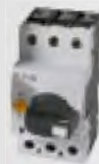


2015/ 2016 Power Distribution product guide



EATON

Powering Business Worldwide

MGE OFFICE PROTECTION SYSTEMS
 MCGRAW-EDISON MOELLER
 METALUX MEM CUTLER-HAMMER
 COOPER HALO ARROW HART
 B-LINE BUSSMANN MTL
 HOLEC MCGRAW-EDISON
 ARROW HART MEM BUSSMANN
 METALUX POWERWARE
 MEM HALO BUSSMANN
 MCGRAW-EDISON CEAG
 MOELLER MTL POWERWARE
 CEAG COOPER BUSSMANN
 MTL B-LINE
 HERNIS
 MCGRAW-EDISON
 B-LINE
 ARROW HART
 MOELLER
 HALO MEM
 MTL
 COOPER
 HERNIS POWERWARE
 BUSSMANN MTL ARROW HART
 B-LINE COOPER MCGRAW-EDISON
 MOELLER CEAG HOLEC MOELLER
 MTL POWERWARE CEAG
 MEM MGE OFFICE PROTECTION SYSTEMS
 HERNIS
 COOPER HALO CROUSE-HINDS

MORE POSSIBILITIES.
POWERFUL SOLUTIONS.

BRAND
INCEPTION
DATES:

COOPER



MOELLER

MEM

Bussmann

B-Line

HOLEC

PEDERSEN
POWER
PRODUCTS

SANTAK

1833

1874

1893

1897

1899

1906

1908

1911

1914

1934

1961

1962

1963

1967

1977

1983

1984

1989



wrightline

POWERWARE

MEISSNER

MGE
Office Protection Systems

CHI CONTROL

EATON

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.

Eaton.com



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.

Eaton.com



Powering Business Worldwide



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



Powering Business Worldwide

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.



Table of contents

Circuit protection.....pg 1	Ancillary products.....pg 319
IEC DIN MCB.....pg 3	Test and measurement.....pg 322
IEC MCCBpg 19	Meteringpg 329
Air circuit breakers.....pg 37	Wiring accessoriespg 338
xEnergy.....pg 39	Enclosurespg 349
LV Switchgearpg 42	Rhomberg.....pg 361
Fusegear.....pg 52	Rikopg 368
Quicklag MCB.....pg 99	Power qualitypg 369
Aftermarket and mining MCCBpg 109	
xBoard panelboardspg 125	
Medium voltage products.....pg 133	
 Power control.....pg 143	 Technical informationpg 389
Control and indicationpg 145	
Motor controlpg 194	
Drives and soft starterspg 246	
Automationpg 258	 Indexpg 403

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

Residential/Commercial/Industrial MCBs, RCDs & RCBOs	pg 3
Controlling & switching devices	pg 14
DIN MCB chassis	pg 17

IEC MCCB

NZM family overview	pg 19
NZM thermomagnetic type	pg 21
NZM electronic type	pg 23
NZM motor protection type	pg 24
NZM switch disconnectors	pg 24
NZM auxiliary contacts	pg 25
NZM undervoltage & shunt trip release devices	pg 26
NZM handles and locking devices	pg 27
NZM shroud and connection kits	pg 28
NZM remote operators and mechanical interlocks	pg 29
NZM paralleling mechanisms, energy metering and communication	pg 30
NZM earth leakage protection	pg 31
NZM chassis	pg 33
SASY 60i busbar system	pg 35

Air circuit breakers

xEnergy

LV Switchgear

QM switch disconnectors	pg 42
Dumeco panelboard switches	pg 42
Dumeco switches & disconnectors	pg 43
QSA switches & disconnectors	pg 45
QA switches & disconnectors	pg 47
K-Line series handles	pg 48
Q-line/Dumeco accessories	pg 49
MEMPROOF Isolators	pg 51

Fusegear

House service fuse chassis	pg 52
Street lighting products	pg 52
Photo electric controllers	pg 52
Bussmann series BS88 industrial fuse links	pg 54
Bussmann series mining & traction fuses & fuse holders - 1200v	pg 66
Bussmann series DIN industrial fuses & fuse holders	pg 67
Bussmann series high speed fuse links.	pg 73
Bussmann series solar products.	pg 87
Bussmann series North American fuse links & fuse holders.	pg 89
Bussmann series medium voltage fuse links.	pg 93
Bussmann series miniature & automotive fuse links.	pg 97

Quicklag MCB

Quicklag Miniature circuit breakers	pg 99
ELQ Earth Leakage breaker	pg 99
Quicklag accessories	pg 100
Quickmov™ Surge Protection Device	pg 101
Quicklag Chassis	pg 101
Quicklag Dimensional data	pg 102
Quicklag Technical data	pg 103
LCQ Metal Loadcentres	pg 107

Aftermarket and Mining MCCB

Series C – F Frame MCCBs	pg 109
The Rock – F Frame mining MCCBs	pg 109
Series C – J Frame MCCBs	pg 111
The Rock – J Frame mining MCCBs	pg 111
Series C – K Frame MCCBs	pg 113
The Rock – K Frame mining MCCBs	pg 113
Series C – L Frame MCCBs	pg 115
The Rock – L Frame mining MCCBs	pg 115
Series G – N Frame MCCBs	pg 117
The Rock – N Frame mining MCCBs	pg 117
Series G – R Frame MCCBs	pg 119
The Rock – R Frame mining MCCBs	pg 119
Aftermarket MCCB comparison chart	pg 121
The Rock mining MCCB application data	pg 122

xBoard panelboards

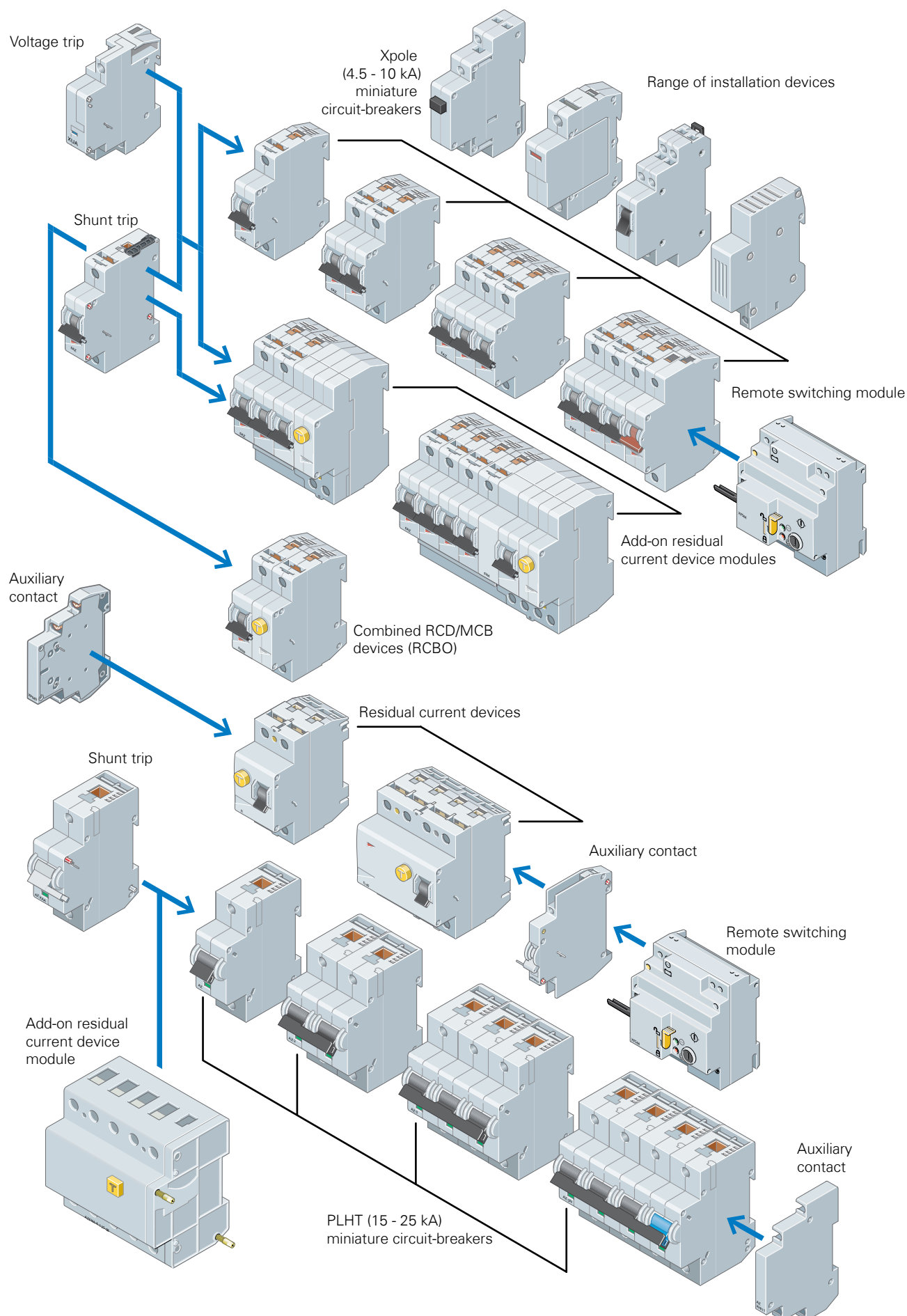
xBoard panelboards (xDB)	pg 125
xBoard Plus panelboards (xDBP)	pg 126
xBoard Weatherproof panelboards (xDBW)	pg 127
xBoard Plus Quicklag panelboards (xDBPQ)	pg 129
xBoard technical data	pg 130

Medium voltage products

Magnefix MD4	pg 133
XIRIA	pg 134
XIRIA-E	pg 135
Innovac SVS	pg 136
W-VACi	pg 137
T-VAC(R) medium voltage vacuum circuit breakers	pg 138
SL medium voltage vacuum contactors	pg 139
Power Xpert Ux	pg 140
Power Xpert FMX	pg 141
Medium voltage generator circuit breakers	pg 141

Circuit protection

IEC DIN MCB



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 1-25mm²
- 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

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



PLS4-C50/1-AU



PLS4-C6/2-AU



PLS4-C10/3-AU

Residential/commercial/industrial MCBs, RCDs & RCBOs

Miniature circuit breakers PLS6



PLS6-C50/1-AU



PLS6-C63/2-AU



PLS6-C25/3-AU



PLN6-B6/1N

- 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 1-25mm²
- 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

- 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 1-16mm²
- 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

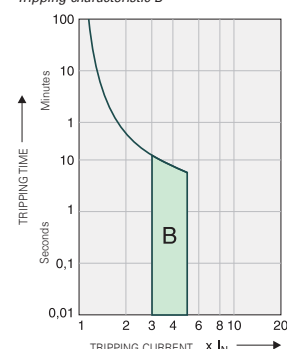
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Terminal capacity 1-25mm²
- Rated currents up to 63 A
- Tripping characteristics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



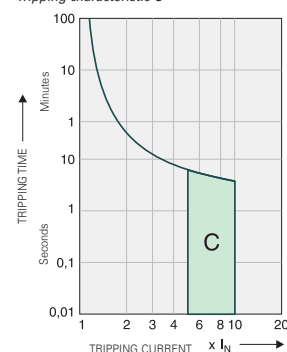
PLSM-C32/1-AU

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

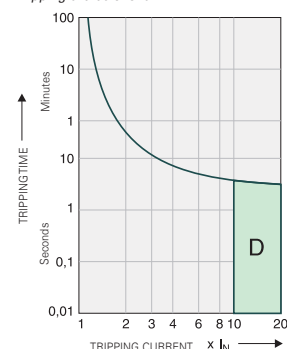
Tripping characteristic B



Tripping characteristic C



Tripping characteristic D



Residential/commercial/industrial MCBs, RCDs & RCBOs

Miniature circuit breakers PLHT

- High-quality miniature circuit breakers for commercial & industrial applications
- Contact position indicator red - green
- Accessories suitable for subsequent installation
- Terminal capacity 2.5-50mm²
- 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



PLHT-B20/1-AA



PLHT-B25/2-AA



PLHT-B32/3-AA



PLHT-B25/4-AA



Z-LHASA/230

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

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



eRB6-32/1/C/003-AU

Residential/commercial/industrial MCBs, RCDs & RCBOs

eRB6 range

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

eRBM range

- 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 1-25mm²

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 1-25mm²

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



PFIM-16/2/001-AU



PFIM-40/4/003-AU

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

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

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



PFIM-40/2/003-G-AU



PFIM-63/4/003-G-AU



ZP-IHK



Z-ASA/24



Z-FAM



Z-USA/115



Z-FW-LP



Z-FW-LP/MO

Residential/commercial/industrial MCBs, RCDs & RCBOs

Accessories

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

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

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

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

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

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

Controlling & switching devices

Installation relays for light & power distribution

- Installation relays & contactors
- Signalling devices
- Impulse relays

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



Z-SCH230/25-31

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-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, I _e , 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 x 1P	85	EVG-16/1PHAS/2MODUL
	1 –	6 x 1P	85	EVG-16/1PHAS/6MODUL
	1 –	12 x 1P	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 x 1P	85	EVG-16/1PHAS/2MODUL/HI
	1 –	6 x 1P	85	EVG-16/1PHAS/6MODUL/HI
	1 –	9 x 1P	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 x 1P	100	EVG-16/3X1PHAS/6MODUL/HI
	3 –	8 x 1P	100	EVG-16/3X1PHAS/8MODUL/HI
	3 –	9 x 1P	100	EVG-16/3X1PHAS/9MODUL/HI

Controlling & switching devices

ETR2 electronic timing relays, 17.5 mm wide

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



ETR2-44



ETR2-11-D



PE18SW

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



PE1E



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		250A Item no.	400A Item no.
					18 mm	27 mm		
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			-		-	XCH3/18	XCH4003/18	
24			-		-	XCH3/24	XCH4003/24	
30			-		-	XCH3/30	XCH4003/30	
36			-		-	XCH3/36	XCH4003/36	
42			-		-	XCH3/42	XCH4003/42	
48			-		-	XCH3/48	XCH4003/48	
60			-		-	XCH3/60	XCH4003/60	
72			-		-	XCH3/72	XCH4003/72	
84			-		-	XCH3/84	XCH4003/84	
96			-		-	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 I_{cs} 25kA for 0.1s
- Rated short-time current I_{cs} 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 U_{imp} 6kV
- Rated voltage U_n 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

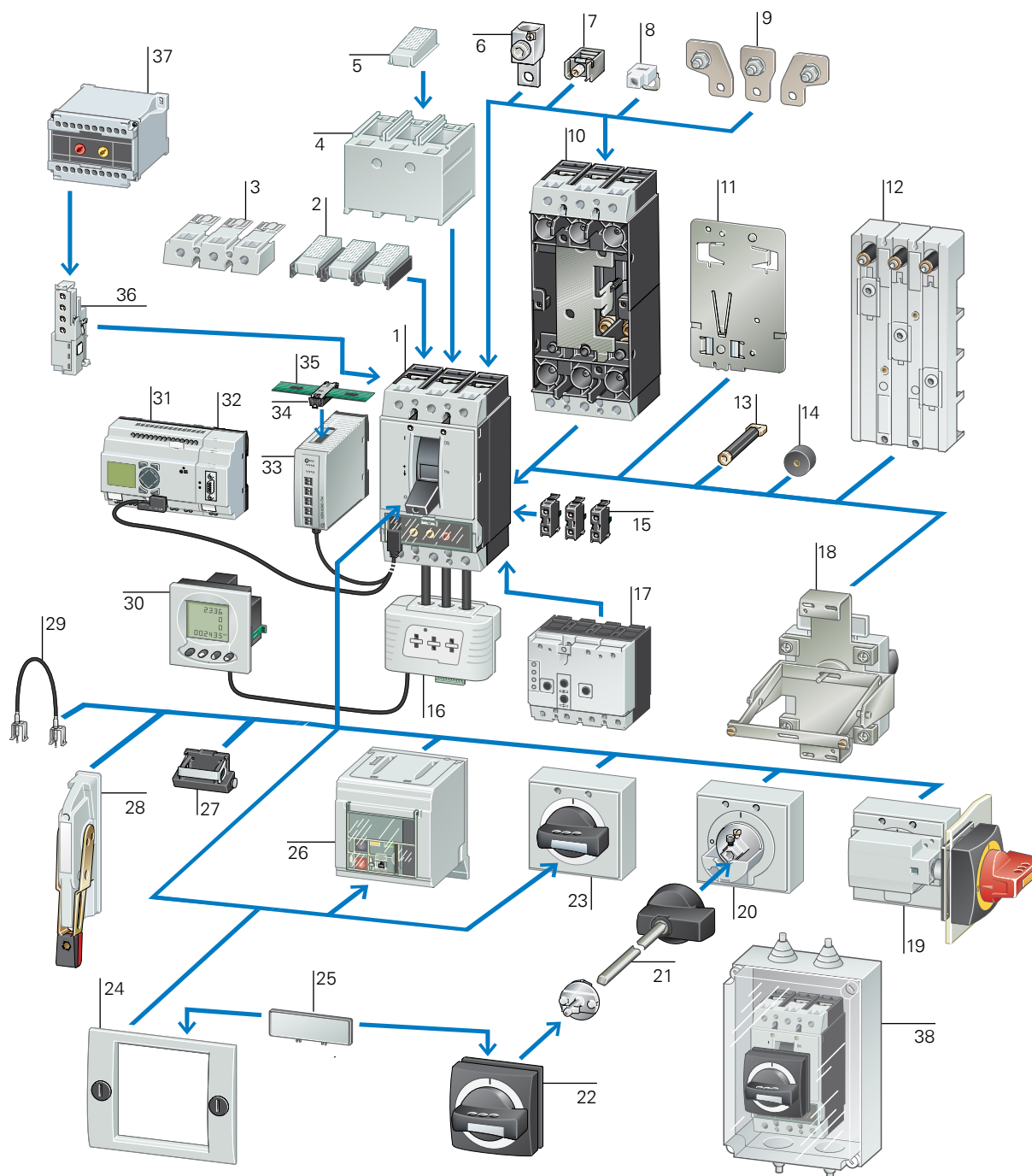


Mount both chassis units into the assembly and butt the housings together to ensure no lost pole spaces



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.



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

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.



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 150000 A. The long lifetime with up to 7500 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.



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
$I_n = I_u$ A	I_r A	I_r A	I_i A	I_i 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 100 ^① /150 ^② kA 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	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	NZMH1-4-A20
NZMB1-1-AF25	NZMB1-A25	NZMB1-4-A25	NZMN1-A25	NZMN1-4-A25	NZMH1-A25	NZMH1-4-A25	NZMH1-4-A25
NZMB1-1-AF32	NZMB1-A32	NZMB1-4-A32	NZMN1-A32	NZMN1-4-A32	NZMH1-A32	NZMH1-4-A32	NZMH1-4-A32
NZMB1-1-AF40	NZMB1-A40	NZMB1-4-A40	NZMN1-A40	NZMN1-4-A40	NZMH1-A40	NZMH1-4-A40	NZMH1-4-A40
NZMB1-1-AF50	NZMB1-A50	NZMB1-4-A50	NZMN1-A50	NZMN1-4-A50	NZMH1-A50	NZMH1-4-A50	NZMH1-4-A50
NZMB1-1-AF63	NZMB1-A63	NZMB1-4-A63	NZMN1-A63	NZMN1-4-A63	NZMH1-A63	NZMH1-4-A63	NZMH1-4-A63
NZMB1-1-AF80	NZMB1-A80	NZMB1-4-A80	NZMN1-A80	NZMN1-4-A80	NZMH1-A80	NZMH1-4-A80	NZMH1-4-A80
NZMB1-1-AF100	NZMB1-A100	NZMB1-4-A100	NZMN1-A100	NZMN1-4-A100	NZMH1-A100	NZMH1-4-A100	NZMH1-4-A100
NZMB1-1-AF125	NZMB1-A125	NZMB1-4-A125	NZMN1-A125	NZMN1-4-A125	NZMH1-A125	NZMH1-4-A125	NZMH1-4-A125
-	NZMB1-A160	NZMB1-4-A160	NZMN1-A160	NZMN1-4-A160	NZMH1-A160	NZMH1-4-A160	NZMH1-4-A160
Supplied with screw terminals							
-	-	-	-	-	NZMH2-A20	NZMH2-4-A20	NZMH2-4-A20
-	-	-	-	-	NZMH2-A25	NZMH2-4-A25	NZMH2-4-A25
-	-	-	-	-	NZMH2-A32	NZMH2-4-A32	NZMH2-4-A32
-	-	-	-	-	NZMH2-A40	NZMH2-4-A40	NZMH2-4-A40
-	-	-	-	-	NZMH2-A50	NZMH2-4-A50	NZMH2-4-A50
-	-	-	-	-	NZMH2-A63	NZMH2-4-A63	NZMH2-4-A63
-	-	-	-	-	NZMH2-A80	NZMH2-4-A80	NZMH2-4-A80
-	-	-	-	-	NZMH2-A100	NZMH2-4-A100	NZMH2-4-A100
-	-	-	-	-	NZMH2-A125	NZMH2-4-A125	NZMH2-4-A125
NZMB2-A160	NZMB2-4-A160	NZMN2-A160	NZMN2-4-A160	NZMN2-4-A160	NZMH2-A160	NZMH2-4-A160	NZMH2-4-A160
-	NZMB2-4-A160/100 ^③	-	NZMN2-4-A160/100 ^③	-	-	NZMH2-4-A160/100 ^③	NZMH2-4-A160/100 ^③
NZMB2-A200	NZMB2-4-A200	NZMN2-A200	NZMN2-4-A200	NZMN2-4-A200	NZMH2-A200	NZMH2-4-A200	NZMH2-4-A200
-	NZMB2-4-A200/125 ^③	-	NZMN2-4-A200/125 ^③	-	-	NZMH2-4-A200/125 ^③	NZMH2-4-A200/125 ^③
NZMB2-A250	NZMB2-4-A250	NZMN2-A250	NZMN2-4-A250	NZMN2-4-A250	NZMH2-A250	NZMH2-4-A250	NZMH2-4-A250
-	NZMB2-4-A250/160 ^③	-	NZMN2-4-A250/160 ^③	-	-	NZMH2-4-A250/160 ^③	NZMH2-4-A250/160 ^③
NZMB2-A300	NZMB2-4-A300	NZMN2-A300	NZMN2-4-A300	NZMN2-4-A300	NZMH2-A300	NZMH2-4-A300	NZMH2-4-A300
-	NZMB2-4-A300/200 ^③	-	NZMN2-4-A300/200 ^③	-	-	NZMH2-4-A300/200 ^③	NZMH2-4-A300/200 ^③
Supplied with screw terminals							
		NZMN3-A320	NZMN3-4-A320	NZMH3-A320	NZMH3-4-A320	NZMH3-4-A320	NZMH3-4-A320
		-	NZMN3-4-A320/200 ^③	-	NZMH3-4-A320/200 ^③	NZMH3-4-A320/200 ^③	NZMH3-4-A320/200 ^③
		NZMN3-A400	NZMN3-4-A400	NZMH3-A400	NZMH3-4-A400	NZMH3-4-A400	NZMH3-4-A400
		-	NZMN3-4-A400/250 ^③	-	NZMH3-4-A400/250 ^③	NZMH3-4-A400/250 ^③	NZMH3-4-A400/250 ^③
		NZMN3-A500	NZMN3-4-A500	NZMH3-A500	NZMH3-4-A500	NZMH3-4-A500	NZMH3-4-A500
		-	NZMN3-4-A500/320 ^③	-	NZMH3-4-A500/320 ^③	NZMH3-4-A500/320 ^③	NZMH3-4-A500/320 ^③

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 uninterrupted current $I_n = I_u$ A	Overload release Setting range overload release I_r A	Short circuit release Non- Delayed $I_i = I_n$ x A	Circuit breaker with normal switching capacity 50kA at 415V 50/60Hz	Circuit breaker with high switching capacity 150 ^① /85kA ^② 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 $I_i = I_n \times \dots$	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.
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Motor protection, thermomagnetic release 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	80-100	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



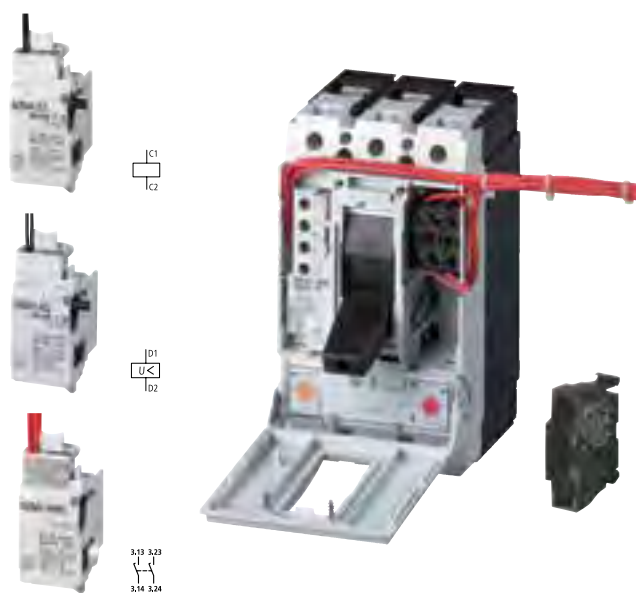
Switch disconnectors

Switch-disconnectors	3-pole IEC		4-pole IEC	
Rated current = Rated uninterrupted 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.

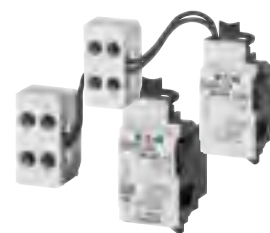
Auxiliary contacts

Item no.	Version	For use with	Max no. of auxiliary 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	
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-XUL110-130AC	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 lever locking devices

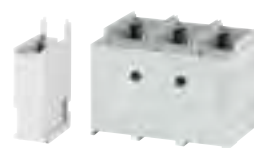
Item no.	For use with	Version
NZM1-XKAV	NZM1(-4), PN2(-4), N(S)1(-4)	Toggle lever locking facilities
NZM2/3-XKAV	NZM2/3(-4), PN2/3(-4), (S)2/3(-4)	

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



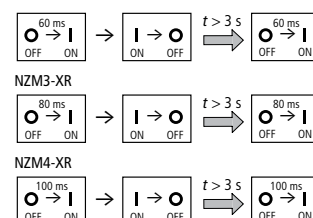
Description	For use with	Rated control voltage Us, V	Item no.
Remote operators, for remote switching of circuit-breakers & switch-disconnectors ON & OFF switching & resetting by means of 2-wire or 3-wire control Can be synchronised. Local switching by hand possible. Lockable in the 0 position of the 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-XR380-440AC ①
		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
	NZM2(-4), N2(-4) + NZM2(-4), N2(-4)	NZM2-XMVRL
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) + 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
	NZM2(-4), N2(-4) + NZM2(-4), N2(-4)	NZM2-XMVRL



Paralleling mechanisms, energy metering and communication

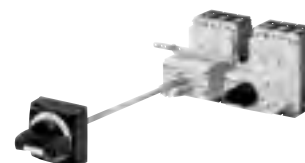
Description	For use with	Item no.
Paralleling mechanisms, simultaneous actuation of 2 PN switch-disconnectors of the same type mounted side-by-side	PN1 + PN1	PN1-XPA ①
	PN2 + PN2	PN2-XPA ①
	PN3 + PN3	PN3-XPA ①②

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: $U_s = 230V \text{ A.C. (50/60 Hz)}$ Integrated auxiliary switch (1 changeover contact)	
Rated fault current $I_n = 0.03 \text{ A}$		PFR-003
Rated fault current $I_n = 0.3 \text{ A}$		PFR-03
Rated fault current $I_n = 0.03...5 \text{ A}$ 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	PFR-W-20
Internal diameter 30 mm	incl. attachment clip for DIN top-hat rail	PFR-W-30
Internal diameter 35 mm	PFR-W-35 and all larger transducers	PFR-W-35
Internal diameter 70 mm	incl. screw fitting	PFR-W-70
Internal diameter 105 mm	Engineering note:	PFR-W-105
Internal diameter 140 mm	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-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 $U_e = 200 - 415 \text{ V } 50/60 \text{ Hz}$, lateral mounting on the right hand side up to 125 A				
Rated fault current $I_{\Delta n} = 0.03 \text{ A}$	NZM1 N1	NZM1-XFI30R	NZM1-4 N1-4	NZM1-4-XFI30R
Rated fault current $I_{\Delta n} = 0.3 \text{ A}$		NZM1-XFI300R		NZM1-4-XFI300R
Rated fault current $I_{\Delta n} = 0.03 - 0.1 - 0.3 - 0.5 - 1 - 3 \text{ A}$		NZM1-XFIR		
Delay time $t_v = 10 - 60 - 150 - 300 - 450 \text{ ms.}$				NZM1-4-XFIR
For 3 & 4 pole circuit-breakers NZM1(-4) & switch-disconnectors N1(-4), dependant on mains power $U_e = 200 - 415 \text{ V } 50/60 \text{ Hz}$, bottom mounting up to 100 A				
Rated fault current $I_{\Delta n} = 0.03 \text{ A}$	NZM1 N1	NZM1-XFI30U	NZM1-4 N1-4	NZM1-4-XFI30U
Rated fault current $I_{\Delta n} = 0.3 \text{ A}$		NZM1-XFI300U		NZM1-4-XFI300U
Rated fault current $I_{\Delta n} = 0.03 - 0.1 - 0.3 - 0.5 - 1 - 3 \text{ A}$, delay time $t_v = 10 - 60 - 150 - 300 - 450 \text{ ms.}$		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 $U_e = 280 - 690 \text{ V } 50/60 \text{ Hz}$, bottom mounting up to 250 A				
Rated fault current $I_{\Delta n} = 0.03 \text{ A}$			NZM2-4 N2-4	NZM2-4-XFI30
Rated fault current $I_{\Delta n} 0.1 - 0.3 - 1 - 3 \text{ A}$, delay time $t_v = 60 - 150 - 300 - 450 \text{ ms}$				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 $U_e = 50 - 400 \text{ V}$, bottom mounting up to 250 A				
Rated fault current $I_{\Delta n} = 0.03 \text{ A}$			NZM2-4 N2-4	NZM2-4-XFIA30
Rated fault current $I_{\Delta n} 0.1 - 0.3 - 1 \text{ A}$, delay time $t_v = 60 - 150 - 300 - 450 \text{ ms}$				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.

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.



BBS-3/FL



BBC-FL10



BBA-TP3-120



NZM2-XAD250

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 6-50mm ² conductor; 54mm wide	BBA-TP3/50 ①
440A rated connection kit suitable for 35-120mm ² conductor; 81mm wide	BBA-TP3/120 ①
560A rated connection kit suitable for 120-300mm ² 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.



Powering Business Worldwide

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



Powering Business Worldwide



Circuit protection

Air circuit breakers

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.



Small, flexible, efficient.

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

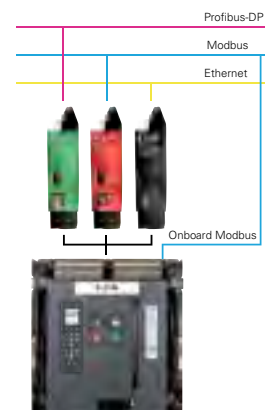
- LCD display with multilingual capability
- Current metering on PXR20 and power metering on PXR25
- Extended range for pickup value and delay timing setting
- "OFF" setting available for ground fault(G) and non-delayed instantaneous trip(I)
- Onboard Modbus communication(standard on PXR25 and optional 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.

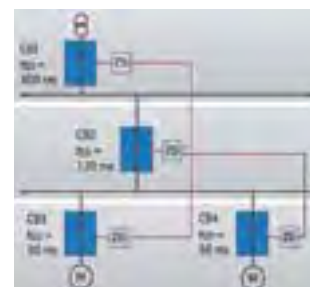


Zone selectivity ZSI

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.



Shift to future.

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 first 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 | • Continuously up-dated product information | • Information material for your customers, such as catalogues and flyers |
| • Access to BAs, AWAs (building and assembly instructions), configurator, certificates and technical data sheets | • Software downloads | • Certificates of conformity and guidelines regarding IEC standards |
| | • Installation instructions | |





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.**



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 2.5mm² - 16mm² conductor
- QM100 have tunnel terminals suitable for 10mm² - 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 shorttime 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 Only)

Current rating	AC-23A kW 415V	Rated shorttime 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 disconnecter fuses - SDFs

Eaton QSA Switch Disconnecter 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 disconnecter fuses

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

Switch Disconnecter 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 shorttime 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.

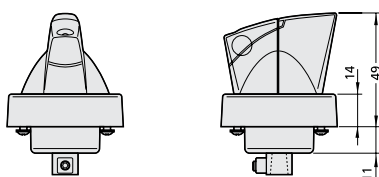
Typical Ordering Example (QA400 Switch Option Shown): QA400 = 1318504 + 1319319 + 1818069.

K-Line handles

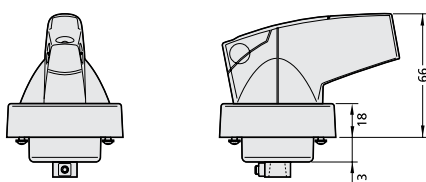
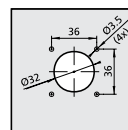
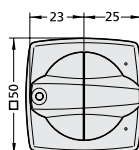
The K-Line handle was designed to enable a uniform handle design to be used with both the Dumeco & Q-Line switch products. The design & range of product variations within the K-Line product range also allows it to be used on other manufactures switch products including circuit breakers to give a uniform 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:

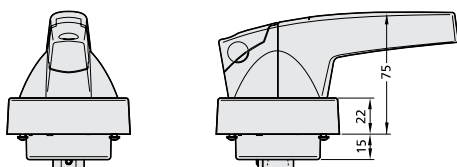
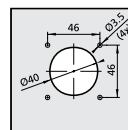
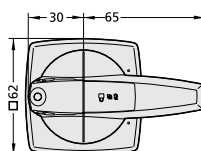
- The K-Line range of product can be fitted to products with a shaft diameter of 6, 8, 10, 12 & 14mm square
- IP65 Ingress protection rating
- Various locking applications e.g. padlock in ON position
- Fixed position of the handle when the door is open



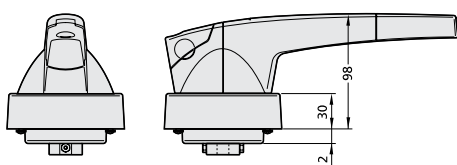
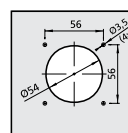
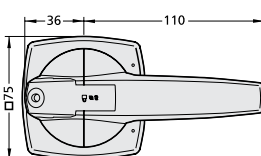
Type K1D - suitable for 6mm square shafts



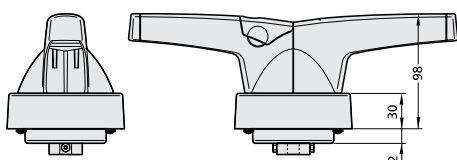
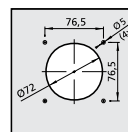
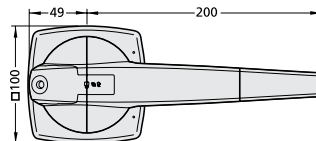
Type K2D & K2SD - versions available for both 6mm + 8mm square shafts



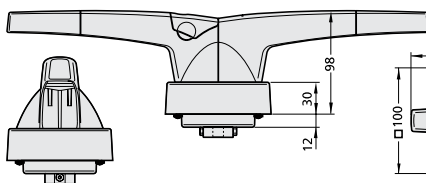
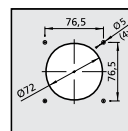
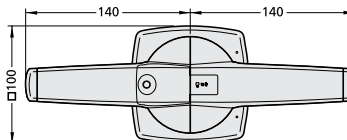
Type K3KD - suitable for 10mm square shafts



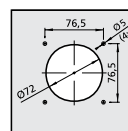
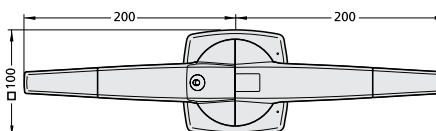
Type K4D - suitable for 12mm square shafts



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



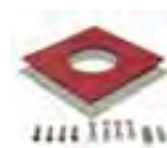
1319332



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.

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

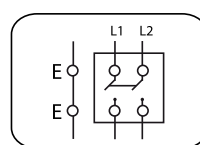


Description	Pack qty	Item no.
63 Amp Switched neutral, suit QSA40N0/63N0 + QSA63N1	1	1319462
125 Amp Switched neutral, suit QA125N1 + QSA100N1/125N1	1	1319467
200 Amp Switched neutral, suit QA160N1/200N1 + QSA160N1	1	1319474
200 Amp Switched neutral, suit QSA200N	1	1319476
500 Amp Switched neutral, suit 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

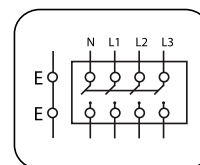
MEMPROOF Enclosed weather/dust proof isolators 20-63A

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 9473 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 micro-controlled circuitry for control, R.A.T. switch sequencing
- Relay Assisted Triac (R.A.T.) solid 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



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	32NNS* SC32*	415	58.5mm	20
NSD20M25	NS20M25	20M25				
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				
ESD4		4				
ESD6		6				
ESD10		10				
ESD16		16				
ESD20		20				
ESD25		25	63ENS* SC63*	550	68.0mm	20
ESD32		32				
ESD40	ES40	40				
ESD50	ES50	50				
ESD63	ES63	63				
ESD63M80	ES63M80	63M80				
ESD63M100		63M100	63ENS* SC63*	415	68.0mm	20
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

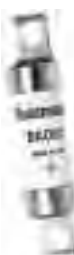
Item no.	Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Offset bolted tags						
NITD2	NIT2L	2	CM-32FC RS20*	550	44.5mm	20
NITD4	NIT4L	4				
NITD6	NIT6L	6				
NITD10	NIT10L	10				
NITD16	NIT16L	16				
NITD20	NIT20L	20				
NITD25	NIT25L	25				
NITD32	NIT32L	32	CM-32FC RS20*	415	44.5mm	20
NITD20M25	NIT20M25L	20M25				
NITD20M32	NIT20M32L	25M32				
NITD32M40	NIT32M40L	32M40				
NITD32M50	NIT32M50L	32M50				
NITD32M63	NIT32M63L	32M63	CM32F RS32 RS63	550	73.5mm	20
AAO2	TIA2L	2				
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	CM63F RS63	550	73.5mm	20
AAO32M63	TIA32M63L	32M63				
BAO35	TIS35L	35				
BAO40	TIS40L	40				
BAO50	TIS50L	50				
BAO63	TIS63L	63				
BAO63M80	TIS63M80L	63M80	CM100F	415	73.0mm	20
BAO63M100	TIS63M100L	63M100				
OSD80	OS80	80				
OSD100	OS100	100				
OSD100M125	OS100M125	100M125	RS100*	550	94.0mm	10
OSD100M160	OS100M160	100M160				
CEO32		32				
CEO40		40				
CEO50		50				
CEO63		63	RS100*	415	94.0mm	10
CEO80	TCP80L	80				
CEO100	TCP100L	100				
CEO100M125	TCP100M125L	100M125				
CEO100M160	TCP100M160L	100M160				
CEO100M200	TCP100M200L	100M200		415	94.0mm	5
DEO125	TFP125L	125				
DEO160	TFP160L	160				
DEO200	TFP200L	200				
DEO200M250	TFP200M250L	200M250				
DEO200M315	TFP200M315L	200M315				



NITD6



AAO32



BAO63



OSD100



DEO200

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				
EFS200		200	RS400*	415	133mm	1
EFS250	TKM250L	250				
Centre bolted tags - 4 hole fixing.						
EFS315	TKM315L	315		415	133/ 184mm	1
EF355	TM355L	355				
EF400	TM400L	400		415	133/ 184mm	1
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		550	92.5mm	1
560R20		560				
630R20		630				
710S20		710				
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
	NIT20M32	25M32				
	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	1
315N09-660	TKF315	315				
	TKF315M355	315M355				
355P09-660	TMF355	355	660	111mm	1	1
400P09-660	TMF400	400				
125N11-660		125	660	133mm	1	1
160N11-660		160				
200N11-660		200				
250N11-660	TKM250	250				
315N11-660	TKM315	315				
355P11-660	TM355	355	660	184 / 133mm	1	1
400P11-660	TM400	400				
450R11-660	TTM450	450	550	184 / 133mm	1	1
500R11-660	TTM500	500				
560R11-660	TTM560	560				
630R11-660	TTM630	630				
450R12-660	TT450	450	550	231 / 167mm	1	1
500R12-660	TT500	500				
560R12-660	TT560	560				
630R12-660	TT630	630				
	TLM670	670	660	184 / 133mm	1	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		5
CM63F	Front wired	BAO	63		
CM100F	Front wired	OSD	100		
CM32FCW	Front wired, white	NITD	32	690	10
CM32FW	Front wired, white	AAO	32		5
CM63FW	Front wired, white	BAO	63		
CM100FW	Front wired, white	OSD	100		
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



SAFEloc



CAMaster



CAMaster accessories - Studs

Bussmann series BS88 industrial fuse links



Safeclip fuseholder - black



Safeclip fuseholder - white



Red spot fuseholder - black



Red spot fuseholder - white

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	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		415	22 X 57 mm	20
10KR85	10				
15KR85	15				
20KR85	20				
25KR85	25				
30KR85	30	HSB22*			
40KR85	40				
45KR85	45				
50KR85	50				
60KR85	60				
80KR85	80				
100KR85	100				
30LR85	30		415	30 X 57 mm	20
40LR85	40				
50LR85	50	HSB30*			
60LR85	60				
80LR85	80				
100LR85	100				

Busmann 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						
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	12.7 x 29mm	
C3030		30		415	16.7 x 35mm	
C4545		45		415	16.7 x 35mm	



House service fuse holder - clear



House service fuse holder - black



C180-5A



C1520

Bussmann series BS88 industrial fuse links

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			



059-0144



059-0114



059-0148



059-0123

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			
2HD36	TAC2	2			
4HD36	TAC4	4			
6HD36	TAC6	6	1200 Vac 750 Vdc	122 mm	10
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			
NBC-100	TFC100	100	1200 Vac 1000 Vdc	168 mm	1
NBC-125	TFC125	125			
NBC-150	TFC150	150			
NBC-200	TFC200	200			
RSL63H	Front wired		1200 Vac 750 Vdc		1
RSL63P	F-wired / b-stud	63	50mm		
RSL63PH	Back stud				



HD36



RSL63H



C08G



C10G



C14G



C22M



CHM1DU



CCP - compact circuit protector

Bussmann series DIN industrial fuses & fuse holders

Item no.	Amps	Type	Fuse holder	Volts	Dim	Box qty
Cylindrical fuses.						
C08G (A)	2, 4, 6, 10, 16, 20, 25, 32	gG	CHM-1DU	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				

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

Item no.	Suits fuse links	Amps	Volts	Poles	Box qty
CCP - compact circuit protector.					
CCP-1-30CC	LP-CC, KTK-R,	30	600 Vac	1	12
CCP-3-30CC	FNQ-R			3	
CCP-1-30M	KTK, FNQ			1	
CCP-3-30M	C10G, C10M			3	8
CCP-1-DCM	PVM			80Vdc	
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	gG/gL (Standard)	SD3-D TD3-D	355	500	3	3
400NHG2B			400			
250NHG03B			250			
315NHG03B			315			
355NHG03B	gG/gL (Standard)	SD3-D TD3-D	355	500	3	3
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			
50NHG000B-690				50			
63NHG000B-690	gG/gL (Standard)		SD00-D TD00-D	63	690	00	3
80NHG000B-690				80			
100NHG000B-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			
50NHM000B-690				50			
63NHM000B-690	aM (Motor start)		SD00-D TD00-D	63	690	00	3
80NHM000B-690				80			
100NHM000B-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			

Busmann 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

Bussmann series DIN industrial fuses & fuse holders



NZ01

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

Neozed fuse links - ultra rapid.

2NZ01R			2			
4NZ01R			4			
6NZ01R		36 X 11mm	6	440	D01	5
10NZ01R			10			
16NZ01R			16			
20NZ02R			20			
25NZ02R			25			
35NZ02R		36 X 15mm	35	440	D02	5
50NZ02R			50			
63NZ02R			63			

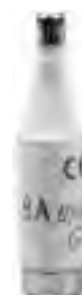


16D27

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

Busmann 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 service - 02 8787 2730.

Bussmann series high speed fuse links.



FWA-5A10F



FWA-45A21F



FWX-15A14F



FWH-.500A6F

Item no.	Description	Body dim	Amps	Volts	I ² T	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	I ² T	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		22 x 58	40	700 Vac / Vdc	750	10
FWP-50A14F			50		1800	
FWP-20A22F			20		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		14 x 51	10	700 Vac / Vdc	22	10
FWP-15A14FI			15		75	
FWP-20A14FI			20		180	
FWP-25A14FI	With indicator		25		320	
FWP-30A14FI			30		450	
FWP-32A14FI			32		600	
FWP-40A14FI			40		750	
FWP-50A14FI			50		1800	
FWP-20A22FI		22 x 58	20	700 Vac / Vdc	260	10
FWP-25A22FI			25		410	
FWP-32A22FI			32		605	
FWP-40A22FI	With indicator		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	I ² T	Box qty
High speed fuse links - ferrule type.						
FWS-2A20F		20 x 127mm	2	2000Vac	2.4	10
FWS-6A20F			6	1000Vdc	81	
FWS-8A20F			8		192	
FWS-10A20F			10	1500Vac	277	
FWS-12A20F			12	1000Vdc	380	
FWS-15A20F			15		500	
FWL-20A20F			20		1550	
FWL-25A20F			25	1250Vac	2760	
FWL-30A20F			30	1000Vdc	4300	
FWS-2A20FI		20 x 127mm	2	2000Vac	2.4	10
FWS-6A20FI			6	1000Vdc	81	
FWS-8A20FI			8		192	
FWS-10A20FI			10	1500Vac	277	
FWS-12A20FI	With indicator		12	1000Vdc	380	
FWS-15A20FI			15		500	
FWL-20A20FI			20		1550	
FWL-25A20FI			25	1250Vac	2760	
FWL-30A20FI			30	1000Vdc	4300	



10LCT



100LET



400LMMT

Item no.	Description	Fix ctrs	Amps	Volts	I ² T	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.

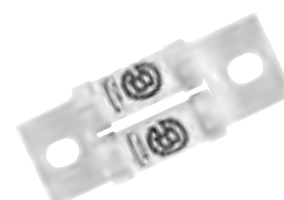
Item no.	Description	Fix ctrs	Amps	Volts	I ² T	Box qty
High speed fuse links - British standard.						
6CT	GSB5	64mm	6	690Vac 500Vdc	12	20
10CT	GSB10		10		48	
12CT			12		65	
16CT	GSB15		16		110	
20CT	GSB20		20		220	
25ET	GSB25	64mm	25	690Vac 500Vdc	250	10
32ET	GSGB30		32		350	
35ET	GSGB35		35		500	
40ET	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

Bussmann series high speed fuse links.



200MT



315MMT

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			



FWA-400B

Item no.	Description	Fix ctrs	Amps	Volts	I ² T	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				2500		4100000			
FWA-3000AH	48 X 75	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				70		1400			
FWX-80A			58mm	80		1850			
FWX-90A				90		2450			
FWX-100A				100		3150			
FWX-125A				125		4850			
FWX-150A				150		6950			
FWX-175A			66mm	175		9300			
FWX-200A				200		12000			
FWX-225A				225		14700			
FWX-250A				250		18100			
FWX-275A				275		21600			
FWX-300A				300		27300			
FWX-350A			66mm	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.

Item no.	Description	Fix ctrs	Amps	Volts	I ² T	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	A50QS A50P L50S	73mm	175	500 Vac / Vdc	6200	
FWH-200B		73mm	200		8500	
FWH-225A		77mm	225		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	



FWH-150B



FWP-100B

Bussmann series high speed fuse links.

Item no.	Description	Fix ctrs	Amps	Volts	I ² T	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.

Item no.	Description	Size	Amps	Volts	I ² T	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	



170M1558D



170M3808D



170M5808D



170M6808D

Bussmann series high speed fuse links.

Item no.	Description	Size	Amps	Volts	I ² T	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.

Item no.	Description	Size	Amps	Volts	I ² T	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	



170M1480



170M4116



170M5108

Bussmann series high speed fuse links.

Item no.	Description	Size	Amps	Volts	I ² T	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	
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	
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	



170M6109



170M3258



170M4258

Bussmann series high speed fuse links.

Item no.	Description		Size	Amps	Volts	I²T	Box qty
High speed fuse links - DIN standard - 110mm fixing.							
170M5258	aR		2	400	690	74000	
170M5259				450		105000	
170M5260				500		145000	
170M5261				550		190000	
170M5262				630		275000	
170M5263				700		405000	
170M5264				800		575000	
170M5265				900		840000	
170M5266				1000		1250000	
170M5267				1100		1600000	
170M5268				1250		2400000	
170M6258	aR		3	500	690	95000	
170M6259				550		135000	
170M6260				630		210000	
170M6261				700		300000	
170M6262				800		465000	
170M6263				900		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	aR		00	25	690	130	
170M2759				32		270	
170M2760				40		460	
170M2761				50		770	
170M2762				63		1450	
170M2763				80		2550	
170M2764				100		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	aR		1*	40	690	270	
170M3459				50		515	
170M3460				63		770	
170M3461				80		1250	
170M3462				100		2450	
170M3463				125		3700	
170M3464				160		7500	
170M3465				200		15000	
170M3466				250		28500	
170M3467				315		46500	
170M3468				350		68500	
170M3469				400		105000	



170M5258



170M6258



170M2758



170M3462

Bussmann series high speed fuse links.

Item no.	Description	Size	Amps	Volts	I ² T	Box qty
High speed fuse links - DIN standard - flush end contact.						
170M3470			450		140000	
170M3471			500		180000	
170M3472			550		230000	
170M3473			630		325000	
170M4458			200		11500	
170M4459			250		21000	
170M4460			315		42000	
170M4461	aR	1	350	690	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			400		74000	
170M5459			450		105000	
170M5460			500		145000	
170M5461			550		190000	
170M5462			630		275000	
170M5463	aR	2	700	690	405000	
170M5464			800		575000	
170M5465			900		840000	
170M5466			1000		1250000	
170M5467			1100		1600000	
170M5468			1250		2400000	
170M6458			500		95000	
170M6459			550		135000	
170M6460			630		210000	
170M6461			700		300000	
170M6462			800		465000	
170M6463	aR	3	900	690	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	1300 Vdc
PV-20A14F	20								
PV-25A14F	25								
PV-32A14F	32								
PV-15A14LF	Solar fuse - ferrule	14 X 65mm	15						
PV-20A14LF			20						
PV-25A14LF			25						
PV-32A14LF			32						
Photovoltaic fuse links - ferrule fuse holders.									
CHPV1U	With indicator	10 X 38mm	30	1000 Vdc		12			
CHPV2U						6			
CHPV1IU						12			
CHPV2IU						6			
CH141D-PV		10 X 38mm	30	1000 Vdc		6			
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						



PV-160ANH1

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



FNM



FNA



KTK-R



SC



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		250	Fast	
	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,	10 x 38mm	250	T/Delay	10
	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	

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				

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			

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			
	110, 125, 150, 175, 200	43.0	300	Very Fast	1
	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			
	110, 125, 150, 175, 200	64.0	600	Very Fast	1
	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	1
T30100-3CR			3	
T60030-1CR	30	600	1	
T60030-3CR			3	
T60060-1CR	60	600	1	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			
	110, 125, 150, 175, 200	181.0	250	Non Delay	1
	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			
	110, 125, 150, 175, 200	244.0	600	Non Delay	1
	225, 250, 300, 350, 400	295.0			
	450, 500, 600	340.0			

Bussmann series North American fuse links & fuse holders.



H30100-1SR



LPN-RK



LPS-RK



KTN-R



KTS-R



FRN-R



FRS-R

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	

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		
	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		
	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		
	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		
	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



LPJ



JKS

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			1
	70, 80, 90, 100	92.0			
	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			1
	70, 80, 90, 100	92.0			
	110, 125, 150, 175, 200	111.0			
	225, 250, 300, 350, 400	133.0			
	450, 500, 600	152.0			

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	12kV	254	63.5	3
12OEFMA10	KEBXO10				
12OEFMA16	KEBXO16				
12OEFMA20	KEBXO20				
12OEFMA25	KEBXO25				
12OEFMA31.5					
12OEFMA40	KEBXO40				
12OEFMA50	KEBXO50				
12OEFMA63	KEBXO63				
12OHFMA71					
12OHFMA80	KEBXO80				
12OHFMA90					
12OHFMA100					
12OHGMA6.3	KEMXO5	12kV	359	63.5	3
12OHGMA10	KEMXO10				
12OHGMA16	KEMXO16				
12OHGMA20	KEMXO20				
12OHGMA25	KEMXO25				
12OHGMA31.5					
12OHGMA40	KEMXO40				
12OHGMA50	KEMXO50				
12OHGMA63	KEMXO63				
12OHGMA71					
12OHGMA80	KEMXO80				
12OHGMA90	KEMXO90				
12OHGMA100	KEMXO100				
12QLGMA125	KEMXO120				



12OEFMA820

Bussmann series medium voltage fuse links.

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



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

Busmann 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				1
7.2ABWNA3.15	VTF6.6/3	3.15	7.2Kv	142	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				
12VTDNN1	VTF11/1	1	12kV	195	25.4	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			
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					



3.6ABWNA6.3



7.2OBCNA3.15



Mounting clips

Bussmann series miniature & automotive fuse links.



AGC-(A)



AGA-(A)



HKP



ATC-(A)

Item no.	Amp rating	Volts	Type	MOQ
M205 fuse links - 5 X 20mm.				
S500-(A)-R	32 to 10A	250	Glass	Fast T/Delay
S506-(A)-R				
S501-(A)-R	32 to 10A	250	Ceramic	Fast T/Delay
S505-(A)-R				
3AG fuse links - 6.3 X 32mm.				
AGC-(A)	1/4 to 10A	250	Glass	Fast T/Delay
	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
MDA-(A)	1/4 to 30A			
1AG fuse links - 6.3 X 16mm.				
AGA-(A)	630mA to 5A	250	Glass	Fast
	6 to 30A	32		
7AG fuse links - 6.3 X 22mm.				
AGW-(A)	1 to 30A	250	Glass	Fast
8AG fuse links - 6.3 X 25mm.				
AGX-(A)	1/1 to 2A	250	Glass	Fast
	2.5 to 7A	125		
	8 to 30A	32		
5AG fuse links - 10.3 X 38mm.				
AGU-(A)	1 to 3A	250	Glass	Fast
	4 to 30A	32		
Fuse holders.				
HTC-55M	6.3	250	Panel mount	M205 3AG
HKP	30	250		
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			
Item no.	Amp rating	Volts	Type	MOQ
Automotive.				
ATM-(A)	2, 3, 4, 5, 7.5, 10, 15, 20, 25, 30	32	Fast	Mini
ATM-(A)LP	5, 7.5, 10, 15, 20, 25, 30	32	Fast	Lo Profile
ATC-(A)	1, 2, 3, 4, 5, 7.5, 10, 15, 20, 25, 30, 40	32	Fast	Std
MAX-(A)	20, 30, 40, 50, 60, 70, 80	32	Fast	Large
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.



Powering Business Worldwide

Circuit protection

Quicklag MCB



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 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 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



LKDELTQW



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)	LKDELTQW①

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 25mm ²	T50Q
100A Terminal 50mm ²	T100Q
Tunnel Kit 35mm ² - 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



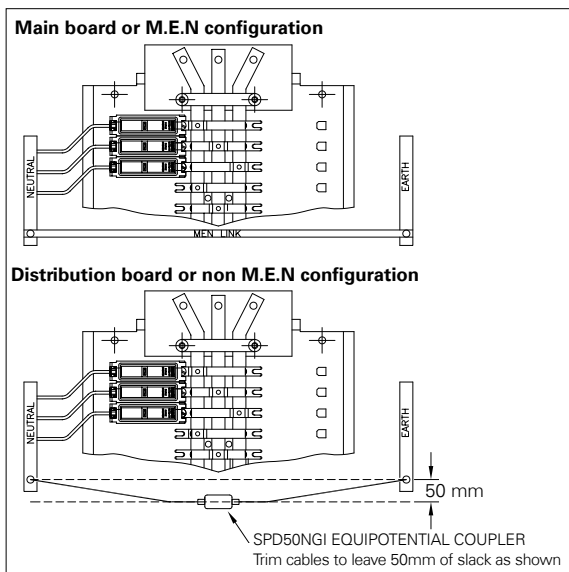
1521-0070/15



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.
1 Pole 60kA Quickmov™ Surge Diverter	60kA	SPDQM1
50kA Neutral to Earth Surge Protector / Equipotential Coupler	50kA	SPD50NGI

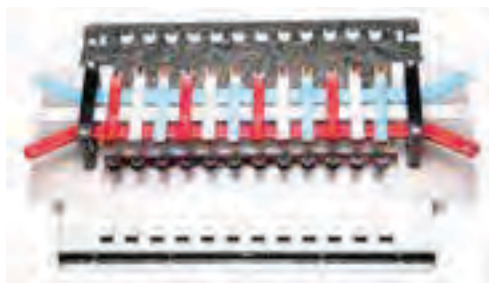
One Quickmov™ per phase is required for multi-phase installations.

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 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 vertical & horizontal type

Pole capacity	Item no. Vertical	Height * (mm)	Width (mm)	Item no. Horizontal	Height * (mm)	Width (mm)
12	Q12PV Ⓢ	229	332	Q12PH	229	332
18	Q18PV Ⓢ	305	332	Q18PH	305	332
24	Q24PV Ⓢ	381	332	Q24PH	381	332
30	Q30PV Ⓢ	457	332	Q30PH	457	332
36	Q36PV Ⓢ	534	332	Q36PH	534	332
42	Q42PV Ⓢ	610	332	Q42PH	610	332
48	Q48PV Ⓢ	686	332	Q48PH	686	332
60	Q60PV Ⓢ	838	332	Q60PH	838	332
72	Q72PV Ⓢ	991	332	Q72PH	991	332
78	Q78PV Ⓢ	1067	332			
84	Q84PV Ⓢ	1143	332			
96	Q96PV Ⓢ	1291	332			
108	Q108PV Ⓢ	1444	332			

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

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

Chassis half-width type

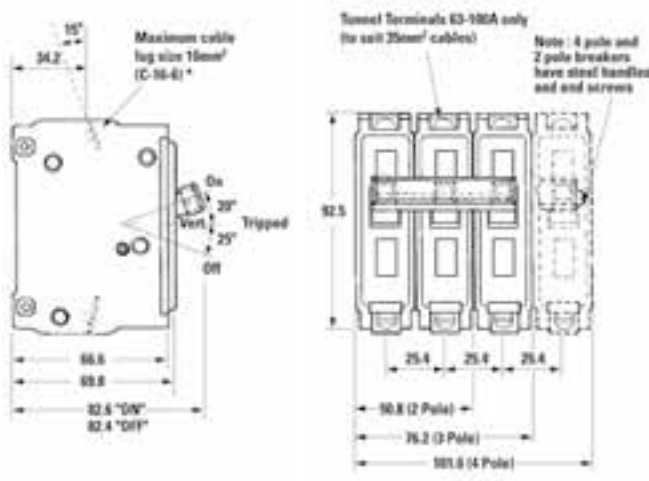
Pole capacity	Item no. Vertical	Height x Width* (mm)	Item no. Horizontal	Height x Width* (mm)
12	1521-1560/1	381* x 230	1521-1561/1	230 x 381*
18	1521-1560/2	534* x 230	1521-1561/2	230 x 534*
24	1521-1560/3	686* x 230	1521-1561/3	230 x 686*
30	1521-1560/4	838* x 230	1521-1561/4	230 x 838*

* Busbars extend 42mm over both sides of mounting pan.

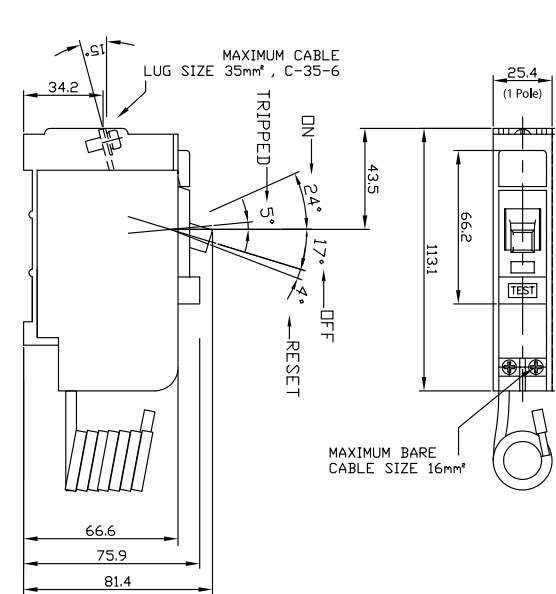
* Half-Width Chassis are made to order.

Dimensional data

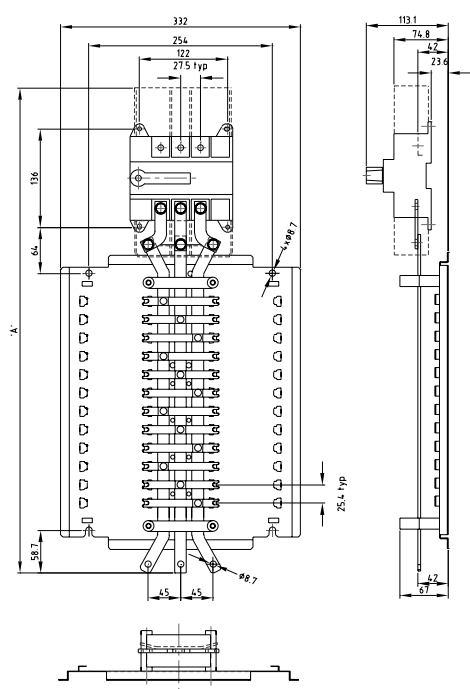
Quicklag dimensions



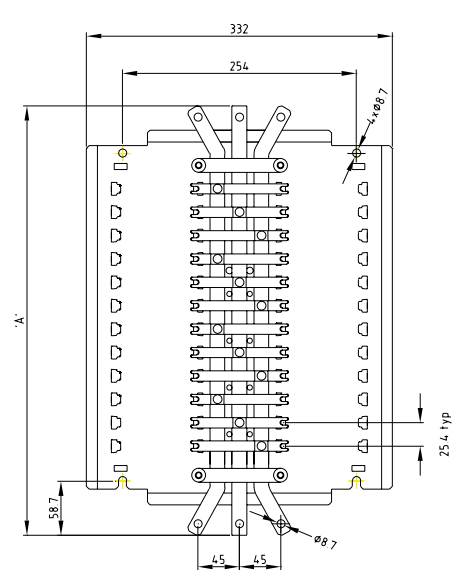
ELQ dimensions



Chassis with main switch dimensions

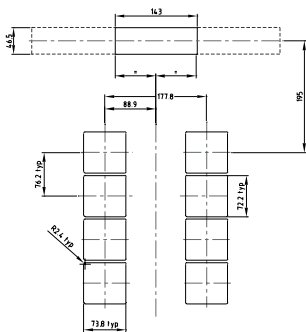


Chassis dimensions



Quicklag Chassis

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

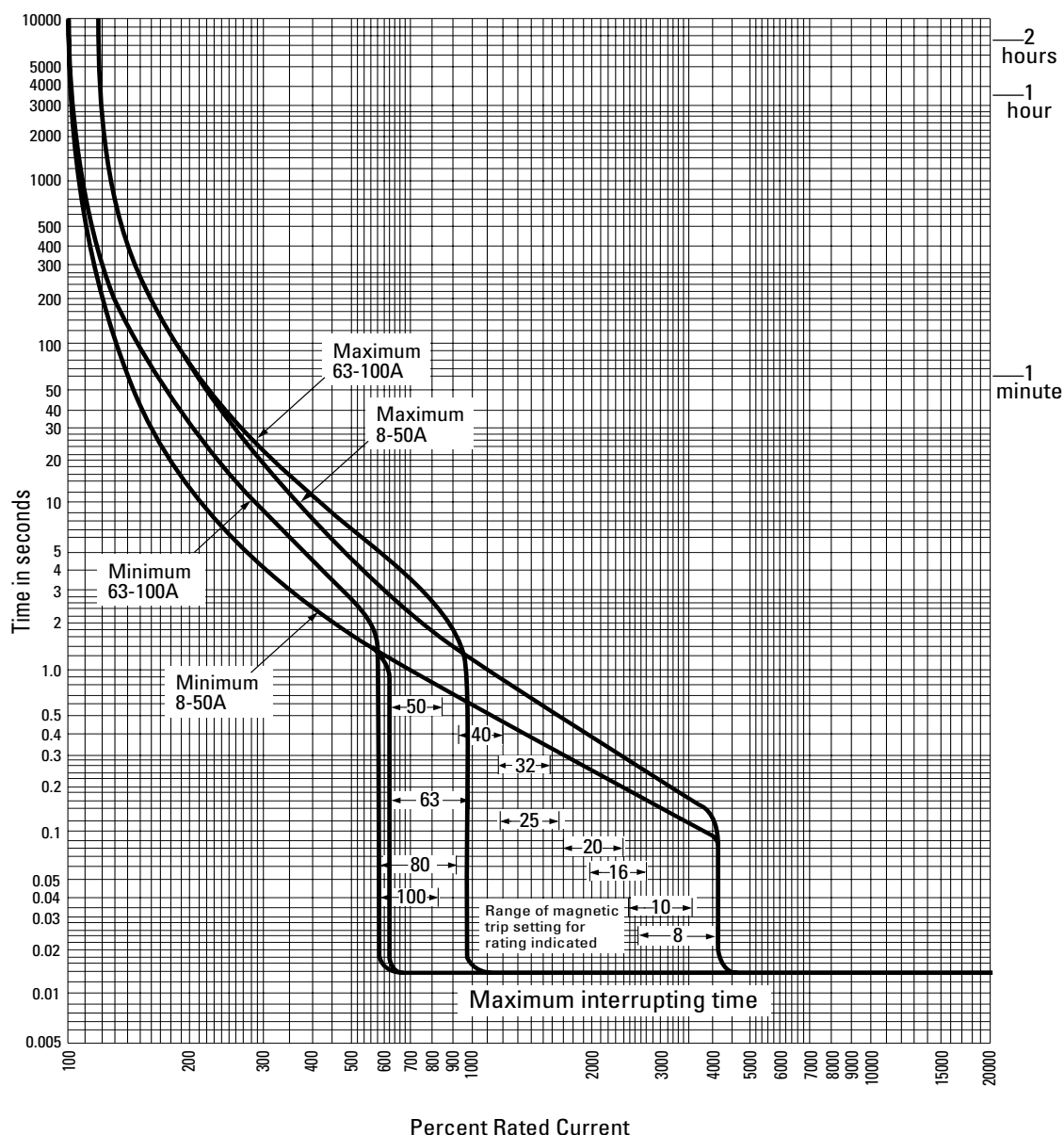


Quicklag Chassis

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.

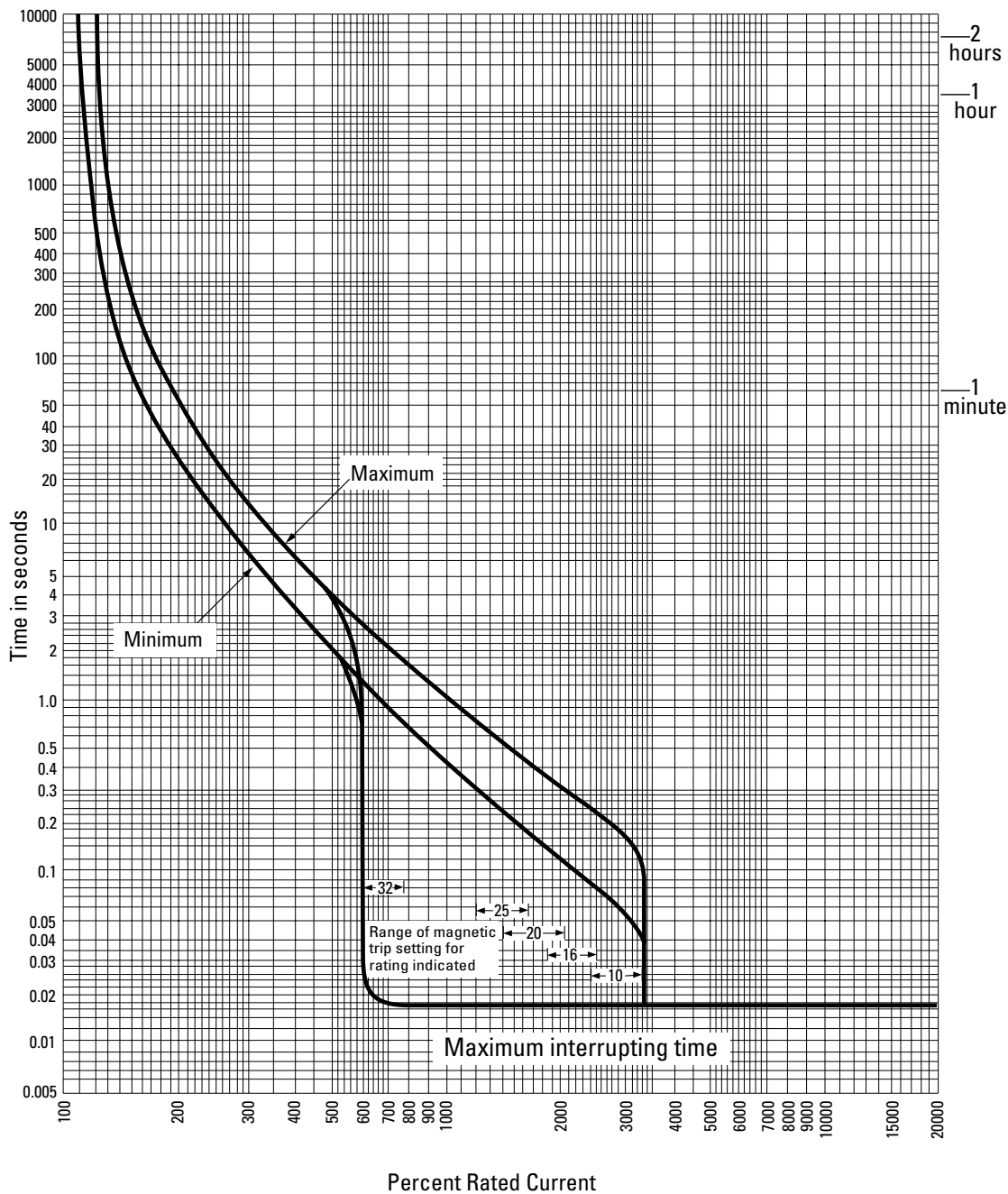
The characteristics are presented not as a single curve but as a band defined by maximum and minimum curves. The characteristics curve for any particular breaker will lie within this band. However, this does not imply that its tolerance band is as wide as the plotted band, which allows for manufacturing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



Circuit protection

Quicklag MCB

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 (mm²)	Earth Spe (mm²)	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

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

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.

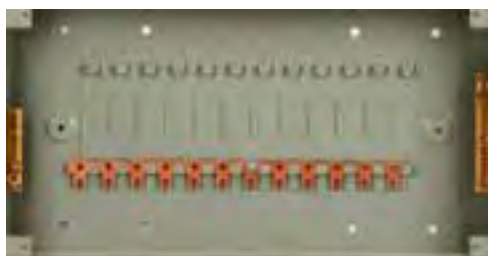


Key Features

- 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



Surface Mount LCQ Loadcentres

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

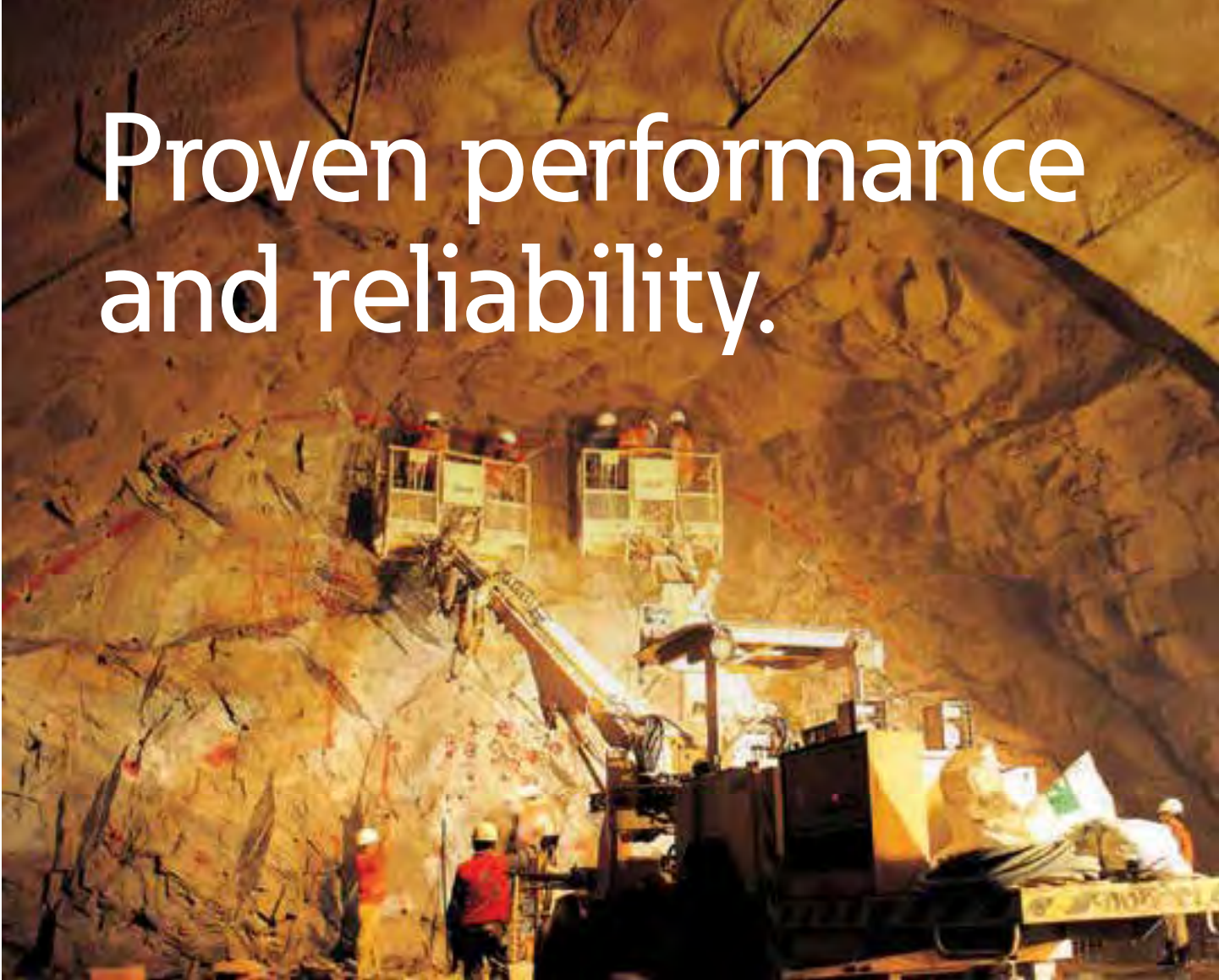
Surface mount with door: LCQ12S + LCQDRKIT12

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 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



Powering Business Worldwide

Circuit protection

Aftermarket and mining MCCB



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 ($8 \times I_n$)	
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, 6mm ² (kit of 3)	T32FB
Terminal Kit (3T150FB), 25-95mm ² 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	FPP
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

Circuit protection

Aftermarket and mining MCCB



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



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

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

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

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

Circuit protection

Aftermarket and mining MCCB



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



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

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, 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.



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

Circuit protection

Aftermarket and mining MCCB



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.



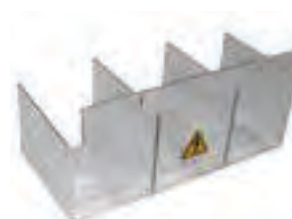
A3X4PK



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

Circuit protection

Aftermarket and mining MCCB



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.



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

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

Circuit protection

Aftermarket and mining MCCB



**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)



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

**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	RGK4200KSM

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	HLLK6
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

Circuit protection

Aftermarket and mining MCCB

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:

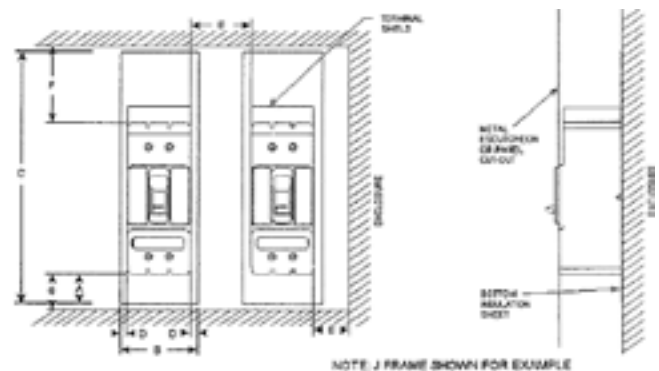
Thermal class: E (120°C) Dielectric strength: 80kV/mm
Service temperature: -70 to +130°C Breakdown voltage: 20kV
Resistivity @ 25°C: 1.8x10¹⁶ ohm-cm

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.

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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



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

Circuit protection

xBoard panelboards



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

xBoard panelboards (xDB)

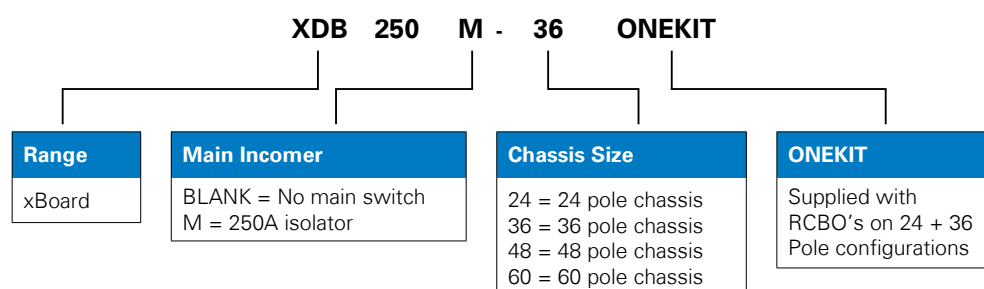
Eaton's xDB xBoard is a compact and versatile panelboard. It delivers an efficient energy distribution system for commercial and light industrial applications.

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.

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



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

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

xBoard Plus DIN panelboards			No mainswitch	250A isolator	Poles	Height	250A MCCB
Description	Poles	Height	Item no.	mainswitch			mainswitch
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.



Circuit protection

xBoard panelboards



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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 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

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.

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

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.

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	250A isolator mainswitch			250A MCCB mainswitch
Description	Poles	Height	item no.	item no.	Poles	Height	item no.
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



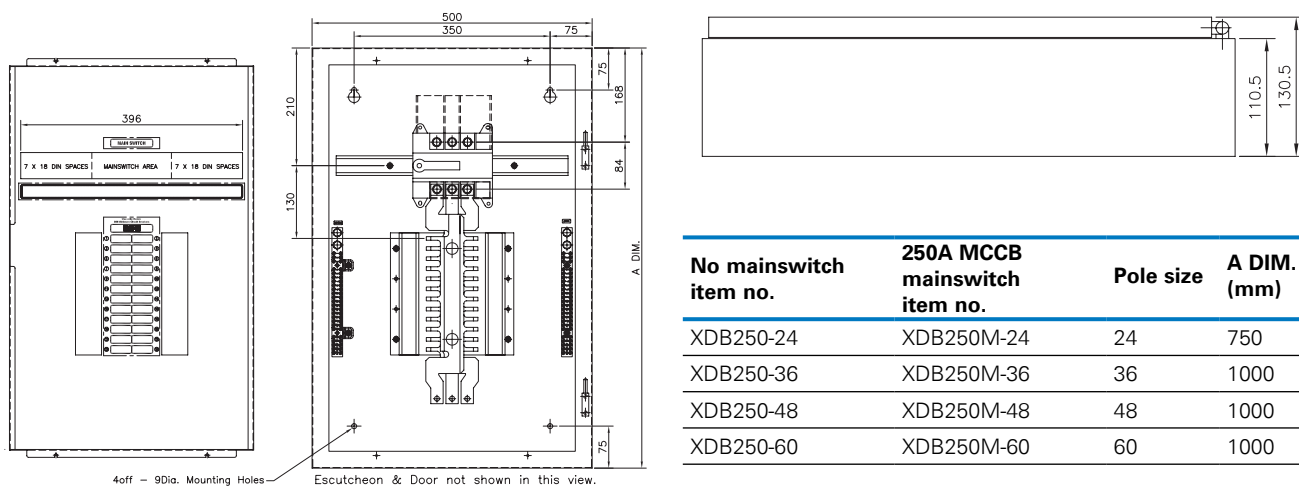
XDBP-SDK

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 link 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.

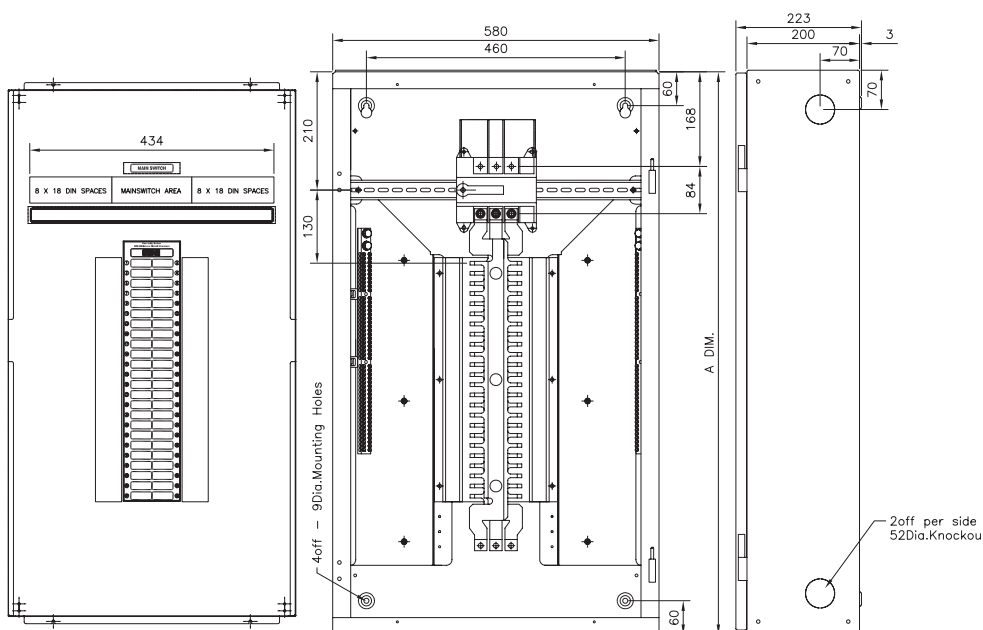
Technical data

xBoard panelboard



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

xBoard Plus panelboard



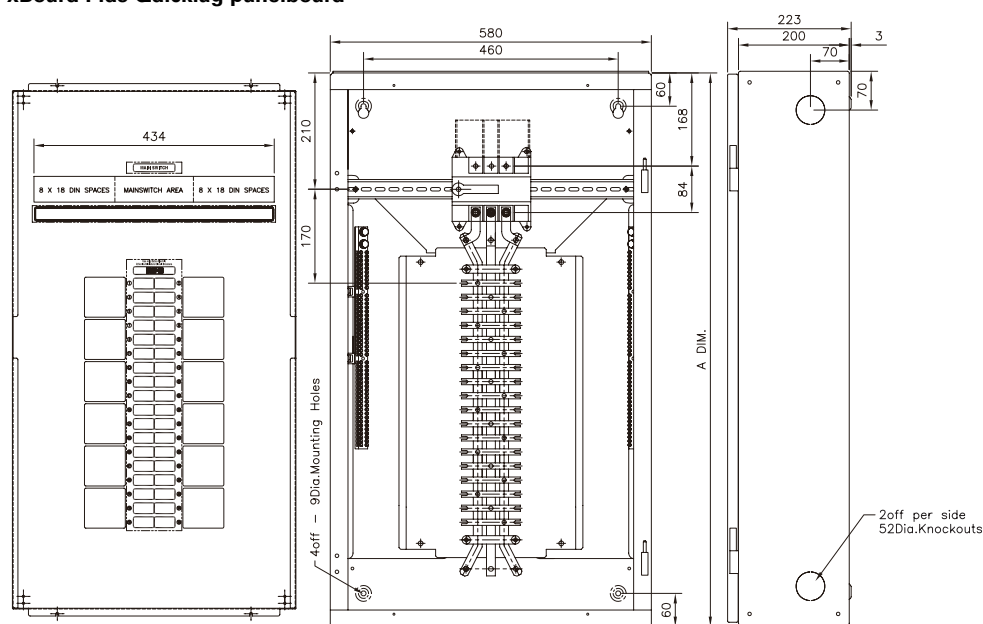
Note: 1000 high box shown with 48 pole chassis and 250A switch

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

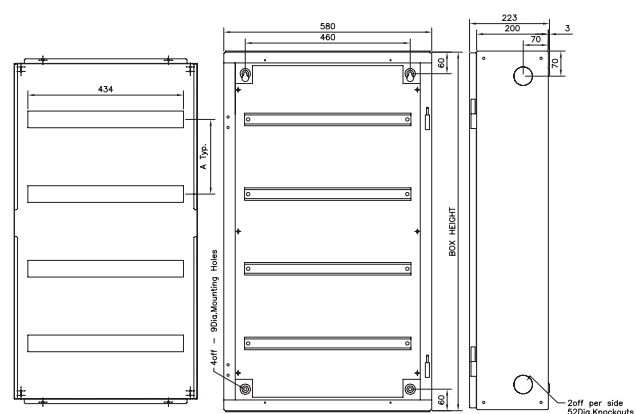


Note: 1000 high box shown with 36 pole chassis and 250A switch

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	XDBPQ250N2M-24	1000	24
XDBPQ250-36	XDBPQ250M-36	1000	XDBPQ250N2M-36	1500	36
XDBPQ250-48	XDBPQ250M-48	1500	XDBPQ250N2M-48	1500	48
XDBPQ250-60	XDBPQ250M-60	1500	XDBPQ250N2M-60	1500	60
XDBPQ250-72	XDBPQ250M-72	1500	XDBPQ250N2M-72	1500	72
XDBPQ250-84	XDBPQ250M-84	2000	XDBPQ250N2M-84	2000	84
XDBPQ250-96	XDBPQ250M-96	2000	XDBPQ250N2M-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

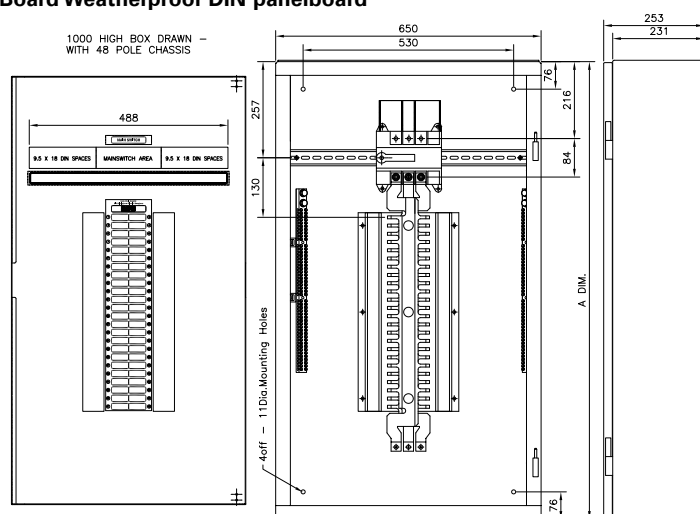
Blank mount. Plate & escutcheon item no.	DIN rail(s) & blank escutcheon item no.	Raised DIN rail(s) & slotted escutcheon item no.	Box height (mm)	A DIM. (mm)	No. of DIN rails
XEB250-B	XEB250-D1	XEB250-D1S	250	-	1
XEB500-B	XEB500-D2	XEB500-D2S	500	155	2
XEB1000-B	XEB1000-D4	XEB1000-D4S	1000	208	4
XEB1500-B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

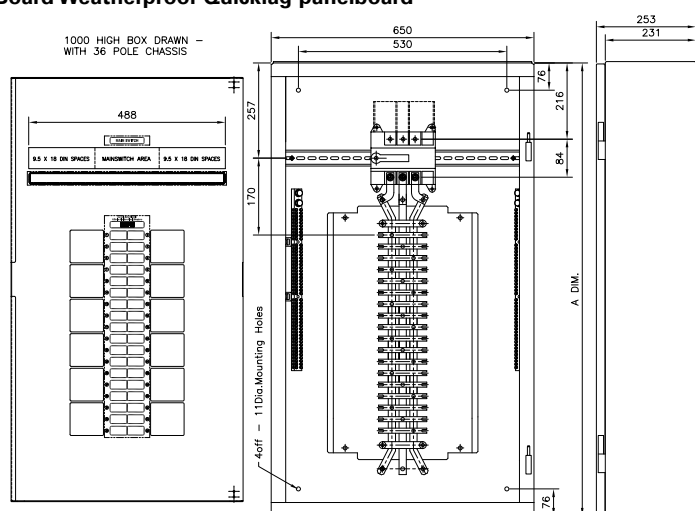
xBoard Weatherproof DIN panelboard



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

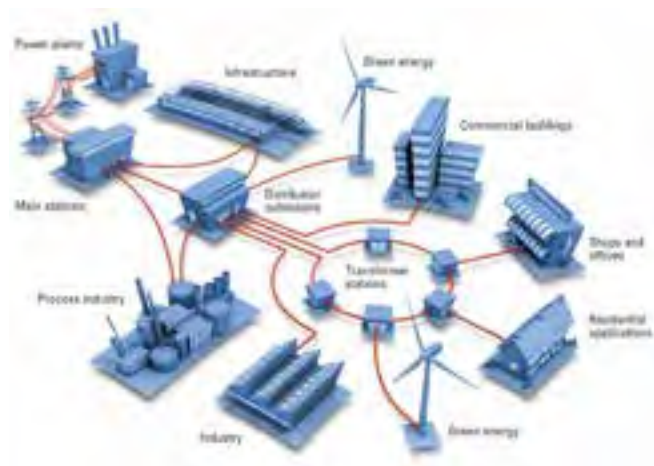
Orange board (-RO suffix) dimensions same as corresponding pole size above.

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.

Dimensions Magnefix MD4



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

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 enclosed 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 operation

- complete design certified in accordance with IEC standards
- Arc fault tested according to IEC 62271-200
- Quality assurance in accordance 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 enclosed 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.

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	I _k	kA/s	20/3	20/3	25/1.5	25/1.5
Rated peak withstand current	I _p	kA	50	50	63	63
Circuit-breaker						
Rated breaking current	I _r	A	630	630	630/1250	630/1250
Rated short circuit breaking current	I _{sc}	kA	16-20	16-20	16-25	16-25



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

Description			SVS/08		SVS/12	
Circuit-breaker						
Rated short-circuit making current	I _{ma}	kA	40-50	40-50	40-63	40-63
Rated short-time withstand current ①	I _k	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	I _r / I _{sc}	A	630	630	630	630
Rated short-circuit making current	I _{ma}	kA	50	50	50	50
Rated short-time withstand current ①	I _k	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	I _r	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.

Circuit protection

Medium voltage products



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

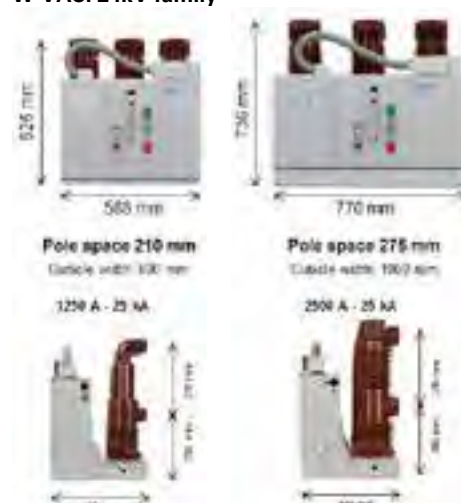
Circuit breaker designation			12 kV			17.5 kV			24 kV		
Rated voltage	Ur	kV	12			17.5			24		
Rated frequency	fr	Hz	50 / 60			50 / 60			50 / 60		
Rated normal current	Ir	A	630 / 800 / 1250 / 1600 / 2000 / 2500 / 3150 / 4000 ①						800 / 1250 / 1600 / 2000 / 2500		
Rated short-time withstand current	Ik	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

Circuit protection

Medium voltage products



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.

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.

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 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

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	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

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

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

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.

Technical specifications

Description		5	15	27	38
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.

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.

A greener form of power.



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

EATON
Powering Business Worldwide

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.

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



Control and indication

22.5mm Pushbuttons	pg 145
30.5mm Pushbuttons	pg 155
Stacklights - SL7 series	pg 172
Stacklights - SL4 series	pg 177
Cam switches	pg 182

Motor control

Xstart IEC Motor control	pg 194
Xstart IEC Contactors	pg 195
Contactors monitoring device	pg 204
Overload Relays	pg 205
IEC Manual Motor Protectors PKZM	pg 212
IEC Electronic Motor Protectors PKE	pg 214
IEC Motor control Busbar Adapters	pg 219
Dimensions	pg 220
DOL Starters	pg 240
Star-delta Starters	pg 242
1000V Mining Contactors	pg 243

Drives and soft starters

DS7 Soft starters	pg 246
S811+ Soft starters	pg 248
M-Max Variable speed drives	pg 249
DG1 Variable Drives	pg 250
Soft starter dimensions	pg 252
Drives dimensions	pg 255

Automation

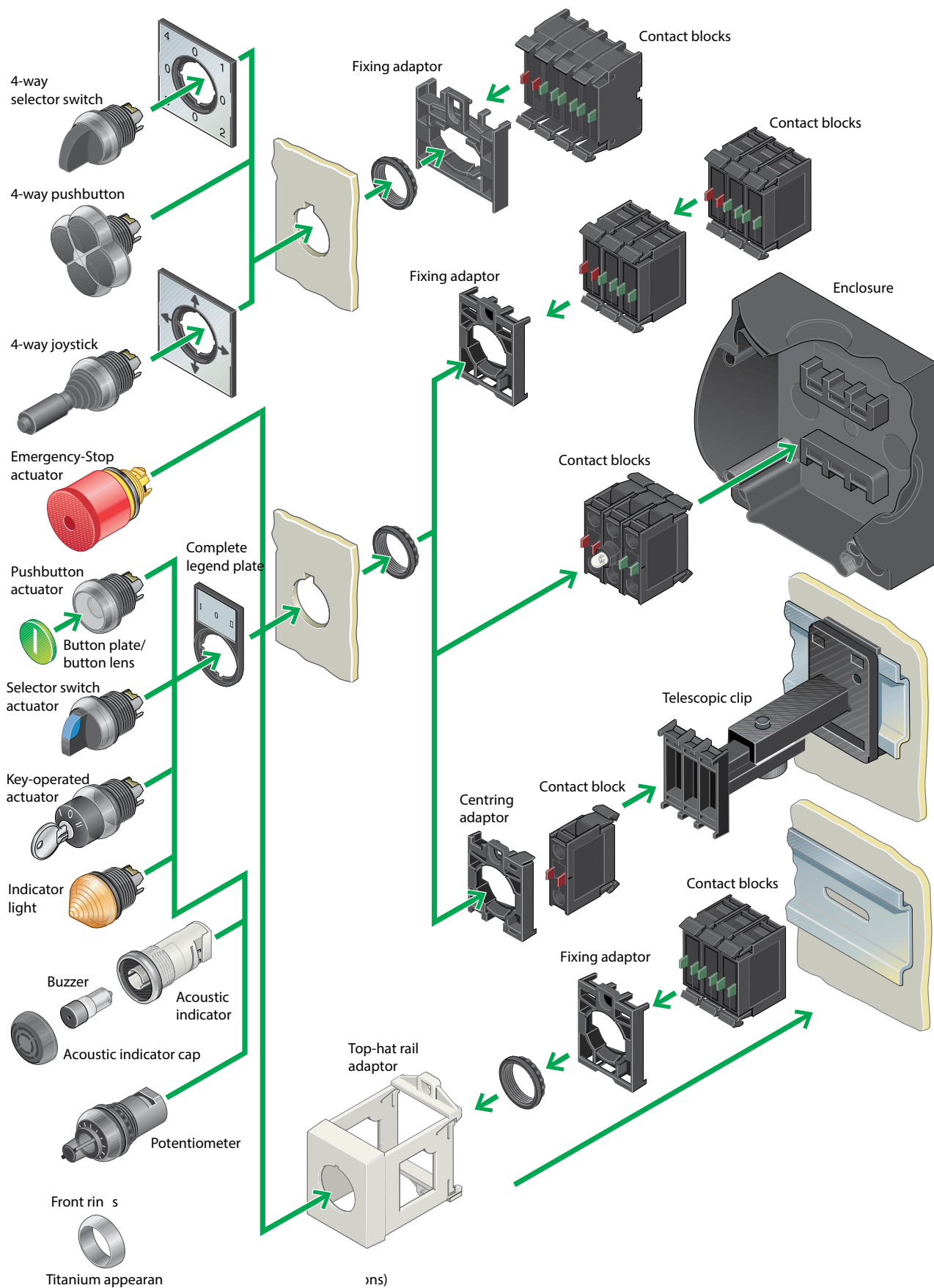
Easy relay controllers	pg 258
Programmable logic controllers	pg 266
ELC Graphic Touch Panels	pg 277
HMI Operator interface	pg 279
LS-Titan Position Switches	pg 281
Limit Switches	pg 285
Global proximity sensors	pg 297
Photoelectric Sensors	pg 302
VoltageWatch EVT range switches	pg 305
CurrentWatch ECS range switches	pg 306
Plug-in Relays	pg 308
EMR measuring & monitoring relays	pg 311
Timers	pg 313
Timeswitches	pg 314
DC power supplies	pg 315
Pressure switches	pg 316

Power control

Control and indication

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

22.5mm Pushbuttons

RMQ - Titan

Complete units

Description		Button plate	Contacts	Item no.
Complete units for front mounting				
Pushbutton actuators	Start		1NO	M22-D-G-X1/K10
	Stop		1NC	M22-D-R-X0/K01
Double actuators	With white LED element lens, 85 – 264 V AC	 	1NO/1NC	M22-DDL-GR-X1/X0/K11/230-W
	Key-release mushroom button with 1 key, MS1 individual lock mechanism		1NC	M22-PVS/K01
Emergency-stop actuators	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		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/K10



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



M22-PV/K01



M22-WRK/K10



M22-WRS/K11



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

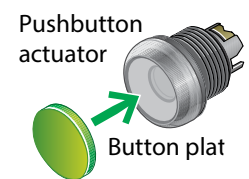
Pushbutton actuators, IP67

- 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
			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		  	M22-DDL-GR-X1/X0



M22-XD-G



M22-DH-R



M22-DP-R

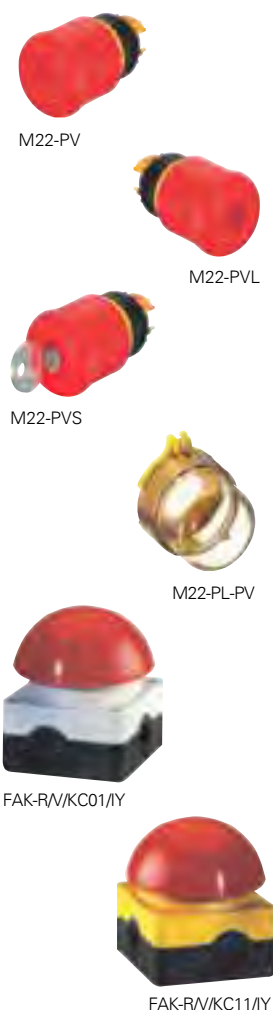


M22-DDL-GR-X1/X0

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



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

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-A



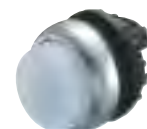
M22-A



M22-DL-R



M22-DRL-G



M22-DLH-W



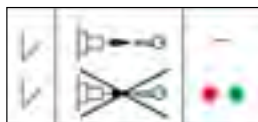
M22-L-R



M22-LH-B

Power control

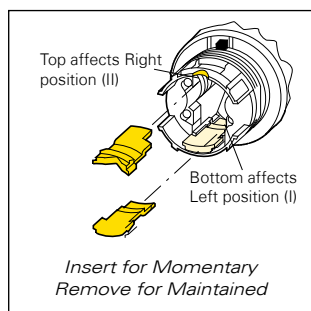
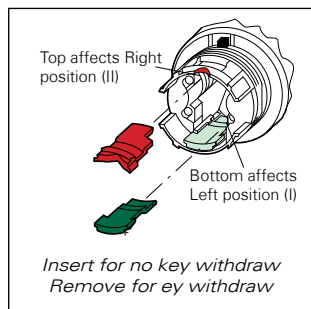
Control and indication



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	M22(S)-WR(L)(K)(3)	-	M22-XC-Y
Used to convert maintained operation to momentary operation	M22(S)-WRS(3)	-	

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		
	maintained	maintained	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	maintained	maintained	maintained
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
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-WR



M22-WR3



M22-WRK



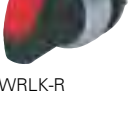
M22-WRK3



M22-WR4



M22-WRS



M22-WRLK-R

22.5mm Pushbuttons

RMQ - Titan

Four-way operators



M22-WJ2H



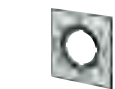
M22-WRJ4



M22-D4-S



M22-XCK



M22-XCK2



M22-I2



M22-I4



M22-EY1



M22-E6

Description	Inscription	Function:	For use with	Front ring: titanium Item no.
		↳ = Stay-put ↳ = Spring-return		
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
			4-way selector switch actuators	M22-XCK2
	0-1-0-2-0-3-0-4	–		

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 ⊙ 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

⊙ 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		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

Power control

Control and indication

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 withstand 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

Power control

Control and indication

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)

Power control

Control and indication

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	E34FB197L*

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.

Illuminated pushbutton light units



Illuminated pushbuttons - transformer type

Description	Supply voltage	Chrome	Corrosion resistant
Transformer type 6V	110/120	T411	E34XB120
secondary bulb supplied	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

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

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)

Power control

Control and indication

30.5Mm pushbuttons

Illuminated operators, push-pull mushroom lenses



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



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.
	110/120	10250T63
Transformer Type	220/240	10250T65
6V secondary bulb supplied	380/415	10250T66
	440/480	10250T67



Resistor type light modules for push-pull operators

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



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



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



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
	T4011	E34VFB
	T4081	E34VEB

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.

3 Position selector switches

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



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
	-	Right & Left	T15113	E34KFB3
	-	Left Only	T15712	E34KEB2

Spare key

Description	Item no.
Replacement Keys (2)	TA152

Other key codes are available contact eaton for more information.

3 Position key operated selector switches

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



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)

Power control

Control and indication

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

Contact block selection & mounting

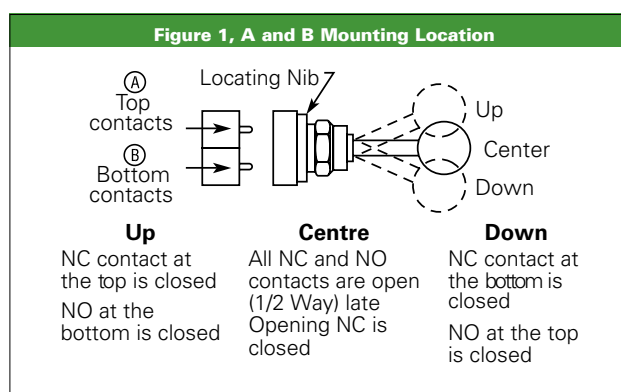
Handle position			Contact block	Mounting location		
Up	Centre	Down			Top	Bottom
			Item no.	Type	A	B
X	O	O	T51P	1NC		
O	O	X	T51P	1NC		
O	X	O	T45	2LONC		
X	O	O	T3P	1NC		
O	O	X	T3P	1NC		
X	X	O	T45	1LONC		
O	X	X	T45	1LONC		
X	O	O	T44	1NC		
O	O	X		1NO		
O	O	X		1NC		
V	O	O		1NO		

X = closed circuit, O = open circuit.

NO = Normally Open, NC = Normally Closed, LONC = Late Opening Normally Closed.

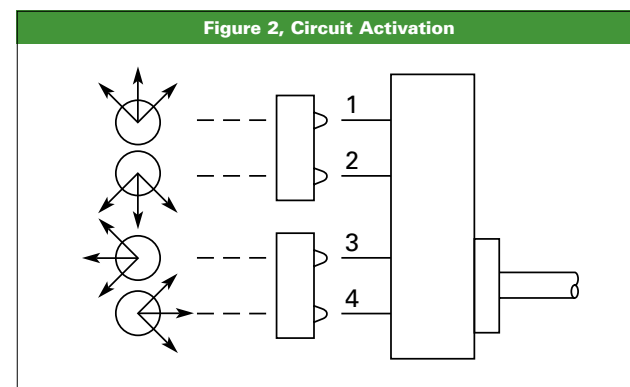
Four circuits in single block depth — rated 300V max.

Two-position joystick operators - contact block operation



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.



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.
	1LONC	NO	ESM9/5
Metal Mushroom 45mm	1LONC	YES	ESM9/5P
	1ECNO,1LONC	NO	ESM9/6
	1ECNO,1LONC	YES	ESM9/6P
	1LONC	NO	ESP6/5
Metal Palm 63.5mm	1LONC	YES	ESP6/5P
	1ECNO,1LONC	NO	ESP6/6
	1ECNO,1LONC	YES	ESP6/6P



ESM9/6



T3500

Stop start pushbutton station

Description	Item no.
Fibreglass Enclosure. Start: green pushbutton with boot Stop: red padlockable mushroom with boot	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

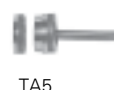
Boots	Colour	Item no.
Protective boot for flush pushbutton operators	Clear	10250TA46
	Black	TA47
	Red	TA48
	Green	TA49
	Yellow	TA50
Protective boot for extended pushbutton operators	Black	TA3
	Red	TA4
	Green	TA10
	Clear	TA85
Protective boot for illuminated pushbuttons.	Clear	TA25
Protective boot for 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
Hole plugs	Description	Item no.
Plug	For unused holes — Steel, painted grey	10250TA7
Stainless Steel Plug	For unused holes — Stainless Steel - Square	E30KT5
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
Special light modules	Description	Item no.
Flasher Module	Changes any AC illuminated device to a controlled flashing light. 24V s 120V	TFL2 TFL1



TA5



TA1



10250TA7



10250TA95



TA96



10250TA102



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.

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



TJ34



TM31



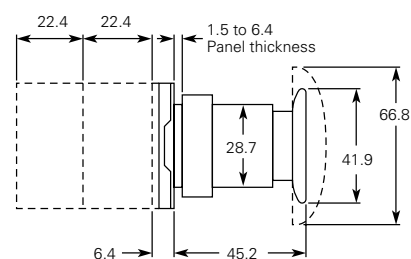
E34SP34

Power control

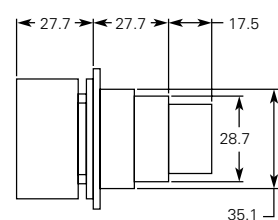
Control and indication

30.5mm Pushbuttons

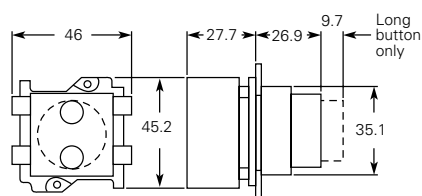
30.5mm Pushbuttons, dimensions & technical data



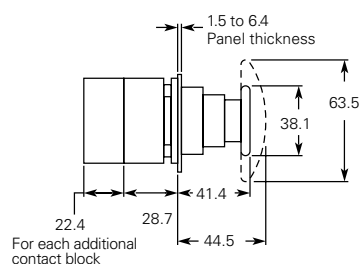
Push-Pull Switch



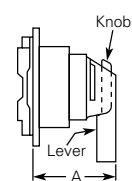
Illuminated Pushbutton



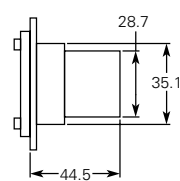
Flush and long pushbutton half shroud is the same as the long pushbutton with lower half of guard ring cut back



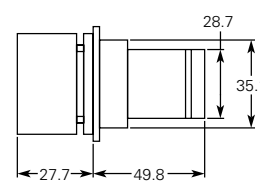
Mushroom and jumbo head pushbutton



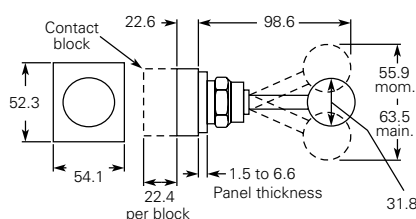
Operator	Dim. A
Knob	35.1
Lever	38.1



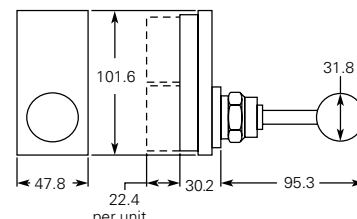
Key operated selector switch



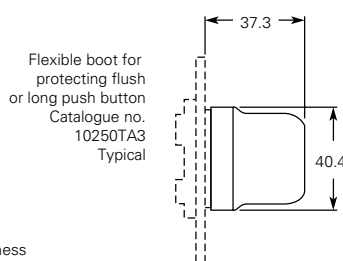
Illuminated Selector Switch



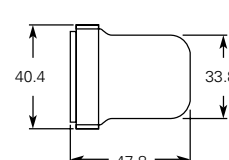
2-position joystick operator



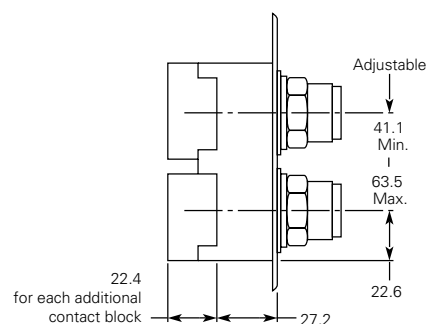
4-position joystick operator



Flexible boot for protecting flush or long push button
Catalogue no. 10250TA3
Typical



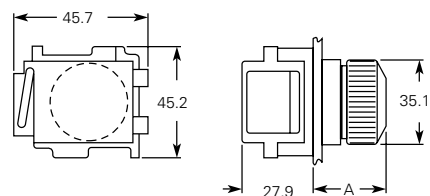
Transparent flexible boot for illuminated pushbutton
Catalogue no. 10250TA25



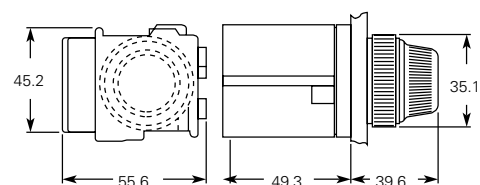
Maintained Pushbutton
Catalog No. 10250TA66
Typical

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

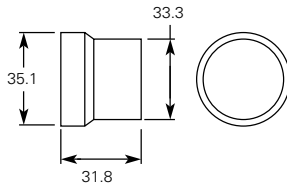
	Wide	High	Deep
1	97	100	75
2	97	150	75
3	97	200	75

316 Stainless steel enclosure dimensions

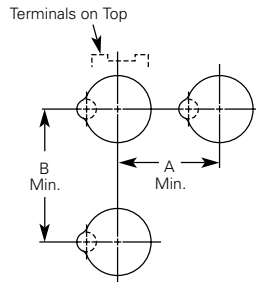
	Wide	High	Deep
1	120	120	84
2	120	160	84
3	120	220	84
4	120	280	84

30.5mm Pushbuttons

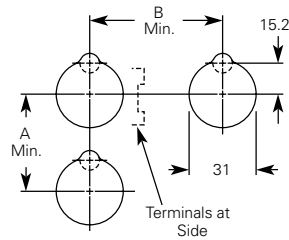
30.5mm Pushbuttons, dimensions & technical data



Extended Retaining Nut
Catalog No. 10250TA12



Horizontal Rows



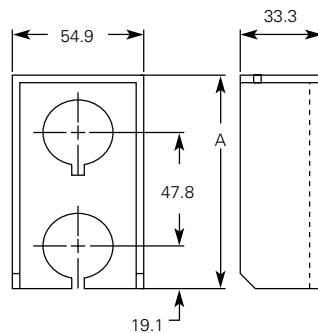
Vertical Rows

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

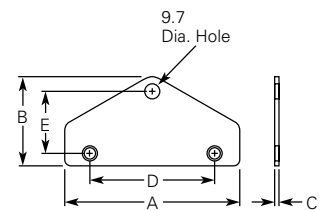
Number of elements	Dimension A
2	101.6
3	149.4
4	202.2
7	339.9

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.	26.9 ②
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)			Mounting	
	Wide A	High B	Deep C	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

Power control

Control and indication

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:

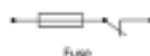
- Marking: NC-NO on the contact block to meet the NEMA requirements. Dual marking system 1 – 2 for normally closed, 3 – 4 for normally open to meet BS5472 (Cenelec EN50 005)
- Clamps: Terminals are saddle clamp type for 1 x 22 AWG (0.34 mm²) to 2 x 14 AWG (2.5 mm²) conductors
- Torque = 7 lb-in (0.8 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: U_i = 660V AC or DC
- Thermal: I_{th} = 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 I_e at 1.1 x U_e), (– 6A: 120V pf 0.3, – 4A: 240V pf 0.3, – 2A: 660V pf 0.3). DC13 rated make/break (1.1 x I_e at 1.1 x U_e), (– 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

100



Stacklights - SL7 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	SL7-100-L-RG-24LED
	3	Red/Amber/Green			SL7-100-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	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



Green



Blue



Red

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

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



Red

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

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	Black			1	SL7-AP24
110/120 Vac	Maximum 41					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	Black			1	SL7-AP24-E
110/120 Vac	Maximum 41					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	Black			1	SL7-AP24-M
110/120 Vac	Maximum 45					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	1	SL7-L...	SL7-CB-100
	250 mm	aluminum		SL7-BL...	SL7-CB-250
	400 mm	color tube		SL7-FL... SL7-AP...	SL7-CB-400
Base with aluminum tube and 3/4 in NPT threaded base Spring-loaded terminals	100 mm	Black	1	SL7-L...	SL7-CB-T-100
	250 mm	aluminum		SL7-BL...	SL7-CB-T-250
	400 mm	color tube		SL7-FL... SL7-AP...	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	1	SL7-L...	SL7-FMS-100
	250 mm	aluminum		SL7-BL...	SL7-FMS-250
	400 mm	color tube		SL7-FL... SL7-AP...	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

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

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



SL7-CB-250



Red



Red



Red

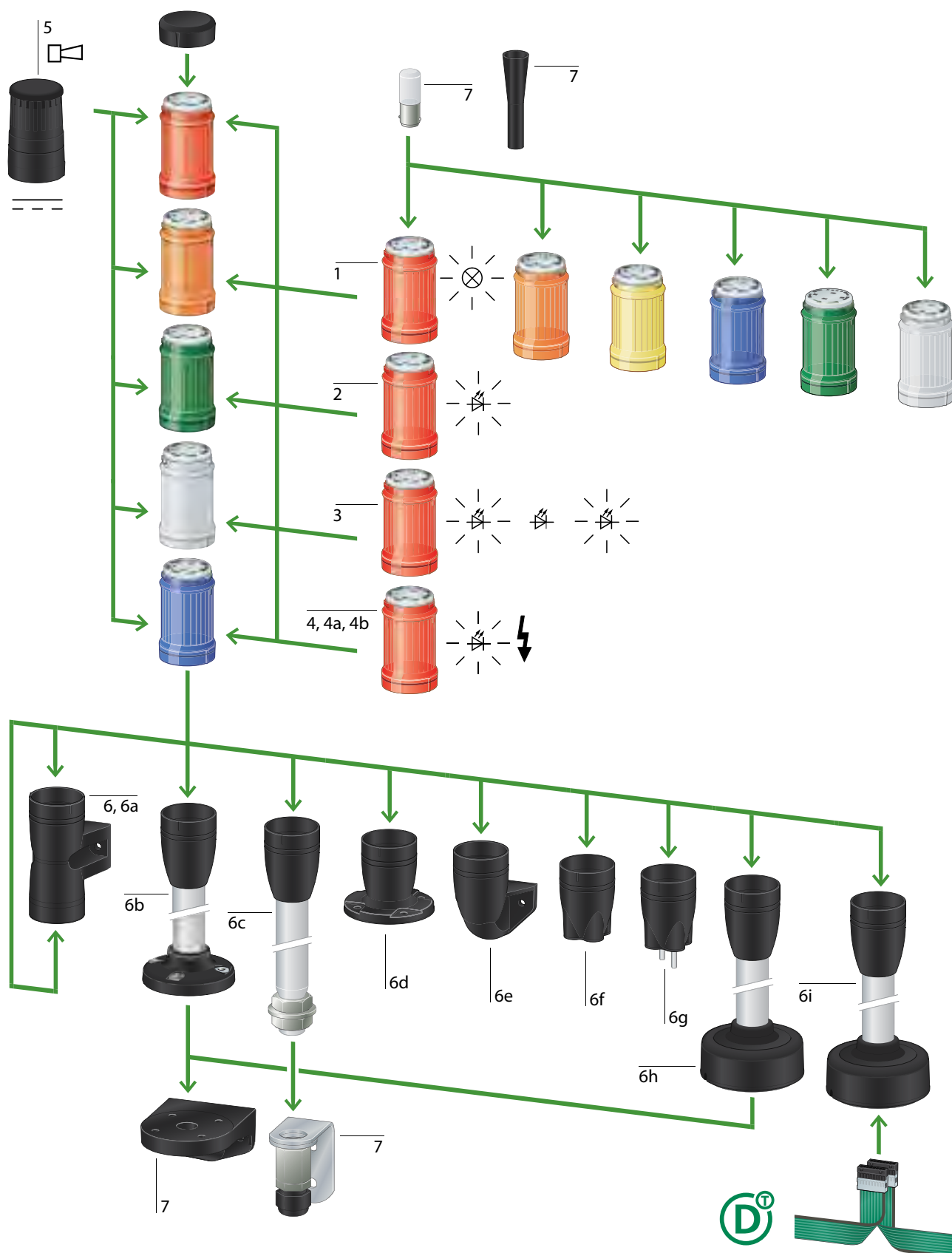


Red

Power control

Control and indication

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

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

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



SL7-100-L-RG-24LED



White



Amber



Yellow



Green



Blue



Red

Stacklights - SL4 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	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	1	SL4-L...	SL4-PIB-100
	250 mm	aluminum		SL4-BL...	SL4-PIB-250
	400 mm	color tube		SL4-FL... SL4-AP...	SL4-PIB-400
Base with aluminum tube and 3/4 in NPT threaded base Spring-loaded terminals	100 mm	Black	1	SL4-L...	SL4-PIB-T-100
	250 mm	aluminum		SL4-BL...	SL4-PIB-T-250
	400 mm	color tube		SL4-FL... SL4-AP...	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	1	SL4-L...	SL4-FMS-100
	250 mm	aluminum		SL4-BL...	SL4-FMS-250
	400 mm	color tube		SL4-FL... SL4-AP...	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

Mounting brackets



SL7/4-FW

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

Mounting: Ba15d - SL4 series

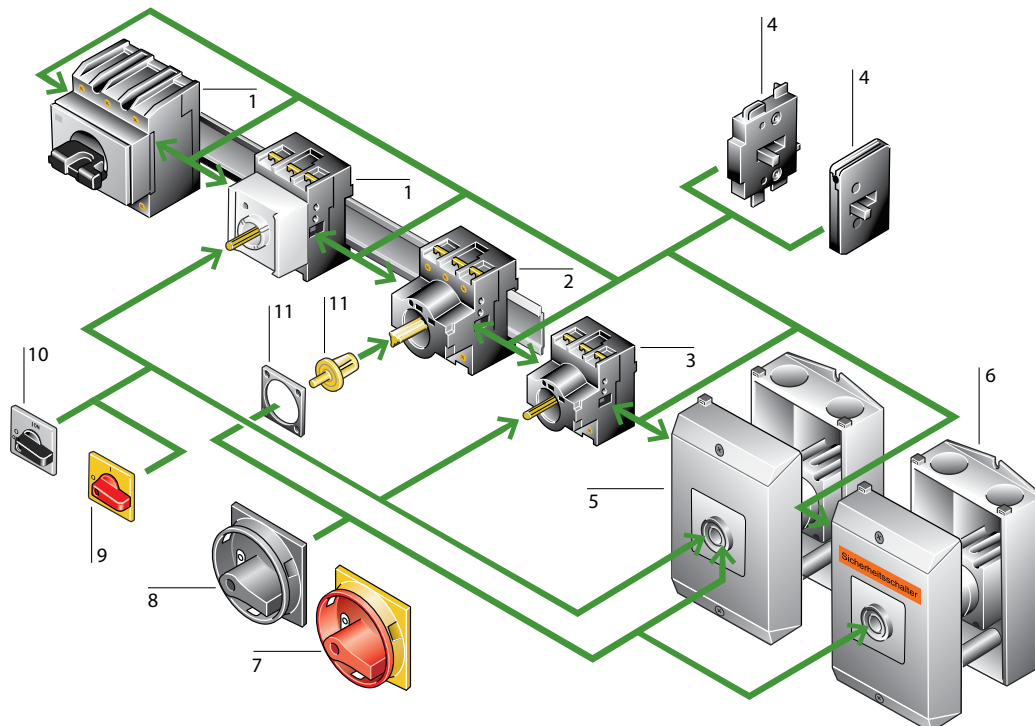
Lifespan (h)	Rated operational voltage (Ue V)	Power (Watts)	Standard pack	For use with..	Item no.
3000	12	4	1	SL4-L...	SL4-L12
	24				SL4-L24
	120				SL4-L120
	230				SL4-L230



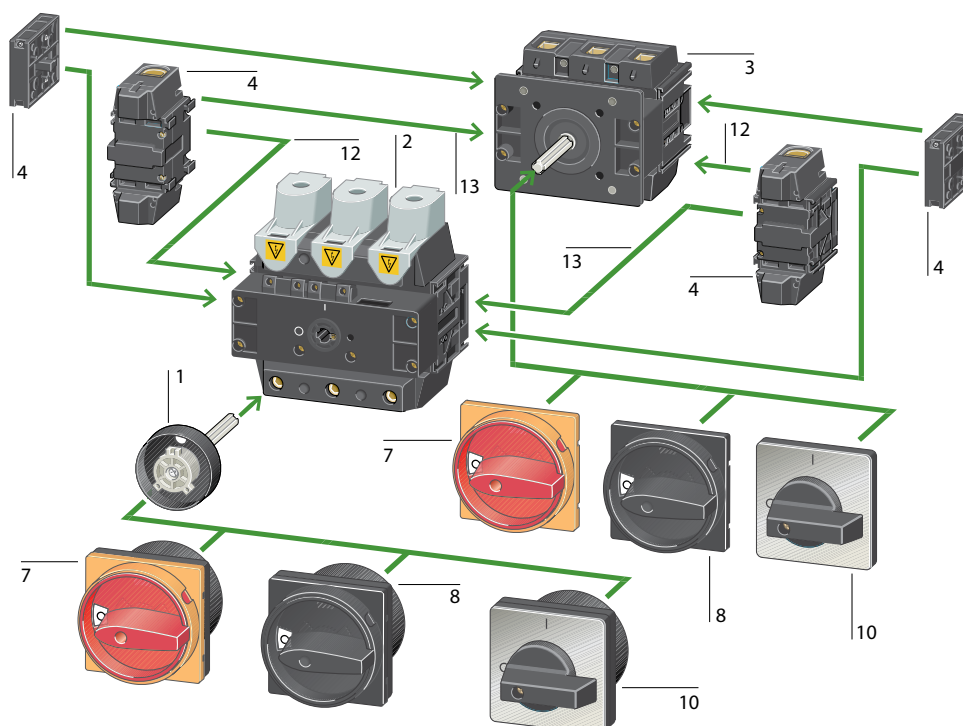
SL7-L12

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

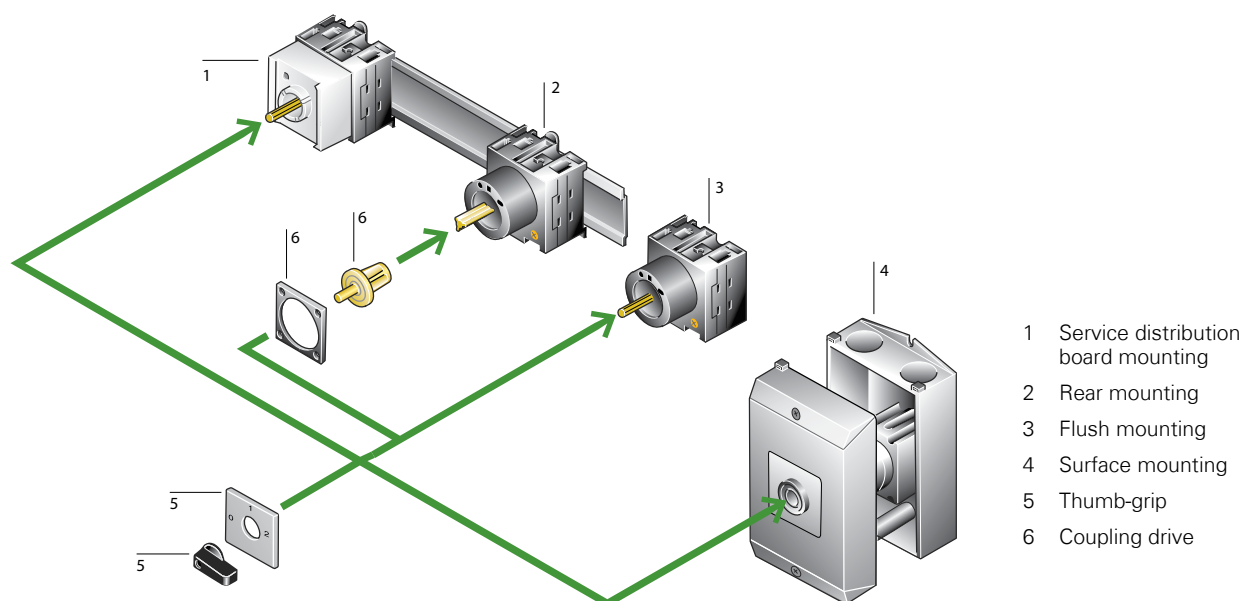
- 10 Thumb-grip
- 11 Coupling drive
- 12 Protective conductor terminal
- 13 Neutral terminal

Power control

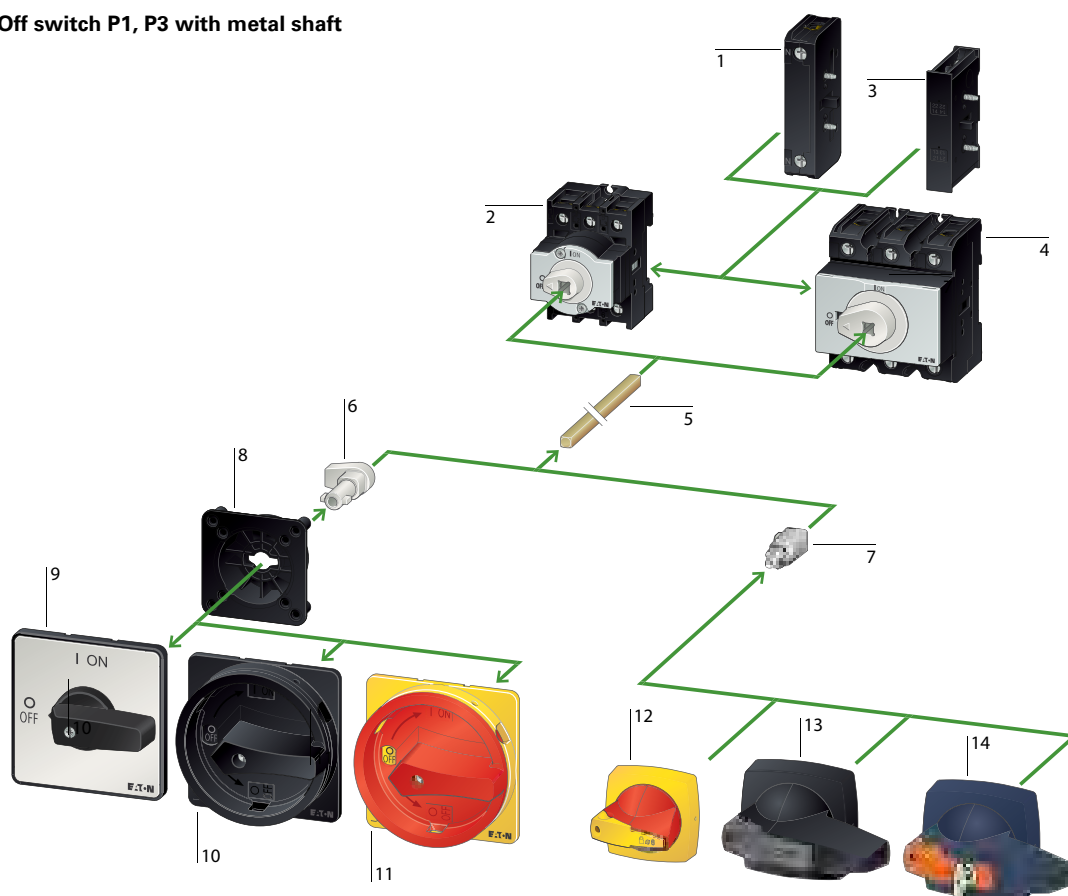
Control and indication

Cam switches

Control switches - T0, T3, T5B, T5



On-Off switch P1, P3 with metal shaft



- | | |
|---------------------------|--|
| 1 Neutral conductor | 7 Centring tip |
| 2 P1 rear-mounting switch | 8 Centring adapter |
| 3 Auxiliary contact | 9 Thumb-grip |
| 4 P3 rear-mounting switch | 10 Main switch kit (black) |
| 5 Metal shaft | 11 Main switch kit for use as emergency switching off device (red) |
| 6 Centring tip | |

- | |
|--|
| 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	Centre mounting	Surface mounting	Service distribution board mounting	Rear mounting
			Front IP65	Front IP65	IP65	Front IP30	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

Power control

Control and indication

Cam switches

Main circuit poles	Auxiliary circuits		Rated uninterrupted current I A	 Main switches surface mounting	 Main switches flush mounting	 Main switches rear mounting	 Main switches rear mounting
	N/O	B		IP65 Item no.	front IP65 Item no.	front IP65 Item no.	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

Control and indication

Cam switches

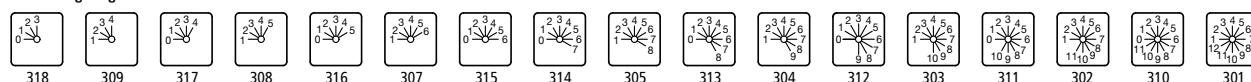
Switch size	Dimensions mm (w x h x d)	For use with	Item no.
Standard front plate			
T0, T3, P1	45 x 45	for frame 48 x 48)	FS(*)-T0
P3, T5, T5B	84 x 84	(for frame 88 x 88)	FS(*)-P3
Emergency switching off/emergency stop front plates			
T0, T3, P1	45 x 45	for frame 48 x 48)	FS908GE-T0
P3, T5, T5B	84 x 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

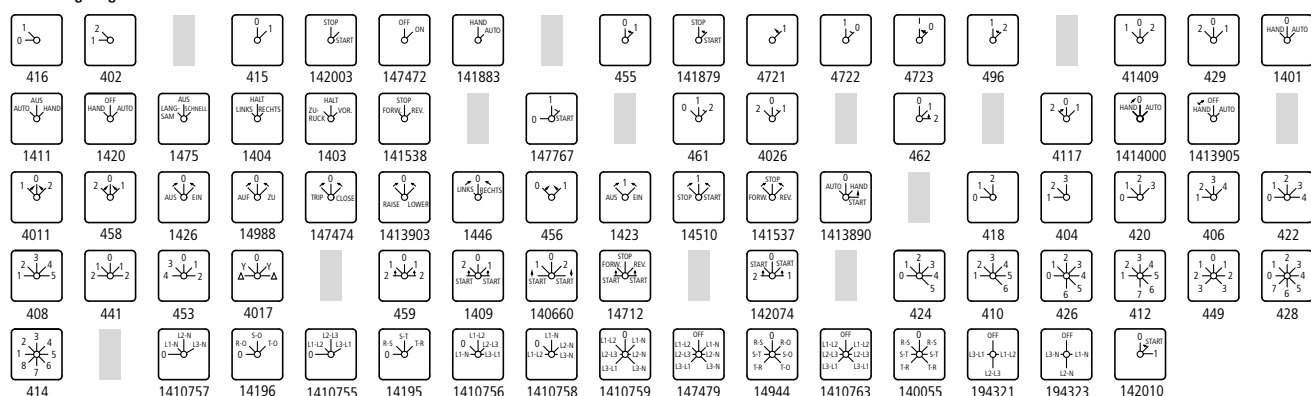
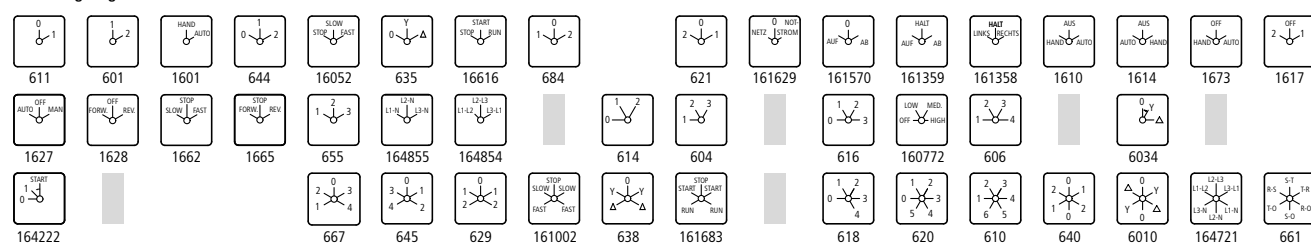
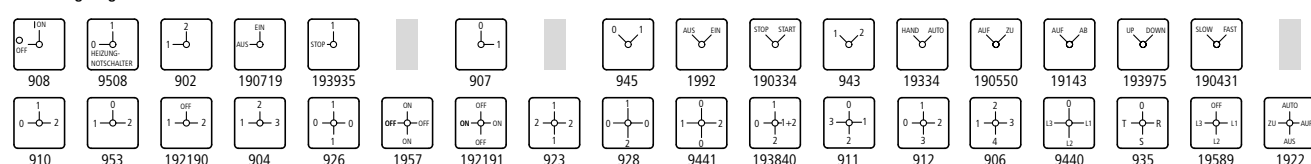
Standard front plate

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		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	T0-1.../I1 to T0-4.../I1 T0-1.../E to T0-6.../E T0-1.../Z to T0-6.../Z		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		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	P1-.../E P1-.../I2 P1-.../Z	Withdrawable positions programmed at factory as ordered	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	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	T3-.../E, T3-.../I2, T3-.../Z P1-.../E, P1-.../I2, P1-.../Z		SVA-SOND-KMS(*)-T3
Lock KMS1: Switches with FS908 are possible as main switch. Key can be withdrawn in positions as specified			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	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(*)-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



Cam switches



N-P1E



PE-P5-125/160Z



HI21-P5-125/160Z



IVS-T0



UV-T0



ZVV-T0



SAV-T0

Description		For use with	Item no.
Neutral conductor	For left or right side mounting	P1-.../E, .../EA, .../EZ	N-P1E
		P1-.../Z, .../N, .../I2, .../IVS	N-P1Z
	For P1-.../I2: optionally, N-P1Z or HI11-P1/P3Z, can only be fitted on the left	P3-.../E, .../EA...	N-P3E
		P3-.../Z, .../N, .../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, .../N, .../I2, .../IVS P3-63/Z, .../N, .../I4, .../IVS P3-100/Z, .../N, .../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-.../N T3-.../Z, T3-.../N P1-.../Z, P1-.../N	ZAV-T0
		T5(B)-.../Z P3-.../Z P3-.../N	ZAV-P3
Shaft	Aluminum, length: 480 mm	P5-.../N... 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, .../N	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, .../N P3-...N, ...HI11, ...N...HI11	H-P3
	For covering the terminals	P5	H-P5-125/160 H-P5-250/315
Key	Set (6 units) for covering the connection terminals	T8-3-8342/...	H-T8
	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
Description		For use with	Item no.
IP65 insulated enclosures	1 - 2 contact units	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	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



H1-t5



VR-T0



MBS-12



CI-K1-T0-2



K-C1-K5

Power control

Control and indication

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

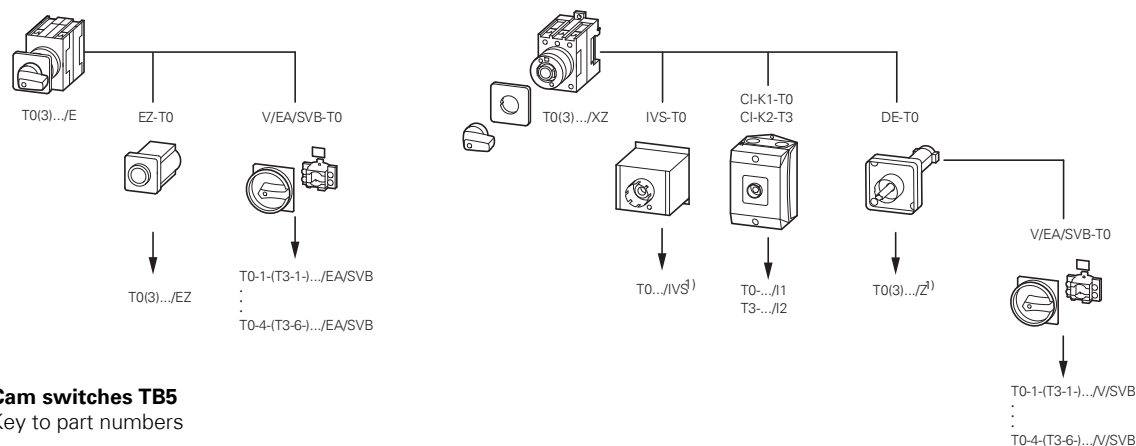
Key to part numbers

T.....-.....-...../.....

↑ ↑ ↑ ↑

Switch size Number of contact chambers Contact sequence Mounting form
T0 or T3 = contact units number

Using the modular system to convert the mounting form



Cam switches TB5

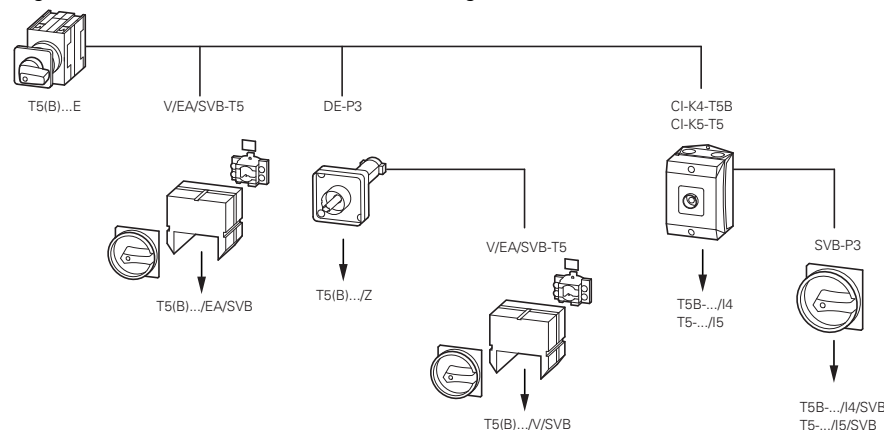
Key to part numbers

T.....-.....-...../.....

↑ ↑ ↑ ↑

Switch size Number of contact chambers Contact sequence Mounting form
T5(B) = contact units number

Using the modular system to convert the mounting form T5B



Switch-disconnectors P1 and P3

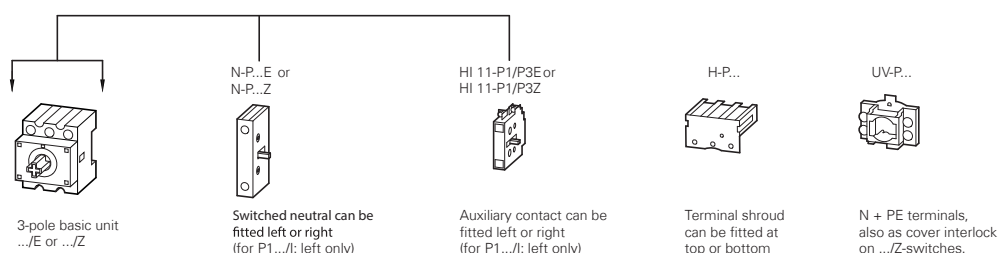
Key to part numbers

P. - /

↑ ↑ ↑ ↑ ↑

Switch size
P1 or P3 Rated uninterrupted current Mounting form Part no. suffix
(if required) Accessories

Add-on functions due to modular systems



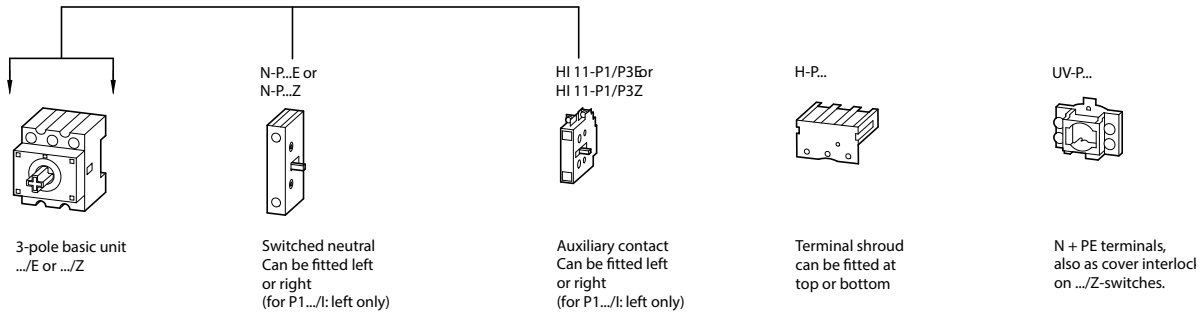
Cam switches

Switch-disconnectors P1 and P3

Key to part numbers

P..... - / - /
 ↑ ↑ ↑ ↑ ↑
 Switch size Rated uninterrupted current Mounting form Part no. suffix Accessories
 P1 or P3

Add-on functions due to modular system



TM mini cam switches

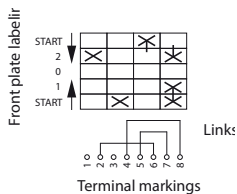
The TM mini cam switch is a particularly small switch with a small space requirement. It is ideally suited for small voltages and currents such as electronic controls. For greater safety the contacts are gold plated.

TM switches have consecutive terminal markings starting with 1.

Key to part numbers

TM..... - / +
 ↑ ↑ ↑ ↑
 Number of contact chambers Contact sequence Mounting form Accessories
 = contact units number

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.

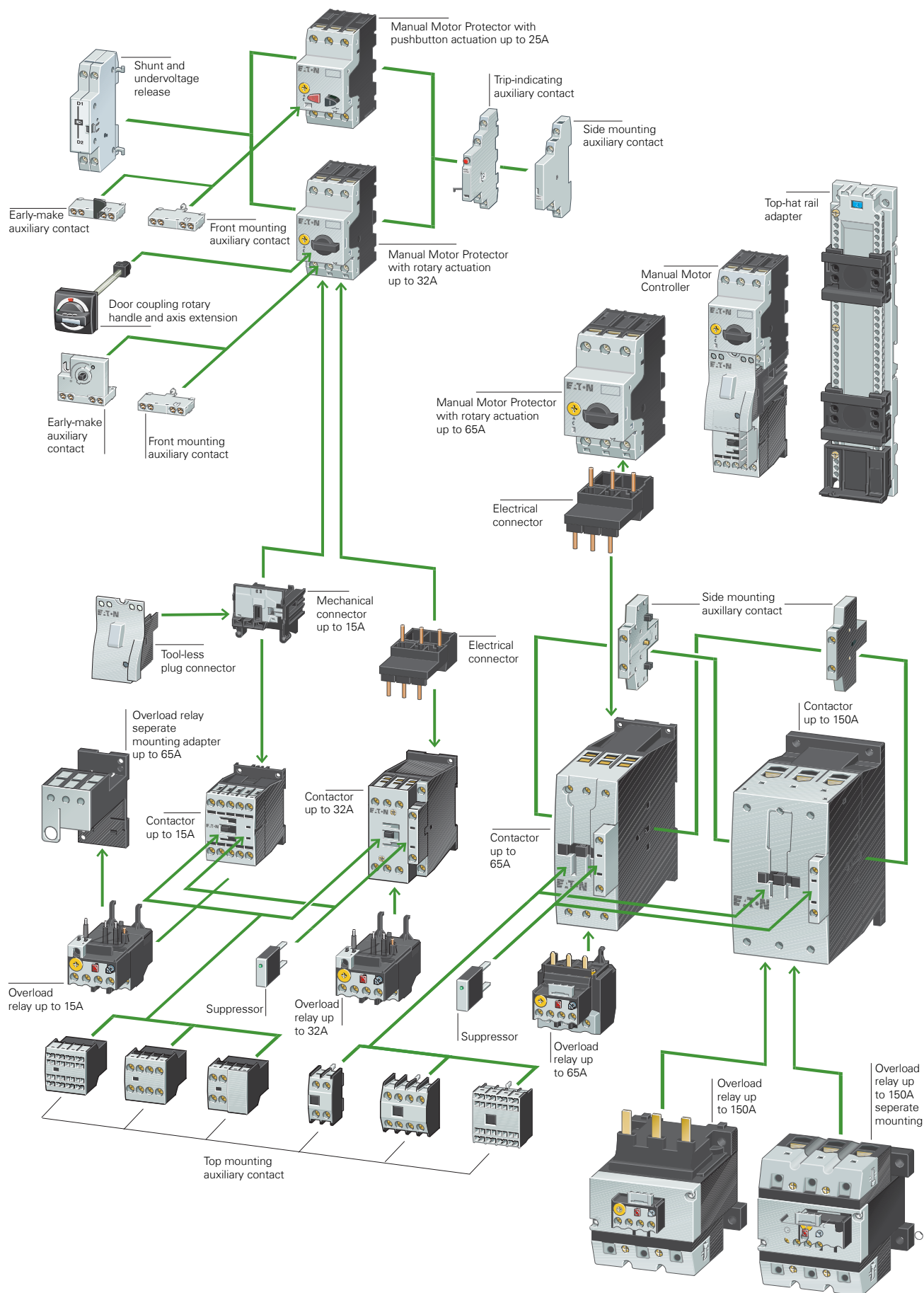


EATON
Powering Business Worldwide

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-15 220 V, 230 V, 240 V		380 V, 400 V, 415 V		Conventional free air thermal current	Aux. contact	Item no.
I_e A	I_e A	I_e A	I_{th} 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		No. of power poles	Aux. contacts	Item no.
240V	415V					
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	10A	1NO-1NC	ZE-0,16
0.16 – 0.24A			ZE-0,24
0.24 – 0.4A			ZE-0,4
0.4 – 0.6A			ZE-0,6
0.6 – 1A	10A	1NO-1NC	ZE-1,0
1 – 1.6A			ZE-1,6
1.6 – 2.4A			ZE-2,4
2.4 – 4A			ZE-4
4 – 6A	10A	1NO-1NC	ZE-6
6 – 9A			ZE-9
9 – 12A			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.	VODILE
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		Conventional free air thermal current	Aux. contact	Item no.
240 V	415 V			
I_e	I_e	I_{th}		
A	A	A		
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

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		Aux. contacts	Item no.
		400V	660/ 690V		
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			Aux. contacts	Item no.
		400V	660/ 690V	1000V		
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.



Frame B



Frame C



Frame D



Frame F & G



Frame L

Xstart IEC Contactors

Full voltage non-reversing 3-pole contactors

IEC ratings						
AC-3 I _e (A)	AC-1 (60°C) I _e = I _{th} (A)	Maximum kW ratings AC-3 3-Phase Motors 50 – 60 Hz			Aux. contacts	Item no.
		400V	660/ 690V	1000V		
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

Power control

Motor control

Xstart IEC Contactors

IEC 4-Pole Contactors, frame B – frame G

I _e (A) AC-3	I _e = I _{th} (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

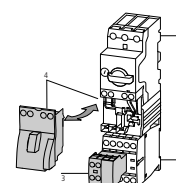
Accessories - Auxiliary contacts

Conventional thermal current, Open at 60°C I _{th} = I _e , 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-1LONC	DILM150-XHIV22

Frame 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.

① Suitable 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



Frame B-C



Frame B



Frame C



Frame D-G

Xstart IEC Contactors

Accessories

Side mount auxiliary contacts for frame D – R, 40 – 2600A

Conventional free air thermal current, I _{th} = I _e , 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).

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-XMV^②
DILM185A - 500	1	DILM500-XMV
DILM580 - 1000	1	DILM820-XMV^②

Reversing link kits

For use with...	Pkg. qty.	Item no.
DILM7 - 12	1	DILM12-XRL^③
DILM17 - 32	1	DILM32-XRL
DILM40 - 65	1	DILM65-XRL
DILM80 - 150	1	DILM150-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).



DILM1000-XHI11-SI



DILM12-XMV



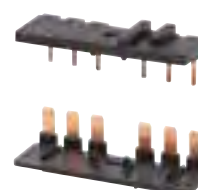
DILM32-XMV



DILM500-XMV



DILM12-XRL



DILM32-XRL

Accessories

Suppressor circuit

Voltage U_s V	For use with	Item no.
RC suppressors		
24 - 48 AC	DILM7 - DILM15	DILM12-XSPR48
110 - 240 AC	DILMP20	DILM12-XSPR240
240 - 500 AC	DILA	DILM12-XSPR500
24 - 48 AC	DILM17 - DILM32	DILM32-XSPR48
110 - 240 AC	DILK12 - DILK25	DILM32-XSPR240
240 - 500 AC	DILL..	DILM32-XSPR500
24 - 48 AC	DILM40 - DILM95	DILM95-XSPR48
110 - 240 AC	DILK33 - DILK50	DILM95-XSPR240
240 - 500 AC	DILMP63 - DILMP200	DILM95-XSPR500
Varistor suppressors		
24 - 48 AC		DILM12-XSPV48
48 - 130 AC	DILM7 - DILM15	DILM12-XSPV130
130 - 240 AC	DILMP20	DILM12-XSPV240
240 - 500 AC	DILA	DILM12-XSPV500
24 - 48 AC		DILM32-XSPV48
48 - 130 AC	DILM17 - DILM32	DILM32-XSPV130
130 - 240 AC	DILK12 - DILK25	DILM32-XSPV240
240 - 500 AC	DILL..	DILM32-XSPV500
24 - 48 AC		DILM95-XSPV48
48 - 130 AC	DILM40 - DILM95	DILM95-XSPV130
130 - 240 AC	DILK33 - DILK50	DILM95-XSPV240
240 - 500 AC	DILMP63 - DILMP200	DILM95-XSPV500
Varistor suppressors with integrated LED		
24 - 48 AC	DILM7 - DILM15	DILM12-XSPVL48
130 - 240 AC	DILMP20	DILM12-XSPVL240
24 - 48 AC		DILM32-XSPVL48
130 - 240 AC	DILM17 - DILM32 DILK12 - DILK25 DILL..	DILM32-XSPVL240
24 - 48 AC		DILM95-XSPVL48
130 - 240 AC	DILM40 - DILM95 DILK33 - DILK50 DILMP63 - DILMP200	DILM95-XSPVL240
Diode suppressor		
12 - 250 DC	DILM7 - DILM15 DILMP20 DILA	DILM12-XSPD



DILM12-XSPR48



DILM12-XSPV48



DILM12-XSPVL48



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

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

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

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



DILM12-XP1



DILM32-XP1



DILM150-XP1



DILM12-XS1



DILM400-XS1



DILM12-XSL



DILM32-XSL



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	DILM32-XTEE11(RA24)
100 ... 130 V AC	DILMP20	DILM32-XTEE11(RA130)
200 ... 240 V AC	DILMP32 - DILMP45 DILA	DILM32-XTEE11(RAC240)
Off-delayed, auxiliary voltage-free		
Cannot be combined with top mounting auxiliary contacts. Incl. suppressor circuits		
24V AC/DC		DILM32-XTED11-1(RA24)
		DILM32-XTED11-10(RA24)
		DILM32-XTED11-100(RA24)
100 ... 130 V AC	DILM7 - DILM32 DILMP20	DILM32-XTED11-1(RAC130)
	DILMP32 - DILMP45 DILA	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	DILM32-XTEY20(RA24)
100 ... 130 V AC	DILMP20	DILM32-XTEY20(RAC130)
200 ... 240 V AC	DILMP32 - DILMP45 DILA	DILM32-XTEY20(RAC240)

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



DILM12-XMCP/E

Accessories

Sealable shrouds - Transparent

For use with	Item no.
DILM32-XTE...	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

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



DILM32-XTEPLH



DILM1000-XSM



DILM225A-XHB

Amplifier module for separate mounting

Rated operational current AC-15			Actuating voltage U_s A DC	For use with	Item no.
AC-15 230V I_g A	400V I_g A	DC 220V I_g A			
2	2	0.03	24	...DILM DILMP... DILL... DILK...	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.	For use with	DC voltage Item no.	AC voltage Item no.
DILM17 DILM25 DILM32 DILM38	DILM32-XSP (RDC24) *	DILM32-XSP (240V50HZ)	DILM250 DILM300A	DILM250-XSP/E (RA250)	DILM250-XSP/E (RA250)
DILM40 DILM50 DILM65 DILM72	DILM65-XSP (RDC24) *	DILM65-XSP (240V50HZ)	DILM400 DILM500	DILM500-XSP/E (RA250)	DILM500-XSP/E (RA250)
DILM80 DILM95	DILM95-XSP (RDC24) *	DILM95-XSP (240V50HZ)	DILM580 DILM650 DILM750 DILM820 DILM1000	DILM1000-XSP/E (RA250)	DILM1000-XSP/E (RA250)
DILM115 DILM150 DILM170	DILM150-XSP (RDC24) *	DILM150-XSP (RAC240)	DILH1400	-	DILH1400-XSP/E (RAW250)
DILM185A DILM225A	DILM225A-XSP (RDC24) *	DILM225A-XSP (RAC240)	DILM250-S DILM300A-S	-	DILM250-S-XSP/E (220-240V50/60HZ)
			DILM400-S DILM500-S	-	DILM500-S-XSP/E (220-240V50/60HZ)

* (Includes electronic module)



ETS4-VS3



DILM32-XSP(RDC24)

Contactors 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.
Contactors monitoring device	CMD(24VDC)
Contactors 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
Programmable 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 manual/auto
- Tripfree release



Setting range overload release, I _r	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, I _r	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, I _r	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

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.
ZB7...	M22-DZ-B-GB14
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		ZEB32-1,65
Without	1 - 5	1NO - 1NC		ZEB32-5
Without	4 - 20	1NO - 1NC		ZEB32-20
Without	9 - 45	1NO - 1NC	DILM17 DILM25	ZEB32-45
With	0.33 - 1.65	1NO - 1NC	DILM32 DILM38	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		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	DILM17 DILM25	ZEB32-45/KK
With	0.33 - 1.65	1NO - 1NC	DILM32 DILM38	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		ZEB65-45
With	9 - 45	1NO - 1NC	DILM40 DILM50	ZEB65-45-GF
Without	20 - 100	1NO - 1NC	DILM65	ZEB65-100
With	20 - 100	1NO - 1NC	DILM72	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	ZEB150-100
With	20 - 100	1NO - 1NC	DILM115 DILM150	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	ZEB150-100/KK
With	20 - 100	1NO - 1NC	DILM115 DILM150	ZEB150-100-GF/KK



Overload relays

ZEB accessories

Current sensors

Setting range of overload releases I_n , A	For use with...	Item no.
60 - 300		ZEB-XCT300
120 - 600	ZEB32-5-GF/KK	ZEB-XCT600
200 - 1000	ZEB32-5/KK	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

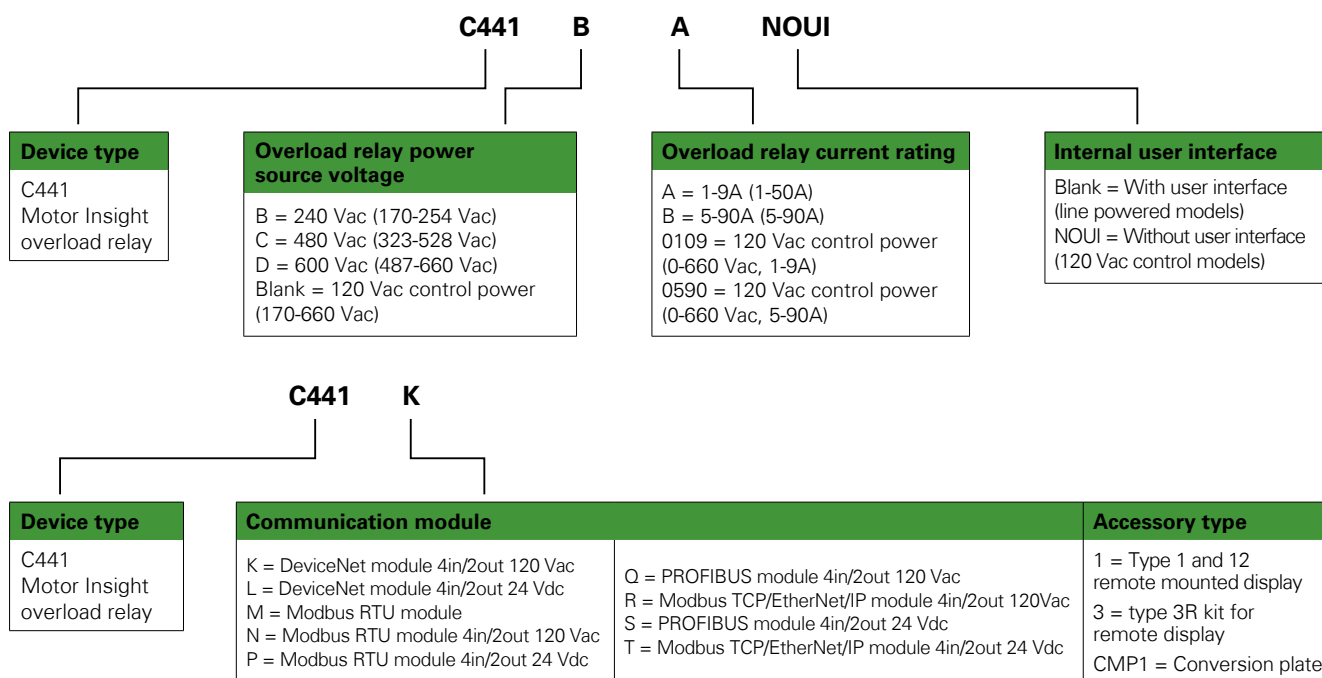
Description	Rated control voltage U_s , V	Item no.
Without automatic reset Mains & fault LED display	24 – 240 V 50/60 Hz, 24 – 240 V DC	EMT6 ①
Without automatic reset Mains & fault LED display With 2 sensor circuits		EMT62
Without automatic reset Mains & fault LED display Trip with short-circuit in the 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



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

PROFIBUS communication modules

Description	I/O	Item no.
PROFIBUS module 4in/2out	120V ac	C441S
PROFIBUS module 4in/2out	24V dc	C441Q

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



C441S



C441R

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

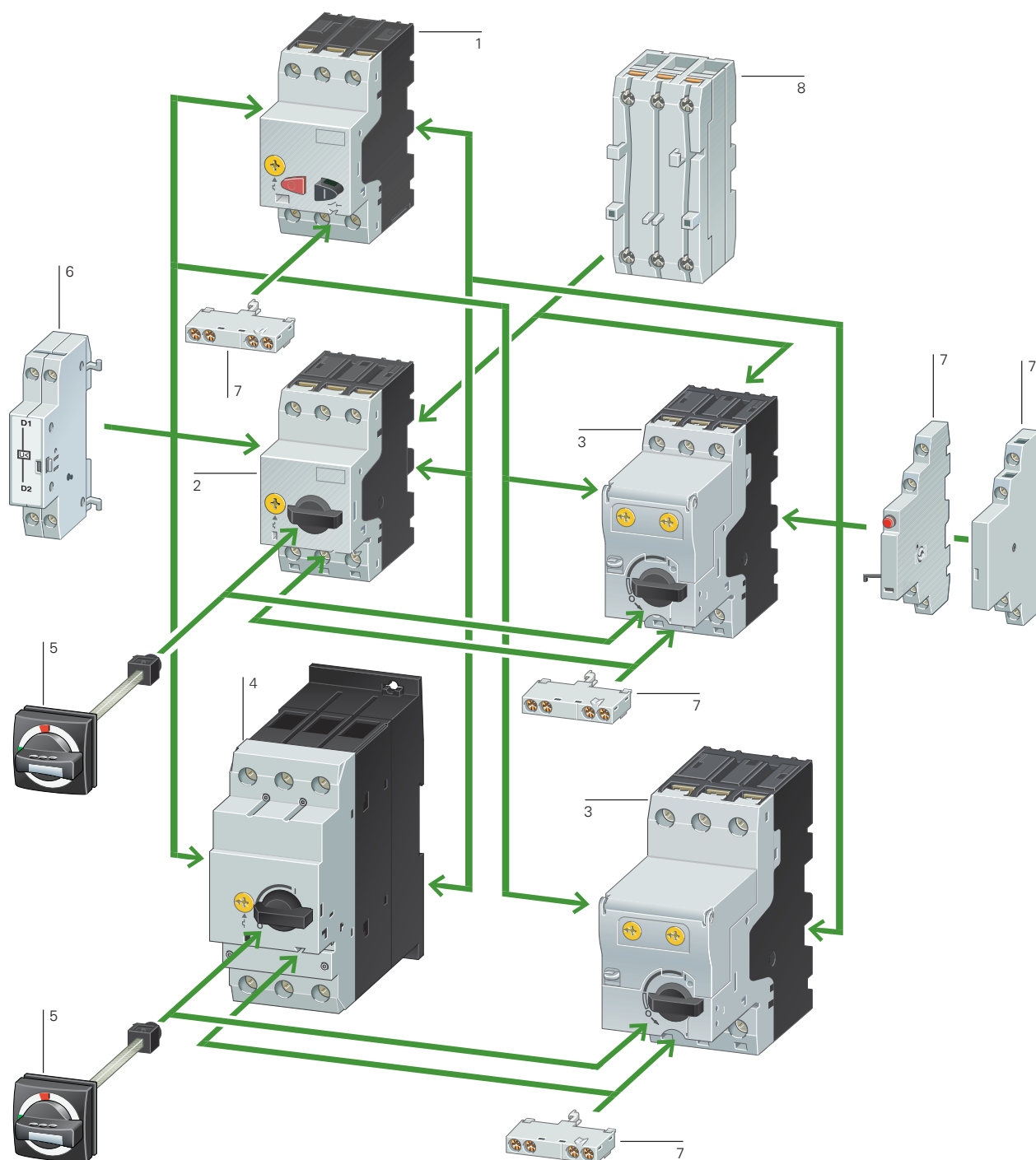


C4413

Motor insight — accessories

Description	Item no.
Remote display IP54	C4411
NEMA 3R Kit for remote display (remote display not included)	C4413
Conversion plate	C441CMP1

IEC Manual motor protectors



- | | |
|---|--------------------------------|
| 1. Motor-protective circuit-breaker PKZM01 | 5. Standard auxiliary contacts |
| 2. Motor-protective circuit-breaker PKZM0 | 6. Shunt release |
| 3. Motor-protective circuit-breaker with wide-range overload protection | 7. Current limiters |
| 4. Motor-protective circuit-breaker PKZM4 | 8. Door coupling handles IP65 |
| | 9. Insulated enclosures |
| | 10. Mounting/wiring |



PKZM01-1



PKZM0-1



PKZM4-16



AK-PKZ0

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 — I _u = I _e (Amps)	FLC adjustment range/overload release — I _r (Amps)	Short circuit release — I _{rm} (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

Rotary manual motor protectors

Rated Uninterrupted Current — I _u = I _e (Amps)	FLC adjustment range/overload release — I _r (Amps)	Short Circuit Release — I _{rm} (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

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

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

SF = 1.15 -> I_r = 1 x I_n in mot

SF = 1 -> I_r = 0.9 x I_n in mot

② Eaton PKZM0 & PKZM4 handles are not padlockable. Order part no. AK-PKZ0 handle if a lockable handle is required.

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 kW	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				
	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	-	-				
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 kW (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 → 12A
1A → 4A
3A → 12A
8A → 32A
16A → 65A



PKE-XTUA-32



PKE-XTUWA-32



PKE-SWD-SP



NHI21-PKZ0



VHI20-PKZ0

Electronic motor-protective circuit-breaker PKE

Motor rating kW	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				
	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	-	-				
7.5	26.4	-	-	16...65 A	PKE65	PKE-XTU-65	PKE-XTUA-65
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	PKE-SWD-SP
Contactor state PKS	
Motor current and thermal motor image in %	
Trip indicators	
Set value overload releases	
Remote disconnection of motor-protective circuit breakers	

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

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.

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

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)

Undervoltage release

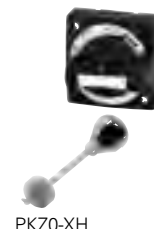
Voltage	Item no.
24 vac	U-PKZ0(24V50HZ)
110 vac	U-PKZ0(110V50HZ)
240 vac	U-PKZ0(240V50HZ)
415 vac	U-PKZ0(415V50HZ)
24 vdc	U-PKZ0(24VDC)

Sealing facility

Description	Item no.
To prevent tampering with the overload release & the test function (For use with PKZM0 & PKZM4)	PL-PKZ0

Current limiters

Description	Item no.
For increasing switching capacity of motor-protective circuit-breakers without auto-protection	CL-PKZ0



PKZ0-XH



PKZ0-XRH-MCC



A-PKZ0(110V50HZ)



U-PKZ0(24VDC)



PL-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 $U_e = 690V$, $I_u = 63A$; D-Frame short circuit proof $U_e = 690V$, $I_u = 128A$. Frame B links can be combined by rotating mounting. Frame D links cannot be combined. + 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, $U_e = 690V$, $I_u = 63A$; for conductor cross-sections: 2.5 – 25 mm² stranded; 2.5 – 16 mm² flexible with ferrules, AWG 14-6.

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 PKZMO & contactor Main current wiring between PKZMO & 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.	PKZMO-XDM12
PKZMO + DILM17-32	Comprised of: DIN-Rail adapter plate	PKZMO-XDM32
PKZM4 + DILM40-65	Main current wiring between PKZMO & contactor	PKZM4-XDM65
Reversing starters		
PKZMO, PKE + DILM7-01 DILM9-01 DILM12-01	Consists of: Mechanical connection element for PKZMO and contactor Reversing starters main supply wiring with tool-less plug connection	PKZMO-XRM12
PKZMO, PKE + DILM17 DILM25 DILM32	Consists of: Top-hat rail adapter plates Reversing starters supply wiring	PKZMO-XRM32
Wiring kit		
PKZMO, PKE + DILM17 DILM25 DILM32 DS7-34...SX016... DS7-34...SX024... SX032...	Main supply wiring between PKZMO and contactor Use only in combination with busbar adapter or mounting rail adapter plate	PKZMO-XM32DE
PKZM4 + DILM40 DILM50 DILM65	Main current supply between PKZM4 and contactor	PKZM4-XM65DE



PKZMO-XDM12



PKZM4-XDM65



PKZMO-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
		With black/grey rotary handle	CI-K2-PKZ0-G
IP65	PKZM0	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

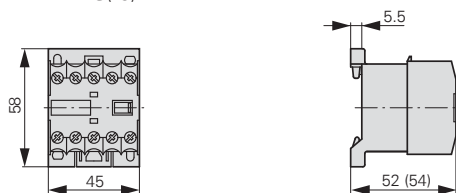
Rated operational voltage $U_e = 690$ V. For mounting on CU flat busbars with 60 mm interval between busbar centres, suitable for 5 mm & 10 mm busbar thickness.

Rated operational current, I_e , 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

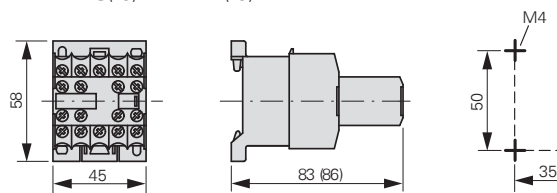
Dimensions

Mini contactor relays

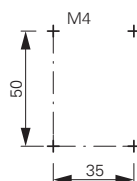
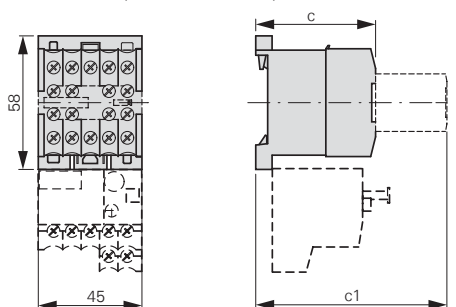
DILER-...(-C)
DILER-...-G(-C)



DILER-...(-C) + ...DILE(-C)
DILER-...-G(-C) + ...DILE(-C)



DILEEM-..., DILEM-...(-C), DILEM-12-...
DILEEM-...-G, DILEM-...-G(-C), DILEM-12-...-G



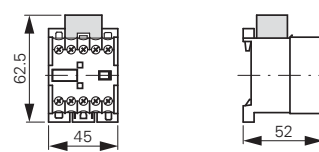
Part no.	c	c1
DILE(E)M-...(-G)	52	83
DILE(E)M-...-G(-C)	54	86

DILER-... + HDILE
DILER-...-G + HDILE

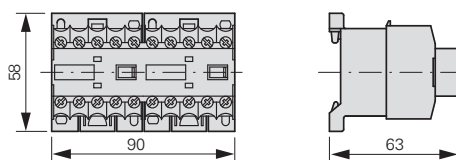


Suppressor circuit

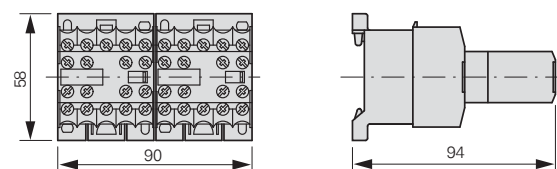
RCDILE...
VGDILE



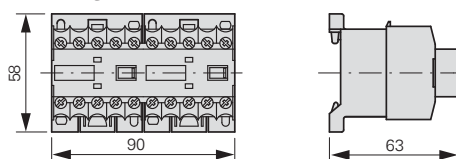
2DILE-... + MVDILE
2DILE-...-G + MVDILE



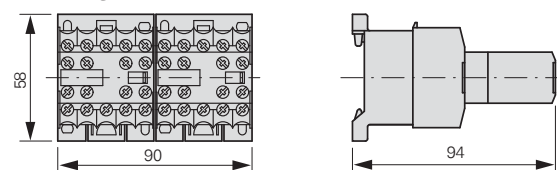
2DILE-... + MVDILE + ...DILE
2DILE-...-G + MVDILE + ...DILE



2DILE-... + MVDILE
2DILE-...-G + MVDILE

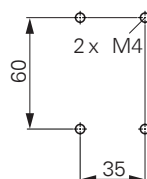
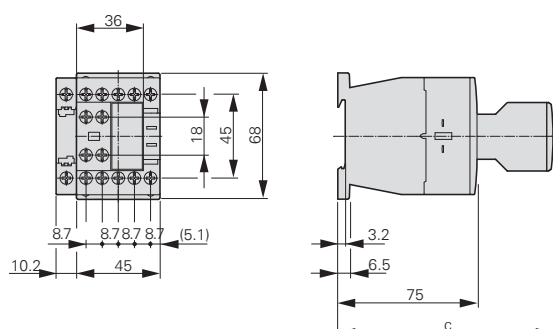


2DILE-... + MVDILE + ...DILE
2DILE-...-G + MVDILE + ...DILE



Contactor with auxiliary contact module

DILM7...DILM15
DILA...



Part no.	c
DILM32-XHI	117
DILA-XHI	117
DILA-XHI...T	125

Power control

Motor control

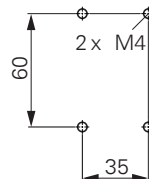
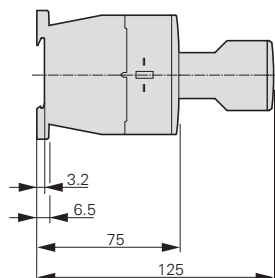
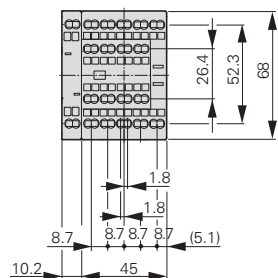
Dimensions

Contactors

DILMC7...DILMC15

DILAC...

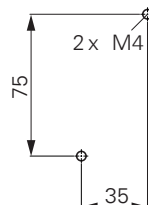
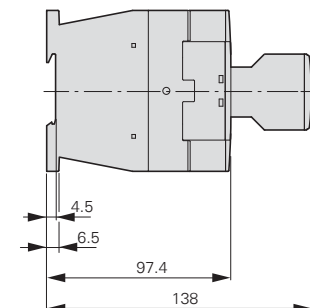
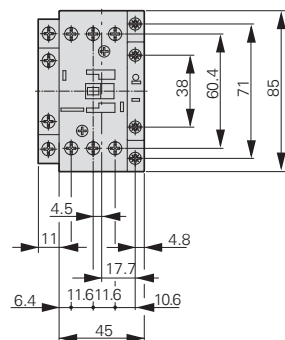
DILA-XHIC...



DILM17...DILM38

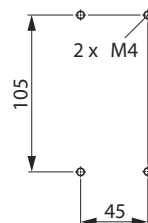
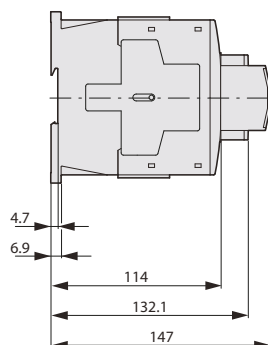
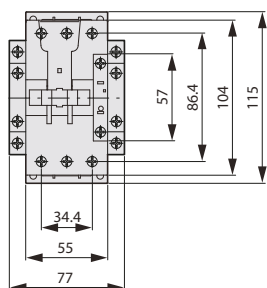
DILMC17...DILMC32

DILMF8...DILMF32



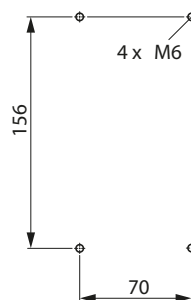
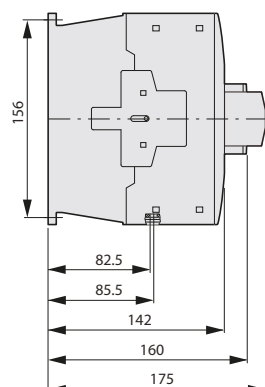
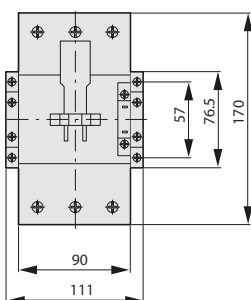
Clearance at side to grounded parts: 6 mm

DILM40...DILM72



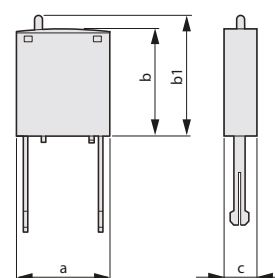
Clearance at side to grounded parts: 6 mm

DILM80...DILM170



Clearance at side to grounded parts: 10 mm

Suppressor circuit



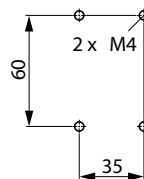
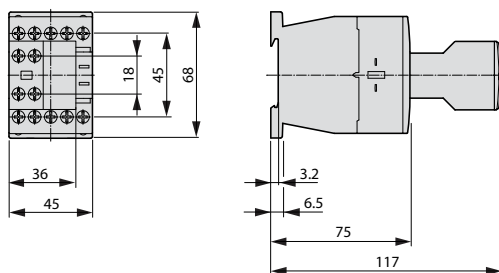
Part no.	a	b
DILM12-XSP...	25	28
DILM32-XSP...	25	28
DILM95-XSP...	25	28

Part no.	b1	c
DILM12-XSP...	≈32	9
DILM32-XSP...	≈32	9
DILM95-XSP...	≈32	9

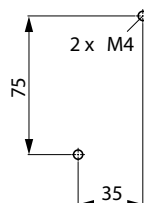
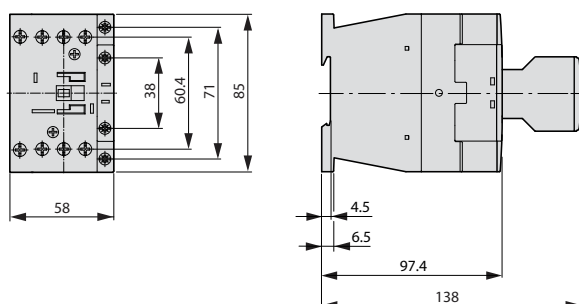
Dimensions

Contactors with auxiliary contact module

DILMP20



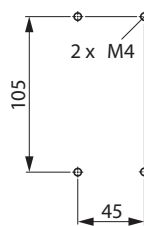
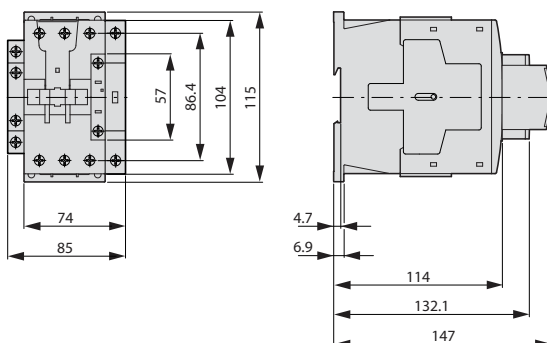
DILMP32 DILMP45



Distance at side to grounded parts: 6 mm

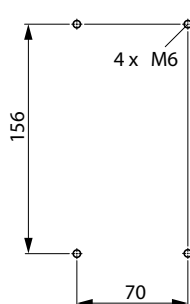
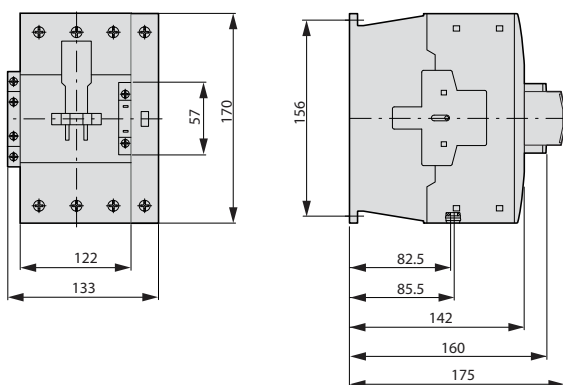
Contactors

DILMP63 DILMP80



Distance at side to grounded parts: 6 mm

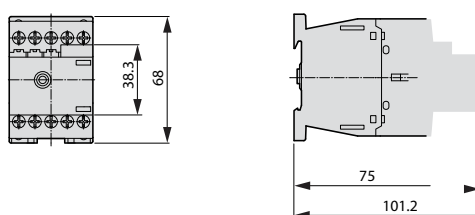
DILMP125 DILMP160 DILMP200



Clearance at side to earthed parts: 10 mm

Motor suppressor module

DILM12-XMSM



Power control

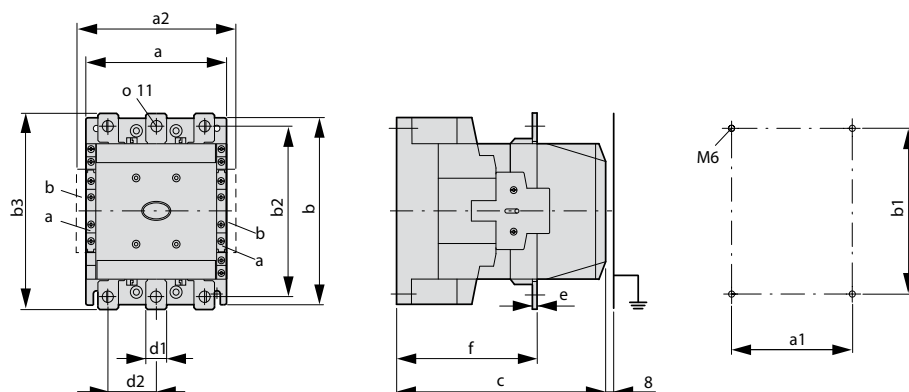
Motor control

Dimensions

Complete units

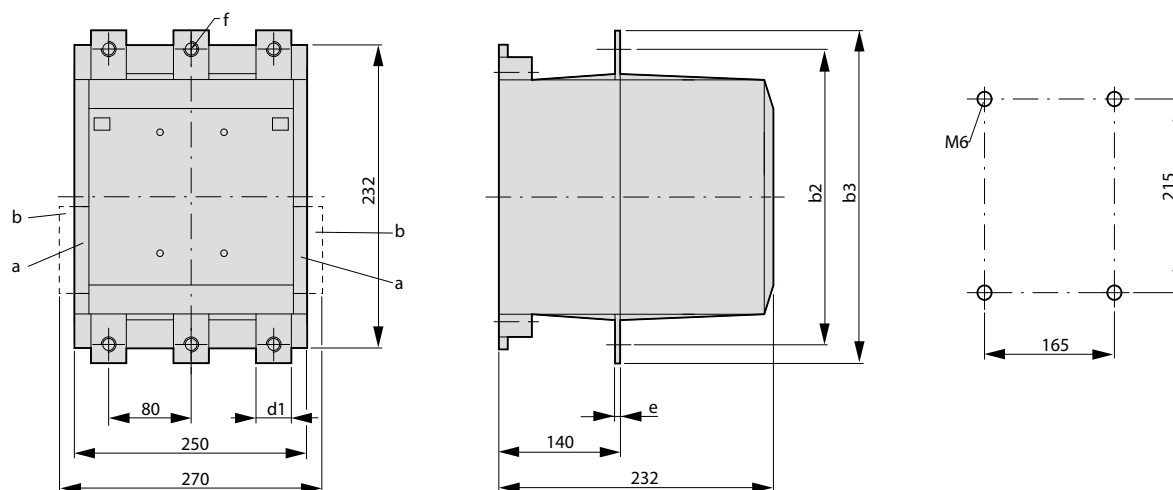
DILM185A...DILM500
DILM250-S...DILM570-S

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



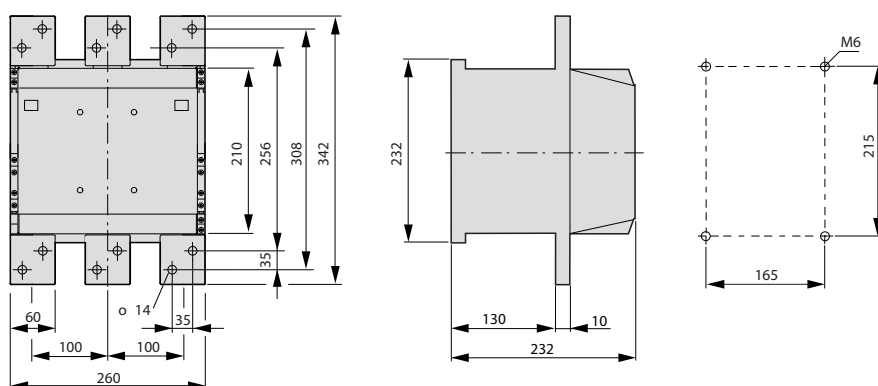
a DILM820-XHI...-SI
b DILM820-XHI11-SA

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

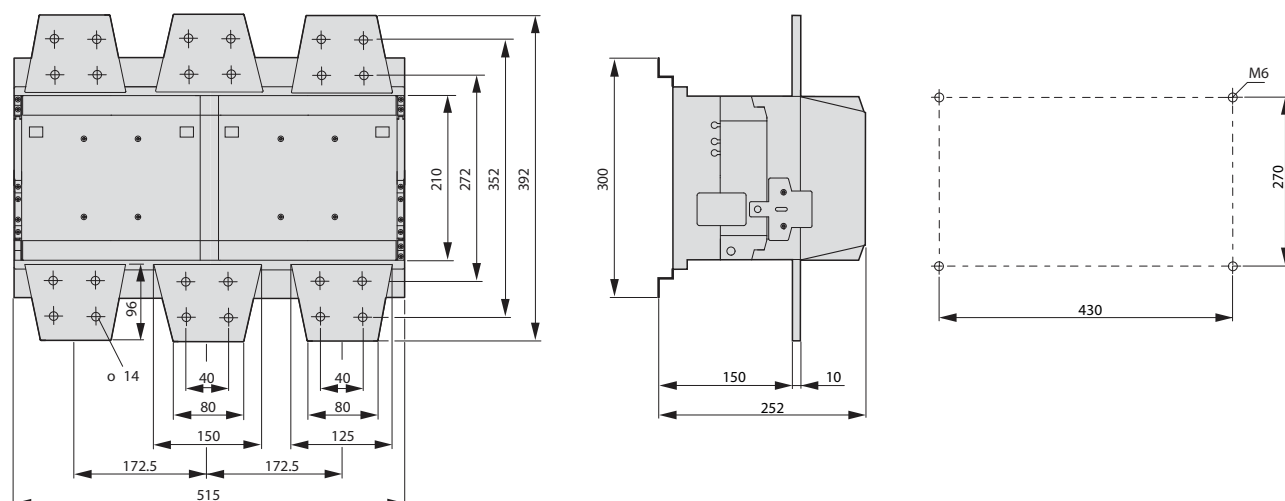
DILH1400



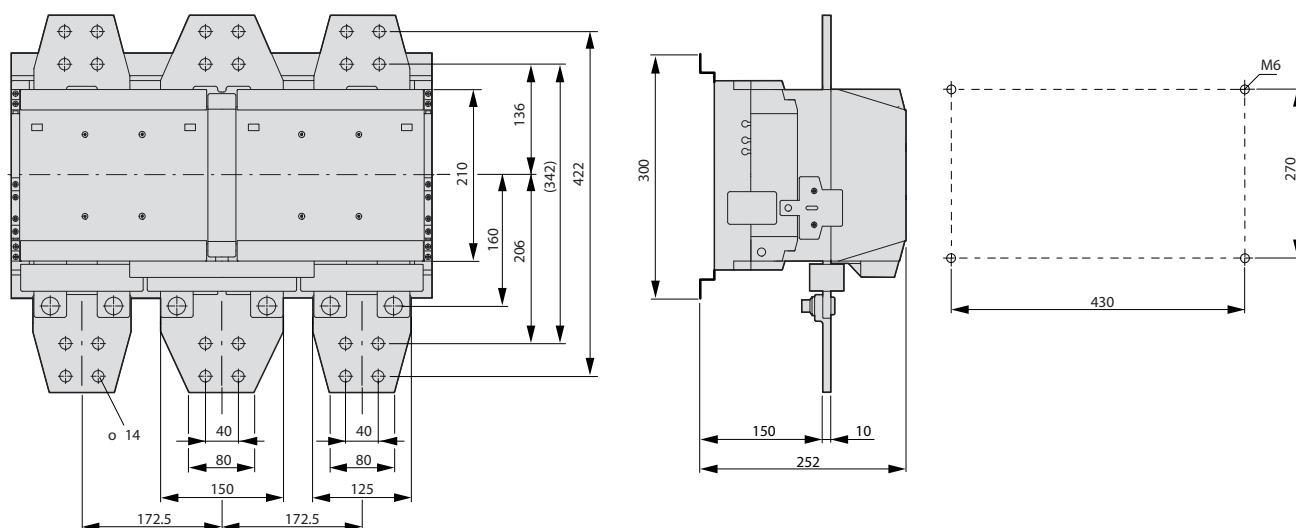
DILM1600

DILH2000

DILH2200



DILH2600



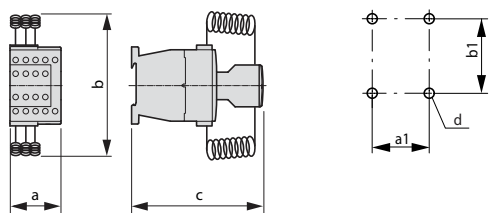
Power control

Motor control

Dimensions

Contactor for capacitors

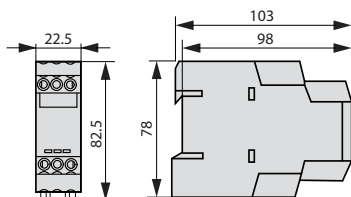
DILK...



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

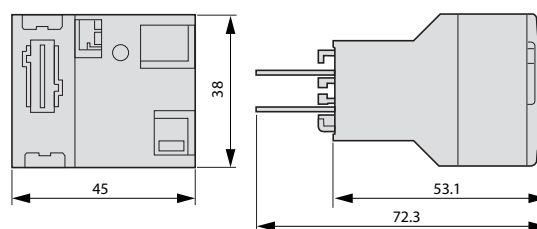
Contactor monitoring devices

CMD(...)



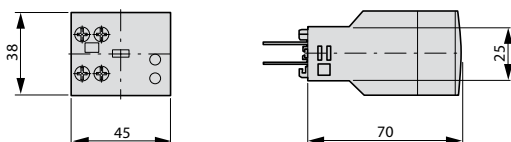
SWD contactor modules

DIL-SWD-32-...



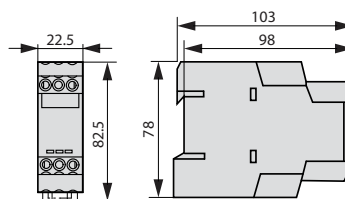
Electronic timer modules

DILM...XTE



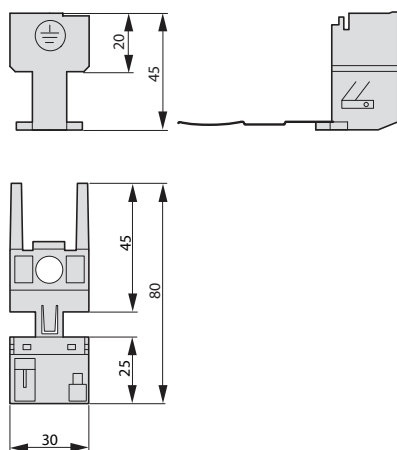
Amplifier module

ETS4-VS3

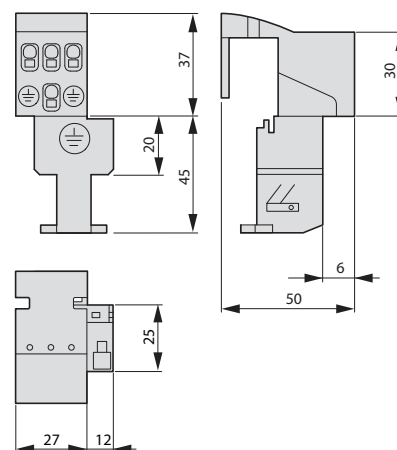


Wiring set for motor feeder plug

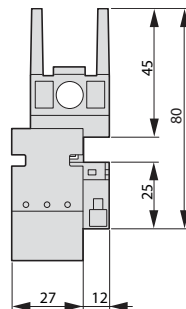
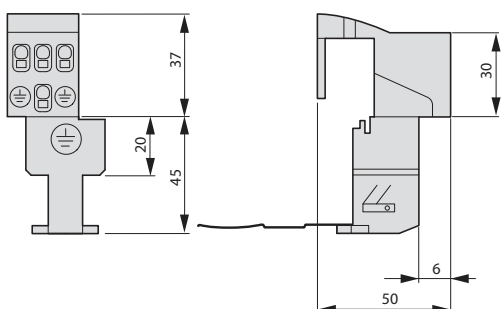
DILM12-XMCE



DILM12-XMCP/T

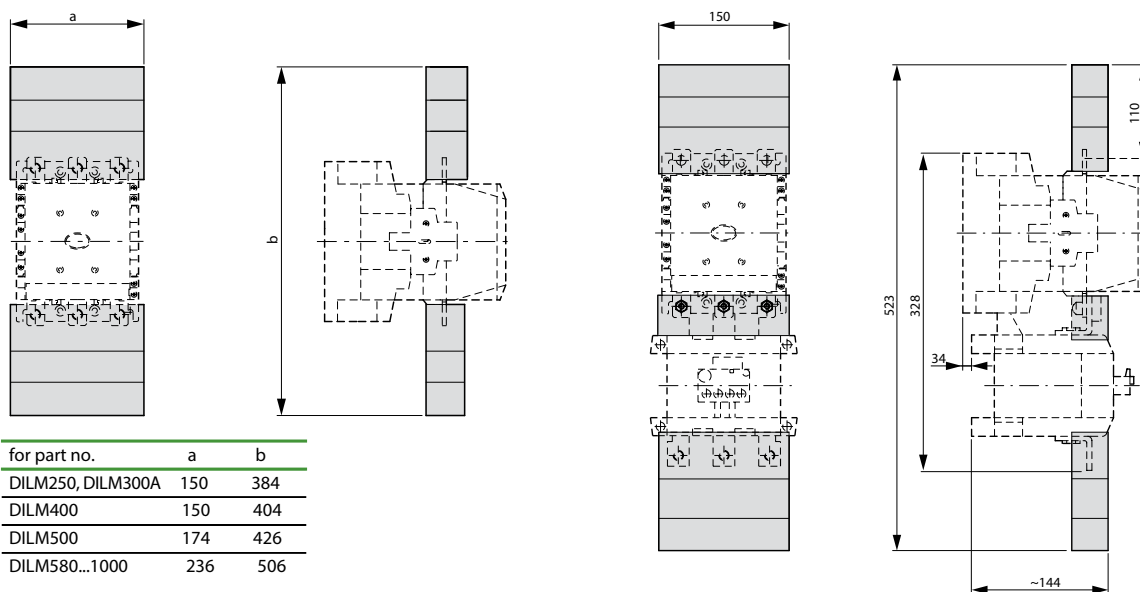


DILM12-XMCP/E

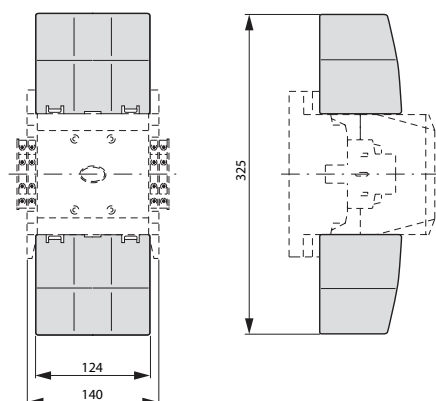


Dimensions

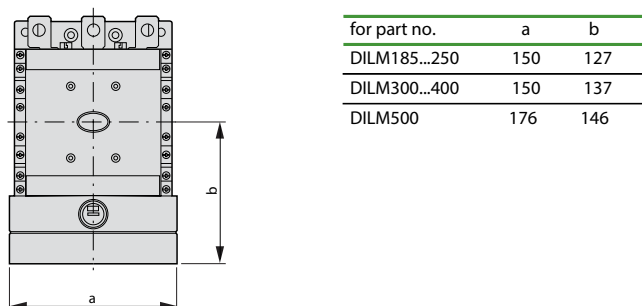
Contactors with terminal shrouds



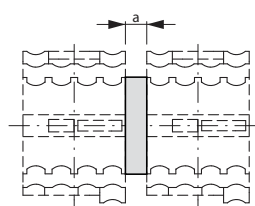
DILM185A...DILM225A + DILM225A-XHB



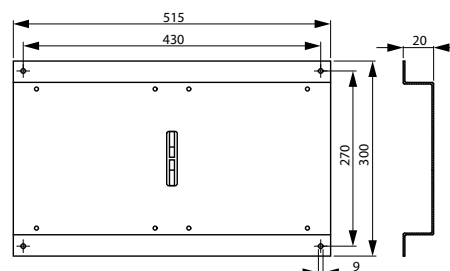
Contactors with star-point bridge and terminal shrouds



Mechanical interlock DILM500-XMV



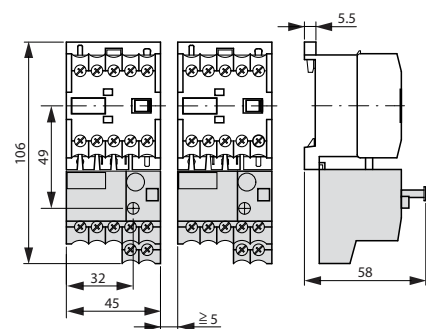
DILM820-XMV



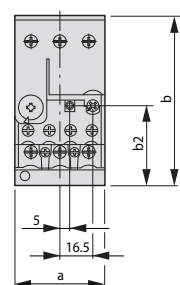
Dimensions

Overload relays

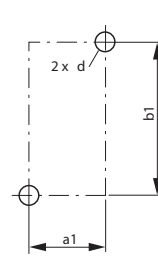
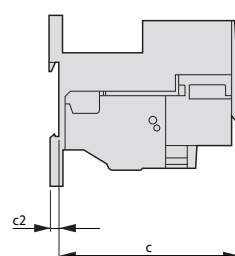
ZE...



ZB32-XEZ

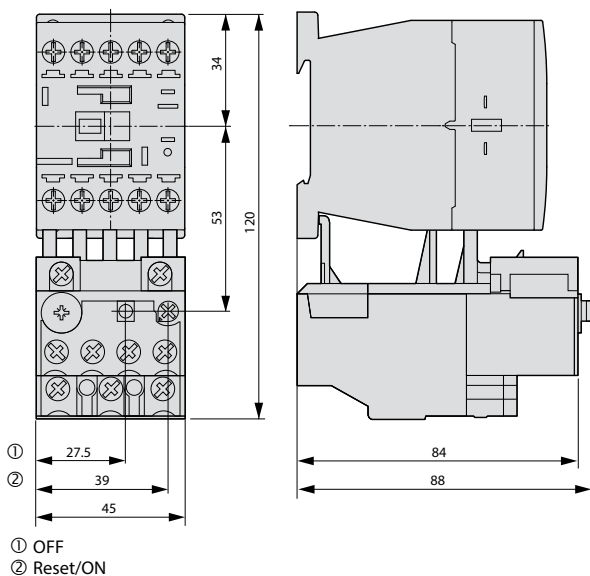


ZB65-XEZ



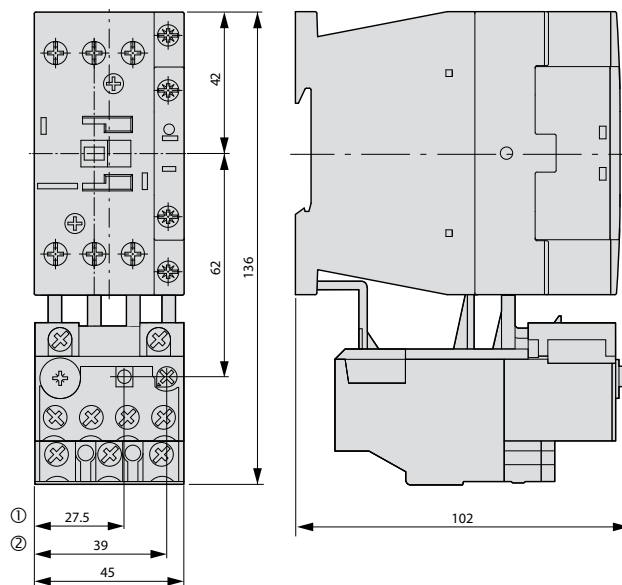
	ZB32	ZB65
a	45	60
b	85	86
c	90.5	112
c2	3.8	4.7
a1	35	50
b1	75	75
b2	40.5	47
d	M4	M5

ZB12

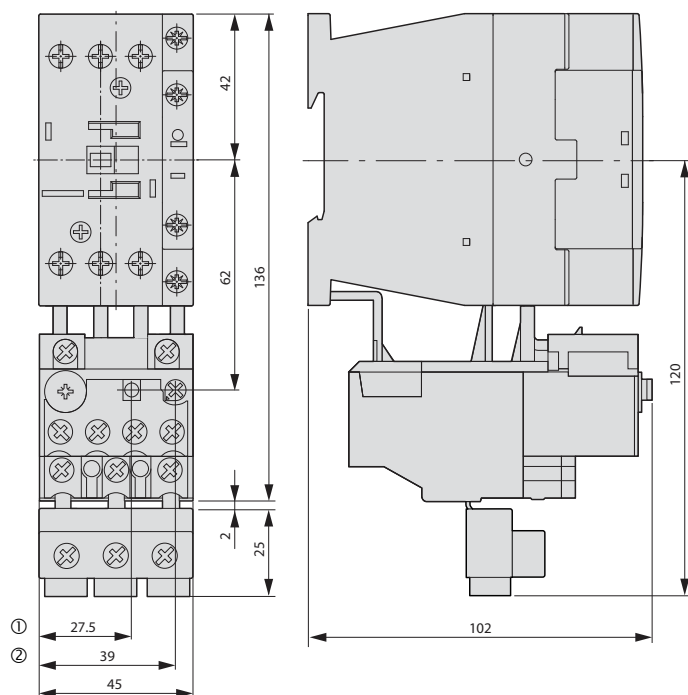


① OFF
② Reset/ON

ZB32



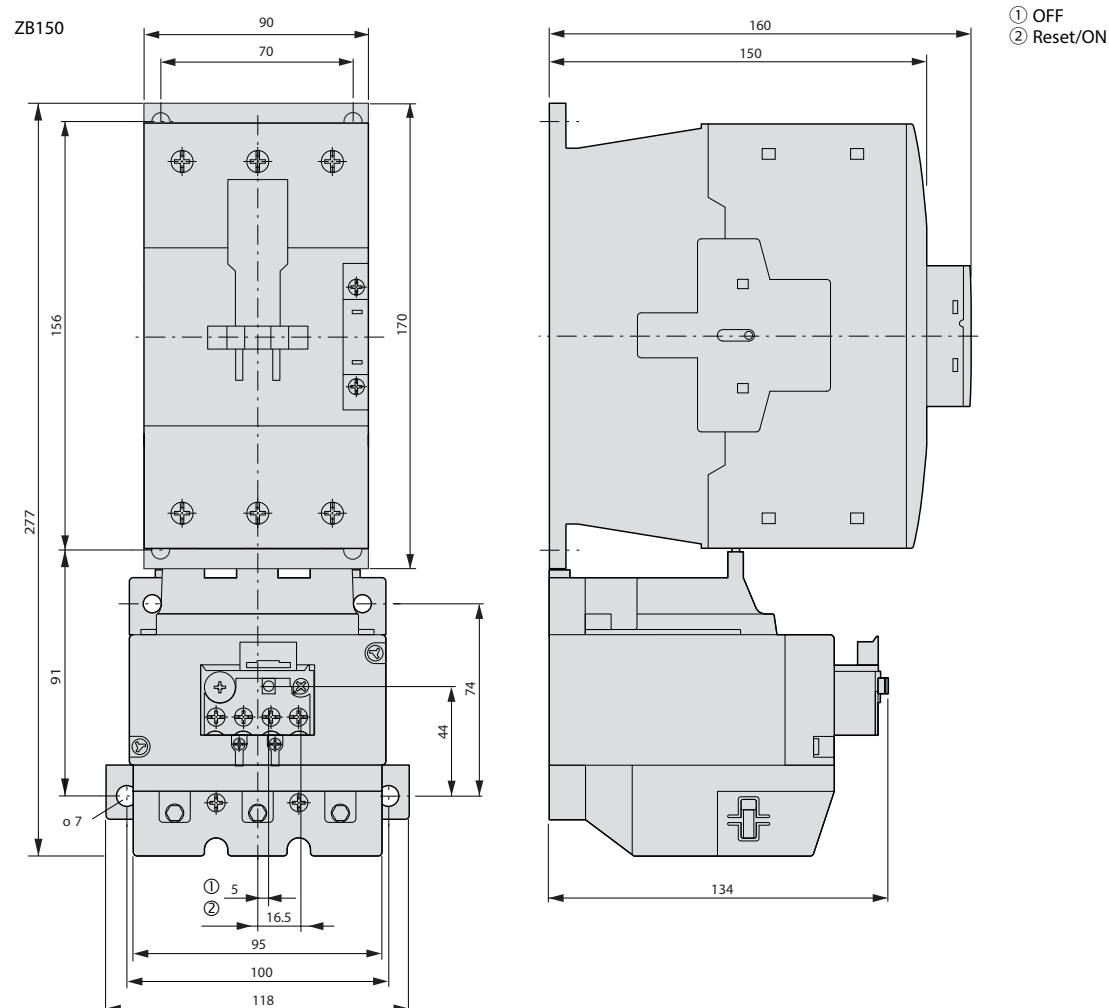
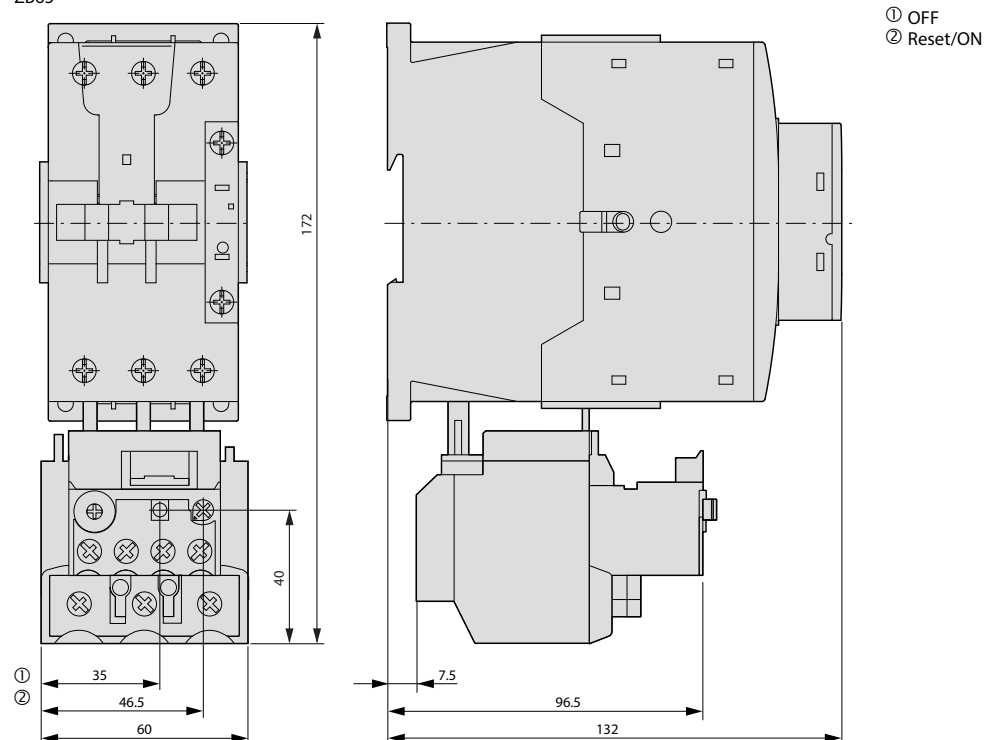
ZB32-38



Dimensions

Overload relays

ZB65



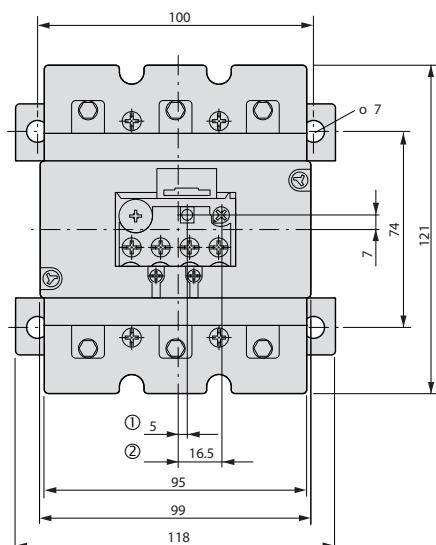
Power control

Motor control

Dimensions

Overload relays

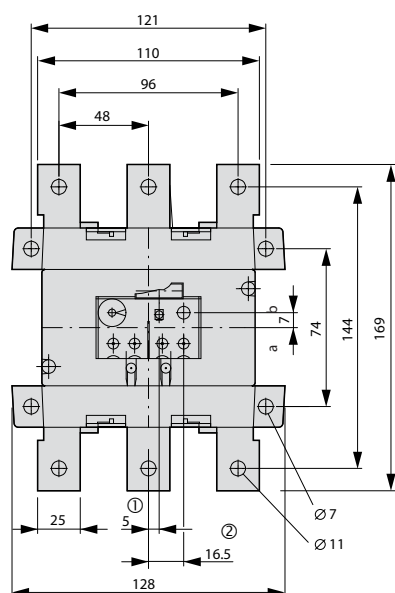
ZB150-50/KK



- ① OFF
- ② Reset/ON

Z5 overload relays greater than 150A

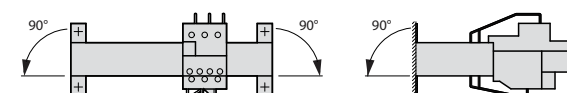
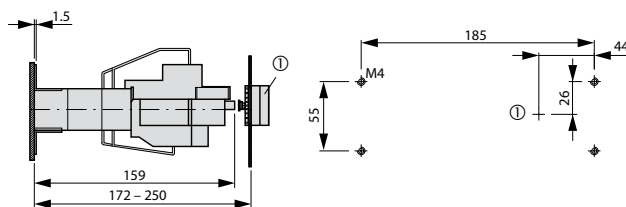
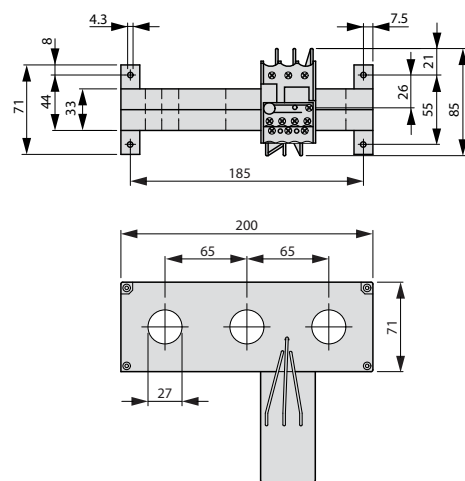
Z5.../FF250



- ① OFF
- ② Reset/ON

Current transformer-operated overload relays

ZW7-...

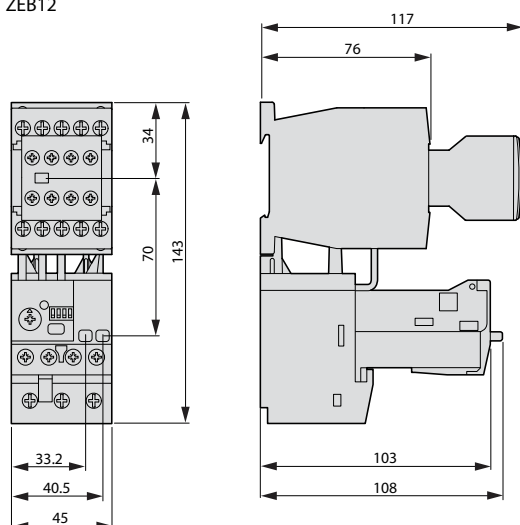


- ① Reset/ON

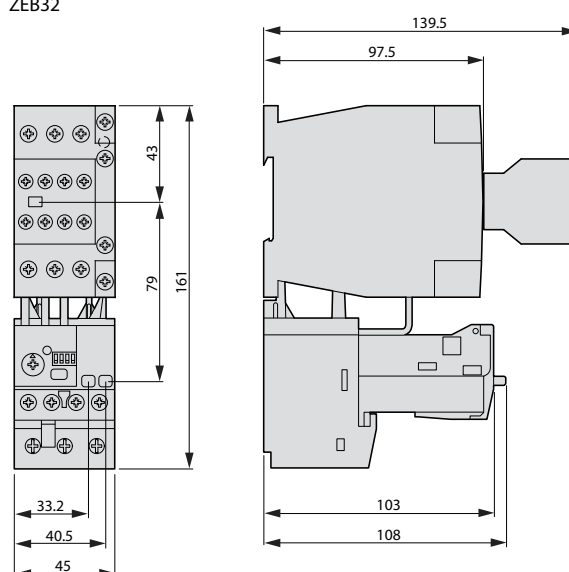
Dimensions

Electronic overload relays

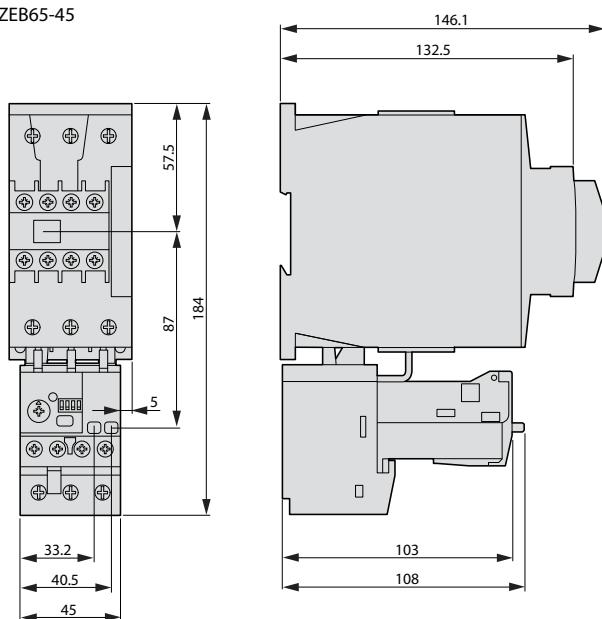
ZEB12



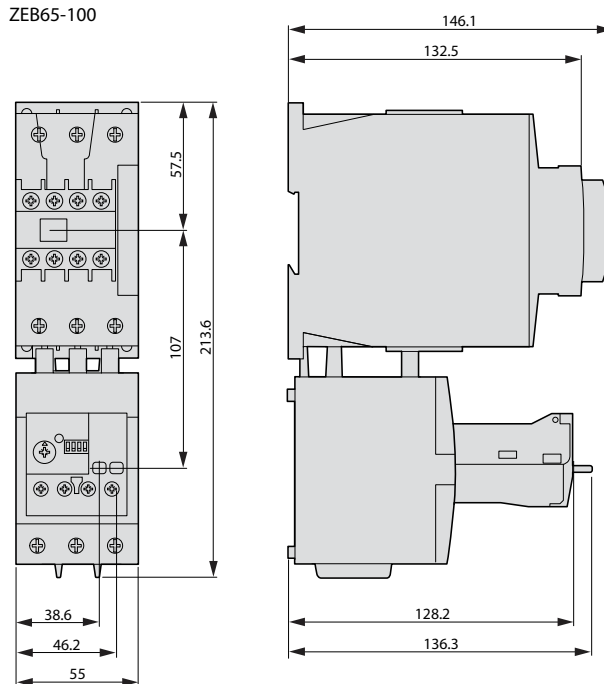
ZEB32



ZEB65-45



ZEB65-100



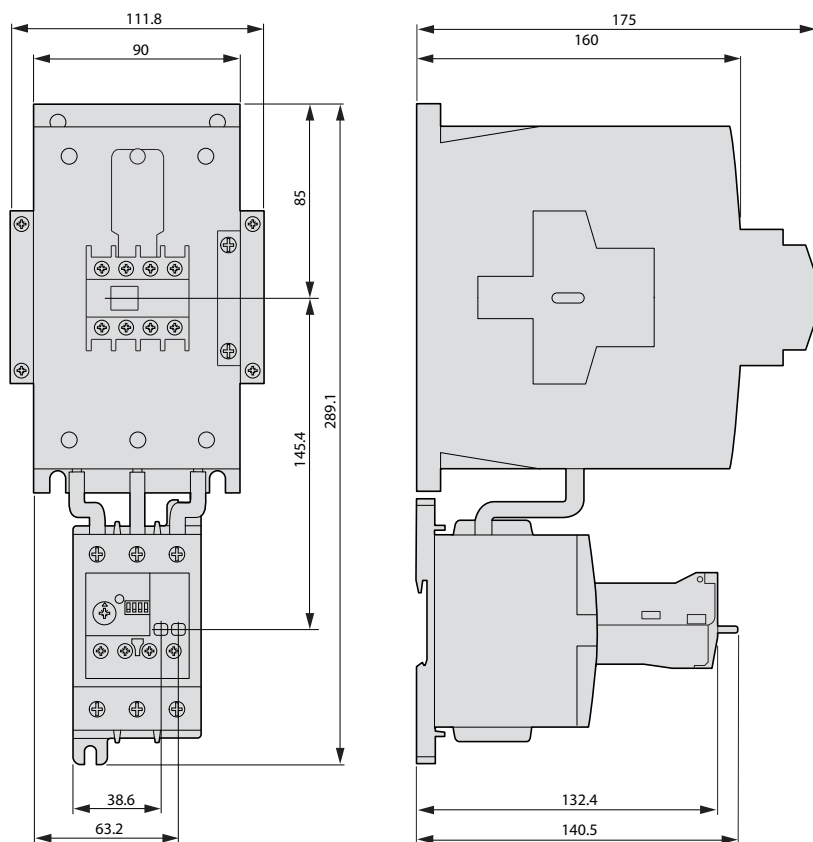
Power control

Motor control

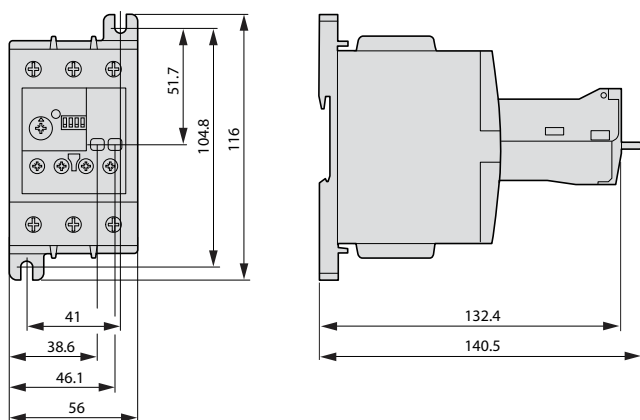
Dimensions

Electronic overload relays

ZEB150-100



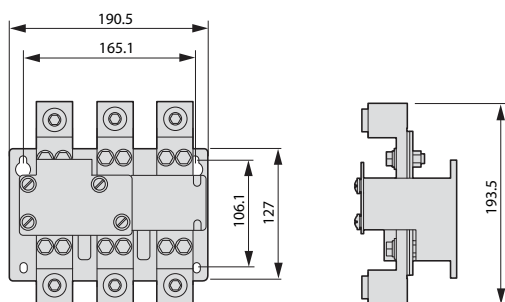
ZEB150-100/KK



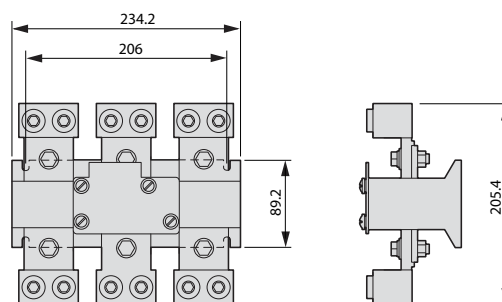
Dimensions

Current sensors

ZEB-XCT300

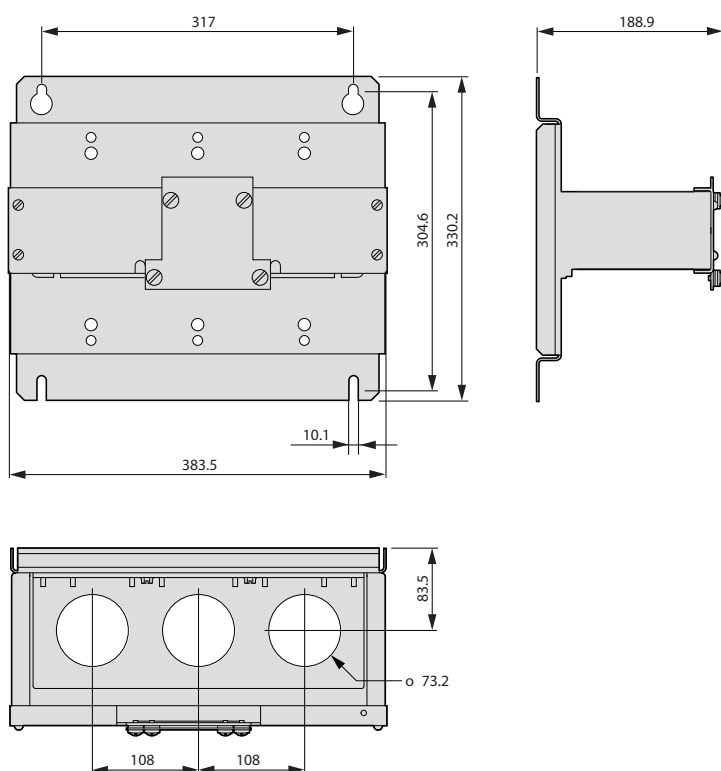


ZEB-XCT600



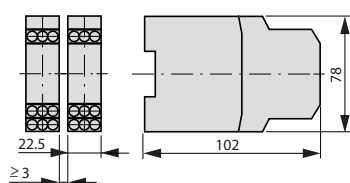
ZEB-XCT1000

ZEB-XCT1500



EMT6 thermistor overload relays for machine protection

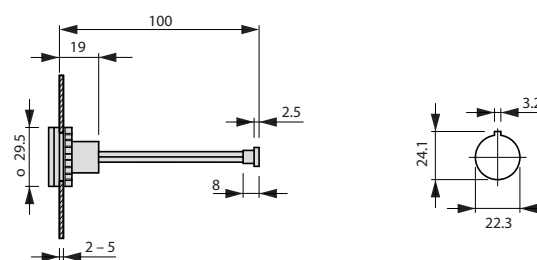
EMT6...



External reset button

M22-DZ-B

M22-DZ-X



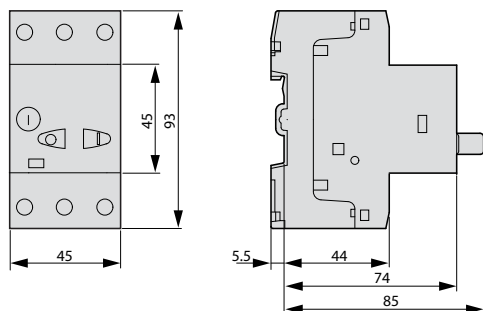
Power control

Motor control

Dimensions

Motor-protective circuit breaker

PKZM01...

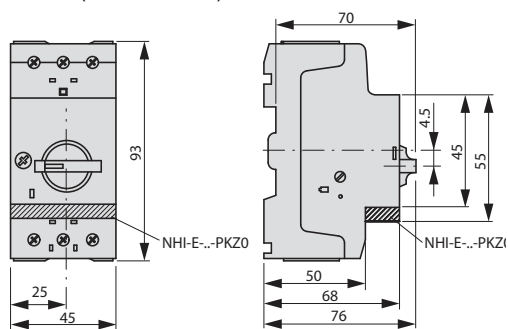


Motor-protective circuit breaker

Transformer-protective circuit breakers

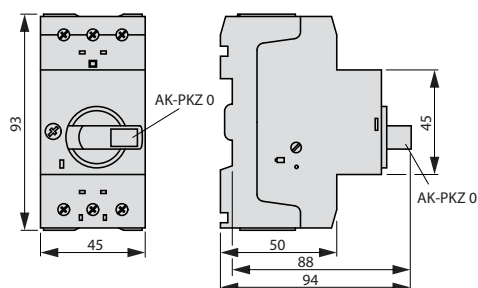
Motor-protective circuit breaker with auxiliary contacts

PKZM0-...(+NHI-E-...-PKZ0)
PKZM0-...-T(+NHI-E-...-PKZ0)
PKM0-...(+NHI-E-...-PKZ0)



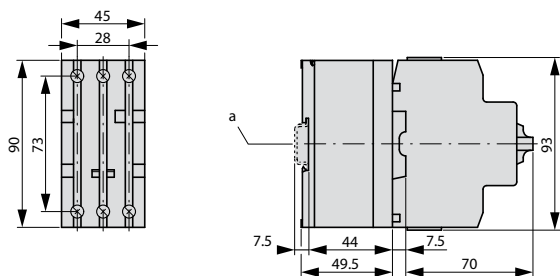
Motor-protective circuit breaker with lockable rotary handles

PKZM0-...+AK-PKZ0



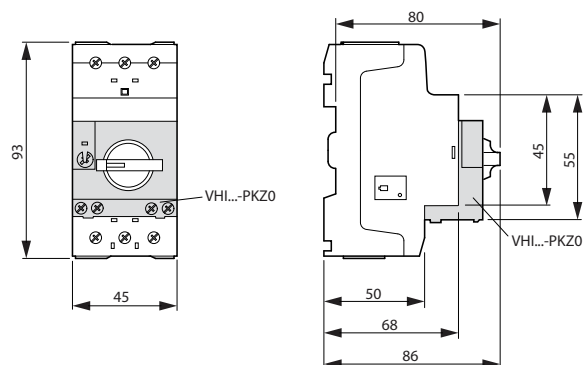
Current limiters

CL-PKZ...



Motor-protective circuit breaker with early-make auxiliary contacts

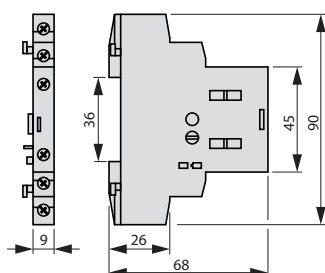
PKZM0-...+VHI-...-PKZ0



① Top-hat rail IEC/EN 60715

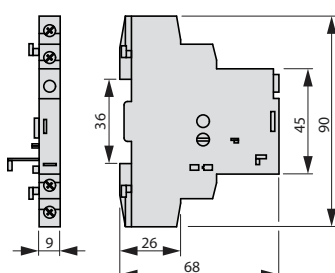
Standard auxiliary contacts

NHI-...-PKZ0



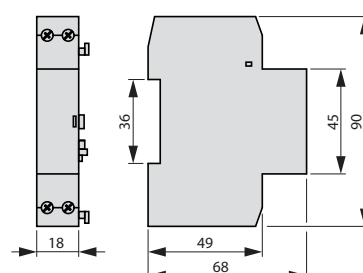
Trip indicators

AGM2...-PKZ0



Shunt release - undervoltage release

A-PKZ0...
U-PKZ0...

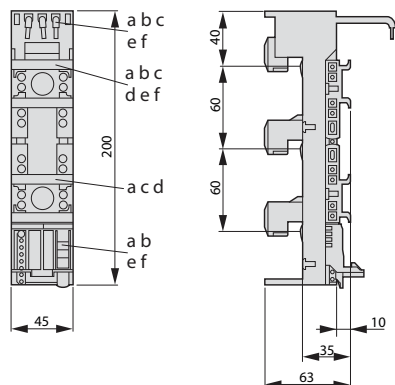


Dimensions

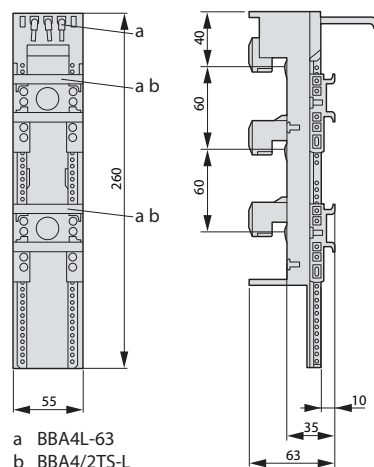
Busbar adaptors

BBA0-25
BBA0-25/2TS
BBA0/2TS-L
BBA0-32
BBA0-32/2TS-C
BBA0C-16

BBA4/2TS-L
BBA4L-63



a BBA0-32/2TS-C d BBA0/2TS-L
b BBA0-25/2TS e BBA0-25
c BBA0C-16 f BBA0-32



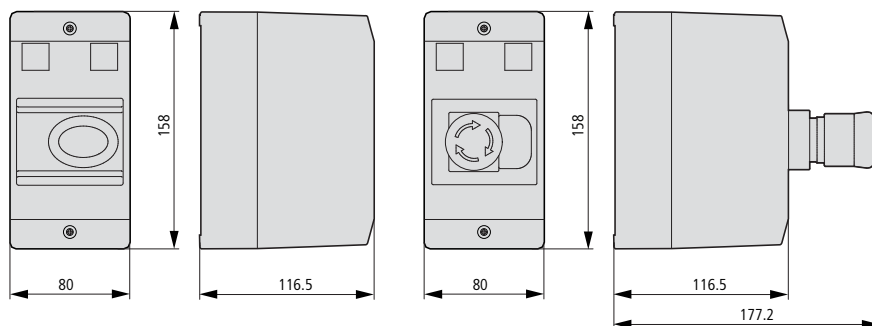
a BBA4L-63
b BBA4/2TS-L

Insulated enclosures for surface mounting

CI-PKZ01
CI-PKZ01-G

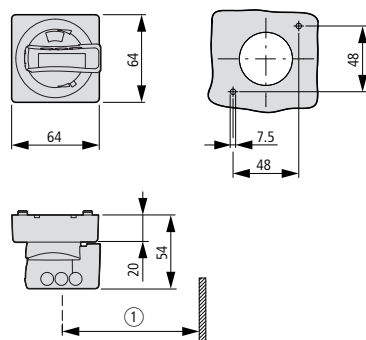
CI-PKZ01-PVT
CI-PKZ01-PVS

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

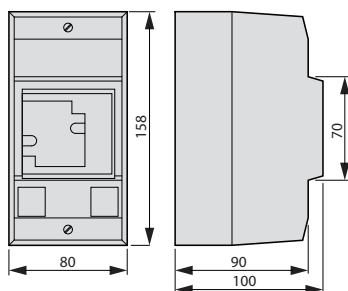
Power control

Motor control

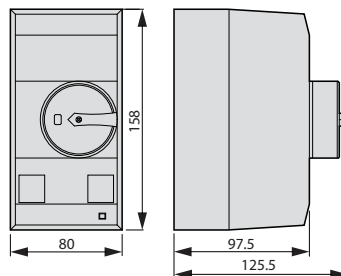
Dimensions

Insulated enclosures for surface mounting

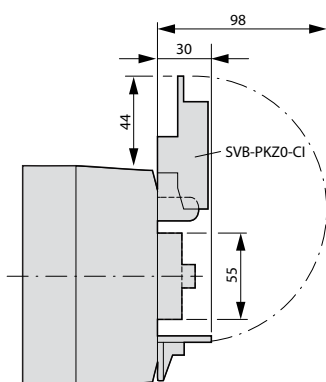
CI-PKZ0-M



CI-PKZ10G...M

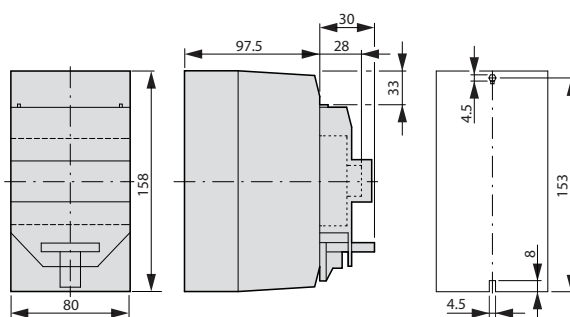


CI-PKZ0...M
+ SVB-PKZ0-CI

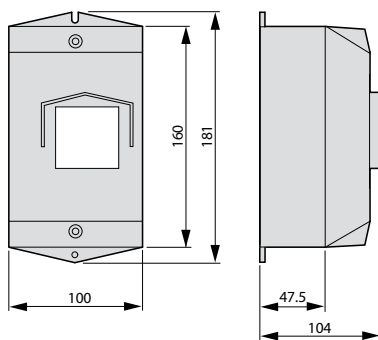


Drilling dimensions

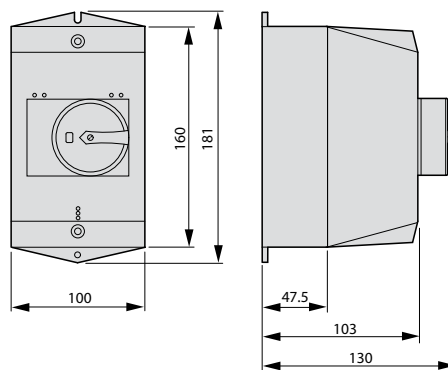
CI-PKZ0...M



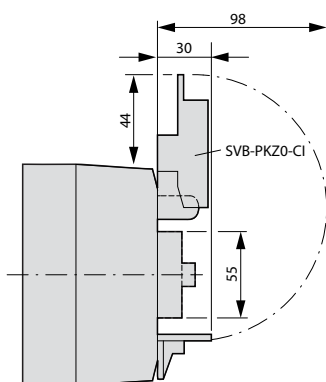
CI-K2-PKZ0



CI-K2-PKZ0G(R)(V)

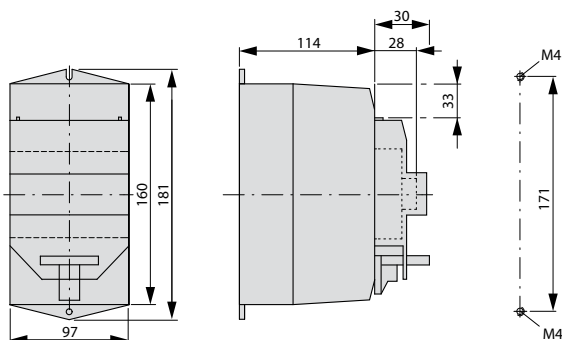


CI-K2-PKZ0-G(R)(V)
+ SVB-PKZ0-CI



Drilling dimensions

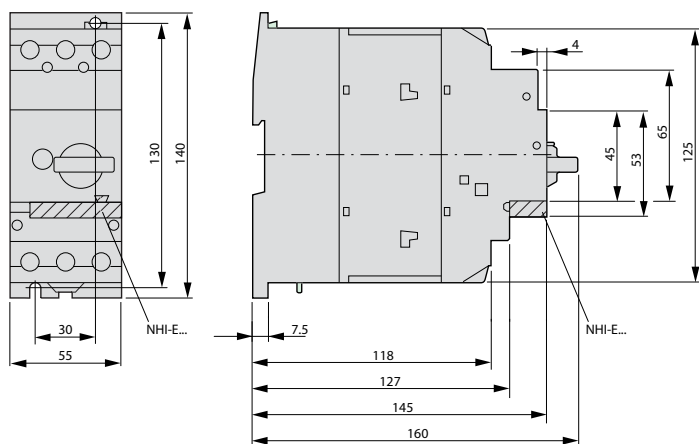
CI-K2-PKZ0...



Dimensions

Motor-protective circuit breakers

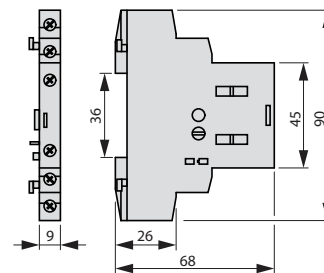
PKZM4-...



Standard auxiliary contacts

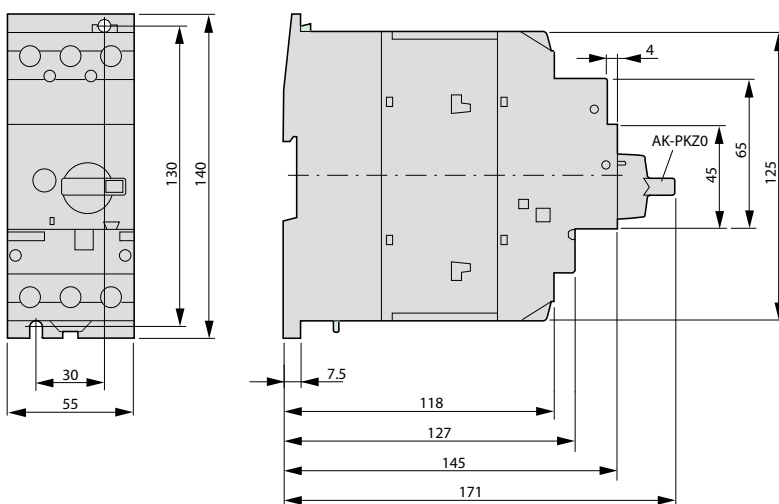
NHI...-PKZ...

NHI...-PKZ0



Motor-protective circuit breakers with lockable cover

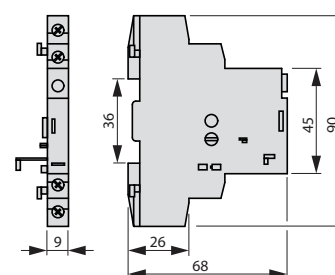
PKZM4-... +AK-PKZ0



Trup indicators

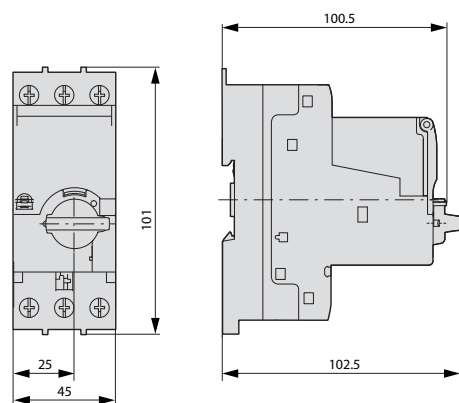
AGM2...-PKZ...

AGM2...-PKZ0

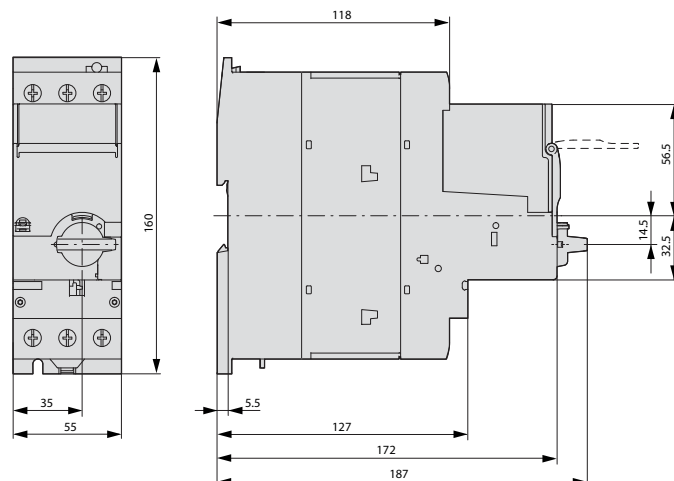


PKE Motor-protective circuit breakers

PKE12, PKE32



PKE65



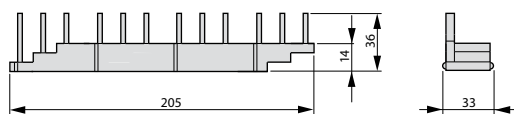
Power control

Motor control

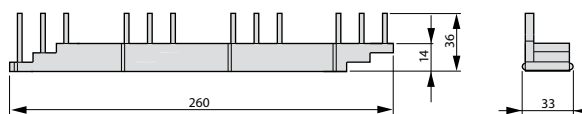
Dimensions

Three-phase commoning links

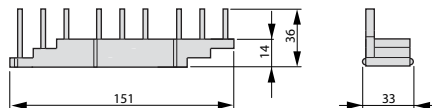
B3.0/4-PKZ4



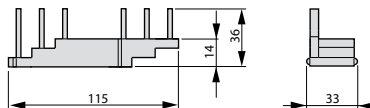
B3.2/4-PKZ4



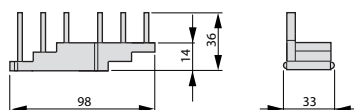
B3.0/3-PKZ4



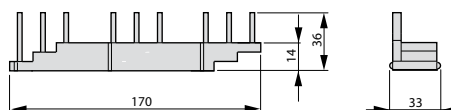
B3.2/2-PKZ4



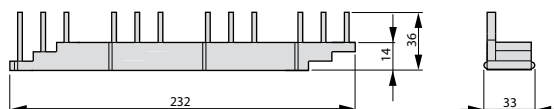
B3.0/2-PKZ4



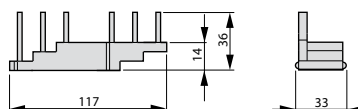
B3.1/3-PKZ4



B3.1/4-PKZ4

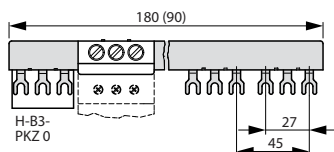


B3.1/2-PKZ4



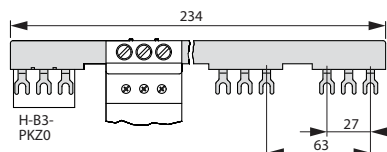
B3.0/4-PKZ0

B3.0/2-PKZ0



B3.2/4-PKZ0

B3.2/2-PKZ0

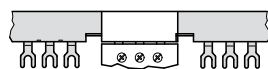
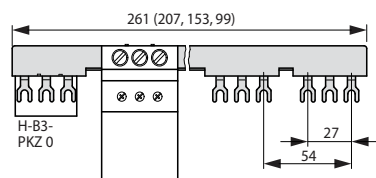


B3.1/5-PKZ0

B3.1/3-PKZ0

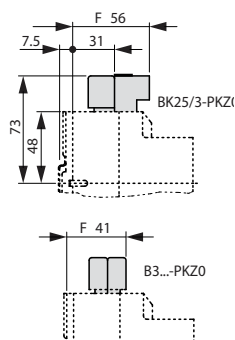
B3.1/4-PKZ0

B3.1/2-PKZ0



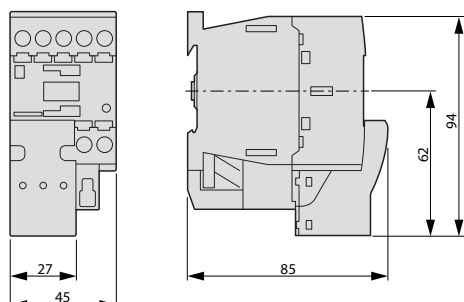
Incoming terminals

BK25/3-PKZ0



Overlapping mounting to extend the three-phase commoning link

Motor plug DILM12-XMCP/T

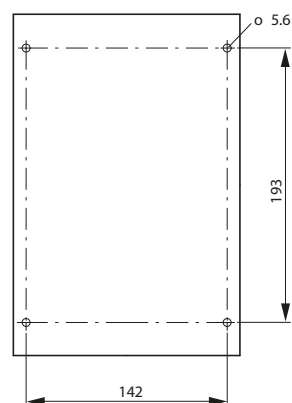
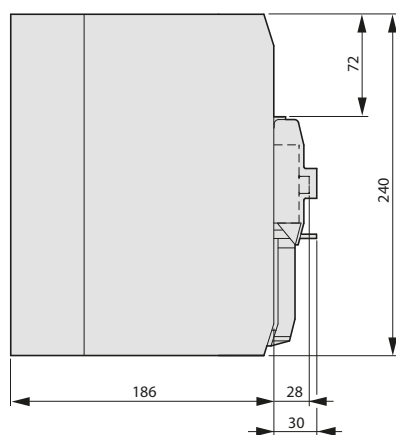
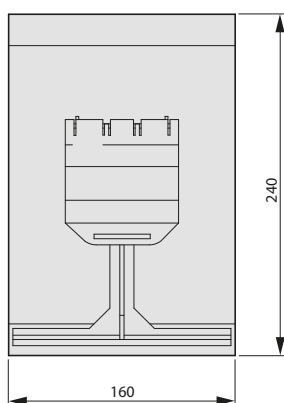
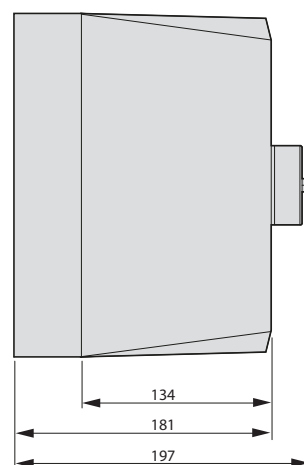
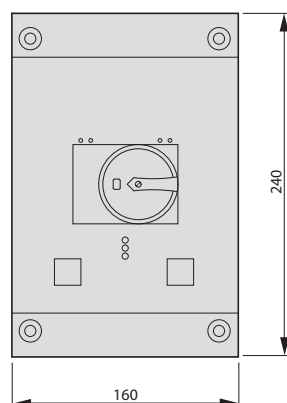
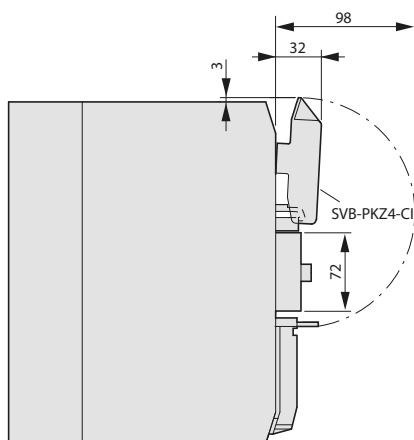


Dimensions

Insulated enclosures for surface mounting

CI-K4-PKZ4-G(R)
+SVB-PKZ4-CI

CI-K4-PKZ4-G



Drilling dimensions
CI-K4-PKZ4-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

Order Overloads Separately.



EDOL40NO240

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

1NO/1NC Electrically Separated Auxiliary Contacts.
Single - phase sensitivity for phase imbalance & phase loss protection.
Temperature Compensated.



EDOL25TOL

Spare coils

Coil voltage (AC)	Item no.
24V	EDOLCOIL24A
32V	EDOLCOIL32A
110V	EDOLCOIL110A
240V	EDOLCOIL240A
415V	EDOLCOIL415A
480V	EDOLCOIL480A
12V	EDOLCOIL12A

Coils suit all starter sizes.



EDOLCOIL240A

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 I _e , 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

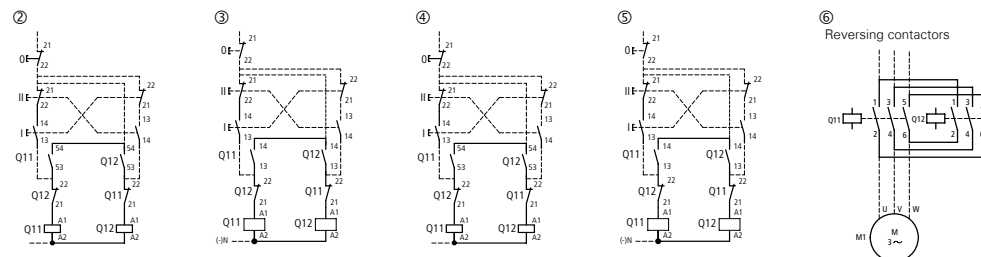
① Specify voltage & frequency when ordering.

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.



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 I _e , 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

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

A: $I_N \times 0.58$ **Starting**
≤ 15 s

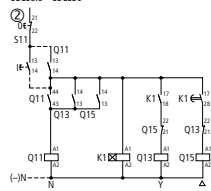
Protection of the motor in
Y- and d configuration
B: $I_N \times 1$ 15 – 40 s

Only partial motor protection in
star position
C: $I_N \times 0.58$ > 40 s

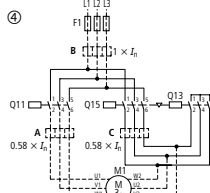
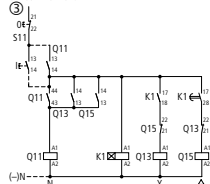
Motor not protected in star position.
Timing relay set to approx. 10 s.

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.

SDES5.5 – SDES30



SDES37 – SDES75



SDES5.5-U



SDES15-U



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

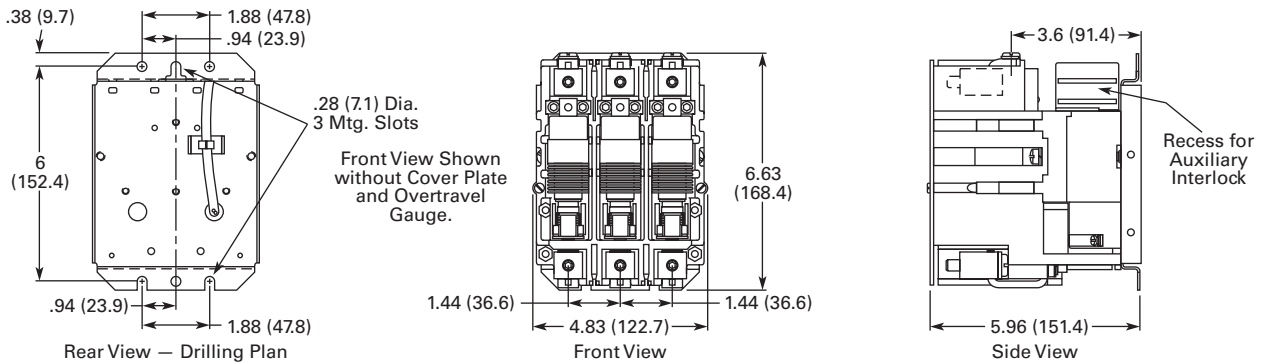
Description	Suffix	Item no.
Size 4	110/120 Vac, 50/60 Hz	J
	220/240 Vac, 50/60 Hz	K
	380/415 Vac, 50/60 Hz	H
	440/480 Vac, 50/60 Hz	U
Size 5	110/120 Vac, 50/60 Hz	J
	220/240 Vac, 50/60 Hz	K
	380/415 Vac, 50/60 Hz	H
	440/480 Vac, 50/60 Hz	U
Size 6	110/120 Vac, 50/60 Hz	J
	220/240 Vac, 50/60 Hz	K
	380/415 Vac, 50/60 Hz	H
	440/480 Vac, 50/60 Hz	U

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).

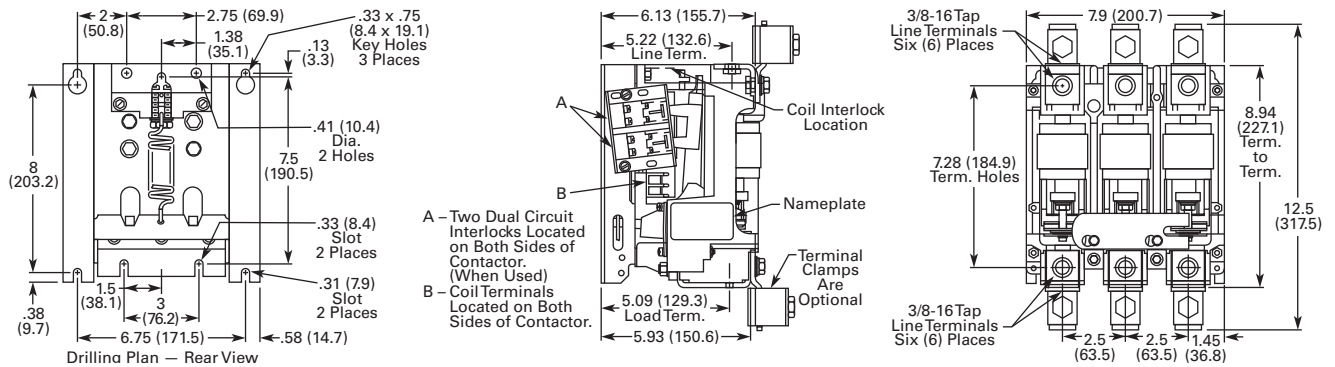
④ 250 Vdc can be directly applied to the Size 5 and 6 coil rated for 240 Vac/60 Hz (cannot be applied to Size 4).

Dimensions

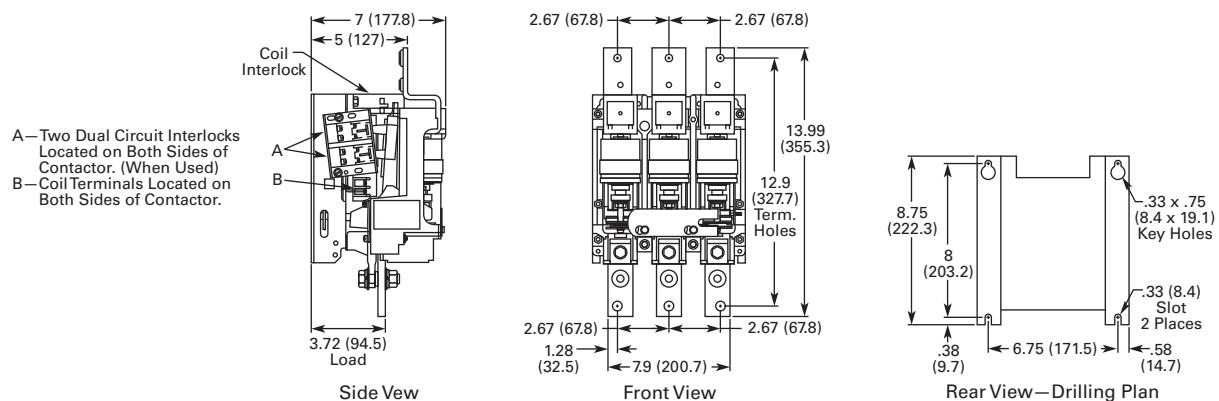
Open type contactors and starters - size 4 and 160A Size 4 and 160A non-revising contactor



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.



Powering Business Worldwide

Looking to run your process more efficiently and see a significant return on your investment? Whether your 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

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 I _e , 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...	ZB12-10
DS7-34...SX009...	
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...	PKZM0-XM32DE
DS7-34...SX024...	
DS7-34...SX032...	

Device fans

For use with...	Item no.
DS7-34...SX004...	DS7-FAN-032
DS7-34...SX007...	
DS7-34...SX009...	
DS7-34...SX012...	
DS7-34...SX016...	
DS7-34...SX024...	
DS7-34...SX032...	
DS7-34...SX041...	DS7-FAN-100
DS7-34...SX055...	
DS7-34...SX070...	
DS7-34...SX081...	
DS7-34...SX100...	DS7-FAN-200
DS7-34...SX135...	
DS7-34...SX160...	
DS7-34...SX200...	

PKZ-DS7 wiring set

For use with...	Item no.
DS7-34...SX004...	PKZM0-XDM12
DS7-34...SX007...	
DS7-34...SX009...	
DS7-34...SX012...	

Busbar adapter

For use with...	Item no.
PKZM0, PKE + DS7...004N...	BBA0L-25
PKZM0, PKE + DS7...007N...	
PKZM0, PKE + DS7...009N...	
PKZM0, PKE + DS7...012N...	
PKZM0, PKE + DS7...004N...	BBA0L-32
PKZM0, PKE + DS7...007N...	
PKZM0, PKE + DS7...009N...	
PKZM0, PKE + DS7...012N...	
PKZM0, PKE + DS7...016N...	
PKZM0, PKE + DS7...024N...	
PKZM0, PKE + DS7...032N...	

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.

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.



EML24



EMA69C



PSG240E

Power control

Drives and soft starters



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
Remote 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 1 for 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	MMX-NET-PS-A
PROFIBUS DP network card w. Sub-D connection	MMX-NET-PD-A
Devicenet network card	MMX-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

Power control

Drives and soft starters

380-500V IP54

Description	Frame size	High overload		Low overload		Item no.
		P [kW]	I(H)	P [kW]	I(L)	
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

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



DXG-EXT-3DI3DO1T



DXG-KEY-LCD

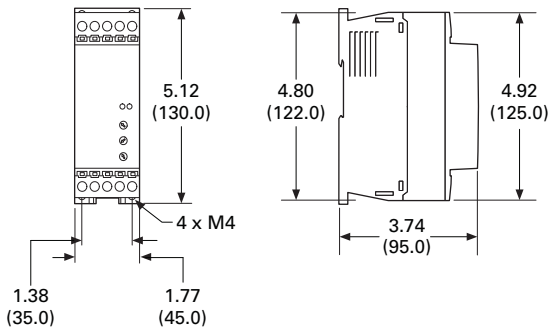


DXG-ACC-FR2N12KIT

Soft starter controllers

Dimensions (approximate dimensions in inches (mm))

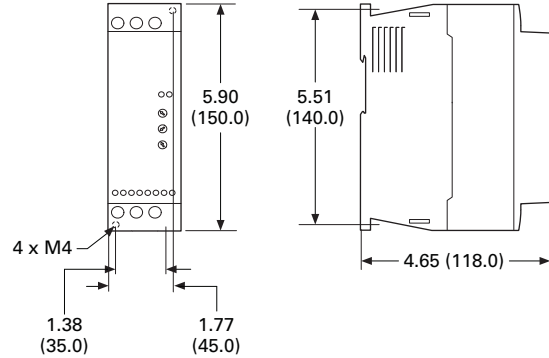
Frame 1



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

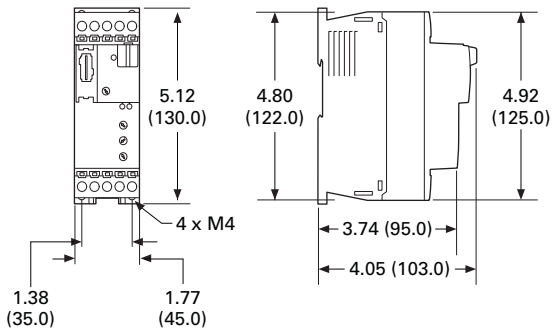
Frame 2



Item no.

DS7-340SX016N0-N	DS7-342SX016N0-N
DS7-340SX024N0-N	DS7-342SX024N0-N
DS7-340SX032N0-N	DS7-342SX032N0-N

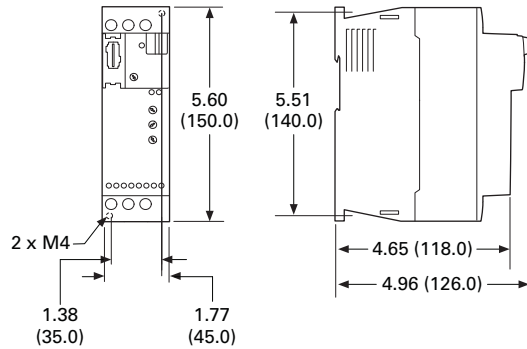
Frame 1—SmartWire-DT



Item no.

DS7-34DSX004N0-D	DS7-34DSX009N0-D
DS7-34DSX007N0-D	DS7-34DSX012N0-D

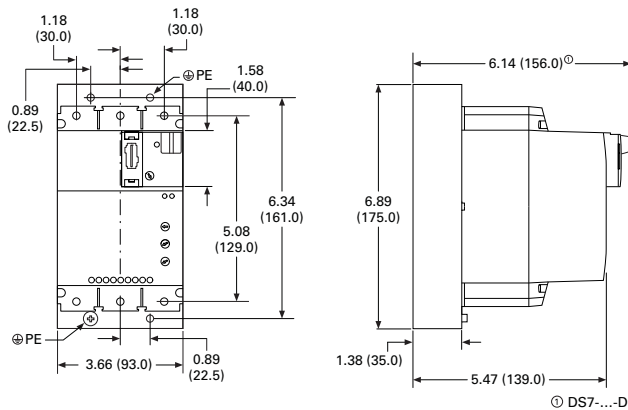
Frame 2—SmartWire-DT



Item no.

DS7-34DSX016N0-D
DS7-34DSX024N0-D
DS7-34DSX032N0-D

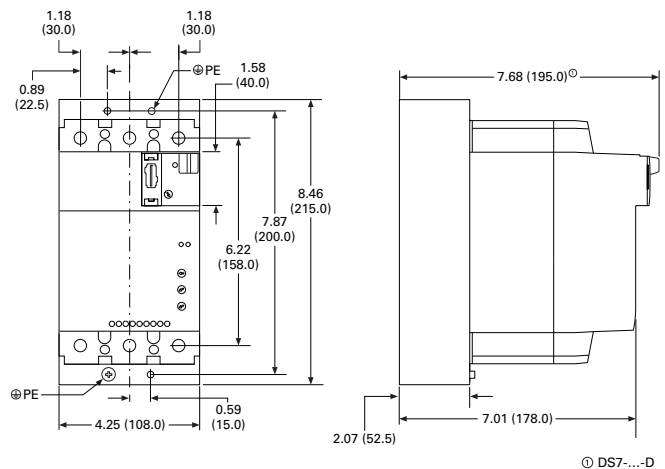
Frame 3—SmartWire-DT and Standard (Non SmartWire-DT)



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

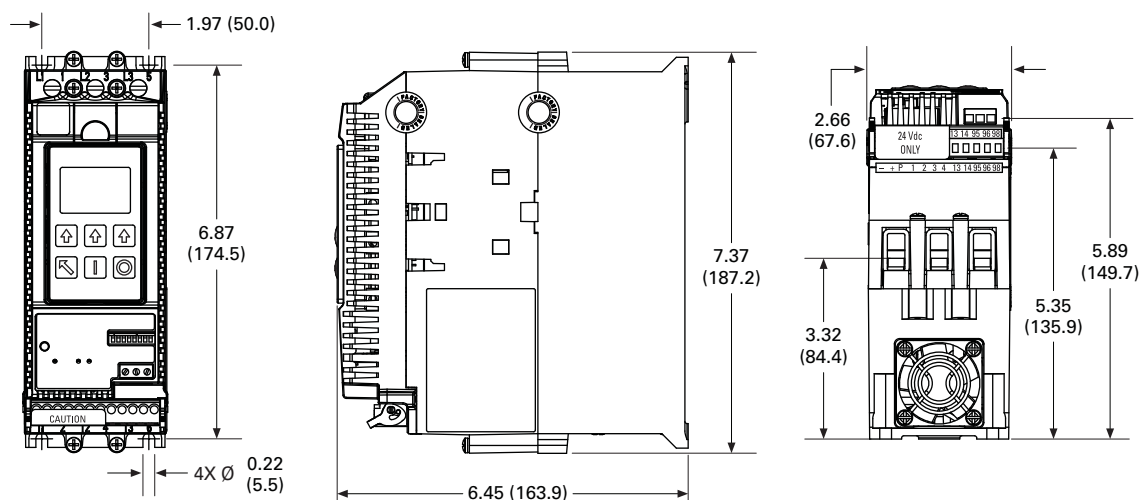
Power control

Drives and soft starters

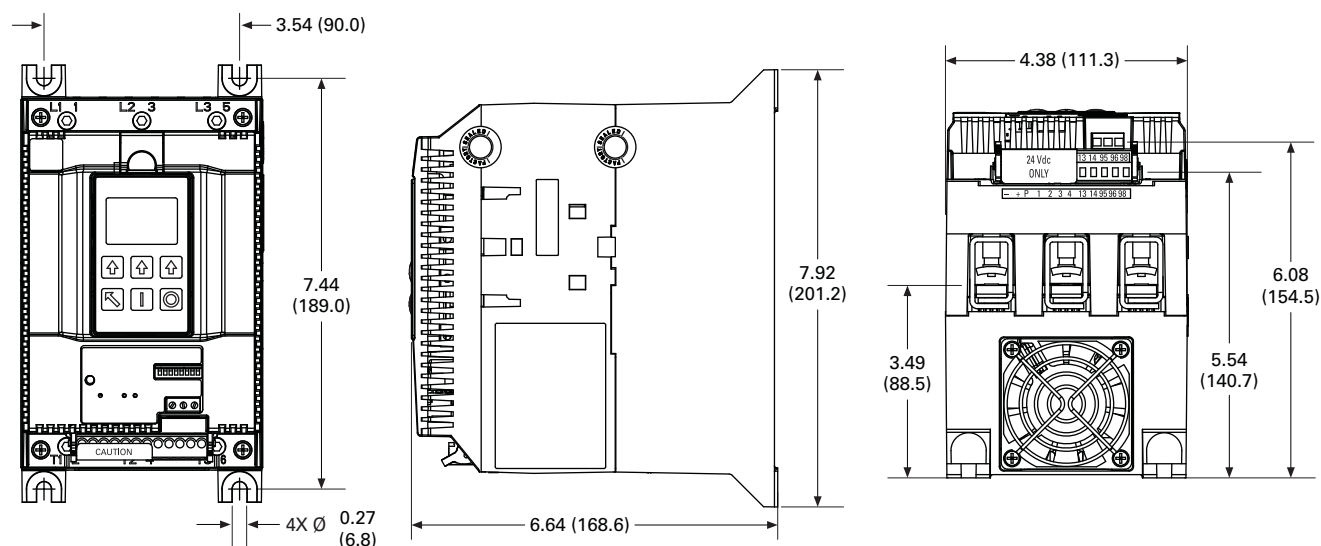
Solid soft starter

Dimensions (approximate dimensions in inches (mm))

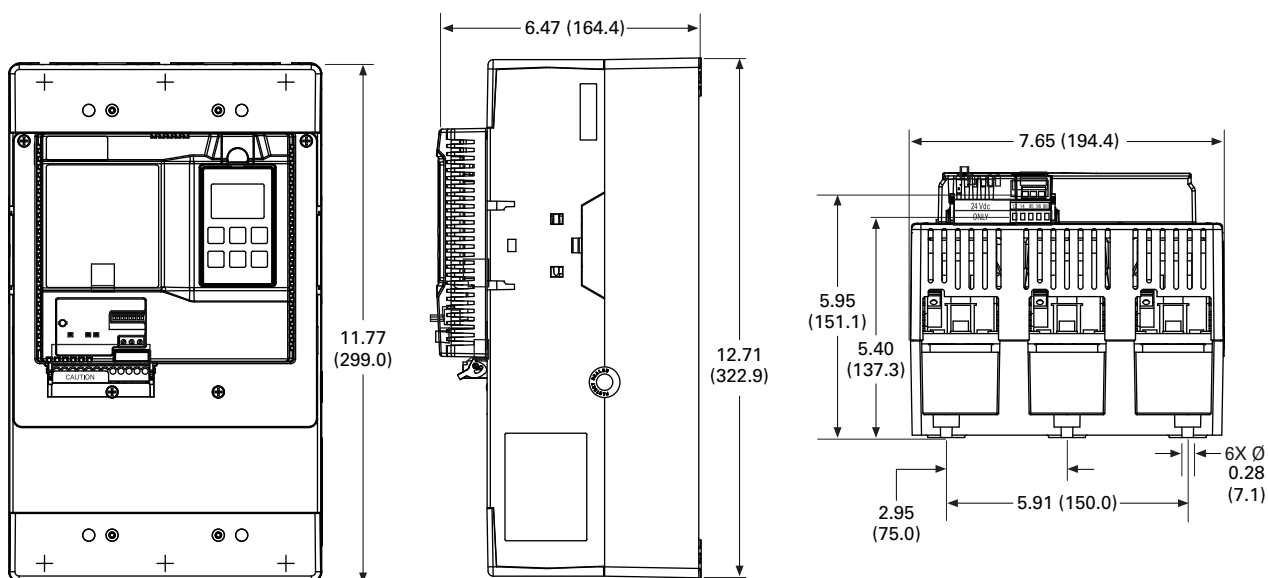
S811+N...



S811+R...



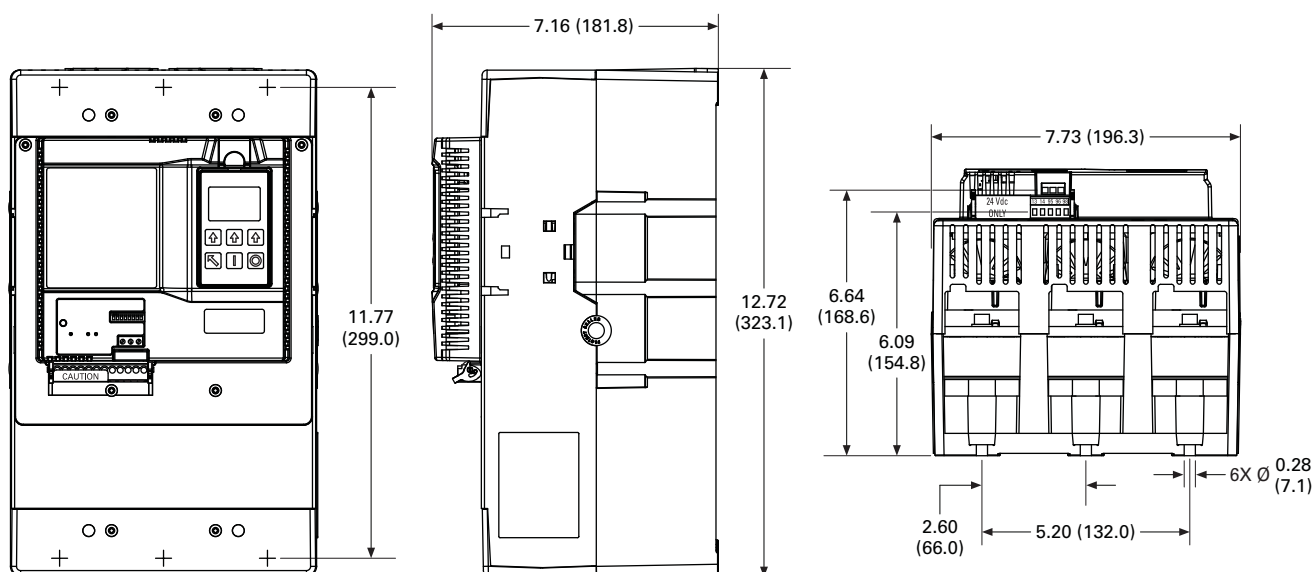
S811+T...



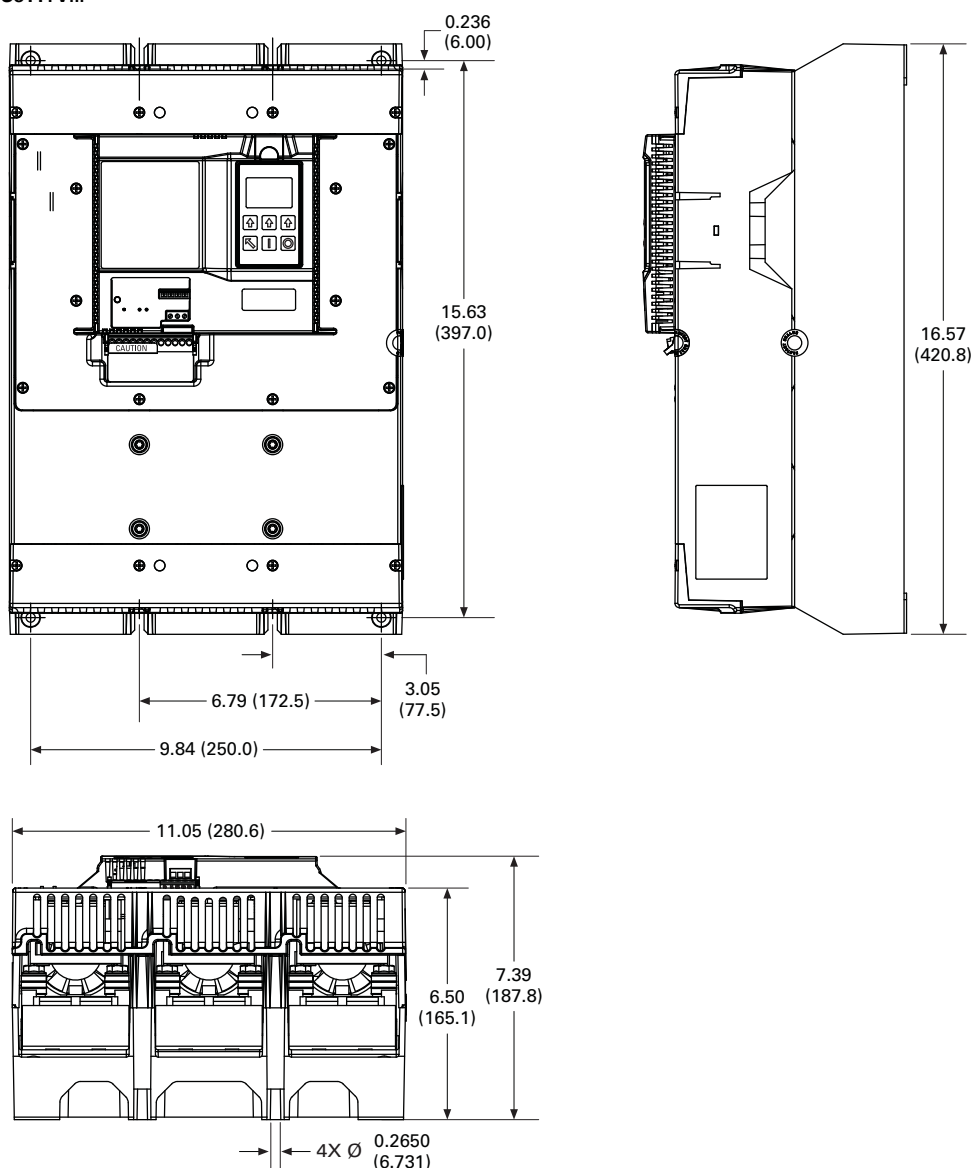
Solid soft starter

Dimensions (approximate dimensions in inches (mm))

S811+U...



S811+V...



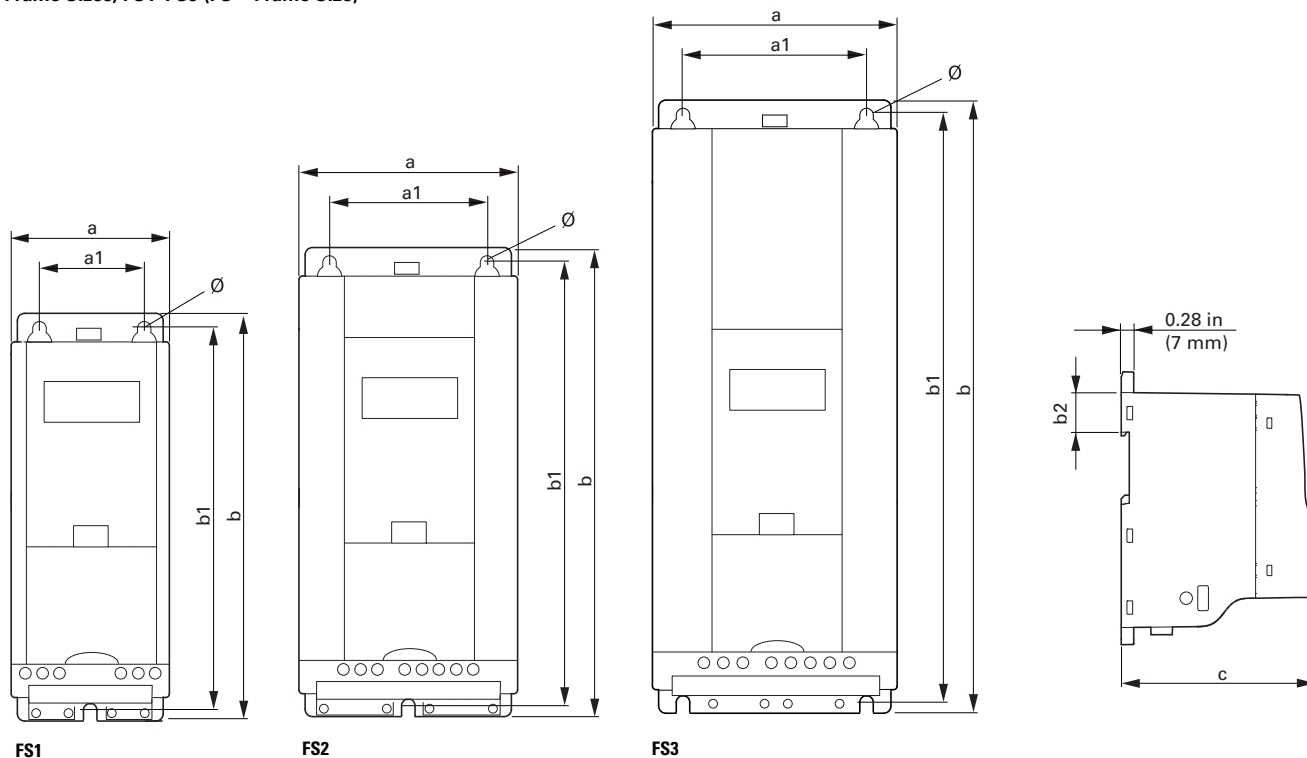
Power control

Drives and soft starters

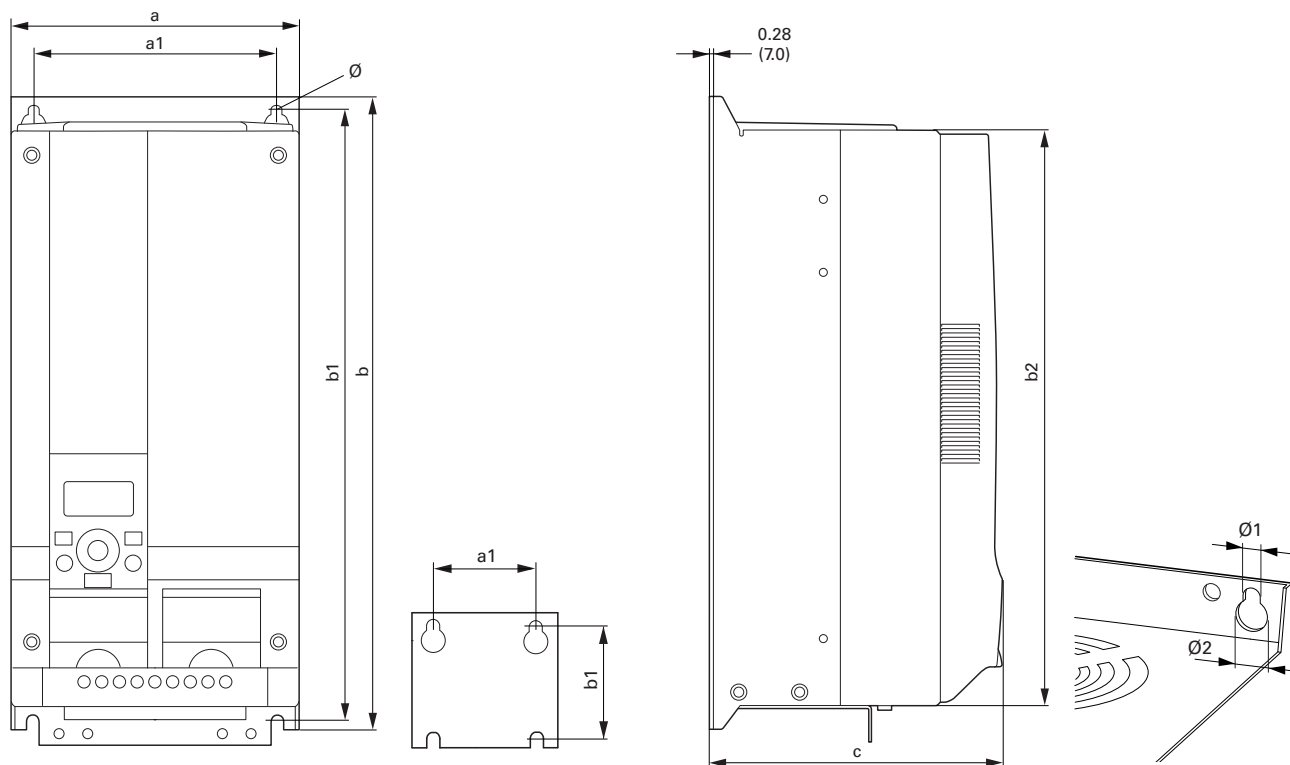
M-Max series drives

Dimensions (approximate dimensions in inches (mm))

Frame Sizes, FS1-FS3 (FS = Frame Size)



Frame Sizes, FS4 and FS5 (FS = Frame Size)

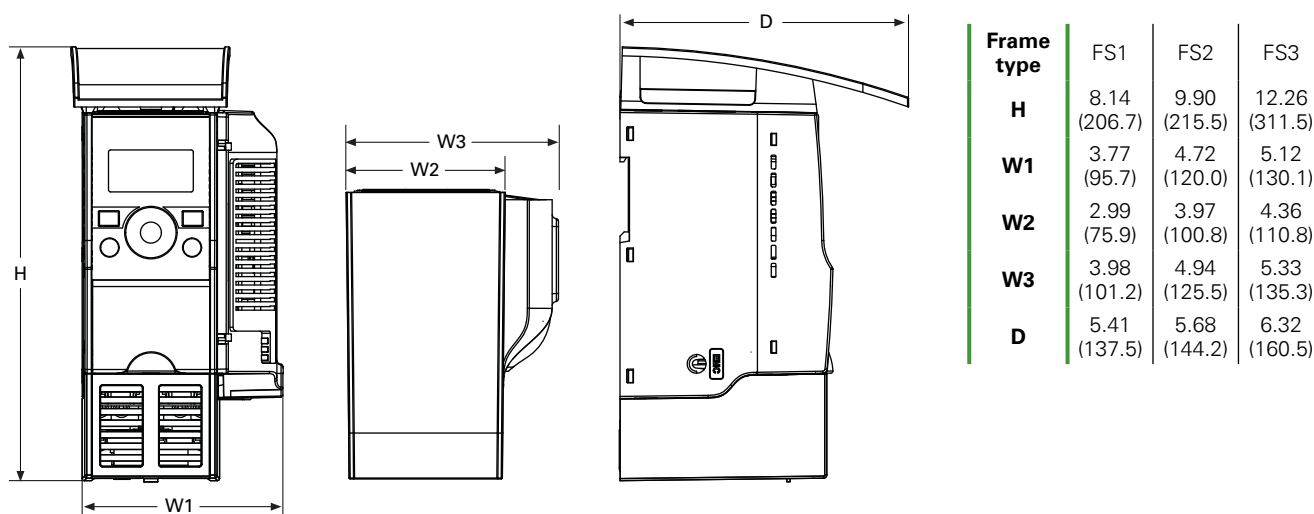


M-Max series drives

Dimensions (approximate dimensions in inches (mm))

Item no.	a	a1	b	b1	b2	c	Ø, Ø1	Ø2	Installation Size
MMX12AA1D7_ MMX12AA2D4_ MMX12AA2D8_	2.60 (66)	1.50 (38)	6.30 (160)	5.79 (147)	1.26 (32)	4.02 (102)	0.18 (4.5)	—	FS1
MMX34AA1D3_ MMX34AA1D9_ MMX34AA2D4_									
MMX12AA3D7_ MMX12AA4D8_ MMX12AA7D0_	3.54 (90)	2.46 (62.5)	7.68 (195)	7.17 (182)	1.26 (32)	4.14 (105)	2.17 (5.5)	—	FS2
MMX34AA3D3_ MMX34AA4D3_ MMX34AA5D6_									
MMX12AA9D6_ MMX34AA7D6_ MMX34AA9D0_	3.94 (100)	2.95 (75)	9.96 (253)	9.53 (242)	1.34 (34)	4.41 (112)	2.17 (5.5)	—	FS3
MMX34AA012_ MMX34AA014_									
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



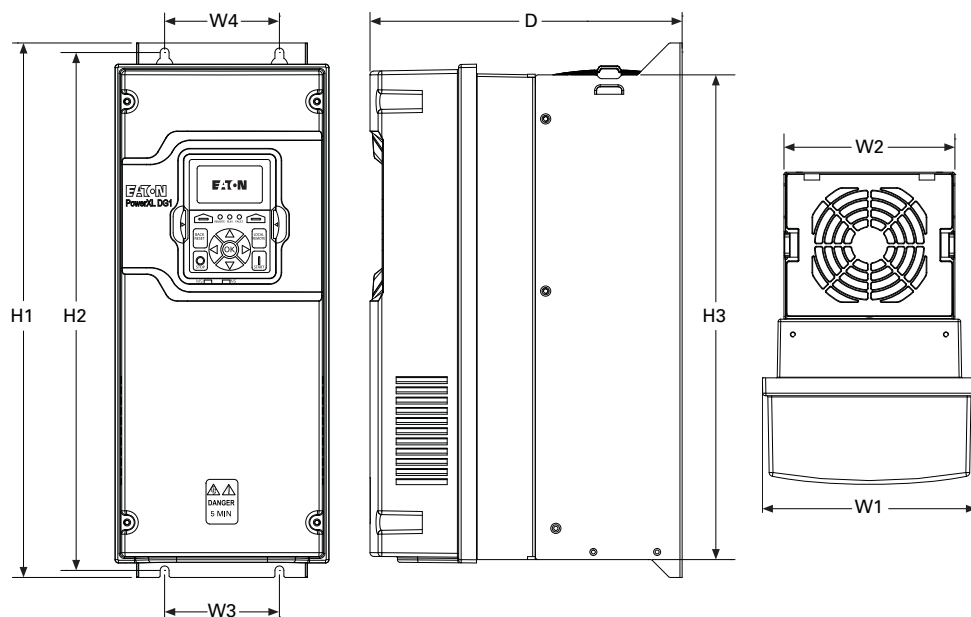
Power control

Drives and soft starters

DG1 drive

Dimensions (approximate dimensions in inches (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.

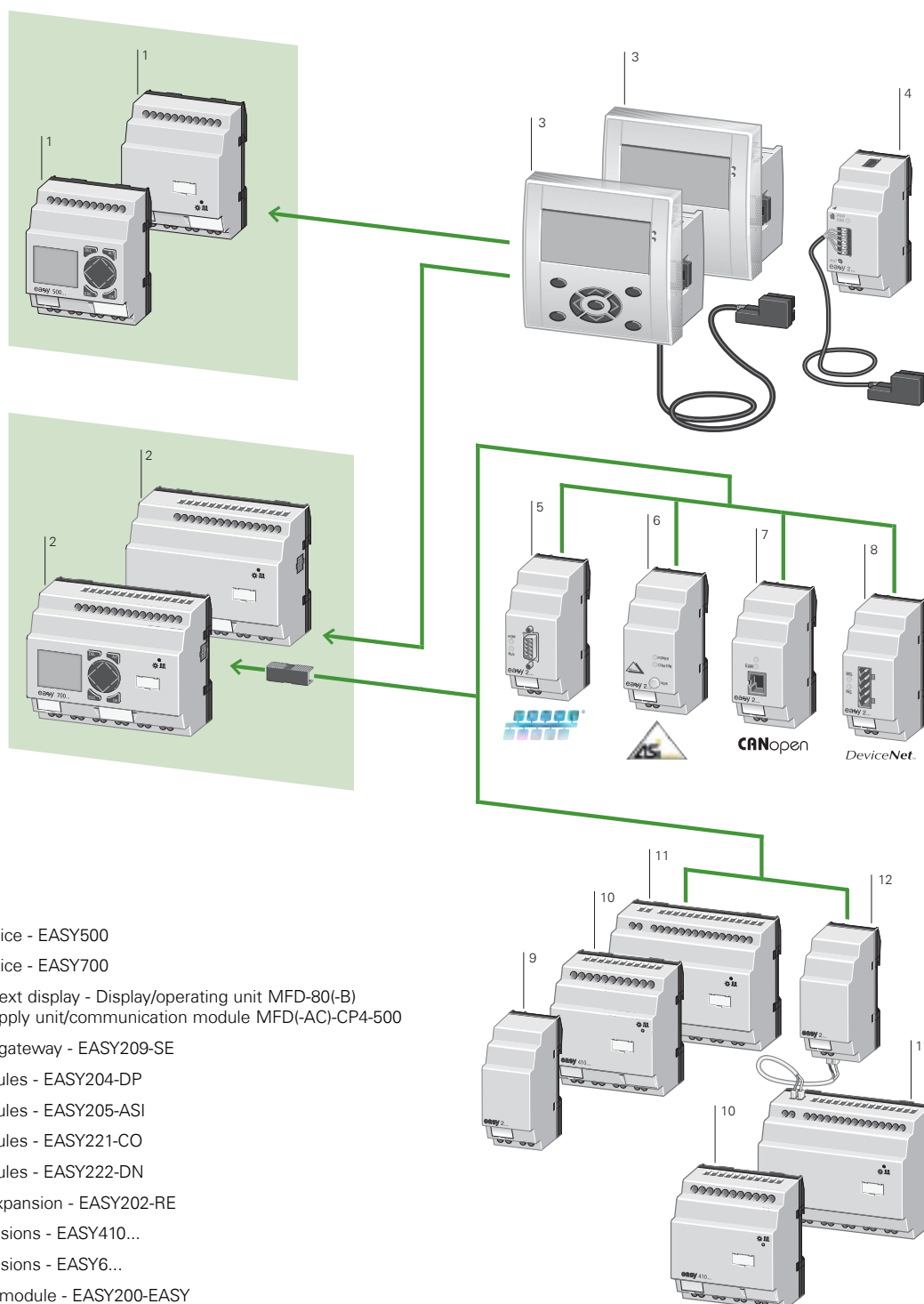
Control, monitor, protect.

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.
		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

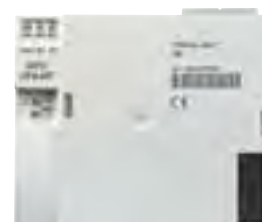
easy relay controllers

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				Item no.
Digital	of which can be used as analog	Pt 100/ Ni 1000	Relay 10 A (UL)	Transistor	Analog	Range of temperature	
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 × 0 - 10 V, 2 × 0 - 20mA, 2 × 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

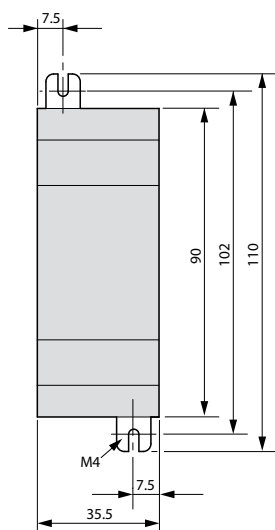
easy relays, MFD-Titan multi-function display, accessories

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 mm ² (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

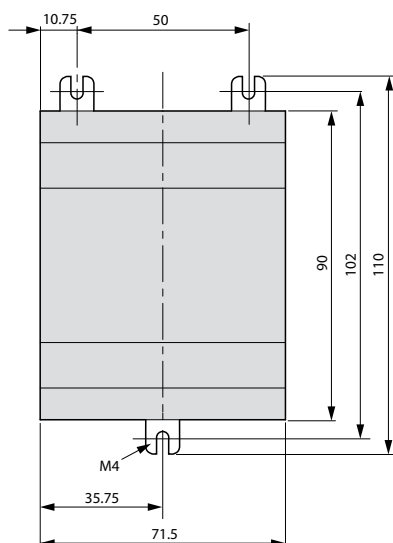
easy relay controllers

Dimension

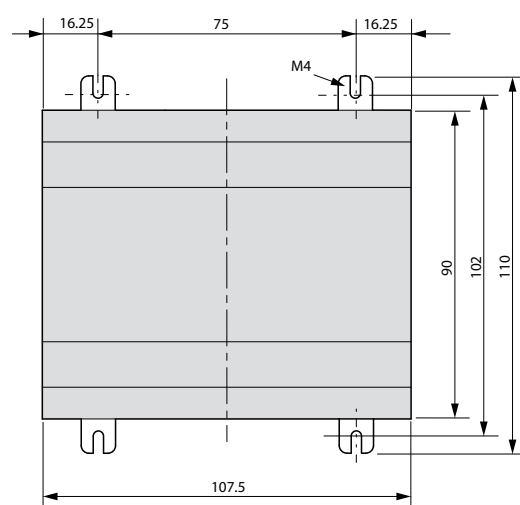
easy200



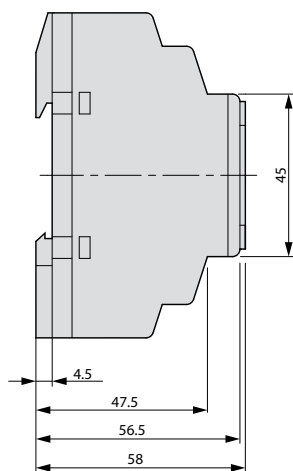
easy400
easy500



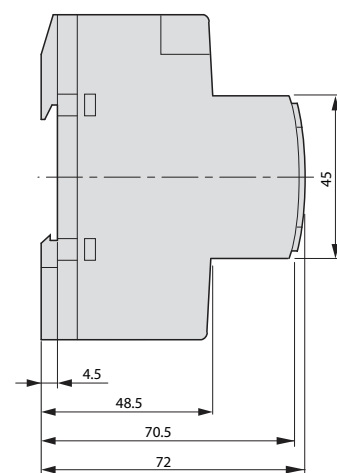
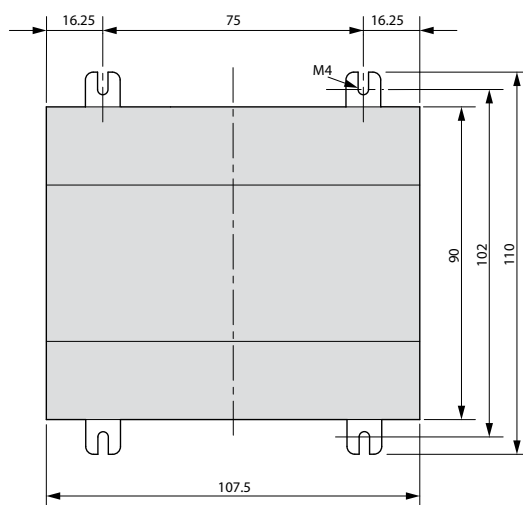
easy600
easy700



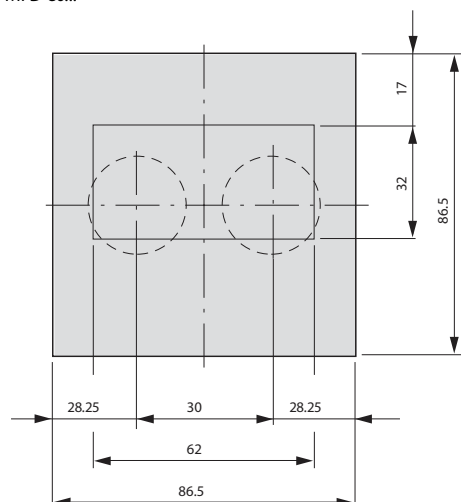
easy200
easy400
easy500
easy600
easy700



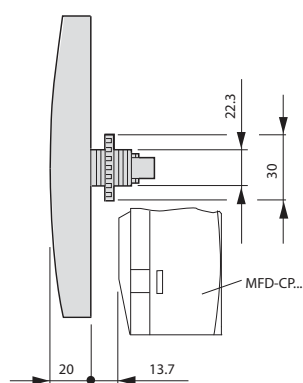
easy800



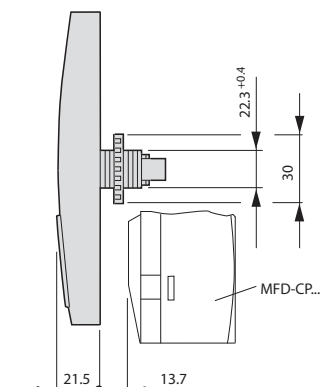
MFD-80...



MFD-80

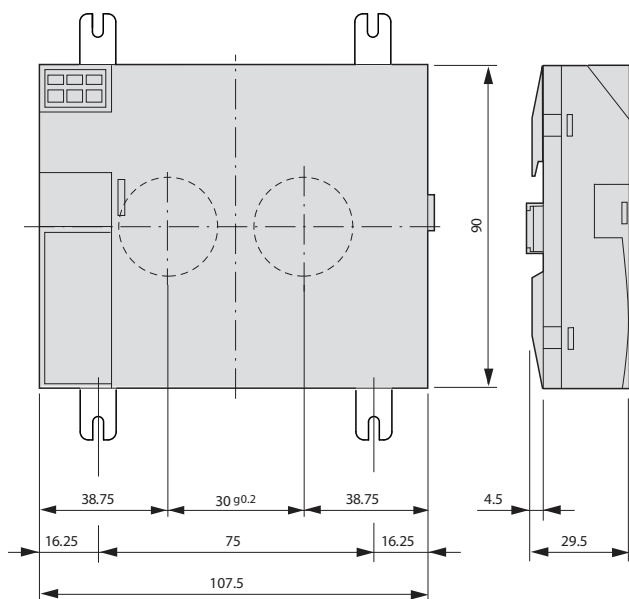


MFD-80-B

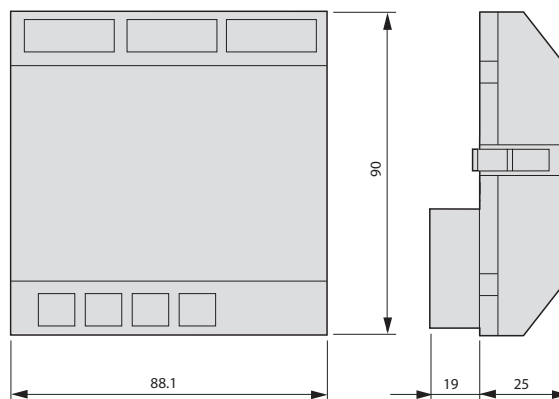


Dimension

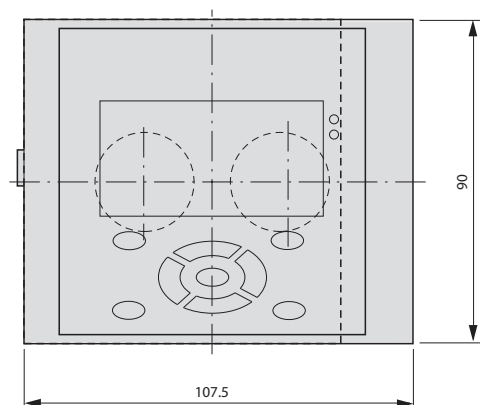
MFD-CP... , MFD-AC-CP...



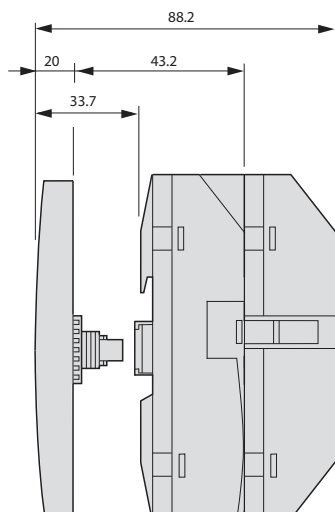
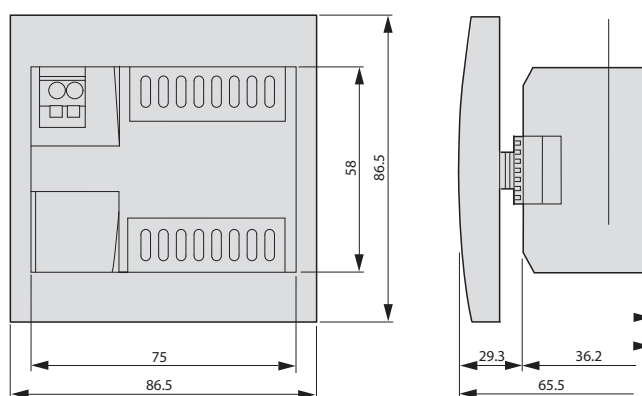
MFD-R... , MFD-T... , MFD-AC-R16



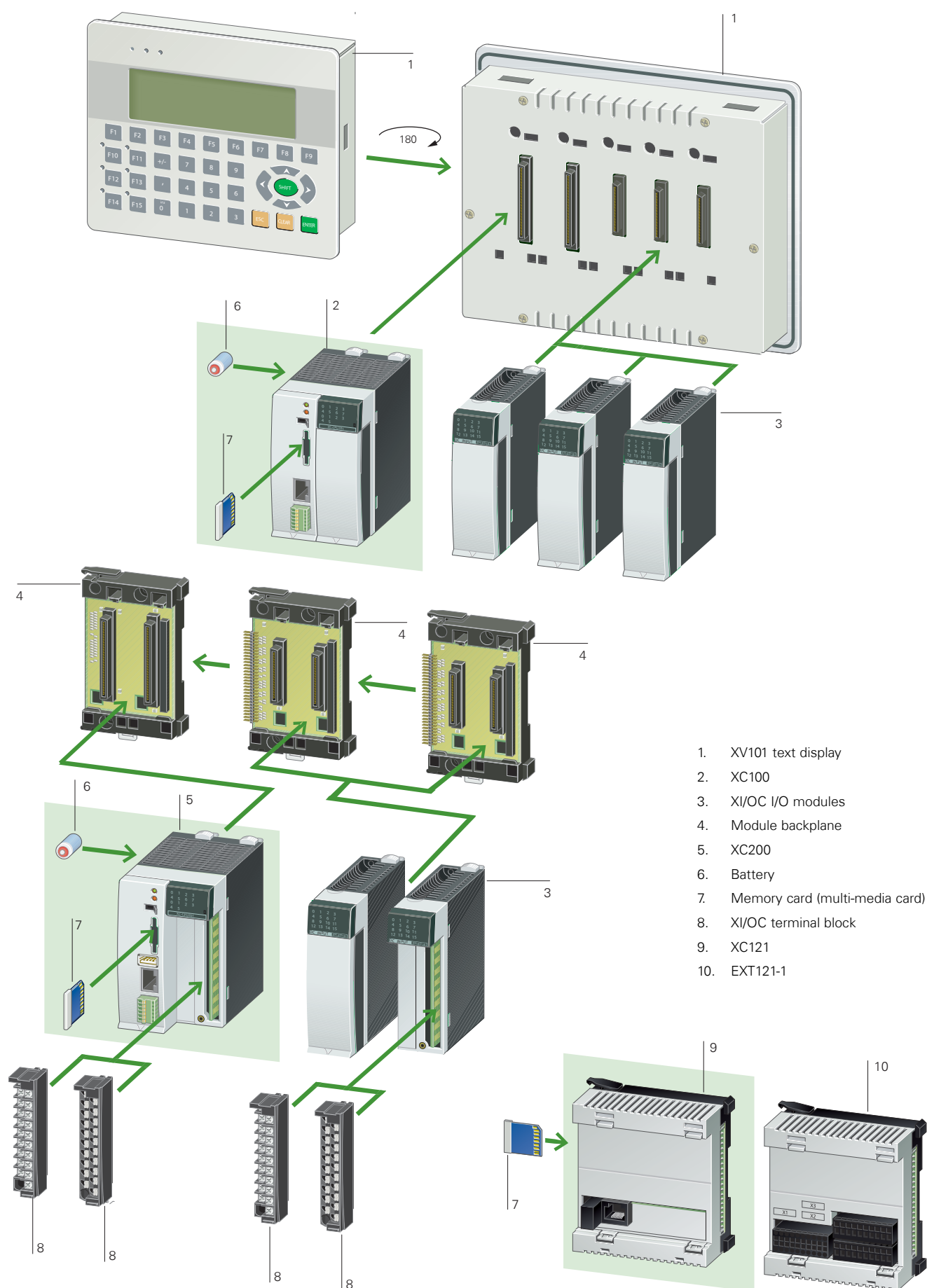
MFD-80... + MFD-CP... + MFD-R.../MFD-T...
MFD-80... + MFD-AC-CP... + MFD-AC-R16



MFD-80... + MFD-CP4



Programmable logic controllers





XC-CPU101-C64K-8DI-6DO

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

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.

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

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.

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

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



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



XIOC-TERM-18T



XIOC-BP-XC1



XT-MEM-MM512M



EASY-NT-30



XIOC-NOP



XT-RJ45-ETH-RS232

Programmable logic controllers

Accessories XIOC-...

Description	Std. pack	Item no.
Terminals		
18-pole plug with spring-loaded terminal		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	10 off	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		XIOC-BP-XC
Basic rack for mounting XC100/200 on top-hat rail, expandable		XIOC-BP-XC1
Expander rack for mounting XI/OC modules on top-hat rail, expandable	1 off	XIOC-BP-2
Expander rack for mounting XI/OC modules on top-hat rail, expandable		XIOC-BP-3
Expander rack for mounting XI/OC modules on top-hat rail, expandable		XIOC-BP-EXT

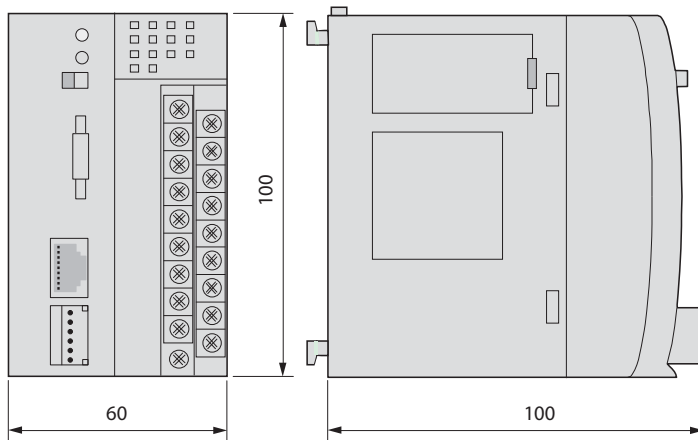
Other accessories

XIOC-..., XTT...

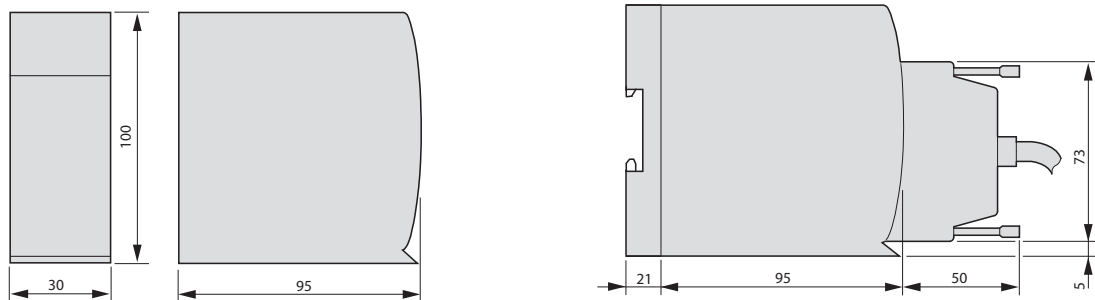
Description	Item no.
Multi-media card - for storage of programs, data, recipes	
- 512 MByte	XT-MEM-MM512M
- 32 MByte	XT-MEM-MM32M
Battery	For back-up of real-time clock & retentive data
	XT-CPU-BAT1
Programming cable	
2 m length	D-sub, 9-pin, serial
	XT-SUB-D/RJ45
2 m length	Ethernet cross, 2 m
	XT-CAT5-X-2
5 m length	Ethernet cross, 5 m
	XT-CAT5-X-5
Programming cable for XC, EC4P, EU5C through USB interface	EU4A-RJ45-USB-CAB1
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 mm ² 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

Programmable logic controllers

XC-CPU101
XC-CPU201
XC-CPU202



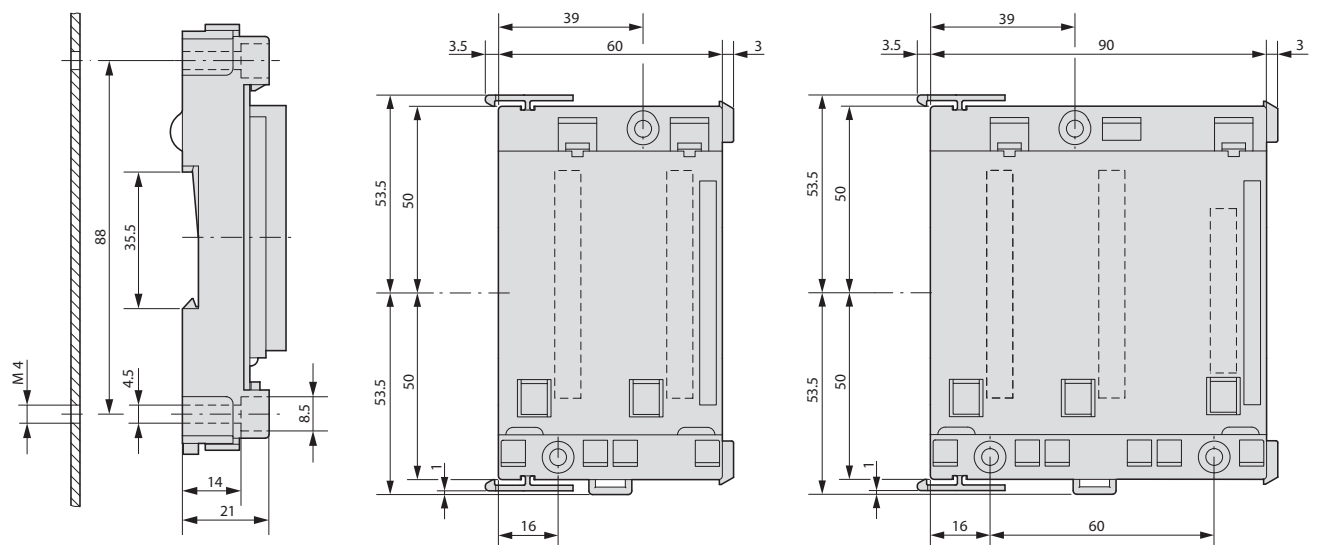
XIOC...



Backplanes

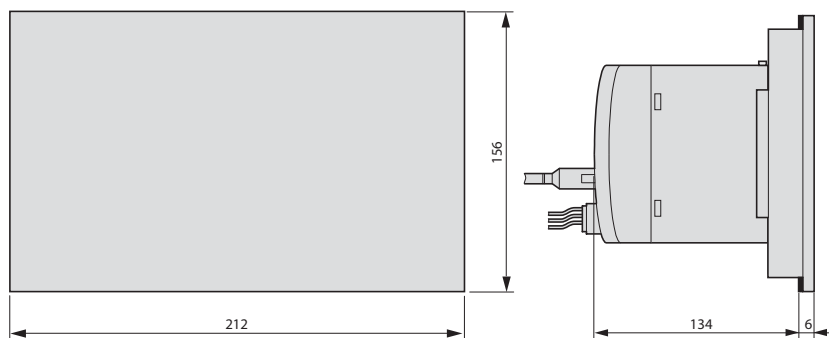
XIOC-BP-2
XIOC-BP-XC

XIOC-BP-3
XIOC-BP-EXT
XIOC-BP-XC1

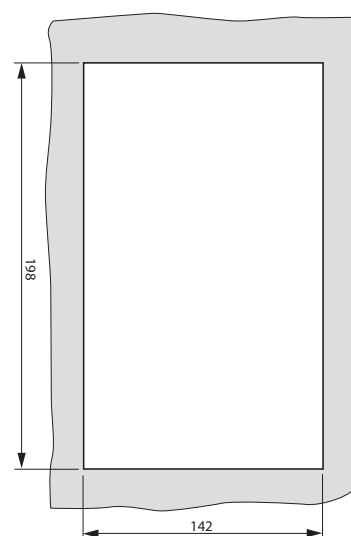


Programmable logic controllers

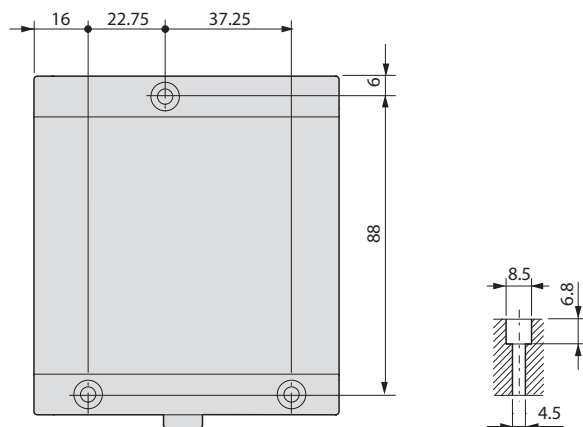
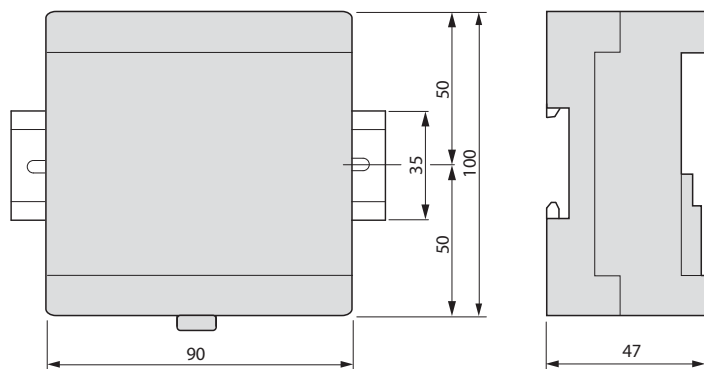
XV-101...



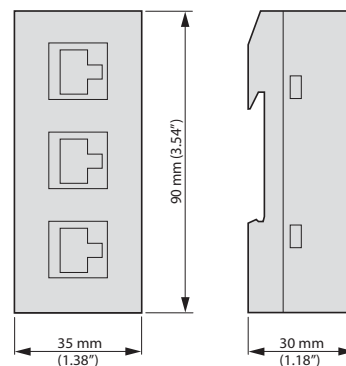
Mounting dimensions



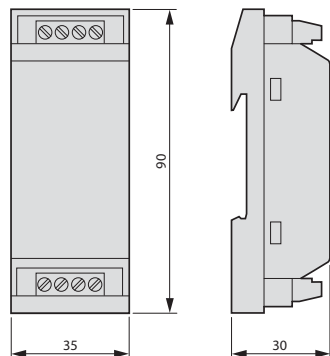
XC-CPU-121...
XIO-EXT121-1



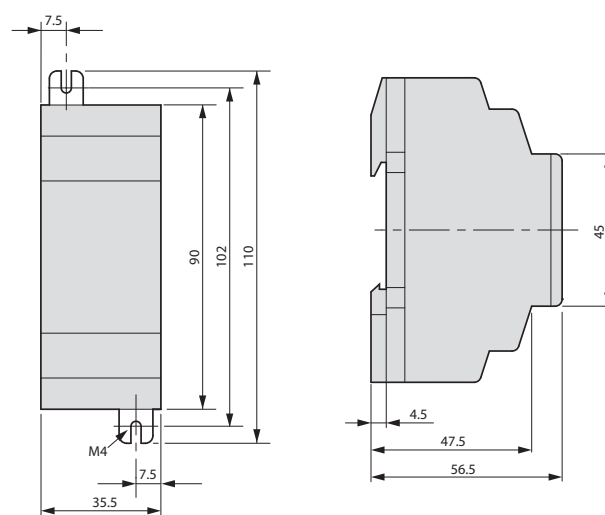
XT-RJ45-ETH-RS232



XT-FIL-1



XT-FIL-2



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

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-PC

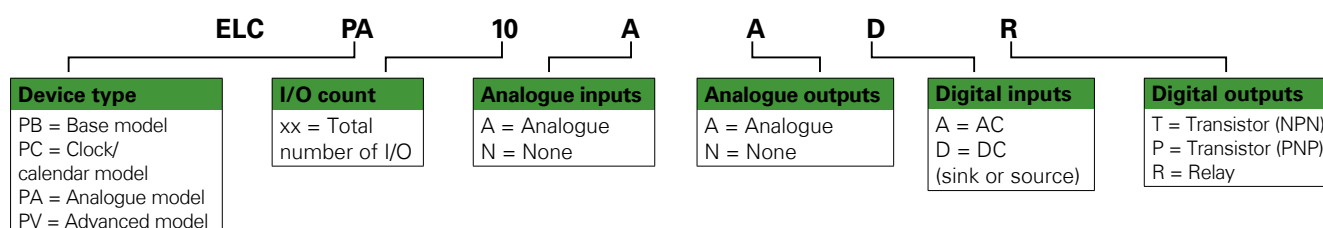


ELC-PA



ELC-PV

Controllers and modules



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

CO = Communication interface module

Module type

DNETM = DeviceNet master module
⓪
ENETM = Ethernet master module
⓪

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

⓪ Left side bus communications module—for use with ELC-PV controllers only.

Distributed I/O adapters

ELC

CA

ENET

Device type

CA = Distributed I/O adapter

Module type

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

AN = Analog expansion module
EX = Digital expansion module
PT = Platinum RTD expansion module
TC = Thermocouple expansion module

I/O count

xx = Total number of I/O

Analogue inputs

A = Analogue
N = None

Analogue outputs

A = Analogue
N = None

Digital inputs

A = AC
D = DC (sink or source)
S = Switch
N = None

Digital outputs

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

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



ELC-PS01

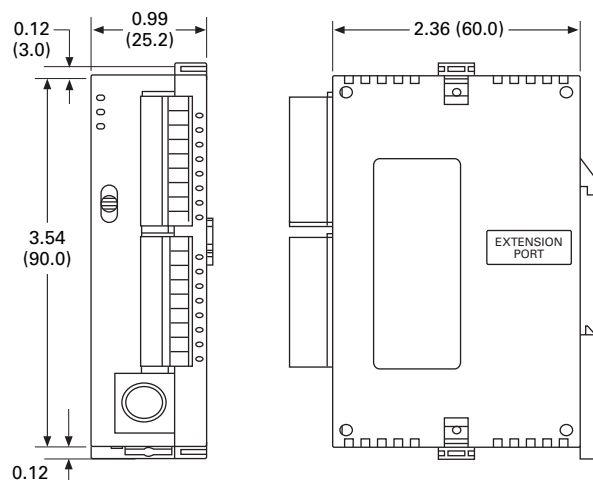
Power control

Automation

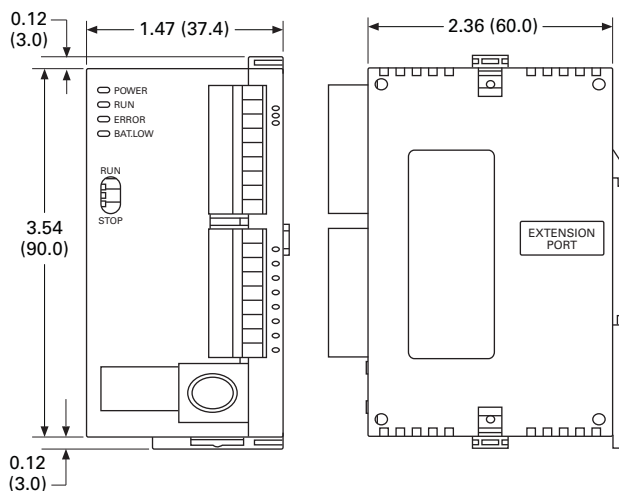
Programmable logic controllers

Dimensions (approximate dimensions in inches (mm))

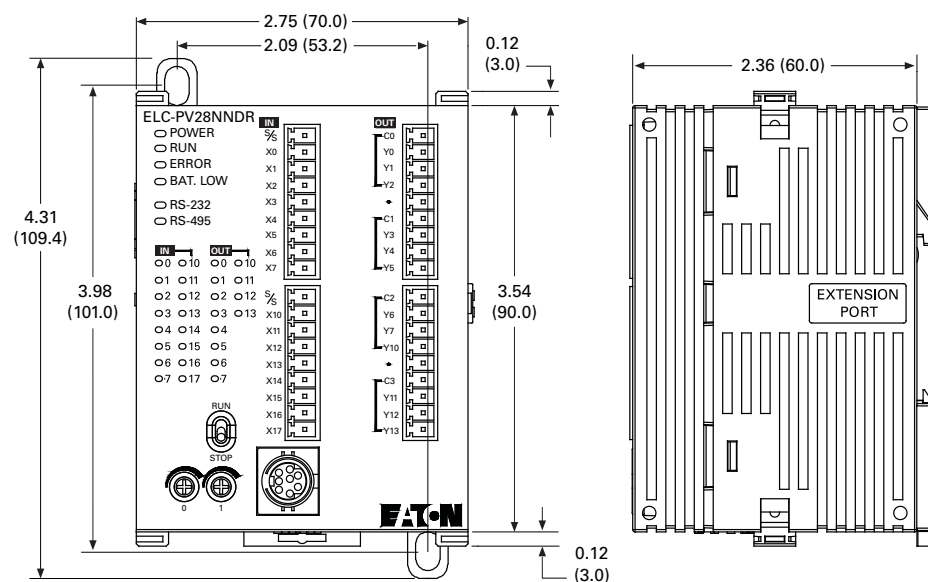
ELC-PB14 controllers



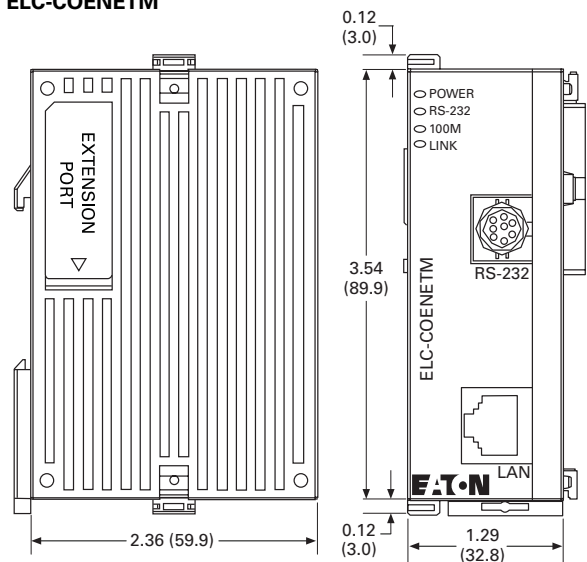
ELC-PC12, ELC-PH12 and ELC-PA10 controllers



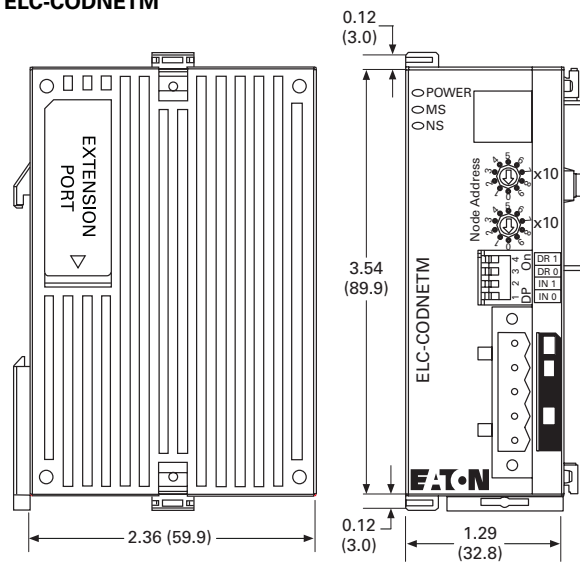
ELC-PV controller



ELC-COENETM



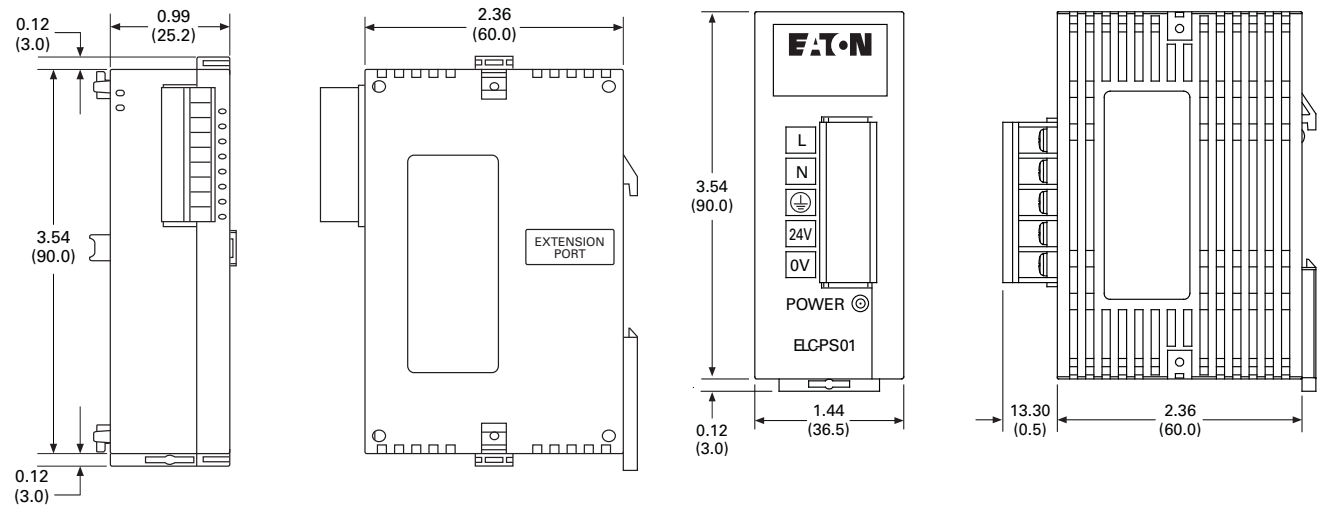
ELC-CODNETM



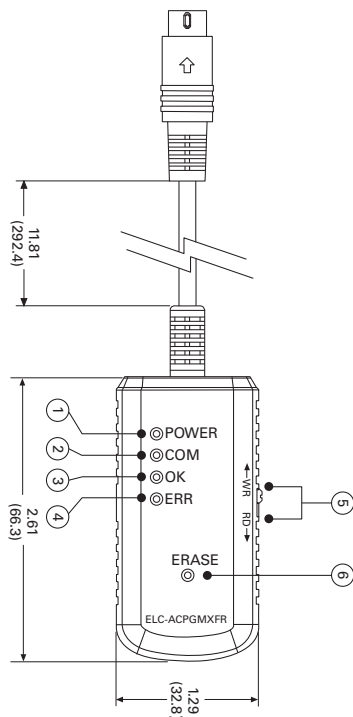
Programmable logic controllers

Dimensions (approximate dimensions in inches (mm))

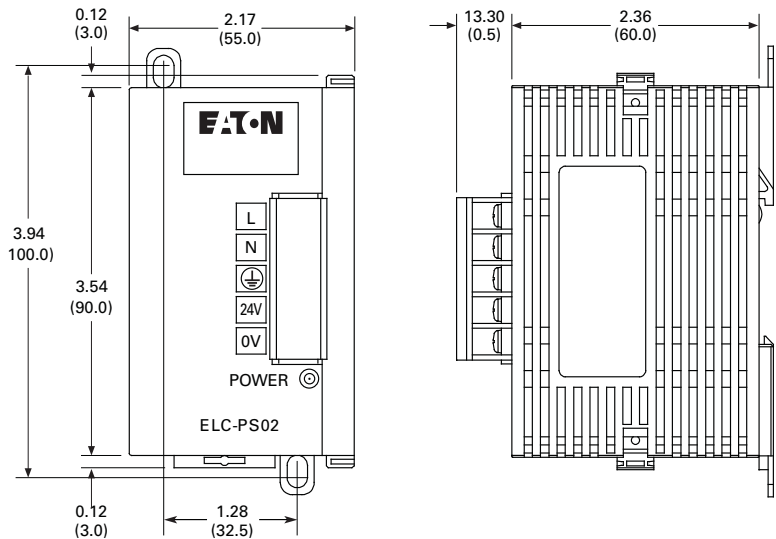
Right side specialty and expansion modules



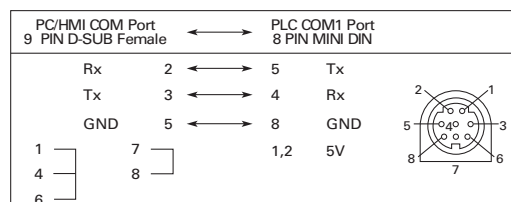
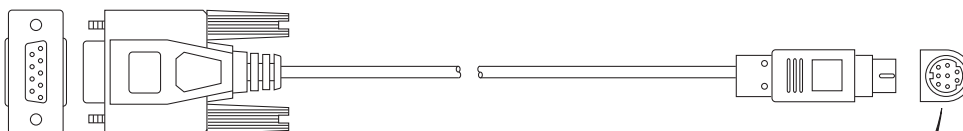
ELC-ACPGMXFR storage device



ELC-PS02



ELC-CBPCEL3 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
- Connection to all major PLCs with drivers
- Process indication by graphs, alarms, etc
- Communication through 2 ports simultaneously: RS232 & RS485/422
- 10 levels of password protection

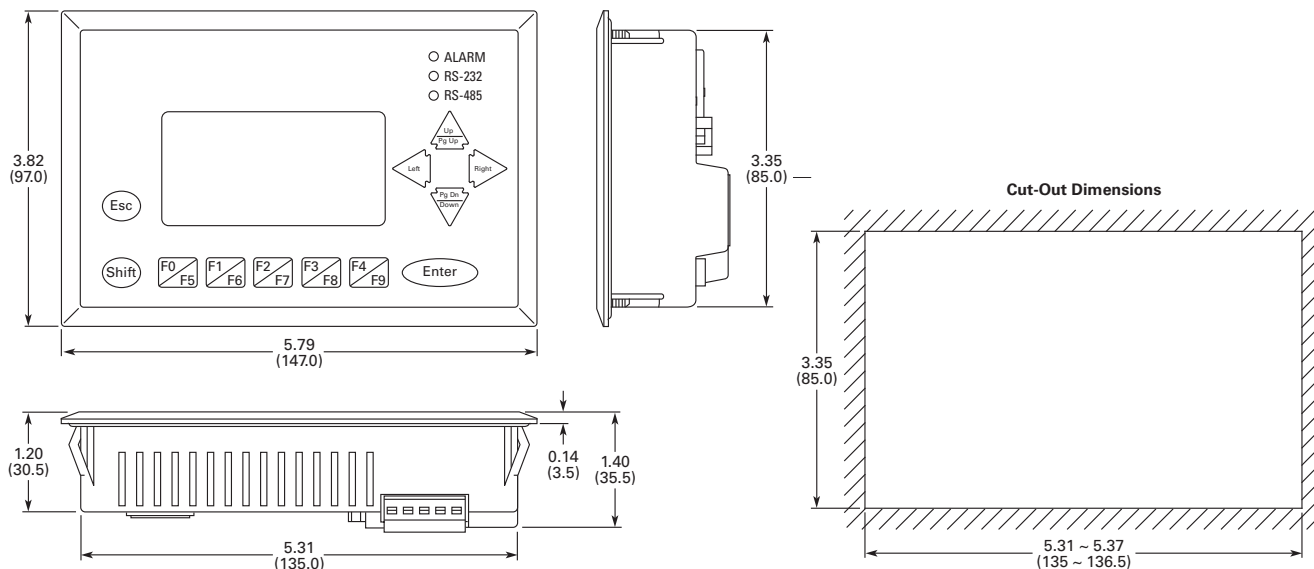


Description	Item no.
Graphic touch panels	
Touch panel, 160 x 32 pixels, 10 function keys, monochrome	ELC-GP02
Touch panel, 128 x 64 pixels, 10 function keys, monochrome	ELC-GP04
Programming software	
Programming software for ELC graphic touch panels	ELCSOFTGP
Power supplies	
Power supply, 110-240V AC 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

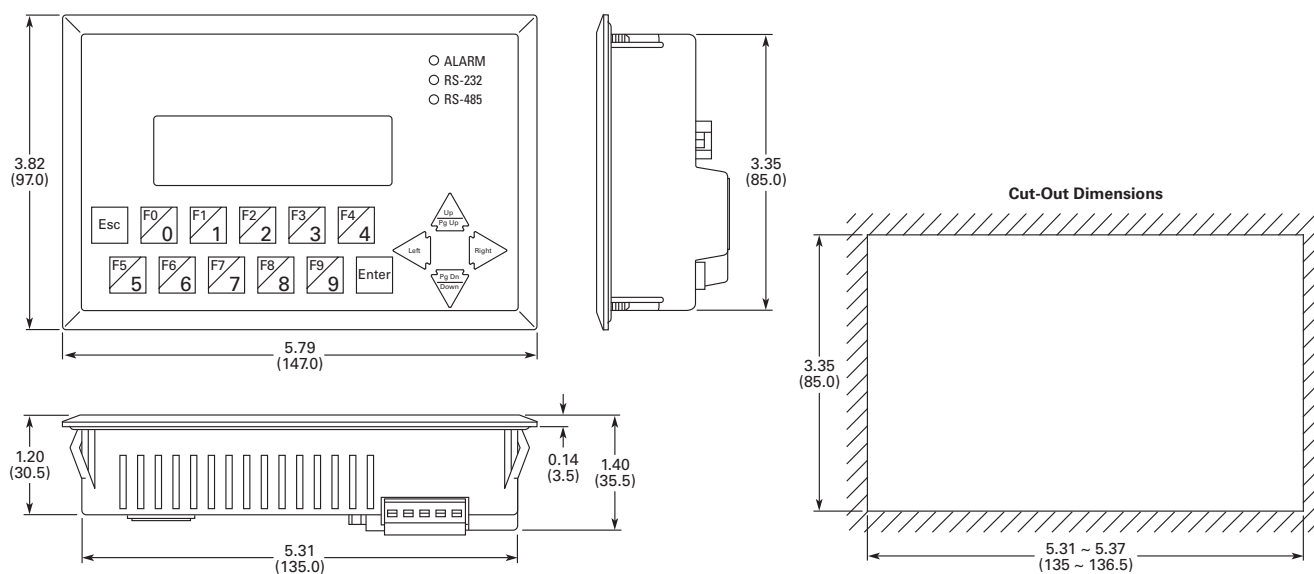
ELC Graphic touch panels

Dimensions (approximate dimensions in inches (mm))

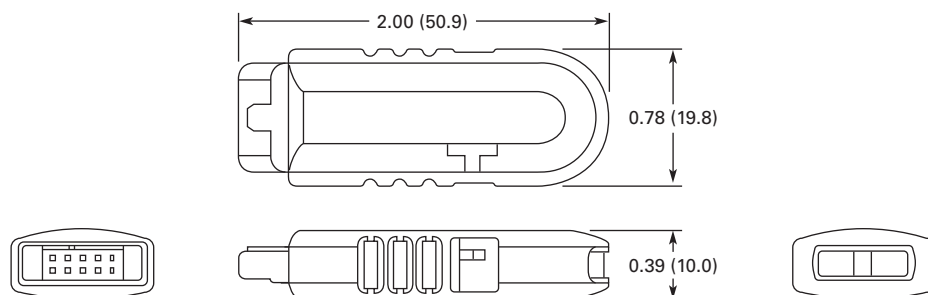
ELC-GP04



ELC-GP02



ELC-GPXFERMOD



Operator interface

HMi operator interface

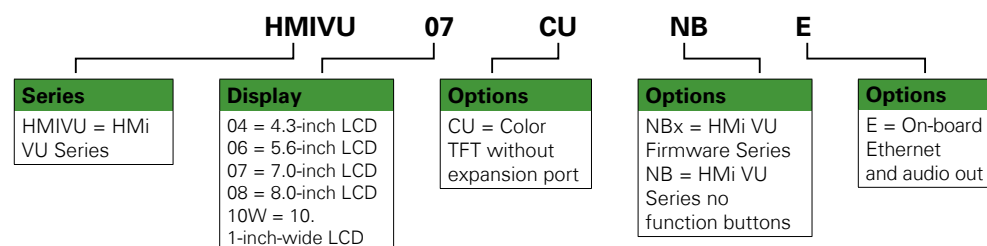
Positioned between the ELC graphics panels and the XV series of operator interfaces, HMi is the workhorse of the industry. Ideal for machinery OEMs, the HMi series provides the most value with the latest technology and advanced feature set in an economical hardware and software package. All units offer 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



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.

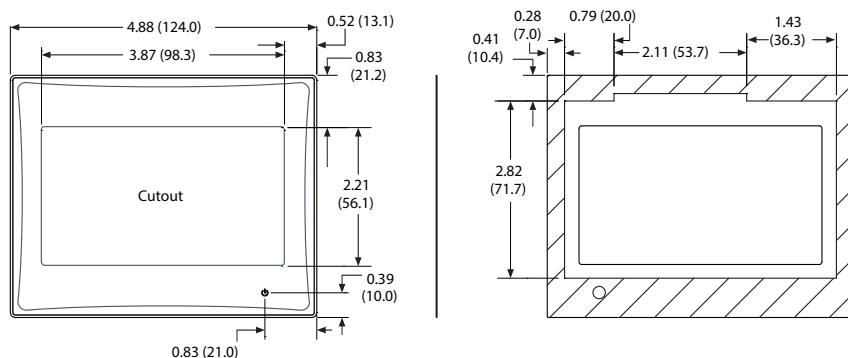
- Ethernet and serial communication drivers
- Up to four simultaneous protocols
- Screen manager
- Over 70 on-screen objects
- Pop-up screens
- Animated graphics
- Conditional visibility
- Built-in picture library
- Create your own picture library
- Multi-language
- Eight levels of security
- Macro editing 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

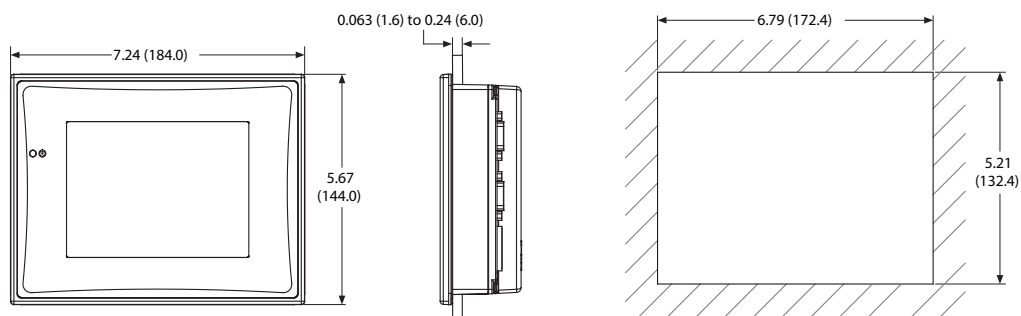
Operator interface

Dimensions (approximate dimensions in inches (mm))

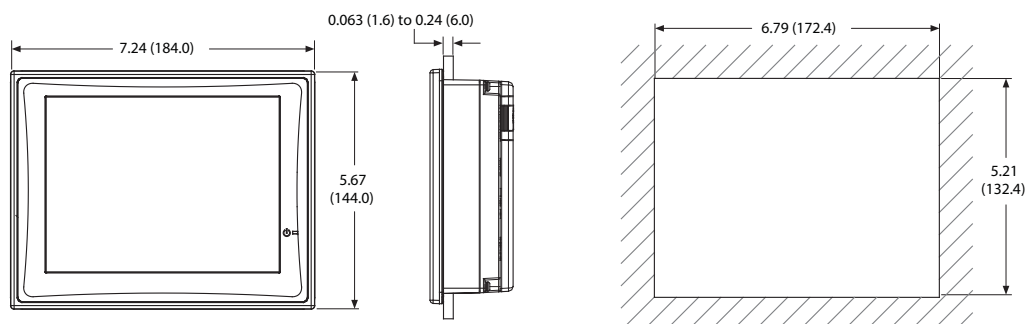
HMIVU04



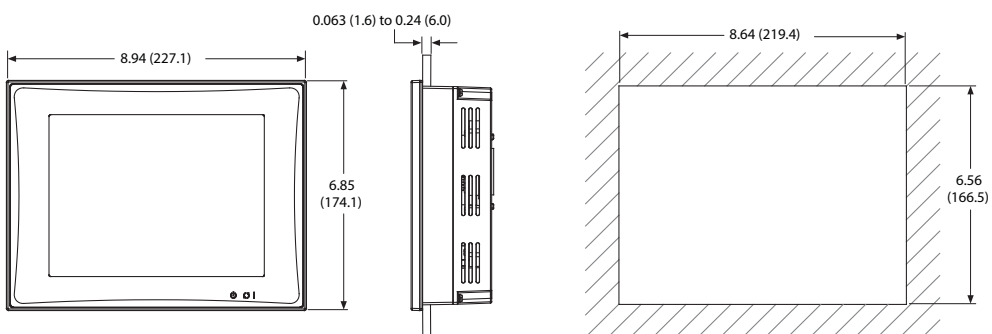
HMIVU06



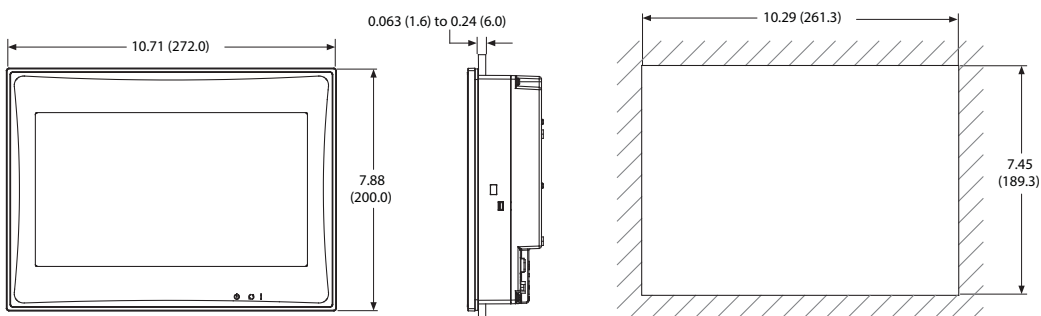
HMIVU07



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 RMO-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		

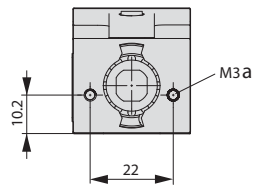
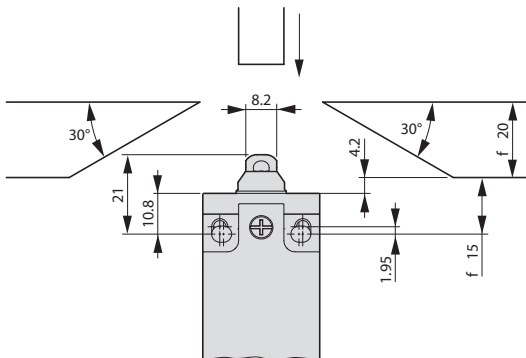


LS-Titan position switches

Dimensions

Basic units, non expandable (front fixing)

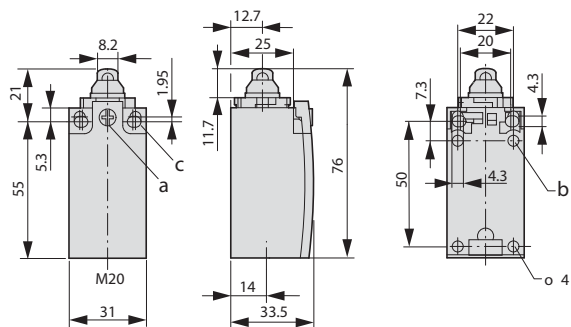
LS(M)-.../F



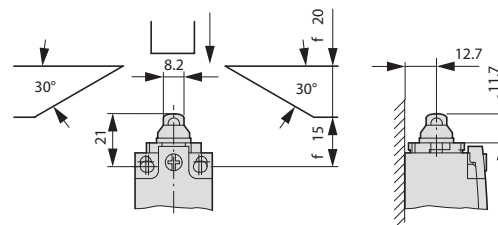
① Screw-in depth max. 12 mm

Basic units, expandable,

LS-..., LSM-..., LSE-...

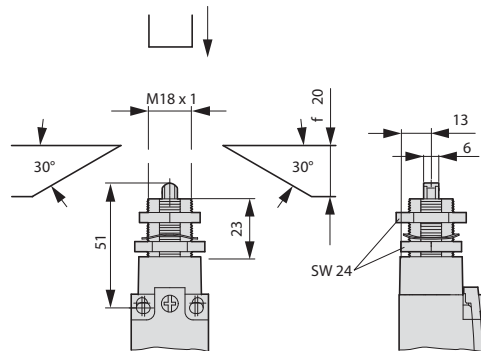


- ① Tightening torque of cover screw: $0.8 \text{ Nm} \pm 0.2 \text{ Nm}$
- ② Only with LS (insulated version)
- ③ Fixing screw 2 x M4 ≥ 30
 $M_A = 1.5 \text{ Nm}$



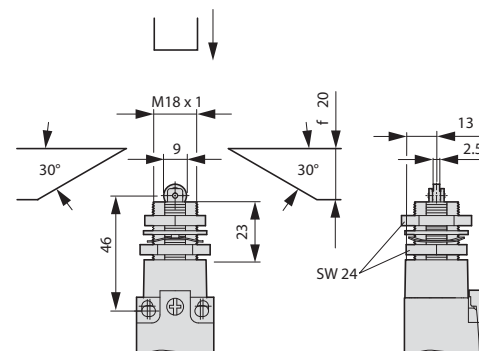
Rounded plunger, center fixing

LS-XZS



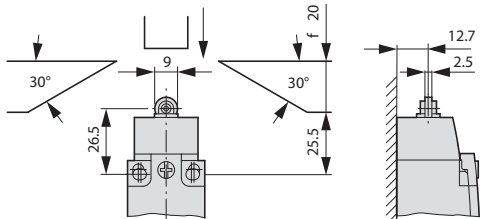
Roller plunger, center fixing

LS-XZRS



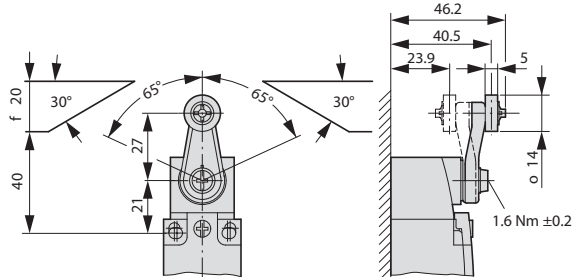
Roller plunger

LS(M)-.../P



Rotary lever

LS(M)-.../RL

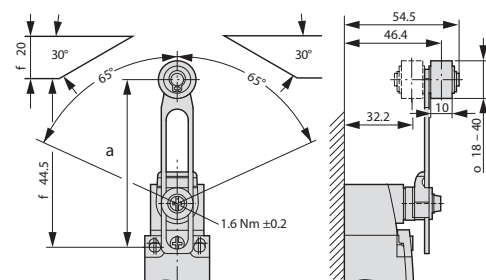


LS-Titan position switches

Dimensions

Adjustable roller lever

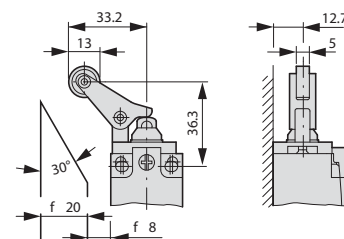
LS(M)-.../RLA



① Setting range from 54.5 to 97

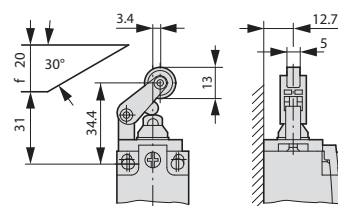
Angled roller lever

LS(M)-XLA

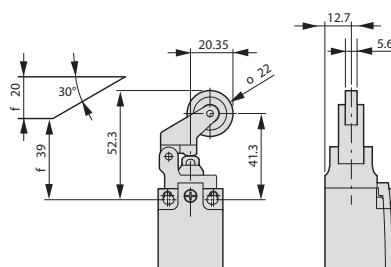


Roller lever

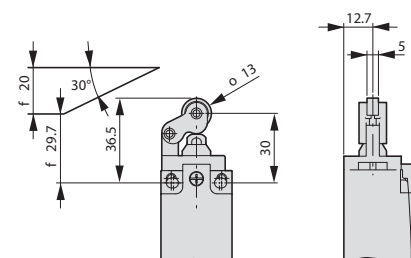
LS(M)-.../L



LS(M)-.../LB

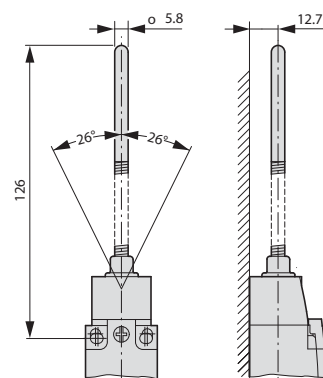


LS(M)-.../LS



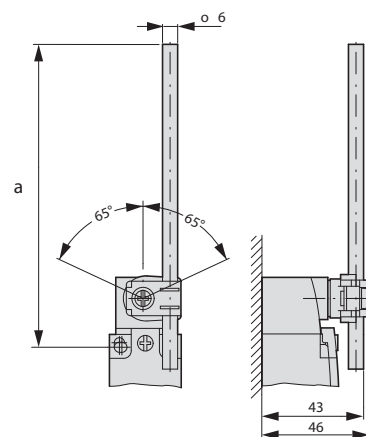
Spring rod

LS(M)-.../S



Actuating rod

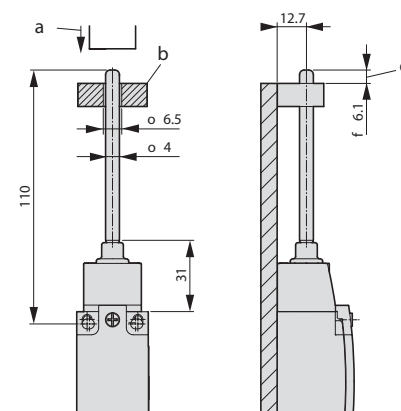
LS(M)-.../RR



① LS.../RR ≤ 150
LS.../RRM ≤ 210

Actuating rod

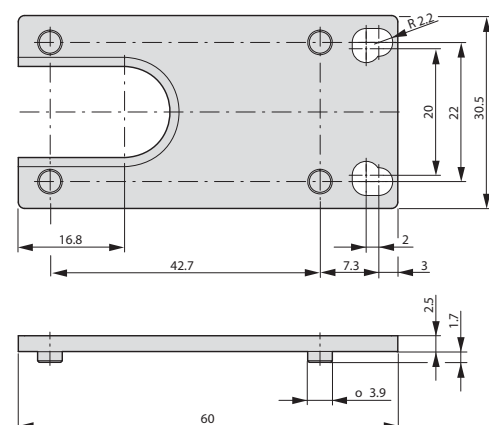
LS(M)-.../OR



① Approach direction, vertical
② Guide is done by customer, not included
③ Max. push-through

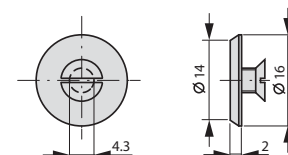
Adapter plate

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.		-



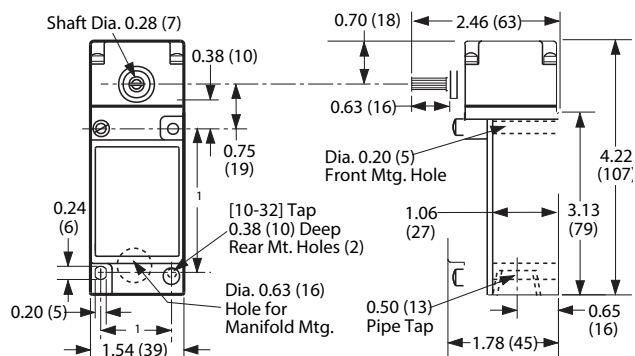
Operating head type	Item no.
Side Rotary	
Standard Spring Return	E50DR1
Low Force Spring Return	E50DL1
Maintained Two position	E50DM1
Side Pushbutton, Spring Return - E50DS1	E50DS1
Side Pushbutton, Spring Return - E50DS2	E50DS2
Side Pushbutton, Spring Return - E50DS3	E50DS3

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

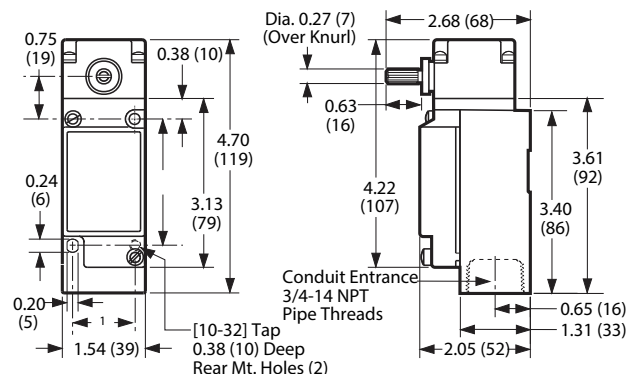
Plug-in switches

Dimensions (approximate dimensions in inches (mm))

Standard



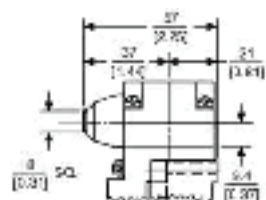
E50SB34



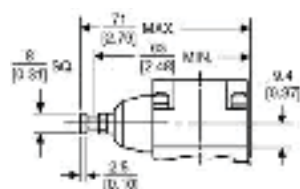
Side push operators

(approximate dimensions in mm (inches))

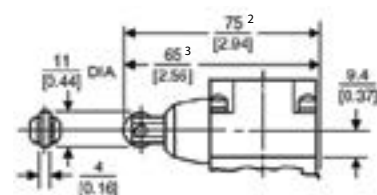
Pushbutton



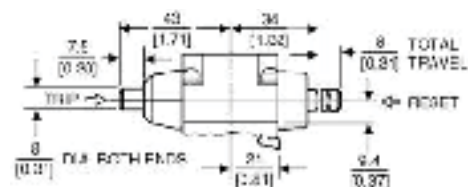
Adjustable pushbutton



Roller

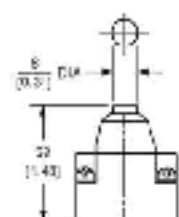


Maintained pushbutton

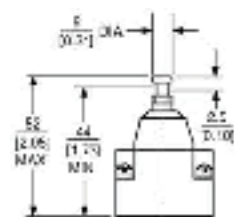


Top push operators

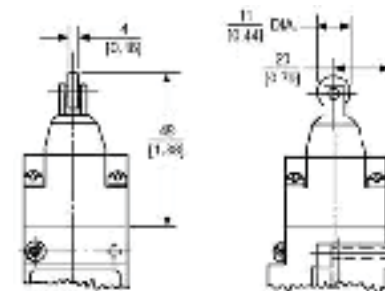
Pushbutton



Adjustable pushbutton



Roller



Notes

- 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.
- For E50DS4.
- 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)						Item no.
		A Lever length ②	B Roller diameter	C Roller width	D	E	F	
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)						Item no.
		A Lever length ②	B Roller diameter	C Roller width	D	E	F	
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)	—	E50KL201SPL®
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



E50KL31

Roller type	Approximate dimensions in Inches (mm)							Item no.
	A Lever length ②	B Roller diameter	C Roller width	D	E	F	G	
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).

® 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



E50KW2



E50KW3



E50KW4

Rod type	Minimum required return torque ①	Approximate dimensions in Inches (mm)		Item no.
		A Rod length ②	B Rod diameter	
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)				Item no.
		A Rod length ②	B Rod diameter	C	D	
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.

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

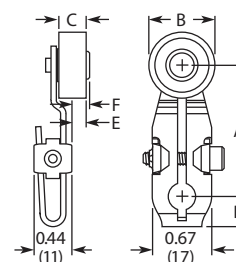
Approximate dimensions in inches (mm)

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).

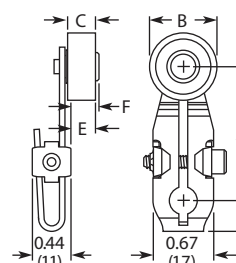
Roller Type Operators



Roller on reverse side

Approximate dimensions in inches (mm)

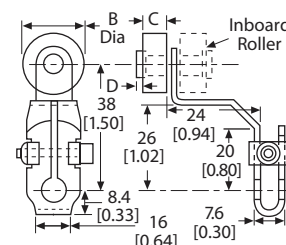
Item no.	A Lever Length ¹	B Roller Diameter	C Roller Width	D	E	F
E50KL580	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.18 (4.6)	0.24 (6.1)
E50KL310	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)
E50KL579	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)
E50KL536	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).

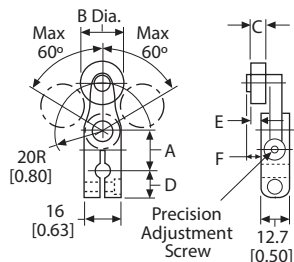
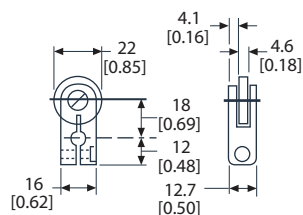
² Maximum length dimension between operating shaft axis to the roller axis for comparison. Precision adjustable to lesser dimensions.

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	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]
E50KL201 SPL 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]

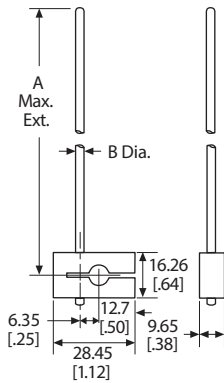
Notes

- 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

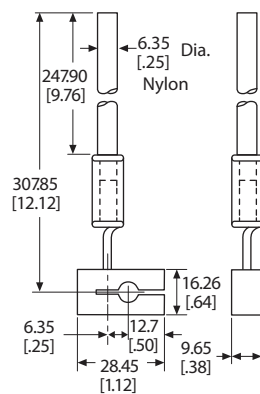
Rod type operators



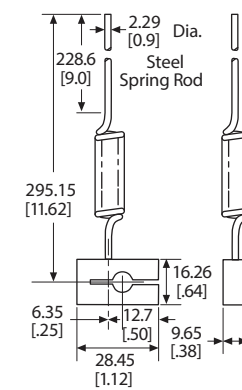
Adjustable rod

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]

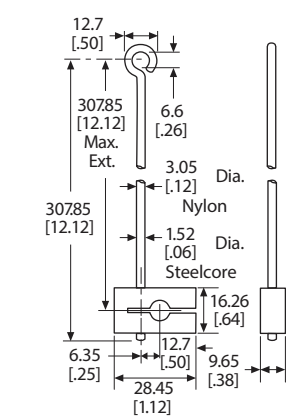
Spring rod—E50KL556



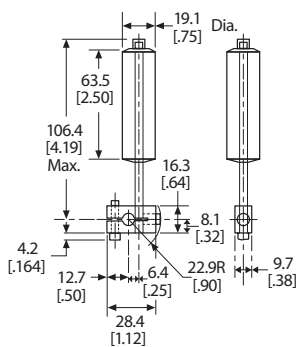
Spring rod—E50KL421



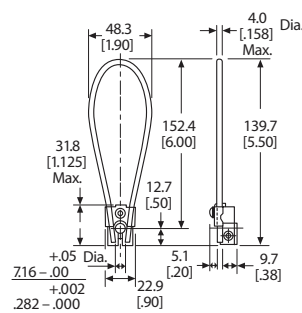
Adjustable wire



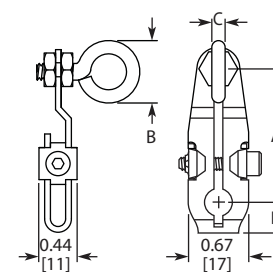
Adjustable wide roller lever



Nylatron loop—E50KL142



Eye bolt



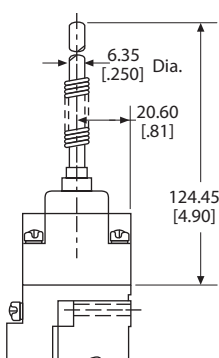
Notes

- ¹ Applies when lever is extended to the maximum dimension.
- ² Length from the operating shaft axis to tip.

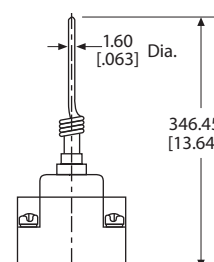
Catalog Number	A Rod Length ²	B Rod Diameter	C Rod Width	D
E50KL33	38.1 [1.50]	4.8 [0.1875] Loop ID: 9.5 [0.375]	13.1 [0.52]	8.6 [0.34]

Wobble Type Operators

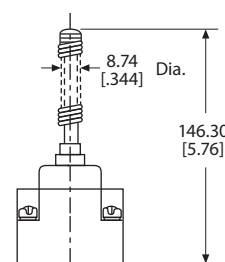
Nylon Rod



Stainless Steel Rod



Coil Spring



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



Roller Lever



Top Push



Top Push Roller
- E49M11CP1



Rod Lever



Adjustable
Roller Lever



Wobble



Cat Whisker

Operating head type	Specifications			Force to operate contacts (maximum) (lb)	Minimum return force (lb)	Item no. Assembled units (Switch Body & Head), 1N.O./1N.C. Contacts
	Travel to operate contacts	Travel to reset contacts	Total travel			
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

Operating head type	Specifications					Item no.
	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)

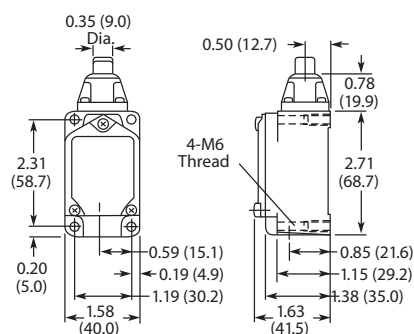


Wobble Stick (Whisker)

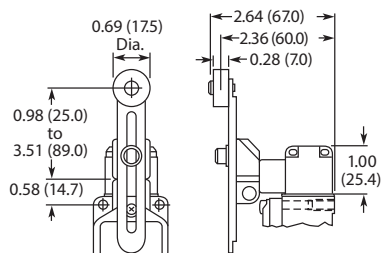
Limit switches

Dimensions

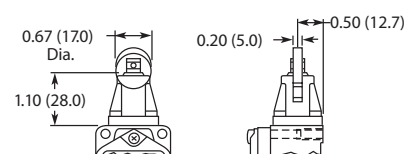
Switch Body with E49M11BP1



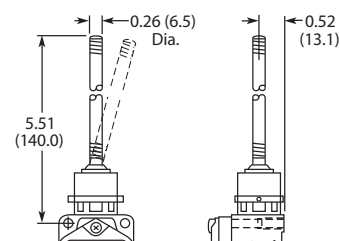
E49M11UP1



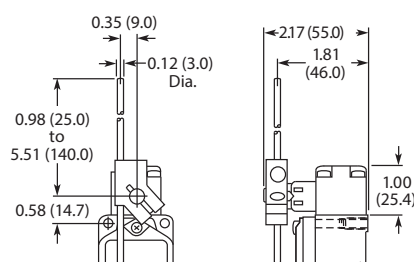
E49M11CP1/E49M11CP2



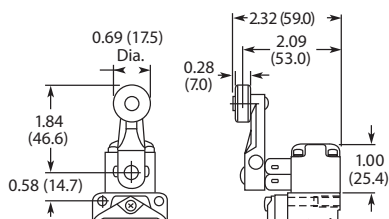
E49M11VP1



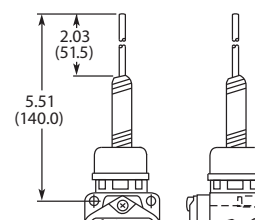
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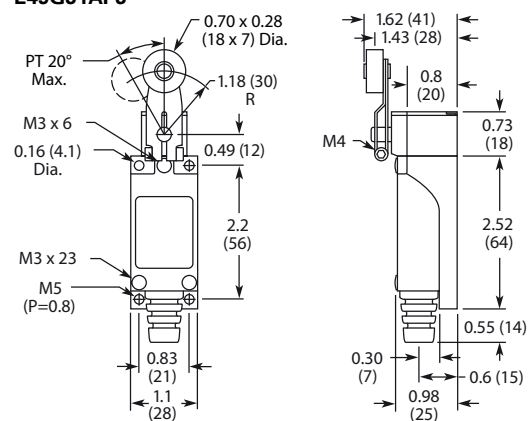
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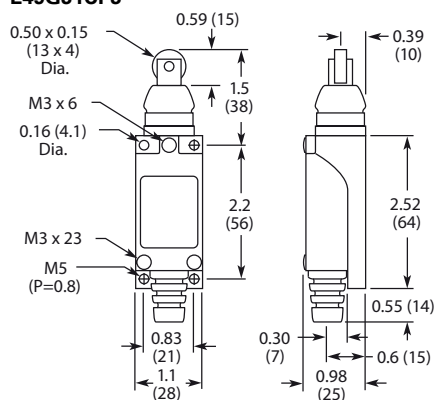
E49M11XM1



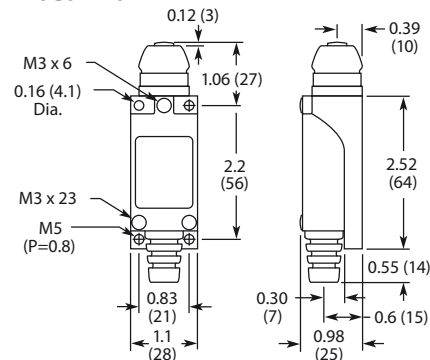
E49G31AP3



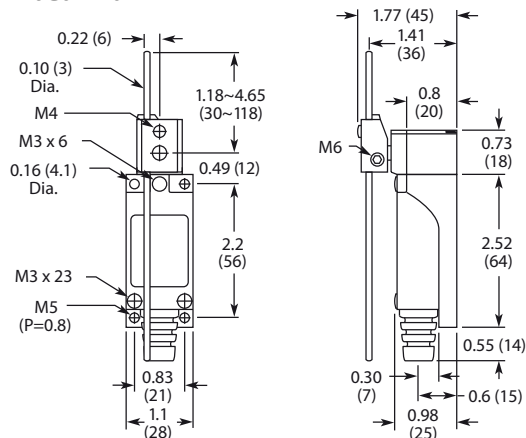
E49G31CP3



E49G31BP3



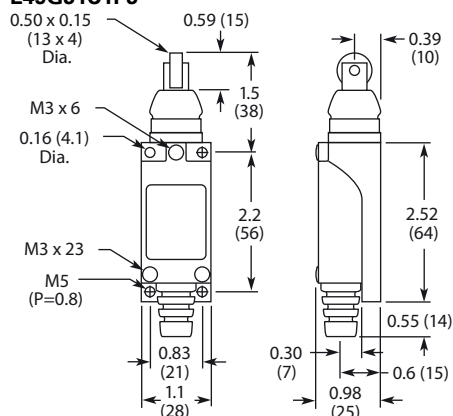
E49G31DP3



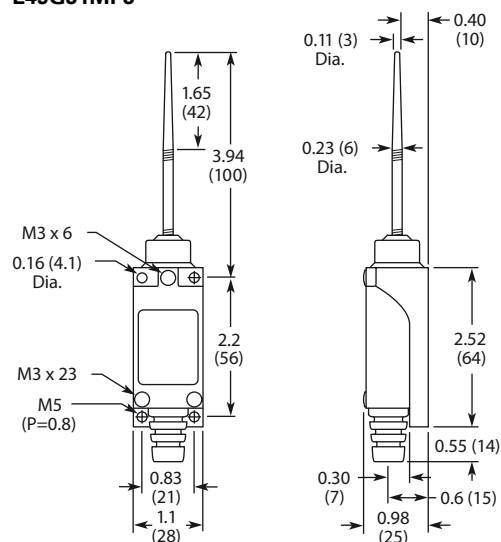
Limit switches

Dimensions

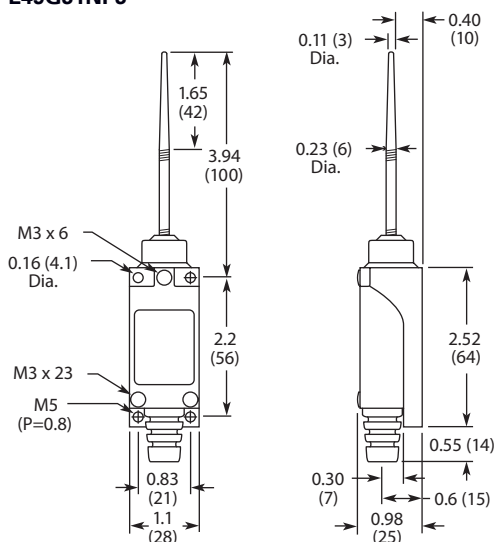
E49G31C1P3



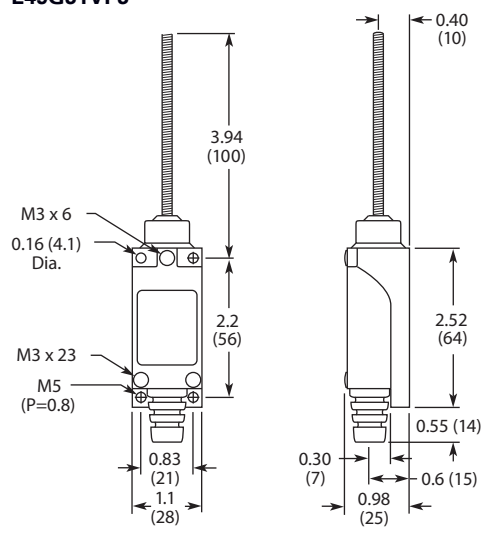
E49G31MP3



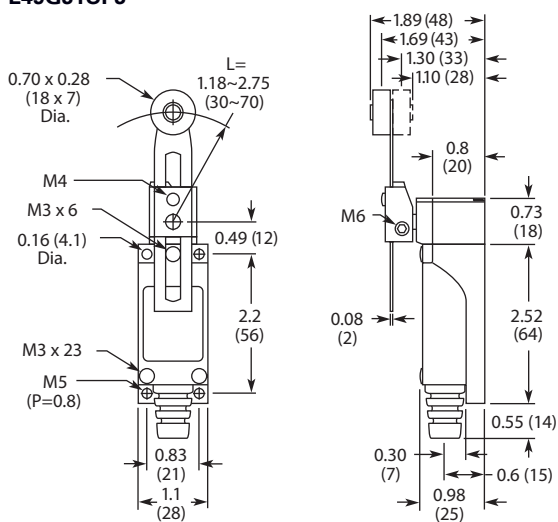
E49G31NP3



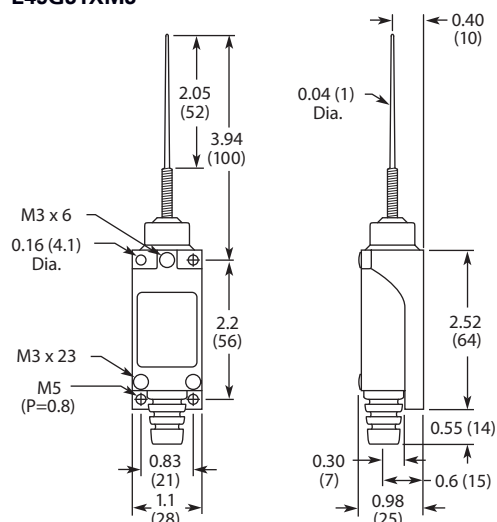
E49G31VP3



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 ☺

☺☺ 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)	Shielded	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)	Unshielded	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)	Shielded	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)	Unshielded	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

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	—
	15 mm (extended range)		NPN	4-pin micro DC connector	E57-30GS10-GDB ☺	E57-30GS10-G1DB ☺
				2-meter cable	E57-30GE15-C	E57-30GE15-C1
			PNP	4-pin micro DC connector	E57-30GE15-CDB ☺	E57-30GE15-C1DB ☺
				2-meter cable	E57-30GE15-G	E57-30GE15-G1
	15 mm	Unshielded	NPN	4-pin micro DC connector	E57-30GE15-GDB ☺	E57-30GE15-G1DB ☺
				2-meter cable	E57-30GU15-C	E57-30GU15-C1
			PNP	4-pin micro DC connector	E57-30GU15-CDB ☺	E57-30GU15-C1DB ☺
				2-meter cable	E57-30GU15-G	E57-30GU15-G1
	29 mm (extended range)		NPN	4-pin micro DC connector	E57-30GU15-GDB ☺	E57-30GU15-G1DB ☺
				2-meter cable	E57-30GE29-C	E57-30GE29-C1
			PNP	4-pin micro DC connector	E57-30GE29-CDB ☺	E57-30GE29-C1DB ☺
				2-meter cable	E57-30GE29-G	E57-30GE29-G1
		PNP	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)	 1-Green 2-Red/Black 3-Red/White	CSAS3F3CY2202	CSAS3F3RY2202
DC	4-pin, 3-wire	22 AWG	6.0 ft (2m)	 1-Brown 2-No Wire 3-Blue 4-Black	CSDS4A3CY2202	CSDS4A3RY2202
Nano-style, straight female						
DC	3-pin	24 AWG	6.0 ft (2m)	 1-Brown 3-Blue 4-Black	CSNS3A3CY2402	CSNS3A3RY2402



Micro-style

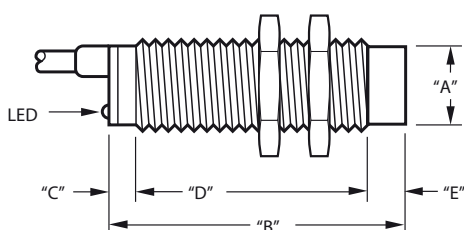


Nano-style

Dimensions

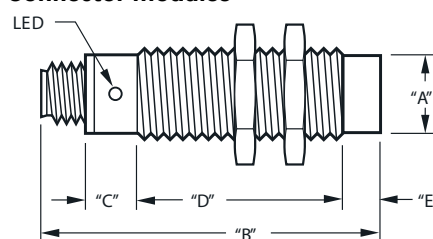
Two-wire sensors

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	10–30 Vdc	M30x1.5	91	20	45	15
E57-12GS02-DDB		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

Power control

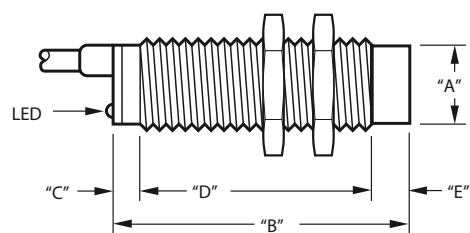
Automation

Global proximity sensors

Dimensions

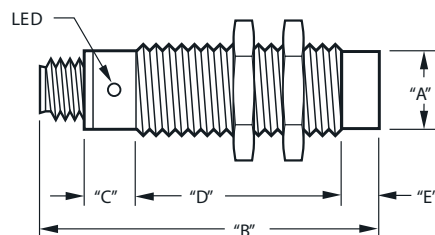
Three-wire sensors

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	CSNS4A4CY2402
			16.4 ft (5m)	2-White	CSNS4A4CY2405
			32.8 ft (10m)	3-Blue 4-Black	CSNS4A4CY2410
Nano-connector cable, right angle female					
DC	4-pin, 4-wire	24 AWG	6.0 ft (2m)	1-Brown	CSNR4A4CY2402
			16.4 ft (5m)	2-White	CSNR4A4CY2405
			32.8 ft (10m)	3-Blue 4-Black	CSNR4A4CY2410

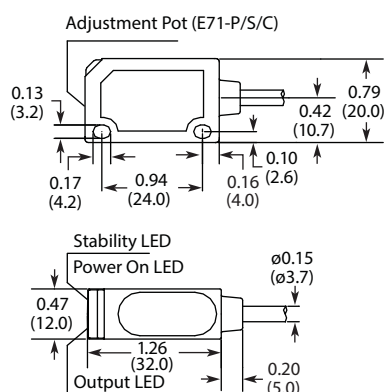
Accessories

Description	Item no.
Mounting bracket	
L-shaped mounting bracket for NanoView sensors	E71-MTB1

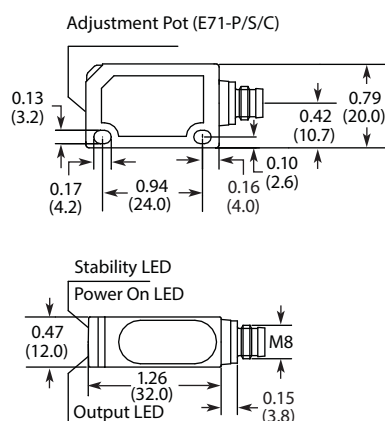


Dimensions

Cable Models

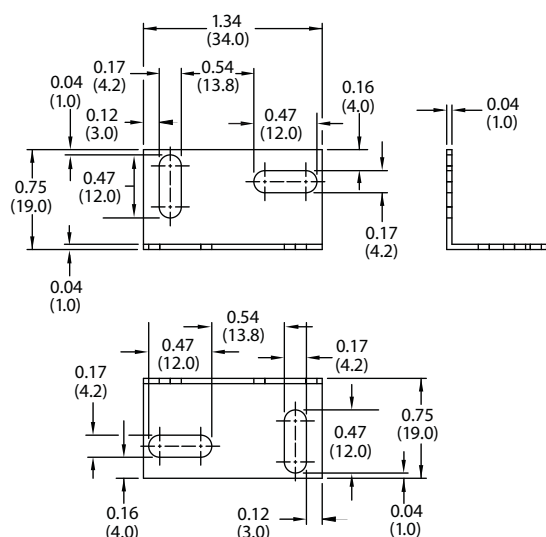


Nano-Connector Models



Accessories

E71-MTB1—Mounting Bracket





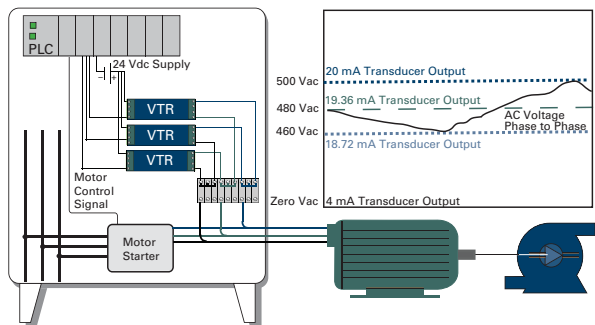
VoltageWatch EVT range

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

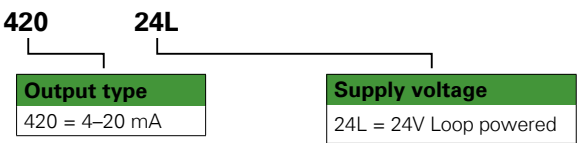
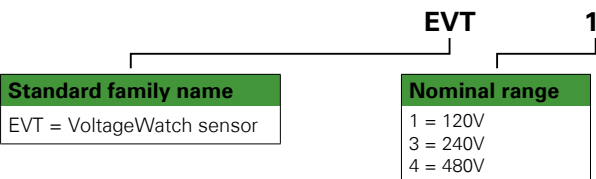


Application description
true RMS voltage monitoring

- 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



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.



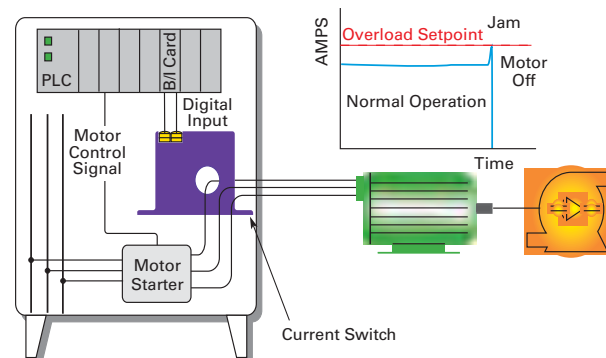
Features

- 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 flexibility 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
		Normally closed	Fixed 5.5A setpoint no LED	ECSNOFSCY1
			Adjustable 1–150A setpoint with LED	ECSNCASC
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



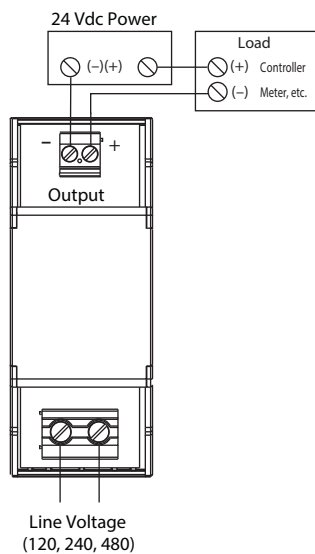
Power control

Automation

VoltageWatch EVT range

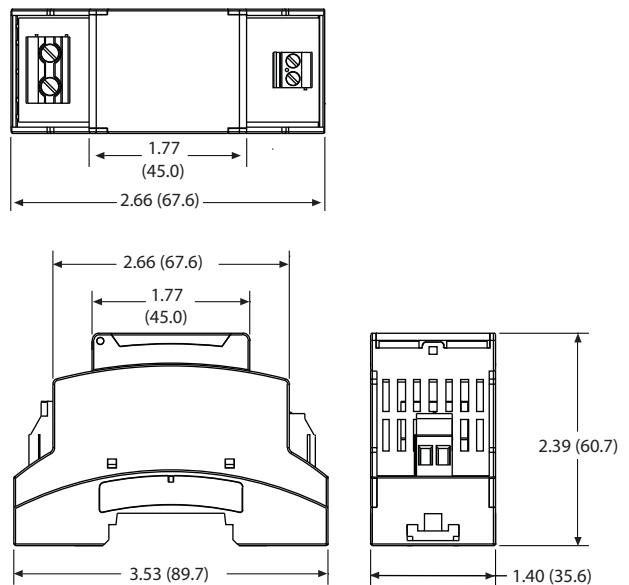
Wiring diagram

VoltageWatch EVT



Dimensions (approximate dimensions in inches (mm))

Complete unit

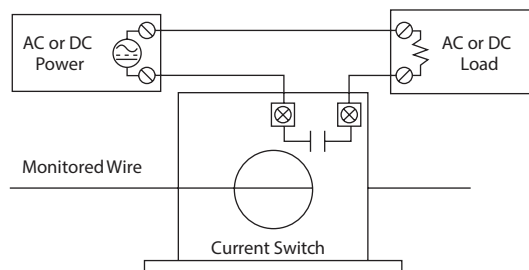


ECS range CurrentWatch current switches

Wiring diagram

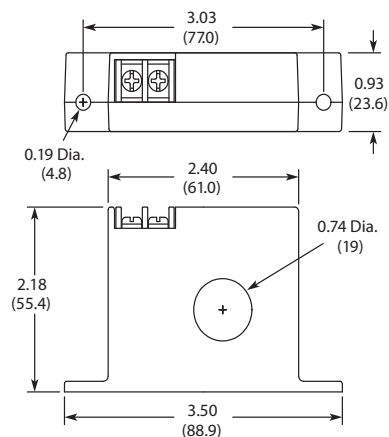
ECS CurrentWatch current switches

Normally open (NO) models shown

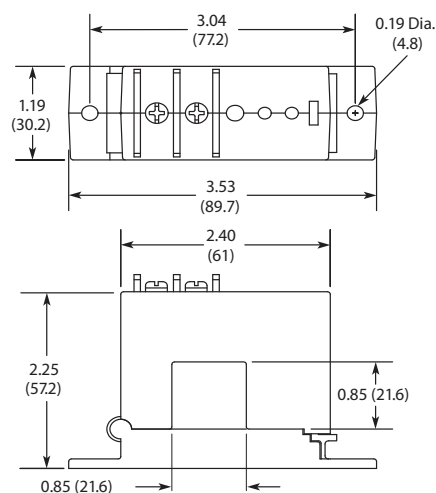


Dimensions (approximate dimensions in inches (mm))

Solid-core housing



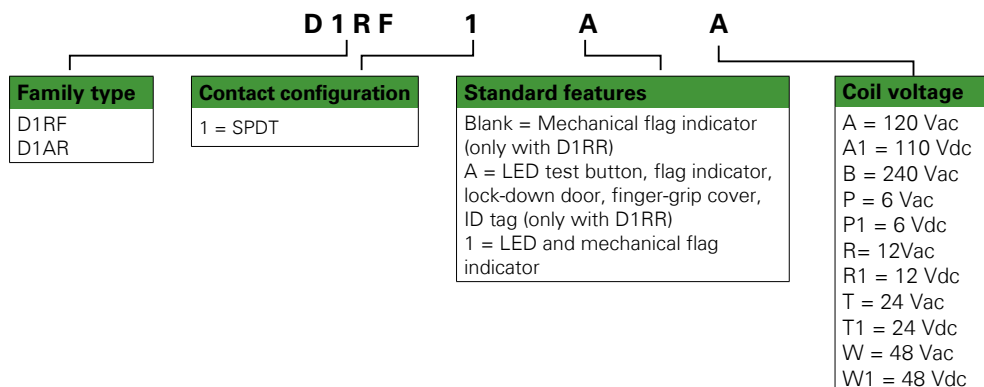
Split core housing



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



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	Coil voltage	
D4PR	1 = SPDT 2 = DPDT	Blank = Plain cover 1 = Indicating light	A = 120Vac A1 = 110Vdc B = 240Vac P = 6Vac P1 = 6Vdc	R = 12Vac R1 = 12Vdc T = 24Vac T1 = 24Vdc 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.	Description	Item no.
XR Relay, 1P, 6A, 12VDC, screw conn	XRU1D12	XR Relay, 1P, 6A, 12VDC, spring-cage	XRP1D12
XR Relay, 1P, 6A, 120VAC/110VDC, screw conn	XRU1D120U	XR Relay, 1P, 6A, 120VAC/110VDC, spring-cage	XRP1D120U
XR Relay, 1P, 6A, 230VAC/220VDC, screw conn	XRU1D230U	XR Relay, 1P, 6A, 230VAC/220VDC, spring-cage	XRP1D230U
XR Relay, 1P, 6A, 24VDC, screw conn	XRU1D24	XR Relay, 1P, 6A, 24VDC, spring-cage	XRP1D24
XR Relay, 1P, 6A, 24VAC/DC, screw conn	XRU1D24U	XR Relay, 1P, 6A, 24VAC/DC, spring-cage	XRP1D24U
XR Relay, 2P, 6A, 12VDC, screw conn	XRU2D12	XR Relay, 2P, 6A, 230VAC/220VDC, spring-cage	XRP2D230U
XR Relay, 2P, 6A, 120VAC/110VDC, screw conn	XRU2D120U	XR Relay, 1P, 10A, 12VDC, screw conn	XRU1H12
XR Relay, 2P, 6A, 230VAC/220VDC, screw conn	XRU2D230U	XR Relay, 1P, 10A, 120VAC/110VDC, screw conn	XRU1H120U
XR Relay, 2P, 6A, 24VDC, screw conn	XRU2D24	XR Relay, 1P, 10A, 230VAC/220VDC, screw conn	XRU1H230U
XR Relay, 2P, 6A, 24VAC/DC, screw conn	XRU2D24U	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	XRAPLCEK
End Cover	XRAATPBK

EMR measuring & monitoring relays

Current, phase, sequence relays, phase imbalance monitoring



EMR4-F500-2



EMR5-A300-1-C



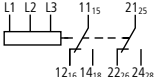
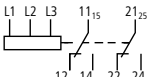
EMR4-N500-2-A



EMR5-N80-1-B

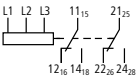
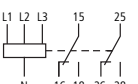
Description	Current measuring range, $I \sim I = A$	Circuit symbol	Supply voltage	Item no.
Current monitoring relays EMR4-I..., single-phase				
• Switching hysteresis adjustable from 3 - 30 %	3 - 30 mA		24 - 240 V AC, 50/60 Hz	EMR4-I1-2-A
• Response delay 0.1 - 30 s	10 - 100 mA		24 - 240 V DC	
• Monitoring of one upper or lower limit	0.1 - 1 A		24 - 240 V AC, 50/60 Hz	EMR4-I15-2-A
• Extension of the measurement range possible with current transformers	0.3 - 1.5 A		24 - 240 V DC	
	1 - 5 A		24 - 240 V AC, 50/60 Hz	EMR4-I15-2-B
	3 - 15 A		24 - 240 V DC	
	0.3 - 1.5 A		24 - 240 V AC, 50/60 Hz	
	1 - 5 A		24 - 240 V DC	
	3 - 15 A		24 - 240 V DC	

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 ($< 0.6 \times U_e$)	200 - 500 V AC, 50/60 Hz		200 - 500 V AC, 50/60 Hz	EMR4-F500-2
• Supply voltage connection = monitored voltage				

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

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 250 Ω - 500 kΩ		24 - 240 V AC, 50/60 Hz 24 - 240 V DC 220 - 240 V AC, 50/60 Hz	EMR4-N500-2-A 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	160 - 300 V AC, 50/60 Hz	U _{max} 220 - 300 V AC U _{min} 160 - 230 V AC		160 - 300 V AC, 50/60 Hz	22.5	EMR5-AW300-1-C
Three-phase monitoring	300 - 500 V AC, 50/60 Hz	U _{max} 420 - 500 V AC U _{min} 300 - 380 V AC		300 - 500 V AC, 50/60 Hz	22.5	EMR5-AW500-1-D
Phase sequence						
Phase failure						
Overvoltage						
Undervoltage	350 - 580 V AC, 50/60 Hz	U _{max} 480 - 580 V AC U _{min} 350 - 460 V AC		350 - 580 V AC, 50/60 Hz	45	EMR5-AWM580-2
Asymmetry						
Adjustable threshold values for overvoltage/undervoltage and imbalance	450 - 720 V AC; 50/60 Hz	U _{max} 600 - 720 V AC U _{min} 450 - 570 V AC		350 - 720 V AC, 50/60 Hz	45	EMR5-AWM720-2
On-/Off-delay: None = 0 or adjustable between 0.1 - 30 s	530 - 820 V AC; 50/60 Hz	U _{max} 690 - 820 V AC U _{min} 530 - 660 V AC		530 - 820 V AC, 50/60 Hz	45	EMR5-AWM820-2
Power supply from measuring circuit	90 - 170 V AC, 50/60 Hz	U _{max} 120 - 170 V AC U _{min} 90 - 130 V AC		90 - 170 V AC, 50/60/400 Hz	22.5	EMR5-AWN170-1-E
Three-phase monitoring						
Phase sequence						
Phase failure						
Overvoltage	180 - 280 V AC, 50/60 Hz	U _{max} 240 - 280 V AC U _{min} 180 - 220 V AC		180 - 280 V AC, 50/60/400 Hz	22.5	EMR5-AWN280-1
Undervoltage						
Asymmetry						
Neutral cable break (not EMR5-AWN500-1)	180 - 280 V AC, 50/60 Hz	U _{max} 240 - 280 V AC U _{min} 180 - 220 V AC		180 - 280 V AC, 50/60 Hz	22.5	EMR5-AWN280-1-F
Adjustable threshold values for overvoltage/undervoltage and imbalance						
On-/Off-delay: None = 0 or adjustable between 0.1 - 30 s	300 - 500 V AC, 50/60 Hz	U _{max} 420 - 500 V AC U _{min} 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

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	1 - 110 kΩ		0-400V AC 45-65 Hz	EMR5-R400-1-A
Test via local test button or remote test operation. Status display via LED (according to VDE 0413/Part 2)				
Tripping function memory				
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

Description	Width mm	Item no.
Sealable shroud EMR4-PH...	22.5	EMR4-PH22
	45	EMR4-PH45



EMR5-AWM720-2



EMR5-AWN500-1



EMR5-R400-1-A



ETR2-12



ETR2-44



ETR2-11-D



ETR4-11-A



ETR4-70-A

Timing relays - Electronic ETR2

Description	Rated operational current AC-11		Conventional thermal current I _{th} A	Time range	Voltage range	Item no.
	230 V I _e A	400 V I _e A				
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			ETR2-69-D

Timing relays - Electronic ETR4

Description	Rated operational current AC-11		Conventional thermal current I _{th} A	Time range	Item no. 24 - 240 V AC, 50/60 Hz 24 - 240 V DC	Item no. 400 V AC, 50/60 Hz
	230 V I _e A	400 V I _e A				
Star-delta switching timing functions	3	3	6	3 - 60 s	ETR4-51-A	ETR4-51-W
On-delayed timing functions	3	3	6		ETR4-11-A	ETR4-11-W
Multifunctional 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	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	1.5 - 30 min 15 - 300 min 1.5 - 30 h 5 - 100 h	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

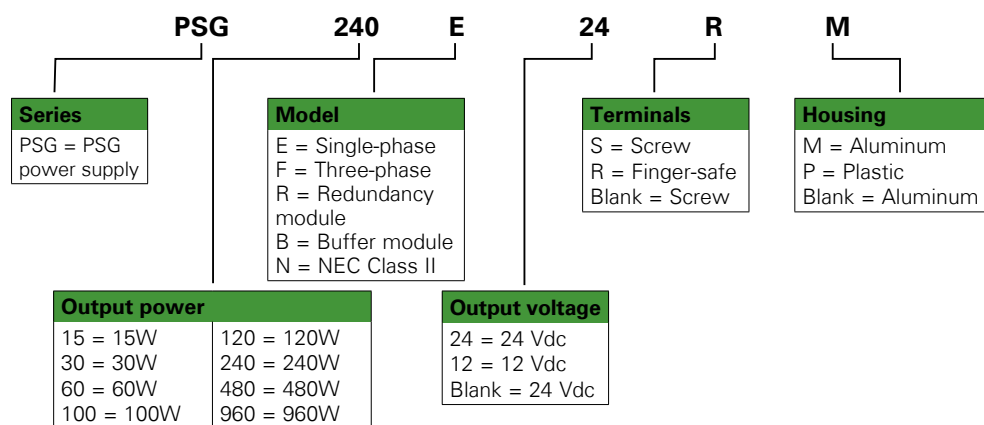
Eaton's PSG Series of power supplies is designed to be a high-performance, highquality line of products covering a majority of 12 Vdc and 24 Vdc control applications.

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

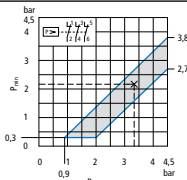
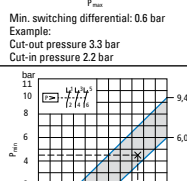
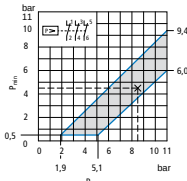
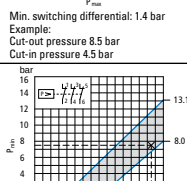
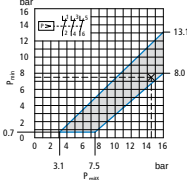
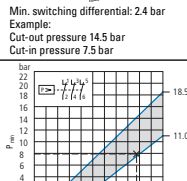
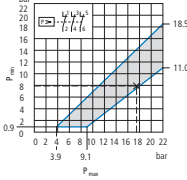
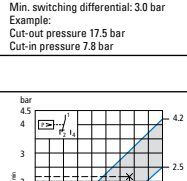
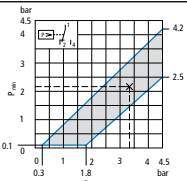
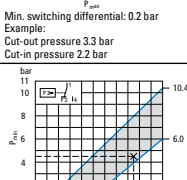
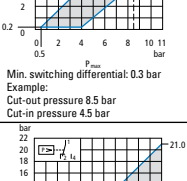
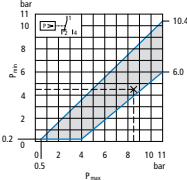
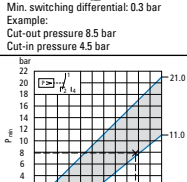
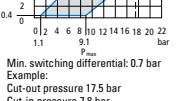
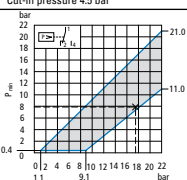
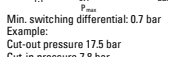


PSG120E24RM

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		7 MCSN4
			7 MCSN4-V
2	10		15 MCSN11
			15 MCSN11-V
5	15		25 MCSN16
			25 MCSN16-V
8	22		25 MCSN22
			25 MCSN22-V
Pressure switch with auxiliary contacts, IP65			
1 changeover contact			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			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			25 MCS22
1 changeover contact with gold-plated			25 MCS22-G
2 changeover contact with gold-plated contacts			25 MCS22-SOND910-G

Pressure switches

Accessories



R1/2-MCS



E8-MCS

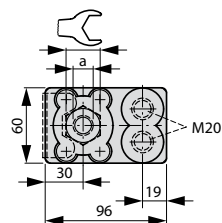


W-MCS

Description	For use with	Item no.
Pressure pipe flange	MCS with R 1/2"	+R1/2"-MCS
	MCS with R 1/2"	R1/2"-MCS
	MCSN(-V) with R 1/4"	+R1/4"-MCSN
	MCSN(-V) with R 1/4"	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(*)

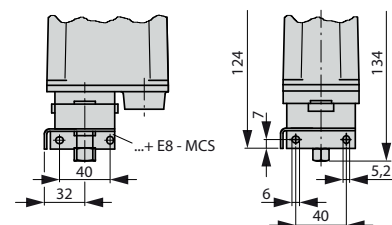
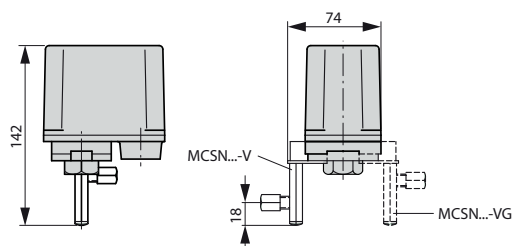
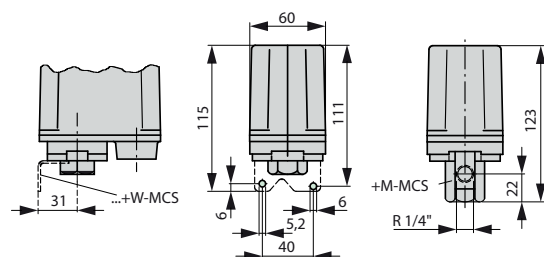
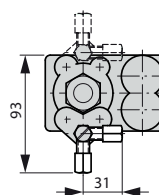
Dimensions

MCS..., MCSN...



Item no.	Pipe in-lead	a	
MSC...	2 x M20	R 1/4"	27
MCSN...	2 x M20	R 1/2"	36

MCSN...V
With relief valve



Simple, intelligent, pluggable, versatile.



EAT•N
Powering Business Worldwide

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.

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.



EATON

Powering Business Worldwide

Test and measurement

Analogue Multimeters	pg 322
Digital Multimeters	pg 322
Voltage Testers	pg 322
Clamp Meters AC	pg 323
Clamp Meters AC/DC	pg 323
Clamp Meters DC milliamp	pg 323
Clamp Meters leakage	pg 323
Insulation Testers	pg 324
High voltage insulation testers	pg 324
Earth Testers	pg 324
Current/Leakage Loggers	pg 325
Power Meters & Power Quality Analysers	pg 325
Test Kits	pg 325
Loop Impedance Testers	pg 326
Multi Function Testers	pg 326
RCD/ELCB Testers	pg 326
Portable Appliance Testers	pg 326
Phase rotation meters	pg 327
Lux Meters	pg 327
Temperature Indicators Infrared	pg 327
Clamps & accessories	pg 327

Metering

Metering Devices	pg 329
Power Meters CVM-MINI Series	pg 330
Power Analyser - Circutor	pg 331
Energy Meters - Circutor	pg 333
Current Transformers - Circutor	pg 334
Industrial Earth leakage Protection	pg 337

Wiring accessories

Feed-Through Terminals	pg 338
Earth Terminals	pg 341
Double Deck/Duo Terminals	pg 342
Disconnect Terminals	pg 343
Fuse Terminals	pg 345
Marking Tags	pg 346
DIN Rail & Ducting	pg 347
Cable Accessories	pg 348

Enclosures

Eaton Halyester Polyester/Non Metallic Enclosures	pg 349
Small insulated enclosures CI-K series	pg 350
Totally insulated enclosures CI series	pg 351
ETA Mild Steel Enclosures	pg 354
ETA CS Enclosures	pg 358
ETA Thermal Management Products	pg 359

Rhomberg

General purpose Inductive Proximity Sensors	pg 361
General purpose Capacitive Proximity Sensors	pg 363
Monitoring Relays	pg 364
Control relays	pg 365
Timers	pg 366
Liquid Level Controllers	pg 367

Riko

Riko Float Switches	pg 368
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Power quality

Rugged, Commercial Surge Filter	pg 369
Class I - Diverters	pg 369
Class II - Diverters	pg 369
Class II, Quickmov™ Surge Diverter	pg 370
Class II, Neutral – Earth Surge Protector	pg 371
Single & Three Phase 50-80A Surge Filter	pg 371
Single Phase High Performance Surge Filter	pg 371
Single Phase DIN Rail Compact Surge Filter	pg 372
Three Phase Surge Diverter	pg 372
Three phase premium power filter	pg 372
Class III diverters & filters	pg 373
Class II solar cell surge diverters	pg 374
Power conditioners	pg 375
DC product range	pg 378
Industrial Batteries - DC power systems	pg 379
UPS single phase	pg 380
5E UPS, 1 phase	pg 380
E Series DX UPS, 1 phase	pg 381
9E UPS, 1 phase	pg 381
Premier series UPS's	pg 382
Series 3 Single Phase Input/Output UPS	pg 382
Series 5 Single Phase Input/Output UPS	pg 382
Series 9 single phase input/output UPS	pg 384
3 phase	pg 386

Kyoritsu.

over **75** years
of Japanese
reliability and quality.



EATON

Powering Business Worldwide

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.



Quality and reliability is our tradition

KYORITSU

Analogue multimeters

Model 1109S

- Mirrored scale for easy & accurate reading
- Safety designed input terminals & test leads
- Output terminal to cut off DC component

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



2200

Clamp meters AC

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



2046R

Clamp meters AC/DC

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



2500

Clamp meters DC milliamp

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

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



2434

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

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



3132A



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

Description	Item no.
Kyoritsu analogue HV insulation tester 2.5kV	
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



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

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



4105A

Ancillary products

Test and measurement



695020-00

Current/leakage loggers

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



6305-00

Power meters & power quality analysers

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: $\pm 0.3\% \text{rdg} \pm 0.2\% \text{f.s.}$
- 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

Model 6315

- Simultaneous power & power quality measurements are recorded at all channels.
- Measurement with high accuracy - $\pm 0.3\% \text{rdg}$ (energy) and $\pm 0.2\% \text{rdg}$ (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



6315-00

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

Model 6141

Electrical test kit includes:
3132A insulation tester

1009 digital multimeter
KT200 AC clamp meter



6141

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

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



4118A

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

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



696010B

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

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



5406A

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

Description	Item no.
Kyoritsu Model 6201A with Leakage current test + Earth bond test at 10A	696201A



696201A

Ancillary products

Test and measurement



8035

Phase rotation meters

Model 8035

- Non contact phase rotation testing
- The insulated crocodile clips for cables from $\varnothing 2.4$ 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



5202

Lux meters

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



5510

Temperature indicators infrared

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



698212USB

Clamps & accessories

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
Accessory	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
Accessory	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-PMAX

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



CVMk2

Power analyser - Circutor

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 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



CVM - 144 series
Size: 144mm x 144mm

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



EMS30C



MK60-LCD



CEP-96



TCP2RS-TCP



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

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

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

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

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
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
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
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
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 4



TC 5



TC 5.2



TC 6.2



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



TC 10



TC 12



P19921



M79951

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
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
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

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
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
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
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
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-23



TP-58



TP-88



TP-812



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.



RGU - 10

MIS = micro second

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	Programmable 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

Ancillary products

Wiring accessories



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



M 6



M 6

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



M 8



M 10

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.

Ancillary products

Wiring accessories

Feed-through terminals

Feed-through connection terminals
(suitable for 35mm DIN rail & 32mm G rail)



M 10

Type	240mm	
Current	453 amps - 1000V	HSK High Current Terminals (available on request).
Width / Strip Length / Screw	36mm / 38mm / M10 all.	
Cable	70mm-240mm stranded / 70mm -240mm solid	

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)



M 2.5



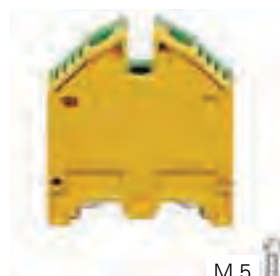
M 3

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



M 4



M 5

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

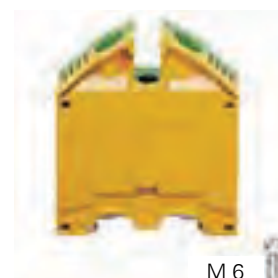
Description	Reference	10mm Item no.	Description	Reference	16mm Item no.
10mm Earth terminal	1213.2	SL1035	16mm Earth terminal	1197.2	SL1635

Earth terminals

Through-type earth terminals (yellow/green)
(suitable for 35mm DIN rail)

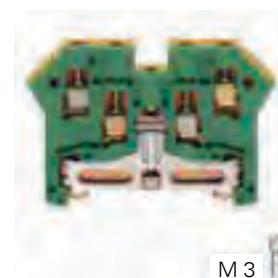
Type	35mm
Width / Strip Length / Screw	16mm / 20mm / M6
Cable	2.5mm-35mm stranded / 2.5mm-50mm solid

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.

Ancillary products

Wiring accessories



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.

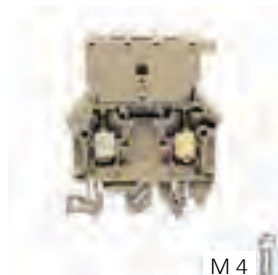
Type	4mm with RH & LH test sockets
Current	10 / 15 amps - 300 / 600V
Width / Strip Length	6mm / 8mm
Cable	0.2mm-4mm stranded / 0.2mm-4mm solid

Description	Reference	4mm Item no.
4mm terminal beige	1395.2	TRK1.5STBDSPA



Ancillary products

Wiring accessories



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	APS11PA	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.

Ancillary products

Wiring accessories



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

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

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

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

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

Ancillary products

Enclosures



Eaton halylester polyester/non metallic enclosures

Polyester enclosures, halylester - polyester enclosures

Durability & quality you can trust. Halylester 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

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

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

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

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

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

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

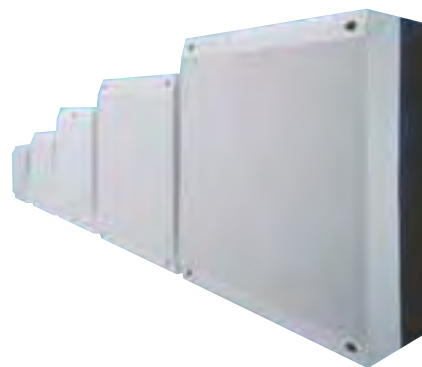
Locking accessories & valves

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



K-CI-K3

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 mm ²	K10/1
	63 A, flexible 6 – 16 mm ²	K25/1
	100 A, flexible 10 – 35 mm ²	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



K10/1



V-M20

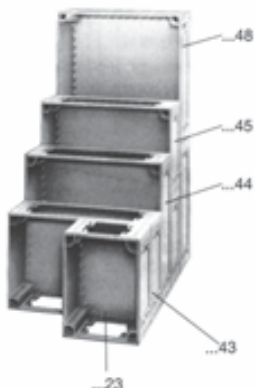
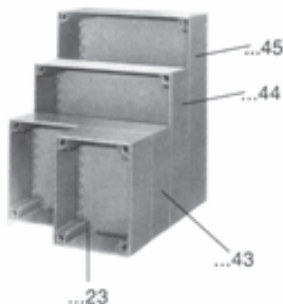
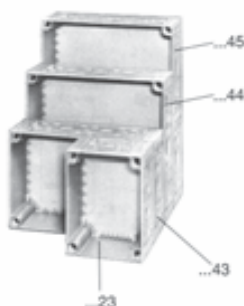
Totally insulated enclosures CI range

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		D125-CI43
150	U-CI43	D150-CI43
200		D200-CI43
125		D125-CI44
150	U-CI44	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	CL2
	Useful length 207 mm for enclosure dimension 250 mm	CL3
	Useful length 332 mm for enclosure dimension 375 mm	CL4
Mounting rails 15 mm high, pack of 10 rails	Useful length 145 mm for enclosure dimension 187.5 mm	CL2-15
	Useful length 207 mm for enclosure dimension 250 mm	CL3-15
	Useful length 332 mm for enclosure dimension 375 mm	CL4-15
Spacers	To raise by 25 mm, pack of 25	HS25-CI
	To raise by 50 mm, pack of 25	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

Ancillary products

Enclosures



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			
	187.5	10	BS-2-CI
To connect enclosures to one another, wedge-lock fasteners included	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			
	187.5	20	D2-CI
To seal faces between enclosures	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			
	375	10	FL4-X
Captive, sponge-rubber gasket. Cable entry drill as required	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

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

Please call Eaton for sizes not listed.

Ancillary products

Enclosures



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 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 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	OCDST140051
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[Ⓢ]
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[Ⓢ]
N/A	CL Nylon sealing Gasket	STCL00-GASKET[Ⓢ]

[Ⓢ] These items are supplied as one combined item.

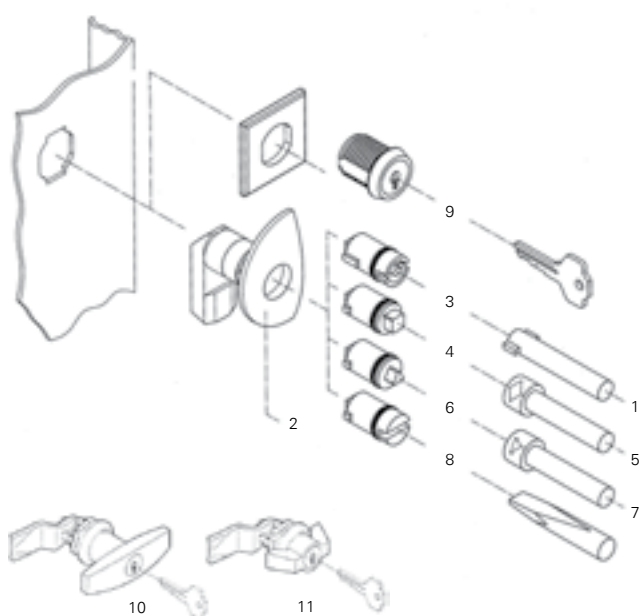
[Ⓢ]One of each of these items is required when ordering items STCL001 + STCL003.

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, rails can be removed after installation and kept for future 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

Rhombert inductive prox NAMUR 2 wire

- 2 Wire (Blue Cable)
- Designed to DIN 19234
- Interfaces with Rhombert 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 rhombert 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

Rhombert proximity switches - capacitive

- Capacitive (most materials) sensing
- Adjustable sensitivity
- 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

Rhombert 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 green 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

Rhombert 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.

Rhombert 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.

Rhombert 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

Rhombert 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.



Rhombert 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



Rhombert 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.



Rhombert 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

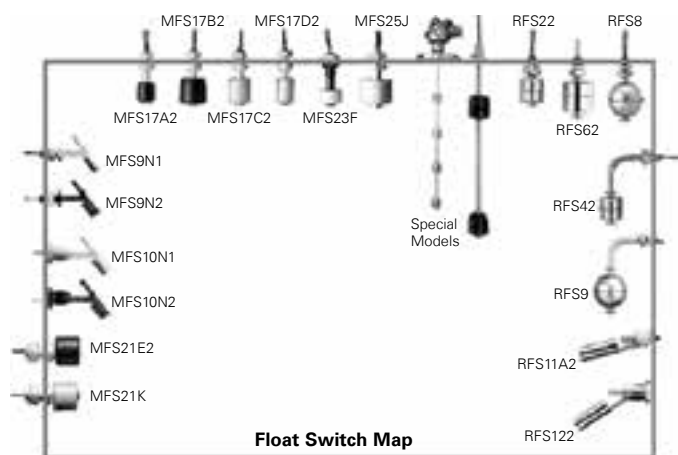
Description	Item no.
Level relay for resistive sensors single point control plug in	SC100/**ACS
Level relay single pt high / low C/W drain function 1 C/O	AC130/**S
Level relay single pt high / low C/W drain function 2 C/O	AC130/**D
Level relay single pt high / low C/W drain function 1 C/O plug in	SC130/**S
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



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)	I _{max}	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

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.

Applications

- Direct strike Class I high risk point of entry

Technical specifications

Description	SPDSG50-300	SPDSG50-255NPE
Nominal voltage U _n	230vac	230vac
Max continuous voltage U _c AC/DC	300vac	255vac
Nominal discharge current (10/350us, kA) per line. I _{imp}	50	50
Max discharge current (8/20us, kA) Per line. I _{max} .	140	140
Voltage protection level (10/350us) I _{imp}	<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: 25mm ² , Alarm: 1.5mm ²	Power: 25mm ² , Alarm: 1.5mm ²	Power: 16mm ² , Alarm: 1.5mm ²		
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)	I _{max}	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)	I _{max}	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)	I _{max}	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



Ancillary products

Power quality



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 U _c DC	6	15	28	60
Nominal discharge current (8/20us, kA) per line. I _{nom} .	5	5	5	5
Max discharge current (8/20us, kA) Per line. I _{max} .	10	10	10	10
Nominal current (A) IL	0.5	0.5	0.5	0.5
Voltage protection level (8/20us, V) Up	<80v	<150v	<200v	<250v
Line -Line, Line - Ground	<350v	<350v	<500v	<500v
Voltage protection level (1KV/us, V) Up	<10v	<18v	<30v	<70v
Line - Line, Line - ground	<600v	<600v	<600v	<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	I _{max} L - N	V _{pl} (let through voltage)	MCOV	Filter type	Attenuation	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% ($\pm 40\%$)
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:	$\pm 3\%$ for +10%, -20% input +5%, -8% for $\pm 40\%$ 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.

① For units with nominal input/output voltage of 220 specify -44-, as in 200-44-730.

	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 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 $\pm 5\%$. 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:	$\pm 5\%$ for an input line variation of $\pm 15\%$. + 5%, -8% for $\pm 40\%$ 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

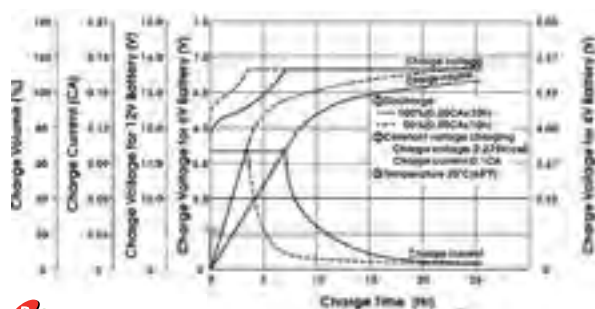
Features:

- 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 (l)	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:

- Infrastructure
- 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





Power Failure Power Sag Power Surge

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







Power Failure Power Sag Power Surge Under-voltage Over-voltage

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











Power Failure Power Sag Power Surge Under-voltage Over-voltage Line Noise Frequency Variation Switching Transient Harmonic Distortion

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 models 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-XL2UUAU
9130 1500VA / 1350W On Line Rack UPS	5 / 14	438 x 438 x 86.5, 19.5kg	PW9130G1500R-XL2UUAU
9130 2000VA / 1800W On Line Rack UPS	6 / 16	438 x 600 x 86.5, 29.0kg	PW9130G2000R-XL2UUAU
9130 3000VA / 2700W On Line Rack UPS	3 / 9	438 x 600 x 86.5, 29.5kg	PW9130G3000R-XL2UUAU

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.

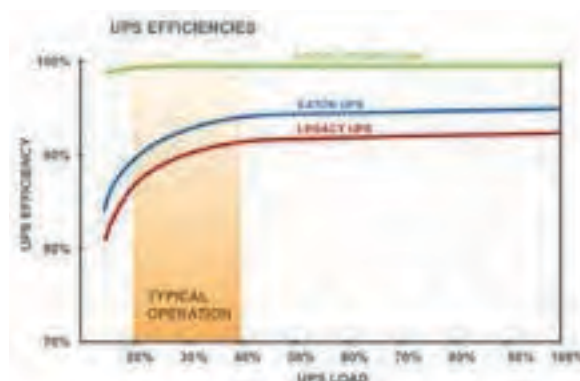


ABM® technology

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.



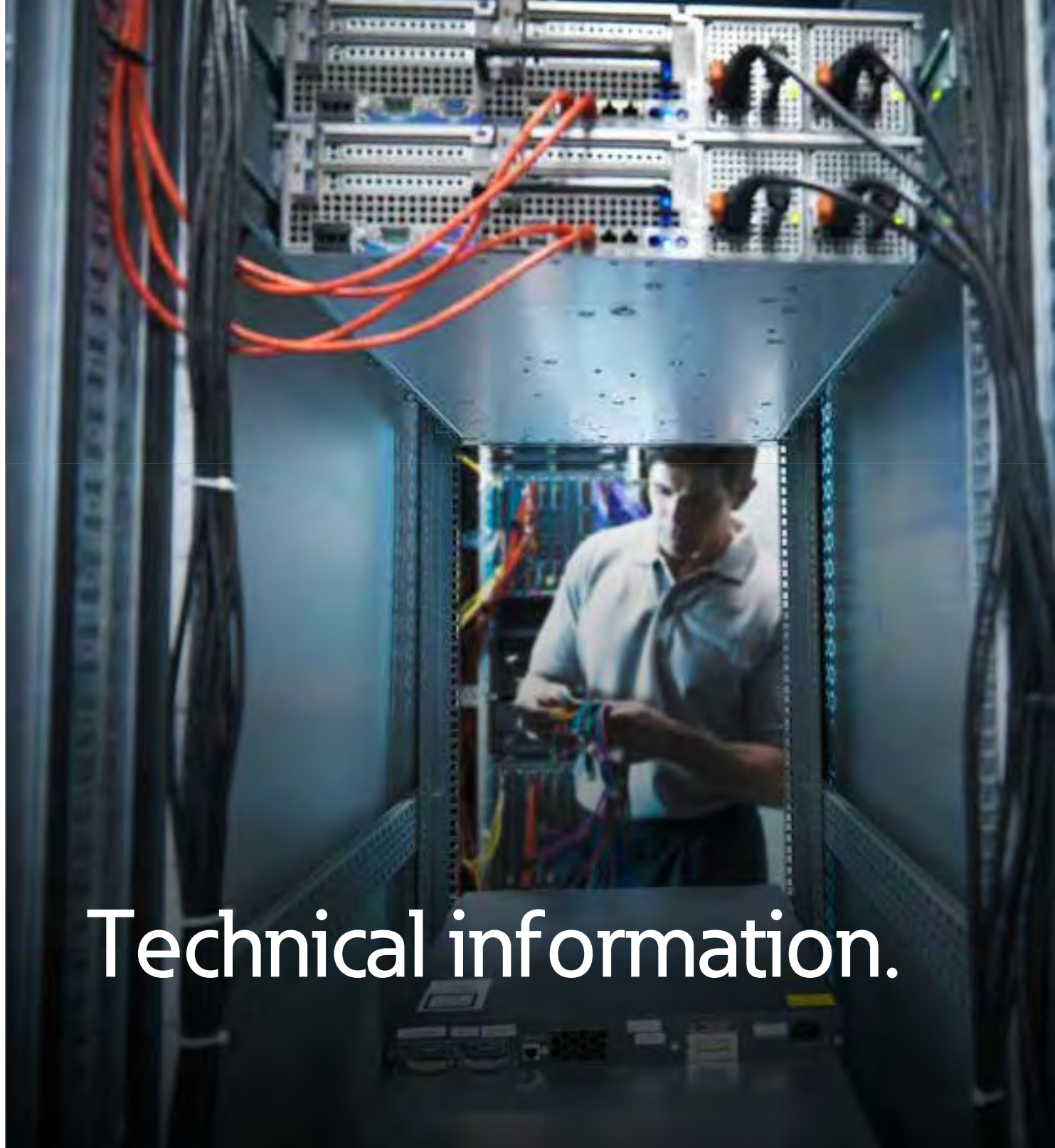
Competitive UPSs can't deliver the efficiency inherent in Eaton's broad range of power protection solutions. That's because Eaton® offers industry-leading technologies such as Energy Saver System to deliver 99% efficiency across all load ranges. Plus, with the most efficient UPSs on the market, your 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.



Powering Business Worldwide

1300 UPS UPS
www.eaton.com/powerquality
AustraliaSales@eaton.com

Switch  to Eaton.



Technical information.

Technical information

Rated currents of 3-phase motors	pg 390
Utilisation categories	pg 391
Degrees of protection, protection ratings	pg 393
Installation relays Z-R, installation contactors Z-SCH for lighting systems	pg 394
Incandescent lamps	pg 394

Fluorescent tubes, mercury arc lamps	pg 395
Metal halide lamps	pg 396
Sodium vapour lamps	pg 397
Fuse Comparison Chart	pg 398
Type "1", type "2" coordination	pg 399
Software tool "Characteristics Program"	pg 401

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 φ	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

Technical information

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, I_c = current broken

I_e = rated operational current

U = voltage

U_e = rated operational voltage

U_r = recovery voltage

t_{0.95} = time in ms to reach 95% of the steady state current

P = U_e x I_e = 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		
			$\frac{I_e}{A}$	$\frac{I}{I_e}$	$\frac{U}{U_e}$	cos φ	$\frac{I_c}{I_e}$	$\frac{U_r}{U_e}$	cos φ	$\frac{I_e}{A}$	$\frac{I}{I_e}$	$\frac{U}{U_e}$	cos φ	$\frac{I_c}{I_e}$	$\frac{I_r}{I_e}$	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 running ^②	≤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	-	-	-	-	-	-	-	-	-	1.5 ^②	1.05 ^②	1.5 ^②	1.05 ^②	-
	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	1.05 ^①	8.0	1.05 ^①	-
	AC-8A	Hermetic refrigerant compressor Motor control with manual resetting of overload releases ^⑤	As specified by the manufacturer				-	-	-	-	-	6.0	1.05 ^①	6.0	1.05 ^①	-
	AC-8B	Hermetic refrigerant compressor Motor control with automatic resetting of overload releases ^⑤	As specified by the manufacturer				-	-	-	-	-	6.0	1.05 ^①	6.0	1.05 ^①	-

Kind of current	Utilisation category	Typical applications	Verification of electrical endurance						Verification of rated making and breaking capacities							
			Make			Break			Make			Break				
			$\frac{I_e}{A}$	$\frac{I}{I_e}$	$\frac{U}{U_e}$	L/R ms	$\frac{I_c}{I_e}$	$\frac{U_r}{U_e}$	L/R ms	$\frac{I_e}{A}$	$\frac{I}{I_e}$	$\frac{U}{U_e}$	L/R ms	$\frac{I_c}{I_e}$	$\frac{I_r}{I_e}$	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	1.05②	-	1.5②	1.05②	-	-

① cos φ = 0.45 for I_e F 100 A; cos φ = 0.35 for I_e 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 _{le}	U _{Ue}	cos φ	I _c le	U _r U _e	cos φ	I _{le}	U _{Ue}	cos φ	I _c le	I _r le	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 _{le}	U _{Ue}	t0.95	I _c le	U _r U _e	t0.95	I _{le}	U _{Ue}	t0.95	I _c le	I _r le	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				
			I _{le} A	I _{le}	U _{Ue}	cos φ	I _c le	U _r U _e	cos φ	I _{le} A	I _{le}	U _{Ue}	cos φ	I _c le	I _r le	cos φ
AC	AC-20 A(B) Ⓢ	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) Ⓢ	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) Ⓢ	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) Ⓢ	Switching of motor loads or other highly inductive loads	All values	1	1	0.65	1	1	0.65	I _{le} ≤100 I _{le} ≥100	10	1.05	0.45 0.35	8	1.05	0.45 0.35

Kind of current	Utilisation category	Typical applications	Verification of electrical endurance						Verification of rated making and breaking capacities							
			Make			Break			Make			Break				
			I _{le} A	I _{le}	U _{Ue}	L/R ms	I _c le	U _r U _e	L/R ms	I _{le} A	I _{le}	U _{Ue}	L/R ms	I _c le	I _r le	cos φ
DC	DC-20 A(B) ⑤	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) ⑤	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) ⑤	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) ⑤	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

⑤ 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.

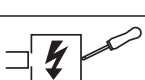
⑤ A: frequent operation, B: occasional operation.

Technical information

Degrees of protection, protection ratings

Degrees of protection given to electrical apparatus by enclosures and covers, in accordance with AS60529

Protection against the ingress of solid particles **First Numeral** IP 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	I _e AC 1	A	20	25	40	63	–
Making capacity							
Root mean square	I _{eff}	A	120	165	300	400	–
Peak value	I _{peak}	A	170	233	424	565	–
Utilisation category AC 5a							
Rated operational power 220 – 240 Vh	cos φ 0,5	kW	1,1	1,3	3,4	5,5	–
	cos φ 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 I _n). 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	–

Technical information

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.	$I = I_{eAC1} \times 0,5$
Lead-lag circuit (2 x ..)	$I = I_{eAC1} \times 0,35$
Fluorescent tubes parallelcomp.	$I = I_{peak} / 100$ (take into account compensation capacitor)
I / Ilamp = number of connectable lamps per current path	
Fluorescent tubes with electronic ballast	$I = I_{peak} / 50$
Mercury arc lamps, HD without compensation	$I = I_{eAC1} \times 0,5$
Mercury arc lamps, HD with compensation	$I = I_{peak} / 100$ (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 (HQL) without compensation	$I = I_{eAC1} \times 0,5$
Metal halide lamps (HQL) with compensation	$I = I_{peak} / 100$ (take into account compensation capacitor)
Transformer for low voltage halogen lamps	$I = I_{peak} / 50$

Lamp types	Power ,W	Current, A	Capacitor, µF	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								
Metal halide lamps without compensation e. g. HQL, 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. HQL, 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	–	–

Technical information

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
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.

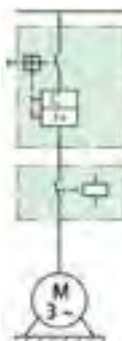
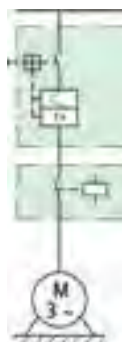
Amp rating	DIN Size	Bussmann	Eaton MEM	Lawson	GE	Siemens
6 to 100	000	NHG000B	F5GG_U000	LSPN000	NHG00-0	3NA2 8
125 to 160	00	NHG00B	F5GG_U00	LSPN00	NHG00	3NA2 8
25 to 250	1	NHG1B	F5GG_U1	LSPN1	NHG1	3NA2 1
40 to 400	2	NHG2B	F5GG_U2	LSPN2	NHG2	3NA2 2
315 to 630	3	NHG3B	F5GG_U3	LSPN3	NHG3	3NA3 3

Technical information

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, I _e , A	Rated short-circuit current, 380 – 415 V, I _k , kA	Overload releases, I _r , A	Short-circuit releases, I _{rm} , 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, I _e , A	Rated short-circuit current, 400 V/415 V, I _q , kA	Overload releases, I _r , 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(...)
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.

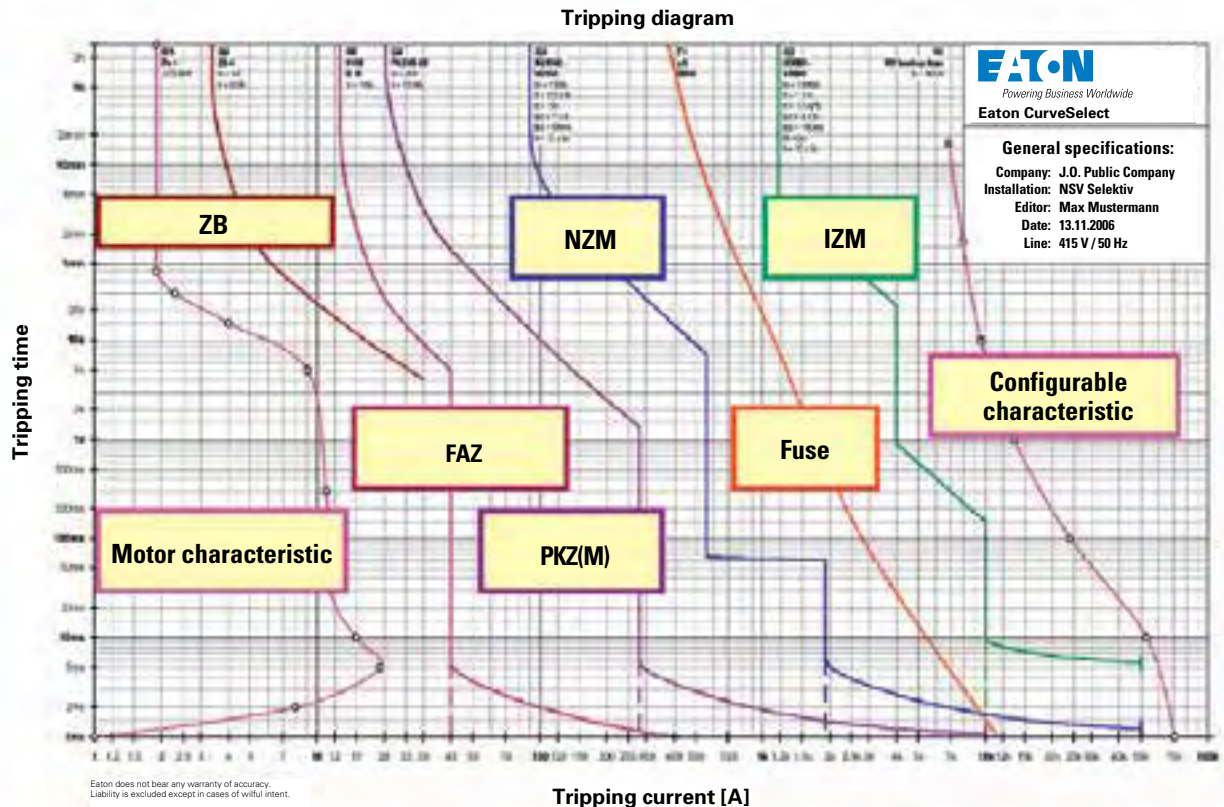


Figure 1: Representation of the tripping characteristic of different protective devices on the same time and current scale, using the example of a h.b.c. fuse characteristic (red), three NZM tripping characteristics (blue) and the tripping characteristic of an IZM (green). The device data and settings are stated at the upper end of the curves.

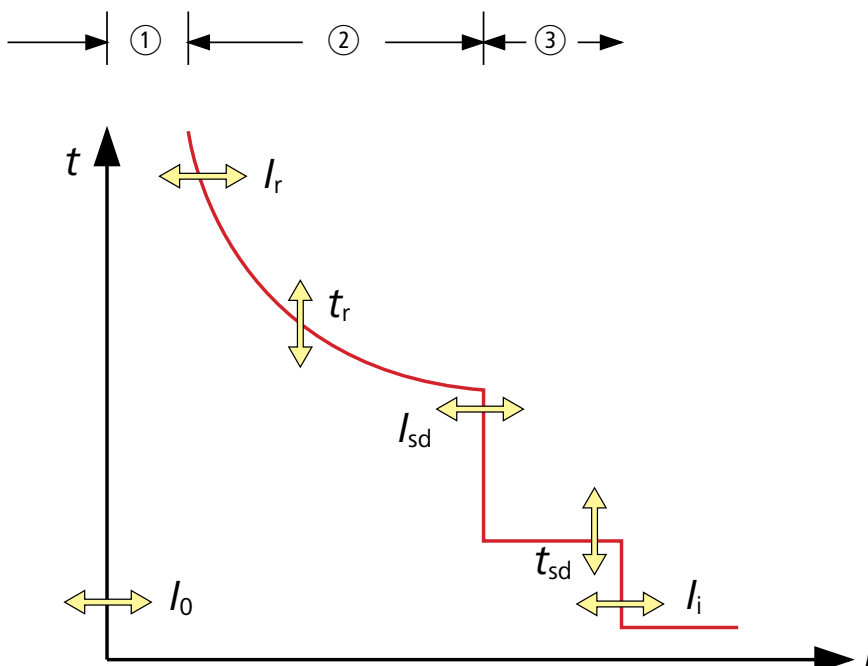


Figure 2: The figure indicates a tripping characteristic with functional ranges

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 application-specific design of the characteristic curve.

Software tool "Characteristics Program"

Setting I_r for overload release

- Response value I_i for delayed short-circuit release
- Response value I_{sd} for delayed short-circuit release
- Time delay setting to overcome current peaks t_r for overload release
- Delay time t_{sd} for short delayed short-circuit release

Up to now, it was difficult to represent individual characteristic curves and to compare them with one another. Quite often the comparison failed due to the differing scales for the representation of the coordinates of the curves for circuit-breakers 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 $\pm 20\%$ 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.

Tripping diagram

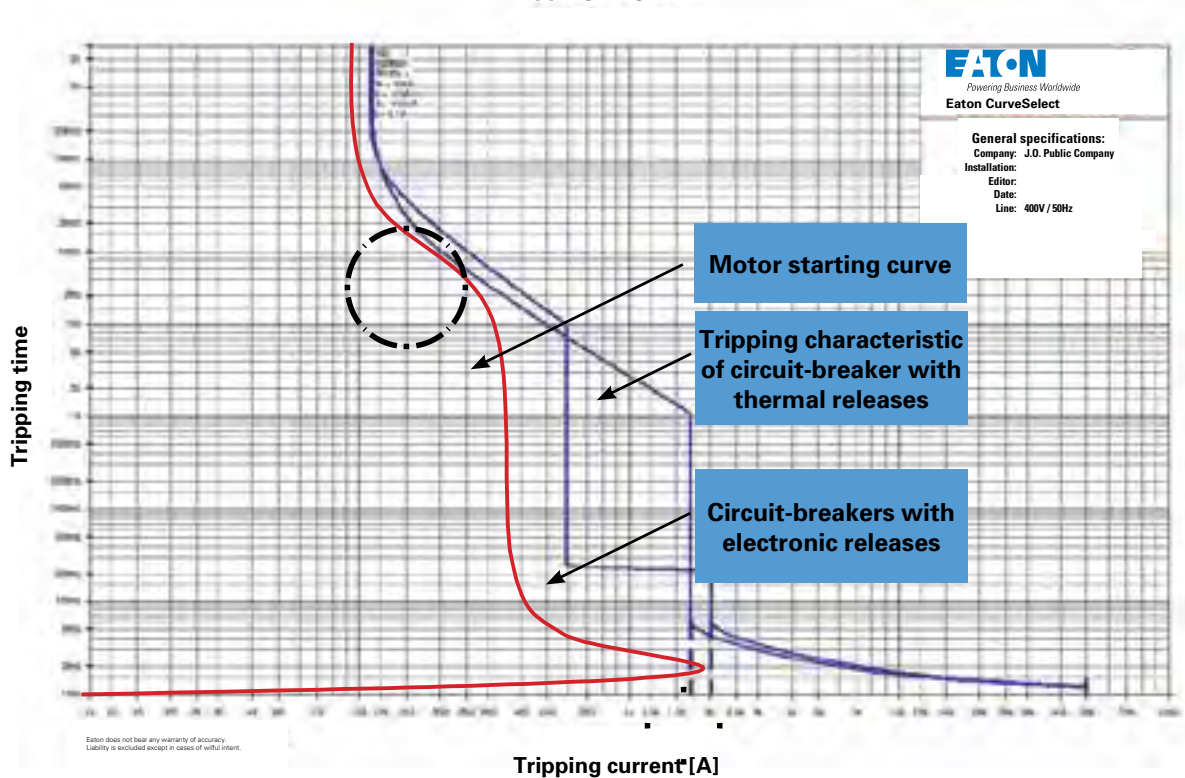


Figure 3: Circuit-breakers with electronic releases enable – by flexible setting features – a more exact matching to the typical current consumption curve of a starting three-phase motor than is possible with the switch on thermal overload releases.

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
011-9127	65	1026378	349	12OHGMA40	93	1319441	49
011-9483	65	1028915	349	12OHGMA50	93	1319448	49
011-9679	65	1028916	349	12OHGMA56.3	93	1319452	49
011-9925	65	1028917	349	12OHGMA63	93	1319460	51
011-9926	65	1028922	349	12OHGMA71	93	1319462	51
012-0067	65	1028926	349	12OHGMA80	93	1319466	51
012-0140	65	1029600	349	12OHGMA90	93	1319467	51
012-0141	65	1030	322	12OLGMA125	93	1319472	51
02DILE	196	1037917	349	12TDLEJ10	94	1319473	51
04DILE	196	1037919	349	12TDLEJ16	94	1319474	51
059-0107	65	1037922	349	12TDLEJ20	94	1319476	51
059-0108	65	1037923	349	12TDLEJ25	94	1319480	51
059-0109	65	1049-U9	128	12TDLEJ31.5	94	1319482	51
059-0110	65	1049019	349	12TDLEJ40	94	1319486	51
059-0111	65	1050242	43	12TDLEJ50	94	1319502	51
059-0112	65	1050243	50	12TDLEJ6.3	94	1319508	51
059-0113	65	1050246	43	12TDLEJ63	94	1319509	51
059-0114	65	1050247	50	12THLEJ100	94	1319511	51
059-0115	65	1050249	43	12THLEJ80	94	1319513	51
059-0116	65	1050250	50	12TKLEJ125	94	1319515	51
059-0117	65	1050252	44	12TXLEJ160	94	1319635	49
059-0118	65	1050253	44	12TXLEJ200	94	1319662	51
059-0119	65	1050255	44	12VTDNN0.5	96	1319806	42
059-0120	65	1050257	43	12VTDNN1	96	1319807	42
059-0121	65	1050257	50	1314039	44	1319814	42
059-0122	65	1064108	349	1314040	44	1319815	42
059-0123	65	10CT	76	1314203	43	1319831	42, 45, 50
059-0124	65	10D16Q	72	1314204	43	1319833	42, 50
059-0125	65	10D16R	72	1314230	49	1319851	42
059-0140	65	10D16	71	1314300	49	1319853	42
059-0141	65	10D27Q	72	1314301	49	1319870	42
059-0142	65	10D27R	72	1314314	44	1319871	42
059-0143	65	10D27	71	1314322	44	1319872	42
059-0144	65	10H07-660	58	1314330	49	1319873	42
059-0145	65	10HD36	66	1314334	43	1319904	42
059-0146	65	10K08-660	58	1314336	44	1319905	42
059-0147	65	10K09-660	59	1314337	44	1319915	42
059-0148	65	10KR85	63	1314398	49	1319916	42
059-0149	65	10LCT	75	1314682	44	1319967	42
059-0150	65	10NHG000B-690	69	1314692	43	1319969	42
059-0151	65	10NHG000B	68	1314693	50	1320200	45
0CDST140051	356	10NHG01B	68	1314735	42	1320201	45
1000_U49	128	10NHM000B-690	69	1314735	49	1320202	45
1001-U12	128	10NZ01R	71	1314736	49	1320203	45
1009	322	10NZ01	71	1314830	49	1320237	49
100D125	71	1109S	322	1314884	44	1320239	49
100FEE	76	110EET	76	1318001	47	1360006	349
100FE	76	1110	322	1318005	47	1360007	349
100KR85	63	11DDILE	196	1318008	47	1360008	349
100L09-660	59	11DILE	196	1318011	45	1360009	349
100L14-660	58	120FEE	76	1318016	45	1360010	349
100LET	75	125D200	71	1318020	45	1360084	349
100LR85	63	125LET	75	1318023	45	1360085	349
100MJ25-6	62	125M09-660	59	1318027	45	1360086	349
100MJ26-6	62	125M14-660	58	1318030	45	1360087	349
100MJ30-7	63	125MJ25-6	62	1318033	45	1360088	349
100MJ31-7	63	125MJ26-6	62	1318046	46	13DILE	196
100NHG000B	68	125MJ30-7	63	1318047	46	140EET	76
100NHG00B-690	69	125MJ31-7	63	1318048	46	140FEE	76
100NHG01B	68	125N11-660	59	1318052	46	1514-1011/1	116
100NHG02B	68	125N20	57	1318268	49	1517-0488/1	110, 112, 114, 116
100NHG1B-690	69	125NHG00B	68	1318269	49	1517-0488/2	110, 112, 114, 116
100NHG2B-690	69	125NHG01B	68	1318476	49	1517-0692/1	116
100NHM00B-690	69	125NHG02B	68	1318504	47	1517-1277/1	100
100NHM1B-690	69	125NHG1B-690	69	1318506	47	1517-1281/1	100
100NZ03	71	125NHG2B-690	69	1318526	45	1517-1290/1	100
1018H	322	125NHM1B-690	69	1318533	45	1517-1299/1	100
1018S	322	125NHM2B-690	70	1318542	45	1517-2004/1	112
1024949	349	12ABCNA3.15	96	1318544	45	1517-2006/1	114
10250ED1241	167	12AKGHA125	93	1318547	45	1517-2009/1	112
10250T451	165	12BDGHA10	93	1318548	45	1517-2010/1	114
10250T461	165	12BDGHA16	93	1318685	50	1517-2013/1	110
10250T63	161	12BDGHA20	93	1318902	49	1517-2021/1	110
10250T65	161	12BDGHA25	93	1318903	49	1517-2024/1	112
10250T66	161	12BDGHA31.5	93	1319065	45	1517-2032/1	114
10250T67	161	12BDGHA40	93	1319074	45	1517-2055/1	118
10250T700M	166	12BDGHA50	93	1319084	46	1517-2082/1	110
10250T700P	166	12BDGHA6.3	93	1319095	45	1517-2129/1	100
10250T701M	166	12BFGHA100	93	1319103	45	1518-0310/2	116
10250T701P	166	12BFGHA63	93	1319113	46	1521-0031/14	107
10250T70	161	12BFGHA71	93	1319114	46	1521-0070/15	100
10250T80	161	12BFGHA80	93	1319128	47	1521-0175/1	107
10250T81	161	12BFGHA90	93	1319175	45	1521-1287/1	100
10250TA101	167	12CT	76	1319311	45, 46, 47, 50	1521-1560/1	101
10250TA102	168	12LCT	75	1319319	45, 46, 47, 50	1521-1560/2	101
10250TA12	167	120BCNA3.15	96	1319326	45, 46, 47, 50	1521-1560/3	101
10250TA15	167	12OEFMA10	93	1319331	45, 46, 47, 50	1521-1560/4	101
10250TA46	167	12OEFMA16	93	1319332	50	1521-1561/1	101
10250TA56Y	167	12OEFMA20	93	1319334	50	1521-1561/2	101
10250TA64	167	12OEFMA25	93	1319336	45, 46, 47, 50	1521-1561/3	101
10250TA7	168	12OEFMA31.5	93	1319398	50	1521-1561/4	101
10250TA95	168	12OEFMA40	93	1319409	49	1521-1935/1	129
10250TA6	167	12OEFMA50	93	1319411	49	1521-1935/2	129
10250TB63	158	12OEFMA6.3	93	1319413	49	1521-1935/3	129
10250TB63	158	12OEFMA63	93	1319415	49	1521-1942/1	129
10250TC57	161	12OHFMA100	93	1319417	49	1521-1981/**	129
10250TC58	161	12OHFMA71	93	1319418	49	1521-2869/2	129
10250TC59	161	12OHFMA80	93	1319423	49	1521-3044/1	128
10250TC61	161	12OHFMA90	93	1319425	49	1521-3096/1	128
10250TC62	161	12OHGMA100	93	1319426	49	15HD36	66
10250TC63	161	12OHGMA10	93	1319429	49	15KR85	63
10250TC64	161	12OHGMA16	93	1319432	49	160D200	71
1026375	349	12OHGMA20	93	1319435	49	160EET	76
1026376	349	12OHGMA25	93	1319438	49	160FEE	76
1026377	349	12OHGMA31.5	93	1319439	49	160LET	75

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
160LMT	75	170M3115	83	170M5108	83	170M6811D	81
160M09-660	59	170M3116	83	170M5109	83	170M6812D	81
160M114-660	58	170M3117	83	170M5110	83	170M6813D	81
160MJ25-6	62	170M3118	83	170M5111	83	170M6814D	81
160MJ26-6	62	170M3119	83	170M5112	83	170M6892D	81
160MJ30-7	63	170M3120	83	170M5113	83	170M8554D	81
160MJ31-7	63	170M3121	83	170M5114	83	170M8555D	81
160N111-660	59	170M3122	83	170M5115	83	170M8556D	81
160N20	57	170M3123	83	170M5116	83	170M8557D	81
160NHG00B	68	170M3258	84	170M5117	83	180C113G04	243
160NHG01B	68	170M3259	84	170M5118	83	180C113G16	243
160NHG02B	68	170M3260	84	170M5258	85	180C113G17	243
160NHG1B-690	69	170M3261	84	170M5259	85	180FEE	76
160NHG2B-690	69	170M3262	84	170M5260	85	180FM	76
160NHM1B-690	69	170M3263	84	170M5261	85	180LET	75
160NHM2B-690	70	170M3264	84	170M5262	85	180MT	77
16CT	76	170M3265	84	170M5263	85	1814065	43
16D16Q	72	170M3267	84	170M5264	85	1814175	43
16D16R	72	170M3268	84	170M5265	85	1814178	43
16D16	71	170M3269	84	170M5266	85	1814179	43
16D27Q	72	170M3270	84	170M5267	85	1814408	43
16D27R	72	170M3271	84	170M5268	85	1814410	43
16D27	71	170M3272	84	170M5458	86	1814411	43
16H07-660	58	170M3273	84	170M5459	86	1814413	43
16K08-660	58	170M3274	84	170M5460	86	1814442	43
16K09-660	59	170M3458	85	170M5461	86	1814444	43
16LCT	75	170M3459	85	170M5462	86	1814445	43
16NHG000B-690	69	170M3460	85	170M5463	86	1814447	43
16NHG000B	68	170M3461	85	170M5464	86	1814590	43
16NHG01B	68	170M3462	85	170M5465	86	1814592	43
16NHM000B-690	69	170M3463	85	170M5466	86	1814595	43
16NZ01R	71	170M3464	85	170M5467	86	1814597	43
16NZ01	71	170M3465	85	170M5468	86	1818002	42, 50
170H0069	86	170M3466	85	170M5808D	81	1818006	50
170H0235	86	170M3467	85	170M5809D	81	1818010	50
170H0236	86	170M3468	85	170M5810D	81	1818012	50
170H3003	86	170M3469	85	170M5811D	81	1818031	42
170H3004	86	170M3470	86	170M5812D	81	1818033	50
170H3005	86	170M3471	86	170M5813D	81	1818034	42, 43, 44, 45
170H3006	86	170M3472	86	170M5814D	81	1818036	50
170M1408	83	170M3473	86	170M5815D	81	1818037	45, 46, 47
170M1409	83	170M3808D	81	170M5816D	81	1818040	50
170M1410	83	170M3809D	81	170M5817D	81	1818043	50
170M1411	83	170M3810D	81	170M5881	82	1818051	50
170M1412	83	170M3811D	81	170M5882	82	1818052	45, 46, 47
170M1413	83	170M3812D	81	170M5883	82	1818055	50
170M1414	83	170M3813D	81	170M5884	82	1818057	50
170M1415	83	170M3814D	81	170M5885	82	1818058	43, 44
170M1416	83	170M3815D	81	170M5886	82	1818061	50
170M1417	83	170M3816D	81	170M5887	82	1818063	50
170M1418	83	170M3817D	81	170M5888	82	1818064	43
170M1419	83	170M3818D	81	170M5889	82	1818067	50
170M1420	83	170M3819D	81	170M6080	82	1818069	43, 44, 45, 46, 47
170M1421	83	170M4108	83	170M6081	82	1818070	50
170M1422	83	170M4109	83	170M6082	82	1818072	42, 44
170M1558D	81	170M4110	83	170M6083	82	1818075	44
170M1559D	81	170M4111	83	170M6084	82	1818077	44
170M1560D	81	170M4112	83	170M6085	82	1818096	50
170M1561D	81	170M4113	83	170M6086	82	1818103	50
170M1562D	81	170M4114	83	170M6087	82	1818104	50
170M1563D	81	170M4115	83	170M6108	84	1818105	50
170M1564D	81	170M4116	83	170M6109	84	1818106	50
170M1565D	81	170M4117	83	170M6110	84	1818111	50
170M1566D	81	170M4118	83	170M6111	84	1818115	44
170M1567D	81	170M4119	83	170M6112	84	1860059	349
170M1568D	81	170M4176	82	170M6113	84	1860060	349
170M1569D	81	170M4177	82	170M6114	84	1860061	349
170M1570D	81	170M4178	82	170M6115	84	1860062	349
170M1571D	81	170M4179	82	170M6116	84	1860063	349
170M1572D	81	170M4180	82	170M6117	84	1860090	349
170M2670	83	170M4181	82	170M6118	84	1860091	349
170M2671	83	170M4182	82	170M6119	84	1860092	349
170M2691	82	170M4183	82	170M6120	84	1860093	349
170M2692	82	170M4184	82	170M6121	84	1860094	349
170M2693	82	170M4185	82	170M6258	85	1860095	349
170M2694	82	170M4186	82	170M6259	85	1860096	349
170M2695	82	170M4258	84	170M6260	85	1860097	349
170M2696	82	170M4259	84	170M6261	85	1860098	349
170M2697	82	170M4260	84	170M6262	85	1860099	349
170M2698	82	170M4261	84	170M6263	85	1860101	349
170M2699	82	170M4262	84	170M6264	85	1860102	349
170M2700	82	170M4263	84	170M6265	85	1860103	349
170M2701	82	170M4264	84	170M6266	85	1860104	349
170M2702	82	170M4265	84	170M6267	85	1860105	349
170M2758	85	170M4266	84	170M6268	85	1860414	349
170M2759	85	170M4267	84	170M6269	85	1860532	349
170M2760	85	170M4268	84	170M6270	85	1860547	349
170M2761	85	170M4269	84	170M6271	85	1860548	349
170M2762	85	170M4458	86	170M6458	86	1860549	349
170M2763	85	170M4459	86	170M6459	86	1860559	349
170M2764	85	170M4460	86	170M6460	86	1860751	349
170M2765	85	170M4461	86	170M6461	86	1860752	349
170M2766	85	170M4462	86	170M6462	86	1860753	349
170M2767	85	170M4463	86	170M6463	86	1860754	349
170M2768	85	170M4464	86	170M6464	86	1860755	349
170M2769	85	170M4465	86	170M6465	86	1860761	349
170M2770	85	170M4466	86	170M6466	86	1860762	349
170M2771	85	170M4467	86	170M6467	86	1860808	349
170M3108	83	170M4468	86	170M6468	86	1860809	349
170M3109	83	170M4469	86	170M6469	86	1860810	349
170M3110	83	170M4863D	81	170M6470	86	1860811	349
170M3111	83	170M4864D	81	170M6471	86	1860812	349
170M3112	83	170M4865D	81	170M6808D	81	1860886	349
170M3113	83	170M4866D	81	170M6809D	81	1A1873	96
170M3114	83	170M4867D	81	170M6810D	81	1HD36	66

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
2002673000	376	24ADIHA16	93	3.6WDLSJ50	95	35D33	71
20026730	376	24ADIHA20	93	3.6WDLSJ63	95	35ET	76
20026750HO	376	24ADIHA25	93	3.6WDLSJ80	95	35FE	76
20026750	376	24ADIHA3.15	93	3.6WDOH6100	95	35KC36	66
20026775	376	24ADIHA31.5	93	3.6WDOH6125	95	35LET	75
20026790	376	24ADIHA6.3	93	3.6WDOH650	95	35NZ02R	71
20026812M	376	24AFIHA40	93	3.6WDOH663	95	35NZ02	71
20026815	376	24AFIHA50	93	3.6WDOH680	95	368/186	110, 112, 114, 116
20026818	376	24AFIHA63	93	3.6WFFHO160	94	368/187	110, 112, 114, 116
2002PA	323	24AFIHA80	93	3.6WFFHO200	94	36OBGNA3.15	96
2002R	323	24AFIHA90	93	3.6WFLSJ160	95	393/1120	110
2003A	323	24OBGNA3.15	96	3.6WFLSJ200	95	373/1121	110
20046822	376	24TDMEJ10	94	3.6WFOH6160	95	373/1126	110
2007A	323	24TDMEJ16	94	3.6WFOH6200	95	373/1128	110
2009R	323	24TDMEJ20	94	3.6WJON610	95	392/1024	112
200D200	71	24TDMEJ25	94	3.6WJON616	95	393/1128	114
200FEE	76	24TDMEJ31.5	94	3.6WJON620	95	394/1246	116
200FM	76	24TDMEJ40	94	3.6WJON625	95	35550AU	382
200LMT	75	24TDMEJ50	94	3.6WJON632	95	35700AU	382
200M09-660	59	24TDMEJ6.3	94	3.6WJON640	95	3TA225FD	110
200M14-660	58	24THMEJ100	94	3.6WJON65	95	400FMM	76
200MJ25-6	62	24THMEJ63	94	3.6WKFOH0250	94	400LMMT	75
200MJ26-6	62	24THMEJ80	94	3.6WKFOH0315	94	400LMT	75
200MJ30-7	63	24TXMEJ125	94	3.6WKFOH0355	94	400MMT	77
200MJ31-7	63	24TXMEJ160	94	3.6WKFOH0400	94	400NHG03B	68
200MMT	77	2500	323	3.6WKLSJ250	95	400NHG2B	68
200MT	77	250FM	76	3.6WKLSJ315	95	400NHG3B-690	69
200N11-660	59	250LMT	75	3.6WKLSJ400	95	400NHM3B-690	70
200N20	57	250MJ25-6	62	3005A	324	400P09-660	59
200NHG02B	68	250MJ26-6	62	3007A	324	400P11-660	59
200NHG1B	68	250MJ30-7	63	3021	324	400P20	57
200NHG2B-690	69	250MJ31-7	63	3022	324	400PJ30-7	63
200NHM2B-690	70	250MMT	77	3023	324	400PJ31-7	63
2012R	322	250MT	77	30HD36	66	40DILE	196
2031	323	250N09-660	59	30KR85	63	40ET	76
2033	323	250N11-660	59	30LR85	63	40FE	76
2040	323	250N20	57	3121A	324	40K07-660	58
2046R	323	250NHG02B	68	3122A	324	40K08-660	58
2055	323	250NHG03B	68	3123A	324	40K09-660	59
2056R	323	250NHG1B	68	3124PPACK	328	40KC36	60
20CT	76	250NHG2B-690	69	3124	324	40KR85	63
20D16Q	72	250NHG3B-690	69	3125	324	40LR85	63
20D16R	72	250NHM2B-690	70	3126	324	40MJ25-6	62
20D16	71	250NHM3B-690	70	3131M	324	40MJ30-8	62
20D27Q	72	25D16Q	72	3132A	324	40MJ31-8	63
20D27R	72	25D16R	72	315FM	76	40NHG000B-690	69
20D27	71	25D16	71	315LMT	75	40NHG000B	68
20DILE	196	25D27Q	72	315MJ30-7	63	40NHG01B	68
20H07-660	58	25D27R	72	315MJ31-7	63	40NHM000B-690	69
20HD36	66	25D27	71	315MMT	77	4100004	46
20K08-660	58	25E04025	17	315MT	77	4100005	46
20K09-660	59	25ET	76	315N09-660	59	4100006	46
20KR85	63	25H07-660	58	315N11-660	59	4102003	42
20LCT	75	25HD36	66	315N20	57	4102A-H	324
20MJ25-6	62	25K08-660	58	315NHG03B	68	4102A	324
20MJ30-8	62	25K09-660	59	315NHG2B-690	69	4105A-H	324
20MJ31-8	63	25KR85	63	315NHG2B	68	4105A	324
20NHG000B-690	69	25LET	75	315NHG3B-690	69	4106A	324
20NHG000B	68	25MJ31-8	63	315NHM2B-690	70	4118A	326
20NHG01B	68	25NHG000B-690	69	315NHM3B-690	70	4140	326
20NHM000B-690	69	25NHG000B	68	3165	324	4164	97
20NZ02R	71	25NHG01B	68	3166	324	4200	324
20NZ02	71	25NHM000B-690	69	31DILE	196	4218B80G15	110
2102665000	375	25NZ02R	71	32BS	60	450FMM	76
2102671000	375	25NZ02	71	32CMLC	60	450LMT	75
2102672000	375	26050500M	377	32CML	60	450MMT	77
2102672500	375	26051000M	377	32ET	76	450R11-660	59
21BA9SL110R	162	260510kM	377	32H07-660	58	450R12-660	59
21BA9SL110V	162	260515kM	377	32K08-660	58	450R20	57
21BA9SL110W	162	26052000M	377	32K09-660	59	450RJ31-7	63
21BA9SL110Y	162	26053000M	377	32LET	75	45ET	76
21BA9SL12G	162	26055000M	377	32LSCC	60	45FE	76
21BA9SL12R	162	2608A	323	32LSC	60	45KR85	63
21BA9SL12V	162	270303	96	32MJ25-6	62	4D16Q	72
21BA9SL12VW	162	28-2225-13	162	32MJ30-8	62	4D16R	72
21BA9SL240A	162	28-2225-24	162	32MJ31-8	63	4D16	71
21BA9SL240R	162	28-2225-33	162	32NHG000B-690	69	4D27Q	72
21BA9SL240V	162	2805	323	32NHG000B	68	4D27R	72
21BA9SL240W	162	280FM	76	32NHG01B	68	4D27	71
21BA9SL24G	162	280MMT	77	32NHM000B-690	69	4H07-660	58
21BA9SL24R	162	280MT	77	32NNL	60	4HD36	66
21BA9SL24V	162	2D16Q	72	32NNSBWHITE	60	4K08-660	58
21BA9SL24W	162	2D16R	72	32NNSBS	60	4K09-660	59
21BA9SL6G	162	2D16	71	32NNSFBWHITE	60	4NZ01R	71
21BA9SL6R	162	2D27Q	72	32NNSFBS	60	4NZ01	71
21BA9SL6V	162	2D27R	72	32NNSFWHITE	60	500FMM	76
21BA9SL6W	162	2D27	71	32NNSF	60	500LMMT	75
2200	323	2H07-660	58	32NNSR	60	500MMT	77
224NHG02B	68	2HD36	66	335MT	77	500NHG3B-690	69
224NHG1B	68	2K08-660	58	350FM	76	500NHG3B	68
224NHG2B-690	69	2K09-660	59	355LMT	75	500NHM3B-690	70
224NHM2B-690	70	2NZ01R	71	355MMT	77	500R11-660	59
225FM	76	2NZ01	71	355MT	77	500R12-660	59
22DDILE	196	3.6ABCN10	96	355NHG03B	68	500R20	57
22DILE	196	3.6ABCN3.15	96	355NHG2B	68	500RJ31-7	63
2300R	323	3.6ABCN3.15	96	355NHG3B-690	69	50BP1.212	379
2412	323	3.6ABWNA3.15	96	355NHM2B-690	70	50BP106	379
2413F	323	3.6ABWNA6.3	96	355NHM3B-690	70	50BP12012	379
2431	323	3.6WDFHO100	94	355P09-660	59	50BP1212	379
2432	323	3.6WDFHO125	94	355P11-660	59	50BP126	379
2433R	323	3.6WDFHO50	94	355P20	57	50BP16012	379
2433	323	3.6WDFHO63	94	355PJ30-7	63	50BP1712	379
2434	323	3.6WDFHO80	94	355PJ31-7	63	50BP2.312	379
24ABGNA3.15	96	3.6WDLSJ100	95	35D33Q	72	50BP2012	379
24ADIHA10	93	3.6WDLSJ125	95	35D33R	72	50BP23012	379

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
50BP2612	379	63K08-660	58	7019	328	A1X5PK	118
50BP4.512	379	63K09-660	59	7066	328	A2L5LPK	118
50BP4012	379	63LET	75	710LMMT	75	A2L5RPK	118
50BP56	379	63MJ25-6	62	710S20	57	A2L6RPK	120
50BP6512	379	63MJ26-6	62	7121	328	A2X1LPK	110
50BP7.512	379	63MJ30-8	62	7122	328	A2X1RPK	110
50BP9012	379	63MJ31-8	63	7123	328	A2X2PK	112
50D33Q	72	63NHG000B	68	7129	328	A2X3PK	114
50D33R	72	63NHG00B-690	69	7133	328	A2X4PK	116
50D33	71	63NHG01B	68	7154B	328	A2X5PK	118
50FE	76	63NHG02B	68	7161A	328	A2X6RPK	120
50K07-660	58	63NHG1B-690	69	71FE	76	A3354705	96
50K08-660	58	63NHG2B-690	69	75EET	76	A3354710	96
50K09-660	59	63NHM00B-690	69	7874A09G01	243	A3354720	96
50KC36	66	63NHM1B-690	69	7874A09G04	243	A3354730	96
50KR85	63	63NZ02R	71	7874A09G05	243	A3354745	96
50LET	75	63NZ02	71	7874A09G10	243	A3X4PK	116
50LR85	63	691011	322	7874A24G01	243	A3X5LPK	118
50MJ30-8	62	691012	322	7874A24G02	243	A3X5RPK	118
50MJ31-8	63	691051	322	7874A24G03	243	A4X6RPK	120
50NHG000B	68	691052	322	7874A24G07	243	A6LES630T2	115
50NHG00B-690	69	691061	322	800LMMT	75	AA115LPK	118
50NHG01B	68	691062	322	800S20	57	AA115RPK	118
50NHG02B	68	692413R	323	800SJ28	63	AA214RPK	116
50NHG1B-690	69	693128	324	8031F	327	AA215RPK	118
50NHM00B-690	69	693131A	324	8031	327	AAL1LPK	110
50NHM1B-690	69	695020-00	325	8035	327	AAL2RPK	112
50NZ02R	71	695020-01	325	80D125	71	AAL3RPK	114
50NZ02	71	695410	326	80ET	76	AAO10	55
5104A24G04	118	696010AFUSE	328	80FE	76	AAO16	55
52-A1617	157	696010B	326	80KR85	63	AAO20	55
5202	327	696016	326	80L09-660	59	AAO25	55
5402D	326	696140	325	80L14-660	58	AAO2	55
5406A	326	696201A	326	80LET	75	AAO32M40	55
550FMM	76	697140	328	80LR85	63	AAO32M50	55
550MMT	77	698121	328	80MJ25-6	62	AAO32M63	55
5510	327	698122	328	80MJ26-6	62	AAO32	55
560R11-660	59	698123	328	80MJ30-7	62	AAO4	55
560R12-660	59	698129-01	328	80MJ31-7	63	AAO6	55
560R20	57	698129-03	328	80NHG000B	68	AA	62
560S.J31-6	63	698212USB	327	80NHG00B-690	69	AB-CI-K4/5	190
56ET	76	698309	328	80NHG01B	68	ABC-(A)	97
5E1100IUSB-AU	380	699132	328	80NHG02B	68	AC10	56
5E1500IUSB-AU	380	69AA6201004	328	80NHG1B-690	69	AC130/**D	367
5E2000IUSB-AU	380	69KT45	326	80NHG2B-690	69	AC130/**S	367
5E650IUSB-AU	380	69KT60	326	80NHM00B-690	69	AC16	56
5E850IUSB-AU	380	6CT	76	80NHM1B-690	69	AC20	56
5KR85	63	6D16Q	72	80NZ03	71	AC25	56
5S1200AU	382	6D16R	72	8112	327	AC2	56
5S1600AU	382	6D16	71	8115	327	AC32	56
5S550AU	382	6D27Q	72	8124	328	AC40	56
5S700AU	382	6D27R	72	8125	328	AC4	56
5S850AU	382	6D27	71	8126	328	AC50	56
5SC1000i	383	6E34TA6	167	8127	328	AC6	56
5SC1500i	383	6H07-660	58	8128	328	AD1/12	339
5SC500i	383	6HD36	66	8130-01	328	AD1/150	340
5SC750i	383	6K08-660	58	8130-03	328	AD1/16	340
6-A474	157	6K09-660	59	8141	328	AD1/240	341
6-A475	157	6LCT	75	8142	328	AD10	56
6000MBS1	384	6NHM000B-690	69	8143	328	AD16	56
6000MBS2	384	6NZ01R	71	8212USB-W	327	AD20	56
6009946	349	6NZ01	71	8212	327	AD25	56
6010A001	328	7.2ABCNA3.15	96	8312	328	AD2	56
6010A	326	7.2ABCNA6.3	96	841077	52	AD32	56
6011A	326	7.2ABWNA3.15	96	841078	52	AD4	56
6084846	43	7.2ABWNA6.3	96	841079	52	AD6	56
6084848	43	7.2OBCNA3.15	96	843002	52	ADQ	338, 339, 343
6093242	43	7.2OBCNA6.3	96	843003	52	AGA-(A)	97
6093244	43	7.2OBWNA3.15	96	844001	52	AGC-(A)	97
60KC36	66	7.2OBWNA6.3	96	849031	52	AGM2-01-PKZ0	215
60KR85	63	7.2VTDNN0.62	96	849032	52	AGM2-10-PKZ0	215
60LR85	63	7.2VTDNN1	96	8918	328	AGU-(A)	97
61267792	18	7.2WFMJSJ100	95	8919	328	AGW-(A)	97
6141	325	7.2WFMJSJ125	95	8923	328	AGX-(A)	97
614YAK	325	7.2WFMJSJ160	95	8926	328	AK-PKZ0	213
63-100CML	60	7.2WFMJSJ25	95	8927	328	AL-D	67
63-100LSC	60	7.2WFMJSJ31.5	95	900LMMT	75	AMG-(A)	97
63/100BS	60	7.2WFMJSJ40	95	9085A57G01	243	AMI-(A)	97
6305-00	325	7.2WFMJSJ50	95	9085A57G02	243	ANL(A)	97
6305-01	325	7.2WFMJSJ63	95	9085A57G03	243	ANN(A)	97
630FMM	76	7.2WFMJSJ80	95	90EET	76	AP-45-W	15, 125, 129
630LMMT	75	7.2WFNHO100	95	90FE	76	AP16PAB	339
630MMT	77	7.2WFNHO125	95	9E10KI	381	AP16PA	339
630NHG3B	68	7.2WFNHO160	95	9E15KI	381	AP2.5-10PAB	338, 339
630R11-660	59	7.2WFNHO25	95	9E20KI	381	AP2.5-10PAR	338, 339
630R12-660	59	7.2WFNHO31.5	95	9E6KI	381	AP2.5-10PAW	338, 339
630R20	57	7.2WFNHO40	95	A-PKZ0(110V50HZ)	216	AP2.5-10PA	338
630S.J31-6	63	7.2WFNHO50	95	A-PKZ0(240V50HZ)	216	AP2.5-10PA	338, 339
6315-00	325	7.2WFNHO63	95	A-PKZ0(24V50HZ)	216	AP2.5RLPA	342, 343
6315-01	325	7.2WFNHO80	95	A-PKZ0(24VDC)	216	AP2.5RPA	343
6315-03	325	7.2WKMSJ200	95	A-PKZ0(415V50HZ)	216	AP224/240VACS	364
63D33Q	72	7.2WKMSJ224	95	A/HS741/CL/3001	128	AP224/24VDCS	364
63D33R	72	7.2WKMSJ250	95	A/IF741-2/01/3268	128	AP231/400AD	364
63D33	71	7.2WKMSJ315	95	A/IF742/C4KA8/6	128	AP35PAB	340
63ENL	60	7.2WKMSJ355	95	A1L1LPK	110	AP35PA	340
63ENSBWHITE	60	7.2WKNHO200	95	A1L2RPK	112	AP430/*D	364
63ENSBS	60	7.2WKNHO224	95	A1L3RPK	114	AP430/*S	364
63ENSFBWHITE	60	7.2WKNHO250	95	A1L4RPK	116	AP4PA	342
63ENSFBS	60	7.2WKNHO315	95	A1L5LPK	118	APS11PA	344
63ENSFWHITE	60	70019564	17	A1L5RPK	118	APS11PA	345
63ENSF	60	70022491	17	A1L6RPK	120	APSK1KRG	345
63ENSR	60	70036193	17	A1X1PK	110	AQ2	343, 344
63ET	76	70039930	17	A1X2PK	112	AQ3	343, 344
63FE	76	700FMM	76	A1X3PK	114	AQ4	343, 344
63K07-660	58	700MMT	77	A1X4PK	116	AQ110/5/15	338, 343

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
AQI10/6/17	338, 343	BBA-TP3/CU-BAND	35	CCP-1-DCM	67	CH20NZM3-24P	34
AQI2/8/11	339	BBA-XSM	219	CCP-3-30CC	67	CH20NZM3-3P	34
AQI2150	340	BBA0-25	219	CCP-3-30M	67	CH20NZM3-6P	34
AQI2240	341	BBA0-32	219	CCP-AUX	67	CH20NZM3-9P	34
AQI250	340	BBA0/2TS-L	219	CCP-PLC-IND	67	CH221B	67
AQI295	340	BBA0L-25	247	CD100M125	56	CHCC1DU	67
AQI3/8/11	339	BBA0L-32	247	CD100M160	56	CHM1DU	67
AQI3150	340	BBA0R-25	219	CD100M160	56	CHPV1IU	87
AQI3240	341	BBA0R-32	219	CD100	56	CHPV1U	87
AQI350	340	BBA4/2TS-L	219	CD80	56	CHPV2IU	87
AQI395	340	BBA4L-63	219	CEO100M125	55	CHPV2U	87
AQI75/6/17	338, 343	BBC-FL10	35	CEO100M160	55	CI-K1-T0-2	190
AS310G-0	346	BBC-FL5	35	CEO100M200	55	CI-K1-T0-4	190
AS310G-1	346	BBS-3/FL	35	CEO100	55	CI-K1H-T0-2	190
AS310G-2	346	BBS(A)	89	CEO32	55	CI-K1H-T0-4	190
AS310G-3	346	BC00	70	CEO40	55	CI-K2-100-M	350
AS310G-4	346	BC1-2	70	CEO50	55	CI-K2-145-M	350
AS310G-5	346	BC3	70	CEO63	55	CI-K2-PKZ0-GR	218
AS310G-6	346	BC6031SQ	89	CEO80	55	CI-K2-PKZ0-G	218
AS310G-7	346	BC6033SQ	89	CH06NZM1-12P/NZM2-12P	33	CI-K2-T3-2	190
AS310G-8	346	BC63M100	56	CH06NZM1-12P/NZM2-6P	33	CI-K2-T3-4	190
AS310G-9	346	BC63M80	56	CH06NZM1-12P	33	CI-K2-T3-5	190
AS310G-A	346	BC63	56	CH06NZM1-18P/NZM2-12P	33	CI-K2H-T3-2	190
AS310G-B	346	BD40	56	CH06NZM1-18P/NZM2-6P	33	CI-K2H-T3-4	190
AS310G-C	346	BD50	56	CH06NZM1-18P	33	CI-K2H-T3-5	190
AS310G-D	346	BD63	56	CH06NZM1-24P	33	CI-K3-125-M	350
AS310G-E	346	BFH00-3A-F	70	CH06NZM1-30P	33	CI-K3-160-M	350
AS310G-F	346	BFH1-3A-F	70	CH06NZM1-36P	33	CI-K4-125-M	350
AS310G-G	346	BFH2-3A-F	70	CH06NZM1-42P	33	CI-K4-160-M	350
AS310G-H	346	BFH3-3A-F	70	CH06NZM1-48P	33	CI-K4-PKZ4-GR	218
AS310G-I	346	BK25/3-PKZ0	217	CH06NZM1-60P	33	CI-K4-PKZ4-G	218
AS310G-J	346	BK50/3-PKZ4-E	217	CH06NZM1-6P/NZM2-12P	33	CI-K4-T5B-2	190
AS310G-K	346	BL-CI	353	CH06NZM1-6P/NZM2-6P	33	CI-K4-T5B-4	190
AS310G-L	346	BM6031SQ	89	CH06NZM1-6P	33	CI-K5-125-M	350
AS310G-MINUS	346	BM6033SQ	89	CH06NZM1-72P	33	CI-K5-160-M	350
AS310G-M	346	BPH500YPV	88	CH06NZM2-12P	33	CI-K5-T5-2	190
AS310G-N	346	BPM275IEC	88	CH06NZM2-18P	33	CI-K5-T5-4	190
AS310G-O	346	BPM500YPV	88	CH06NZM2-24P	33	CI-PKZ01-G	218
AS310G-PLUS	346	BPS255IEC	88	CH06NZM2-30P	33	CI-PKZ01-PVT	218
AS310G-P	346	BS-2-CI	353	CH06NZM2-36P	33	CI23E-125	351
AS310G-Q	346	BS-3-CI	353	CH06NZM2-42P	33	CI23E-150	351
AS310G-R	346	BS-4-CI	353	CH06NZM2-48P	33	CI23X-125	351
AS310G-S	346	BSPH31000YPVR	88	CH06NZM2-6P	33	CI23X-150	351
AS310G-T	346	BSPH31000YPV	88	CH10NZM1-12P/NZM2-12P	34	CI43E-125	351
AS310G-U	346	BSPM1275TNR	88	CH10NZM1-12P/NZM2-6P	34	CI43E-150	351
AS310G-V	346	BSPM1275TN	88	CH10NZM1-12P	33	CI43E-200	351
AS310G-W	346	BSPM1375TNR	88	CH10NZM1-18P/NZM2-12P	34	CI43X-125	351
AS310G-X	346	BSPM1375TN	88	CH10NZM1-18P/NZM2-6P	34	CI43X-150	351
AS310G-Y	346	BSPS31000YPV	88	CH10NZM1-18P	33	CI43X-200	351
AS310G-Z	346	BSPS3255TNCR	88	CH10NZM1-24P	33	CI44E-125	351
AS310	346	BSPS3255TNC	88	CH10NZM1-30P	33	CI44E-150	351
AT100/**D	366	BSZ/230	15	CH10NZM1-36P	33	CI44E-200	351
AT110/*S	366	BSZ/24	15	CH10NZM1-42P	33	CI44E-250	351
AT130/*AS	366	BVL50	70	CH10NZM1-48P	33	CI44X-125	351
AT200/**D	366	C08G(A)	67	CH10NZM1-60P	33	CI44X-150	351
AT500/*S	366	C08M(A)	67	CH10NZM1-6P/NZM2-12P	34	CI44X-200	351
ATC-(A)	97	C10G(A)	67	CH10NZM1-6P/NZM2-6P	34	CI44X-250	351
ATM-(A)LP	97	C10M(A)	67	CH10NZM1-6P	33	CI45E-200	351
ATM-(A)	97	C14G(A)	67	CH10NZM1-72P	33	CI45X-200	351
ATZE-A100	358	C14GM(A)	67	CH10NZM2-12P	33	CI48-200	351
ATZE-T0300S	358	C1515	64	CH10NZM2-18P	33	CI48-250	351
ATZE-T0400A	358	C1520	64	CH10NZM2-24P	33	CL-PKZ0	216
ATZE-T0600	358	C180-10A	64	CH10NZM2-30P	33	CL2-15	352
ATZE-T0800	358	C180-13A	64	CH10NZM2-36P	33	CL2	352
ATZE-T1000	358	C180-1A	64	CH10NZM2-42P	33	CL3-15	352
ATZE-T1200	358	C180-2A	64	CH10NZM2-48P	33	CL3	352
AW-T5-1/2	190	C180-3A	64	CH10NZM2-6P	33	CL4-15	352
AW-T5-3/4	190	C180-5A	64	CH10NZM3-12P	34	CL4	352
B2016RDLM	120	C180-7A	64	CH10NZM3-3P	34	CM100FW	60
B3.0/2-PKZ0	217	C22G(A)	67	CH10NZM3-6P	34	CM100F	60
B3.0/2-PKZ4	217	C22M(A)	67	CH10NZM3-9P	34	CM32FCW	60
B3.0/3-PKZ0	217	C3030	64	CH14-HP	67	CM32FC	60
B3.0/3-PKZ4	217	C36Q	100	CH141B	67	CM32FW	60
B3.0/4-PKZ0	217	C441_A	210	CH141D-PV	87	CM32F	60
B3.0/4-PKZ4	217	C441_B	210	CH20NZM1-12P/NZM2-12P/	34	CM63FW	60
B3.0/5-PKZ0	217	C4410109NOUI	210	NZM3-3P	34	CM63F	60
B3.1/2-PKZ0	217	C4410190NOUI	210	CH20NZM1-12P/NZM2-6P/NZM3-6P	34	CMD(220-240VAC)	204
B3.1/2-PKZ4	217	C4410590NOUI	210	CH20NZM1-12P	34	CMD(24VDC)	204
B3.1/3-PKZ0	217	C4411	211	CH20NZM1-18P/NZM2-12P/	34	CP1C	367
B3.1/3-PKZ4	217	C4413	211	NZM3-3P	34	CP2C	367
B3.1/4-PKZ0	217	C441BA	210	CH20NZM1-18P/NZM2-6P/NZM3-3P	34	CP3C	367
B3.1/4-PKZ4	217	C441BB	210	CH20NZM1-18P	34	CS-TE	209
B3.1/5-PKZ0	217	C441CA	210	CH20NZM1-24P	34	CS00	70
B3.2/2-PKZ0	217	C441CB	210	CH20NZM1-30P	34	CS10-1240	358
B3.2/2-PKZ4	217	C441CMP1	211	CH20NZM1-36P	34	CS10-1430	358
B3.2/4-PKZ0	217	C441CTKIT150	211	CH20NZM1-42P	34	CS10-1440	358
B3.2/4-PKZ4	217	C441CTKIT300	211	CH20NZM1-48P	34	CS12-1240	358
BA9S110N	162	C441CTKIT600	211	CH20NZM1-60P	34	CS12-1430	358
BA9S12	162	C441DA	210	CH20NZM1-6P/NZM2-12P/	34	CS12-1440	358
BA9S240NG	162	C441DB	210	NZM3-6P	34	CS1	70
BA9S240NR	162	C441K	211	CH20NZM1-6P/NZM2-6P/NZM3-6P	34	CS2	70
BA9S240N	162	C441L	211	CH20NZM1-6P	34	CS3	70
BA9S30	162	C441M	211	CH20NZM1-72P	34	CS6-1240	358
BAF(A)	89	C441N	211	CH20NZM2-12P	34	CS6-1430	358
BAN(A)	89	C441P	211	CH20NZM2-18P	34	CS6-1440	358
BAO35	55	C441Q	211	CH20NZM2-24P	34	CS8-1240	358
BAO40	55	C441R	211	CH20NZM2-30P	34	CS8-1430	358
BAO50	55	C441S	211	CH20NZM2-36P	34	CS8-1440	358
BAO63M100	55	C441T	211	CH20NZM2-42P	34	CSAS3F3CY2202	300
BAO63M80	55	C4545	64	CH20NZM2-48P	34	CSAS3F3RY2202	300
BAO63	55	C55	64	CH20NZM2-6P	34	CSDS4A3CY2202	300
BA	62	CA	62	CH20NZM3-12P	34	CSDS4A3RY2202	300
BBA-TP3/120	35	CC701/*DSP	365	CH20NZM3-15P	34	CSFI	372
BBA-TP3/300	35	CCP-1-30CC	67	CH20NZM3-18P	34	CSNR4A4CY2402	304
BBA-TP3/50	35	CCP-1-30M	67	CH20NZM3-21P	34	CSNR4A4CY2405	304

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
CSNR4A4CY2410	304	DG1-DEMO2	251	DILM300A/22(...	197	DOLRS30/U(..V50HZ)	241
CSNS3A3CY2402	300	DIL-SWD-32-001	203	DILM32-10(...	197	DOLRS4/I(..V50HZ)	241
CSNS3A3RY2402	300	DIL-SWD-32-002	203	DILM32-XHI11-S	199	DOLRS4/U(..V50HZ)	241
CSNS4A4CY2402	304	DILA-22(..)	196	DILM32-XIP2X	202	DOLRS5 5/I(..V50HZ)	241
CSNS4A4CY2405	304	DILA-31(..)	196	DILM32-XMV	200	DOLRS5 5/U(..V50HZ)	241
CSNS4A4CY2410	304	DILA-40(..)	196	DILM32-XP1	202	DOLRS7 5/I(..V50HZ)	241
CSPP-00300	358	DILA-XHI01-S	199	DILM32-XRL	200	DOLRS7 5/U(..V50HZ)	241
CSPP-00400	358	DILA-XHI02	199	DILM32-XS1	202	DS1TRK1.51A	344
D125-CI23	352	DILA-XHI04	199	DILM32-XSL	202	DS1TRK1.5B	344
D125-CI43	352	DILA-XHI10-S	199	DILM32-XSP(RDC24)	204	DS1TRK1.5	344
D125-CI44	352	DILA-XHI11	199	DILM32-XSPR240	201	DS7-34DSX004N0-D	246
D150-CI23	352	DILA-XHI13	199	DILM32-XSPR48	201	DS7-34DSX007N0-D	246
D150-CI43	352	DILA-XHI20	199	DILM32-XSPR500	201	DS7-34DSX009N0-D	246
D150-CI44	352	DILA-XHI20	241, 242	DILM32-XSPV130	201	DS7-34DSX012N0-D	246
D1RAA	308	DILA-XHI22	199	DILM32-XSPV240	201	DS7-34DSX016N0-D	246
D1RF1A1	308	DILA-XHI31	199	DILM32-XSPV48	201	DS7-34DSX024N0-D	246
D1RF1A	308	DILA-XHI40	199	DILM32-XSPV500	201	DS7-34DSX032N0-D	246
D1RF1B	308	DILA-XHIT02	199	DILM32-XSPVL240	201	DS7-34DSX041N0-D	246
D1RF1T1	308	DILA-XHIT11	199	DILM32-XSPVL48	201	DS7-34DSX055N0-D	246
D1RF1T	308	DILA-XHIT20	199	DILM32-XTED11-1(RA24)	203	DS7-34DSX070N0-D	246
D2-CI	353	DILA-XHIT22	199	DILM32-XTED11-1(RAC130)	203	DS7-34DSX081N0-D	246
D200-CI43	352	DILA-XHIV11	199	DILM32-XTED11-1(RAC240)	203	DS7-34DSX100N0-D	246
D200-CI44	352	DILA-XHIV22	199	DILM32-XTED11-10(RA24)	203	DS7-34DSX135N0-D	246
D200-CI45	352	DILEEM-01(..)	195	DILM32-XTED11-10(RAC130)	203	DS7-34DSX160N0-D	246
D200-CI48	352	DILEEM-10(..)	195	DILM32-XTED11-10(RAC240)	203	DS7-34DSX200N0-D	246
D2179-53CP	157	DILEM-01(..)	195	DILM32-XTED11-100(RA24)	203	DS7-FAN-032	247
D250-CI44	352	DILEM-10(..)	195	DILM32-XTED11-100(RAC130)	203	DS7-FAN-100	247
D250-CI48	352	DILEM12-01(..)	195	DILM32-XTED11-100(RAC240)	203	DS7-FAN-200	247
D2PA7	309	DILEM12-10(..)	195	DILM32-XTED11-100(RAC240)	203	DSCH-CI	353
D2RF2A1	309	DILEM4(..)	195	DILM32-XTEE11(RA130)	203	DSFI	371
D2RF2A	309	DILER-22(..)	195	DILM32-XTEE11(RA24)	203	DYG-ACC-4FR1N12KIT	251
D2RF2B	309	DILER-31(..)	195	DILM32-XTEE11(RAC240)	203	DYG-ACC-FR1N12FK	251
D2RF2T1	309	DILER-40(..)	195	DILM32-XTEPLH	204	DYG-ACC-FR2N12FK	251
D2RF2T	309	DILH1400-XSP/E(RAW250)	204	DILM32-XTEY20(RA24)	203	DYG-ACC-FR2N12KIT	251
D2RF4A1	309	DILH1400/22(..)	198	DILM32-XTEY20(RAC130)	203	DYG-ACC-FR3N12FK	251
D2RF4A	309	DILH2000/22(..)	198	DILM32-XTEY20(RAC240)	203	DYG-ACC-FR3N12KIT	251
D2RF4B	309	DILH2200/22(..)	198	DILM38-01(..)	197	DYG-ACC-FR4N12FK	251
D2RF4T1	309	DILH2600-XSM	204	DILM38-10(..)	197	DYG-ACC-FR5N12FK	251
D2RF4T	309	DILH2600/22(..)	198	DILM40(..)	197	DYG-ACC-RTBATT	251
D3-CI	353	DILK12-11(..)	199	DILM400-S/22(..)	198	DYG-CBL-1M0	251
D4-CI	353	DILK20-11(..)	199	DILM400-XHB	204	DYG-CBL-3M0	251
D4PA1	310	DILK25-11(..)	199	DILM400-XS1	202	DYG-CBL-PCCABLE	251
D4PA2	310	DILK33-10(..)	199	DILM400/22(..)	197	DYG-EXT-1AI2AO	251
D4PR11A	310	DILK50-10(..)	199	DILM50(..)	197	DYG-EXT-3DI3DO1T	251
D4PR11B	310	DILM1000-XHI11-SI	200	DILM500-S-XSP/E(220-240V50/60HZ)	204	DYG-EXT-3RO	251
D4PR11T1	310	DILM1000-XHIV11-SI	200	DILM500-S/22(..)	198	DYG-EXT-6DI	251
D4PR11T	310	DILM1000-XSM	204	DILM500-XHB	204	DYG-EXT-THERM1	251
D4PR21A	310	DILM1000-XSP/E(RA250)	204	DILM500-XMV	200	DYG-KEY-HOLDER	251
D4PR21B	310	DILM1000/22(..)	198	DILM500-XS1	202	DYG-KEY-LCD	251
D4PR21T1	310	DILM115(..)	197	DILM500-XSP/E(RA250)	204	DYG-KEY-N12PLUG	251
D4PR21T	310	DILM12-01(..)	197	DILM500-XSP/E(RA250)	204	DYG-KEY-RMTKIT	251
DCM(A)	89	DILM12-10(..)	197	DILM500/22(..)	197	DYG-MNT-PROFIBUS	251
DD125	56	DILM12-XMCE	203	DILM580/22(..)	198	DYG-NET-CANOPEN	251
DD160	56	DILM12-XMCP/E	203	DILM65-XIP2X	202	DYG-NET-DEVICENET	251
DD200M250	56	DILM12-XMCP/T	203	DILM65-XMV	200	DYG-NET-LONWORKS	251
DD200M315	56	DILM12-XMV	200	DILM65-XP1	202	DYG-NET-PROFIBUS	251
DD200	56	DILM12-XP1	202	DILM65-XRL	200	DYG-NET-SWD	251
DE-P3	189	DILM12-XRL	200	DILM65-XS1	202	DYG-SPR-CTRLKIT	251
DE-T0	189	DILM12-XS1	202	DILM65-XSL	202	E-FB1P	110
DEO125	55	DILM12-XSL	202	DILM65-XSP(RDC24)	204	E-FB3P	110
DEO160	55	DILM12-XSPD	201	DILM65(..)	197	E22LED024GN	162
DEO200M250	55	DILM12-XSPR240	201	DILM650-XHB	204	E22LED024RN	162
DEO200M315	55	DILM12-XSPR48	201	DILM650/22(..)	198	E22LED024WN	162
DEO200	55	DILM12-XSPR500	201	DILM7-01(..)	197	E22LED024YN	162
DG1-34012FB-C21C	250	DILM12-XSPV130	201	DILM7-10(..)	197	E22LED120GN	162
DG1-34012FB-C54C	251	DILM12-XSPV240	201	DILM72(..)	197	E22LED120RN	162
DG1-34016FB-C21C	250	DILM12-XSPV48	201	DILM750/22(..)	198	E22LED120WN	162
DG1-34016FB-C54C	251	DILM12-XSPV500	201	DILM80(..)	197	E22LED120YN	162
DG1-34023FB-C21C	250	DILM12-XSPVL240	201	DILM820-XHB	204	E22LED612GN	162
DG1-34023FB-C54C	251	DILM12-XSPVL48	201	DILM820-XHI11-SI	200	E22LED612RN	162
DG1-34031FB-C21C	250	DILM15-01(..)	197	DILM820-XHI11V-SI	200	E22LED612WN	162
DG1-34031FB-C54C	251	DILM15-10(..)	197	DILM820-XMV	200	E22LED612YN	162
DG1-34038FB-C21C	250	DILM150-XHI02	199	DILM820/22(..)	198	E2FM100KM	109
DG1-34038FB-C54C	251	DILM150-XHI04	199	DILM9-01(..)	197	E2FM100RM	109
DG1-34046FB-C21C	250	DILM150-XHI11	199, 241, 242	DILM9-10(..)	197	E2FM150TM	109
DG1-34046FB-C54C	251	DILM150-XHI13	199	DILM95-XSL	202	E2FM150UM	109
DG1-34061FN-C21C	250	DILM150-XHI20	199	DILM95-XSP(RDC24)	204	E2FM3016	109
DG1-34061FN-C54C	251	DILM150-XHI22	199	DILM95-XSPR240	201	E2FM3020	109
DG1-34072FN-C21C	250	DILM150-XHI31	199, 242	DILM95-XSPR48	201	E2FM3025	109
DG1-34072FN-C54C	251	DILM150-XHI40	199	DILM95-XSPR500	201	E2FM3032	109
DG1-34087FN-C21C	250	DILM150-XHIV22	199	DILM95-XSPV130	201	E2FM3040	109
DG1-34087FN-C54C	251	DILM150-XIP2X	202	DILM95-XSPV240	201	E2FM3050	109
DG1-34105FN-C21C	250	DILM150-XMV	200	DILM95-XSPV48	201	E2FM3063	109
DG1-34105FN-C54C	251	DILM150-XP1	202	DILM95-XSPV500	201	E2FM3080	109
DG1-34140FN-C21C	250	DILM150-XRL	200	DILM95-XSPVL240	201	E2FM3100	109
DG1-34140FN-C54C	251	DILM150-XS1	202	DILM95-XSPVL48	201	E2FM3125	109
DG1-34170FN-C21C	250	DILM150-XSL	202	DILM95(..)	197	E2FM3160	109
DG1-34170FN-C54C	251	DILM150-XSP(RDC24)	204	DILMP125(..)	199	E2JM3250F	111
DG1-34205FN-C21C	250	DILM150(..)	197	DILMP160(..)	199	E2K3250T	113
DG1-34205FN-C54C	251	DILM1600/22(..)	198	DILMP20(..)	199	E2K3300T	113
DG1-34261FN-C21C	250	DILM17-01(..)	197	DILMP200(..)	199	E2K3350T	113
DG1-34261FN-C54C	251	DILM17-10(..)	197	DILMP32-10(..)	199	E2K3400TMV	113
DG1-342D2FB-C21C	250	DILM170(..)	197	DILMP45-10(..)	199	E2K3400T	113
DG1-342D2FB-C54C	251	DILM185-XP1	202	DILMP63(..)	199	E2KM3400F	113
DG1-343D3FB-C21C	250	DILM185A/22(..)	197	DILMP80(..)	199	E2L3600TML	115
DG1-343D3FB-C54C	251	DILM225A-XHB	204	DMM-D-(A)	89	E2L3600TMN	115
DG1-344D3FB-C21C	250	DILM225A-XSP(RDC24)	204	DOLRS11/I(..V50HZ)	241	E2L3600TMP	115
DG1-344D3FB-C54C	251	DILM225A/22(..)	197	DOLRS11/U(..V50HZ)	241	E2L3600TMR	115
DG1-345D6FB-C21C	250	DILM25-01(..)	197	DOLRS15/I(..V50HZ)	241	E2L3600TMX	115
DG1-345D6FB-C54C	251	DILM25-10(..)	197	DOLRS15/U(..V50HZ)	241	E2L3600TMT	115
DG1-347D6FB-C21C	250	DILM250-S-XSP/E(220-240V50/60HZ)	204	DOLRS18.5/I(..V50HZ)	241	E2LM3600F	115
DG1-347D6FB-C54C	251	DILM250-XSP/E(RA250)	204	DOLRS18.5/U(..V50HZ)	241	E2NM312V	117
DG1-349D0FB-C21C	250	DILM250/22(..)	197	DOLRS22/I(..V50HZ)	241	E2NM3800W	117
DG1-349D0FB-C54C	251	DILM300A-S/22(..)	198	DOLRS22/U(..V50HZ)	241	E2RM316W	119
DG1-DEMO1	251			DOLRS30/I(..V50HZ)	241	E2RM320W	119

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
E30KT5	168	E34SP34	168	E50KL538	288	E57-12GS02-C1	298
E34129M	158	E34TA12	167	E50KL539	288	E57-12GS02-CDB	298
E34129P	158	E34TA15	167	E50KL541	288	E57-12GS02-C	298
E34129S	158	E34TA2	167	E50KL542	288	E57-12GS02-D1DB	297
E34176M	158	E34TB120	159	E50KL543	288	E57-12GS02-D1	297
E34176P	158	E34TB240	159	E50KL544	288	E57-12GS02-DDB	297
E34A1	163	E34TB380	159	E50KL545	288	E57-12GS02-D	297
E34C1	158	E34TB415	159	E50KL546	287	E57-12GS02-G1DB	298
E34C2	158	E34TB480	159	E50KL547	287	E57-12GS02-G1	298
E34C3	158	E34TB600	159	E50KL548	287	E57-12GS02-GDB	298
E34CB497L	160	E34TPB120	160	E50KL549	287	E57-12GS02-G	298
E34EB1	156	E34TPB240	160	E50KL550	287	E57-12GU04-A1AB	297
E34EB2	156	E34TPB380	160	E50KL551	287	E57-12GU04-A1	297
E34EB3	156	E34V0	160	E50KL552	287	E57-12GU04-AAAB	297
E34EB4	156	E34V2	160	E50KL553	287	E57-12GU04-A	297
E34EB6	156	E34V3	160	E50KL554	287	E57-12GU04-C1DB	298
E34EVB1	156	E34V4	160	E50KL556	289	E57-12GU04-C1	298
E34EVB2	156	E34V5	160	E50KL572	287	E57-12GU04-CDB	298
E34EVB3	156	E34V6	160	E50KL573	287	E57-12GU04-C	298
E34EVB4	156	E34V9	160	E50KL574	287	E57-12GU04-D1DB	297
E34EVB6	156	E34VEB	163	E50KL575	287	E57-12GU04-D1	297
E34FB06	159	E34VFB	163	E50KL576	287	E57-12GU04-DDB	297
E34FB110	159	E34VGB	163	E50KL579	287	E57-12GU04-D	297
E34FB12	159	E34VHB	163	E50KL580	287	E57-12GU04-G1DB	298
E34FB197L	159	E34VJB	163	E50KL581	289	E57-12GU04-G1	298
E34FB240	159	E34VKB	163	E50KL598	288	E57-12GU04-GDB	298
E34FB24	159	E34VLB	163	E50KL599	288	E57-12GU04-G	298
E34FB48	159	E34VMB	163	E50KW2	289	E57-18GE08-C1DB	299
E34FPB	160	E34VNB	163	E50KW3	289	E57-18GE08-C1	299
E34G0	159	E34VPB	163	E50KW4	289	E57-18GE08-CDB	299
E34G2	159	E34VTB	163	E50RA	285	E57-18GE08-C	299
E34G3	159	E34XB120	160	E50RB	285	E57-18GE08-G1DB	299
E34G4	159	E34XB1240	160	E50SAL	285	E57-18GE08-G1	299
E34G5	159	E34XB380	160	E50SA	285	E57-18GE08-GDB	299
E34G6	159	E34XB380	160	E50SBL	285	E57-18GE08-G	299
E34G9	159	E34XB480	160	E50SB	285	E57-18GE16-A1AB	297
E34GDB	158, 161	E49G31AP3	294	E57-08GE03-C1DB	298	E57-18GE16-AAAB	297
E34GEB	158, 161	E49G31BP3	294	E57-08GE03-C1NB	298	E57-18GE16-D1DB	297
E34GFB	158, 161	E49G31C1P3	294	E57-08GE03-C1	298	E57-18GE16-D1	297
E34H0	159	E49G31CP3	294	E57-08GE03-CDB	298	E57-18GE16-DDB	297
E34H2	159	E49G31DP3	294	E57-08GE03-CNB	298	E57-18GE16-D	297
E34H3	159	E49G31MP3	294	E57-08GE03-C	298	E57-18GE18-C1DB	299
E34H4	159	E49G31NP3	294	E57-08GE03-G1DB	298	E57-18GE18-C1	299
E34H5	159	E49G31UP3	294	E57-08GE03-G1NB	298	E57-18GE18-CDB	299
E34H6	159	E49G31VP3	294	E57-08GE03-G1	298	E57-18GE18-C	299
E34H9	159	E49G31XM3	294	E57-08GE03-GDB	298	E57-18GE18-G1DB	299
E34J2N8	158	E49M11AP1	293	E57-08GE03-GNB	298	E57-18GE18-G1	299
E34J2	158	E49M11BP1	293	E57-08GE03-G	298	E57-18GE18-GDB	299
E34JB1	157	E49M11CP1	293	E57-08GE06-C1DB	298	E57-18GE18-G	299
E34JB2N	157	E49M11CP2	293	E57-08GE06-C1	298	E57-18GS05-A1AB	297
E34JB2	157	E49M11DP1	293	E57-08GE06-CDB	298	E57-18GS05-A1	297
E34JB3	157	E49M11UP1	293	E57-08GE06-C	298	E57-18GS05-AAAB	297
E34K1	163	E49M11VP1	293	E57-08GE06-G1DB	298	E57-18GS05-A	297
E34KEB2	164	E49M11XM1	293	E57-08GE06-G1	298	E57-18GS05-C1DB	299
E34KFB3	164	E50DH1	285	E57-08GE06-GDB	298	E57-18GS05-C1	299
E34KGB7	164	E50DL1	285	E57-08GE06-G	298	E57-18GS05-CDB	299
E34KHB7	164	E50DM1	285	E57-08GS01-C1DB	298	E57-18GS05-C	299
E34KJB5	164	E50DR1	285	E57-08GS01-C1NB	298	E57-18GS05-D1DB	297
E34KKB5	164	E50DS1	285	E57-08GS01-C1	298	E57-18GS05-D1	297
E34KLB4	164	E50DS2	285	E57-08GS01-CDB	298	E57-18GS05-DDB	297
E34KMB4	164	E50DS3	285	E57-08GS01-CNB	298	E57-18GS05-D	297
E34L1	163	E50DT1	285	E57-08GS01-C	298	E57-18GS05-G1DB	299
E34LB1	157	E50DT2	285	E57-08GS01-G1DB	298	E57-18GS05-G1	299
E34LB2	157	E50DT3	285	E57-08GS01-G1NB	298	E57-18GS05-GDB	299
E34LB3	157	E50DW1	285	E57-08GS01-G1	298	E57-18GS05-G	299
E34LB4	157	E50DW2	285	E57-08GS01-GDB	298	E57-18GU08-A1AB	297
E34LB6	157	E50KL142	289	E57-08GS01-GNB	298	E57-18GU08-A1	297
E34LP179	157	E50KL200	287	E57-08GS01-G	298	E57-18GU08-AAAB	297
E34M0	161	E50KL201SPL	288	E57-08GU02-C1DB	298	E57-18GU08-A	297
E34M2N8	161	E50KL201	288	E57-08GU02-C1NB	298	E57-18GU08-C1DB	299
E34M2	161	E50KL202	289	E57-08GU02-C1	298	E57-18GU08-C1	299
E34M3	161	E50KL203	288	E57-08GU02-CDB	298	E57-18GU08-CDB	299
E34M5	161	E50KL204	288	E57-08GU02-CNB	298	E57-18GU08-C	299
E34M6	161	E50KL220	289	E57-08GU02-C	298	E57-18GU08-D1DB	297
E34M9	161	E50KL226	289	E57-08GU02-G1DB	298	E57-18GU08-D1	297
E34N11	166	E50KL24	287	E57-08GU02-G1NB	298	E57-18GU08-DDB	297
E34N12	166	E50KL25	287	E57-08GU02-G1	298	E57-18GU08-D	297
E34N13	166	E50KL26	287	E57-08GU02-GDB	298	E57-18GU08-G1DB	299
E34N14	166	E50KL27	287	E57-08GU02-GNB	298	E57-18GU08-G1	299
E34N1	166	E50KL28	287	E57-08GU02-G	298	E57-18GU08-GDB	299
E34N2	166	E50KL29	287	E57-12GE05-C1DB	298	E57-18GU08-G	299
E34N3	166	E50KL30	287	E57-12GE05-C1	298	E57-30GE15-C1DB	299
E34N4	166	E50KL310	287	E57-12GE05-CDB	298	E57-30GE15-C1	299
E34P0	160	E50KL31	288	E57-12GE05-C	298	E57-30GE15-CDB	299
E34P2	160	E50KL32	287	E57-12GE05-G1DB	298	E57-30GE15-C	299
E34P3	160	E50KL33	289	E57-12GE05-G1	298	E57-30GE15-G1DB	299
E34P4	160	E50KL340	288	E57-12GE05-GDB	298	E57-30GE15-G1	299
E34P5	160	E50KL355	287	E57-12GE05-G	298	E57-30GE15-GDB	299
E34P6	160	E50KL35	289	E57-12GE08-D1DB	297	E57-30GE15-G	299
E34P9	160	E50KL36	289	E57-12GE08-D1	297	E57-30GE25-D1DB	297
E34PB1	156	E50KL377	287	E57-12GE08-DDB	297	E57-30GE25-D1	297
E34PB2	156	E50KL37	289	E57-12GE08-D	297	E57-30GE25-DDB	297
E34PB3	156	E50KL399	289	E57-12GE10-C1DB	298	E57-30GE25-D	297
E34PB4	156	E50KL39	287	E57-12GE10-C1	298	E57-30GE29-C1DB	299
E34PB5	156	E50KL40	287	E57-12GE10-CDB	298	E57-30GE29-C1	299
E34PB6	156	E50KL41	289	E57-12GE10-C	298	E57-30GE29-CDB	299
E34RB120	159	E50KL421	289	E57-12GE10-G1DB	298	E57-30GE29-C	299
E34RB240	159	E50KL443	288	E57-12GE10-G1	298	E57-30GE29-G1DB	299
E34RPB120	160	E50KL465	288	E57-12GE10-GDB	298	E57-30GE29-G1	299
E34RPB240	160	E50KL531	287	E57-12GE10-G	298	E57-30GE29-GDB	299
E34SP	168	E50KL532	288	E57-12GS02-A1AB	297	E57-30GE29-G	299
E34SP24	168	E50KL533	289	E57-12GS02-A1	297	E57-30GS10-A1AB	297
E34SP25	168	E50KL535	288	E57-12GS02-AAAB	297	E57-30GS10-A1	297
E34SP31	168	E50KL536	287	E57-12GS02-A	297	E57-30GS10-AAAB	297
E34SP33	168	E50KL537	288	E57-12GS02-C1DB	298	E57-30GS10-A	297

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
E57-30GS10-C1DB	299	EASY411-DC-ME	261	ELC-ACPGMXFR	274	eRB6-25/1/C/003-AU	9
E57-30GS10-C1	299	EASY500-POW	263	ELC-AN02NANN	274	eRB6-32/1/C/003-AU	9
E57-30GS10-CDB	299	EASY512-AB-RCX	259	ELC-AN04ANN	274	eRB6-40/1/C/003-AU	9
E57-30GS10-C	299	EASY512-AB-RC	259	ELC-AN04NANN	274	eRB6-45/1/C/003-AU	9
E57-30GS10-D1DB	297	EASY512-AC-RCX	259	ELC-AN06AANN	274	eRB6-6/1/C/003-AU	9
E57-30GS10-D1	297	EASY512-AC-RC	259	ELC-CADNET	273	eRBM-10/1/C/003-A-AU	9
E57-30GS10-DDB	297	EASY512-AC-R	259	ELC-CAENET	273	eRBM-10/1/D/003-A-AU	9
E57-30GS10-D	297	EASY512-DA-RCX	259	ELC-CAPBDP	273	eRBM-16/1/C/003-A-AU	9
E57-30GS10-G1DB	299	EASY512-DA-RC	259	ELC-CARS485	273	eRBM-16/1/D/003-A-AU	9
E57-30GS10-G1	299	EASY512-DC-RCX	259	ELC-CBPCELC1	274	eRBM-20/1/C/003-A-AU	9
E57-30GS10-G5	299	EASY512-DC-RC	259	ELC-CBPCELC3	274, 277	eRBM-20/1/D/003-A-AU	9
E57-30GS10-GDB	299	EASY512-DC-R	259	ELC-CBPCCGP3	277	eRBM-25/1/C/003-A-AU	9
E57-30GS10-G	299	EASY512-DC-TCX	259	ELC-CODNETM	273	eRBM-32/1/C/003-A-AU	9
E57-30GU15-A1AB	297	EASY512-DC-TC	259	ELC-COENETM	273	eRBM-40/1/C/003-A-AU	9
E57-30GU15-A1	297	EASY618-AC-RE	261	ELC-EX06NNNI	273	eRBM-45/1/C/003-A-AU	9
E57-30GU15-AAB	297	EASY618-DC-RE	261	ELC-EX08NNAN	273	eRBM-6/1/C/003-A-AU	9
E57-30GU15-A	297	EASY620-DC-TE	261	ELC-EX08NNND	273	eRBM-6/1/D/003-A-AU	9
E57-30GU15-C1DB	299	EASY719-AB-RCX	259	ELC-EX08NNDR	273	ES-BBS-3/FL	35
E57-30GU15-C1	299	EASY719-AB-RC	259	ELC-EX08NNDT	273	ES-KMS(*)-T0	190
E57-30GU15-CDB	299	EASY719-AC-RCX	259	ELC-EX08NNNR	273	ES-KMS1-T0	190
E57-30GU15-C	299	EASY719-AC-RC	259	ELC-EX08NNNT	273	ES35KST	339, 340
E57-30GU15-D1DB	297	EASY719-DA-RCX	259	ELC-EX16NNND	273	ES35PA	338, 339, 340, 341, 342, 345, 347, 343, 344
E57-30GU15-D1	297	EASY719-DA-RC	259	ELC-EX16NNDP	273	ES35SKT	338, 340, 341, 342, 343, 344, 345, 347
E57-30GU15-DDB	297	EASY719-DC-RCX	259	ELC-EX16NNDR	273	ES40	54
E57-30GU15-D	297	EASY719-DC-RC	259	ELC-EX16NNDT	273	ES50	54
E57-30GU15-G1DB	299	EASY721-DC-TCX	259	ELC-GP02	277	ES63M80	54
E57-30GU15-G1	299	EASY721-DC-TC	259	ELC-GP04	277	ES63	54
E57-30GU15-GDB	299	EASY800-MO-CAB	262	ELC-GPXFERMOD	277	ESD10	54
E57-30GU15-G	299	EASY800-PC-CAB	262	ELC-PA10AADR	272	ESD16	54
E58-18DP100-ED	302	EASY800-USB-CAB	262	ELC-PA10AADT	272	ESD20	54
E58-18DP100-EL	302	EASY819-AC-RCX	259	ELC-PB14NNDR	272	ESD25	54
E58-18DP100-HD	302	EASY819-AC-RC	259	ELC-PB14NNDT	272	ESD2	54
E58-18DP100-HL	302	EASY819-DC-RCX	259	ELC-PC12NNDR	272	ESD32	54
E58-18DP50-ED	302	EASY819-DC-RC	259	ELC-PC12NNDT	272	ESD40	54
E58-18DP50-EL	302	EASY820-DC-RCX	259	ELC-PS01	274, 277	ESD4	54
E58-18DP50-HD	302	EASY820-DC-RC	259	ELC-PS02	274, 277	ESD50	54
E58-18DP50-HL	302	EASY821-DC-TCX	259	ELC-PT04ANN	274	ESD63M100	54
E58-30DP150-ED	302	EASY821-DC-TC	259	ELC-PV28NNDR	272	ESD63M80	54
E58-30DP150-EL	302	EASY822-DC-TCX	259	ELC-PV28NNDT	272	ESD63	54
E58-30DP150-GD	302	EASY822-DC-TC	259	ELC-TC04ANN	274	ESD6	54
E58-30DP150-GL	302	ECELOCK	129	ELCSOFTGP	277	ESF501-TN-E	371
E58-30DPS280-ED	302	ECSNCASC	306	ELQ-E-KIT	99	ESF503-TN-E	371
E58-30DPS280-EL	302	ECSNCASP	306	ELQ110C10TW	99	ESF631-TN-E	371
E58-30DPS280-GD	302	ECSNCFSC	306	ELQ110C3TW	99	ESF633-TN-E	371
E58-30DPS280-GL	302	ECSNCFSP	306	ELQ116C10TW	99	ESF801-TN-E	371
E58-30RP10-GD	302	ECSNOASC	306	ELQ116C1TW	99	ESF803-TN-E	371
E58-30RP10-GL	302	ECSNOASP	306	ELQ116C3TW	99	ESM9/5P	166
E58-30RS18-GD	302	ECSNOFSCY1	306	ELQ120C10TW	99	ESM9/5	166
E58-30RS18-GL	302	ECSNOFSC	306	ELQ120C1TW	99	ESM9/6P	166
E58-30TD250-GD	302	ECSNOFSP	306	ELQ120C3TW	99	ESM9/6	166
E58-30TD250-GL	302	ED250	56	ELQ125C10TW	99	ESP6/5P	166
E58-30TS250-GA	302	ED315M400	56	ELQ125C1TW	99	ESP6/5	166
E58-30TS250-GA	302	ED315	56	ELQ125C3TW	99	ESP6/6P	166
E71-CON-CA	303	ED355	56	ELQ132C10TW	99	ESP6/6	166
E71-CON-M8	303	ED400M500	56	ELQ132C1TW	99	ETR2-11-D	16, 313
E71-COP-CA	303	ED400	56	ELQ132C3TW	99	ETR2-11	16, 313
E71-COP-M8	303	EDINKIT	306	EMA69C	248	ETR2-12-D	16, 313
E71-FFDN-CA	303	EDOL02TOL	240	EMA75	248	ETR2-12	16, 313
E71-FFDN-M8	303	EDOL045TOL	240	EML24	248	ETR2-21	16, 313
E71-FFDP-CA	303	EDOL04TOL	240	EML28	248	ETR2-42	16, 313
E71-FFDP-M8	303	EDOL063TOL	240	EMR4-F500-2	311	ETR2-44	16, 313
E71-MTB1	304	EDOL08TOL	240	EMR4-I1-2-A	311	ETR2-69-D	16, 313
E71-NTBS-CA	303	EDOL100TOL	240	EMR4-I15-2-A	311	ETR2-69	16, 313
E71-NTBS-M8	303	EDOL10TOL	240	EMR4-I15-2-B	311	ETRA-11-A	313
E71-PRN-CA	303	EDOL11NO240	240	EMR4-N100-1-B	311	ETRA-11-W	313
E71-PRN-M8	303	EDOL11NO415	240	EMR4-N500-2-A	312	ETRA-51-A	313
E71-PRP-CA	303	EDOL125TOL	240	EMR4-PH22	312	ETRA-51-W	313
E71-PRP-M8	303	EDOL16TOL	240	EMR4-PH45	312	ETRA-69-A	313
E71-SDN-CA	303	EDOL1P3TOL	240	EMR5-A300-1-C	311	ETRA-69-W	313
E71-SDN-M8	303	EDOL1P6TOL	240	EMR5-A400-1	311	ETRA-70-A	313
E71-SDP-CA	303	EDOL20TOL	240	EMR5-AW300-1-C	312	ETS4-VS3	204
E71-SDP-M8	303	EDOL215TOL	240	EMR5-AW500-1-D	312	EU4A-RJ45-USB-CAB1	269
E71-TBRN-CA	303	EDOL250TOL	240	EMR5-AWM580-2	312	EVG-16/1PHAS/12MODUL	15
E71-TBRN-M8	303	EDOL25TOL	240	EMR5-AWM720-2	312	EVG-16/1PHAS/2MODUL	15
E71-TBRP-CA	303	EDOL30TOL	240	EMR5-AWM820-2	312	EVG-16/1PHAS/2MODUL/HI	15
E71-TBRP-M8	303	EDOL32TOL	240	EMR5-AWN170-1-E	312	EVG-16/1PHAS/6MODUL	15
E71-TBS-CA	303	EDOL40NO240	240	EMR5-AWN280-1-F	312	EVG-16/1PHAS/6MODUL/HI	15
E71-TBS-M8	303	EDOL40NO415	240	EMR5-AWN280-1	312	EVG-16/1PHAS/9MODUL/HI	15
E8-MCS	317	EDOL48TOL	240	EMR5-AWN500-1	312	EVG-16/2PHAS/10MODUL/HI	15
EASY-LINK-DS	262	EDOL55NO240	240	EMR5-N80-1-B	312	EVG-16/2PHAS/12MODUL	15
EASY-M-256K	262	EDOL55NO415	240	EMR5-N80-1-B	312	EVG-16/2PHAS/4MODUL	15
EASY-M-32K	262	EDOL63TOL	240	EMR5-R250-1-A	312	EVG-16/2PHAS/4MODUL/HI	15
EASY-NT-150	269, 262	EDOL75NO240	240	EMR5-R400-1-A	312	EVG-16/2PHAS/6MODUL	15
EASY-NT-30	269, 262	EDOL75NO415	240	EMR5-R400-2-A	312	EVG-16/2PHAS/6MODUL/HI	15
EASY-NT-80	269, 262	EDOL75TOL	240	EMR5-RC690	312	EVG-16/3PHAS/12MODUL	15
EASY-NT-CAB	262	EDOLCOIL110A	240	EMT6-DB(230V)	209	EVG-16/3PHAS/12MODUL/HI	15
EASY-NT-RJ45	262	EDOLCOIL12A	240	EMT6-DBK	209	EVG-16/3PHAS/6MODUL	15
EASY-NT-R	262	EDOLCOIL240A	240	EMT6-DB	209	EVG-16/3PHAS/6MODUL/HI	15
EASY-PC-CAB	262	EDOLCOIL24A	240	EMT6-KDB	209	EVG-16/3X1PHAS/6MODUL/HI	15
EASY-SOFT-BASIC	262	EDOLCOIL32A	240	EMT6-K	209	EVG-16/3X1PHAS/8MODUL/HI	15
EASY-SOFT-PRO	262	EDOLCOIL415A	240	EMT6(230V)	209	EVG-16/3X1PHAS/9MODUL/HI	15
EASY-USB-CAB	262	EDOLCOIL480A	240	EMT62-DB	209	EVG-16/4PHAS/12MODUL	15
EASY200-EASY	261	EDX1000HA	381	EMT62	209	EVG-16/4PHAS/8MODUL	15
EASY200-POW	263	EDX2000HA	381	EMT6	209	EV11-420-24L	305
EASY202-RE	261	EDX3000HA	381	EOP1T11	110	EVT3-420-24L	305
EASY204-DP	261	EF355	56	EOP2T11	112	EVT4-420-24L	305
EASY205-ASI	261	EF400M500	56	EOP3T11	114	EZ-P1	189
EASY209-SE	261	EF400	56	EOP4MT11A	116	EZ-T0	189
EASY221-CO	30, 261	EF5125	56	EOP5T11	118	FAK-R/KC11/I	149
EASY222-DN	30, 261	EF5160	56	EOP6T11K	120	FAK-RV/KC01/IY	149
EASY256-HCI	263	EF5200	56	EP1/CEXT	367	FAK-S/KC11/I	149
EASY400-POW	263	EF5250	56	eRB6-10/1/C/003-AU	9	FBAG16	348
EASY406-DC-ME	261	EF5315	56	eRB6-16/1/C/003-AU	9		
EASY410-DC-RE	261	ELC-485APTR	274	eRB6-20/1/C/003-AU	9		
EASY410-DC-TE	261	ELC-ACPGMXFR	274				

Index

Item no.	Page no.	Item no.	Page no.
FBAG20	348	FLOAT50MM316	368
FBAG25	348	FNA(A)	89
FBAG32	348	FNMI(A)	89
FBAG40	348	FNQ-R(A)	89
FBAG50	348	FNQ(A)	89
FBAG63	348	FOST3	110
FBC100100B	347	FPF	110
FBC100100G	347	FRN-R(A)	91
FBC2530B	347	FRS-R(A)	91
FBC2560B	347	FS-ALU980-P3	187
FBC2560G	347	FS-ALU980-T0	187
FBC4040B	347	FS(*)-P3	187
FBC4040G	347	FS(*)-T0	187
FBC4060B	347	FS908GE-P3	187
FBC4060G	347	FS908GE-T0	187
FBC4080B	347	FT-CI	353
FBC4080G	347	FW3050	109
FBC6060B	347	FW3063	109
FBC6060G	347	FW3080	109
FBC6080B	347	FW3100	109
FBC6080G	347	FW3125	109
FBC8080B	347	FW3160	109
FBC8080G	347	FW3200	109
FBCT1002B	348	FWA-1000AH	78
FBCT1002C	348	FWA-1000A	78
FBCT11689B	348	FWA-100B	77
FBCT11689C	348	FWA-10A10F	73
FBCT1503B	348	FWA-1200AH	78
FBCT1904B	348	FWA-125B	77
FBCT1904C	348	FWA-1500AH	78
FBCT2804B	348	FWA-150B	77
FBCT2804C	348	FWA-15A10F	73
FBCT2807B	348	FWA-2000AH	78
FBCT2807C	348	FWA-200B	77
FBCT3704B	348	FWA-20A10F	73
FBCT3704C	348	FWA-225B	77
FBCT3807B	348	FWA-2500AH	78
FBCT3807C	348	FWA-250B	77
FBCT4507B	348	FWA-25A10F	73
FBCT4507C	348	FWA-3000AH	78
FBCT4508B	348	FWA-300B	77
FBCT4508C	348	FWA-30A10F	73
FBCT5508B	348	FWA-350B	77
FBCT5508C	348	FWA-35A21F	73
FBCT8129C	348	FWA-4000AH	78
FBL100B	347	FWA-400B	77
FBL100G	347	FWA-40A21F	73
FBL25B	347	FWA-450B	78
FBL25G	347	FWA-45A21F	73
FBL40B	347	FWA-500A	78
FBL40G	347	FWA-50A21F	73
FBL60B	347	FWA-5A10F	73
FBL60G	347	FWA-600A	78
FBL80B	347	FWA-60A21F	73
FBL80G	347	FWA-700A	78
FBMB10	348	FWA-70B	77
FBMB16	348	FWA-800A	78
FBMB24	348	FWA-80B	77
FBMB32	348	FWC-10A10F	74
FBMB45	348	FWC-12A10F	74
FBO100100B	347	FWC-16A10F	74
FBO100100G	347	FWC-20A10F	74
FBO2530B	347	FWC-25A10F	74
FBO2530G	347	FWC-30A10F	74
FBO2540G	347	FWC-6A10F	74
FBO2560B	347	FWC-8A10F	74
FBO2560G	347	FWF1016	109
FBO4040B	347	FWF1020	109
FBO4040G	347	FWF1025	109
FBO4060B	347	FWF1032	109
FBO4060G	347	FWF1040	109
FBO4080B	347	FWF1050	109
FBO4080G	347	FWF1063	109
FBO6040G	347	FWF1080	109
FBO6060B	347	FWF1100	109
FBO6060G	347	FWF1125	109
FBO6080B	347	FWF1160	109
FBO6080G	347	FWF2016	109
FBO9060G	347	FWF2020	109
FBO8080B	347	FWF2025	109
FBO8080G	347	FWF2032	109
FBSW06	348	FWF2040	109
FBSW08	348	FWF2050	109
FBSW10	348	FWF2063	109
FBSW12	348	FWF2080	109
FBSW15	348	FWF2100	109
FBSW19	348	FWF2125	109
FC00	70	FWF2160	109
FC01	70	FWF2200	109
FC1-2	70	FWF2225	109
FC3	70	FWF3016	109
FEH	70	FWF3020	109
FF450	57	FWF3025	109
FF500	57	FWF3032	109
FF560	57	FWF3040	109
FF630	57	FWF3225	109
FG450	57	FWF4016	109
FG500	57	FWF4020	109
FG560	57	FWF4025	109
FG630	57	FWF4032	109
FL1-X	353	FWF4040	109
FL2-X	353	FWF4050	109
FL3-X	353	FWF4063	109
FL4-X	353	FWF4080	109
FLOAT316SS	368	FWF4100	109

Item no.	Page no.	Item no.	Page no.
FWF4125	109	FWP-15A14F	74
FWF4160	109	FWP-15B	79
FWF4200	109	FWP-175A	80
FWF4225	109	FWP-1A14F	74
FWH-250A6F	73	FWP-2-5A14F	74
FWH-500A6F	73	FWP-200A	80
FWH-001A6F	73	FWP-20A14FI	74
FWH-002A6F	73	FWP-20A14F	74
FWH-005A6F	73	FWP-20A22FI	74
FWH-007A6F	73	FWP-20A22F	74
FWH-010A6F	73	FWP-20B	79
FWH-015A6F	73	FWP-225A	80
FWH-016A6F	73	FWP-250A	80
FWH-020A6F	73	FWP-25A14FI	74
FWH-025A6F	73	FWP-25A14F	74
FWH-030A6F	73	FWP-25A22FI	74
FWH-1000A	79	FWP-25A22F	74
FWH-100B	79	FWP-25B	79
FWH-10A14F	73	FWP-2A14F	74
FWH-12-5A6F	73	FWP-300A	80
FWH-1200A	79	FWP-30A14FI	74
FWH-125B	79	FWP-30A14F	74
FWH-12A14F	73	FWP-30B	79
FWH-1400A	79	FWP-32A14FI	74
FWH-150B	79	FWP-32A14F	74
FWH-15A14F	73	FWP-32A22FI	74
FWH-1600A	79	FWP-32A22F	74
FWH-175B	79	FWP-350A	80
FWH-1A14F	73	FWP-35B	79
FWH-200B	79	FWP-3A14F	74
FWH-20A14F	73	FWP-400A	80
FWH-225A	79	FWP-40A14FI	74
FWH-250A	79	FWP-40A14F	74
FWH-25A14F	73	FWP-40A22FI	74
FWH-275A	79	FWP-40A22F	74
FWH-2A14F	73	FWP-40B	79
FWH-3-15A6F	73	FWP-450A	80
FWH-300A	79	FWP-4A14F	74
FWH-30A14F	73	FWP-500A	80
FWH-325A	79	FWP-50A14FI	74
FWH-350A	79	FWP-50A14F	74
FWH-35B	79	FWP-50A22FI	74
FWH-3A14F	73	FWP-50A22F	74
FWH-400A	79	FWP-50B	79
FWH-40B	79	FWP-5A14F	74
FWH-450A	79	FWP-5B	79
FWH-45B	79	FWP-600A	80
FWH-4A14F	73	FWP-60B	79
FWH-500A	79	FWP-63A22FI	74
FWH-50B	79	FWP-63A22F	74
FWH-5A14F	73	FWP-700A	80
FWH-6-30A6F	73	FWP-70B	79
FWH-600A	79	FWP-800A	80
FWH-60B	79	FWP-80A22FI	74
FWH-6A14F	73	FWP-80A22F	74
FWH-700A	79	FWP-80B	79
FWH-70B	79	FWP-900A	80
FWH-800A	79	FWP-90B	79
FWH-80B	79	FWX-10A20FI	75
FWH-90B	79	FWX-10A20F	75
FWJ-1000A	80	FWX-12A20FI	75
FWJ-100A	80	FWX-12A20F	75
FWJ-1200A	80	FWX-15A20FI	75
FWJ-125A	80	FWX-15A20F	75
FWJ-1400A	80	FWX-2A20FI	75
FWJ-150A	80	FWX-2A20F	75
FWJ-1600A	80	FWX-6A20FI	75
FWJ-175A	80	FWX-6A20F	75
FWJ-1800A	80	FWX-8A20FI	75
FWJ-2000A	80	FWX-8A20F	75
FWJ-200A	80	FWX-1000AH	78
FWJ-20A14F	74	FWX-100A	78
FWJ-250A	80	FWX-10A14F	73
FWJ-25A14F	74	FWX-1200AH	78
FWJ-300A	80	FWX-125A	78
FWJ-30A14F	74	FWX-1500AH	78
FWJ-350A	80	FWX-150A	78
FWJ-35A	80	FWX-15A14F	73
FWJ-400A	80	FWX-1600AH	78
FWJ-40A	80	FWX-175A	78
FWJ-500A	80	FWX-1A14F	73
FWJ-50A	80	FWX-2000AH	78
FWJ-600A	80	FWX-200A	78
FWJ-60A	80	FWX-20A14F	73
FWJ-70A	80	FWX-225A	78
FWJ-800A	80	FWX-2500AH	78
FWJ-80A	80	FWX-250A	78
FWJ-90A	80	FWX-25A14F	73
FWL-20A20FI	75	FWX-275A	78
FWL-20A20F	75	FWX-2A14F	73
FWL-25A20FI	75	FWX-300A	78
FWL-25A20F	75	FWX-30A14F	73
FWL-30A20FI	75	FWX-350A	78
FWL-30A20F	75	FWX-35A	78
FWP-1000A	80	FWX-3A14F	73
FWP-100A22FI	74	FWX-400A	78
FWP-100A22F	74	FWX-40A	78
FWP-100B	79	FWX-450A	78
FWP-10A14FI	74	FWX-45A	78
FWP-10A14F	74	FWX-4A14F	73
FWP-10B	79	FWX-500A	78
FWP-1200A	80	FWX-50A14F	73
FWP-125A	79	FWX-50A	78
FWP-150A	79	FWX-5A14F	73
FWP-15A14FI	74	FWX-600A	78

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
FWX-60A	78	HMCP250F	111	K2ADAPTKIT	50	LST4	54
FWX-700A	78	HMCP250G	111	K3ADAPTKIT	50	LST5LPK	118
FWX-70A	78	HMCP250J	111	K4ADAPTKIT	50	LST6RPK	120
FWX-800A	78	HMCP250K5	111	K50/I	350, 352	LST6	52
FWX-80A	78	HMCP250L5	111	K95/1N/BR	352	LST6	54
FWX-90A	78	HMCP250W5	111	KAMP10	328	LT3315TA	115
GF710	57	HMCP400F5	113	KBL2.5-4PA	338	LT3400TA	115
GF800	57	HMCP400J5	113	KBL2.5PA	338	LT3500TA	115
GG1000	57	HMCP400K5	113	KBL6-10PA	339	LT3630TA	115
GG1250	57	HMCP400L5	113	KD4-CI	353	LT4500TA	115
GG710	57	HMCP400X5	113	KES3125LSI	113	LT4630TA	115
GG800	57	HMEG	97	KES3250LSI	113	LW3630F	115
GH1000	57	HMID	97	KES3400LSI	113	LW3800T33W	115
GH1250	57	HMISOFT	279	KEWMATE2000	322	LW3800W	115
GH710	57	HMIVU04CUNBE	279	KEWMATE2001	322	LW4630F	115
GH800	57	HMIVU06CUNB1	279	KLM(A)	89	LWC3630F	115
GSA-1	62	HMIVU07CUNBE	279	KLU(A)	92	M-MCS	317
GSA-2	62	HMIVU08CUNBE	279	KNB-P3	186	M22-A4	149
GSD-2	62	HMIVU10WCUNBE	279	KNB-RT-P3	186	M22-AK01	149
GSK-260	97	HMVD5B	118	KNB-RT-T0	186	M22-AK10	149
H-B3-PK20	217	HMVD6B	120	KNB-T0	186	M22-AK11	149
H-B3-PK24	217	HS-SA(*)-T0	190	KNK-P3	186	M22-AMC	154
H-P14	190	HS25-CI	352	KNK-T0	186	M22-A	149
H-P1	190	HS50-CI	352	KPEKM2	112	M22-B	154
H-P3	190	HSB22BW-V	64	KPEKM3	114	M22-CK02	25
H-P5-125/160	190	HSB22BWCL-Q	64	KPEKM4	116	M22-CK11	25
H-P5-250/315	190	HSB22BWCL	64	KPR3AM	114	M22-CK20	25
H-T8	190	HSB22BW	64	KPR3BM	114	M22-D-B	148
H1-T5	190	HSB22FWCL-Q	64	KRP-C(A)SP	92	M22-D-G-K11-P	146
H3-T0	190	HSB22FWCL	64	KS3-CI	353	M22-D-G-X1/K10	147
H30030-2SR	91	HSB22FW	64	KS4-CI	353	M22-D-G-X1/KC11/I	147
H30030-3SR	91	HSB30BWCLI	64	KT170-AU	322	M22-D-G-X1	148
H30060-2SR	91	HSB30BWI	64	KT200	323	M22-D-G	148
H30060-3SR	91	HSB30FWCLI	64	KT203	323	M22-D-R-X0/K01	147
H30100-1SR	91	HSB30FWI	64	KT3200TA	113	M22-D-R-X0/KC11/I	147
H30100-3SR	91	HSF12P	52	KT3250TA	113	M22-D-R-X0	148
H60030-1SR	91	HSF18P	52	KT3315TA	113	M22-D-R	148
H60030-3SR	91	HSF24P	52	KT3400TA	113	M22-D-S-K11-P	146
H60060-1SR	91	HSF36P	52	KT4200TA	113	M22-D-S	148
H60060-3SR	91	HTC-55M	97	KT4250TA	113	M22-D-W	148
H60100-1SR	91	HZ-T5	190	KT4315TA	113	M22-D-X	148
H60100-3SR	91	I/F743-CP	128	KT4400TA	113	M22-D-Y	148
HDILE	196	ID89221G07	243	KTH	114	M22-D4-S-X7	153
HES35ST	338, 339, 340, 341, 342, 343, 344, 345, 347	IPB1	110, 243	KTk-R(A)	89	M22-D4-S	153
HEX3	112, 114	IPB3	112, 114	KTk(A)	89	M22-DDL-GR-X1/X0	148
HEX4	116	IPB4	116	KTn-R(A)	91	M22-DDL-GR-X1/X0/	147
HEX5	118	IPB5	118	KTQ(A)	89	K11/230-W	147
HEX6	120	IQ250-PMak	329	KTS-R(A)	91	M22-DG-X	148
HFw3050	109	IQ250/260-I01	329	KTU(A)	92	M22-DH-G	148
HFw3063	109	IQ250/260-I02	329	KW3400F	113	M22-DH-R-K11-P	146
HFw3080	109	IQ250/260-I03	329	KWC3400F	113	M22-DH-R	148
HFw3100	109	IQ250/260-I04	329	KYK4	118	M22-DH-S	148
HFw3125	109	IS-100/1	4	KYK6	120	M22-DI4-S-X7	153
HFw3160	109	IS-100/2	4	LCQ12FKIT	107	M22-DL-B	150
HFw3200	109	IS-100/3	4	LCQ12PBB	107	M22-DL-G	150
HFwF1016	109	IS-100/4	4	LCQ12S	107	M22-DL-R	150
HFwF1020	109	IS-125/1	4	LCQ18FKIT	107	M22-DL-W	150
HFwF1025	109	IS-125/2	4	LCQ18PBB	107	M22-DLY	150
HFwF1032	109	IS-125/3	4	LCQ18S	107	M22-DLH-B	150
HFwF1040	109	IS-125/4	4	LCQ6FKIT	107	M22-DLH-G	150
HFwF1050	109	IS-40/1	4	LCQ6S	107	M22-DLH-R-K11-230R-P	146
HFwF1063	109	IS-40/2	4	LCQ9FKIT	107	M22-DLH-R-K11-R-P	146
HFwF1080	109	IS-40/3	4	LCQ9S	107	M22-DLH-R	150
HFwF1100	109	IS-40/4	4	LCOCLK	107	M22-DLH-W	150
HFwF1125	109	IS-63/1	4	LCODRKIT12	107	M22-DLH-Y	150
HFwF1160	109	IS-63/2	4	LCODRKIT18	107	M22-DP-G	148
HFwF2016	109	IS-63/3	4	LCODRKIT6	107	M22-DP-R	148
HFwF2020	109	IS-63/4	4	LCODRKIT9	107	M22-DP-S	148
HFwF2025	109	IS-80/1	4	LKD3	112, 114	M22-DP-Y	148
HFwF2032	109	IS-80/2	4	LKD4	118	M22-DRL-B	150
HFwF2040	109	IS-80/3	4	LKDELQTW	99	M22-DRL-G	150
HFwF2050	109	IS-80/4	4	LKDO	100	M22-DRL-R	150
HFwF2063	109	IS/SPE-1TE	15	LP-CC(A)	89	M22-DRL-W-K11-230W-P	146
HFwF2080	109	IVS-T0	189	LPJ-4ISP	92	M22-DRL-W-K11-W-P	146
HFwF2100	109	J-02	243	LPN-RK(A)SP	91	M22-DRL-W	150
HFwF2125	109	J-11	243	LPS-RK(A)SP	91	M22-DRL-Y	150
HFwF2160	109	J-1CV	243	LS-02	281, 282	M22-DRL-G	148
HFwF3016	109	J-20	243	LS-11D	281, 282	M22-DRL-R	148
HFwF3020	109	J60030-1CR	92	LS-11S	281, 282	M22-DRL-S	148
HFwF3025	109	J60030-3CR	92	LS-11	281, 282	M22-DZ-B-GB14	154
HFwF3032	109	J60060-1CR	92	LS-20	281, 282	M22-DZ-B-GB14	207
HFwF3040	109	J60060-3CR	92	LSCR1-K	77	M22-E1	153
HFwF3225	109	J60100-1CR	92	LSCR2-K	77	M22-E2	153
HG-CI	353	J60100-3CR	92	LSE-02	281, 282	M22-E3	153
HI11-P1/P3E	189	JUN(A)	90	LSE-11	281, 282	M22-E4	153
HI11-P1/P3Z	189	JJS(A)	90	LSM-02	281, 282	M22-E5	153
HI21-P5-125/160E	189	JKS-A)	92	LSM-11D	281, 282	M22-E6	153
HI21-P5-125/160Z	189	JT3125TA	111	LSM-11S	281, 282	M22-ES-MS1	152
HI21-P5-250/315E	189	JT3160TA	111	LSM-11	281, 282	M22-EY1	153
HI21-P5-250/315Z	189	JT3200TA	111	LSM-20	281, 282	M22-FR-AU	154
HJDDC3250F	111	JT3250TA	111	LSM-XLA	282	M22-GR	154
HJW3250F	111	JT4200TA	111	LSM-XL	282	M22-H1	154
HJW4250F	111	JT4250TA	111	LSM-XP	282	M22-H2	154
HKP	97	JTH	112	LSM-XRLA	282	M22-I1	153
HKW3400F	113	JW3250F	111	LSM-XRL	282	M22-I2-M1	147
HKW4400F	113	JWC3250F	111	LSM-XRRM	282	M22-I2	153
HLDDC3600F	115	K-CH-K1/2	190	LSM-XRR	282	M22-I3-M1	147
HLK4	116	K-CH-K3	350	LSM-XS	282	M22-I3-M2	147
HLK6	120	K-CH-K4	190, 350	LST10	52, 54	M22-I3	153
HLW3630F	115	K-CH-K5	190	LST16	52, 54	M22-I4-M1	147
HLW4630F	115	K-CI	353	LST20	52, 54	M22-I4	153
HMCP250A	111	K10/I	350, 352	LST25	52, 54	M22-I6	153
HMCP250C	111	K150/I/BR	352	LST2	52, 54	M22-IVS	154
HMCP250D	111	K240/I/BR	352	LST32	54	M22-K01	25, 149
		K25/I	350, 352	LST4	52	M22-K10	25, 149

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
M22-KC01	149	M22-XCK1	153	M70125	336	M90231	333
M22-KC10	149	M22-XCK2	153	M70126	336	M90241	333
M22-L-B	150	M22-XCK3	153	M70127	336	MAI	77
M22-L-G-230G-P	146	M22-XCK	153	M70128	336	MAX-(A)	97
M22-L-G-G-P	146	M22-XD-B	148	M70131	336	MBS-I2	190
M22-L-G	150	M22-XD-G	148	M70132	336	MBS-I4	190
M22-L-R-230R-P	146	M22-XD-R	148	M70133	336	MBS11NSB40BW	384
M22-L-R-R-P	146	M22-XD-S	148	M70134	336	MBS11SB40BW	384
M22-L-R	150	M22-XD-W	148	M70135	336	MBS2000SW1	384
M22-L-W	150	M22-XD-Y	148	M70136	336	MBS3000SW1	384
M22-L-Y	150	M22-XGWK	154	M70137	336	MC-250	77
M22-LED-B	150	M22-XLED-T	150	M70138	336	MC-600	77
M22-LED-G	150	M22-XLED230-T	150	M70141	336	MCCLIP	77
M22-LED-R	150	M22-XST	154	M70142	336	MCS11-G	316
M22-LED-W	150	M22-XW	154	M70143	336	MCS11-SOND910-G	316
M22-LED230-B	150	M22-XZK-GB99	154	M70144	336	MCS11	316
M22-LED230-G	150	M22-XZK	154	M70145	336	MCS22-G	316
M22-LED230-R	150	M22S-B	154	M70146	336	MCS22-SOND910-G	316
M22-LED230-W	150	M22S-R30	154	M70147	336	MCS22	316
M22-LEDC-B	150	M22S-ST-X	154	M70148	336	MCS4-G	316
M22-LEDC-G	150	M22S-STDD-X	154	M70151	336	MCS4-SOND910-G	316
M22-LEDC-R	150	M3-CI23	352	M70152	336	MCS4	316
M22-LEDC-W	150	M3-CI43	352	M70153	336	MCSN11-V	316
M22-LEDC230-B	150	M3-CI44	352	M70154	336	MCSN11	316
M22-LEDC230-G	150	M3-CI45	352	M70155	336	MCSN16-V	316
M22-LEDC230-R	150	M3-CI48	352	M70156	336	MCSN16	316
M22-LEDC230-W	150	M30110	333	M70157	336	MCSN22-V	316
M22-LH-B	150	M30120	333	M70311	334	MCSN22	316
M22-LH-G	150	M30121	333	M70312	334	MCSN4-V	316
M22-LH-R	150	M30210	333	M70313	334	MCSN4	316
M22-LH-W	150	M30220	333	M70314	334	MDA-(A)	97
M22-LH-Y	150	M30221	333	M70315	334	MDL-(A)	97
M22-LS	281, 282	M30310	333	M70316	334	MDST4-300	355
M22-MS	154	M30701	333	M70317	334	MDST4-400	355
M22-PL-PV	149	M30811	333	M70318	334	MDST4-500	355
M22-PV/K01	147	M31531	333	M70319	334	MDST4-600	355
M22-PV/K11	147	M31563	333	M70321	334	MDST6-1000	355
M22-PV/KC11/I/Y	147	M31566	333	M70322	334	MDST6-1200	355
M22-PVL-K12-230R-P	146	M31567	333	M70323	334	MDST6-600	355
M22-PVL-K12-R-P	146	M31611	333	M70324	334	MDST6-800	355
M22-PVL	149	M31741	333	M70325	334	METALPIN	356
M22-PVS/K01	147	M31743	333	M70326	334	MFD-80-B-X	260
M22-PVS/KC11/I/Y	147	M31751	333	M70327	334	MFD-80-B	260
M22-PVS	149	M33000	333	M70328	334	MFD-80-X	260
M22-PVT-K12-P	146	M33011	333	M70329	334	MFD-800-CAB5	262
M22-PVT	149	M50600	332	M70331	334	MFD-80	260
M22-PV	149	M50700	332	M70332	334	MFD-AC-CP4-500	261
M22-R100K	154	M50730	332	M70333	334	MFD-AC-CP4-800	261
M22-R10K	154	M50790	332	M70334	334	MFD-AC-CP4	262
M22-R1K	154	M50A60	332	M70335	334	MFD-AC-CP8-ME	260
M22-R470K	154	M50C10	332	M70336	334	MFD-AC-CP8-NT	260
M22-R47K	154	M51001	332	M70337	334	MFD-AC-R16	260
M22-R4K7	154	M51010	332	M70338	334	MFD-CP4-500-CAB5	262
M22-T-DD	154	M51011	332	M70339	334	MFD-CP4-500	261
M22-T-D	154	M51016	332	M70341	334	MFD-CP4-800-CAB5	262
M22-TA	263	M51020	332	M70342	334	MFD-CP4-800	261
M22-TCV	154	M51100	331	M70343	334	MFD-CP4	262
M22-TC	154	M51200	331	M70344	334	MFD-CP8-ME	260
M22-W3	152	M51211	331	M70345	334	MFD-CP8-NT	260
M22-WVJ2H	153	M51231	331	M70346	334	MFD-R16	260
M22-WVJ2V	153	M51513	331	M70347	334	MFD-RA17	260
M22-WVJ4	153	M51711	331	M70348	334	MFD-T16	260
M22-WK3-K22-P	146	M51800	332	M70349	334	MFD-TA17	260
M22-WK3	152	M51900	332	M70361	335	MFD-TAP13-NI-A	260
M22-WVK-K11-P	146	M51911	332	M70362	335	MFD-TAP13-PT-A	260
M22-WKV	152	M51B11	332	M70363	335	MFD-TAP13-PT-B	260
M22-WK	152	M52000	330	M70364	335	MFD-TP12-NI-A	260
M22-WLK-B	152	M52010	330	M70365	335	MFD-TP12-PT-A	260
M22-WLK-G	152	M52021	330	M70366	335	MFD-TP12-PT-B	260
M22-WLK-R	152	M52031	330	M70367	335	MFD-TS-144	263
M22-WLK-W	152	M52091	330	M70368	335	MFD-XM-80	263
M22-WLK-Y	152	M520F1	330	M70369	335	MFD-XS-80	263
M22-WLK3-B	152	M520J1	330	M7036B	335	MFS10N1	368
M22-WLK3-G	152	M54032	333	M7036C	335	MFS10N2	368
M22-WLK3-R	152	M54033	333	M70372	335	MFS17A2PPC	368
M22-WLK3-W	152	M54040	333	M70373	335	MFS17A2	368
M22-WLK3-Y	152	M54400	331	M70374	335	MFS17B2	368
M22-WR3	152	M54402	331	M70376	335	MFS17C2	368
M22-WR4	152	M54410	331	M70377	335	MFS17D2	368
M22-WR4	153	M54412	331	M70378	335	MFS21E2	368
M22-WRK/K10	147	M54420	331	M70379	335	MFS9N1	368
M22-WRK3/K20	147	M54501	331	M7037B	335	MFS9N2	368
M22-WRK3	152	M54502	331	M7037C	335	ML4	352
M22-WRK4	152	M54503	331	M7037D	335	MMX-ADAPTER-RJ45	249
M22-WRK	152	M54504	331	M7037F	335	MMX-CKIT-FS4	249
M22-WRLK-B	152	M54506	331	M7037G	335	MMX-CKIT-FS5	249
M22-WRLK-G	152	M54507	331	M70381	335	MMX-COM-PC	249
M22-WRLK-R	152	M5450A	331	M70382	335	MMX-IP21-FS1	249
M22-WRLK-W	152	M55510	330	M70383	335	MMX-IP21-FS2	249
M22-WRLK-Y	152	M55511	330	M70384	335	MMX-IP21-FS3	249
M22-WRLK3-B	152	M5ZZF1	330	M70385	335	MMX-NET-XA-45	249
M22-WRLK3-G	152	M5ZZF1	333	M70386	335	MMX-NET-XA	249
M22-WRLK3-R	152	M68433	385	M70387	335	MMX-REMKEY-TEXT	249
M22-WRLK3-W	152	M68434	385	M70388	335	MMX12AA1D7F0-0	249
M22-WRLK3-Y	152	M68443	385	M7038B	335	MMX12AA2D4F0-0	249
M22-WRS/KC11/I	147	M70111	336	M7038D	335	MMX12AA2D8F0-0	249
M22-WRS3	152	M70112	336	M703D5	334	MMX12AA3D7F0-0	249
M22-WRS	152	M70113	336	M703D6	334	MMX12AA4D8F0-0	249
M22-WVR	152	M70114	336	M703D7	334	MMX12AA7D0F0-0	249
M22-WV	152	M70115	336	M703D8	334	MMX12AA9D6F0-0	249
M22-XAK1	154	M70116	336	M703D9	334	MMX34AA012F0-0	249
M22-XAMP	154	M70121	336	M703DA	334	MMX34AA014F0-0	249
M22-XAM	154	M70122	336	M703DB	334	MMX34AA016F0-0	249
M22-XC-R	151	M70123	336	M79951	335	MMX34AA023F0-0	249
M22-XC-Y	151	M70124	336	M90211	333	MMX34AA031F0-0	249

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
MMX34AA038F0-0	249	NIT16	57	NZM1-XKR	28	NZM4-XKP	29
MMX34AA1D3F0-0	249	NIT20L	55	NZM1-XKSA	28	NZM4-XKR	28
MMX34AA1D9F0-0	249	NIT20M25L	55	NZM1-XMV	29	NZM4-XKSA	28
MMX34AA2D4F0-0	249	NIT20M25	57	NZM1-XSTS	28	NZM4-XMVRL	29
MMX34AA3D3F0-0	249	NIT20M32L	55	NZM1-XTVDVR	27	NZM4-XMVR	29
MMX34AA4D3F0-0	249	NIT20M32	57	NZM1-XTVDV	27	NZM4-XMV	29
MMX34AA5D6F0-0	249	NIT20	57	NZM1-XU110-130AC	26	NZM4-XR110-130AC	29
MMX34AA7D6F0-0	249	NIT25L	55	NZM1-XU110-130DC	26	NZM4-XR208-240AC	29
MMX34AA9D0F0-0	249	NIT2L	55	NZM1-XU12DC	26	NZM4-XR24-30DC	29
MP202	51	NIT2	57	NZM1-XU208-240AC	26	NZM4-XR380-440AC	29
MP203N	51	NIT32L	55	NZM1-XU220-250DC	26	NZM4-XTVDVR	27
MP352	51	NIT32M40L	55	NZM1-XU24AC	26	NZM4-XTVDV	27
MP353N	51	NIT32M40	57	NZM1-XU24DC	26	NZM4-XU110-130AC	26
MP453N	51	NIT32M50L	55	NZM1-XU380-440AC	26	NZM4-XU110-130DC	26
MP633N	51	NIT32M50	57	NZM1-XUL110-130DC	26	NZM4-XU12DC	26
MP820/240AS	365	NIT32M63L	55	NZM1-XUL110-30AC	26	NZM4-XU208-240AC	26
MP830/415AS	365	NIT32M63	57	NZM1-XUL12DC	26	NZM4-XU220-250DC	26
MVDILE	196	NIT4L	55	NZM1-XUL208-40AC	26	NZM4-XU24AC	26
MVS-SB-EM	196	NIT4	57	NZM1-XUL220-250DC	26	NZM4-XU24DC	26
MVS-WB-EM	196	NIT6L	55	NZM1-XUL24AC	26	NZM4-XU380-440AC	26
N-P1E	189	NIT6	57	NZM1-XUL24DC	26	NZMB1-1-AF100	22
N-P1Z	189	NITD10	55	NZM1-XUL380-440AC	26	NZMB1-1-AF125	22
N-P3E	189	NITD16	55	NZM1/2-XAB	29	NZMB1-1-AF16	22
N-P3Z	189	NITD20M25	55	NZM1/2-XV4	27	NZMB1-1-AF20	22
N-P5-125/160E	189	NITD20M32	55	NZM1/2-XV6	27	NZMB1-1-AF25	22
N-P5-125/160Z	189	NITD20	55	NZM2-4-XFI30	32	NZMB1-1-AF32	22
N-P5-250/315E	189	NITD25	55	NZM2-4-XFIA30	32	NZMB1-1-AF40	22
N-P5-250/315Z	189	NITD2	55	NZM2-4-XFIA	32	NZMB1-1-AF50	22
N1-100	24	NITD32M40	55	NZM2-4-XFI	32	NZMB1-1-AF63	22
N1-125	24	NITD32M50	55	NZM2-4-XKA	28	NZMB1-1-AF80	22
N1-160	24	NITD32M63	55	NZM2-4-XKR	28	NZMB1-4-A100	22
N1-4-100	24	NITD32	55	NZM2-4-XKSA	28	NZMB1-4-A125	22
N1-4-125	24	NITD4	55	NZM2-XAD250	35	NZMB1-4-A160	22
N1-4-160	24	NITD6	55	NZM2-XDVR	27	NZMB1-4-A20	22
N1-4-63	24	NO-140	97	NZM2-XDV	27	NZMB1-4-A25	22
N1-63	24	NO-220	97	NZM2-XKA	28	NZMB1-4-A32	22
N16TE3	118	NO-270	97	NZM2-XKP	29	NZMB1-4-A40	22
N16TE4	118	NON(A)	90	NZM2-XKR	28	NZMB1-4-A50	22
N2-200	24	NOS(A)	90	NZM2-XKSA	28	NZMB1-4-A63	22
N2-250	24	NS10	54	NZM2-XMVRL	29	NZMB1-4-A80	22
N2-4-200	24	NS16	54	NZM2-XMVR	29	NZMB1-A100	22
N2-4-250	24	NS20M25	54	NZM2-XMV	29	NZMB1-A125	22
N3-4-400	24	NS20M32	54	NZM2-XR110-130AC	29	NZMB1-A160	22
N3-4-630	24	NS20	54	NZM2-XR208-240AC	29	NZMB1-A20	22
N3-400	24	NS25	54	NZM2-XR24-30DC	29	NZMB1-A25	22
N3-630	24	NS2	54	NZM2-XR380-440AC	29	NZMB1-A32	22
N4-1000	24	NS32M36	54	NZM2-XRK4	35	NZMB1-A40	22
N4-1250	24	NS32M40	54	NZM2-XSTS	28	NZMB1-A50	22
N4-1600	24	NS32M50	54	NZM2-XTVDVR	27	NZMB1-A63	22
N4-4-1000	24	NS32M63	54	NZM2-XTVDV	27	NZMB1-A80	22
N4-4-1250	24	NS32	54	NZM2/3-XA110-130AC/DC	26	NZMB1-M100	24
N4-4-1600	24	NS4	54	NZM2/3-XA12AC/DC	26	NZMB1-M40	24
N4-4-800	24	NS6	54	NZM2/3-XA208-250AC/DC	26	NZMB1-M50	24
N4-800	24	NSD10	54	NZM2/3-XA24AC/DC	26	NZMB1-M63	24
NBC-100	66	NSD16	54	NZM2/3-XA380-440AC/DC	26	NZMB1-M80	24
NBC-125	66	NSD20M25	54	NZM2/3-XHIV	25	NZMB2-4-A160/100	22
NBC-150	66	NSD20M32	54	NZM2/3-XKAV	27	NZMB2-4-A160	22
NBC-200	66	NSD20	54	NZM2/3-XMVRL	29	NZMB2-4-A200/125	22
NBC-80	66	NSD25	54	NZM2/3-XMVR	29	NZMB2-4-A200	22
NET25	57	NSD2	54	NZM2/3-XU110-130AC	26	NZMB2-4-A250/160	22
NET32	57	NSD32M36	54	NZM2/3-XU110-130DC	26	NZMB2-4-A250	22
NGH308032M	117	NSD32M40	54	NZM2/3-XU12DC	26	NZMB2-4-A300/200	22
NGH308036M	117	NSD32M50	54	NZM2/3-XU208-240AC	26	NZMB2-4-A300	22
NGH312532M	117	NSD32M63	54	NZM2/3-XU220-250DC	26	NZMB2-A160	22
NGH312536M	117	NSD32	54	NZM2/3-XU24AC	26	NZMB2-A200	22
NGH316032M	117	NSD4	54	NZM2/3-XU24DC	26	NZMB2-A250	22
NGH316036M	117	NSD6	54	NZM2/3-XU380-440AC	26	NZMB2-A300	22
NGH408032M	117	NZM-XBZ1000	29	NZM3-4-XKA2	28	NZMB2-M125	24
NGH408036M	117	NZM-XBZ225	29	NZM3-4-XKR	28	NZMB2-M160	24
NGH412532M	117	NZM-XBZ600	29	NZM3-4-XKSA	28	NZMB2-M200	24
NGH412536M	117	NZM-XDMI-DPV1	30	NZM3-XAB	29	NZMH1-4-A100	22
NGH416032M	117	NZM-XDMI612	30	NZM3-XAD630	35	NZMH1-4-A125	22
NGH416036M	117	NZM-XPC-KIT	30	NZM3-XDVR	27	NZMH1-4-A160	22
NGHF316032M	117	NZM1-1-XKSA	28	NZM3-XDV	27	NZMH1-4-A20	22
NGHF316036M	117	NZM1-4-XFI300R	32	NZM3-XKA2	28	NZMH1-4-A25	22
NGHF416032M	117	NZM1-4-XFI300U	32	NZM3-XKP	29	NZMH1-4-A32	22
NGHF416036M	117	NZM1-4-XFI30R	32	NZM3-XKR13	35	NZMH1-4-A40	22
NGK3080KSM	117	NZM1-4-XFI30U	32	NZM3-XKR	28	NZMH1-4-A50	22
NGK3125KSM	117	NZM1-4-XFIR	32	NZM3-XKSA	28	NZMH1-4-A63	22
NGK4080KSM	117	NZM1-4-XFIU	32	NZM3-XMVRL	29	NZMH1-4-A80	22
NGK4125KSM	117	NZM1-4-XKA	28	NZM3-XMVR	29	NZMH1-A100	22
NGS308032M	117	NZM1-4-XKR	28	NZM3-XMV	29	NZMH1-A125	22
NGS308036M	117	NZM1-4-XKSA	28	NZM3-XR110-130AC	29	NZMH1-A160	22
NGS312532M	117	NZM1-XA110-130AC/DC	26	NZM3-XR208-240AC	29	NZMH1-A20	22
NGS312536M	117	NZM1-XA12AC/DC	26	NZM3-XR24-30DC	29	NZMH1-A25	22
NGS316032M	117	NZM1-XA208-250AC/DC	26	NZM3-XR380-440AC	29	NZMH1-A32	22
NGS316036M	117	NZM1-XA24AC/DC	26	NZM3-XTVDVR	27	NZMH1-A40	22
NGS408032M	117	NZM1-XA380-440AC/DC	26	NZM3-XTVDV	27	NZMH1-A50	22
NGS408036M	117	NZM1-XAD160	35	NZM3/4-XMVRL	29	NZMH1-A63	22
NGS412532M	117	NZM1-XAL110-130AC/DC	26	NZM3/4-XMVR	29	NZMH1-A80	22
NGS412536M	117	NZM1-XAL12AC/DC	26	NZM3/4-XSTS	28	NZMH1-M100	24
NGS416032M	117	NZM1-XAL208-250AC/DC	26	NZM3/4-XV4	27	NZMH1-M40	24
NGS416036M	117	NZM1-XAL24AC/DC	26	NZM3/4-XV6	27	NZMH1-M50	24
NGSF316032M	117	NZM1-XAL380-440AC/DC	26	NZM4-4-XKA	28	NZMH1-M63	24
NGSF316036M	117	NZM1-XDVR	27	NZM4-4-XKR	28	NZMH1-M80	24
NGSF416032M	117	NZM1-XDV	27	NZM4-4-XKSA	28	NZMH2-4-A100	22
NGSF416036M	117	NZM1-XFI300R	32	NZM4-XA110-130AC/DC	26	NZMH2-4-A125	22
NHI-E-10-PK20	215	NZM1-XFI30R	32	NZM4-XA12AC/DC	26	NZMH2-4-A160/100	22
NHI-E-11-PK20	215	NZM1-XFIR	32	NZM4-XA208-250AC/DC	26	NZMH2-4-A160	22
NHI11-PK20	215	NZM1-XHIVL	25	NZM4-XA24AC/DC	26	NZMH2-4-A200/125	22
NHI12-PK20	215	NZM1-XHIVR	25	NZM4-XA380-440AC/DC	26	NZMH2-4-A200	22
NHI21-PK20	215	NZM1-XHIV	25	NZM4-XDVR	27	NZMH2-4-A20	22
NIT10L	55	NZM1-XKAV	27	NZM4-XDV	27	NZMH2-4-A250/160	22
NIT10	57	NZM1-XKA	28	NZM4-XHIV	25	NZMH2-4-A250	22
NIT16L	55	NZM1-XKP	29	NZM4-XKA	28	NZMH2-4-A25	22

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
NZMH2-4-A300/200	22	NZMN2-4-VE100	23	P110152-10	62	PFIM-100/4/03-A	11
NZMH2-4-A300	22	NZMN2-4-VE160	23	P110153-10	62	PFIM-100/4/03-G	12
NZMH2-4-A32	22	NZMN2-4-VE250	23	P110154-10	62	PFIM-100/4/03-G/A-AU	12
NZMH2-4-A40	22	NZMN2-A160	22	P11941	337	PFIM-100/4/03-U	12
NZMH2-4-A50	22	NZMN2-A200	22	P11944	337	PFIM-100/4/03	11
NZMH2-4-A63	22	NZMN2-A250	22	P19921	335	PFIM-100/4/05-A	11
NZMH2-4-A80	22	NZMN2-A300	22	P3-100/EA/SVB/HI11	185	PFIM-100/4/05	11
NZMH2-4-VE100	23	NZMN2-M125	24	P3-100/EA/SVB/N	185	PFIM-16/2/001-A-AU	11
NZMH2-4-VE160	23	NZMN2-M160	24	P3-100/EA/SVB/N/HI11	185	PFIM-16/2/001-AU	11
NZMH2-4-VE250	23	NZMN2-M200	24	P3-100/EA/SVB	185	PFIM-25/2/003-A-AU	11
NZMH2-A100	22	NZMN2-VE100	23	P3-100/I5/SVB/HI11	185	PFIM-25/2/003-AU	11
NZMH2-A125	22	NZMN2-VE160	23	P3-100/I5/SVB/N	185	PFIM-25/2/01-A-AU	11
NZMH2-A160	22	NZMN2-VE250	22	P3-100/I5/SVB/N/HI11	185	PFIM-25/2/01-AU	11
NZMH2-A200	22	NZMN3-4-A320/200	22	P3-100/I5/SVB	185	PFIM-25/2/03-A-AU	11
NZMH2-A20	22	NZMN3-4-A320	22	P3-100/M4/SVB/HI11	185	PFIM-25/2/03-AU	11
NZMH2-A250	22	NZMN3-4-A400/250	22	P3-100/M4/SVB/N	185	PFIM-25/4/03-A-AU	11
NZMH2-A25	22	NZMN3-4-A400	22	P3-100/M4/SVB/N/HI11	185	PFIM-40/2/003-A-AU	11
NZMH2-A300	22	NZMN3-4-A500/320	22	P3-100/M4/SVB	185	PFIM-40/2/003-AU	11
NZMH2-A32	22	NZMN3-4-A500	22	P3-100/V/SVB/HI11	185	PFIM-40/2/003-G/A-AU	12
NZMH2-A40	22	NZMN3-4-AE400	23	P3-100/V/SVB/N/HI11	185	PFIM-40/2/003-G-AU	12
NZMH2-A50	22	NZMN3-4-AE630	23	P3-100/V/SVB/N	185	PFIM-40/2/01-A-AU	11
NZMH2-A63	22	NZMN3-4-VE400	23	P3-100/V/SVB	185	PFIM-40/2/01-AU	11
NZMH2-A80	22	NZMN3-4-VE630	23	P3-63/EA/SVB/HI11	185	PFIM-40/2/01-G-AU	12
NZMH2-M125	24	NZMN3-A320	22	P3-63/EA/SVB/N/HI11	185	PFIM-40/2/03-A-AU	11
NZMH2-M160	24	NZMN3-A400	22	P3-63/EA/SVB/N	185	PFIM-40/2/03-AU	11
NZMH2-M200	24	NZMN3-A500	22	P3-63/EA/SVB	185	PFIM-40/4/003-A-AU	11
NZMH2-VE100	23	NZMN3-AE250	23	P3-63/I4/SVB/HI11	185	PFIM-40/4/003-AU	11
NZMH2-VE160	23	NZMN3-AE400	23	P3-63/I4/SVB/N/HI11	185	PFIM-40/4/003-G/A-AU	12
NZMH2-VE250	23	NZMN3-AE630	23	P3-63/I4/SVB/N	185	PFIM-40/4/003-G-AU	12
NZMH3-4-A320/200	22	NZMN3-ME220	24	P3-63/I4/SVB	185	PFIM-40/4/01-A-AU	11
NZMH3-4-A320	22	NZMN3-ME350	24	P3-63/M4/SVB/HI11	185	PFIM-40/4/01-AU	11
NZMH3-4-A400/250	22	NZMN3-ME450	24	P3-63/M4/SVB/N/HI11	185	PFIM-40/4/01-G-AU	12
NZMH3-4-A400	22	NZMN3-VE250	23	P3-63/M4/SVB/N	185	PFIM-40/4/01-U	12
NZMH3-4-A500/320	22	NZMN3-VE400	23	P3-63/M4/SVB	185	PFIM-40/4/03-A-AU	11
NZMH3-4-A500	22	NZMN3-VE630	23	P3-63/V/SVB/HI11	185	PFIM-40/4/03-AU	11
NZMH3-4-AE400	23	NZMN4-4-AE1000	23	P3-63/V/SVB/N/HI11	185	PFIM-40/4/03-U	12
NZMH3-4-AE630	23	NZMN4-4-AE1250	23	P3-63/V/SVB/N	185	PFIM-63/2/003-A-AU	11
NZMH3-4-VE400	23	NZMN4-4-AE1600	23	P3-63/V/SVB	185	PFIM-63/2/003-AU	11
NZMH3-4-VE630	23	NZMN4-4-AE800	23	P5-125/EA/SVB/N	185	PFIM-63/2/003-G/A-AU	12
NZMH3-A320	22	NZMN4-4-VE1000	23	P5-125/EA/SVB	185	PFIM-63/2/01-A-AU	11
NZMH3-A400	22	NZMN4-4-VE1250	23	P5-125/V/SVB/N	185	PFIM-63/2/01-AU	11
NZMH3-A500	22	NZMN4-4-VE1600	23	P5-125/V/SVB	185	PFIM-63/2/03-A-AU	11
NZMH3-AE250	23	NZMN4-4-VE800	23	P5-160/EA/SVB/N	185	PFIM-63/2/03-AU	11
NZMH3-AE400	23	NZMN4-AE1000	23	P5-160/EA/SVB	185	PFIM-63/4/003-A-AU	11
NZMH3-AE630	23	NZMN4-AE1250	23	P5-160/V/SVB/N	185	PFIM-63/4/003-AU	11
NZMH3-ME220	24	NZMN4-AE1600	23	P5-160/V/SVB	185	PFIM-63/4/003-G/A-AU	12
NZMH3-ME350	24	NZMN4-AE630	23	P5-250/EA/SVB/N	185	PFIM-63/4/003-G-AU	12
NZMH3-ME450	24	NZMN4-AE800	23	P5-250/EA/SVB	185	PFIM-63/4/003-R	12
NZMH3-VE250	23	NZMN4-ME1400	24	P5-250/V/SVB/N	185	PFIM-63/4/003-U	12
NZMH3-VE400	23	NZMN4-ME550	24	P5-250/V/SVB	185	PFIM-63/4/01-A-AU	11
NZMH3-VE630	23	NZMN4-ME875	24	P5-315/EA/SVB/N	185	PFIM-63/4/01-AU	11
NZMH4-4-AE1000	23	NZMN4-VE1000	23	P5-315/EA/SVB	185	PFIM-63/4/01-G-AU	12
NZMH4-4-AE1250	23	NZMN4-VE1250	23	P5-315/V/SVB/N	185	PFIM-63/4/01-U	12
NZMH4-4-AE1600	23	NZMN4-VE1600	23	P5-315/V/SVB	185	PFIM-63/4/03-A-AU	11
NZMH4-4-AE800	23	NZMN4-VE630	23	PADLOCK-BRKT-NZM1	27	PFIM-63/4/03-AU	11
NZMH4-4-VE1000	23	NZMN4-VE800	23	PADLOCK-BRKT-NZM2	27	PFIM-63/4/03-S/A-AU	12
NZMH4-4-VE1250	23	OPTRMT-BP-HMAX	249	PADLOCK-BRKT-NZM3	27	PFIM-63/4/03-U	12
NZMH4-4-VE1600	23	OS100M125	55	PADLOCK-BRKT-NZM4	27	PFIM-80/2/003-AU	11
NZMH4-4-VE800	23	OS100	55	PB250LINK	42	PFIM-80/2/01-AU	11
NZMH4-AE1000	23	OS80	55	PB250MS3PD	42	PFIM-80/2/03-AU	11
NZMH4-AE1250	23	OSD100M125	55	PB400MS3PD	17, 42	PFIM-80/4/003-A-AU	11
NZMH4-AE1600	23	OSD100M160	55	PE-P5-125/160E	189	PFIM-80/4/03-AU	11
NZMH4-AE630	23	OSD100	55	PE-P5-125/160Z	189	PFIM-80/4/01-AU	11
NZMH4-AE800	23	OSD80	55	PE-P5-250/315E	189	PFIM-80/4/03-A-AU	11
NZMH4-ME1400	24	P/CAM/3A	128	PE-P5-250/315Z	189	PFIM-80/4/03-AU	11
NZMH4-ME550	24	P1-25/EA/SVB/HI11	185	PE12FT	16	PFIM-80/4/03-S/A-AU	12
NZMH4-ME875	24	P1-25/EA/SVB/N/HI11	185	PE12FW	16	PFIM-80/4/03-U	12
NZMH4-VE1000	23	P1-25/EA/SVB/N	185	PE12ST-IP55	16	PFIM-80/4/05-AU	11
NZMH4-VE1250	23	P1-25/EA/SVB	185	PE12ST	16	PFR-003	31
NZMH4-VE1600	23	P1-25/I2/SVB/HI11	185	PE12SW	16	PFR-03	31
NZMH4-VE630	23	P1-25/I2/SVB/N	185	PE18FT	16	PFR-5	31
NZMH4-VE800	23	P1-25/I2/SVB	185	PE18FW	16	PFR-W-105	31
NZMN1-4-A100	22	P1-25/M4/SVB/HI11	185	PE18ST-IP55	16	PFR-W-140	31
NZMN1-4-A125	22	P1-25/M4/SVB/N/HI11	185	PE18ST	16	PFR-W-20	31
NZMN1-4-A160	22	P1-25/M4/SVB/N	185	PE18SV	16	PFR-W-210	31
NZMN1-4-A20	22	P1-25/M4/SVB	185	PE1E	16	PFR-W-30	31
NZMN1-4-A25	22	P1-25/V/SVB/HI11	185	PE24FT	16	PFR-W-35	31
NZMN1-4-A32	22	P1-25/V/SVB/N/HI11	185	PE24FW	16	PFR-W-70	31
NZMN1-4-A40	22	P1-25/V/SVB/N	185	PE24ST-IP55	16	PKE-SWD-SP	215
NZMN1-4-A50	22	P1-25/V/SVB	185	PE24ST	16	PKE-XH-MCC	216
NZMN1-4-A63	22	P1-32/EA/SVB/HI11	185	PE24SW	16	PKE-XH	216
NZMN1-4-A80	22	P1-32/EA/SVB/N/HI11	185	PE2E	16	PKE-XRH-MCC	216
NZMN1-A100	22	P1-32/EA/SVB/N	185	PE36FT	16	PKE-XRH	216
NZMN1-A125	22	P1-32/EA/SVB	185	PE36FW	16	PKE-XTU-1,2	214
NZMN1-A160	22	P1-32/I2/SVB/HI11	185	PE36ST	16	PKE-XTU-12	214
NZMN1-A20	22	P1-32/I2/SVB/N	185	PE36SV	16	PKE-XTU-32	214
NZMN1-A25	22	P1-32/I2/SVB	185	PE4E	16	PKE-XTU-32	215
NZMN1-A32	22	P1-32/M4/SVB/HI11	185	PE4ST-IP55	16	PKE-XTU-4	214
NZMN1-A40	22	P1-32/M4/SVB/N/HI11	185	PE6ST-IP55	16	PKE-XTU-65	215
NZMN1-A50	22	P1-32/M4/SVB/N	185	PE8E	16	PKE-XTUA-1,2	214
NZMN1-A63	22	P1-32/M4/SVB	185	PE8ST-IP55	16	PKE-XTUA-12	214
NZMN1-A80	22	P1-32/V/SVB/HI11	185	PFIM-100/2/003-G/A-AU	12	PKE-XTUA-32	214
NZMN1-M100	24	P1-32/V/SVB/N/HI11	185	PFIM-100/2/003	11	PKE-XTUA-32	215
NZMN1-M40	24	P1-32/V/SVB/N	185	PFIM-100/2/01-A	11	PKE-XTUA-4	214
NZMN1-M50	24	P1-32/V/SVB	185	PFIM-100/2/01	11	PKE-XTUA-65	215
NZMN1-M63	24	P10111	337	PFIM-100/2/03-A	11	PKE-XTUW-32	215
NZMN1-M80	24	P10112	337	PFIM-100/2/03-G/A-AU	12	PKE-XTUWA-32	215
NZMN2-4-A160/100	22	P10113	337	PFIM-100/2/03	11	PKE12	214
NZMN2-4-A160	22	P10114	337	PFIM-100/4/003-A	11	PKE32	214, 215
NZMN2-4-A200/125	22	P10115	337	PFIM-100/4/003-G	12	PKE65	215
NZMN2-4-A200	22	P10131	337	PFIM-100/4/003-G/A-AU	12	PKNM-10/1N/C/001-A-AU	10
NZMN2-4-A250/160	22	P10132	337	PFIM-100/4/003-R	12	PKNM-10/1N/C/001-AU	10
NZMN2-4-A250	22	P10214	337	PFIM-100/4/003	11	PKNM-10/1N/C/003-A-AU	10
NZMN2-4-A300/200	22	P10215	337	PFIM-100/4/01-A	11	PKNM-10/1N/C/003-AU	10
NZMN2-4-A300	22	P110151-10	62	PFIM-100/4/01	11	PKNM-10/1N/C/01-A-AU	10

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
PKNM-10/1N/C/01-AU	10	PLHT-B25/3-AA	7	PLN6-B6/1N	5	PLS6-C4/2-AU	5
PKNM-10/1N/C/03-A-AU	10	PLHT-B25/4-AA	7	PLN6-C10/1N	5	PLS6-C4/3-AU	5
PKNM-10/1N/C/03-AU	10	PLHT-B32/1-AA	7	PLN6-C13/1N	5	PLS6-C4/4-AU	5
PKNM-16/1N/C/001-A-AU	10	PLHT-B32/2-AA	7	PLN6-C16/1N	5	PLS6-C40/1-AU	5
PKNM-16/1N/C/001-AU	10	PLHT-B32/3-AA	7	PLN6-C20/1N	5	PLS6-C40/2-AU	5
PKNM-16/1N/C/003-A-AU	10	PLHT-B32/4-AA	7	PLN6-C25/1N	5	PLS6-C40/3-AU	5
PKNM-16/1N/C/003-AU	10	PLHT-B40/1-AA	7	PLN6-C32/1N	5	PLS6-C40/4-AU	5
PKNM-16/1N/C/01-A-AU	10	PLHT-B40/2-AA	7	PLN6-C40/1N	5	PLS6-C50/1-AU	5
PKNM-16/1N/C/01-AU	10	PLHT-B40/3-AA	7	PLN6-C6/1N	5	PLS6-C50/2-AU	5
PKNM-16/1N/C/03-A-AU	10	PLHT-B40/4-AA	7	PLS4-C10/1-AU	4	PLS6-C50/3-AU	5
PKNM-16/1N/C/03-AU	10	PLHT-B50/1-AA	7	PLS4-C10/2-AU	4	PLS6-C50/4-AU	5
PKNM-20/1N/C/003-A-AU	10	PLHT-B50/2-AA	7	PLS4-C10/3-AU	4	PLS6-C6/1-AU	5
PKNM-20/1N/C/003-AU	10	PLHT-B50/3-AA	7	PLS4-C16/1-AU	4	PLS6-C6/2-AU	5
PKNM-20/1N/C/01-A-AU	10	PLHT-B50/4-AA	7	PLS4-C16/2-AU	4	PLS6-C6/3-AU	5
PKNM-20/1N/C/01-AU	10	PLHT-B63/1-AA	7	PLS4-C16/3-AU	4	PLS6-C6/4-AU	5
PKNM-20/1N/C/03-A-AU	10	PLHT-B63/2-AA	7	PLS4-C20/1-AU	4	PLS6-C63/1-AU	5
PKNM-20/1N/C/03-AU	10	PLHT-B63/3-AA	7	PLS4-C20/2-AU	4	PLS6-C63/2-AU	5
PKNM-25/1N/C/003-A-AU	10	PLHT-B63/4-AA	7	PLS4-C20/3-AU	4	PLS6-C63/3-AU	5
PKNM-25/1N/C/003-AU	10	PLHT-B80/1-AA	7	PLS4-C25/1-AU	4	PLS6-C63/4-AU	5
PKNM-25/1N/C/01-A-AU	10	PLHT-B80/2-AA	7	PLS4-C25/2-AU	4	PLSM-B1/1-AU	6
PKNM-25/1N/C/01-AU	10	PLHT-B80/3-AA	7	PLS4-C25/3-AU	4	PLSM-B1/2-AU	6
PKNM-25/1N/C/03-A-AU	10	PLHT-B80/4-AA	7	PLS4-C32/1-AU	4	PLSM-B1/3-AU	6
PKNM-25/1N/C/03-AU	10	PLHT-C100/1-AA	7	PLS4-C32/2-AU	4	PLSM-B1/4-AU	6
PKNM-32/1N/C/003-A-AU	10	PLHT-C100/2-AA	7	PLS4-C32/3-AU	4	PLSM-B10/1-AU	6
PKNM-32/1N/C/003-AU	10	PLHT-C100/3-AA	7	PLS4-C40/1-AU	4	PLSM-B10/2-AU	6
PKNM-32/1N/C/01-A-AU	10	PLHT-C100/4-AA	7	PLS4-C40/2-AU	4	PLSM-B10/3-AU	6
PKNM-32/1N/C/01-AU	10	PLHT-C125/1-AA	7	PLS4-C40/3-AU	4	PLSM-B10/4-AU	6
PKNM-32/1N/C/03-A-AU	10	PLHT-C125/2-AA	7	PLS4-C50/1-AU	4	PLSM-B16/1-AU	6
PKNM-32/1N/C/03-AU	10	PLHT-C125/3-AA	7	PLS4-C50/2-AU	4	PLSM-B16/2-AU	6
PKNM-40/1N/C/003-A-AU	10	PLHT-C125/4-AA	7	PLS4-C50/3-AU	4	PLSM-B16/3-AU	6
PKNM-40/1N/C/003-AU	10	PLHT-C20/1-AA	7	PLS4-C6/1-AU	4	PLSM-B16/4-AU	6
PKNM-40/1N/C/01-A-AU	10	PLHT-C20/2-AA	7	PLS4-C6/2-AU	4	PLSM-B2/1-AU	6
PKNM-40/1N/C/01-AU	10	PLHT-C20/3-AA	7	PLS4-C6/3-AU	4	PLSM-B2/2-AU	6
PKNM-40/1N/C/03-A-AU	10	PLHT-C20/4-AA	7	PLS4-C63/1-AU	4	PLSM-B2/3-AU	6
PKNM-40/1N/C/03-AU	10	PLHT-C25/1-AA	7	PLS4-C63/2-AU	4	PLSM-B2/4-AU	6
PKNM-6/1N/C/001-A-AU	10	PLHT-C25/2-AA	7	PLS4-C63/3-AU	4	PLSM-B20/1-AU	6
PKNM-6/1N/C/001-AU	10	PLHT-C25/3-AA	7	PLS6-B10/1-AU	5	PLSM-B20/2-AU	6
PKNM-6/1N/C/003-A-AU	10	PLHT-C25/4-AA	7	PLS6-B10/2-AU	5	PLSM-B20/3-AU	6
PKNM-6/1N/C/003-AU	10	PLHT-C32/1-AA	7	PLS6-B10/3-AU	5	PLSM-B20/4-AU	6
PKNM-6/1N/C/01-A-AU	10	PLHT-C32/2-AA	7	PLS6-B10/4-AU	5	PLSM-B25/1-AU	6
PKNM-6/1N/C/01-AU	10	PLHT-C32/3-AA	7	PLS6-B16/1-AU	5	PLSM-B25/2-AU	6
PKNM-6/1N/C/03-A-AU	10	PLHT-C32/4-AA	7	PLS6-B16/2-AU	5	PLSM-B25/3-AU	6
PKNM-6/1N/C/03-AU	10	PLHT-C40/1-AA	7	PLS6-B16/3-AU	5	PLSM-B25/4-AU	6
PKZ0-XH-MCC	216	PLHT-C40/2-AA	7	PLS6-B16/4-AU	5	PLSM-B3/1-AU	6
PKZ0-XH	216	PLHT-C40/3-AA	7	PLS6-B20/1-AU	5	PLSM-B3/2-AU	6
PKZ0-XRH-MCC	216	PLHT-C40/4-AA	7	PLS6-B20/2-AU	5	PLSM-B3/3-AU	6
PKZ0-XRH	216	PLHT-C50/1-AA	7	PLS6-B20/3-AU	5	PLSM-B3/4-AU	6
PKZM0-0,16	213	PLHT-C50/2-AA	7	PLS6-B20/4-AU	5	PLSM-B32/1-AU	6
PKZM0-0,25	213	PLHT-C50/3-AA	7	PLS6-B25/1-AU	5	PLSM-B32/2-AU	6
PKZM0-0,4	213	PLHT-C50/4-AA	7	PLS6-B25/2-AU	5	PLSM-B32/3-AU	6
PKZM0-0,63	213	PLHT-C63/1-AA	7	PLS6-B25/3-AU	5	PLSM-B32/4-AU	6
PKZM0-1,6	213	PLHT-C63/2-AA	7	PLS6-B25/4-AU	5	PLSM-B4/1-AU	6
PKZM0-10	213	PLHT-C63/3-AA	7	PLS6-B32/1-AU	5	PLSM-B4/2-AU	6
PKZM0-12	213	PLHT-C63/4-AA	7	PLS6-B32/2-AU	5	PLSM-B4/3-AU	6
PKZM0-16	213	PLHT-C80/1-AA	7	PLS6-B32/3-AU	5	PLSM-B4/4-AU	6
PKZM0-1	213	PLHT-C80/2-AA	7	PLS6-B32/4-AU	5	PLSM-B40/1-AU	6
PKZM0-2,5	213	PLHT-C80/3-AA	7	PLS6-B40/1-AU	5	PLSM-B40/2-AU	6
PKZM0-20	213	PLHT-C80/4-AA	7	PLS6-B40/2-AU	5	PLSM-B40/3-AU	6
PKZM0-25	213	PLHT-D100/1-AA	7	PLS6-B40/3-AU	5	PLSM-B40/4-AU	6
PKZM0-32	213	PLHT-D100/2-AA	7	PLS6-B40/4-AU	5	PLSM-B50/1-AU	6
PKZM0-4	213	PLHT-D100/3-AA	7	PLS6-B50/1-AU	5	PLSM-B50/2-AU	6
PKZM0-6,3	213	PLHT-D100/4-AA	7	PLS6-B50/2-AU	5	PLSM-B50/3-AU	6
PKZM0-XDM12	218, 247	PLHT-D20/1-AA	7	PLS6-B50/3-AU	5	PLSM-B50/4-AU	6
PKZM0-XDM32	218	PLHT-D20/2-AA	7	PLS6-B50/4-AU	5	PLSM-B6/1-AU	6
PKZM0-XM32DE	218, 247	PLHT-D20/3-AA	7	PLS6-B6/1-AU	5	PLSM-B6/2-AU	6
PKZM0-XRM12	218	PLHT-D20/4-AA	7	PLS6-B6/2-AU	5	PLSM-B6/3-AU	6
PKZM0-XRM32	218	PLHT-D25/1-AA	7	PLS6-B6/3-AU	5	PLSM-B6/4-AU	6
PKZM01-0,16	213	PLHT-D25/2-AA	7	PLS6-B6/4-AU	5	PLSM-B63/1-AU	6
PKZM01-0,25	213	PLHT-D25/3-AA	7	PLS6-B63/1-AU	5	PLSM-B63/2-AU	6
PKZM01-0,4	213	PLHT-D25/4-AA	7	PLS6-B63/2-AU	5	PLSM-B63/3-AU	6
PKZM01-0,63	213	PLHT-D32/1-AA	7	PLS6-B63/3-AU	5	PLSM-B63/4-AU	6
PKZM01-1,6	213	PLHT-D32/2-AA	7	PLS6-B63/4-AU	5	PLSM-C1/1-AU	6
PKZM01-10	213	PLHT-D32/3-AA	7	PLS6-C1/1-AU	5	PLSM-C1/2-AU	6
PKZM01-12	213	PLHT-D32/4-AA	7	PLS6-C1/2-AU	5	PLSM-C1/3-AU	6
PKZM01-16	213	PLHT-D40/1-AA	7	PLS6-C1/3-AU	5	PLSM-C1/4-AU	6
PKZM01-1	213	PLHT-D40/2-AA	7	PLS6-C1/4-AU	5	PLSM-C10/1-AU	6
PKZM01-2,5	213	PLHT-D40/3-AA	7	PLS6-C10/1-AU	5	PLSM-C10/2-AU	6
PKZM01-20	213	PLHT-D40/4-AA	7	PLS6-C10/2-AU	5	PLSM-C10/3-AU	6
PKZM01-25	213	PLHT-D50/1-AA	7	PLS6-C10/3-AU	5	PLSM-C10/4-AU	6
PKZM01-4	213	PLHT-D50/2-AA	7	PLS6-C10/4-AU	5	PLSM-C16/1-AU	6
PKZM01-6,3	213	PLHT-D50/3-AA	7	PLS6-C16/1-AU	5	PLSM-C16/2-AU	6
PKZM4-16	213	PLHT-D50/4-AA	7	PLS6-C16/2-AU	5	PLSM-C16/3-AU	6
PKZM4-25	213	PLHT-D63/1-AA	7	PLS6-C16/3-AU	5	PLSM-C16/4-AU	6
PKZM4-32	213	PLHT-D63/2-AA	7	PLS6-C16/4-AU	5	PLSM-C2/1-AU	6
PKZM4-40	213	PLHT-D63/3-AA	7	PLS6-C2/1-AU	5	PLSM-C2/2-AU	6
PKZM4-50	213	PLHT-D63/4-AA	7	PLS6-C2/2-AU	5	PLSM-C2/3-AU	6
PKZM4-58	213	PLHT-D80/1-AA	7	PLS6-C2/3-AU	5	PLSM-C2/4-AU	6
PKZM4-63	213	PLHT-D80/2-AA	7	PLS6-C2/4-AU	5	PLSM-C20/1-AU	6
PKZM4-XDM65	218	PLHT-D80/3-AA	7	PLS6-C20/1-AU	5	PLSM-C20/2-AU	6
PKZM4-XM65DE	218	PLHT-D80/4-AA	7	PLS6-C20/2-AU	5	PLSM-C20/3-AU	6
PL-PKZ0	216	PLK1LOFF	110	PLS6-C20/3-AU	5	PLSM-C20/4-AU	6
PLHT-B100/1-AA	7	PLK3ROFF	114	PLS6-C20/4-AU	5	PLSM-C25/1-AU	6
PLHT-B100/2-AA	7	PLK3	112, 114	PLS6-C25/1-AU	5	PLSM-C25/2-AU	6
PLHT-B100/3-AA	7	PLK5	118	PLS6-C25/2-AU	5	PLSM-C25/3-AU	6
PLHT-B100/4-AA	7	PLKQ1	100	PLS6-C25/3-AU	5	PLSM-C25/4-AU	6
PLHT-B125/1-AA	7	PLKQ24	100	PLS6-C25/4-AU	5	PLSM-C3/1-AU	6
PLHT-B125/2-AA	7	PLKQ3	100	PLS6-C3/1-AU	5	PLSM-C3/2-AU	6
PLHT-B125/3-AA	7	PLN2M	112	PLS6-C3/2-AU	5	PLSM-C3/3-AU	6
PLHT-B125/4-AA	7	PLN6-B10/1N	5	PLS6-C3/3-AU	5	PLSM-C3/4-AU	6
PLHT-B20/1-AA	7	PLN6-B13/1N	5	PLS6-C3/4-AU	5	PLSM-C32/1-AU	6
PLHT-B20/2-AA	7	PLN6-B16/1N	5	PLS6-C32/1-AU	5	PLSM-C32/2-AU	6
PLHT-B20/3-AA	7	PLN6-B20/1N	5	PLS6-C32/2-AU	5	PLSM-C32/3-AU	6
PLHT-B20/4-AA	7	PLN6-B25/1N	5	PLS6-C32/3-AU	5	PLSM-C32/4-AU	6
PLHT-B25/1-AA	7	PLN6-B32/1N	5	PLS6-C32/4-AU	5	PLSM-C4/1-AU	6
PLHT-B25/2-AA	7	PLN6-B40/1N	5	PLS6-C4/1-AU	5	PLSM-C4/2-AU	6

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
PLSM-C4/3-AU	6	PSG30E12SP	315	PXM4051A1AA	329	Q363-ST2	99
PLSM-C4/4-AU	6	PSG480B24RM	315	PXM4051A1BA	329	Q363	99
PLSM-C40/1-AU	6	PSG480E24RM	315	PXM4051A1BB	329	Q36PH	101
PLSM-C40/2-AU	6	PSG480F24RM	315	PXM6051A1AA	329	Q36PVQT	101
PLSM-C40/3-AU	6	PSG480R24RM	315	PXM6051A1BA	329	Q36PV	101
PLSM-C40/4-AU	6	PSG60E12SM	315	PXM6051A1BB	329	Q380-ST2	99
PLSM-C50/1-AU	6	PSG60E24RM	315	PXM8051A1AA	329	Q380N-ST2	99
PLSM-C50/2-AU	6	PSG60E24SP	315	PXM8051A1BA	329	Q380N	99
PLSM-C50/3-AU	6	PSG60F24RM	315	PXM8051A1BB	329	Q380	99
PLSM-C50/4-AU	6	PSG960F24RM	315	PXMCE-B	329	Q408-ST2	99
PLSM-C6/1-AU	6	PSG960R24RM	315	PXMIO-B	329	Q408	99
PLSM-C6/2-AU	6	PV-100A-01XL-D	88	Q 0.5m4	338	Q410-ST2	99
PLSM-C6/3-AU	6	PV-100A-01XL	87	Q 0.5m	338, 343	Q4100-ST2	99
PLSM-C6/4-AU	6	PV-100ANH1	87	Q 1016	339	Q4100N-ST2	99
PLSM-C63/1-AU	6	PV-10A10F	87	Q 102.5	338	Q4100N	99
PLSM-C63/2-AU	6	PV-125A-01XL-D	88	Q 1035	340	Q4100	99
PLSM-C63/3-AU	6	PV-125A-01XL	87	Q 216	339	Q410	99
PLSM-C63/4-AU	6	PV-125ANH1	87	Q 22.5	338	Q416-ST2	99
PLSM-D1/1-AU	6	PV-12A10F	87	Q 235	340	Q416	99
PLSM-D1/2-AU	6	PV-15A10F	87	Q 316	339	Q420-ST2	99
PLSM-D1/3-AU	6	PV-15A14F	87	Q 32.5	338	Q420	99
PLSM-D1/4-AU	6	PV-15A14LF	87	Q 335	340	Q425-ST2	99
PLSM-D10/1-AU	6	PV-160A-01XL-D	88	Q108-ST2	99	Q425	99
PLSM-D10/2-AU	6	PV-160A-01XL	87	Q108PV	101	Q42PH	101
PLSM-D10/3-AU	6	PV-160A-2XL-D	88	Q108	99	Q42PV	101
PLSM-D10/4-AU	6	PV-160A-2XL	87	Q110-ST2	99	Q432-ST2	99
PLSM-D16/1-AU	6	PV-160ANH1	87	Q1100-ST2	99	Q432	99
PLSM-D16/2-AU	6	PV-1A10F	87	Q1100N-ST2	99	Q440-ST2	99
PLSM-D16/3-AU	6	PV-200A-1XL-D	88	Q1100N	99	Q440	99
PLSM-D16/4-AU	6	PV-200A-1XL	87	Q1100	99	Q450-ST2	99
PLSM-D2/1-AU	6	PV-200A-2XL-D	88	Q110	99	Q450	99
PLSM-D2/2-AU	6	PV-200A-2XL	87	Q116-ST2	99	Q463-ST2	99
PLSM-D2/3-AU	6	PV-20A10F	87	Q116	99	Q463	99
PLSM-D2/4-AU	6	PV-20A14F	87	Q120-ST2	99	Q480-ST2	99
PLSM-D20/1-AU	6	PV-20A14LF	87	Q120	99	Q480N-ST2	99
PLSM-D20/2-AU	6	PV-250A-2XL-D	88	Q125-ST2	99	Q480N	99
PLSM-D20/3-AU	6	PV-250A-2XL	87	Q125	99	Q480	99
PLSM-D20/4-AU	6	PV-25A14F	87	Q12PH	101	Q48PH	101
PLSM-D25/1-AU	6	PV-25A14LF	87	Q12PVQT	101	Q48PV	101
PLSM-D25/2-AU	6	PV-2A10F	87	Q12PV	101	Q60PH	101
PLSM-D25/3-AU	6	PV-315A-2XL-D	88	Q132-ST2	99	Q60PV	101
PLSM-D25/4-AU	6	PV-315A-2XL	87	Q132	99	Q72PH	101
PLSM-D3/1-AU	6	PV-32A14F	87	Q140-ST2	99	Q72PV	101
PLSM-D3/2-AU	6	PV-32A14LF	87	Q140	99	Q78PV	101
PLSM-D3/3-AU	6	PV-32ANH1	87	Q150-ST2	99	Q84PV	101
PLSM-D3/4-AU	6	PV-350A-3L-D	88	Q150	99	Q96PV	101
PLSM-D32/1-AU	6	PV-350A-3L	87	Q163-ST2	99	Q1010	339
PLSM-D32/2-AU	6	PV-355A-2XL-D	88	Q163	99	Q1104	338, 343
PLSM-D32/3-AU	6	PV-355A-2XL	87	Q180-ST2	99	Q1210	339
PLSM-D32/4-AU	6	PV-3A10F	87	Q180N-ST2	99	Q124	338, 343
PLSM-D4/1-AU	6	PV-400A-3L-D	88	Q180N	99	Q1310	339
PLSM-D4/2-AU	6	PV-400A-3L	87	Q180	99	Q134	338, 343
PLSM-D4/3-AU	6	PV-40ANH1	87	Q18PH	101	QLDINADAPT	100
PLSM-D4/4-AU	6	PV-4A10F	87	Q18PV	101	QLUGKIT	100
PLSM-D40/1-AU	6	PV-500A-3L-D	88	Q208-ST2	99	QPC	100
PLSM-D40/2-AU	6	PV-500A-3L	87	Q208	99	QPF	100, 107, 129
PLSM-D40/3-AU	6	PV-50ANH1	87	Q210-ST2	99	QSEALKIT	100
PLSM-D40/4-AU	6	PV-5A10F	87	Q2100-ST2	99	R1/2"-MCS	317
PLSM-D6/1-AU	6	PV-600A-3L-D	88	Q2100N-ST2	99	R1/4"-MCSN	317
PLSM-D6/2-AU	6	PV-600A-3L	87	Q2100N	99	R30030-1SR	92
PLSM-D6/3-AU	6	PV-63A-01XL-D	88	Q2100	99	R30030-3SR	92
PLSM-D6/4-AU	6	PV-63A-01XL	87	Q210	99	R30060-2CR	92
PMC-1781	308	PV-63ANH1	87	Q216-ST2	99	R30060-3CR	92
PN1-100	24	PV-6A10F	87	Q216	99	R30100-1CR	92
PN1-125	24	PV-80A-01XL-D	88	Q220-ST2	99	R30100-3CR	92
PN1-160	24	PV-80A-01XL	87	Q220	99	R60030-1CR	92
PN1-4-100	24	PV-80ANH1	87	Q225-ST2	99	R60030-3CR	92
PN1-4-125	24	PV-8A10F	87	Q225	99	R60060-1CR	92
PN1-4-160	24	PVD40-1000-V-CD	374	Q232-ST2	99	R60060-3CR	92
PN1-4-63	24	PVD40-500-V-C	374	Q232	99	R60100-1CR	92
PN1-63	24	PVD40-600-V-C	374	Q240-ST2	99	R60100-3CR	92
PN1-XPA	30	PW5130I1250-XL2U	383	Q240	99	RC*1805F	363
PN2-200	24	PW5130I1750-XL2U	383	Q24PH	101	RC*1810S	363
PN2-250	24	PW5130I2500-XL2UAU	383	Q24PVQT	101	RC*3010F	363
PN2-4-200	24	PW5130I3000-XL2UAU	383	Q24PV	101	RC*3020S	363
PN2-4-250	24	PW5130N1750-EBM2U	383	Q250-ST2	99	RC03010FNC	363
PN2-XPA	30	PW5130N3000-EBM2U	383	Q250	99	RC03020SNC	363
PN3-4-400	24	PW9130G1500HW-Kit	385	Q263-ST2	99	RC04020SNCNCPBT	363
PN3-4-630	24	PW91302000HW-Kit	385	Q263	99	RC11805F	362
PN3-400	24	PW91303000HW-Kit	385	Q280-ST2	99	RC11810S	362
PN3-630	24	PW9130G1000R-XL2UAU	385	Q280N-ST2	99	RC13010F	362
PN3-XPA	30	PW9130G1000T-XLAU	384	Q280N	99	RC13020S	362
PPF1003CEI	372	PW9130G1500R-XL2UAU	385	Q280	99	RC44020SNCNCPBT	363
PPF1003DEI	372	PW9130G1500T-XLAU	384	Q308-ST2	99	RC44020SNOPBT	363
PPF1603CEI	372	PW9130G2000R-XL2UAU	385	Q308	99	RC54020SNCNCPBT	363
PPF1603DEI	372	PW9130G2000T-XLAU	384	Q30PH	101	RC54020SNOPBT	363
PPF2003CEI	372	PW9130G3000R-XL2UAU	385	Q30PV	101	RCDILE250	196
PPF2003DEI	372	PW9130G3000T-XLAU	384	Q310-ST2	99	REM-USB-DOWN	249
PPF3003CEI	372	PW9130G6000T-XLAU	384	Q3100-ST2	99	RFS11A2	368
PPF3003DEI	372	PW9130G700T-XLAU	384	Q3100N-ST2	99	RFS122	368
PPF4003CEI	372	PW9130N1000R-EBM2U	385	Q3100N	99	RFS22	368
PPF4003DEI	372	PW9130N1000T-EBM	385	Q3100	99	RFS42	368
PQC-1782	309	PW9130N1500R-EBM2U	385	Q310	99	RFS62	368
PQC-1782	309	PW9130N1500T-EBM	385	Q316-ST2	99	RFS8	368
PS2.3	338, 343, 344	PW9130N3000R-EBM2U	385	Q316	99	RFS9	368
PS4	339, 340	PW9130N3000T-EBM	385	Q320-ST2	99	RGH316032M	119
PSF10I	369	PW9130N6000T-EBM	385	Q320	99	RGH316036M	119
PSF16I	369	PX-PMBA	329	Q325-ST2	99	RGH320032M	119
PSG100E12SM	315	PXD-MMG	329	Q325	99	RGH320036M	119
PSG120E24RM	315	PXM2250MA51105	329	Q332-ST2	99	RGH325032M	119
PSG120F24RM	315	PXM2250MA55105	329	Q332	99	RGH325036M	119
PSG15E12SP	315	PXM2260MA51105	329	Q340-ST2	99	RGH416032M	119
PSG240E24RM	315	PXM2260MA55105	329	Q340	99	RGH416036M	119
PSG240E	248	PXM2270MA51105	329	Q350-ST2	99	RGH420032M	119
PSG240F24RM	315	PXM2270MA55105	329	Q350	99	RGH420036M	119

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
RGH425032M	119	RSL63PH	66	SD00-D	70	SKF-FF6	263
RGH425036M	119	RSL63P	66	SD1-D-PV	88	SKF-HA	263
RGK3160KSM	119	S-SOND-KMS(*)-T0	188	SD1-D	70	SL1035	341
RGK3200KSM	119	S-T0	188	SD1XL-S	88	SL1635	341
RGK3200KSM	119	S(*)-SOND-SA(*)-T0	188	SD2-D-PV	88	SL2.535ZR	342
RGK4160KSM	119	S(*)-T0	188	SD2-D	70	SL2.535ZR	342
RI*1202F	361	S1Q	100	SD2XL-S	88	SL2535	341
RI*1204S	361	S3B	362, 363, 364, 365, 366, 367	SD3-D-PV	88	SL3535	342
RI*1805FNX	361	S3Q	100	SD3-D	70	SL4-100-L-RAG-24LED	178
RI*1805F	361	S500-(A)-R	97	SD3L-S	88	SL4-100-L-RG-24LED	178
RI*1808SNX	361	S501-(A)-R	97	SDES11/I(L...)	242	SL4-AP120	179
RI*1808S	361	S505-(A)-R	97	SDES11/UL...	242	SL4-AP230	179
RI*3010FNX	361	S506-(A)-R	97	SDES15/I(L...)	242	SL4-AP24	179
RI*3010F	361	S811+N37P3S	248	SDES15/UL...	242	SL4-BL120-A	178
RI*3015SNX	361	S811+N66P3S	248	SDES22/I(L...)	242	SL4-BL120-B	178
RI*3015S	361	S811+R10P3S	248	SDES22/UL...	242	SL4-BL120-G	178
RI*4020FNX	361	S811+R13P3S	248	SDES30/I(L...)	242	SL4-BL120-R	178
RI*4020F	361	S811+T18P3S	248	SDES30/UL...	242	SL4-BL120-W	178
RI*4025SNX	361	S811+T24P3S	248	SDES37/I(L...)	242	SL4-BL120-Y	178
RI*4025S	361	S811+T30P3S	248	SDES37/UL...	242	SL4-BL230-A	178
RI01202FNC	362	S811+U36P3S	248	SDES45/I(L...)	242	SL4-BL230-B	178
RI01204SNC	362	S811+U42P3S	248	SDES45/UL...	242	SL4-BL230-G	178
RI01805FNC	362	S811+V10P3S	248	SDES5.5/I(L...)	242	SL4-BL230-R	178
RI01808SNC	362	S811+V50P3S	248	SDES5.5/UL...	242	SL4-BL230-W	178
RI03010FNC	362	S811+V65P3S	248	SDES55/I(L...)	242	SL4-BL230-Y	178
RI03015SNC	362	S811+V72P3S	248	SDES55/UL...	242	SL4-BL24-A	178
RI04020FNC	362	S811+V85P3S	248	SDES7.5/I(L...)	242	SL4-BL24-B	178
RI04025SNC	362	SB510FS1-10	346	SDES7.5/UL...	242	SL4-BL24-G	178
RI11202F	361	SB510FS11-20	346	SDES75/I(L...)	242	SL4-BL24-R	178
RI11204S	361	SB510FS21-30	346	SDES75/UL...	242	SL4-BL24-W	178
RI11805F	361	SB510FS31-40	346	SDL00	70	SL4-BL24-Y	178
RI11808S	361	SB510FS41-50	346	SDL1	70	SL4-FL120-A	179
RI13010F	361	SB510FS51-60	346	SDL2	70	SL4-FL120-B	179
RI13015S	361	SB510FS61-70	346	SDL3	70	SL4-FL120-G	179
RI14020F	361	SB510FS71-80	346	SDP2-208	357	SL4-FL120-R	179
RI14025S	361	SB510FS81-90	346	SDP2-212	357	SL4-FL120-W	179
RK150PAB	340	SB510FS91-100	346	SDP2-308	357	SL4-FL120-Y	179
RK150PA	340	SB610	346	SDP2-312	357	SL4-FL230-A	179
RK16PAB	339	SB610FS1-10	346	SDP2-408	357	SL4-FL230-B	179
RK16PA	339	SB610FS11-20	346	SDP2-412	357	SL4-FL230-G	179
RK2.5-4PAB	338	SB610FS21-30	346	SDP2-512	357	SL4-FL230-R	179
RK2.5-4PAR	338	SB610FS31-40	346	SDP3-312	357	SL4-FL230-W	179
RK2.5-4PAW	338	SB610FS41-50	346	SDP3-412	357	SL4-FL230-Y	179
RK2.5-4PA	338	SB610FS51-60	346	SDPA11	357	SL4-FL24-A-M	179
RK2.5-4ZRLPA	343	SB610FS61-70	346	SDPA21	357	SL4-FL24-A	179
RK2.5-4ZRPA	343	SB610FS71-80	346	SDPA22	357	SL4-FL24-B-M	179
RK2.5PAB	338	SB610FS81-90	346	SDPA31	357	SL4-FL24-B	179
RK2.5PAR	338	SB610FS91-100	346	SDPA32	357	SL4-FL24-G-M	179
RK2.5PAW	338	SB610	346	SDPA33	357	SL4-FL24-G	179
RK2.5PA	338	SB810FS1-10	346	SDPA42	357	SL4-FL24-R-M	179
RK240PAB	341	SB810FS11-20	346	SDPA43	357	SL4-FL24-R	179
RK240PA	341	SB810FS21-30	346	SDPA44	357	SL4-FL24-W-M	179
RK35PAB	340	SB810FS31-40	346	SDPA52	357	SL4-FL24-W	179
RK35PA	340	SB810FS41-50	346	SDPA53	357	SL4-FL24-Y-M	179
RK50PAB	340	SB810FS51-60	346	SDPA62	357	SL4-FL24-Y	179
RK50PA	340	SB810FS61-70	346	SDPA63	357	SL4-FMS-100	180
RK6-10PAB	339	SB810FS71-80	346	SDPA64	357	SL4-FMS-250	180
RK6-10PAR	339	SB810FS81-90	346	SDPA82	357	SL4-FMS-400	180
RK6-10PAW	339	SB810FS91-100	346	SDPA84	357	SL4-L-A	179
RK6-10PA	339	SB810	346	SDV1-108	357	SL4-L-B	179
RK95PAB	340	SBK5	118	SDV1-112	357	SL4-L-G	179
RK95PA	340	SC100/**-ACS	367	SDV2-208	357	SL4-L-R	179
RKD4PA	342	SC12Q	100	SDV2-212	357	SL4-L-W	179
RKD4SVPA	342	SC130/**-D	367	SDV3-112	357	SL4-L-Y	179
RS100BW	61	SC130/**-S	367	SDV3-208	357	SL4-L120-A	178
RS100HWH	61	SC20BH	61	SDV3-212	357	SL4-L120-B	178
RS100H	61	SC20HWH	61	SDV3-312	357	SL4-L120-G	178
RS100LOCK	62	SC20H	61	SDV4-208	357	SL4-L120-R	178
RS100PH	61	SC20P	61	SDV4-212	357	SL4-L120-W	178
RS100PWH	61	SC230/*-SP	367	SDV4-312	357	SL4-L120-Y	178
RS100P	61	SC24Q	100	SDV4-412	357	SL4-L120	181
RS100RED	62	SC300/*-SP	362, 363, 365	SDV5-208	357	SL4-L12	181
RS200HWH	61	SC314/*-SP	365	SDV5-212	357	SL4-L230-A	178
RS200H	61	SC320/*-SP	365	SDV5-312	357	SL4-L230-B	178
RS200PH	61	SC32BH	61	SDV6-208	357	SL4-L230-G	178
RS200PWH	61	SC32H-DWH	61	SDV6-212	357	SL4-L230-R	178
RS200P	61	SC32H-D	61	SDV6-312	357	SL4-L230-W	178
RS20BW	61	SC32PH-DWH	61	SDV6-412	357	SL4-L230-Y	178
RS20H-WH	61	SC32PH-D	61	SDV8-208	357	SL4-L230	181
RS20H	61	SC32PWH	61	SDV8-212	357	SL4-L24-A	178
RS20LOCK	62	SC32P	61	SDV8-412	357	SL4-L24-B	178
RS20P-G	61	SC3Q	100	SDWA-005	357	SL4-L24-G	178
RS20PG-WH	61	SC410/*-SP	362, 363, 365	SDWA013	357	SL4-L24-R	178
RS20PH-G	61	SC501/*-SP	365	SDWA015	357	SL4-L24-W	178
RS20RED	62	SC510/*-DP	365	SDWA020	357	SL4-L24-Y	178
RS32BW	61	SC510/*-SP	365	SDWA025	357	SL4-L24	181
RS32HWH	61	SC511/*-SP	365	SDWA030	357	SL4-PIB-100	180
RS32H	61	SC610/*-SP	365	SDWA035	357	SL4-PIB-250	180
RS32LOCK	62	SC611/*-SP	365	SDWA040	357	SL4-PIB-400	180
RS32PH	61	SC63BH	61	SDWC-010	356	SL4-PIB-D	180
RS32PWH	61	SC63H-DWH	61	SDWC-010	357	SL4-PIB-EMH	180
RS32P	61	SC63H-D	61	SDWC-010	358	SL4-PIB-FVW	180
RS32RED	62	SC63P	61	SF8RM	373	SL4-PIB-IMH	180
RS400H	61	SC6Q	100	SIK10PA	345	SL4-PIB-IMS	180
RS400PH	61	SC700/*-SP	365	SIK10ZPA	345	SL4-PIB-T-100	180
RS400P	61	SC900/240/12R	365	SIK201A	345	SL4-PIB-T-250	180
RS63BW	61	SC900/240/24A	365	SIK202A	345	SL4-PIB-T-400	180
RS63HWH	61	SC900/240/24D	365	SIK204A	345	SL4-SWD	180
RS63H	61	SC900/240/24R	365	SIK206.3A	345	SL435	341
RS63LOCK	62	SCHT3	346	SIK251A	345	SL7-100-L-RAG-24LED	173
RS63PH	61	SCHT4	346	SIK252A	345	SL7-100-L-RG-24LED	173
RS63PWH	61	SCHT5	346	SIK254A	345	SL7-AP120-E	175
RS63P	61	SCHT6	346	SIK256.3A	345	SL7-AP120-M	175
RS63RED	62	SC	89	SK135	345	SL7-AP120	175
RSL63H	66			SKF-FF4	263	SL7-AP230-E	175

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
SL7-AP230-M	175	SLA3D1	52	ST3-420	354	SVC(*)-T3	188
SL7-AP230	175	SLA3D2	52	ST3-515	354	T0-1-102/EA/SVB	185
SL7-AP24-E	175	SMD10	64	ST3-520	354	T0-1-102/EZ	184
SL7-AP24-M	175	SMD16	64	ST300/*SP	366	T0-1-102/E	184
SL7-AP24	175	SMD20	64	ST301/*SP	366	T0-1-102/I1/SVB	185
SL7-BL120-A	173	SMD25	64	ST4-315	354	T0-1-102/I1	184
SL7-BL120-B	173	SMD2	64	ST4-320	354	T0-1-102/IVS	184
SL7-BL120-G	173	SMD32	64	ST4-420	354	T0-1-102/V/SVB	185
SL7-BL120-R	173	SMD4	64	ST4-515	354	T0-1-102/Z	184
SL7-BL120-W	173	SMD6	64	ST4-520	354	T0-1-15401/EZ	184
SL7-BL120-Y	173	SMD8	64	ST4-525	354	T0-1-15401/E	184
SL7-BL230-A	173	SNT1RP03K	110	ST4-620	354	T0-1-15401/I1	184
SL7-BL230-B	173	SNT1RP08K	110	ST4-625	354	T0-1-15401/IVS	184
SL7-BL230-G	173	SNT1RP12K	110	ST4-640	354	T0-1-15401/Z	184
SL7-BL230-R	173	SNT1RP18K	110	ST5-520	354	T0-1-15402/EZ	184
SL7-BL230-W	173	SNT2P04K	112	ST5-720	354	T0-1-15402/E	184
SL7-BL230-Y	173	SNT2P11K	112	ST5-725	354	T0-1-15402/I1	184
SL7-BL24-A	173	SNT2P14K	112	ST6-1025	354	T0-1-15402/IVS	184
SL7-BL24-B	173	SNT3P04K	114	ST6-1030	354	T0-1-15402/Z	184
SL7-BL24-G	173	SNT3P06K	114	ST6-1040	354	T0-1-15431/EZ	184
SL7-BL24-R	173	SNT3P11K	114	ST6-1230	354	T0-1-15431/E	184
SL7-BL24-W	173	SNT3P14K	114	ST6-420	354	T0-1-15431/I1	184
SL7-BL24-Y	173	SNT4LP03K	116	ST6-430	354	T0-1-15431/IVS	184
SL7-CB-100	176	SNT4LP11K	116	ST6-620	354	T0-1-15431/Z	184
SL7-CB-250	176	SNT4LP14K	116	ST6-630	354	T0-1-8200/EA/SVB	185
SL7-CB-400	176	SNT5LP03K	118	ST6-640	354	T0-1-8200/EZ	184
SL7-CB-D	176	SNT5LP05K	118	ST6-825	354	T0-1-8200/E	184
SL7-CB-EMH	176	SNT5LP11K	118	ST6-830	354	T0-1-8200/I1/SVB	185
SL7-CB-FW	176	SNT5LP14K	118	ST6-840	354	T0-1-8200/I1	184
SL7-CB-IMH	176	SNT5LP18K	118	ST8-1030	354	T0-1-8200/IVS	184
SL7-CB-IMS	176	SNT5LP23K	118	ST8-1040	354	T0-1-8200/V/SVB	185
SL7-CB-T-100	176	SNT5LP26K	118	ST8-1230	354	T0-1-8200/Z	184
SL7-CB-T-250	176	SNT6P03K	120	ST8-630	354	T0-1-8210/EZ	184
SL7-CB-T-400	176	SNT6P11K	120	ST8-830	354	T0-1-8210/E	184
SL7-FL120-A	174	SNT6P14K	120	STB14/2.3	338	T0-1-8210/I1	184
SL7-FL120-B	174	SNT6P18K	120	STB14/2.3	343	T0-1-8210/IVS	184
SL7-FL120-G	174	SNT6P23K	120	STB14/4	339	T0-1-8210/Z	184
SL7-FL120-R	174	SP103/*-SP	364	STB16/4	340	T0-1-8214/EZ	184
SL7-FL120-W	174	SP104/*-SP	364	STB8.5/2.3	338	T0-1-8214/E	184
SL7-FL120-Y	174	SP123/*-SP	364	STB8.5/2.3	343	T0-1-8214/I1	184
SL7-FL230-A	174	SP201/*-SP	364	STCL00-GASKET	356	T0-1-8214/IVS	184
SL7-FL230-B	174	SP221/*-SP	364	STCL00-LOCKTONGUE	356	T0-1-8214/Z	184
SL7-FL230-G	174	SP231/*-SP	364	STCL001	356	T0-1-8220/EZ	184
SL7-FL230-R	174	SP232/*-SP	364	STCL003	356	T0-1-8220/E	184
SL7-FL230-W	174	SP320/*-SP	364	STD10	54	T0-1-8220/I1	184
SL7-FL230-Y	174	SP430/*-DP	364	STD16	54	T0-1-8220/IVS	184
SL7-FL24-A-HPM	174	SP430/*-SP	364	STD20	54	T0-1-8220/Z	184
SL7-FL24-A-HP	174	SP431/*-SP	364	STD25	54	T0-2-1/EA/SVB	185
SL7-FL24-A	174	SP433/*-SP	364	STD2	54	T0-2-1/EZ	184
SL7-FL24-B-HPM	174	SP510/*-SP	364	STD32	54	T0-2-1/E	184
SL7-FL24-B-HP	174	SPD-DM05	373	STD4	54	T0-2-1/I1/SVB	185
SL7-FL24-B	174	SPD-DM12	373	STD6	54	T0-2-1/I1	184
SL7-FL24-G-HPM	174	SPD-DM24	373	STK1PA	345	T0-2-1/IVS	184
SL7-FL24-G-HP	174	SPD-DM48	373	STK2	118	T0-2-1/V/SVB	185
SL7-FL24-G	174	SPD150I	370	STK2	120	T0-2-1/Z	184
SL7-FL24-R-HPM	174	SPD3200-TN-E	372	STO4-420	354	T0-2-15403/EZ	184
SL7-FL24-R-HP	174	SPD360GI	370	STO4-620	354	T0-2-15403/E	184
SL7-FL24-R	174	SPD360NI	370	STO5-725	354	T0-2-15403/I1	184
SL7-FL24-W-HPM	174	SPD50NGI	101	STO6-1025	354	T0-2-15403/IVS	184
SL7-FL24-W-HP	174	SPD50NGI	371	STO6-1230	354	T0-2-15403/Z	184
SL7-FL24-W	174	SPDOM1	101	STO6-620	354	T0-2-15432/EZ	184
SL7-FL24-Y-HPM	174	SPDOM1	370	STO6-825	354	T0-2-15432/E	184
SL7-FL24-Y-HP	174	SPDSG50-255NPE	369	STO8-1030	354	T0-2-15432/I1	184
SL7-FL24-Y	174	SPDSG50-300	369	STO8-1230	354	T0-2-15432/IVS	184
SL7-FMS-100	176	SPDT60-255	370	STP01-44	355	T0-2-15432/Z	184
SL7-FMS-250	176	SPDV60-300	370	STP01-45	355	T0-2-15679/EA/SVB	185
SL7-FMS-400	176	SS10	54	STP01-46	355	T0-2-15679/EZ	184
SL7-L-A	175	SS16	54	STP01-57	355	T0-2-15679/E	184
SL7-L-B	175	SS20	54	STP01-610	355	T0-2-15679/I1/SVB	185
SL7-L-G	175	SS25	54	STP01-612	355	T0-2-15679/I1	184
SL7-L-R	175	SS2	54	STP01-64	355	T0-2-15679/IVS	184
SL7-L-W	175	SS32	54	STP01-66	355	T0-2-15679/V/SVB	185
SL7-L-Y	175	SS4	54	STP01-68	355	T0-2-15679/Z	184
SL7-L120-A	173	SS6	54	STP01-810	355	T0-2-8211/EZ	184
SL7-L120-B	173	SSD10	54	STP01-812	355	T0-2-8211/E	184
SL7-L120-G	173	SSD16	54	STP4-320	355	T0-2-8211/I1	184
SL7-L120-R	173	SSD20	54	STP4-420	355	T0-2-8211/IVS	184
SL7-L120-W	173	SSD25	54	STP4-520	355	T0-2-8211/Z	184
SL7-L120-Y	173	SSD2	54	STP4-525	355	T0-2-8215/EZ	184
SL7-L120	181	SSD32	54	STP4-620	355	T0-2-8215/E	184
SL7-L12	181	SSD4	54	STP4-625	355	T0-2-8215/I1	184
SL7-L230-A	173	SSD6	54	STP5-720	355	T0-2-8215/IVS	184
SL7-L230-B	173	SSTSILKLED115	345	STP5-725	355	T0-2-8215/Z	184
SL7-L230-G	173	SSTSILKLED12	345	STP6-1025	355	T0-2-8221/EZ	184
SL7-L230-R	173	SSTSILKLED30	345	STP6-1030	355	T0-2-8221/E	184
SL7-L230-W	173	SSTSILKLED60	345	STP6-1230	355	T0-2-8221/I1	184
SL7-L230-Y	173	ST-P5-250/315	189	STP6-420	355	T0-2-8221/IVS	184
SL7-L230	181	ST10-1030	354	STP6-430	355	T0-2-8221/Z	184
SL7-L24-A-HP	174	ST10-1230	354	STP6-620	355	T0-2-8231/EZ	184
SL7-L24-A	173	ST10-820	354	STP6-630	355	T0-2-8231/E	184
SL7-L24-B-HP	174	ST10-830	354	STP6-825	355	T0-2-8231/I1	184
SL7-L24-B	173	ST100/*-DP	366	STP6-830	355	T0-2-8231/IVS	184
SL7-L24-G-HP	174	ST101/*-DP	366	STP8-1030	355	T0-2-8231/Z	184
SL7-L24-G	173	ST110/*-DP	366	STP8-1230	355	T0-2-8241/EZ	184
SL7-L24-R-HP	174	ST111/*-DP	366	SVA-SOND-KMS(*)-T3	188	T0-2-8241/E	184
SL7-L24-R	173	ST130/*-SP	366	SVA-T3	188	T0-2-8241/I1	184
SL7-L24-W-HP	174	ST2-315	354	SVA(*)-SOND-SA(*)-T3	188	T0-2-8241/IVS	184
SL7-L24-W	173	ST200/*-DP	366	SVA(*)-T3	188	T0-2-8241/Z	184
SL7-L24-Y-HP	174	ST201/*-DP	366	SVB-P3	186	T0-2-8900/EZ	184
SL7-L24-Y	173	ST202/*-DP	366	SVB-PK20-CI	218	T0-2-8900/E	184
SL7-L24	181	ST203/*-DP	366	SVB-PK24-CI	218	T0-2-8900/I1/SVB	185
SL7-SWD	176	ST210/*-SP	366	SVB-SW-F3	186	T0-2-8900/I1	184
SL7/4-BET	181	ST3-315	354	SVB-SW-T0	186	T0-2-8900/IVS	184
SL7/4-FW-T	181	ST3-320	354	SVB-T0	186	T0-2-8900/Z	184
SL7/4-FW	181	ST3-415	354	SVC-T3	188	T0-3-15433/EZ	184

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
T0-3-15433/E	184	T197N/8	159	T60030-1CR	90	TFL1	168
T0-3-15433/I1	184	T197N	159	T60030-3CR	90	TFL2	168
T0-3-15433/IVS	184	T1E	156	T60060-1CR	90	TFP125L	55
T0-3-15433/Z	184	T1P	156	T60060-3CR	90	TFP125	58
T0-3-15680/EA/SVB	185	T201N	159	T60100-1CR	90	TFP160L	55
T0-3-15680/I1/SVB	185	T202N	159	T60100-3CR	90	TFP160	58
T0-3-15680/V/SVB	185	T221N	160	T6	156	TFP200L	55
T0-3-15683/EA/SVB	185	T222N	160	T71	156	TFP200M250L	55
T0-3-15683/I1/SVB	185	T223N	160	T7	156	TFP200M315L	55
T0-3-15683/V/SVB	185	T230N	160	T8	156	TFP200	58
T0-3-8007/EZ	184	T231N	160	T9	161	T11100	77
T0-3-8007/E	184	T240N	160	TA10	167	T11500	77
T0-3-8007/I1	184	T250KB	112	TA152	164	T12000	77
T0-3-8007/IVS	184	T281	157	TA1600RDM	120	T12500	77
T0-3-8007/Z	184	T282	157	TA1	168	T1250	77
T0-3-8048/EZ	184	T283	157	TA2000RDM	120	T1500	77
T0-3-8048/E	184	T284	157	TA22	167	T1600	77
T0-3-8048/IVS	184	T288	157	TA23	167	T1700	77
T0-3-8048/Z	184	T291	157	TA25	167	T1A10L	55
T0-3-8212/EZ	184	T292	157	TA26	167	T1A10	58
T0-3-8212/E	184	T293	157	TA2	167	T1A16L	55
T0-3-8212/I1	184	T2E	156	TA38	167	T1A16	58
T0-3-8212/IVS	184	T2P	156	TA3	167	T1A20L	55
T0-3-8212/Z	184	T3-1-102/EA/SVB	185	TA47	167	T1A20	58
T0-3-8216/EZ	184	T3-1-102/I2/SVB	185	TA48	167	T1A25L	55
T0-3-8216/E	184	T3-1-102/V/SVB	185	TA49	167	T1A25	58
T0-3-8216/I1	184	T3-1-8200/EA/SVB	185	TA4	167	T1A2L	55
T0-3-8216/IVS	184	T3-1-8200/I2/SVB	185	TA50	167	T1A2	58
T0-3-8216/Z	184	T3-1-8200/V/SVB	185	TA56	167	T1A32L	55
T0-3-8222/EZ	184	T3-3-15680/I2/SVB	185	TA5	168	T1A32M35	58
T0-3-8222/E	184	T3-3-8342/EA/SVB	185	TA85	167	T1A32M40L	55
T0-3-8222/I1	184	T3-3-8342/I2/SVB	185	TA88	167	T1A32M40	58
T0-3-8222/IVS	184	T3-3-8342/V/SVB	185	TA8	167	T1A32M50L	55
T0-3-8222/Z	184	T30030-2CR	90	TA96	168	T1A32M50	58
T0-3-8342/EA/SVB	185	T30030-3CR	90	TAD3	114	T1A32M63L	55
T0-3-8342/I1/SVB	185	T30060-2CR	90	TB10	58	T1A32M63	58
T0-3-8342/V/SVB	185	T30060-3CR	90	TB16	58	T1A32	58
T0-3-8401/EZ	184	T300K	114	TB20	58	T1A4L	55
T0-3-8401/E	184	T30100-1CR	90	TB25	58	T1A4	58
T0-3-8401/I1	184	T30100-3CR	90	TB2	58	T1A6L	55
T0-3-8401/IVS	184	T32FB	110	TB32	58	T1A6	58
T0-3-8401/Z	184	T341M	163	TB40	58	T1S35L	55
T0-4-8213/EZ	184	T3500	166	TB4	58	T1S35	58
T0-4-8213/E	184	T350K	114	TB50	58	T1S40L	55
T0-4-8213/I1	184	T3E	156	TB63	58	T1S40	58
T0-4-8213/IVS	184	T3P	156	TB6	58	T1S50L	55
T0-4-8213/Z	184	T4011	163	TBC10	59	T1S50	58
T0-4-8223/EZ	184	T4022	163	TBC16	59	T1S63L	55
T0-4-8223/E	184	T4023	163	TBC20	59	T1S63M100L	55
T0-4-8223/I1	184	T4024	163	TBC25	59	T1S63M100	58
T0-4-8223/IVS	184	T4026	163	TBC2	59	T1S63M80L	55
T0-4-8223/Z	184	T4032	163	TBC32	59	T1S63M80	58
T100Q	100	T4033	163	TBC40	59	T1S63	58
T100	157	T4042	163	TBC4	59	TJ	168
T101	156	T4043	163	TBC50	59	TJ24	168
T102	156	T4052	163	TBC63M100	59	TJ25	168
T103	156	T4053	163	TBC63	59	TJ31	168
T104	156	T4067	163	TBC6	59	TJ33	168
T105	156	T4081	163	TC100L	56	TJ34	168
T106	156	T411	160	TC100	59	TJ36X	168
T107	156	T412	160	TC10N	159	TJ36	168
T108	156	T413	160	TC11N	159	TJ37	168
T111	156	T413	160	TC12N	159	TKF250L	56
T112	156	T414	160	TC13N	160	TKF250	59
T113	156	T441	160	TC14N	160	TKF315L	56
T116	156	T44	156	TC15N	160	TKF315M355	59
T118	156	T450	165	TC16N	160	TKF315M400L	56
T120	156	T452	165	TC17N	160	TKF315	59
T121	157	T45	156	TC18N	160	TKM250L	56
T122	157	T460	165	TC7N	159	TKM250	59
T123	157	T4	161	TC80L	56	TKM315L	56
T124	157	T5-1-102/EA/SVB	185	TC80	59	TKM315	59
T129M	158	T5-1-102/I5/SVB	185	TC8N	159	TLM670	59
T129P	158	T5-1-102/V/SVB	185	TC9N	159	TLM710L	57
T129S	158	T5-1-8200/EA/SVB	185	TCP100L	55	TLM710	59
T129	157	T5-1-8200/V/SVB	185	TCP100M125L	55	TLM750	59
T140	157	T5-3-8342/EA/SVB	185	TCP100M125	58	TLM800L	57
T15113	164	T5-3-8342/I5/SVB	185	TCP100M160L	55	TLM800	59
T15227	164	T5-3-8342/V/SVB	185	TCP100M160	58	TM	168
T15237	164	T501	156	TCP100M200L	55	TM24	168
T15247	164	T502	156	TCP100M200	58	TM25	168
T15267	164	T503	156	TCP100	58	TM31	168
T15325	164	T504	156	TCP80L	55	TM33	168
T15335	164	T508	156	TCP80	58	TM34	168
T15424	164	T50Q	100	TD00-D	70	TM355L	56
T15434	164	T51E	156	TD00-IP20	70	TM355	59
T15712	164	T51P	156	TD1-D	70	TM36S	168
T1600RDM	120	T52	156	TD1-IP20	70	TM36X	168
T160FB	110	T53E	156	TD2-D	70	TM36	168
T171	157	T53P	156	TD2-IP20	70	TM37S	168
T17213	157	T54	156	TD3-D	70	TM37	168
T172	157	T55	156	TD3-IP20	70	TM400L	56
T173	157	T56	156	TF125L	56	TM400	59
T176M	158	T57	156	TF125	59	TMF355L	56
T176P	158	T58	156	TF160L	56	TMF355	59
T181N	159	T5B-1-102/EA/SVB	185	TF160	59	TMF400L	56
T182N	159	T5B-1-102/I4/SVB	185	TF200L	56	TMF400	59
T183N	159	T5B-1-102/V/SVB	185	TF200M250L	56	TN11	166
T184N	159	T5B-1-8200/EA/SVB	185	TF200M250	59	TN12	166
T185N	159	T5B-1-8200/I4/SVB	185	TF200M315L	56	TN13	166
T197N/2	159	T5B-1-8200/V/SVB	185	TF200M315	59	TN14	166
T197N/3	159	T5B-3-8342/EA/SVB	185	TF200	59	TN15	166
T197N/4	159	T5B-3-8342/I4/SVB	185	TFG11	166	TN1	166
T197N/5	159	T5B-3-8342/V/SVB	185	TFG12	166	TN2	166
T197N/7	159	T5	161	TFG13	166	TN3	166

Index

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
TN4	166	UVH3LP23K	114	WT335	359	XCH400E3/72	17
TRK1.5DSPA	344	UVH3LP26K	114	WT338	359	XCH4A4_/12	17
TRK1.5PA	343	UVH3LP28K	114	WT340	359	XCH4A4_/20	17
TRK1.5STBDSA	344	UVH3RP23K	114	WT343	359	XCH4A4_/24	17
TRK1.5STBPA	343	UVH4LP08K	116	WTCE-18008	358	XCH4A4_/32	17
TRK2KPA	344	UVH4LP11K	116	WTGS-003	358	XCH4A4_/36	17
TRL04	314	UVH4LP15K	116	WTPR-050022R	358	XCH4A4_/48	17
TRL07	314	UVH4LP21K	116	WTPR-050032R	358	XCH4A4_/60	17
TRL27	314	UVH4LP26K	116	WTPR-050120CS	358	XCH4A4_/72	17
TRS3PA	338	UVH5LP08K	118	WTPR-050140CS	358	XCHC3/12	17
TRS3PA	343	UVH5LP11K	118	WUVH1RP11K	110	XCHC3/18	17
TRS	338, 339, 343	UVH5LP21K	118	WUVH1RP15K	110	XCHC3/24	17
TRW27	314	UVH5LP29K	118	WUVH1RP21K	110	XCHC3/30	17
TS-CI-K2	350	UVH6RP11K	120	WUVH1RP24K	110	XCHC3/36	17
TS-CI-K3	350	UVH6RP21K	120	WUVH1RP26K	110	XCHC3/42	17
TS-CI-K4	350	UVH6RP29K	120	XAF57035	356	XCHC3/48	17
TS-CI-K5	350	V-M20	350	XBMISCKIT-DIN	128	XCHC3/60	17
TS357.5S	347	V-M25	350	XBMISCKIT-QL	128	XCHC3/72	17
TS357.5US	347	V-M32	350	XBS130	166	XCHC3/12	17
TSAMEMKIT	314	V-M50	350	XBS230	166	XCHC3/18	17
TSAMEM	314	V/EA/SVB-SW-T0	186	XBS330	166	XCHC3/24	17
TSDW1CODG	314	V/EA/SVB-SW-T5	186	XBS430	166	XCHC3/30	17
TSDW1COMIN	314	V/EA/SVB-T0	186	XBS630	166	XCHC3/36	17
TSDW1CO	314	V/EA/SVB-T5	186	XBS830	166	XCHC3/42	17
TSDW2CO	314	V0DILE	196	XBS930	166	XCHC3/48	17
TSF	110	V201KRCJZ1	243	XC-CPU101-C128K-8DI-6DO	267	XCHC3/60	17
TSJ	112	V201KTCJZ1	243	XC-CPU101-C256K-8DI-6DO	267	XCHC3/72	17
TSK	114	V201KVCJZ1	243	XC-CPU101-C64K-8DI-6DO	267	XDB1000-FMK	125
TSL	116	VH120-PKZ01	215	XC-CPU121-2C256K	267	XDB250-24	125
TSP76	168	VH120-PKZ0	215	XC-CPU201-EC256K-8DI-6DO	267	XDB250-36	125
TSP77	168	VR-T0	190	XC-CPU201-EC256K-8DI-6DO-XV	267	XDB250-48	125
TSOD1CO	314	VR-T3	190	XC-CPU201-EC512K-8DI-6DO	267	XDB250-60	125
TSOD1NO	314	VS-CI	353	XC-CPU201-EC512K-8DI-6DO-XV	267	XDB250M-24ONEKIT	125
TSOW1CO	314	VS-KS-CI	353	XC-CPU202-EC4M-8DI-6DO-XV	267	XDB250M-24	125
TSSD1CO	314	VS-TR-CI	353	XCAP3/12PRSK	18	XDB250M-36ONEKIT	125
TSSD1NO	314	W-MCS	317	XCAP3/12	18	XDB250M-36	125
TT1-04	355	WA050	356	XCAP3/18PRSK	18	XDB250M-48	125
TT1-05	355	WA060	356	XCAP3/18	18	XDB250M-60	125
TT1-06	355	WA980	355	XCAP3/24PRSK	18	XDB750-FMK	125
TT2-04	355	WA981	355	XCAP3/30PRSK	18	XDBP-M/S	129
TT2-05	355	WA982	355	XCAP3/30	18	XDBP-SDK	125, 129
TT2-06	355	WC001	355	XCAP3/36PRSK	18	XDBP250-24	126
TT2-08	355	WC002	355	XCAP3/42PRSK	18	XDBP250-36	126
TT450	59	WC003	355	XCAP3/48PRSK	18	XDBP250-48	126
TT500	59	WC004	355	XCAP3/60PRSK	18	XDBP250-60	126
TT600	59	WC005	355	XCAP3/60	18	XDBP250-72	126
TT630	59	WC016	356	XCAP3/72PRSK	18	XDBP250-84	126
TTM450L	57	WC018	356	XCAP3/72	18	XDBP250-96	126
TTM450	59	WC020	356	XCAP3/84PRSK	18	XDBP250M-24	126
TTM500L	57	WC022	356	XCAP3/84	18	XDBP250M-36	126
TTM500	59	WE096	356	XCAP3/96PRSK	18	XDBP250M-48	126
TTM560L	57	WE230	356	XCAP3/96	18	XDBP250M-60	126
TTM560	59	WE235	356	XCH3/12	17	XDBP250M-72	126
TTM630L	57	WE250EAT	356	XCH3/18	17	XDBP250M-84	126
TTM630	59	WE265	356	XCH3/24	17	XDBP250M-96	126
TW16PAB	339	WE268	356	XCH3/30	17	XDBP250N-24	126
TW16PA	339	WE275	356	XCH3/36	17	XDBP250N-36	126
TW2.5-10PAB	338	WE278	356	XCH3/42	17	XDBP250N-48	126
TW2.5-10PAB	338	WE280	356	XCH3/48	17	XDBP250N-60	126
TW2.5-10PAB	339	WE285	356	XCH3/60	17	XDBP250N-72	126
TW2.5-10PA	338	WE288	356	XCH3/72	17	XDBP250N-84	126
TW2.5-10PA	338	WHM1R12X	110	XCH3/84	17	XDBP250N-96	126
TW2.5-10PA	339	WHM2R12X	112	XCH3/96	17	XDBP250N-108	126
TW35PAB	340	WHM3R12X	114	XCH4003/12	17	XDBPEN250KIT108	128
TW35PA	340	WHM4R12X	116	XCH4003/18	17	XDBPEN250KIT24	128
U-CI23E	351	WHM5R12	118	XCH4003/24	17	XDBPEN250KIT48	128
U-CI23X	351	WI250	360	XCH4003/30	17	XDBPEN250KIT72	128
U-CI23	351	WI255	360	XCH4003/36	17	XDBPEN250KIT84	128
U-CI43E	351	WI260	360	XCH4003/42	17	XDBPEN250KIT96	128
U-CI43X	351	WI265	360	XCH4003/48	17	XDBPLINKKIT-NZM-DIN	129
U-CI43	351	WI270	360	XCH4003/60	17	XDBPLINKKIT-NZM-QL	129
U-CI44E	351	WI271	360	XCH4003/72	17	XDBPQ-M/S	128, 129
U-CI44X	351	WI273	360	XCH4003/84	17	XDBPQ250-108	129
U-CI44	351	WI274	360	XCH4003/96	17	XDBPQ250-24	129
U-CI45E	351	WI277	360	XCH4004_/12	17	XDBPQ250-36	129
U-CI45X	351	WI279	360	XCH4004_/18	17	XDBPQ250-48	129
U-CI45	351	WI282	360	XCH4004_/24	17	XDBPQ250-60	129
U-CI48	351	WI284	360	XCH4004_/30	17	XDBPQ250-72	129
U-PKZ0(110V50HZ)	216	WIRV005	360	XCH4004_/36	17	XDBPQ250-84	129
U-PKZ0(240V50HZ)	216	WIRV010	360	XCH4004_/48	17	XDBPQ250-96	129
U-PKZ0(24V50HZ)	216	WIRV020	360	XCH4004_/60	17	XDBPQ250M-108	129
U-PKZ0(24VDC)	216	WPAST1010Z	356	XCH4004_/72	17	XDBPQ250M-24	129
U-PKZ0(415V50HZ)	216	WPAST23Z	356	XCH400C3/12	17	XDBPQ250M-36	129
UV-P3	189	WPAST33Z	356	XCH400C3/18	17	XDBPQ250M-48	129
UV-T0	189	WPAST44Z	356	XCH400C3/24	17	XDBPQ250M-60	129
UVH1RP03K	110	WPAST45Z	356	XCH400C3/30	17	XDBPQ250M-72	129
UVH1RP05K	110	WPAST46Z	356	XCH400C3/36	17	XDBPQ250M-84	129
UVH1RP08K	110	WPAST55Z	356	XCH400C3/42	17	XDBPQ250M-96	129
UVH1RP11K	110	WPAST610Z	356	XCH400C3/48	17	XDBPQ250N-24	129
UVH1RP15K	110	WPAST68Z	356	XCH400C3/60	17	XDBPQ250N-36	129
UVH1RP21K	110	WPAST88Z	356	XCH400E3/12	17	XDBPQ250N-48	129
UVH1RP22K	110	WT200CW	359	XCH400E3/18	17	XDBPQ250N-60	129
UVH1RP26K	110	WT205CW	359	XCH400E3/24	17	XDBPQ250N-72	129
UVH2LP03K	112	WT210CW	359	XCH400E3/30	17	XDBPQ250N-84	129
UVH2LP08K	112	WT215CW	359	XCH400E3/36	17	XDBPQ250N-96	129
UVH2LP11K	112	WT220CW	359	XCH400E3/42	17	XDBPW-M/S-XCAP	128, 129
UVH2LP15K	112	WT225CW	359	XCH400E3/48	17	XDBPWCONTA	128, 129
UVH2LP21K	112	WT230CW	359	XCH400E3/60	17	XDBW250-24	127
UVH2LP28K	112	WT300	359	XCH400E3/72	17	XDBW250-36	127
UVH3LP03K	114	WT305	359	XCH400E3/84	17	XDBW250-48	127
UVH3LP05K	114	WT308	359	XCH400E3/96	17	XDBW250-60	127
UVH3LP08K	114	WT310	359	XCH400E3/108	17	XDBW250-72	127
UVH3LP11K	114	WT315	359	XCH400E3/12	17	XDBW250-84	127
UVH3LP15K	114	WT330	359	XCH400E3/18	17	XDBW250-96	127
UVH3LP21K	114	WT333	359	XCH400E3/24	17	XDBW250M-24	127
				XCH400E3/30	17	XDBW250M-36	127

Item no.	Page no.	Item no.	Page no.	Item no.	Page no.	Item no.	Page no.
XDBW250M-48	127	XIOC-BP-EXT	269	Z-SCH230/25-31	14	ZEB12-5-GF	207
XDBW250M-60	127	XIOC-BP-XC1	269	Z-SCH230/25-40	14	ZEB12-5	207
XDBW250M-72	127	XIOC-BP-XC	269	Z-SCH230/40-20	14	ZEB150-100-GF/KK	208
XDBW250M-84	127	XIOC-NET-DP-M	268	Z-SCH230/40-22	14	ZEB150-100-GF	208
XDBW250M-96	127	XIOC-NET-DP-S	268	Z-SCH230/40-31	14	ZEB150-100/KK	208
XDBWB1000-NE-RO	128	XIOC-NET-SK-M	268	Z-SCH230/40-40	14	ZEB150-100	208
XDBWB1000-NE	128	XIOC-NOP	269	Z-SCH230/63-20	14	ZEB32-1,65-GF/KK	208
XDBWB1500-NE-RO	128	XIOC-SER	268	Z-SCH230/63-22	14	ZEB32-1,65-GF	208
XDBWB1500-NE	128	XIOC-TC1	268	Z-SCH230/63-31	14	ZEB32-1,65/KK	208
XDBWB2000-NE-RO	128	XIOC-TERM-18S	269	Z-SCH230/63-40	14	ZEB32-1,65	208
XDBWB2000-NE	128	XIOC-TERM-18T	269	Z-SCH24/25-22	14	ZEB32-20-GF/KK	208
XDBWB500-NE-RO	128	XIOC-TERM30-CNT4	269	Z-SCH24/25-40	14	ZEB32-20-GF	208
XDBWB500-NE	128	XIOC-TERM32	269	Z-SCHAK-2TE	14	ZEB32-20/KK	208
XDBWCKIT250	128	XXM-NET-DN-A	249	Z-SCHAK-3TE	14	ZEB32-20	208
XDBWDMTGKIT	128	XXM-NET-PD-A	249	Z-SC	14	ZEB32-45-GF/KK	208
XDBWDRTH	128	XXM-NET-PS-A	249	Z-USA/115	13	ZEB32-45-GF	208
XDBWVB1000	128	XRAATPBK	310	Z-USA/230	13	ZEB32-45/KK	208
XDBWVB1500	128	XRAFBST2GY	310	Z-USA/400	13	ZEB32-45	208
XDBWVB2000	128	XRAFBST500GY	310	Z-USD/115	13	ZEB32-5-GF/KK	208
XDBWVEB500	128	XRAPLCEK	310	Z-USD/230	13	ZEB32-5-GF	208
XDBWVED1000	128	XRP1D120U	310	Z5-100/FF225A	207	ZEB32-5/KK	208
XDBWVED1500	128	XRP1D12	310	Z5-100/FF250	207	ZEB32-5	208
XDBWVED500-2S	128	XRP1D230U	310	Z5-125/FF225A	207	ZEB65-100-GF	208
XDBWVEN165KIT-12-E	128	XRP1D24U	310	Z5-125/FF250	207	ZEB65-100	208
XDBWVEN165KIT-12-O	128	XRP1D24	310	Z5-160/FF225A	207	ZEB65-45-GF	208
XDBWVEN165KIT-18-E	128	XRP2D230U	310	Z5-160/FF250	207	ZEB65-45	208
XDBWVEN165KIT-18-O	128	XRU1D120U	310	Z5-220/FF225A	207	ZP-ASA/230	13
XDBWVEN165KIT-24-E	128	XRU1D12	310	Z5-220/FF250	207	ZP-ASA/24	13
XDBWVEN165KIT-24-O	128	XRU1D230U	310	Z5-250/FF225A	207	ZP-JHK	13
XDBWVEN165KIT-30-E	128	XRU1D24U	310	Z5-250/FF250	207	ZP-NHK	13
XDBWVEN165KIT-30-O	128	XRU1D24	310	Z5-300/FF250	207	ZP-VHK	13
XDBWVEN165KIT-36-E	128	XRU1H120U	310	Z5-70/FF225A	207	ZV-P3	189
XDBWVEN165KIT-36-O	128	XRU1H12	310	Z5-70/FF250	207	ZV-T0	189
XDBWVEN165KIT-42-E	128	XRU1H230U	310	ZAV-P3	189	ZW7-125	207
XDBWVEN165KIT-42-O	128	XRU1H24	310	ZAV-P5	189	ZW7-160	207
XDBWVEN165KIT-48-E	128	XRU2D120U	310	ZAV-T0	189	ZW7-240	207
XDBWVEN165KIT-48-O	128	XRU2D12	310	ZB12-0,16	206	ZW7-290	207
XDBWVEN165KIT-54-E	128	XRU2D230U	310	ZB12-0,24	206	ZW7-400	207
XDBWVEN165KIT-54-O	128	XRU2D24U	310	ZB12-0,4	206	ZW7-540	207
XDBWVEQ1000	128	XRU2D24	310	ZB12-0,6	206	ZW7-630	207
XDBWVEQ1500	128	XT-BS1	269	ZB12-1,6	206	ZW7-63	207
XDBWVEQ2000	128	XT-CAT5-X-2	269	ZB12-10	206, 247	ZW7-90	207
XDBWGPSEALKIT	128	XT-CAT5-X-5	269	ZB12-12	206, 247		
XDBWPLTH1	128	XT-CPU-BAT1	269	ZB12-16	206		
XDBWPLTH2	128	XT-FIL-1	269	ZB12-1	206		
XDBWPLTH3	128	XT-MEM-MM32M	269	ZB12-2,4	206		
XDBWPLTH4	128	XT-MEM-MM512M	269	ZB12-4	206, 247		
XDBWPLTHG1	128	XT-RJ45-ETH-RS232	269	ZB12-6	206		
XDBWPLTHG2	128	XT-SUB-D/RJ45	269	ZB150-100/KK	206		
XDBWPLTHG4	128	XV-101-K42	267	ZB150-100	206		
XDBWQ250-108	127	XV-101-K84	267	ZB150-125/KK	206		
XDBWQ250-24	127	Z-AHK	13	ZB150-125	206		
XDBWQ250-36	127	Z-ASA/230	13	ZB150-150/KK	206		
XDBWQ250-48	127	Z-ASA/24	13	ZB150-150	206		
XDBWQ250-60	127	Z-DST	14	ZB150-175/KK	206		
XDBWQ250-72	127	Z-EL/BL230	15	ZB150-175	206		
XDBWQ250-84	127	Z-EL/G230	15	ZB150-50/KK	206		
XDBWQ250-96	127	Z-EL/OR230	15	ZB150-50	206		
XDBWQ250M-108	127	Z-EL/R230	15	ZB150-70/KK	206		
XDBWQ250M-24	127	Z-EL/WH230	15	ZB150-70	206		
XDBWQ250M-36	127	Z-EMER-DIN	15, 125, 129	ZB32-0,16	206		
XDBWQ250M-48	127	Z-EMER-E	15	ZB32-0,24	206		
XDBWQ250M-60	127	Z-FAM	13	ZB32-0,4	206		
XDBWQ250M-72	127	Z-FW-LP/MO	13	ZB32-0,6	206		
XDBWQ250M-84	127	Z-FW-LPD/MO	13	ZB32-1,6	206		
XDBWQ250M-96	127	Z-FW-LPD	13	ZB32-10	206		
XEB1000-B	126	Z-FW-LP	13	ZB32-16	206, 247		
XEB1000-D4S	126	Z-FW-MO	13	ZB32-1	206		
XEB1000-D4	126	Z-FW/001	13	ZB32-2,4	206		
XEB1500-B	126	Z-FW/003	13	ZB32-24	206, 247		
XEB1500-D8S	126	Z-FW/010	13	ZB32-32	206, 247		
XEB1500-D8	126	Z-FW/030	13	ZB32-38	206		
XEB250-B	126	Z-FW/050	13	ZB32-4	206		
XEB250-D1S	126	Z-HK	13	ZB32-6	206		
XEB250-D1	126	Z-IS/SPE-1TE	15	ZB32-XEZ	207		
XEB500-B	126	Z-KAM	13	ZB4-209-DS2	263		
XEB500-D2S	126	Z-LHASA/230	7	ZB4-209-DS3	263		
XEB500-D2	126	Z-LHASA/24	7	ZB4-900-KB1	263		
XIO-EXT121-1	267	Z-LHK	7	ZB65-10	206		
XIOC-12DO-R	268	Z-NHK	13	ZB65-16	206		
XIOC-16DI	268	Z-PU/OO	15	ZB65-24	206		
XIOC-16DO-S	268	Z-PU/SO	15	ZB65-40	206		
XIOC-16DO	268	Z-PU/SS	15	ZB65-57	206		
XIOC-16DX	268	Z-PU/S	15	ZB65-65	206		
XIOC-1CNT-100KHZ	268	Z-PUL230/SO	15	ZB65-75	206		
XIOC-2AI-1AO-U1	268	Z-PUL230/SS	15	ZB65-XEZ	207		
XIOC-2AI-1AO-U1-I1	268	Z-R230/OO	14	ZE-0,16	195		
XIOC-2AO-U1-2AO-I2	268	Z-R230/SO	14	ZE-0,24	195		
XIOC-2AO-U2	268	Z-R230/SS	14	ZE-0,4	195		
XIOC-2CNT-100KHZ	268	Z-R230/S	14	ZE-0,6	195		
XIOC-2CNT-2AO-INC	268	Z-R24/OO	14	ZE-1,0	195		
XIOC-32DI	268	Z-R24/SO	14	ZE-1,6	195		
XIOC-32DO	268	Z-R24/SS	14	ZE-12	195		
XIOC-4AI-2AO-U1	268	Z-R24/S	14	ZE-2,4	195		
XIOC-4AI-2AO-U1-I1	268	Z-S/MM	15	ZE-4	195		
XIOC-4AI-T	268	Z-S/WTN	15	ZE-6	195		
XIOC-4AO-U1	268	Z-S230/SO	14	ZE-9	195		
XIOC-4T-PT	268	Z-S230/SS	14	ZEB-XCT1000	209		
XIOC-8AI-I2	268	Z-S230/S	14	ZEB-XCT1500	209		
XIOC-8AI-U1	268	Z-S24/SO	14	ZEB-XCT300	209		
XIOC-8AI-U2	268	Z-S24/SS	14	ZEB-XCT600	209		
XIOC-8DI	268	Z-S24/S	14	ZEB12-1,65-GF	207		
XIOC-8DO	268	Z-SC/GP	14	ZEB12-1,65	207		
XIOC-BP-2	269	Z-SCH230/25-04	14	ZEB12-20-GF	207		
XIOC-BP-3	269	Z-SCH230/25-22	14	ZEB12-20	207		

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