Z5-250/FF225A**
50 – 70	1NO-1NC	250A	**Z5-70/FF250**
70 – 100	1NO-1NC	250A	**Z5-100/FF250**
95 – 125	1NO-1NC	250A	**Z5-125/FF250**
120 – 160	1NO-1NC	250A	**Z5-160/FF250**
160 – 220	1NO-1NC	250A	**Z5-220/FF250**
200 – 250	1NO-1NC	250A	**Z5-250/FF250**
250 - 300	1NO-1NC	300A	**Z5-300/FF250**

Note: Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting. Trip Class: 10A. Suitable for protection of EEx e-motors.

Current transformer operated overload relay

ZB32-XEZ

Setting range Overload release, Ir	Contact Sequence	Aux contact configuration	For use with contactor Ampere range	Item no.
Frame L – N — Separate Mount				
42 - 63		1NO-1NC	185 - 650A	**ZW7-63**
60 - 90		1NO-1NC	185 - 650A	**ZW7-90**
85 - 125		1NO-1NC	185 - 650A	**ZW7-125**
110 - 160		1NO-1NC	185 - 650A	**ZW7-160**
160 – 240		1NO-1NC	185 - 650A	**ZW7-240**
190 – 290		1NO-1NC	185 - 650A	**ZW7-290**
270 – 400		1NO-1NC	185 - 650A	**ZW7-400**
360 – 540		1NO-1NC	185 - 650A	**ZW7-540**
420 – 630		1NO-1NC	185 - 650A	**ZW7-630**

DIN-Rail or panel-mount adapter, frame C – D

M22-DZ-B-GB14

Accessories

For use with...	Item no.
ZB32	**ZB32-XEZ**
ZB65	**ZB65-XEZ**

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

External reset button, IP65

For use with...	Item no.
ZW7... ZE, Z5 ZB12, ZB32 ZB65, ZB150	**M22-DZ-B-GB14**

ZEB12 electronic overload relay

- Phase-failure sensitivity
- Test/off pushbutton
- Reset button
- Manual/Auto reset selectable
- Protection with heavy starting duty (Class 5-30)

ZEB12 direct mounting

Ground fault detection	Setting range of overload releases I_r A	Auxiliary contact	For use with...	Item no.
Without	0.33 - 1.65	1NO - 1NC	DILM7 DILM9 DILM12 DILM15	**ZEB12-1,65**
Without	1 - 5	1NO - 1NC		**ZEB12-5**
Without	4 - 20	1NO - 1NC		**ZEB12-20**
With	0.33 - 1.65	1NO - 1NC		**ZEB12-1,65-GF**
With	1 - 5	1NO - 1NC		**ZEB12-5-GF**
With	4 - 20	1NO - 1NC		**ZEB12-20-GF**

Overload relays

ZEB32 electronic overload relay

- Phase-failure sensitivity
- Test/off pushbutton
- Reset button
- Manual/Auto reset selectable
- Protection with heavy starting duty (Class 5-30)

ZEB32 direct mounting

Ground fault detection	Setting range of overload releases I_r A	Auxiliary contact	For use with...	Item no.
Without	0.33 - 1.65	1NO - 1NC	DILM17 DILM25 DILM32 DILM38	**ZEB32-1,65**
Without	1 - 5	1NO - 1NC		**ZEB32-5**
Without	4 - 20	1NO - 1NC		**ZEB32-20**
Without	9 - 45	1NO - 1NC		**ZEB32-45**
With	0.33 - 1.65	1NO - 1NC		**ZEB32-1,65-GF**
With	1 - 5	1NO - 1NC		**ZEB32-5-GF**
With	4 - 20	1NO - 1NC		**ZEB32-20-GF**
With	9 - 45	1NO - 1NC		**ZEB32-45-GF**

ZEB32 separate mounting

Ground fault detection	Setting range of overload releases I_r A	Auxiliary contact	For use with...	Item no.
Without	0.33 - 1.65	1NO - 1NC	DILM17 DILM25 DILM32 DILM38	**ZEB32-1,65/KK**
Without	1 - 5	1NO - 1NC		**ZEB32-5/KK**
Without	4 - 20	1NO - 1NC		**ZEB32-20/KK**
Without	9 - 45	1NO - 1NC		**ZEB32-45/KK**
With	0.33 - 1.65	1NO - 1NC		**ZEB32-1,65-GF/KK**
With	1 - 5	1NO - 1NC		**ZEB32-5-GF/KK**
With	4 - 20	1NO - 1NC		**ZEB32-20-GF/KK**
With	9 - 45	1NO - 1NC		**ZEB32-45-GF/KK**

ZEB65 and ZEB150 electronic overload relay

- Phase-failure sensitivity
- Test/off pushbutton
- Reset button
- Manual/Auto reset selectable
- Protection with heavy starting duty (Class 5-30)

ZEB65 direct mounting

Ground fault detection	Setting range of overload releases I_r A	Auxiliary contact	For use with...	Item no.
Without	9 - 45	1NO - 1NC	DILM40 DILM50 DILM65 DILM72	**ZEB65-45**
With	9 - 45	1NO - 1NC		**ZEB65-45-GF**
Without	20 - 100	1NO - 1NC		**ZEB65-100**
With	20 - 100	1NO - 1NC		**ZEB65-100-GF**

ZEB150 direct mounting

Ground fault detection	Setting range of overload releases I_r A	Auxiliary contact	For use with...	Item no.
Without	20 - 100	1NO - 1NC	DILM80 DILM95 DILM115 DILM150	**ZEB150-100**
With	20 - 100	1NO - 1NC		**ZEB150-100-GF**

ZEB150 separate mounting

Ground fault detection	Setting range of overload releases I_r A	Auxiliary contact	For use with...	Item no.
Without	20 - 100	1NO - 1NC	DILM80 DILM95 DILM115 DILM150	**ZEB150-100/KK**
With	20 - 100	1NO - 1NC		**ZEB150-100-GF/KK**

Overload relays

ZEB accessories

Current sensors

Setting range of overload releases I_r A	For use with...	Item no.
60 - 300	ZEB32-5-GF/KK ZEB32-5/KK	**ZEB-XCT300**
120 - 600		**ZEB-XCT600**
200 - 1000		**ZEB-XCT1000**
300 - 1500		**ZEB-XCT1500**

EMT6

EMT6-DB

EMT6-DBK

CS-TE

Thermistor overload relays for machine protection

- 3 A rated operational current for AC-15, 240 V

Description	Rated control voltage Us, V	Item no.
Without automatic reset Mains & fault LED display	24 – 240 V 50/60 Hz, 24 – 240 V DC	**EMT6** ①
Without automatic reset Mains & fault LED display With 2 sensor circuits		**EMT62**
Without automatic reset Mains & fault LED display Trip with short-circuit in the sensor cable	24 – 240 V 50/60 Hz, 24 – 240 V DC	**EMT6-K**
Without automatic reset Mains & fault LED display	230 V 50/60 Hz	**EMT6(230V)** ①
Selector switch with/without automatic reset For manual or remote resetting Test button Mains & fault LED display	24 – 240 V 50/60 Hz, 24 – 240 V DC	**EMT6-DB** ①
Selector switch with/without automatic reset For manual or remote resetting Test button Mains & fault LED display With 2 sensor circuits		**EMT62-DB**
Selector switch with/without automatic reset For manual or remote resetting Test button Mains & fault LED display Trip with short-circuit in the sensor cable	24 – 240 V 50/60 Hz, 24 – 240 V DC	**EMT6-KDB**
Selector switch with/without automatic reset For manual or remote resetting Test button Mains & fault LED display	230 V 50/60 Hz	**EMT6-DB(230V)** ①
Multifunction device Selector switch with/without automatic reset Trip with short-circuit in the sensor cable Zero-voltage safe For manual or remote resetting Test button Short-circuit detection and retention can be deactivated Mains & fault LED display	24 – 240 V 50/60 Hz, 24 – 240 V DC	**EMT6-DBK**
Accessories - screw adapter		
For screw fixing	–	**CS-TE**

① Provide additional short-circuit protection in the sensor circuit with a current monitoring relay.

Overload relays

Motor insight motor protection relays

- Power, voltage & current monitoring, ground fault, flexible communications, motor, load & 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 & highly customisable parameter configuration
- Remote display allows for configuration without opening the panel, providing additional operator safety

C441 B A NOUI

Device type	Overload relay power source voltage	Overload relay current rating	Internal user interface
C441 Motor Insight overload relay	B = 240 Vac (170-254 Vac) C = 480 Vac (323-528 Vac) D = 600 Vac (487-660 Vac) Blank = 120 Vac control power (170-660 Vac)	A = 1-9A (1-50A) B = 5-90A (5-90A) 0109 = 120 Vac control power (0-660 Vac, 1-9A) 0590 = 120 Vac control power (0-660 Vac, 5-90A)	Blank = With user interface (line powered models) NOUI = Without user interface (120 Vac control models)

C441 K

Device type	Communication module		Accessory type
C441 Motor Insight overload relay	K = DeviceNet module 4in/2out 120 Vac L = DeviceNet module 4in/2out 24 Vdc M = Modbus RTU module N = Modbus RTU module 4in/2out 120 Vac P = Modbus RTU module 4in/2out 24 Vdc	Q = PROFIBUS module 4in/2out 120 Vac R = Modbus TCP/EtherNet/IP module 4in/2out 120Vac S = PROFIBUS module 4in/2out 24 Vdc T = Modbus TCP/EtherNet/IP module 4in/2out 24 Vdc	1 = Type 1 and 12 remote mounted display 3 = type 3R kit for remote display CMP1 = Conversion plate

Motor Insight relays

Voltage	Current range	Item no.
240V ac (170 – 264)	1 – 9 Amps	**C441BA**
240V ac (170 – 264)	5 – 90 Amps	**C441BB**
415V ac (323 – 528)	1 – 9 Amps	**C441CA**
415V ac (323 – 528)	5 – 90 Amps	**C441CB**
600V ac (489 – 660)	1 – 9 Amps	**C441DA**
600V ac (489 – 660)	5 – 90 Amps	**C441DB**
120V ac (170-660)	1 – 9 Amps	**C4410109NOUI**
120V ac (170-660	5 – 90 Amps	**C4410590NOUI**

Motor Insight CT multiplier and wire wrap schedule

Motor FLC	Number of loops	Number of conductors, through CT primary	CT multiplier, setting	External CT kit Catalogue no. ②	Item no.①
Current Range: 5 – 90A					
5 – 22.5	3	4	4	-	**C441_B and C4410590NOUI**
6.67 – 30	2	3	3	-	
10 – 45	1	2	2	-	
20 – 90	0	1	1	-	
Current Range: 1 – 9A					
1 – 5	1	2	2	-	**C441_A and C4410190NOUI**
2 – 9	0	1	1	-	
60 – 135	0	1	150 – (150:5)	C441CTKIT150	
120 – 270	0	1	300 – (300:5)	C441CTKIT300	
240 – 540	0	1	600 – (600:5)	C441CTKIT600	

① Underscore indicates operating voltage code required.

② Any manufacturer's CT's may be used

Operating Voltage Codes:

Code	Voltage
B	240V ac
C	415V ac
D	600V ac

Overload relays

Modbus RTU communication modules

Description	I/O	Item no.
Modbus communication module	None	**C441M**
Modbus communication module 4IN / 2OUT	120V ac	**C441N**
Modbus communication module 4IN / 2OUT	24Vdc	**C441P**

DeviceNet communication modules

Description	I/O	Item no.
DeviceNet communication module	120V ac	**C441K**
DeviceNet communication module	24V dc	**C441L**

C441S

PROFIBUS communication modules

Description	I/O	Item no.
PROFIBUS module 4in/2out	120V ac	**C441S**
PROFIBUS module 4in/2out	24V dc	**C441Q**

C441R

Ethernet communication modules

Description	I/O	Item no.
Modbus TCP/EtherNet/IP module 4in/2out	120V ac	**C441R**
Modbus TCP/EtherNet/IP module 4in/2out	24V dc	**C441T**

Communication cables
The remote display requires a communication cable to connect to the Motor Insight overload relay

Communication cable lengths

Length	Item no.
0.25 m	**D77E-QPIP25**
1 m	**D77E-QPIP100**
2 m	**D77E-QPIP200**
3 m	**D77E-QPIP300**

Current transformer kits

Description	Item no.
Three 150:5 CTs to be used with Motor Insight	**C441CTKIT150**
Three 300:5 CTs to be used with Motor Insight	**C441CTKIT300**
Three 600:5 CTs to be used with Motor Insight	**C441CTKIT600**

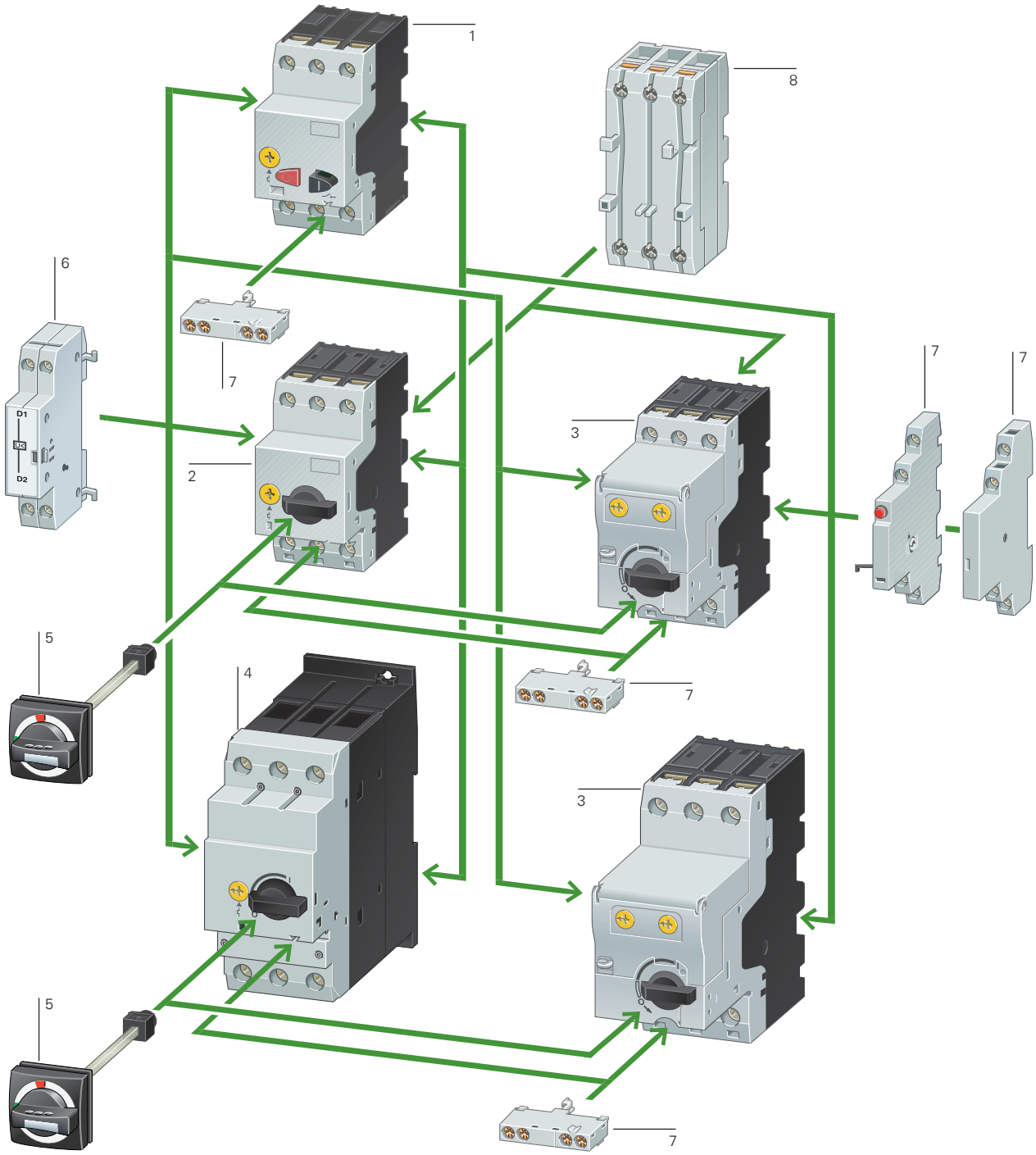
C4411

Motor insight — accessories

Description	Item no.
Remote display IP54	**C4411**
NEMA 3R Kit for remote display (remote display not included)	**C4413**
Conversion plate	**C441CMP1**

C4413

IEC Manual motor protectors



1. Motor-protective circuit-breaker PKZM01
2. Motor-protective circuit-breaker PKZM0
3. Motor-protective circuit-breaker with wide-range overload protection
4. Motor-protective circuit-breaker PKZM4
5. Standard auxiliary contacts
6. Shunt release
7. Current limiters
8. Door coupling handles IP65
9. Insulated enclosures
10. Mounting/wiring

IEC Manual motor protectors

- Class 10 overload protection
- Motor applications from 0.1A to 63A
- Built-in heater & magnetic trip elements to protect the motor
- Adjustment dial for setting motor FLC

Pushbutton manual motor protectors

Rated Uninterrupted Current — Iu = Ie (Amps)	FLC adjustment range/overload release — Ir (Amps)	Short circuit release — Irm (Amps)	Maximum Motor Ratings ① Maximum kW Rating AC-3 — P (kW) 3-Phase			Item no.
			220 - 240V	380 - 415V	440V	
Frame B (Type 1 & Type 2 Coordination)						
0.16	0.1 – 0.16	2.2	—	—	—	**PKZM01-0,16**
0.25	0.16 – 0.25	3.5	—	0.06	0.06	**PKZM01-0,25**
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	**PKZM01-0,4**
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	**PKZM01-0,63**
1	0.63 – 1	14	0.12	0.25	0.25	**PKZM01-1**
1.6	1 – 1.6	22	0.25	0.55	0.55	**PKZM01-1,6**
2.5	1.6 – 2.5	35	0.37	0.75	1.1	**PKZM01-2,5**
4	2.5 – 4	56	0.75	1.5	1.5	**PKZM01-4**
6.3	4 – 6.3	88	1.1	2.2	3	**PKZM01-6,3**
10	6.3 – 10	140	2.2	4	4	**PKZM01-10**
12	8 – 12	168	3	5.5	5.5	**PKZM01-12**
16	10 – 16	224	4	7.5	9	**PKZM01-16**
20	16 – 20	280	5.5	9	11	**PKZM01-20**
25	20 – 25	350	5.5	12.5	12.5	**PKZM01-25**

PKZM01-1

Rotary manual motor protectors

Rated Uninterrupted Current — Iu = Ie (Amps)	FLC adjustment range/overload release — Ir (Amps)	Short Circuit Release — Irm (Amps)	Maximum Motor Ratings ① Maximum kW Rating AC-3 — P (kW) 3-Phase					Item no. ②
			220 – 240V	380 – 415V	440V	500V	660 – 690V	
B (Type 1 & Type 2 Coordination)								
0.16	0.1 – 0.16	2.2	—	—	—	—	0.06	**PKZM0-0,16**
0.25	0.16 – 0.25	3.5	—	0.06	0.06	0.06	0.12	**PKZM0-0,25**
0.4	0.25 – 0.4	5.6	0.06	0.09	0.12	0.12	0.18	**PKZM0-0,4**
0.63	0.4 – 0.63	8.8	0.09	0.12	0.18	0.25	0.25	**PKZM0-0,63**
1	0.63 – 1	14	0.12	0.25	0.25	0.37	0.55	**PKZM0-1**
1.6	1 – 1.6	22	0.25	0.55	0.55	0.75	1.1	**PKZM0-1,6**
2.5	1.6 – 2.5	35	0.37	0.75	1.1	1.1	1.5	**PKZM0-2,5**
4	2.5 – 4	56	0.75	1.5	1.5	2.2	3	**PKZM0-4**
6.3	4 – 6.3	88	1.1	2.2	3	3	4	**PKZM0-6,3**
10	6.3 – 10	140	2.2	4	4	4	7.5	**PKZM0-10**
12	8 – 12	168	3	5.5	5.5	5.5	11	**PKZM0-12**
16	10 – 16	224	4	7.5	9	9	12.5	**PKZM0-16**
20	16 – 20	280	5.5	9	11	12.5	15	**PKZM0-20**
25	20 – 25	350	5.5	12.5	12.5	15	22	**PKZM0-25**
32	25 – 32	448	7.5	15	15	22	30	**PKZM0-32**
Frame D (Type 1 & Type 2 Coordination)								
16	10 – 16	224	4	7.5	9	9	12.5	**PKZM4-16**
25	16 – 25	350	5.5	12.5	12.5	15	22	**PKZM4-25**
32	25 – 32	448	7.5	15	17.5	22	22	**PKZM4-32**
40	32 – 40	560	11	20	22	24	30	**PKZM4-40**
50	40 – 50	700	14	25	30	30	45	**PKZM4-50**
58	50 – 58	812	17	30	37	37	55	**PKZM4-58**
65	55 – 65	882	18.5	34	37	45	55	**PKZM4-63**

PKZM0-1

PKZM4-16

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

Note: Service Factor (SF) — Setting Ir of current scale in dependence of load factor:
SF = 1.15 -> Ir = 1 x In mot
SF = 1 -> Ir = 0.9 x In mot

② Eaton PKZM0 & PKZM4 handles are not padlockable. Order part no. AK-PKZ0 handle if a lockable handle is required.

AK-PKZ0

Lockable rotary handle for MMPs

For use with	Item no.
PKZM0 & PKZM4	**AK-PKZ0**

Electronic Motor-protective circuit-breaker PKE

Switch & protect motors up to 65 A with electronic wide-range overload protection. Modular design. Highest level of flexibility. Highest level of performance.

The selection of a suitable motor-protective circuit-breaker is decisive for the functional safety & service life of a motor. Motor-protective circuit-breakers PKE with electronic overload protection offer an interesting alternative to the bimetal solution here & complement the intelligent PKZ series from Eaton. The motor-protective circuit-breaker PKE provides the highest level of flexibility featuring a compact & modular design with plug-in control unit for motor currents up to 65 A.

The large current setting ranges decisively reduce the number of variants & minimise the engineering work & costs accordingly.

PKE features & benefits:

- Autonomous supply via current transformer
- Large electronically controlled setting range
- Exchangeable control units
- Tripping classes greater than CLASS 10
- Precise & extremely long-time stable tripping characteristic curves
- Minimum heat losses
- Protection suited to individual starting conditions
- Motor starter design with standard components
- Common range of accessories from system PKZ0
- Parameter data read out options
- Very service friendly
- Reduction of engineering time & costs
- Advanced control unit includes a COM interface for SmartWire

Motor rating	Rated motor current AC-3			Overload release setting range	Base unit	Control unit Standard	Control unit Advanced (with COM interface)
	240V	415V	660 V 690 V				
kW	A	A	A				
	Motor-protective circuit-breaker, Coordination type "1" & "2"						
0.06	0.37	-	-	0.3 ... 1.2 A	**PKE12**	**PKE-XTU-1,2**	**PKE-XTUA-1,2**
0.09	0.54	0.31	-				
0.12	0.72	0.41	-				
0.18	1.04	0.6	0.35				
0.25	-	0.8	0.5				
0.37	-	1.1	0.7				
0.55			0.9				
0.75			1.1				
0.18	1.04	-	-	1 ... 4 A	**PKE12**	**PKE-XTU-4**	**PKE-XTUA-4**
0.25	1.4	-	-				
0.37	2	1.1	-				
0.55	2.7	1.5	-				
0.75	3.2	1.9	1.1				
1.1	-	2.6	1.5				
1.5	-	3.6	2.1				
2.2			2.9				
3			3.8				
0.75	3.2	-	-	3 ... 12 A	**PKE12 PKE32**	**PKE-XTU-12**	**PKE-XTUA-12**
1.1	4.6	-	-				
1.5	6.3	3.6	-				
2.2	8.7	5	-				
3	11.5	6.6	3.8				
4	-	8.5	4.9				
5.5	-	11.3	6.5				
7.5			8.8				
2.2	8.7	-	-	8 ... 32 A	**PKE32**	**PKE-XTU-32**	**PKE-XTUA-32**
3	11.5	-	-				
4	14.8	8.5	-				
5.5	19.6	11.3	-				
7.5	26.4	15.2	8.8				
11	-	21.7	12.6				
15	-	29.3	17				
18.5			20.9				

PKE 12, 12A (45 mm)

0.3A 12A
0.09 - 5.5 kW (400 V)

PKE 32, 32A (45 mm)

3A 32A
1.5 - 15 kWa (400 V)

PKE 65, 65A (55 mm)

8A 65A
4 - 34 kW (400 V)

5 plug-in control units up to 65 A in 2 versions.

Standard

Extended

0.3A 1.2A
1A 4A
3A 12A
8A 32A
16A 65A

Electronic motor-protective circuit-breaker PKE

PKE-XTUA-32

PKE-XTUWA-32

PKE-SWD-SP

Motor rating	Rated motor current AC-3			Overload release setting range	Base unit	Control unit Standard	Control unit Advanced (with COM interface)
	240V	415V	660 V 690 V				
kW	A	A	A				
	Motor-protective circuit-breaker, Coordination type "1" & "2"						
22	-	-	23.8	8 ... 32 A	**PKE32**	**PKE-XTU-32**	**PKE-XTUA-32**
30	-	-	32				
5.5	19.6	-	-	16...65 A	**PKE65**	**PKE-XTU-65**	**PKE-XTUA-65**
7.5	26.4	-	-				
11	38	21.7	-				
15	51	29.3	17				
18.5	63	36	20.9				
22	-	41	23.8				
30	-	55	32				
37	-	-	39				
45	-	-	47				
55	-	-	58				
2.2	8.7	-	-	8...32 A	**PKE65**	**PKE-XTUW-32**	**PKE-XTUWA-32**
3	11.5	-	-				
4	14.8	8.5	-				
5.5	19.6	11.3	-				
7.5	26.4	15.2	8.8				
11	-	21.7	12.6				
15	-	29.3	17				
18.5	-	-	20.9				
22	-	-	23.8				
30	-	-	58				

Smartwire-DT module for connecting PKE-XTUA trip block to Smartwire-DT

Description	Item no.
Messages Contactor state PKS Motor current and thermal motor image in % Trip indicators Set value overload releases Remote disconnection of motor-protective curicuit breakers	**PKE-SWD-SP**

NHI21-PKZ0

IEC manual motor protectors accessories

Auxiliary contacts

Contact configuration	Item no.
Side-Mount	
1NO-1NC	**NHI11-PKZ0**
2NO-1NC	**NHI21-PKZ0**
1NO-2NC	**NHI12-PKZ0**
Front-Mount	
1NO-1NC	**NHI-E-11-PKZ0**
1NO	**NHI-E-10-PKZ0**
Trip indicating aux. contact	**AGM2-10-PKZ0** **AGM2-01-PKZ0**

VHI20-PKZ0

Early-make auxiliary contacts

Contact configuration	For use with..	Item no.
2N/O	PKZM0 PKZM0-T PKM0 PKZM4	**VHI20-PKZ0**
2N/O	PKZM01	**VHI20-PKZ01**

Electronic motor-protective circuit-breaker PKE

IP65 rotary handle mechanism - PKZM0 ①②③

Description	Item no.
Complete Kits — Includes Handle, Shaft & Required Hardware	
Rotary Handle Mechanism IP65 Black — For use on main switches to IEC / EN 60204.	**PKZ0-XH**
Rotary Handle Mechanism IP65 Red / Yellow — For use on main switch with Emergency-Stop function to IEC / EN 60204.	**PKZ0-XRH**
Rotary Handle Mechanism IP65 Black — For use on main switches to IEC / EN 60204 where PKZ0 is mounted 90° from vertical.	**PKZ0-XH-MCC**
Rotary Handle Mechanism IP65 Red / Yellow — For use on main switch with Emergency-Stop function to IEC / EN 60204 where PKZ0 is mounted 90° from vertical.	**PKZ0-XRH-MCC**

① With ON/OFF switch position & "+" (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 VHI20-PKZ0 early-make front-mount auxiliary contact.

PKZ0-XH

IP65 rotary handle mechanism - PKE

Description		Item no.
For use as main switch to IEC/EN 60204	black	**PKE-XH**
For use as main switch with Emergency-Stop function to IEC/EN 60204	red-yellow	**PKE-XRH**
For use as a main switch to EN 60204 in MCC power distribution systems and with PKE installed when rotated by 90°	black	**PKE-XH-MCC**
For use as a main switch to EN 60204 in MCC power distribution systems and with PKE installed when rotated by 90°	red-yellow	**PKE-XRH-MCC**

PKZ0-XRH-MCC

Shunt release

Voltage	Item no.
24 vac	**A-PKZ0(24V50HZ)**
110 vac	**A-PKZ0(110V50HZ)**
240 vac	**A-PKZ0(240V50HZ)**
415 vac	**A-PKZ0(415V50HZ)**
24 vdc	**A-PKZ0(24VDC)**

A-PKZ0(110V50HZ)

Undervoltage release

Voltage	Item no.
24 vac	**U-PKZ0(24V50HZ)**
110 vac	**U-PKZ0(110V50HZ)**
240 vac	**U-PKZ0(240V50HZ)**
415 vac	**U-PKZ0(415V50HZ)**
24 vdc	**U-PKZ0(24VDC)**

U-PKZ0(24VDC)

Sealing facility

Description	Item no.
To prevent tampering with the overload release & the test function (For use with PKZMO & PKZM4)	**PL-PKZ0**

PL-PKZ0

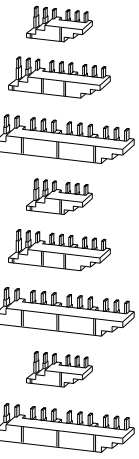
Current limiters

Description	Item no.
For increasing switching capacity of motor-protective circuit-breakers without auto-protection	**CL-PKZ0**

CL-PKZ0

IEC Manual motor protectors accessories

Three-phase commoning links ①



For Use with...	Qty. MMP	Length of link (mm)	Unit width (mm)	Item no.
Frame B				
MMP With No Side-Mounted Auxiliaries or Voltage Releases	2	90	45	**B3.0/2-PKZ0**
	3	135	45	**B3.0/3-PKZ0**
	4	180	45	**B3.0/4-PKZ0**
	5	225	45	**B3.0/5-PKZ0**
For motor-protective circuit-breaker each with an auxiliary contact or trip-indicating auxiliary contact fitted on the right	2	99	45 + 9	**B3.1/2-PKZ0**
	3	153	45 + 9	**B3.1/3-PKZ0**
	4	207	45 + 9	**B3.1/4-PKZ0**
	5	261	45 + 9	**B3.1/5-PKZ0**
For PKZM0-... with one auxiliary contact each & a trip-indicating auxiliary contact fitted on right or a voltage release fitted on left	2	108	45 + 18	**B3.2/2-PKZ0**
	4	234	45 + 18	**B3.2/4-PKZ0**
Shroud for unused terminals.				
Protection against direct contact. For closing off non-used connections on the three phase commoning link. B3...-PKZ0	-	-	-	**H-B3-PKZ0**
Frame D				
MMP With No Side-Mounted Auxiliaries or Voltage Releases	2	110	55	**B3.0/2-PKZ4**
	3	165	55	**B3.0/3-PKZ4**
	4	220	55	**B3.0/4-PKZ4**
For motor-protective circuit-breakers/starters each with an auxiliary contact or trip-indicating auxiliary contact fitted on the right & with a DIL1(A)M contactor	2	-	-	**B3.1/2-PKZ4**
	3	-	-	**B3.1/3-PKZ4**
	4	-	-	**B3.1/4-PKZ4**
For PKZM4 with one auxiliary contact each or trip-indicating auxiliary contact fitted on right or a voltage release fitted on left	2	-	-	**B3.2/2-PKZ4**
	4	-	-	**B3.2/4-PKZ4**
Shroud for unused terminals. Protection against direct contact. To cover unused terminals on three-phase commoning link				
-	-	-	-	**H-B3-PKZ4**

① Protected against accidental contact. B-Frame short circuit proof Ue = 690V, Iu = 63A; D-Frame short circuit proof Ue = 690V, Iu = 128A. Frame B links can be combined by rotating mounting. Frame D links cannot be combined. + MMP w/1 aux. (2, 3, 4, 5 module) + trip indicating etc. for frames B & D.

Incoming terminal for three-phase commoning link ②

For use with...	Item no.
B-Frame PKZM0/PKE	**BK25/3-PKZ0**
PKZM4	**BK50/3-PKZ4-E**

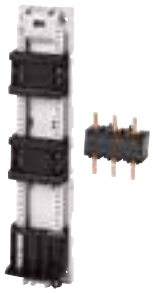
② For three-phase commoning link, protected against accidental contact, Ue = 690V, Iu = 63A; for conductor cross-sections: 2.5 – 25 mm2 stranded; 2.5 – 16 mm2 flexible with ferrules, AWG 14-6.

IEC Manual motor protectors accessories

Combination connection kits for connection of rotary MMP with IEC contactor

For use with...	Description	Item no.
Non-Reversing Starters		
PKE/PKZMO + DILM7-15 DS7 (4-12A)	Comprised of: Mechanical connection element for PKZM0 & contactor Main current wiring between PKZM0 & contactor in tool-less plug connection Cable guidance Use contactor auxiliary switch DILA-XHIT... 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.	**PKZM0-XDM12**
PKZMO + DILM17-32	Comprised of: DIN-Rail adapter plate Main current wiring between PKZM0 & contactor	**PKZM0-XDM32**
PKZM4 + DILM40-65		**PKZM4-XDM65**
Reversing starters		
PKZM0, PKE + DILM7-01 DILM9-01 DILM12-01	Consists of: Mechanical connection element for PKZM0 and contactor Reversing starters main supply wiring with tool-less plug connection	**PKZM0-XRM12**
PKZM0, PKE + DILM17 DILM25 DILM32	Consists of: Top-hat rail adapter plates Reversing starters supply wiring	**PKZM0-XRM32**
Wiring kit		
PKZM0, PKE + DILM17 DILM25 DILM32 DS7-34…SX016… DS7-34…SX024… SX032…	Main supply wiring between PKZM0 and contactor Use only in combination with busbar adapter or mounting rail adapter plate	**PKZM0-XM32DE**
PKZM4 + DILM40 DILM50 DILM65	Main current supply between PKZM4 and contactor	**PKZM4-XM65DE**

PKZM0-XDM12


PKZM4-XDM65

PKZM0-XM32DE

Insulated enclosures for surface mounting

Degree of protection	For use with...	Description	Item no.
PKZM01 Pushbutton Manual Motor Protectors			
IP65	PKZM01	With operating membrane	**CI-PKZ01-G**
IP65		With Emergency-Stop (E-Stop) pushbutton actuator, Red-Yellow	**CI-PKZ01-PVT**
D-Frame (10 – 65A) PKZM0/PKZM4 Rotary Manual Motor Protectors ①②			
IP65	PKZM4	With black/grey rotary handle	**CI-K4-PKZ4-G**
IP65	PKZM0	With black/grey rotary handle	**CI-K2-PKZ0-G**
		With red/yellow rotary handle for use as Emergency-Stop switches to IEC/ EN 60204	**CI-K2-PKZ0-GR**
IP65	PKZM4	With red/yellow rotary handle for use as Emergency-Stop switches to IEC / EN 60204	**CI-K4-PKZ4-GR**

① Integrated terminal for PE(N) connection.
② % Metric knockouts: Top ÷ bottom: M25/M32. In backplate: M25/M32. Control cable entry: M20.

CI-PKZ01-PVT

CI-K2-PKZ0-G

MMP enclosure accessories (padlock attachment)

For use with...	Description	Item no.
CI-K2-PKZ0-GR & CI-K2-PKZ0-G	Padlocking feature. Up to 3 padlocks with 3 – 6 mm hasp thickness. For use as main switch to IEC/EN 60204.	**SVB-PKZ0-CI** ①
CI-K4-PKZ4-GR & CI-K4-PKZ4-G		**SVB-PKZ4-CI** ①

More enclosures are available. Contact your local sales office for more information.
① Lockable in the 0-position of the XTPR manual motor protector.

SVB-PKZ0-CI

BBA0-25

BBA4L-63

BBA0R-32

BBA-XSM

IEC Motor control busbar adapters

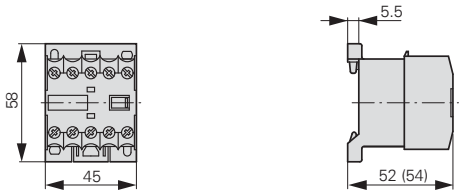
Busbar adapter, 3 pole
Rated operational voltage Ue = 690 V. For mounting on CU flat busbars with 60 mm interval between busbar centres, suitable for 5 mm & 10 mm busbar thickness.

Rated operational current, Ie, A	Width (mm)	Length (mm)	For use with...	Item no.
For direct-on-line starters				
25	45	200	PKE/ PKZM0 + DILM7 PKE/ PKZM0 + DILM9 PKE/ PKZM0 + DILM12 PKE/ PKZM0 + DILM15	**BBA0-25**
32	45	200	PKE/ PKZM0 + DILM17 PKE/ PKZM0 + DILM25 PKE/ PKZM0 + DILM32	**BBA0-32**
63	55	260	PKZM4 + DILM17 PKZM4 + DILM25 PKZM4 + DILM32 PKZM4 + DILM40 PKZM4 + DILM50 PKZM4 + DILM65	**BBA4L-63**
For reversing starters				
25	90	200	PKE/ PKZM0 + 2 x DILM7-01 PKE/ PKZM0 + 2 x DILM9-01 PKE/ PKZM0 + 2 x DILM12-01	**BBA0R-25**
32	90	200	PKE/ PKZM0 + 2 x DILM17-01 PKE/ PKZM0 + 2 x DILM25-01 PKE/ PKZM0 + 2 x DILM32-01	**BBA0R-32**
Empty module, without electrical contacts				
–	45	200	–	**BBA0/2TS-L**
–	54	200	–	**BBA4/2TS-L**
Side mounted module, can be plugged into both sides				
–	9	200	–	**BBA-XSM**

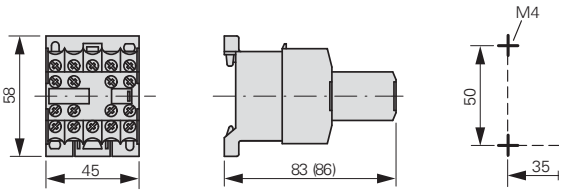
Dimensions

Mini contactor relays

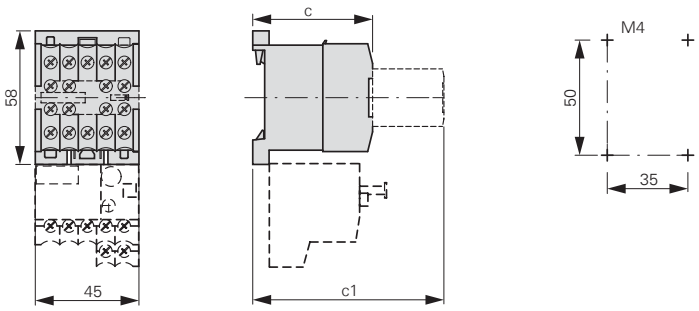
DILER-...(-C)
DILER-...-G(-C)



DILER-...(-C) + ...DILE(-C)
DILER-...-G(-C) + ...DILE(-C)

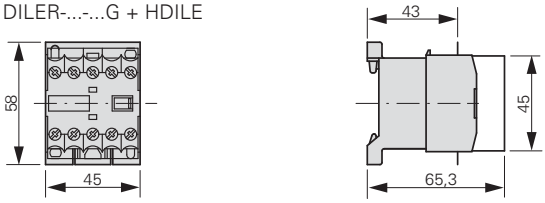


DILEEM-..., DILEM-...(-C), DILEM-12-...
DILEEM-...-G, DILEM-...-G(-C), DILEM-12-...-G



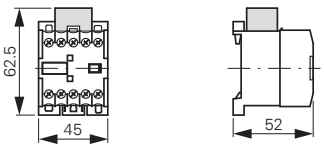
Part no.	c	c1
DILE(E)M-...(-G)	52	83
DILE(E)M-...-G(-C)	54	86

DILER-... + HDILE
DILER-...-...G + HDILE

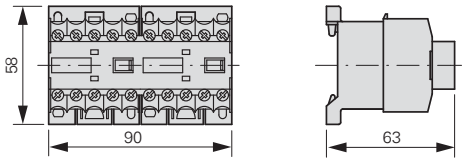


Suppressor circuit

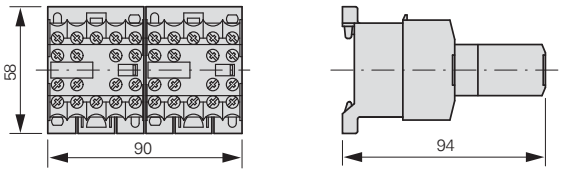
RCDILE...
VGDILE



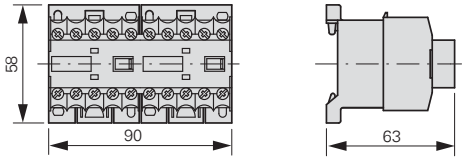
2DILE-... + MVDILE
2DILE-...-G + MVDILE



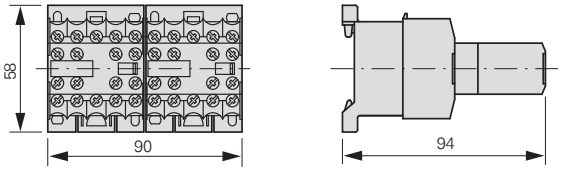
2DILE-... + MVDILE + ...DILE
2DILE-...-G + MVDILE + ...DILE



2DILE-... + MVDILE
2DILE-...-G + MVDILE

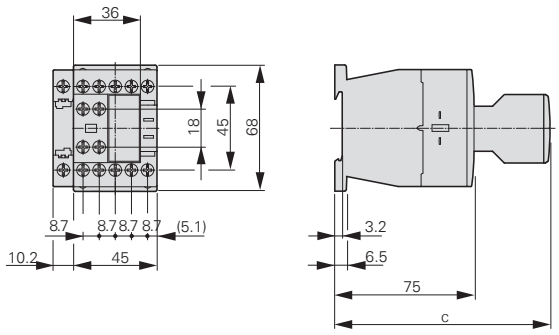


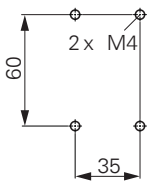
2DILE-... + MVDILE + ...DILE
2DILE-...-G + MVDILE + ...DILE



Contactor with auxilary contact module

DILM7...DILM15
DILA...



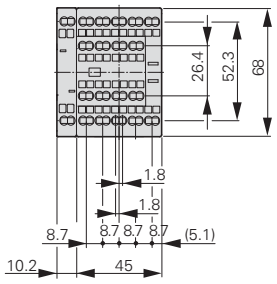


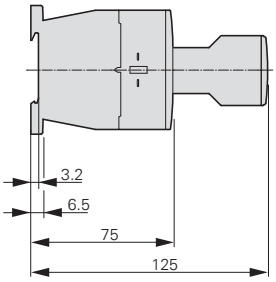
Part no.	c
DILM32-XHI	117
DILA-XHI	117
DILA-XHI...T	125

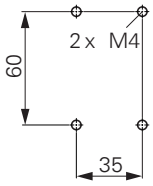
Dimensions

Contactors

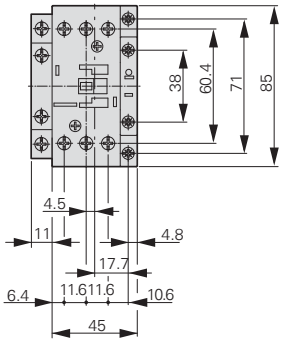
DILMC7...DILMC15
DILAC...
DILA-XHIC...

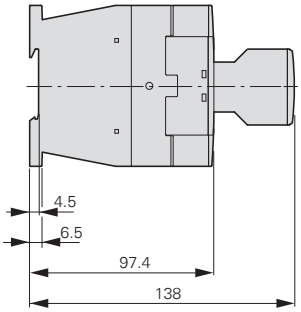


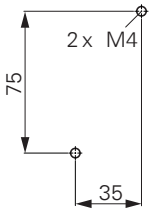




DILM17...DILM38
DILMC17...DILMC32
DILMF8...DILMF32

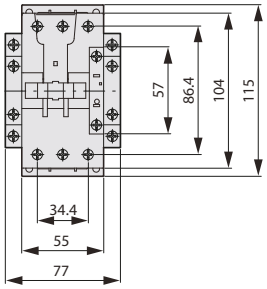


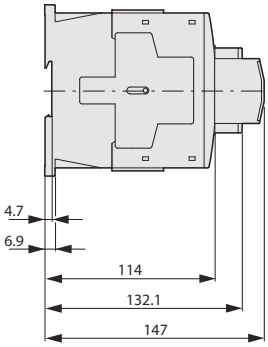


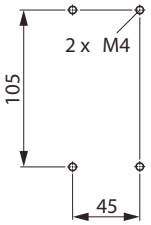


Clearance at side to grounded parts: 6 mm

DILM40...DILM72

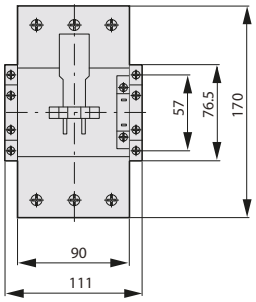


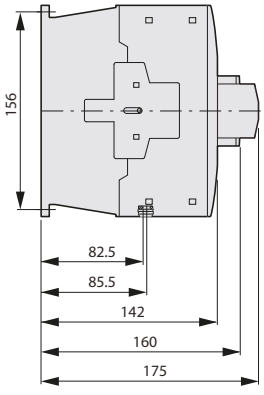


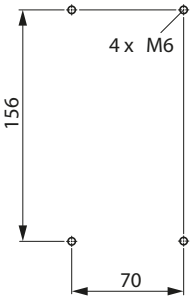


Clearance at side to grounded parts: 6 mm

DILM80...DILM170

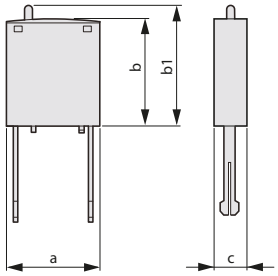






Clearance at side to grounded parts: 10 mm

Suppressor circuit



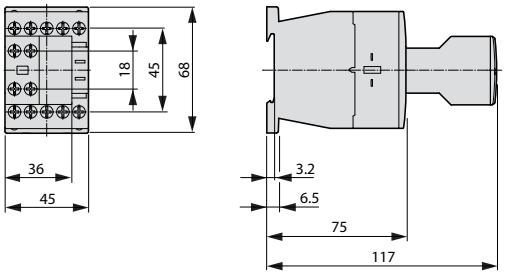
Part no.	a	b
DILM12-XSP...	25	28
DILM32-XSP...	25	28
DILM95-XSP...	25	28

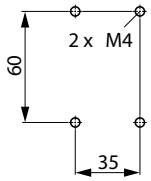
Part no.	b1	c
DILM12-XSP...	≈32	9
DILM32-XSP...	≈32	9
DILM95-XSP...	≈32	9

Dimensions

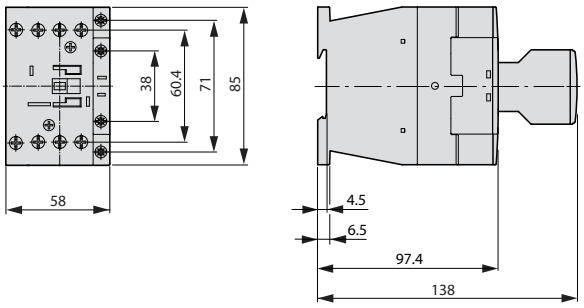
Contactor with auxilary contact module

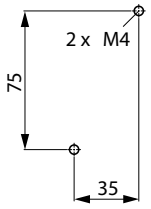
DILMP20





DILMP32 DILMP45

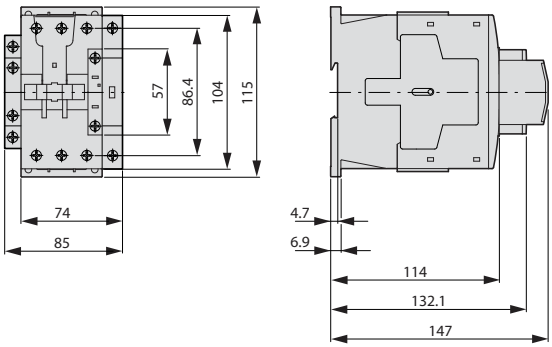


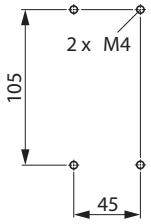


Distance at side to grounded parts: 6 mm

Contactors

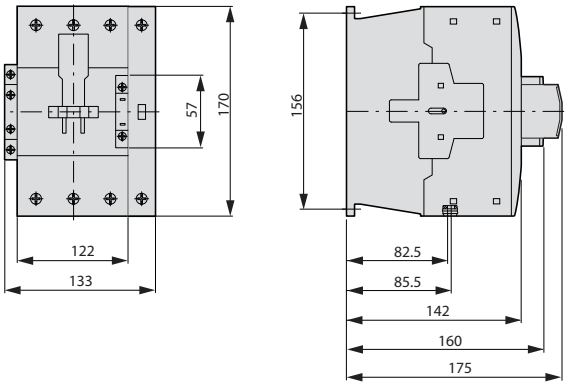
DILMP63 DILMP80

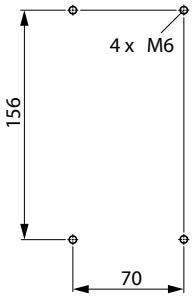




Distance at side to grounded parts: 6 mm

DILMP125 DILMP160 DILMP200

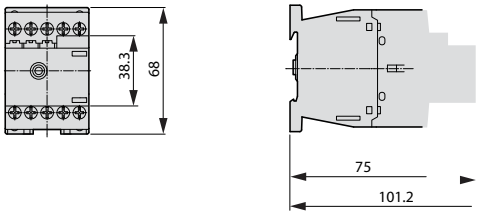




Clearance at side to earthed parts: 10 mm

Motor suppressor module

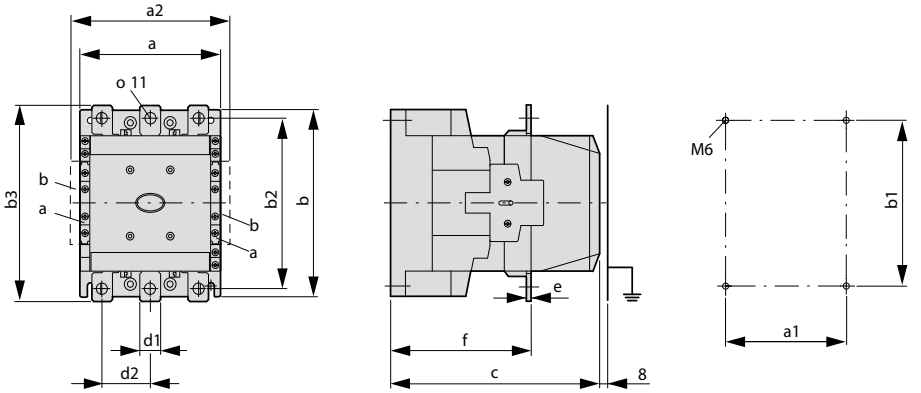
DILM12-XMSM



Dimensions

Complete units

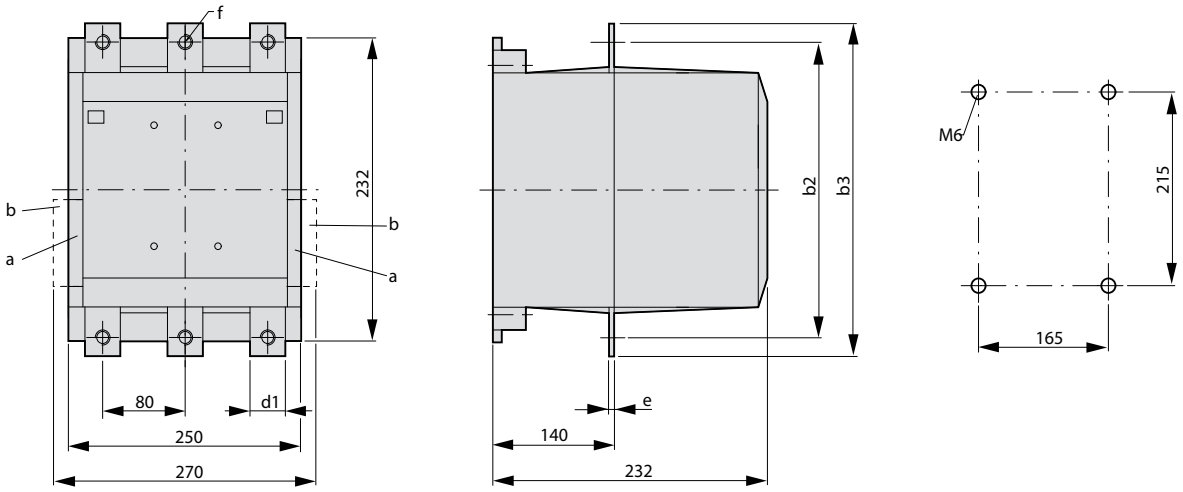
DILM185A...DILM500
DILM250-S...DILM570-S



a DILM1000-XHI...-SI
b DILM1000-XHI11-SA

Part no.	a	a1	a2	b	b1	b2	b3	d1	d2	e	c	f
DILM185A	140	120	160	180	160	165	190	20	41	5	158	83
DILM225A	140	120	160	180	160	165	190	20	41	5	158	83
DILM250	140	120	160	180	160	164	189	25	48	5	208	140
DILM300A	140	120	160	180	160	164	189	25	48	5	208	140
DILM400	160	130	180	200	180	184	209	25	48	6	216	140
DILM500	160	130	180	200	180	189	219	38	57	6	216	140
DILM570	160	130	180	200	180	189	219	38	57	6	216	140

DILM580...DILM1000



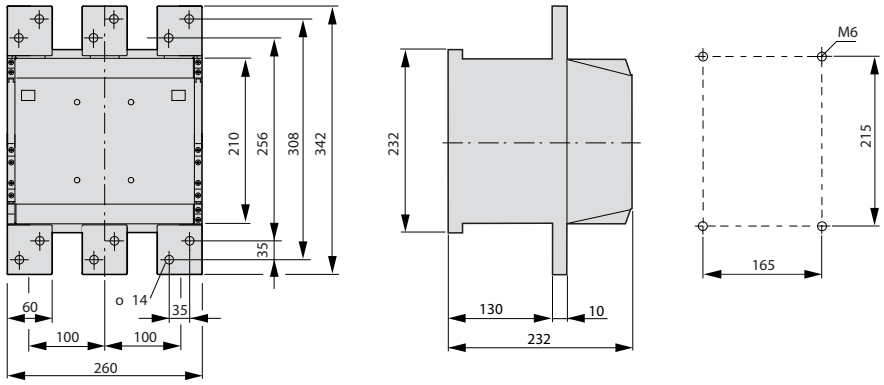
a DILM820-XHI...-SI
b DILM820-XHI11-SA

Part no.	b2	b3	d1	e	f
DILM580	256	296	45	6	13.5
DILM650	256	296	45	6	13.5
DILM750	256	296	45	6	13.5
DILM820	256	296	45	6	13.5
DILM1000	256	296	45	10	13.5

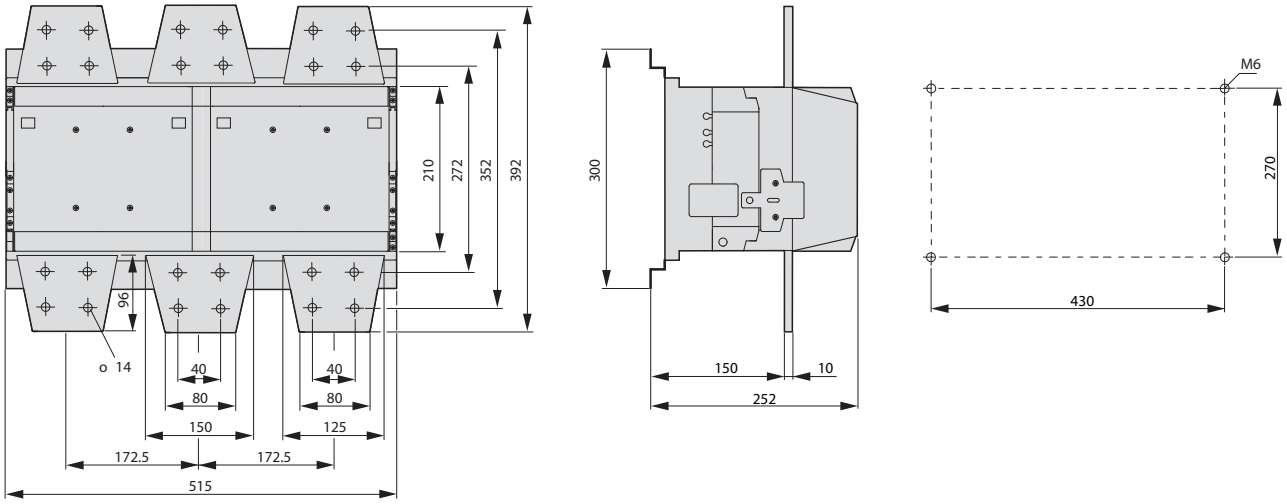
Dimensions

AC-1 contactors greater than 1000A

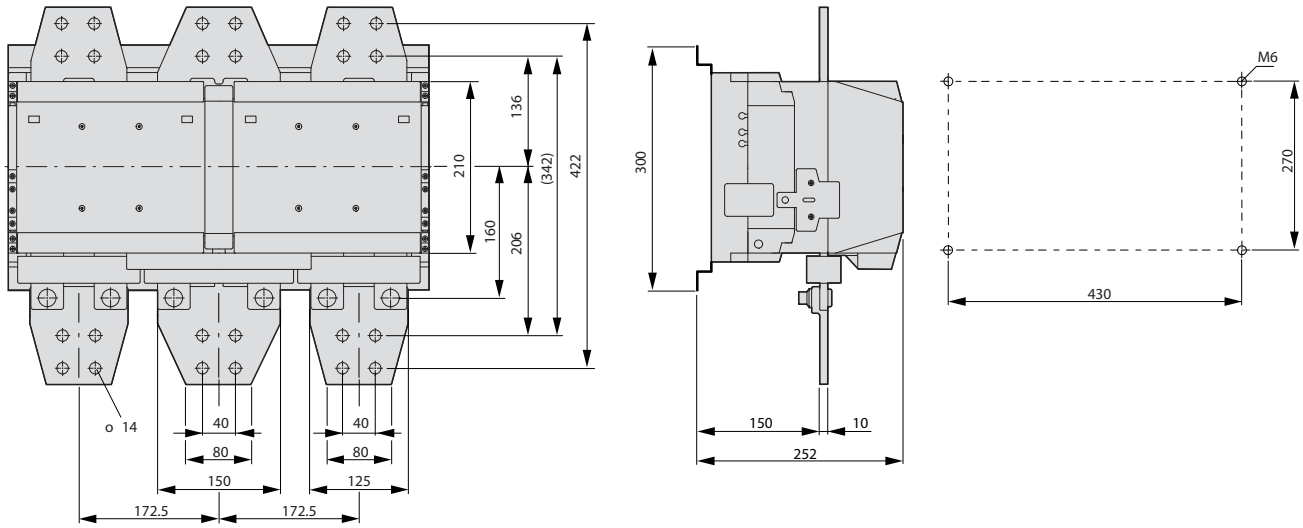
DILH1400



DILM1600
DILH2000
DILH2200



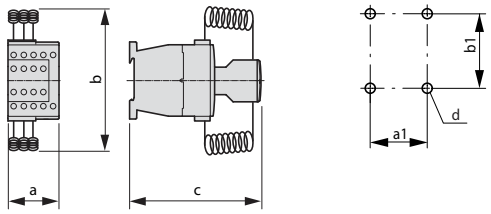
DILH2600



Dimensions

Contactor for capacitors

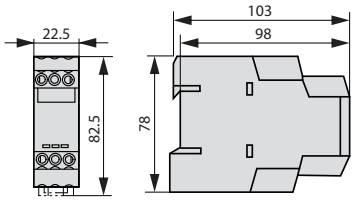
DILK…



Part no.	a	b	c	a1	b1	d
DILK12	45	135	138	35	75	2 x M4
DILK20	45	135	138	35	75	2 x M4
DILK25	45	135	138	35	75	2 x M4
DILK33	55	190	147	45	105	2 x M4
DILK50	55	190	147	45	105	2 x M4

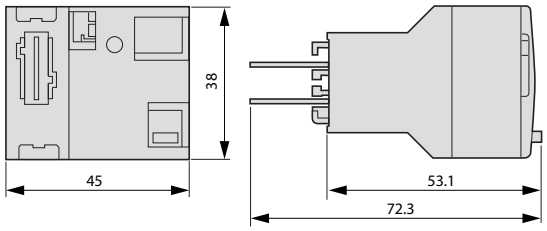
Contactor monitoring decives

CMD(...)



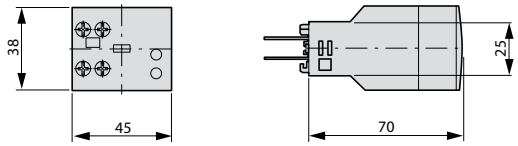
SWD contactor modules

DIL-SWD-32-...



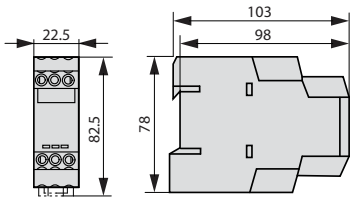
Electronic timer modules

DILM…XTE



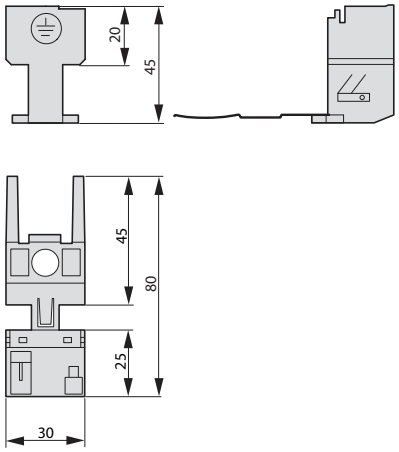
Amplifier module

ETS4-VS3

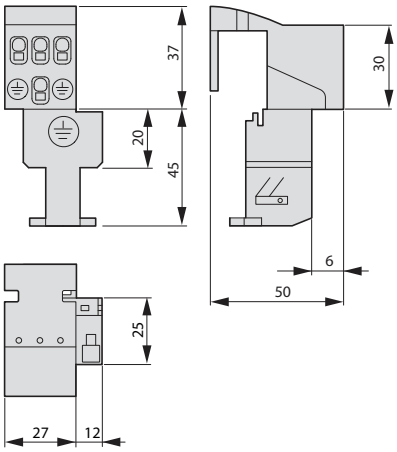


Wiring set for motor feeder plug

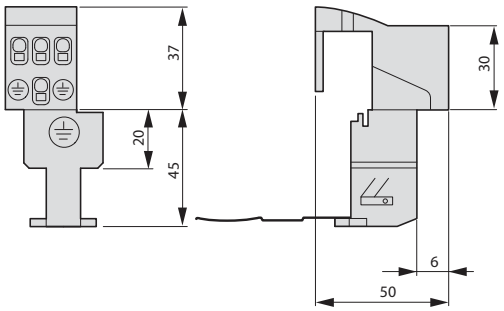
DILM12-XMCE

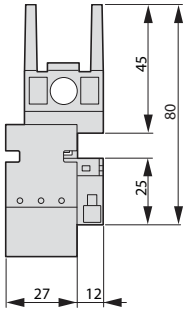


DILM12-XMCP/T



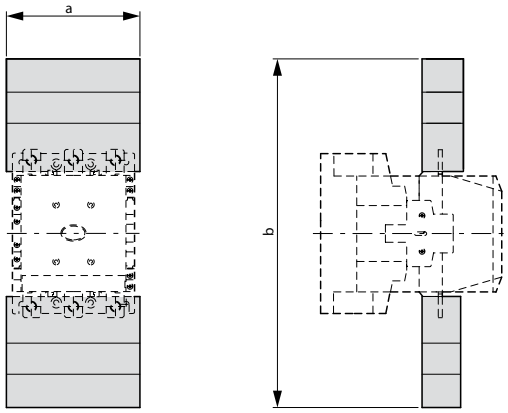
DILM12-XMCP/E

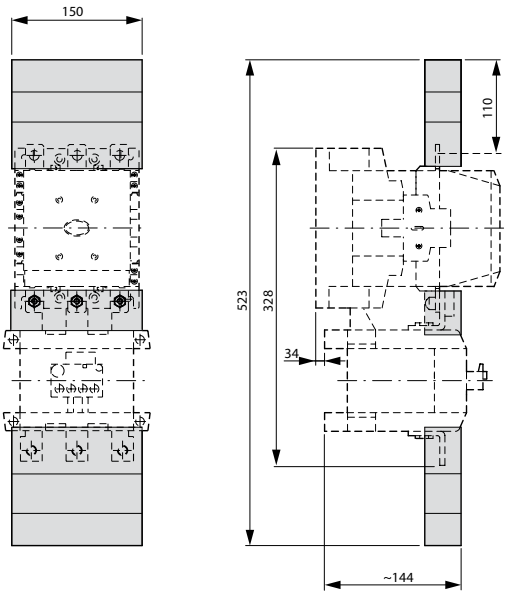




Dimensions

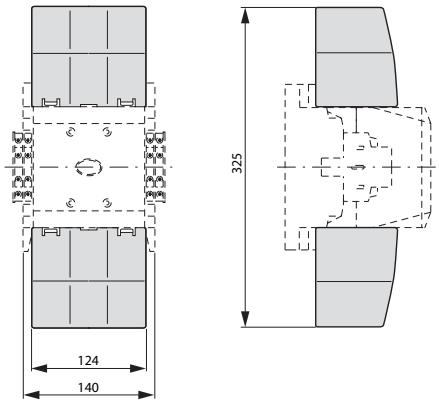
Contactors with terminal shrouds



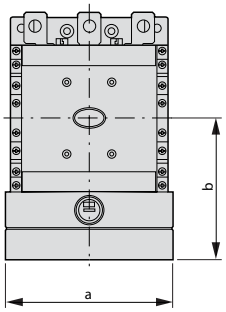


for part no.	a	b
DILM250, DILM300A	150	384
DILM400	150	404
DILM500	174	426
DILM580...1000	236	506

DILM185A...DILM225A + DILM225A-XHB



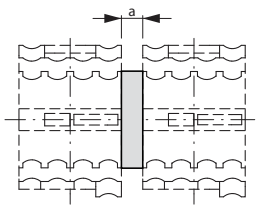
Contactors with star-point bridge and terminal shrouds



for part no.	a	b
DILM185...250	150	127
DILM300...400	150	137
DILM500	176	146

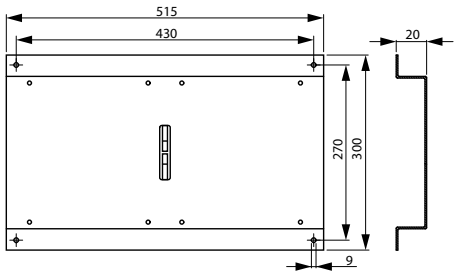
Mechanical interlock

DILM500-XMV



for part no.	a
DILM185...500	15

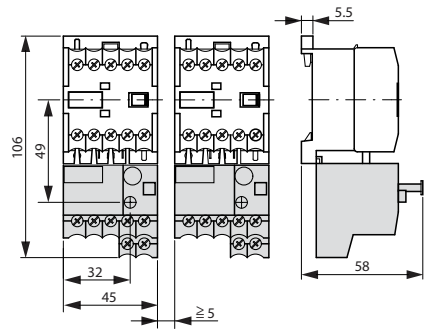
DILM820-XMV



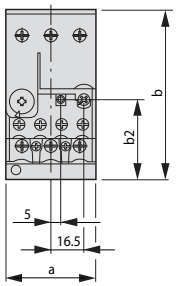
Dimensions

Overload relays

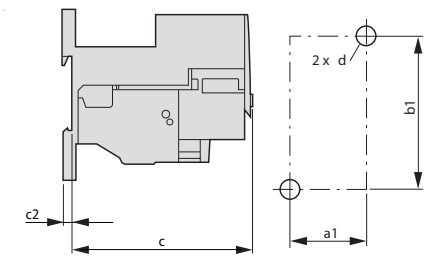
ZE-…



ZB32-XEZ

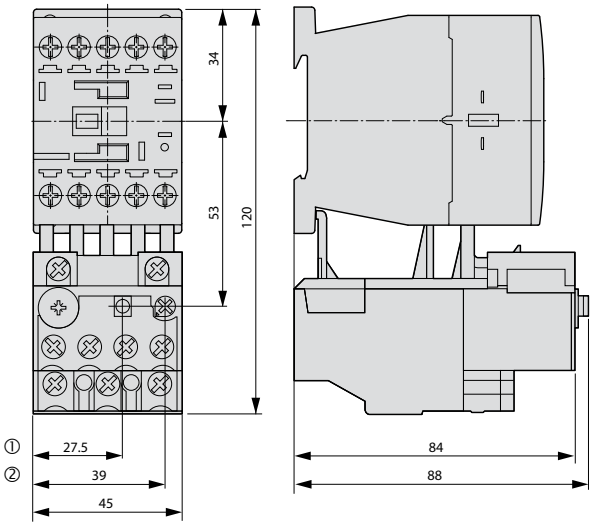


ZB65-XEZ



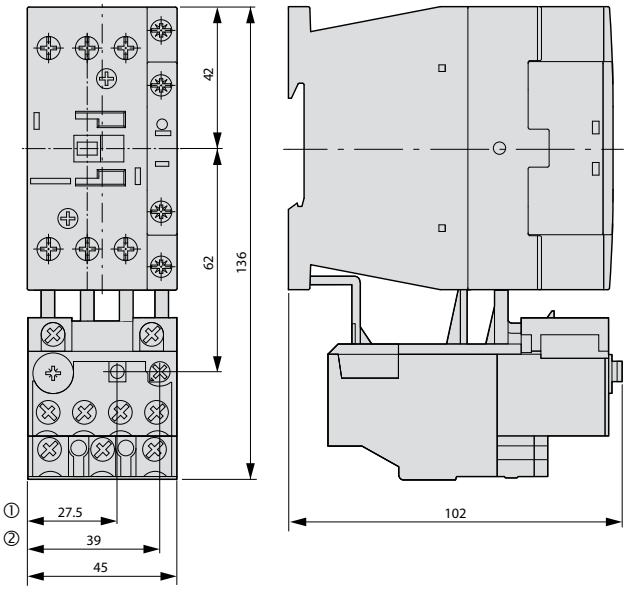
	ZB32	ZB65
a	45	60
b	85	86
c	90.5	112
c2	3.8	4.7
a1	35	50
b1	75	75
b2	40.5	47
d	M4	M5

ZB12

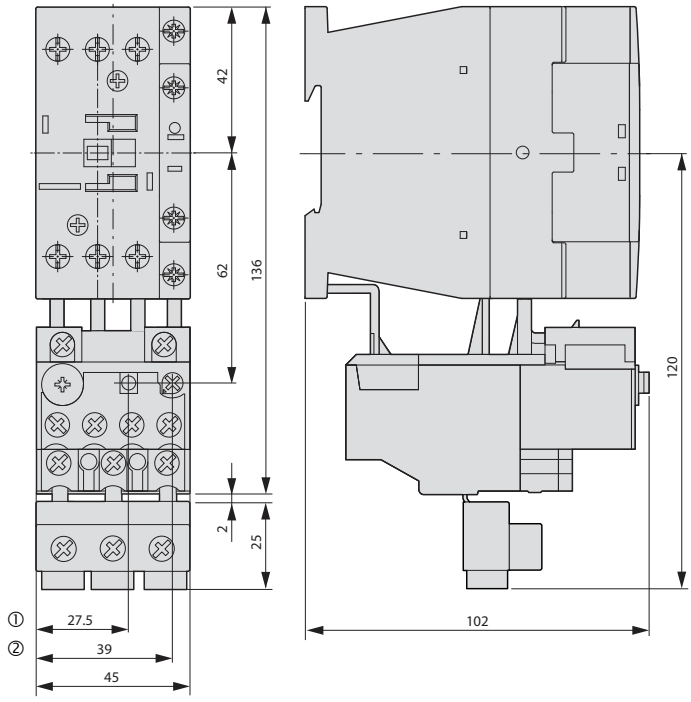


① OFF
② Reset/ON

ZB32



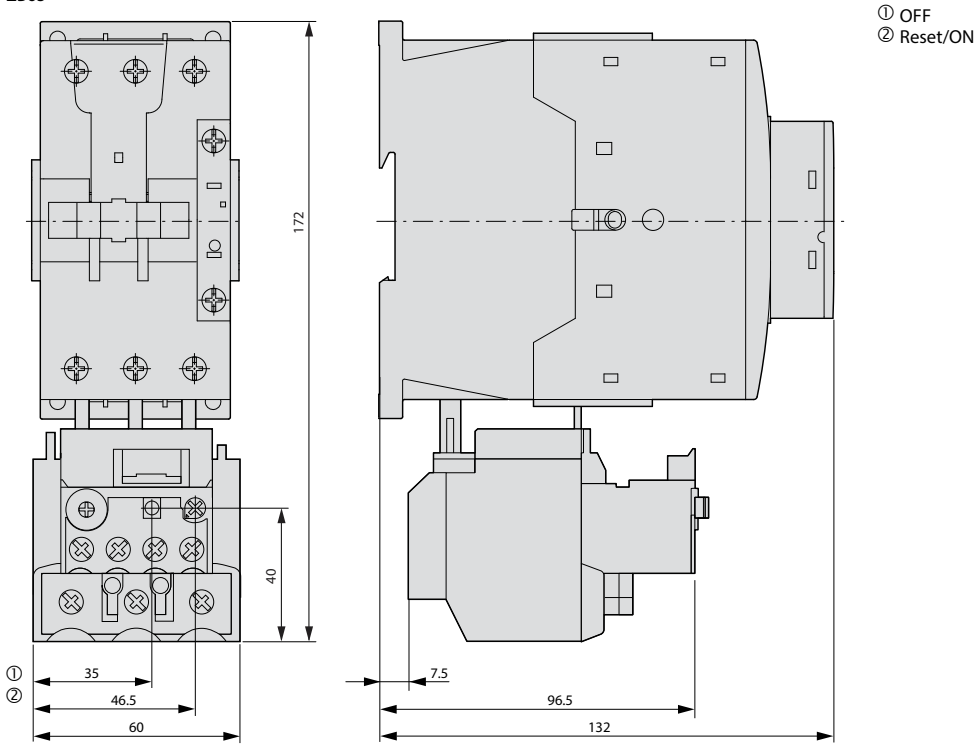
ZB32-38



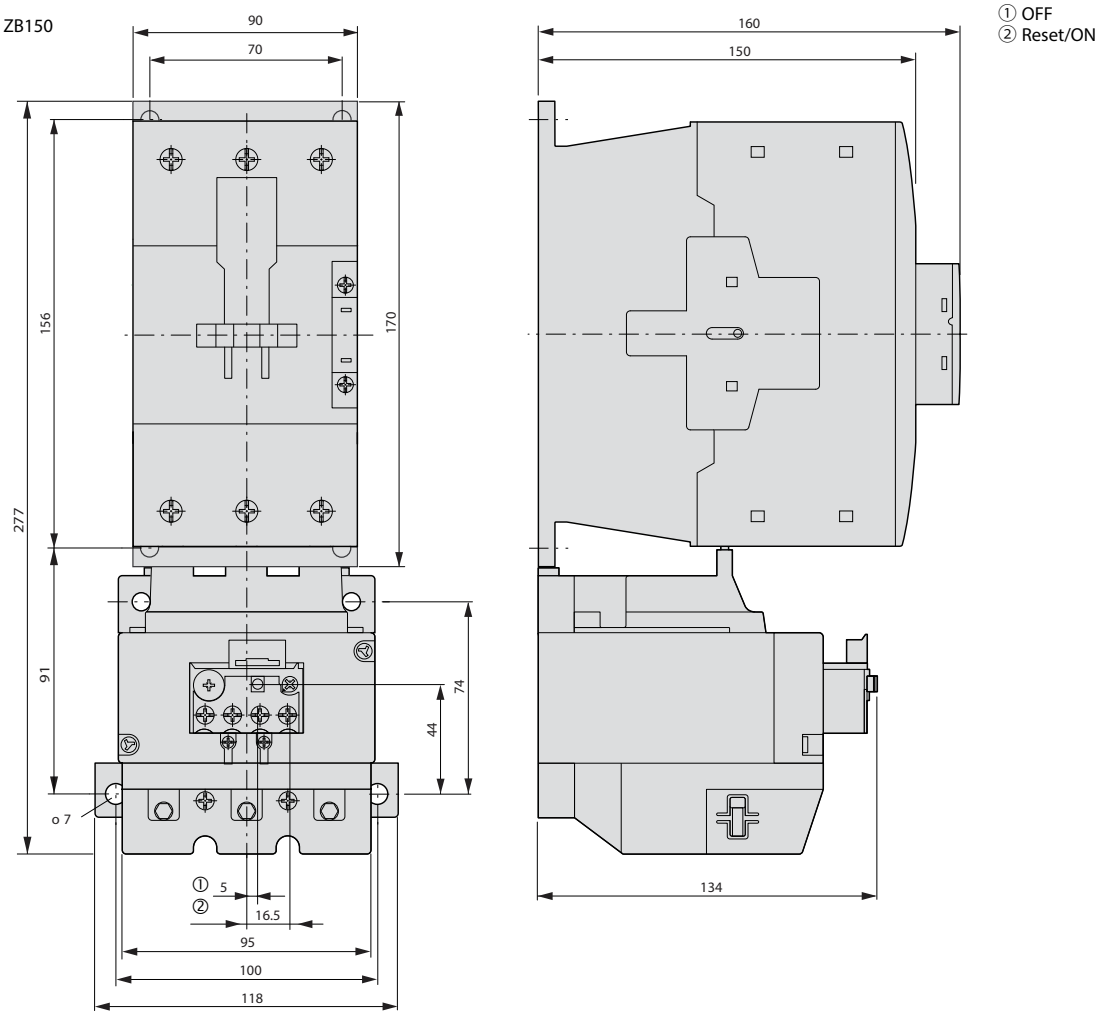
Dimensions

Overload relays

ZB65



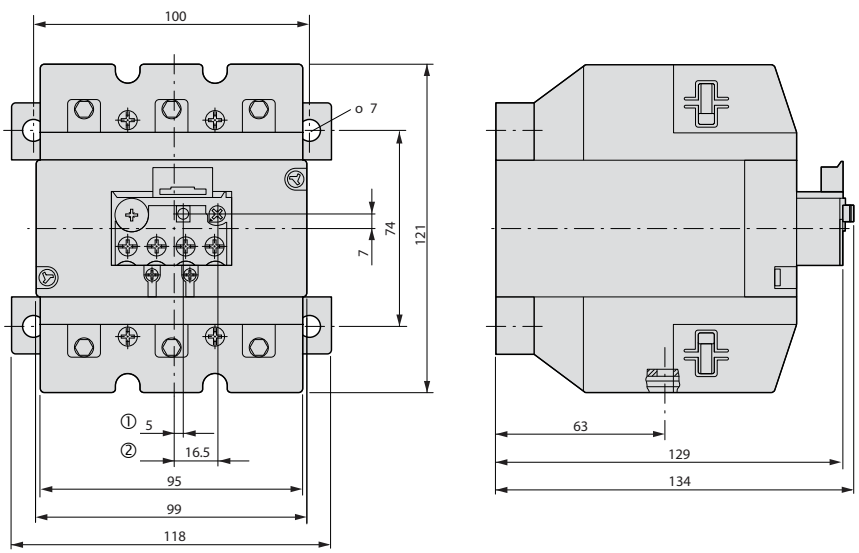
ZB150



Dimensions

Overload relays

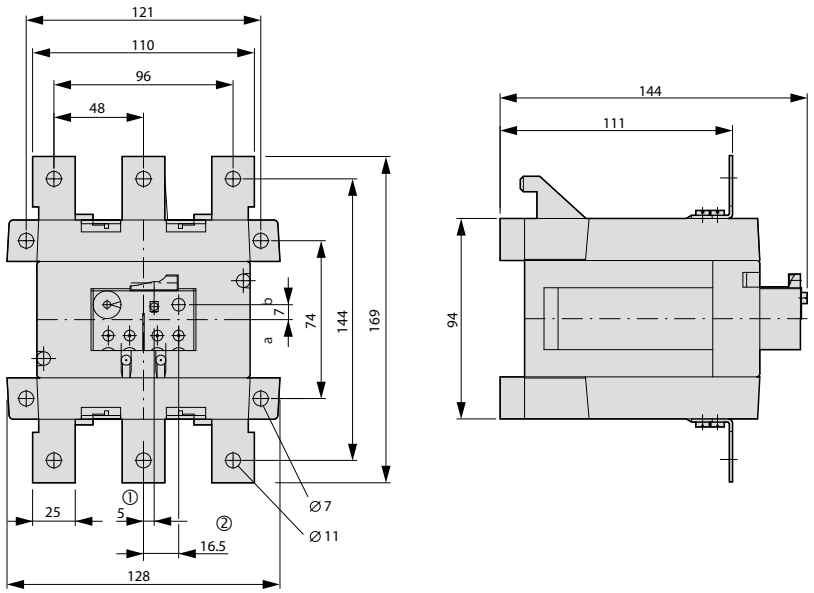
ZB150-50/KK



① OFF
② Reset/ON

Z5 overload replays greater than 150A

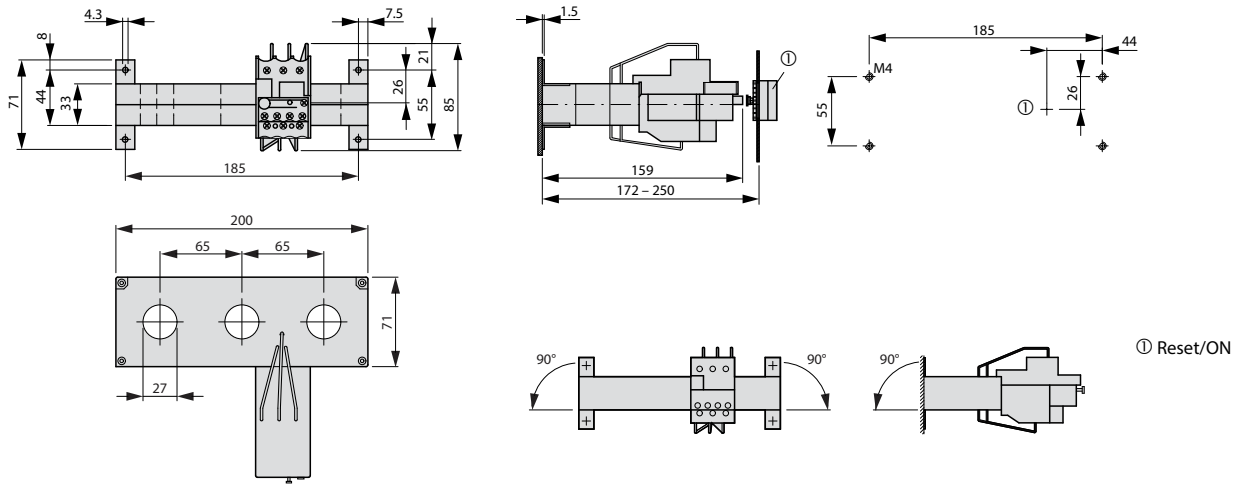
Z5-.../FF250



① OFF
② Reset/ON

Current transformer-operated overload relays

ZW7-...

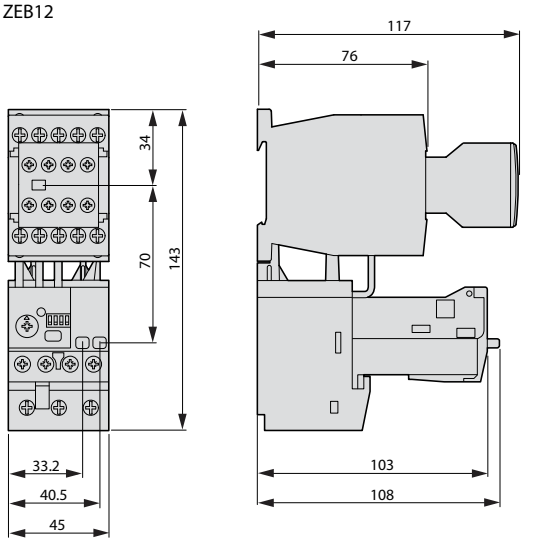


① Reset/ON

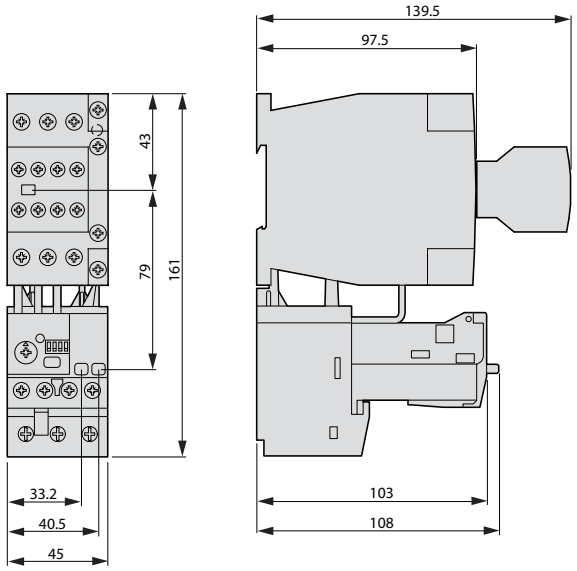
Dimensions

Electronic overload relays

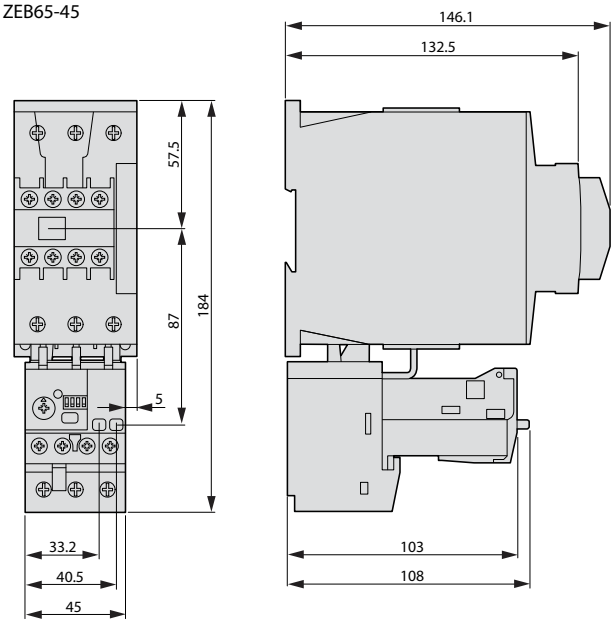
ZEB12



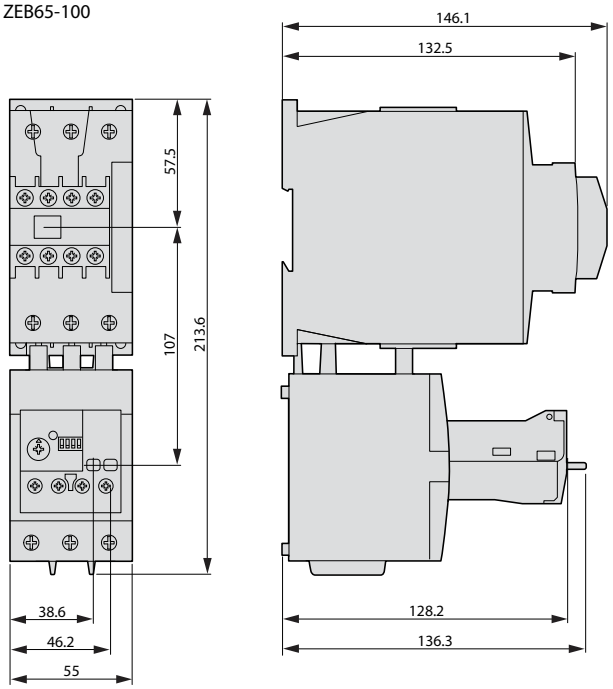
ZEB32



ZEB65-45



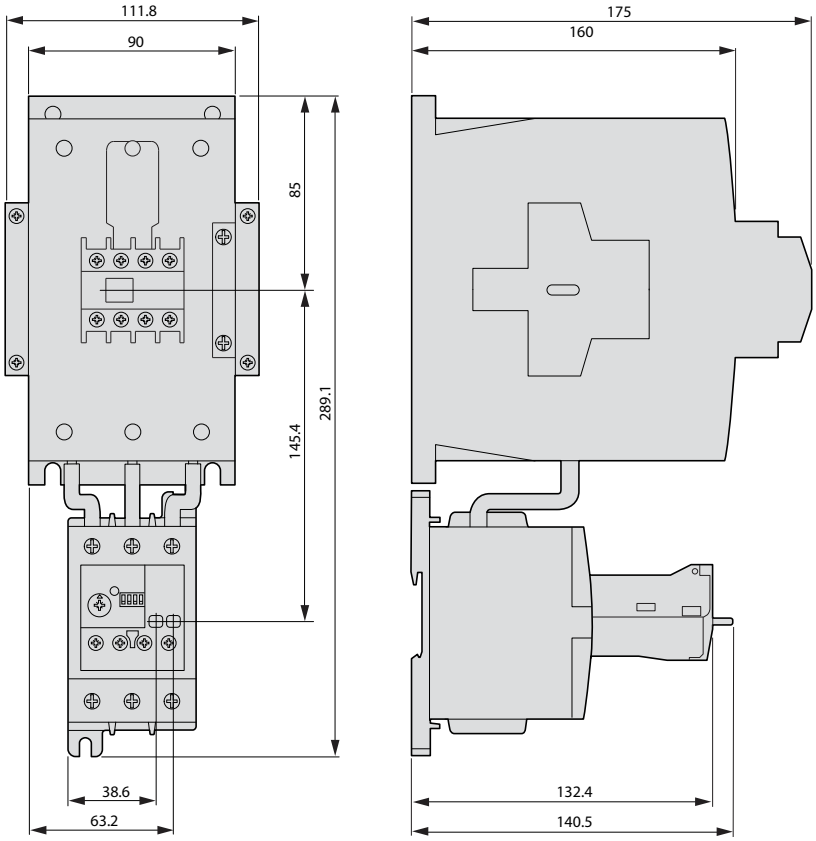
ZEB65-100



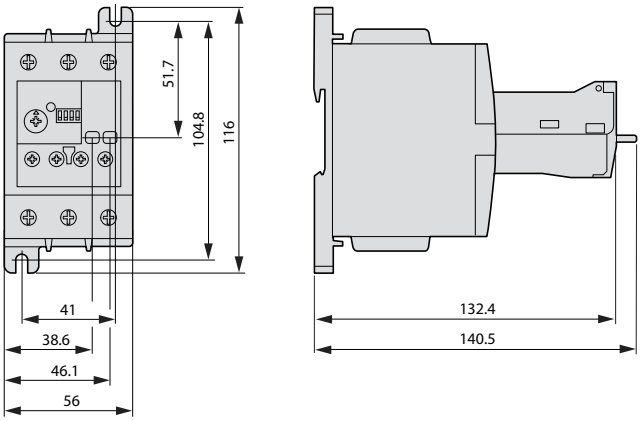
Dimensions

Electronic overload relays

ZEB150-100



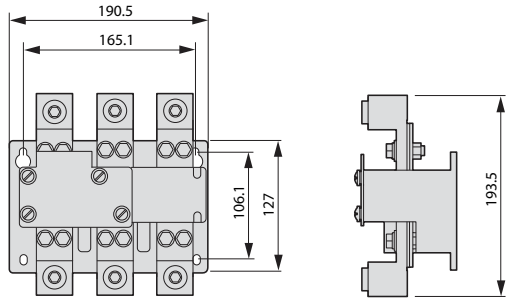
ZEB150-100/KK



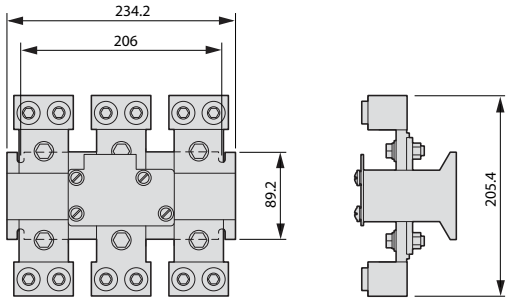
Dimensions

Current sensors

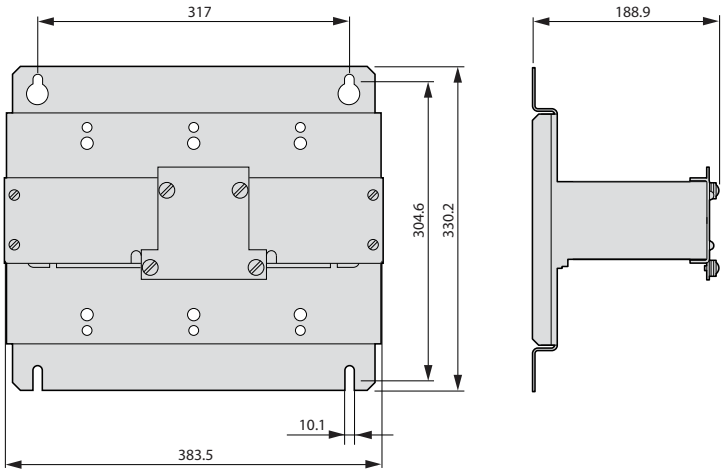
ZEB-XCT300

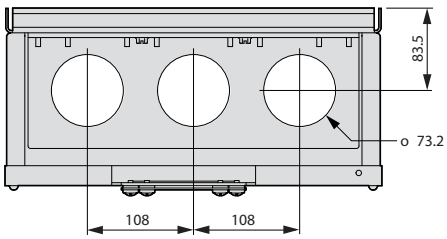


ZEB-XCT600



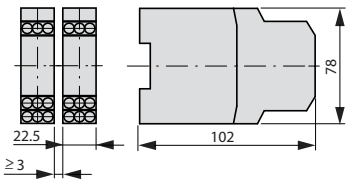
ZEB-XCT1000
ZEB-XCT1500





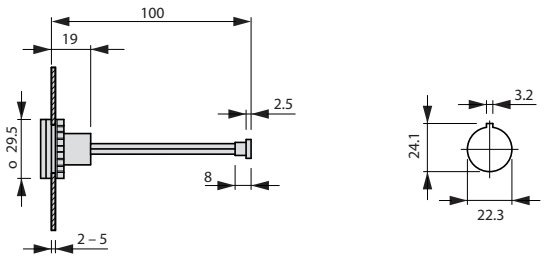
EMT6 thermistor overload relays for machine protection

EMT6…



External reset button

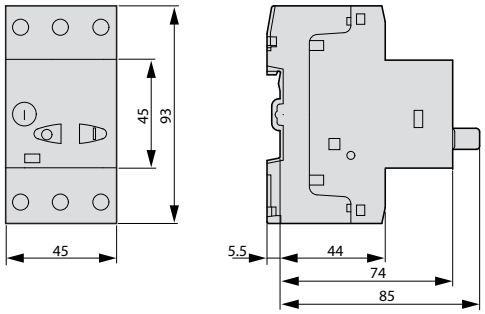
M22-DZ-B
M22-DZ-X



Dimensions

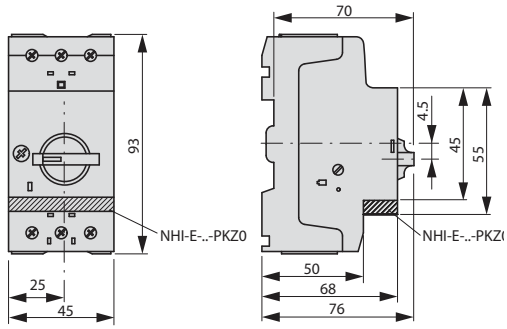
Motor-protective circuit breaker

PKZM01…



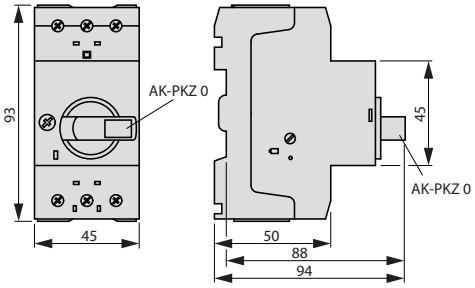
Motor-protective circuit breaker
Transformer-protective circuit breakers
Motor-protective circuit breaker with auxiliary contacts

PKZM0-…(+NHI-E-…-PKZ0)
PKZM0-…-T(+NHI-E-…-PKZ0)
PKM0-…(+NHI-E-…-PKZ0)



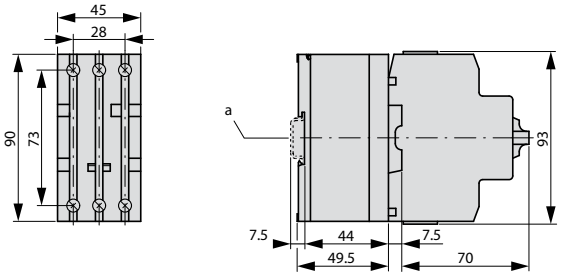
Motor-protective circuit breaker with lockable rotary handles

PKZM0-…+AK-PKZ0



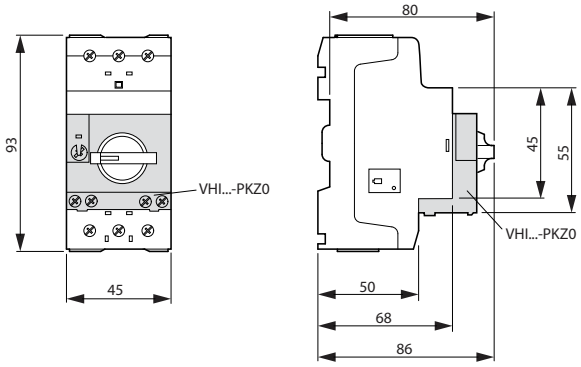
Current limiters

CL-PKZ…



Motor-protective circuit breaker with early-make auxilary contacts

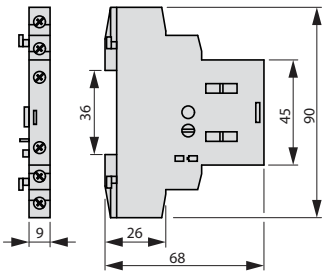
PKZM0-…+VHI-…-PKZ0



① Top-hat rail IEC/EN 60715

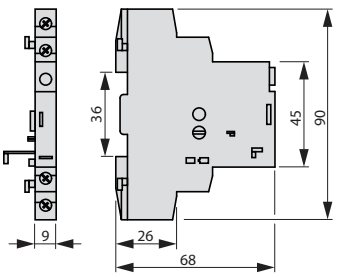
Stabdard auxiliary contacts

NHI…-PKZ0



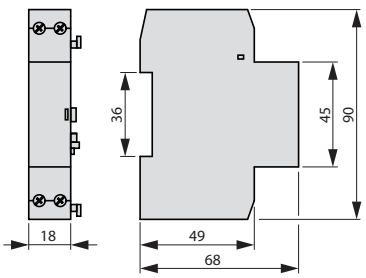
Trip indicators

AGM2…-PKZ0



Shunt release - undervoltage release

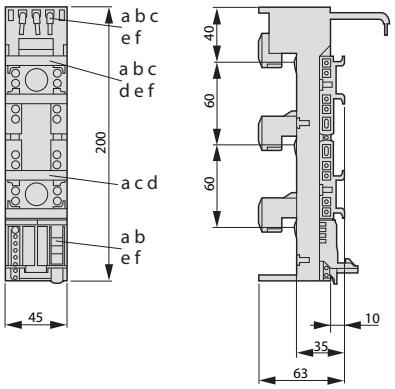
A-PKZ0…
U-PKZ0…



Dimensions

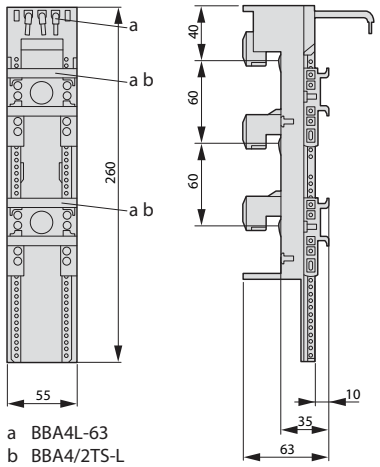
Busbar adaptors

BBA0-25
BBA0-25/2TS
BBA0/2TS-L
BBA0-32
BBA0-32/2TS-C
BBA0C-16



a BBA0-32/2TS-C d BBA0/2TS-L
b BBA0-25/2TS e BBA0-25
c BBA0C-16 f BBA0-32

BBA4/2TS-L
BBA4L-63



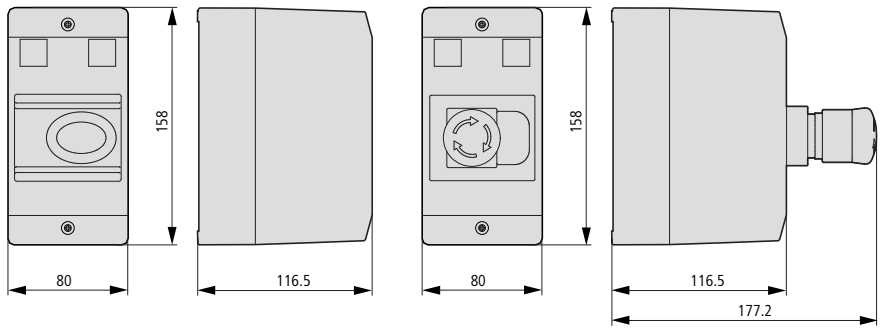
a BBA4L-63
b BBA4/2TS-L

Insulated enclosures for surface mounting

CI-PKZ01
CI-PKZ01-G

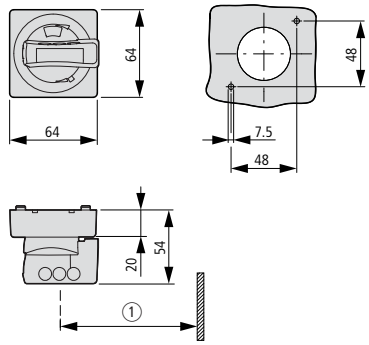
CI-PKZ01-PVT
CI-PKZ01-PVS

CI-PKZ01-SVB
CI-PKZ01-SVB-V



Door coupling handles

PKZ0-X(R)H…



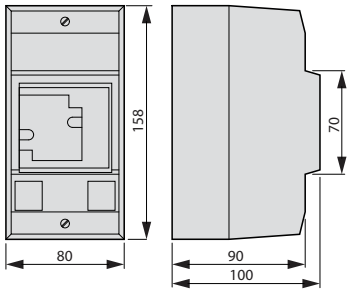
Mounting depth: 100 to 240 mm from the top edge of the top-hat rail to the front edge of the cabinet door/cover
Distance between switch axis and cover hinge: at least 100 mm

① At least 100 mm from cover hinge

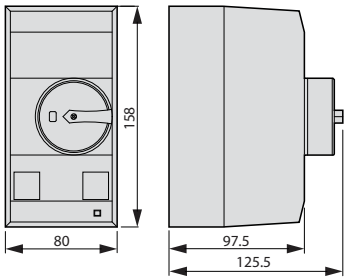
Dimensions

Insulated enclosures for surface mounting

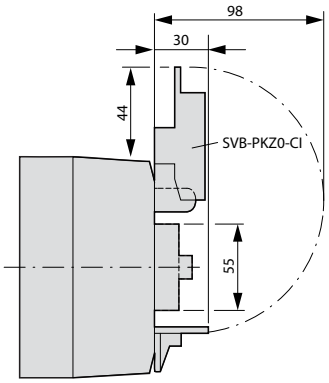
CI-PKZ0-M



CI-PKZ10G...M

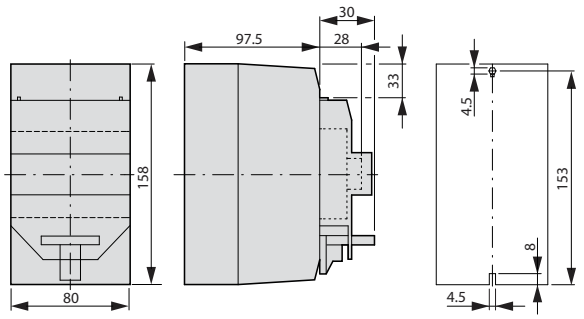


CI-PKZ0-…M
+ SVB-PKZ0-CI

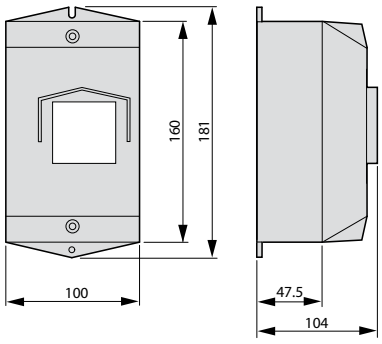


Drilling dimensions

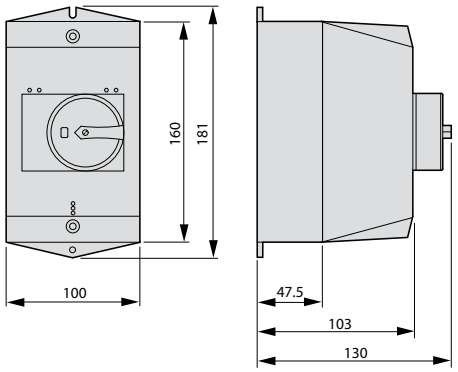
CI-PKZ0-…M



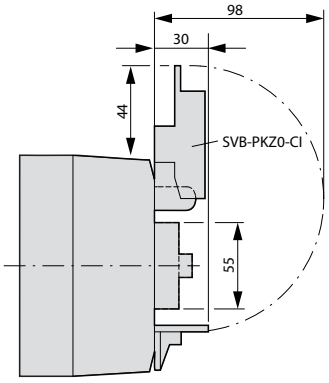
CI-K2-PKZ0



CI-K2-PKZ0G(R)(V)

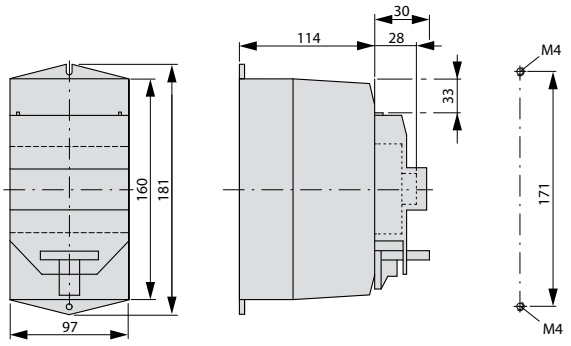


CI-K2-PKZ0-G(R)(V)
+ SVB-PKZ0-CI



Drilling dimensions

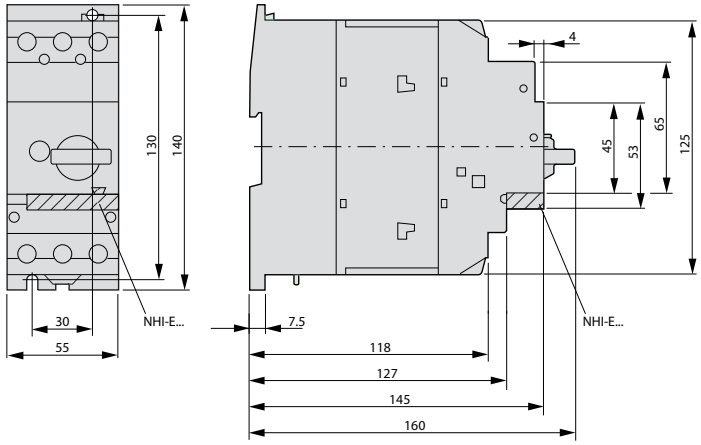
CI-K2-PKZ0…



Dimensions

Motor-protective circuit breakers

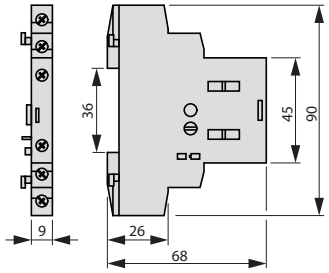
PKZM4-…



Standard auxiliary contacts

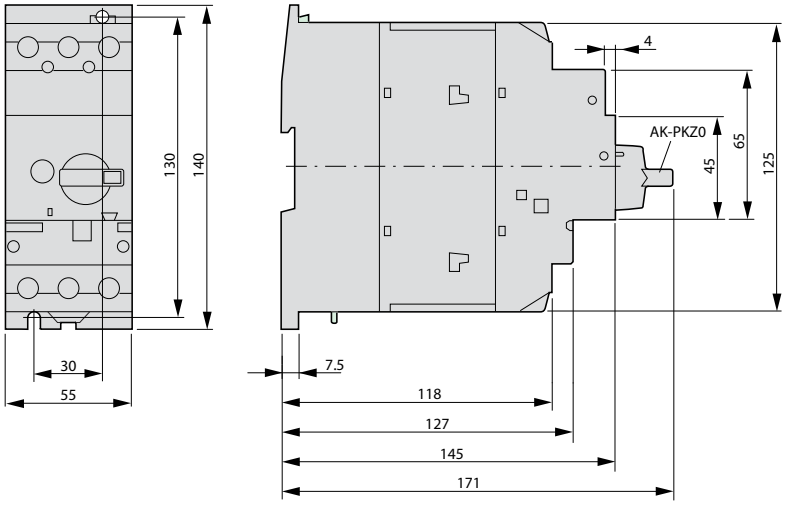
NHI…-PKZ…

NHI…-PKZ0



Motor-protective circuit breakers with lockable cover

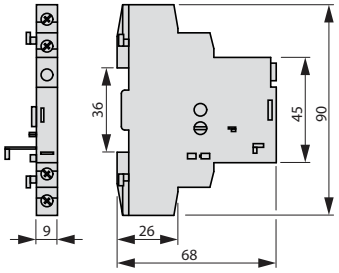
PKZM4-… +AK-PKZ0



Trup indicators

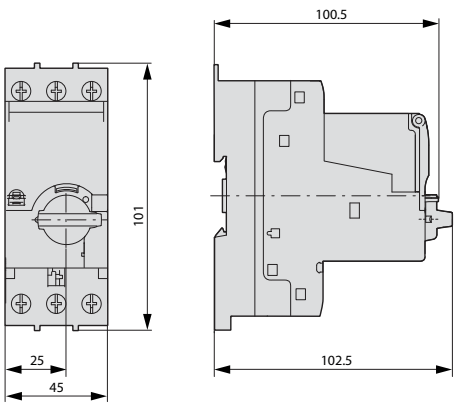
AGM2…-PKZ…

AGM2…-PKZ0

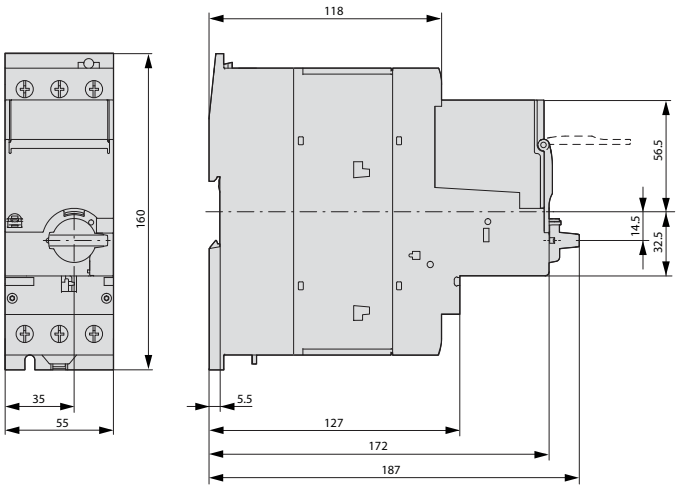


PKE Motor-protective circuit breakers

PKE12 , PKE32



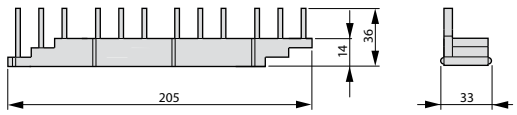
PKE65



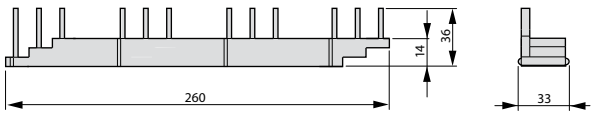
Dimensions

Three-phase commoning links

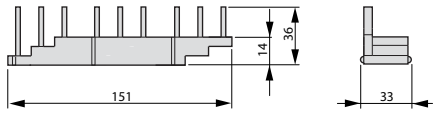
B3.0/4-PKZ4



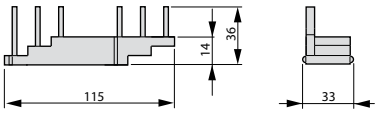
B3.2/4-PKZ4



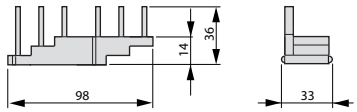
B3.0/3-PKZ4



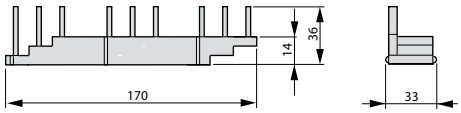
B3.2/2-PKZ4



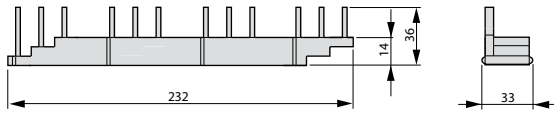
B3.0/2-PKZ4



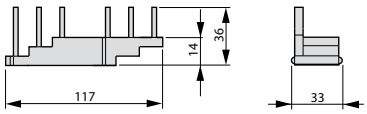
B3.1/3-PKZ4



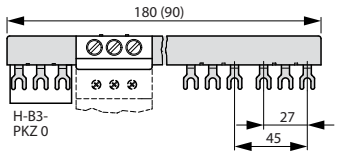
B3.1/4-PKZ4



B3.1/2-PKZ4



B3.0/4-PKZ0
B3.0/2-PKZ0



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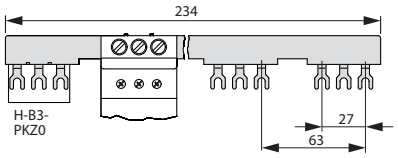
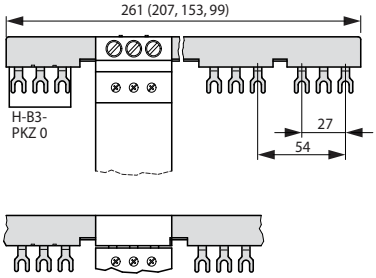
B3.2/2-PKZ0

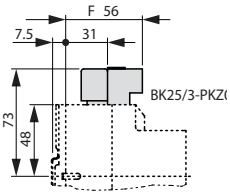


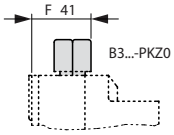
B3.1/5-PKZ0 B3.1/3-PKZ0
B3.1/4-PKZ0 B3.1/2-PKZ0



Incoming terminals

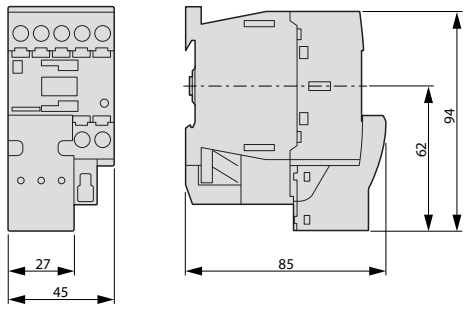
BK25/3-PKZ0





Overlapping mounting to extend the three-phase commoning link

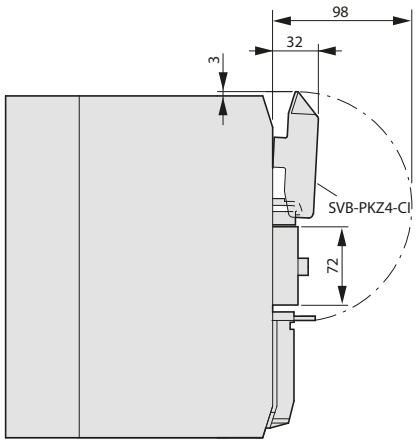
Motor plug DILM12-XMCP/T



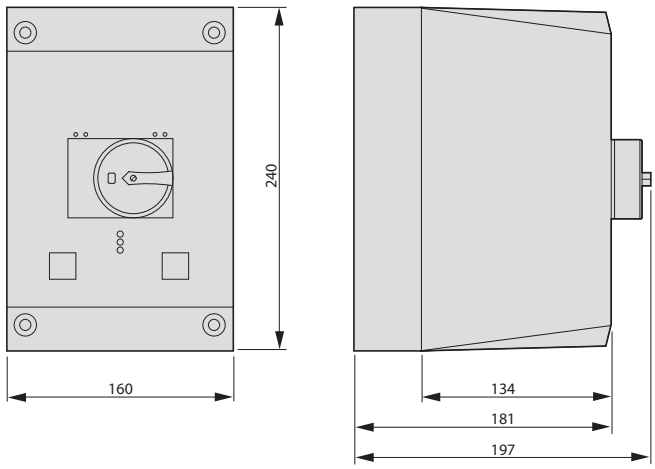
Dimensions

Insulated enclosures for surface mounting

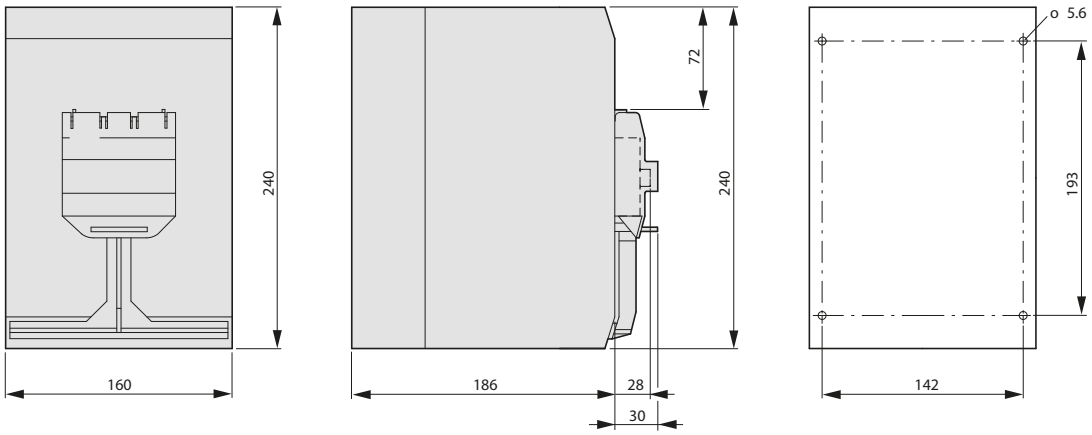
CI-K4-PKZ4-G(R)
+SVB-PKZ4-CI



CI-K4-PKZ4-G

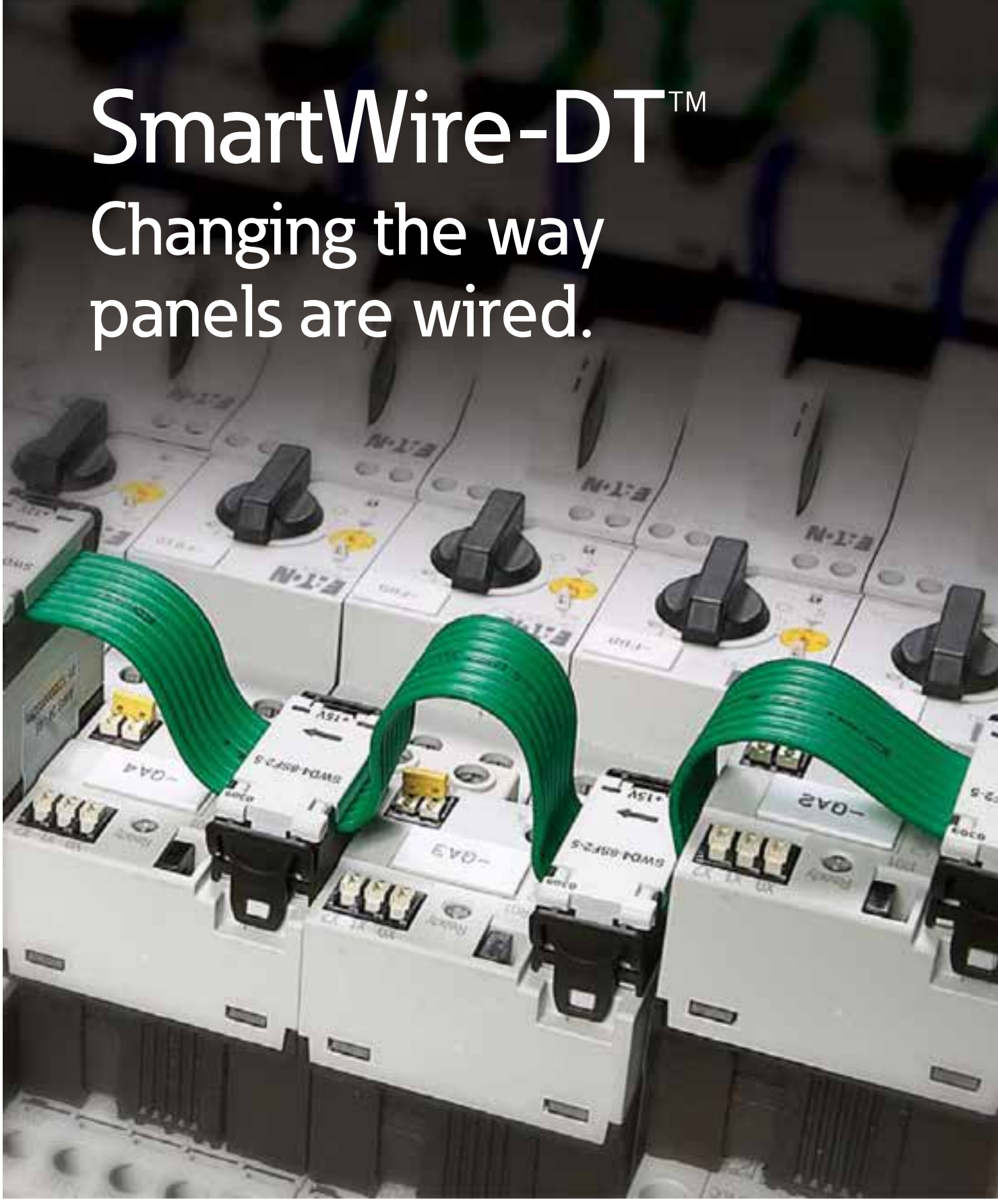


Drilling dimensions
CI-K4-PKZ-G(R)



SmartWire-DT™

Changing the way panels are wired.



Powering Business Worldwide

Reduce cost throughout the value chain.

SmartWire-DT reduces wiring time and effort, which in turn reduces costs. From design through construction to commissioning and system expansion, SmartWire-DT creates value at every step.

SmartWire-DT works with third-party PLC controllers and industry standard networks to connect motor starters and pilot devices without conventional point-to-point wiring.

DOL Starters

DOL starters

IP65 Surface mounting starter, fitted with start & stop/reset pushbuttons.

kW(400 - 415VAC)	AC-3 Amps	Coil voltage	Aux. contacts	Dimensions (W x H x D) mm	Item no.
4	11	240	1NO	90 x 184 x 113	**EDOL40NO240**
5.5	12	240	1NO	90 x 184 x 113	**EDOL55NO240**
7.5	16	240	1NO	90 x 184 x 113	**EDOL75NO240**
11	22	240	1NO	100 x 194 x 123	**EDOL11NO240**
4	11	415	1NO	90 x 184 x 113	**EDOL40NO415**
5.5	12	415	1NO	90 x 184 x 113	**EDOL55NO415**
7.5	16	415	1NO	90 x 184 x 113	**EDOL75NO415**
11	22	415	1NO	100 x 194 x 123	**EDOL11NO415**

EDOL4DNO240

Order Overloads Separately.

Overload relays

Full load current (A)	Item no.
0.35 - 0.5	**EDOL045TOL**
0.45 - 0.63	**EDOL063TOL**
0.55 - 0.8	**EDOL08TOL**
0.75 - 1.0	**EDOL10TOL**
0.9 - 1.3	**EDOL1P3TOL**
1.1 - 1.6	**EDOL1P6TOL**
1.4 - 2.0	**EDOL02TOL**
1.8 - 2.5	**EDOL25TOL**
2.3 - 3.2	**EDOL32TOL**
2.9 - 4.0	**EDOL04TOL**
3.5 - 4.8	**EDOL48TOL**
4.5 - 6.3	**EDOL63TOL**
5.5 - 7.5	**EDOL75TOL**
7.2 - 10	**EDOL100TOL**
9.0 - 12.5	**EDOL125TOL**
11.3 - 16	**EDOL16TOL**
15.0 - 20.0	**EDOL20TOL**
17.5 - 21.5	**EDOL215TOL**
21.0 - 25.0	**EDOL250TOL**
24.5 - 30.0	**EDOL30TOL**

EDOL25TOL

1NO/1NC Electrically Separated Auxiliary Contacts.
Single - phase sensitivity for phase imbalance & phase loss protection.
Temperature Compensated.

Spare coils

Coil voltage (AC)	Item no.
24V	**EDOLCOIL24A**
32V	**EDOLCOIL32A**
110V	**EDOLCOIL110A**
240V	**EDOLCOIL240A**
415V	**EDOLCOIL415A**
480V	**EDOLCOIL480A**
12V	**EDOLCOIL12A**

EDOLCOIL240A

Coils suit all starter sizes.

DOL starters

Reversing DOL starters

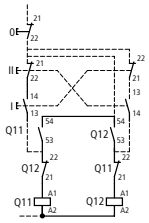
DOLRS4/u(...V50HZ)

DOLRS4/I(...V50HZ)

Rated operational current	Max. rating for three-phase motors, 50 – 60 Hz		Individual components of the combination		AC operation ① Item no.
AC-3, 415 V Ie, A	AC-3, 380/415 V P, kW	AC-4, 380/415 V P, kW	Contactor Q11 Item no.	Contactor Q12 Item no.	
Open units					
9	4	2.5	**DILM9-01 + DILA-XHI20**	**DILM9-01 + DILA-XHI20**	**DOLRS4/U(...V50HZ)** ②⑥
12	5.5	3	**DILM12-01 + DILA-XHI20**	**DILM12-01 + DILA-XHI20**	**DOLRS5.5/U(...V50HZ** ②⑥
18	7.5	4.5	**DILM17-01 + DILA-XHI20**	**DILM17-01 + DILA-XHI20**	**DOLRS7.5/U(...V50HZ)** ②⑥
25	11	6	**DILM25-01 + DILA-XHI20**	**DILM25-01 + DILA-XHI20**	**DOLRS11/U(...V50HZ)** ②⑥
32	15	7	**DILM32-01 + DILA-XHI20**	**DILM32-01 + DILA-XHI20**	**DOLRS15/U(...V50HZ)** ②⑥
40	18.5	9	**DILM40 + DILM150-XHI11**	**DILM40 + DILM150-XHI11**	**DOLRS18.5/U(...V50HZ)** ③⑥
50	22	10	-	-	**DOLRS22/U(...V50HZ)** ③⑥
65	30	12	**DILM65 + DILM150-XHI11**	**DILM65 + DILM150-XHI11**	**DOLRS30/U(...V50HZ)** ③⑥
Enclosed units					
9	4	2.5	**DILM9-01 + DILA-XHI20**	**DILM9-01 + DILA-XHI20**	**DOLRS4/I(...V50HZ)** ④⑥
12	5.5	3	**DILM12-01 + DILA-XHI20**	**DILM12-01 + DILA-XHI20**	**DOLRS5.5/I(...V50HZ)** ④⑥
18	7.5	4.5	**DILM17-01 + DILA-XHI20**	**DILM17-01 + DILA-XHI20**	**DOLRS7.5/I(...V50HZ)** ④⑥
25	11	6	**DILM25-01 + DILA-XHI20**	**DILM25-01 + DILA-XHI20**	**DOLRS11/I(...V50HZ)** ④⑥
32	15	7	**DILM32-01 + DILA-XHI20**	**DILM32-01 + DILA-XHI20**	**DOLRS15/I(...V50HZ)** ④⑥
40	18.5	9	**DILM40 + DILM150-XHI11**	**DILM40 + DILM150-XHI11**	**DOLRS18.5/I(...V50HZ)** ⑤⑥
50	22	10	-	-	**DOLRS22/I(...V50HZ)** ⑤⑥
65	30	12	**DILM65 + DILM150-XHI11**	**DILM65 + DILM150-XHI11**	**DOLRS30/I(...V50HZ)** ⑤⑥

① Specify voltage & frequency when ordering.
Standard voltages: V AC: 24 V, 110 V, 240 V, 415 V at 50 Hz.
Non-standard voltages: V AC: 12 – 600 V at 50 or 60 Hz. V DC: 12 – 250 V.
For DC voltage add suffix "-G" to Item No.
N.B. additional charge applies. Please enquire for non-standard configurations.

②



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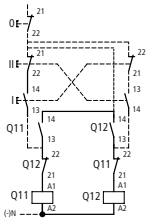

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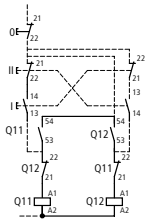

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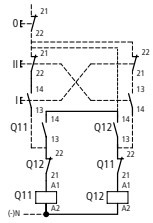
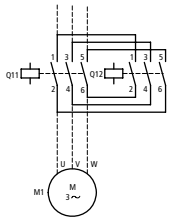


⑥ Reversing contactors



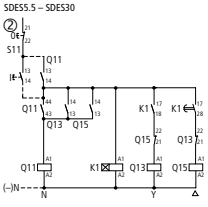
Star-delta starters

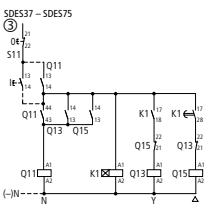
Rated operational current	Max. rating for three-phase motors, 50 – 60 Hz	Max. changeover time	Individual components of the combination			Item no. ①
AC-3, 380/415 V Ie, A	AC-3, 380/415 V P, kW	S	Mains contactor Q11 Item No.	Delta contactor Q15 Item No.	Star contactor Q13 Item No.	
Star-delta starter combinations						
Open units Timing relay K1T: ETR4-51, Complete with overload						
12	5.5 ①	20	**DILM7-10 + DILA-XHI20**	**DILM7-01 + DILA-XHI20**	**DILM7-01 + DILA-XHI20**	**SDES5.5/U(...)** ②④
16	7.5	20	**DILM9-10 + DILA-XHI20**	**DILM9-01 + DILA-XHI20**	**DILM7-01 + DILA-XHI20**	**SDES7.5/U(...)** ②④
22	11	20	**DILM12-10 + DILA-XHI20**	**DILM12-01 + DILA-XHI20**	**DILM7-01 + DILA-XHI20**	**SDES11/U(...)** ②④
30	15	20	**DILM17-10 + DILA-XHI20**	**DILM17-01 + DILA-XHI20**	**DILM17-01 + DILA-XHI20**	**SDES15/U(...)** ②④
45	22	20	**DILM25-10 + DILA-XHI20**	**DILM25-01 + DILA-XHI20**	**DILM17-01 + DILA-XHI20**	**SDES22/U(...)** ②④
55	30	20	**DILM32-10 + DILA-XHI20**	**DILM32-01 + DILA-XHI20**	**DILM25-01 + DILA-XHI20**	**SDES30/U(...)** ②④
70	37	20	**DILM40 + DILM150-XHI11**	**DILM40 + DILM150-XHI31**	**DILM40 + DILM150-XHI11**	**SDES37/U(...)** ③④
90	45	20	**DILM50 + DILM150-XHI11**	**DILM50 + DILM150-XHI31**	**DILM40 + DILM150-XHI11**	**SDES45/U(...)** ③④
115	55	20	**DILM65 + DILM150-XHI11**	**DILM65 + DILM150-XHI31**	**DILM40 + DILM150-XHI11**	**SDES55/U(...)** ③④
140	75	20	**DILM80 + DILM150-XHI11**	**DILM80 + DILM150-XHI31**	**DILM50 + DILM150-XHI11**	**SDES75/U(...)** ③④
Enclosed units Complete with pushbutton & overload, According to IEC 60947						
12	5.5	20	**DILM7-10 + DILA-XHI20**	**DILM7-01 + DILA-XHI20**	**DILM7-01 + DILA-XHI20**	**SDES5.5/I(...)** ④
16	7.5	20	**DILM9-10 + DILA-XHI20**	**DILM9-01 + DILA-XHI20**	**DILM7-01 + DILA-XHI20**	**SDES7.5/I(...)** ④
22	11	20	**DILM12-10 + DILA-XHI20**	**DILM12-01 + DILA-XHI20**	**DILM7-01 + DILA-XHI20**	**SDES11/I(...)** ④
30	15	20	**DILM17-10 + DILA-XHI20**	**DILM17-01 + DILA-XHI20**	**DILM17-01 + DILA-XHI20**	**SDES15/I(...)** ④
45	22	20	**DILM25-10 + DILA-XHI20**	**DILM25-01 + DILA-XHI20**	**DILM17-01 + DILA-XHI20**	**SDES22/I(...)** ④
55	30	20	**DILM32-10 + DILA-XHI20**	**DILM32-01 + DILA-XHI20**	**DILM25-01 + DILA-XHI20**	**SDES30/I(...)** ④
70	37	20	**DILM40 + DILM150-XHI11**	**DILM40 + DILM150-XHI31**	**DILM40 + DILM150-XHI11**	**SDES37/I(...)** ④
90	45	20	**DILM50 + DILM150-XHI11**	**DILM50 + DILM150-XHI31**	**DILM40 + DILM150-XHI11**	**SDES45/I(...)** ④
115	55	20	**DILM65 + DILM150-XHI11**	**DILM65 + DILM150-XHI31**	**DILM40 + DILM150-XHI11**	**SDES55/I(...)** ④
140	75	20	**DILM80 + DILM150-XHI11**	**DILM80 + DILM150-XHI31**	**DILM50 + DILM150-XHI11**	**SDES75/I(...)** ④

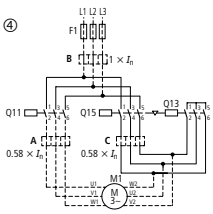
SDES5.5-U

SDES15-U

① Specify voltage & frequency when ordering.
Standard voltages: V AC: 24 V, 110 V, 240 V, 415 V at 50 Hz
Non-standard voltages: V AC: 12 – 600 V at 50 or 60 Hz, V DC: 12 – 250 V
For DC voltage add suffix "-G" to part no.
N.B. additional charge applies.please enquire for non-standard configurations.







Overload relay settings	Starting
A: I_N x 0.58	≦ 15 s
Protection of the motor in Y- and d configuration B: I_N x 1	15 – 40 s
Only partial motor protection in star position C: I_N x 0.58	> 40 s

Motor not protected in star position.

Timing relay set to approx. 10 s.

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

1000V Mining contactors

Eaton V201 vacuum contactor

Eaton's V201 Vacuum Contactors are known for quality & proven performance. They are ideally suited for heavy-duty applications in harsh environments. These contactors are most commonly used for mining applications.

- Rated for up to 1500V
- Small physical size
- Long life
- Reduced maintenance
- No atmospheric contamination of the contacts
- No noise, no arc flash
- Derating is not required at higher voltages
- Mounting in any position

Vacuum contactors

Description	Item no.
160A	**V201KRCJZ1**
320A	**V201KTCJZ1**
540A	**V201KVCJZ1**

110V AC Coil as standard. Vacuum Contactor Amp Ratings are AC3. Vacuum switch tubes cannot be replaced.

Auxiliary contacts for V201 vacuum contactors & DPCK air break contactors

Description	Item no.
1NO/1NC	**J-11**
2NO	**J-20**
2NC	**J-02**
1NO/1NC delay – 160A only	**J-1CV**

Accessories

Description	Item no.
For mechanically interlocking two 160A Vacuum Contactors	**180C113G04**
For mechanically interlocking two 320A Vacuum Contactors	**180C113G16**
For mechanically interlocking two 540A Vacuum Contactors	**180C113G17**
Interphase barriers for 160A Vacuum contactor. Contains a set of two interphase barriers.	**IPB1** ①

① A set is suitable for line OR load side of the contactor. For line AND load side interphase barriers, order two sets.

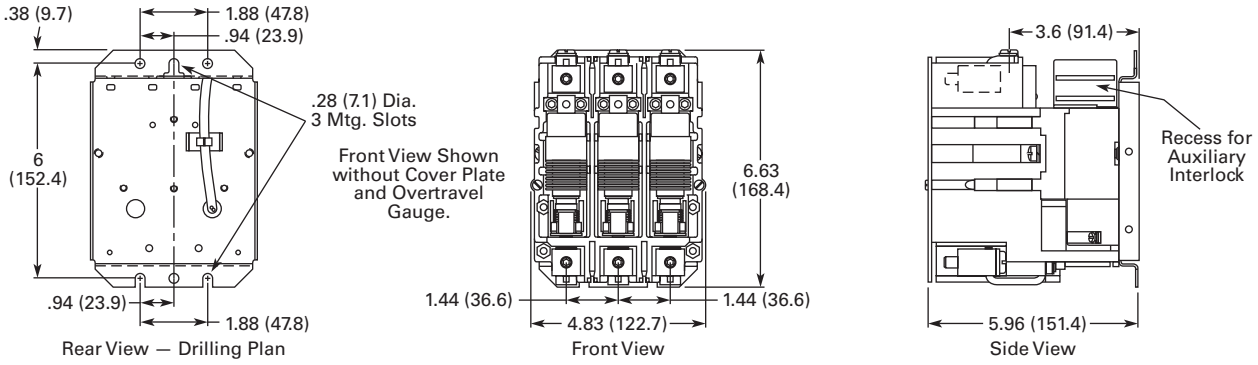
Replacement parts

Description		Suffix	Item no.
Size 4	110/120 Vac, 50/60 Hz	J	**9085A57G01**
	220/240 Vac, 50/60 Hz	K	**9085A57G02**
	380/415 Vac, 50/60 Hz	H	**ID89221G07**
	440/480 Vac, 50/60 Hz	U	**9085A57G03**
Size 5	110/120 Vac, 50/60 Hz	J	**7874A09G01** ③
	220/240 Vac, 50/60 Hz	K	**7874A09G04** ④
	380/415 Vac, 50/60 Hz	H	**7874A09G10**
	440/480 Vac, 50/60 Hz	U	**7874A09G05**
Size 6	110/120 Vac, 50/60 Hz	J	**7874A24G01** ③
	220/240 Vac, 50/60 Hz	K	**7874A24G02** ④
	380/415 Vac, 50/60 Hz	H	**7874A24G07**
	440/480 Vac, 50/60 Hz	U	**7874A24G03**

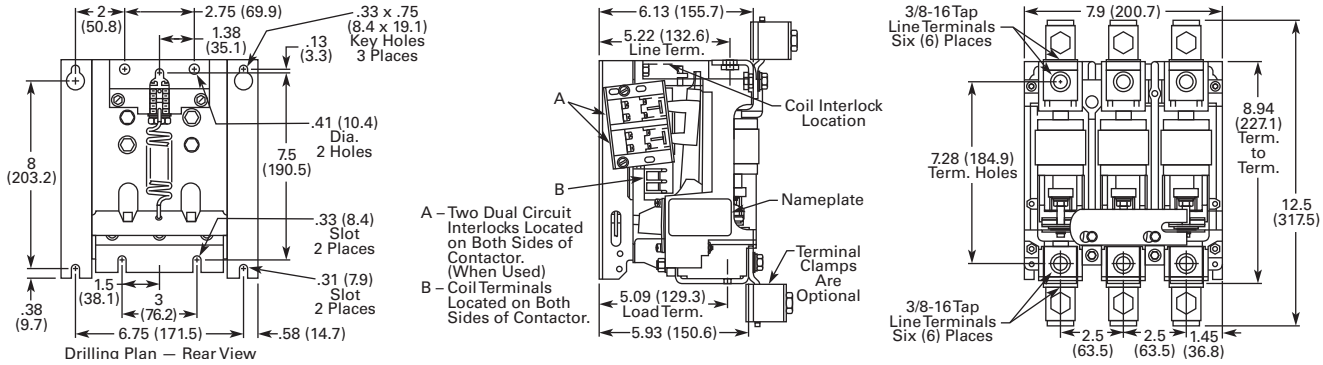
③ 125 Vdc can be directly applied to the Size 5 and 6 coil rated for 120 Vac/60 Hz (cannot be applied to Size 4).
④ 250 Vdc can be directly applied to the Size 5 and 6 coil rated for 240 Vac/60 Hz (cannot be applied to Size 4).

Dimensions

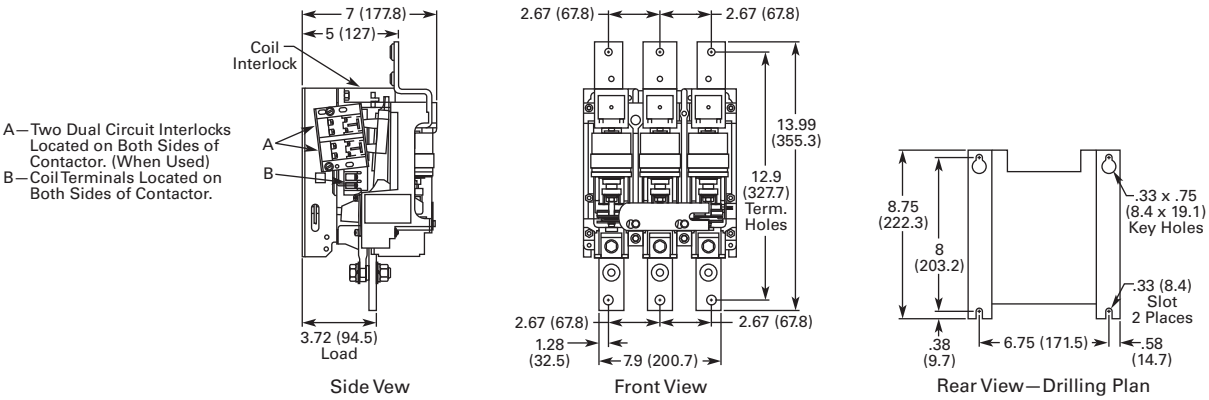
Open type contactors and starters - size 4 and 160A
Size 4 and 160A non-revising contactor



Open type contactors and starters - size 5 and 320A
Size 5 and 320A non-revising contactor



Open type contactors and starters - size 6, 540A and 610A
Size 6, 540 and 610A non-revising contactor



Solutions you can depend upon.

Looking to run your process more efficiently and see a significant return on your investment? Whether you application calls for an ultra-compact solution, requires harmonic mitigation, or future configurability is needed, Eaton's high performance adjustable frequency drives will allow you to realise dramatic energy savings, enabling you to show positive ROI within 18 months, all while maximising your process.

For further information about Eaton's drives please visit www.eatoncorp.com.au

EATON

Powering Business Worldwide

Drives and soft starters

Eaton's variable speed drives are software driven solid-state devices that enable the OEM, contractor or end user to control the speed of motors used in industrial, mining & HVAC applications. Drives are an alternative to direct-on-line or star-delta starters as a method to control the motor & offer greatly enhanced control capability along with energy savings.

From advanced starting & stopping control to integrated motor protection & communications capabilities, Eaton's line of soft starters provide a unique combination of soft starting & flexible protective features. Communications capabilities enable integration into building management systems for easy monitoring & troubleshooting & the small size permits the use of smaller panels & enclosures, for significant cost savings.

Soft starters

DS7 Soft starters

- Tool-less plug connection, ensuring easy connection & wiring with other switching devices such as motor-protective circuit breakers
- Connection design, handling & the 45 mm device width match our motor-protective circuit-breakers & contactors of the device series exactly
- The DS7 ensures a jerk-free increase in torque and effective current reduction in the three-phase motor startup phase
- Furthermore, the DS7 is also available with a 110/230 Vac control voltage input
- Settings & status values can be remotely transferred via SmartWire-Darwin gateway regardless of whether Profibus DP or CANopen control commands are used

Rated operational current Ie, A	Rated power for three-phase motors at 3 AC 400 V P, kW	Control supply	Item no.
4	1.5	24 V DC	**DS7-34DSX004N0-D**
7	3	24 V DC	**DS7-34DSX007N0-D**
9	4	24 V DC	**DS7-34DSX009N0-D**
12	5.5	24 V DC	**DS7-34DSX012N0-D**
16	7.5	24 V DC	**DS7-34DSX016N0-D**
24	11	24 V DC	**DS7-34DSX024N0-D**
32	15	24 V DC	**DS7-34DSX032N0-D**
41	22	24 V DC	**DS7-34DSX041N0-D**
55	30	24 V DC	**DS7-34DSX055N0-D**
70	37	24 V DC	**DS7-34DSX070N0-D**
81	45	24 V DC	**DS7-34DSX081N0-D**
100	55	24 V DC	**DS7-34DSX100N0-D**
135	75	24 V DC	**DS7-34DSX135N0-D**
160	90	24 V DC	**DS7-34DSX160N0-D**
200	110	24 V DC	**DS7-34DSX200N0-D**

Soft starters

Accessories

ZB12-4

PKZM0-XM32DE

DS7-FAN-032

PKZM0-XDM12

BBA0L-25

Overload relays

For use with...	Item no.
DS7-34…SX004…	**ZB12-4**
DS7-34…SX007… DS7-34…SX009…	**ZB12-10**
DS7-34…SX012…	**ZB12-12**
DS7-34…SX016…	**ZB32-16**
DS7-34…SX024…	**ZB32-24**
DS7-34…SX032…	**ZB32-32**

Electric contact module

For use with...	Item no.
DS7-34…SX016… DS7-34…SX024… DS7-34…SX032…	**PKZM0-XM32DE**

Device fans

For use with...	Item no.
DS7-34...SX004... DS7-34...SX007... DS7-34...SX009... DS7-34...SX012... DS7-34...SX016... DS7-34...SX024... DS7-34...SX032...	**DS7-FAN-032**
DS7-34...SX041... DS7-34...SX055... DS7-34...SX070... DS7-34...SX081... DS7-34...SX100...	**DS7-FAN-100**
DS7-34...SX135... DS7-34...SX160... DS7-34...SX200...	**DS7-FAN-200**

PKZ-DS7 wiring set

For use with...	Item no.
DS7-34…SX004… DS7-34…SX007… DS7-34…SX009… DS7-34…SX012…	**PKZM0-XDM12**

Busbar adapter

For use with...	Item no.
PKZM0, PKE + DS7...004N... PKZM0, PKE + DS7...007N... PKZM0, PKE + DS7...009N... PKZM0, PKE + DS7...012N...	**BBA0L-25**
PKZM0, PKE + DS7...004N... PKZM0, PKE + DS7...007N... PKZM0, PKE + DS7...009N... PKZM0, PKE + DS7...012N... PKZM0, PKE + DS7...016N... PKZM0, PKE + DS7...024N... PKZM0, PKE + DS7...032N...	**BBA0L-32**

Soft starters

S811+ intelligent technologies (IT)

- Built-in overload protection
- Built-in run bypass contactor
- Adjustable ramp times
- Adjustable torque control
- Adjustable kick start control
- Programmable overload settings, 31-100% of rated current
- Digital Interface Module (DIM) to safely configure, commission, monitor and troubleshoot
- Soft start and Soft stop control
- Multiple trip class settings (5, 10, 20 and 30)
- Built-in comms. capability for Modbus (through the DIM or using CH Studio software)
- Six SCR control, 3 or 6 wire 415V
- Ideal for pump protection and control
- 24V DC power supply required with soft starter see below

Max current (amps)		kW rating at 415V AC		Item no.
Normal duty	Severe duty	Normal duty*	Severe duty**	
37	22	18.5	11	**S811+N37P3S**
66	42	30	22	**S811+N66P3S**
105	65	55	37	**S811+R10P3S**
135	80	75	45	**S811+R13P3S**
180	115	90	55	**S811+T18P3S**
240	150	132	75	**S811+T24P3S**
304	192	160	90	**S811+T30P3S**
360	240	185	132	**S811+U36P3S**
420	305	220	160	**S811+U42P3S**
500	365	260	200	**S811+V50P3S**
650	420	355	220	**S811+V65P3S**
720	480	400	260	**S811+V72P3S**
850	525	450	300	**S811+V85P3S**
1000	575	560	330	**S811+V10P3S**

Normal duty is 4 starts per hour at ramp current 300% of full load amps. Severe duty is 4 starts per hour at ramp current 450% of full load amps.

EML24

Accessories for S811+ soft starters

Description		Item no.
Lug kits, 3-phase	2 cable connection, up to 2 x 240mm dia (T/U)	**EML24**
Lug kits, 3-phase	2 cable connection, up to 2 x 240mm dia (V)	**EML28**
Control interface module panel mounting kits	Kit with 2m Cable, remote keypad mount	**EMA69C**
Control wire connectors	12-Pin Connector for Control Wiring	**EMA75**
DC power supply	240Vac in, 24 V DC out	**PSG240E**

For voltages rated 690V to 7.5kV open panel/enclosed type, we have the MV 811 Series medium voltage soft starters. Please contact your nearest Eaton branch to discuss your application for the medium voltage starters.

EMA69C

PSG240E

Variable speed drives

M-Max machinery drives

- Ease of use — plug & play, start-up wizard, advanced diagnostic capability, copy/paste parameters without powering drive
- Compact, space-saving design
- RS485/Modbus & PI-controller inbuilt as standard
- Rugged & reliable — 50°C rating, 150% overload for 1 min., 200% starting current for 2 secs. in every 20 sec. period, conformal coated boards
- Internal EMC filter complying with IEC61800-3
- RoHS compliance

1-ph in, 3-ph out, 240V AC

Description	H x W x D (mm)	High overload		Low overload		Item no.
		P(kW)	I(H)	P(kW)	I(L)	
M-Max Drive 240V 0.25 kW CT IP20	157 x 66 x 102	0.25	1.7	0.25	1.7	**MMX12AA1D7F0-0**
M-Max Drive 240V 0.37 kW CT IP20	157 x 66 x 102	0.37	2.4	0.37	2.4	**MMX12AA2D4F0-0**
M-Max Drive 240V 0.55 kW CT IP20	157 x 66 x 102	0.55	2.8	0.55	2.8	**MMX12AA2D8F0-0**
M-Max Drive 240V 0.75 kW CT IP20	157 x 66 x 102	0.75	3.7	0.75	3.7	**MMX12AA3D7F0-0**
M-Max Drive 240V 1.1 kW CT IP20	195 x 90 x 105	1.1	4.8	1.1	4.8	**MMX12AA4D8F0-0**
M-Max Drive 240V 1.5 kW CT IP20	195 x 90 x 105	1.5	7	1.5	7	**MMX12AA7D0F0-0**
M-Max Drive 240V 2.2 kW CT IP20	263 x 100 x 112	2.2	9.6	2.2	9.6	**MMX12AA9D6F0-0**

3-ph in, 3-ph out, 415V AC

Description	H x W x D (mm)	High overload		Low overload		Item no.
		P(kW)	I(H)	P(kW)	I(L)	
M-Max Drive 415V 0.37 kW CT IP20	160 x 66 x 102	0.37	1.3	0.37	1.3	**MMX34AA1D3F0-0**
M-Max Drive 415V 0.55 kW CT IP20	160 x 66 x 102	0.55	1.9	0.55	1.9	**MMX34AA1D9F0-0**
M-Max Drive 415V 0.75 kW CT IP20	160 x 66 x 102	0.75	2.4	0.75	2.4	**MMX34AA2D4F0-0**
M-Max Drive 415V 1.1 kW CT IP20	195 x 90 x 105	1.1	3.3	1.1	3.3	**MMX34AA3D3F0-0**
M-Max Drive 415V 1.5 kW CT IP20	195 x 90 x 105	1.5	4.3	1.5	4.3	**MMX34AA4D3F0-0**
M-Max Drive 415V 2.2 kW CT IP20	195 x 90 x 105	2.2	5.6	2.2	5.6	**MMX34AA5D6F0-0**
M-Max Drive 415V 3.0 kW CT IP20	253 x 100 x 112	3	7.6	3	7.6	**MMX34AA7D6F0-0**
M-Max Drive 415V 4.0 kW CT IP20	253 x 100 x 112	4	9	4	9	**MMX34AA9D0F0-0**
M-Max Drive 415V 5.5 kW CT IP20	253 x 100 x 112	5.5	12	5.5	12	**MMX34AA012F0-0**
M-Max Drive 415V 7.5 kW CT IP20	253 x 100 x 112	7.5	14	7.5	14	**MMX34AA014F0-0**
M-Max Drive 415V 7.5 kW CT IP20	370 x 165 x 168	7.5	16	7.5	16	**MMX34AA016F0-0**
M-Max Drive 415V 11 kW CT IP20	370 x 165 x 168	11	23	11	23	**MMX34AA023F0-0**
M-Max Drive 415V 15 kW CT IP20	414 x 165 x 205	15	31	15	31	**MMX34AA031F0-0**
M-Max Drive 415V 18.5 kW CT IP20	414 x 165 x 205	18.5	38	18.5	38	**MMX34AA038F0-0**

M-Max copy/paste module

Description	Item no.
Module is plugged onto the front of the drive to provide upload/download of all parameters, direct link to a PC via USB or via MaxConnect software.	**MMX-COM-PC**

PC cable

Description	Item no.
Remote download USB to RJ-45 cable with software driver	**REM-USB-DOWN**

Remote Keypad ③

Description	Item no.
Keypad, bezel and cable	**OPTRMT-BP-HMAX**
Romote copy/paste keypad	**MMX-REMKEY-TEXT**
VFD adaptor	**MMX-ADAPTER-RJ45**

NEMA type 1 kit ①

Description	Item no.
NEMA type 1 and IP21 kit for frame 1	**MMX-IP21-FS1**
NEMA type 1 and IP21 kit for frame 2	**MMX-IP21-FS2**
NEMA type 1 and IP21 kit for frame 3	**MMX-IP21-FS3**
NEMA type 1 for frame 4	**MMX-CKIT-FS4**
NEMA type 1for frame 5	**MMX-CKIT-FS5**

Optional communication modules ②

Description	Item no.
Communication adaptor kit (FS1-FS3)	**MMX-NET-XA**
Communication adaptor kit (FS4-FS5)	**MMX-NET-XA-45**
PROFIBUS DP network card w. serial connection	**XMX-NET-PS-A**
PROFIBUS DP network card w. Sub-D connection	**XMX-NET-PD-A**
DevicerNet network card	**XMX-NET-DN-A**

① NEMA Type 1 kit provides conduit entry plate.

② Additional input and output reactors are available. Consult Eaton representative for a complete listing.

③ All three components are required for remote keypad operation.

Drives

DG1

The DG1 general purpose drives are part of Eaton's next generation PowerXL Series of adjustable frequency drives specifically engineered for today's more demanding commercial and industrial applications. The power unit makes use of the most sophisticated semiconductor technology and a highly modular construction that can be flexibly adapted to meet the customer's needs.

The control module was designed to include today's standard communication protocols and I/O while still having the modularity to add additional option cards. Eaton's patented Active Energy Control is also a standard feature on DG1 drives, offering customers increased efficiency, safety and reliability.

DG1 general purpose drives

- High spec sensorless vector open loop general purpose industrial drive, with inbuilt 5% dc choke
- Suitable for variable torque (fan/pump) and constant torque (conveyor/crusher) applications
- Internal RFI filter complying with emc category 2 & inbuilt brake chopper in frames 1-3
- Available off-the-shelf with IP21 & IP54 protection, suitable for direct wall mounting
- Comms inbuilt onboard - Ethernet/IP, Modbus/RTU, Modbus/TCP, BacNet MS/TP
- Conformal coated boards, suitable for tropical & coastal high humidity environments
- Complies with local C-Tick & RCM mark & product standards AS/IEC61800, 61000 series
- Real time clock & graphic copy/paste keypad with local/remote key & onscreen diagnostics
- Preset speeds, jump frequencies, sleep/wake modes, 2 PID feedback loops inbuilt
- Patented 'Active Energy Control' energy saving software, added savings over other drives

380-500V IP21

Description	Frame size	High overload		Low overload		Item no.
		P [kW]	I(H)	P [kW]	I(L)	
DG1 drive 415V 1.1kW VT IP21 C/W brake chopper	1	0.75	2.2	1.1	3.3	**DG1-342D2FB-C21C**
DG1 drive 415V 1.5kW VT IP21 C/W brake chopper	1	1.1	3.3	1.5	4.3	**DG1-343D3FB-C21C**
DG1 drive 415V 2.2kW VT IP21 C/W brake chopper	1	1.5	4.3	2.2	5.6	**DG1-344D3FB-C21C**
DG1 drive 415V 3.0kW VT IP21 C/W brake chopper	1	2.2	5.6	3	7.6	**DG1-345D6FB-C21C**
DG1 drive 415V 4.0kW VT IP21 C/W brake chopper	1	3	7.6	4	9	**DG1-347D6FB-C21C**
DG1 drive 415V 5.5kW VT IP21 C/W brake chopper	1	4	9	5.5	12	**DG1-349D0FB-C21C**
DG1 drive 415V 7.5kW VT IP21 C/W brake chopper	2	5.5	12	7.5	16	**DG1-34012FB-C21C**
DG1 drive 415V 11kW VT IP21 C/W brake chopper	2	7.5	16	11	23	**DG1-34016FB-C21C**
DG1 drive 415V 15kW VT IP21 C/W brake chopper	2	11	23	15	31	**DG1-34023FB-C21C**
DG1 drive 415V 18.5kW VT IP21 C/W brake chopper	3	15	31	18.5	38	**DG1-34031FB-C21C**
DG1 drive 415V 22kW VT IP21 C/W brake chopper	3	18.5	38	22	46	**DG1-34038FB-C21C**
DG1 drive 415V 30kW VT IP21 C/W brake chopper	3	22	46	30	61	**DG1-34046FB-C21C**
DG1 drive 415V 37kW VT IP21	4	30	61	37	72	**DG1-34061FN-C21C**
DG1 drive 415V 45kW VT IP21	4	37	72	45	87	**DG1-34072FN-C21C**
DG1 drive 415V 55kW VT IP21	4	45	87	55	105	**DG1-34087FN-C21C**
DG1 drive 415V 75kW VT IP21	5	55	105	75	140	**DG1-34105FN-C21C**
DG1 drive 415V 90kW VT IP21	5	75	140	90	170	**DG1-34140FN-C21C**
DG1 drive 415V 110kW VT IP21	5	90	170	110	205	**DG1-34170FN-C21C**
DG1 drive 415V 132kW VT IP21	6	110	205	132	261	**DG1-34205FN-C21C**
DG1 drive 415V 160kW VT IP21	6	132	245	160	310	**DG1-34261FN-C21C**

380-500V IP54

Description	Frame size	High overload P [kW]	High overload I(H)	Low overload P [kW]	Low overload I(L)	Item no.
DG1 drive 415V 1.1kW VT IP54 C/W brake chopper	1	0.75	2.2	1.1	3.3	**DG1-342D2FB-C54C**
DG1 drive 415V 1.5kW VT IP54 C/W brake chopper	1	1.1	3.3	1.5	4.3	**DG1-343D3FB-C54C**
DG1 drive 415V 2.2kW VT IP54 C/W brake chopper	1	1.5	4.3	2.2	5.6	**DG1-344D3FB-C54C**
DG1 drive 415V 3.0kW VT IP54 C/W brake chopper	1	2.2	5.6	3	7.6	**DG1-345D6FB-C54C**
DG1 drive 415V 4.0kW VT IP54 C/W brake chopper	1	3	7.6	4	9	**DG1-347D6FB-C54C**
DG1 drive 415V 5.5kW VT IP54 C/W brake chopper	1	4	9	5.5	12	**DG1-349D0FB-C54C**
DG1 drive 415V 7.5kW VT IP54 C/W brake chopper	2	5.5	12	7.5	16	**DG1-34012FB-C54C**
DG1 drive 415V 11kW VT IP54 C/W brake chopper	2	7.5	16	11	23	**DG1-34016FB-C54C**
DG1 drive 415V 15kW VT IP54 C/W brake chopper	2	11	23	15	31	**DG1-34023FB-C54C**
DG1 drive 415V 18.5kW VT IP54 C/W brake chopper	3	15	31	18.5	38	**DG1-34031FB-C54C**
DG1 drive 415V 22kW VT IP54 C/W brake chopper	3	18.5	38	22	46	**DG1-34038FB-C54C**
DG1 drive 415V 30kW VT IP54 C/W brake chopper	3	22	46	30	61	**DG1-34046FB-C54C**
DG1 drive 415V 37kW VT IP54	4	30	61	37	72	**DG1-34061FN-C54C**
DG1 drive 415V 45kW VT IP54	4	37	72	45	87	**DG1-34072FN-C54C**
DG1 drive 415V 55kW VT IP54	4	45	87	55	105	**DG1-34087FN-C54C**
DG1 drive 415V 75kW VT IP54	5	55	105	75	140	**DG1-34105FN-C54C**
DG1 drive 415V 90kW VT IP54	5	75	140	90	170	**DG1-34140FN-C54C**
DG1 drive 415V 110kW VT IP54	5	90	170	110	205	**DG1-34170FN-C54C**
DG1 drive 415V 132kW VT IP54	6	110	205	132	261	**DG1-34205FN-C54C**
DG1 drive 415V 160kW VT IP54	6	132	245	160	310	**DG1-34261FN-C54C**

DXG-EXT-3DI3DO1T

DXG-KEY-LCD

DXG-ACC-FR2N12KIT

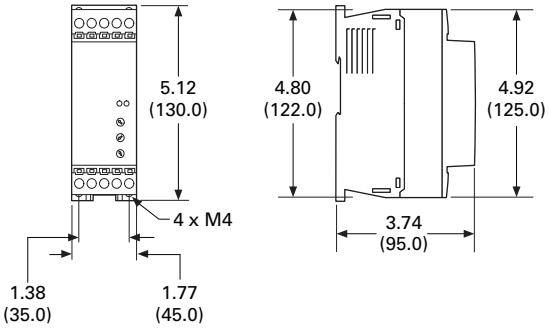
Options & accessories

Description	Item no.
DG1 Option card 3 DI 3 DO 1 THERMISTOR INPUT	**DXG-EXT-3DI3DO1T**
DG1 Option card 1 AI 2 AO ISOLATED ANALOG	**DXG-EXT-1AI2AO**
DG1 Option card 3 RO (2NO+1CO) OUTPUT	**DXG-EXT-3RO**
DG1 Option card 3 Pt100 RTD INPUT	**DXG-EXT-THERM1**
DG1 Option card 6 DI 240VAC INPUT	**DXG-EXT-6DI**
DG1 Comms card PROFIBUS DP	**DXG-NET-PROFIBUS**
DG1 Comms card CANOPEN	**DXG-NET-CANOPEN**
DG1 Comms card DEVICENET	**DXG-NET-DEVICENET**
DG1 Comms card PROFIBUS DP (DB9 CONN)	**DXG-MNT-PROFIBUS**
DG1 Comms card SMARTWIRE DT	**DXG-NET-SWD**
DG1 Comms card LONWORKS	**DXG-NET-LONWORKS**
DG1 replacement keypad	**DXG-KEY-LCD**
DG1 remote keypad mount kit (0.5M CABLE)	**DXG-KEY-RMTKIT**
DG1 remote keypad cable 1M	**DXG-CBL-1M0**
DG1 remote keypad cable 3M	**DXG-CBL-3M0**
DG1 remote keypad mounting holder	**DXG-KEY-HOLDER**
DG1 IP54 blank keypad hole plug	**DXG-KEY-N12PLUG**
DG1 FRAME 1 IP54 conversion kit	**DXG-ACC-4FR1N12KIT**
DG1 FRAME 2 IP54 conversion kit	**DXG-ACC-FR2N12KIT**
DG1 FRAME 3 IP54 conversion kit	**DXG-ACC-FR3N12KIT**
DG1 FRAME 1 IP54 flange kit	**DXG-ACC-FR1N12FK**
DG1 FRAME 2 IP54 flange kit	**DXG-ACC-FR2N12FK**
DG1 FRAME 3 IP54 flange kit	**DXG-ACC-FR3N12FK**
DG1 FRAME 4 IP54 flange kit	**DXG-ACC-FR4N12FK**
DG1 FRAME 5 IP54 flange kit	**DXG-ACC-FR5N12FK**
DG1 control module demo stand	**DG1-DEMO1**
DG1 full drive demo case	**DG1-DEMO2**
DG1 RS485 programming cable USB-TO-RJ45	**DXG-CBL-PCCABLE**
DG1 battery for real time clock	**DXG-ACC-RTBATT**
DG1 control module kit with keypad	**DXG-SPR-CTRLKIT**

Soft starter controllers

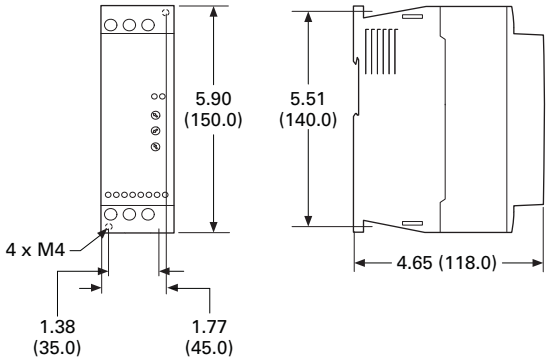
Dimensions (approximate dimensions in inched (mm)

Frame 1



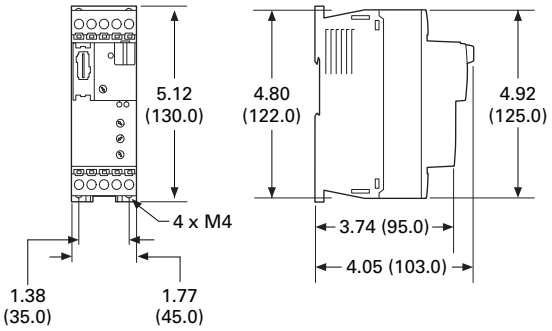
Item no.	
DS7-340SX004N0-N	DS7-342SX004N0-N
DS7-340SX007N0-N	DS7-342SX007N0-N
DS7-340SX009N0-N	DS7-342SX009N0-N
DS7-340SX012N0-N	DS7-342SX012N0-N

Frame 2



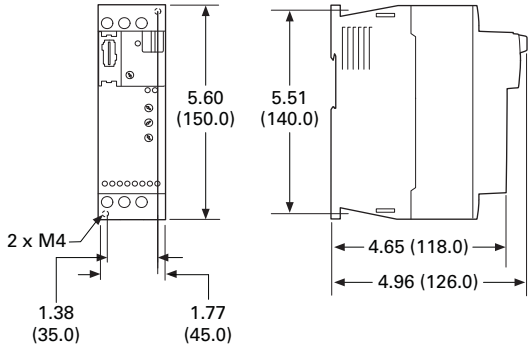
Item no.	
DS7-340SX016N0-N	DS7-342SX016N0-N
DS7-340SX024N0-N	DS7-342SX024N0-N
DS7-340SX032N0-N	DS7-342SX032N0-N

Frame 1—SmartWire-DT



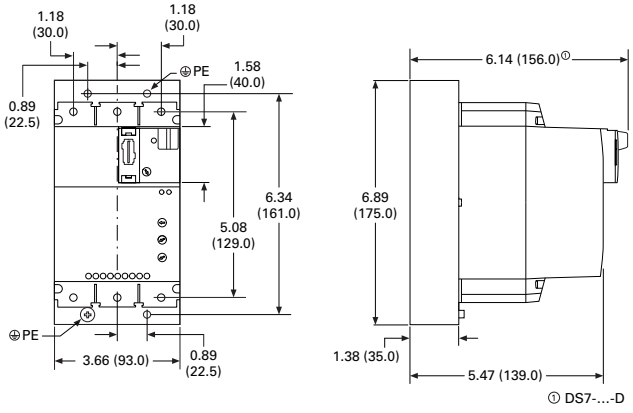
Item no.	
DS7-34DSX004N0-D	DS7-34DSX009N0-D
DS7-34DSX007N0-D	DS7-34DSX012N0-D

Frame 2—SmartWire-DT



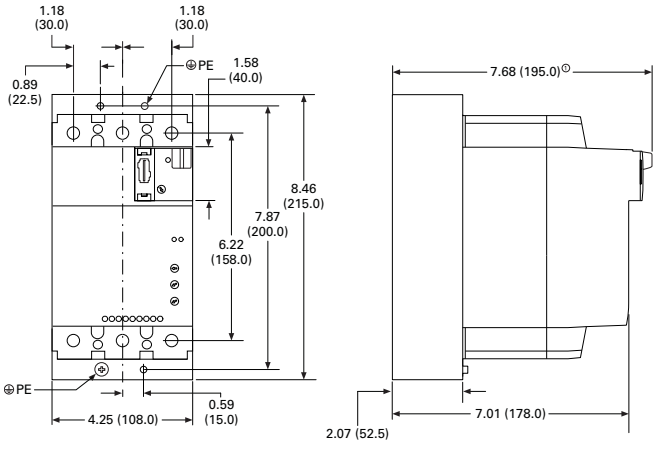
Item no.
DS7-34DSX016N0-D
DS7-34DSX024N0-D
DS7-34DSX032N0-D

Frame 3—SmartWire-DT and Standard (Non SmartWire-DT)



Item no.		
DS7-340SX041N0-N	DS7-342SX041N0-N	DS7-34DSX041N0-D
DS7-340SX055N0-N	DS7-342SX055N0-N	DS7-34DSX055N0-D
DS7-340SX070N0-N	DS7-34DSX070N0-D	DS7-342SX070N0-N
DS7-340SX081N0-N	DS7-342SX081N0-N	DS7-34DSX081N0-D
DS7-340SX100N0-N	DS7-342SX100N0-N	DS7-34DSX100N0-D

Frame 4—SmartWire-DT and Standard (Non SmartWire-DT)

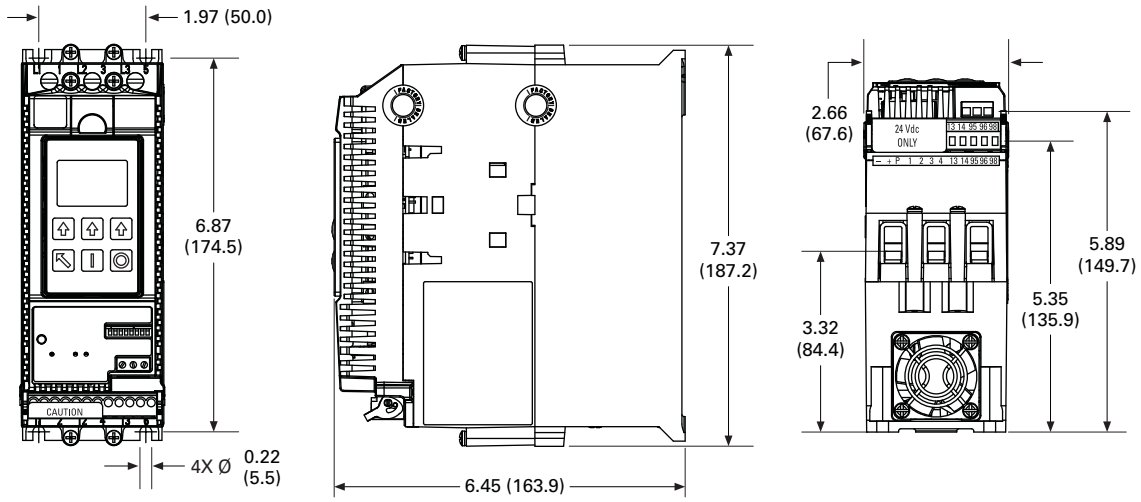


Item no.		
DS7-342SX135N0-N	DS7-340SX135N0-N	DS7-34DSX135N0-D
DS7-342SX160N0-N	DS7-340SX160N0-N	DS7-34DSX160N0-D
DS7-342SX200N0-N	DS7-340SX200N0-N	DS7-34DSX200N0-D

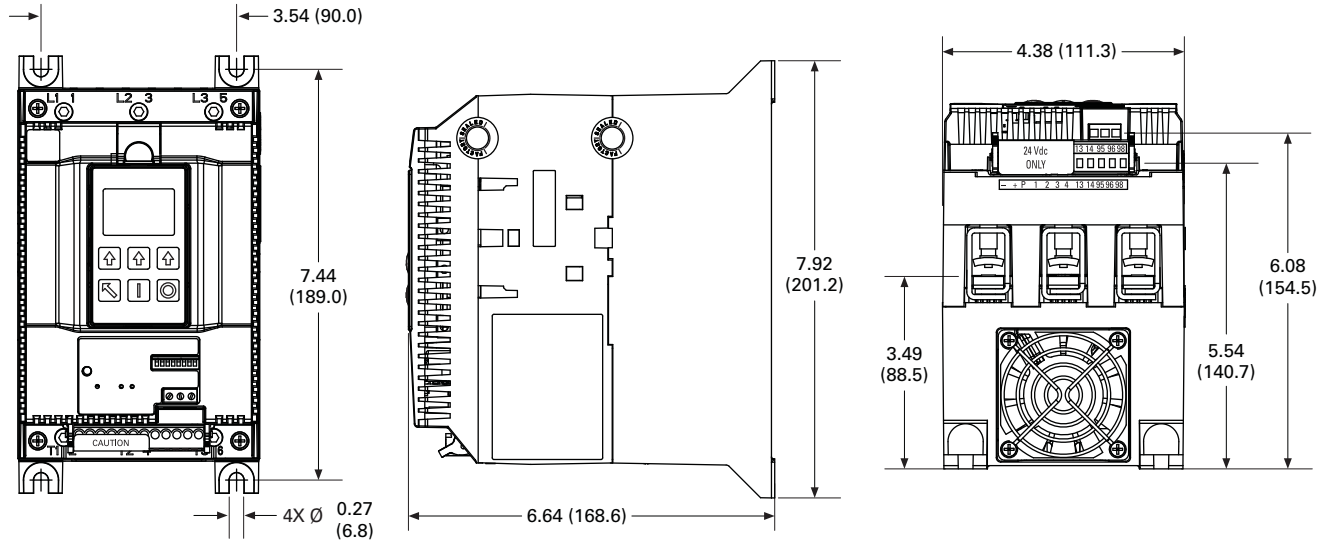
Solid soft starter

Dimensions (approximate dimensions in inched (mm)

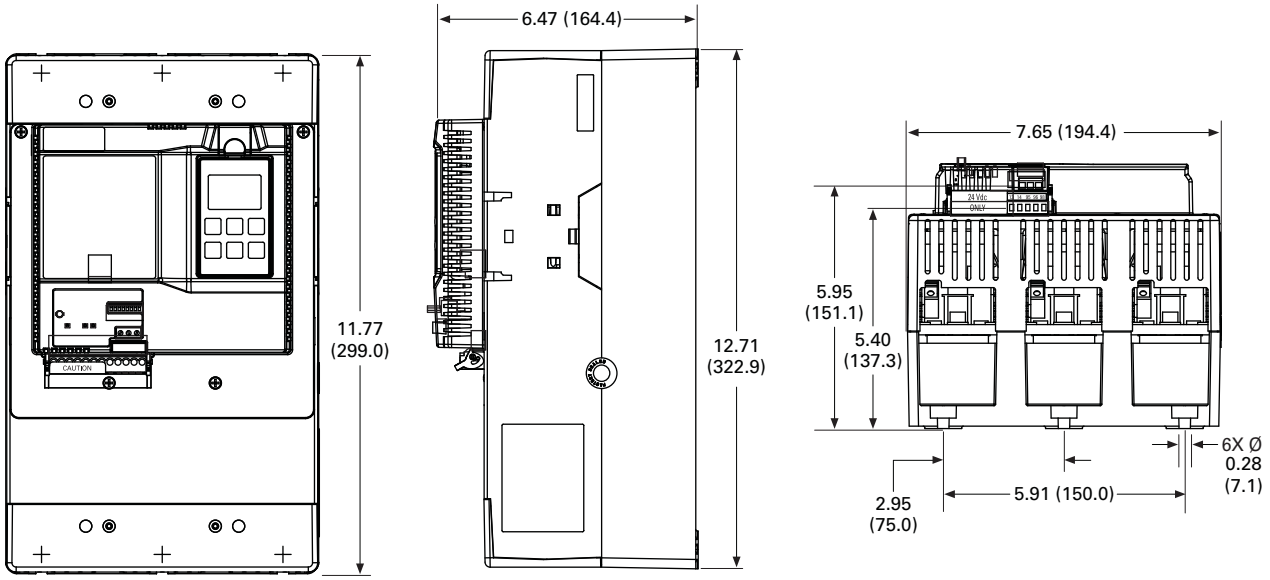
S811+N...



S811+R...



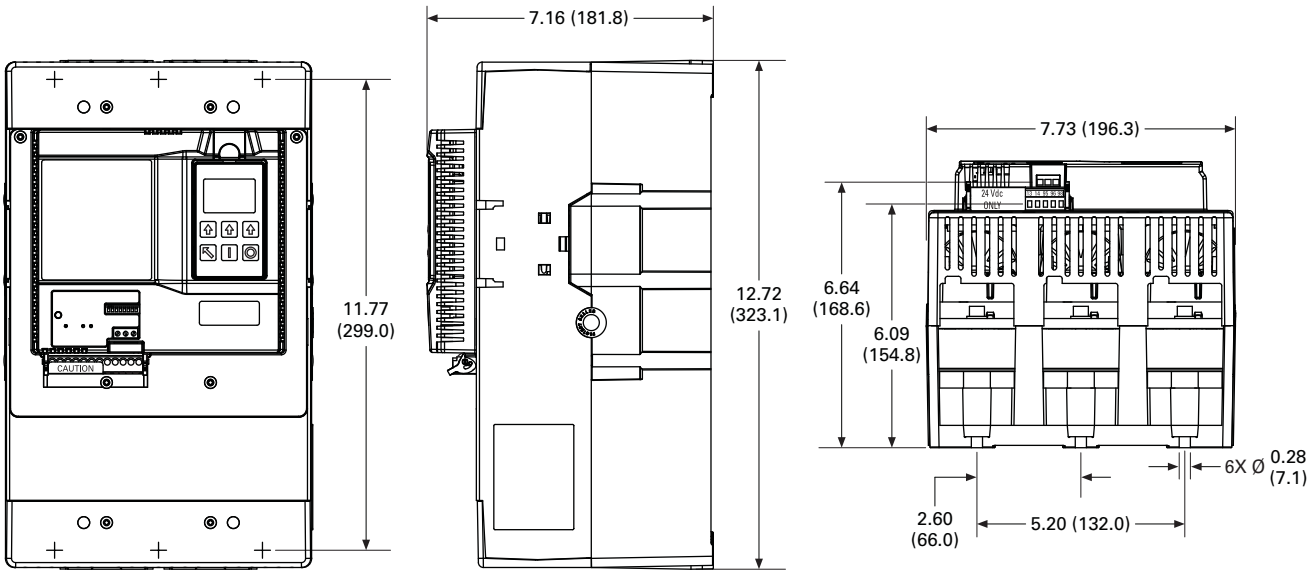
S811+T...



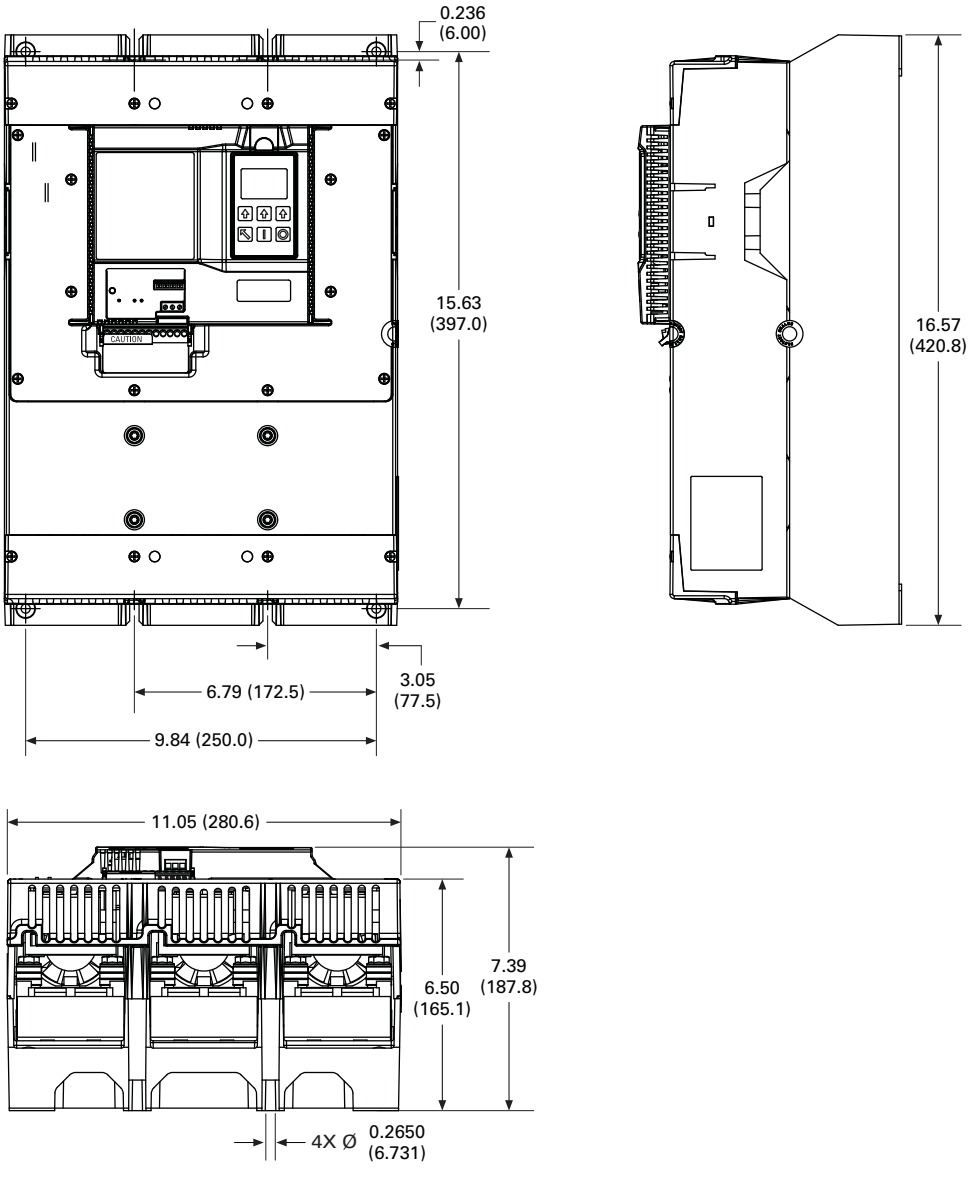
Solid soft starter

Dimensions (approximate dimensions in inched (mm)

S811+U...



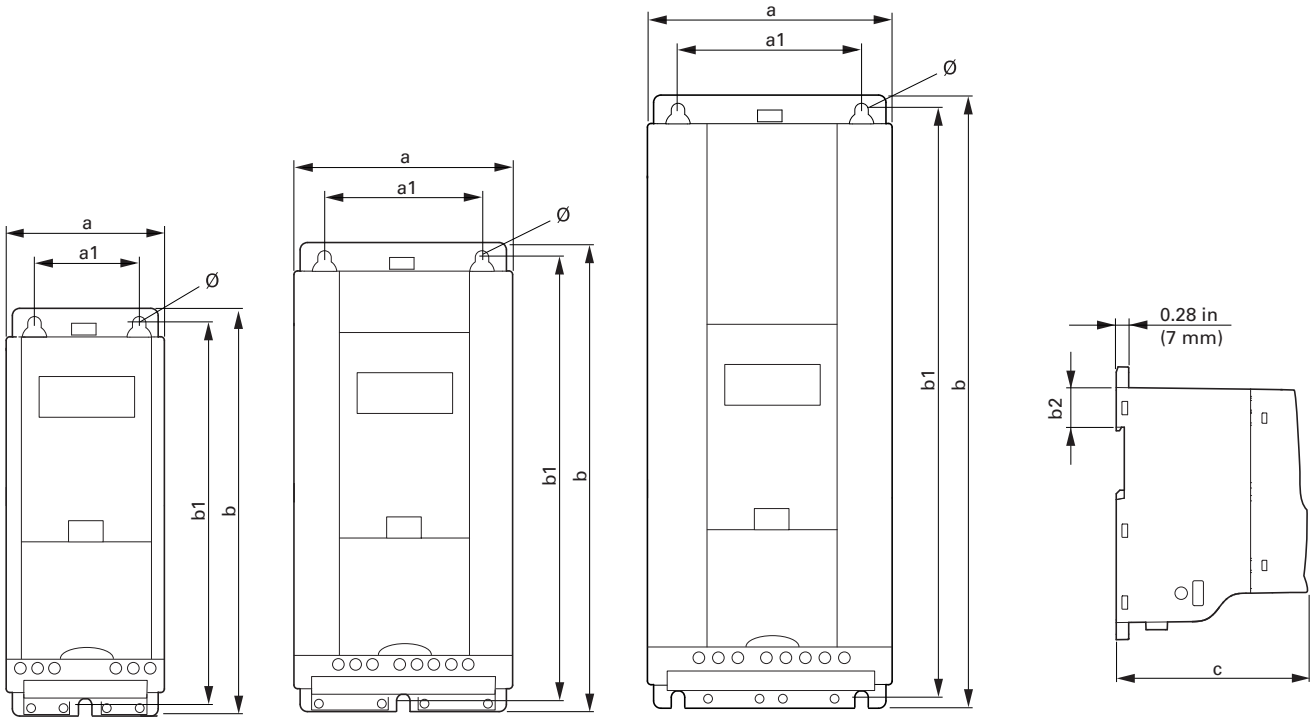
S811+V...



M-Max series drives

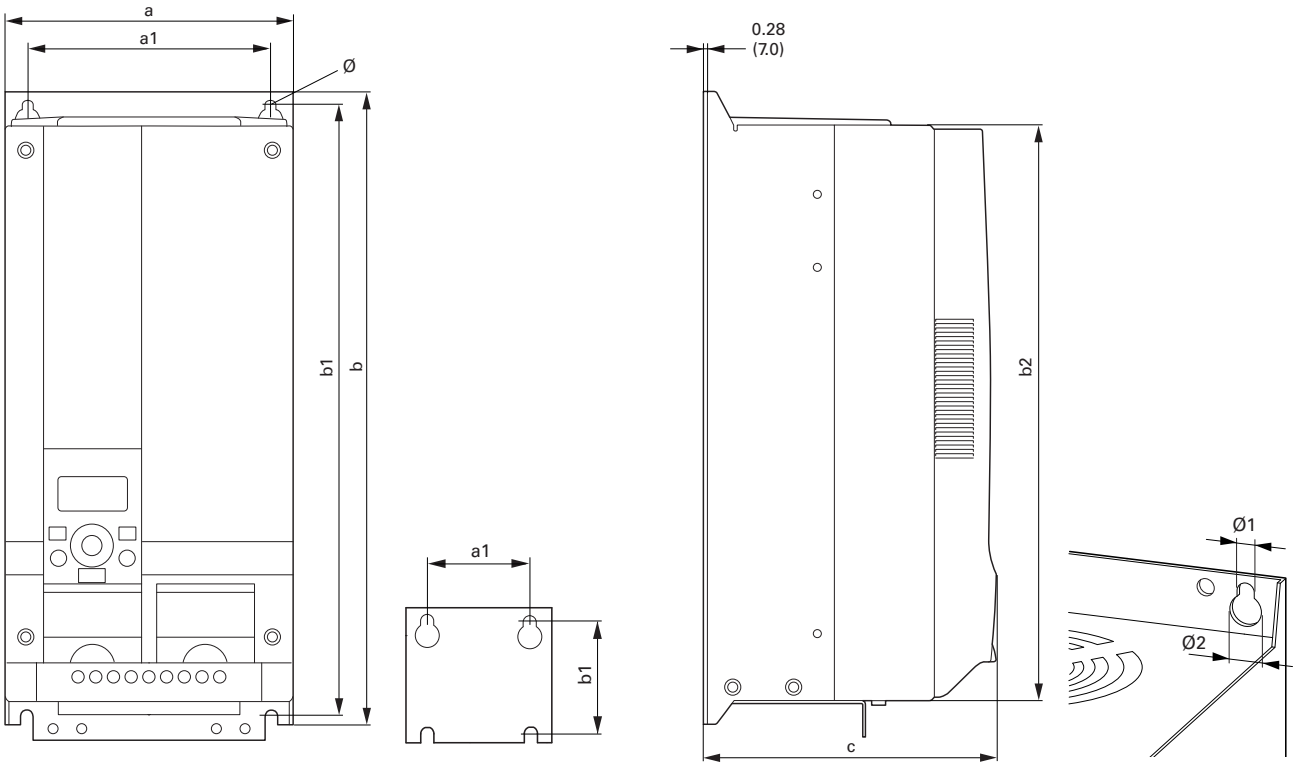
Dimensions (approximate dimensions in inched (mm)

Frame Sizes, FS1–FS3 (FS = Frame Size)



FS1 FS2 FS3

Frame Sizes, FS4 and FS5 (FS = Frame Size)

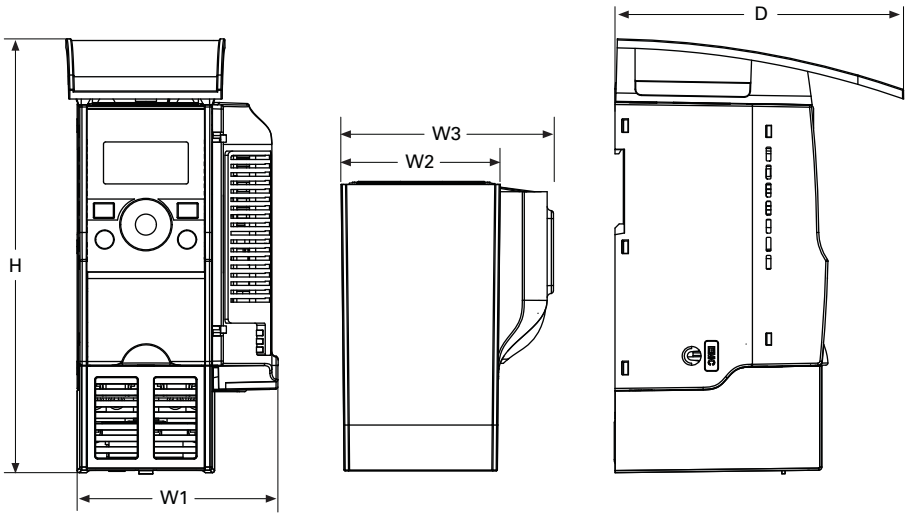


M-Max series drives

Dimensions (approximate dimensions in inched (mm)

Item no.	a	a1	b	b1	b2	c	Ø, Ø1	Ø2	Installation Size
MMX12AA1D7_ MMX12AA2D4_ MMX12AA2D8_ MMX34AA1D3_ MMX34AA1D9_ MMX34AA2D4_	2.60 (66)	1.50 (38)	6.30 (160)	5.79 (147)	1.26 (32)	4.02 (102)	0.18 (4.5)	—	FS1
MMX12AA3D7_ MMX12AA4D8_ MMX12AA7D0_ MMX34AA3D3_ MMX34AA4D3_ MMX34AA5D6_	3.54 (90)	2.46 (62.5)	7.68 (195)	7.17 (182)	1.26 (32)	4.14 (105)	2.17 (5.5)	—	FS2
MMX12AA9D6_ MMX34AA7D6_ MMX34AA9D0_ MMX34AA012_ MMX34AA014_	3.94 (100)	2.95 (75)	9.96 (253)	9.53 (242)	1.34 (34)	4.41 (112)	2.17 (5.5)	—	FS3
MMX34AA016_ MMX34AA023_	6.50 (165.0)	5.51 (140.0)	14.57 (370.0)	13.82 (351.0)	13.27 (337.0)	6.61 (168.0)	0.28 (7.0)	0.55 (14.0)	FS4
MMX34AA031_ MMX34AA038_	6.50 (165.0)	5.51 (140.0)	14.57 (414.0)	13.82 (398.0)	15.08 (383.0)	8.07 (205.0)	0.28 (7.0)	0.55 (14.0)	FS5

NEMA 1/IP21 M-Max Drives and Communication Adapter Kit

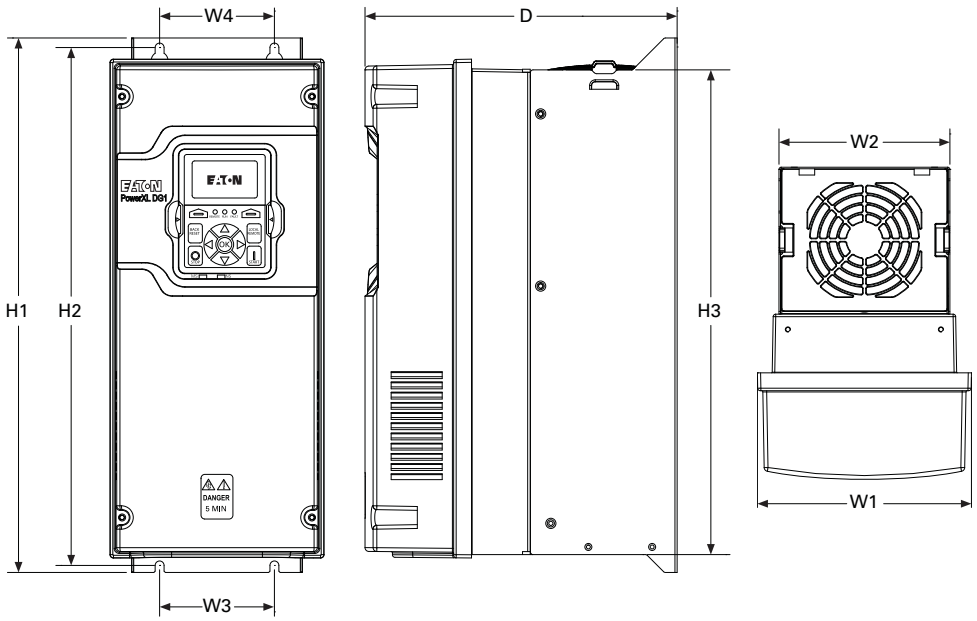


Frame type	FS1	FS2	FS3
H	8.14 (206.7)	9.90 (215.5)	12.26 (311.5)
W1	3.77 (95.7)	4.72 (120.0)	5.12 (130.1)
W2	2.99 (75.9)	3.97 (100.8)	4.36 (110.8)
W3	3.98 (101.2)	4.94 (125.5)	5.33 (135.3)
D	5.41 (137.5)	5.68 (144.2)	6.32 (160.5)

DG1 drive

Dimensions (approximate dimensions in inched (mm)

PowerXL Series



Frame Size	Voltage	hp (CT/I_H)	kW	Amperes (CT/I_H)	D	H1	H2	H3	W1	W2	W3	W4	Ø	Weight Lb (kg)
FR1	230 Vac	0.75–3	0.55–2.2	3.5–11	7.89 (200.4)	12.87 (326.9)	12.28 (311.9)	11.50 (292.1)	6.02 (153.0)	4.80 (121.9)	3.94 (100.1)	3.94 (100.1)	0.28 (7.0)	14.33 (6.5)
	480 Vac	1–5	0.75–3.7	2.3–7.6										
	575 Vac[1]	2–5	1.5–3.7	3.3–7.5										
FR2	230 Vac	5–7.5	3–5.5	12.5–25	9.63 (244.7)	16.50 (419.1)	15.98 (405.9)	14.96 (380.0)	6.61 (167.8)	5.28 (134.1)	3.54 (90.0)	3.54 (90.0)	0.28 (7.0)	23.37 (10.6)
	480 Vac	7.5–15	5.5–11	12–23										
	575 Vac[1]	7.5–15	5.5–11	10–18										
FR3	230 Vac	10–15	7.5–11	31–48	10.44 (265.1)	21.97 (558.0)	21.46 (545.0)	20.43 (518.9)	8.06 (204.6)	7.24 (183.9)	4.92 (125.0)	4.92 (125.0)	0.35 (9.0)	49.82 (22.6)
	480 Vac	20–30	15–22	31–46										
	575 Vac[1]	20–30	15–22	22–34										
FR4	230 Vac	20–30	15–22	61–88	11.57 (294.0)	24.80 (629.9)	34.31 (617.5)	23.27 (591.1)	9.36 (237.7)	9.13 (231.9)	8.07 (205.0)	8.07 (205.0)	0.35 (9.0)	77.60 (35.2)
	480 Vac	40–60	30–45	61–87										
	575 Vac[1]	40–60	30–45	41–62										
FR5	230 Vac	40–60	30–45	114–170	13.41 (340.7)	34.98 (888.5)	29.65 (753.1)	27.83 (706.9)	11.34 (288.0)	11.10 (281.9)	8.66 (220.0)	8.66 (220.0)	0.35 (9.0)	154.32 (70.0)
	480 Vac	75–125	55–90	105–170										
	575 Vac[1]	75–125	55–90	80–125										
FR6[1]	230 Vac	75–100	55–75	211–261	1	1	1	1	1	1	1	1	1	1
	480 Vac	150–200	110–150	205–261										
	575 Vac[1]	150–200	110–160	144–208										

Note [1] FR6 and 575 Vac available in 2015.

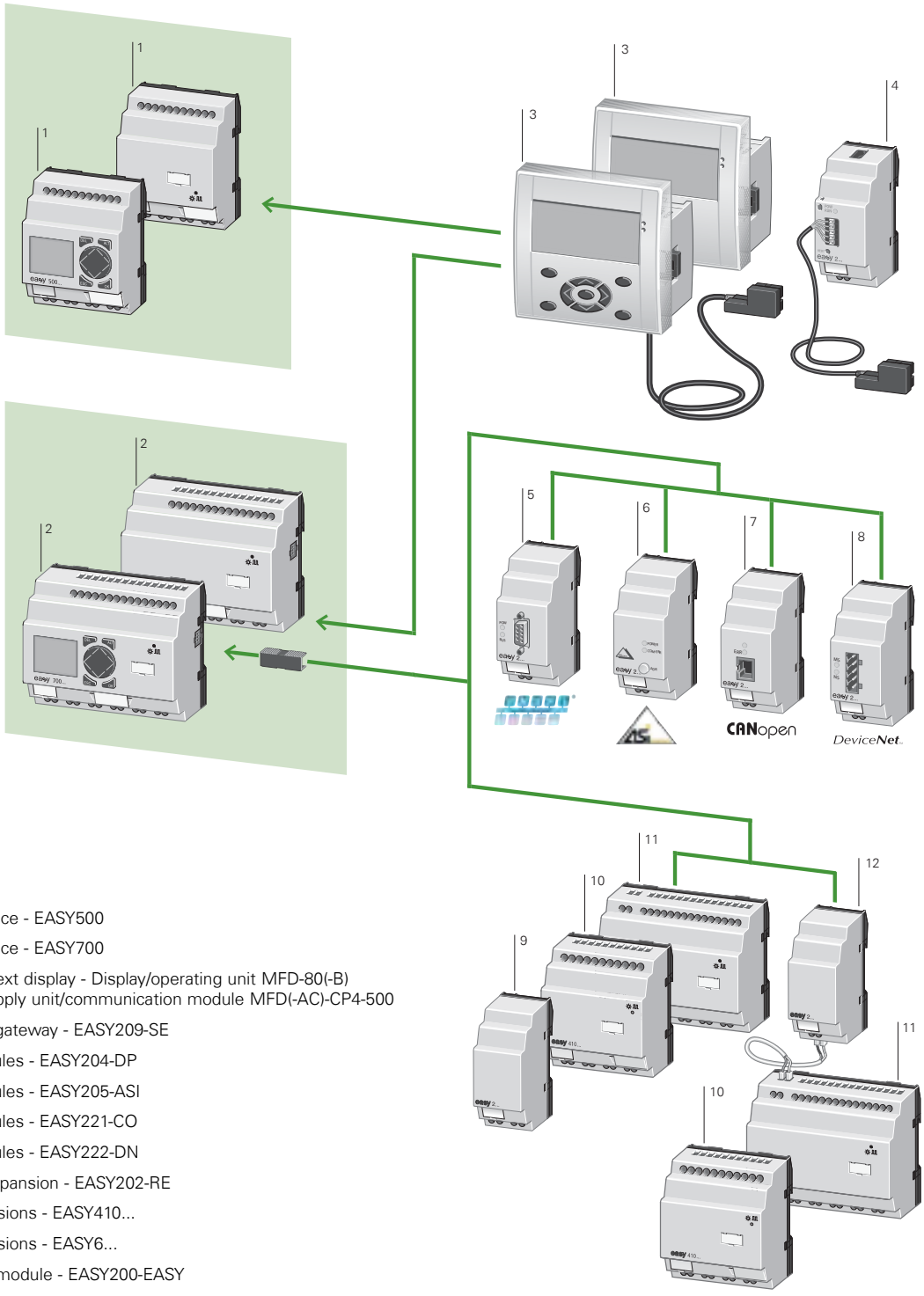
Control, monitor, protect.

Today's marketplace is all about how you interface with customers, suppliers & your machinery. Meeting customers' needs means creating products that interface seamlessly. That's why Eaton's complete line of automation & control products includes everything from sophisticated logic controllers & operator interfaces to monitoring relays, timers, limit switches & terminal blocks, all the latest in technology.

With the ever present need to be connected to your machinery & processes, communications are more important than ever. All our controllers, touchscreens & drives provide Ethernet connectivity to stay in control of your processes & machinery wherever you are. Our new & expanded range, now including Eaton's industrial automation products, provides a one-stop shop for all your automation & control requirements.

easy relay controllers

System overview, easy relays, MFD-titan multi-function display



1. Basic device - EASY500
2. Basic device - EASY700
3. Remote text display - Display/operating unit MFD-80(-B)
   Power supply unit/communication module MFD(-AC)-CP4-500
4. Ethernet gateway - EASY209-SE
5. Bus modules - EASY204-DP
6. Bus modules - EASY205-ASI
7. Bus modules - EASY221-CO
8. Bus modules - EASY222-DN
9. Output expansion - EASY202-RE
10. I/O expansions - EASY410...
11. I/O expansions - EASY6...
12. Coupling module - EASY200-EASY

easy relay controllers

Base units easy500, easy700, easy800

easy500

easy700

easy800

Inputs	of which can be used as analogue	Outputs			Additional features		Supply voltage	Item no.
Digital		Relay 10 A (UL)	Transistor	Analog	Display & keypad	Real time clock		
8	2	4	–	–	✓	✓	24 V AC	**EASY512-AB-RC**
8	2	4	–	–	–	✓	24 V AC	**EASY512-AB-RCX**
8	–	4	–	–	✓	–	100 - 240 VAC	**EASY512-AC-R**
8	–	4	–	–	✓	✓	100 - 240 VAC	**EASY512-AC-RC**
8	–	4	–	–	–	✓	100 - 240 VAC	**EASY512-AC-RCX**
8	2	4	–	–	✓	✓	12 V DC	**EASY512-DA-RC**
8	2	4	–	–	–	✓	12 V DC	**EASY512-DA-RCX**
8	2	4	–	–	✓	–	24 V DC	**EASY512-DC-R**
8	2	4	–	–	✓	✓	24 V DC	**EASY512-DC-RC**
8	2	4	–	–	–	✓	24 V DC	**EASY512-DC-RCX**
8	2	–	4	–	✓	✓	24 V DC	**EASY512-DC-TC**
8	2	–	4	–	–	✓	24 V DC	**EASY512-DC-TCX**
12	4	6	–	–	✓	✓	24 V AC	**EASY719-AB-RC**
12	4	6	–	–	–	✓	24 V AC	**EASY719-AB-RCX**
12	–	6	–	–	✓	✓	100 - 240 VAC	**EASY719-AC-RC**
12	–	6	–	–	–	✓	100 - 240 VAC	**EASY719-AC-RCX**
12	4	6	–	–	✓	✓	12 V DC	**EASY719-DA-RC**
12	4	6	–	–	–	✓	12 V DC	**EASY719-DA-RCX**
12	4	6	–	–	✓	✓	24 V DC	**EASY719-DC-RC**
12	4	6	–	–	–	✓	24 V DC	**EASY719-DC-RCX**
12	4	–	8	–	✓	✓	24 V DC	**EASY721-DC-TC**
12	4	–	8	–	–	✓	24 V DC	**EASY721-DC-TCX**
12	–	6	–	–	✓	✓	100 - 240 VAC	**EASY819-AC-RC**
12	–	6	–	–	–	✓	100 - 240 VAC	**EASY819-AC-RCX**
12	4	6	–	–	✓	✓	24 V DC	**EASY819-DC-RC**
12	4	6	–	–	–	✓	24 V DC	**EASY819-DC-RCX**
12	4	6	–	1	✓	✓	24 V DC	**EASY820-DC-RC**
12	4	6	–	1	–	✓	24 V DC	**EASY820-DC-RCX**
12	4	–	8	–	✓	✓	24 V DC	**EASY821-DC-TC**
12	4	–	8	–	–	✓	24 V DC	**EASY821-DC-TCX**
12	4	–	8	1	✓	✓	24 V DC	**EASY822-DC-TC**
12	4	–	8	1	–	✓	24 V DC	**EASY822-DC-TCX**

easy relay controllers

MFD-Titan display/keypad, CPU, I/O modules

Voltage	Description	Item no.
Display/operating unit Graphics display: 132 x 64 pixels with switchable backlight, freely definable status LED, IP65, removable titanium front frame		
–	With keypad & Eaton logotype NEMA 4x in connection with MFD-XM-80 protective membrane, see accessories	**MFD-80-B**
–	With keypad, without Eaton logotype, NEMA 4x in connection with MFD-XM-80 protective membrane, see accessories	**MFD-80-B-X**
–	Without keypad, with Eaton logotype, NEMA 4x	**MFD-80**
–	Without keypad, without Eaton logotype, NEMA 4x	**MFD-80-X**
Power supply unit/CPU module Expandable with MFD-80-.. & I/O module, easy expansions can be connected, Serial interface, IP20, cage clamp terminals		
100/240 V AC	Without easy-NET	**MFD-AC-CP8-ME**
100/240 V AC	With easy-NET	**MFD-AC-CP8-NT**
24 V DC	Without easy-NET	**MFD-CP8-ME**
24 V DC	With easy-NET	**MFD-CP8-NT**

MFD-80-B

MFD-CP8-ME

MFD-Titan display/keypad, CPU, I/O modules

Inputs			Outputs				
Digital	**of which can be used as analog**	**Pt 100/ Ni 1000**	**Relay 10 A (UL)**	**Transistor**	**Analog**	**Range of temperature**	**Item no.**
I/O modules IP20, cage clamp terminals 24 V DC for MFD-CP8..							
12	4	–	4	–	–	–	**MFD-R16**
12	4	–	–	4	–	–	**MFD-T16**
12	4	–	4	–	1	–	**MFD-RA17**
12	4	–	–	4	1	–	**MFD-TA17**
100/240 V AC for MFD-AC-CP8…							
12	–	–	4	–	–	–	**MFD-AC-R16**
I/O modules with temperature measuring IP20, cage clamp terminals, 24 V DC for MFD-CP8…, (from device version 08), temperature range can be set							
6	2	2	–	4	–	-40…+90 °C 0…+250 °C 0…+400 °C	**MFD-TP12-PT-A**
6	2	2	–	4	–	-200…+200 °C 0…+850 °C	**MFD-TP12-PT-B**
6	2	2	–	4	–	-40…+90 °C 0…+250 °C	**MFD-TP12-NI-A**
6	2	2	–	4	1	-40…+90 °C 0…+250 °C 0…+400 °C	**MFD-TAP13-PT-A**
6	2	2	–	4	1	-200…+200 °C 0…+850 °C	**MFD-TAP13-PT-B**
6	2	2	–	4	1	-40…+90 °C 0…+250 °C	**MFD-TAP13-NI-A**

MFD-R16

MFD-TP12-PT-A

easy relay controllers

Expansions, bus modules, Ethernet gateway

EASY618-AC-RE

EASY200-EASY

EASY209-SE

MFD-CP4-500

Description	Inputs Digital/ Analogue	Outputs Relay 10 A (UL)	Transistor	Analogue	Supply voltage	For use with...	Item no.
I/O expansions							
–	12	6	–	-	100 - 240 VAC	easy700 easy800 MFD-CP8..	**EASY618-AC-RE**
–	12	6	–	-	24 V DC		**EASY618-DC-RE**
–	12	–	8	-	24 V DC		**EASY620-DC-TE**
Not usable in combination with base units EASY719-DA-...	–	2	–	-	–		**EASY202-RE**
Can be used through easyLink	6	4	–	-	24 V DC		**EASY410-DC-RE**
	6	–	4	-	24 V DC		**EASY410-DC-TE**
	1 / 2 ②	–	2	1	24 V DC		**EASY406-DC-ME**
	1 / 6 ③	–	2	2	24 V DC		**EASY411-DC-ME**
Coupling unit							
For the connection of remote I/O modules up to 30 m.	–	–	–	-	–	easy700 easy800 MFD-CP8..	**EASY200-EASY**
Expansion units for networking							
AS-Interface connection slave 4 inputs, 4 outputs, 4parameter bits Addresses available: 0 to 31	–	–	–	-	–		**EASY205-ASI**
Profibus DP slave addresses available: 1 to 126	–	–	–	-	–	easy700 easy800 MFD-CP8..	**EASY204-DP**
CANopen interface addresses available: 1 to 127	–	–	–	-	–		**EASY221-CO**
DeviceNet interface addresses available: 0 to 63	–	–	–	-	–		**EASY222-DN**
Ethernet gateway							
Serial interface easy to ethernet	–	–	–	-	–	easy500 easy700 easy800 MFD-CP8..	**EASY209-SE**
Power supply unit/communication modules							
24 V DC	–	–	–	-	–	easy500 easy700	**MFD-CP4-500**
24 V DC	–	–	–	-	–	easy800 MFD-CP8..	**MFD-CP4-800**
100/240 V AC	–	–	–	-	–	easy500 easy700	**MFD-AC-CP4-500**
100/240 V AC	–	–	–	-	–	easy800 MFD-CP8..	**MFD-AC-CP4-800**

② 2 × 0 - 10 V, 2 × 0 - 20 mA, 2 × RTD (2/3-wire connection);
any combination Voltage inputs (0–10 V) can optionally be used as digital inputs

③ 2 x 0 - 10 V, 2 x 0 - 20mA, 2 x Pt100 (2/3 wire connection);
Voltage inputs (0 –10 V) can optionally be used as digital inputs

easy relay controllers

easy relays, MFD-Titan multi-function display, accessories

Description	For use with	Item no.
Programming software		
Menu selection in 13 languages. Operating systems: Windows 2000 SP4, Windows XP SP1	easy400/500/600/700	**EASY-SOFT-BASIC**
Menu selection in 13 languages. Operating systems: Windows 2000 SP4, Windows XP SP1	easy400/500/600/700 /800/MFD-..-CP8	**EASY-SOFT-PRO**
Programming cable		
SUB-D 9-pole, serial, 2 m	easy500 easy700	**EASY-PC-CAB**
USB, 2 m		**EASY-USB-CAB**
SUB-D 9-pole, serial, 2 m	easy800 MFD-..-CP8	**EASY800-PC-CAB**
USB, 2 m		**EASY800-USB-CAB**
Modem cable		
Configurable modem, printer and programming cable, possible transfer rate 56 kbaud, 9 pole Sub-D plug (plug + socket for assembly by user)		**EASY800-MO-CAB**
Memory cards		
32 kB module	easy500 easy700	**EASY-M-32K**
256 kB module	easy800 MFD-..-CP8	**EASY-M-256K**
Coupling piece		
Spare link between base unit & expansion units	easy700/800/ MFD-..-CP8	**EASY-LINK-DS**
Network connection cable (remote coupling) Completely prepared for easy-NET		
Length: 0.3 m	easy800 MFD-..-CP8-NT	**EASY-NT-30**
Length: 0.8 m		**EASY-NT-80**
Length: 1.5 m		**EASY-NT-150**
Bus termination resistor		
8 pole, RJ45, 124 Ω Connection to PIN 1 and PIN 2	easyNet	**EASY-NT-R**
Data cable		
4 x 0.14 mm², twisted pair, AWG 26 Length: 100 m	easyNet	**EASY-NT-CAB**
Bus connector plug		
8 pole, RJ45	easyNet	**EASY-NT-RJ45**
Point-to-point connection cable		
Serial interface for connecting MFD-..-CP8 to easy800 or MFD-..-CP8, can be configured as required with separate plug, 5m can be cut as required	easy800 MFD-..-CP8	**MFD-800-CAB5**
Reserve power supply/communications module For MFD-80… separately mounted display (only ASCII characters) on easy500/700/800/MFD-…-CP8, without connection cable, serial interface.		
24 V DC, IP20	MFD-80..	**MFD-CP4**
100/240 V AC, IP20	MFD-80..	**MFD-AC-CP4**
Spare connection cables		
For the connection of MFD-CP4-500 to easy500/ easy700, 5m, can be cut to length	easy500 easy700	**MFD-CP4-500-CAB5**
For the connection of MFD-CP4-800 to easy800/ MFD-…-CP8, 5m, can be cut to length	easy800 MFD-..-CP8	**MFD-CP4-800-CAB5**

EASY-PC-CAB

EASY-LINK-DS

MFD-800-CAB5

EASY400-POW

easy relay controllers

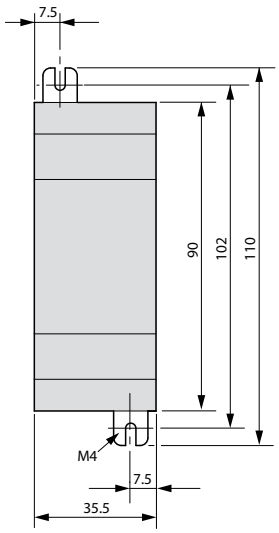
easy relays, MFD-Titan multi-function display, accessories

Description	For use with	Item no.
Switched-mode power supply unit primary-switched mode Stabilized		
Rated input voltage: 50/60 HZ: 100/240 V AC Rated output voltage (residual ripple): 24 V DC (g 3 %) Rated output current: 1.25 A	easy500 easy700 easy800 MFD-CP8	**EASY400-POW**
Rated input voltage: 50/60 Hz: 100/240 V Rated output voltage: 24 V/12 V DC Rated output current: 0.35 A/20 mA	easy500 easy700 easy800 MFD-CP8	**EASY200-POW**
Rated input voltage: 50/60 Hz: 100 - 240 V AC Rated output voltage (residual ripple): 24 V DC (± 3 %) Rated output current: 2.5 A		**EASY500-POW**
PROFIBUS-DP data cable		
Twisted pair, without plug, 2-core, 2 x 0.64 mm² (only suitable for fixed wiring) 100 m		**ZB4-900-KB1**
PROFIBUS-DP bus connector plug		
Pins, 9 pole - Cable entry, angled 90°		**ZB4-209-DS2**
Metallised insulated housing Maximum transfer rate 12 MBit/s Integrated switch (accessible from the outside) for the bus terminating resistors Terminal block for two cable entries, with straight or 90° angled cable entry, as required		**ZB4-209-DS3**
Upstream device to increase the AC input current		
6 channels, cable length up to 100m	AC versions of easy/MFD	**EASY256-HCI**
Mounting accessories **Top-hat rail adapter for hinged inspection window**		
12 mm x 66 mm x 82 mm Installation on hinged inspection window, for front fitting of devices. Complete set, consisting of 2 brackets & 4 screws	easy200 easy500 easy700 easy800 MFD-CP8	**SKF-HA**
Hinged inspection window		
94 mm x 77 mm x 25 mm (4 space units)	easy500	**SKF-FF4**
130 mm x 77 mm x 25 mm (6 space units)	easy700 easy800	**SKF-FF6**
Mounting rail to IEC/EN 60715		
Mounting rail with cutout specifically for MFD-AC-CP8.../MFD CP8... for fixing easy expansion units (2 space units) Length: 142.5 mm	easy200	**MFD-TS-144**
Protective cover		
Transparent, protection against accidental actuation. Can be sealed. Application without front frame	MFD-80..	**MFD-XS-80**
Protective membrane		
Transparent version for harsh environmental conditions & application in the food industry. Increased protection rating to NEMA 4x for MFD-80-B	MFD-80..	**MFD-XM-80**
Telescopic clip		
With 35mm top-hat rail to IEC/EN 60715 for mounting depth compensation when rear mounting in CI-K… enclosures and cabinets. Stepless adjustment via scale from 75 – 115 mm. Screw and snap fastening		**M22-TA**

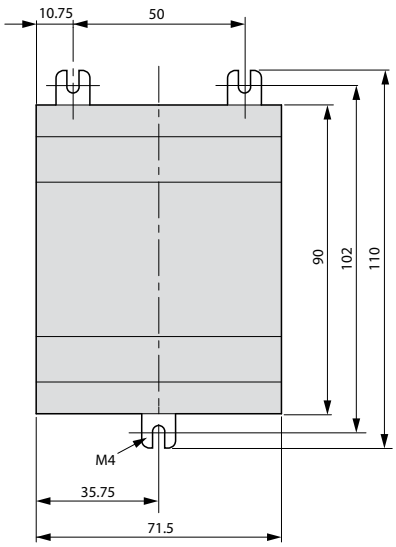
easy relay controllers

Dimension

easy200



easy400
easy500



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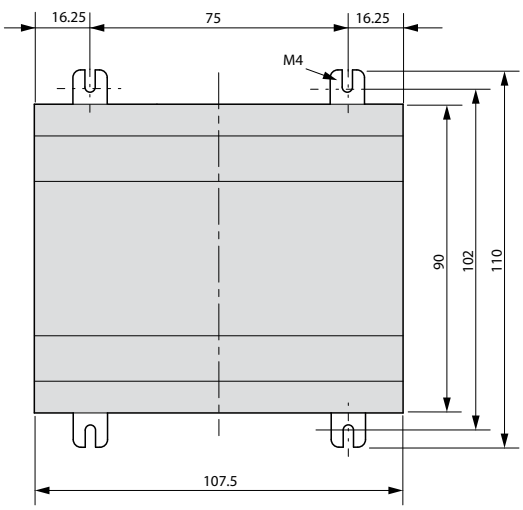
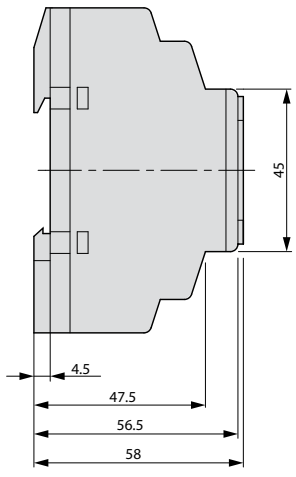
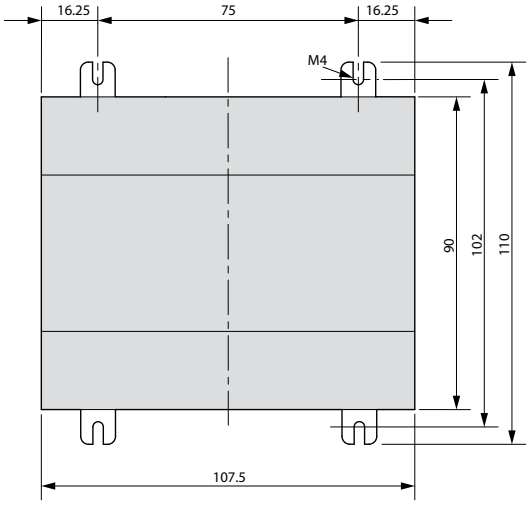
easy700

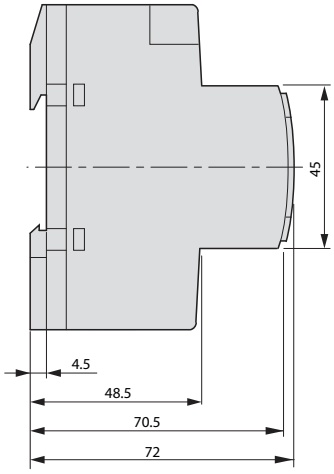


easy200
easy400
easy500
easy600
easy700

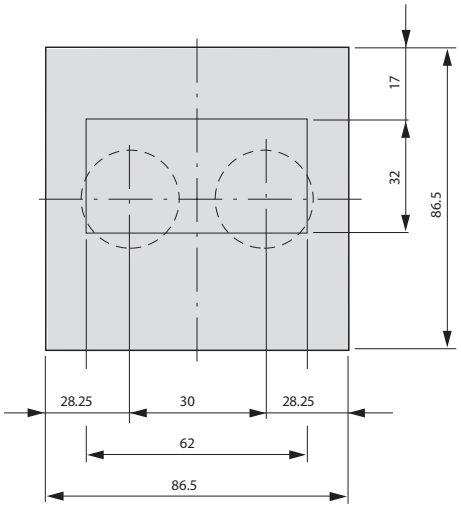


easy800

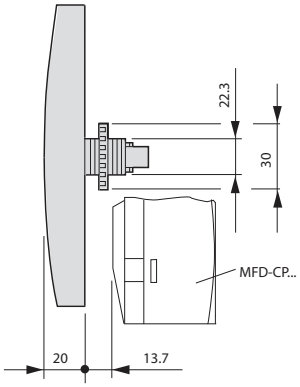




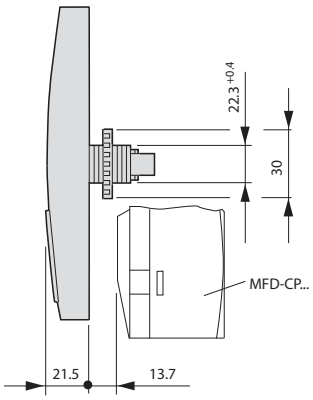
MFD-80...



MFD-80



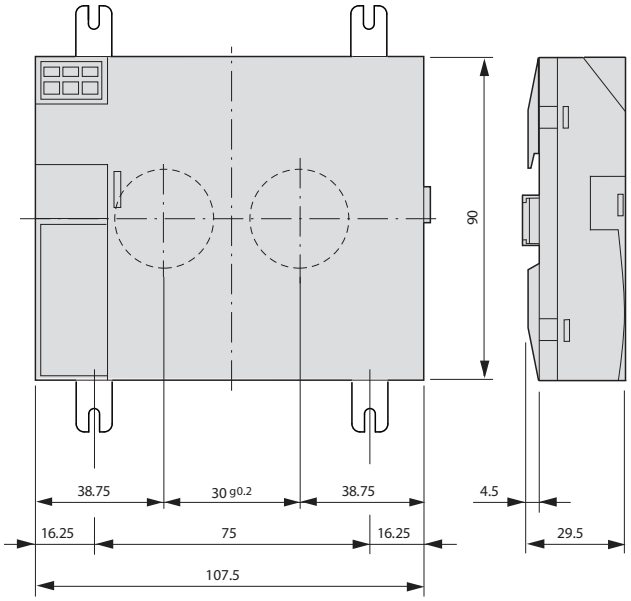
MFD-80-B



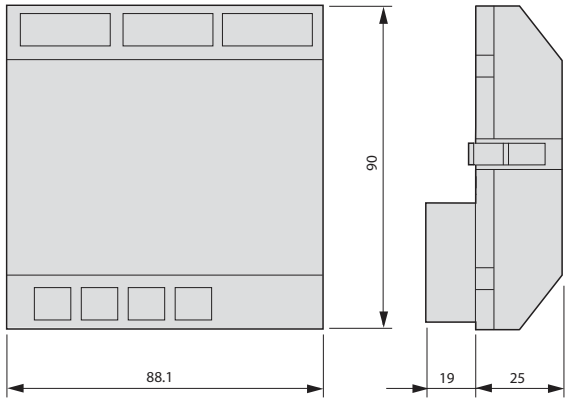
easy relay controllers

Dimension

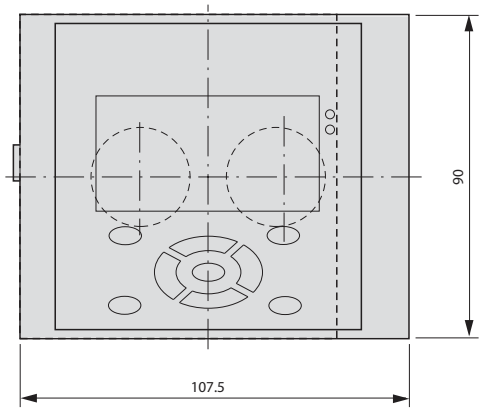
MFD-CP... , MFD-AC-CP...



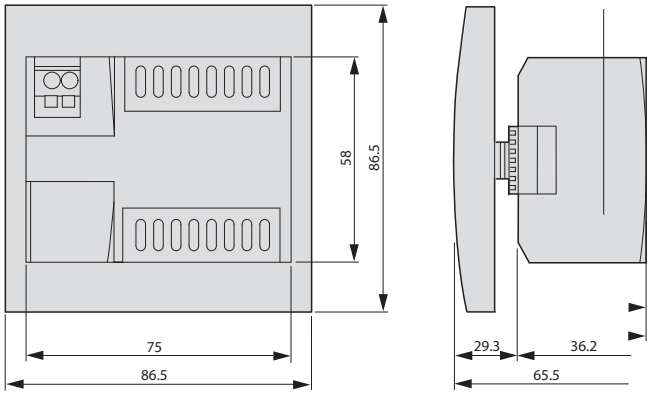
MFD-R... , MFD-T... , MFD-AC-R16

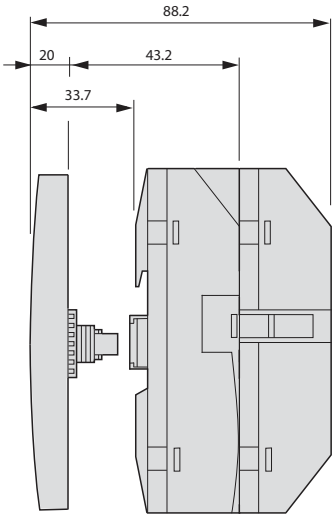


MFD-80... + MFD-CP... + MFD-R.../MFD-T...
MFD-80... + MFD-AC-CP... + MFD-AC-R16

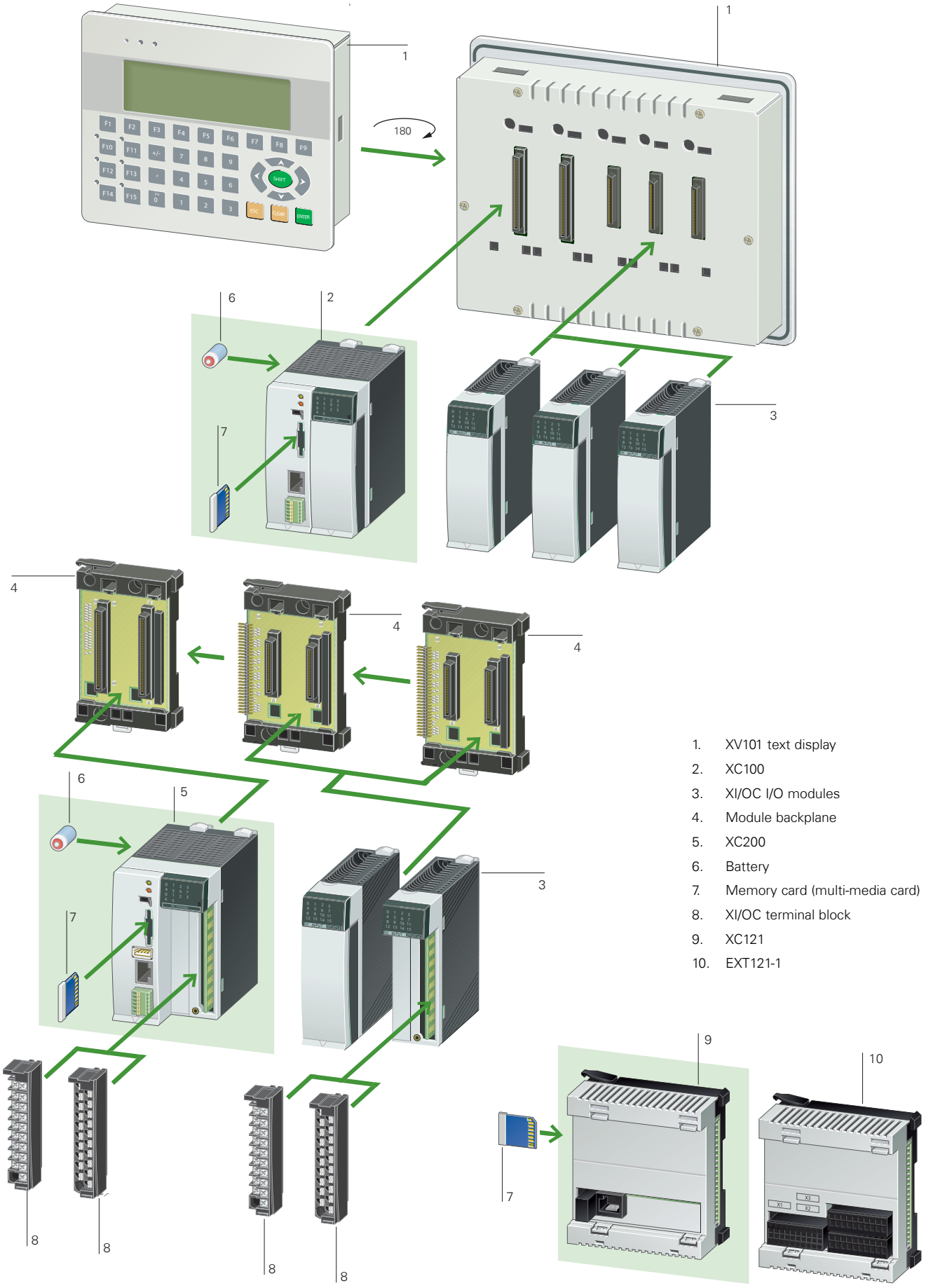


MFD-80... + MFD-CP4





Programmable logic controllers



1. XV101 text display
2. XC100
3. XI/OC I/O modules
4. Module backplane
5. XC200
6. Battery
7. Memory card (multi-media card)
8. XI/OC terminal block
9. XC121
10. EXT121-1

Programmable logic controllers

XC100/XC200

- Controller with digital inputs/outputs, locally & remotely expandable
- CANopen interface, 24V power supply
- Locally expandable by up to 15 XI/OC modules
- The following accessory equipment is required: terminal clamps, module rack, battery

XC-CPU101-C64K-8DI-6DO

XC100

Controller with 8 digital inputs (4 interrupt inputs), 6 digital outputs, RS232 interface for programming & communication, CANopen interface; slot for memory card, optional expansion with text display, RUN/STOP switch & LED indicators.

XC200

Controller with 8 digital inputs (2 counters, 2 interrupt inputs, 1 incremental input) & 6 digital outputs, Ethernet & RS232 interface for programming & communication, CANopen interface, slot for memory card, USB interface, RUN/STOP switch & LED indicators.

XC-CPU...

Description	Std. pack	Item no.
64 kByte user memory	1 off	**XC-CPU101-C64K-8DI-6DO**
128 kByte user memory		**XC-CPU101-C128K-8DI-6DO**
256 kByte user memory		**XC-CPU101-C256K-8DI-6DO**
256 kByte user memory	1 off	**XC-CPU201-EC256K-8DI-6DO**
2 mByte user memory		**XC-CPU201-EC512K-8DI-6DO**
256 kByte user memory Integrated Web server		**XC-CPU201-EC256K-8DI-6DO-XV**
2 mByte user memory Web server		**XC-CPU201-EC512K-8DI-6DO-XV**
4 mByte user memory Integrated Web server		**XC-CPU202-EC4M-8DI-6DO-XV**

Text display for XC100

- Backlit LCD
- Membrane keypad
- 1 slot for XC100
- 3 spare slots for XI/OC modules
- Numerical keypad
- Arrow keys
- Contrast setting adjustable via software

Description	Item no.
Operation with XC-CPU101-...-XV 4 lines x 20 characters, resolution 122 x 32 pixels, 9 function keys	**XV-101-K42**
Operation with XC-CPU101-...-XV 8 lines x 40 characters, resolution 240 x 64 pixels, 15 function keys	**XV-101-K84**

XC-CPU121-2C256K

XC121

- Compact PLC
- 24 V supply
- 2 CANopen interfaces
- RS232 interface for programming and communication
- Second RS232/RS485 interface
- Slot for MMC memory card
- Connection through spring-cage terminal blocks
- OPC server

Description	Item no.
Can be locally expanded with I/O module XIO-EXT-121-1 256 kByte program memory, 244 kByte data memory	**XC-CPU121-2C256K**

XIO-EXT121-1

I/O expansion for XC121

- Expansion unit with digital and analog inputs/outputs
- expandable with XI/OC signal modules (except XIOC-NET-DP-M)
- pluggable spring-cage terminals

Description	Item no.
Local I/O expansions for PLC XC121 10 digital inputs 24 V DC, of which 6 interrupt 8 digital inputs/outputs 24 V DC, 0.5 A 2 analog inputs 0 - 10 V 2 analog inputs 0 - 20 mA 2 analog inputs Pt100 RTD 2 analog outputs 0 - 10 V	**XIO-EXT121-1**

Programmable logic controllers

XIOC

- Compact I/O system for connection to XC100/200 Modular PLCs
- XC100/200 expandable with up to 15 XI/OC modules
- Optionally, screw terminals or spring-loaded terminals for digital/analogue modules

Description		Std. pack	Item no.
Digital modules	8 inputs, 24 V DC	1 off	**XIOC-8DI**
	16 inputs, 24 V DC		**XIOC-16DI**
	32 inputs, 24 V DC		**XIOC-32DI**
	8 outputs, 24 V DC, 0.3 A		**XIOC-8DO**
	12 relay outputs		**XIOC-12DO-R**
	16 outputs, 24 V DC, 0.3 A XIOC-16DO		**XIOC-16DO**
	16 outputs, 24 V DC, 0.8 A, short-circuit proof		**XIOC-16DO-S**
	32 outputs, 24 V DC, 0.2 A		**XIOC-32DO**
	16 connections, 4 inputs, 12 freely parameterisable as inputs/outputs, 24 V DC Outputs 0.5 A		**XIOC-16DX**
Analogue modules			
Inputs	8 inputs, 4 – 20 mA	1 off	**XIOC-8AI-I2**
	8 voltage inputs, 0 – 10 V		**XIOC-8AI-U1**
	8 voltage inputs, g10 V		**XIOC-8AI-U2**
	4 inputs for temperature monitoring, Pt100/1000		**XIOC-4T-PT**
Outputs	4 inputs for thermocouples, Type K, J, L, B, N, E, R, S, T		**XIOC-4AI-T**
	2 outputs, g10 V		**XIOC-2AO-U2**
	2 outputs, 0 – 10 V, 2 outputs, 4 – 20 mA		**XIOC-2AO-U1-2AO-I2**
	4 outputs, 0 – 10 V		**XIOC-4AO-U1**
Combination modules	2 inputs & 1 output, 0 – 10 V 1 ms conversion time		**XIOC-2AI-1AO-U1**
	2 inputs & 1 output, 0 – 10 V, 0 – 20 mA 1 ms conversion time, individual changeover		**XIOC-2AI-1AO-U1-I1**
	4 inputs & 2 outputs, 0 – 10 V 1 ms conversion time		**XIOC-4AI-2AO-U1**
	4 inputs & 2 outputs 0 – 10 V, 0 – 20 mA 1 ms conversion time, individual changeover		**XIOC-4AI-2AO-U1-I1**
Counter modules	1 input up to 100 kHz, 24 V DC, 5 V DC, 2 digital transistor outputs, opto-isolated, 24 V DC 30-pole connector required for counter module	1 off	**XIOC-1CNT-100KHZ**
	2 inputs up to 100 kHz, (24 V DC or 5 V diff), 4 digital transistor outputs, opto-coupled, 24 V DC 30-pole connector required for counter module		**XIOC-2CNT-100KHZ**
	2 incremental encoders up to 400 kHz, 5 V DC, 2 analog, outputs, +10 V		**XIOC-2CNT-2AO-INC**
Communication modules	Profibus DP master module	1 off	**XIOC-NET-DP-M**
	Profibus DP slave module		**XIOC-NET-DP-S**
	Suconet K master module		**XIOC-NET-SK-M**
	Serial interface RS 232C, RS 485, RS 422. Operating modes: Transparent mode, Modbus master, slave, SUCOM A, Suconet-K slave		**XIOC-SER**
	Serial interfaces RS232C, RS485, RS422. Modes of operation; Transparent mode, Modbus master/slave SUCOM-A, DNP protocol		**XIOC-TC1**

XIOC-8DI

XIOC-8AI-I2

XIOC-1CNT-100KHZ

XIOC-NET-DP-M

Programmable logic controllers

Accessories XIOC-...

XIOC-TERM-18T

Description		Std. pack	Item no.
Terminals			
18-pole plug with spring-loaded terminal		10 off	**XIOC-TERM-18T**
One 18-pole terminal plug is required for each digital & analogue module.			**XIOC-TERM-18S**
30-pole connector for counter module, with 4 m cable XIOC-1CNT-100KHZ, XIOC-2CNT-100KHZ			**XIOC-TERM30-CNT4**
40-pole connector for digital module, with 4 m cable XIOC-32DI, XIOC-32DO			**XIOC-TERM32**
Basic rack for mounting XC100/200 on top-hat rail, expandable	Width: 2 slots for controller	1 off	**XIOC-BP-XC**
Basic rack for mounting XC100/200 on top-hat rail, expandable	Width: 3 slots for controller & one XI/OCmodule		**XIOC-BP-XC1**
Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 2 slots for XI/OC modules		**XIOC-BP-2**
Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 3 slots for XI/OC modules		**XIOC-BP-3**
Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 3 slots for XI/OC modules Note: module carriers for expansion to maximum 15 modules must be plugged into the 5th slot		**XIOC-BP-EXT**

XIOC-BP-XC1

Other accessories

XIOC-..., XTT...

XT-MEM-MM512M

Description		Item no.
Multi-media card - for storage of programs, data, recipes		
-	512 MByte	**XT-MEM-MM512M**
-	32 MByte	**XT-MEM-MM32M**
Battery	For back-up of real-time clock & retentive data	**XT-CPU-BAT1**
Programming cable		
2 m length	D-sub, 9-pin, serial	**XT-SUB-D/RJ45**
2 m length	Ethernet cross, 2 m	**XT-CAT5-X-2**
5 m length	Ethernet cross, 5 m	**XT-CAT5-X-5**
Programming cable for XC, EC4P, EU5C through USB interface		**EU4A-RJ45-USB-CAB1**

EASY-NT-30

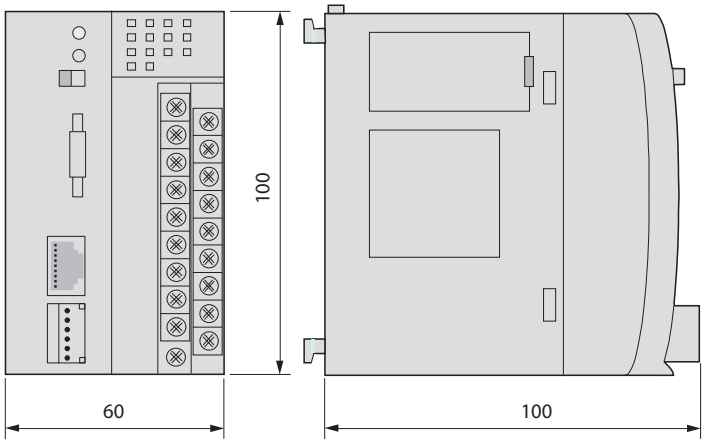
Connection cable		
Connecting cable for interface switch XC200 Length: 0.3 m		**EASY-NT-30**
Connecting cable for interface switch XC200 Length: 0.8 m		**EASY-NT-80**
Connecting cable for interface switch XC200 Length: 1.5 m		**EASY-NT-150**
CAN cable to ISO 11898	Recommendation: UNITRONIC bus LD, Messrs. LAPPKABEL, 2 x 2 x 0.22 mm2 Surge impedance: 100 – 120 W Effective capacitance: 800 Hz, max. 60 nF/km	-
Empty module	Empty module to cover free XI/OC slots	**XIOC-NOP**
Interface switch	Interface adapter to split the combined RS232/Ethernet interface of the XC200 into RJ45 sockets. Connection cable EASY-NT-30/80/150 usable for connection to XC200.	**XT-RJ45-ETH-RS232**
Filter	Interference suppression of the external 24 V DC, supply of the XC100/200, Max. current drawn: 2.2 A	**XT-FIL-1**
Insert labels	Insert labels for free user inscription For 3 devices: XV-101-K42 For 3 devices: XV-101-K84	**XT-BS1**

XIOC-NOP

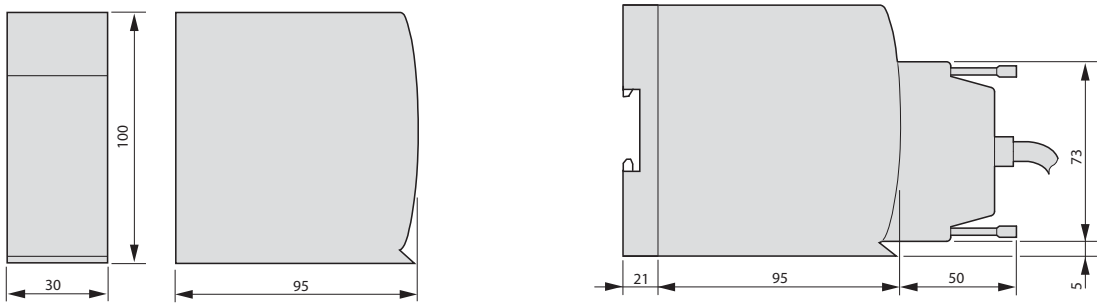
XT-RJ45-ETH-RS232

Programmable logic controllers

XC-CPU101
XC-CPU201
XC-CPU202

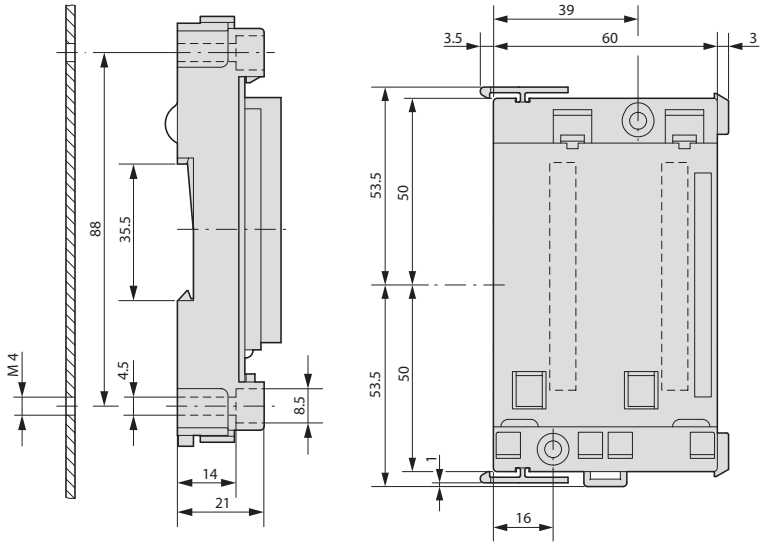


XIOC...

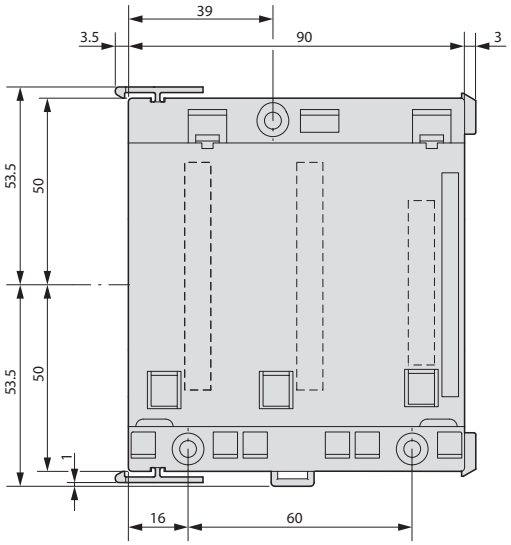


Backplanes

XIOC-BP-2
XIOC-BP-XC

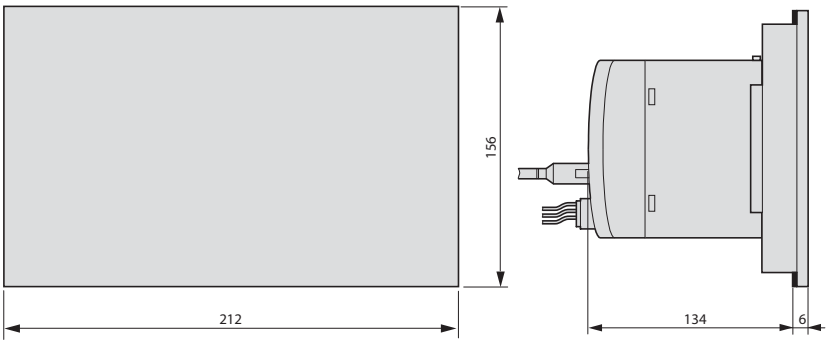


XIOC-BP-3
XIOC-BP-EXT
XIOC-BP-XC1

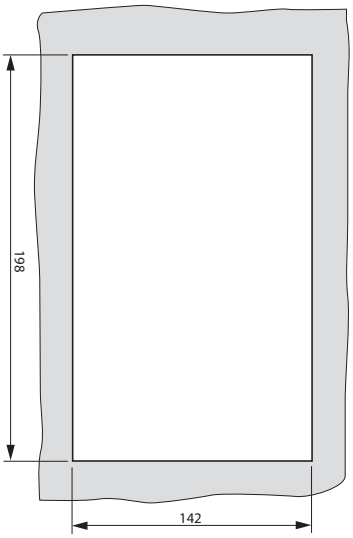


Programmable logic controllers

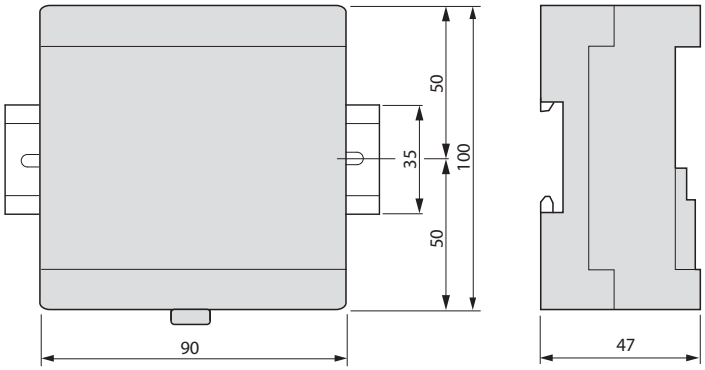
XV-101…



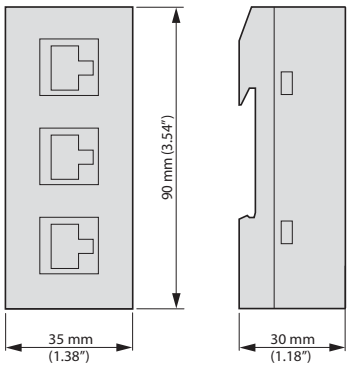
Mounting dimensions

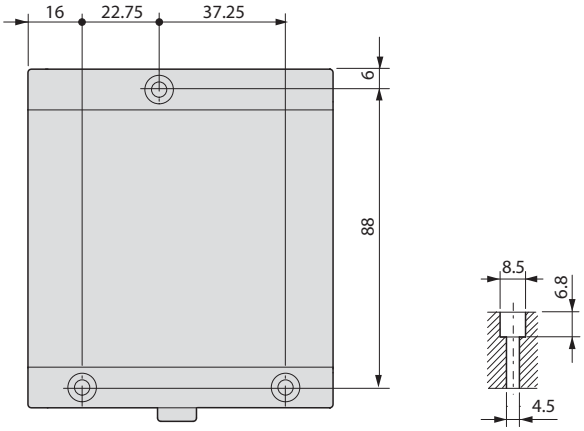


XC-CPU-121...
XIO-EXT121-1

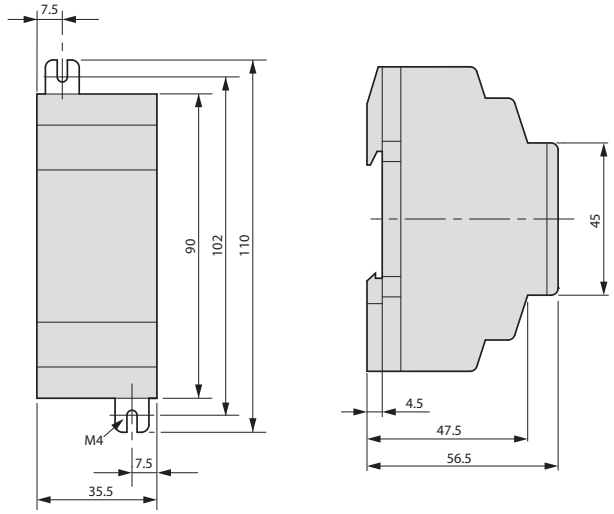


XT-RJ45-ETH-RS232

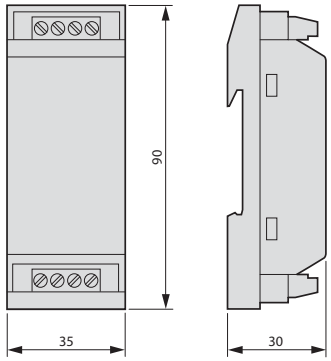




XT-FIL-2



XT-FIL-1



Programmable logic controllers

ELC modular PLCs

PB base model—

- 14 I/O (8i/6o)
- Over 130 instructions
- Two Modbus (ASCII/RTU) serial ports for master/slave communications
- RS-485 master port with the ability to communicate to 31 other devices
- The master port can also be configured to communicate to devices such as ASCII, bar code readers, and so on
- EEPROM program retention in the event of power loss

Note: This model does not provide a real-time clock

PH high-speed model

- 12 I/O (8i/4o)
- All the features of the PC model
- High speed pulse capture up to 100 kHz
- Single-axis motion control

PC clock/calendar model

- 12 I/O (8i/4o)
- Same features as the basic model plus clock/calendar
- Distributed I/O capability with up to 16 devices
- File area for data storage and retrieval
- RAM program memory with battery backup
- Replaceable battery has greater than a 5-year life
- Two digital potentiometers that vary the data in internal registers

PA analog model

- 10 I/O (6i/4o)
- Same features as PC model with a different I/O mix
- Four digital inputs, two digital outputs, two analog inputs, and two analog outputs
- Analog channels can be set up for either voltage or current
- Two 7-segment LEDs that can be used to display unit ID, error codes, process steps, and so on

ELC-PC

PV advanced model

- 28 I/O (16i/12o)
- The PV model has the most extensive features
- Programs written for the other controllers can be migrated to a PV model controller where greater speed or more I/O is required
- 10 times increase in processing speed for about 0.24µ seconds/step
- RAM program storage and backed using a rechargeable lithium-ion battery that charges with normal use
- Includes 2-axis motion control
- Additional expansion bus to the left of the controller
- Add high-speed and specialty modules to the left
- Left side Ethernet master and DeviceNet master modules are available for use with the PV model controller

ELC-PA

ELC-PV

Controllers and modules

ELC PA 10 A A D R

Device type	I/O count	Analogue inputs	Analogue outputs	Digital inputs	Digital outputs
PB = Base model PC = Clock/ calendar model PA = Analogue model PV = Advanced model	xx = Total number of I/O	A = Analogue N = None	A = Analogue N = None	A = AC D = DC (sink or source)	T = Transistor (NPN) P = Transistor (PNP) R = Relay

Description	Inputs	Outputs	Analogue	High speed I/O	Max. current	Item no.
ELC-PB module and 14 I/O built-in	(8) 24 Vdc	(6) Relay, 1.5A	-	(2) 20 kHz inputs	150 mA	**ELC-PB14NNDR**
	(8) 24 Vdc	6) Transistor, 100 mA	-			**ELC-PB14NNDT**
ELC-PC module and 12 I/O built-in	(8) 24 Vdc	4) Relay, 1.5A	-	(1) 30 kHz inputs	150 mA	**ELC-PC12NNDR**
	(8) 24 Vdc	(4) Transistor, 100 mA	-			**ELC-PC12NNDT**
ELC-PA module and 10 I/O built-in Analogue - 2 in, 2 out	(4) 24 Vdc	(2) Relay, 1.5A	-	(1) 30 kHz inputs	210 mA	**ELC-PA10AADR**
	(4) 24 Vdc	(2) Relay, 1.5A	-			**ELC-PA10AADT**
ELC-PV module and 28 I/O built-in	(16) 24 Vdc	(12) Relay, 1.5A	-	(2) 200 kHz inputs	220 mA	**ELC-PV28NNDR**
	(16) 24 Vdc	(12) Transistor, 100 mA	-			**ELC-PV28NNDT**

Programmable logic controllers

Master communication modules

ELC-EX16NNDR

ELC CO ENETM

Device type	Module type
CO = Communication interface module	DNETM = DeviceNet master module ① ENETM = Ethernet master module ①

Description	Inputs points	Type	Outputs points	Item no.
Ethernet Modbus TCP (master/slave)		Modbus TCP		**ELC-COENETM**
DeviceNet Scanner (master/slave)	190 bytes	DeviceNet	190 bytes	**ELC-CODNETM**

① Left side bus communications module—for use with ELC-PV controllers only.

Distributed I/O adapters

ELC CA ENET

Device type	Module type
CA = Distributed I/O adapter	ENET = EtherNet/IP or Modbus TCP I/O adapter DNET = DeviceNet I/O adapter RS485 = Modbus serial RS-485 I/O adapter PBDP = PROFIBUS-DP I/O adapter

Features

- Combine with ELC expansion modules to create distributed I/O racks for different PLC networks
- Use ELC-CAENET and ELC-COENETM to create distributed I/O racks to the ELC-PV controllers

Description	Item no.
EtherNet/IP or Modbus TCP I/O adapter	**ELC-CAENET**
Modbus serial RS-485 I/O adapter	**ELC-CARS485**
DeviceNet I/O adapter	**ELC-CADNET**
PROFIBUS-DP I/O adapter	**ELC-CAPBDP**

Digital expansion modules (right side bus)

ELC EX 16 N N D P

Device type	I/O count	Analogue inputs	Analogue outputs	Digital inputs	Digital outputs
AN = Analog expansion module EX = Digital expansion module PT = Platinum RTD expansion module TC = Thermocouple expansion module	xx = Total number of I/O	A = Analogue N = None	A = Analogue N = None	A = AC D = DC (sink or source) S = Switch N = None	T = Transistor (NPN) P = Transistor (PNP) R = Relay I = Relay - high current N = None

Features

- Digital right side expansion modules can be used with any ELC controller
- They simply snap together to allow the ELC backplane to pass through each connected module
- Maximum of 14 modules per controller

Description	Inputs	Outputs	Max. current	Item no.
8 DC input module	(8) 24 Vdc		50 mA	**ELC-EX08NNDN**
8 AC input module	(8) 110 Vac		50 mA	**ELC-EX08NNAN**
8 Transistor output module		(8) Transistor (sink), 0.3A	70 mA	**ELC-EX08NNNT**
8 Relay output module		(8) Relay, 1.5A	70 mA	**ELC-EX08NNNR**
8 DC input/output module	(4) 24 Vdc	(4) Transistor (sink), 0.3A	70 mA	**ELC-EX08NNDT**
8 DC input/relay output module	(4) 24 Vdc	(4) Relay, 1.5A	70 mA	**ELC-EX08NNDR**
6 High current relay output module		(6) Relay, 6A	70 mA	**ELC-EX06NNNI**
16 DC input module	(16) 24 Vdc		100 mA	**ELC-EX16NNDN**
16 DC input/output module	(8) 24 Vdc	(8) Transistor (sink), 0.3A	90 mA	**ELC-EX16NNDT**
16 DC input/output module	(8) 24 Vdc	(8) Transistor (source), 0.3A	100 mA	**ELC-EX16NNDP**
16 DC input/relay output module	(8) 24 Vdc	(8) Relay, 1.5A	90 mA	**ELC-EX16NNDR**

Programmable logic controllers

Analogue input and out modules (right side bus)

Description	Input points	Resolution	Mode	Output points	Resolution	Mode	Max. current	Item no.
4 analogue input module	4	V= 12 bit I = 13 bit	±10V ±20 mA				90mA	**ELC-AN04ANNN**
2 analogue output module				2	12 bit	0–20 mA; 4–20 mA 0–10V; 2–10V	125mA	**ELC-AN02NANN**
4 analogue output module				2	12 bit	0–20 mA; 4–20 mA 0–10V; 2–10V	170mA	**ELC-AN04NANN**
6 analogue input/output module	4	V = 12 bit I = 11 bit	±10V ±20 mA	2	12 bit	0–20 mA 0–10V	170mA	**ELC-AN06AANN**

Temperature input modules (right side bus)

Thermocouple and Platinum RTD temperature sensor input modules with 14 bit resolution

Description	Input points	Resolution	Sensor type	Max. current	Item no.
4 Thermocouple input module	4		J, K, R, S, T	90 mA	**ELC-TC04ANNN**
4 Platinum RTD input module	4	14 bit	PT100	90 mA	**ELC-PT04ANNN**

RS-485 Adapter module (right side bus—end module)

Passive RS-485 connection device module.
RJ12 port for connecting to a drive.
2-pin screw terminal to connect to ELC controller.
Male and female DB9 connectors to connect to other RS-485 devices.

Description	Connector type	Item no.
RS-485 Connect adapter module	RJ12, DB9 (male and female) 2-pin screw terminals	**ELC-485APTR**

Accessories

Power supplies

All ELC controllers, analog and specialty expansion modules operate from 24 Vdc

Description	Input power	Output volts	Output current (A)	Watts	Item no.
24 watt, 1 amp power supply	100–240 Vac 50/60 Hz	24 Vdc	1A	24	**ELC-PS01**
48 watt, 2 amp power supply	100–240 Vac 50/60 Hz	24 Vdc	2A	48	**ELC-PS02**

ELC-PS01

Cables

Description	Item no.
Cable to connect a PC or an ELC-GP unit to ELC, 3 meters (DB 9-pin female to 8-pin DIN)	**ELC-CBPCELC3**
Cable to connect a PC or an ELC-GP unit to ELC, 1 meter with right angle connector (DB 9-pin female to 8-pin DIN)	**ELC-CBPCELC1**

Storage devices

The ELC-ACPGMXFR module is a multifunction device that provides the ability to back up an application already loaded onto one of the ELC controllers. It will store system settings, passwords and the application, including the data registers for pre-loaded recipes

Description	Item no.
Program transfer module for ELC controllers	**ELC-ACPGMXFR**

Programming software

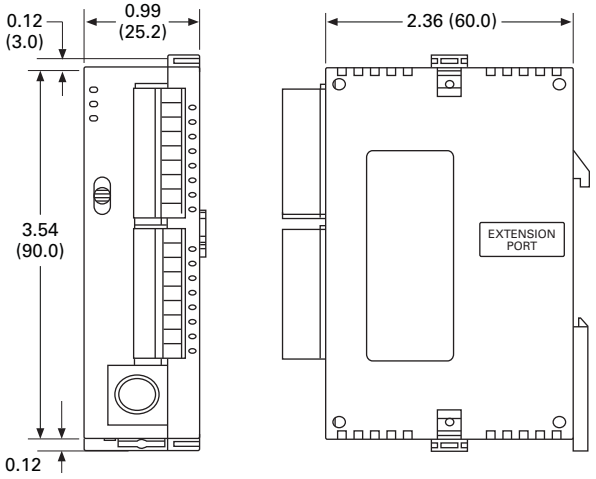
ELCSoft programming software configures all ELC controllers. Program in ladder, sequential function chart or instruction language.

Description	Item no.
Programming Software for ELC Controllers	**ELCSOFT**

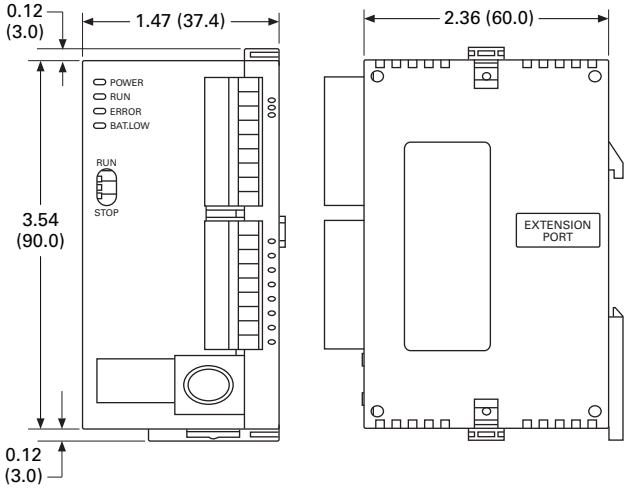
Programmable logic controllers

Dimensions (approximate dimensions in inches (mm)

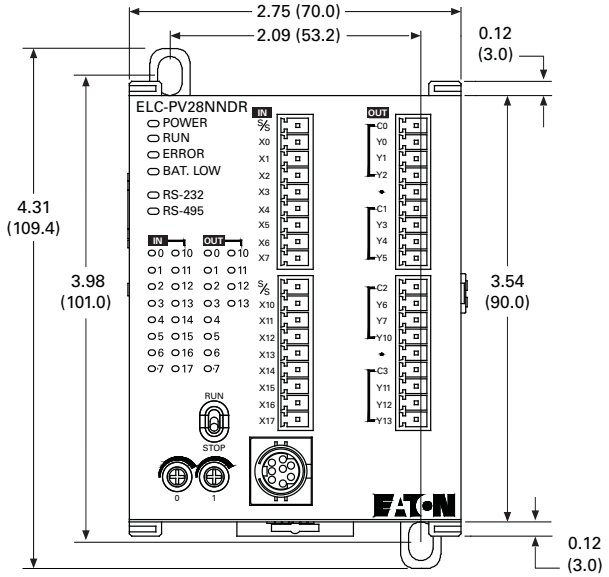
ELC-PB14 controllers

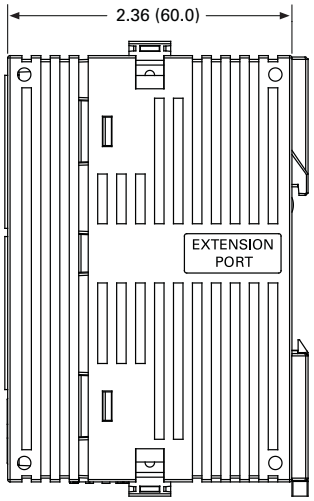


ELC-PC12, ELC-PH12 and ELC-PA10 controllers

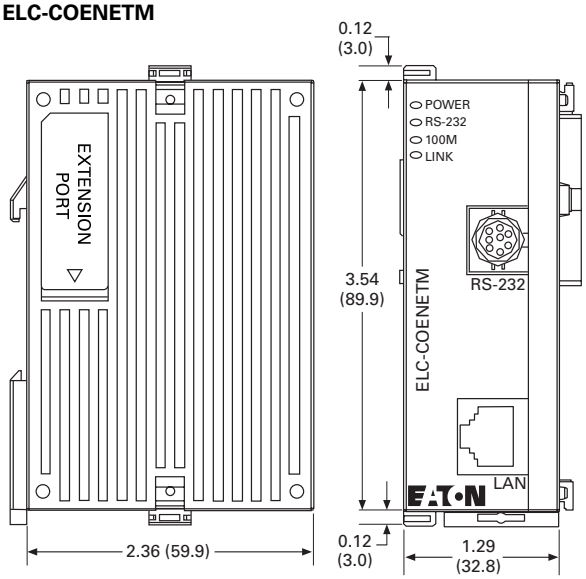


ELC-PV controller

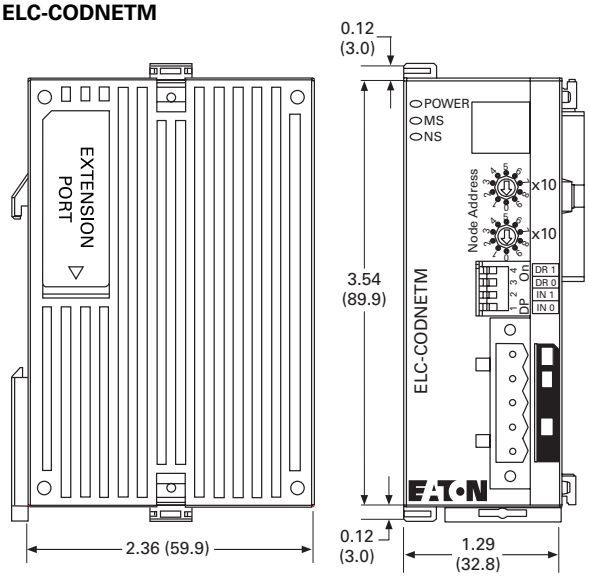




ELC-COENETM



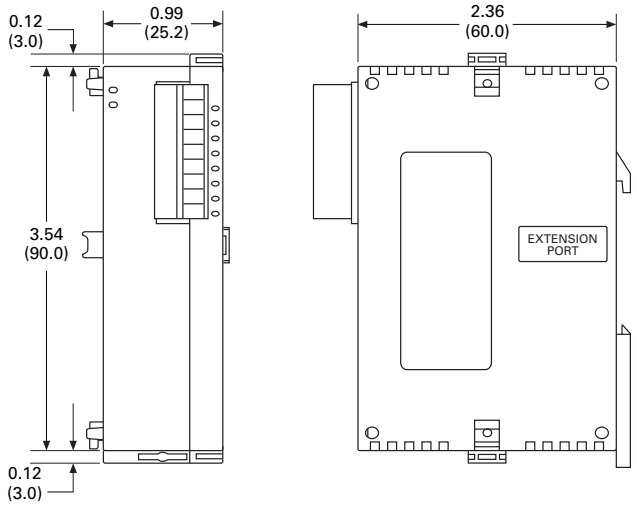
ELC-CODNETM



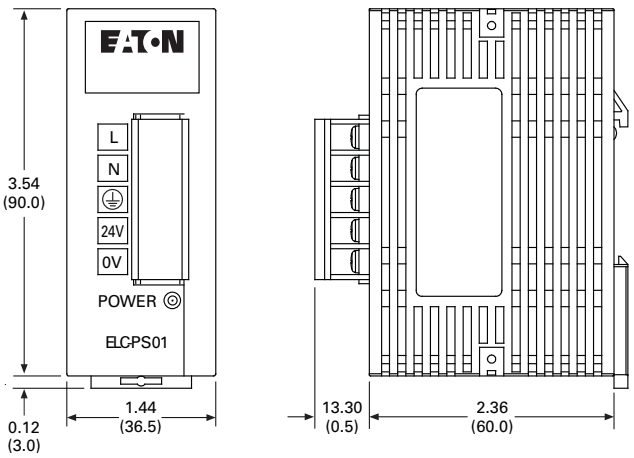
Programmable logic controllers

Dimensions (approximate dimensions in inches (mm)

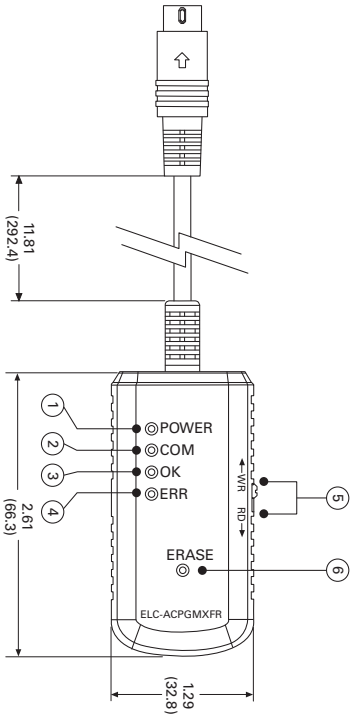
Right side specialty and expansion modules



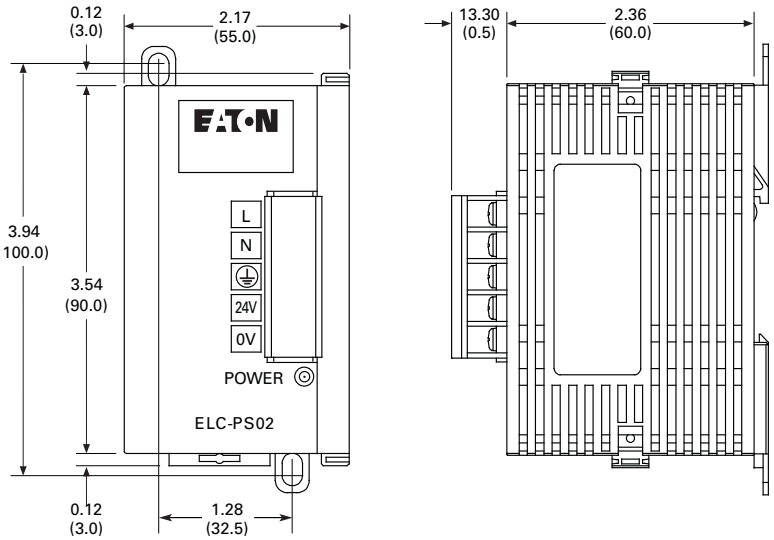
ELC-PS01



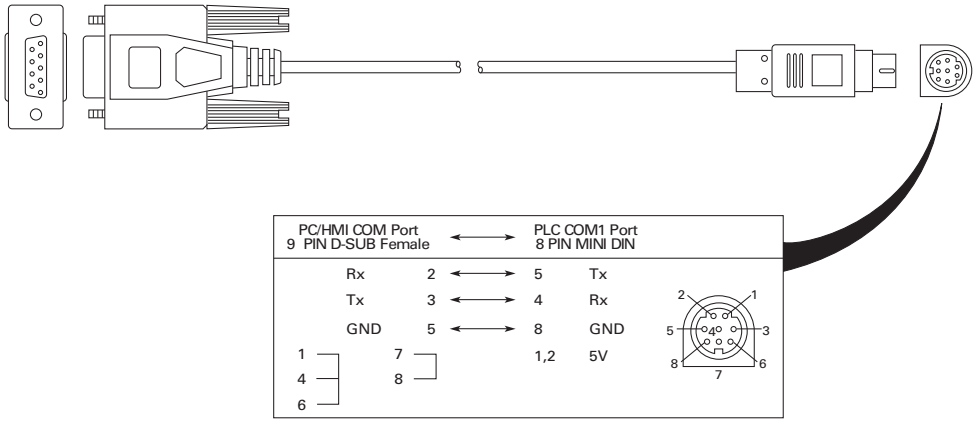
ELC-ACPGMXFR storage device



ELC-PS02



ELC-CBPCELC1 cable (right angle connector not shown) and ELC-CBPCEL3 cable (straight connector as shown)



ELC Graphic touch panels

Eaton ELC Graphic touch panels

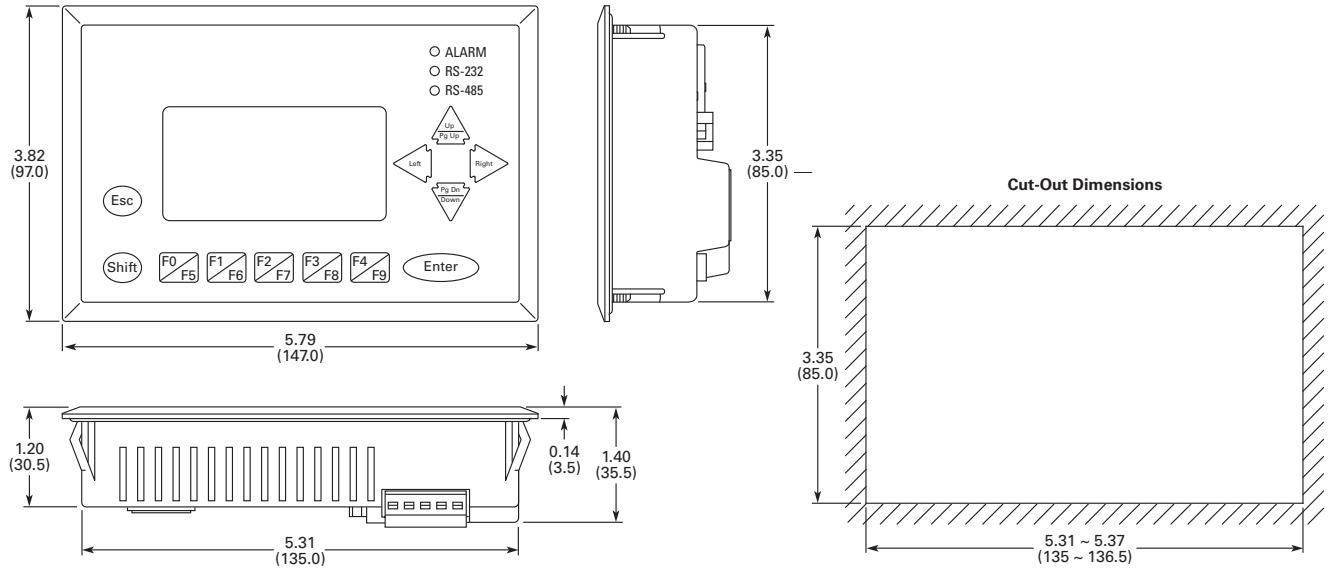
- High-end features in a low-cost operator interface
- Communication through 2 ports simultaneously: RS232 & RS485/422
- Connection to all major PLCs with drivers
- Process indication by graphs, alarms, etc
- 10 levels of password protection

Description	Item no.
Graphic touch panels	
Touch panel, 160 x 32 pixels, 10 function keys, monochrome	**ELC-GP02**
Touch panel, 128 x 64 pixels, 10 function keys, monochrome	**ELC-GP04**
Programming software	
Programming software for ELC graphic touch panels	**ELCSOFTGP**
Power supplies	
Power supply, 110-240V AC IN, 24V DC OUT, 24 watts, 1 A	**ELC-PS01**
Power supply, 110-240V AC IN, 24V DC OUT, 48 watts, 2 A	**ELC-PS02**
Programming cable	
Cable PC to ELC-GP, 3m (DB9 female to DB9 female)	**ELC-CBPCGP3**
Cable PC or touch panel to PLC, 3 m (DB9 female to 8-pin DIN)	**ELC-CBPCELC3**
Program transfer module	
Program transfer module for ELC graphic touch panels	**ELC-GPXFERMOD**

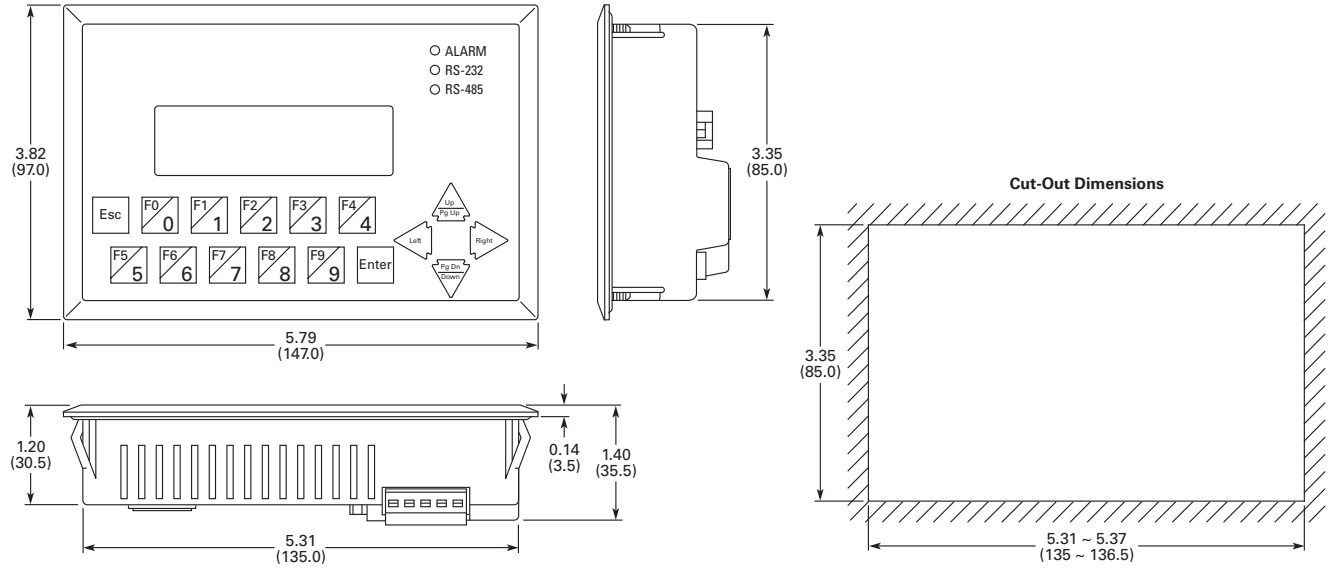
ELC Graphic touch panels

Dimensions (approximate dimensions in inches (mm)

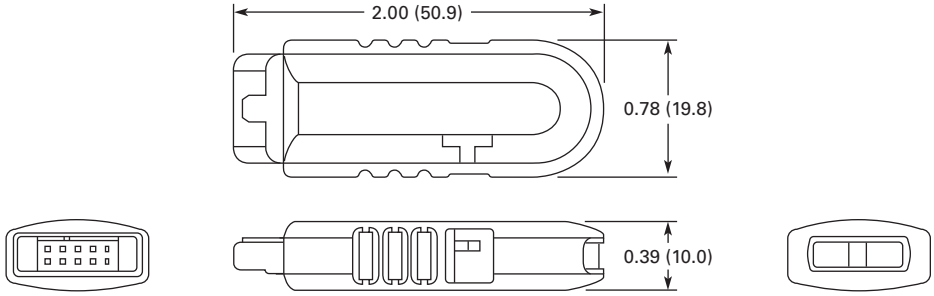
ELC-GP04



ELC-GP02



ELC-GPXFERMOD



Operator interface

HMi operator interface

Positioned between the ELC graphics panels and the XV series of operator interfaces, HMi is the workhorse of the industry. Ideal for machinery OEMs, the HMi series provides the most value with the latest technology and advanced feature set in an economical hardware and software package. All units offer RS-232, RS-485 and RS-422 communications. The 7-, 8- and 10-inch units also offer Ethernet communication options.

Features

- Auto-scale application from 10 to 4 inches
- Screen and backlight saver
- Pop-up screens
- Animated graphics
- Conditional visibility
- Application lock for IP protection
- Data archiving
- Multi-language
- Eight levels of security
- Ethernet communication drivers
- Ethernet, COMM port and USB upload/download
- USB ports for data storage
- Three serial ports
- Up to four simultaneous protocols
- Math and logic functions
- CSV import/export tags and recipes
- Macro capability
- Alarm/event recording and viewing
- Real-time and historical trending
- Online and offline simulation

HMi VU exclusive features

- VU server
- VU remote
- Multi-link
- Onboard Ethernet on some models
- Audio and SD on some models
- Supports USB mouse and other industrial pointing devices

HMIVU 07 CU NB E

Series	Display	Options	Options	Options
HMIVU = HMi VU Series	04 = 4.3-inch LCD 06 = 5.6-inch LCD 07 = 7.0-inch LCD 08 = 8.0-inch LCD 10W = 10. 1-inch-wide LCD	CU = Color TFT without expansion port	NBx = HMi VU Firmware Series NB = HMi VU Series no function buttons	E = On-board Ethernet and audio out

Description	Item no.
4-inch color TFT, no function buttons, on-board Ethernet	**HMIVU04CUNBE**
6-inch color TFT, no function buttons, no Ethernet	**HMIVU06CUNB1**
7-inch color TFT, no function buttons, on-board Ethernet	**HMIVU07CUNBE**
8-inch color TFT, no function buttons, on-board Ethernet	**HMIVU08CUNBE**
10-inch color TFT, no function buttons, on-board Ethernet	**HMIVU10WCUNBE**

HMiSoft programming software

For use with the of HMi and HMi VU series touchscreens. This easy to use Windows based software can run on Windows XP and Windows 7 32-bit and 64-bit systems.

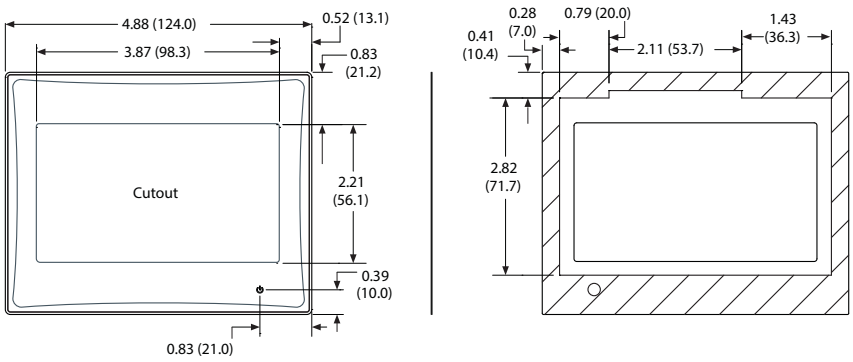
- Ethernet and serial communication drivers
- Up to four simultaneous protocols
- Screen manager
- Over 70 on-screen objects
- Pop-up screens
- Animated graphics
- Conditional visibility
- Built-in picture library
- Create your own picture library
- Multi-language
- Eight levels of security
- Macro editing with math and logic functions
- CSV import/export tags and recipes
- Alarm/event recording and viewing
- Store archived data, alarms and events to USB
- Real-time and historical trending
- Auto-scale application from 10 to 4 inches
- On and offline simulation
- Upload/download applications over USB, serial or Ethernet
- Application lock for IP protection
- Screen and backlight saver
- Multi-link allows sharing of PLC data over Ethernet
- VU Server optional download
- VU Remote optional download

Description	Item no.
Programming software for HMi and HMi VU models	**HMISOFT**

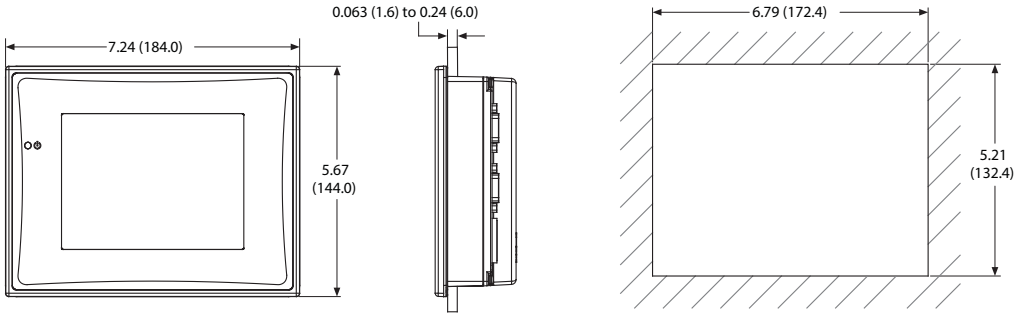
Operator interface

Dimensions (approximate dimensions in inches (mm)

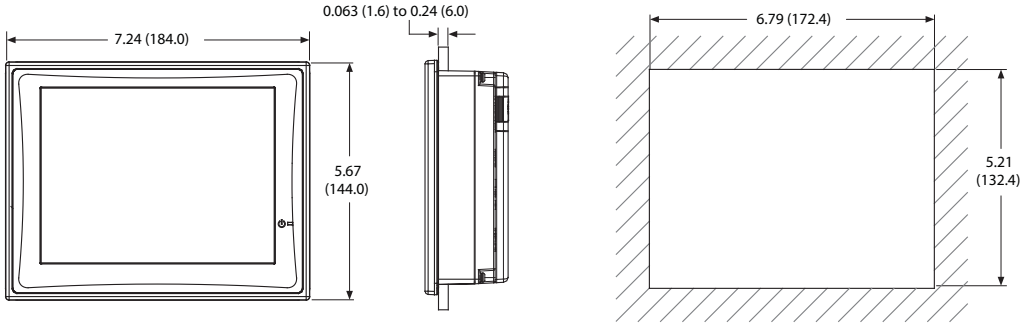
HMIVU04



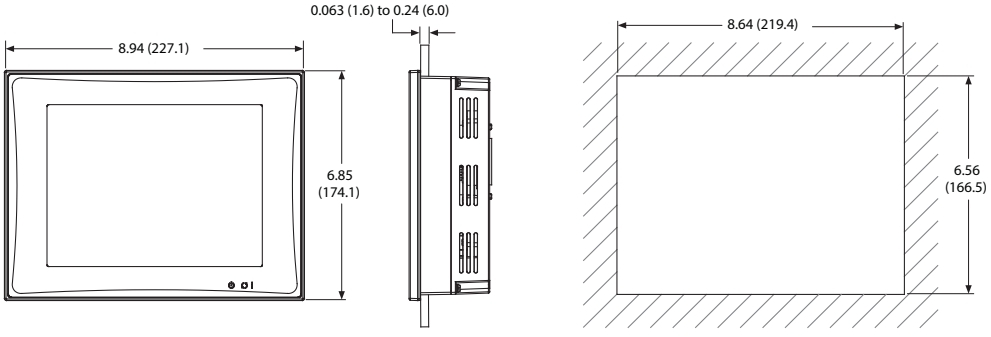
HMIVU06



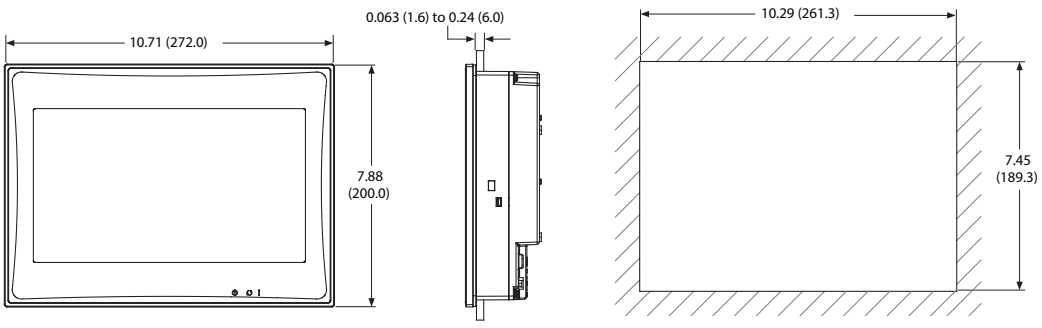
HMIVU07



HMIVU08



HMIVU10



LS-Titan position switches

Basic units

LS-Titan position switches are quick & easy to install, highly flexible & safe. Rated to IP66, the LS-Titan range is available in two versions: For normal operating conditions in corrosive environments, or in the food industry, the LS versions have a totally insulated housing, whereas the LSM versions in their robust metal enclosures are suited to mechanically harsher environments.

All devices are actuated mechanically & with their positively opening & interlocked opposing contacts, are suitable for use in safety circuits. A unique feature is the ability to combine LS-Titan with pushbutton actuators, selector switches or Emergency-Stop buttons from the RMQ-Titan range. These can simply be snapped on to act as the operating head of the position switch.

The LSE (limit switch electronic) has a freely programmable operating point that can be easily set. Just move the plunger from the original position to the new switching position & press the 'teach-in' button with a screwdriver for 1 second. Once the LED flashes at a higher rate, the new position is accepted & is usable. The switching point is freely adjustable within a range of 0.5 to 5.5 mm.

Features & benefits:

- Conform to EN 50047, so ensuring interchangeability
- Modular range of basic units & operating heads are quickly & easily installed with a bayonet catch, offering flexibility of application
- Maintenance free & vibration resistant cage clamp terminals

LS-11

LSM-11

M22-LS

Description		Contacts	Item no.
Insulated, enclosed units, IP66, rounded plunger			
Basic units	Standard action contacts	1 N/O, 1 N/C	**LS-11**
	Make-before-break contacts	1 N/O, 1 N/C	**LS-11D**
	Snap-action contacts	1 N/O, 1 N/C	**LS-11S**
	Standard action contacts	2 N/O	**LS-20**
	Standard action contacts	2 N/C	**LS-02**
Basic units with electronically adjustable operating point	Indicator light ①	1 N/O, 1 N/C	**LSE-11**
		2 N/C	**LSE-02**
Metal, enclosed units, IP66, rounded plunger			
Basic units	Standard action contacts	1 N/O, 1 N/C	**LSM-11**
	Make-before-break contacts	1 N/O, 1 N/C	**LSM-11D**
	Snap-action contacts	1 N/O, 1 N/C	**LSM-11S**
	Standard action contacts	2 N/O	**LSM-20**
	Standard action contacts	2 N/C	**LSM-02**
Accessories			
Fixing adapter	For operation by RMQ-Titan actuators	-	**M22-LS**

① To show status (optical status display safety category 3, EN 954-1)

LS-Titan position switches

Operating heads

Description	Std. pack	Plastic Item no.	Std. pack	Metal Item no.
Rounded plunger, center fixing				
For installation in M18 × 1 enclosure wall or mounting plate drilling	1 off	**LS-XZS**		
Roller plunger, center fixing				
For installation in M18 × 1 enclosure wall or mounting plate drilling	1 off	**LS-XZRS**		
Roller plunger	10 off	**LS-XP**	10 off	**LSM-XP**
Roller lever				
Large	5 off	**LS-XLB**		
Short	1 off	**LS-XLS**		
Long	10 off	**LS-XL**	10 off	**LSM-XL**
Angled roller lever	10 off	**LS-XLA**	10 off	**LSM-XLA**
Rotary lever	5 off	**LS-XRL**	5 off	**LSM-XRL**
Adjustable roller lever				
D = 18 mm	4 off	**LS-XRLA**	4 off	**LSM-XRLA**
D = 30 mm	5 off	**LS-XRLA30**		
D = 40 mm (rubber)	5 off	**LS-XRLA40R**		
D = 40 mm	5 off	**LS-XRLA40**		
Actuating rod				
Rod from insulated material	4 off	**LS-XRR**	4 off	**LSM-XRR**
Metal rod	4 off	**LS-XRRM**	4 off	**LSM-XRRM**
Spring rod				
Not to be used as a safety position switch Use only in conjunction with snap-action contact.	5 off	**LS-XS**	5 off	**LSM-XS**
Actuating rod	1 off	**LS-XOR**		
Fixing adapters				
Actuation through front element RMQ-Titan®	10/1 off	**M22-LS**		

LS-XP

LS-XL

LS-XLA

LS-XRL

LS-XRLA

LS-XRR

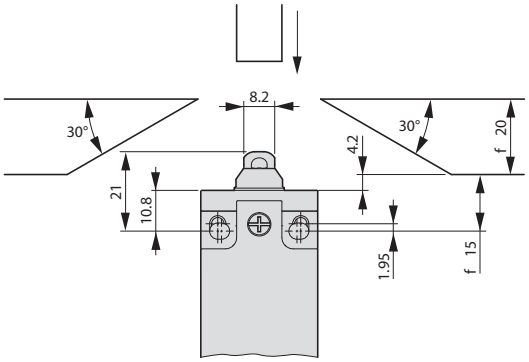
LS-XS

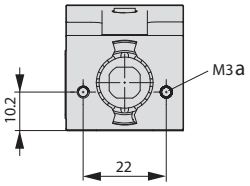
LS-Titan position switches

Dimensions

Basic units, non expandable (front fixing)

LS(M)-…/F

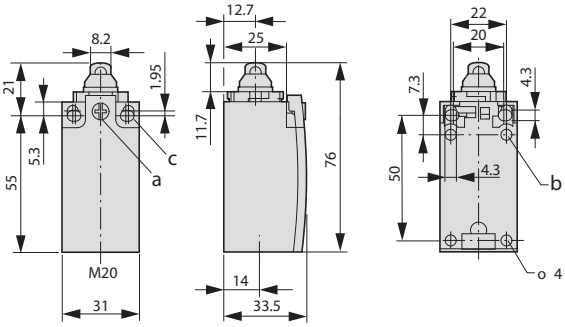


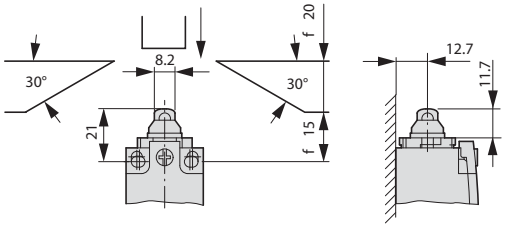


① Screw-in depth max. 12 mm

Basic units, expandable,

LS-…, LSM-…, LSE-…

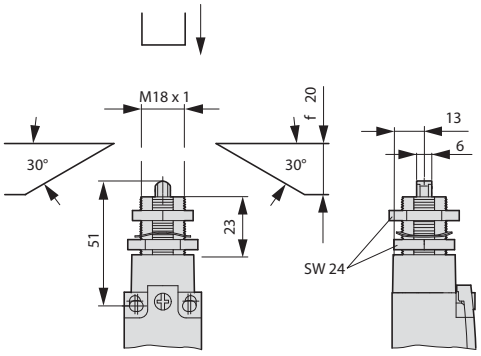




① Tightening torque of cover screw: 0.8 Nm ±0.2 Nm
② Only with LS (insulated version)
③ Fixing screw 2 x M4 ≥ 30
M_A = 1.5 Nm

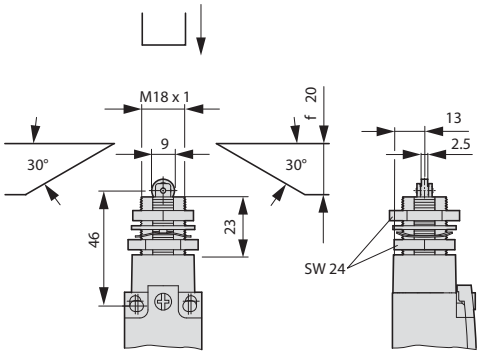
Rounded plunger, center fixing

LS-XZS



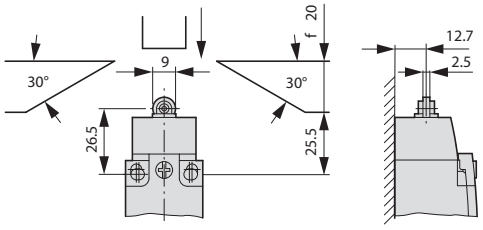
Roller plunger, center fixing

LS-XZRS



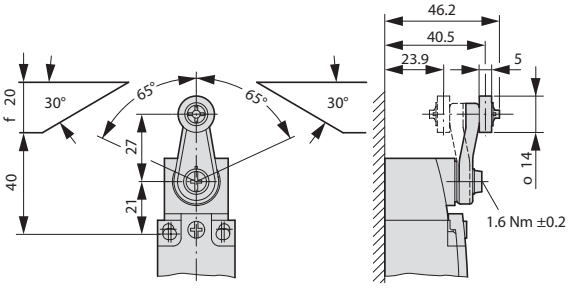
Roller plunger

LS(M)-…/P



Rotary lever

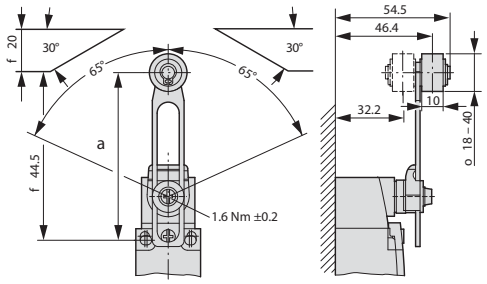
LS(M)-…/RL



LS-Titan position switches

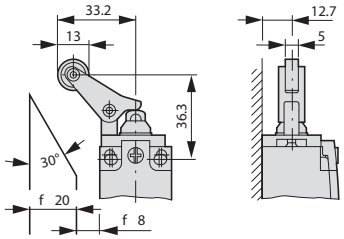
Dimensions

Adjustable roller lever
LS(M)-.../RLA

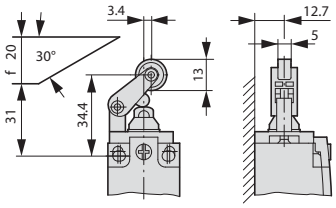


① Setting range from 54.5 to 97

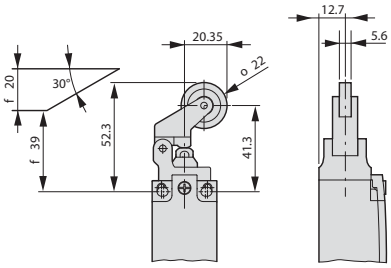
Angled roller lever
LS(M)-XLA



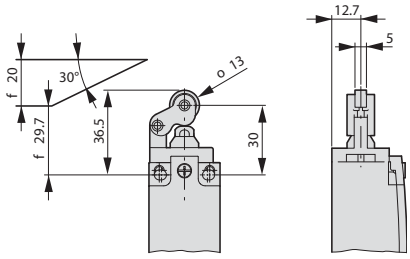
Roller lever
LS(M)-.../L



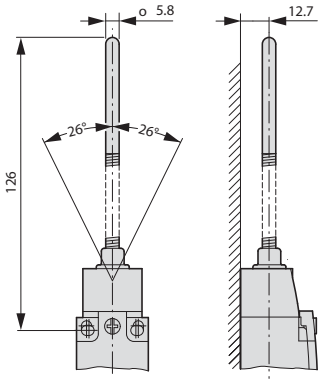
LS(M)-.../LB



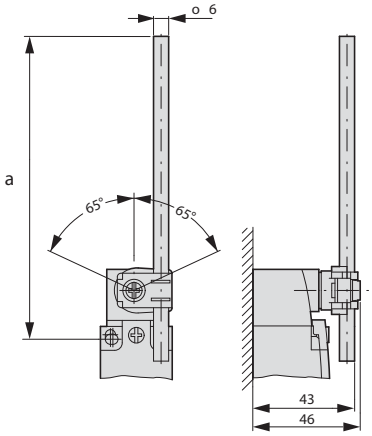
LS(M)-.../LS



Spring rod
LS(M)-.../S

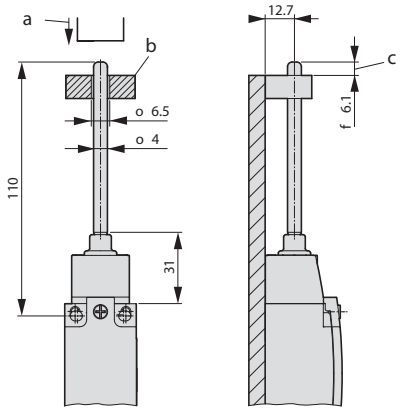


Actuating rod
LS(M)-.../RR



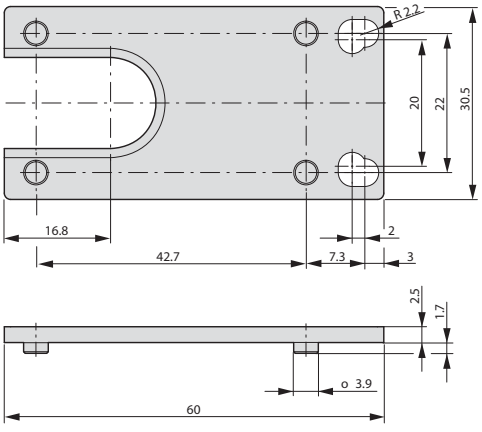
① LS.../RR ≤ 150
LS.../RRM ≤ 210

Actuating rod
LS(M)-.../OR

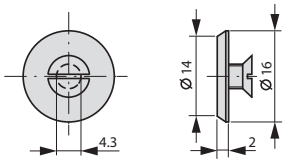


① Approach direction, vertical
② Guide is done by customer, not included
③ Max. push-through

Adapter plate
LS-XAP



Locating plate
FS-AT



Assembled switch

Switch body

Single pole

Double pole

E50 Heavy duty modular limit switches

Eaton E50 Limit Switches are available with or without indicating LED, in single- or 2-pole versions. Optional manifold mount & submersible versions available.

Complete switch = body + receptacle + Head

Indicating light	Switch body Item no.		Receptacle Item no.
None	**E50SA, 1N.O.-1N.C.**	**Single Pole (5 Terminal)**	**E50RA**
LED (24 - 120V AC/DC)	**E50SAL, 1N.O.-1N.C.**		**-**
None	**E50SB, 2N.O.-2N.C.**	**Double pole (9 Terminal)**	**E50RB**
LED (24 - 120V AC/DC)	**E50SBL, 2N.O.-2N.C.**		**-**

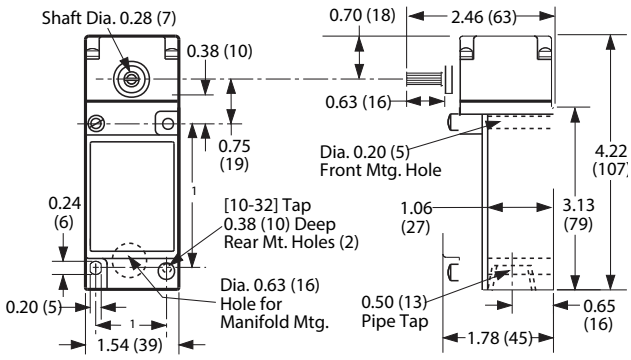
Operating head type	Item no.
Side Rotary	
Standard Spring Return	**E50DR1**
Low Force Spring Return	**E50DL1**
Maintained Two position	**E50DM1**
Side Pushbutton, Spring Return - E50DS1	**E50DS1**
Side Pushbutton, Spring Return - E50DS2	**E50DS2**
Side Push Roller, Spring Return - E50DS3	**E50DS3**

Operating head type	Item no.
Side Pushbutton, Maintained - E50DH1	**E50DH1**
Top Pushbutton, Spring Return - E50DT1	**E50DT1**
Top Pushbutton, Adjustable Spring Return - E50DT2	**E50DT2**
Top Push Roller, Spring Return - E50DT3	**E50DT3**
Wobble Head Spring Return	
Standard Duty	**E50DW1**
Heavy-Duty High Strength Steel	**E50DW2**

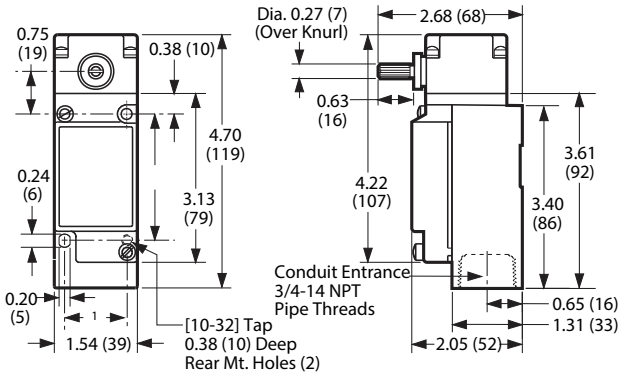
Plug-in switches

Dimensions (approximate dimensions in inches (mm)

Standard



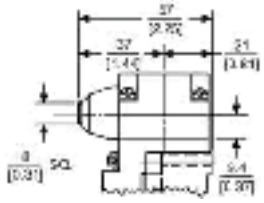
E50SB34



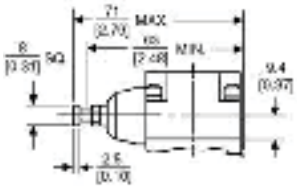
Side push operators

(approximate dimensions in mm (inches)

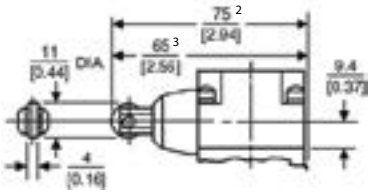
Pushbutton



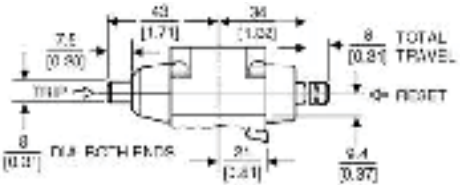
Adjustable pushbutton



Roller

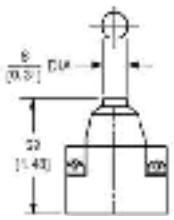


Maintained pushbutton

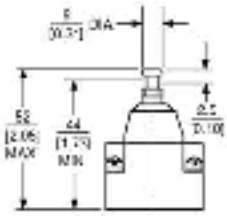


Top push operators

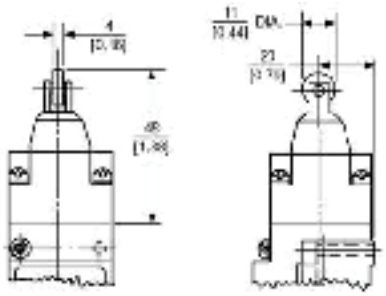
Pushbutton



Adjustable pushbutton



Roller



Notes

1 Can accommodate both U.S., 1.16 (29.4) x 2.34 (59.5) and DIN, 1.18 (30) x 3.26 (60), mounting dimensions.

2 For E50DS4.

3 For E50DS3.

Limit switches

Roller type operators

For rotary head switches: E50 Plug-In, E50 6P+, and 10316.

E50KL200

E50KL355

E50KL377

E50KL554

E50KL580

E50KL24

E50KL27

Roller type	Minimum Required Return torque ①	Approximate Dimensions in Inches (mm) A Lever length ②	B Roller diameter	C Roller width	D	E	F	Item no.
Standard roller (stainless steel)								
Metal	0.62 in-oz	0.88 (22.2)	0.75 (19.0)	0.32 (8.1)	0.31 (7.9)	0.20 (5.1)	0.24 (6.1)	**E50KL39**
Metal	0.95 in-oz	1.38 (34.9)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	**E50KL40**
Ball bearing	0.77 in-oz	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)	**E50KL531**
Nylatron	0.53 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3	**E50KL200**
Metal	1.10 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	**E50KL355**
Nylatron	0.96 in-oz	1.50 (38.1)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)	**E50KL377**
Without roller	0.32 in-oz	1.50 (38.1)	—	—	0.34 (8.6)	—	—	**E50KL32**
Ball bearing	1.10 in-oz	2.00 (50.8)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)	**E50KL552**
Nylatron	0.71 in-oz	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	**E50KL546**
Metal	1.50 in-oz	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	**E50KL549**
Nylatron	1.45 in-oz	2.00 (50.8)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)	**E50KL572**
Ball bearing	1.50 in-oz	2.50 (63.5)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)	**E50KL553**
Nylatron	1.00 in-oz	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	**E50KL547**
Metal	2.00 in-oz	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	**E50KL550**
Nylatron	1.80 in-oz	2.50 (63.5)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)	**E50KL573**
Nylatron	1.40 in-oz	2.50 (63.5)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.11 (2.8)	0.17 (4.3)	**E50KL575**
Ball bearing	1.80 in-oz	3.00 (76.2)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)	**E50KL554**
Nylatron	1.30 in-oz	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	**E50KL548**
Metal	2.50 in-oz	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)	**E50KL551**
Nylatron	2.30 in-oz	3.00 (76.2)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)	**E50KL574**
Nylatron	1.80 in-oz	3.00 (76.2)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.11 (2.8)	0.17 (4.3)	**E50KL576**
Roller on reverse side (stainless steel)								
Ball bearing	0.77 in-oz	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.18 (4.6)	0.24 (6.1)	**E50KL580**
Nylatron	0.53 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)	**E50KL310**
Metal	1.10 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)	**E50KL579**
Nylatron	0.96 in-oz	1.50 (38.1)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.23 (5.8)	0.31 (7.9)	**E50KL536**
Offset inboard roller (stainless steel)								
Nylatron	0.65 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.03 (0.8)	—	—	**E50KL24**
Metal	1.20 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.03 (0.8)	—	—	**E50KL25**
Ball bearing	0.90 in-oz	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.04 (1.0)	—	—	**E50KL26**
Offset outboard (stainless steel)								
Nylatron	0.65 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.03 (0.8)	—	—	**E50KL27**
Metal	1.20 in-oz	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.03 (0.8)	—	—	**E50KL28**
Ball bearing	0.90 in-oz	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.04 (1.0)	—	—	**E50KL29**
Nylatron	1.10 in-oz	1.50 (38.1)	0.75 (19.0)	1.00 (25.4)	—	—	—	**E50KL30**

Limit switches

Roller type operators

Roller type	Minimum Required Return torque ①	Approximate dimensions in Inches (mm) A Lever length ②	B Roller diameter	C Roller width	D	E	F	Item no.
Bantam lever								
Metal	0.45 in-oz	0.69 (17.5)	0.85 (22.0)	0.18 (4.6)	—	—	—	**E50KL532**
Precision adjustment								
Nylatron	0.65 in-oz	0.69 (17.5) Roller length: 1.50 (38.1) ③	0.75 (19.0)	0.32 (8.1)	0.48 (12.2)	0.24 (6.1)	0.28 (7.1)	**E50KL340**
Metal	1.20 in-oz		0.75 (19.0)	0.32 (8.1)	0.48 (12.2)	0.24 (6.1)	0.28 (7.1)	**E50KL465**
Ball bearing	0.90 in-oz		0.69 (17.5)	0.25 (6.4)	0.48 (12.2)	0.16 (4.1)	0.22 (5.6)	**E50KL535**
Adjustable roller (Stainless steel)								
Ball bearing	2.50 in-oz ④	1.0 (25.4) to 3.75 (95.2) ⑤	0.69 (17.5)	0.25 (6.4)	0.23 (5.8)	0.30 (7.6)	—	**E50KL539**
Nylatron	1.90 in-oz ④		0.75 (19.0)	0.32 (8.1)	0.29 (7.4)	0.33 (8.4)	—	**E50KL201**
			0.75 (19.0)	0.32 (8.1)	0.29 (7.4)	0.33 (8.4)	—	**E50KL201SPL⑥**
Metal	3.40 in-oz ④		0.75 (19.0)	0.32 (8.1)	0.29 (7.4)	0.33 (8.4)	—	**E50KL538**
Nylatron	1.90 in-oz ④		0.75 (19.0)	0.50 (12.7)	0.46 (11.6)	0.48 (12.2)	—	**E50KL599**
Nylatron	3.10 in-oz ④		0.75 (19.0)	1.00 (25.4)	0.90 (22.9)	0.95 (24.1)	—	**E50KL537**
Large Nylatron	4.50 in-oz ④	0.5 (12.7) to 3.25 (82.6)	4.00 (102.0)	0.11 (2.8)	0.11 (2.8)	0.19 (4.8)	—	**E50KL598**
Without roller	1.20 in-oz ④	0.5 (12.7) to 3.75 (95.2)	—	—	—	—	—	**E50KL31**
Nylatron	2.50 in-oz ④	1.63 (41.3) to 3.75 (95.2) ⑤	1.50 (38.1)	0.29 (7.4)	0.26 (6.6)	0.32 (8.1)	—	**E50KL443**

E50KL532

E50KL340

E50KL201

E50KL537

Roller type	Approximate dimensions in Inches (mm) A Lever length ②	B Roller diameter	C Roller width	D	E	F	G	Item no.
Fork lever—both rollers on one side								
Ball bearing	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.08 (2.0)	0.14 (3.6)	—	—	**E50KL545**
Nylatron		0.75 (19.0)	0.32 (8.1)	0.16 (4.1)	0,20 (5.1)	—	—	**E50KL204**
Metal		0.75 (19.0)	0.32 (8.1)	0.16 (4.1)	0,20 (5.1)	—	—	**E50KL544**
Nylatron		0.75 (19.0)	1.00 (25.4)	0.84 (21.3)	0.88 (22.4)	—	—	**E50KL543**
Fork lever—one roller outside, one inside								
Ball bearing	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.08 (2.0)	0.14 (3.6)	0.64 (16.3)	0.70 (17.8)	**E50KL542**
Nylatron		0.75 (19.0)	0.32 (8.1)	0.16 (4.1)	0.20 (5.1)	0.73 (18,5)	0.77 (19.6)	**E50KL203**
Metal		0.75 (19.0)	0.32 (8.1)	0.16 (4.1)	0.20 (5.1)	0.73 (18,5)	0.77 (19.6)	**E50KL541**

E50KL545

E50KL542

① Caution: When selecting lever, the minimum required return torque of lever should not exceed minimum return force available in operating head as given in operating head specifications.
② Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).
③ Maximum length dimension between operating shaft axis to roller axis for comparison.
Precision adjustable to lesser dimensions.
④ Applies when lever is extended to the maximum dimension.
⑤ By reassembling lever, minimum length can be reduced another 0.5 in (12.7 mm).
⑥ High-grade stainless steel.

Limit switches

Rod type operators

For rotary head switches: E50 Plug-In, E50 6P+, and 10316.

Nylon/metal

Metal/steel

Nylon/steel

Nylon covered wire

Nylatron

Nylatron loop

Zinc-plated steel

Rod type	Minimum required return torque ①	Approximate dimensions in Inches (mm) A Rod length ②	B Rod diameter	Item no.
Adjustable rod				
Nylon	0.40 in-oz 3	5.50 (140.0)	0.19 (4.8)	**E50KL399**
Metal	0.92 in-oz 3		0.12 (3.2)	**E50KL202**
Metal	2.20 in-oz 3	8.75 (222.0)	Rod size (square): 0.12 (3.2) x 0.12 (3.2)	**E50KL581**
Stainless steel	7.00 in-oz 3	9.00 (229.0)	0.19 (4.8)	**E50KL220**
Bendable steel	5.00 in-oz 3	12.00 (305.0)	0.12 (3.2)	**E50KL226**
Clamps for adjustable rods (rod not included)				
clamp for..				
0.19 (4.8) diameter rods				**E50KL35**
0.12 (3.2) diameter rods				**E50KL36**
0.25 (6.4) diameter rods				**E50KL41**

Rod type	Minimum required return torque ①	Approximate dimensions in Inches (mm) A Rod length ②	B Rod diameter	C	D	Item no.
Spring rod						
Nylon	3.50 in-oz	—	—	—	—	**E50KL556**
Stainless steel	2.80 in-oz	—	—	—	—	**E50KL421**
Adjustable wire						
Nylon covered wire	1.50 in-oz ③	—	—	—	—	**E50KL533**
Adjustable wide roller lever						
Nylatron	4.50 in-oz ③	—	—	—	—	**E50KL37**
Nylatron loop						
Nylatron	0.40 in-oz	6.00 (152.0)	0.158 (4.0)	—	—	**E50KL142**
Eye bolt						
Zinc-plated steel	0.53 in-oz	150.00 (38.1)	Ø 0.1875 (4.8) Loop ID: 0.375 (9.5)	0.52 (13.1)	0.24 (8.6)	**E50KL33**

① Caution: When selecting lever, the minimum required return torque of lever should not exceed minimum return force available in operating head as given in operating head specifications.

② Length from the operating shaft axis to tip.

③ Applies when lever is extended to the maximum dimension.

E50KW2

E50KW3

E50KW4

Wobble type operators

For E50DW1 and E50DW2 Operator Heads on E50 Plug-In and E50 6P+ Switches.

Wobble type	Item no.
Nylon rod	**E50KW2**
Stainless steel rod	**E50KW3**
Coil spring	**E50KW4**

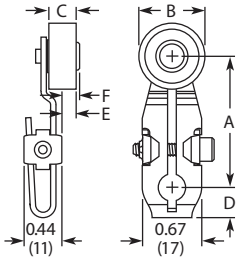
Limit switches

Dimensions

Standard roller

Approximate dimensions in inches (mm)

Roller Type Operators



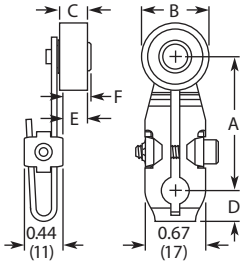
Item no.	A Lever Length[1]	B Roller Diameter	C Roller Width	D	E	F
E50KL39	0.88 (22.2)	0.75 (19.0)	0.32 (8.1)	0.31 (7.9)	0.20 (5.1)	0.24 (6.1)
E50KL40	1.38 (34.9)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL531	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)
E50KL200	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL355	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL377	1.50 (38.1)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)
E50KL32	1.50 (38.1)	—	—	0.34 (8.6)	—	—
E50KL552	2.00 (50.8)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)
E50KL546	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL549	2.00 (50.8)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL572	2.00 (50.8)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)
E50KL553	2.50 (63.5)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)
E50KL547	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL550	2.50 (63.5)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL573	2.50 (63.5)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)
E50KL575	2.50 (63.5)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.11 (2.8)	0.17 (4.3)
E50KL554	3.00 (76.2)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.05 (1.3)	0.11 (2.8)
E50KL548	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL551	3.00 (76.2)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.13 (3.3)	0.17 (4.3)
E50KL574	3.00 (76.2)	0.75 (19.0)	1.00 (25.4)	0.34 (8.6)	0.83 (21.1)	0.83 (21.1)
E50KL576	3.00 (76.2)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.11 (2.8)	0.17 (4.3)

Note

[1] Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).

Roller on reverse side

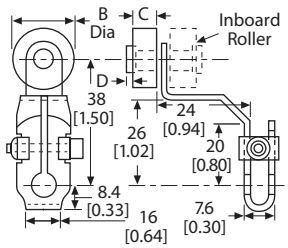
Approximate dimensions in Inches (mm)



Item no.	A Lever Length[1]	B Roller Diameter	C Roller Width	D	E	F
E50KL580	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.18 (4.6)	0.24 (6.1
E50KL310	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9
E50KL579	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9
E50KL536	1.50 (38.1)	1.50 (38.1)	0.28 (7.1)	0.34 (8.6)	0.23 (5.8)	0.31 (7.9

Offset roller

Approximate dimensions in mm [in]



Item no.	A Lever Length[1]	B Roller Diameter	C Roller Width	D
Inboard				
E50KL24	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	0.8 [0.03]
E50KL25	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	0.8 [0.03]
E50KL26	38.1 [1.50]	17.5 [0.69]	6.4 [0.25]	1.0 [0.04]
Outboard				
E50KL27	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	0.8 [0.03]
E50KL28	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	0.8 [0.03]
E50KL29	38.1 [1.50]	17.5 [0.69]	6.4 [0.25]	1.0 [0.04]
E50KL30	38.1 [1.50]	19.0 [0.75]	25.4 [1.00]	—

Notes

[1] Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).

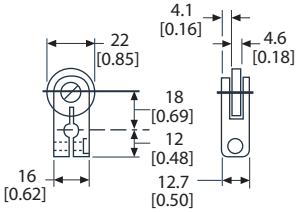
[2] Maximum length dimension between operating shaft axis to the roller axis for comparison. Precision adjustable to lesser dimensions.

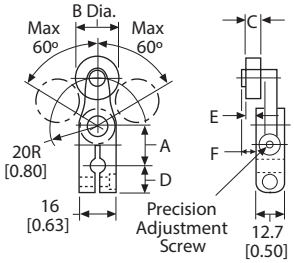
Limit Switches

Dimensions

Bantam lever

Approximate dimensions in mm [in]





Precision Adjustment

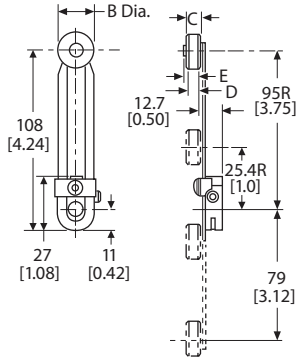
Approximate Dimensions in mm [in]

Item no.	A Lever Length[1]	B Roller Diameter	C Roller Width	D	E	F
E50KL340	17.5 [0.69]	19.0 [0.75]	8.1 [0.32]	12.2 [0.48]	6.1 [0.24]	7.1 [0.28]
E50KL465	Roller length: 38.1 [1.50][2]	19.0 [0.75]	8.1 [0.32]	12.2 [0.48]	6.1 [0.24]	7.1 [0.28]
E50KL535		17.5 [0.69]	6.4 [0.25]	12.2 [0.48]	4.1 [0.16]	5.6 [0.22]

Notes

[1] Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).

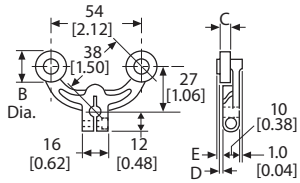
[2] Maximum length dimension between operating shaft axis to the roller axis for comparison. Precision adjustable to lesser dimensions.



Adjustable roller

Approximate dimensions in mm [in]

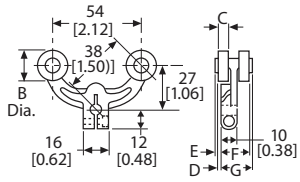
Item no.	A Lever Length[1]	B Roller Diameter	C Roller Width	D	E
E50KL539	25.4 [1.0] to 95.2 [3.75][2]	17.5 [0.69]	6.4 [0.25]	5.8 [0.23]	7.6 [0.30]
E50KL201		19.0 [0.75]	8.1 [0.32]	7.4 [0.29]	8.4 [0.33]
E50KL201SPL[3]		19.0 [0.75]	8.1 [0.32]	7.4 [0.29]	8.4 [0.33]
E50KL538		19.0 [0.75]	8.1 [0.32]	7.4 [0.29]	8.4 [0.33]
E50KL599		19.0 [0.75]	12.7 [0.50]	11.6 [0.46]	12.2 [0.48]
E50KL537		19.0 [0.75]	25.4 [1.00]	22.9 [0.90]	24.1 [0.95]
E50KL598	12.7 [0.50] to 82.6 [3.25]	102.0 [4.00]	2.8 [0.11]	4.8 [0.19]	24.1 [0.95]
E50KL31	12.7 [0.50] to 95.2 [3.75]	—	—	—	—
E50KL443	41.3 [1.63] to 95.2 [3.75][2]	38.1 [1.50]	7.4 [0.29]	6.6 [0.26]	8.1 [0.32]



Fork lever—Both rollers on one side

Approximate Dimensions in mm [in]

Item no.	A Lever Length[1]	B Roller Diameter	C Roller Width	D	E
E50KL545	38.1 [1.50]	17.5 [0.69]	6.4 [0.25]	2.0 [0.08]	3.6 [0.14]
E50KL204	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	4.1 [0.16]	5.1 [0.20]
E50KL544	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	4.1 [0.16]	5.1 [0.20]
E50KL543	38.1 [1.50]	19.0 [0.75]	25.4 [1.00]	21.3 [0.84]	22.4 [0.88]



Fork lever— one roller outside, one inside

Approximate dimensions in mm [in]

Item no.	A Lever Length[1]	B Roller Diameter	C Roller Width	D	E	F	G
E50KL542	38.1 [1.50]	17.5 [0.69]	6.4 [0.25]	2.0 [0.08]	3.6 [0.14]	16.3 [0.64]	17.8 [0.70]
E50KL203	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	4.1 [0.16]	5.1 [0.20]	18.5 [0.73]	19.6 [0.77]
E50KL541	38.1 [1.50]	19.0 [0.75]	8.1 [0.32]	4.1 [0.16]	5.1 [0.20]	18.5 [0.73]	19.6 [0.77]

Notes

[1] Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).

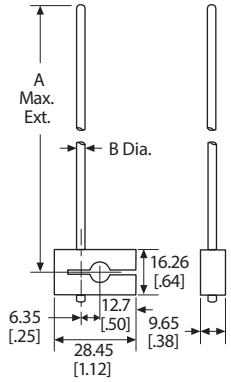
[2] By reassembling lever, minimum length can be reduced another 12.7 mm [0.5 in].

[3] High-grade stainless steel.

Limit Switches

Dimensions

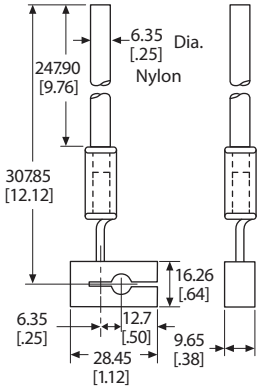
Rod type operators



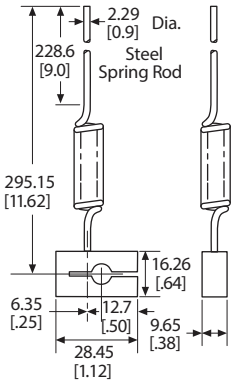
Adjustable rod

Item no.	A Rod Length[1]	B Rod Diameter
E50KL399	140.0 [5.50]	4.8 [0.19]
E50KL202		3.2 [0.12]
E50KL581	222.0 [8.75]	Rod size (square): 3.2 [0.12] x 3.2 [0.12]
E50KL220	229.0 [9.00]	4.8 [0.19]
E50KL226	305.0 [12.00]	3.2 [0.12]

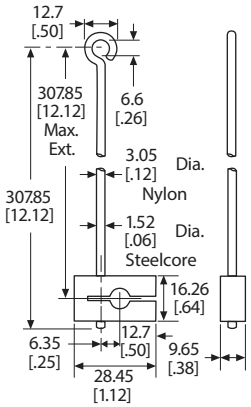
Spring rod—E50KL556



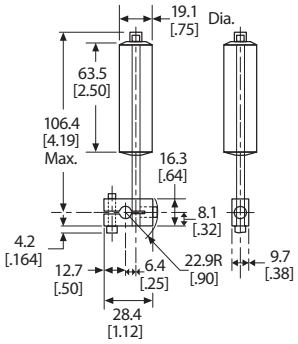
Spring rod—E50KL421



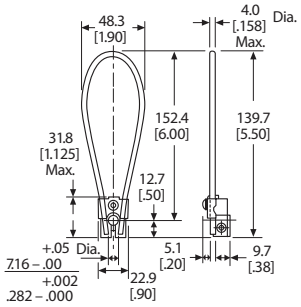
Adjustable wire



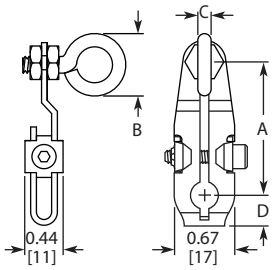
Adjustable wide roller lever



Nylatron loop—E5 0KL142



Eye bolt



Catalog Number	A Rod Length[2]	B Rod Diameter	C Rod Width	D
E50KL33	38.1 [1.50]	4.8 [0.1875] Loop ID: 9.5 [0.375]	13.1 [0.52]	8.6 [0.34]

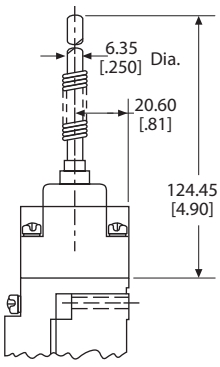
Notes

1 Applies when lever is extended to the maximum dimension.

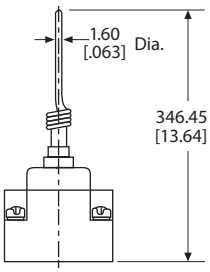
2 Length from the operating shaft axis to tip.

Wobble Type Operators

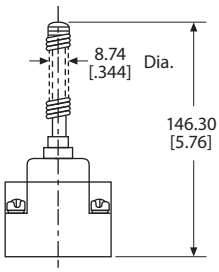
Nylon Rod



Stainless Steel Rod



Coil Spring



Roller Lever

Top Push

Top Push Roller
- E49M11CP1

Rod Lever

Adjustable
Roller Lever

Wobble

Cat Whisker

E49 metal body compact limit switches

Eaton E49 compact metal limit switches

- Rigid die cast switch housing
- Oil-tight, waterproof & dustproof construction
- High mechanical strength
- Snap action 1NO/1NC contact provides flexibility in design

	Specifications					Item no.
Operating head type	**Travel to operate contacts**	**Travel to reset contacts**	**Total travel**	**Force to operate contacts (maximum) (lb)**	**Minimum return force (lb)**	**Assembled units (Switch Body & Head), 1N.O./1N.C. Contacts**
Roller lever	20°	12°	50°	2.99	0.50	**E49M11AP1**
Top push	0.067 in (1.7mm)	0.04 in (1.0mm)	-	6.02	2.01	**E49M11BP1**
Top push roller - E49M11CP1	0.067 in (1.7 mm)	0.04 in (1.0 mm)	0.25 in (6.5 mm)	6.02	2.01	**E49M11CP1**
						E49M11CP2*
Rod lever	20°	12°	50°	0.31	0.06	**E49M11DP1**
Adjustable roller lever	20°	12°	50°	2.99	0.50	**E49M11UP1**
Wobble	1.10 in (28mm)	N/A	N/A	0.33	N/A	**E49M11VP1**
Cat whisker	1.10 in (28mm)	N/A	N/A	0.064	N/A	**E49M11XM1**

* Includes 90° Roller.

E49 metal body compact limit switches

Eaton E49 mini metal limit switches

- Long life - rated for 10 million operations
- Pre-wired units with custom cable lengths available for high volume customers
- Fingerproof terminals protect against accidental contact
- Double-spring mechanism for contact reliability
- Grounding terminal included
- Captive screws on enclosure cover make wiring hassle-free
- SPDT double break

	Specifications					Item no.
Operating head type	**Travel to operate contacts**	**Travel to reset contacts**	**Total travel**	**Force to operate contacts (g)**	**Minimum return force (g)**	**Assembled Units (Switch Body & Head), 1N.O./1N.C. Contacts**
Side rotary lever	20°	12°	70°	750	100	**E49G31AP3**
Adjustable side rotary lever	20°	12°	70°	750	100	**E49G31UP3**
Top pushbutton	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900	150	**E49G31BP3**
Top push roller	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900	150	**E49G31CP3**
Top push roller	0.06 in (1.5 mm)	0.04 in (1 mm)	0.22 in (5.5 mm)	900	150	**E49G31C1P3***
Adjustable rod lever	20°	12°	70°	750	100	**E49G31DP3**
Wobble stick (Nylon coil)	1.18 in (30 mm)	-	-	150	-	**E49G31NP3**
Wobble stick (metal coil)	1.18 in (30 mm)	-	-	150	-	**E49G31VP3**
Wobble stick (metal rod)	1.18 in (30 mm)	-	-	150	-	**E49G31MP3**
Wobble stick (whisker)	1.18 in (30 mm)	-	-	150	-	**E49G31XM3**

* Includes 90° Roller.

Side Rotary Lever

Adjustable Side Rotary Lever

Top Pushbutton

Top Push Roller

Top Push Roller

Adjustable Rod Lever

Wobble Stick (Nylon Coil)

Wobble Stick (Metal Coil)

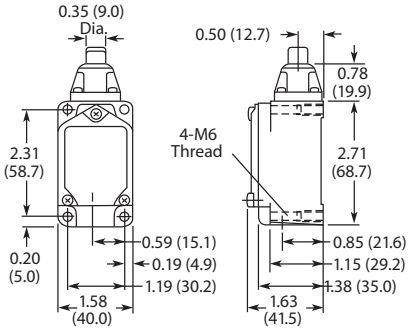
Wobble Stick (Metal Rod)

Wobble Stick (Whisker)

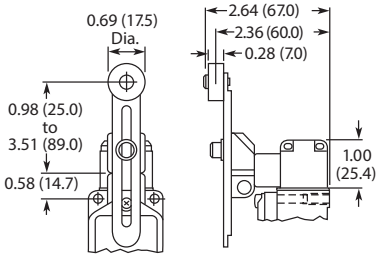
Limit switches

Dimensions

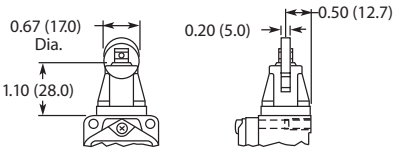
Switch Body with E49M11BP1



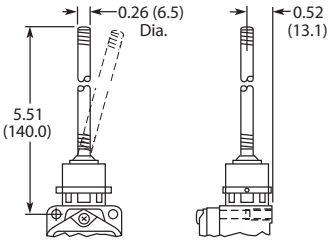
E49M11UP1



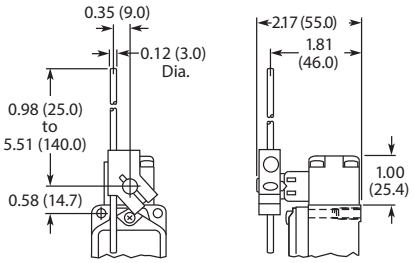
E49M11CP1/E49M11CP2



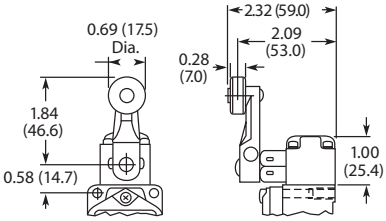
E49M11VP1



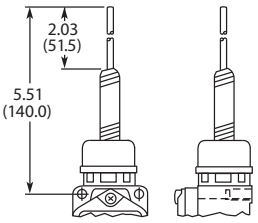
E49M11DP1



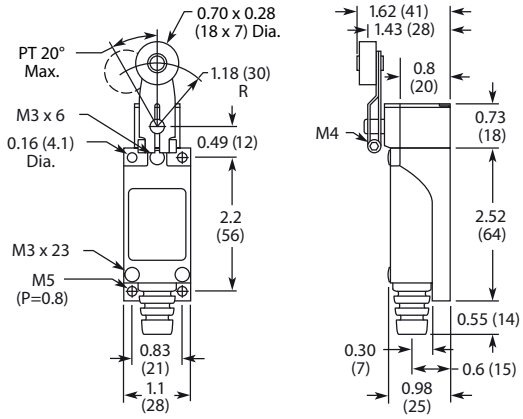
E49M11AP1



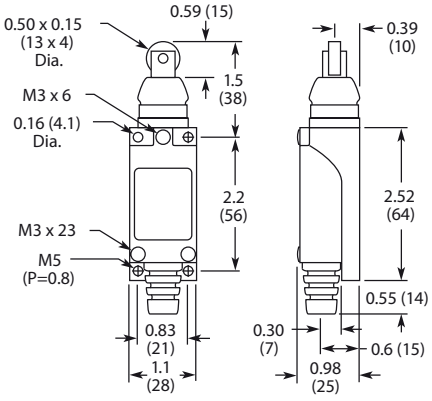
E49M11XM1



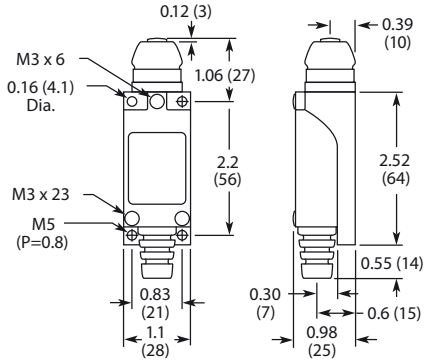
E49G31AP3



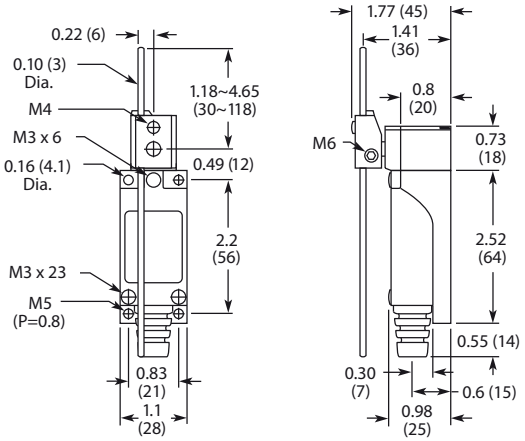
E49G31CP3



E49G31BP3



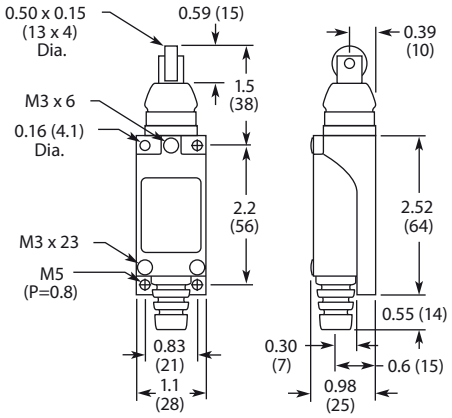
E49G31DP3



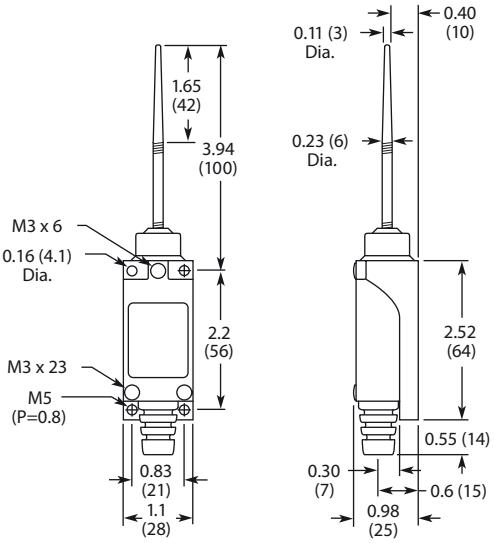
Limit switches

Dimensions

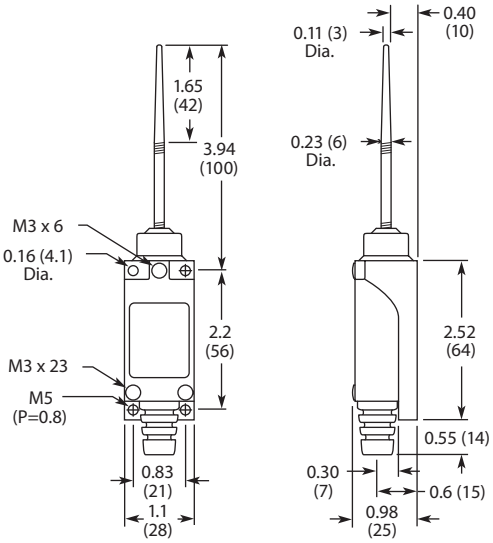
E49G31C1P3



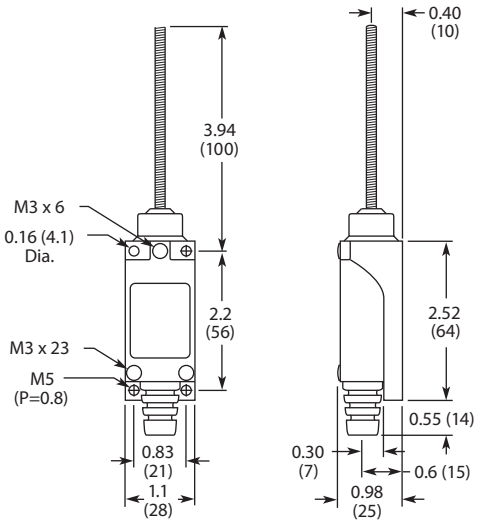
E49G31MP3



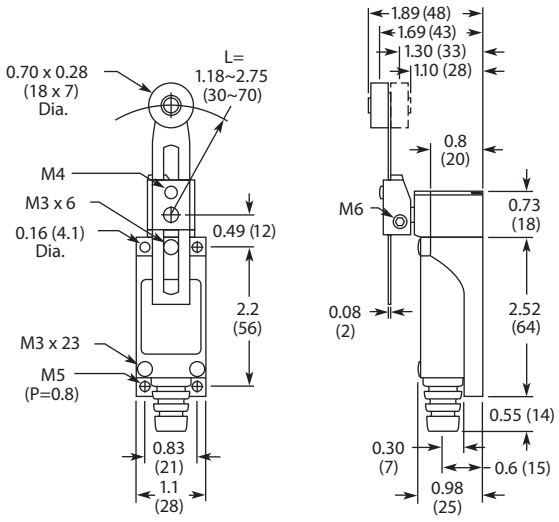
E49G31NP3



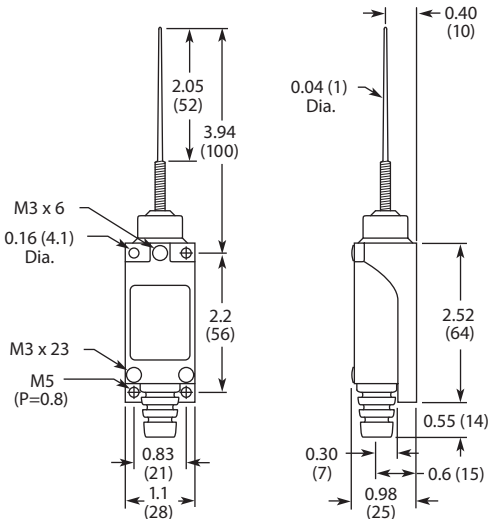
E49G31VP3



E49G31UP3



E49G31XM3



Global proximity sensors

Features

- The Global Proximity Line features solid performance and a basic feature set for reliable, cost-effective sensing
- Available in a variety of sizes to fit in all of your applications: 8 mm, 12 mm, 18 mm and 30 mm diameters
- DC sensors operate on 10–30 Vdc in two-wire and three-wire (NPN or PNP) configurations
- AC sensors operate on 20–250 Vac in two-wire configuration
- Switching frequency of 2 kHz for DC models
- Shielded and unshielded versions available
- Terminations include:
  2-meter cable
  Micro-connector
  Nano-connector
- DC units include short circuit protection

Two-wire sensors

Operating voltage	Sensing range	Shielding	Output type	Connection type	NO Output Item no.	NC Output Item no.
12 mm Diameter						
20–250 Vac	2 mm	Shielded		2-meter cable	**E57-12GS02-A**	**E57-12GS02-A1**
				3-pin micro AC connector	**E57-12GS02-AAB** ⚇	**E57-12GS02-A1AB** ⚇
	4 mm	Unshielded		2-meter cable	**E57-12GU04-A**	**E57-12GU04-A1**
				3-pin micro AC connector	**E57-12GU04-AAB** ⚇	**E57-12GU04-A1AB** ⚇
10–30 Vdc	2 mm	Shielded	NPN/PNP	2-meter cable	**E57-12GS02-D**	**E57-12GS02-D1**
				4-pin micro DC connector	**E57-12GS02-DDB** ⚇	**E57-12GS02-D1DB** ⚇
	4 mm	Unshielded	NPN/PNP	2-meter cable	**E57-12GU04-D**	**E57-12GU04-D1**
				4-pin micro DC connector	**E57-12GU04-DDB** ⚇	**E57-12GU04-D1DB** ⚇
	8 mm (extended range)		NPN/PNP	2-meter cable	**E57-12GE08-D**	**E57-12GE08-D1**
				4-pin micro DC connector	**E57-12GE08-DDB** ⚇	**E57-12GE08-D1DB** ⚇
18 mm Diameter						
20–250 Vac	5 mm	Shielded		2-meter cable	**E57-18GS05-A**	**E57-18GS05-A1**
				3-pin micro AC connector	**E57-18GS05-AAB** ⚇	**E57-18GS05-A1AB** ⚇
	8 mm	Unshielded		2-meter cable	**E57-18GU08-A**	**E57-18GU08-A1**
				3-pin micro AC connector	**E57-18GU08-AAB** ⚇	**E57-18GU08-A1AB** ⚇
	16 mm			3-pin micro AC connector	**E57-18GE16-AAB** ⚇	**E57-18GE16-A1AB** ⚇
10–30 Vdc	5 mm	Shielded	NPN/PNP	2-meter cable	**E57-18GS05-D**	**E57-18GS05-D1**
				4-pin micro DC connector	**E57-18GS05-DDB** ⚇	**E57-18GS05-D1DB** ⚇
	8 mm	Unshielded	NPN/PNP	2-meter cable	**E57-18GU08-D**	**E57-18GU08-D1**
				4-pin micro DC connector	**E57-18GU08-DDB** ⚇	**E57-18GU08-D1DB** ⚇
	16 mm (extended range)		NPN/PNP	2-meter cable	**E57-18GE16-D**	**E57-18GE16-D1**
				4-pin micro DC connector	**E57-18GE16-DDB** ⚇	**E57-18GE16-D1DB** ⚇
30 mm Diameter						
20–250 Vac	10 mm	Shielded		2-meter cable	**E57-30GS10-A**	**E57-30GS10-A1**
				3-pin micro AC connector	**E57-30GS10-AAB** ⚇	**E57-30GS10-A1AB** ⚇
	15 mm	Unshielded		2-meter cable	**E57-30GU15-A**	**E57-30GU15-A1**
				3-pin micro AC connector	**E57-30GU15-AAB** ⚇	**E57-30GU15-A1AB** ⚇
10–30 Vdc	10 mm	Shielded	NPN/PNP	2-meter cable	**E57-30GS10-D**	**E57-30GS10-D1**
				4-pin micro DC connector	**E57-30GS10-DDB** ⚇	**E57-30GS10-D1DB** ⚇
	15 mm	Unshielded	NPN/PNP	2-meter cable	**E57-30GU15-D**	**E57-30GU15-D1**
				4-pin micro DC connector	**E57-30GU15-DDB** ⚇	**E57-30GU15-D1DB** ⚇
	25 mm (extended range)		NPN/PNP	2-meter cable	**E57-30GE25-D**	**E57-30GE25-D1**
				4-pin micro DC connector	**E57-30GE25-DDB** ⚇	**E57-30GE25-D1DB** ⚇

12mm diameter

18mm diameter

30mm diameter

⚇ See listing of compatible connector cables

Global proximity sensors

Three-wire sensors

Operating voltage	Sensing range	Shielding	Output type	Connection type	NO Output Item no.	NC Output Item no.
8 mm Diameter						
10–30 Vdc	1 mm	Shielded	NPN	2-meter cable	**E57-08GS01-C**	**E57-08GS01-C1**
				3-pin nano-connector	**E57-08GS01-CNB** ⚇	**E57-08GS01-C1NB** ⚇
				4-pin micro DC connector	**E57-08GS01-CDB** ⚇	**E57-08GS01-C1DB** ⚇
			PNP	2-meter cable	**E57-08GS01-G**	**E57-08GS01-G1**
				3-pin nano-connector	**E57-08GS01-GNB** ⚇	**E57-08GS01-G1NB** ⚇
				4-pin micro DC connector	**E57-08GS01-GDB** ⚇	**E57-08GS01-G1DB** ⚇
	3 mm (extended range)		NPN	2-meter cable	**E57-08GE03-C**	**E57-08GE03-C1**
				3-pin nano-connector	**E57-08GE03-CNB** ⚇	**E57-08GE03-C1NB** ⚇
				4-pin micro DC connector	**E57-08GE03-CDB** ⚇	**E57-08GE03-C1DB** ⚇
			PNP	2-meter cable	**E57-08GE03-G**	**E57-08GE03-G1**
				3-pin nano-connector	**E57-08GE03-GNB** ⚇	**E57-08GE03-G1NB** ⚇
				4-pin micro DC connector	**E57-08GE03-GDB** ⚇	**E57-08GE03-G1DB** ⚇
	2 mm	Unshielded	NPN	2-meter cable	**E57-08GU02-C**	**E57-08GU02-C1**
				3-pin nano-connector	**E57-08GU02-CNB** ⚇	**E57-08GU02-C1NB** ⚇
				4-pin micro DC connector	**E57-08GU02-CDB** ⚇	**E57-08GU02-C1DB** ⚇
			PNP	2-meter cable	**E57-08GU02-G**	**E57-08GU02-G1**
				3-pin nano-connector	**E57-08GU02-GNB** ⚇	**E57-08GU02-G1NB** ⚇
				4-pin micro DC connector	**E57-08GU02-GDB** ⚇	**E57-08GU02-G1DB** ⚇
	6 mm (extended range)		NPN	2-meter cable	**E57-08GE06-C**	**E57-08GE06-C1**
				4-pin micro DC connector	**E57-08GE06-CDB** ⚇	**E57-08GE06-C1DB** ⚇
			PNP	2-meter cable	**E57-08GE06-G**	**E57-08GE06-G1**
				4-pin micro DC connector	**E57-08GE06-GDB** ⚇	**E57-08GE06-G1DB** ⚇
12 mm Diameter						
10–30 Vdc	2 mm	Shielded	NPN	2-meter cable	**E57-12GS02-C**	**E57-12GS02-C1**
				4-pin micro DC connector	**E57-12GS02-CDB** ⚇	**E57-12GS02-C1DB** ⚇
			PNP	2-meter cable	**E57-12GS02-G**	**E57-12GS02-G1**
				4-pin micro DC connector	**E57-12GS02-GDB** ⚇	**E57-12GS02-G1DB** ⚇
	5 mm (extended range)		NPN	2-meter cable	**E57-12GE05-C**	**E57-12GE05-C1**
				4-pin micro DC connector	**E57-12GE05-CDB** ⚇	**E57-12GE05-C1DB** ⚇
			PNP	2-meter cable	**E57-12GE05-G**	**E57-12GE05-G1**
				4-pin micro DC connector	**E57-12GE05-GDB** ⚇	**E57-12GE05-G1DB** ⚇
	4 mm	Unshielded	NPN	2-meter cable	**E57-12GU04-C**	**E57-12GU04-C1**
				4-pin micro DC connector	**E57-12GU04-CDB** ⚇	**E57-12GU04-C1DB** ⚇
			PNP	2-meter cable	**E57-12GU04-G**	**E57-12GU04-G1**
				4-pin micro DC connector	**E57-12GU04-GDB** ⚇	**E57-12GU04-G1DB** ⚇
	10 mm (extended range)		NPN	2-meter cable	**E57-12GE10-C**	**E57-12GE10-C1**
				4-pin micro DC connector	**E57-12GE10-CDB** ⚇	**E57-12GE10-C1DB** ⚇
			PNP	2-meter cable	**E57-12GE10-G**	**E57-12GE10-G1**
				4-pin micro DC connector	**E57-12GE10-GDB** ⚇	**E57-12GE10-G1DB** ⚇

8mm diameter

12mm diameter

⚇⚇ See listing of compatible connector cables

Global proximity sensors

Three-wire sensors

18mm diameter

30mm diameter

Operating voltage	Sensing range	Shielding	Output type	Connection type	NO Output Item no.	NC Output Item no.
18 mm Diameter						
10–30 Vdc	5 mm	Shielded	NPN	2-meter cable	**E57-18GS05-C**	**E57-18GS05-C1**
				4-pin micro DC connector	**E57-18GS05-CDB** ⚇	**E57-18GS05-C1DB** ⚇
			PNP	2-meter cable	**E57-18GS05-G**	**E57-18GS05-G1**
				4-pin micro DC connector	**E57-18GS05-GDB** ⚇	**E57-18GS05-G1DB** ⚇
	8 mm (extended range)		NPN	2-meter cable	**E57-18GE08-C**	**E57-18GE08-C1**
				4-pin micro DC connector	**E57-18GE08-CDB** ⚇	**E57-18GE08-C1DB** ⚇
			PNP	2-meter cable	**E57-18GE08-G**	**E57-18GE08-G1**
				4-pin micro DC connector	**E57-18GE08-GDB** ⚇	**E57-18GE08-G1DB** ⚇
	8 mm	Unshielded	NPN	2-meter cable	**E57-18GU08-C**	**E57-18GU08-C1**
				4-pin micro DC connector	**E57-18GU08-CDB** ⚇	**E57-18GU08-C1DB** ⚇
			PNP	2-meter cable	**E57-18GU08-G**	**E57-18GU08-G1**
				4-pin micro DC connector	**E57-18GU08-GDB** ⚇	**E57-18GU08-G1DB** ⚇
	18 mm (extended range)		NPN	2-meter cable	**E57-18GE18-C**	**E57-18GE18-C1**
				4-pin micro DC connector	**E57-18GE18-CDB** ⚇	**E57-18GE18-C1DB** ⚇
			PNP	2-meter cable	**E57-18GE18-G**	**E57-18GE18-G1**
				4-pin micro DC connector	**E57-18GE18-GDB** ⚇	**E57-18GE18-G1DB** ⚇
30 mm Diameter						
10–30 Vdc	10 mm	Shielded	NPN	2-meter cable	**E57-30GS10-C**	**E57-30GS10-C1**
				4-pin micro DC connector	**E57-30GS10-CDB** ⚇	**E57-30GS10-C1DB** ⚇
			PNP	2-meter cable	**E57-30GS10-G**	**E57-30GS10-G1**
				5-meter Cable	**E57-30GS10-G5**	—
				4-pin micro DC connector	**E57-30GS10-GDB** ⚇	**E57-30GS10-G1DB** ⚇
	15 mm (extended range)		NPN	2-meter cable	**E57-30GE15-C**	**E57-30GE15-C1**
				4-pin micro DC connector	**E57-30GE15-CDB** ⚇	**E57-30GE15-C1DB** ⚇
			PNP	2-meter cable	**E57-30GE15-G**	**E57-30GE15-G1**
				4-pin micro DC connector	**E57-30GE15-GDB** ⚇	**E57-30GE15-G1DB** ⚇
	15 mm	Unshielded	NPN	2-meter cable	**E57-30GU15-C**	**E57-30GU15-C1**
				4-pin micro DC connector	**E57-30GU15-CDB** ⚇	**E57-30GU15-C1DB** ⚇
			PNP	2-meter cable	**E57-30GU15-G**	**E57-30GU15-G1**
				4-pin micro DC connector	**E57-30GU15-GDB** ⚇	**E57-30GU15-G1DB** ⚇
	29 mm (extended range)		NPN	2-meter cable	**E57-30GE29-C**	**E57-30GE29-C1**
				4-pin micro DC connector	**E57-30GE29-CDB** ⚇	**E57-30GE29-C1DB** ⚇
			PNP	2-meter cable	**E57-30GE29-G**	**E57-30GE29-G1**
				4-pin micro DC connector	**E57-30GE29-GDB** ⚇	**E57-30GE29-G1DB** ⚇

⚇ See listing of compatible connector cables

Global proximity sensors

Compatible connector cables

Voltage style	Number of pins	Gauge	Length	Pin configuration/ Wire colors (Face view female shown)	PVC jacket Item no.	PUR jacket Item no.
Micro-style, straight female						
AC	3-pin, 3-wire	22 AWG	6.0 ft (2m)	② ③ ① 1-Green 2-Red/Black 3-Red/White	**CSAS3F3CY2202**	**CSAS3F3RY2202**
DC	4-pin, 3-wire	22 AWG	6.0 ft (2m)	① ② ④ ③ 1-Brown 2-No Wire 3-Blue 4-Black	**CSDS4A3CY2202**	**CSDS4A3RY2202**
Nano-style, straight female						
DC	3-pin	24 AWG	6.0 ft (2m)	③ ④ ① 1-Brown 3-Blue 4-Black	**CSNS3A3CY2402**	**CSNS3A3RY2402**

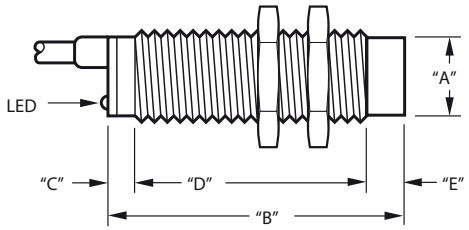
Micro-style

Nano-style

Dimensions

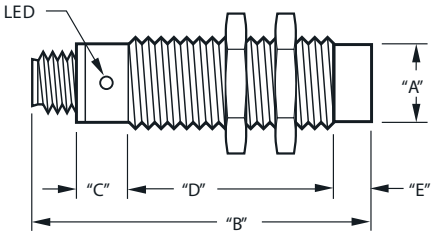
Two-wire sensors

Cable models



Catalog Number	Operating Voltage	A	B	C	D	E
E57-12GS02-A	20–250 Vac	M12x1	65	15	50	—
E57-12GU04-A		M12x1	60	15	42	8
E57-18GS05-A		M18x1	80	20	60	—
E57-18GU08-A		M18x1	80	20	48	12
E57-30GS10-A		M30x1.5	80	20	60	—
E57-30GU15-A		M30x1.5	80	20	45	15
E57-12GS02-D	10–30 Vdc	M12x1	50	—	50	—
E57-12GU04-D		M12x1	50	—	42	8
E57-12GE08-D		M12x1	50	—	42	8
E57-12GE08-D1		M12x1	50	—	42	8
E57-18GS05-D		M18x1	55	5	50	—
E57-18GU08-D		M18x1	55	5	38	12
E57-18GE16-D		M18x1	55	5	38	12
E57-18GE16-D1		M18x1	55	5	38	12
E57-30GS10-D		M30x1.5	55	5	50	—
E57-30GU15-D		M30x1.5	55	5	35	15
E57-30GE25-D		M30x1.5	55	5	35	15
E57-30GE25-D1		M30x1.5	55	5	35	15

Connector modules



Catalog Number[1]	Operating Voltage	A	B	C	D	E
E57-12GS02-AAB	20–250 Vac	M12x1	68	16	42	—
E57-12GU04-AAB		M12x1	68	16	34	8
E57-18GS05-AAB		M18x1	91	20	60	—
E57-18GU08-AAB		M18x1	91	20	48	12
E57-18GE16-AAB		M18x1	79.2	15	37	11.5
E57-30GS10-AAB		M30x1.5	80	20	60	—
E57-30GU15-AAB		M30x1.5	91	20	45	15
E57-12GS02-DDB	10–30 Vdc	M12x1	69	16	42	—
E57-12GU04-DDB		M12x1	68	16	34	8
E57-12GE08-DDB		M12x1	68	10	50	8
E57-12GE08-D1DB		M12x1	68	10	50	8
E57-18GS05-DDB		M18x1	76	15	61	—
E57-18GU08-DDB		M18x1	80	15	49	12
E57-18GE16-DDB		M18x1	79	15	52	12
E57-30GS10-DDB		M30x1.5	75	15	60	—
E57-30GU15-DDB		M30x1.5	79	15	45	15
E57-30GE25-DDB		M30x1.5	78	15	48	15

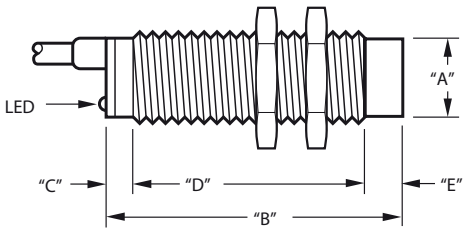
Note: Normally closed models are dimensionally identical to equivalent normally open models

Global proximity sensors

Dimensions

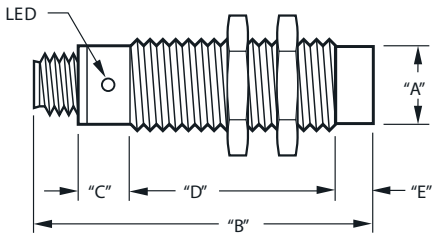
Three-wire sensors

Cable modules



Catalog Number	Operating Voltage	A	B	C	D	E
E57-08GE03-C	10–30 Vdc	M8x1	46	6	40	—
E57-08GE03-G		M8x1	46	6	40	—
E57-08GE06-C		M8x1	45	—	41	4
E57-08GE06-G		M8x1	45	—	41	4
E57-08GS01-C		M8x1	45	—	45	—
E57-08GS01-G		M8x1	45	—	45	—
E57-08GU02-C		M8x1	45	—	41	4
E57-08GU02-G		M8x1	45	—	41	4
E57-12GE05-C		M12x1	51	2	49	—
E57-12GE05-G		M12x1	51	2	49	—
E57-12GE10-C		M12x1	50.5	1.7	41	7.8
E57-12GE10-G		M12x1	50.5	1.7	41	7.8
E57-12GS02-C		M12x1	50	—	50	—
E57-12GS02-G		M12x1	50	—	50	—
E57-12GU04-C		M12x1	50	—	42	8
E57-12GU04-G		M12x1	50	—	42	8
E57-18GE08-C		M18x1	67.5	2.5	65	—
E57-18GE08-G		M18x1	65.5	2.5	65	—
E57-18GE18-C		M18x1	66	2.5	52	11.5
E57-18GE18-G		M18x1	66	2.5	52	11.5
E57-18GS05-C		M18x1	55	5	50	—
E57-18GS05-G		M18x1	55	5	50	—
E57-18GU08-C		M18x1	55	5	38	12
E57-18GU08-G		M18x1	55	5	38	12
E57-30GE15-C		M30x1.5	69	5	64	—
E57-30GE15-G		M30x1.5	69	5	64	—
E57-30GE29-C		M30x1.5	83	5	64	15
E57-30GE29-G		M30x1.5	83	5	64	15
E57-30GS10-C		M30x1.5	55	5	50	—
E57-30GS10-G		M30x1.5	55	5	50	—
E57-30GU15-C		M30x1.5	55	5	35	15
E57-30GU15-G		M30x1.5	55	5	35	15

Connector modules



Catalog Number[1]	Operating Voltage	A	B	C	D	E
E57-08GE03-CDB	10–30 Vdc	M8x1	71	26	36	—
E57-08GE03-CNB		M8x1	61	19	42	—
E57-08GE03-GDB		M8x1	71	26	36	—
E57-08GE03-GNB		M8x1	61	19	42	—
E57-08GE06-CDB		M8x1	70	31	35	4
E57-08GE06-GDB		M8x1	70	31	35	4
E57-08GS01-CDB		M8x1	70	21	49	—
E57-08GS01-CNB		M8x1	60	20	40	—
E57-08GS01-GDB		M8x1	70	21	49	—
E57-08GS01-GNB		M8x1	60	20	40	—
E57-08GU02-CDB		M8x1	70	21	45	4
E57-08GU02-CNB		M8x1	60	20	36	4
E57-08GU02-GDB		M8x1	70	21	45	4
E57-08GU02-GNB		M8x1	60	20	36	4
E57-12GE05-CDB		M12x1	69	24	45	—
E57-12GE05-GDB		M12x1	69	24	45	—
E57-12GE10-CDB		M12x1	68.5	10.3	36	7.8
E57-12GE10-GDB		M12x1	68.5	10.3	36	7.8
E57-12GS02-CDB		M12x1	68	16	52	—
E57-12GS02-GDB		M12x1	68	16	52	—
E57-12GU04-CDB		M12x1	68	20	31	8
E57-12GU04-GDB		M12x1	68	20	31	8
E57-18GE08-CDB		M18x1	79	30	49	—
E57-18GE08-GDB		M18x1	79	30	49	—
E57-18GE18-CDB		M18x1	79.2	15	37	11.5
E57-18GE18-GDB		M18x1	79.2	15	37	11.5
E57-18GS05-CDB		M18x1	76	15	61	—
E57-18GS05-GDB		M18x1	76	15	61	—
E57-18GU08-CDB		M18x1	76	15	49	12
E57-18GU08-GDB		M18x1	80	15	49	12
E57-30GE29-CDB		M30x1.5	79	30	34	15
E57-30GE29-GDB		M30x1.5	79	30	34	15
E57-30GS10-CDB		M30x1.5	79	15	60	—
E57-30GS10-GDB		M30x1.5	75	15	60	—
E57-30GU15-CDB		M30x1.5	75	15	45	15
E57-30GU15-GDB		M30x1.5	75	15	45	15

Note: Normally closed models are dimensionally identical to equivalent normally open models

Photoelectric sensors

Eaton E58 harsh duty series photoelectric sensors

- E58 Sensors are available in 18 mm & 30 mm diameters
- Highly refined optics for long sensing ranges & to see through high levels of contamination — unmatched optical performance
- Perfect Prox® technology provides exceptional background rejection & extremely high excess gain
- Resistant to the wide range of chemicals used in the automotive, food processing & forest products industries
- Suitable for high temperature, high pressure washdown (1200 psi)
- Mechanical Viton seals hold up to extreme temperature variations
- Visible sensing beam on all models lets you see where the beam is aimed for quick setup & alignment
- Output status indicator is the brightest available & is visible from any angle & in any lighting condition
- The industry's only background rejection sensors with a 2-wire circuit design
- Models available with both AC & DC operation in a single unit
- 4-wire DC sensors offer dual NPN & PNP outputs

3-Wire & 4-Wire sensors

Model selection	Operating voltage	Sensing range	Field of view	Through beam part	Item no. Light Operate	Item no. Dark Operate
30 mm Diameter	20 – 132V AC	250 m	830 mm diameter	Source	**E58-30TS250-GA**	**E58-30TS250-GA**
Through-Beam	or 15 – 30V DC	-	at 7.6 metres	Detector	**E58-30TD250-GL**	**E58-30TD250-GD**
30 mm Diameter Reflex	20 – 132V AC or 15 – 30V DC	18 m	150 mm diameter at 6 metres	-	**E58-30RS18-GL***	**E58-30RS18-GD***
30 mm Diameter Polarized Reflex	20 – 132V AC or 15 – 30V DC	10 m	150 mm diameter at 6 metres	-	**E58-30RP10-GL***	**E58-30RP10-GD***

* Retroreflector not included.
Connection type: 2 metre Cable

2-Wire sensors

Model selection	Operating voltage	Sensing range	Field of view	Through beam part	Item no. Light Operate	Item no. Dark Operate
18 mm Diameter Perfect Prox®	90 – 132V AC or 18 – 50V DC	50 mm	6 mm diameter at 50 mm	-	**E58-18DP50-EL**	**E58-18DP50-ED**
	90 – 132V AC or 18 – 50V DC	100 mm	10 mm diameter at 100 mm	-	**E58-18DP100-EL**	**E58-18DP100-ED**
30 mm Diameter Perfect Prox®	90 – 132V AC or 18 – 50V DC	150 mm	19 mm diameter at 150 mm	-	**E58-30DP150-EL**	**E58-30DP150-ED**
	90 – 132V AC or 18 – 50V DC	280 mm	26 mm diameter at 280 mm	-	**E58-30DPS280-EL**	**E58-30DPS280-ED**

Connection type: 2 metre Cable

3-Wire & 4-Wire sensors

Model selection	Operating voltage	Sensing range	Field of view	Through beam part	Item no. Light Operate	Item no. Dark Operate
18 mm Diameter Perfect Prox®	10 – 30V DC	50 mm	6 mm diameter at 50 mm	-	**E58-18DP50-HL**	**E58-18DP50-HD**
	10 – 30V DC	100 mm	10 mm diameter at 100 mm	-	**E58-18DP100-HL**	**E58-18DP100-HD**
30 mm Diameter Perfect Prox®	20 – 132V AC or 15 – 30V DC	150 mm	19 mm diameter at 150 mm	-	**E58-30DP150-GL**	**E58-30DP150-GD**
	20 – 132V AC or 15 – 30V DC	280 mm	26 mm diameter at 280 mm	-	**E58-30DPS280-GL**	**E58-30DPS280-GD**

Connection type: 2 metre Cable

Photoelectric sensors

Nano view series sensors

- A Complete Family of Solutions—Models include an 8.2 ft (2.5m) polarized reflex, a 13 in (35 cm) diffuse reflective, a 4 in (10 cm) fixed-focus diffuse, a 20 ft (6m) thru-beam; and a 2.6 ft (80 cm) clear object detector for sensing plastic bottles, molds, cartons and films
- Small Size—At less than 1.5 in long and half an in deep, NanoView can fit into the smallest of spaces
- Fixed Focus Diffuse Models—Perfect for sensing very small targets at a 4-in focal point. A visible red LED beam makes it easy to set up
- Clear Object Detection Models—Ideal for sensing plastic bottles, molds, cartons, films and glass objects

Thru-Beam

Polarized Reflex

Diffuse Reflective

Fixed Focus Diffuse Reflective

Clear Object Detector

Voltage range	Sensing mode	Sensing range	Output type	Connection type	Item no.
Thru-beam					
10–30 Vdc	Thru-beam detector	19 ft (6m)	NPN, light operate or dark operate (selectable)	6 ft cable	**E71-TBRN-CA**
				4-pin nano-connector ①	**E71-TBRN-M8**
			PNP, light operate or dark operate (selectable)	6 ft cable	**E71-TBRP-CA**
				4-pin nano-connector ①	**E71-TBRP-M8**
	Thru-beam source	19 ft (6m)		6 ft cable	**E71-TBS-CA**
				4-pin nano-connector ①	**E71-TBS-M8**
	Narrow beam Thru-beam source	4.9 ft (1.5m)		6 ft cable	**E71-NTBS-CA**
				4-pin nano-connector ①	**E71-NTBS-M8**
Polarized reflex					
10–30 Vdc	Polarized reflex	8.2 ft (2.5m)	NPN, light operate or dark operate (selectable)	6 ft cable	**E71-PRN-CA**
				4-pin nano-connector ①	**E71-PRN-M8**
			PNP, light operate or dark operate (selectable)	6 ft cable	**E71-PRP-CA**
				4-pin nano-connector ①	**E71-PRP-M8**
Diffuse reflective					
10–30 Vdc	Diffuse reflective	13.8 in (35 cm)	NPN, light operate or dark operate (selectable)	6 ft cable	**E71-SDN-CA**
				4-pin nano-connector ①	**E71-SDN-M8**
			PNP, light operate or dark operate (selectable)	6 ft cable	**E71-SDP-CA**
				4-pin nano-connector ①	**E71-SDP-M8**
Fixed focus diffuse reflective					
10–30 Vdc	Fixed-focus Diffuse reflective	3.9 in (10 cm) focal point	NPN, light operate or dark operate (selectable)	6 ft cable	**E71-FFDN-CA**
				4-pin nano-connector ①	**E71-FFDN-M8**
			PNP, light operate or dark operate (selectable)	6 ft cable	**E71-FFDP-CA**
				4-pin nano-connector ①	**E71-FFDP-M8**
Clear object detector					
10–30 Vdc	Clear object detector	31.5 in (80 cm)	NPN, light operate or dark operate (selectable)	6 ft cable	**E71-CON-CA**
				4-pin nano-connector ①	**E71-CON-M8**
			PNP, light operate or dark operate (selectable)	6 ft cable	**E71-COP-CA**
				4-pin nano-connector ①	**E71-COP-M8**

① for compatible connector cables, refer to the following page

Photoelectric sensors

Standard cables—Nano

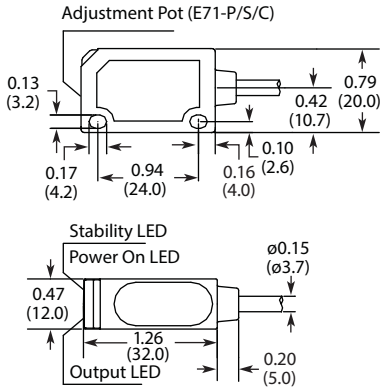
Voltage style	Number of pins	Gauge	Length	Pin configuration/ Wire colors (Face view female shown)	PVC yellow jacket Item no.
Nano-connector cable, straight female					
DC	4-pin, 4-wire	24 AWG	6.0 ft (2m)	1-Brown 2-White 3-Blue 4-Black	**CSNS4A4CY2402**
			16.4 ft (5m)		**CSNS4A4CY2405**
			32.8 ft (10m)		**CSNS4A4CY2410**
Nano-connector cable, right angle female					
DC	4-pin, 4-wire	24 AWG	6.0 ft (2m)	1-Brown 2-White 3-Blue 4-Black	**CSNR4A4CY2402**
			16.4 ft (5m)		**CSNR4A4CY2405**
			32.8 ft (10m)		**CSNR4A4CY2410**

Accessories

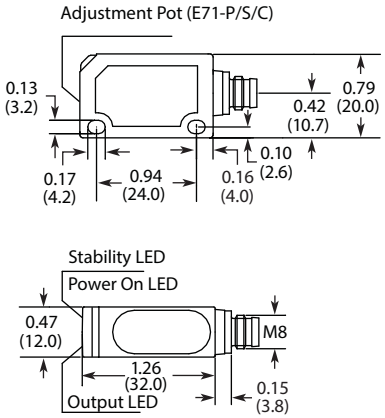
Description	Item no.
Mounting bracket	
L-shaped mounting bracket for NanoView sensors	**E71-MTB1**

Dimensions

Cable Models

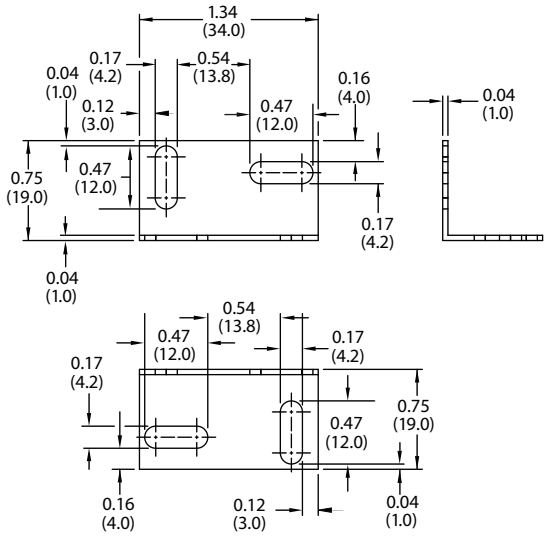


Nano-Connector Models



Accessories

E71-MTB1—Mounting Bracket



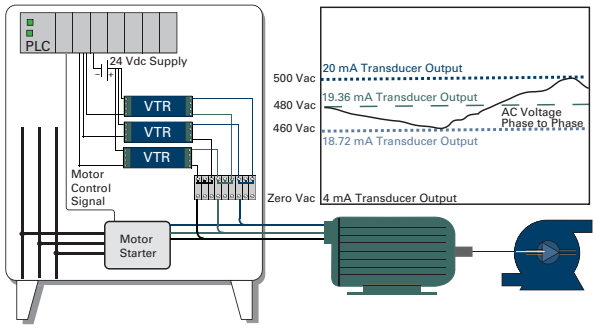
VoltageWatch EVT range

Eaton's VoltageWatch™ sensor is a high-performance, true RMS sensor for sensing voltage in single- and threephase installations. Applicable on nominal circuits of 120V, 240V and 480V, this voltage sensor provides a fully isolated analog output proportional to rated nominal voltage in both sinusoidal and non-sinusoidal (variable frequency) situations. It is housed in a slim, compact, easy-to-install DIN rail mount enclosure.

Ideal for situations where power quality is of interest or concern, the VoltageWatch sensor facilitates monitoring of supply voltage levels, identifying undervoltage or overvoltage conditions, and helping to protect critical motors and electronics.

Designed with an industry standard 4–20 mA output, VoltageWatch is easily coupled to a data logger, panel meter or PLC to enable basic trending of operational status of low voltage circuits up to real-time monitoring and reporting of supply voltage levels.

Example application - Phase loop



Application description true RMS voltage monitoring

- Detect below normal or "brown out" voltage conditions; protect against possible motor overheating
- Identify phase-loss conditions by detecting voltage reduction in one or more phases of a threephase motor
- Monitor overvoltage conditions associated with regenerative voltage to help in diagnosing/avoiding motor drive issues
- Detect voltage conditions that may cause stress in or damage to soft starter components (SCRs)

Features

- True RMS Output - Allows for use in situations where power supplied is non-sinusoidal, such as VFD applications, poor power quality installations or other electrically harsh/challenging environments
- Input/Output Isolation - Input and output circuitry is electrically isolated for improved safety
- Standard 4–20 mA Loop Powered Output - Industry standard output works easily and reliably with existing controllers, data loggers and SCADA equipment
- Compact DIN Rail Mount Enclosure—Space-saving 35 mm wide enclosure mounts quickly for an attractive installation

EVT 1 420 24L

Standard family name	Nominal range	Output type	Supply voltage
EVT = VoltageWatch sensor	1 = 120V 3 = 240V 4 = 480V	420 = 4–20 mA	24L = 24V Loop powered

VoltageWatch EVT—top terminal current sensors

Power supply	Output signal	Nominal voltage	Item no.
24 Vdc loop powered	4–20 mA	120	**EVT1-420-24L**
		240	**EVT3-420-24L**
		480	**EVT4-420-24L**

ECS range CurrentWatch current switches

The CurrentWatch™ ECS Series from Eaton's Electrical Sector is a family of solidstate adjustable current switches, ideal for providing status information on electrical equipment. The ECS is excellent for new installations, where the conductors run through the housing, requiring no cutting. These switches are also ideal for retrofits, since split-core models can be opened to fit around existing conductors. The current switch is accurate, reliable and easy to install.

The ECS can sense continuous currents from 1 to 150A and does not require any supply voltage, as the power required is induced from the monitored conductor. The output is a non-polarity-sensitive solidstate contact for switching AC and DC circuits up to 240 Vac/dc. This switch also includes an LED indicating two states: on and below trip point, and above trip point with contacts energized.

Any change in current can be sensed with the ECS Series. A change in current may indicate motor failure, belt loss/slippage or mechanical failure. Any of these events can cause the current to drop significantly, tripping the switch and notifying the controller.

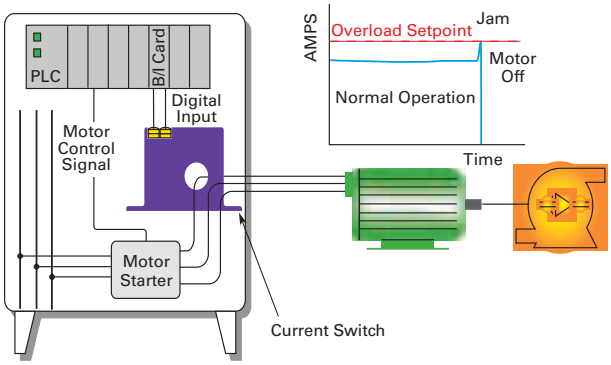
Features

- Universal Outputs - NO or NC solid-state switch for control circuits up to 240 Vac/dc, compatible with most automation systems
- Self-Powered - Cuts installation and operating costs
- Easily Adjustable Setpoint - Increases application flexibly and speeds start-up
- Solid- or Split-Core Housings - Versions tailored for each type of installation
- LED Indication - Provides quick visual indication of contact status
- Built-In Mounting Feet - Simple, two-screw panel mount or attach with optional DIN-rail mounting kit accessory

Application description typical applications

- Electronic Proof of Flow - Current operated switches eliminate the need for multiple pipe or duct penetrations and are more reliable than electromechanical pressure or flow switches
- Conveyors - Detect jams and overloads
- Lighting Circuits - Easier to install and more accurate than photocells
- Fans, Pumps and Heating Elements - Faster response than temperature sensors
- Critical Motors
- Ancillary Equipment

Example application - Pump jam and suction loss protection



ECS range CurrentWatch current switches

Power supply	Aperture Size	Output Signal	Setpoint and LED Configuration	Item no.
Solid-Core Housing				
Self powered (no external power needed)	0.74 in (19 mm)	Normally open	Adjustable 1–150A setpoint with LED	**ECSNOASC**
			Fixed 1.0A setpoint no LED	**ECSNOFSC**
			Fixed 5.5A setpoint no LED	**ECSNOFSCY1**
		Normally closed	Adjustable 1–150A setpoint with LED	**ECSNCASC**
			Fixed 1.0A setpoint no LED	**ECSNCFSC**
Split-Core Housing				
Self powered (no external power needed)	0.85 in (21.6 mm)	Normally open	Adjustable 1.75–150A setpoint with LED	**ECSNOASP**
			Fixed 1.5A setpoint no LED	**ECSNOFSP**
		Normally closed	Adjustable 1.75–150A setpoint with LED	**ECSNCASP**
			Fixed 1.5A setpoint no LED	**ECSNCFSP**

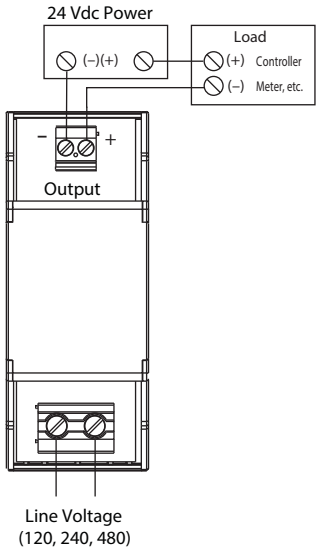
Accessories

Description	Item no.
DIN rail mounting kit	**EDINKIT**

VoltageWatch EVT range

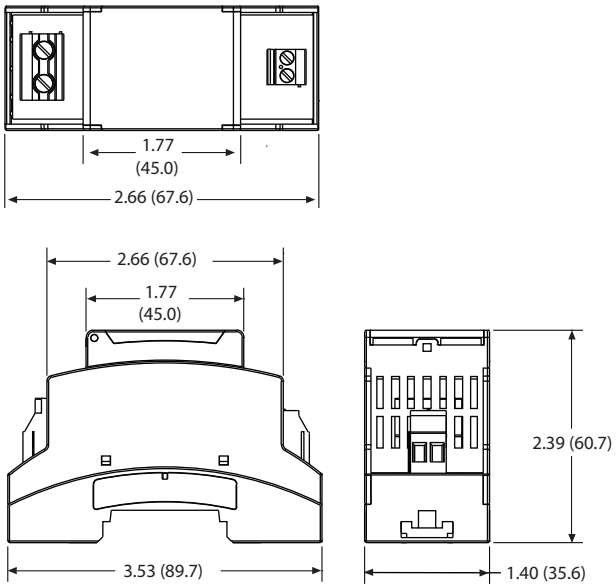
Wiring diagram

VoltageWatch EVT



Dimensions (approximate dimensions in inches (mm)

Complete unit

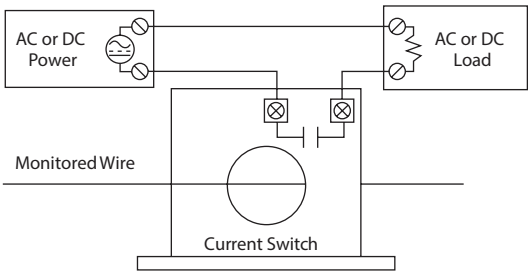


ECS range CurrentWatch current switches

Wiring diagram

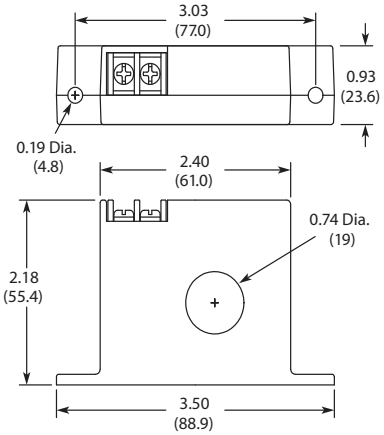
ECS CurrentWatch current switches

Normally open (NO) models shown

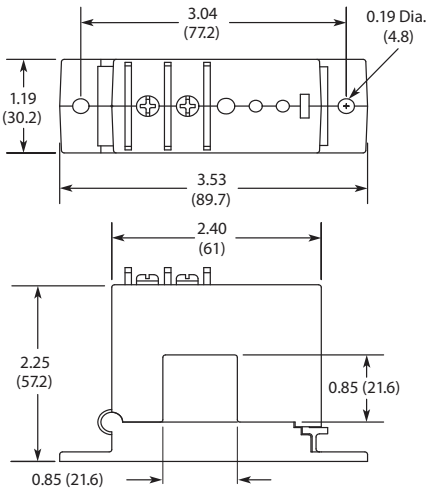


Dimensions (approximate dimensions in inches (mm)

Solid-core housing



Split core housing



Plug-in relays – D1 range

Eaton D1RF 1-pole relays

- The contact operation can be easily checked by Push-to-Test button
- Flag indicator shows relay status in manual or powered condition
- LED status lamp shows coil ON or OFF status— ideal for use in low light applications
- Push-to-Test button allows for manual operation of relay without the need for coil power
- Lock-down door holds pushbutton and contacts in the operate position when activated
- Finger-grip cover allows operator to remove relays from sockets easily
- ID tag/write label to identify relays in multiple relay circuits
- Bipolar LED allows for reverse polarity applications

D 1 R F 1 A A

Family type	Contact configuration	Standard features	Coil voltage
D1RF D1AR	1 = SPDT	Blank = Mechanical flag indicator (only with D1RR) A = LED test button, flag indicator, lock-down door, finger-grip cover, ID tag (only with D1RR) 1 = LED and mechanical flag indicator	A = 120 Vac A1 = 110 Vdc B = 240 Vac P = 6 Vac P1 = 6 Vdc R= 12Vac R1 = 12 Vdc T = 24 Vac T1 = 24 Vdc W = 48 Vac W1 = 48 Vdc

Eaton D1RF1 1-pole relays

Description	Voltage	Item no.
Relay 20A 24V DC 1 Pole	24V DC	**D1RF1T1**
Relay 20A 24V AC 1 Pole	24V AC	**D1RF1T**
Relay 20A 240V AC 1 Pole	240V AC	**D1RF1B**
Relay 20A 110V AC 1 Pole	110V AC	**D1RF1A**
Relay 20A 110V DC 1 Pole	110V DC	**D1RF1A1**
1-pole base D1 relay DIN mount		**D1RAA**
Hold down clip		**PMC-1781**

Plug-in relays – D2 range

D 2 R F 2 A A

Family type	Contact configuration	Standard features	Coil voltage
D2RF D2RR	2 = DPDT 4 = 4PDT 5 = DPDT latching	Blank = Plain cover (only with D2RR) A = LED test button, flag indicator, lock-down door, finger-grip cover, ID tag (only with D2RF)	A = 120V ac A1 = 110V dc B = 240V ac P = 6V ac P1 = 6V dc R = 12V ac R1 = 12V dc T = 24V ac T1 = 24V dc W1 = 48V dc

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

Eaton D2RF2 2 pole relays

- Flag indicator shows relay status in manual or powered condition
- Bi-polar LED status lamp allows for reverse polarity applications
- LED status lamp shows coil "ON" or "OFF" status — ideal for use in low light applications
- Shows coil ON or OFF status
- Colour coded pushbutton identifies AC coils with red or DC coils with blue pushbuttons
- Allows for manual operation of relay without the need for coil power
- Ideal for field service personnel to test control circuits
- Lock down door, when activated, holds pushbutton & contacts in the operate position
- Excellent for analysing circuit problems
- Finger-grip cover allows operator to remove relays from sockets more easily than conventional relays
- White plastic I.D. tag/write label used for identification of relays in multi-relay circuits

Description	Voltage	Item no.
Relay 10A 24V DC 2 Pole	24V DC	**D2RF2T1**
Relay 10A 24V AC 2 Pole	24V AC	**D2RF2T**
Relay 10A 240V AC 2 Pole	240V AC	**D2RF2B**
Relay 10A 110V AC 2 Pole	110V AC	**D2RF2A**
Relay 10A 110V DC 2 Pole	110V DC	**D2RF2A1**
2-pole base D2 relay DIN mount		**D2PA7**
Hold down clip		**PQC-1782**

Eaton D2RF4 4 pole relays

- Flag indicator shows relay status in manual or powered condition
- LED status lamp shows coil "ON" or "OFF" status — ideal for use in low light applications
- Push-to-test button allows for manual operation of relay without the need for coil power
- Lock-down door holds pushbutton & contacts in the operate position when activated
- Finger-grip cover allows operator to remove relays from sockets easily
- I.D. tag/write label to identify relays in multiple-relay circuits
- Bi-polar LED allows for reverse polarity applications

Description	Voltage	Item no.
Relay 10A 24V DC 4 Pole	24V DC	**D2RF4T1**
Relay 10A 24V AC 4 Pole	24V AC	**D2RF4T**
Relay 10A 240V AC 4 Pole	240V AC	**D2RF4B**
Relay 10A 110V AC 4 Pole	110V AC	**D2RF4A**
Relay 10A 110V DC 4 Pole	110V DC	**D2RF4A1**
4-pole base D2 relay DIN mount		**D2PA7**
Hold down clip		**PQC-1782**

Plug-in relays – D4 range

D 4 P R 1 1 A

Family type	Contact configuration	Options
D4PR	1 = SPDT 2 = DPDT	Blank = Plain cover 1 = Indicating light

Coil voltage	
A = 120Vac	R = 12Vac
A1 = 110Vdc	R1 = 12Vdc
B = 240Vac	T = 24Vac
P = 6Vac	T1 = 24Vdc
P1 = 6Vdc	W1 = 48Vdc

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

D4PR1, D4PR2 single & double pole slimline flat pin relay

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

Eaton D4PR1 single pole slimline flat pin relay

Description	Voltage	Item no.
Relay 10 Amps 24V DC 1 Pole	24V DC	**D4PR11T1**
Relay 10 Amps 24V AC 1 Pole	24V AC	**D4PR11T**
Relay 10 Amps 240V AC 1 Pole	240V AC	**D4PR11B**
Relay 10 Amps 120V AC 1 Pole	120V AC	**D4PR11A**
Single Pole Base	-	**D4PA1**

D4PR2 double pole slimline flat pin relay

Description	Voltage	Item no.
Relay 5 Amps 24V DC 2 Pole	24V DC	**D4PR21T1**
Relay 5 Amps 24V AC 2 Pole	24V AC	**D4PR21T**
Relay 5 Amps 120V AC 2 Pole	120V AC	**D4PR21A**
Relay 5 Amps 240V AC 2 Pole	240V AC	**D4PR21B**
Double Pole Base	-	**D4PA2**

Interface relays – XR range

XR U 1 D12 G

Type	Connection type	Number of poles	Coil voltage	Gold plated contacts
XR = XR Terminal Block Relay	U = Screw P = Spring-Cage	1 = 1 PDT 2 = 2 PDT	D12 = 12V dc D120U = 120V ac / 110V dc D24 = 24V dc D230U = 23Vac / dc	G = Yes Blank = No

XR Terminal block interface relays

- 6mm wide (1P), 14mm wide (2P) relay screw connection or spring-cage
- Plug-in jumpers or bridges available
- SPDT or DPDT contacts rated 6A
- DIN rail mount, LED indication
- Field-replaceable pluggable miniature relay
- 12VDC to 110VDC/120VAC available
- 10A High current series in SPDT

Description	Item no.
XR Relay, 1P, 6A, 12VDC, screw conn	**XRU1D12**
XR Relay, 1P, 6A, 120VAC/110VDC, screw conn	**XRU1D120U**
XR Relay, 1P, 6A, 230VAC/220VDC, screw conn	**XRU1D230U**
XR Relay, 1P, 6A, 24VDC, screw conn	**XRU1D24**
XR Relay, 1P, 6A, 24VAC/DC, screw conn	**XRU1D24U**
XR Relay, 2P, 6A, 12VDC, screw conn	**XRU2D12**
XR Relay, 2P, 6A, 120VAC/110VDC, screw conn	**XRU2D120U**
XR Relay, 2P, 6A, 230VAC/220VDC, screw conn	**XRU2D230U**
XR Relay, 2P, 6A, 24VDC, screw conn	**XRU2D24**
XR Relay, 2P, 6A, 24VAC/DC, screw conn	**XRU2D24U**

Description	Item no.
XR Relay, 1P, 6A, 12VDC, spring-cage	**XRP1D12**
XR Relay, 1P, 6A, 120VAC/110VDC, spring-cage	**XRP1D120U**
XR Relay, 1P, 6A, 230VAC/220VDC, spring-cage	**XRP1D230U**
XR Relay, 1P, 6A, 24VDC, spring-cage	**XRP1D24**
XR Relay, 1P, 6A, 24VAC/DC, spring-cage	**XRP1D24U**
XR Relay, 2P, 6A, 230VAC/220VDC, spring-cage	**XRP2D230U**
XR Relay, 1P, 10A, 12VDC, screw conn	**XRU1H12**
XR Relay, 1P, 10A, 120VAC/110VDC, screw conn	**XRU1H120U**
XR Relay, 1P, 10A, 230VAC/220VDC, screw conn	**XRU1H230U**
XR Relay, 1P, 10A, 24VDC, screw conn	**XRU1H24**

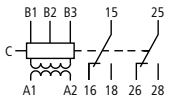
Accessories

Description	Item no.
2-position snap-in Jumper, grey	**XRAFBST2GY**
80-position snap-in Jumper, grey	**XRAFBST500GY**
Power Terminal Block	**XRAPLCESK**
End Cover	**XRAATPBK**

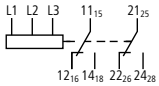
EMR measuring & monitoring relays

Current, phase, sequence relays, phase imbalance monitoring

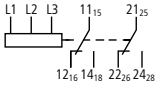
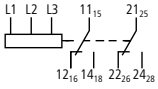
EMR4-F500-2

Description	Current measuring range, I ~ /I = A	Circuit symbol	Supply voltage	Item no.
Current monitoring relays EMR4-I..., single-phase				
• Switching hysteresis adjustable from 3 - 30 % • Response delay 0.1 - 30 s • Monitoring of one upper or lower limit • Extension of the measurement range possible with current transformers	3 – 30 mA 10 – 100 mA 0.1 – 1 A		24 - 240 V AC, 50/60 Hz 24 - 240 V DC	**EMR4-I1-2-A**
	0.3 – 1.5 A 1 – 5 A 3 – 15 A		24 - 240 V AC, 50/60 Hz 24 - 240 V DC	**EMR4-I15-2-A**
	0.3 – 1.5 A 1 – 5 A 3 – 15 A		24 - 240 V AC, 50/60 Hz 24 - 240 V DC	**EMR4-I15-2-B**

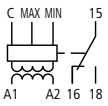
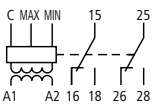
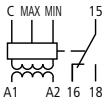
EMR5-A300-1-C

Description	Monitoring voltage per phase,UN V AC	Circuit symbol	Supply voltage	Item no.
EMR4-F... phase sequence relay				
• Monitors three-phase systems for phase sequence and phase failure (< 0.6 x Ue) • Supply voltage connection = monitored voltage	200 - 500 V AC, 50/60 Hz		200 - 500 V AC, 50/60 Hz	**EMR4-F500-2**

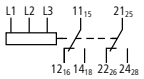
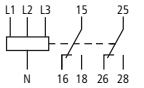
EMR4-N500-2-A

Description	Threshold value	Circuit symbol	Supply voltage	Item no.
EMR5-A... phase imbalance monitoring relays				
Power supply from measuring circuit Three-phase monitoring • Phase sequence • Phase failure • Asymmetry • Imbalance threshold values adjustable 2 - 25 % of mean value of phase voltages • On-delay: None = 0 or adjustable from 0.1 to 30 s	Imbalance = 2 - 25 % of phase voltage mean value		160 - 300 V AC, 50/60 Hz	**EMR5-A300-1-C**
Power supply from measuring circuit Three-phase monitoring • Phase sequence • Phase failure • Asymmetry • Imbalance threshold values adjustable • On-delay: None = 0 or adjustable from 0.1 to 30 s	Imbalance = 2 - 25 % of phase voltage mean value		300 - 500 V AC, 50/60 Hz	**EMR5-A400-1**

EMR5-N80-1-B

Description	Response sensitivity	Circuit symbol	Supply voltage	Item no.
Liquid level monitoring relays EMR4-N...				
• Fill level monitoring of conductive liquids • Mixture ratio monitoring of conductive liquids • Selectable dry-running or overflow protection	5 kΩ - 100 kΩ		220 - 240 V AC, 50/60 Hz	**EMR4-N100-1-B**
• Fill level monitoring of conductive liquids • Mixture ratio monitoring of conductive liquids • Selectable on-delay or off-delay between 0.5 - 10 s	250 Ω - 500 kΩ		24 - 240 V AC, 50/60 Hz 24 - 240 V DC	**EMR4-N500-2-A**
	250 Ω - 500 kΩ		220 - 240 V AC, 50/60 Hz	**EMR5-N80-1-B**
Liquid level monitoring relays EMR5N...				
• Fill level monitoring of conductive liquids • Conductivity (mixture ratio) monitoring of conductive liquids	5 kΩ - 100 kΩ		220 - 240 V AC, 50/60 Hz	**EMR5-N80-1-B**

EMR measuring & monitoring relays

Description	Monitoring voltage per phase	Threshold value ①	Circuit symbol	Supply voltage	Width mm	Item no.
Phase monitoring relay EMR5-(A)W...						
Power supply from measuring circuit Three-phase monitoring Phase sequence Phase failure Overvoltage Undervoltage Asymmetry Adjustable threshold values for overvoltage/ undervoltage and imbalance On-/Off-delay: None = 0 or adjustable between 0.1 - 30 s	160 - 300 V AC, 50/60 Hz	Umax 220 - 300 V AC Umin 160 - 230 V AC		160 - 300 V AC, 50/60 Hz	22.5	**EMR5-AW300-1-C**
	300 - 500 V AC, 50/60 Hz	Umax 420 - 500 V AC Umin 300 - 380 V AC		300 - 500 V AC, 50/60 Hz	22.5	**EMR5-AW500-1-D**
	350 - 580 V AC, 50/60 Hz	Umax 480 - 580 V AC Umin 350 - 460 V AC		350 - 580 V AC, 50/60 Hz	45	**EMR5-AWM580-2**
	450 - 720 V AC; 50/60 Hz	Umax 600 - 720 V AC Umin 450 - 570 V AC		350 - 720 V AC, 50/60 Hz	45	**EMR5-AWM720-2**
	530 - 820 V AC; 50/60 Hz	Umax 690 - 820 V AC Umin 530 - 660 V AC		530 - 820 V AC, 50/60 Hz	45	**EMR5-AWM820-2**
Power supply from measuring circuit Three-phase monitoring Phase sequence Phase failure Overvoltage Undervoltage Asymmetry Neutral cable break (not EMR5-AWN500-1) Adjustable threshold values for overvoltage/ undervoltage and imbalance On-/Off-delay: None = 0 or adjustable between 0.1 - 30 s	90 - 170 V AC, 50/60 Hz	Umax 120 - 170 V AC Umin. 90 - 130 V AC		90 - 170 V AC, 50/60/ 400 Hz	22.5	**EMR5-AWN170-1-E**
	180 - 280 V AC, 50/60 Hz	Umax 240 - 280 V AC Umin 180 - 220 V AC		180 - 280 V AC, 50/60/ 400 Hz	22.5	**EMR5-AWN280-1**
	180 - 280 V AC, 50/60 Hz	Umax 240 - 280 V AC Umin 180 - 220 V AC		180 - 280 V AC, 50/60 Hz	22.5	**EMR5-AWN280-1-F**
	300 - 500 V AC, 50/60 Hz	Umax 420 - 500 V AC Umin 300 - 380 V AC		300 - 500 V AC, 50/60 Hz	22.5	**EMR5-AWN500-1**

① Imbalance = 2 - 25% of phase voltage mean value

EMR5-AWM720-2

EMR5-AWN500-1

Description	Insulation resistance range Ω	Circuit symbol	Supply voltage	Item no.
Insulation monitoring relays EMR4-R...				
Monitors the insulation resistance between non-grounded AC supply systems and the protective ground conductor. Insulation monitoring in 1- and 3-phase. AC voltage networks Test via local test button or remote test operation. Status display via LED (according to VDE 0413/Part 2) Tripping function memory	1 - 110 kΩ		0-400V AC 45-65 Hz	**EMR5-R400-1-A**
Monitors the insulation resistance in non-grounded DC supply systems. Selector switch for open- or closed-circuit principle. Test and reset via local test button or remote test operation. Status indication via LEDs	10 - 110 kΩ		0-300V DC or 0-250V AC 15-400Hz	**EMR5-R250-1-A**
The EMR5-R400-2-A serves to monitor insulation resistance in accordance with IEC 61557-8 in unearthed IT AC systems, IT AC systems with galvanically connected DC circuits, or unearthed IT DC systems.			0-600 V DC or 0-400 V AC, 15-400 Hz	**EMR5-R400-2-A**
The coupling module EMR5-RC690 is a passive device not needing any control supply voltage. It serves to connect the insulation monitoring relay EMR5-R400-2-A to systems up to 690 V AC and 1000 V DC. Hence the EMR5-RC690 is connected between the system to be monitored and the EMR5-R400-2-A			1000V DC or 690V AC	**EMR5-RC690**

EMR5-R400-1-A

Description	Width mm	Item no.
Sealable shroud EMR4-PH...	22.5	**EMR4-PH22**
	45	**EMR4-PH45**

ETR2-12

ETR2-44

ETR2-11-D

ETR4-11-A

ETR4-70-A

Timing relays - Electronic ETR2

Description	Rated operational current AC-11 230 V Ie A	Rated operational current AC-11 400 V Ie A	Conventional thermal current Ith A	Time range	Voltage range	Item no.
One changeover contact						
On-delayed timing functions	3	-	6	0.05 - 1 s 0.5 - 10 s 5 - 100 s 0.5 - 10 min 5 - 100 min 0.5 - 10 h 5 - 100	24 - 240 V AC, 50/60 Hz 24 - 48 V DC	**ETR2-11**
Off-delayed timing functions	3	-	6			**ETR2-12**
Fleeting contact on energization timing functions	3	-	6			**ETR2-21**
Flashing, pulse initiating timing functions	3	-	6			**ETR2-42**
Flashing, 2 speeds (ON/OFF times variable) timing functions	3	-	6			**ETR2-44**
Multifunction relay timing functions	3	-	6			**ETR2-69**
Two changeover contacts						
On-delayed timing functions	3	-	6	0.05 - 1 s 0.5 - 10 s 5 - 100 s 0.5 - 10 min 5 - 100 min 0.5 - 10 h 5 - 100 h	24 - 240 V AC, 50/60 Hz 24 - 48 V DC	**ETR2-11-D**
Off-delayed timing functions	3	-	6			**ETR2-12-D**
Multifunction relay timing functions	3	0.75	6		12 - 240 V AC, 50/60 Hz	**ETR2-69-D**

Timing relays - Electronic ETR4

Description	Rated operational current AC-11 230 V Ie A	Rated operational current AC-11 400 V Ie A	Conventional thermal current Ith A	Time range	Item no. 24 - 240 V AC, 50/60 Hz 24 - 240 V DC	Item no. 400 V AC, 50/60 Hz
Star-delta switching timing functions	3	3	6	3 - 60 s	**ETR4-51-A**	**ETR4-51-W**
On-delayed timing functions	3	3	6	0.05 - 1 s 0.15 - 3 s 0.5 - 10 s 1.5 - 30 s 5 - 100 s 15 - 300 s 1.5 - 30 min 15 - 300 min 1.5 - 30 h 5 - 100 h	**ETR4-11-A**	**ETR4-11-W**
Multifunctional timing functions	3	3	6		**ETR4-69-A**	**ETR4-69-W**
Multifunctional with connection for potentiometer, and two changeover contacts that can be converted to two timed contacts or one non-delayed contact and one timed contact. Timing functions	3	-	6		**ETR4-70-A**	**-**

Timers

Eaton TRL 18mm DIN timers

- Slim 18mm DIN rail mount timers
- Timing range 50 msec to 100 hours
- Changeover output contact rated 8A, 240VAC
- Universal supply voltage
  12V-240V AC/DC for TRL07 & TRLPG
  24V-240V AC/DC for TRL04

Description	Item no.
18mm DIN Multifunction Timer - 4 modes	TRL04
18mm DIN Multifunction Timer - 7 modes	TRL07
Compact DIN rail mount, DPDT	TRL27
Asymmetrical pulse generator, DPDT	TRW27

Timeswitches

Timeswitches are applied in any residential or commercial buildings wherever automatic control is required on predefined times. The Eaton range comprises of a wide variety of different products which include analogue and digital timeswitches.

Benefits

- Easily programmable on front of device.
- Computer aided programming software available.
- Compact 18 mm design for restricted space opportunities.
- High level of accuracy.
- Automatic summer and winter time adjustment.
- Holiday & Random program settings.
- High power reserve up to 10 years.

Analogue timeswitches

- Daily or weekly programing
- Power reserve in case of loss of supply
- Compact 18mm design for restricted spaces
- Permanent on/off
- Manual override function
- 1 changeover (or normally open) rated 16A resistive, 240Vac
- Convenient DIN rail mounting type.

Analogue range

Description	Item no.
Analogue time switch, dial type, 24 hr, 1 channel, no power reserve	**TSSD1CO**
Analogue time switch, 18 mm wide, 24 hr, 1 channel, no power reserve	**TSSD1NO**
Analogue time switch, dial type, 24 hr, 1 channel, 200 hr power reserve	**TSQD1CO**
Analogue time switch, 18 mm wide, 24 hr, 1 channel, 3 yr power reserve	**TSQD1NO**
Analogue time switch, dial type, 7 day, 1 channel, 200 hr power reserve	**TSQW1CO**

Analogue timeswitches

Digital timeswitches

- Simplified set-up
  Pre-settings only need confirmation (fewer manually settings needed)
- TSA MEMKIT software kit
  Programming can be copied from one clock to another
  Pre-programming on PC
- Pulse output
- Memory card for storing time settings
- Weekly programing, 1 or 2 channels
- Automatic summer/winter time switching

Digital range

Description	Item no.
Digital time switch, 36 mm wide, 7 day, 1 channel, 10 yr power reserve	**TSDW1CO**
Digital time switch, 18 mm wide, 7 day, 1 channel, 3 yr power reserve	**TSDW1COMIN**
Digital time switch, 36 mm wide, 7 day, 1 channel, 10 yr power reserve, pulse output	**TSDW1CODG**
Digital time switch, 36 mm wide, 7 day, 2 channel, 10 yr power reserve	**TSDW2CO**

Digital timeswitches

Software & memory card

Description	Item no.
Programming software, cable & memory card	**TSAMEMKIT**
Memory card	**TSAMEM**

DC power supplies

Eaton's PSG Series of power supplies is designed to be a high-performance, highquality line of products covering a majority of 12 Vdc and 24 Vdc control applications.

Features, benefits and functions

- Universal input voltages: 100–240 Vac for singlephase units, 400–500 Vac for three-phase units
- General-purpose 12 Vdc and 24 Vdc adjustable output
- 150% power surge output
- Wide operating temperature range: –25°C to +80°C
- MTBF up to 1,000,000 hours ensures uptime and reliability
- Protection from overvoltage, overcurrent and overtemperature conditions
- Rugged aluminum and plastic housings provide the durability required to stand up to harsh environments
- All-metal DIN rail mounting hardware
- Heavy-duty screw and finger-safe terminals
- LED indicating light for DC OK simplifies troubleshooting
- Conformal coated electronics
- Hazardous Location Class I, Division 2 rated models
- NEC® Class II rated model
- Redundancy modules keep loads up and running in the event of a device failure
- Buffer module has the stored power needed to keep loads running through a short duration power failure

PSG240F24RM

PSG120F24RM

PSG120E24RM

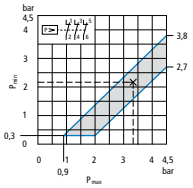
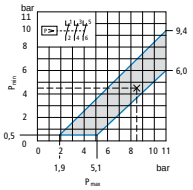
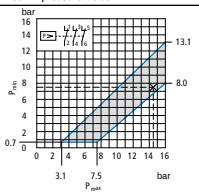
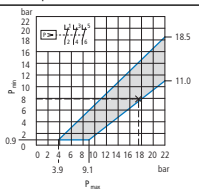
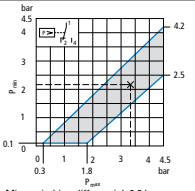
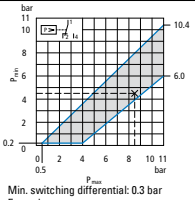
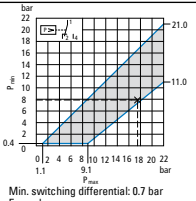
PSG 240 E 24 R M

Series	Model	Terminals	Housing
PSG = PSG power supply	E = Single-phase F = Three-phase R = Redundancy module B = Buffer module N = NEC Class II	S = Screw R = Finger-safe Blank = Screw	M = Aluminum P = Plastic Blank = Aluminum

Output power		Output voltage
15 = 15W	120 = 120W	24 = 24 Vdc
30 = 30W	240 = 240W	12 = 12 Vdc
60 = 60W	480 = 480W	Blank = 24 Vdc
100 = 100W	960 = 960W	

Description	Item no.
Single phase input	
Power supply 85-264VAC input 12VDC output 15W plastic housing	**PSG15E12SP**
Power supply 85-264VAC input 12VDC output 30W plastic housing	**PSG30E12SP**
Power supply 85-264VAC input 12VDC output 30W aluminium housing	**PSG60E12SM**
Power supply 85-264VAC input 24VDC output 60W plastic housing	**PSG60E24SP**
Power supply 85-264VAC input 24VDC output 60W aluminium housing	**PSG60E24RM**
Power supply 85-264VAC input 24VDC output 100W aluminium housing	**PSG100E12SM**
Power supply 85-264VAC input 24VDC output 120W aluminium housing	**PSG120E24RM**
Power supply 85-264VAC input 24VDC output 240W aluminium housing	**PSG240E24RM**
Power supply 85-264VAC input 24VDC output 480W aluminium housing	**PSG480E24RM**
Three phase input	
Power supply 320-600VAC input 24VDC output 60W aluminium housing	**PSG60F24RM**
Power supply 320-600VAC input 24VDC output 120W aluminium housing	**PSG120F24RM**
Power supply 320-600VAC input 24VDC output 240W aluminium housing	**PSG240F24RM**
Power supply 320-600VAC input 24VDC output 480W aluminium housing	**PSG480F24RM**
Power supply 320-600VAC input 24VDC output 960W aluminium housing	**PSG960F24RM**
Buffer & Redundancy modules	
Buffer module 24VDC 20A aluminium housing	**PSG480B24RM**
Power supply redundant module 24VDC 20A aluminium housing	**PSG480R24RM**
Power supply redundant module 24VDC 40A aluminium housing	**PSG960R24RM**

Pressure switches

Description			Max. operating pressure	Item no.
Pressure switches with main contacts IP65, 3 pole				
Preferred setting range from bar	Preferred setting range to bar			
0.9	4	 Min. switching differential: 0.6 bar Example: Cut-out pressure 3.3 bar Cut-in pressure 2.2 bar	7	**MCSN4**
			7	**MCSN4-V**
2	10	 Min. switching differential: 1.4 bar Example: Cut-out pressure 8.5 bar Cut-in pressure 4.5 bar	15	**MCSN11**
			15	**MCSN11-V**
5	15	 Min. switching differential: 2.4 bar Example: Cut-out pressure 14.5 bar Cut-in pressure 7.5 bar	25	**MCSN16**
			25	**MCSN16-V**
8	22	 Min. switching differential: 3.0 bar Example: Cut-out pressure 17.5 bar Cut-in pressure 7.8 bar	25	**MCSN22**
			25	**MCSN22-V**
Pressure switch with auxiliary contacts, IP65				
1 changeover contact		 Min. switching differential: 0.2 bar Example: Cut-out pressure 3.3 bar Cut-in pressure 2.2 bar	7	**MCS4**
1 changeover contact with gold-plated			7	**MCS4-G**
2 changeover contact with gold-plated contacts			7	**MCS4-SOND910-G**
1 changeover contact		 Min. switching differential: 0.3 bar Example: Cut-out pressure 8.5 bar Cut-in pressure 4.5 bar	15	**MCS11**
1 changeover contact with gold-plated			15	**MCS11-G**
2 changeover contact with gold-plated contacts			15	**MCS11-SOND910-G**
1 changeover contact		 Min. switching differential: 0.7 bar Example: Cut-out pressure 17.5 bar Cut-in pressure 7.8 bar	25	**MCS22**
1 changeover contact with gold-plated			25	**MCS22-G**
2 changeover contact with gold-plated contacts			25	**MCS22-SOND910-G**

Pressure switches

R1/2-MCS

E8-MCS

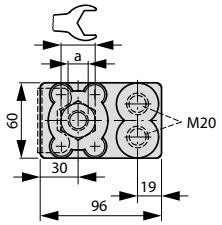
W-MCS

Accessories

Description	For use with	Item no.
Pressure pipe flange	MCS with R ½"	**+R1/2"-MCS**
	MCS with R ½"	**R1/2"-MCS**
	MCSN(-V) with R ¼"	**+R1/4"-MCSN**
	MCSN(-V) with R ¼"	**R1/4"-MCSN**
Pressure pipe flange with pressure gauge connection	MCS, MCSN(-V)	**+M-MCS**
	MCS, MCSN(-V)	**M-MCS**
Compression fitting	MCS, MCSN	**+E8-MCS**
	MCS, MCSN	**E8-MCS**
Wall fixing bracket	MCS, MCSN	**+W-MCS**
	MCS, MCSN	**W-MCS**
External unit plug, IP65 3 poles plus earth for socket adapters to DIN 43650-A/ISO 4400	MCS MCS…-G Not for use with MCS…SOND910-G	**+S3-MCS**
Pressure setting Standard setting of the cut-in and cut-out pressures	MCS, MCSN	**+PMIN(*)/PMAX(*)**

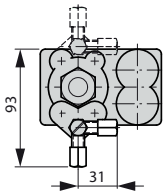
Dimensions

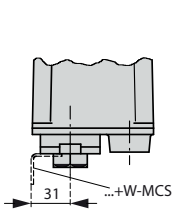
MCS…, MCSN…

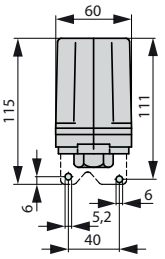


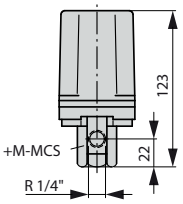
Item no.	Pipe in-lead	a	
MSC…	2 x M20	R 1/4"	27
MSCN…	2 x M20	R 1/2"	36

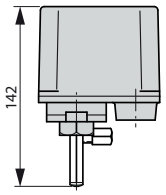
MCSN…V
With relief valve

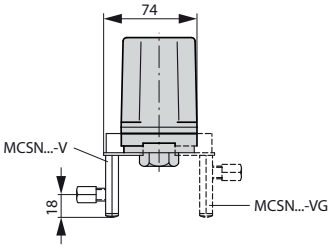


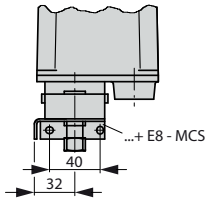


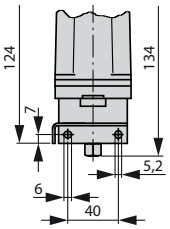












Simple, intelligent, pluggable, versatile.

Motor-protective circuit-breakers PKZ have been manufactured by Eaton since 1932. Our ideas and developments have decisively influenced the trends in the protection of motors since then. The results are progressive concepts and marketable product innovations that again and again assume the role of international trendsetting, pioneering products, e.g. such as the motor-protective circuit-breaker PKE.

Standstill times of machines and installation should be as short as possible. The fuseless motor-protective circuit-breakers PKZ combine short-circuit protection and overload protection in a single device. This enables a short recovery time. PKZM0, PKZM01, PKZM4 and PKE feature the same range of accessories. They can be easily combined with contactors DILM and soft starters DS7. Switching technology can be this easy.

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Ancillary products.

Eaton has access in Australia to an extensive range of high quality and world class test and measurement tools to provide reliability and accuracy when it comes to verification and troubleshooting in electrical installations. Also with a broad array of wiring accessories, enclosures, proximity sensors and monitoring relays, Eaton is the ideal choice to depend on.

Eaton is a world leader in energy management and power quality solutions from metering devices to monitor energy consumption to industry leading backup power (UPS) and surge protection products to solve the most challenging power related problems today.

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Kyoritsu.

over 75 years of Japanese reliability and quality.

Eaton is pleased to represent the Kyoritsu brand throughout Australia. Kyoritsu is a world leading brand when it comes to electrical test and measurement. Kyoritsu offers an extensive range of high quality instruments from analogue/digital multimeters to high-end power quality analysers that are widely used and trusted by electricians, maintenance technicians and engineers.

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Quality and reliability is our tradition
KYORITSU

Analogue multimeters

Model 1109S

- Mirrored scale for easy & accurate reading
- Output terminal to cut off DC component
- Safety designed input terminals & test leads

Description	Item no.
Kyoritsu analogue multimeter with dB & hFE	**1109S**
Kyoritsu analogue multimeter with temperature & continuity buzzer.	**1110**

1109S

Digital multimeters

Model 2012R

- Capable of measuring AC & DC current to 120 A
- True RMS measurements
- Pocket sized heavy duty design
- Sleep function to conserve battery life
- Designed to international safety standard IEC 61010-1, CAT III 300V

Description	Item no.
Kyoritsu Pen Type Digital Multimeter-AC/DC V, ohm, Hz, uF, diode & continuity tests.	**1030**
Kyoritsu digital multimeter-AC/DC V, AC/DC A, ohm, Hz, uF, diode & continuity tests.	**1009**
Kyoritsu digital multimeter-AC/DC V, AC/DC A, ohm, Hz, uF, Temp, diode & continuity tests.	**691011**
Kyoritsu digital multimeter with True RMS–AC/DC V, AC/DC A, ohm, Hz, uF, diode & continuity tests.	**691012**
Kyoritsu digital multimeter (Soft Case)-AC/DC V, ohm, Hz, uF, diode & continuity tests.	**1018S**
Kyoritsu digital multimeter (Hard Case)-AC/DC V, ohm, Hz, uF, diode & continuity tests.	**1018H**
Kyoritsu high performance CAT IV digital multimeter with low pass filter	**691051**
Kyoritsu high performance CAT IV digital multimeter with low pass filter & data capture capability	**691052**
Kyoritsu professional digital multimeter with 1,000 data capture capability	**691061**
Kyoritsu professional digital multimeter with 10,000 data capture capability	**691062**
Kyoritsu digital multimeter / 6mm Dia. clamp meter-AC/DC V, ohm, Hz.	**KEWMATE2000**
Kyoritsu digital multimeter / 10mm Dia. clamp meter-AC/DC V, ohm, Hz.	**KEWMATE2001**
Kyoritsu digital multimeter true RMS/12mm dia open clamp sensor	**2012R**

2012R

Voltage testers

Model KT170-AU

- AC/DC voltage tests up to 690V
- Clear oversize luminous LED & audible indication
- Continuity test
- Self-diagnostic test
- Single pole phase test
- Phase rotation test
- Polarity indication
- Auto power on/off
- Penlight (white LED)
- IP65 rating
- IEC61010-1CAT.IV 600V/ CAT.III 690V

Description	Item no.
Kewtech KT170-AU voltage tester with phase checking & continuity	**KT170-AU**

KT170-AU

Clamp meters AC

2200

Model 2200

- Maximum AC current measurement 1000A
- Maximum AC voltage measurement 600V
- 33 mm diameter conductor size
- Ultra slim and light weight

Description	Item no.
Kyoritsu digital clamp meter AC-600A AC, CAT. IV 600V	**2040**
Kyoritsu digital clamp meter AC-2000A AC, 55mm Dia.	**2002PA**
Kyoritsu digital clamp meter AC-2000A AC, 55mm Dia. TRMS	**2002R**
Kyoritsu digital clamp meter AC-600A AC, 33mm Dia.	**2007A**
Kyoritsu digital clamp meter AC miniature-200A AC, 24mm Dia.	**2031**
Kyoritsu ultra slim digital clamp meter AC-1000A AC, 33mm Dia.	**2200**
Kyoritsu analogue clamp meter AC-300A AC, 33mm Dia.	**2608A**
Kyoritsu analogue clamp meter AC-600A AC, 35mm Dia.	**2805**
Kewtech digital clamp meter AC-400A AC, 30mm Dia.	**KT200**

Clamp meters AC/DC

2046R

Model 2046R

- CAT. IV 600V rating
- Current up to 600A AC/DC and voltage up to 600V AC/DC
- Continuity buzzer
- 33mm jaw size
- Frequency, capacitance and temperature measurement
- LED Non-contact voltage detection
- Display: 6039 counts with bar graph
- Lowest resolution 0.1A

Description	Item no.
Kyoritsu digital clamp meter AC/DC, True RMS, 600A AC, 33mm Dia., CAT. IV 600V.	**2046R**
Kyoritsu digital clamp meter AC/DC, 1000A AC, CAT. IV 600V.	**2055**
Kyoritsu digital clamp meter AC/DC, True RMS, 1000A AC, 40mm Dia., CAT. IV 600V.	**2056R**
Kewtech digital clamp meter AC/DC-400A AC, 30mm Dia.	**KT203**
Kyoritsu digital clamp meter AC/DC-2000A AC, 55mm Dia.	**2003A**
Kyoritsu digital clamp meter AC/DC True RMS, 2000A AC, 55mm Dia.	**2009R**
Kyoritsu digital clamp meter AC/DC miniature-300A AC, 24mm Dia.	**2033**
Kyoritsu digital clamp meter AC/DC open slot-100A AC, 10mm Dia.	**2300R**

Clamp meters DC milliamp

2500

Model 2500

- Measures DC 4-20mA signals without breaking the loop
- Top class measurement 0.2% accuracy
- 6mm clamp jaw easy to use in tight places
- Measurement from 0.01mA to 120.0mA
- Dual display with backlight shows both mA measurement and percentage of 4-20 mA span
- Analog output terminal for recorder connection

Description	Item no.
Kyoritsu 2500 DC milliamp process clamp meter	**2500**

Clamp meters leakage

2434

Model 2434

- Least affected by external stray magnetic fields
- Frequency selector switch eliminates harmonic effects
- Data hold function
- Designed to international safety standard IEC 61010-1 CAT III 300V

Description	Item no.
Kyoritsu digital clamp meter AC leakage, 40mm Dia., AC 100Amp., Filter, Peak10ms.	**2432**
Kyoritsu digital clamp meter AC leakage, 28mm Dia., AC 100Amp., Filter.	**2434**
Kyoritsu digital clamp meter AC leakage, 24mm Dia., AC 200Amp., Filter.	**2431**
Kyoritsu digital clamp meter AC leakage, 40mm Dia., AC 400Amp., Filter, Peak 10ms.	**2433**
Kyoritsu digital clamp meter AC leakage, 40mm Dia., AC 500Amp., Filter, Output.	**2412**
Kyoritsu digital clamp meter AC leakage, 68mm Dia., AC 1000Amp., Filter, Output, Peak 10ms.	**2413F**
Kyoritsu digital clamp meter AC leakage, True RMS, 40mm Dia., AC 400Amp., Filter, Peak 10ms.	**2433R**
Kyoritsu digital clamp meter AC leakage, 68mm Dia., AC 1000Amp., True RMS	**692413R**

Insulation testers

Model 3132A

- 3 insulation test ranges - 250/500/1000V
- Easy-to-read multi colour scales eliminates reading errors
- Compact and easy to use
- Live circuit warning buzzer and neon lamp for added safety
- Automatic discharge of circuit capacitance
- Dust and drip proof construction

3132A

Description	Item no.
Analogue Insulation Testers	
Kyoritsu analogue insulation/continuity tester (250V/500V/1000V)	**3132A**
Kyoritsu analogue insulation/continuity tester with backlight (250V/500V/1000V)	**693131A**
Kyoritsu analogue insulation tester (500V)	**3165**
Kyoritsu analogue insulation tester (1000V)	**3166**
Kyoritsu mining insulation tester (250V/500V/1000V) with hard case & fixed leads	**3131M**
Digital Insulation Testers	
Kyoritsu digital Insulation/continuity tester (250V/500V/1000V)	**3005A**
Kyoritsu digital Insulation/continuity tester with backlight (250V/500V/1000V)	**3007A**
Kyoritsu digital Insulation/continuity tester with memory (125V/250V/500V/1000V)	**3021**
Kyoritsu digital Insulation/continuity tester with memory (50V/100V/250V/500V)	**3022**
Kyoritsu digital Insulation/continuity tester with memory (100V/250V/500V/1000V)	**3023**

3007A

High voltage insulation testers

Model 3128

- Test voltage 12kV, Resistance 35TΩ, Short-circuit Current 5mA
- CAT IV 600V rating
- Robust design for field use with IP64 rating (with lid closed)
- Internal memory, print screen & USB adaptor plus software
- Automatic discharge after test and display of discharge voltage
- Polarization index (PI), Dielectric Absorption Ratio (DAR), Dielectric discharge index (DDI), Step Voltage (SV), leakage current

693128

Description	Item no.
Kyoritsu analogue HV insulation tester 2.5kV	**3121A**
Kyoritsu analogue HV insulation tester 5kV	**3122A**
Kyoritsu analogue HV insulation tester 5/10kV	**3123A**
Kyoritsu analogue HV insulation tester 1 - 10kV	**3124**
Kyoritsu digital HV insulation tester 5kV	**3125**
Kyoritsu digital HV insulation tester 5kV with DAR & filter function	**3126**
Kyoritsu digital HV insulation tester 12kV	**693128**

Earth testers

Model 4105A

- Dust & drip proof construction (Designed to IEC 529 IP54)
- Capable of measuring earth voltage
- 2mA measuring current of circuit under test
- Automatic warning in excess of resistance tolerance
- 2mA measuring current permits earth resistance tests without tripping earth leakage current breakers in the circuit under test

4105A

Description	Item no.
Kyoritsu analogue earth tester	**4102A**
Kyoritsu analogue earth resistance tester (Hard Case)	**4102A-H**
Kyoritsu digital earth tester	**4105A**
Kyoritsu digital earth resistance tester (Hard Case)	**4105A-H**
Kyoritsu analogue earth resistance tester 4 wire	**4106**
Kyoritsu digital earth tester clamp	**4200**

Current/leakage loggers

695020-00

Model 5020

- The leakage current value of 1 to 3 channels can be recorded with the leakage clamp sensors, & 60,000 data points can be recorded (when using 1 ch)
- The recorded data can be transmitted to the personal computer directly by USB connection, & the data can be edited for analysis & the graphical display, etc.
- LED blinks when the current setting value is exceeded
- Data limits can be set & variations can be displayed
- Voltage, Current & Leakage Current clamps can be connected

Description	Item no.
Kyoritsu current/voltage logger (no clamps)	**695020-00**
Kyoritsu current/voltage logger with voltage sensor (no clamps)	**695020-01**

Power meters & power quality analysers

6305-00

Model 6305

- Comprehensive real-time monitoring, recording and analysis of single and 3-phase systems
- Voltage, Current, Power Factor and Frequency measurements
- Power analysis (Active, Apparent and Reactive power)
- Energy analysis (Active, Apparent and Reactive power)
- Active power accuracy: ±0.3%rdg±0.2%f.s.
- Automatic wiring check function to prevent incorrect connections
- Large memory capability (2GB) using built-in SD card interface
- Real time & remote measurements using Android application
- Synchronous measurements between two units of KEW 6305
- Wide selection of clamp sensors allow measurements from 0.1A to 3000A
- The instrument automatically recognizes what kind of clamp sensor is connected to it
- Windows software for data analysis and setting via USB port or Bluetooth

6315-00

Model 6315

- Simultaneous power & power quality measurements are recorded at all channels.
- Measurement with high accuracy - ±0.3%rdg (energy) and ±0.2%rdg (voltage/current)
- Complies with IEC61000-4-30 Class S
- Remote monitoring on PC and Android device via BlueTooth
- Trend and demand graphs for easy recognition
- Various types of clamp and flexible sensors: from 1000mA up to 3000A and earth leakage measurements

Description	Item no.
Kyoritsu 6305 power meter kit WITHOUT clamp sensors	**6305-00**
Kyoritsu 6305 power meter kit with 3 x 500A clamps (8125)	**6305-01**
Kyoritsu 6315 power quality analyser kit WITHOUT clamp sensors	**6315-00**
Kyoritsu 6315 power quality analyser kit with 3 x 500A clamps (8125)	**6315-01**
Kyoritsu 6315 power quality analyser kit with 3 x 1000A flexi-clamps (8130)	**6315-03**

*Other clamp sensor ratings available

Test kits

6141

Model 6141

Electrical test kit includes:
3132A insulation tester
1009 digital multimeter
KT200 AC clamp meter

Description	Item no.
Kyoritsu contractor kit containing models 3132A/1009/KT200	**6141**
Kyoritsu contractor kit containing models 6010A/1009/KT200	**696140**
Eaton young apprentice kit containing models 2046R/1009/KT170-AU	**614YAK**

Loop impedance testers

Model 4118A

- Custom micro processor controlled
- Direct reading of prospective short circuit current
- Measures low loop resistance resolution 0.01 ohm
- Large custom digital display readout

4118A

Description	Item no.
Kyoritsu digital loop impedance tester with PSC	**4118A**
Kyoritsu Loop/PSC/PFC tester with ATT, phase rotation, V & Hz	**4140**
Kewtech KT45 Loop/PSC with ATT	**69KT45**
Kewtech KT60 Loop/PSC/RCD with ATT	**69KT60**

Multi function testers

Model 6010B

- Continuity 20/200 ohm 200mA Test Current
- Insulation 500/1000V, 20/200M ohm 1mA Rated Test Current
- Loop Impedance 20/2000 ohm 15mA Test Current at 2000 ohm (No RCD Trip)
- RCD 10/30/100/300/500mA x1/2, x1, Fast Trip (40ms), DC, Auto Ramp
- Uc (Contact Voltage) 100V
- Designed to IEC 61010-1, IEC 61557
- Data Memory : 300 measured results
- PC Download Using 8212 Data Communication Adapter

696010B

Description	Item no.
Kyoritsu digital multi function tester (4 in 1) continuity, loop, insulation and RCD	**6010A**
Kyoritsu digital multi function tester (5 in 1) with memory/communication function	**696010B**
Kyoritsu digital multi function tester (5 in 1) continuity, loop, insulation, RCD and PSC	**6011A**
Kyoritsu digital multi function 10 in 1 tester with anti-trip	**696016**

RCD/ELCB testers

Model 5406A

- Custom Microprocessor controlled
- 0-180 degree phase angle switch
- Digital readout of tripping time
- Test DC sensitive breakers
- Constant current source circuitry

5406A

Description	Item no.
Kyoritsu digital RCD/ELCB tester	**5402D**
Kyoritsu digital RCD/ELCB tester with Auto Ramp.	**5406A**
Kyoritsu digital RCD/ELCB tester 100 – 400V operating voltage. Battery operated	**695410**

Portable appliance testers

Model 6201A

- Suitable for performing tests required by AS/NZS3760
- LED indicator for pass/fail result
- Insulation resistance test
- AC voltmeter for measuring mains voltage

696201A

Description	Item no.
Kyoritsu Model 6201A with Leakage current test + Earth bond test at 10A	**696201A**

Phase rotation meters

8035

Model 8035

- Non contact phase rotation testing
- The insulated crocodile clips for cables from Φ2.4 to 30mm.
- Wide measuring range for 3 phase installations from 70V to 1000V AC
- CAT. IV 600V and CAT. III 1000V rated

Description	Item no.
Kyoritsu phase indicator with open phase checker	**8031**
Kyoritsu phase indicator with open phase checker with alligator fused test leads	**8031F**
Kyoritsu non contact phase indicator	**8035**

Lux meters

5202

Model 5202

- 3 ranges changeable from low to high illuminance
- 200/2000/20000 lux
- Data hold function
- Separate light receiving sensor

Description	Item no.
Kyoritsu lux meter digital	**5202**

Temperature indicators infrared

5510

Model 5510

- Wide temperature range - 40 to 300 C
- Dust proof & waterproof construction to IP67
- Shock proof construction drop test to 1 metre
- Auto power off for battery preservation

Description	Item no.
Kyoritsu digital Infrared thermometer (-40 deg C ---- 300 deg C)	**5510**

Clamps & accessories

698212USB

Software/communication adaptors

Description	Item no.
RS232C Adaptor with KEW Report software	**8212**
USB Adaptor with KEW Report software	**698212USB**
USB Adaptor with KEW Windows software for 3128	**8212USB-W**

8115

Clamp adaptors

Description	Item no.
Kyoritsu AC clamp adaptor for DMM (Max. AC120A)	**8112**
Kyoritsu AC/DC clamp adaptor for DMM (max. AC 130A DC 180A)	**8115**

Clamps & accessories

Clamp sensors

Description	Type	5020	6305/ 6300	6315/ 6310	Item no.
Clamp sensor AC 100A Ø 24mm	Load current	✓			**698121**
Clamp sensor AC 500A Ø 40mm		✓			**698122**
Clamp sensor AC 1000A Ø 55mm		✓			**698123**
Clamp sensor AC 1000A Ø 68mm			✓	✓	**8124**
Clamp sensor AC 500A Ø 40mm			✓	✓	**8125**
Clamp sensor AC 200A Ø 40mm			✓	✓	**8126**
Clamp sensor AC 100A Ø 24mm			✓	✓	**8127**
Clamp sensor AC 5-50A Ø 24mm			✓	✓	**8128**
Flexible clamp sensor 1CH 3000A Ø 150mm		✓	✓	✓	**698129-01**
Flexible clamp sensor 3CH 3000A Ø 150mm		✓	✓	✓	**698129-03**
Flexible clamp sensor 1CH 1000A Ø 110mm		✓	✓	✓	**8130-01**
Flexible clamp sensor 3CH 1000A Ø 110mm		✓	✓	✓	**8130-03**
Leakage clamp sensor 1000mA max. Ø 24mm	Leakage current	✓		✓	**8141**
Leakage clamp sensor 1000mA max. Ø 40mm		✓		✓	**8142**
Leakage clamp sensor 1000mA max. Ø 68mm		✓		✓	**8143**
Voltage sensor		✓			**698309**
Carrying case with magnet			✓	✓	**699132**
Source power supply adaptor			✓	✓	**8312**

8130

8125

Fuses & test leads

Description	Item no.
KYORITSU Fuse (0.8A/600V) for 1011/1012	**8918**
KYORITSU Fuse (10A/600V) for 1009/1011/1012	**8919**
KYORITSU Fuse (500mA/600V) for 1009/3132A	**8923**
KYORITSU Fuse (440mA/1000V) for 1051/1052/1061/1062	**8926**
KYORITSU Fuse (10A/1000V) for 1051/1052/1061/1062	**8927**
FUSE S505/6.3A to suit 6010A	**696010AFUSE**
10A 600V Ceramic Fuse for 6201A	**69AA6201004**
Battery Holder to suit 6010A	**6010A001**
Test Leads 7019 to suit 5402D	**7019**
Test Leads 7066 to suit 1009/1011/1012/2007A/2040/2046R/2055/2056R	**7066**
Test Leads 7121 to suit 4118A/5406A/6050	**7121**
Test Leads 7122 to suit 3132A/6010A/6010B/6011A	**7122**
Power Cord AU 7123	**7123**
Test Lead to suit 6201A	**7129**
Test Leads 7133 to suit 6010A/6010B/6011A	**7133**
Test Leads 7154B (Non-Fused) w/ Crocodile Clip & Probes	**7154B**
Flat Test Bar (BLACK) to suit 6201A	**7161A**
Test Leads KAMP10 to suit 6010A/6010B/6011A	**KAMP10**
Adaptor for Extension Cord for 6201A	**697140**
Kyoritsu power pack 12V DC 5A to suit 3124	**3124PPACK**

8923

7154B

Metering devices

Power Xpert meters

The Power Xpert Meter 4000

"This meter provides all the core functions for monitoring power consumption and power quality along with 2 GB of data storage. It captures fast voltage changes, low frequency transients and reviews individual harmonic levels directly on the meter"

The Power Xpert Meter 6000

This meter provides all the functionality of the Power Xpert 4000 plus enhanced power quality monitoring with automatic industry standard trigger settings. It also offers a larger 4 GB of data storage.

The Power Xpert Meter 8000

This meter provides all the functionality of the Power Xpert 6000 and adds the ability to capture very fast transients by sampling at 6 MHz—100,000 samples per cycle. That's a sample every 166 nanoseconds, across three input channels as well as neutral-to-ground. In addition, it has a capacity of 8 GB for data storage.

Type	Item no.
PXM 4000 Meter, 2 GB, AC, no options	**PXM4051A1AA**
PXM 4000 Meter, 2 GB, AC, w/ Com. Exp. Card	**PXM4051A1BA**
PXM 4000 Meter, 2 GB, AC, w/ Com. Exp. & I/O Cards	**PXM4051A1BB**
PXM 6000 Meter, 4 GB, AC, no options	**PXM6051A1AA**
PXM 6000 Meter, 4 GB, AC, w/ Com. Exp. Card	**PXM6051A1BA**
PXM 6000 Meter, 4 GB, AC, w/ Com. Exp. & I/O Cards	**PXM6051A1BB**
PXM 8000 Meter, 8 GB, AC, no options	**PXM8051A1AA**
PXM 8000 Meter, 8 GB, AC, w/ Com. Exp. Card	**PXM8051A1BA**
PXM 8000 Meter, 8 GB, AC, w/ Com. Exp. & I/O Cards	**PXM8051A1BB**

Accesory	Item no.
PXM meter graphic display module	**PXD-MMG**
PXM bracket for back-to-back meter to display mounting	**PX-PMBA**
PXM I/O card	**PXMIO-B**
PXM Com Exp. Card: Ethernet 100FX, 10/100T, RS-485, RS-232	**PXMCE-B**

Power Xpert meter 2000 range

Power Xpert Meter 2250

"This meter provides all the core functions for monitoring power consumption and power quality along with 256 MB for data logging, Ethernet connectivity and onboard Gateway Card limits. This unit uses D/A technology to sample circuits at 400 samples per cycle for accurate measurement of power factor and energy consumption.

Power Xpert Meter 2260

This meter adds the ability to monitor total harmonic distortion and the ability to set onboard meter limits. The meter also will illuminate LEDs on the faceplate, indicating that a limit has been exceeded. This meter comes standard with 512 MB for data logging.

Power Xpert Meter 2270

This meter adds the ability to monitor individual harmonics and to visualize waveforms on your desktop using the embedded Web server. This meter comes with 768 MB for data logging.

Type	Item no.
PXM2250 Meter/Display 50Hz 5A 90-265V AC/DC	**PXM2250MA55105**
PXM2260 Meter/Display 50Hz 5A 90-265V AC/DC	**PXM2260MA55105**
PXM2270 Meter/Display 50Hz 5A 90-265V AC/DC	**PXM2270MA55105**
PXM2250 Meter/Display 50Hz 1A 90-265V AC/DC	**PXM2250MA51105**
PXM2260 Meter/Display 50Hz 1A 90-265V AC/DC	**PXM2260MA51105**
PXM2270 Meter/Display 50Hz 1A 90-265V AC/DC	**PXM2270MA51105**

Accesory	Item no.
PXM 2000 I/O Card—two relay outputs/two status inputs	**IQ250/260-I01**
PXM 2000 I/O Card—four KYZ pulses/four status inputs	**IQ250/260-I02**
PXM 2000 I/O Card—four analog outputs—0–1 mA	**IQ250/260-I03**
PXM 2000 I/O Card—four analog outputs—4–20 mA	**IQ250/260-I04**
Mounting assy for retrofitting a PXM2000 to an IQ Analyzer/DP-4000/data cutout	**IQ250-PMAK**

Metering devices

IQ 250/260 range

The IQ 250 & IQ 260 electronic meters provide capabilities you wouldn't normally expect in an affordable, compact meter—such as fast sampling rate & accurate metering for a full range of power attributes. The meter can be configured either from the easy-to-read display or remotely (accessible via a Power Xpert Gateway) for upgrades to input/output option cards.

Eaton's IQ 250 & IQ 260 meters provide direct-reading metered values for the most critical power aspects, such as watts, watt demand, watt-hours, voltage-amperes (VA), VA-hours, vars, var-hours & power factor. They have high sampling speed & accuracy. The IQ 260 meter also measures power quality, such as total harmonic distortion (THD) up to the 40th order. The IQ 260 also provides configurable limit alarming/control capability of up to eight measured parameters for more sophisticated power management.

Features

- Comprehensive metering
- High-end accuracy
- Self-test capability to validate accuracy
- Large, easy-to-read display
- Local or remote configuration
- Industry-standard communication protocols (Modbus)
- Mix-and-match input/output options
- Integration with Eaton's Power Xpert Architecture
- Field-upgradeable

IQ 100 range

Providing the first line of defense against costly power problems, Eaton's IQ 100 electronic power meters can perform the work of an entire wall of legacy metering equipment utilizing today's technology. Eaton's IQ 100 meters use 24-bit AD converters that sample at more than 400 samples per cycle & meet ANSI C12.20 standards for accuracy of 0.5 percent. With such high-performance measurement capability, these meters can be confidently used for primary revenue metering & sub-metering applications.

Eaton's IQ 100 meters provide direct-reading metered values for the most critical power aspects, such as watts, watt demand, watt hours, voltage-amperes (VA), VA-hours, vars, var hours & power factor. They have high sampling speed & accuracy.

Applications

- Utility & commercial metering
- Substations, industrial facilities, power generation sites & campuses
- Sub-metering
- Load studies & voltage recording
- Analogue meter replacement

Power meters CVM-MINI range

The CVM-MINI is an instrument which measures, calculates & displays the main electrical parameters for three-phase industrial systems (balanced or unbalanced). Measurements are in true effective value, via three AC voltage inputs & three AC current inputs.

Other features include:

- Current measuring .../5 or .../1A
- DIN rail format with only 3 modules
- Assembly on the 72 x 72mm panel with frontal adaptor (M5ZZF1)
- RS-485 Communications (Modbus-RTU)
- Two transistor outputs
- Sealable

Description	Type	Item no.
3PH DIN Power Analyser	CVM-MINI	**M52000**
3PH DIN Power Analyser with isolated inputs	CVM-MINI-ITF-C2	**M52010**
3PH DIN Power Analyser with RS485 comms	CVM-MINI-ITF-RS485-C2	**M52021**
3PH DIN Power Analyser with Harmonics & RS485 comms	CVM-MINI-ITF-HAR-RS-485-C2	**M52031**
3PH DIN Power Analyser with Ethernet	CVM-MINI-ITF-ETHERNET-C2	**M520J1**
3PH DIN Power Analyser with BACnet	CVM-MINI-ITF-BACnet-C2	**M520F1**
3PH DIN Power Analyser with LonWorks	CVM-MINI-ITFLonWorks-C2	**M52091**
72mm x 72mm Panel Adaptor	CVM-MINI Panel Adaptor	**M5ZZF1**

CVM-MINI Series

Single phase power analyser CVM-1D

CVM-1D is a power analyser for single phase circuits upto 32A. It has an LCD display with a rotation screen system, showing a total of 24 instantaneous, maximum and minimum electrical variables.

Description	Type	Item no.
Single Phase 32A Direct DIN Rail Power Meter	CVM-1D-C	**M55510**
Single Phase 32A Direct DIN Rail Power Meter with RS485	CVM-1D-C-RS485	**M55511**

CVM-1D

Power analyser - Circutor

CVMk2

CVMk2 modular power analyzer

The CVMk2 Series is a modular programmable power meter that measures more than 300 electrical parameters of balanced or unbalanced three-phase electrical networks. All measurements are true RMS values & 4C, that are sourced by means of three A.C. voltage inputs & three A.C. Current inputs via…/5Amp current transformers. Unit is composed of measuring module & display module. It can be panel mounted: 144 x 144, 96 x 96 & round profile.

Description	Model no.	Item no.
CVMk2 modular power analyzer 3 phase Modbus RTU RS485 Class 0.5	CVMk2-ITF-405	**M54400**
CVMk2 modular power analyser 3 phase Modbus RTU RS485 Class 0.2	CVMk2-ITF-402	**M54402**
CVMk2 3 phase class 0.5 measurement module only	M-CVMk2-ITF-405	**M54410**
CVMk2 3 phase class 0.2 measurement module only	M-CVMk2-ITF-402	**M54412**
CVMk2 display only	D-CVM-K2	**M54420**

Expansion modules

Type	Outputs	2 GB Memory	Digital I/O	Analogue I/O	Com	Item no.
k2-EXP-8I / 8O-Digital-TR Card	Static	-	8/8	-	-	**M54501**
k2-EXP-8I / 4O-Analogue Card	Analogue	-	-	8/4	-	**M54502**
k2-EXP-8I / 4O-Digital-RL Card	Relay	-	8/4	-	-	**M54503**
k2-EXP-SD-MODBUS/TCP Card	-	I	-	-	Ethernet Modbus/TCP	**M54504**
k2-EXP-SD Card	-	I	-	-	-	**M54506**
Exp. Card 4 S analogue + 4 S static. ±5 mA	Static	-	4	4	-	**M54507**
PROFIBUS Card	-	-	-	-	Profibus	**M5450A**

CVM - 96 series
Size: 96mm x 96mm

Power meters

CVM96 range

The CVM96 Series is a programmable power meter that measures the electrical parameters of balanced or unbalanced three-phase electrical networks. All measurements are true RMS values that are sourced by means of three A.C. voltage inputs & three A.C. Current inputs via …/5Amp current transformers. The CVM Series can display up to 43 different parameters depending requirements & selection of device.

CVM - 96 Meter Type	Three-phase 50… 60 Hz	True RMS value	LED Display	Isolated Current Inputs ITF	2 Quadrants	Physical interface	Communication protocol	Relay Outputs	Energy	Measuring THD (V,A)	Harmonic Measuring up to 31	Maximum demand	Neutral Current	Item no.
CVM 96	•	•	•	-	•	-	-	-	•	•	-	•	-	**M51100**
CVM 96-ITF	•	•	•	•	•	-	-	-	•	•	-	•	-	**M51200**
CVM 96-ITF, RS485 C2	•	•	•	•	•	R	MR	2	•	•	-	•	-	**M51211**
CVM96-ITF, Ethernet C2 TCP	•	•	•	•	•	E	MT	2	•	•	-	•	-	**M51231**
CVM 96-ITF, JC-C2	•	•	•	•	•	R	JC	2	•	•	-	•	-	**M51711**
CVM 96-F-ITF, RS485-C2-HAR-IN	•	•	•	•	•	R	MR	2	•	•	•	•	•	**M51513**

R=RS485
E=Ethernet
MR=Modbus / RTU
MT=Modbus /TCP
JC=Johnson Contro

Power analyser - Circutor

Power meters

CVM NRG Series

The CVM Series is a programmable power meter that measures the electrical parameters of balanced or unbalanced three-phase electrical networks. All measurements are true RMS values that are sourced by means of three A.C. voltage inputs & three A.C. Current inputs via …/5Amp current transformers. The CVM Series can display up to 43 different parameters depending requirements & selection of device.

Description	Item no.
CVM-NRG 96	**M51800**
CVM-NRG 96-ITF	**M51900**
CVM-NRG 96-ITF-RS485C	**M51911**
CVM-NRG 96-ITF-HAR-RS485-C	**M51B11**

CVM NRG 96 series
Size: 96mm x 96mm

CVM144 range

The CVM Series is a programmable power meter that measures the electrical parameters of balanced or unbalanced three-phase electrical networks. All measurements are true RMS values that are sourced by means of three A.C. voltage inputs & three A.C. Current inputs via …/5Amp current transformers. The CVM Series can display up to 43 different parameters depending requirements & selection of device.

CVM - 144 series
Size: 144mm x 144mm

CVM-144 Meter Type	Quadrants	Class (V, A)	Communications	Protocol	Harmonics	Item no.
CVM 144	2	0.5	-	-	-	**M50600**
CVM 144-ITF	2	0.5	-	-	-	**M50700**
CVM 144-ITF-HAR	2	0.5	-	-	U/I (31°)	**M50A60**
CVM 144-Ethernet-TCP	2	0.5	Ethernet	Modbus/TCP	-	**M50790**
CVM 144-ITF-Profibus	2	0.5	RS485	Profibus DP	-	**M50730**
CVM 144-ITF-Johnson Controls	2	0.5	RS485	Johnson Controls	-	**M50C10**

RS=RS485
E=Ethernet
P=Profibus
M=Modbus/RTU

Expansion Modules for CVM 144

Module Type	Digital outputs	Digital inputs	Communications	Protocol	Current leakages / neutral	Item no.
CVM 144-C2-Currents Module	2	-	-	-	Yes	**M51001**
CVM 144-RS-485-C2 Module	2	-	RS-485	Modbus/ RTU	-	**M51010**
CVM 144-RS-485-C2-Currents Module	2	-	RS-485	Modbus/ RTU	Yes	**M51011**
CVM 144-RS-485-C2-Digital Module	2	4	RS-485	Modbus/ RTU	-	**M51016**
CVM 144-RS-232-C2 Module	2	-	RS-232	Modbus/ RTU	-	**M51020**

Energy meters - Circutor

Electrical energy meters

The consumption of energy can become difficult to measure in situations of multiple loads & different tariffs. Circutor is able to offer a complete solution.

The product range includes single phase digital & mechanical meters that can measure consumption at pre-determined locations to control each sector of the project. Three phase active & reactive electronic meters are also available for monitoring the different electrical services, or machines that may be installed within the facility.

EDMk-ITF-C2

Single phase energy meters, direction connection, DIN rail mounting

Description	Model no.	Item no.
EMS30C 1-Phase kW.h 5A (max. 30A) Mechanical 1 Module	EMS30C	**M31611**
EM 30-C 1-Phase kW.h 5A (max. 30A) Mechanical 2 Module	EM30C	**M30811**
MK30 M 1-Phase kW.h 30A (max. 60A) Mechanical 4 Module	MK30M	**M30110**
MK60 M 1-Phase kW.h 60A (max. 120A) Mechanical 4 Module	MK60M	**M30210**
MK30-LCD 1-Phase kW.h 30A (max. 60A) Digital	MK30-LCD	**M30120**
MK30-LCD-RS485 1-Phase kW.h 30A (max. 60A) Digital w/ RS485	MK30-LCD-RS485	**M30121**
MK60-LCD 1-Phase kW.h 60 A (max. 120A) Digital	MK60-LCD	**M30220**
MK60-LCD-RS485 1-Phase kW.h 60A (max. 120A) Digital w/ RS485	MK60-LCD-RS485	**M30221**

EMS30C

Three phase energy meters, direction connection, DIN rail mounting

Description	Tariff	Model no.	Item no.
MKB 363M-400V phase-phase kW.h 63A, Mechanical	1	MKB363M	**M30310**
MKD-ITF-C2 three-ph meter 4 quadrant 40A(mx.120A) Digital	1	MKD-ITF-C2	**M33000**
MKD-ITF-RS485-I2-C2 three-ph 4 quadrant 40A(mx.120A) Digital + RS485	3	MKD-ITF-RS485-I2-C2	**M33011**

MK60-LCD

Three phase energy meters, external current transformers

Description	Tariff	Model no.	Item no.
CEP96 3-ph kW.h Digital Energy Meter.../5A Panel Mount	-	CEP-96	**M30701**
EDMk-ITF-C2 3-ph Digital Energy KWh/KVAR DIN Rail	1	EDMk-ITF-C2	**M31741**
EDM3k-ITF-C2 3-ph Digital Energy Meter KWh/KVARh	3	EDM3k-ITF-C2	**M31743**
EDMk-ITF-C2 3-ph Digital Energy Meter KWh/KVARh + RS485	1	EDMk-ITF-RS485	**M31751**
EDMk Panel Adapter	-	-	**M5ZZF1**

CEP-96

Impulse centralisation units

Description	Inputs	Model no.	Item no.
LM25-M Pulse Concentrator (RS485, Modbus/RTU)	25	LM25-M	**M31567**
LM50-TCP 19200 bps (Ethernet, Modbus/TCP)	50	LM50-TCP	**M31531**
LM50-TCP+ 4800-115200 bps (Ethernet, Modbus/TCP)	50	LM50-TCP+	**M31566**
LM4I/4O Centralisation Unit 4 inputs/4 outputs + RS485 (Modbus/RTU)	4I/4O	LM4I/4O-M	**M31563**

TCP2RS-TCP

Convertors

Description	Model no.	Item no.
TCP2RS Converter RS-232/RS-485 to Ethernet	TCP2RS	**M54032**
TCP2RS+ Converter RS-232/RS-485 to Ethernet with web server	TCP2RS+	**M54033**
USB to RS-485 Converter	USB-TCP	**M54040**

Software

Description	Model no.	Item no.
Power Studio Energy Monitoring & Control Software (Basic Package)	POWERSTUDIO	**M90211**
Power Studio Energy Monitoring & Control Software (Full Package)	POWERSTUDIO SCADA	**M90231**
Power Studio Energy Monitoring & Control Software (Deluxe Version)	POWERSTUDIO DELUXE	**M90241**

Current transformers - Circutor

TC range - Berg range - Classes: 0.5, 1 or 3

The TC range (Berg Range) is specifically designed for use in those places with a limited space, such as situations where there is minimum separation between busbars or circuit breakers.

A	Burden (VA)			Primary window	Size (mm)	Model no.	Item no.
	Class 0,5	Class 1	Class 3				
50/5	-	-	1	PASSING BAR Busbar: 30 x 10 mm 20 x 10 mm 25 x 5 mm cable: Ø 21 mm	70 x 46	TC 4	**M703D5**
60/5	-	-	1.25		70 x 46	TC 4	**M703D6**
75/5	-	-	1.25		70 x 46	TC 4	**M703D7**
100/5	-	2	3		70 x 46	TC 4	**M703D8**
125/5	-	2.5	2.75		70 x 46	TC 4	**M703D9**
150/5	1.5	2.5	4		70 x 46	TC 4	**M703DA**
200/5	2.5	5	6		70 x 46	TC 4	**M703DB**

TC 4

40/5	-	-	1.50	PASSING BAR Busbar: 25 x 5 mm cable: Ø 20 mm	70 x 58	TC 5	**M70311**
50/5	-	-	3.00		70 x 58	TC 5	**M70312**
60/5	-	1.25	3.50		70 x 58	TC 5	**M70313**
75/5	-	2	3.50		70 x 58	TC 5	**M70314**
100/5	1.5	2.5	3.75		70 x 58	TC 5	**M70315**
125/5	1.75	3.5	5.00		70 x 58	TC 5	**M70316**
150/5	2.5	3.5	5.00		70 x 58	TC 5	**M70317**
200/5	3.75	5	5.00		70 x 58	TC 5	**M70318**
250/5	5	7.5	7.50		70 x 58	TC 5	**M70319**

TC 5

100/5	-	1	1.5	PASSING BAR Busbar: 20 x 12mm, 25 x 10mm, 30 x 10mm Cable: Ø 22mm	70 x 58	TC 5.2	**M70321**
125/5	-	1.5	2		70 x 58	TC 5.2	**M70322**
150/5	1	2	2.5		70 x 58	TC 5.2	**M70323**
200/5	2.5	3	3.5		70 x 58	TC 5.2	**M70324**
250/5	3.5	3.75	5		70 x 58	TC 5.2	**M70325**
300/5	3.5	3.75	5		70 x 58	TC 5.2	**M70326**
400/5	3.5	5	7.5		70 x 58	TC 5.2	**M70327**
500/5	5	7.5	10		70 x 58	TC 5.2	**M70328**
600/5	5	7.5	10		70 x 58	TC 5.2	**M70329**

TC 5.2

100/5	1.75	3.75	7.5	PASSING BAR Busbar: 30 x 10 mm cable: Ø 26 mm	80.5 x 64	TC 6.2	**M70341**
125/5	3.75	7.5	10.00		80.5 x 64	TC 6.2	**M70342**
150/5	5	7.5	10.00		80.5 x 64	TC 6.2	**M70343**
200/5	7.5	10	10.00		80.5 x 64	TC 6.2	**M70344**
250/5	7.5	10	15.00		80.5 x 64	TC 6.2	**M70345**
300/5	10	10	15.00		80.5 x 64	TC 6.2	**M70346**
400/5	10	10	15.00		80.5 x 64	TC 6.2	**M70347**
500/5	15	15	20.00		80.5 x 64	TC 6.2	**M70348**
600/5	15	20	25.00		80.5 x 64	TC 6.2	**M70349**

TC 6.2

150/5	1	3.5	5.00	PASSING BAR Busbar: 40 x 10 mm cable: Ø 28 mm	80.5 x 64	TC 6	**M70331**
200/5	3.5	5	7.5		80.5 x 64	TC 6	**M70332**
250/5	5	7.5	10		80.5 x 64	TC 6	**M70333**
300/5	5	7.5	10.00		80.5 x 64	TC 6	**M70334**
400/5	5	7.5	10.00		80.5 x 64	TC 6	**M70335**
500/5	7.5	10	15.00		80.5 x 64	TC 6	**M70336**
600/5	7.5	10	15.00		80.5 x 64	TC 6	**M70337**
750/5	10	15	20.00		80.5 x 64	TC 6	**M70338**
800/5	10	15	20.00		80.5 x 64	TC 6	**M70339**

TC 6

Current transformers - Circutor

TC range - Berg range - Classes: 0.5, 1 or 3

The TC range (Berg Range) is specifically designed for use in those places with a limited space, such as situations where there is minimum separation between busbars or circuit breakers.

TC 8

A	Burden (VA)			Primary Window	Size (mm)	Model no.	Item no.
	Class 0,5	Class 1	Class 3				
200/5	1	2.5	5	PASSING BAR Busbar: 60 x 12 mm cable: Ø 44 mm	102 x 84.5	TC 8	**M7036C**
300/5	2.5	5	7.5		102 x 84.5	TC 8	**M7036B**
400/5	5	7.5	10.00		102 x 84.5	TC 8	**M70361**
500/5	7.5	10	15.00		102 x 84.5	TC 8	**M70362**
600/5	10	15	20.00		102 x 84.5	TC 8	**M70363**
750/5	15	20	25.00		102 x 84.5	TC 8	**M70364**
800/5	15	20	30.00		102 x 84.5	TC 8	**M70365**
1000/5	15	20	30.00		102 x 84.5	TC 8	**M70366**
1200/5	15	20	30.00		102 x 84.5	TC 8	**M70367**
1500/5	15	20	30.00		102 x 84.5	TC 8	**M70368**
1600/5	15	20	30.00		102 x 84.5	TC 8	**M70369**

TC 10

200/5	1	2.5	5	PASSING BAR Busbar: 80 x 30mm cable: Ø 63mm	130 x 108	TC 10	**M7037F**
300/5	2.5	5	7.5		131 x 108	TC 10	**M7037D**
400/5	2.5	5	7.5		132 x 108	TC 10	**M7037G**
500/5	5	7.5	10		133 x 108	TC 10	**M7037B**
600/5	7.5	10	15		134 x 108	TC 10	**M7037C**
800/5	7.5	10	15		135 x 108	TC 10	**M70372**
1000/5	10				130 x 108	TC 10	**M70373**
1200/5	10				130 x 108	TC 10	**M70374**
1600/5	15				130 x 108	TC 10	**M70376**
2000/5	15				130 x 108	TC 10	**M70377**
2500/5	15				130 x 108	TC 10	**M70378**
3000/5	15				130 x 108	TC 10	**M70379**

TC 12

800/5	10	15	20	PASSING BAR Busbar: 3x100x10mm	150 x 129	TC 12	**M7038B**
1000/5	10	15	20		151 x 129	TC 12	**M70381**
1200/5	10	15	20		152 x 129	TC 12	**M70382**
1250/5	10	15	20		153 x 129	TC 12	**M7038D**
1500/5	10	20	30		154 x 129	TC 12	**M70383**
1600/5	15				150 x 129	TC 12	**M70384**
2000/5	15				150 x 129	TC 12	**M70385**
2500/5	20				150 x 129	TC 12	**M70386**
3000/5	30				150 x 129	TC 12	**M70387**
4000/5	35				150 x 129	TC 12	**M70388**

P19921

M79951

Current transformer - accessories

Description	Item no.
Accessory to mount the TC5, TC5.2, TC6, TC6.2 transformers on a DIN rail	**P19921**
Accessory to seal the secondary side terminal on the TC type transformers	**M79951**

Current transformers - Circutor

TP range- current transformers - split core

Circutor offer the most comprehensive range of Split C.T.s in providing flexibility for upgrading or retrofitting into existing switchboard assemblies.

A	Burden & accuracy	Primary window	Size (mm)	Model No.	Item no.
100/5	1.5 VA class 3	PASSING BAR Busbar: 20 x 30mm	110 x 89	TP - 23	**M70111**
150/5	2 VA class 3		110 x 89	TP - 23	**M70112**
200/5	1.5 VA class 1		110 x 89	TP - 23	**M70113**
250/5	2 VA class 1		110 x 89	TP - 23	**M70114**
300/5	1.5 VA class 0.5		110 x 89	TP - 23	**M70115**
400/5	2.5 VA class 0.5		110 x 89	TP - 23	**M70116**

TP-23

250/5	1 VA class 0.5	PASSING BAR Busbar: 50 x 80mm	145 x 114	TP - 58	**M70121**
300/5	1.5 VA class 0.5		145 x 114	TP - 58	**M70122**
400/5	1.5 VA class 0.5		145 x 114	TP - 58	**M70123**
500/5	2.5 VA class 0.5		145 x 114	TP - 58	**M70124**
600/5	2.5 VA class 0.5		145 x 114	TP - 58	**M70125**
750/5	3 VA class 0.5		145 x 114	TP - 58	**M70126**
800/5	3 VA class 0.5		145 x 114	TP - 58	**M70127**
1000/5	5 VA class 0.5		145 x 114	TP - 58	**M70128**

TP-58

250/5	1 VA class 0.5	PASSING BAR Busbar: 80 x 80mm	145 x 144	TP - 88	**M70131**
300/5	1.5 VA class 0.5		145 x 144	TP - 88	**M70132**
400/5	1.5 VA class 0.5		145 x 144	TP - 88	**M70133**
500/5	2.5 VA class 0.5		145 x 144	TP - 88	**M70134**
600/5	2.5 VA class 0.5		145 x 144	TP - 88	**M70135**
750/5	3 VA class 0.5		145 x 144	TP - 88	**M70136**
800/5	3 VA class 0.5		145 x 144	TP - 88	**M70137**
1000/5	5 VA class 0.5		145 x 144	TP - 88	**M70138**

TP-88

500/5	4 VA class 1	PASSING BAR Busbar: 80 x 120mm	185 x 144	TP - 812	**M70141**
600/5	5 VA class 1		185 x 144	TP - 812	**M70142**
750/5	2.5 VA class 0.5		185 x 144	TP - 812	**M70143**
800/5	3 VA class 0.5		185 x 144	TP - 812	**M70144**
1000/5	5 VA class 0.5		185 x 144	TP - 812	**M70145**
1200/5	6 VA class 0.5		185 x 144	TP - 812	**M70146**
1250/5	7 VA class 0.5		185 x 144	TP - 812	**M70147**
1500/5	8 VA class 0.5		185 x 144	TP - 812	**M70148**

TP-812

1000/5	10 VA class 0.5	PASSING BAR Busbar: 80 x 160mm	245 x 184	TP - 816	**M70151**
1500/5	15 VA class 0.5		245 x 184	TP - 816	**M70152**
2000/5	15 VA class 0.5		245 x 184	TP - 816	**M70153**
2500/5	15 VA class 0.5		245 x 184	TP - 816	**M70154**
3000/5	20 VA class 0.5		245 x 184	TP - 816	**M70155**
4000/5	20 VA class 0.5		245 x 184	TP - 816	**M70156**
5000/5	20 VA class 0.5		245 x 184	TP - 816	**M70157**

TP-816

Industrial earth leakage protection

Multi function LCD electronic industrial earth leakage protection relays

Multifunction electronic industrial earth leakage protection relay that can offer protection, prevention & continuity. It utilises WG transformers, can be Din rail or panel mounted & comes with LCD display & programmable sensitivity/delay.

MiS = micro second

RGU - 10

Type	True RMS value	Din Rail/Panel	Class A Super immunised	Disconnection Between 80-100% of leakage current	High Frequency Filtering	8/20 MiS at 5KA 1.2/50 MiS at 5KV	Programable Sensitivity/Delay	RS485 Communication	Manual Reset Power Failure	NR of Modules	Item no.
RGU-10	•	•	•	•	-	•	•	-	•	3	**P11941**
RGU-10C	•	•	•	•	•	•	•	•	•	3	**P11944**

Accessory for panel mounting M5ZZF1.

WG earth leakage transformers (supports RGU-10 Relay)

WG series can cover diameter range of 20mm up to 210mm protected against harmonics & disturbances. They support the RGU-10 relays.

WG Series

Type	Description	Item no.
WGS-20	20mm Diameter	**P10131**
WGS-30	30mm Diameter	**P10132**
WGS-35	35mm Diameter	**P10111**
WGS-70	70mm Diameter	**P10112**
WGS-105	105mm Diameter	**P10113**
WGS-140	140mm Diameter	**P10114**
WGS-210	210mm Diameter	**P10115**

Electronic earth leakage relays with external transformer WN Series

An electronic industrial earth leakage protection relay that can offer protection & prevention. It is DIN Rail mounted & utilises external transformers WN Series.

RN Relay

Type	True RMS value	Sensitivity F=Fixed A=Adjustable	Delay F=Fixed A=Adjustable	Class A Super Immunised	High Frequency Filtering	Leakage Indication (LED)	Manual Reset Power Failure	External Test	2 Modules Din Rail	Leakage Indication via LED	Multi Range Power Supply	Item no.
RN-10	•	A	A	•	•	•	•	•	•	•	•	**P12140**

WN earth leakage transformers (supports RN Relay)

WN series Leakage Transformers support the RN Relays covering diameters from 20mm up to 210mm.

WNS/WN

Type	Description	Item no.
WN-140	140mm Diameter	**P10214**
WN-210	210mm Diameter	**P10215**

Feed-through terminals

Feed-through connection terminals (suitable for 35mm DIN rail & 32mm G rail)

Type	2.5mm	4mm
Current	26 amps - 750V / 24 amps - 800V	34 amps - 750V / 32 amps - 800V
Width / Strip Length / Screw	5mm / 7mm / M2.5	6mm / 12mm / M3
Cable	0.2mm-2.5mm stranded / 0.2mm -4mm solid	0.2mm-4mm stranded / 0.2mm-6mm solid

Description	Reference	2.5mm Item no.	Description	Reference	4mm Item no.
2.5mm terminal beige	1296.0	**RK2.5PA**	4mm terminal beige	1001.2	**RK2.5-4PA**
2.5mm terminal beige 10P	1297.2	**KBL2.5PA**	4mm terminal beige 10P	1002.2	**KBL2.5-4PA**
End plate beige	2001.2	**AP2.5-10PA**	End section beige	2001.2	**AP2.5-10PA**
Partition beige	2002.2	**TW2.5-10PA**	Partition beige	2002.2	**TW2.5-10PA**
2.5mm terminal red	1296.9	**RK2.5PAR**	4mm terminal red	1001.9	**RK2.5-4PAR**
End plate red	2001.9	**AP2.5-10PAR**	End plate red	2001.9	**AP2.5-10PAR**
2.5mm terminal white	1296.7	**RK2.5PAW**	4mm terminal white	1001.7	**RK2.5-4PAW**
End plate white	2001.7	**AP2.5-10PAW**	End plate white	2001.7	**AP2.5-10PAW**
2.5mm terminal blue	1296.5	**RK2.5PAB**	4mm terminal blue	1001.5	**RK2.5-4PAB**
End plate Blue	2001.5	**AP2.5-10PAB**	End plate Blue	2001.5	**AP2.5-10PAB**
Partition blue	2002.5	**TW2.5-10PAB**	Partition blue	2002.5	**TW2.5-10PAB**
Cross Connection 2P bare	2567.0	**Q.22.5**	Cross Connection 2P insul.	2740.2	**QI24**
Cross Connection 3P bare	2568.0	**Q.32.5**	Cross Connection 3P insul.	2741.2	**QI34**
Cross Connection 10P bare	2570.0	**Q.102.5**	Cross Connection 10P insul.	2743.2	**QI104**
Cross Connection 100P bare	2152.0	**Q.0.5m**	Cross Connection 83P bare	2153.0	**Q.0.5m4**
Cover (60mm)	2499.0	**ADQ**	Cover (60mm)	2499.0	**ADQ**
External jumper insulated 10P	2029.0	**AQI10/5/15**	External jumper insulated 10P	2143.0	**AQI10/6/17**
-	-	**-**	External jumper insulated 75P	2480.0	**AQI75/6/17**
Separator	2566.2	**TRS3PA**	Separator	2003.2	**TRS**
Test socket	2075.0	**STB8.5/2.3**	Test socket	2006.0	**STB14/2.3**
Test plug	2007.0	**PS2.3**	Test plug	2007.0	**PS2.3**
End clamp Economy TS35	2005.2	**ES35PA**	End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35SKT**	End clamp TS35 (9.5mm)	2828.0	**ES35SKT**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**

For marking systems, refer to 346

M 4

M 5

Feed-through terminals

Feed-through connection terminals (suitable for 35mm DIN rail & 32mm G rail)

Type	10mm	16mm
Current	61 amps - 750V / 57 amps - 800V	82 amps - 750V / 76 amps - 800V
Width / Strip Length / Screw	8mm / 12mm / M4	12mm / 15mm / M5
Cable	0.2mm-10mm stranded / 0.2mm -10mm solid	2.5mm-16mm stranded / 2.5mm-25mm solid

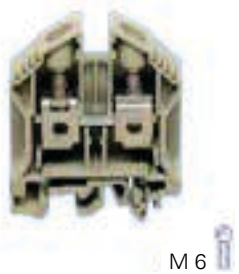
Description	Reference	10mm Item no.	Description	Reference	16mm Item no.
10mm terminal beige *	1005.2	**RK6-10PA**	16mm terminal beige *	1050.2	**RK16PA**
10mm terminal beige 10P *	1006.2	**KBL6-10PA**	-	-	**-**
End plate beige *	2001.2	**AP2.5-10PA**	End plate beige *	2104.2	**AP16PA**
Partition beige *	2002.2	**TW2.5-10PA**	Partition beige *	2105.2	**TW16PA**
10mm terminal red *	1005.9	**RK6-10PAR**			
End plate red *	2001.9	**AP2.5-10PAW**			
10mm terminal white *	1005.7	**RK6-10PAW**			
End plate white *	2001.7	**AP2.5-10PAR**			
6mm terminal blue *	1005.5	**RK6-10PAB**	16mm terminal blue *	1050.5	**RK16PAB**
End plate Blue *	2001.5	**AP2.5-10PAB**	End plate Blue *	2104.5	**AP16PAB**
Partition blue *	2002.5	**TW2.5-10PAB**	Partition blue *	2105.5	**TW16PAB**
Cross Connection 2P insul.	2750.2	**QI210**	Cross Connection 2P bare	2112.0	**Q.216**
Cross Connection 3P insul.	2751.2	**QI310**	Cross Connection 3P bare	2113.0	**Q.316**
Cross Connection 10P insul.	2753.2	**QI1010**	Cross Connection 10P bare	2115.0	**Q.1016**
Cover s (60mm)	2499.0	**ADQ**	Cover 1P	2819.0	**AD1/12**
External jumper insulated 2P	2067.0	**AQI2/8/11**			
External jumper insulated 3P	2068.0	**AQI3/8/11**			
Separator	2003.2	**TRS**			
Test Socket	2050.0	**STB14/4**			
Test Plug	2051.0	**PS4**			
End clamp Economy TS35	2005.2	**ES35PA**	End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35KST**	End clamp TS35 (9.5mm)	2828.0	**ES35KST**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**

For marking systems, refer to page 346
* Other colours available on request.

Feed-through terminals

Feed-through connection terminals
(suitable for 35mm DIN rail & 32mm G rail)

Type	35mm	50mm
Current	135 amps - 750V / 125 amps - 800V	168 amps - 1000V
Width / Strip Length / Screw	16mm / 20mm / M5 all.	20mm / 27mm / M8 all.
Cable	2.5mm-35mm stranded / 2.5mm -50mm solid	25mm-50mm stranded / 16mm-50mm solid



Description	Reference	35mm Item no.	Description	Reference	50mm Item no.
35mm terminal beige	1494.2	**RK35PA**	50mm terminal beige	1120.2	**RK50PA**
End plate beige	2116.2	**AP35PA**	End plate beige	-	**Not Required**
Partition beige	2117.2	**TW35PA**	Partition grey	-	**Not Required**
35mm terminal blue	1494.5	**RK35PAB**	35mm terminal blue	1120.5	**RK50PAB**
End plate Blue	2116.5	**AP35PAB**	End section Blue	-	**Not Required**
Partition blue	2117.5	**TW35PAB**	-	-	**-**
Cross Connection 2P bare	2164.0	**Q.235**	Cross Connection 2P insul.	2763.2	**AQI250**
Cross Connection 3P bare	2165.0	**Q.335**	Cross Connection 3P bare	2764.2	**AQI350**
Cross Connection 10P bare	2167.0	**Q.1035**			
Cover 1P	2820.0	**AD1/16**			
Test Socket	2127.0	**STB16/4**			
Test Plug	2051.0	**PS4**			
End clamp Economy TS35	2005.2	**ES35PA**	End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35KST**	End clamp TS35 (9.5mm)	2828.0	**ES35KST**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**

Type	95mm	150mm
Current	250 amps - 1000V	355 amps - 1000V
Width / Strip Length / Screw	25mm / 30mm / M8 all	31mm / 38mm / M10 all.
Cable	35mm-95mm stranded / 25mm -95mm solid	35mm-150mm stranded / 35mm-185mm solid

Description	Reference	95mm Item no.	Description	Reference	150mm Item no.
95mm terminal beige	1122.2	**RK95PA**	150mm terminal beige	1124.2	**RK150PA**
End plate	-	**Not Required**	End plate	-	**Not Required**
Partition	-	**Not Required**	Partion	-	**Not Required**
95mm terminal blue	1122.5	**RK95PAB**	150mm terminal blue	1124.5	**RK150PAB**
End plate	-	**Not Required**	End Plate		**Not Required**
Partition	-	**Not Required**	-	-	**-**
Cross Connection 2P insul.	2765.2	**AQI295**	Cross Connection 2P insul.	2767.2	**AQI2150**
Cross Connection 3P bare	2766.2	**AQI395**	Cross Connection 3P bare	2768.2	**AQI3150**
-	-	**-**	Warning Tag	2806.0	**AD1/150**
End clamp Economy TS35	2005.2	**ES35PA**	End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35SKT**	End clamp TS35 (9.5mm)	2828.0	**ES35SKT**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**

For marking systems, refer to page 346. For mounting rails, refer to page 347.

Feed-through terminals

Feed-through connection terminals (suitable for 35mm DIN rail & 32mm G rail)

Type	**240mm**
Current	453 amps - 1000V
Width / Strip Length / Screw	36mm / 38mm / M10 all.
Cable	70mm-240mm stranded / 70mm -240mm solid

HSK High Current Terminals (available on request).

Description	Reference	240mm Item no.
240mm terminal beige	1126.2	**RK240PA**
End plate	-	**Not Required**
Partition	-	**Not Required**
240mm terminal blue	1126.5	**RK240PAB**
End Plate	-	**Not Required**
Cross Connection 2P insul.	2769.2	**AQI2240**
Cross Connection 3P bare	2770.2	**AQI3240**
Warning Tag	2808.0	**AD1/240**
End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35SKT**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**

For marking systems, refer to page 346. For mounting rails, refer to page 347.

Earth terminals

Through-type earth terminals (yellow/green) (suitable for 35mm DIN rail)

Type	2.5mm	4mm
Width / Strip Length / Screw	6mm / 10mm / M2.5	8mm / 12mm / M3
Cable	0.2mm-2.5mm stranded / 0.2mm -4mm solid	0.2mm-4mm stranded / 0.2mm-6mm solid

Description	Reference	2.5mm Item no.	Description	Reference	4mm Item no.
2.5mm Earth terminal	1056.2	**SL2535**	4mm Earth terminal	1212.2	**SL435**

Type	10mm	16mm
Width / Strip Length / Screw	10mm / 12mm / M4	12mm / 12mm / M5
Cable	0.2mm-10mm stranded / 0.2mm-10mm solid	2.5mm-16mm stranded / 2.5mm-25mm solid

Description	Reference	10mm Item no.	Description	Reference	16mm Item no.
10mm Earth terminal	1213.2	**SL1035**	16mm Earth terminal	1197.2	**SL1635**

Earth terminals

Through-type earth terminals (yellow/green)
(suitable for 35mm DIN rail)

Type	**35mm**
Width / Strip Length / Screw	16mm / 20mm / M6
Cable	2.5mm-35mm stranded / 2.5mm-50mm solid

Description	Reference	35mm Item no.
35mm Earth terminal	1199.2	**SL3535**

For mounting rails, refer to page 347.

Type	**2.5mm, Duo Earth Double**
Width / Strip Length	6mm / 10mm
Cable	0.2mm-2.5mm stranded / 0.2mm-0.4mm solid

Description	Reference	2.5mm Item no.	Description	Reference	2.5mm Item no.
2.5mm terminal	1060.2	**SL2.535ZR**	2.5mm terminal	1062.2	**SL2.535ZR**
			End section	2575.1	**AP2.5RLPA**

For marking systems, refer to page 346. For mounting rails, refer to page 347.

Double deck/duo terminals

Double deck through-type terminals
(suitable for 35mm DIN rail & 32mm G rail)

Type	4mm without Bridge	4mm with Bridge
Current	34 amps - 500V	34 amps
Width / Strip Length / Screw	6mm / 9mm / M3	6mm / 9mm / M3
Cable	0.2mm-4mm stranded / 0.2mm-4mm solid	0.2mm-4mm stranded / 0.2mm-4mm solid

Description	Reference	4mm Item no.	Description	Reference	4mm Item no.
4mm terminal beige	1020.2	**RKD4PA**	4mm terminal beige	1027.2	**RKD4SVPA**
End section beige	2101.2	**AP4PA**	End section beige	2101.2	**AP4PA**
End clamp Economy TS35	2005.2	**ES35PA**	End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35SKT**	End clamp TS35 (9.5mm)	2828.0	**ES35SKT**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**

For marking systems, refer to page 346. For mounting rails, refer to page 347.

Double deck/duo terminals

Duo through-type connection terminals (suitable for 35mm DIN rail & 32mm G rail)

Type	4mm 1in/2out Connection	4mm 2in/2out Connection
Current	26 amps - 500V	26 amps - 500V
Width / Strip Length	6mm / 12mm	6mm / 9mm
Cable	0.2mm-4mm stranded / 0.2mm -6mm solid	0.2mm-4mm stranded / 0.2mm -6mm solid

Description	Reference	4mm Item no.	Description	Reference	4mm Item no.
4mm terminal beige *	1210.2	**RK2.5-4ZRPA**	4mm terminal beige *	1211.2	**RK2.5-4ZRLPA**
End section beige *	2574.2	**AP2.5RPA**	End section beige *	2575.2	**AP2.5RLPA**
Cross Connection 2P insul.	2740.2	**QI24**	Cross Connection 2P insul.	2740.2	**QI24**
Cross Connection 3P insul.	2741.2	**QI34**	Cross Connection 3P insul.	2741.2	**QI34**
Cross Connection 10P insul.	2743.2	**QI104**	Cross Connection 10P insul.	2743.2	**QI104**
Cross Connection 83P bare	2153.0	**Q.0.5m**	Cross Connection 83P bare	2153.0	**Q.0.5m**
Cover s (60mm)	2499.0	**ADQ**	Cover s (60mm)	2499.0	**ADQ**
External jumper insulated 10P	2029.0	**AQI10/5/15**	External jumper insulated 10P	2143.0	**AQI10/6/17**
-	-	**-**	External jumper insulated 75P	2480.0	**AQI75/6/17**
Separator	2566.2	**TRS3PA**	Separator	2003.2	**TRS**
Test Socket	2075.0	**STB8.5/2.3**	Test Socket	2006.0	**STB14/2.3**
Test Plug	2007.0	**PS2.3**	Test Plug	2007.0	**PS2.3**
End clamp Economy TS35	2005.2	**ES35PA**	End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35SKT**	End clamp TS35 (9.5mm)	2828.0	**ES35SKT**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**

*Blue on Request.

Disconnect terminals

Disconnect terminals (suitable for 35mm DIN rail & 32mm G rail)

Type	4mm without test socket	4mm with LH & RH test sockets
Current	10 amps	35 amps
Width / Strip Length	6mm / 8mm	6mm
Cable	0.2mm-4mm stranded / 0.2mm -6mm solid	0.5mm-4mm stranded / 0.5mm-6mm solid

Description	Reference	4mm Item no.	Description	Reference	4mm Item no.
4mm terminal beige	1390.2	**TRK1.5PA**	4mm terminal beige	1391.2	**TRK1.5STBPA**
External Jumper 2p	2064.0	**AQ2**			
External Jumper 3p	2065.0	**AQ3**			
External Jumper 4p	2066.0	**AQ4**			
Test Plug	2007.0	**PS2.3**			
End clamp Economy TS35	2005.2	**ES35PA**	End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35SKT**	End clamp TS35 (9.5mm)	2828.0	**ES35SKT**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**

For marking systems, refer to page 346. For mounting rails, refer to page 347.

Disconnect terminals

Disconnect terminals
(suitable for 35mm DIN rail & 32mm G rail)

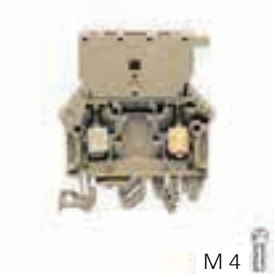
Type	**4mm without test sockets**	**4mm**
Current	10 / 15 amps - 300 / 600V	34 / 15 amps - 300 / 600V
Width / Strip Length	6mm / 8mm	8mm / 9mm
Cable	0.2mm-4mm stranded / 0.2mm-4mm solid	0.2mm-4mm stranded / 0.2mm -4mm solid

Description	Reference	4mm Item no.	Description	Reference	4mm Item no.
4mm terminal beige	1394.2	**TRK1.5DSPA**	4mm terminal beige	2193.2	**TRK2KPA**
Plug (spare)	1403.2	**DS1TRK1.5**	End plate beige	2046.2	**APSI1PA**
Diode Plug 1A	1401.2	**DS1TRK1.51A**			
Diode Plug with Bridge	1400.2	**DS1TRK1.5B**			
External Jumper 2p	2064.0	**AQ2**	End clamp Economy TS35	2005.2	**ES35PA**
External Jumper 3p	2065.0	**AQ3**	End clamp TS35 (9.5mm)	2828.0	**ES35SKT**
External Jumper 4p	2066.0	**AQ4**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**
Test Plug	2007.0	**PS2.3**			
End clamp Economy TS35	2005.2	**ES35PA**	End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35SKT**	End clamp TS35 (9.5mm)	2828.0	**ES35SKT**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**

For marking systems, refer to page 346. For mounting rails, refer to page 347.

Type	**4mm with RH & LH test sockets**
Current	10 / 15 amps - 300 / 600V
Width / Strip Length	6mm / 8mm
Cable	0.2mm-4mm stranded / 0.2mm-4mm solid

Description	Reference	4mm Item no.
4mm terminal beige	1395.2	**TRK1.5STBDSPA**



Fuse terminals

Fuse terminals (suitable for 35mm DIN Rail & 32mm G Rail)

Type	10mm 5 x 20mm / 5 X 25mm	10mm 6.3mm x 32mm
Width / Strip Length	8mm / 9mm	6mm / 9mm
Cable	0.2mm-10mm stranded / 0.2mm-10mm solid	0.2mm-10mm stranded / 0.2mm-10mm solid

Description	Reference	10mm Item no.	Description	Reference	10mm Item no.
Terminal beige	1101.2	**SIK10PA**	Terminal beige	1102.2	**SIK10ZPA**
LED - 12VDC / 24VAC	1113.2	**SSTSIKLED12**			
LED - 30VDC / 60VAC	1114.2	**SSTSIKLED30**			
LED - 60VDC / 120VAC	1115.2	**SSTSIKLED60**			
LED - 115VDC / 230VAC	1116.2	**SSTSIKLED115**			
End clamp Economy TS35	2005.2	**ES35PA**			
End clamp TS35 (9.5mm)	2828.0	**ES35SKT**			
End clamp metal TS35 (11mm)	2761.9	**HES35ST**			
Fuses to suit:					
5 x 25mm:					
1A	2096.0	**SIK251A**			
2A	2097.0	**SIK252A**			
4A	2098.0	**SIK254A**			
6.3A	2099.0	**SIK256.3A**			
5 x 20mm:					
1A	2406.0	**SIK201A**			
2A	2407.0	**SIK202A**			
4A	2408.0	**SIK204A**			
6.3A	2409.0	**SIK206.3A**			

Fuse terminals (suitable for 35mm DIN Rail)

Type	4mm 5mm X 20mm/25mm	10mm 5mm X 20mm/25mm
Width / Strip Length	8mm / 9mm	12mm / 12mm
Cable	0.2mm-4mm stranded / 0.2mm-4mm solid	0.2mm-10mm stranded / 0.2mm-10mm solid

Description	Reference	4mm Item no.	Description	Reference	10mm Item no.
4mm terminal	2190.2	**STK1PA**	10mm terminal	1092.6	**SK135**
End section	2046.2	**APSI1PA**	End section	2047.6	**APSK1KRG**
End clamp Economy TS35	2005.2	**ES35PA**	End clamp Economy TS35	2005.2	**ES35PA**
End clamp TS35 (9.5mm)	2828.0	**ES35SKT**	End clamp TS35 (9.5mm)	2828.0	**ES35SKT**
End clamp metal TS35 (11mm)	2761.9	**HES35ST**	End clamp metal TS35 (11mm)	2761.9	**HES35ST**

For marking systems, refer to page 346. For mounting rails, refer to page 347.
For fuses see above.

Marking tags

Terminal SB marking tag branches (each branch with 10 tags)

Nos.	Reference	5mm width, Item no. *	Reference	6mm width, Item no.	Reference	8mm width, Item no.
1 - 10	2433.0/1-10	**SB510FS1-10**	2037.0/1-10	**SB610FS1-10**	2942.0/1-10	**SB810FS1-10**
11- 20	2433.0/11-20	**SB510FS11-20**	2037.0/11-20	**SB610FS11-20**	2942.0/11-20	**SB810FS11-20**
21 - 30	2433.0/21-30	**SB510FS21-30**	2037.0/21-30	**SB610FS21-30**	2942.0/21-30	**SB810FS21-30**
31 - 40	2433.0/31-40	**SB510FS31-40**	2037.0/31-40	**SB610FS31-40**	2942.0/31-40	**SB810FS31-40**
41 - 50	2433.0/41-50	**SB510FS41-50**	2037.0/41-50	**SB610FS41-50**	2942.0/41-50	**SB810FS41-50**
51 - 60	2433.0/51-60	**SB510FS51-60**	2037.0/51-60	**SB610FS51-60**	2942.0/51-60	**SB810FS51-60**
61 - 70	2433.0/61-70	**SB510FS61-70**	2037.0/61-70	**SB610FS61-70**	2942.0/61-70	**SB810FS61-70**
71 - 80	2433.0/71-80	**SB510FS71-80**	2037.0/71-80	**SB610FS71-80**	2942.0/71-80	**SB810FS71-80**
81 - 90	2433.0/81-90	**SB510FS81-90**	2037.0/81-90	**SB610FS81-90**	2942.0/81-90	**SB810FS81-90**
91 - 100	2433.0/91-100	**SB510FS91-100**	2037.0/91-100	**SB610FS91-100**	2942.0/91-100	**SB810FS91-100**
Blank	2430.0	**SB510**	2035.0	**SB610**	2940.0	**SB810**

* Tag quantity - price is for one strip of 10 tags.

AS310 Marking branches white polyamide with Black print (colours available on request).

Terminal AS marking tag branches (each strip with 10 tags)

Description	Reference	Item no. *	Description	Reference	Item no.
Letter A	2573.0-A	**AS310G-A**	Letter O	2573.0-O	**AS310G-O**
Letter B	2573.0-B	**AS310G-B**	Letter P	2573.0-P	**AS310G-P**
Letter C	2573.0-C	**AS310G-C**	Letter Q	2573.0-Q	**AS310G-Q**
Letter D	2573.0-D	**AS310G-D**	Letter R	2573.0-R	**AS310G-R**
Letter E	2573.0-E	**AS310G-E**	Letter S	2573.0-S	**AS310G-S**
Letter F	2573.0-F	**AS310G-F**	Letter T	2573.0-T	**AS310G-T**
Letter G	2573.0-G	**AS310G-G**	Letter U	2573.0-U	**AS310G-U**
Letter H	2573.0-H	**AS310G-H**	Letter V	2573.0-V	**AS310G-V**
Letter I	2573.0-I	**AS310G-I**	Letter W	2573.0-W	**AS310G-W**
Letter J	2573.0-J	**AS310G-J**	Letter X	2573.0-X	**AS310G-X**
Letter K	2573.0-K	**AS310G-K**	Letter Y	2573.0-Y	**AS310G-Y**
Letter L	2573.0-L	**AS310G-L**	Letter Z	2573.0-Z	**AS310G-Z**
Letter M	2573.0-M	**AS310G-M**	Letter +	2573.0-PLUS	**AS310G-PLUS**
Letter N	2573.0-N	**AS310G-N**	Letter -	2573.0-MINUS	**AS310G-MINUS**

Description	Reference	Item no. *	Description	Reference	Item no.
Nos. Sequence 0.....9	2572.0		Tag Mounting Clip		
No .1	2573.0-1	**AS310G-1**	3 way 9.5mm	2616.0	**SCHT3**
No .2	2573.0-2	**AS310G-2**	4 way 12.5mm	2617.0	**SCHT4**
No. 3	2573.0-3	**AS310G-3**	5 way 15.8mm	2618.0	**SCHT5**
No. 4	2573.0-4	**AS310G-4**	6 way 19mm	2619.0	**SCHT6**
No. 5	2573.0-5	**AS310G-5**			
No. 6	2573.0-6	**AS310G-6**			
No. 7	2573.0-7	**AS310G-7**			
No. 8	2573.0-8	**AS310G-8**			
No. 9	2573.0-9	**AS310G-9**			
No. 0	2573.0-0	**AS310G-0**			
Blank	2571.0	**AS310**			

* Tag quantity - price is for one strip of 10 tags.

TS357.5

ES35PA

HES35ST

DIN rail & ducting

Terminal accessories

Description	Reference	Item no.
Mounting Rails (2 Metre length)		
35mm DIN 7.5mm high	2026.00	**TS357.5US**
35mm DIN 7.5mm high slotted	2094.00	**TS357.5S**
End Clamps		
End clamp Economy	2005.20	**ES35PA**
Type TS35 (35mm)	2828.0	**ES35SKT**
End clamp metal (11mm)	2761.9	**HES35ST**

Wiring duct, surface mounting

Wiring duct available in slotted closed & open or solid wall variations.

- High impact strength
- Self extinguishing 94V - 0 PVC
- Service temperature 850C
- Ducting comes with lids

Slotted - open (2m lengths)

Dimensions (W x H mm)	Colour	Item no.
25 x 30	Grey	**FBO2530G**
25 x 40	Grey	**FBO2540G**
25 x 60	Grey	**FBO2560G**
40 x 40	Grey	**FBO4040G**
40 x 60	Grey	**FBO4060G**
40 x 80	Grey	**FBO4080G**
60 x 40	Grey	**FBO6040G**
60 x 60	Grey	**FBO6060G**
60 x 80	Grey	**FBO6080G**
80 x 60	Grey	**FBO8060G**
80 x 80	Grey	**FBO8080G**
100 x 100	Grey	**FBO100100G**
25 x 30	Black	**FBO2530B**
25 x 60	Black	**FBO2560B**
40 x 40	Black	**FBO4040B**
40 x 60	Black	**FBO4060B**
40 x 80	Black	**FBO4080B**
60 x 60	Black	**FBO6060B**
60 x 80	Black	**FBO6080B**
80 x 80	Black	**FBO8080B**
100 x 100	Black	**FBO100100B**

Slotted - closed (2m lengths)

Dimensions (W x H mm)	Colour	Item no.
25 x 60	Grey	**FBC2560G**
40 x 40	Grey	**FBC4040G**
40 x 60	Grey	**FBC4060G**
40 x 80	Grey	**FBC4080G**
60 x 60	Grey	**FBC6060G**
60 x 80	Grey	**FBC6080G**
80 x 80	Grey	**FBC8080G**
100 x 100	Grey	**FBC100100G**
25 x 30	Black	**FBC2530B**
25 x 60	Black	**FBC2560B**
40 x 40	Black	**FBC4040B**
40 x 60	Black	**FBC4060B**
40 x 80	Black	**FBC4080B**
60 x 60	Black	**FBC6060B**
60 x 80	Black	**FBC6080B**
80 x 80	Black	**FBC8080B**
100 x 100	Black	**FBC100100B**

Spare duct lids

Dimensions (mm)	Colour	Item no.
25	Grey	**FBL25G**
40	Grey	**FBL40G**
60	Grey	**FBL60G**
80	Grey	**FBL80G**
100	Grey	**FBL100G**
25	Black	**FBL25B**
40	Black	**FBL40B**
60	Black	**FBL60B**
80	Black	**FBL80B**
100	Black	**FBL100B**

Cable accessories

Cable ties

- UL approved nylon 66, 94V-2
- One piece design ensures strong locking
- Service temperature -400C to +1050C
- High temperature 1850C, 94V-0 available on request
- Packed quantity 100

Dimensions (mm)	Colour	Tensile strength	Bundle Diameter	Item no.
100 x 2.5	Clear	8 kg	25 mm	**FBCT1002C**
190 x 4.8	Clear	22 kg	52 mm	**FBCT1904C**
280 x 4.8	Clear	22 kg	81 mm	**FBCT2804C**
370 x 4.8	Clear	22 kg	102 mm	**FBCT3704C**
280 x 7.6	Clear	55 kg	81 mm	**FBCT2807C**
380 x 7.6	Clear	55 kg	110 mm	**FBCT3807C**
450 x 7.6	Clear	55 kg	120 mm	**FBCT4507C**
450 x 8.0	Clear	80 kg	133 mm	**FBCT4508C**
550 x 8.0	Clear	80 kg	168 mm	**FBCT5508C**
812 x 9.0	Clear	80 kg	246 mm	**FBCT8129C**
1168 x 9.0	Clear	80 kg	360 mm	**FBCT11689C**
100 x 2.5	Black	8 kg	25 mm	**FBCT1002B**
150 x 3.6	Black	18 kg	39 mm	**FBCT1503B**
190 x 4.8	Black	22 kg	52 mm	**FBCT1904B**
280 x 4.8	Black	22 kg	81 mm	**FBCT2804B**
370 x 4.8	Black	22 kg	102 mm	**FBCT3704B**
280 x 7.6	Black	55 kg	81 mm	**FBCT2807B**
380 x 7.6	Black	55 kg	110 mm	**FBCT3807B**
450 x 7.6	Black	55 kg	120 mm	**FBCT4507B**
450 x 8.0	Black	80 kg	133 mm	**FBCT4508B**
550 x 8.0	Black	80 kg	168 mm	**FBCT5508B**
1168 x 9.0	Black	80 kg	360 mm	**FBCT11689B**

Cable tie saddles

- Available in screw-in or stick-on
- Colour - white

Dimensions (mm)	Mounting	Item no.
19 x 9.5	Screw-on	**FBTM0**
15 x 10	Screw-on	**FBTM1**
23 x 16	Screw-on	**FBTM2**
21 x 21	Stick-on	**FBTM21214**
28 x 28	Stick-on + screw-on	**FBTM28284**

Cable Tie Saddles

Cable Ties, Surface Mounting

Flexible bushing

- Cut to suit any shape hole
- Protects cables from sharp edges
- Manufactured P.E. Natural

Thickness	Max. Thickness	Item no.
1.0	1.0	**FBMB10**
1.6	1.0 - 1.6	**FBMB16**
2.4	1.6 - 2.4	**FBMB24**
3.2	2.4 - 3.2	**FBMB32**
4.5	3.2 - 4.5	**FBMB45**

Cable glands

- Manufactured from UL approved nylon 66 94V-2 black
- Temperature -400C to +1050C
- "Cable grab claw" stays on gland body to reduce installation time
- IP68 rating

Thread size, metric, (mm)	Suits cable outside dia.	Item no.
16	5 - 10	**FBAG16**
20	6 - 13	**FBAG20**
25	10-18	**FBAG25**
32	16 - 22	**FBAG32**
40	20 - 27	**FBAG40**
50	30 - 41	**FBAG50**
63	40 - 53	**FBAG63**

Flexible bushing

Cable glands

Spiral banding

- Manufactured from P.E.
- Binds cables & protects them from damage

Wrapping range (mm)	Band width	Dia. (inner)	Dia. (outer)	Item no.
4 - 50	7.0	4.0	6.0	**FBSW06**
6 - 60	10.8	6.0	8.0	**FBSW08**
7.5 - 60	11.4	7.5	10	**FBSW10**
9 - 65	13.9	9.0	12	**FBSW12**
12 - 75	15	12	15	**FBSW15**
15 - 100	18.2	15	19	**FBSW19**

Spiral banding

Ancillary products
Enclosures

Eaton halyester polyester/non metallic enclosures

Polyester enclosures, halyester - polyester enclosures

Durability & quality you can trust. Halyester has been proving its reliability in the harshest climates, from the sweltering heats to the coldest temperatures for over 30 years.

- IP66 - dust & jet water tight
- Built for outdoor & indoor usage
- Covers IK10 impact rating
- UV resistant- tested
- Corrosion free & chemical resistant GRP

Empty boxes with TRANSPARENT cover & insulated base-plate

Type	Description (W x H x D mm)	Item no.
K432	IP66 Enclosure 180 x 270 x 171mm	**1860808**
K433	IP66 Enclosure 270 x 270 x 171mm	**1860809**
K434	IP66 Enclosure 270 x 360 x 171mm	**1860810**
K442	IP66 Enclosure 180 x 360 x 171mm	**1860090**
K444	IP66 Enclosure 360 x 360 x 171mm	**1860091**
K463	IP66 Enclosure 270 x 540 x 171mm	**1860811**
K464	IP66 Enclosure 360 x 540 x 171mm	**1860812**
K466	IP66 Enclosure 540 x 540 x 171mm	**1860092**
K484	IP66 Enclosure 360 x 720 x 201mm	**1860093**
K486	IP66 Enclosure 540 x 720 x 201mm	**1860094**

Spare covers, TRANSPARENT

Type	Description (W x H mm)	Item no.
KD432	Cover only 180 x 270	**1860755**
KD433	Cover only 270 x 270	**1860751**
KD434	Cover only 270 x 360	**1860752**
KD442	Cover only 180 x 360	**1860059**
KD444	Cover only 360 x 360	**1860060**
KD463	Cover only 270 x 540	**1860753**
KD464	Cover only 360 x 540	**1860754**
KD466	Cover only 540 x 540	**1860061**
KD484	Cover only 360 x 720	**1860062**
KD486	Cover only 540 x 720	**1860063**

Empty boxes with OPAQUE cover with insulated base-plate

Type	Description (W x H x D mm)	Item no.
K432GS	IP66 Enclosure 180 x 270 x 171mm	**1860101**
K433GS	IP66 Enclosure 270 x 270 x 171mm	**1860102**
K434GS	IP66 Enclosure 270 x 360 x 171mm	**1860103**
K442GS	IP66 Enclosure 180 x 360 x 171mm	**1860095**
K444GS	IP66 Enclosure 360 x 360 x 171mm	**1860096**
K463GS	IP66 Enclosure 270 x 540 x 171mm	**1860104**
K464GS	IP66 Enclosure 360 x 540 x 171mm	**1860105**
K466GS	IP66 Enclosure 540 x 540 x 171mm	**1860097**
K484GS	IP66 Enclosure 360 x 720 x 201mm	**1860098**
K486GS	IP66 Enclosure 540 x 720 x 201mm	**1860099**

Spare Covers, OPAQUE

Type	Description (W x H mm)	Item no.
KD432GS	Cover only 180 x 270	**1360006**
KD433GS	Cover only 270 x 270	**1360007**
KD434GS	Cover only 270 x 360	**1360008**
KD442GS	Cover only 180 x 360	**1360084**
KD444GS	Cover only 360 x 360	**1360085**
KD463GS	Cover only 270 x 540	**1360009**
KD464GS	Cover only 360 x 540	**1360010**
KD466GS	Cover only 540 x 540	**1360086**
KD484GS	Cover only 360 x 720	**1360087**
KD486GS	Cover only 540 x 720	**1360088**

Flanges for increasing depth

Type	Description	Item no.
KR434	Depth 62,5 mm	**1860547**
KR444	Depth 62,5 mm	**1860414**
KR463	Depth 62,5 mm	**1860762**
KR464	Depth 62,5 mm	**1860761**
KR466	Depth 125 mm	**1860532**

Spare base plates

Type	Description	Item no.
K432	Phenolic base plate suit K432	**1028926**
K433	Phenolic base plate suit K433	**1028915**
K434	Phenolic base plate suit K434	**1028916**
K442	Phenolic base plate suit K442	**1026377**
K444	Phenolic base plate suit K444	**1026375**
K463	Phenolic base plate suit K463	**1028917**
K464	Phenolic base plate suit K464	**1028922**
K466	Phenolic base plate suit K466	**1029600**
K484	Phenolic base plate suit K484	**1026376**
K486	Phenolic base plate suit K486	**1026378**

Boxes with DIN rails - TRANSPARENT cover

Type	Description	Item no.
K433/1h	Box with 1 top hat mounting rail	**1860886**
K434/2h	Box with 2 top hat mounting rails	**1860548**
K444/2h	Box with 2 top hat mounting rails	**1860549**
K464/2h	Box with 2 top hat mounting rails	**1860559**

Spare fixing screws for lids

Description	Item no.
Lid screws, standard, tool operated	**1037917**
Lid screws, hand operated	**1037922**
Lid screws, tool operated, captive cover	**1037919**
Lid screws, hand operated, captive cover	**1037923**

Locking accessories & valves

Type	Description	Item no.
All	External Hinge Kit (pair)	**1064108**
All	Seal Plate for Padlocking Cover	**6009946**
All	Vent Valve	**1049019**
All	Drain Valve	**1024949**

Small insulated enclosures CI-K range

Suitable for housing a wide range of protection and control devices, the robust CI-K enclosures are rated to IP65 degree of protection. Metric cable entry knockouts in the top, bottom and rear of the enclosure make installation easy.
A choice of the unique push-through membrane or hard knockout versions provide added flexibility.

The units are ideal for housing Moeller products including: T rotary switches, P switch-disconnectors, RMQ-Titan command and signalling devices, xStart contactors, Xpole miniature circuit-breakers, easy control relays, ETR4 timing relays, and PKZ motor-protective circuit-breakers. They also make excellent terminal boxes and can be used to house pneumatic or hydraulic components.

Features and benefits

- Fully insulated with no need to earth, resistant to flaking or rusting which is particularly important for the food industry
- Choice of mounting rails and plates, with fixing holes for vertical or horizontal positioning, simplifies mounting
- Captive screws, fixing centres printed on the base, rubber feet to compensate for wall unevenness and optional external fixing brackets
  all simplify installation
- Shallow base depth eases connection to devices mounted in the enclosure
- Eyelets on the base and cover mean tie wraps can be used as a simple hinge when accessing the contents of the enclosure

CI-K enclosures

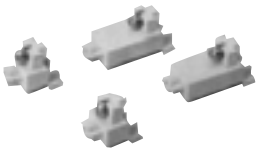
Dimensions (W x H x D mm)	Mounting Depth mm	Item no.
Degree of protection IP65, material: polycarbonate, with metal mounting plate, enclosure base RAL 9005, black, top RAL 7035, light grey, metric cable entry knockouts at top, bottom and in back plate, cable membrane with CI-K1 and CI-K2, control cable entry to CI-K2, enclosure CI-K3 to CI-K5 include metric cable grommets		
100 x 160 x 100	73	**CI-K2-100-M**
100 x 160 x 145	118	**CI-K2-145-M**
120 x 200 x 125	98	**CI-K3-125-M**
120 x 200 x 160	133	**CI-K3-160-M**
160 x 240 x 125	93	**CI-K4-125-M**
160 x 240 x 160	128	**CI-K4-160-M**
200 x 280 x 125	93	**CI-K5-125-M**
200 x 280 x 160	128	**CI-K5-160-M**

CI-K2-100-M

TS-CI-K2

CI-K accessories

Description	For use with	Item no.
Mounting rails		
7.5 mm with fixing screws	CI-K2 crosswise, useful length 82 mm	**TS-CI-K2**
	CI-K3 lengthwise and crosswise, useful length 98 mm	**TS-CI-K3**
	CI-K4 crosswise, useful length 133 mm	**TS-CI-K4**
	CI-K5 lengthwise and crosswise, and for CI-K4 lengthwise, useful length 173 mm	**TS-CI-K5**
N terminals, PE terminals		
Can be screwed into support bosses	CI-K3	**K-CI-K3**
	CI-K4	**K-CI-K4**
Insulated individual terminals		
With PE, N adhesive labels, for snap-fitting onto mounting rail	32 A, flexible 1.5 – 6 mm2	**K10/1**
	63 A, flexible 6 – 16 mm2	**K25/1**
	100 A, flexible 10 – 35 mm2	**K50/1**
Metric cable glands		
20.5 mm drilled hole diameter	6 – 13 mm external cable diameter	**V-M20**
25.5 mm drilled hole diameter	9 – 17 mm external cable diameter	**V-M25**
32.5 mm drilled hole diameter	13 – 21 mm external cable diameter	**V-M32**
50.5 mm drilled hole diameter	18 – 35 mm external cable diameter	**V-M50**



K-CI-K3

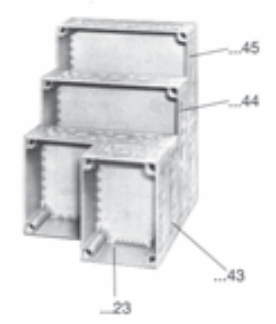
K10/1

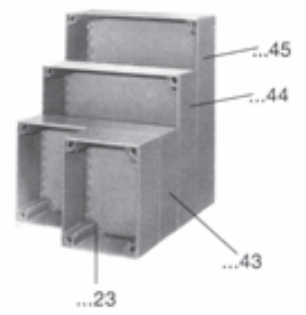
V-M20

Totally insulated enclosures CI range

CI Series enclosures

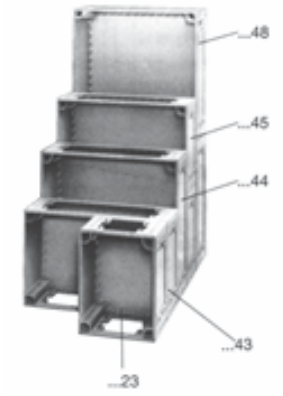
Dimensions (W x H x D mm)	Mounting depth mm	Item no.
E type individual enclosures Metric cable entry knockouts on all sides, degree of protection IP65, full-area knockouts possible on all sides, transparent cover (included in depth), fixing straps for wall mounting, cover fasteners can be sealed		
187.5 x 250 x 150	125	**CI23E-125**
187.5 x 250 x 175	150	**CI23E-150**
375 x 250 x 150	125	**CI43E-125**
375 x 250 x 175	150	**CI43E-150**
375 x 250 x 225	200	**CI43E-200**
375 x 375 x 150	125	**CI44E-125**
375 x 375 x 175	150	**CI44E-150**
375 x 375 x 225	200	**CI44E-200**
375 x 375 x 275	250	**CI44E-250**
375 x 500 x 225	200	**CI45E-200**
X type individual enclosures Smooth plain sides for easy cleaning, Degree of protection IP65, Transparent cover (included in depth), Fixing straps for wall mounting, Cover fasteners can be sealed		
187.5 x 250 x 150	125	**CI23X-125**
187.5 x 250 x 175	150	**CI23X-150**
375 x 250 x 150	125	**CI43X-125**
375 x 250 x 175	150	**CI43X-150**
375 x 250 x 225	200	**CI43X-200**
375 x 375 x 150	125	**CI44X-125**
375 x 375 x 175	150	**CI44X-150**
375 x 375 x 225	200	**CI44X-200**
375 x 375 x 275	250	**CI44X-250**
375 x 500 x 225	200	**CI45X-200**
Panel enclosures Sides with full-area knockouts, open top and bottom, Degree of protection IP65, Transparent cover (included in depth), cover fasteners can be sealed		
375 x 750 x 225	200	**CI48-200**
375 x 750 x 275	250	**CI48-250**





CI Series bases

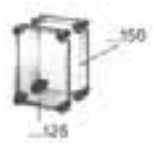
Description	Dimensions (W x H mm)	Item no.
Bases for E type individual enclosures Metric cable entry knockouts on all sides, full-area knockouts possible on all sides, support bosses in the base to fit mounting plates or mounting rails	187.5 x 250	**U-CI23E**
	375 x 250	**U-CI43E**
	375 x 375	**U-CI44E**
	375 x 500	**U-CI45E**
Bases for X type individual enclosures Smooth plain sides for easy cleaning, cable entry drill as required, support bosses in the base to fit mounting plates or mounting rails	187.5 x 250	**U-CI23X**
	375 x 250	**U-CI43X**
	375 x 375	**U-CI44X**
	375 x 500	**U-CI45X**
Bases for panel enclosures Sides with full area knockouts, Open top and bottom, Support bosses in the base to fit mounting plates or mounting rails	187.5 x 250	**U-CI23**
	375 x 250	**U-CI43**
	375 x 375	**U-CI44**
	375 x 500	**U-CI45**
	375 x 750	**U-CI48**

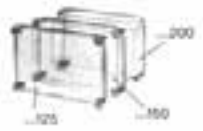


Totally insulated enclosures CI range

CI covers - Transparent covers only

Mounting depth mm	For use with enclosure base	Item no.
125	U-CI23	**D125-CI23**
150		**D150-CI23**
125	U-CI43	**D125-CI43**
150		**D150-CI43**
200		**D200-CI43**
125	U-CI44	**D125-CI44**
150		**D150-CI44**
200		**D200-CI44**
250		**D250-CI44**
200	U-CI45	**D200-CI45**
200	U-CI48	**D200-CI48**
250		**D250-CI48**





CI accessories

Description		For use with	Item no.
Steel mounting plates 3 mm galvanised steel, including fixing screws		CI 23	**M3-CI23**
		CI 43	**M3-CI43**
		CI 44	**M3-CI44**
		CI 45	**M3-CI45**
		CI 48	**M3-CI48**
Module mounting rails Useful length 330 mm for enclosure dimension 375 mm, 3 mm galvanised steel, including fixing screws, pack of 10 rails		Horizontal CI43, CI44, CI45, CI48, Vertical CI44	**ML4**
Mounting rails Galvanised steel, including fixing screws, 7.5 mm high, Pack of 20 rails	Useful length 145 mm for enclosure dimension 187.5 mm	145	**CL2**
	Useful length 207 mm for enclosure dimension 250 mm	207	**CL3**
	Useful length 332 mm for enclosure dimension 375 mm	332	**CL4**
Mounting rails 15 mm high, pack of 10 rails	Useful length 145 mm for enclosure dimension 187.5 mm	145	**CL2-15**
	Useful length 207 mm for enclosure dimension 250 mm	207	**CL3-15**
	Useful length 332 mm for enclosure dimension 375 mm	332	**CL4-15**
Spacers	To raise by 25 mm, pack of 25	by 25	**HS25-CI**
	To raise by 50 mm, pack of 25	by 50	**HS50-CI**

Description	Rated current	For use with	Item no.
Insulated individual terminals Connections on both sides for round conductors	32 A	-	**K10/1**
	63 A	-	**K25/1**
	100 A	-	**K50/1**
	160 A	-	**K95/1N/BR**
	250 A	-	**K150/1/BR**
	400 A	-	**K240/1/BR**

BL-CI

HG-CI

KD4-CI

K-CI

BS-2-CI

FT-CI

VS-CI

FL4-X

KS3-CI

DSCH-CI

Totally insulated enclosures CI range

CI accessories

Description	Enclosure width mm	Standard pack	Item no.
Fixing strap with screw			
For wall mounting of CI enclosures. Each kit contains four straps.	–	5	**BL-CI**
Thumb-grip			
For fitting to cover fasteners on CI enclosures. Set of four	–	20	**HG-CI**
Clip			
For enclosure assembly	–	25	**KD4-CI**
Wedge lock			
For enclosure assembly and flange fitting	–	100	**K-CI**
Assembly kits			
To connect enclosures to one another, wedge-lock fasteners included	187.5	10	**BS-2-CI**
	250 (500: use 2 off)	10	**BS-3-CI**
	375 (750: use 2 off)	10	**BS-4-CI**
Flange adapter			
For connecting enclosures with sides of different lengths	–	10	**FT-CI**
Gaskets			
To seal faces between enclosures	187.5	20	**D2-CI**
	250	20	**D3-CI**
	375	20	**D4-CI**
Connecting pieces			
Wedge lock K-CI required for enclosure assembly and flange fitting for attaching gland plates	–	100	**VS-CI**
	–	25	**VS-KS-CI**
	–	25	**VS-TR-CI**
Flange plates			
Captive, sponge-rubber gasket. Cable entry drill as required	375	10	**FL4-X**
	250	10	**FL3-X**
	187.5	10	**FL2-X**
	125	10	**FL1-X**
Gland plates (including cable grommets)			
For two cables 14 – 54 mm	250	1	**KS3-CI**
For three cables 14 – 68 mm	375	1	**KS4-CI**
Cover hinge			
For CI...E and CI...X individual enclosures. One set consists of 2 hinges.	–	5	**DSCH-CI**

ETA Mild steel enclosures

ETA ST wall mount enclosures

ETA metal enclosures are the ideal housing for all electrical control circuits & switchboard construction, ST enclosures feature:

- Enclosure & door RAL 7035 textured polyester powder coat
- Enclosure & door made from 1.5mm sheet steel
- Mounting plate made of 2.5mm galvanised sheet steel
- Removable gland plate
- Two part polyurethane continuous sealing gasket
- Reversible door including mounting rails
- Degree of protection IP66 to EN60529, EN50298
- Impact Resistance - IK10 to EN50298, EN 50102

ETA ST wall mount enclosures IP66 (Single door)

External dimensions (W x H x D mm)	Colour	No. of locks	Weight Kgs	Item no.
200 x 300 x 150	RAL7035	1	6	**ST2-315**
300 x 300 x 150	RAL7035	1	7.5	**ST3-315**
300 x 400 x 150	RAL7035	1	9.5	**ST3-415**
300 x 500 x 150	RAL7035	1	11.5	**ST3-515**
400 x 300 x 150	RAL7035	1	9.5	**ST4-315**
400 x 500 x 150	RAL7035	1	13	**ST4-515**
300 x 300 x 200	RAL7035	1	8	**ST3-320**
300 x 400 x 200	RAL7035	1	11	**ST3-420**
300 x 500 x 200	RAL7035	1	13	**ST3-520**
400 x 300 x 200	RAL7035	1	11	**ST4-320**
400 x 400 x 200	RAL7035	1	13.5	**ST4-420**
400 x 500 x 200	RAL7035	1	15.5	**ST4-520**
400 x 600 x 200	RAL7035	2	18	**ST4-620**
500 x 500 x 200	RAL7035	1	18.5	**ST5-520**
500 x 700 x 200	RAL7035	2	24.5	**ST5-720**
600 x 400 x 200	RAL7035	1	18	**ST6-420**
600 x 600 x 200	RAL7035	2	24.5	**ST6-620**
400 x 500 x 250	RAL7035	1	18	**ST4-525**
400 x 600 x 250	RAL7035	2	20.5	**ST4-625**
500 x 700 x 250	RAL7035	2	27	**ST5-725**
600 x 800 x 250	RAL7035	2	34	**ST6-825**
600 x 1000 x 250	RAL7035	2	43.5	**ST6-1025**
600 x 400 x 300	RAL7035	1	23	**ST6-430**
600 x 600 x 300	RAL7035	2	30	**ST6-630**
600 x 800 x 300	RAL7035	2	37	**ST6-830**
600 x 1000 x 300	RAL7035	2	47	**ST6-1030**
600 x 1200 x 300	RAL7035	1	54	**ST6-1230**
800 x 600 x 300	RAL7035	2	37	**ST8-630**
800 x 800 x 300	RAL7035	2	48	**ST8-830**
800 x 1000 x 300	RAL7035	2	58	**ST8-1030**
800 x 1200 x 300	RAL7035	1	67	**ST8-1230**
400 x 600 x 400	RAL7035	2	25	**ST4-640**
600 x 600 x 400	RAL7035	2	32	**ST6-640**
600 x 800 x 400	RAL7035	2	46	**ST6-840**
600 x 1000 x 400	RAL7035	2	56	**ST6-1040**
800 x 800 x 400	RAL7035	2	52	**ST8-840**
800 x 1000 x 400	RAL7035	2	62	**ST8-1040**

Please call Eaton for sizes not listed.

ETA ST wall boxes IP55 (2 Door)

External dimensions (W x H x D mm)	Colour	No. of locks	Weight Kgs	Item no.
800 x 600 x 300	RAL7035	1	37	**ST8-630**
1000 x 800 x 200	RAL7035	1	51	**ST10-820**
1000 x 800 x 300	RAL7035	1	58	**ST10-830**
1000 x 1000 x 300	RAL7035	1	69	**ST10-1030**
1000 x 1200 x 300	RAL7035	1	80	**ST10-1230**

Orange RAL2000 ETA ST wall mount enclosures IP66 (Single door)

External dimensions (W x H x D mm)	Colour	No. of locks	Weight Kgs	Item no.
400 x 400 x 200	RAL2000	1	13.5	**STO4-420**
400 x 600 x 200	RAL2000	2	18	**STO4-620**
600 x 600 x 200	RAL2000	2	24.5	**STO6-620**
500 x 700 x 250	RAL2000	2	27	**STO5-725**
600 x 800 x 250	RAL2000	2	34	**STO6-825**
600 x 1000 x 250	RAL2000	2	43.5	**STO6-1025**
600 x 1200 x 300	RAL2000	1	54	**STO6-1230**
800 x 1000 x 300	RAL2000	2	58	**STO8-1030**
800 x 1200 x 300	RAL2000	1	67	**STO8-1230**

Ancillary products
Enclosures

ETA Mild steel enclosures

ETA STP wall mount enclosures IP66 with plexiglass window

ETA metal enclosures are the ideal housing for all electrical control circuits & switch board construction, STP enclosures feature:

- Full Plexiglass viewing window
- Enclosure & door RAL 7035 textured polyester powder coat
- Enclosure & door made from 1.5mm sheet steel
- Mounting plate made of 2.5mm galvanised sheet steel
- Removable gland plate & gasket
- Two part polyurethane continuous sealing gasket
- Reversible door including mounting rails
- Degree of protection to IEC 529 IP66

ETA STP wall mount enclosures IP66 with plexiglass window

External dimensions (W x H x D mm)	Colour	No. of locks	Weight Kgs	Item no.
400 x 300 x 200	RAL7035	1	11	**STP4-320**
400 x 400 x 200	RAL7035	1	13.5	**STP4-420**
400 x 500 x 200	RAL7035	1	15.5	**STP4-520**
400 x 600 x 200	RAL7035	2	18	**STP4-620**
500 x 700 x 200	RAL7035	2	24.5	**STP5-720**
600 x 400 x 200	RAL7035	1	18	**STP6-420**
600 x 600 x 200	RAL7035	2	24.5	**STP6-620**
400 x 500 x 250	RAL7035	1	18	**STP4-525**
400 x 600 x 250	RAL7035	2	20.5	**STP4-625**
500 x 700 x 250	RAL7035	2	27	**STP5-725**
600 x 800 x 250	RAL7035	2	34	**STP6-825**
600 x 1000 x 250	RAL7035	2	43.5	**STP6-1025**
600 x 400 x 300	RAL7035	1	23	**STP6-430**
600 x 600 x 300	RAL7035	2	30	**STP6-630**
600 x 800 x 300	RAL7035	2	37	**STP6-830**
600 x 1000 x 300	RAL7035	2	47	**STP6-1030**
600 x 1200 x 300	RAL7035	1	54	**STP6-1230**
800 x 1000 x 300	RAL7035	2	58	**STP8-1030**
800 x 1200 x 300	RAL7035	1	67	**STP8-1230**

ETA ST enclosures accessories

ETA ST inner door kits

Description (W x H mm)	Colour	Item no.
Inner Door Kit, 400 x 400	RAL7035	**STP01-44**
Inner Door Kit, 400 x 500	RAL7035	**STP01-45**
Inner Door Kit, 400 x 600	RAL7035	**STP01-46**
Inner Door Kit, 500 x 700	RAL7035	**STP01-57**
Inner Door Kit, 600 x 400	RAL7035	**STP01-64**
Inner Door Kit, 600 x 600	RAL7035	**STP01-66**
Inner Door Kit, 600 x 800	RAL7035	**STP01-68**
Inner Door Kit, 600 x 1000	RAL7035	**STP01-610**
Inner Door Kit, 600 x 1200	RAL7035	**STP01-612**
Inner Door Kit, 800 x 1000	RAL7035	**STP01-810**
Inner Door Kit, 800 x 1200	RAL7035	**STP01-812**

ETA ST enclosures accessories

ETA ST Modular Chassis Kits Includes:

- Frame
- Zinc plated DIN Rail
- Internal IP rating: IP1X
- Front panel with modular slot complete with mounting accessories & captive screws

ETA ST modular chassis kits

Description	Colour	Item no.
Modular Chassis Kit, 1 x 16 Module	RAL7035	**MDST4-300**
Modular Chassis Kit, 2 x 16 Module	RAL7035	**MDST4-400**
Modular Chassis Kit, 3 x 16 Module	RAL7035	**MDST4-500**
Modular Chassis Kit, 3 x 16 Module*	RAL7035	**MDST4-600**
Modular Chassis Kit, 3 x 26 Module*	RAL7035	**MDST6-600**
Modular Chassis Kit, 4 x 26 Module*	RAL7035	**MDST6-800**
Modular Chassis Kit, 5 x 26 Module*	RAL7035	**MDST6-1000**
Modular Chassis Kit, 6 x 26 Module*	RAL7035	**MDST6-1200**

* These units have individual module frames, example MDST4-600 has 3 x 16 module lift off panels.

ETA ST canopies **B22**

Description (W x D mm)	Colour	Item no.
Mild Steel, Canopy 400 x 200	RAL7035	**TT1-04**
Mild Steel, Canopy 500 x 200	RAL7035	**TT1-05**
Mild Steel, Canopy 600 x 250	RAL7035	**TT1-06**
Mild Steel, Canopy 400 x 250	RAL7035	**TT2-04**
Mild Steel, Canopy 500 x 250	RAL7035	**TT2-05**
Mild Steel, Canopy 600 x 300	RAL7035	**TT2-06**
Mild Steel, Canopy 800 x 300	RAL7035	**TT2-08**

Inner door kits, Modular chassis kits & canopies are also suitable for relevant sized STP type ETA enclosures.

ETA ST horizontal door rails **B22**

Description	Colour	Item no.
Crosspiece for 300mm wide door	GAL	**WC001**
Crosspiece for 400mm wide door	GAL	**WC002**
Crosspiece for 500mm wide door	GAL	**WC003**
Crosspiece for 600mm wide door	GAL	**WC004**
Crosspiece for 800mm wide door	GAL	**WC005**

ETA enclosures include vertical door rails as standard.

ETA ST mounting plate adjustment kit

Description	Colour	Item no.
Plate adjustment for 200mm deep	GAL	**WA980**
Plate adjustment for 200mm deep	GAL	**WA981**
Plate adjustment for 200mm deep	GAL	**WA982**

Supply includes 2 pieces. 4 pieces required for enclosure 800mm high or less, 6 pieces required for enclosures greater than 800mm high.

ETA Mild steel enclosures

ETA ST enclosures accessories

ETA ST general accessories

Description	Item no.
Wall Mounting Bracket kit, 4 pieces	**SDWC-010**
ST Door Stop, holds door at 90 degrees to prevent accidental closing	**WA060***
ST Metal Box Hinge	**0CDST140051**
ST Metal Hinge Pin	**METALPIN**
Document Door Pocket A4 Sized, Thermoplastic	**WA050**
RAL7035, touch up paint	**XAFS7035**

*To hold the door open at 90 degrees & avoid accidental closing. Used on ST or STP boxes.

ETA ST gland plates

Description	Colour	Item no.
Gland Plate 78 x 158mm, suit 200mm wide	RAL7035	**WC016**
Gland Plate 78 x 258mm, suit 300mm wide	RAL7035	**WC018**
Gland Plate 128 x 358mm, suit 500mm wide	RAL7035	**WC020**
Gland Plate 128 x 558mm, suit 600mm wide	RAL7035	**WC022**

Includes one gland plate, sealing gasket, mounting accessories.

ETA ST locking systems

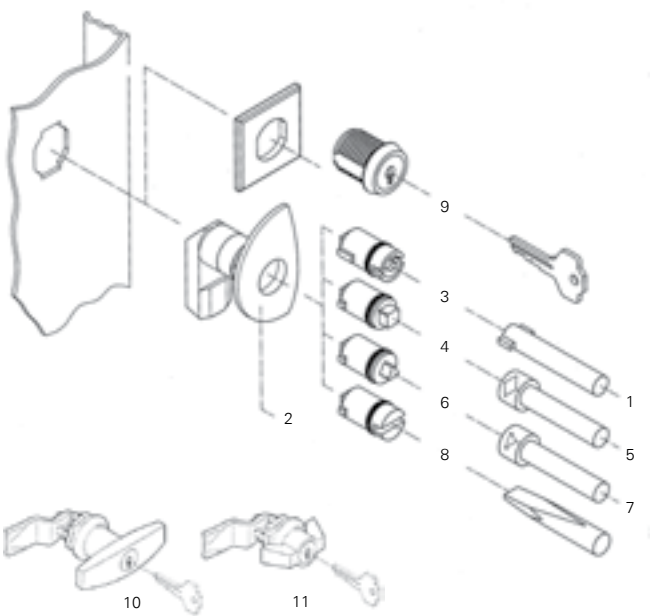
ID	Description	Item no.
1	Standard ETA Lock, Key Only	**WE096**
2+3	Lock & cam, with standard ETA Locking Insert	**WE250EAT**①
4	7mm Square Locking Insert	**WE265**
5	7mm Square Lock, Key Only	**WE268**
6	8mm Triangle Locking Insert	**WE275**
7	8mm Triangle Lock, Key Only	**WE278**
8	Screwdriver Locking Insert	**WE280**
9	Keylock insert with E333 key (includes cam & locking cover)	**WE235**
10	T Handle with Key Lock	**WE285**
11	Wing Handle with Key Lock	**WE288**
N/A	T Handle with Key Lock - For Double Door Enclosures plus 1200mm high ST, STO & STP enclosures	**WE230**
N/A	CL001 Lock, Complete with 2 Keys	**STCL001**
N/A	CL003 Lock, Complete with 2 Keys	STCL003
N/A	Lock Tongue to Suit CL Locks	**STCL00-LOCKTONGUE** ②
N/A	CL Nylon sealing Gasket	**STCL00-GASKET** ②

① These items are supplied as one combined item.
②One of each of these items is required when ordering items STCL001 + STCL003.

ETA ST mounting plates

Description (W x H mm)	Colour	Item no.
suit 200W x 300H	GAL	**WPAST23Z**
suit 300W x 300H	GAL	**WPAST33Z**
suit 400W x 400H	GAL	**WPAST44Z**
suit 400W x 500H	GAL	**WPAST45Z**
suit 400W x 600H	GAL	**WPAST46Z**
suit 500W x 500H	GAL	**WPAST55Z**
suit 600W x 800H	GAL	**WPAST68Z**
suit 600W x 1000H	GAL	**WPAST610Z**
suit 800W x 800H	GAL	**WPAST88Z**
suit 1000W x 1000H	GAL	**WPAST1010Z**

CL001 & CL003 Lock Kit



Ancillary products
Enclosures

Terminal boxes accessories

Mounting plates

Description (W x H mm)	Colour	Item no.
Mounting Plate, suit 150W x 150H	GAL	**SDPA11**
Mounting Plate, suit 200W x 150H	GAL	**SDPA21**
Mounting Plate, suit 200W x 200H	GAL	**SDPA22**
Mounting Plate, suit 300W x 150H	GAL	**SDPA31**
Mounting Plate, suit 300W x 200H	GAL	**SDPA32**
Mounting Plate, suit 300W x 300H	GAL	**SDPA33**
Mounting Plate, suit 400W x 200H	GAL	**SDPA42**
Mounting Plate, suit 400W x 300H	GAL	**SDPA43**
Mounting Plate, suit 400W x 400H	GAL	**SDPA44**
Mounting Plate, suit 500W x 200H	GAL	**SDPA52**
Mounting Plate, suit 500W x 300H	GAL	**SDPA53**
Mounting Plate, suit 600W x 200H	GAL	**SDPA62**
Mounting Plate, suit 600W x 300H	GAL	**SDPA63**
Mounting Plate, suit 600W x 400H	GAL	**SDPA64**
Mounting Plate, suit 800W x 200H	GAL	**SDPA82**
Mounting Plate, suit 800W x 400H	GAL	**SDPA84**

DIN Rails

Description	Colour	Item no.
DIN Rail, suit 150mm Wide, Pack of 10	GAL	**SDWA013**
DIN Rail, suit 200mm Wide, Pack of 10	GAL	**SDWA015**
DIN Rail, suit 300mm Wide, Pack of 10	GAL	**SDWA020**
DIN Rail, suit 400mm Wide, Pack of 10	GAL	**SDWA025**
DIN Rail, suit 500mm Wide, Pack of 10	GAL	**SDWA030**
DIN Rail, suit 600mm Wide, Pack of 10	GAL	**SDWA035**
DIN Rail, suit 800mm Wide, Pack of 10	GAL	**SDWA040**

SDV & SDP

Description	Colour	Item no.
Wall Mounting Bracket kit, 4 pieces	GAL	**SDWC-010**
Hinge kit for SDV type, 6 pieces	GAL	**SDWA-005**

ETA Mild steel terminal boxes

Sheet steel terminal boxes

Ideal for termination of marshalling cables. ETA SDV Terminal Boxes features

- Enclosure & door made from 1.2mm sheet steel in RAL 7035
- Lid fixed with captive screws, hinges can be fitted as an option
- Holes for fixing mounting plates/DIN rail included
- Two part polyurethane continuous sealing gasket
- IP66 rating

Ideal for termination of marshalling cables. ETA SDP Terminal boxes features:

- Enclosure & door made from 1.2mm sheet steel in RAL7035
- Hinged door with standard 3 lock included
- Holes to fix mounting plates or din rail included
- Two part polyurethane continuous sealing gasket
- IP55 Rating

ETA SDV terminal boxes IP66 (Lift off door)

External Dimensions (W x H x D mm)	Colour	Weight Kgs	Item no.
150 x 150 x 80	RAL7035	1.1	**SDV1-108**
200 x 200 x 80	RAL7035	1.7	**SDV2-208**
300 x 200 x 80	RAL7035	2.2	**SDV3-208**
400 x 200 x 80	RAL7035	2.8	**SDV4-208**
500 x 200 x 80	RAL7035	3.3	**SDV5-208**
600 x 200 x 80	RAL7035	3.9	**SDV6-208**
800 x 200 x 80	RAL7035	5	**SDV8-208**
150 x 150 x 120	RAL7035	1.6	**SDV1-112**
200 x 200 x 120	RAL7035	2.3	**SDV2-212**
300 x 150 x 120	RAL7035	2	**SDV3-112**
300 x 200 x 120	RAL7035	2.6	**SDV3-212**
300 x 300 x 120	RAL7035	3.5	**SDV3-312**
400 x 200 x 120	RAL7035	3.3	**SDV4-212**
400 x 300 x 120	RAL7035	4.3	**SDV4-312**
400 x 400 x 120	RAL7035	5.4	**SDV4-412**
500 x 200 x 120	RAL7035	3.8	**SDV5-212**
500 x 300 x 120	RAL7035	5.1	**SDV5-312**
600 x 200 x 120	RAL7035	4.5	**SDV6-212**
600 x 300 x 120	RAL7035	5.9	**SDV6-312**
600 x 400 x 120	RAL7035	7.4	**SDV6-412**
800 x 200 x 120	RAL7035	5.8	**SDV8-212**
800 x 400 x 120	RAL7035	9.7	**SDV8-412**

Terminal Boxes with gland plates (120mm depth boxes only) & boxes with transparent lids can be offered. Contact Eaton for details.

ETA SDP terminal boxes IP55 (Hinged door)

External Dimensions (W x H x D mm)	Colour	Weight Kgs	Item no.
200 x 200 x 80	RAL7035	1.8	**SDP2-208**
200 x 300 x 80	RAL7035	2.4	**SDP2-308**
200 x 400 x 80	RAL7035	3	**SDP2-408**
200 x 200 x 120	RAL7035	2.5	**SDP2-212**
200 x 300 x 120	RAL7035	2.8	**SDP2-312**
200 x 400 x 120	RAL7035	3.5	**SDP2-412**
200 x 500 x 120	RAL7035	4.1	**SDP2-512**
300 x 300 x 120	RAL7035	3.8	**SDP3-312**
300 x 400 x 120	RAL7035	4.5	**SDP3-412**

ETA CS Enclosures

- Enclosure & door RAL 7035 textured polyester powder coat
- Enclosure & door made from 1.5mm sheet steel
- Mounting plate, 2.5mm galvanised steel
- Degree of protection IP55 to EN62208
- CS enclosures can be wall mounted using SDWC - 010 mounting brackets as per ST Enclosure range
- CS Enclosures can also be floor mounted with plinths available in 100mm or 200mm heights
- Door mounting rails fitted as standard
- 3 point locking system
- Studs welded on the internal sides enable the fixing of both the vertical & horizontal profiles (WTPR-CS & fast fixing brackets WTPR-R)

ETA CS Enclosures

External Dimensions (W x H x D mm)	Colour	Door Type	Item no.
600 x 1200 x 400	RAL7035	Single	**CS6-1240**
600 x 1400 x 300	RAL7035	Single	**CS6-1430**
600 x 1400 x 400	RAL7035	Single	**CS6-1440**
800 x 1200 x 400	RAL7035	Single	**CS8-1240**
800 x 1400 x 300	RAL7035	Single	**CS8-1430**
800 x 1400 x 400	RAL7035	Single	**CS8-1440**
1000 x 1200 x 400	RAL7035	Double	**CS10-1240**
1000 x 1400 x 300	RAL7035	Double	**CS10-1430**
1000 x 1400 x 400	RAL7035	Double	**CS10-1440**
1200 x 1200 x 400	RAL7035	Double	**CS12-1240**
1200 x 1400 x 300	RAL7035	Double	**CS12-1430**
1200 x 1400 x 400	RAL7035	Double	**CS12-1440**

ETA CS Enclosure range - modular plinth

Description	Pack Size	Item no.
Universal Cover Pieces - 100mm (H), with mounting hardware	4 pieces	**ATZE-A100**
Front / Rear crosspiece pack - 600mm (W) enclosures	2 pieces	**ATZE-T0600**
Front / Rear crosspiece pack - 800mm (W) enclosures	2 pieces	**ATZE-T0800**
Front / Rear crosspiece pack - 1000mm (W) enclosures	2 pieces	**ATZE-T1000**
Front / Rear crosspiece pack - 1200mm (W) enclosures	2 pieces	**ATZE-T1200**
Side crosspiece pack - 300mm (D) Enclosures	2 pieces	**ATZE-T0300S**
Side crosspiece pack - 400mm (D) Enclosures	2 pieces	**ATZE-T0400A**

Modular plinth: available in 100mm and 200mm heights in RAL7025 textured finish.

ETA CS Enclosure range - accessories

Description	Pack Size	Item no.
Vertical rails to suit 1200mm (H) CS enclosures	4 pieces	**WTPR-050120CS**
Vertical rails to suit 1400mm (H) CS enclosures	4 pieces	**WTPR-050140CS**
Fast fixing horizontal rails to suit 300mm (D) CS enclosures	4 pieces	**WTPR-050022R**
Fast fixing horizontal rails to suit 400mm (D) CS enclosures	4 pieces	**WTPR-050032R**
180 Degree door opening hinge set	3 pieces	**WTCE-18008**
Eyebolts - M12 Zinc alloy, with hardware	2 pieces	**WTGS-003**
Wall mounting brackets	4 pieces	**SDWC-010**
Reusable mounting plate sliding rails - 300mm (D) enclosures	2 pieces	**CSPP-00300**
Reusable mounting plate sliding rails - 400mm (D) enclosures	2 pieces	**CSPP-00400**

Sliding rails: allow easy installation of the mounting plate,railes can be removed after installation and kept for futur use

ETA Thermal management products

ETA - Grids, fans & filters

The Grids are manufactured from thermoplastic material.

- Heat resistance (-35°C +80°C)
- IEC/DIN 53480 KA 3 sliding currents resistance
- Colour similar to RAL7035 textured finish/RAL7025
- Sealing gasket to guarantee IP 54
- The filtering panel is manufactured from mixed polyester-modacrylic fibres
- High filtering capacity
- Max working temperature 130°C
- Easily removed
- Good reutilization

Fans with filter - "click & fit" type

Air flow with Filter	Power Supply V-Hz	Cut out Dimensions (mm)	External Dimensions (mm)	Item no.
44 m3/H	230 / 50-60	127 x 127	163 x 163	**WT300**
97 m3/H	230 / 50-60	181 x 181	214 x 214	**WT305**
205 m3/H	230 / 50-60	181 x 181	214 x 214	**WT308**
295 m3/H	230 / 50-60	250 x 250	286 x 286	**WT310**
485 m3/H	230 / 50-60	250 x 250	286 x 286	**WT315**

All fans can be used as suction or blower type (except WT315).

Filter grids - Complete with filters

Cut out Dimensions (mm)	External Dimensions (mm)	Item no.
127 x 127	163 x 163	**WT330**
181 x 181	214 x 214	**WT335**
250 x 250	286 x 286	**WT340**

Spare filters

Description	Item no.
120mm x 120mm filter, to suit WT300, WI200 & WT330 - Pack 10 pieces	**WT333**
170mm x 170mm filter, to suit WT305/308, WI205 & WT335 - Pack 10 pieces	**WT338**
235mm x 235mm filter, to suit WT310/315, WI210 & WT340 - Pack 10 pieces	**WT343**

ETA Roof mounting fans

Steel sheet front cover powder painted RAL 7035 textured finish. The units can be delivered with IP54 protection degree.

- Ball bearing radial fans, with internal amperometric protection (only for roof mounting fans)
- High dynamic pressure
- Operating temperature range -20/+55°C
- Power supply chord 3m long according to applicable CE regulation
- IP44 as standard on IP54 on request

ETA Roof Mounting Fans

Air Flow with Filter	Power Supply V-ph-Hz	Cut out Dimensions (L x W mm)	External Dimensions (L x W x H mm)	Item no.
575 m3/H	230-1-50/60	350x270	460x380x108	**WT200CW**
860 m3/H	230-1-50/60	350x270	460x380x108	**WT205CW**
1450 m3/H	230-1-50/60	405x275	540x400x160	**WT210CW**
2365 m3/H	230-1-50/60	420x400	600x550x300	**WT215CW**

Roof Mounting - Structure Only

Description	Cut out Dimensions (L x W mm)	External Dimensions (L x W x H mm)	Item no.
Roof Mount Structure only	350x270	460 x 380 x 108	**WT220CW**
Roof Mount Structure only	405x275	540 x 400 x 160	**WT225CW**
Roof Mount Structure only	420x400	600 x 550 x 300	**WT230CW**

ETA Thermal management products

Heating & anti-condensation units

Heating Units

Power Watt	V. AC/DC	Height (mm)	IP Rating	Item no.
10	110-250	50	IP54	**WI271**
20	110-250	60	IP54	**WI273**
30	110-250	70	IP54	**WI274**
15	110-250	65	IP20	**WI250**
30	110-250	65	IP20	**WI255**
45	110-250	65	IP20	**WI260**
75	110-250	140	IP20	**WI265**
150	110-250	220	IP20	**WI270**
250	230/50-60	182	IP20	**WI277***
400	230/50-60	222	IP20	**WI279***

*35 m3/h, 45 m3/h (50 Hz) &/or 54 m3/h (60 Hz). Surface temperature of about 75°C.

Heater with fan & thermostat

WIRV-005
PTC (semiconductor).
AC 230V 50-60 Hz/600W.
108 m3/h.
Time capacity: 50,000 hours to 25°C
0-60 adjustable, contacts NC.

Power Watt	V. AC	Height (mm)	Fan Capacity	IP Rating	Item no.
600	230	-	108 m3/h	IP20	**WIRV005**
350	230	75	35 m3/h	IP20	**WIRV010**
550	230	85	35 m3/h	IP20	**WIRV020**

WIRV 010 & 020
PTC (semiconductor).
0-60 adjustable

Temperature regulators

WI280

Adjustment range: +10 +60°C
Contact capacity:

- Close 5A/250 V AC
- Open 10A/250 V AC

2,5 mm2 - 4 poles
35 mm CLIP fixing on DIN rails
UL 94 VO thermoplastic material
Dimensions - 67 x 50 x 37 mm
IP 20.

WI290 : electronic temperature/humidity controller

Temperature regulation: 0° ÷ 60°C
Intervention Sensitivity: ±2°C
Respective Humidity Regulation : 50% ÷ 90%
230 V/50-60 Hz
Exchange contact: AC 8A (4) / 250 V,
DC 0,5A / 100 V, DC 8A / 12 V, DC 5A / 35 V
CLIP fixing on 35 mm DIN rail
Dimensions - 50 x 67 x 43 mm
UL 94 VO thermoplastic material
IP 20.

WI297 - Air flow monitor

IP 20.

Small thermostat with NO or NC contact

Small mechanical thermostat (NC) for temperature regulation in, for example, cooling equipment, filter fans & heat exchangers or for switching signal devices when temperature limit been exceeded. To be used to control air temperature inside cabinets.

- Heating
- Ventilation
- Signal transmissions

Adjustment range : 0° ÷ 60°C
Bimetallic
Intervention Sensitivity : ±2°C
250V AC
2,5 mm2 - 2 poles
35 mm CLIP fixing on DIN rails
60 x 33 x 35 mm
UL 94 VO thermoplastic material
IP 20.

Thermostat	Item no.
With NC contact	**WI282**
With NO contact	**WI284**

WI286 - Universal thermostat

Two thermostats in one casing:
Thermostat (contact breaker, normally closed) for regulation heaters
Thermostat (contact breaker, normally open) for regulation filter fans & heat exchangers or switching signal devices when temperature limit has been exceeded (IP 20).

General purpose inductive proximity sensors

Rhomberg proximity switches - inductive

- Inductive (metal) sensing
- Black cap, cables & LED colour coded for type
- Moulded 2m colour coded cable with fishtail - rated to IP67
- Normally open (NO) has red LED, Normally closed (NC) has green LED
- Interchangeable with other makes

Rhomberg inductive prox 2 wire AC

- 20-250Vac, 50/60Hz
- Series & parallel connection compatible
- 400mA max. load current

Description	Item no.
M12 Dia. 2mm sensing distance shielded AC 2 Wire	**RI11202F****
M12 Dia. 4mm sensing distance unshielded AC 2 Wire	**RI11204S****
M18 Dia. 5mm sensing distance shielded AC 2 Wire	**RI11805F****
M18 Dia. 8mm sensing distance unshielded AC 2 Wire	**RI11808S****
M30 Dia. 10mm sensing distance shielded AC 2 Wire	**RI13010F****
M30 Dia. 15mm sensing distance unshielded AC 2 Wire	**RI13015S****
M40 Dia. 20mm sensing distance shielded AC 2 Wire	**RI14020F****
M40 Dia. 25mm sensing distance unshielded AC 2 Wire	**RI14025S****

Add "MTP" for sensors with plug instead of 2m standard cable & request pricing.

** Specify NO or NC.

Rhomberg inductive prox 3 or 4 wire PNP & NPN DC

- PNP - 3 or 4 wire yellow cable, NPN - 3 or 4 wire green cable
- 10-60Vdc
- Reverse polarity & short circuit protected
- 400mA max load current

Description	Item no.
M12 Dia.. 2mm sensing distance shielded 3 Wire	**RI*1202F****
M12 Dia.. 4mm sensing distance unshielded 3 Wire	**RI*1204S****
M18 Dia. 5mmsensing distance shielded 3 Wire	**RI*1805F****
M18 Dia. 5mm sensing distance shielded 4 Wire	**RI*1805FNX**
M18 Dia. 8mm sensing distance unshielded 3 Wire	**RI*1808S****
M18 Dia. 8mm sensing distance unshielded 4 Wire	**RI*1808SNX**
M30 Dia. 10mm sensing distance shielded 3 Wire	**RI*3010F****
M30 Dia. 10mm sensing distance shielded 4 Wire	**RI*3010FNX**
M30 Dia. 15mm sensing distance unshielded 3 Wire	**RI*3015S****
M30 Dia. 15mm sensing distance unshielded 4 Wire	**RI*3015SNX**
M40 Dia. 20mm sensing distance shielded3 Wire	**RI*4020F****
M40 Dia. 20mm sensing distance shielded 4 Wire	**RI*4020FNX**
M40 Dia. 25mm sensing distance unshielded 3 Wire	**RI*4025S****
M40 Dia. 25mm sensing distance unshielded 4 Wire	**RI*4025SNX**

Add "MTP" for sensors with plug instead of 2m standard cable & request pricing.

* Specify 4 for PNP or 5 for NPN

** Specify NO or NC

NX = 4 wire NO & NC

General purpose inductive proximity sensors

Rhomberg inductive prox NAMUR 2 wire

- 2 Wire (Blue Cable)
- Designed to DIN 19234
- Interfaces with Rhomberg SC320 or SC300 relay

Description	Item no.
M12 Dia. 2mm sensing distance shielded	**RI01202FNC**
M12 Dia. 4mm sensing distance unshielded	**RI01204SNC**
M18 Dia. 5mm sensing distance shielded	**RI01805FNC**
M18 Dia. 8mm sensing distance unshielded	**RI01808SNC**
M30 Dia. 10mm sensing distance shielded	**RI03010FNC**
M30 Dia. 15mm sensing distance unshielded	**RI03015SNC**
M40 Dia. 20mm sensing distance shielded	**RI04020FNC**
M40 Dia. 25mm sensing distance unshielded	**RI04025SNC**
Switching amplifier/relay for NAMUR sensors plug in	**SC300/*-SP**
Control relay for rhomberg photo electric sensors plug in	**SC410/*-SP**
11 Pin DIN rail base	**S3B**

Add "-MTP" for sensors with plug instead of cable & request pricing.

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac.

General purpose capacitive proximity sensors

Rhomberg proximity switches - capacitive

- Capacitive (most materials) densing
- Adjustable densitivity
- White cap, cables & LED colour coded for type
- Moulded 2m colour coded cable with fishtail - rated to IP67
- Normally open (NO) has red LED, normally closed (Nc) has green LED
- Interchangeable with other makes

Rhomberg capacitive prox 2 wire AC

- 20-250Vac, 50/60Hz
- Series & parallel connection compatible
- 400mA max load current

Description	Item no.
M18 Dia. 5mm sensing distance shielded AC 2 wire	**RC11805F****
M18 Dia. 10mm sensing distance unshielded AC 2 wire	**RC11810S****
M30 Dia. 10mm sensing distance shielded AC 2 wire	**RC13010F****
M30 Dia. 20mm sensing distance unshielded AC 2 wire	**RC13020S****

Add "MTP" for sensors with plug instead of 2m standard cable & request pricing.

** Specify NO or NC.

General purpose capacitive proximity sensors

Rhomberg capacitive prox 3 wire PNP & NPN DC

- PNP - 3 wire yellow cable, NPN - 3 Wire dreen cable
- 10-60Vdc
- reverse polarity & short circuit protected
- 400mA max load current

Description	Item no.
M18 Dia. 5mm sensing distance shielded	**RC*1805F****
M18 Dia. 10mm sensing distance unshielded	**RC*1810S****
M30 Dia. 10mm sensing distance shielded	**RC*3010F****
M30 Dia. 20mm sensing distance unshielded	**RC*3020S****

Add "MTP" for sensors with plug instead of 2m standard cable & request pricing.
* Specify 4 for PNP or 5 for NPN.
** Specify NO or NC.

Rhomberg capacitive prox NAMUR 2 wire

- 2 Wire (blue cable)
- Designed to DIN 19234
- Interfaces with SC320 or SC300 relay

Description	Item no.
M30 Dia. 10mm sensing distance shielded	**RC03010FNC**
M30 Dia. 20mm sensing distance unshielded	**RC03020SNC**
Switching Amplifier/Relay For NAMUR sensors plug in	**SC300/*-SP**
Control relay for rhomberg photo electric sensors plug in	**SC410/*-SP**
11 Pin DIN rail base	**S3B**

Add "-MTP" for sensors with plug instead of 2m standard cable & request pricing.
* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac.

Rhomberg capacitive prox plastic body 1.5" BSP

Description	Item no.
1.5" BSP20mm sensing distance NAMUR Type	**RC04020SNCPBT**
1.5" BSP20mm sensing distance DC Type NO	**RC44020SNOPBT**
1.5" BSP20mm sensing distance DC Type NC	**RC44020SNCPBT**
1.5" BSP20mm sensing distance DC Type NO	**RC54020SNOPBT**
1.5" BSP20mm sensing distance DC Type NC	**RC54020SNCPBT**

Monitoring relays

Rhomberg 3-phase sequence/failure/asymmetry relays

- Protects against phase imbalance or asymmetry, phase loss or phase reversal
- Sensitivity (Nps) adjustment
- Insensitive to regenerated EMF
- Loss of neutral detection in SP431

Description	Item no.
Ph Fail, Ph Seq, Ph Asy detection with 1 C/O & LEDs	**AP430/*S**
Ph Fail, Ph Seq, Ph Asy detection with 2 C/O & LEDs	**AP430/*D**
Ph Fail, Ph Seq, Ph Asy detection Plug In 1 C/O & LEDs	**SP430/*-SP**
Ph Fail, Ph Seq, Ph Asy detection Plug In 2 C/O & LEDs	**SP430/*-DP**
Ph Fail, Ph Seq, Ph Asy loss of neutral detection plug in	**SP431/*-SP**
Ph Fail, Ph Seq detection plug in with LEDs	**SP433/*-SP**
11 Pin DIN rail base	**S3B**

* Specify voltage: 110, 115, 220, 380, 400, 415 & 525Vac.

Rhomberg current relays/monitors (AC & DC) single phase

- 11 Pin plug in or DIN rail mount relay (with plug in terminals)
- 250Vac/10A relay
- Single pole & 2 pole configuration
- Slimline & Slimline-D series

Description	Item no.
Current monitor 5 Amp AC/DC selectable with time delay plug in	**SP103/*-SP**
Current monitor for DC shunt selectable with time delay plug in	**SP104/*-SP**
Current window comparator AC adjustable with time delay plug in	**SP123/*-SP**
single phase reverse power monitor for ac current	**SP510/**-SP**
11 Pin DIN rail base	**S3B**

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac.
** Specify voltage: 24, 110, 240, 415Vac.

Rhomberg voltage monitors (AC & DC) & frequency relays

- 11 Pin plug in or DIN rail mount relay (with plug in terminals)
- 250Vac/10A relay
- Slimline & Slimline-D series

Description	Item no.
Voltage Comparator adj delay DPDT 415VAC	**AP231/400AD**
Overvoltage & undervoltage monitoring relay, 24VDC	**AP224/24VDCS**
Overvoltage & undervoltage monitoring relay, 240VAC	**AP224/240VACS**
Voltage Monitor 1-Ph Selectable with Time Delay Plug In	**SP201/*-SP**
Voltage Window Comparator 1-Ph selectable with time delay plug in	**SP221/*-SP**
Voltage Window Comparator 3-Ph selectable with time delay plug in	**SP231/**-SP**
Voltage Window Comparator 3-Ph + N over & under	**SP232/**-SP**
Frequency Monitor Over & Under 50Hz	**SP320/**-SP**
11 Pin DIN rail base	**S3B**

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac
** Specify voltage: 24, 110, 240, 415Vac.

Monitoring relays

Rhomberg bases for monitoring relays

- Shrouded terminals

Description	Item no.
11 Pin DIN rail socket / base	**S3B**

Rhomberg motor/pump protection relays

- Borehole pump protection
- Auto-calibrating
- Overload (blocking/closed valve) protection
- Underload (running dry) protection with auto restart timer
- Max 4kw without external CT
- Over & under voltage protection
- Phase sequence/failure monitoring
- Liquid level control

Description	Item no.
Motor/pump protection relay 240Vac single phase	**MP820/240AS**
Motor/pump protection relay 400-415Vac three phase	**MP830/415AS**

Control relays

- Switching amplifiers, tacho relays, thermistor relays, flip flop relays
- Power supply modules

Description	Item no.
Switching amplifier/relay for NAMUR sensors plug in	**SC300/*-SP**
Switching amplifier/relay for three wire DC sensors plug in	**SC314/*-SP**
Tacho relay for NAMUR Sensors Pulse In 0-1mA re-transmit plug in	**SC320/*-SP**
Control relay for Rhomberg photo electric sensors plug in	**SC410/*-SP**
Temperature control relay for PT-100/Rtd sensors plug in	**SC501/*-SP**
Thermistor motor protection relay auto reset plug in	**SC510/*-SP**
Thermistor motor protection relay auto reset plug in	**SC510/*-DP**
Thermistor motor protection relay test & reset buttons plug in	**SC511/*-SP**
Flip flop relay no memory contact input plug in	**SC610/*-SP**
Flip flop relay with memory contact input or sensor plug in	**SC611/*-SP**
Multi function preselect counter plug in	**SC700/*-SP**
Preset counter panel mount 48x48	**CC701/*DSP**
Power Supply 250Vac / 24Vac 150mA unregulated plug in	**SC900/240/24A**
Power Supply 250Vac / 24Vdc 120mA unregulated plug in	**SC900/240/24D**
Power Supply 250Vac / 24Vdc 100mA regulated plug in	**SC900/240/24R**
Power Supply 240Vac / 12Vdc 150mA regulated plug in	**SC900/240/12R**
11 Pin DIN rail base	**S3B**

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac.

Timers

Rhomberg multi-function DIN rail & plug in

- Delayed-on, interval, recycling functions 22.5Mm size
- 0.2 Sec. To 100 hours
- DPDT Relay (5A per contact)

Description	Item no.
0.2 Sec - 100 Hrs 2 Timed Contacts DIN Rail	**AT100/**D**
0.2 Sec - 120 Sec 2 Timed Contacts 11 Pin	**ST100/**DP**
22 Sec - 240 Min 2 Timed Contacts 11 Pin	**ST101/**DP**
0.2 Sec - 100 Hrs 1 Timed Contact DIN Rail	**AT110/*S**
0.2 Sec - 120 Sec 2 Timed Contacts 11 Pin (Hold or Pulse Reset NPN)	**ST110/**DP**
22 Sec - 240 Min 2 Timed Contacts 11 Pin (Hold or Pulse Reset NPN)	**ST111/**DP**
11 Pin DIN Rail Base (Accepts Retainer Clip with Plug in Timers)	**S3B**

* Specify voltage: 12, 24Vdc, 24, 110, 240, 415Vac.
** Specify voltage: 30Vdc, 250, 415Vac.

Rhomberg asymmetrical recycling din rail & plug in

- Asymmetrical recycling - on or off cycle first
- DPDT Relay (5A per contact)
- DIN Rail & plug in 22.5mm size

Description	Item no.
0.2 Sec - 240 Min 2 Timed Contacts DIN Rail	**AT200/**D**
T1 = 0 - 120s, T2 = 0 - 120s 2 Timed Contacts 11 Pin	**ST200/**DP**
T1 = 0 - 120s, T2 = 22s - 240m 2 Timed Contacts 11 Pin	**ST201/**DP**
T1 = 22s - 240m, T2 = 22s - 240m 2 Timed Contacts 11 Pin	**ST202/**DP**
T1 = 22s - 240m, T2 = 0 - 120s 2 Timed Contacts 11 Pin	**ST203/**DP**
Multi Function Type 0.2 Sec - 120 Sec 1 Timed Contact 11 Pin	**ST210/*SP**
11 Pin DIN Rail Base (Accepts Retainer Clip with Plug in Timers)	**S3B**

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac
** Specify voltage: 30Vdc & 250, 415Vac

Rhomberg special function timers

- No power delayed off functions - 'true off delay'
- Multi start attempt timer for repeated starting attempts of standby generator sets with start failure alarm output
- Slim housing (22.5Mm)

Description	Item no.
0.2 Sec - 120 Sec No Power Delay OFF Timer 1 Timed Contact 11 Pin	**ST300/*SP**
22 Sec - 240 Min No Power Delay OFF Timer 1 Timed Contact 11 Pin	**ST301/*SP**
Multi Start Attempt Timer 1 C/O	**AT500/*S**
11 Pin DIN Rail Base (Accepts Retainer Clip with Timer)	**S3B**

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac.

Rhomberg star delta timers

- Star time adjustable up to 60 sec. (30 Sec. Max adjustment available on request)
- Pause time 75msec (50msec available on request)
- Relay rests in "centre-off" position during pause & power off state
- 5A Relay output

Description	Item no.
Star Time Adjustable Pause Time 75msec Fixed 1 C/O DIN Rail	**AT130/*AS**
Star Time Adjustable Pause Time 75msec Fixed 1 C/O Plug in	**ST130/*-SP**
11 Pin DIN Rail Base (Accepts Retainer Clip with St310)	**S3B**

* Specify voltage: 110, 240, 415Vac

Liquid level controllers

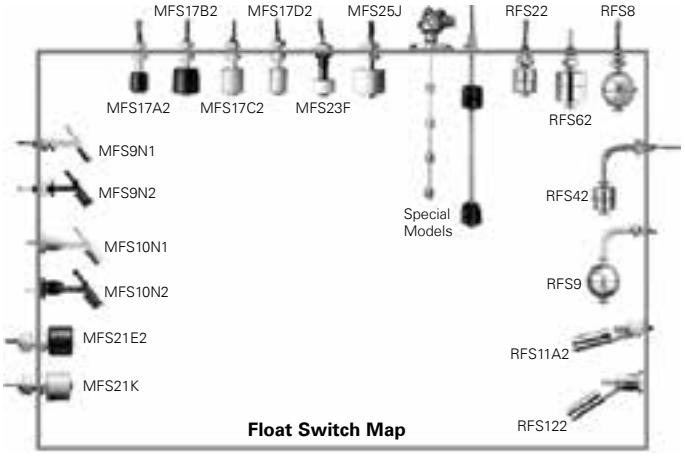
- Level control of conductive liquids - relay & probes
- Level control of non-conductive liquids or granular materials
- Relay for use with capacitive proximity switches

Description	Item no.
Level relay for resistive sensors single point control plug in	**SC100/***ACS**
Level relay single pt high / low C/W drain function 1 C/O	**AC130/***S**
Level relay single pt high / low C/W drain function 2 C/O	**AC130/***D**
Level relay single pt high / low C/W drain function 1 C/O plug in	**SC130/***S**
Level relay single pt high / low C/W drain function 2 C/O plug in	**SC130/***D**
Level relay non conductive type single pt high / low 1 C/O plug in	**SC230/*SP**
11 Pin DIN Rail Base	**S3B**
Accessories	
Probe holder with screw cap incl 3 X 1 MTR coated SS316 rods	**CP3C**
Probe holder with screw cap incl 2 X 1 MTR coated SS316 rods	**CP2C**
Probe holder with screw cap incl 1 X 1 MTR coated SS316 rods	**CP1C**
Extension rods 1 MTR male / female	**EP1/CEXT**

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac.
*** Specify voltage: 24, 110, 240, 415Vac.

Riko float switches

- Stainless & plastic type floats
- Horizontal & vertical types
- Multiple level switches
- Suitable For 240Vac



Float Switch Map

Description	Item no.
1/2" NPT polypropylene horizontal float switch, 90mm x 15mm Dia. 0.5 Amp	**MFS10N1**
1/2" NPT nylon-6 horizontal float switch, 90mm long x 15mm Dia. 0.5 Amp	**MFS10N2**
PA/rubber upright float switch, 44mm long x 20mm Dia. 0.5 Amp	**MFS17A2**
PA/rubber upright float switch, 44mm long x 20mm Dia. 0.5 Amp, PP clip	**MFS17A2PPC**
PA/rubber upright float switch, 44mm long x 26.5mm Dia. 0.5 Amp	**MFS17B2**
Polypropylene upright float switch, 44mm long x 25mm Dia. 0.5 Amp	**MFS17C2**
Polypropylene upright float switch, 44mm long x 18mm Dia. 0.5 Amp	**MFS17D2**
1/4" PF PA/rubber horizontal float switch, 38mm x 31mm Dia. 0.5 Amp	**MFS21E2**
Polypropylene horizontal float switch, 73mm x 15mm Dia. 0.5 Amp	**MFS9N1**
Nylon-6 horizontal float switch, 73mm long x 15mm Dia. 0.5 Amp	**MFS9N2**
S/S Horizontal float switch, 73mm long x 28mm Dia. 0.5 Amp	**RFS11A2**
1/2" NPT S/S horizontal float switch, 94mm Long x 17mm Dia. 0.5 Amp	**RFS122**
S/S upright float switch, 42mm long x 28mm Dia. 0.5 Amp	**RFS22**
S/S elbow float switch, 83.5mm long x 28mm Dia. 0.5 Amp	**RFS42**
S/S upright float switch, 75 long x 50mm Dia. 0.5 Amp	**RFS62**
S/S upright float switch, 59mm long x 43mm Dia. 0.5 Amp	**RFS8**
S/S elbow float switch, 99mm long x 28mm Dia. 0.5 Amp	**RFS9**
316S/S float only, RFS22	**FLOAT316SS**
316S/S float only, RFS62	**FLOAT50MM316**

Rugged, commercial surge filter

PSFI key features:

- Surge suppression rating of 25kA (L-N)
- 2 Mode, 3 Element Series Filter
- 3 Mode, 2 Stage Surge Diverter
- Rugged steel IP24 enclosure
- Protection Fail Indicators
- 12 Month Warranty

The PSFI is a 1-Phase 25kA portable surge filter, designed to provide secondary protection against power surges caused by external sources such as lightning strikes & substation switching, as well as providing a measure of protection from surge events generated on the secondary side of the filter.

Model/Description	In (x20 hits)	Imax	Joules	Dimensions (mm) WxDxH, kg	Item no.
1 Ph, 10A IEC input/output surge filter	10kA	25kA	1555J	90 x 205 x 55, 1kg	**PSF10I**
1 Ph, 16A IEC input/output surge filter	10kA	25kA	1555J	90 x 205 x 55, 1kg	**PSF16I**

Class I - diverters

SPDI surge protection, spark gap surge arresters

Features:

- 1 mode direct strike protection
- 25kA, 50kA & 100kA surge suppression ratings
- DIN43880 case, 35 mm wide

Applications

- Direct strike Class I high risk point of entry

Designed to protect single phase power systems against damage from surges & spikes caused by lightning & other electrical sources. The unit is intended for high risk point of entry protection & is connected in parallel with the system via HRC fuses.

Technical specifications

Description	SPDSG50-300	SPDSG50-255NPE
Nominal voltage Un	230vac	230vac
Max continuous voltage Uc AC/DC	300vac	255vac
Nominal discharge current (10/350us, kA) per line. Iimp	50	50
Max discharge current (8/20us, kA) Per line. Imax.	140	140
Voltage protection level (10/350us) Iimp	<2.5kV	<2.5kV
Follow current	None	None
Leakage current	None	None
Dimensions	35mm (W) x 100mm (H) x 77mm (D)	35mm (W) x 100mm (H) x 77mm (D)
Applicable standards	IEC61643-1:2001	IEC61643-1:2001

Description	Class	Item no.
2 Pole, 255v, 50kA, 1 mode surge diverter	I	**SPDSG50-255NPE**
2 Pole, 300v, 50kA, 1 mode surge diverter	I	**SPDSG50-300**

Class II - diverters

SPDI Series diverters, DIN rail mounted surge diverters

SPDI key features:

- 1 or 2 Mode, 1 Stage Surge Diverter
- Surge rating from 40kA - 120kA
- Din 43880 profile IP20 enclosure
- Versatile mounting clips for DIN or Surface Mount
- 12 Month Warranty

The SPDI range of DIN surge diverters provide the ultimate solution for surge protection in single & multi-phase systems. The units are housed in a genuine DIN43880 profile enclosure, enabling them to be easily included in new designs or retrofitted into existing switchboards. SPDi surge diverters can be installed as point-of-entry or sub-board protection & are connected in parallel with the power circuit via separate protection HRC fuses. The SPDi utilises state-of-the-art MOV technology featuring embedded thermal fusing.

Class II - diverters

DIN rail mounted surge diverters

Specifications	SPDT60-255	SPDV60-300	SPD150I	SPD360NI	SPD360GI
Input voltage	220-250VAC, 1 Phase	220-250VAC, 1 Phase	220-277VAC, 1 Phase	220-277VAC (380-480V), 3 Phase	220-300VAC (380-520V), 3 Phase
Maximum continuous operating voltage (MCOV)	255VAC	300VAC	320VAC	320VAC	350VAC
Temporary over-voltage (TOV)	300VAC	320VAC, 15 mins	350VAC, 15 mins	350VAC, 15 mins	420VAC, 15 mins
Initial clamp voltage	N/A	470V	560V	560V	680V
Maximum rated surge current – Ismax 8/20us	60kA	60kA	120kA	60kA / Phase	60kA / Phase
Nominal surge current – In 8/20us	30kA	30kA	60kA	30kA / Phase	30kA / Phase
Residual voltage (Vpl) @ 3kA, 8/20us	N/A	1.0kV	1.0kV	⩽ 1.2kV L-N, 900V N-E	⩽ 1.2kV L-E, ⩽ 1.4kV N-E
Residual voltage (Vpl) @ Ismax, 8/20us	1.8kV	1.4kV	1.65kV	⩽ 2.1kV L-N, 1.46kV N-E	⩽ 2.1kV L-E, ⩽ 2.45kV N-E
Energy absorption (2ms)	N/A	2,130 Joules	2,130 Joules	2,130 Joules	3,640 Joules
Modes of Protection	N-E	L-N	L-N or L-E	L-N & N-E	L-E & N-E
Recommended maximum over-current protection	NIL	gG/gL HRC fuse, 160A maximum	gG/gL HRC fuses, 1 per phase, 125A maximum		
Terminations	Power: 25mm², Alarm: 1.5mm²	Power: 25mm², Alarm: 1.5mm²	Power: 16mm², Alarm: 1.5mm²		
Alarms / indicators	Flag indicator, dry contact – 250VA/32VDC, 2A	Flag indicator, dry contact – 250VA/32VDC, 2A	5 indicators, dry contact alarm relay – 250VAC/32VDC, 5A		
Design standards	IEC61643-1, IEC610006, ANSI/IEEE C62.41, AS1768-2003, AS3100, CE mark				

SPDI - Shunt diverters - single & three phase - DIN rail mount (hardwired)

Model/description	Class	Dimensions (mm) W x D x H, kg	Item no.
1P 60kA 1 Mode DIN surge diverter N-E	II	18 x 65 x 97, 0.1kg	**SPDT60-255**
1P 60kA 1 Mode DIN surge diverter L-E, L-N	II	18 x 65 x 97, 0.1kg	**SPDV60-300**
1 Phase 120kA 1 Mode DIN surge diverter	II	70 x 68 x 90, 0.2kg	**SPD150I**
3 Phase 60kA 2 Mode DIN surge diverter (M.E.N)	II	70 x 68 x 90, 0.2kg	**SPD360NI**
3 Phase 60kA 2 Mode DIN surge diverter (non-M.E.N)	II	70 x 68 x 90, 0.2kg	**SPD360GI**

Note: For installations remote from the M.E.N link using SPDV60-300 or SPD150i, use with an SPD50NGi for N-E protection. The SPDV60-300 is also available as a Gas-Arrestor (SPDT60-255).

Class II, Quickmov™ surge diverter

Quickmov™ key features:

- 1 Mode, 1 Stage Surge Diverter
- Mounts directly in any Quicklag™ panelboard
- Surge suppression MOV rating 30kA Inom, 60kA Imax
- Ideal for main board or sub-board protection
- Includes built-in HRC fuse for safe disconnect
- Compatible with most Quicklag™ accessories

Eaton's Quickmov™ is a fully integrated surge diverter, designed to provide point-of-entry or sub-board protection against surge transients & voltage spikes. The unit is intended for installation at the main switchboard or to be used in conjunction with an SPD50NGi Neutral-Earth Arrestor for Non-M.E.N locations. One Quickmov™ per phase is required for multi-phase installations.

Model/description	Class	Dimensions (mm) W x D x H, kg	Item no.
1P 60kA Quickmov surge diverter	II	25 x 71 x 93, 0.3kg	**SPDQM1**

Note: For installations remote from the M.E.N link, use with an SPD50NGi for N-E protection. For compatible accessories refer to Quicklag accessories

Class II, Neutral – Earth surge protector

SPDNGI Key features:

- Compact neutral-earth protection solution
- Surge current rating from 25kA Inom, 50kA Imax
- Compatible with most switchboards
- Quick and simple installation

The SPDNGI is designed to protect against Neutral to Earth surge transients and can also be applied as an Equipotential Coupler in applications where separate earth systems are used.

Commercial and Industrial Environments at point of building entry protection, three phase, c/w Common & Normal Mode Protection

Model/description	Class	Dimensions (mm) W x D x H, kg	Item no.
50kA Equipotential Coupler	II	60 x 15 x 15 (not incl cables), 0.15kg	**SPD50NGI**

Single & three phase 50-80A surge filter

ESF key features:

- 1 Mode, 2 element series filter
- 3 Mode, 2 stage surge diverter
- Available in 50, 63 & 80 Amp ratings
- Surge suppression rating of 100kA
- Protection fail alarm relay
- IP42 Steel Enclosure

The ESF surge filter is designed to provide point-of-entry protection against power surges caused by external sources as well as providing a measure of protection from surge events generated on the secondary side of the filter. The ESF is a 3-stage protection unit utilising primary & secondary MOV protection in conjunction with a Low-Q LC filter.

ESF - Single phase (hardwired in/out) - series filter c/w enclosure & remote alarm

For use in industrial and commercial applications where there are severe power problems such as electrical noise

Model/description	Amps	In (x20 hits)	Imax	Class	Dimensions (mm) W x D x H, kg	Item no.
1 Ph, 50A, 100kA, Surge Filter	50A	50kA	100kA	II & III	240 x 220 x 520, 6kg	**ESF501-TN-E**
1 Ph, 63A, 100kA, Surge Filter	63A	50kA	100kA	II & III	240 x 220 x 520, 6kg	**ESF631-TN-E**
1 Ph, 80A, 100kA, Surge Filter	80A	50kA	100kA	II & III	240 x 220 x 520, 6kg	**ESF801-TN-E**

ESF - Three Phase (hardwired in/out) - series filter c/w enclosure & remote alarm

For use in industrial and commercial applications where there are severe power problems such as electrical noise

Model/description	Amps	In (x20 hits)	Imax	Class	Dimensions (mm) W x D x H, kg	Item no.
3 Ph, 50A, 100kA, Surge Filter	50A	50kA/Ph	100kA/ Ph	II & III	400 x 220 x 520, 10kg	**ESF503-TN-E**
3 Ph, 63A, 100kA, Surge Filter	63A	50kA/Ph	100kA/ Ph	II & III	400 x 220 x 520, 10kg	**ESF633-TN-E**
3 Ph, 80A, 100kA, Surge Filter	80A	50kA/Ph	100kA/ Ph	II & III	400 x 220 x 520, 10kg	**ESF803-TN-E**

Single phase high performance surge filter

DSFI Key features:

- Surge suppression & filtering in a single package
- 2 Mode, 5 element series filter
- 3 Mode, 2 stage surge diverter
- Enclosed in IP20 painted steel housing
- Protection Fail Alarm Relay
- 5 Year Warranty

Input voltage	Amps	In (x20 hits)	Imax	Joules	Protection Mode	Recommended maximum over-current protection
200-250VAC, 1 Phase	5 - 32A	15kA	40kA	2225J	L-N, L-E, N-E	gG/gL HRC fuse 32A or MCB 32A

DSFI - series filter - single phase (hardwired) - panel mount

For use in industrial and commercial applications where there are severe power problems such as electrical noise

Model/description	Class	Dimensions (mm) W x D x H, kg	Item no.
1 Ph, 32 Amp, Hardwired series Surge Filter	II	140 x 50 x 270, 1.5kg	**DSFI**

Single phase DIN rail compact surge filter

CSFI Key features:

- Surge suppression & filtering
- 2 Mode, 3 element series filter
- 3 Mode, 2 stage surge diverter
- DIN rail mountable 35mm wide
- Protection Fail Alarm Relay
- 12 Month Warranty

Input voltage	Amps	In (x20 hits)	Imax	Joules	Protection mode	Recommended maximum over-current protection
200-250VAC, 1 Phase	5 - 25A	10kA	25kA	1555J	L-N, L-E, N-E	gG/gL HRC fuse 25A or MCB 25A

CSFI - Series filter - single phase (hardwired) - DIN rail

For use in industrial and commercial applications where there are severe power problems such as electrical noise

Model/description	Class	Dimensions (mm) W x D x H, kg	Item no.
1 Ph, 25 A, DIN rail, series Surge Filter 240V	II	70 x 68 x 90, 0.2kg	**CSFI**

Three phase surge diverter

SPD3200 Key features:

- Protection rating 200kA per phase
- L-E & N-E protection
- LED indicators and in-built surge counter
- Includes 3 Ph MCB safety disconnect within enclosure
- Surge suppression rating of 200kA
- IP50 Steel Enclosure
- Protection Fail Alarm Relay
- 5 Year Warranty

The SPD3200-TN-E is designed to protect three phase power systems against damage from surges and spikes caused by lightning and other electrical sources. The unit is intended for point of entry or main board protection and is connected in parallel with the power system via its own safety disconnect MCB.

Input voltage	In (x20 hits)	Imax	Protection mode	Recommended maximum over-current protection
200-250VAC (380-440V) 3 Phase	100kA/ph	200kA/ph	L-E, N-E	63A gG HRC fuse, 1 per phase

SPD3200 - Shunt diverter - three phase - wall mount (hardwired in/out)

commercial and Industrial Environments at point of building entry protection, three phase, c/w Common & Normal Mode Protection

Model/description	Class	Dimensions (mm) W x D x H, kg	Item no.
3 Ph, 200kA/ph, Shunt Diverter,	II & III	280 x 125 x 360, 7kg	**SPD3200-TN-E**

Three phase premium power filter

PPFI Key features:

- 1 Mode, Multi-Element Series Filter
- 2 Mode, 2 Stage Surge Diverter
- Standard current ratings from 100A to 400 Amps
- Surge suppression ratings from 80kA to 120kA
- Incorporates EN certified EMI/RFI Filter
- Provides extensive high frequency and RF filtering
- Panel mounted mimic display
- Protection Fail Alarm Relay
- IP 24 Steel Enclosure
- 5 Year Warranty

The PPFI is designed to provide point-of-entry and sub-circuit protection against power surges caused by sources such as lightning strikes and substation switching, as well as providing a measure of protection from surge events generated on the secondary side of the filter. The PPFi is a 3-stage protection unit utilising primary and secondary MOV protection in conjunction with a Low-Q LC Filter. The unit provides filtering of line harmonics, noise and RF transmitters with a cut-off frequency of <10kHz and attenuation of >70dB above 1Mhz.

PPFI - Three phase (hardwired in/out) - surge power filter c/w enclosure & remote alarms

For use as point-of-entry or sub-board protection in industrial & commercial applications where there are severe power problems.

Model/ description	Amps per phase	In (x20 hits)	Imax	Joules	Category	Dimensions (mm) W x D x H, kg	Item no.
3 Ph, 100A, 80kA	100A	30kA/Ph	80kA/Ph	7530J	B/C/D/E	600 x 200 x 800, 50kg	**PPF1003CEI**
3 Ph, 100A, 120kA	100A	45kA/Ph	120kA/Ph	7910J	B/C/D/E	600 x 200 x 800, 50kg	**PPF1003DEI**
3 Ph, 160A, 80kA	160A	30kA/Ph	80kA/Ph	7530J	B/C/D/E	600 x 200 x 800, 50kg	**PPF1603CEI**
3 Ph, 160A, 120kA	160A	45kA/Ph	120kA/Ph	7910J	B/C/D/E	600 x 200 x 800, 50kg	**PPF1603DEI**
3 Ph, 200A, 80kA	200A	30kA/Ph	80kA/Ph	7530J	B/C/D/E	600 x 200 x 800, 60kg	**PPF2003CEI**
3 Ph, 200A, 120kA	200A	45kA/Ph	120kA/Ph	7910J	B/C/D/E	600 x 200 x 800, 60kg	**PPF2003DEI**
3 Ph, 250A, 80kA	250A	30kA/Ph	80kA/Ph	7530J	B/C/D/E	600 x 250 x 1000, 75kg	**PPF3003CEI**
3 Ph, 250A, 120kA	250A	45kA/Ph	120kA/Ph	7910J	B/C/D/E	600 x 250 x 1000, 75kg	**PPF3003DEI**
3 Ph, 400, 80kA	400A	30kA/Ph	80kA/Ph	7530J	B/C/D/E	600 x 250 x 1000, 75kg	**PPF4003CEI**
3 Ph, 400A, 120kA	400A	45kA/Ph	120kA/Ph	7910J	B/C/D/E	600 x 250 x 1000, 75kg	**PPF4003DEI**

Class III diverters & filters

I.T. Data & Telecommunication Protection

Eaton's line of data & telecommunication surge suppression products are available for nearly any configuration & offer complete protection for computers & small to large networks, communication devices, phone systems, printers, fax machines & much more.

Wherever uptime is essential, Eaton delivers a comprehensive, single-source power management solution to ensure maximum reliability through the life of your vital applications. Our unique surge protection systems represent a fundamental component of the complete facility solution.

Designed to safeguard against harmful & potentially disastrous surges & spikes, our data surge suppression solutions protect your equipment from the damage frequently caused by lightning strikes, brownouts, electrical load switching, faulty wiring, downed power lines & more. For more information, please contact your local Eaton representative.

Low voltage DC surge diverters to suit data & extra low voltage power applications available in 5, 12, 24 & 48 Volt models.

Features:

- 1 mode plug-in protection
- 10kA surge suppression rating
- Compact solution for data & ELV systems protection
- DIN43880 case, 13 mm wide

Applications

- Data networks signalling protection

Technical specifications, DM series

Description	SPD-DM05	SPD-DM12	SPD-DM24	SPD-DM48
Nominal voltage Un	5	12	24	48
Max continuous voltage Uc DC	6	15	28	60
Nominal discharge current (8/20us, kA) per line. Inom.	5	5	5	5
Max discharge current (8/20us, kA) Per line. Imax.	10	10	10	10
Nominal current (A) IL	0.5	0.5	0.5	0.5
Voltage protection level (8/20us, V) Up Line –Line, Line - Ground	<80v <350v	<150v <350v	<200v <500v	<250v <500v
Voltage protection level (1KV/us, V) Up Line - Line, Line - ground	<10v <600v	<18v <600v	<30v <600v	<70v <600v
Series impedance per line (Ohm)	4	4	4	4
Insertion loss at 100Mhz (dB)	<3.0	<3.0	<3.0	<3.0

SPD-DM series

Description	Item no.
1 Pole, 5vdc, 10kA, 1 mode Surge Diverter w/ removable module	**SPD-DM05**
1 Pole, 12vdc, 10kA, 1 mode Surge Diverter w/ removable module	**SPD-DM12**
1 Pole, 24vdc, 10kA, 1 mode Surge Diverter w/ removable module	**SPD-DM24**
1 Pole, 48vdc, 10kA, 1 mode Surge Diverter w/ removable module	**SPD-DM48**

Technical specifications, SF8RM

Current rating	Imax L - N	Vpl (let through voltage)	MCOV	Filter type	Attentuation	Input connection	Output connections	Dimensions (mm) W x D x H	Weight (kg)
10A total	22.5kA	< 700V @ 3kA	300vac	Low Q / low C filter, differential & common mode	> 50dB above 1Mhz	Approved 3 Pin Australian 10A plug	Australian 3 pin 10A sockets x 8	441 x 120 x 44	1.2

SF8RU rack mount surge filter

Description	Item no.
Surge filter, 19", 1 RU, 8 way, rack mount	**SF8RM**

Class II solar cell surge diverters

Photo voltaic diverters

The PVD series diverters are designed to protect home & industrial solar panel arrays commonly used in grid interactive power solutions in the 1.5kW to 5kW range. These systems commonly use 500, 600 & 1000VDC solar panel arrays. The PVD series diverters are designed to protect the DC input side of grid interactive inverters from harmful transients that can appear on the output of solar arrays, especially where they are located on roof or other high infrastructure locations. IEC61643-1 & UL1449 ed3 compliant. Available in 3 models to suit 500, 600 & 1000VDC systems.

Features:

- 2 mode plug in protection
- 40kA surge suppression rating
- Compact modular solution
- 2 & 3 unit DIN43880 case, 36 & 54mm DIN-rail mount
- Floating contact alarm output

Applications

- Stand alone & Grid Interactive Solar arrays.

Technical specifications

Description	PVD40-500-V-C	PVD40-600-V-C	PVD40-1000-V-CD
Nominal Voltage Un	500VDC	600VDC	1000VDC
Max Continuous Voltage Uc	530VDC	620VDC	1060VDC
Nominal Discharge Current (8/20us, kA) Inom.	20	20	20
Max Discharge Current (8/20us, kA) Imax.	40	40	40
Nominal current (ma) IL	10	10	10
Residual voltage (Vpl) @ Inom 20kA, 8/20us	1.6kV	2.0kV	3.2kV
Test classification	Class II	Class II	Class II
Internal protection	MOV thermal disconnect	MOV thermal disconnect	MOV thermal disconnect
Alarm & indicators	Red flag indicator on module Alarm relay contact. 250vac/24vdc, 2A	Red flag indicator on module Alarm relay contact. 250vac/24vdc, 2A	Red flag indicator on module Alarm relay contact. 250vac/24vdc, 2A
Terminations	Main terminals 25mm Alarm terminals 1.5mm	Main terminals 25mm Alarm terminals 1.5mm	Main terminals 25mm Alarm terminals 1.5mm

Description	Item no.
2 Pole, 500vdc, 40kA, 2 mode (–ve - earth, +ve – earth) Surge Diverter w/ removable modules, floating contact alarm output	**PVD40-500-V-C**
2 Pole, 600vdc, 40kA, 2 mode (–ve - earth, +ve - earth) Surge Diverter w/ removable modules, floating contact alarm output	**PVD40-600-V-C**
3 Pole, 1000vdc, 40kA, 2 mode (–ve - earth, +ve - earth) Surge Diverter w/ removable modules, floating contact alarm output	**PVD40-1000-V-CD**

Power conditioners

500VA to 2500VA portable power conditioners

Designed & manufactured in Australia, the Sola 200/210 portable power conditioner provides smooth stepless control of output voltage to your computer or electronic system, whilst attenuating harmful impulses, surges & other power line disturbances. The Sola 200/210 incorporates improved surge withstand capabilities, as specified by ANSI/IEEE C62.41-1980 & is covered by the SECV Certificate of Suitability Number CS84292V.

Technical specifications

	Description
Input	
Voltage:	220 or 240 Volt AC
Frequency:	50 Hz
Input Voltage Range:	+ 10%, -20% (±40%)
Protection:	ANSI/IEEE C62.41-1980 A & B waveforms suppressed to safe levels
Output	
Nominal Voltage:	220 or 240 Volt AC
Frequency:	50 Hz
Voltage Regulation:	±3% for +10%, -20% input +5%, -8% for ±40% input
Control:	AC on/off switch
Power	
Efficiency:	90%
Response/ Correction Time:	Return to regulation envelope within 30 msec.
Dynamic Response:	Continuous & smooth correction for input voltage fluctuations
Overloads	200% of rated load for 10 seconds without damage. 500% of rated load for 10 msec.
Warranty	5 years

	Description
Electrical Noise Attenuation	
Transverse Mode:	60 dB typical, (80 dB max.), 4kHz to 20 MHz
Common Mode:	120 dB typical, (140 dB max.)2kHz to 1 MHz
Output Harmonic Distortion	Less than 3% THD on linear loads. No greater than 5% on typical computer loads
Environmental	
Operating Ambient:	-20°C to +50°C
Relative Humidity:	0 to 95% non-condensing
Ventilation:	Natural Convection Cooled
Status Indication	
Power On:	Amber lamp
Overload Protection	Output short circuit protection
Warranty	5 years

Rated output VA	Current AMPS (Cont.)	Output receptacles	Weight (kg)	Enclosure size ①	Item no.
500	2.08	2	23	3	**2102665000**
1000	4.16	3	36	4	**2102671000**
2000	8.33	3	55	4	**2102672000**
2500	10.41	3	66	4	**2102672500** ②

240 Volt Hardwired options available to order. Special voltage configurations available to order. Specific input leads & output sockets can be fitted to order.

① Enclosure sizes (mm) Size 3: 195 (H) x 210 (W) x 328 (D), Size 4: 252 (H) x 280 (W) x 421 (D).

② Input lead fitted with 15 Amp plug top (all other units fitted with 10 Amp plug tops).

Power conditioners

3kVA to 22kVA power conditioners

The extension of Sola ferroresonant power conditioners continues through to 22kVA. These units are mostly suited to hardwired, fixed installation applications for providing smooth stepless control of the output voltage, attenuation of harmful impulses or surges & other power line disturbances. Sola 200 power conditioners are ideally suited to provide protection in computer rooms, regulation for scientific instrumentation, plus protection & regulated power to sophisticated computer based factory process equipment. To simplify installation, all units are free standing & fitted with castors (excluding 22kVA) & jacking feet. Connections are provided at the rear via a base plate cable entry to an isolation switch.

The flexibility of Sola 200 power conditioners is increased on units between 7.5kVA & 18kVA. These units can be field configured for single phase or three phase operation with 230 Volt taps provided as standard on 240 Volt In/Out models. Sola 200 power conditioners (3 to 22kVA) incorporate approved surge withstand capabilities, as required by ANSI/IEEE C62.41- 1980.

Technical specifications

	Description
Input	
Voltage:	220 or 240 Volt AC ① (Refer Ordering Details" for configuration options)
Frequency:	50 Hz
Input Voltage Range:	+ 10%, -20% (±40%)
Protection:	ANSI/IEEE C62.41-1980 A & B waveforms suppressed to safe levels.
Output	
Nominal Voltage:	220 or 240 Volt AC
Frequency:	50 Hz
Voltage Regulation:	±3% for +10%, -20% input. +5%, -8% for ±40% input.
Control:	AC on/off switch
Power	
Efficiency:	90%
Response/ Correction Time:	Return to regulation envelope within 30 msec.
Dynamic Response:	Continuous & smooth correction for input voltage fluctuations.
Overloads	200% of rated load for 10 seconds without damage. 500% of rated load for 10 msec.

	Description
Electrical Noise Attenuation	
Transverse Mode:	60 dB typical, (80 dB max.), 4kHz to 20 MHz
Common Mode:	120 dB typical, (140 dB max.), 2kHz to 1 MHz
Output Harmonic Distortion	
	Less than 3% THD on linear loads. No greater than 5% on typical computer loads.
Environmental	
Operating Ambient:	-20°C to +50°C
Relative Humidity:	0 to 95% non-condensing
Ventilation:	Natural Convection Cooled
Status Indication	
Power On:	Amber lamp
Overload Protection	Output short circuit protection
Warranty	5 years

① For units with nominal input/output voltage of 220 specify -44-, as in 200-44-730.

Rated output kVA	Configuration	Weight (kg)	Enclosure size ④	Item no.
3	1 Phase only	100	1	**20026730**
3	1 Phase only	100	1	**2002673000** ①
5	1 Phase only	155	2	**20026750**
5	1 Phase only	155	2	**20026750HO** ②
7.5	1 or 3 Phase	215	2	**20026775** ③
9	1 or 3 Phase	270	2	**20026790** ③
12	1 or 3 Phase	360	3	**20026812M** ③
15	1 or 3 Phase	420	3	**20026815** ③
18	1 or 3 Phase	520	3	**20026818** ③
22.5	3 Phase only	595	4	**20046822** ③

To avoid nuisance tripping of input circuit breakers, we recommend the use of 'D' curve or motor start type circuit breakers. Current rating should be at least one size larger than input current stated on unit data plate.
See manual or consult your Sales Representative for further details.
① Units fitted with WIP 15 plug & 4 x 10/15 Amp screw sockets.
② Units fitted with input terminal block & 4 x 10/15 amp screw sockets.
③ 3 Phase loads to be star connected only. Power Conditioners NOT to be used for Delta loads.
④ Enclosure Sizes (mm): Size 1: 600 (H) x 400 (W) x 440 (D)
Size 2: 995 (H) x 525 (W) x 550 (D)
Size 3: 990 (H) x 800 (W) x 550 (D)
Size 4: 1236 (H) x 800 (W) x 550 (D)

Power conditioners

Multi-voltage, hardwired power conditioners for industrial applications

Frequently, power transformers are incorporated with process equipment to provide specific voltages for sensitive equipment. Unfortunately, outside interferences will vary the output from these transformers, causing the sensitive equipment to malfunction or fail. The Sola 26 range of power conditioners provide an immediate answer to this inconvenience, by suppressing & isolating power line interference & regulating the output voltage to ±5%. These hardwired power conditioners provide the unique feature of selectable input tap for greater versatility & output voltage taps are also provided. These features make the Sola 26 power conditioner the ideal choice for a regulated power supply where a three phase source is provided without a neutral line.

The Sola 26 power conditioner provides superior noise rejection, exceeding 120 dB common mode & 60 dB transverse mode noise rejection. By nature of design, this product is a true, ultra isolation device. The Sola 26 is available from 120VA through to 15kVA as a panel mounting, hardwired unit.

Technical specifications

	Description
Input	
Voltage:	500-5000VA models: Field selectable 110/120V or 220/240 or 380/415V 7.5-15kVA Models: Field selectable 220/240V or 380/415V
Frequency:	50 Hz (60Hz available)
Output	
Voltage:	Field Selectable - 110/120/220/240 Volts AC
Voltage Regulation:	± 5% for an input line variation of ±15%. + 5%, -8% for ± 40% input.
Output Harmonic Distortion	
	Less than 3% THD on linear loads. No greater than 5% on typical computer loads.

	Description
Efficiency	
	85% at full load.
Dropout	
	No loss of output for line loss of 30 msec.
Electrical Noise Rejection	
Transverse Mode:	> 60 dB
Common Mode:	> 120 dB
Operating Temperature	
	-20°C to +50°C
Warranty	
	5 years

Rated output VA	Height (mm)	Width (mm)	Length (mm)	Weight (kg)	Item no.
500	162	200	362	18	**26050500M**
1000	170	200	460	28	**26051000M**
2000	244	288	467	51	**26052000M**
3000	244	288	501	73	**26053000M**
5000	244	288	736	110	**26055000M**
10000 ①	244	630	736	221	**260510kM**
15000 ①	244	987	736	350	**260515kM**

① Multi-Module Units.

DC product range

Access power solutions

- 24V up to 18,000W, 48V up to 36,000W

Features:

- 19" 3U or 6U Sub-rack
- Pre-Configured Software
- High Power Density
- Optional Remote
- Compliance with International Standards

Typical applications

- Data Networks & IP Routers
- Customer Premises Equipment
- Local Loop Transmissions Systems
- Wireless
- Transmission Terminals

Network power solutions (24V up to 38.4kW, 48V up to 72kW)

Features:

- Flexible Modular Designs
- Pre-Configured Supervisory Module
- Fast On-Line Replacement of Rectifiers (Hot-Swap)
- High Efficiency & Unity Power Factor
- Downloadable Configuration Files
- Designed to Maximise Battery Performance
- Wide AC Input Voltage Tolerance
- Optional Parallel System Connection Kit
- Compliance with International Standards

Typical applications

- Data/Customer Premises Equipment
- Wireless/Cellular/CDMA
- Central Office

Large power solutions (24V up to 202kW, 48V up to 378kW)

Features:

- 45U Cabinet
- Pre-Configured Software
- High Power Density
- Fast On-Line Replacement of Rectifiers (Hot-Swap)
- High Efficiency & Unity Power Factor
- Surge Protection
- Parallel Systems Option up to 15,000A
- Compliance with International Standards

Typical applications

- Wireless
- Transmission Terminals
- Local & Central Office Switching

Ancillary products
Power quality

Industrial batteries
DC power systems

Valve regulated sealed lead acid batteries

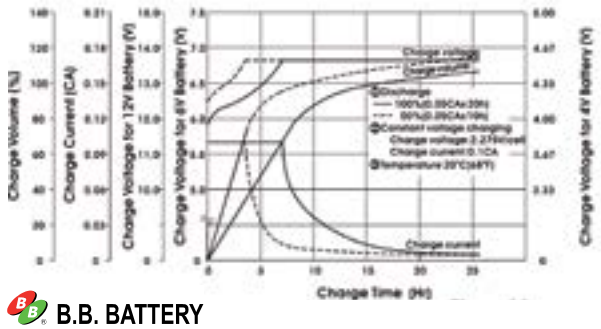
Features:

- Completely maintenance free, sealed construction eliminating the need for watering
- Fully tank formed plates
- Analytical grade electrolyte
- Spill & Leak proof
- Valve regulated - Max. Internal Pressure 2.5psi
- Multi-position usage
- Low self discharge
- ISO9001: 2000, ISO14001: 1996, CE, UL & SSL approved
- Non hazardous material

B.B. Battery produces highly specialised batteries utilizing the most recent high tech equipment & manufacturing methods from the US & Japan. B.B.'s battery factory is ISO 9001:2000 & ISO 14001 certified.

B.B.'s battery business goals closely follow the trend of a globally integrated economy & actualise the precise plans of developing high tech, high efficiency & quality products. Company goals are to provide high quality products & exceptional service at competitive prices to customers.

Battery charging characteristics



B.B. BATTERY

Technical specifications

	Description
Nominal Voltage:	6 & 12 Volts
Design Life:	6+ years @ 20 Degrees Celcius
Operating Temperature:	-20 to 50 Degrees Celcius
Grid Alloy:	Calcium / Tin Lead alloy
Plates:	Flat Pasted
Separator:	Absorbent Glass Mat
Active Material:	Very high purity lead 99.9999%
Case & Cover:	ABS (VO)
Charge Voltage:	Float 2.27 - 2.30VPC @ 20 Degrees
Electrolyte:	Sulphuric acid, analytical grade purity
Venting Valve:	1.5 to 2 psi release

Voltage	Capacity (20hr)	Dimensions			Weight ()	Item no.
		Length (mm)	Width (mm)	Height (mm)		
6V	5.Ah	70	48	102	0.95	**50BP56**
6V	10.Ah	151	50	94	2.00	**50BP106**
6V	12.Ah	151	50	94	2.05	**50BP126**
12V	1.2Ah	97	45	53	0.59	**50BP1.212**
12V	2.3Ah	178	34	60	0.94	**50BP2.312**
12V	4.5Ah	90	70	102	1.84	**50BP4.512**
12V	7.5Ah	151	65	94	2.65	**50BP7.512**
12V	12.Ah	151	98	94	4.03	**50BP1212**
12V	17.Ah	181	76	166	6.15	**50BP1712**
12V	20.Ah	181	76	166	6.35	**50BP2012**
12V	26.Ah	175	166	125	9.40	**50BP2612**
12V	40.Ah	197	165	171	14.30	**50BP4012**
12V	65.Ah	350	166	174	24.50	**50BP6512**
12V	90.Ah	329	172	215	33.50	**50BP9012**
12V	120.Ah	407	173	210	39.50	**50BP12012**
12V	160.Ah	483	171	240	51.20	**50BP16012**
12V	230.Ah	522	240	216	72.30	**50BP23012**

UPS single phase

Our story

Comprised of legacy brands including Powerware®, MGE Office Protection Systems, Best Power, Pulizzi & Aphel, Eaton's power quality business is a global leader in power management products & services. Eaton has many products that provide customer-driven PowerChain Management solutions to serve the power system needs of the industrial, institutional, government, utility, commercial, residential, IT, mission-critical & OEM markets worldwide.

Our portfolio

Eaton's power quality portfolio encompasses a comprehensive offering of power management solutions from a single-source provider. This includes UPSs, power distribution units (PDUs), remote monitoring, software, connectivity, enclosures & services. Our power quality portfolio was designed to fulfill specific customer requirements, complement a new or pre-existing solution & to deliver a comprehensive solution. With all our products, Eaton strives for continued success in leveraging technical innovation to develop next-generation solutions.

Single phase UPS

With over 60 years experience in the Australian market, Eaton offers a range of single phase UPS products designed to suit local conditions & applications. Evolving from brands such as Powerware, Sola, Exide, Deltec & MGE Office Protection Systems, Eaton's range contains features such as Australian outlets, telephone line surge suppression & included accessories to ensure easy integration to any system.

Introducing the E-Series

Eaton's E-Series value UPS products offer cost effective, reliable power protection, ranging from 650VA to 20kVA. The new E Series uninterruptible power system (UPS) is Eaton's newest product line introduction featuring both line interactive & double-conversion technology UPSs. Ideal for the home office, small Point of Sale (POS) & desktop computing environment, the 5E UPS provides reliable power protection for personal computers & peripherals. Unique features including cold start on battery power allows this UPS to offer portable power where users need it most.

5E UPS, 1 phase

Power Rating: 650, 850, 1100, 1500, 2000 VA tower models
Voltage: 170 to 280Vac
Frequency: 50/60 Hz (auto-sensing)
Technology: Line Interactive with Automatic Voltage Regulation

The 5E range is designed to meet even the most cost-conscious customer's needs while providing a reliable & easy-to-set-up solution. The 5E line interactive uninterruptible power system (UPS) provides affordable power protection for your personal computers, home, office & other electronic devices. While packed with valuable features such as plentiful power receptacles & USB communications, the compact size is ideal for limited office & home working spaces.

Features

- Automatic Voltage Regulation (AVR) stabilises fluctuating power sources
- Microprocessor control design ensures high reliability
- Australian outlets, allowing easy equipment connection
- Start-on-battery provides portable power capability
- UPS Companion software monitors power conditions & gracefully shuts down computer applications prior to battery depletion

Description	Item no.
5E 650VA / 360W, 2 x Aust sockets	**5E650IUSB-AU**
5E 850VA / 480W, 2 x Aust sockets	**5E850IUSB-AU**
5E 1100VA / 660W, 3 x Aust sockets	**5E1100IUSB-AU**
5E 1500VA / 900W, 3 x Aust sockets	**5E1500IUSB-AU**
5E 2000VA / 1200W, 3 x Aust sockets	**5E2000IUSB-AU**

Ancillary products
Power quality

E Series DX UPS, 1 phase

Power Rating: 1KVA-3KVA
Voltage: 80 to 300 VAC
Frequency: 50/60 Hz (auto-sensing)
Technology: High-frequency double-conversion

The E Series DX UPS delivers affordable mission critical reliability for a wide range of applications including small grade medical equipment, the network closet or small data center. Whether your environment requires Automatic Voltage Regulation (AVR) to stabilise fluctuating power sources or you need the flexibility to purchase the UPS separate from the battery – the E Series UPS product line offers a variety of alternatives.

The E Series® DX UPS double-conversion UPS affordably protects mission critical applications from downtime, data loss & corruption. The double-conversion architecture incorporates rectifier & inverter stages to completely isolate the output power from all input anomalies. By adapting to a wide range of input voltages, the E Series DX avoids battery usage during minor power fluctuations, saving its capacity for times when utility power is completely lost.

Features

- Double conversion topology assures maximum reliability
- Wide input-voltage range appropriate for the harshest electrical environments
- Standard Models for fixed run time performance
- Tested for generator compatibility
- Automatic bypass for fault-tolerance
- Optional SNMP communications provides remote network- based monitoring
- XL Models for customised, long run-time applications, with fast recharging
- Cold start on battery power allows portable power
- WINPOWER software monitors power conditions
- Intuitive front-panel user interface for consistent status indication

E series DX

E Series DX 1000

DX 1000 VA FRONT

1. Output receptacles
2. AC Input
3. Standard RS232 Communication Port

DX 1000 VA REAR

4. Optional SNMP Communication Port
5. Extended Battery Connector (XL models only)

Description	Item no.
E-Series DX 1kVA/700W, 4 x IEC sockets	**EDX1000HA**
E-Series DX 2kVA/1400W, 6 x IEC sockets	**EDX2000HA**
E-Series DX 3kVA/2.1kW, 4 x IEC sockets plus hard wired output	**EDX3000HA**

9E UPS, 1 phase

Power Rating: 6KVA-20KVA
Voltage: 176 to 276 VAC
Frequency: 50/60 Hz (auto-sensing)
Technology: High-frequency double-conversion

Advanced protection for:

- Infrastucture
- Industrial and Medical IT
- Networking
- Storage
- Telecom

The Eaton 9E constantly monitors power conditions and regulates voltage and frequency due to the online double conversion topology. Make your installation more flexible with a combo input (3:1 and 1:1) on the 10kVA, 15kVA, and 20kVA models. An internal bypass allows service continuity in case of an internal fault. A maintenance bypass is also available as standard for easy maintenance of the UPS without powering down critical systems.

The 9E provides clear information on the UPS' status and measurements (load level, battery level, input/output voltage and frequency) on a single screen with the new LCD interface, easily communicate with the UPS through USB, RS232 serial or over the network with the optional network card (Network-MS). Relay cards or ModBus cards are also available. Integrate 9E into all software environments. The Eaton 9E is delivered with Eaton's Intelligent Power™ Software and is compatible with all major operating systems.

Extend runtime as you like by adding up to 4 external battery modules (EBM). For extra-long runtime, XL models with internal supercharger are also available at 10kVA and 20kVA

Description	Backup time qt 75%/50% load	Dimensions W x D x H (mm), kg	Item no.
6kVA/4.8kW On Line Tower UPS	12/20	263 x 613 x 709, 68kg	**9E6KI**
10kVA/8kW On Line Tower UPS	9/15	263 x 613 x 709, 85kg	**9E10KI**
15kVA/12kW On Line Tower UPS	9/16	350 x 706 x 816, 145kg	**9E15KI**
20kVA/16kW On Line Tower UPS	9/15	350 x 706 x 816, 160kg	**9E20KI**

Premier series UPS's

Premier series UPS, available from 550VA to 1100kVA, offer technology leading power quality solutions for your critical applications. With features such as Advanced Battery Management, HotSync wireless paralleling technology & high efficiency ratings, Eaton's Powerware Series offer high performance power protection with a lower cost of ownership.

UPS Solution Overview

Series 3, Continuous power

The Series 3 UPS primarily protects against three of the nine power problems including power failures, power sags & power surges. This essential, cost-effective protection is necessary in order to prevent damage such as data loss, file corruption, hardware damage & equipment shutoff.

Series 5, Keeping it smooth

Series 5 UPS are most effective against five power problems (power failures, power sags, power surges, under-voltage & over-voltage) & offer a degree of protection against other power problems.

Series 9, Total protection

Series 9 UPSs protect against all nine power problems: power failures, power sags, power surges, under-voltage, over-voltage, line noise, frequency variation, switching transients & harmonic distortion.

Series 3 single phase input/output UPS

Eaton 3S
Technology: Series 3 (standby)
Rating: 550-700 VA
Backup time: Typical 5 min
Model: Cabinet

Designed to offer cost effective basic power protection for single PCs & workstations, Eaton 3S protects your equipment against three of the nine most common power problems. 3S's sleek design is perfect for placement on or under a desk as well as for wall mounted use. Its typical back-up time of 5 minutes is more than enough to save your work & if you wish, you can install Eaton's shutdown software which will automatically save & shutdown your applications during longer power outages. The 700VA model saves up to 30% energy through its EcoControl function which automatically disables peripherals when the master device, such as a computer, is turned off.

Description	Backup time full/half load	Dimensions W x D x H (mm), kg	Item no.
550VA / 330W Standby Powerboard UPS	6 / 10	140 x 335 x 86, 5kg	**3S550AU**
700VA / 420W Standby Powerboard UPS	6 / 9	280 x 115 x 86, 6.5kg	**3S700AU**

Series 5 single phase input/output UPS

Technology: Series 5
(line interactive)
Rating: 550-1600 VA
Voltage: 220-240 Vac
Backup time: Typical 5 min
Models: Cabinet

The Eaton 5S UPS provides effective power protection, even in disturbed electrical environments. Voltage fluctuations are automatically corrected using an AVR device (booster/fader), without needing the batteries. The 5S not only provides a supply with battery backup to keep equipment operating during power cuts, but also provides effective protection against damaging surges.

The 5S protects networked equipment from back door power surges coming through Ethernet, internet or telephone lines. The 5S periodic automatic battery testing ensures early detection if a battery needs to be replaced. The easy-to-replace battery helps to extend the UPS service life. The 850-1600VA modlels feature an LCD display.

Description	Backup time 70%/50% load	Dimensions W x D x H (mm), kg	Item no.
550VA / 330W Line Interactive UPS	6 / 0	87 x 260 x 250, 5kg	**5S550AU**
700VA / 420W Line Interactive UPS	5 / 9	87 x 260 x 250, 6kg	**5S700AU**
850VA / 510W Line Interactive UPS	5 / 9	87 x 260 x 250, 6.5kg	**5S850AU**
1200VA / 750W Line Interactive UPS	5 / 9	87 x 260 x 362, 9.5kg	**5S1200AU**
1600VA/1000W Line Interactive UPS	5 / 9	87 x 260 x 382 11kg	**5S1600AU**

Series 5 single phase input/output UPS

Eaton 5SC
Technology: Series 5 (Line Interactive)
Rating: 500VA – 1500VA
Model: Tower

Designed to offer advanced power protection for office servers & other critical applications, the Eaton 5SC protects your equipment against five of the nine most common power problems that can harm your equipment or result in corrupted data.

In offices a crucial part of the work is stored on servers & reliable shutdown software is needed to ensure that no data is lost even during longer power outages. With Eaton 5SC & IPM software protecting the server, business goes on while the UPS invisibly & automatically takes care that no data is lost due to power problems. If a total outage threatens to exceed the system's backup time, the software automatically shuts down the entire network in a predefined order.

Description	Backup time full load	Dimensions W x D x H (mm), kg	Item no.
500VA/350W Line Interactive Sine Wave	5	150 x 240 x 210, 6.6kg	**5SC500i**
750VA/525W Line Interactive Sine Wave	5	150 x 340 x 185, 10.4kg	**5SC750i**
1000VA/670W Line Interactive Sine Wave	5	150 x 340 x 185, 11.1kg	**5SC1000i**
1500VA/1050W Line Interactive Sine Wave	5	150 x 410 x 185, 15.2kg	**5SC1500i**

Eaton 5130
Technology: Series 5 (Line Interactive)
Rating: 1250VA – 3000VA
Model: Rack/Tower

Designed to ensure clean power & reliable operation of all kinds of IT devices in the network system, Eaton 5130 protects your equipment against five of the nine most common power problems that can harm your equipment or result in corrupted data.

The Eaton 5130 offers the features needed for cost effective network protection & comes with the proven reliability users have come to expect from Eaton products. In addition to a reliable shutdown solution, Eaton 5130 offers extended runtime capability as well as enhanced connectivity options to manage & monitor the UPS remotely.

Description	Backup time full/half load	Dimensions W x D x H (mm), kg	Item no.
1250VA / 1150W Line Interactive UPS	5 / 5	441 x 509 x 87, 25kg	**PW5130I1250-XL2U**
1750VA / 1600W Line Interactive UPS	3.5 / 9.5	441 x 509 x 87, 27kg	**PW5130I1750-XL2U**
2500VA / 2250W Line Interactive UPS	3 / 11	441 x 634 x 87, 34kg	**PW5130I2500-XL2UAU**
3000VA / 2700W Line Interactive UPS	3 / 10	441 x 634 x 87, 34kg	**PW5130I3000-XL2UAU**
1250/1750VA extended battery module	-	441 x 509 x 87, 31kg	**PW5130N1750-EBM2U**
2500/3000VA extended battery module	-	441 x 634 x 87, 42kg	**PW5130N3000-EBM2U**

Note: Input cord & comms. cable supplied.

Series 9 single phase input/output UPS

Eaton 9130 Tower
Technology: Series 9 (Online, Double Conversion)
Rating: 700VA – 6000VA
Model: Tower

The Eaton 9130 UPS, resolves utility power problems & delivers superior power protection for IT & networking equipment, medical systems, manufacturing process control or anywhere critical equipment & applications require clean, continuous power.

The Eaton 9130 is constantly monitoring power conditions regulating both voltage & frequency. Even when presented with the most severe power problems, this UPS's output remains within three percent of nominal voltage.

With a wide input voltage range, the Eaton 9130 does not depend on batteries to smooth out minor power fluctuations. Batteries are conserved for those times when utility power is highly unstable or completely out. If an outage occurs, the Eaton 9130 runs from the battery with zero interruption in power, making this an ideal UPS for sensitive & critical equipment.

Description	Backup time full/half load	Dimensions W x D x H (mm), kg	Item no.
Eaton 9130 700VA/630W On Line Tower UPS	6 / 11	160 x 355 x 250, 12.2 kg	**PW9130G700T-XLAU**
Eaton 9130 1000VA/900W On Line Tower UPS	7 / 14	160 x 383 x 250, 14.5 kg	**PW9130G1000T-XLAU**
Eaton 9130 1500VA/1350W On Line Tower UPS	5 / 14	160 x 435 x 250, 19.0 kg	**PW9130G1500T-XLAU**
Eaton 9130 2000VA/1800W On Line Tower UPS	10 / 24	214 x 410 x 345, 34.5 kg	**PW9130G2000T-XLAU**
Eaton 9130 3000VA/2700W On Line Tower UPS	5 / 14	214 x 410 x 345, 34.5 kg	**PW9130G3000T-XLAU**
Eaton 9130 6000VA/5400W On Line Tower UPS	8 / 23	280 x 580 x 570, 91 kg	**PW9130G6000T-XLAU**

Note: Input cord & comms. cable supplied.

Description	Dimensions W x D x H (mm), kg	Item no.
700-2000VA Softwired interlocked external bypass	210 x 100 x 130, 4kg	**MBS2000SW1**
3000VA Softwired interlocked external bypass	210 x 100 x 225, 5kg	**MBS3000SW1**
1-6kVA Hardwired interlocked external bypass (max 6mm^2 cable)	190 x 130 x 190, 10kg	**6000MBS1**
6kVA Hardwired interlocked external bypass w/sep byp input (max 6mm^2)	190 x 130 x 190, 10kg	**6000MBS2**
Wraparound MBS,1/1ph, w/o Sep Byp Input, 40A,16mm^2, Bottom Entry	275 x 138* x 487**,10kg Size 1	**MBS11NSB40BW**
Wraparound MBS,1/1ph, Sep Byp Input, 40A,16mm^2, Bottom Entry	275 x 138* x 487**,10kg Size 1	**MBS11SB40BW**

Add $200 if key interlock is required instead of pushbutton interlock. Add KL suffix to part no.
*Depth does not include switch handle. **Height does not include mounting flanges.

Series 9 single phase input/output UPS

Hard wiring kits (9130 tower only)

Description	Item no.
Hard wired field conversion Kit for 9130 700-1500VA	**PW91301500HW-Kit**
Hard wired field conversion Kit for 9130 2000VA	**PW91302000HW-Kit**
Hard wired field conversion Kit for 9130 3000VA	**PW91303000HW-Kit**

Extended battery modules,
Standard matching cabinets

Description	Dimensions W x D x H (mm), kg	Item no.
9130 Tower Extended Battery Module, 1000VA	155 x 410 x 245, 20 kg	**PW9130N1000T-EBM**
9130 Tower Extended Battery Module, 1500VA	170 x 445 x 275, 25 kg	**PW9130N1500T-EBM**
9130 Tower Extended Battery Module, 2/3kVA	215 x 470 x 365, 50 kg	**PW9130N3000T-EBM**
9130 Tower Extended Battery Module, 6000VA	280 x 580 x 570, 75 kg	**PW9130N6000T-EBM**

Note: Long run time extended cabinets available on request.

Eaton 9130 rack mount
Technology: Series 9 (Online, Double Conversion)
Rating: 1000VA – 3000VA
Model: Rack Mount

The Eaton 9130 UPS, resolves utility power problems & delivers superior power protection for IT and networking equipment, medical systems, manufacturing process control— or anywhere critical equipment and applications require clean, continuous power.

The Eaton 9130 is constantly monitoring power conditions—regulating both voltage & frequency. Even when presented with the most severe power problems, this UPS's output remains within three percent of nominal voltage.

With a wide input voltage range, the Eaton 9130 does not depend on batteries to smooth out minor power fluctuations. Batteries are conserved for those times when utility power is highly unstable or completely out. If an outage occurs, the Eaton 9130 runs from the battery with zero interruption in power, making this an ideal UPS for sensitive & critical equipment.

9130 rack mount on line UPS

Description	Backup Time full/half load	Dimensions W x D x H (mm), kg	Item no.
9130 1000VA / 900W On Line Rack UPS	7 / 14	438 x 438 x 86.5, 16.0kg	**PW9130G1000R-XL2UAU**
9130 1500VA / 1350W On Line Rack UPS	5 / 14	438 x 438 x 86.5, 19.5kg	**PW9130G1500R-XL2UAU**
9130 2000VA / 1800W On Line Rack UPS	6 / 16	438 x 600 x 86.5, 29.0kg	**PW9130G2000R-XL2UAU**
9130 3000VA / 2700W On Line Rack UPS	3 / 9	438 x 600 x 86.5, 29.5kg	**PW9130G3000R-XL2UAU**

Note: Input cord is not included on 9125 1&2kVA models & must be ordered separately if required.

Extended battery modules

Description	Dimensions W x D x H (mm), kg	Item no.
9130 1000VA Rack Extended Battery Module	438 x 438 x 86.5, 22.1kg	**PW9130N1000R-EBM2U**
9130 1500VA Rack Extended Battery Module	438 x 438 x 86.5, 28.1kg	**PW9130N1500R-EBM2U**
9130 2000/3000VA Rack Extended Battery Module	438 x 600 x 86.5, 41.0kg	**PW9130N3000R-EBM2U**

Maintenance bypass switches

Description	Dimensions W x D x H (mm), kg	Item no.
HotSwap Maintenance Bypass, 16A, Aust 3 pin outlets	483 x 80 x 44, 3kg	**M68443**
HotSwap Maintenance Bypass, 16A, IEC outlets	483 x 80 x 44, 3kg	**M68433**
HotSwap Maintenance Bypass, 16A, Hardwired	483 x 80 x 44, 3kg	**M68434**

3 phase

Eaton has been developing its innovative technical solutions in the power protection field since receiving its first patent in 1962. As a technology leader Eaton meets the customers' fast growing needs with advanced patented technologies.

Eaton's three-phase UPS products are based on the same technical platform, including a similar internal topology, common control hardware & algorithms, standardised communications capabilities & a common user-interface.

The benefits of a single platform include:

- UPS units behave in a uniform way and carry similar features
- Product upgrades are easier as the process is identical
- Improved service capabilities due to usage of common spare parts & accessories across product families and standard service tools
- Similarity of service training & documentation guarantee that customers in all countries receive the same high level of service
- Lower total cost of ownership Single platform benefits

Transformer-free technology

The transformer-free technology used in Eaton UPSs with small & lightweight filter inductors, high performance IGBTs in both inverter & rectifier & advanced control algorithms brings improved performance & value. Compared to legacy UPS topology designs, a transformer-free UPS is typically only 50% the weight & occupies just 60% the footprint. Low input THD (<3% at full load) & high input power factor (>0.99) are supported down to nearly 10% load without the need for an additional input filter. In addition, full load efficiency can reach 96.57% & above.

Eaton Hot Sync® technology

Hot Sync technology is designed for parallel redundant N+1 systems to satisfy 24/7 applications. It can also be used in parallel capacity systems to benefit from scalability for customers' ever-increasing load demands.

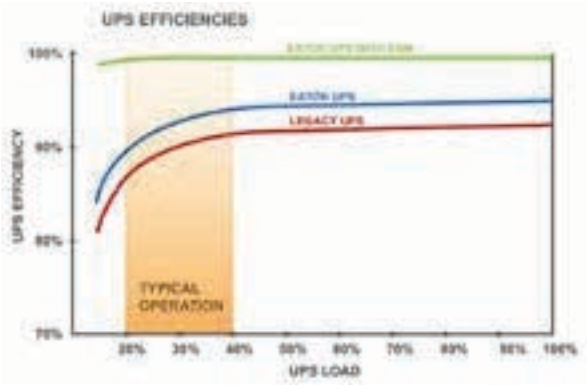
Hot Sync eliminates single point of failure, with the ability to synchronise & support critical loads independently of other UPS modules in the system. UPS modules can share loads without any communication wiring to the outside world.

ABM® technology

Eaton has created ABM® Technology to extend the life of valve regulated lead-acid batteries by applying sophisticated logic to the charging regime. Using traditional trickle charge method, batteries become subject to electrode corrosion & electrolyte dry-out, especially in standby service use due to continuous float charging. ABM is essentially an addition of intelligence to the charging routine by preventing charging when it is not necessary, thus significantly retarding wear-out. ABM provides an additional feature for monitoring battery condition & advance warning about the end of battery life upon detection of a weak battery. Also, it optimises the recharge time, which is advantageous when there may be consecutive power outages within a short period. ABM has been used for over fifteen years in our UPSs ranging from 1 to 1100 kVA.

Highest efficiency ratings

To demonstrate the importance of total system efficiency in relation to load level, the UPS efficiencies graph shows how efficiency generally dips as load level decreases. In general, manufacturers list an optimal efficiency rating at full load. In reality, however, most three-phase UPSs operate well below full load. As a result, it is extremely important to evaluate the efficiency of a UPS at lighter loads as this graph depicts. Eaton data center & facility products operate efficiently even at lighter loads to reduce utility costs. Additionally, Eaton three phase UPSs with Energy Saver Mode operate at 99% efficiency saving thousands of dollars in energy costs while maintaining double conversion protection.



PowerChain™ Management keeps your data centre open for business

Greater reliability: Maintain vital operations with steady, high-quality power every minute of every day.

Operating cost efficiencies: Reduce operating costs with efficient energy management & maintenance strategies.

Effective use of capital: Put your capital to work faster, & keep it working longer, with electrical designs that require less equipment & space, services that extend equipment life & preassembled equipment that can be installed faster.

Risk mitigation: Reduce the risk of construction delays & cost overruns with a coordinated approach to power system design, procurement, installation & maintenance.

Enhanced safety: Reduce electrical hazards with safety-conscious design & installation, plus products & information that help people recognize & avoid dangers.

Software & connectivity

In order to get full benefit out of a UPS it needs to communicate with the outside world. Eaton UPSs have intelligent digital control with comprehensive fault detection & self test capability built into the internal microprocessor system of the device.

Power Xpert software

Eaton's Power Xpert® Architecture is the backbone of Eaton's PowerChain Management. Power Xpert Architecture can transform your power system into an integrated, agile system that you can monitor, control & manage effectively & efficiently.

Power Xpert Software enables you to manage the complexities of large system deployments, from one desktop, on one screen. Web-enabled hardware devices are fine in limited numbers. However, as the number of components grows or becomes more complex, Power Xpert Software is the logical choice for the trending, analysis & alarming systems that are required.

The Power Xpert Software is Web-enabled, open & time synchronised. Using only a browser, you can access the software from anywhere your network can reach, including remotely. Designed to communicate graphically with the broad range of Eaton & non - Eaton devices, Power Xpert Software uses industry standard protocols. The software is offered in the Server Core Class & the Foreseer Class.

Data centre & facility UPS overview

With a rich history of technical innovation & proven performance, the data center & facility UPS products continue to personify Eaton's pioneering spirit in the power quality industry. Whether you are designing or procuring a UPS, each model can be deployed around the world. Designed to meet global requirements, the same UPS can be installed anywhere—from Argentina to Russia, China to South Africa or the United States.

The following features differentiate Eaton's data center & facility UPS solutions:

Leading sustainability

- Highest efficiency ratings lower utility costs
- Lowest total cost of ownership & lifecycle carbon footprint
- Smallest footprint & weight
- Lowest transportation & installation costs
- Stronger power performance
- Lowest input total harmonic distortion (THD) enhances compatibility with upstream power systems
- Lowest output THD
- Optimum generator sizing
- PFC power supply compatibility
- Highest reliability & availability
- Hot Sync wireless paralleling
- Easy Capacity test
- Superior battery management
- Inherent redundancy
- Scalable architecture that adapts to increasing power requirements

Robust manageability

- Superior control & connectivity

Eaton ePDUs

Eaton offers the largest selection of enclosure power distribution units available on the market. This complete suite of power products is designed specifically to help data center IT managers meet their rapidly escalating power requirements.

ePDUs come in five levels of functionality with 24 to 45 receptacles & can distribute power levels in excess of 23 kW.

ePDU functionality

Basic - Economical power distribution to up to 24 receptacles in a rack or wiring closet

Metered - Distribution with power monitoring on any receptacle, branch circuit or the entire unit

Monitored - Power distribution with secure, remote monitoring & alerts over IP networks

Switched - Provides secure, network receptacle-level control & network monitoring, optional integrated environmental & inter-networking capabilities

Managed - Local & remote monitoring, plus advanced Revelation technology that provides receptacle-level monitoring & remote server boot-up or electronically lock designated receptacles to prevent unauthorized use

eATS - The enclosure automatic transfer switch (eATS) provides in-rack power distribution with redundant power sourcing for single-corded loads

Power through high energy costs.

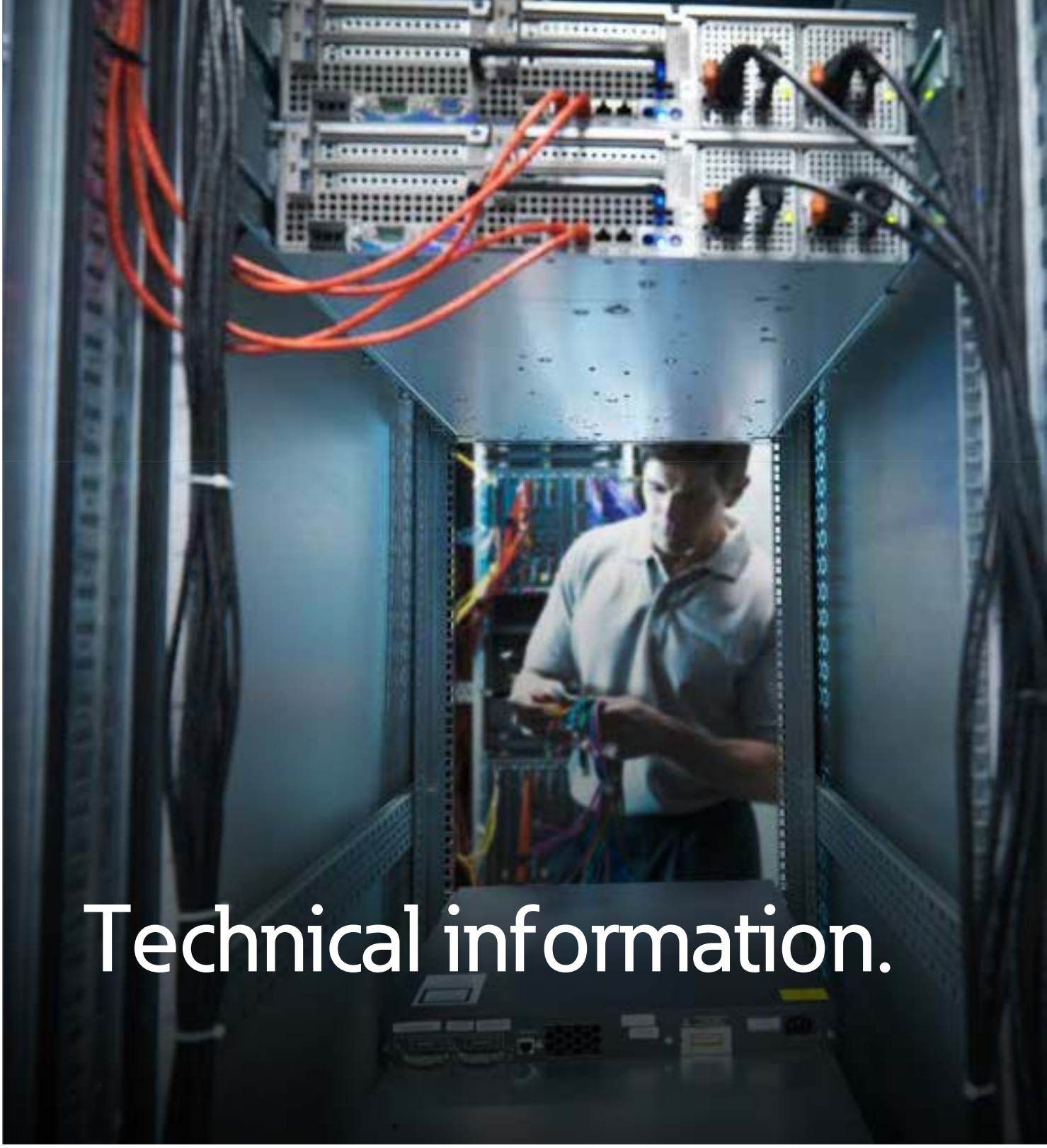
Eaton leads the UPS industry in power efficiency.

Competitive UPSs can't deliver the efficiency inherent in Eaton's broad range of power protection solutions. That's because Eaton® offers industry-leading technologies such as Energy Saver System to deliver 99% efficiency across all load ranges. Plus, with the most efficient UPSs on the market, your customers can slash energy costs through reduced power consumption and heat output.
Eaton's superior UPS technology enables your customers to carry on efficiently — uninterrupted.

EATON
Powering Business Worldwide

1300 UPS UPS
www.eaton.com/powerquality
AustraliaSales@eaton.com

Switch ON to Eaton.



Technical information.

Technical information

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Rated currents of 3-phase motors

The maximum size is governed by the requirements of the switchgear or overload relay.
The rated motor currents are normally ventilated and internally enclosed fan-cooled
three-phase motors at 1500rpm.

D.O.L. starting: Maximum starting current 6 x rated motor current, maximum starting time: 5 s.

S/D starting: Maximum starting current 2 x rated motor current, maximum starting time: 15 s.

Set overload relay in the phase lead to 0.58 x rated motor current.
Rated fuse currents for S/D starting apply to 3-phase motors with slip-ring rotors.
For higher rated currents, starting currents and/or longer starting times, larger fuses will be required. Table is valid for 'slow' and/or 'gL' fuses (DIN VDE 0636) for NH fuses with aM characteristic, fuses = rated current selected.

Motor rating			230V			400V			500V			690V		
kW	cos f	h (%)	Rated motor current, A	Fuse starting direct, A	Fuse S/Δ, A	Rated motor current, A	Fuse starting direct, A	Fuse S/Δ, A	Rated motor current, A	Fuse starting direct, A	Fuse S/Δ, A	Rated motor current, A	Fuse starting direct, A	Fuse S/Δ, A
0.06	0.7	58	0.37	2	–	0.21	2	–	0.17	2	–	0.12	2	–
0.09	0.7	60	0.54	2	–	0.31	2	–	0.25	2	–	0.18	2	–
0.12	0.7	60	0.72	4	2	0.41	2	–	0.33	2	–	0.24	2	–
0.18	0.7	62	1.04	4	2	0.6	2	–	0.48	2	–	0.35	2	–
0.25	0.7	62	1.4	4	2	0.8	4	2	0.7	2	–	0.5	2	–
0.37	0.72	66	2	6	4	1.1	4	2	0.9	2	2	0.7	2	–
0.55	0.75	69	2.7	10	4	1.5	4	2	1.2	4	2	0.9	4	2
0.75	0.79	74	3.2	10	4	1.9	6	4	1.5	4	2	1.1	4	2
1.1	0.81	74	4.6	10	6	2.6	6	4	2.1	6	4	1.5	4	2
1.5	0.81	74	6.3	16	10	3.6	6	4	2.9	6	4	2.1	6	4
2.2	0.81	78	8.7	20	10	5	10	6	4	10	4	2.9	10	4
3	0.82	80	11.5	25	16	6.6	16	10	5.3	16	6	3.8	10	4
4	0.82	83	14.8	32	16	8.5	20	10	6.8	16	10	4.9	16	6
5.5	0.82	86	19.6	32	25	11.3	25	16	9	20	16	6.5	16	10
7.5	0.82	87	26.4	50	32	15.2	32	16	12.1	25	16	8.8	20	10
11	0.84	87	38	80	40	21.7	40	25	17.4	32	20	12.6	25	16
15	0.84	88	51	100	63	29.3	63	32	23.4	50	25	17	32	20
18.5	0.84	88	63	125	80	36	63	40	28.9	50	32	20.9	32	25
22	0.84	92	71	125	80	41	80	50	33	63	32	23.8	50	25
30	0.85	92	96	200	100	55	100	63	44	80	50	32	63	32
37	0.86	92	117	200	125	68	125	80	54	100	63	39	80	50
45	0.86	93	141	250	160	81	160	100	65	125	80	47	80	63
55	0.86	93	173	250	200	99	200	125	79	160	80	58	100	63
75	0.86	94	233	315	250	134	200	160	107	200	125	78	160	100
90	0.86	94	279	400	315	161	250	200	129	200	160	93	160	100
110	0.86	94	342	500	400	196	315	200	157	250	160	114	200	125
132	0.87	95	401	630	500	231	400	250	184	250	200	134	250	160
160	0.87	95	486	630	630	279	400	315	224	315	250	162	250	200
200	0.87	95	607	800	630	349	500	400	279	400	315	202	315	250
250	0.87	95	–	–	–	437	630	500	349	500	400	253	400	315
315	0.87	96	–	–	–	544	800	630	436	630	500	316	500	400
400	0.88	96	–	–	–	683	1000	800	547	800	630	396	630	400
450	0.88	96	–	–	–	769	1000	800	615	800	630	446	630	630
500	0.88	97	–	–	–	–	–	–	–	–	–	491	630	630
560	0.88	97	–	–	–	–	–	–	–	–	–	550	800	630
630	0.88	97	–	–	–	–	–	–	–	–	–	618	800	630

Utilisation categories

Utilisation categories for contactors to IEC 60947-4-1, EN 60947, VDE 0660 Part 102

All equipment is manufactured and tested in accordance with national and international standards and regulations, the most important of which are listed below:

IEC 60439	Low voltage switchgear and controlgear assemblies
IEC 60947-…, EN 60947	Low voltage switchgear and controlgear
IEC 60664	Insulation co-ordination including clearances and creepage distances for equipment
IEC 60364	Electrical installations of buildings
IEC 60204-…, EN 60204-…	Electrical equipment of industrial machines
VDE 0105	Operation of electrical power installations
IEC 536	Protection against electric shock

Key

I = current made, Ic = current broken

Ie = rated operational current

U = voltage

Ue = rated operational voltage

Ur = recovery voltage

t0.95 = time in ms to reach 95% of the steady state current

P = Ue x Ie = rated power consumption in watts

Utilisation categories for contactors to IEC 60947-4-1, EN 60947, VDE 0660 Part 102

Kind of current	Utilisation category	Typical applications	Verification of electrical endurance							Verification of rated making and breaking capacities						
			Make				Break			Make				Break		
			Ie / A	I / Ie	U / Ue	cos φ	Ic / Ie	Ur / Ue	cos φ	Ie / A	I / Ie	U / Ue	cos φ	Ic / Ie	Ir / Ie	cos φ
AC	AC-1	Non-inductive or slightly inductive loads, resistance furnaces	All values	1	1	0.95	1	1	0.95	All values	1.5	1.05	0.8	1.5	1.05	0.8
	AC-2	Slip-ring motors: starting, switching off	All values	2.5	1	0.65	2.5	1	0.65	All values	4	1.05	0.65	4	1.05	0.65
	AC-3	Squirrel-cage motors: starting, switching off motors during running②	≤17	6	1	0.65	1	0.17	0.65	≤100	10	1.05	0.45	8	1.05	0.45
			≥17	6	1	0.65	6	1	0.65	≥100	12	1.05	0.45	10	1.05	0.45
	AC-4	Squirrel-cage motors: starting, plugging, inching	≤17	6	1	0.65	6	1	0.65	≤100	12	1.05	0.45	10	1.05	0.45
			≥17	6	1	0.35	6	1	0.35	≥100	12	1.05	0.35	10	1.05	0.35
	AC-5A	Switching of electric discharge lamp controls	-	-	-	-	-	-	-	-	3.0	1.05	0.45	3.0	1.05	0.45
	AC-5B	Switching of incandescent lamps	-	-	-	-	-	-	-	-	-	1.5②	1.05②	1.5②	1.05②	-
	AC-6A ③	Switching of transformers	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AC-6B ③	Switching of capacitor banks	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AC-7A	Slightly inductive loads in household appliances and similar applications	As specified by the manufacturer				-	-	-	-	1.5	1.05	0.8	1.5	1.05	0.8
	AC-7B	Motor-loads for household applications	As specified by the manufacturer				-	-	-	-	-	8.0	1.05①	8.0	1.05①	-
	AC-8A	Hermetic refrigerant compressor Motor control with manual resetting of overload releases ⑤	As specified by the manufacturer				-	-	-	-	-	6.0	1.05①	6.0	1.05①	-
	AC-8B	Hermetic refrigerant compressor Motor control with automatic resetting of overload releases ⑤	As specified by the manufacturer				-	-	-	-	-	6.0	1.05①	6.0	1.05①	-

Kind of current	Utilisation category	Typical applications	Verification of electrical endurance							Verification of rated making and breaking capacities						
			Make				Break			Make				Break		
			Ie / A	I / Ie	U / Ue	L/R ms	Ic / Ie	Ur / Ue	L/R ms	Ie / A	I / Ie	U / Ue	L/R ms	Ic / Ie	Ir / Ie	cos φ
DC	DC-1	Non-inductive or slightly inductive loads, resistance furnaces	All values	1	1	1	1	1	1	All values	1.5	1.05	1	1.5	1.05	1
	DC-3	Shunt motors: starting, plugging, inching, dynamic braking	All values	2.5	1	2	2.5	1	2	All values	4	1.05	2.5	4	1.05	2.5
	DC-5	Series motors: starting, plugging, inching, dynamic braking	All values	2.5	1	7.5	2.5	1	7.5	All values	4	1.05	15	4	1.05	15
	DC-6	Switching of incandescent lamps	-	-	-	-	-	-	-	1.5②	1.052②	-	1.5②	1.05②	-	-

① cos φ = 0.45 for Ie F 100 A; cos v = 0.35 for Ie f 100 A.
② The tests are to be carried out with an incandescent lamp load.
③ The test data is to be derived from the test values for AC-3 or AC-4 according to Table VIIb, EN 60947-1.
④ AC-3 category may be used for occasional inching (jogging) or plugging for limited time periods such as machine set-up. During such limited time periods, the number of such operations should not exceed five per minute or ten in any ten minute period.
⑤ A hermetic refrigerant compressor motor is a combination consisting of a compressor and a motor, both of which are enclosed in the same housing, with no external shaft seals and with the motor operating in the refrigerant.

Utilisation categories

Utilisation categories for control switches to IEC 60947-5-1, VDE 0660 Part 200

Kind of current	Utilisation category	Typical applications	Normal conditions of use						Abnormal conditions of use					
			Make			Break			Make			Break		
			I/Ie	U/Ue	cos φ	Ic/Ie	Ur/Ue	cos φ	I/Ie	U/Ue	cos φ	Ic/Ie	Ir/Ie	cos φ
AC	AC-12	Control of resistive loads and solid state loads with isolation by optocouplers	1	1	0.9	1	1	0.9	–	–	–	–	–	-
	AC-13	Control of solid state loads with transformer isolation	2	1	0.65	1	1	0.65	10	1.1	0.65	1.1	1.1	0.65
	AC-14	Control of small electromagnetic loads (max 72 VA)	6	1	0.3	1	1	0.3	6	1.1	0.7	6	1.1	0.7
	AC-15	Control of electromagnetic loads (> 72 VA)	10	1	0.3	1	1	0.3	10	1.1	0.3	10	1.1	0.3

Kind of current	Utilisation category	Typical applications	Normal conditions of use						Abnormal conditions of use					
			Make			Break			Make			Break		
			I/Ie	U/Ue	t0.95	Ic/Ie	Ur/Ue	t0.95	I/Ie	U/Ue	t0.95	Ic/Ie	Ir/Ie	t0.95
DC	DC-12	Control of resistive and solid state loads with isolation by optocouplers	1	1	1	1	1	1	–	–	–	–	–	–
	DC-13	Control of electromagnets	1	1	6.P ⑥	1	1	6.P ⑥	1.1	1.1	6.P ⑥	1.1	1.1	6.P ⑥
	DC-14	Control of d.c. electromagnetic loads having economy resistors in circuit	10	1	15	1	1	15	10	1.1	15	10	1.1	15

Utilisation categories for switch-disconnectors, switches, disconnectors, and fuse combination units to IEC/EN 60947-3, and VDE 0660 Part 107

Kind of current	Utilisation category	Typical applications	Verification of electrical endurance							Verification of rated making and breaking capacities						
			Make				Break			Make				Break		
			Ie/A	I/Ie	U/Ue	cos φ	Ic/Ie	Ur/Ue	cos φ	Ie/A	I/Ie	U/Ue	cos φ	Ic/Ie	Ir/Ie	cos φ
AC	AC-20 A(B) ⑧	Connecting and disconnecting under no-load conditions	All values	⑦	⑦	⑦	⑦	⑦	⑦	All values	⑦	1.05	⑦	⑦	1.05	⑦
	AC-21 A(B) ⑧	Switching of resistive loads, including slight overloads	All values	1	1	0.95	1	1	0.95	All values	1.5	1.05	0.95	1.5	1.05	0.95
	AC-22 A(B) ⑧	Switching of mixed resistive and inductive loads, including slight overloads	All values	1	1	0.8	1	1	0.8	All values	3	1.05	0.65	3	1.05	0.65
	AC-23 A(B) ⑧	Switching of motor loads or other highly inductive loads	All values	1	1	0.65	1	1	0.65	Ie ≦100	10	1.05	0.45	8	1.05	0.45
										Ie ≧100	10	1.05	0.35	8	1.05	0.35

Kind of current	Utilisation category	Typical applications	Verification of electrical endurance							Verification of rated making and breaking capacities						
			Make				Break			Make				Break		
			Ie/A	I/Ie	U/Ue	L/R ms	Ic/Ie	Ur/Ue	L/R ms	Ie/A	I/Ie	U/Ue	L/R ms	Ic/Ie	Ir/Ie	cos φ
DC	DC-20 A(B) ⑧	Connecting and disconnecting under no-load conditions	All values	⑦	⑦	⑦	⑦	⑦	⑦	All values	⑦	1.05	⑦	⑦	1.05	⑦
	DC-21 A(B) ⑧	Switching of resistive loads, including slight overloads	All values	1	1	1	1	1	1	All values	1.5	1.05	1	1.5	1.05	1
	DC-22 A(B) ⑧	Switching of mixed resistive and inductive loads, including slight overloads (e.g. series motors)	All values	1	1	2	1	1	2	All values	4	1.05	2.5	4	1.05	2,5
	DC-23 A(B) ⑧	Switching of highly inductive loads (e.g. series motors)	All values	1	1	7.5	1	1	7.5	All values	4	1.05	15	4	1.05	15

⑥ The value "6.P" results from an empirical relationship which is found to represent most D.C. magnetic loads to an upper limit of P = 50 W, where 6.P = 300 ms. Loads having power consumption greater than 50 W are assumed to consist of smaller loads in parallel. Therefore, 300ms is to be an upper limit, irrespective of the power consumption value.
⑦ If the switching device has a making and/or breaking capacity, the figures for the current and the power factor (time constants) must be stated by the manufacturer.
⑧ A: frequent operation, B: occassional operation.

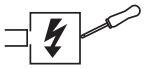
Degrees of protection, protection ratings

Degrees of protection given to electrical apparatus by enclosures and covers, in accordance with AS60529

IP □ □

First Numeral
Protection against the ingress of solid particles

Second Numeral
Protection against harmful ingress of water

IP	Requirements	Example	Protection of persons against access to hazardous parts with:
0	No protection		Nonprotected
1	Full penetration of 50 mm diameter sphere not allowed. Contact with hazardous parts not permitted.		Back of hand
2	Full penetration of 12.5 mm diameter sphere not allowed. The jointed test finger shall have adequate clearance from hazardous parts.		Finger
3	The access probe of 2.5 mm diameter shall not penetrate.		Tool
4	The access probe of 1.0 mm diameter shall not penetrate.		Wire
5	Limited ingress of dust permitted (no harmful deposit).		Wire
6	Totally protected against the ingress of dust.		Wire

This Chart is intended to be read in conjunction with AS60529. Degrees of protection provided by enclosures for electrical equipment (IP Code).
The symbols shown on this chart are for explanatory purposes only. They are not part of the IP Code and must not be used instead of the Code.

IP	Requirements	Example	Protection from water
0	No protection		Nonprotected
1	Protected against vertically falling drops of water. Limited ingress permitted.		Vertically dripping
2	Protected against vertically falling drops of water with the enclosure tilted 15° from the vertical. Limited ingress permitted.		Dripping up to 15° from the vertical
3	Protected against sprays to 60° from the vertical. Limited ingress permitted.		Limited spraying
4	Protected against water splashed from all directions. Limited ingress permitted.		Splashing from all directions
5	Protected against jets of water. Limited ingress permitted.		Hosing jets from all directions
6	Protected against strong jets of water. Limited ingress permitted.		Strong hosing jets from all directions
7	Protected against the effects of immersion between 15 cm and 1 m.		Temporary immersion
8	Protected against long periods of immersion under pressure		Continuous immersion

Installation relays Z-R, installation contactors Z-SCH for lighting systems

			Z-R.20/..	Z-SCH/25/..	Z-SCH/40/..	Z-SCH/63/..	Z-SC
The decisive factors are the type, connection and current consumption of lamps during switch-on and in permanent operation. Only 90 % of the continuous current of switching devices should be used in view of higher current consumption as a result of increases of voltage. The maximum number of lamps per phase that can be operated by a switching device is dependent on the nominal current and making current of lamps on the one hand, and on the continuous current and making capacity of the switching devices on the other. Thus, e.g. in lead-lag circuits, the continuous current of contactors can be used, while this is not possible in fluorescent tubes with separate compensation.							
Utilisation category AC 1							
Rated operational current at 60 °C	Ie AC 1	A	20	25	40	63	–
Making capacity							
Root mean square	Ieff	A	120	165	300	400	–
Peak value	Ipeak	A	170	233	424	565	–
Utilisation category AC 5a							
Rated operational power 220 – 240 Vh	cos ƒ 0,5	kW	1,1	1,3	3,4	5,5	–
	cos ƒ 0,9	kW	0,4	0,4	1,6	2,1	–
	DUO	kW	3	3,7	6,3	10	–
Utilisation category AC 5b							
Rated operational power 220 – 240 Vh	–	kW	1,4	1,8	3,6	5,1	–

Incandescent lamps

	Power ,W	Current, A	Z-R.20/..	Z-SCH/25/..	Z-SCH/40/..	Z-SCH/63/..	Z-SC
			max. number of lamps per current path at 230 V, 50 Hz				
The incandescent lamp filament has a very low ohmic resistance when it is cold. Therefore, when switching on, there is a high peak current (up to 20 x In). When switching off, only the nominal current is switched off.							
Utilisation category AC 5b	60	0,27	22	28	58	85	–
	100	0,45	13	17	35	51	–
	200	0,91	7	8	17	25	–
	300	1,36	4	5	11	16	–
	500	2,27	3	3	7	10	–
	1000	4,5	1	1	3	5	–

Fluorescent tubes, mercury arc lamps

High and low pressure discharge lamps with mercury vapour, with or without fluorescent-coated glass body are perfectly identical in their electrical behaviour. In order to limit the operational current and pre-conduction current, and to achieve the initial peak voltage, reactance coils are used as ballast. Capacitors are used for compensation of the resulting reactive current, which are either connected in series with the coil (lead-lag circuit) or parallel to the mains (separate compensation, very rarely used now). The high making current in case of separate compensation (max. 30 x nominal current of the capacitor) which goes down quickly is usually attenuated considerably by the feed line.

Utilisation category AC 5a	
Fluorescent lamps without comp. or with series comp.	I = IeAC1 x 0,5
Lead-lag circuit (2 x ..)	I = IeAC1 x 0,35
Fluorescent tubes parallelcomp.	I = Ipeak / 100 (take into account compensation capacitor)
I / Ilamp = number of connectable lamps per current path	
Fluorescent tubes with electronic ballast	I = Ipeak / 50
Mercury arc lamps, HD without compensation	I = IeAC1 x 0,5
Mercury arc lamps, HD with compensation	I = Ipeak / 100 (take into account compensation capacitor)

Lamp types	Power, W	Current, A	Capacitor, µF	Z-R.20/..	Z-SCH/25/..	Z-SCH/40/..	Z-SCH/63/..	Z-SC
Utilisation category AC 5a			max. number of lamps per current path at 230 V, 50 Hz					
Fluorescent lamps without compensation or with series compensation	11	0,16	–	60	75	210	310	–
	18	0,37	2,7	25	30	90	140	–
	24	0,35	2,5	25	30	90	140	–
	36	0,43	3,4	20	25	70	140	–
	58	0,67	5,3	14	17	45	70	–
	65	0,67	5,3	13	16	40	65	–
	85	0,8	–	11	14	35	60	–
Fluorescent tubes lead-lag circuit	11	0,07	–	2 x 100	2 x 110	2 x 220	2 x 250	–
	18	0,11	–	2 x 50	2 x 55	2 x 130	2 x 200	–
	24	0,14	–	2 x 40	2 x 44	2 x 110	2 x 160	–
	36	0,22	–	2 x 30	2 x 33	2 x 70	2 x 100	–
	58	0,35	–	2 x 20	2 x 22	2 x 46	2 x 70	–
	65	0,35	–	2 x 15	2 x 16	2 x 40	2 x 60	–
	85	0,47	–	2 x 10	2 x 11	2 x 30	2 x 40	–
Fluorescent tubes with parallel comp.	11	0,16	2,0	30	30	100	140	–
	18	0,37	2,0	20	20	70	90	–
	24	0,35	3,0	15	15	55	75	–
	36	0,43	4,5	10	10	38	51	–
	58	0,67	7,0	6	6	25	30	–
	65	0,67	7,0	5	5	24	28	–
	85	0,8	8,0	4	4	18	23	–
Fluorescent tubes with electronic ballast	18	0,09	–	40	40	100	150	–
	36	0,16	–	20	20	50	75	–
	58	0,25	–	15	15	30	55	–
	2 x 18	0,17	–	2 x 20	2 x 20	2 x 50	2 x 60	–
	2 x 36	0,32	–	2 x 10	2 x 10	2 x 25	2 x 30	–
	2 x 58	0,49	–	2 x 7	2 x 7	2 x 15	2 x 20	–
Mercury arc lamps, high pressure without compensation e. g.: HQL, HPL	50	0,61	–	16	18	38	55	–
	80	0,8	–	12	14	28	40	–
	125	1,15	–	8	9	20	28	–
	250	2,15	–	4	5	11	15	–
	400	3,25	–	3	4	7	10	–
	700 1000	5,4 7,5	– –	1 1	2 1	4 3	6 4	– –
Mercury arc lamps, high pressure with compensation e. g.: HQL, HPL	50	0,28	7	7	7	32	46	–
	80	0,41	8	5	5	25	35	–
	125	0,65	10	3	3	16	22	–
	250	1,22	18	2	2	8	12	–
	400	1,95	25	1	1	5	7	–
	700	3,45	45	1	1	3	4	–
	1000	4,8	60	–	–	2	3	–

Metal halide lamps

Transformers for low-voltage halogen lamps

Metal halide lamps are a version of high-pressure mercury arc lamps with higher luminous efficiency and fidelity of colour (metalloids [halogens] added to the mercury fill up the HG-spectrum with its many gaps). Ballast and ignition devices are necessary. Starting time 3 ... 5 minutes at 1.4 – 2 x I. After switching on, it is not possible to light the lamp again immediately (lamp extinguishes after a power cut-off of only 1/2 period). Therefore, in many cases in important facilities ionisation of part of the lamps is maintained by switching over to 415 V, 500 Hz (e.g. to an emergency power supply). In this case, the lamp lights immediately after the mains voltage is on again. Otherwise, this would take several minutes. When using suitable ignition devices, the lamp can be lit again immediately.

I / Ilamp = number of connectable lamps per current path	
Metal halide lamps (HQI) without compensation	I = IeAC1 x 0,5
Metal halide lamps (HQI) with compensation	I = Ipeak / 100 (take into account compensation capacitor)
Transformer for low voltage halogen lamps	I = Ipeak / 50

Lamp types	**Power ,W**	**Current, A**	**Capacitor, µF**	**Z-R.20/..**	**Z-SCH/25/..**	**Z-SCH/40/..**	**Z-SCH/63/..**	**Z-SC**
Lamp types			max. number of lamps per current path at 230 V, 50 Hz					
Metal halide lamps without compensation e. g. HQI, HPI	35	0,53	–	22	24	45	65	–
	70	1	–	12	14	24	35	–
	150	1,8	–	6	8	13	18	–
	250	3	–	4	5	8	12	–
	400	3,5	–	3	4	6	10	–
	1000	9,5	–	1	1	2	4	–
	2000	16,5	–	–	–	1	2	–
Metal halide lamps with compensation e. g. HQI, HPI	35	0,25	6	8	8	38	50	–
	70	0,45	12	4	4	20	28	–
	150	0,75	20	2	2	12	17	–
	250	1,5	33	1	1	7	10	–
	400	2,1	35	1	1	5	7	–
	1000	5,8	95	–	–	2	3	–
	2000	11,5	148	–	–	1	1	–
Transformers for low-voltage halogen lamps	20	–	40	52	110	174	–	–
	50	–	20	24	50	80	–	–
	75	–	13	16	35	54	–	–
	100	–	10	12	27	43	–	–
	150	–	7	9	19	29	–	–
	200	–	5	5	14	23	–	–
	300	–	3	4	9	14	–	–

Sodium vapour lamps

For 200 W, 1200 mm high-pressure lamps and low-pressure lamps, reactance coils are used as ballast. For smaller lamps, stray field transformers can be used as ballast. Take into account, the long starting period.

Low pressure lamps		**High pressure lamps**	
Without compensation		Without compensation	
Making current	1 x Xle, cos f 0,3	Making current	1,4 x Xle, cos f 0,5
Starting time	5 .. 10 min	Starting time	5 .. 10 min (at 1,6 x In), I = Ipeak / 200
Decisive for selection of device	60 % continuous current I = IeAC1 x 0,6	Decisive for selection of device	60% continuous current I = IeAC1 x 0,6
With compensation		With compensation	
Making current	20 x Xle, cos f 0,45	Making current Starting time	20 x Xle, cos f 0,95
Starting time	5 .. 10 min (at 1,6 x In), I = Ipeak / 200	Starting time	5 .. 10 min (at 1,6 x In)

Lamp types	**Power ,W**	**Current, A**	**Capacitor, µF**	**Z-R.20/..**	**Z-SCH/25/..**	**Z-SCH/40/..**	**Z-SCH/63/..**	**Z-SC**
Lamp types			max. number of lamps per current path at 230 V, 50 Hz					
Sodium vapour lamps low-pressure without compensation	35	1,5	–	7	9	22	30	–
	55	1,5	–	7	9	22	30	–
	90	2,4	–	4	6	13	19	–
	135	3,5	–	3	4	10	13	–
	150	3,3	–	3	4	10	13	–
	180	3,3	–	3	4	10	13	–
	200	3,3	–	3	4	10	13	–
Sodium vapour lamps low-pressure with compensation	35	0,31	20	3	3	12	16	–
	55	0,42	20	2	2	8	14	–
	90	0,63	30	1	1	5	9	–
	135	0,94	45	1	1	3	6	–
	150	1	40	1	1	3	6	–
	180	1,16	40	1	1	2	5	–
	200	1,32	25	1	–	2	4	–
Sodium vapour lamps high-pressure without compensation	150	1,8	–	5	6	11	22	–
	250	3	–	4	5	7	13	–
	330	3,7	–	3	4	6	10	–
	400	4,7	–	2	2	5	8	–
	1000	10,3	–	1	1	5	4	–
Sodium vapour lamps high-pressure with compensation	150	0,83	20	2	2	7	14	–
	250	1,5	33	2	2	4	8	–
	330	2	40	1	1	3	6	–
	400	2,4	48	1	1	2	5	–
	1000	6,3	106	–	–	1	2	–

Conversion table

To convert	**Multiply by**
Inches to millimetres (mm)	25.4
Millimetres to inches	0.03937
Feet to metres (m)	0.3048
Metres to feet (ft)	3.2808
Yards to metres (m)	0.9144
Metres to yards (yd)	1.0936
Miles to kilometres (km)	1.6093
Kilometres to miles	0.6214
Square inches to square millimetres (mm2)	645.16
Square millimetres to square inches (inch2)	0.00155
Square yards to square metres (m2)	0.8361
Square metres to square yards (yd2)	1.196
Cubic inches to cubic centimetres (cm3)	16.387
Cubic centimetres to cubic inches (inch3)	0.06102
Pounds to kilograms (kg)	0.4536

To convert	**Multiply by**
Kilograms to pounds (lb)	2.2046
Tons (2240 lb) to kilograms (kg)	1016.05
Kilograms to tons (2240 lb)	0.0009842
Ounces to grams (g)	28.3495
Grams to ounces	0.0353
Gallons to litres (l)	4.561
Litres to gallons	0.220
Force N (Newtons) to lbft	0.225
1 N = 1 kg (mass) accelerated at 1 metre/sec.	0.239
1 Nm = 1 J (Joule) to calorie	–
Horse power to kilowatts (kW)	0.7458
Kilowatts to horse power (hp)	1.3408
1 W (watt) = 1 J/S	–
Atmospheres to lb per square inch (lb/inch2)	14.68
1 bar = 1 kg/cm2 = 735.6 mm Hg = 14.2lb/inch2	–

Fuse comparison chart

Clip-in fuse-links

For industrial application & general back-up protection. Complies to BS88 Part 6 & IEC60269-2 2006. All bold part numbers are Eaton Electric product offerings.

Amp rating	BS Ref.	Length	Bussmann	Eaton MEM	Lawson	GE	Siemens
2 to 32	F1	60mm	**NSD**	SN2	NS	NS	3NW NS
16 to 63	F2	67mm	**ESD**	SP	MES	ES	3NW ES

Bolt-in fuse-links

For industrial application & general back-up protection. Complies to BS88 Part 1 & 2 & IEC60269-1 & IEC60269-2 2006. All bold part numbers are Eaton Electric product offerings.

Amp rating	BS Ref.	Fixing centres	Bussmann	Eaton MEM	Lawson	GE	Siemens
Offset Tags							
2 to 32	A1	44mm	**NITD**	SA2	NIT	NIT	3NW NIT
2 to 32	A2	73mm	**AAO**	SB3	TIA	TIA L	3NW TIA
35 to 63	A3	73mm	**BAO**	SB4	TIS	TIS L	3NW TIS
80 to 100	A3	73mm	**OSD**	SO	TIS	OS	3NW OS
25 to 100	A4	94mm	**CEO**	SD5	TCP	TCP L	3NW TCP
125 to 200	-	94mm	**DEO**	SD6	TFP	TFP	3NW TFP
Centre Tags							
2 to 32	-	97mm	**AC**	SE3	TB	TB	3NW TB
40 to 63	-	97mm	**BC**	SE4	TB	TB	3NW TB
2 to 32	B1	111mm	**AD**	SF3	TBC	TBC	3NW TBC
40 to 63	B1	111mm	**BD**	SF4	TBC	TBC	3NW TBC
80 to 100	B1	111mm	**CD**	SF5	TC	TC	3NW TC
125 to 200	B2	111mm	**DD**	SF6	TF	TF	3NW TF
250 to 315	B3	111mm	**ED**	SF7	TKF	TKF	3NW TKF
355 to 400	B4	111mm	**ED**	SF8	TMF	TMF	3NW TMF
250 to 315	-	133mm	**EFS**	SG7	TKM	TKM	3NW TKM
355 to 400	C1	133/184mm	**EF**	SH8	TM	TM	3NW TM
450 to 630	C2	133/184mm	**FF**	SH9	TTM	TTM	3NW TTM
450 to 630	-	165/229mm	**FG**	SY9	TT	TT	3NW TT
710 to 800	C3	133/184mm	**GF**	SH10	TLM	TLM	3NW TLM
710 to 800	-	165/229mm	**GG**	SY10	TLT	TLT	3NW TLT
1000 to 1250	D1	149mm	**GH**	SJ11	-	TXU	3NW TXU

Consumer fuse-links

Domestic service installations. Complies to BS1361 & IEC60269-3 2006. All bold part numbers are Eaton Electric product offerings.

Amp rating	Dimensions	Bussmann	Eaton MEM	Lawson	GE	Siemens
10 to 100	22 x 57mm	**KR85**	4R	ME	RHF	3NW RHB
30 to 100	30 x 57mm	**LR85**	4RL	MF	RHLF	3NW RHLB

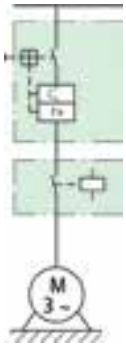
DIN 'NH' type

For industrial application & general back-up protection. Complies to EN60269-2-1 & VDE0636. All bold part numbers are Eaton Electric product offerings.

Amp rating	DIN Size	Bussmann	Eaton MEM	Lawson	GE	Siemens
6 to 100	000	**NHG000B**	F5GG_U000	LSPN000	NHG00-0	3NA2 8
125 to 160	00	**NHG00B**	F5GG_U00	LSPN00	NHG00	3NA2 8
25 to 250	1	**NHG1B**	F5GG_U1	LSPN1	NHG1	3NA2 1
40 to 400	2	**NHG2B**	F5GG_U2	LSPN2	NHG2	3NA2 2
315 to 630	3	**NHG3B**	F5GG_U3	LSPN3	NHG3	3NA3 3

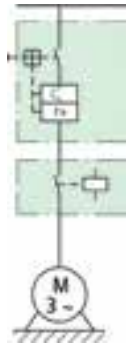
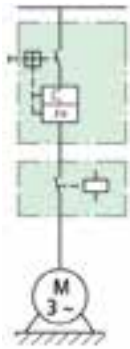
Type “1”, type “2” coordination

DOL starters 400/415 V

	Motor ratings			Setting range		Breaker	Contactor
	Motor data, AC-3, 380 V, 400 V, 415 V, P, kW	Rated operational current, 400 V, Ie, A	Rated short-circuit current, 380 – 415 V, Iq, kA	Overload releases, Ir, A	Short-circuit releases, Irm, A		
Type “1” coordination							
	Modules PKZM0 and DILM						
	0.06	0.21	150	0.16 – 0.25	3.5	PKZM0-0,25	DILM7-...(...)
	0.09	0.31	150	0.25 – 0.4	5.6	PKZM0-0,4	DILM7-...(...)
	0.12	0.41	150	0.4 – 0.63	8.82	PKZM0-0,63	DILM7-...(...)
	0.18	0.6	150	0.4 – 0.63	8.82	PKZM0-0,63	DILM7-...(...)
	0.25	0.8	150	0.63 – 1	14	PKZM0-1	DILM7-...(...)
	0.37	1.1	150	1 – 1.6	22.4	PKZM0-1,6	DILM7-...(...)
	0.55	1.5	150	1 – 1.6	22.4	PKZM0-1,6	DILM7-...(...)
	0.75	1.9	150	1.6 – 2.5	35	PKZM0-2,5	DILM7-...(...)
	1.1	2.6	150	2.5 – 4	56	PKZM0-4	DILM7-...(...)
	1.5	3.6	150	2.5 – 4	56	PKZM0-4	DILM7-...(...)
	2.2	5	150	4 – 6.3	88.2	PKZM0-6,3	DILM7-...(...)
	3	6.6	150	6.3 – 10	140	PKZM0-10	DILM9-...(...)
	4	8.5	150	6.3 – 10	140	PKZM0-10	DILM9-...(...)
	5.5	11.3	50	8 – 12	168	PKZM0-12	DILM12-...(...)
	7.5	15.2	50	10 – 16	224	PKZM0-16	DILM17-...(...)
	11	21.7	50	20 – 25	350	PKZM0-25	DILM25-...(...)
	15	29.3	50	25 – 32	448	PKZM0-32	DILM32-...(...)
	Modules PKZM4 and DILM						
	5.5	11.3	50	10 – 16	224	PKZM4-16	DILM17-...(...)
	7.5	16	50	10 – 16	224	PKZM4-16	DILM17-...(...)
	11	21.7	50	20 – 25	350	PKZM4-25	DILM25-...(...)
	15	29.3	50	25 – 32	448	PKZM4-32	DILM32-...(...)
	18.5	36	50	32 – 40	560	PKZM4-40	DILM40(...)
	22	41	50	40 – 50	700	PKZM4-50	DILM50(...)
	30	55	50	50 – 58	812	PKZM4-58	DILM65(...)
	34	63	50	55 – 65	882	PKZM4-63	DILM65(...)
Type “2” coordination							
	Modules PKZM0 and DILM						
	0.06	0.21	50	0.16 – 0.25	3.5	PKZM0-0,25	DILM7-...(...)
	0.09	0.31	50	0.25 – 0.4	5.6	PKZM0-0,4	DILM7-...(...)
	0.12	0.41	50	0.4 – 0.63	8.82	PKZM0-0,63	DILM7-...(...)
	0.18	0.6	50	0.4 – 0.63	8.82	PKZM0-0,63	DILM7-...(...)
	0.25	0.8	50	0.63 – 1	14	PKZM0-1	DILM7-...(...)
	0.37	1.1	50	1 – 1.6	22.4	PKZM0-1,6	DILM7-...(...)
	0.55	1.5	50	1 – 1.6	22.4	PKZM0-1,6	DILM7-...(...)
	0.75	1.9	50	1.6 – 2.5	35	PKZM0-2,5	DILM7-...(...)
	1.1	2.6	50	2.5 – 4	56	PKZM0-4	DILM7-...(...)
	1.5	3.6	50	2.5 – 4	56	PKZM0-4	DILM7-...(...)
	2.2	5	50	4 – 6.3	88.2	PKZM0-6,3	DILM7-...(...)
	3	6.6	50	6.3 – 10	140	PKZM0-10	DILM17-...(...)
	4	8.5	50	6.3 – 10	140	PKZM0-10	DILM17-...(...)
	5.5	11.3	50	8 – 12	168	PKZM0-12	DILM17-...(...)
	7.5	15.2	50	10 – 16	224	PKZM0-16	DILM17-...(...)
	11	21.7	50	20 – 25	350	PKZM0-25	DILM25-...(...)
	15	29.3	50	25 – 32	448	PKZM0-32	DILM32-...(...)
	Modules PKZM4 and DILM						
	5.5	11.3	50	10 – 16	224	PKZM4-16	DILM17-...(...)
	7.5	16	50	10 – 16	224	PKZM4-16	DILM17-...(...)
	11	21.7	50	20 – 25	350	PKZM4-25	DILM25-...(...)
	15	29.3	50	25 – 32	448	PKZM4-32	DILM32-...(...)
	18.5	36	50	32 – 40	560	PKZM4-40	DILM40(...)
	22	41	50	40 – 50	700	PKZM4-50	DILM50(...)
	30	55	50	50 – 58	812	PKZM4-58	DILM65(...)
	34	63	50	55 – 65	882	PKZM4-63	DILM65(...)

Type "1", type "2" coordination

Motor starter and combination, type "2" coordination – direct-on-line starters 400/415 V

	Motor ratings			Setting range		Breaker	Contactor
	Motor data, AC-3, 380 V, 400 V, 415 V, P, kW	Rated operational current, 400 V, Ie, A	Rated short-circuit current, 400 V/415 V, Lq, kA	Overload releases, Ir, A	Short-circuit releases, Li, A		
Type "2" coordination – direct-on-line starters 400/415 V							
	15	29,3	50	25 – 32	320 – 448	NZMN1-M32	DILM80(...)
	18,5	36	50	32 – 40	320 – 560	NZMN1-M40	DILM80(...)
	22	41	50	40 – 50	400 – 700	NZMN1-M50	DILM80(...)
	30	55	50	50 – 63	504 – 882	NZMN1-M63	DILM80(...)
	37	68	50	63 – 80	640 – 1120	NZMN1-M80	DILM80(...)
	45	81	50	80 – 100	800 – 1250	NZMN1-M100	DILM95(...)
	55	99	50	80 – 100	800 – 1250	NZMN1-M100	DILM115(...)
	75	134	50	125 – 160	1280 – 2240	NZMN2-M160	DILM150(...)
	90	161	50	160 – 200	1600 – 2500	NZMN2-M200	DILM185/22(...)
	110	196	50	160 – 200	1600 – 2500	NZMN2-M200	DILM225/22(...)
	132	231	50	175 – 350	350 – 4900	NZMN3-ME350	DILM250/22(...)
	160	279	50	175 – 350	350 – 4900	NZMN3-ME350	DILM300/22(...)
	200	349	50	175 – 350	350 – 4900	NZMN3-ME350	DILM400/22(...)
	250	437	50	225 – 450	450 – 6300	NZMN3-ME450	DILM500/22(...)
Type "1" coordination – direct-on-line starters 400/415 V							
	15	29,3	50	25 – 32	320 – 448	NZMN1-M32	DILM40(...)
	18,5	36	50	32 – 40	320 – 560	NZMN1-M40	DILM40(...)
	22	41	50	40 – 50	400 – 700	NZMN1-M50	DILM50(...)
	30	55	50	50 – 63	504 – 882	NZMN1-M63	DILM65(...)
	37	68	50	63 – 80	640 – 1120	NZMN1-M80	DILM80(...)
	45	81	50	80 – 100	800 – 1250	NZMN1-M100	DILM95(...)
	55	99	50	80 – 100	800 – 1250	NZMN1-M100	DILM115(...)
	75	134	50	125 – 160	1280 – 2240	NZMN2-M160	DILM150(...)
	90	161	50	160 – 200	1600 – 2500	NZMN2-M200	DILM185/22(...)
	110	196	50	160 – 200	1600 – 2500	NZMN2-M200	DILM225/22(...)
	132	231	50	175 – 350	350 – 4900	NZMN3-ME350	DILM250/22(...)
	160	279	50	175 – 350	350 – 4900	NZMN3-ME350	DILM300/22(...)
	200	349	50	175 – 350	350 – 4900	NZMN3-ME350	DILM400/22(...)
	250	437	50	225 – 450	450 – 6300	NZMN3-ME450	DILM500/22(...)
	315	544	50	275 – 550	550 – 7700	NZMN4-ME550	DILM580/22(...)
	400	683	50	438 – 875	875 – 12250	NZMN4-ME875	DILM650/22(...)
	450	750	50	438 – 875	875 – 12250	NZMN4-ME875	DILM750/22(...)
	500	820	50	438 – 875	875 – 12250	NZMN4-ME875	DILM820/22(...)
	560	947	50	700 – 1400	1400 – 19600	NZMN4-ME1400	DILM820/22(...)

Software tool "Characteristics Program"

Setting-specific representation of tripping characteristics and competent assessment of their interaction Explanations regarding the "Characteristics Program" software tool If several protective devices are to interact effectively in a switchgear system, it is necessary to compare their tripping characteristics in order to evaluate their selectivity for the demands of enhanced system availability. It is important to use characteristic curves which take the actual individual settings on the protective devices into account for all tests. This is practically impossible with printed graphical representations. The device-specific setting features are presented and assigned to the differing electrical equipment.

The "Characteristics Program" software tool enables a simple common representation of the curves on multiple protective devices on the same time and current scales for very little effort. This significantly simplifies the representation of the curves. The tool enables assessment of the interaction of the Moeller circuitbreakers of the NZM and IZM series, as well as combinations with low-voltage highbreaking-capacity fuses with gL-characteristic (Figure 1).

The handling involved with the Excel file based tool is briefly presented. The result, which allows for common representation of the curves as protected engineering documentation with individual project designations, can be saved, printed or exported to other documents.

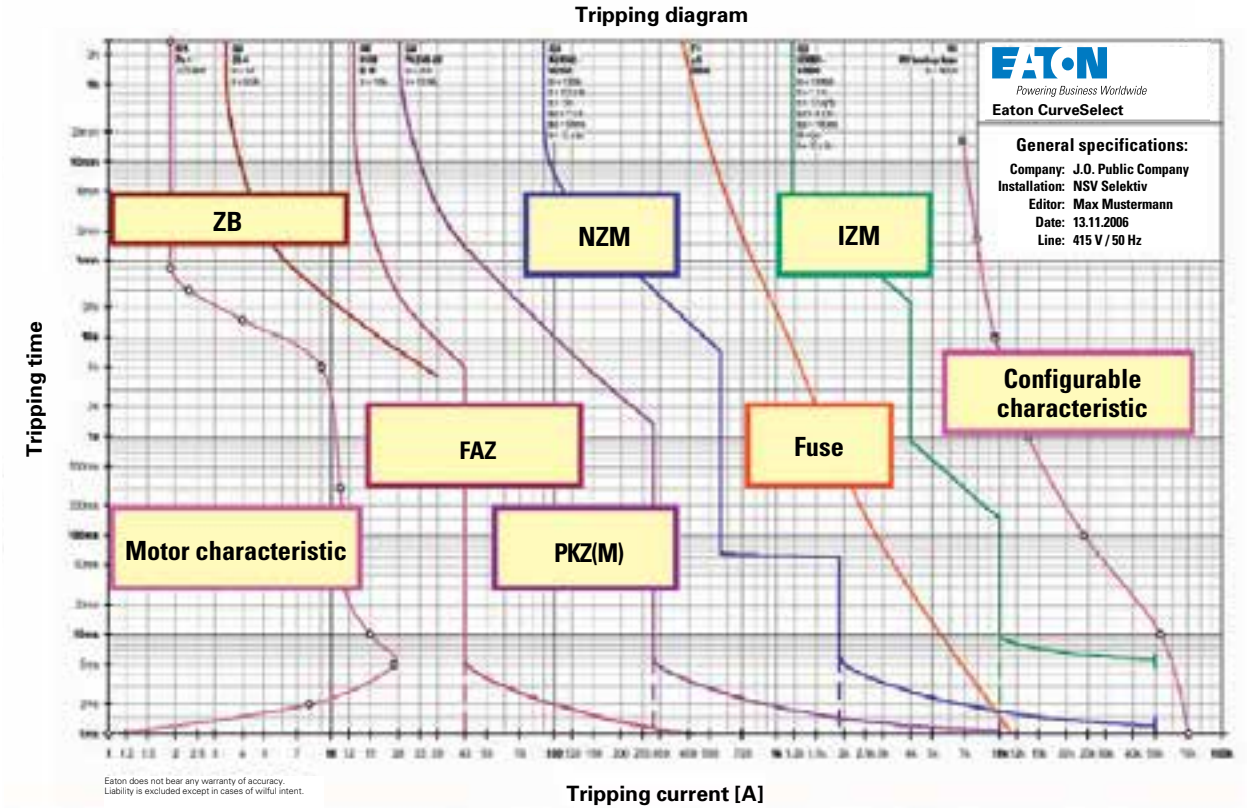


Figure 1: Representation of the tripping characteristic of different protective devices on the same time and current scale, using the example of a h.b.c. fuse characteristic (red), three NZM tripping characteristics (blue) and the tripping characteristic of an IZM (green). The device data and settings are stated at the upper end of the curves.

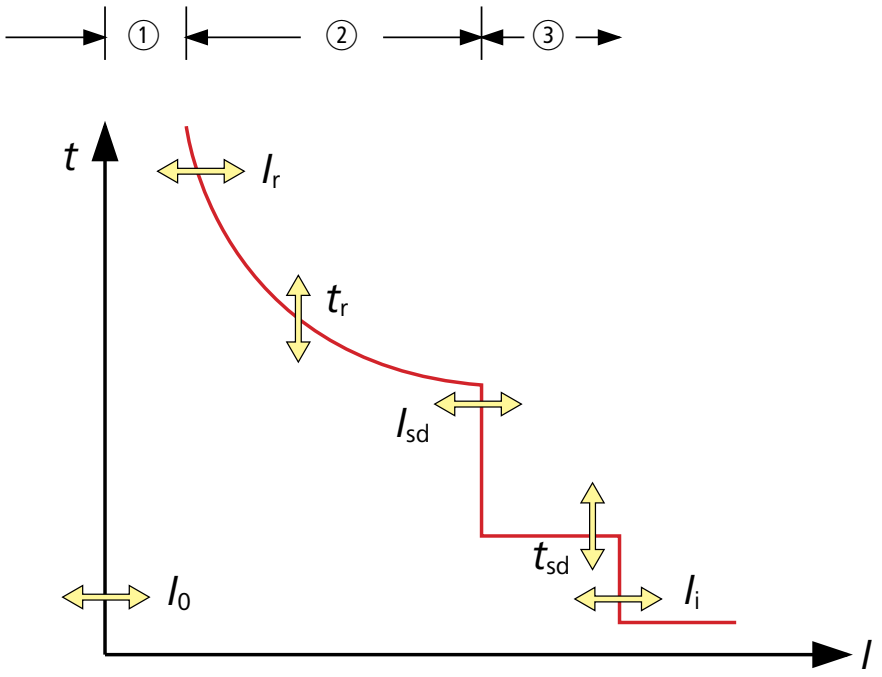


Figure 2: The figure indicates a tripping characteristic with functional ranges
1. Non-trip range/operating range to the left of or under the red tripping characteristic,
2. Overload range, a brief overload is possible,
3. Short-circuit range.
The figure also indicates the variable parameters corresponding to Table 4, which enable applicationspecific design of the characteristic curve.

Software tool "Characteristics Program"

Setting I_r for overload release

- Response value Ii for delayed short-circuit release
- Response value Isd for delayed short-circuit release
- Time delay setting to overcome current peaks tr for overload release
- Delay time tsd for short delayed short-circuit release

Up to now, it was difficult to represent individual characteristic curves and to compare them with one another. Quiet often the comparison failed due to the differing scales for the representation of the coordinates of the curves for circuitbreakers and fuses. This has now changed with the new software tool. All curves are now displayed on a single sheet enabling simple visual evaluation. The handling is very simple as the user is offered the permissible variables in the type-specific input sheets. He simply has to enter the respective variable manually into the mask.

The program is available on request.

1. The program is copied onto a PC as an Excel file on which Microsoft Excel® is already installed.
2. The German or English language versions can be selected in the "General" sheet. On this sheet "General details" of the project are entered and are automatically accepted into the representation of the characteristic curves.
3. With the worksheets "NZM...", "IZM..." or "Fuses" you can select the protective device whose characteristic curve you want to represent next.
4. After entering the data for the first protective device and after each further input, the tripping characteristic(s) are displayed on the "Tripping graphs <> Curves" (Figure 1).
5. The entire worksheet or just the "Characteristics <> Curves" can be printed.
6. All curves are represented assuming the cold state and without representation of the standard-conform tolerances of the response ranges, and the tripping times are represented as mean values of the parameterized tripping characteristic.
7. In order to ensure selectivity (discrimination) in the overload range, the curves represented for the circuit-breaker under one another, and the curves for the fuses may not cross or touch each other at any point. Consider the tolerances of the curves which are ± 20 % in the overload range. The overload selectivity (discrimination) of the selected devices has been reached at the meeting and crossover points.
8. Selectivity problems can normally be remedied by selecting another device or sometimes by modified device settings.

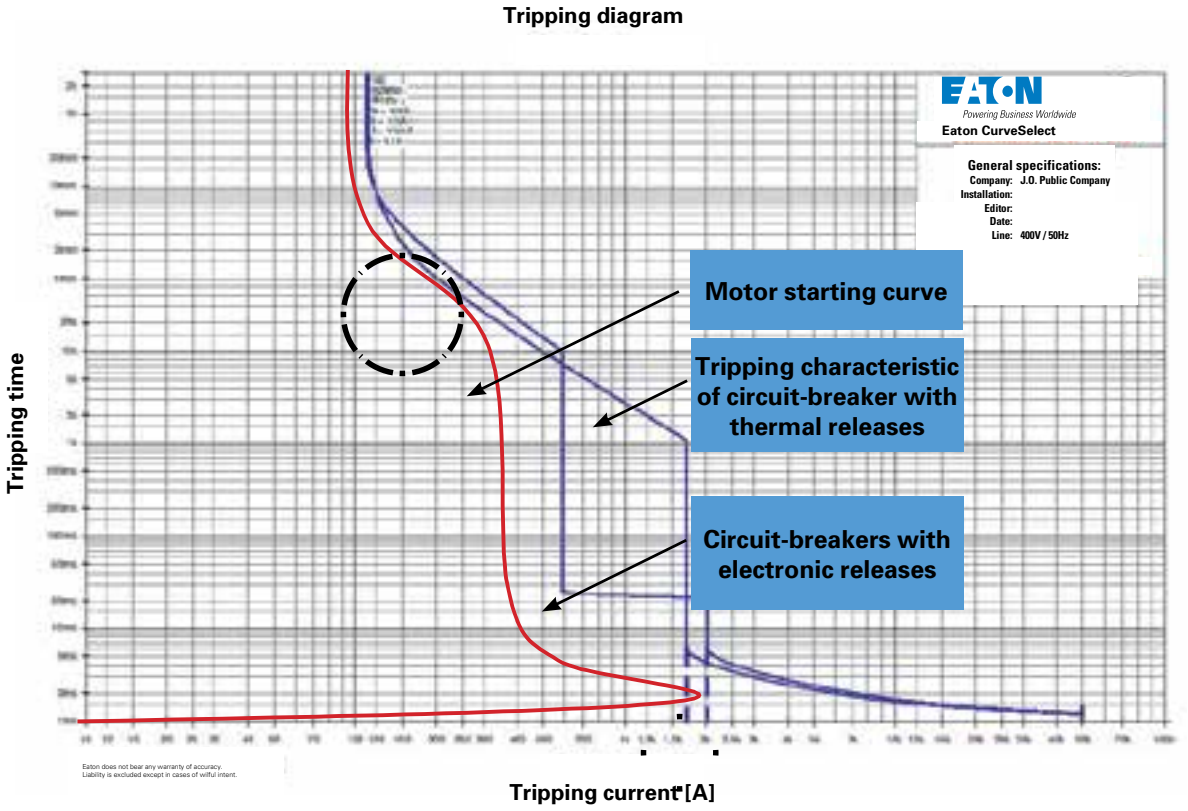


Figure 3: Circuit-breakers with electronic releases enable – by flexible setting features – a more exact matching to the typical current consumption curve of a starting three-phase motor than is possible with the switch on thermal overload releases.

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Eaton's electrical business is a global leader with expertise in power distribution and circuit protection; backup power protection; control and automation; lighting and security; structural solutions and wiring devices; solutions for harsh and hazardous environments; and engineering services. Eaton is positioned through its global solutions to answer today's most critical electrical power management challenges.

Eaton is a power management company with 2014 sales of $22.6 billion. Eaton provides energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. Eaton has approximately 102,000 employees and sells products to customers in more than 175 countries.

For more information, visit www.eaton.com.

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