

Product guide 2018
Australia and New Zealand

Power Distribution Product Guide



Powering Business Worldwide

Electrical upgrade pays off for leading Australian manufacturer Qenos



As Australia's exclusive manufacturer of polyethylene and a valued supplier of a diverse range of specialty polymers, Qenos appointed Eaton xEnergy partner, Dynelec to deliver a turnkey solution for the project which included end-to-end design, manufacture and installation of the MCC upgrade – all within a short timeframe to ensure minimal impact to its site operations.

The solution complies with the new standard AS/NZS61439 for low-voltage switchgear and control assemblies, incorporating a range of leading Eaton products including:

- Arc flash safety with IZMX40 circuit breaker equipped with Eaton's Arcflash Reduction Maintenance System (ARMS)
- Temperature monitoring with Eaton's 'Diagnose'
- Motor protection and intelligence with the Power Xpert C445



"We've been able to prolong machine lifespans and reduce downtime, allowing us to focus more time on the business and our next phase of upgrades to the site."

– Keith Cottrell, Electrical & Instrumentation Engineer at Qenos

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Uninterpretable Power Supply

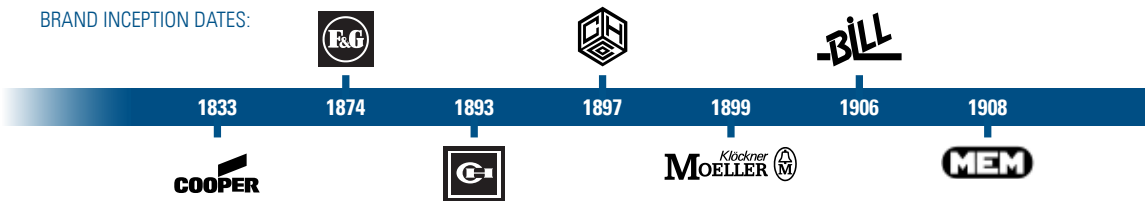
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 MCGRAW-EDISON MOELLER
 METALUX MEM CUTLER-HAMMER
 COOPER HALO ARROW HART
 B-LINE BUSSMANN MTL
 HOLEC MCGRAW-EDISON
 ARROW HART MEM BUSSMANN
 METALUX POWERWARE
 MEM HALO BUSSMANN
 MCGRAW-EDISON CEAG
 MOELLER MTL POWERWARE
 CEAG COOPER BUSSMANN
 MTL B-LINE
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 MOELLER CEAG HOLEC MOELLER
 MTL POWERWARE CEAG
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 CEAG BUSSMANN

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1911

Bussmann

1914

wright·line

1934

B-Line

1961

POWERWARE

1962

HOLEC HH

1963

MEISSNER

1967

**PEDERSEN
POWER
PRODUCTS**

1977

MGE
Office Protection Systems

1983

SANTAK

1984

CHI CONTROL

1989

Medium Voltage Assemblies



Features/Products	Xiria	Xiria E
Rated Voltage	3.6, 7.2, 12, 17.5 & 24kV	3.6, 7.2, 12, 17.5 & 24kV
Max. Short time withstand	20kA-3s	20kA-1s & 3s
Rated Current Busbars	630A Single busbar	630A Single busbar
Internal Arc	20kA-1s AFL (Against the Wall)	20kA-1s AFL (Arc Absorber Against the Wall)
Circuit Breaker	200A / 500A 630A optional	200A / 630A
Load Break Switch	630A	630A
Fuse load-break switch	N/A	N/A
Transformer panel	N/A	200A
Busbar sectionaliser, direct busbar panel	N/A	630A
Metering panel	Add Xiria M 850 x 750 x 1305mm for metering VT's and CT's.	Dedicated Metering Panel Included
Current transformers	Epoxy Resin Insulated around primary conductors behind the cable cones for protection	Block type for metering or protection available with equipment
Voltage transformers	Available only if Xiria M is used	For metering or protection available with equipment
Switching	Vacuum	Vacuum
Insulation	Air	Air
Degree of Protection	IP 31D	IP 31D
Loss of Service Continuity category	LSC2B - PM	LSC2B - PM
Cable connections	Front/Bottom	Front/Bottom
Relays	Protection relays in panel Self-power Control Box w/aux power supply relays	Self-power relays in Panel Control Box w/ aux power supply relays
Motorized option	Open/Close remotely breaker only, not for the selector switch, no earth switching	Open/Close remotely breaker only, not for the selector switch, no earth switching
Automation	Remote, signaling, tripping & control	Remote, signaling, tripping & control
Local options	Ammeter, Short-circuit indicator, trip indicator	Ammeter, Short-circuit indicator, trip indicator
Dimensions (W x D x H)(mm)	760mm 2panels to 1810mm 5 panels x 600 x 1305mm	500 x 600 x 1305mm self-power relay 500 x 770 x 1705mm relay top control box
Applications	CB: Protection of transformers & cables LBS: for ring cable connection	CB: Protection of transformers & cables LBS: for ring cable connection ARC Absorber available



FMX	UX	
12, 17.5 & 24KV	12, 17.5 & 24KV	36kV
25kA-3s	50kA-3s 25kA-3s for 24kV	31.5kA-3s
2000A	4000A 2500A for 24kV	1250A / 2500A
Single busbar	Single busbar	Single busbar
25kA-1s AFL	AFLR 50kA-3s AFLR 25kA-3s for 24kV	AFLR 31.5kA-3s
1250, 1600 & 2000A 630A, 800A	630A – 4000A 800A to 2500A for 24kV	1250A / 2500A
N/A	NA Disconnecter Panel	NA Disconnecter Panel
N/A	N/A	N/A
N/A	CB	CB
1250, 1600 & 2000A with CB	CB + Riser	CB + Riser
N/A	Yes	Yes
Epoxy Resin Insulated around primary conductors behind the cable cones	Cast-resin insulated block-type in the panel metering or protection	Cast-resin insulated block-type in the panel metering or protection
Cast-resin insulated voltage transformers for the voltage measurement on the cable side, or on the busbar side.	Cast-resin insulated voltage transformers voltage protection or metering in the panel	Cast-resin insulated voltage transformers voltage protection or metering in the panel
Vacuum	Vacuum	Vacuum
Air	Air	Air
LV - IP3XD; HV - IP4X	IP4X – IP42	IP2X - IP4X
LSC2B - PM	LSC2B - PM	LSC2B - PM
Front/Bottom	Bottom, Top optional	Bottom
No self-power option	No self-power option	No self-power option
Aux power supply relays	Aux power supply relays	Aux power supply relays
Remote Operation CB, VT's + earth switch selector switch	Remote for all options	Remote for all options
Remote, signaling, tripping & control	Remote, signaling, tripping & control	Remote, signaling, tripping & control
Ammeter, Short-circuit indicator, trip indicator	Ammeter, Short-circuit indicator, trip indicator	Ammeter, Short-circuit indicator, trip indicator
500mm to 1325mm x 1450mm x 2100mm	600, 800, 1000mm x 1310 to 1570mm x 2200/2320 to 2860mm	1200mm x 2600mm x 2930mm (height includes arc chamber)
Primary distribution, fixed space, fully motorized	Primary and secondary	Primary

Air Insulated Switchgear

Xiria

Xiria ring main units are characterised by their high level of operational safety and are suitable for applications up to 24 kV. 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.

Xiria is an extremely well designed and modern system. For example, when developing the system we intentionally opted for protection in the form of a circuit-breaker combined with an electronic relay. This is a modern, safe and flexible alternative to fuse protection.

In addition it also makes Xiria very easy to use in an automated distribution network. These specific features make Xiria an easy-to-use system that responds perfectly to changing electricity distribution requirements, both now and in the future.



Maintenance-free



All the live primary parts and mechanisms in a Xiria unit are installed in a fully enclosed housing. This prevents dust, moisture and other environmental influences from affecting the operation of the unit. The switching mechanism has been designed with a minimum number of parts, and is specifically intended for switching after a long period of inactivity – precisely the way it happens in practice. What is more, the mechanism does not use any lubricants, which also benefits its operational safety. As it is maintenance-free, Xiria significantly cuts inspection and maintenance costs without adversely affecting the operational safety of your distribution network. Which is something to look forward to in today's liberalised energy market.

Intrinsically safe



When carrying out operational actions and work on the cables, it is vital to have unambiguous status indications. When it comes to the safety of the operating personnel, Eaton leaves nothing to chance. That is why Xiria is fitted with directly visible isolation by means of inspection windows in the front which makes the isolating distance between the cable and the busbar system directly visible. A visible, short-circuit proof earthing can take place 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. This reduces the risk of an internal fault to an absolute minimum, thus providing a high degree of safety and availability. The KEMA-tested arc-proof housing also offers additional protection for operating personnel.

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. This compactness offers direct financial benefits in new buildings and when refurbishing existing transformer stations because of the minimal floor area required.

Ready for automated networks



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. In this way Xiria anticipates future developments in automation and operational control, so you can be sure that you will not be left with control, display and communication standards that are too specific or possibly even obsolete.

Clean and green



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 labeled and can be reused. This facilitates recycling and avoids excessive costs and environmental taxes when the unit is decommissioned.

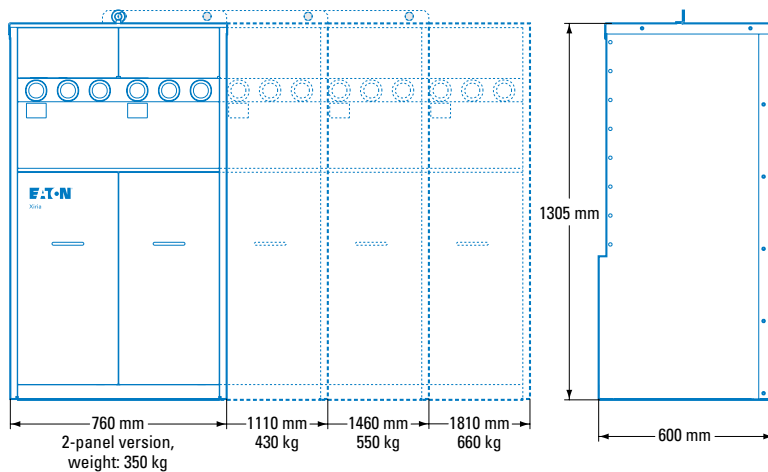
Air Insulated Switchgear

Xiria

		3.6kV	7.2kV	12kV	17.5kV	24kV
Rated voltage	kV	3.6	7.2	12	17.5	24
Impulse withstand voltage	kV	40	60	75/95	95	125
Power frequency withstand voltage	kV	10	20	28	38	50
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60
Internal arc resistance	kA-s	20-1	20-1	20-1	16-1	16-1
Busbar system						
Rated normal current	A	630	630	630	630	630
Rated short-time withstand current	kA-s	20-3	20-3	20-3	16-3	16-3
Rated peak withstand current	kA	50	50	50	40	40
Circuit-breaker						
Rated normal current	A	200/630	200/630	200/630	200/630	200/630
Rated breaking current	kA	20	20	20	16	16
Rated short-circuit making current	kA	50	50	50	40	40
Rated short-time withstand current	kA-s	20-3	20-3	20-3	16-3	16-3
Load break switch						
Rated normal current	A	630	630	630	630	630
Rated mainly active load breaking current at cos. phi 0.7	A	630	630	630	630	630
Rated short-circuit making current	kA	50	50	50	40	40
Rated short-time withstand current	kA-s	20-3	20-3	20-3	16-3	16-3



Main dimensions



Xiria complies with the following international standards

IEC 62271-1	Common specifications
IEC 62271-200	Metal-enclosed switchgear
IEC 62271-304	Severe climatic conditions
IEC 62271-100	Circuit-breakers (M1/E2)
IEC 60265-1	Switches (M1/E3)
IEC 62271-102	Disconnectors/Earthing switch (M0)
IEC 62271-102	Earthing via vacuum bottle (E2)
IEC 60529	Degree of protection
IEC 60044-1	Current transformers
EN 50181	Cable cones
Classification according to IEC 62271-200	



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Air Insulated Switchgear

Xiria E



The Xiria E switchgear is designed around Eaton's proven vacuum interrupters, which require no maintenance and are certified for 30,000 operation cycles. All live parts in the available panels are single pole insulated. The used materials are shaped specifically to provide optimum insulation combined with excellent thermal characteristics. In addition, the insulation is configured to provide effective control over electric fields around the used components, thereby minimizing any risk of internal arcing.

Within the Xiria E panels both the primary parts and the mechanisms are housed in a fully enclosed housing which protects the whole system against environmental influences.

The use of vacuum interrupters and solid insulation means that the Xiria E is environmentally friendly. These technologies ensure that this system is a conservational alternative to switchgear systems using Sulfur Hexafluoride (SF6) gas for insulation. The cost of ownership is also significantly reduced, as no regular testing of gas pressure or other routine maintenance is needed and there is no high end-of-life cost associated with ultimately disposing of the equipment.

When it comes to the safety of the operating personnel the Xiria E design leaves nothing to chance. All parts are fully enclosed by an internal arc tested safe metal housing. Besides that the panels in the system are provided with direct visible indication of the integrated earthing and ON/OFF-position by means of inspection windows in the front.



Vacuum circuit-breaker

The vacuum circuit-breaker uses a simple and reliable spring charging mechanism for operation of the vacuum interrupters. The mechanism contains a low number of moving parts and makes no use of lubricants. It is completely housed in a sealed for life enclosure and therefore needs no maintenance.

- With environmental friendly vacuum interrupters
- Simple spring charging mechanism
- No use of lubricants
- Housed in a sealed for life enclosure
- Manual or motor-operated
- Position indication by means of inspection windows and mechanical indicators
- Auxiliary contacts for Open/Closed position



2-position change-over switch

All panels are equipped with a change-over switch positioned in the same sealed for life enclosure as the circuit-breaker. The change-over switch consists of three shafts connected to the busbars or earthing points. Since it is mechanically interlocked the change-over switch can only be operated when the circuit breaker is in the open position.

- Manual-operated switch with 2 positions (service / earthed)
- Maintenance free
- Housed in sealed for life enclosure
- Auxiliary contacts for service / earthed positions
- Position indication by means of inspection windows and mechanical indicators
- Mechanically interlocked with the vacuum circuit-breaker



Busbar

The busbars in the panel are housed in the same sealed for life enclosure as the circuit-breaker and change-over switch. To prevent a possible internal arc all busbars are single phase insulated.

- Single phase insulated
- Air insulated
- Housed in a sealed for life enclosure
- Simple and robust construction
- Easy to couple



Preventing an internal arc

Eaton's proven technologies have been integrated in the design and development of the Xiria in order to ensure that the switchgear is safe and has high operational reliability throughout its complete lifetime. Within the Xiria design there are different technologies used to prevent an open arc.

Single pole insulated primary parts

All high voltage parts are single pole insulated. The insulation materials used for this are Polycarbonate and Thermo - plastic elastomer (TPE), both high-quality materials with optimal insulation characteristic resulting in minimised dimensions.

Use of Electrical Field control

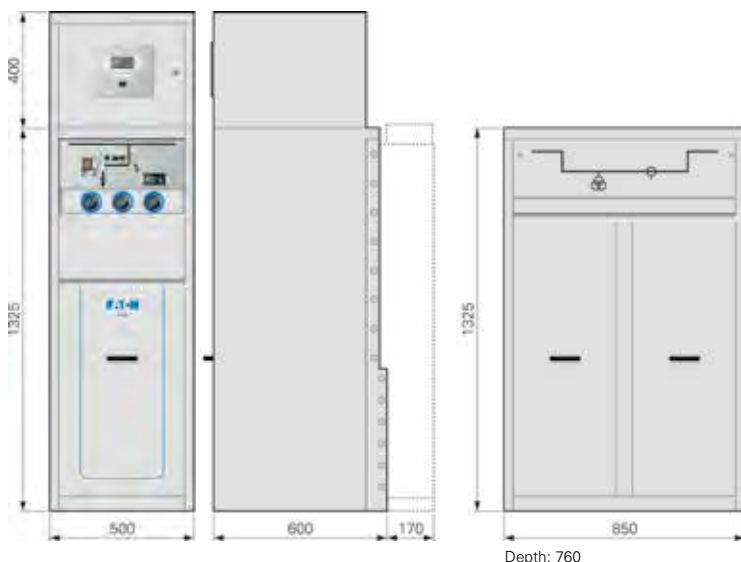
Engineers designed the whole construction of primary parts, housed in the sealed for life tank, based on Eaton's key technology for electrical field control. By means of special shapes and dimensions the possibility of an open arc is minimized.

Air Insulated Switchgear

Xiria E

		3.6 kV	7.2 kV	12 kV	17.5 kV	24 kV
Rated voltage	kV	3.6	7.2	12	17.5	24
Impulse withstand voltage	kV	40	60	75 / 95	95	125
Power frequency withstand voltage	kV-1m	10	20	28 / 38 / 42	38	50
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60
Loss of service continuity		LSC2B	LSC2B	LSC2B	LSC2B	LSC2B
Internal arc resistance	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Internal arc resistance with absorber	kA - s	16 - 1	16 - 1	16 - 1	16 - 1	16 - 1
Internal arc resistance cable comp. alternative	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Degree of protection in service		IP31D	IP31D	IP31D	IP31D	IP31D
Degree of protection with doors/covers open		IP2X	IP2X	IP2X	IP2X	IP2X
Ambient air temperature range	°C	-25 +40	-25 +40	-25 +40	-25 +40	-25 +40
Busbar system - 630A						
Rated short-time withstand current	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Rated short time withstand current alternative	kA - s	20 - 3	20 - 3	20 - 3	20 - 3	20 - 3
Rated peak withstand current	kA	50	50	50	50	50
Load break switches - 630A						
Rated active load break current	A	630	630	630	630	630
Rated short-circuit making current	kA	50	50	50	50	50
Rated short-time withstand current	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Rated short-time withstand current alternative	kA - s	20 - 3	20 - 3	20 - 3	20 - 3	20 - 3
Rated Cable Charging Breaking Current	A	31.5	31.5	31.5	31.5	31.5
Mechanical Endurance Class		M2 5000 x	M2 5000 x	M2 5000 x	M2 5000 x	M2 5000 x
Mechanical Endurance Class as Earth Switch		M0	M0	M0	M0	M0
Mechanical Endurance Class Disconnecter		M0	M0	M0	M0	M0
Electrical Endurance Class		E3	E3	E3	E3	E3
Electrical Endurance Class as Earth Switch		E2	E2	E2	E2	E2
Circuit-breakers - 630A						
Rated breaking current	kA	20	20	20	20	20
Rated short-circuit making current	kA	50	50	50	50	50
Rated Capacitive Switching Current Class		C2	C2	C2	C2	C2
Rated Cable Charging Breaking Current	A	31.5	31.5	31.5	31.5	31.5
DC Time Constant	msec	45	45	45	45	45
DC Component	%	<20	<20	<20	<20	<20
Transformer panel - 200A						
Rated breaking current	kA	20	20	20	20	20
Rated short-circuit making current	kA	50	50	50	50	50
Rated Capacitive Switching Current Class		C2	C2	C2	C2	C2
Rated Cable Charging Breaking Current	A	31.5	31.5	31.5	31.5	31.5
DC Time Constant	msec	45	45	45	45	45
DC Component	%	<20	<20	<20	<20	<20

Main dimensions



XiriaE complies with the following international standards	
IEC 62271-1	Common specifications for high-voltage switchgear and control gear standards
IEC 62271-100	High-voltage alternating-current circuit-breakers
IEC 62271-102	Alternating current disconnectors and earthing switches
IEC 62271-103	High-voltage switches
IEC 62271-200	A.C. metal-enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV
IEC 62271-304	Additional requirements for enclosed switchgear and control gear from 1 kV to 72.5 kV to be used in severe climatic conditions
IEC 60529	Degrees of protection provided by enclosures
IEC 60044-1	Instrument transformers - Part 1: Current transformers
IEC 60044-2	Instrument transformers - Part 2: Inductive voltage transformers
EN 50181	Plug-in type bushings above 1 kV up to 36 kV
ISO 9001-2000	Quality
ISO 14001	Environmental management

Air Insulated Switchgear

Magnefix

Eaton has more than fifty years experience in manufacturing insulation enclosed switchgear and is recognised throughout the world as being a specialist in the field of epoxy resin based insulation technology. More than 200,000 Magnefix switchboards have been supplied to satisfied customers all over the world.

Magnefix was first introduced onto the market more than 50 years ago. Especially the smart design, safe and robust construction and easy operation have made Magnefix "timeless". New developments are still being carried out and research into new applications and technologies is continuing unabated. Eaton's engineers are continuously working on improvements in the design and efficiency, and Magnefix users can count on maximum support and the associated service.

Magnefix is applied in, decentralised transformer stations, high rise buildings, consumer connections, wind turbine connections and for the electrical supply to signalling and protection equipment along railway tracks.

Extremely compact

Epoxy resin is not only a high quality insulating material but due to its high mechanical strength, also an excellent construction material. This combination produces a very compact design. The compact construction and full insulation enclosed design of Magnefix equipment enables it to be installed in very small spaces. This results in considerable savings in building costs.

Safe and reliable

Magnefix is a fully insulation enclosed type of switchgear. All live parts are surrounded by insulating material in such a way that touching is impossible.

Insulation

The primary insulation of the Magnefix system consists of epoxy resin with powdered quartz as filling material. This ensures a very low dielectric loss factor (also with high temperatures), high insulation breakdown factor, very low moisture absorption, high creepage current resistance, high mechanical strength and complete homogeneity. The cable boxes for PILC and XLPE type cables are made of synthetic materials. Magnefix switchgear is provided with double insulation at points accessible to operating personnel. This additional insulation is manufactured and tested independently of the primary insulation.

Protected against atmospheric and climatic influences

The epoxy resin insulation ensures protection against atmospheric and climatic influences. In addition, the material is vibration proof and shock proof and does not age. Magnefix is highly reliable and has a very long life-cycle.

Fully tested

Each Magnefix switchboard is extensively mechanically and electrically tested before it leaves the factory. The test procedures carried out are not only in accordance with the routine tests as specified in the relevant IEC publications, each switchboard is also subjected to additional discharge tests. Consequently, Eaton can guarantee the quality and reliability of each Magnefix switchboard supplied.

Earthing

Before a cable connected to a Magnefix switchboard can be earthed, the switch caps of the unit must be removed. Only then is it possible to fit the earthing caps. The Magnefix unit can only be energized again after the earthing caps have been removed. The earthing caps are designed to make inadvertent earthing of the busbars impossible.



MD4

Magnefix type MD4

A Magnefix switchboard type MD4 usually comprises a number of cable units to which the main cables are connected (switch-disconnectors), plus one or more protected tee-off units to which the transformer cables are connected (switch-disconnectors combined with fuse-links). A cable unit consists of a fixed portion and three removable switch-caps. The fixed portion is made of epoxy resin, in which the conductors are embedded.

The epoxy resin switch caps, in which the moving main and arcing contacts are located, are held in the closed position by high-strength permanent magnets. The latter are not subject to variation, so that the contacts are always MAGNETically FIXED. The various units can be mounted on either a floor frame or a wall frame.

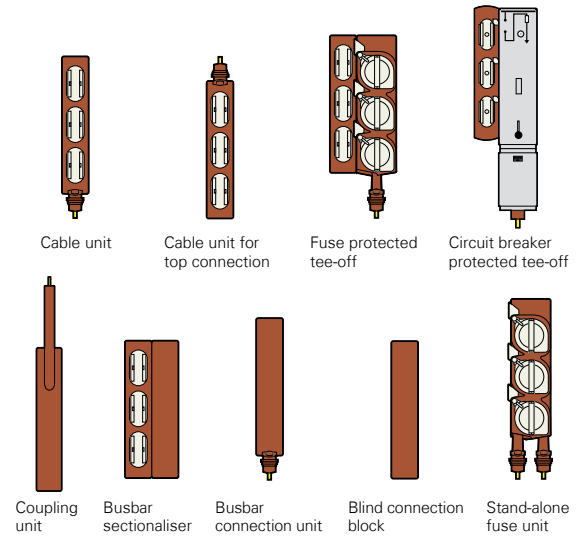
Air Insulated Switchgear

Magnefix

Assembly

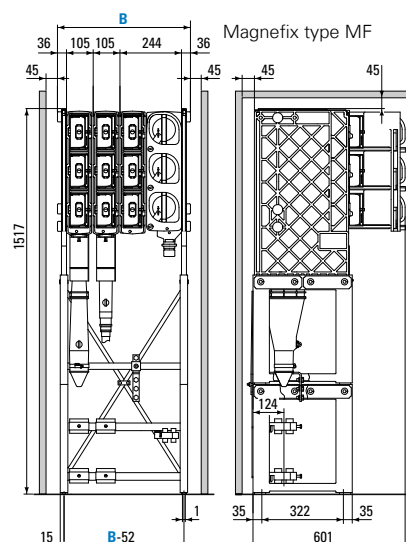
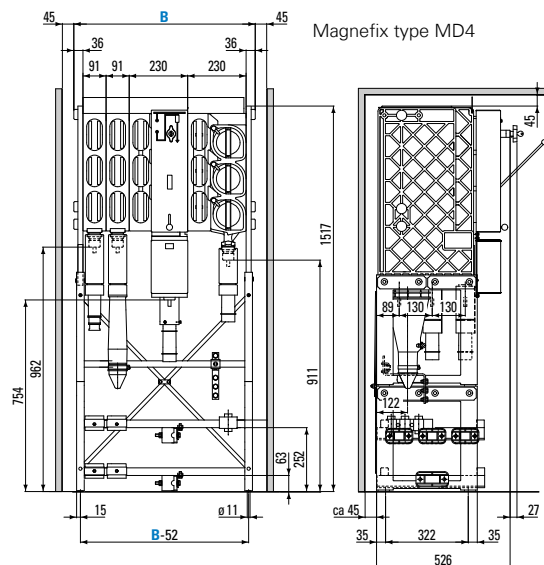
It is possible to assemble switchboards with a wide variety of combinations for various applications. Tie rods ensure that the units and the insulated side plates are clamped together at the right tension. Silver plated tubular conductors- the busbar system- provide the electrical connections between the units and interconnect the busbar contacts. Each busbar connection is completely insulated, and the entire busbar system is surrounded by epoxy resin insulation.

Magnefix MD4 & MF switchgear comply with the following IEC publications	
IEC60694 / IEC62271-1	Common specifications for high-voltage switchgear and controlgear standards
IEC60056 / IEC62271-100	High-voltage alternating-current circuit-breakers
IEC60129 / IEC62271-102	Alternating current disconnectors and earthing switches
IEC60265 / IEC62271-103	High-voltage switches
IEC60466 / IEC62271-201	A.C. insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV
IEC60529	Degrees of protection provided by enclosures
IEC60185 / IEC60044-1	Instrument transformers - Part 1: Current transformers



Magnefix type		MD4			MF			
Rated values								
Voltage	kV	3.6	7.2	12	3.6	7.2	12	15
Impulse withstand voltage	kV	40/46	60/70	75/85	40/46	60/70	75/85	95/110
Power frequency withstand voltage	kV	10/12	20/23	28/32	10/12	20/23	28/32	38/45
Frequency	Hz	50-60	50-60	50-60	50-60	50-60	50-60	50-60
Busbar system								
Normal current	A	400	400	400	630	630	630	630
Short-time withstand current 1 s.	kA	14.4	14.4	14.4	20	20	20	20
Peak withstand current	kA	31	31	31	50	50	50	50
Switch-disconnector								
Normal current	A	400	400	400	450	450	450	450
Mainly active load breaking current	A	400	400	400	450	450	450	450
Short-circuit making current peak value	kA	31	31	31	50	50	50	50
Short-time withstand current 1 s.	kA	14.4	14.4	14.4	20	20	20	20
Earth fault breaking current	A	240	240	240	240	240	240	240
Cable charging breaking current	A	25	25	25	25	25	25	25
Circuit-breaker								
Normal current	A	400	400	400	-	-	-	-
Short-time withstand current 1 s.	kA	14.4	14.4	14.4	-	-	-	-
Short-circuit breaking current peak value	kA	14.4	14.4	14.4	-	-	-	-
DC component	%	20	20	20	-	-	-	-
Fuse-links								
Normal current	A	57.7	57.7	57.7	57.7	57.7	57.7	57.7

Main dimensions



MD4 - $B = C \times 91 + T \times 230 + 72$
 MF - $B = C \times 105 + T \times 244 + 72$
 (C = number of cable units,
 T = number of protected tee-offs)

Air Insulated Switchgear

Power Xpert FMX

Power Xpert® FMX is Eaton's IEC single busbar, solid- and air-insulated medium voltage switchgear system, for use up to 24 kV. The system provides reliable switching, protection, metering and distribution of electrical energy. The modern design system uses Eaton's state of the art technology and is manufactured in accordance with the highest quality standards. Within the system our engineers have integrated Eaton core technologies, such as vacuum technology, solid insulation and electrical field control. More than a century of experience in design and production of medium voltage systems has gone into the product. Type FMX switchgear features a reliable and compact system design, which benefits from the best practices incorporated in Eaton's current range of MV systems. The system is tested according to the latest standard IEC 62271.

The system uses only environmentally friendly technology and materials. Since the type FMX system is based on vacuum technology and solid insulation, the system is the latest environmentally friendly "green" switchgear on the market.

The new system incorporates highly innovative technology, by implementing an electro - magnetic mechanism for the circuit-breaker control, and it introduces an integrated cable test facility outside of the high voltage compartment.



Vacuum circuit-breaker

The vacuum circuit-breaker uses a simple and reliable electromagnetic mechanism for operation of the vacuum interrupters. The construction of the mechanical linkage between the actuator and the drive rod of each of the three vacuum interrupters is reduced in complexity, compared to a conventional spring-charged mechanism.

- Environmentally friendly vacuum interrupters
- Electromagnetic mechanism with controller
- Mechanical lever for hand-operated operation (switch off)
- Mechanical position indicator for Open / Closed position
- Auxiliary contacts for Open / Closed position



2-position change-over switch

All panels are equipped with a change-over switch consisting of interconnected contact pins moving in the horizontal plane. Since it is mechanically interlocked, the change-over switch can only be operated when the circuit-breaker is in the open position.

- Motor or manually-operated switch with two positions (Service / Earthed)
- Interconnected contact pins moving in the horizontal plane
- Mechanical position indicators
- Contact pins epoxy resin insulated and located in the busbar compartment
- Auxiliary contacts for Service / Earthed positions
- Interlocked with the vacuum circuit-breaker



Busbar

The busbars in the panel are constructed from high-quality aluminium bars of standardised cross-sections. The shape of the busbar has been designed to attain optimal electrical field control.

- Busbars constructed from high-quality aluminium; Branch of busbars made of copper or aluminium; Aluminium parts are coated with galvanic silver layer
- Contact surfaces are treated with Penetrox
- Housed in busbar duct covering the full width of the panel
- Air insulated
- Situated in fully closed compartment complying with IP4X degree of protection

Safe in use

- Capacitive voltage detection system for verification of safe isolation from supply
- Operation only possible with closed cable compartment
- Cable testing via integrated cable test facility outside high voltage compartments
- Voltage transformers can be (dis) connected from the primary circuit, with closed high voltage compartments

Reliable and safe in operation

- Complete design certified in accordance with IEC
- Arc fault tested in accordance with IEC 62271-200
- Single pole insulated primary parts within one compartment
- Ferro-resonance protected voltage transformers
- Integrated (internal) arc absorbers

Environmentally friendly

- Minimised number of components
- Environmentally-friendly materials used in the design
- No use of SF6-gas for switching and insulation (green switching)
- Minimal number of transition points in the primary design enables low energy loss during operation
- Only re-usable and/or recyclable materials used

Low total cost of ownership

Low initial costs due to:

- Panels minimum 500 mm width
- Integrated arc channel with absorbers
- 12 kV and 24 kV panels in the same housing

No costs during service due to:

- Long-life, using epoxy resin as insulation medium
- Maintenance-free circuit breaker (electromagnetic mechanism and vacuum interrupters)

User friendly

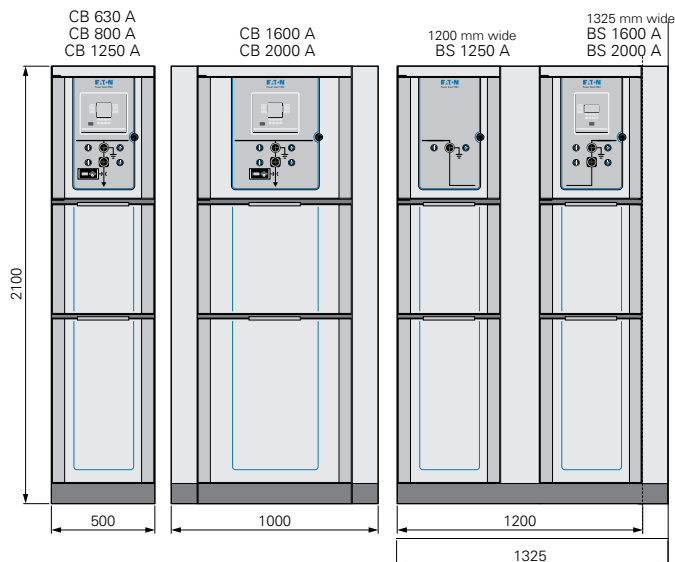
- Cable connection and user interfaces for operation on the front side of the unit
- Ergonomic cable connection height of 750 mm from floor level
- Cable (secondary) entry points on both sides of the low voltage compartment top plate
- Facility for (dis) connecting the voltage transformers, easily accessible from the front without entering the HV compartment

Air Insulated Switchgear

Power Xpert FMX

		12 kV	17.5 kV	24 kV
Rated Voltage	kV	12	17.5	24
Lightning Impulse withstand voltage	kV	75	95	125
Power frequency withstand voltage	kV	28	38	50
Rated frequency	Hz	50	50	50
Internal arc class		AFL 25 kA - 1 s	AFL 25 kA - 1 s	AFL 25 kA - 1 s
Loss of service continuity category		LSC2B	LSC2B	LSC2B
Partition class		PM	PM	PM
Earthing circuit	kA - s	25-3	25-3	25-3
Compartment circuit-breaker/cable		Interlock-controlled	Interlock-controlled	Interlock-controlled
Compartment busbar		Tool-based / non-accessible	Tool-based / non-accessible	Tool-based / non-accessible
Degree of protection HV compartments (optional)		IP4X	IP4X	IP4X
Degree of protection LV compartment		IP3XD	IP3XD	IP3XD
Temperature classification		Minus 5 °C indoor	Minus 5 °C indoor	Minus 5 °C indoor
Busbar system				
Rated normal current	A	2000	2000	2000
Rated short-time withstand current	kA - s	25-3	25-3	25-3
Rated peak withstand current	kA	63	63	63
Circuit-breaker - incoming feeder and sectionalizer				
Rated normal current	A	1250 - 1600 - 2000	1250 - 1600 - 2000	1250 - 1600 - 2000
Rated short-circuit breaking current	kA	25	25	25
Rated short-circuit making current	kA	63	63	63
Rated short-time withstand current	kA - s	25-3	25-3	25-3
Circuit-breaker - outgoing feeder				
Rated normal current	A	630 - 800	630 - 800	630 - 800
Rated short-circuit breaking current	kA	25	25	25
Rated short-circuit making current	kA	63	63	63
Rated short-time withstand current	kA - s	25-3	25-3	25-3
Class		E2, C2	E2, C2	E2, C2
Operating cycles at short-circuit current		100	100	100
Single capacitor bank switching	A	400	400	400
Mechanism				
Rated operating sequence	A	C+P		
Class		M2	M2	M2
Opening time	ms	50	50	50
DC component	%	35	35	35
Closing time	ms	70	70	70
Number of operations actuator		30,000	30,000	30,000
Number of operations interrupter		30,000	30,000	30,000
Auxiliary voltage	V	24, 48, 60, 110, 220 VDC 110/230 VAC	24, 48, 60, 110, 220 VDC 110/230 VAC	24, 48, 60, 110, 220 VDC 110/230 VAC
Mechanism change-over switch				
Opening time	s	< 20	< 20	< 20
Closing time	s	< 20	< 20	< 20
Number of operations change-over switch		1,000	1,000	1,000
Class		M0	M0	M0

Main dimensions



FMX complies with the following international standards

IEC 62271-1	Common specifications
IEC 62271-100	Circuit-breakers (E2, M2, C2)
IEC 62271-102	Disconnectors and earthing switches (E2, M0)
IEC 62271-200	Metal enclosed switchgear and controlgear
IEC 60044-1	Current transformers
IEC 60044-2	Voltage transformers
IEC 60529	Degrees of protection (IP Code)
IEC 61850	Communication networks and systems in substations
IEC 61243-5	Live working - Voltage detectors - Part 5: Voltage detecting systems

Depth: 1450 mm

Extra panel height: 500 mm for busbar side voltage transformers, 150 mm for busbar venting box, 500 mm for busbar side cooling box on 2000 A panels.

Air Insulated Switchgear

Power Xpert UX 3.6kV - 24 kV

Eaton understands that real estate is a valuable resource. The available space must be optimized to ensure building and land costs are minimized, without compromise to the solution design or functionality.

The footprint of Eaton's Power Xpert UX switchgear is one of the most compact of all systems available on the market. 12/17.5kV vacuum circuit breaker (VCB) panels with rated current of 630/1250A up to 31.5kA are only 600mm wide and 1320mm deep – up to 37% less floor area than similar switchgear solutions on the market. Along with a compact footprint, the Power Xpert UX system offers flexible design options for the most demanding of applications.

The Power Xpert UX platform has three high-voltage compartments separated by earthed metal barriers, providing the highest loss of service continuity classification LSC2B and partition class PM; The busbar compartment, the switch device compartment and the cable compartment.

For personnel safety, the Power Xpert UX system is designed with a number of comprehensive mechanical interlocks according to IEC62271-200 for safe and reliable operation of the switchgear. Additional electrical or mechanical key interlocks are available to secure safe and reliable operation for busbar earthing and up or downstream interlocking.

Eaton's expertise in switchgear innovation, including cast-resin, vacuum circuit breaker and contactor technologies, arc interruption and electrical field control have been integrated into the design and development of Power Xpert UX. This ensures that the switchgear has the highest levels of safety and operational reliability at all times.



Maximising performance and safety

- Safety first
- Ensuring maximum uptime
- Flexibility in small foot print

Best-in-class testing

No matter where the system is produced around the world, the same rigorous testing is provided as standard. You can count on Eaton's commitment to quality, beginning in the design phase with full 3rd party type testing to all relevant IEC standards, right through to factory and on site acceptance testing. In addition to compliance to ISO 9001, all manufacturing locations must adhere to Eaton's quality system to ensure the highest quality standards are delivered.



SF6-free design

The combination of vacuum interrupters for switching, cast-resin technology and clean air as the isolation medium ensures that the Power Xpert UX is an environmental friendly system. Without SF6 gas, plant maintenance and operation is simplified and costly administration, SF6 gas management and end of life disposal costs are minimized.

Vacuum circuit breaker technology

By designing a simple and efficient low energy springcharged mechanism with the minimum possible number of parts, the maintenance requirements normally associated with this type of mechanism are minimized. The W-VACi breaker is virtually maintenance-free.

Internal arc classification (IAC) AFLR up to 50kA for 1 second

In the unlikely event of an internal arc fault, the metal enclosed design and robust construction enables the Power Xpert UX system to successfully pass internal arcing tests in accordance with IEC 62271-200. This standard defines the required level of protection in the event of an internal arc fault, in all three primary compartments up to 50kA for 1 second. Fully insulated and isolated current paths reduce the potential for internal faults through the creation of arc free zones.

Racking behind closed doors

To maximize operator safety Power Xpert UX enables operation of the withdrawable switching device from test to service and back to the test position, all behind closed doors. This ensures full internal arc containment at all times during operation.

Remote operation

For additional safety, full remote operation of the switchboard is possible without the need to enter the switch room. Operational safety and automation can be further enhanced by including the remote racking option for withdrawable switching devices and the option for remote operation of the integral earthing switches.



Air Insulated Switchgear

Power Xpert UX 3.6kV - 24 kV

24/7 thermal monitoring system

By determining potential reliability issues before they occur, uptime can be increased through planned and preventative maintenance. Eaton has partnered with Exertherm, a world leader in continuous thermal monitoring, to provide the Power Xpert UX system with an optional continuous 24/7 temperature monitoring system. Hotspots in joints and cable connections are detected at an early stage of development via permanently installed infrared sensors.

The system provides valuable data for preventative maintenance. Based on real-time data, preventative maintenance can be scheduled to reduce unplanned downtime. The thermal monitoring system is modular and can be scaled to any size of installation. Local or remote monitoring of the system is possible via local display or web connection.



Primary components

Eaton is one of the few global, fully integrated manufacturers of high-voltage switchgear. Utilizing core technologies of vacuum interruption and cast resin insulation, switching devices used within the Power Xpert UX switchgear have outstanding performance including:

- Optimal arc control
- High electrical endurance
- SF6 free
- Virtually maintenance-free
- Insensitivity to environment
- Long service life



Vacuum circuit breakers - Type W-Vaci

- Type tested in accordance with IEC62271-100
- 12/17.5kV up to 4000A 50kA/3sec.
- 24kV up to 2500A 31.5kA/3sec.
- Wide range of AC or DC auxiliary control voltages
- Full range of accessories
- Optional remote racking capability
- Electrical or mechanical key interlocking options



Vacuum contactors - Type W-SLC

- Tested in accordance with IEC 62271-106
- Mid-mount type
- 3.6/7.2/12kV ratings
- Contactor switching up to 400A
- Maximum fuse/contactator combination: 200A
- Breaking capacity with fuse up to 50kA
- Wide range of AC or DC auxiliary control voltages
- On-board contactor control power transformer option
- Optional remote racking capability
- Electrical or mechanical key interlocking options



Vacuum contactors - Type W-SLN

- Tested in accordance with IEC 62271-106
- Roll-on floor type
- 3.6/7.2kV ratings
- Contactor switching up to 400A
- Maximum fuse/contactator combination: 400A
- Breaking capacity with fuse up to 50kA
- Wide range of AC or DC auxiliary control voltages
- On-board contactor control power transformer option
- Suitable for integration in 400mm wide Slimline contactor panel
- Electrical or mechanical key interlocking options

Earthing switch

- Type tested in accordance with IEC62271-102
- 12/17.5kV up to 50kA/3sec. 130kA peak
- 24kV up to 31.5kA/3sec. 80kA peak
- Optional remote operating capability

Flexibility in arc channel solutions

- Arc channels provided with integrated arc absorber technology for venting gases inside the switch room, without the need to exhaust to the outside
- Different heights of arc channels are available
- Flexible solutions to connect the arc channel to the wall flange (via sides, front or rear of the installation), in case of venting gases outside the switch room



Arc channel with integral arc absorber



Low height arc channels.

Space saving solutions

- Current and voltage transformers located in the bus riser
- Voltage transformer and integral fault-making busbar earthing combined in the bus coupler
- Top mounted integral fault making busbar earthing
- Top mounted voltage transformers
- Multiple sets of current transformers per phase
- Fixed/removable and withdrawable voltage transformers
- On board control power transformer (contactor)



Top mounted integral fault-making busbar earthing.



Current and voltage transformers located in the bus riser.

Medium Voltage Assemblies

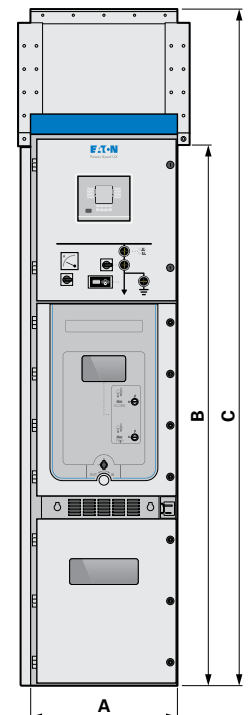
Air Insulated Switchgear

Power Xpert UX 3.6kV - 24 kV

	3.6 kV	7.2 kV	12 kV	17.5 kV	24 kV
Rated voltage kV	3.6	7.2	12	17.5	24
Impulse withstand voltage kV	40	60	75	95	125
Power frequency withstand voltage kV	10	20	28	38	50
Rated frequency Hz	50/60	50/60	50/60	50/60	50/60
Busbar system					
Rated normal current A	630 ... 4000	630 ... 4000	630 ... 4000	630 ... 4000	630 ... 2500
Rated short time withstand current kA/s	25 ... 50/3	25 ... 50/3	25 ... 50/3	25 ... 50/3	20 ... 31.5/3
Rated peak withstand current kA	63 ... 125	63 ... 125	63 ... 125	63 ... 125	50 ... 80
Circuit-breaker type W-VACi					
Rated nominal current A	630 ... 4000 (FC)				630 ... 2500
Rated breaking current kA	25 ... 50/3	25 ... 50/3	25 ... 50/3	25 ... 50/3	20 ... 31.5/3
Rated short-circuit making current kA	63 ... 125	63 ... 125	63 ... 125	63 ... 125	50 ... 80
Rated short time withstand current kA/s	25 ... 50/3	25 ... 50/3	25 ... 50/3	25 ... 50/3	20 ... 31.5/3
Contactor type W-SLC					
Rated nominal current A	400	400	400	-	-
Rated current contactor / fuse combination A	Max. 200	Max. 200	Max. 200	-	-
Rated breaking current kA	50 (limited by the fuse)			-	-
Rated short time withstand current kA/s	6/1	6/1	6/1	-	-
Rated peak withstand current kA	15.6	15.6	15.6	-	-
Earthing switch					
Rated short-circuit making current kA	63 ... 130	63 ... 130	63 ... 130	63 ... 130	50 ... 80
Rated short time withstand current kA/s	25 ... 50/3	25 ... 50/3	25 ... 50/3	25 ... 50/3	20 ... 31.5/3
Contactor type W-SLN (Slimline)					
Rated nominal current A	400	400	400	-	-
Rated current contactor / fuse combination A	Max. 400 (double fuse)			-	-
Rated breaking current kA	50 (limited by the fuse)			-	-
Rated short time withstand current kA/s	6/1	6/1	6/1	-	-
Rated peak withstand current kA	15.6	15.6	15.6	-	-
Earthing switch Rated short-circuit making current kA	15.6	15.6	15.6	-	-
Rated short time withstand current kA/s	6/1	6/1	6/1	-	-
Internal arc					
Internal arc classification AFLR kA/s	Up to 50/1	Up to 50/1	Up to 50/1	Up to 50/1	Up to 31.5/1
Enclosure data					
Degree of protection	IP4X (IP41, IP42 or IP44 as an option)				
Loss of service continuity category	LSC2B				
Partition class	PM				
Standard color	RAL7035				

Main dimensions

System	Width A (mm)	Height B (mm)	Height C1 (mm)	Depth D (mm)
3.6/7.2kV				
Slimline contactor	400	2200	2760	1770
3.6/7.2/12kV				
Mid-mount contactor panel	600	2200	2760	1320
3.6/7.2/12/17.5kV				
630A - 25kA	600	2200	2760	1320
1250A - 25/31.5kA	600	2200	2760	1320
2000A - 25/31.5kA	800	2200	2760	1320
2500A - 25/31.5kA	800	2200	2760	1320
1250A - 40/50kA	800	2200	2760	1500
2000A - 40/50kA	800	2200	2760	1500
3150A - 25/31.5/40/50kA	1000	2200	2760	1500
24kV				
1250A - 20/25/31.5kA	800	2320	2880	1570
2000A - 20/25/31.5kA	1000	2320	2880	1570
2500A - 20/25/31.5kA	1000	2320	2880	1570



Air Insulated Switchgear

Power Xpert UX 36kV

Eaton's Power Xpert UX™ 36 IEC high-voltage switchgear is designed for your most critical applications.

At Eaton, our focus is on developing the latest in power distribution, control and protection technologies that optimize the performance of your installation, while keeping your personnel and equipment safe from harm. With over 90 years of experience in high-voltage switching and vacuum technology, our customers can depend on our expertise to provide the right equipment for the most demanding of applications.

Designed to be fully scalable, the Power Xpert UX 36 enables you to create a fit-for-purpose high-voltage switchgear system. With ratings up to 2500A and 31.5kA, this system provides reliable power distribution for applications.

The Power Xpert UX 36 is free of SF6, which eliminates recording and re-filling, SF6 inspections at end-of-life and disposal costs, reducing your total cost of ownership.

The integral arc-chamber

Evacuates the gases associated with an internal arc. Optional standard parts are available to extend the arc chamber; flanges and grilles are available to exhaust the gases outside the switchgear room. Internal Arc Classification of AFLR – 31.5kA – 1 sec.



The low voltage compartment

Segregated with earthed metal partitions with ample space for control and protection devices. A fully segregated horizontal wireway connects all the low-voltage compartments.

The switching device compartment

Fully segregated by earthed metal partitions, with its own pressure relief channel into the arc chamber, the compartment provides all the safety interlocking mechanisms required for safe and reliable operation of the vacuum circuit breaker.

The busbar compartment

Busbars are totally enclosed in their own earthed metal compartment, which vents into the arc chamber. Fully insulated along their entire length, the busbars are type tested for ratings up to 2500, 31.5kA for 3 seconds. Earthed metal partitions segregate switchgear sections.

The cable compartment

Ample cable termination provision is provided for up to 6 single core cables per phase to enter the bottom of the switchgear and are terminated with compression lugs onto copper tails provided in the bottom of each panel.

Safety and reliability through accessibility of compartments

Ensuring safety of personnel whether in operation or maintenance is essential and is further enhanced in the Power Xpert UX 36 by providing a level of accessibility that limits unauthorized access.

IEC62271-200 defines the accessibility classification for each of the power sections in the switchgear.

The system has the following accessibility definitions:

- Busbar: tool-based/non-accessible
- Circuit breaker: interlocked controlled
- Cable: tool-based or option for interlocked controlled

Vacuum switching

With over 90 years of experience in the field, Eaton is a world leader in vacuum switching technology.

SF6-free design

The combination of vacuum interrupters for switching, cast-resin technology, and clean air as the insulation medium, makes the system environmentally friendly and helps maintain quality throughout the product lifecycle. Because there is no SF6 gas, plant maintenance and operation is simplified and costly administration, gas management and end-of-life disposal costs are minimized.



Vacuum circuit breaker

By designing a simple, modular, efficient and low energy spring-charged mechanism with the fewest possible number of parts for the vacuum circuit breaker, normal maintenance requirements are dramatically reduced. The 360W-VACi breaker is virtually maintenance-free.

LSC2B-PM construction

The construction of the system ensures maximum uptime as personnel can safely perform maintenance on the cable compartment with live busbars or the switching device compartment with live busbars and cables.

Medium Voltage Assemblies

Air Insulated Switchgear

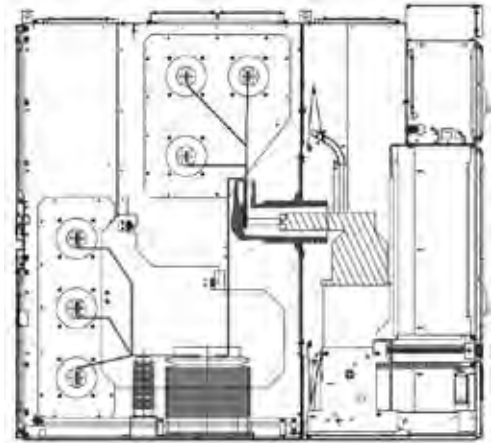
Power Xpert UX 36kV

The flexibility to design and configure the Power Xpert UX 36 to your specific needs helps to ensure it is built for your applications.

Standard configurations for power distribution and control are readily available within the Power Xpert UX 36 product range. Standard VCB ratings of 1250A, 2500A at 36kV meet the requirements of virtually all applications.

Special configurations

In addition to VCB panels, the Power Xpert UX 36 offers a range of panels with specialized configurations, increasing the flexibility of the switchgear. One of these configurations is the equipped riser panel, which allows for a busbar-connected voltage transformer (VT) and control transformers (CT) to be mounted in the riser. This can reduce the overall length of the lineup reducing the cost of the building.



Primary components

Eaton power control and protection components are among the best in the world. The Power Xpert UX 36 is designed specifically around these components and provides a best-in-class power distribution system. Fully third-party type tested to meet even the most arduous of applications.



Vacuum circuit breaker type 360W-VACi

- Type tested in accordance with IEC 62271-100
- 36kV Ratings
- 1250A
- 2500A
- With I_{sc} ratings of 31.5kA-3s
- Full range of field mountable accessories, shunt trip, UVR, motorized mechanism, auxiliary contacts



Truck-mounted fused voltage transformer

- Fused transformer truck arranged to mount into either an equipped riser or an auxiliary (metering) panel
- Arranged for mounting 3 single-phase cast resin transformers with integral primary fuse protection
- Wide range of ratings and classes of VT are available



Earthing switch

- Tested in accordance with IEC 62271-102
- Fully type tested within Power Xpert UX 36 switchgear with ratings of 31.5kA-3s
- 2,000 mechanical operations M1 class
- Optional remote operation

Secondary components

Safe and reliable operation of any switchgear relies heavily on a clear, uncomplicated control and protection system. Clarity of operation is key to the design of the control and protection systems in the Power Xpert UX 36.



Clear, uncluttered low voltage compartment

- Clear monitoring and simple operation provide added safety and security to the installation
- Ample space for protection relays
- Space for circuit metering
- VCB local Open/Close switch
- Contactor On/Off pushbutton control
- LED indicators provide clear VCB or contactor position and Open/Close status
- Earth switch Open/Close status LED indicator



Voltage detection system (VDS)

- In accordance with IEC 61243-5, voltage detection systems shown here provide additional operator and maintenance personnel safety
- Capacitive sensors in the cable compartment provide the power to the monitor mounted on the door of the low voltage compartment door
- Voltage detection systems provide visual indication that voltage is present at the monitored location, whether that is the cable or a busbar location

Other manufacturer's systems can be integrated within the Power Xpert UX 36.

Air Insulated Switchgear

Power Xpert UX 36kV

		36 kV
Rated voltage	kV	36
Lightning impulse withstand voltage	kV	170
Power frequency withstand voltage	kV	70
Rated frequency	Hz	50/60
Internal arc class		AFLR
Loss of service continuity category		LSC2B
Partition class		PM
Earthing circuit	kA - 3 s	31.5
Accessibility of compartments		
Circuit breaker compartment		Interlock-controlled
Busbar compartment		Tool-based/non-accessible
Cable compartment		Tool-based or interlock-controlled
External degree of protection		IP4X (IP41 as an option)
Internal degree of protection		IP2X
Installation		Indoor
Temperature classification	°C	-5 to +40
Relative humidity (max)	%	95
Busbar system		
Rated normal current	A	1250, 2500
Rated short-time withstand current	kA - 3 s	31.5
Rated peak withstand current	kA	82
Circuit breaker ratings		
Rated normal current	A	1250, 2500
Rated short-circuit breaking current	kA	31.5
Rated short-circuit making current	kA	82
Rated short-time withstand current	kA - 3 s	31.5
Class		E2, M2, C2
Breaking number of short-circuit current		30
Auxiliary voltage	V	AC110/220 - DC110/220
Mechanism		
Rated operating sequence	A	O - 0.3s - CO - 15s - CO
Class		M2
Number of operations		>10,000
Number of operations interrupter		>10,000



Main dimensions

Panel width (A)	1200mm
36 kV	
Max. rating	1250A, 2500A
Depth	2600
Height (A)	2400
Height including arc chamber (B)	2950

Gas Insulated Switchgear

RVAC Ring Main Unit

RVAC RMUs are fully sealed and insulated switchgears developed by ECPS exclusively for the cable system, and have been extensively applied in the urban grid system across the country since introduction in 1995 with their excellent operating performance.

RVAC RMU's are characterized by the following:

- Insulation using SF6 gas
- Three position SF6 Switch as the breaking device in the load switch unit to break rated current
- Vacuum arc-extinguishing chamber as the breaking device in the circuit breaker unit to break short-circuit current.
- Based on the design principles of all insulation and omniseal, all primary parts of a RVAC RMU are fully enclosed in the SS main case, free from condensation and foreign materials. The main case has the protection grade of IP67 and is equipped with Cooper touchable waterproof cable joints to protect against occasional floods in flood-prone areas

Currently, the development of a grid system is focused on application of ecological resources, requiring a medium-voltage switchgear which is characterised by energy conservation, low operating cost, reliable performance and flexible configuration.

Featuring long service life, compact structure and re-usability, the RVAC RMUs have become a role model economically and ecologically.

With rapid development of urbanization, the improvement and perfection of buried cable system has loomed large in terms of equipment and many other aspects. Ring main units (RMU), as the main equipment for protection and sectional isolation of the buried cable system, have been widely used in the urban grid system with their safe and reliable performance, compact and pleasant appearance, and outstanding cost performance.

As the leader in the distribution switch gear field, Eaton Cooper Power Systems (ECPS) started design and production of high-quality distribution switchgears as early as 1942, with over 2,000,000 switchgears in proper operation throughout the world up to now.



Vacuum technology features

- As the leader in the vacuum technology field, Eaton carries forward the innovation of vacuum Westinghouse and HOLEC arc-extinguishing chambers
- Eaton is the first enterprise to develop proprietary technologies for copper-chromium alloy contactor and inner shield
- The arc-extinguishing chamber developed by Eaton for contactor has a long service life of 2,500,000 operations
- Almost all of global high-end electrical equipment manufacturers are our purchasers of our arc-extinguishing chambers



SF6 gas insulated system

- All primary HV components are enclosed in SF6 gas tank, free from ambient conditions and maintenance and ensuring full insulation
- The main case has the protection grade of IP67 and is equipped with Cooper prefab shielded touchable cable accessories, allowing for long-term operation underwater or at other extreme conditions
- Advanced gas shielded welding and the pressure seal system with the leak rate of $\leq 1\%/a$ is available, ensuring a service life of 30 years



Load break switch

The load switch is a three-position switch for opening, closing and grounding. The movable blade at the opening position provides enough insulation distance. Opening and closing of master switch and grounding switch can be available respectively with one operating handle, and master switch and grounding switch are mechanically interlocked.

- Arch-extinguishing with deionised metal grating for load switch ensures excellent breaking performance
- The operating mechanism controls moving speed of contactor of the load switch so that the switch on and off speed of the load switch will not vary with operators



Gas Insulated Switchgear

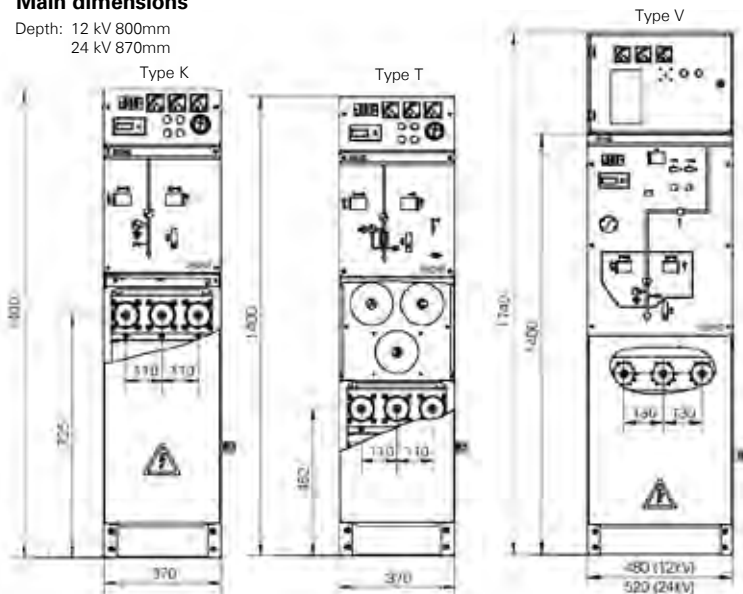
RVAC Ring Main Unit

Rated voltage	kV	12	24
Power frequency withstand voltage (1min)			
Phase to phase/Phase to earth	kV	42	50
Between isolating distance		48	60
Lightning impulse withstand voltage (BIL)			
Phase to phase/Phase to earth	kV	75	125
Between isolating distance		85	145
Rated frequency	Hz	50	50
Internal arc classification (IAC)	kA-s	AFLR 20-1	AFLR 20-1
Degree of protection in service		IP3X	IP3X
Degree of protection with doors/covers open		IP2X	IP2X
Busbar system			
Rated normal current	A	630	630
Rated short-time withstand current	kA-s	20-4	20-4
Rated peak withstand current	kA	50	50
Load break switches panel			
Rated normal current	A	630	630
Rated short-circuit making current	kA	50	50
Rated short-time withstand current	kA-s	20-Apr	20-Mar
Mechanical endurance class (Load break switch)		M1 5000	M1 5000
Mechanical endurance class (Earthing switch)		M1 2000	M1 3000
Electrical endurance class (active load breaking capacity 630A)		E3	E3
Circuit-breakers panel			
Rated normal current	A	630	630
Rated breaking current	kA	20	20
Rated short-circuit making current	kA	50	50
Rated capacitive switching current class		C2	C2
Mechanical endurance class (Circuit-breakers)		M2 10000 x	M1 3000
Mechanical endurance class (Earthing switch)		M1 2000	M1 3000
Electrical endurance class		E2	E2
Rated short-time withstand current	kA-s	20-4	20-4
Mechanism type		O - 0.3s - CO - 180s - CO	O - 0.3s - CO - 180s - CO
Switch-fuse combination panel			
Normal current of load-break switch	A	630	630
Normal current with fuses	A	125	125
Rated breaking current	kA	31.5	31.5
Rated short-circuit making current	kA	80	80
Rated transfer current	A	1750	900

For others, please contact local Eaton sales representative.

Main dimensions

Depth: 12 kV 800mm
24 kV 870mm



RVAC complies with the following international standards

IEC62271-1	Common specifications for high-voltage switchgear and controlgear
IEC62271-103	High-voltage switches for rated voltages above 1kV up to and including 52 kV
IEC62271-102	High-voltage alternating current disconnectors and earthing switches
IEC62271-200	A.C. metal-enclosed switchgear and controlgear for rated voltages above 1kV and up to including 52kV
IEC62271-100	High-voltage alternating-current circuit breakers
IEC62271-105	High-voltage alternating current switch-fuse combinations for rated voltage above 1kV up to and including 52kV

Components

W-VACi medium voltage vacuum circuit breakers

Eaton's W-VACi compact MV vacuum circuit breakers with IEC ratings of 12 kV, 17.5 kV and 24 kV are part of Eaton's comprehensive global product portfolio. It serves both 50 Hz and 60 Hz end-user segments of the electrical industry such as industrial, commercial, utility, mining, marine and off-shore. The W-VACi circuit breakers are complemented by a full line of accessories and compartment kits for panel builders. In addition, they fit in Eaton's new IEC panel design, Power Xpert® UX. UX is available in 600 mm, 800 mm and 1000 mm configurations.

- Fixed and withdrawable versions available
- Eno 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

Universal mechanism assembly (UMA)

Designed with reliability and long product life, the W-VACi circuit breaker utilizes a simple spring charged, stored energy mechanism. With its simple and proven design, the universal mechanism assembly has a life of up to 20,000 mechanical operations and does not require inspection up to 10,000 operating cycles. It includes special plating on metal components to increase mechanical life and prevent corrosion.

Encapsulated pole unit (EPU)

The W-VACi IEC vacuum circuit breakers use Eaton vacuum interrupters that are embedded in epoxy resin. Encapsulating the vacuum interrupter in epoxy resin results in circuit breaker pole units that are extremely durable. Further, it protects the vacuum interrupter from mechanical impact and climatic conditions such as moisture, humidity and dust.

Vacuum interrupter (VI)

At the heart of the W-VACi IEC circuit breaker portfolio is Eaton's proven vacuum interruption technology and eighty-year expertise in this field. The vacuum interrupter is where current making and breaking occurs. It houses Eaton-designed high-performance copperchrome contacts, which provide superior performance characteristics. The vacuum in the arc chamber protects the copper contacts from adverse effects such as contamination and corrosion.

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

Main dimensions

W-VACi 12kV and 17.5kV family

Pole space 150 mm

Pole space 210 mm

Pole space 275 mm

FRONT

SIDE

PLAN

W-VACi 24kV family

Pole space 210 mm

Pole space 275 mm

FRONT

SIDE

PLAN

Components

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.

No adjustment or replacement of vacuum interrupters is required to achieve 300,000 electrical operations. With fewer moving parts the contactor enhances 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.

Auxiliary Contact Kits provide for up to six extra auxiliary contacts.

Mechanical Latch Kits available in many coil voltages with a wide range of AC and DC selections.

Mechanical Interlock Kit prevents unintentional energizing.

Easy Installation

The SL medium voltage vacuum contactor can be mounted in horizontal or vertical positions when space is an issue. The built-in mounting tabs provide for pedestal mounts or panel mounting also.

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.

Design and Test Standards

IEC #60470

CSA T.I.L D-21, File

#LR28548ANSI/NEMA ICS3, Part 2



Control terminal strip

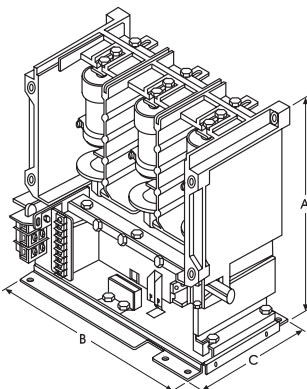


Mounting cutout

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.



Main dimensions

Current size	Mounting	Length (A)	Width (B)	Height (C)	Weight kg
160	Control panel or pedestal	406	387	221	21.4
200	Control panel or pedestal	406	387	221	21.4
360	Control panel or pedestal	406	387	221	21.4
400	Control panel or pedestal	406	387	221	22.2
800	Control panel or pedestal	378	430	466	43.2

Components

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 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. VCP-W vacuum circuit breakers incorporate many design features which have been field proven with over 50 years of vacuum interrupter design and manufacturing experience...coupled with over 75 years of power circuit breaker design and manufacturing experience.

Eaton's VCP-WG generator circuit breakers meet and even exceed service duty requirements set forth by IEEE for generator circuit applications, including:

- Generator circuit configuration
- High continuous current levels
- Unique fault current conditions
- Transformer-source short-circuit faults
- Generator-source short-circuit faults
- Unique voltage conditions
- Very fast RRRV
- Out-of-phase switching

Fault Current Breaking capacity

Eaton's VCP-WG Generator Circuit Breakers have a distinct feature to perform under out-of-phase conditions when the generator and power system voltages are not in sync. The voltages across the open contacts can be as high as twice the rated line-to-ground voltage of the system. The VCP-WG complies with IEEE standard requirement and passes the test that the generator circuit breaker can switch under specified out-of-phase conditions.

Versatility in Application

Eaton's Generator Vacuum Circuit Breakers are available in drawout (VCP-WG) or fixed (VCP-WRG) configurations to provide superior performance and versatility. Many industrial and commercial power systems now include small generators as a local source of power. New applications are arising as a result of the de-regulation of the utility industry, and the construction of smaller packaged power plants. Typical applications include:

- Small and mid-sized hydro power generator
- Electrical generators
- Power plant
- Combined cycle/combustion turbines
- Paper, Chemical and manufacture companies with backup power plant

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.

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.

The reliability you expect.

Your business delivery partner.

COOPER POWER SERIES



Power is the backbone of industry, and ensuring the availability of safe, reliable power is at the heart of Eaton's business.

Our Cooper Power series portfolio completes the picture with engineered systems, turnkey offerings and smart solutions that lead the industry. From transforming and regulating power delivery to distributing and managing it through a facility, as well as the services and support needed to commission and keep it running,

Eaton offers an industry-leading portfolio of products and services that meet the challenging demands of today's electrical grid. Cooper Power series provides solutions that span the entire electrical power system including:

- Capacitor banks and control systems
- Energy automation systems
- Metalclad switchgear and accessories
- MV switches, reclosers and sectionalisers
- Pole top and padmount voltage regulators
- Station and distribution class surge arresters
- Transformer components and spares
- Engineering services

EATON

Powering Business Worldwide

Energy Automation Systems

Yukon™ Visual T&D™ HMI/SCADA

Version 4.0 brings Visual T&D™ to the next level as a substation historian with a completely revamped datalog feature based on standard world-class database engines, allowing for increased capacity and reliability, and improved integration with existing corporate IT infrastructure.

As a standalone HMI, or as a companion product to the SMP™ Gateway, Yukon™ Visual T&D™ integrates seamlessly in your substation environment to provide immediate access to your data, with the following advanced features:

- Supports a large variety of devices and data sources
- Licensing model adapts to the large number of data points in modern IEDs
- Reliably and cost-effectively logs all events, alarms, operator actions, and all transitions on all data point in a high-performance historian based on industry-proven PostgreSQL and Microsoft SQL Server databases
- Automatically retrieve event files
- Millisecond time tagging
- Data point tagging for information and control inhibition
- Power industry shape libraries to simplify diagram creation

Visual T&D is designed from the ground up to be easy to set up and reduce engineering, maintenance and commissioning efforts.

SMP™ SC-2200 substation computer

The SMP™ SC-2200 computer is designed for mission-critical applications in harsh environments. Eaton has leveraged the same expertise and high industry standards used to develop our SMP™ Gateway product line to offer a fanless substation platform with hot-swappable dual-power supplies and no moving parts.

The SMP SC-2200 is based on the recent Intel® Xeon® multicore processor and supports up to 32 GB of errorcorrecting code (ECC) embedded memory to optimize virtual applications. Solid-state drives (SSD) with flexible RAID configurations enable fast data access and improve data integrity. The SMP SC-2200 is the only rugged platform in the industry to provide USB 3.0 interfaces for fast data transfer.

Yukon™ Feeder Automation software

Eaton's Cooper Power series Yukon™ Feeder Automation software includes a graphical user interface, object-oriented configuration, a simulator, communications dashboard, and post-event traceability allowing users to turn distribution automation into an integrated process.

The robust, standardized tools empower utility engineers to easily change automation settings in hours rather than months by eliminating costly custom programming and "trial and error" debugging. Utility engineers can now own the feeder automation process with Yukon's many advanced tools.

Yukon Feeder Automation software allows users to easily add and remove devices using a standardized interface without reprogramming or reconfiguration algorithms. The number of sources and switching devices that can be automated is only limited by the physical load flows of the power system and communication structure.

SMP™ SG-4250 substation gateway

Eaton leverages more than 20 years of hardware and software development with its Cooper Power™ series SMP™ SG-4250 substation gateway and delivers one of the most advanced substation automation solutions on the market. With its robust, flexible and scalable design, the SMP SG-4250 substation gateway is an evolving solution that adapts to new market requirements.

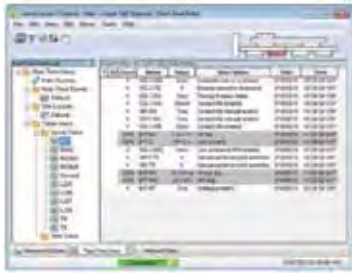
SMP I/O

The SMP I/O is a substation-grade distributed I/O module designed for today's substations. It supports binary input and binary output cards, operates with AC or DC voltage, and communicates using the DNP3 protocol over serial RS-485, or TCP/IP using fiber or copper Ethernet. It can be used with the Cybectec SMP Gateway, or as a stand-alone I/O module that connects directly to a DNP3 master station. The SMP I/O replaces traditional centralized RTU installations. It is a scalable, distributed monitoring and control device perfectly adapted to today's substation automation requirements.

GridAdvisor Series II smart sensor

Eaton helps utilities improve the efficiency in which they operate their distribution systems with its Cooper Power™ series GridAdvisor™ Series II smart sensor by improving outage management, capacitor bank maintenance, and providing critical system information not previously available. This simple yet sophisticated product can annunciate directional fault targeting, detect a capacitor bank fuse failure and provide a DNP3 scannable line monitoring device at nearly any location.

The smart sensors meet or exceed the IEEE Std 495™-2007 standard making them suitable for underground applications. The GridAdvisor Series II smart sensor saves both operation and maintenance dollars by reducing drive time, and maximizes energy dollars by keeping capacitors online, operating at peak efficiency. Being hotstick installable with no additional hardware or software needed, the smart sensor is the easiest way to gain SCADA



Surge Arrestors

UltraSIL polymer-housed VariSTAR surge arresters

Eaton recognizes the advantages of polymerhoused arresters with reduced size and weight and enhanced safety in this generation of Cooper Power™ series UltraSIL® polymerhoused VariSTAR® surge arresters. The UltraSIL polymer-housed VariSTAR surge arrester incorporates the industry recognized superior polymeric material – silicone rubber.

Using Metal Oxide Varistors (MOVs) having excellent electrical properties, these arresters provide superior overvoltage protection for MV distribution systems. Manufacturing our own MOV disks allows strict quality control over the manufacturing process from start to finish.

After production, every MOV disk must pass a series of electrical tests designed to ensure the highest individual disk quality. These MOV disks have proven their reliability and protective abilities through years of in-service use. UltraSIL polymer-housed VariSTAR surge arresters are available in 5 kA and 10 kA Class 1 IEC 60099-4 designs.

- Aluminum ground electrode
- Nameplate information
- Stainless steel top cap
- Aluminum line electrode
- UltraSIL silicone rubber housing
- Metal oxide varistar (mov) disks
- Bonded solid interface
- Fiberglass reinforced epoxy composite
- kV rating label
- Optional:
Stainless steel 12 mm line terminal 3/8"
Ground lead disconnecter
Insulating glass-filled thermoset polyester hanger

The UltraSIL silicone rubber housing has undergone a wide range of design tests to determine the optimum shed configuration. In addition, long term environmental testing has verified the lifetime superiority of UltraSIL silicone rubber when compared to other polymeric insulating materials.

Independent laboratory tests have verified the superiority of silicone rubber in terms of hydrophobicity, resistance to UV and surface tracking performance in contaminated environments, chemical inertness, temperature stability and other key insulating properties.

UltraSIL silicone rubber will not support biological growth (algae and mildew) and is non-flammable. A ground lead disconnecter is optionally available for use on systems having 20 A or more of available fault current. The disconnecter will sense and disconnect the ground terminal in the unlikely event of arrester failure, preventing a permanent system short circuit. A disconnecter that has operated gives a visual indication of internal arrester damage and the need for arrester replacement.

Commonly Applied Voltage Ratings (Ur)

A preliminary selection that is based on selecting an arrester having a "Continuous Operating Voltage," or Uc, that equals or exceeds the normal system maximum line-to-earth operating voltage is made. Reference IEC 60099-5.

System Voltage(kV rms)	Arrester Rating(kV rms)	— Ur		
Nominal	Maximum	Four-Wire Star Multi-Grounded Neutral	Three-Wire Star Solidly Grounded Neutral at Source	Delta, Ungrounded, & Resonant Impedance Grounded Star
3.3	3.7	3	6	6
6.6	7.3	6	9	9
10	11.5	9	12	12-15
11	12	9-10	12	12-15
16.4	18	15	—	18-21
22	24	18-21	24	24-27
33	36.3	27-30	36	36-36

Pressure Relief Tests

These tests demonstrate the ability to withstand fault currents for specific durations. All UltraSIL polymer-housed VariSTAR surge arresters have been tested in accordance with the requirements listed in IEC 60099-4 and are non-fragmenting to the levels shown below

Arrester Type	IEC Pressure Relief Class	Fault Current Amplitude (kA rms) Sym.	Minimum Fault Current Duration (Seconds)
UNS/UHS	B	0.8 20	0.5 0.2



Voltage Regulators

Single-Phase Step Voltage Regulators



Eaton's Cooper Power™ series VR-32 single-phase step voltage regulators are tap-changing auto-transformers. They regulate distribution line voltages from 10% raise (boost) to 10% lower (buck) in 32 steps of approximately 5/8% each. Voltage ratings are available from 2400 volts (60 kV BIL) to 34,500 volts (200 kV BIL) for 60 Hz and 50 Hz systems.

Internal potential winding taps and an external ratio correction transformer are provided on all ratings so that each regulator may be applied to more than one system voltage. Smaller kVA sizes are supplied with support lugs for pole mounting and with substation or platform tie down provisions. Larger sizes are provided with substation bases with pad-mounting provisions.

Voltage is maintained within desired limits by controls that feature superior accuracy, reliability, and serviceability. Continuity of service is assured by rugged, service-proven tap-changers and core-and-coil assemblies functioning with the control.

Eaton's Cooper Power series voltage regulators are available with a full complement of standard features for routine applications, as well as a full line of optional accessories for unique applications. In addition, the regulator offers desirable features that enhance operation and service.

The unit construction cover suspends the internal assembly, consisting of the core-and-coil assembly, tap-changer, and the reactor, for ease of inspection and maintenance. All Eaton's Cooper Power series voltage regulators are manufactured and tested to the IEEE Std C57.15™-2009 standard.

- CL-7 control
- Tap-changer with motor and power supply
- Position indicator with ADD-AMP adjustment
- Two laser-etched nameplates
- Lifting lugs
- Oil drain valve and sampling device
- Upper filter press connection
- Oil sight gauge
- Mounting provisions for shunt arresters
- Bolt-down provisions (overhead units)
- Pole-type mounting brackets (overhead units)
- High-creep bushings with clamp-type connectors
- Substation base (substation units)
- External series arrester
- Automatic pressure relief device
- Handhole
- Control cabinet with removable front panel
- Ratio correction transformer
- Conformally coated circuit boards

ADD-AMP Capabilities of 50 Hz Ratings

Rated Volts	Rated kVA	Load Current Ratings (Amperes)*				
		Regulation Range				
		±10%-	±8 3/4%	±7 1/2%	±6 1/4%	±5%
6600 95 kV BIL	33	50	55	60	68	80
	66	100	110	120	135	160
	99	150	165	180	203	240
	132	200	220	240	270	320
	198	300	330	360	405	480
	264	400	440	480	540	640
	330	500	550	600	668	668
	396	600	660	668	668	668
	440	668	668	668	668	668
11000 95 kV BIL	55	50	55	60	68	80
	110	100	110	120	135	160
	165	150	165	180	203	240
	220	200	220	240	270	320
	330	300	330	360	405	480
	440	400	440	480	540	640
	550	500	550	600	668	668
	660	600	660	668	668	668
15000 150 kV BIL	75	50	55	60	68	80
	150	100	110	120	135	160
	225	150	165	180	203	240
	300	200	220	240	270	320
	450	300	330	360	405	480
	600	400	440	480	540	640
	750	500	550	600	668	668

Rated Volts	Rated kVA	Load Current Ratings (Amperes)*				
		Regulation Range				
		±10%-	±8 3/4%	±7 1/2%	±6 1/4%	±5%
16000 150 kV BIL	160	100	110	120	135	160
	320	200	220	240	270	320
	480	300	330	360	405	480
22000 150 kV BIL	110	50	55	60	68	80
	220	100	110	120	135	160
	330	150	165	180	203	240
	440	200	220	240	270	320
	660	300	330	360	405	480
	880	400	440	480	540	640
33000 200 kV BIL	999**	454	454	454	454	454
	165	50	55	60	68	80
35000 200 kV BIL	330	100	110	120	135	160
	495	150	165	180	203	240
	660	200	220	240	270	320
	825	250	275	300	337	373
	175	50	55	60	67.5	80
	350	100	110	120	135	160
	525	150	165	180	202.5	240
	700	200	220	240	270	320

* Additional 12% increase in capacity is available due to the use of 65 °C winding rise insulation if the tap-changer's maximum current rating has not been exceeded. For loading in excess of the above values, contact your Eaton product representative.

** Additional capacity available when unit is equipped with cooling fans. For information on loading in excess of the values listed, contact your Eaton product representative.

Pole-top Switchgear

NOVA™ three-phase, microprocessor controlled recloser

Eaton provides reliable, economical overcurrent protection, advanced metering, and automation systems for distribution circuits rated through 34.5 kV with its Cooper Power™ series NOVA™ three-phase, electronically controlled, vacuum-interrupting automatic circuit reclosers.

The NOVA recloser combines solid cycloaliphatic-epoxy polymeren encapsulated vacuum interrupters with a reliable, lightweight operating mechanism that utilizes a magnetic actuator to provide a lifetime of trouble-free operation. The solid polymer system does not rely on a gaseous, liquid, or foam dielectric. The NOVA recloser is highly resistant to ozone, oxygen, moisture, contamination, and ultraviolet light.

The NOVA recloser is available with two configuration options: control powered interface and auxiliary-powered interface. Designed and tested to be compatible with Eaton's Cooper Power series three-phase controls, these automatic circuit reclosers offer superior coordination, protection, and application capabilities.

Recloser operations are programmed in an electronic control with accurate characteristics and a host of advanced features. Precise operating tolerances enable close coordination with other protective devices on the system. When system requirements change, program settings are easily altered with no sacrifice of accuracy or consistency.

Compact and lightweight, NOVA reclosers are easily installed on poles or in substations. Mounting equipment is available for both pole and substation applications. Recloser and control accessories enable further tailoring of the protective program to achieve maximum system operating flexibility. Eaton is strongly committed to improving the reliability of the electric power industry. Technological advances, including the newest microprocessor-based controls and solid insulation NOVA distribution switchgear products, represent our investment in the future.

The NOVA recloser is not only a technological breakthrough, but a valuable component that brings significant operational savings to the utility business unit, lowering the installation, operation, training, and maintenance costs on your power distribution system. When needed, application expertise, backed by world-wide systems engineering knowledge and experience, is available. Customer-focused design capability, based on more than 65 years of recloser experience, has made Eaton the industry leader. NOVA reclosers are designed and manufactured in accordance with IEEE Std C37.60™-2003 standard.



Voltage Ratings (kV)

Description	15 kV	15 kV	27 kV	27 kV	38 kV
Maximum Voltage	15.5 kV	15.5 kV	29.2 kV	29.2 kV	38.0 kV
Rated Basic Impulse Level	110.0 kV	125.0 kV	125.0 kV	150.0 kV	170.0 kV
Radio Noise Limit (iV)	100 @ 9.4 kV	100 @ 9.4 kV	100 @ 16.4 kV	100 @ 16.4 kV	100 @ 23.0 kV
Power Frequency Withstand, Dry	50 kV	50 kV	60 kV	60 kV	70 kV
Power Frequency Withstand, Wet	45 kV	45 kV	50 kV	50 kV	60 kV

Current Ratings (Amperes)

Description	15 kV	15 kV	27 kV	27 kV	38 kV
Rated Continuous Current	630 A*	630 A*	630 A*	630 A*	630 A*
Short Circuit Current, Symmetrical	12.5 kA**	12.5 kA**	12.5 kA**	12.5 kA**	12.5 kA
Making Current, Asymmetrical Peak	31.0 kA	31.0 kA	31.0 kA	31.0 kA	31.0 kA
Cable Charging Current	10 A	10 A	25 A	25 A	40 A

* 800 amp accessory is also available.

** 16.0 kA option is also available. (Making Current is 40.0 kA Asymmetrical Peak.)

Low Voltage Assemblies

xEnergy

xEnergy:

Make way for progress by integrating innovation.

Of course, we all like the idea of progress, but often what we really need are tangible, practical solutions - innovations we can implement and use right now. That is precisely why Eaton has developed xEnergy.

xEnergy switchboard systems are designed to configure your projects efficiently, meeting your own specific requirements – from planning and assembly to installation. xEnergy systems provide the ideal basis for building infrastructures up to 6300 A. xEnergy cleverly combines switching and protective devices, mounting systems and enclosure components, allowing you to work quickly and efficiently in your workshop and easily integrate future innovations as they arise.

Ideal modules.

Intelligent system platform.

Is it possible to bridge the divide between increasingly stringent technological and safety requirements on the one hand, and cost reduction on the other?

Eaton's answer to this question is a resounding 'Yes' – resulting in development of the latest generation of switchboard systems to prove the point.

xEnergy systems think ahead by allowing for tomorrow's requirements today. xEnergy's switching and protective devices, mounting and switchboard systems together form a single technical and cost-effective economic unit that offers you the best in power management, switching and control.

How does it work?

Quite simply: the system's modular design allows for a wide range of intelligent combinations resulting in space, time and financial savings.

And because you can also rely on Eaton's excellent reputation for safety, you can implement individual projects in functional buildings or office and industrial buildings simply, quickly and flexibly.

Eaton offers the entire product range in fl at-packed versions, functionally packed as assembly groups, or as cabinets preassembled to customer specifications. Short delivery times make it easy to react to enquiries or modifications requested by the customer.

- Easy configuration and ordering thanks to tools that support the setup of parts lists
- Fast delivery ex warehouse thanks to lean logistic processes
- Easy handling of individual parts thanks to convenient packaging units
- Safe and time-saving assembly based on Eaton assembly instructions

The system offer is optimised for the incorporation of internationally available Eaton switchgear and protective devices and it is completed by configuration and planning tools. The right tool for every project stage and safe power distribution!



xEnergy

System features and benefits.

Functionality is a fundamental, individuality is the future.

xEnergy switchboard systems consist of IEC/EN 60439/61439 type-tested function modules. These have an internal separation up to Form 4, and comply with various national or regional installation requirements, such as DIN VDE, CEI, NF or UNE. This means you can design customised solutions for use in several different countries.

xEnergy systems offer you a wide range of options for implementing power distribution reliably, economically and fully in accordance with your customers' requirements. You can use feeder and coupling sections for circuit-breakers up to 6300 A, and individually equipped outgoing sections with fixed and removable compartment modules for switching and protective devices up to 630 A.

Outgoing sections up to 630 A for switchfuse strips, fuse rails and fuse switch-disconnectors are also available.

Control sections and empty sections can be combined as required for installing ancillary components such as motor starters, PFC modules, frequency inverters, soft starters or for automation solutions. The mounting systems for rail-mounted service installation devices can be used in conventional service distribution boards.



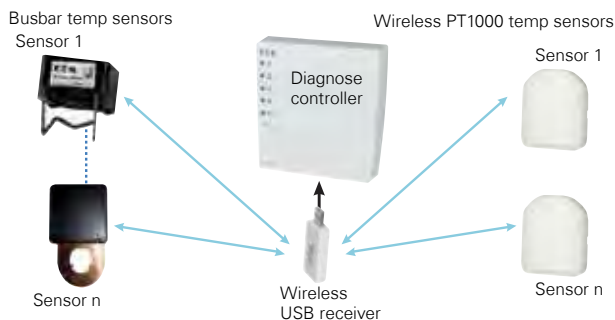
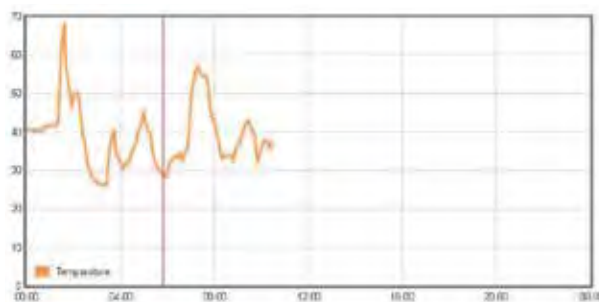
- Type-tested switchgear assemblies (TTA) up to 6300 A
- Clear and symmetrical design with only one circuit-breaker per section reduces the number of busbar connections and saves mounting requirements
- Internal separation up to Form 4 increases personnel and system protection
- Fast and direct allocation of circuit-breaker mounting kits for the mechanical fastening of circuit-breakers
- High level of flexibility in the terminal area thanks to alternative connection options
- 3-pole and 4-pole switching and protective devices, type-tested switchboard systems (TTA) up to 630 A
- Max. 38 fixed compartment modules in one section (H 50mm), optimum device utilisation despite high packing density
- Flexible module mounting to Form 4 with different device mounting depths, however with standard operating front
- Simple module mounting to Form 2 on one mounting depth
- Highly flexible combination possible for functional areas and busbars in accordance with IEC/

Eaton Diagnose System

Eaton Diagnose System offers 24 hours a day, 7 days a week thermal monitoring of LV switchboard. This system provides valuable data such as instance, absolute peak and trends back to system operator/maintenance personnel. This system provides higher visibility and eliminate the requirement of periodic thermography, which can only provide a snapshot of the switchboard thermal behaviour through a fixed narrow viewing window.

Advantages

- Early detection
- Warning messages
- Diagnosis
- Documentation
- Optimised service intervals
- Reduction of infrared scans
- Reduction of mechanical stress
- 24 hours/7 days permanent monitoring



ARCON®

- An engineered solution, components consist of light and current sensors, evaluation unit and quenching device.
- In the event of an arc fault, emitted light and arc current will either initiate the quenching device or trip the incoming breaker.
- "Lightning fast" clearing of arc flash fault (2ms).



Low Voltage Assemblies

xEnergy

IEC/EN 61439

The IEC/EN 61439 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.

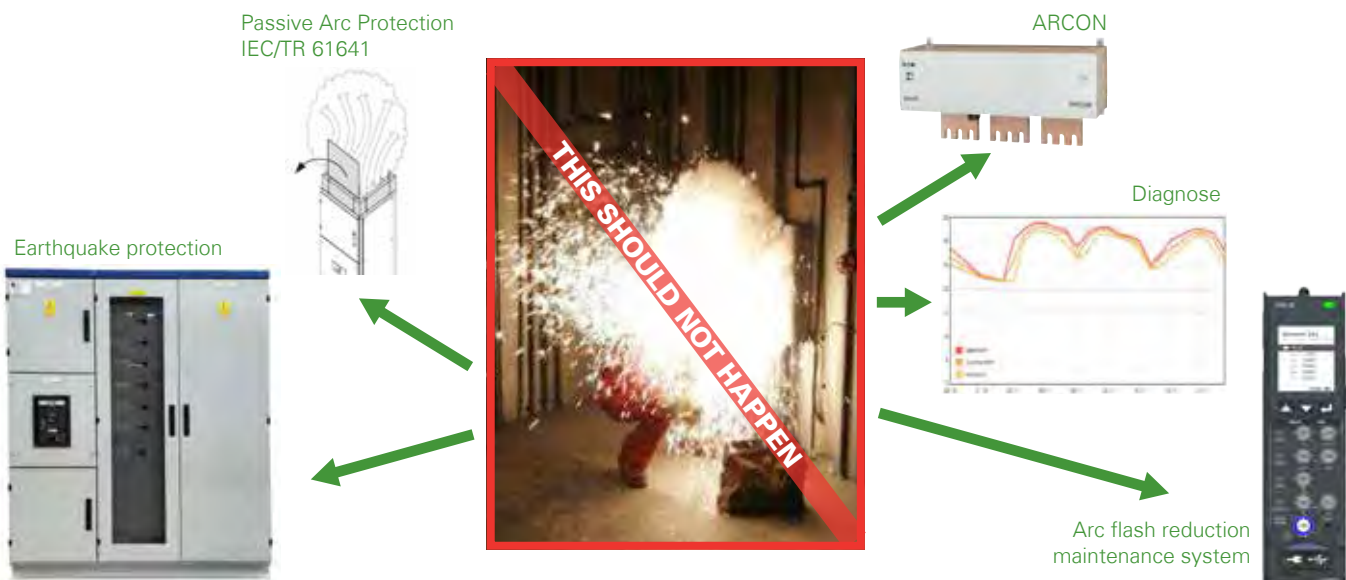
xEnergy, in conformity with the standard

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 their part of the responsibility, a large number of applications have been split up into standardised 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.

Standards	IEC/EN 61439-1/-2, DEKRA /KEMA witnessed Design-verified
Position Main Bus bar	Rear or Top
Internal partition	Form 1 to Form 4b (Type 6/7)
Rated operational voltage U_n	690 V / 50 – 60 Hz
Rated current I_n	up to 6300 A
Rated short-time withstand current I_{cw}	up to 105 kAeff
Ambient air temperature	35 °C (24-h average value) and 50°C
Degree of protection	IP 31/ 42/ 55
Net configuration	TN-C / TN-C-S / TN-S / IT
Colour	RAL 7035 (other colors on request)
Dimensions	H 2000 mm basic height, without plinth
	W 300/ 425/ 600/ 800/ 850/ 1000/ 1100/ 1200/ 1350 mm
	D 400/ 600/ 800/ 1000 mm (800+200)

EATON = Safety for Switchgears



xEnergy

xEnergy product features

- Enclosures for side-by-side and stand-alone cabinets
- Degree of protection IP31 or IP55
- Main busbars up to 5000 A
- 2 Main busbar systems are possible in each section
- Clear separations into functional areas from Form 1 to Form 4 to provide even better protection for people and equipment
- Widths of 425, 600, 800, 850, 1000, 1100, 1200 and 1350 mm
- Height 2000 mm
- Color RAL 7035 (other colors upon request)
- Network types TN-C, TN-C-S, TN-S, TT, IT
- Type-tested switchgear assemblies in accordance with IEC/EN 61439
- Optimized for 3 and 4 pole switchgear from Eaton



XW Withdrawable

- Power outgoing - circuit breakers up to 630 A
- Outgoers for motor starters up to 250 KW
- Empty drawers for individual applications
- Easy & 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-energised status
- Easy maintenance without the need of using any special tools for replacement jobs



XR Removable

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



XG General

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



XF Fixed

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



XP Power Sections

- Incoming supplies, outgoing & 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

Low Voltage Assemblies



Z-EMER-DIN



XDBP-SDK

xBoard Distribution Boards

xBoard panelboards (xDB)

Compact and versatile, xDB panelboards deliver an efficient energy distribution system in commercial and light industrial applications. Available in two box sizes with the choice from 24 to 60 poles, panelboards are available with; no main switch allowing user flexibility to elect different main incomer preference or a 250A main isolator pre-fitted saving valuable time and money.

Additional 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, with panelboards offering 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

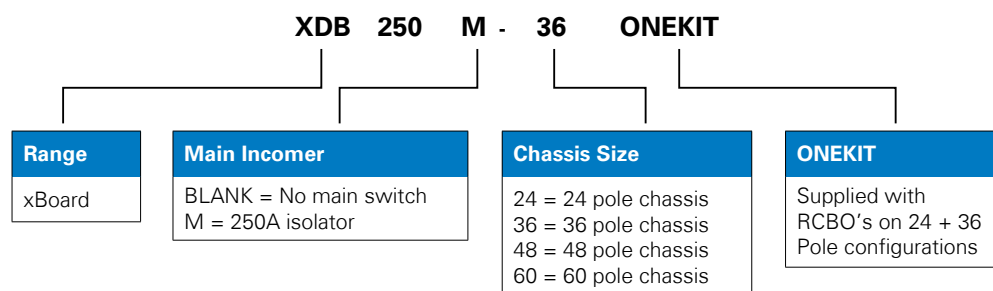
- Choice between no main switch or pre-fitted with 250A main switch
- Type tested chassis – DIN, 25kA for 0.1sec
- CL001 Key Lockable door with pintle hinges
- Lift-off escutcheon and door
- Designed and manufactured in Australia
- 7 pole DIN space either side of main switch to fit emergency light test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

xDB specifications

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

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"



xBoard and xBoard Plus Panelboard accessories

Accessories	Item no.
Flush mounting kit 750mm high enclosures	XDB750-FMK ①
Flush mounting kit 1000mm high enclosures	XDB1000-FMK ①
250A main switch kit for xBoard Plus DIN XCH	XDBP-M/S ②
250A main switch kit for xBoard Plus DIN XCAP	XDBPW-M/S-XCAP ②
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 ②
Flush surround kit for xBoard Plus	1521-1981/** ②

① xBoard panelboards only

② xBoard Plus panelboards only

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

Accessories	Item no.
E-Lock field fittable kit	ECELOCK ②
XEB DIN Rail mounting bracket	1521-1935/1 ②
XEB Chassis mounting bracket DIN	1521-1935/2 ②
XEB Chassis mounting bracket QUICKLAG	1521-1935/3 ②
XDBP Quicklag chassis adaptor	1521-2869/2 ②
XDBP NZM mounting bracket	1521-1942/1 ②
XDBP NZM to DIN connecting link kit	XDBPLINKKIT-NZM-DIN ②
XDBP NZM to QUICKLAG connecting kit	XDBPLINKKIT-NZM-QL ②
XDBP/XDBW mounting bracket kit for contactor DILM (Up to 250A)	XDBPWCONTA ②

xBoard Distribution Boards

xBoard Plus panelboards (xDBP)

xBoard Plus (xDBP) provides an ideal solution for applications that demand a modular electrical distribution system to meet more complex requirements. xDBP offers greater flexibility and increase configuration options with a deeper enclosure (200mm) to allow room for components such as contactors and motor controls to fit.

xDBP is supplied complete with a type tested 3 phase, colour coded, encapsulated chassis, rated for 250A in DIN 25kA for 0.1 sec. The xDBP can also be supplied with the Quicklag chassis rated for 250A in 20kA for 0.1 sec. Panelboards are also fitted with a fully rated, 250A neutral link, a 165A earth link, a hinged escutcheon, and a pintle hinged door with a circuit schedule card and card holder.

Manufactured in Australia, xDBP provides a robust 1.6mm sheet steel enclosure construction complete 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. xDBP 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.

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 x 18mm 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
- Gloss white escutcheon
- Designed and manufactured in Australia

xDBP specifications

- IP42 rating
- 24 to 96 poles
- 580 x 223 mm (W x D - external dimensions)
- 1.6mm sheet steel construction
- DIN or Quicklag chassis
- No main switch, 250A isolator or MCCB incomer
- 2 colour choices - grey RAL7035 or orange RAL2000
- Field-reversible hinged escutcheon and door

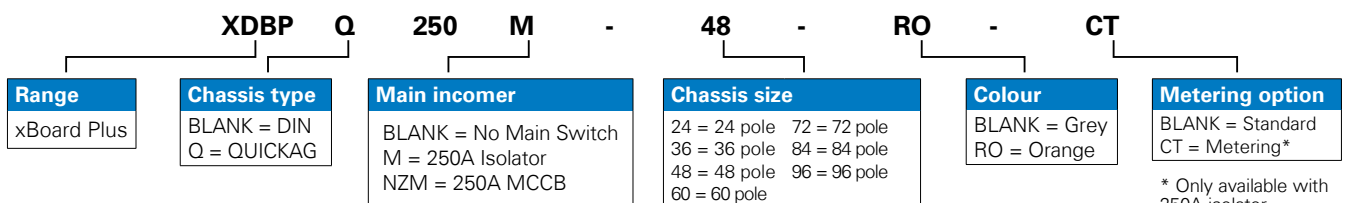


xBoard Plus DIN panelboards				
Description	Poles	Height	No mainswitch Item no.	250A isolator main switch Item no.
xBoard Plus DIN chassis Grey RAL7035 IP42	24	1000	XDBP250-24	XDBP250M-24
	36	1000	XDBP250-36	XDBP250M-36
	48	1000	XDBP250-48	XDBP250M-48
	60	1000	XDBP250-60	XDBP250M-60
	72	1500	XDBP250-72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



xBoard Distribution Boards

xBoard Plus IP54 kits



The xBoard Plus panelboard is now available to be upgraded to IP54 with 3-point / 4-point locking system and smoke seal for applications where the panelboards are required to be installed in passage ways and common areas such as in schools, aged care facilities and public works locations.

The IP54 upgrade kits are designed to be easily field fitted by the installers or supplied complete for assemblies that required fitted and wired to your specific requirements



xBoard Plus - IP54 kits

Description	Enclosure height	Item no. existing board	Item no. new board
IP54 kits to suit xBoard Plus	500	XDBP-IP54KIT-500	XDBP-IP54-500
	1000	XDBP-IP54KIT-1000	XDBP-IP54-1000
	1500	XDBP-IP54KIT-1500	XDBP-IP54-1500
	2000	XDBP-IP54KIT-2000	XDBP-IP54-2000

Locking accessories

Description	Item no.
Locks for NSW Public Works Department (E lock)	ECELOCK
1x lock required for 500/1000 H	
2x lock required for 1500/2000 H	
Locks for QLD State Works Department (92268 key lock)	1521-1517/3
1x lock required for 500/1000 H	
2x lock required for 1500/2000 H	



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 96 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.

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)

xDBPQ overview

- 24 to 96 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

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

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.

Accessories	Item no.
250A main switch kit for xBoard Plus Quicklag (xDBPQ)	XDBPQ-M/S ③

xBoard Distribution Boards

xBoard Weatherproof panelboards (xDBW)

xBoard Weatherproof provides an ideal solution for applications that require a modular electrical distribution system designed to meet arduous applications. xBoard Weatherproof offers greater flexibility and increased configuration options coupled with a deeper enclosure (231mm) to allow room for components such as contactors and motor controls.

Panelboards are supplied complete with a type tested 3 phase, colour coded, encapsulated chassis, rated for 250A in DIN 25kA for 0.1 sec. xBoard Weatherproof can also be supplied with the Quicklag chassis rated for 250A in 20kA for 0.1 sec. Panelboards are also fitted with a fully rated 250A neutral link and a 165A earth link, a hinged escutcheon, and a pintle hinged door with a circuit schedule card and card holder. The xDBW boasts 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 adapted for MCCB or higher rated incomer options.

Features and benefits

- Hinged escutcheon deep dished
- Lift-off door with pintle hinges
- Earth and neutral link with double screws
- Removable 3mm thick aluminum gland plates as standard
- 2 mm 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
- Gloss white escutcheon
- Designed and manufactured in Australia

xDBW specifications

- IP66 rating
- 24 to 96 poles
- 650 x 253 mm (W x D - external dimensions)
- 1.6mm sheet steel fully welded construction
- DIN or Quicklag chassis
- 2 colour choices - grey RAL7035 or orange RAL2000
- Hinged escutcheon and door
- Available assembled or self assembly



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

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

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



xBoard Distribution Boards

Self assembly options for xBoard Weatherproof panelboards (xDBW)

At Eaton we understand that electrical distribution board requirements can sometimes be very specific and often requires the ability for customisation. xBoard Weatherproof (xDBW) self assembly options provide a faster more flexible way to deliver customised distribution boards with the choice to order in flat pack kits that are ready to be assembled and wired by the switchboard builder and installer.

1

SELECT

1. Empty box
2. Escutcheon
3. E&N bars kit

Empty box includes standard swing handle and accessories.

2

SELECT

1. Mounting bracket
2. DIN rail kit
3. Labels kit

3

OPTIONAL

1. Locking accessories

Different locking barrels available, see handle locking accessories table.

4

OPTIONAL

1. Main switch kit
2. Plinth
3. Others

For chassis please refer to page 30

Access to flexible choices

- Empty boxes available in 4 heights (mm) – 500, 1000, 1500 and 2000
- Escutcheons to suit DIN and Quicklag MCB cut-outs or blank for other requirements
- RAL7035 and RAL2000 enclosure colours
- Right and left hand hinged options

Reduce lead time on custom designs

- Reduce quotation complexity and increase response turnarounds
- Shorten lead times and expedite delivery for projects
- Ability to speed up design and construction of modular distribution boards



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xBoard Distribution Boards

Self assembly options for xBoard Weatherproof panelboards (xDBW)

1

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

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

Escutcheons loose	Item no.
500mm 2 DIN horizontal rails 27 poles	XDBWED500-2S
1000mm Main switch slot and vertical DIN Cutout 48P + 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 escutcheon + hindges	XDBWEB500
1000mm blank escutcheon + hindges	XDBWEB1000
1500mm blank escutcheon + hindges	XDBWEB1500
2000mm blank escutcheon + hindges	XDBWEB2000

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

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

2

Mounting bracket	Item no.
xDBW DIN chassis mounting bracket	1521-3044/1
xDBW QUICKLAG chassis mounting bracket	1521-3096/1
xDBW accessory DIN Rail kit	XDBWDRTH
Label kit	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

3

Handle locking accessories	Item no.
xDBW Chrome swing handle with CL001	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

4

Other accessories	Item no.
XDBP/XDBW main switch kit to suit XCAP DIN	XDBPW-M/S-XCAP
XDBP/XDBW main switch kit to suit Quicklag	XDBPQ-M/S
Sealing washer for gland plate screws (set of 12)	XDBWGPSEALKIT
xDBW Wall mounting kit	XDBWDMTGKIT
xDBW Plinth Full Channel - 1 Tier Painted BLACK	XDBWPLTH1
xDBW Plinth Full Channel - 2 Tier Painted BLACK	XDBWPLTH2
xDBW Plinth Full Channel - 3 Tier Painted BLACK	XDBWPLTH3
xDBW Plinth Full Channel - 4 Tier Painted BLACK	XDBWPLTH4
xDBW Plinth Full Channel - 1 Tier GALVANISED	XDBWPLTHG1
xDBW Plinth Full Channel - 2 Tier GALVANISED	XDBWPLTHG2
xDBW Plinth Full Channel - 3 Tier GALVANISED	XDBWPLTHG2
xDBW Plinth Full Channel - 4 Tier GALVANISED	XDBWPLTHG4
XDBP/XDBW mounting bracket kit for contactor DILM (Up to 250A)	XDBPWCONTA
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



Customised solutions.

Finding a supplier who's willing to take the time to customise electrical equipment just for you can be tough. That's why you should contact Eaton to discuss your next electrical switchboard design challenge.

Eaton can specify, develop and manufacture customised products and solutions locally. This gives our customers local access to market knowledge and in-depth technical skills, and lets them take advantage of emergency response and quick-ship schedules when required.

Eaton offers:

- Customised main switchboards and distribution boards
- Supply Authority CT and multi-tenant metering panels
- Main process control panel with PLC, controls relays and VFD's
- Motor control centres and enclosed control
- Power factor correction switchboards
- Automatic transfer switches
- Low/Medium voltage switchgear



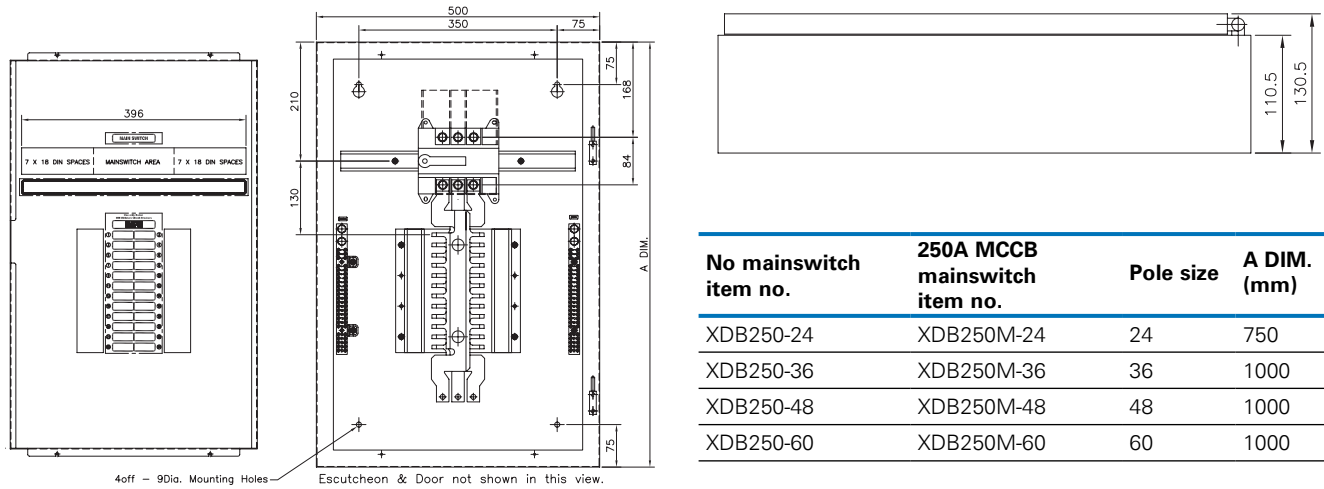
Powering Business Worldwide

Whether you manufacture original equipment, manage an industrial facility or are in commercial construction, we make a point of learning how you do business so we can best serve your needs. If you are ready to start on your next project, just contact Eaton or one of our many xEnergy partners.

xBoard Distribution Boards

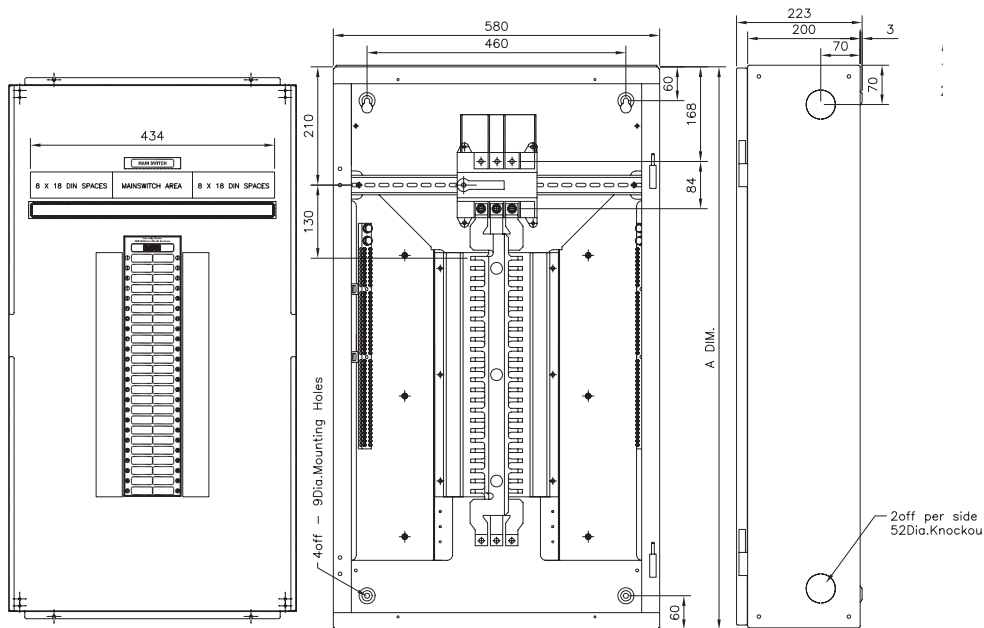
Technical data

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

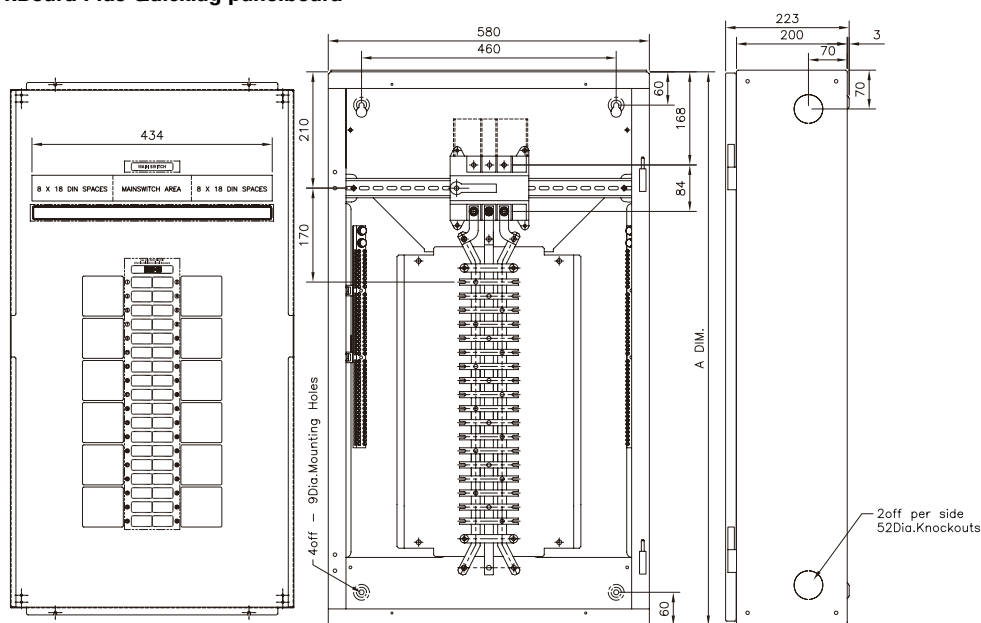
Orange board (-RO suffix) dimensions same as corresponding pole size above.

Low Voltage Assemblies

xBoard Distribution Boards

Technical data

xBoard Plus Quicklag panelboard

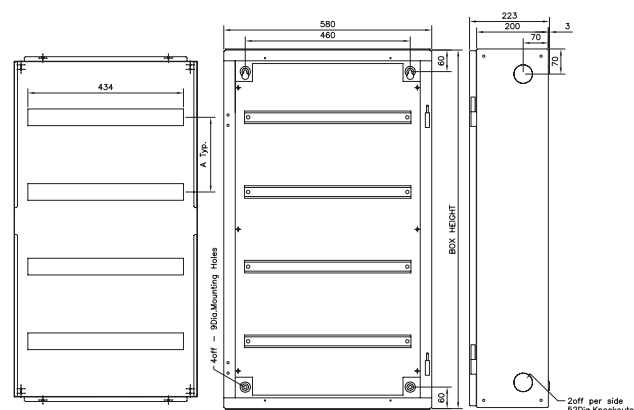


Note: 1000 high box shown with 36 pole chassis and 250A switch

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

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

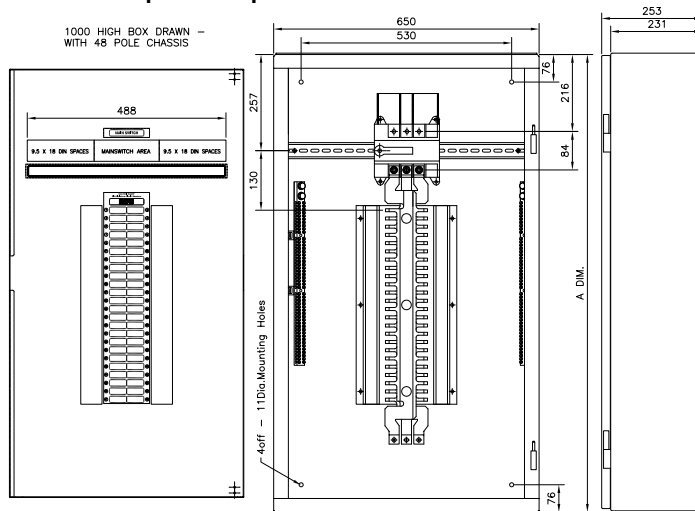
1. A DIM. and No. of DIN Rails information only applies to extension boxes with DIN rail(s) fitted.

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

xBoard Distribution Boards

Technical data

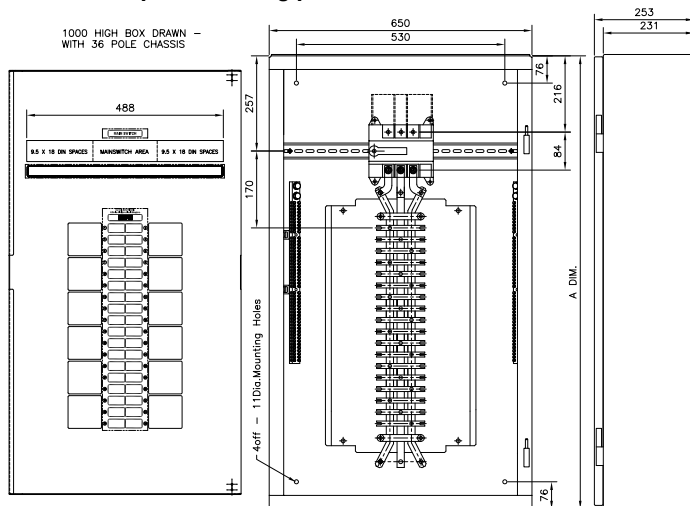
xBoard Weatherproof DIN panelboard



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

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



Enclosures

Eaton Halyester polyester/non metallic enclosures

Polyester enclosures, Halyester - polyester enclosures

Durability & quality you can trust. Halyester has been proving its reliability in the harshest climates, from the sweltering heats to the coldest temperatures for over 30 years.

- IP66 - dust & jet water tight
- Built for outdoor & indoor usage
- Covers IK10 impact rating
- UV resistant- tested
- Corrosion free & chemical resistant GRP

Empty boxes with TRANSPARENT cover & insulated base-plate

Type	Description (W x H x D mm)	Item no.
K432	IP66 Enclosure 180 x 270 x 171mm	1860808
K433	IP66 Enclosure 270 x 270 x 171mm	1860809
K434	IP66 Enclosure 270 x 360 x 171mm	1860810
K442	IP66 Enclosure 180 x 360 x 171mm	1860090
K444	IP66 Enclosure 360 x 360 x 171mm	1860091
K463	IP66 Enclosure 270 x 540 x 171mm	1860811
K464	IP66 Enclosure 360 x 540 x 171mm	1860812
K466	IP66 Enclosure 540 x 540 x 171mm	1860092
K484	IP66 Enclosure 360 x 720 x 201mm	1860093
K486	IP66 Enclosure 540 x 720 x 201mm	1860094

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

Enclosures

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-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



CI-K2-100-M



TS-CI-K2



K-CI-K3



K10/1



V-M20

Enclosures

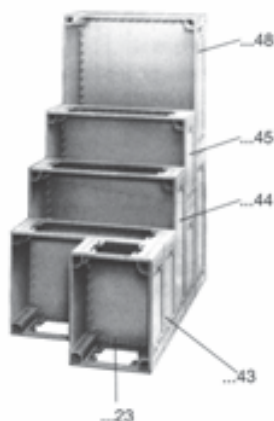
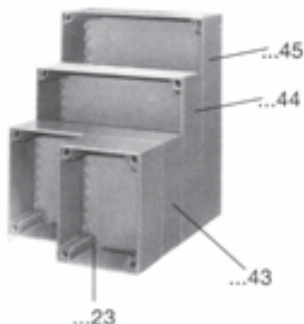
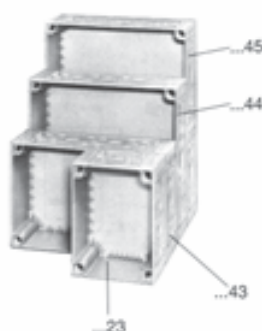
Totally insulated enclosures CI range

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	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	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	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

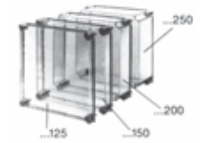


Enclosures

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		D200-CI48
250		D250-CI48



CI accessories

Description	For use with	Item no.
Steel mounting plates 3 mm galvanised steel, including fixing screws	CI 23	M3-CI23
	CI 43	M3-CI43
	CI 44	M3-CI44
	CI 45	M3-CI45
	CI 48	M3-CI48
Module mounting rails Useful length 330 mm for enclosure dimension 375 mm, 3 mm galvanised steel, including fixing screws, pack of 10 rails	Horizontal CI43, CI44, CI45, CI48, Vertical CI44	ML4
Mounting rails Galvanised steel, including fixing screws, 7.5 mm high, Pack of 20 rails	Useful length 145 mm for enclosure dimension 187.5 mm	145 CL2
	Useful length 207 mm for enclosure dimension 250 mm	207 CL3
	Useful length 332 mm for enclosure dimension 375 mm	332 CL4
Mounting rails 15 mm high, pack of 10 rails	Useful length 145 mm for enclosure dimension 187.5 mm	145 CL2-15
	Useful length 207 mm for enclosure dimension 250 mm	207 CL3-15
	Useful length 332 mm for enclosure dimension 375 mm	332 CL4-15
Spacers	To raise by 25 mm, pack of 25	by 25 HS25-CI
	To raise by 50 mm, pack of 25	by 50 HS50-CI



Description	Rated current	For use with	Item no.
Insulated individual terminals Connections on both sides for round conductors	32 A	-	K10/1
	63 A	-	K25/1
	100 A	-	K50/1
	160 A	-	K95/1N/BR
	250 A	-	K150/1/BR
	400 A	-	K240/1/BR

Enclosures

Totally insulated enclosures CI range

CI accessories



BL-CI



HG-CI



KD4-CI



K-CI



BS-2-CI



FT-CI



VS-CI



FL4-X



KS3-CI



DSCH-CI

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			
	–	100	VS-CI
Wedge lock K-CI required for enclosure assembly and flange fitting for attaching gland plates	–	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

Enclosures

ETA Mild steel enclosures

ETA ST wall mount enclosures

ETA metal enclosures are the ideal housing for all electrical control circuits & switchboard construction, ST enclosures feature:

- Enclosure & door RAL 7035 textured polyester powder coat
- Enclosure & door made from 1.5mm sheet steel
- Mounting plate made of 2.5mm galvanised sheet steel
- Removable gland plate
- Two part polyurethane continuous sealing gasket
- Reversible door including mounting rails
- Degree of protection IP66 to EN60529, EN50298
- Impact Resistance - IK10 to EN50298, EN 50102



ETA ST wall mount enclosures IP66 (Single door)

External dimensions (W x H x D mm)	Colour	No. of locks	Weight Kgs	Item no.
200 x 300 x 150	RAL7035	1	6	ST2-315
300 x 300 x 150	RAL7035	1	7.5	ST3-315
300 x 400 x 150	RAL7035	1	9.5	ST3-415
300 x 500 x 150	RAL7035	1	11.5	ST3-515
400 x 300 x 150	RAL7035	1	9.5	ST4-315
400 x 500 x 150	RAL7035	1	13	ST4-515
300 x 300 x 200	RAL7035	1	8	ST3-320
300 x 400 x 200	RAL7035	1	11	ST3-420
300 x 500 x 200	RAL7035	1	13	ST3-520
400 x 300 x 200	RAL7035	1	11	ST4-320
400 x 400 x 200	RAL7035	1	13.5	ST4-420
400 x 500 x 200	RAL7035	1	15.5	ST4-520
400 x 600 x 200	RAL7035	2	18	ST4-620
500 x 500 x 200	RAL7035	1	18.5	ST5-520
500 x 700 x 200	RAL7035	2	24.5	ST5-720
600 x 400 x 200	RAL7035	1	18	ST6-420
600 x 600 x 200	RAL7035	2	24.5	ST6-620
400 x 500 x 250	RAL7035	1	18	ST4-525
400 x 600 x 250	RAL7035	2	20.5	ST4-625
500 x 700 x 250	RAL7035	2	27	ST5-725
600 x 800 x 250	RAL7035	2	34	ST6-825
600 x 1000 x 250	RAL7035	2	43.5	ST6-1025
600 x 400 x 300	RAL7035	1	23	ST6-430
600 x 600 x 300	RAL7035	2	30	ST6-630
600 x 800 x 300	RAL7035	2	37	ST6-830
600 x 1000 x 300	RAL7035	2	47	ST6-1030
600 x 1200 x 300	RAL7035	1	54	ST6-1230
800 x 600 x 300	RAL7035	2	37	ST8-630
800 x 800 x 300	RAL7035	2	48	ST8-830
800 x 1000 x 300	RAL7035	2	58	ST8-1030
800 x 1200 x 300	RAL7035	1	67	ST8-1230
400 x 600 x 400	RAL7035	2	25	ST4-640
600 x 600 x 400	RAL7035	2	32	ST6-640
600 x 800 x 400	RAL7035	2	46	ST6-840
600 x 1000 x 400	RAL7035	2	56	ST6-1040
800 x 800 x 400	RAL7035	2	52	ST8-840
800 x 1000 x 400	RAL7035	2	62	ST8-1040

Please call Eaton for sizes not listed.

ETA ST wall boxes IP55 (2 Door)

External dimensions (W x H x D mm)	Colour	No. of locks	Weight Kgs	Item no.
800 x 600 x 300	RAL7035	1	37	ST8-630
1000 x 800 x 200	RAL7035	1	51	ST10-820
1000 x 800 x 300	RAL7035	1	58	ST10-830
1000 x 1000 x 300	RAL7035	1	69	ST10-1030
1000 x 1200 x 300	RAL7035	1	80	ST10-1230

Orange RAL2000 ETA ST wall mount enclosures IP66 (Single door)

External dimensions (W x H x D mm)	Colour	No. of locks	Weight Kgs	Item no.
400 x 400 x 200	RAL2000	1	13.5	STO4-420
400 x 600 x 200	RAL2000	2	18	STO4-620
600 x 600 x 200	RAL2000	2	24.5	STO6-620
500 x 700 x 250	RAL2000	2	27	STO5-725
600 x 800 x 250	RAL2000	2	34	STO6-825
600 x 1000 x 250	RAL2000	2	43.5	STO6-1025
600 x 1200 x 300	RAL2000	1	54	STO6-1230
800 x 1000 x 300	RAL2000	2	58	STO8-1030
800 x 1200 x 300	RAL2000	1	67	STO8-1230



Enclosures

ETA Mild steel enclosures

ETA STP wall mount enclosures IP66 with plexiglass window

ETA metal enclosures are the ideal housing for all electrical control circuits & switch board construction, STP enclosures feature:

- Full Plexiglass viewing window
- Enclosure & door RAL 7035 textured polyester powder coat
- Enclosure & door made from 1.5mm sheet steel
- Mounting plate made of 2.5mm galvanised sheet steel
- Removable gland plate & gasket
- Two part polyurethane continuous sealing gasket
- Reversible door including mounting rails
- Degree of protection to IEC 529 IP66

ETA STP wall mount enclosures - IP66 with plexiglass window

External dimensions (W x H x D mm)	Colour	No. of locks	Weight Kgs	Item no.
400 x 300 x 200	RAL7035	1	11	STP4-320
400 x 400 x 200	RAL7035	1	13.5	STP4-420
400 x 500 x 200	RAL7035	1	15.5	STP4-520
400 x 600 x 200	RAL7035	2	18	STP4-620
500 x 700 x 200	RAL7035	2	24.5	STP5-720
600 x 400 x 200	RAL7035	1	18	STP6-420
600 x 600 x 200	RAL7035	2	24.5	STP6-620
400 x 500 x 250	RAL7035	1	18	STP4-525
400 x 600 x 250	RAL7035	2	20.5	STP4-625
500 x 700 x 250	RAL7035	2	27	STP5-725
600 x 800 x 250	RAL7035	2	34	STP6-825
600 x 1000 x 250	RAL7035	2	43.5	STP6-1025
600 x 400 x 300	RAL7035	1	23	STP6-430
600 x 600 x 300	RAL7035	2	30	STP6-630
600 x 800 x 300	RAL7035	2	37	STP6-830
600 x 1000 x 300	RAL7035	2	47	STP6-1030
600 x 1200 x 300	RAL7035	1	54	STP6-1230
800 x 1000 x 300	RAL7035	2	58	STP8-1030
800 x 1200 x 300	RAL7035	1	67	STP8-1230

ETA ST enclosures accessories - ETA ST inner door kits

Description (W x H mm)	Colour	Item no.
Inner Door Kit, 400 x 400	RAL7035	STP01-44
Inner Door Kit, 400 x 500	RAL7035	STP01-45
Inner Door Kit, 400 x 600	RAL7035	STP01-46
Inner Door Kit, 500 x 700	RAL7035	STP01-57
Inner Door Kit, 600 x 400	RAL7035	STP01-64
Inner Door Kit, 600 x 600	RAL7035	STP01-66
Inner Door Kit, 600 x 800	RAL7035	STP01-68
Inner Door Kit, 600 x 1000	RAL7035	STP01-610
Inner Door Kit, 600 x 1200	RAL7035	STP01-612
Inner Door Kit, 800 x 1000	RAL7035	STP01-810
Inner Door Kit, 800 x 1200	RAL7035	STP01-812

ETA ST enclosures accessories

ETA ST Modular Chassis Kits Includes:

- Frame
- Zinc plated DIN Rail
- Internal IP rating: IP1X
- Front panel with modular slot complete with mounting accessories & captive screws

ETA ST modular chassis kits

Description	Colour	Item no.
Modular Chassis Kit, 1 x 16 Module	RAL7035	MDST4-300
Modular Chassis Kit, 2 x 16 Module	RAL7035	MDST4-400
Modular Chassis Kit, 3 x 16 Module	RAL7035	MDST4-500
Modular Chassis Kit, 3 x 16 Module*	RAL7035	MDST4-600
Modular Chassis Kit, 3 x 26 Module*	RAL7035	MDST6-600
Modular Chassis Kit, 4 x 26 Module*	RAL7035	MDST6-800
Modular Chassis Kit, 5 x 26 Module*	RAL7035	MDST6-1000
Modular Chassis Kit, 6 x 26 Module*	RAL7035	MDST6-1200

* These units have individual module frames, example MDST4-600 has 3 x 16 module lift off panels.

ETA ST canopies

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

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.

Enclosures

ETA Mild steel enclosures

ETA ST enclosures accessories

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 ST general accessories

Description	Item no.
Wall Mounting Bracket kit, 4 pieces	SDWC-010
ST Door Stop, holds door at 90 degrees to prevent accidental closing	WA060*
ST Metal Box Hinge	0CDST140051
ST Metal Hinge Pin	METALPIN
Document Door Pocket A4 Sized, Thermoplastic	WA050
RAL7035, touch up paint	XAFS7035

*To hold the door open at 90 degrees & avoid accidental closing. Used on ST or STP boxes.

ETA ST gland plates

Description	Colour	Item no.
Gland Plate 78 x 158mm, suit 200mm wide	RAL7035	WC016
Gland Plate 78 x 258mm, suit 300mm wide	RAL7035	WC018
Gland Plate 128 x 358mm, suit 500mm wide	RAL7035	WC020
Gland Plate 128 x 558mm, suit 600mm wide	RAL7035	WC022

Includes one gland plate, sealing gasket, mounting accessories.

ETA ST locking systems

ID	Description	Item no.
1	Standard ETA Lock, Key Only	WE096
2+3	Lock & cam, with standard ETA Locking Insert	WE250EAT^①
4	7mm Square Locking Insert	WE265
5	7mm Square Lock, Key Only	WE268
6	8mm Triangle Locking Insert	WE275
7	8mm Triangle Lock, Key Only	WE278
8	Screwdriver Locking Insert	WE280
9	Keylock insert with E333 key (includes cam & locking cover)	WE235
10	T Handle with Key Lock	WE285
11	Wing Handle with Key Lock	WE288
N/A	T Handle with Key Lock - For Double Door Enclosures plus 1200mm high ST, STO & STP enclosures	WE230
N/A	CL001 Lock, Complete with 2 Keys	STCL001
N/A	CL003 Lock, Complete with 2 Keys	STCL003
N/A	Lock Tongue to Suit CL Locks	STCL00-LOCKTONGUE^②
N/A	CL Nylon sealing Gasket	STCL00-GASKET^②

① These items are supplied as one combined item.

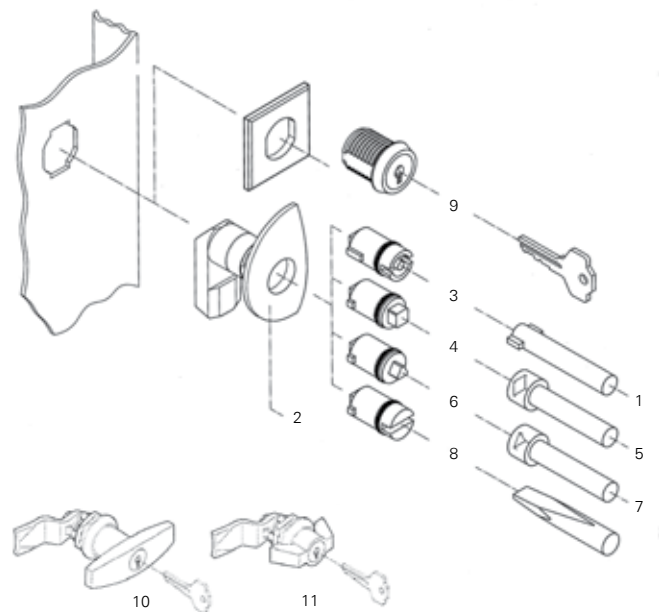
② One of each of these items is required when ordering items STCL001 + STCL003.

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



Low Voltage Assemblies



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

Enclosures

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

Enclosures

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

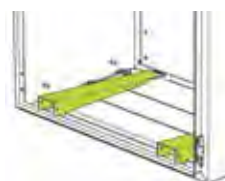
Description	Pack Size	Item no.
Universal Cover Pieces - 100mm (H), with mounting hardware	4 pieces	ATZE-A100
Front / Rear crosspiece pack - 600mm (W) enclosures	2 pieces	ATZE-T0600
Front / Rear crosspiece pack - 800mm (W) enclosures	2 pieces	ATZE-T0800
Front / Rear crosspiece pack - 1000mm (W) enclosures	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

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-PMMAK

Metering devices

IQ 250/260 range

The IQ 250 & IQ 260 electronic meters provide capabilities you wouldn't normally expect in an affordable, compact meter—such as fast sampling rate & accurate metering for a full range of power attributes. The meter can be configured either from the easy-to-read display or remotely (accessible via a Power Xpert Gateway) for upgrades to input/output option cards.

Eaton's IQ 250 & IQ 260 meters provide direct-reading metered values for the most critical power aspects, such as watts, watt demand, watt-hours, voltage-amperes (VA), VA-hours, vars, var-hours & power factor. They have high sampling speed & accuracy. The IQ 260 meter also measures power quality, such as total harmonic distortion (THD) up to the 40th order. The IQ 260 also provides configurable limit alarming/control capability of up to eight measured parameters for more sophisticated power management.

Features

- Comprehensive metering
- High-end accuracy
- Self-test capability to validate accuracy
- Large, easy-to-read display
- Local or remote configuration
- Industry-standard communication protocols (Modbus)
- Mix-and-match input/output options
- Integration with Eaton's Power Xpert Architecture
- Field-upgradeable



IQ 100 range

Providing the first line of defense against costly power problems, Eaton's IQ 100 electronic power meters can perform the work of an entire wall of legacy metering equipment utilizing today's technology. Eaton's IQ 100 meters use 24-bit AD converters that sample at more than 400 samples per cycle & meet ANSI C12.20 standards for accuracy of 0.5 percent. With such high-performance measurement capability, these meters can be confidently used for primary revenue metering & sub-metering applications.

Eaton's IQ 100 meters provide direct-reading metered values for the most critical power aspects, such as watts, watt demand, watt hours, voltage-amperes (VA), VA-hours, vars, var hours & power factor. They have high sampling speed & accuracy.

Applications

- Utility & commercial metering
- Substations, industrial facilities, power generation sites & campuses
- Sub-metering
- Load studies & voltage recording
- Analogue meter replacement



Power meters CVM-MINI range

The CVM-MINI is an instrument which measures, calculates & displays the main electrical parameters for three-phase industrial systems (balanced or unbalanced). Measurements are in true effective value, via three AC voltage inputs & three AC current inputs.

Other features include:

- Current measuring .../5 or .../1A
- DIN rail format with only 3 modules
- Assembly on the 72 x 72mm panel with frontal adaptor (M5ZZF1)
- RS-485 Communications (Modbus-RTU)
- Two transistor outputs
- Sealable

Description	Type	Item no.
3PH DIN Power Analyser	CVM-MINI	M52000
3PH DIN Power Analyser with isolated inputs	CVM-MINI-ITF-C2	M52010
3PH DIN Power Analyser with RS485 comms	CVM-MINI-ITF-RS485-C2	M52021
3PH DIN Power Analyser with Harmonics & RS485 comms	CVM-MINI-ITF-HAR-RS-485-C2	M52031
3PH DIN Power Analyser with Ethernet	CVM-MINI-ITF-ETHERNET-C2	M520J1
3PH DIN Power Analyser with BACnet	CVM-MINI-ITF-BACnet-C2	M520F1
3PH DIN Power Analyser with LonWorks	CVM-MINI-ITFLonWorks-C2	M52091
72mm x 72mm Panel Adaptor	CVM-MINI Panel Adaptor	M5ZZF1



CVM-MINI Series

Single phase power analyser CVM-1D

CVM-1D is a power analyser for single phase circuits upto 32A. It has an LCD display with a rotation screen system, showing a total of 24 instantaneous, maximum and minimum electrical variables.

Description	Type	Item no.
Single Phase 32A Direct DIN Rail Power Meter	CVM-1D-C	M55510
Single Phase 32A Direct DIN Rail Power Meter with RS485	CVM-1D-C-RS485	M55511



CVM-1D

Power analyser

Circuitor 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.



CVM NRG 96 series
Size: 96mm x 96mm

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

CVM144 range

The CVM Series is a programmable power meter that measures the electrical parameters of balanced or unbalanced three-phase electrical networks. All measurements are true RMS values that are sourced by means of three A.C. voltage inputs & three A.C. Current inputs via .../5Amp current transformers. The CVM Series can display up to 43 different parameters depending requirements & selection of device.



CVM - 144 series
Size: 144mm x 144mm

CVM-144 Meter Type	Quadrants	Class (V, A)	Communications	Protocol	Harmonics	Item no.
CVM 144	2	0.5	-	-	-	M50600
CVM 144-ITF	2	0.5	-	-	-	M50700
CVM 144-ITF-HAR	2	0.5	-	-	U/I (31°)	M50A60
CVM 144-Ethernet-TCP	2	0.5	Ethernet	Modbus/TCP	-	M50790
CVM 144-ITF-Profibus	2	0.5	RS485	Profibus DP	-	M50730
CVM 144-ITF-Johnson Controls	2	0.5	RS485	Johnson Controls	-	M50C10

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

RS=RS485
E=Ethernet
P=Profibus
M=Modbus/RTU

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.



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



EDMk-ITF-C2



EMS30C

Three phase energy meters, direction connection, DIN rail mounting

Description	Tariff	Model no.	Item no.
MKB 363M-400V phase-phase kW.h 63A, Mechanical	1	MKB363M	M30310
MKD-ITF-C2 three-ph meter 4 quadrant 40A(mx.120A) Digital	1	MKD-ITF-C2	M33000
MKD-ITF-RS485-I2-C2 three-ph 4 quadrant 40A(mx.120A) Digital + RS485	3	MKD-ITF-RS485-I2-C2	M33011

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



MK60-LCD



CEP-96



TCP2RS-TCP

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.



TC 4



TC 5



TC 5.2



TC 6.2



TC 6

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

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				
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



TC 8



TC 10



TC 12



P19921



M79951

Current transformer - accessories

Description	Item no.
Accessory to mount the TC5, TC5.2, TC6, TC6.2 transformers on a DIN rail	P19921
Accessory to seal the secondary side terminal on the TC type transformers	M79951

Current transformers

Circutor TP range- current transformers - split core

Circutor offer the most comprehensive range of Split C.T.s in providing flexibility for upgrading or retrofitting into existing switchboard assemblies.



TP-23



TP-58



TP-88



TP-812



TP-816

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

Industrial earth leakage protection

Multi function LCD electronic industrial earth leakage protection relays

Multifunction electronic industrial earth leakage protection relay that can offer protection, prevention & continuity. It utilises WG transformers, can be Din rail or panel mounted & comes with LCD display & programmable sensitivity/delay.

MIS = micro second

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.



RGU - 10

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.

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



WG Series

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.

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



RN Relay

WN earth leakage transformers (supports RN Relay)

WN series Leakage Transformers support the RN Relays covering diameters from 20mm up to 210mm.

Type	Description	Item no.
WN-140	140mm Diameter	P10214
WN-210	210mm Diameter	P10215



WNS/WN



IEC DIN MCB

xPole Arc Fault Detection Device

The AFDD+ provides a full protection solution against electrical ignited fires

The AFDD+ provides a full protection solution in one device that enhances consumers' peace of mind against fires ignited by electrical installations, while adding additional comfort. This all-in-one device gives the consumer full protection in their home and enables the installer to offer and install products that comply with evolving new codes and standards.

- Electric fire protective device according to IEC/EN-62606
- Line-voltage-independent RCBO (combined switch) according to IEC/EN 61009
- 2-pole: Both clearances between open contacts are protected
- Tripped indication: CB, RCD or AFDD
- LED indication for arc faults
- Compatible with standard busbar
- Twin-purpose terminal above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damp or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (RE), or proper checking of the earth conductor condition redundant, which must be performed separately.
- Type A: Protects against special forms of residual pulsating DC which have not been smoothed
- Approval number NSW27674

$I_n / I_{\Delta n}$ (A)	Item no.
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10 kA, 2-pole

To a certain extent surge-current-proof 250A; non-delayed, pulse current sensitive, Type A

Characteristic B

10A / 30mA	AFDD-10/2/B/003-A
16A / 30mA	AFDD-16/2/B/003-A
20A / 30mA	AFDD-20/2/B/003-A
25A / 30mA	AFDD-25/2/B/003-A

Characteristic C

10A / 30mA	AFDD-10/2/C/003-A
16A / 30mA	AFDD-16/2/C/003-A
20A / 30mA	AFDD-20/2/C/003-A
25A / 30mA	AFDD-25/2/C/003-A

$I_n / I_{\Delta n}$ (A)	Item no.
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6 kA, 2-pole

To a certain extent surge-current-proof 250A; non-delayed, pulse current sensitive, Type A

Characteristic B

32A / 30mA	AFDD-32/2/B/003-A
40A / 30mA	AFDD-40/2/B/003-A

Characteristic C

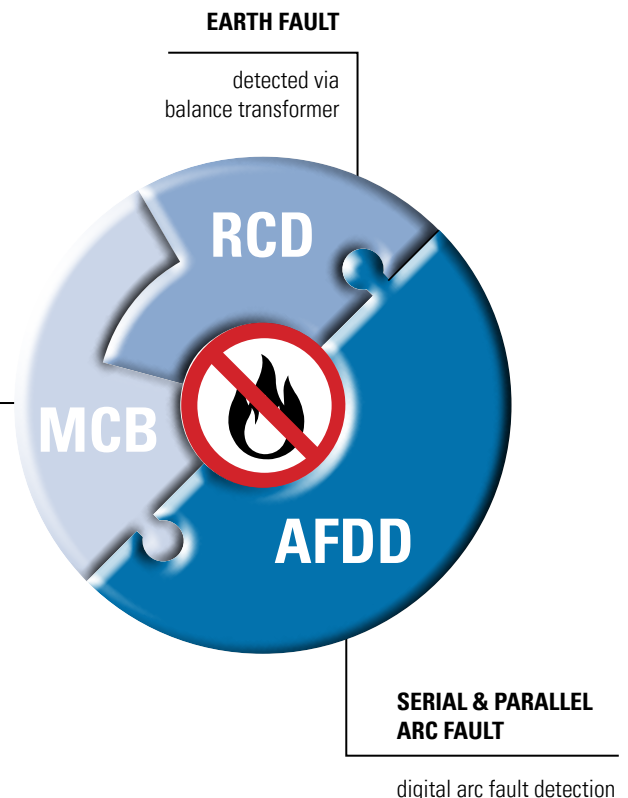
32A / 30mA	AFDD-32/2/C/003-A
40A / 30mA	AFDD-40/2/C/003-A

Accessories	Item no.
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Commoning busbar for 4 x AFDD devices	EVG-2PHAS/4AFDD
Auxiliary switch with 1NO+1NC contacts	ZP-IHK
Auxiliary switch with 2CO contacts	ZP-NHK
Shunt trip release	ZP-ASA/..
Switching interlock	IS/SPE-1TE

SHORT CIRCUIT & OVERCURRENT

thermal and magnetic detection



IEC DIN MCB

xPole Arc Fault Detection Device

The following types of fault can lead to severe hazard and danger.

Overcurrents

A moderate increase in current which does not immediately damage the wiring but results in a thermal overload over time. May increase over a period or almost instantaneously jump to a steady state current.

Typical causes

- Insulation defects
- Breakdown between phases
- Breakdown between phase and neutral

Short circuit currents

Faults with very low impedance and very high currents which can be up to 20 times the nominal current.

Typical causes

- Phase and neutral shortcircuiting over very low impedance, due to:
- Insulation breakdown
 - Mechanical damage to wiring
 - Water

Fault currents

High or low impedance faults between phase and earth. They can result in very low leakage and fault currents, either much lower than nominal current or in very high currents.

Typical causes

Changes in insulation and insulation resistance, due to:

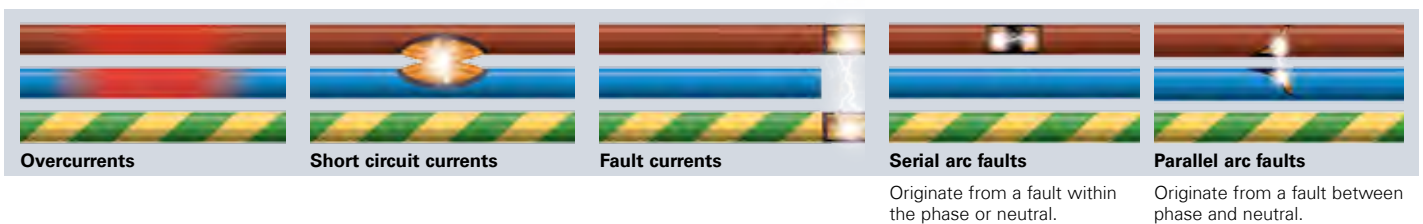
- Humidity
- Aging
- Mechanical stress
- Dust
- Dirt etc.

Arc fault currents

Typically at nominal current or just below, and therefore difficult to detect. Small arcs can grow over time as insulation is increasingly damaged. Identified by high frequency electrical noise and breakdown of the fault current close to the zero crossing of the driving voltage.

Typical causes

Broken or damaged wires leading to an arc continually or intermittently burning and damaging insulation.



Extended protection for people, property and assets

Protection against electrical hazards has evolved and improved to arrive at today's state-of-the-art EATON solutions.

Money-saving

Billions of dollars are lost because of fires. The AFDD+ makes a definite and significant contribution to reducing this loss, by offering installers for the first time a single compact device which not only increases safety but also reduces the risk of fire hazards.

Time-saving

Easy to operate and with no assembly required, the EATON AFDD+ is a fully integrated device, resistant to nuisance tripping, with sensitivity above the requirements of the product standard.

In case of an earth fault, having all protection in one device makes fault finding easier. And, as the AFDD+ provides tripping reason indicators, you, as a professional electrician, know immediately what to look for.

End User Convenience

In the case of any (earth) fault, only the circuit that caused the fault will trip so other circuits will remain powered.

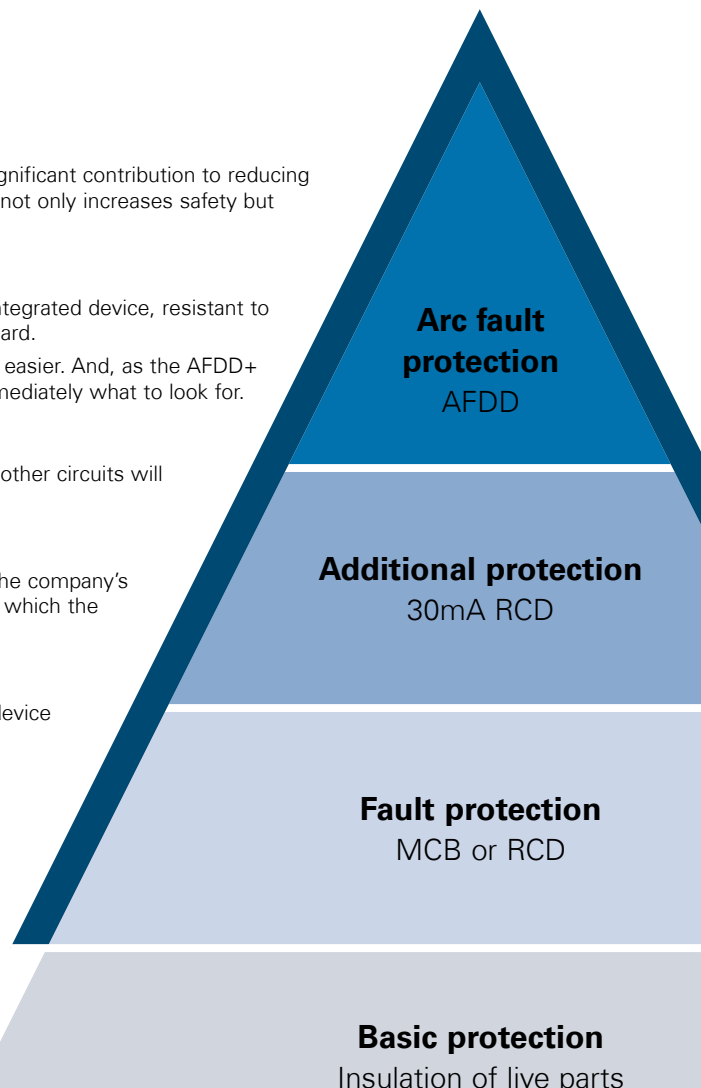
Market-leading

EATON's long experience in developing electronic protection devices ensures the company's leading position in providing reliable and safe electronic protection devices – of which the AFDD+ is the latest in a long line.

Comprehensive protection in final end circuits

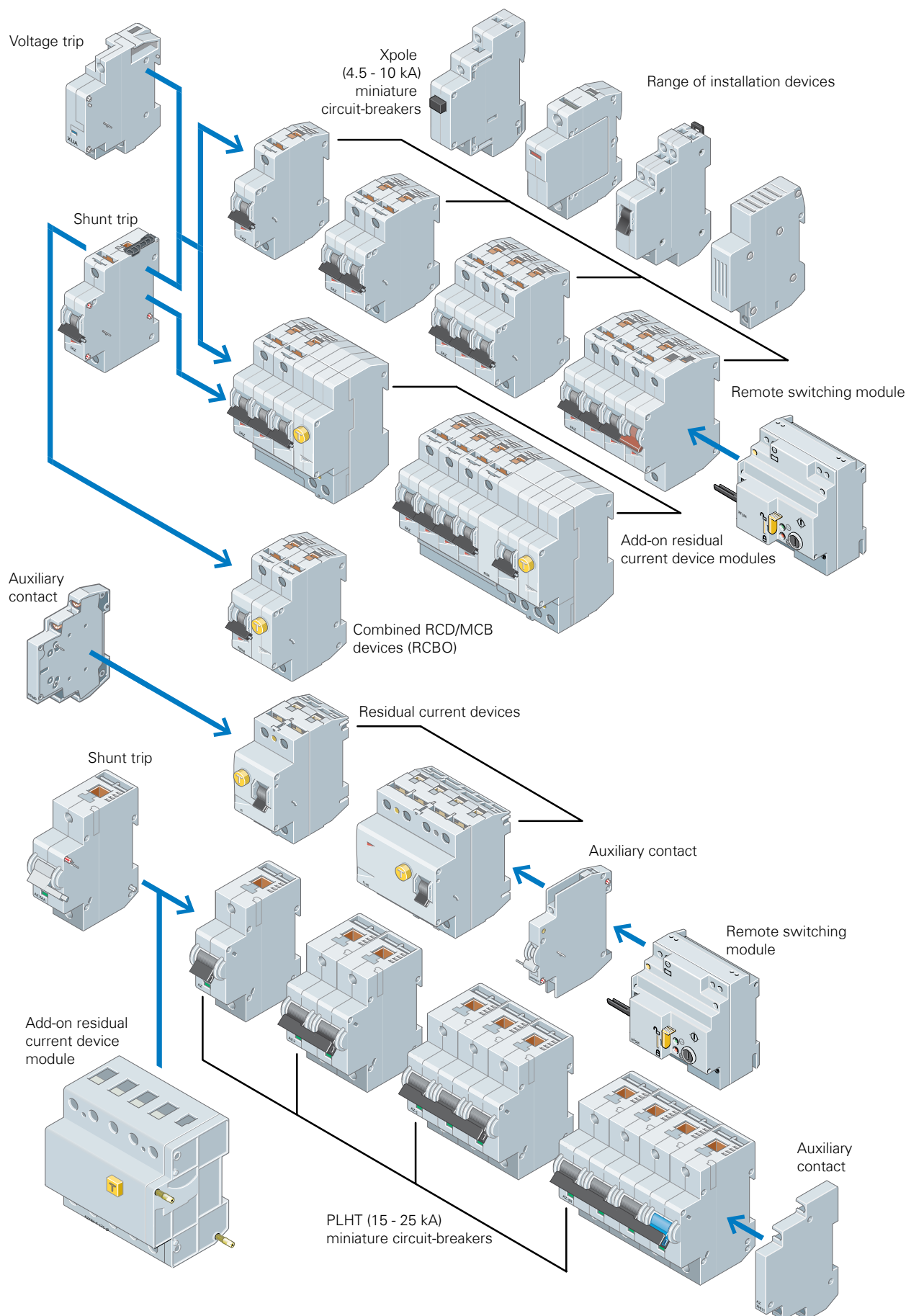
The AFDD+ provides complete protection in final sub circuits in one compact device

- ARC FAULT PROTECTION**
- + ADDITIONAL PROTECTION**
- + FAULT PROTECTION**



Low Voltage Circuit Protection & Switchgear

IEC DIN MCB



IEC DIN MCB

xPole IEC DIN MCB, RCCB & RCBO products

IS Main switches/isolating switches

Rated uninterrupted current I _u , A	Poles	Item no.
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

PLS4 Miniature Circuit Breakers (MCB)

- 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
- 48 VDC rating (per pole, max. 2 poles)
- 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 I _n , 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

IEC DIN MCB

xPole IEC DIN MCB, RCCB & RCBO products

PLS6 Miniature Circuit Breakers (MCB)

- 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
- 48 VDC rating (per pole, max. 2 poles)
- 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



PLS6-C50/1-AU



PLS6-C63/2-AU



PLS6-C25/3-AU



PLS6-C63/4-AU



PLN6-B6/1N

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

PLN6 Miniature Circuit Breakers (MCB)

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

IEC DIN MCB

xPole IEC DIN MCB, RCCB & RCBO products

PLSM Miniature Circuit Breakers (MCB)

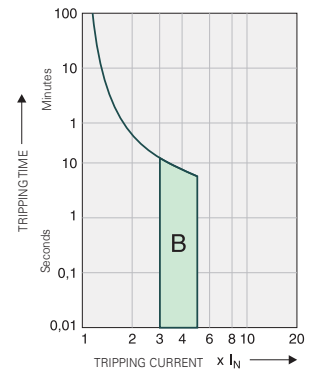
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Terminal capacity 1-25mm²
- 48 VDC rating (per pole, max. 2 poles)
- Rated 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



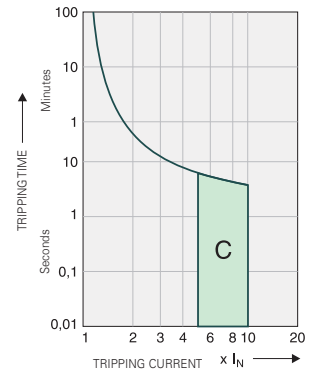
PLSM-C32/1-AU

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

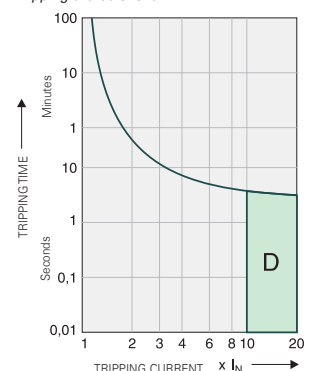
Tripping characteristic B



Tripping characteristic C



Tripping characteristic D



IEC DIN MCB

xPole IEC DIN MCB, RCCB & RCBO products

PLHT Miniature Circuit Breakers (MCB)

- High-quality miniature circuit breakers for commercial & industrial applications
- Contact position indicator red - green
- Accessories suitable for subsequent installation
- 60 VDC rating (per pole, max. 2 poles)
- 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

PLHT Miniature Circuit Breaker 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

IEC DIN MCB

xPole IEC DIN MCB, RCCB & RCBO products

Residual Current Devices general data - short description and symbol

	Eaton standard. Suitable for outdoor installation (distribution boxes for outdoor installation and building sites) up to -25°C.
	Conditionally surge-current proof (>250 A, 8/20 μ s) for general application.
	Type AC: AC current sensitive RCD
	Type A: AC and pulsating DC current sensitive RCD
	Type F: AC and pulsating DC current sensitive RCD, trip also at frequency composition (10 Hz, 50 Hz, 1000 Hz)
	Frequency range up to 20 kHz
	Trip also at frequency composition (10 Hz, 50 Hz, 1000 Hz)
	RCD of type G (min 10 ms time delay) surge current-proof up to 3 kA. For system components where protection against unwanted tripping is compulsory to avoid personal injury and damage to property (§ 12.1.6 of OVE/ONORM E 8001-1). Also for systems involving long lines and high line capacity. Some versions are sensitive to pulsating DC. Some versions are available in all-current sensitive design.
	RCD of type S (selective, min 40 ms time delay) surge current-proof up to 5 kA. Mainly used as main switch according to OVE/ONORM E 8001-1 § 12.1.5, as well as in combination with surge arresters. This is the only RCD suitable for series connection with other types if the rated tripping current of the downstream RCD does not exceed one third of the rated tripping current of the device of type S. Some versions are sensitive to pulsating DC. Some versions are available in all-current sensitive design.
	X-ray-proof, for avoiding unwanted tripping caused by x-ray devices.

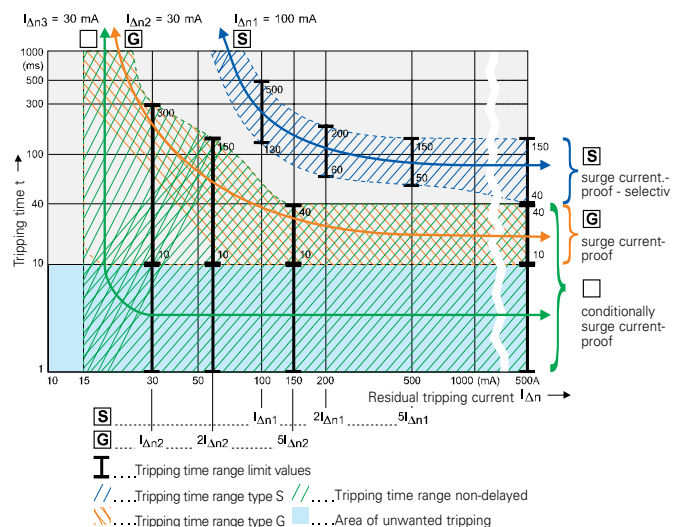
Tripping characteristics (IEC/EN 61008)

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

Testing:

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

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



IEC DIN MCB

xPole IEC DIN MCB, RCCB & RCBO products

eRB6 Residual Current operated circuit Breaker with Overcurrent protection (RCBO)

- 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



eRB6-32/1/C/003-AU

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 - contact Eaton for details.

eRBM Residual Current operated circuit Breaker with Overcurrent protection (RCBO)

- 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



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

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 - contact Eaton for details.

IEC DIN MCB

xPole IEC DIN MCB, RCCB & RCBO products

PKNM Residual Current operated circuit Breaker with Overcurrent protection (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	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	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/003-AU

PKNM Type A Residual Current operated circuit Breaker with Overcurrent protection (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	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	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/003-A-AU

IEC DIN MCB

xPole IEC DIN MCB, RCCB & RCBO products

PFIM Residual Current operated Circuit Breaker without overcurrent protection (RCCB)


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




PFIM-16/2/001-AU



PFIM-40/4/003-AU

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			
25	30	PFIM-25/2/003-AU			
25	100	PFIM-25/2/01-AU			
25	300	PFIM-25/2/03-AU	40	30	PFIM-40/4/003-AU
			40	100	PFIM-40/4/01-AU
40	30	PFIM-40/2/003-AU	40	300	PFIM-40/4/03-AU
40	100	PFIM-40/2/01-AU			
40	300	PFIM-40/2/03-AU	63	30	PFIM-63/4/003-AU
			63	100	PFIM-63/4/01-AU
63	30	PFIM-63/2/003-AU	63	300	PFIM-63/4/03-AU
63	100	PFIM-63/2/01-AU			
63	300	PFIM-63/2/03-AU	80	30	PFIM-80/4/003-AU
			80	100	PFIM-80/4/01-AU
80	30	PFIM-80/2/003-AU	80	300	PFIM-80/4/03-AU
80	100	PFIM-80/2/01-AU	80	500	PFIM-80/4/05-AU
80	300	PFIM-80/2/03-AU			
			100	30	PFIM-100/4/003
100	30	PFIM-100/2/003	100	100	PFIM-100/4/01
100	100	PFIM-100/2/01	100	300	PFIM-100/4/03
100	300	PFIM-100/2/03	100	500	PFIM-100/4/05







A	mA	2-Pole Item no.	A	mA	4-Pole Item no.
Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A 					
16	10	PFIM-16/2/001-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

IEC DIN MCB

xPole IEC DIN MCB, RCCB & RCBO products

PFIM Residual Current operated Circuit Breaker without overcurrent protection (RCCB)

- 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 3kA, type G/F 					
25	30	PFIM-25/2/003-G/F	25	30	PFIM-25/4/003-G/F
25	300	PFIM-25/2/03-G/F	25	300	PFIM-25/4/03-G/F
40	30	PFIM-40/2/003-G/F	40	30	PFIM-40/4/003-G/F
40	300	PFIM-40/2/03-G/F	40	300	PFIM-40/4/03-G/F
63	30	PFIM-63/2/003-G/F	63	30	PFIM-63/4/003-G/F
63	300	PFIM-63/2/03-G/F	63	300	PFIM-63/4/03-G/F
Selective + surge current-proof 5kA, type S/F 					
			25	300	PFIM-25/4/03-S/F
			40	300	PFIM-40/4/03-S/F
			63	300	PFIM-63/4/03-S/F
Surge current-proof 3 kA, type G 					
40	30	PFIM-40/2/003-G-AU	40	30	PFIM-40/4/003-G
			40	100	PFIM-40/4/01-G
			63	30	PFIM-63/4/003-G
			63	100	PFIM-63/4/01-G
			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-100/4/03-G/A-AU
Surge current-proof 3 kA, X-ray application, type 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



PFIM-40/2/003-G-AU



PFIM-63/4/003-G-AU

IEC DIN MCB

xPole IEC DIN accessories

- Auxiliary switch
- Shunt trip release
- Undervoltage release
- RCD tripping module
- Remote control & automatic switching device



ZP-IHK



Z-ASA/24



Z-USA/115



Z-FAM



Z-FW-LP



Z-FW-LP/MO

Auxiliary switches

For protective device/function	18 mm modules	Item no.
Auxiliary Switch Z-HK, Z-AHK, Tripping Signal Switch Z-NHK.		Design: for screw fixing
PFIM 1NO+1NC left side mount	0.5 MU	Z-HK
PLS 1NO+1NC left side mount	0.5 MU	Z-AHK
PLS, PFIM, 2CO left side mount	0.5 MU	Z-NHK
Auxiliary Switch ZP-IHK, ZP-WHK, Tripping Signal Switch ZP-NHK.		Design: snap fixing
PLS, PKN, 1NO+1NC left side mount	0.5 MU	ZP-IHK
PLS, PKN, 1CO left side mount	0.5 MU	ZP-WHK
PLS, PKN, 2CO left side mount	0.5 MU	ZP-NHK

Shunt trip release Z-ASA, ZP-ASA

Operational voltage range (V~)	18 mm modules	Item no.
12 - 110 Vac - screw fixing, left side mount	1 MU	Z-ASA/24
110 - 415 Vac - screw fixing, left side mount	1 MU	Z-ASA/230
12 - 110 Vac - snap on fixing, left side mount	1 MU	ZP-ASA/24
110 - 415 Vac - snap on fixing, left side mount	1 MU	ZP-ASA/230

Undervoltage release Z-USA, Z-USD

Operational voltage range (V~)/function	18 mm modules	Item no.
115 Vac non-delayed, left side mount	1 MU	Z-USA/115
230 Vac non-delayed, left side mount	1 MU	Z-USA/230
400 Vac non-delayed, left side mount	1 MU	Z-USA/400
115 Vac delayed 0.4s left side mount	1 MU	Z-USD/115
230 Vac delayed 0.4s left side mount	1 MU	Z-USD/230

RCD-tripping module Z-..AM

For protective device	18 mm modules	Item no.
PFIM, RCD, left side mount	0.5 MU	Z-FAM
PKNM, RCBO, left side mount	0.5 MU	Z-KAM

Remote control & automatic switching device Z-FW

Function	18 mm modules	Item no.
Automatic restarting 230VAC	4 MU	Z-FW-LP
Automatic restarting 24-48VDC	4 MU	Z-FW-LPD
+ Remote control ON/OFF/TEST	2 MU	Z-FW-MO

Remote control & automatic switching device Z-FW

Function	18 mm modules	Item no.
Pre-mounted sets Z-FW: Set consisting of automatic switching device Z-FW-LP. & switching module Z-FW-MO		
230 VAC	6 MU	Z-FW-LP/MO
24-48 VDC	6 MU	Z-FW-LPD/MO

Remote control & automatic switching device Z-FW

Function	18 mm modules	Item no.
Remote Testing Module Z-FW (for Z-FW-LP./MO set use only)		
0,01 A	6 MU	Z-FW/001
0,03 A	6 MU	Z-FW/003
0,1 A	6 MU	Z-FW/010
0,3 A	6 MU	Z-FW/030
0,5 A	6 MU	Z-FW/050

IEC DIN MCB

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 20A AC1, 18 mm modules: 1 MU, Finger & hand touch safe to VGB 4, Low switching noise, no humming, Easy coil feed connection with Pozidrive screws				
20	8	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	8	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 MU				
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: 3 MU				
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-DST

Accessories

Sealing cover 25A, 2 MU wide	Z-SCHAK-2TE
Sealing cover 40A & 63A, 3 MU wide	Z-SCHAK-3TE
Auxiliary switch, 0.5 MU wide	Z-SC
Spacer, 0.5 MU wide	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 MU			
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

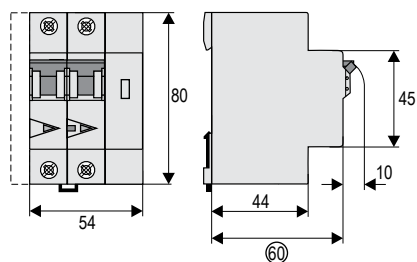
Technical application data within technical section refer to pages 438-441

Low Voltage Circuit Protection & Switchgear

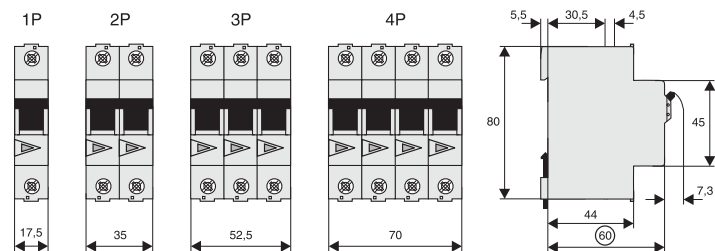
IEC DIN MCB

Dimensions (mm)

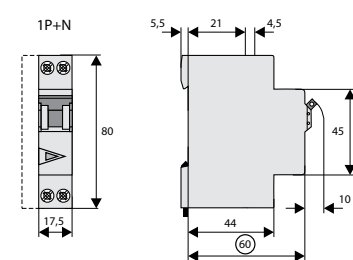
AFDD+



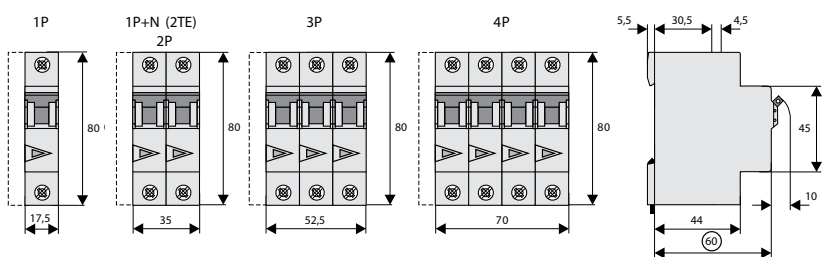
IS switches



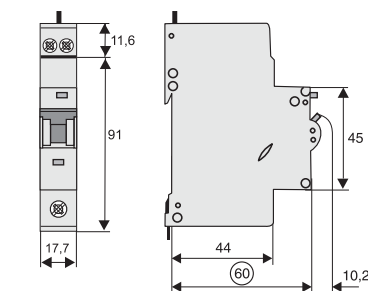
PLN6



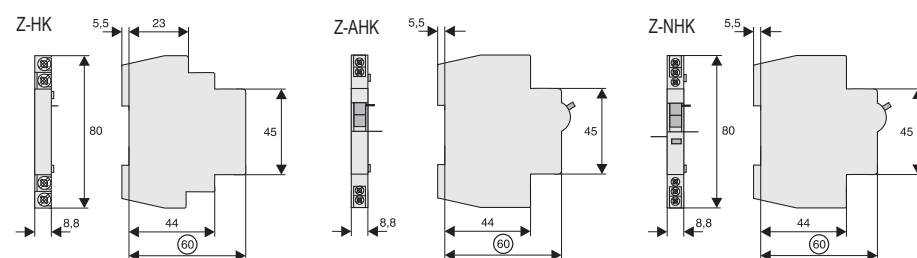
PLS4, PLS6, PLSM



eRB6 and eRBM

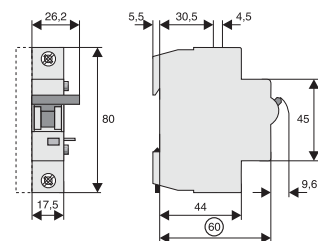


Auxiliary switches

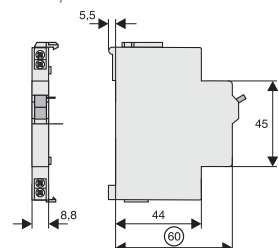


Shunt trip release

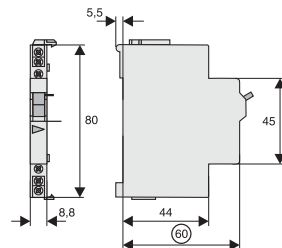
Z-ASA and ZP-ASA



ZP-IHK, ZP-WHK

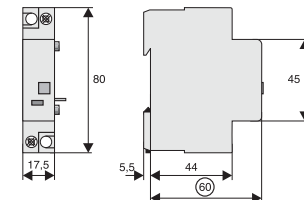


ZP-NHK



Undervoltage release

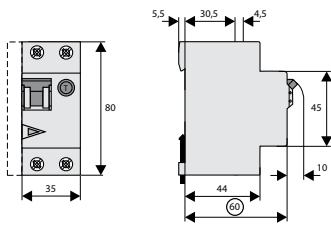
Z-USA and Z-USD



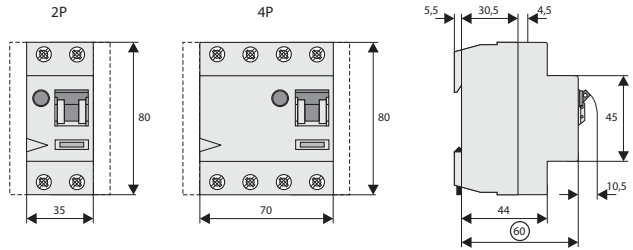
IEC DIN MCB

Dimensions (mm)

PKNM

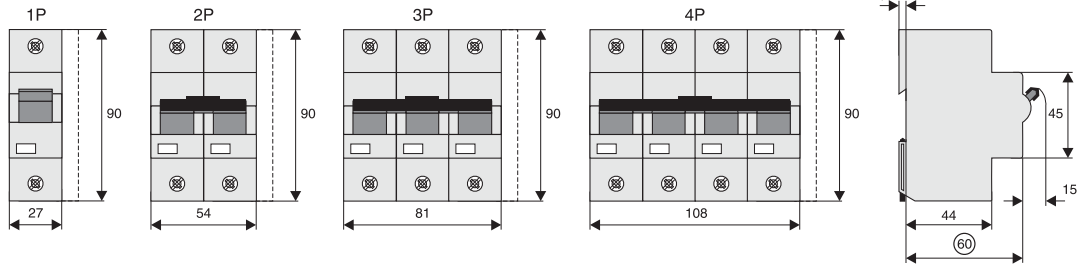


PFIM

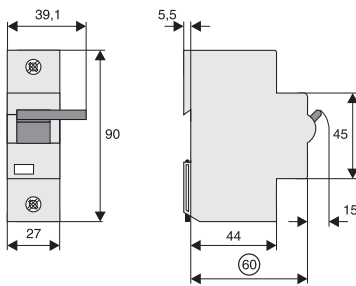


PLHT

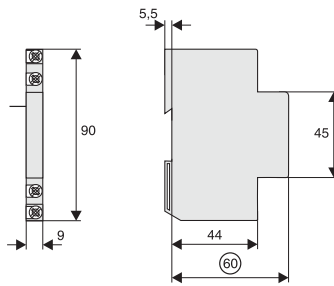
MCB



Shunt trip release Z-LHASA

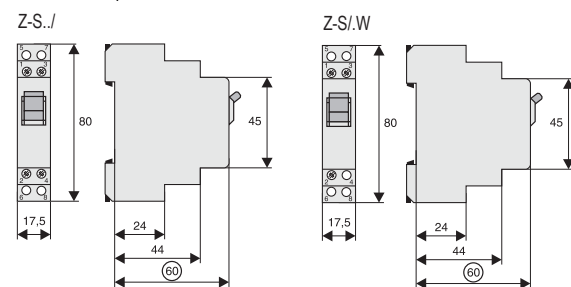


Auxiliary switch Z-LHK

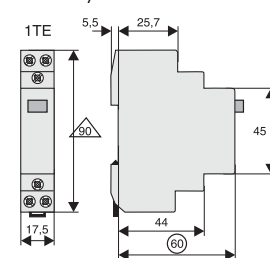


Controlling and switching devices

Z-S and Z-S/W switches

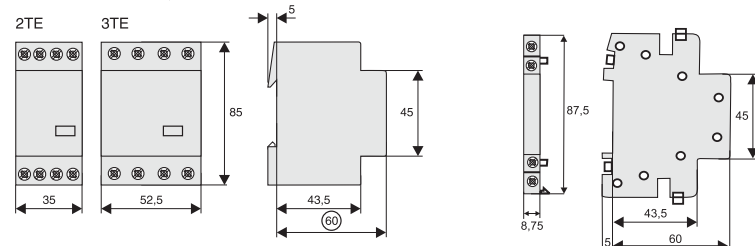


Z-R relay



Contactors

Z-SCH.../25 Z-SCH.../40, .../63



IEC DIN MCB

Controlling & switching devices



Z-EL/R230



Z-S/WM



Z-EMER-E



Z-EMER-DIN

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		
1 C/O, I – O – II		Z-S/WM
1 C/O, DAY – O – NIGHT		Z-S/WTN
Hour run counter: display 5 + 2 digit		
230 V, 50 Hz		ASOHC230
Emergency lighting test kit		
Enclosed		Z-EMER-E
DIN rail mounting		Z-EMER-DIN
Replacement key for Z-EMER-E		M22-ES-MS1
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

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

IEC DIN MCB

PE loadcentres

Eaton offers a wide range of plastic loadcentres, available in a variety of sizes, mounting configurations and IP ratings. The PE range of enclosures are adequately sized to be suitable for use of Eaton xPole eRB type single module RCBOs. Aside from ease of use, PE loadcentres offer an aesthetically pleasing design with discreet markings.

No. of poles	Type of mounting	Type of door	Item no.
Protection rating IP42			
1	Surface	Opaque	PE1E
2	Surface	Opaque	PE2E
4	Surface	Opaque	PE4E
8	Surface	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



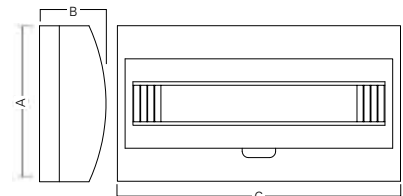
PE18SW



PE24ST

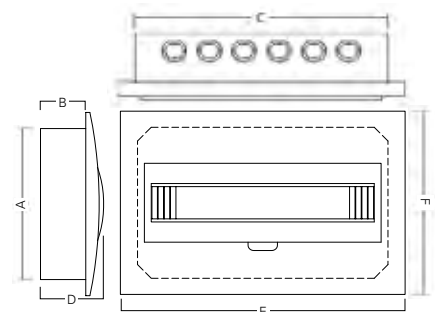
IP42 surface mount dimensions

Item no.	No of Din Rails	A (mm)	B (mm)	C (mm)
PE12ST/W	1	200	95	256
PE18ST/W	1	221	95	364
PE24ST/W	2	326	95	270
PE36ST/W	3	474	100	308



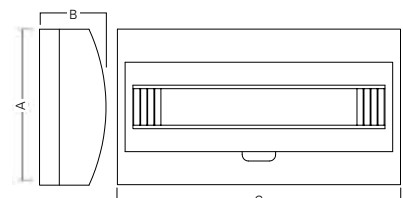
IP42 flush mount

Item no.	No of Din Rails	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
PE12FT/W	1	200	66	256	92	305	245
PE18FT/W	1	218	66	366	100	414	270
PE24FT/W	2	312	66	260	100	306	358
PE36FT/W	3	456	66	296	100	340	504



IP55 surface mount

Item no.	No of DIN Rails	A (mm)	B (mm)	C (mm)
PE4ST-IP55	1	215	98	126
PE6ST-IP55	1	215	98	162
PE8ST-IP55	1	215	98	215
PE12ST-IP55	1	215	98	272
PE18ST-IP55	1	235	98	380
PE24ST-IP55	2	340	98	285

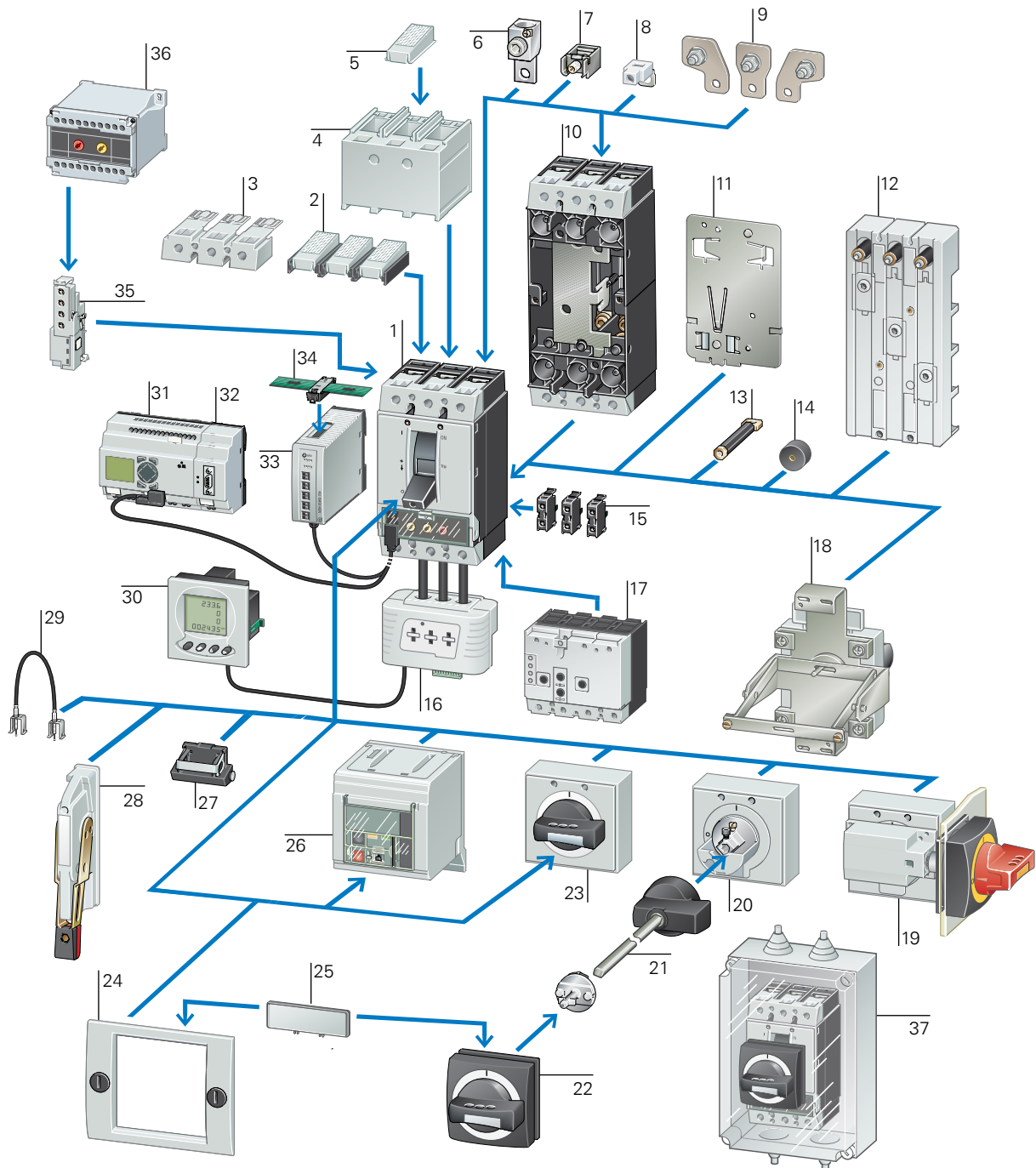


IEC MCCB

NZM range

System overview - Circuit-breakers, Switch-disconnectors

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



IEC MCCB

NZM range

NZM range up to 1600 A –

New ideas for better circuit-breakers

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



1-pole

3-pole circuit-breaker

Excellent under load –

Switch-disconnector's for safe switching under load

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

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



4-pole circuit-breaker

Control circuit terminals

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

The spacer – saving time and expense

All switches including the accessories fitted on them were designed with the grid spacing of the spacer. Different depths of switches are evened-out simply by means of inexpensive, rapidly fitted spacers.

The result is a cost-effective alternative to the door coupling rotary handle with extension shaft for external operation of the circuit-breaker. This worldwide innovation gains time and saves expense.

Clever installation and terminations

Fast and efficient top-hat rail installation with the use of a clip plate. Just simply attach the clip plate from the rear onto the circuit-breaker and clip it onto the top-hat rail. No need to drill holes in the mounting plate.

The particular advantage of the small NZM1: the "standard dimension" enables side-by-side installation with miniature circuit breakers in service distribution boards.



IEC MCCB

Thermomagnetic release



NZMN1-A100



NZMN1-4-A125



NZMN2-A160



NZMH2-4-A250



NZMN3-A500

Rated current = rated uninterrupted current $I_n = I_u$ A	Overload release 1-pole I_r A	Overload release Setting range overload release I_r A	Short-circuit release 1-pole I_i A	Short-circuit release adjustable 3-pole 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

IEC MCCB

Thermomagnetic release

Circuit-breaker with Basic switching capacity 25 kA at 415Vac 50/60 Hz		Circuit-breaker with Basic switching capacity 25 kA at 415Vac 50/60 Hz		Circuit-breaker with Normal switching capacity 50 kA at 415Vac 50/60 Hz		Circuit-breaker with High switching capacity 100 ^① /150 ^② kA at 415Vac 50/60 Hz	
Item no. 1-pole	Item no. 3-pole	Item no. 4-pole	Item no. 3-pole	Item no. 4-pole	Item no. 3-pole	Item no. 4-pole	
Supplied with box terminals							
NZMB1-1-AF16	-	-	-	-	-	-	
NZMB1-1-AF20	NZMB1-A20	NZMB1-4-A20	NZMN1-A20 ^⑥	NZMN1-4-A20	NZMH1-A20 ^⑦	NZMH1-4-A20	
NZMB1-1-AF25	NZMB1-A25	NZMB1-4-A25	NZMN1-A25 ^⑥	NZMN1-4-A25	NZMH1-A25 ^⑦	NZMH1-4-A25	
NZMB1-1-AF32	NZMB1-A32	NZMB1-4-A32	NZMN1-A32 ^⑥	NZMN1-4-A32	NZMH1-A32 ^⑦	NZMH1-4-A32	
NZMB1-1-AF40	NZMB1-A40	NZMB1-4-A40	NZMN1-A40 ^⑥	NZMN1-4-A40	NZMH1-A40 ^⑦	NZMH1-4-A40	
NZMB1-1-AF50	NZMB1-A50	NZMB1-4-A50	NZMN1-A50 ^⑥	NZMN1-4-A50	NZMH1-A50 ^⑦	NZMH1-4-A50	
NZMB1-1-AF63	NZMB1-A63	NZMB1-4-A63	NZMN1-A63 ^⑥	NZMN1-4-A63	NZMH1-A63 ^⑦	NZMH1-4-A63	
NZMB1-1-AF80	NZMB1-A80	NZMB1-4-A80	NZMN1-A80 ^⑥	NZMN1-4-A80	NZMH1-A80 ^⑦	NZMH1-4-A80	
NZMB1-1-AF100	NZMB1-A100	NZMB1-4-A100	NZMN1-A100 ^⑥	NZMN1-4-A100	NZMH1-A100 ^⑦	NZMH1-4-A100	
NZMB1-1-AF125	NZMB1-A125	NZMB1-4-A125	NZMN1-A125 ^⑥	NZMN1-4-A125	NZMH1-A125 ^⑦	NZMH1-4-A125	
-	NZMB1-A160	NZMB1-4-A160	NZMN1-A160 ^⑥	NZMN1-4-A160	NZMH1-A160 ^⑦	NZMH1-4-A160	
Supplied with screw terminals							
-	-	-	-	-	NZMH2-A20 ^⑦	NZMH2-4-A20	
-	-	-	-	-	NZMH2-A25 ^⑦	NZMH2-4-A25	
-	-	-	-	-	NZMH2-A32 ^⑦	NZMH2-4-A32	
-	-	-	-	-	NZMH2-A40 ^⑦	NZMH2-4-A40	
-	-	-	-	-	NZMH2-A50 ^⑦	NZMH2-4-A50	
-	-	-	-	-	NZMH2-A63 ^⑦	NZMH2-4-A63	
-	-	-	-	-	NZMH2-A80 ^⑦	NZMH2-4-A80	
-	-	-	-	-	NZMH2-A100 ^⑦	NZMH2-4-A100	
-	-	-	-	-	NZMH2-A125 ^⑦	NZMH2-4-A125	
-	NZMB2-A160	NZMB2-4-A160	NZMN2-A160 ^⑥	NZMN2-4-A160	NZMH2-A160 ^⑦	NZMH2-4-A160	
-	-	NZMB2-4-A160/100 ^③	-	NZMN2-4-A160/100 ^③	-	NZMH2-4-A160/100 ^③	
-	NZMB2-A200	NZMB2-4-A200	NZMN2-A200 ^⑥	NZMN2-4-A200	NZMH2-A200 ^⑦	NZMH2-4-A200	
-	-	NZMB2-4-A200/125 ^③	-	NZMN2-4-A200/125 ^③	-	NZMH2-4-A200/125 ^③	
-	NZMB2-A250	NZMB2-4-A250	NZMN2-A250 ^⑥	NZMN2-4-A250	NZMH2-A250 ^⑦	NZMH2-4-A250	
-	-	NZMB2-4-A250/160 ^③	-	NZMN2-4-A250/160 ^③	-	NZMH2-4-A250/160 ^③	
-	NZMB2-A300	NZMB2-4-A300	NZMN2-A300 ^⑥	NZMN2-4-A300	NZMH2-A300 ^⑦	NZMH2-4-A300	
-	-	NZMB2-4-A300/200 ^③	-	NZMN2-4-A300/200 ^③	-	NZMH2-4-A300/200 ^③	
Supplied with screw terminals							
-	-	-	NZMN3-A320 ^⑥	NZMN3-4-A320	NZMH3-A320 ^⑦	NZMH3-4-A320	
-	-	-	-	NZMN3-4-A320/200 ^③	-	NZMH3-4-A320/200 ^③	
-	-	-	NZMN3-A400 ^⑥	NZMN3-4-A400	NZMH3-A400 ^⑦	NZMH3-4-A400	
-	-	-	-	NZMN3-4-A400/250 ^③	-	NZMH3-4-A400/250 ^③	
-	-	-	NZMN3-A500 ^⑥	NZMN3-4-A500	NZMH3-A500 ^⑦	NZMH3-4-A500	
-	-	-	-	NZMN3-4-A500/320 ^③	-	NZMH3-4-A500/320 ^③	

① Applies for NZM1

② Applies for NZM2 and NZM3

③ 60% release on neutral pole

④ Max. DC voltage rating 500Vdc I_{cu}/I_{cs} 15/15kA

⑤ Max. DC voltage rating 500Vdc I_{cu}/I_{cs} 30/30kA

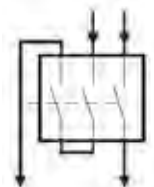
⑥ Max. DC voltage rating 750Vdc I_{cu}/I_{cs} 30/75kA

⑦ Max. DC voltage rating 750Vdc I_{cu}/I_{cs} 60/15kA

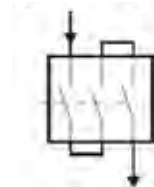
⑧ Max. DC voltage rating 750Vdc I_{cu}/I_{cs} 30/30kA

⑨ Max. DC voltage rating 750Vdc I_{cu}/I_{cs} 70/70kA

Permitted circuit configurations for Eaton NZM breakers for DC voltage switching



Option 1
Two pole switching, with one pole switched via two contacts in series.



Option 2
One pole switching, via three contacts in series

Low Voltage Circuit Protection & Switchgear

IEC MCCB

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 $I_i = I_n \times A$	Circuit breaker with normal switching capacity 50kA at 415V 50/60Hz Item no.	Circuit breaker with high switching capacity 150 ^① /85kA ^② at 415V 50/60Hz Item no.
--	--	--	---	--

Supplied with screw terminals

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 & NZM3

② Applies for NZM4



NZMN2-VE160



NZMN3-VE250



NZMH4-VE1250



NZMN4-4-VE800

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

Eaton products that are featured on PowerCad-5™:

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



EATON
Powering Business Worldwide



IEC MCCB

Circuit breakers for 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 $I_s = I_n \times \dots$	Rated operating power AC-3 50/60 Hz 400 V P kW	Rated operational current AC-3 50/60 Hz 400 V I_n 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 ^③ / 100kA ^④ / 150kA ^⑤ 400/415V 50/60 Hz Item no.
--	--	--	--	---	---	--	---

Motor protection, thermomagnetic release NZM...1-M...: with phase failure sensitivity, tripping class 10 A

Supplied with box terminals

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

Supplied with screw terminals

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

Supplied with screw terminals

90	45-90	2 - 14	45	81	NZMN2-ME90	NZMH2-ME90
140	70-140	2 - 14	75	134	NZMN2-ME140	NZMH2-ME140
220	110-220	2 - 12	110	196	NZMN2-ME220	NZMH2-ME220
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
1400	700-1400	2 - 14	630	1066	NZMN4-ME1400	NZMH4-ME1400

③ Applies for NZMH4

④ Applies for NZMH1

⑤ Applies for NZMH2 & NZMH3

690Vac Switch disconnectors

- 690V ac voltage rating
- Frame sizes are the same form and fit as NZM MCCBs

Switch-disconnectors Rated current = Rated uninterrupted current $I_n = I_u$ A	3-pole IEC	4-pole IEC
	2 switch positions Item no. ①	3 switch positions Item no. ②
	2 switch positions Item no. ①	3 switch positions Item no. ②

Supplied with box terminals

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

Supplied with screw terminals

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



NZMN1-63



NZMN2-ME90



NZMN3-ME350



N1-125



N4-1600

IEC MCCB

1000Vdc / 1500Vdc Photovoltaic Switch disconnectors

- 4-pole basic device usable for both 1-pole and 2-pole configuration depending on the connection
- Industry leading DC22-A ratings across the entire range
- IEC/EN 60947-3 compliant



N2-4-200-S15-DC



N3-4-400-S15-DC

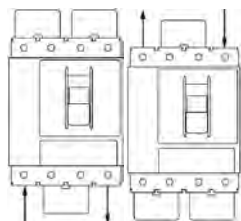


N4-4-1250-S15-DC

Rated current = Rated uninterrupted current $I_n = I_u$ A	Rated short-time withstand I_{cs} kA	1000Vdc Item no.	1500Vdc Item no.
160	3.6 1 sec	N2-4-160-S1-DC	N2-4-160-S15-DC
200	3.6 1 sec	N2-4-200-S1-DC	N2-4-200-S15-DC
250	3.6 1 sec	N2-4-250-S1-DC	N2-4-250-S15-DC
320	6.6 1 sec	N3-4-320-S1-DC	N3-4-320-S15-DC
400	6.6 1 sec	N3-4-400-S1-DC	N3-4-400-S15-DC
500	6.6 1 sec	N3-4-500-S1-DC	N3-4-500-S15-DC
550	6.6 1 sec	N3-4-550-S1-DC	N3-4-550-S15-DC
800	34 0.1 sec	N4-4-800-S1-DC	N4-4-800-S15-DC
1000	34 0.1 sec	N4-4-1000-S1-DC	N4-4-1000-S15-DC
1250	34 0.1 sec	N4-4-1250-S1-DC	N4-4-1250-S15-DC
1400	34 0.1 sec	N4-4-1400-S1-DC	N4-4-1400-S15-DC
1600	34 0.1 sec	N4-4-1600-S1-DC	N4-4-1600-S15-DC

Bridging Kits for 1 pole configuration

- Bridging kit contains parts for upper and lower connection points for the 4 pole devices
- Detailed assignment taking into account ambient temperature, degree of protection and fitting position is listed on pages 434-435



Rated operational current I_n A	Protection Class	For use with	Notes	Item no.
200A at 40°C 160A at 65°C	IP2X	N2-4-xxx-S1 (S15)-DC	Limited to 200A devices	NZM2-4-XKV1P
225A at 40°C 170A at 65°C	IP2X	N2-4-xxx-S1 (S15)-DC	Includes heatsink	NZM2-4-XKV1P-K
400A at 40°C 388A at 65°C	IP2X	N3-4-xxx-S1 (S15)-DC	Limited to 400A devices	NZM3-4-XKV1P
517A at 40°C 435A at 65°C	IP2X	N3-4-xxx-S1 (S15)-DC	Limited to 500A devices Includes heatsink	NZM3-4-XKV1P-K
1274A at 40°C 1138A at 65°C	IP2X	N4-4-xxx-S1 (S15)-DC	Limited to 1250A devices	NZM4-4-XKV1P
213A at 40°C 160A at 65°C	IP00	N2-4-xxx-S1 (S15)-DC	Limited to 200A devices	NZM2-4-XKVI1P
238A at 40°C 180A at 65°C	IP00	N2-4-xxx-S1 (S15)-DC	Limited to 250A devices Includes heatsink	NZM2-4-XKVI1P-K
501A at 40°C 418A at 65°C	IP00	N3-4-xxx-S1 (S15)-DC	-	NZM3-4-XKVI1P
534A at 40°C 451A at 65°C	IP00	N3-4-xxx-S1 (S15)-DC	Includes heatsink	NZM3-4-XKVI1P-K
1260A at 40°C 1138A at 65°C	IP00	N4-4-xxx-S1 (S15)-DC	-	NZM4-4-XKVI1P
1552A at 40°C 1448A at 65°C	IP00	N4-4-xxx-S1 (S15)-DC	Includes heatsink	NZM4-4-XKVI1P-K



NZM2-4-XKV1P-K

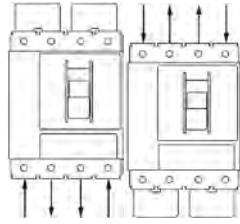


NZM4-4-XKVI1P-K

IEC MCCB

Bridging Kits for 2 pole configuration - Connection option 1

- Bridging kit contains parts for either upper or lower connection points for the 4 pole devices
- Detailed assignment taking into account ambient temperature, degree of protection and fitting position is listed on pages 434-435



Rated operational current In A	Protection Class	For use with	Notes	Item no.
225A at 40°C 170A at 65°C	IP2X	N2-4-xxx-S1 (S15)-DC	-	NZM2-4-XKV2P
250A at 40°C 190A at 65°C	IP2X	N2-4-xxx-S1 (S15)-DC	Includes heatsink	NZM2-4-XKV2P-K
517A at 40°C 435A at 65°C	IP2X	N3-4-xxx-S1 (S15)-DC	-	NZM3-4-XKV2P
550A at 40°C 468A at 65°C	IP2X	N3-4-xxx-S1 (S15)-DC	Includes heatsink	NZM3-4-XKV2P-K
1400A at 40°C 1260A at 65°C	IP2X	N4-4-xxx-S1 (S15)-DC	Limited to 1400A devices	NZM4-4-XKV2P
238A at 40°C 180A at 65°C	IP00	N2-4-xxx-S1 (S15)-DC	-	NZM2-4-XKVI2P
250A at 40°C 213A at 65°C	IP00	N2-4-xxx-S1 (S15)-DC	Includes heatsink	NZM2-4-XKVI2P-K
534A at 40°C 451A at 65°C	IP00	N3-4-xxx-S1 (S15)-DC	-	NZM3-4-XKVI2P
550A at 40°C 501A at 65°C	IP00	N3-4-xxx-S1 (S15)-DC	Includes heatsink	NZM3-4-XKVI2P-K
1400A at 40°C 1260A at 65°C	IP00	N4-4-xxx-S1 (S15)-DC	Limited to 1400A devices	NZM4-4-XKVI2P
1600A at 40°C 1500A at 65°C	IP00	N4-4-xxx-S1 (S15)-DC	Includes heatsink	NZM4-4-XKV2P-K



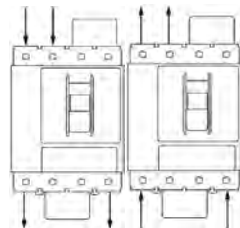
NZM3-4-XKV2P



NZM2-4-XKVI2P

Bridging Kits for 2 pole configuration - Connection option 2

- Bridging kit contains parts for upper and lower connection points for the 4 pole devices
- Detailed assignment taking into account ambient temperature, degree of protection and fitting position is listed on pages 434-435



Rated operational current In A	Protection Class	For use with	Notes	Item no.
200A at 40°C 160A at 65°C	IP2X	N2-4-xxx-S1 (S15)-DC	Limited to 200A devices	NZM2-4-XKV2POU
225A at 40°C 170A at 65°C	IP2X	N2-4-xxx-S1 (S15)-DC	Includes heatsink	NZM2-4-XKV2POU-K
501A at 40°C 418A at 65°C	IP2X	N3-4-xxx-S1 (S15)-DC	-	NZM3-4-XKV2POU
517A at 40°C 435A at 65°C	IP2X	N3-4-xxx-S1 (S15)-DC	-	NZM3-4-XKV2POU-K
213A at 40°C 160A at 65°C	IP00	N2-4-xxx-S1 (S15)-DC	-	NZM2-4-XKVI2POU
238A at 40°C 180A at 65°C	IP00	N2-4-xxx-S1 (S15)-DC	Includes heatsink	NZM2-4-XKVI2POU-K
501A at 40°C 418A at 65°C	IP00	N3-4-xxx-S1 (S15)-DC	-	NZM3-4-XKVI2POU
534A at 40°C 451A at 65°C	IP00	N3-4-xxx-S1 (S15)-DC	Includes heatsink	NZM3-4-XKVI2POU-K



NZM2-4-XKVI2POU-K



NZM3-4-XKVI2POU

IEC MCCB

System benefits – the universal accessory range

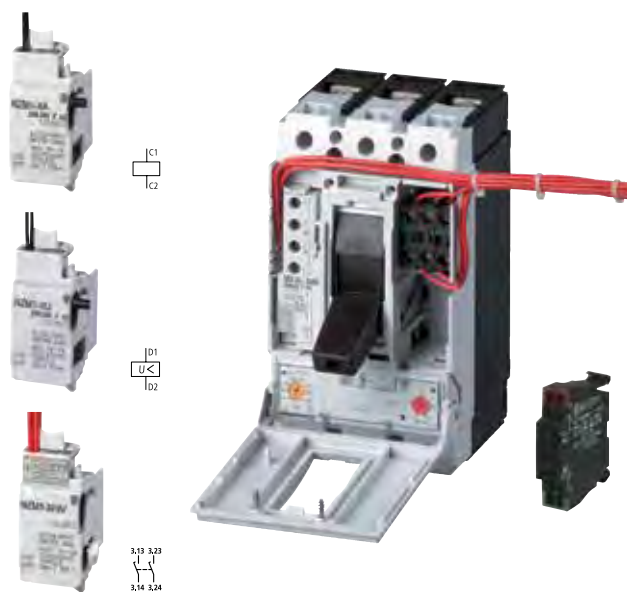
The method of functioning and fitting of the accessories is identical for every size. Contact elements from the RMQ-Titan® range of control circuit devices are used for the entire NZM range of circuit-breakers.

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.			N1, PN1, NZM1: 1		
			N2, PN2, NZM2: 2		
			N3, PN3, NZM3: 3		
			N4, 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
		N1(-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		N1(-4), 2(-4), 3(-4), 4(-4)		–	2 N/C
Trip indicating auxiliary contact (HIA)¹⁾ General trip indication “+” with trip by voltage release, overload release or short-circuit release			N1, PN1, NZM1: 1		
			N2, PN2, NZM2: 1		
			N3, PN3, NZM3: 1		
			N4, NZM4: 2		
M22-K10	With bolt connection	NZM1(-4), 2(-4), 3(-4), 4(-4)		1 N/O	–
M22-K01		N1(-4), 2(-4), 3(-4), 4(-4)		–	1 N/C
		N1(-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		N1(-4), 2(-4), 3(-4), 4(-4)		2 N/O	–
M22-CK02				–	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)			
		N1(-4)			
NZM1-XHIVR	With clamp terminal on the right-hand switch side.	NZM1(-4)		2 N/O	–
		PN1(-4)			
		N1(-4)			
NZM1-XHIVL	With 3 m connecting cables instead of bolt connection.	NZM1(-4)		2 N/O	–
		PN1(-4)			
		N1(-4)			
NZM2/3-XHIV	With bolt connection	NZM2(-4), 3(-4)	N1, NZM1: 1	2 N/O	–
		PN2(-4), 3(-4)	N2, NZM2: 1		
		N2(-4), 3(-4)	N3, NZM3: 1		
			N4, NZM4: 2		
NZM4-XHIV		NZM4(-4)		2 N/O	–
		N4(-4)			

¹⁾ not in conjunction with switch-disconnector PN

¹⁾ not in conjunction with switch-disconnector PN



M22-K01 M22-K10



M22-CK20 M22-CK02



NZM2/3-XHIV

IEC MCCB

Undervoltage & shunt trip release devices without auxiliary contact

- Undervoltage releases cannot be installed simultaneously with shunt trip releases
- Shunt trip releases cannot be installed simultaneously with undervoltage releases
- Undervoltage releases and shunt trip releases are all left side mount

Release		Undervoltage release ① without auxiliary contact		Shunt trip release ② without auxiliary contact	
Version	For use with	Item no.	Rated control voltage Us V	Item no.	Rated control voltage Us V
With clamp terminal on the left-hand side	NZM1 (-4), N1(-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		
With 3m connection cable instead of screw termination	NZM1(-4), N1(-4)	NZM1-XU220-250DC	220V-250V DC		
		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		
With clamp-type terminals	NZM2(-4), N2(-4), NZM3(-4), N3(-4)	NZM1-XUL110-130DC	110V-130V DC		
		NZM1-XUL220-250DC	220V-250V DC		
		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
With clamp-type terminals	NZM4(-4), N4(-4)	NZM2/3-XU24DC	24V DC		
		NZM2/3-XU110-130DC	110V-130V DC		
		NZM2/3-XU220-250DC	220V-250V DC		
		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		



NZM1-XU380-440AC



NZM1-XA208-240AC



NZM2/3-XA380-440AC/DC



NZM4-XU380-440AC

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.

IEC MCCB

Door coupling rotary handles (excludes extension shaft)



NZM1-XTVDV



NZM1-XTVDVR

Item no.	For use with	Version
NZM1-XTVDV	NZM1(-4), PN1(-4), N1(-4)	IP66 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), N2(-4)	
NZM3-XTVDV	NZM3(-4), PN3(-4), N3(-4)	
NZM4-XTVDV	NZM4(-4), N4(-4)	
NZM1-XTVDVR	NZM1(-4), PN1(-4), N1(-4)	IP66 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), N2(-4)	
NZM3-XTVDVR	NZM3(-4), PN3(-4), N3(-4)	
NZM4-XTVDVR	NZM4(-4), N4(-4)	

Extension shaft

Item no.	For use with	Version
NZM1/2-XV4	NZM1(-4), PN1(-4), N1(-4), NZM2(-4), PN2(-4), N2(-4)	400 mm Max. mounting depth
NZM3/4-XV4	NZM3(-4), PN3(-4), N3(-4), NZM4(-4), N4(-4)	
NZM1/2-XV6	NZM1(-4), PN1(-4), N1(-4), NZM2(-4), PN2(-4), N2(-4)	600 mm Max. mounting depth
NZM3/4-XV6	NZM3(-4), PN3(-4), N3(-4), NZM4(-4), N4(-4)	

Rotary handles direct mount

Item no.	For use with	Version
NZM1-XDV	NZM1(-4), PN1(-4), N1(-4)	Black/Grey Lockable in 0 position on switch with up to 3 padlocks.
NZM2-XDV	NZM2(-4), PN2(-4), N2(-4)	
NZM3-XDV	NZM3(-4), PN3(-4), N3(-4)	
NZM4-XDV	NZM4(-4), N4(-4)	
NZM1-XDVR	NZM1(-4), PN1(-4), N1(-4)	Red-yellow for Emergency-Stop Lockable in 0 position on switch with up to 3 padlocks.
NZM2-XDVR	NZM2(-4), PN2(-4), N2(-4)	
NZM3-XDVR	NZM3(-4), PN3(-4), N3(-4)	
NZM4-XDVR	NZM4(-4), N4(-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), N1(-4)	Toggle lever locking facilities
NZM2/3-XKAV	NZM2/3(-4), PN2/3(-4), N2/3(-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



NZM1-XKAV

IEC MCCB

Shrouds & connection kits

Item no.	For use with	Current Rating	No. of poles	Comments
Terminal shrouds				
NZM1-1-XKSA	NZM1-1	-	1	Contains enough items for either LINE or LOAD side only
NZM1-XKSA	NZM1, PN1, N1	-	3	Contains enough items for either LINE or LOAD side only
NZM1-4-XKSA	NZM1-4, PN1-4, N1-4	-	4	Contains enough items for either LINE or LOAD side only
NZM2-XKSA	NZM2, PN2, N2	-	3	Contains enough items for either LINE or LOAD side only
NZM2-4-XKSA	NZM2-4, PN2-4, N2-4	-	4	Contains enough items for either LINE or LOAD side only
NZM3-XKSA	NZM3, PN3, N3	-	3	Contains enough items for either LINE or LOAD side only
NZM3-4-XKSA	NZM3-4, PN3-4, N3-4	-	4	Contains enough items for either LINE or LOAD side only
NZM4-XKSA	NZM4, N4	-	3	Contains enough items for either LINE or LOAD side only
NZM4-4-XKSA	NZM4-4, N4-4	-	4	Contains enough items for either LINE or LOAD side only
Tunnel terminals				
NZM1-XKA	NZM1, PN1, N1	160A	3	Contains enough items for either LINE or LOAD side only
NZM1-4-XKA	NZM1-4, PN1-4, N1-4	160A	4	Contains enough items for either LINE or LOAD side only
NZM2-XKA	NZM2, PN2, N2	300A	3	Contains enough items for either LINE or LOAD side only
NZM2-4-XKA	NZM2-4, PN2-4, N2-4	300A	4	Contains enough items for either LINE or LOAD side only
NZM3-XKA2	NZM3, PN3, N3	630A	3	Contains enough items for either LINE or LOAD side only
NZM3-4-XKA2	NZM3-4, PN3-4, N3-4	630A	4	Contains enough items for either LINE or LOAD side only
NZM4-XKA	NZM4, N4	1400A	3	Contains enough items for either LINE or LOAD side only
NZM4-4-XKA	NZM4-4, N4-4	1400A	4	Contains enough items for either LINE or LOAD side only
Rear connection kits				
NZM1-XKR	NZM1, PN1, N1	160A	3	Contains enough items for either LINE or LOAD side only
NZM1-4-XKR	NZM1-4, PN1-4, N1-4	160A	4	Contains enough items for either LINE or LOAD side only
NZM2-XKR	NZM2, PN2, N2	300A	3	Contains enough items for either LINE or LOAD side only
NZM2-4-XKR	NZM2-4, PN2-4, N2-4	300A	4	Contains enough items for either LINE or LOAD side only
NZM3-XKR	NZM3, PN3, N3	630A	3	Contains enough items for either LINE or LOAD side only
NZM3-4-XKR	NZM3-4, PN3-4, N3-4	630A	4	Contains enough items for either LINE or LOAD side only
NZM4-XKR	NZM4, N4	1250A	3	Contains enough items for either LINE or LOAD side only
NZM4-4-XKR	NZM4-4, N4-4	1250A	4	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	Contains only 2 pieces
NZM2-XSTS	NZM2, PN2, N2 & NZM2-4, PN2-4, N2-4	-	3 & 4	Contains only 2 pieces
NZM3/4-XSTS	NZM3, PN3, N3 & NZM3-4, PN3-4, N3-4 & NZM4, N4 & NZM4-4, N4-4	-	3 & 4	Contains only 2 pieces



NZM1-1-XKSA



NZM1-XKSA



NZM1-XKA



NZM1-XKR



NZM1-XSTS

IEC MCCB

Remote operators



NZM2-XR208-240AC



NZM4-XR24-30DC

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
		4th pole cover ^①	NZM2-XAVPR
	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
		4th pole cover ^①	NZM3-XAVPR
	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^②
		24 – 30 V DC	NZM4-XR24-30DC

① Additional cover required for 4 pole MCCBs

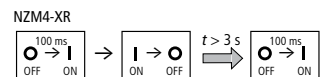
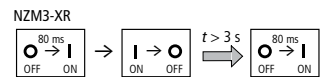
② Not UL/CSA approved.

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



NZM1/2-XAB



NZM1-XMV



NZM3-XMVR

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 One set contains 4 spacers	NZM1, PN1, N1, NZM2, PN2, N2	NZM1/2-XAB
	NZM3, PN3, N3, NZM4, N4	NZM3-XAB
Interpole phase barriers - 2 pieces per set	NZM1, PN1, N1	NZM1-XKP
	NZM2, PN2, N2	NZM2-XKP
	NZM3, PN3, N3	NZM3-XKP
	NZM4, N4	NZM4-XKP
Mechanical interlocking of (door coupling) rotary handles	NZM1, PN1, N1	NZM1-XMV
	NZM2, PN2, N2	NZM2-XMV
	NZM3, PN3, N3	NZM3-XMV
	NZM4, N4	NZM4-XMV
Bowden cables For mechanical interlocking of (door coupling) rotary handles	NZM1, PN1, N1	NZM-XBZ225
	NZM2, PN2, N2	NZM-XBZ600
	NZM3, PN3, N3, NZM4, N4	NZM-XBZ1000
Mechanical interlock for remote operator For 2 switches of the same or next frame size with each other. Mounting beside one another. Type contains parts for both switches	NZM2(-4), N2(-4) +NZM2(-4), N2(-4)	NZM2-XMVR
	NZM2(-4), N2(-4) +NZM3(-4), N3(-4)	NZM2/3-XMVR
	NZM3(-4), N3(-4) +NZM3(-4), N3(-4)	NZM3-XMVR
	NZM3(-4), N3(-4) +NZM4(-4), N4(-4)	NZM3/4-XMVR
	NZM4(-4), N4(-4) +NZM4(-4), N4(-4)	NZM4-XMVR
Mechanical interlock for remote operator For 2 switches of the same or next frame size with each other. Extra long Bowden cables for mounting in neighbouring control panel fields. Type contains parts for both switches	NZM2(-4), N2(-4) +NZM2(-4), N2(-4)	NZM2-XMVRL
	NZM2(-4), N2(-4) +NZM3(-4), N3(-4)	NZM2/3-XMVRL
	NZM3(-4), N3(-4) +NZM3(-4), N3(-4)	NZM3-XMVRL
	NZM3(-4), N3(-4) +NZM4(-4), N4(-4)	NZM3/4-XMVRL
	NZM4(-4), N4(-4) +NZM4(-4), N4(-4)	NZM4-XMVRL

IEC MCCB

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.



PN1-XPA

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



NZM-XDMI612

Data Management Interface (DMI Module)	Item no.
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



EASY221-CO



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IEC MCCB

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.



PFR-003



PFR-03



PFR-5



PFR-W-20

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: 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-105
Internal diameter 140 mm		PFR-W-140
Internal diameter 210 mm		PFR-W-210

IEC MCCB

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 N1-4	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-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 N2-4	NZM2-4-XFIA



NZM1-XFI30R



NZM1-4-XFIU

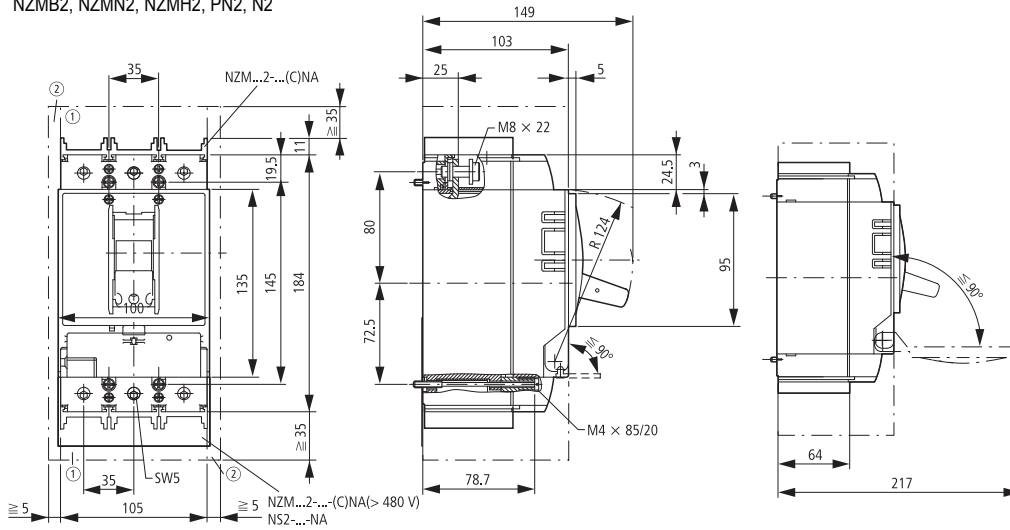


NZM2-4-XFIA30

IEC MCCB

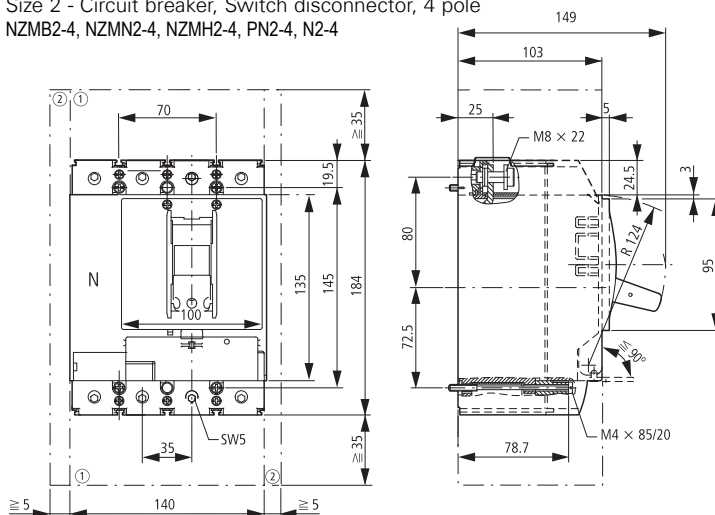
Dimensions

Size 2 - Circuit breaker, Switch disconnecter, 3 pole
NZMB2, NZMN2, NZMH2, PN2, N2



- ① Blow-out area, minimum distance to other parts ≥ 35 mm
- ② Minimum distance to adjacent parts ≥ 5 mm

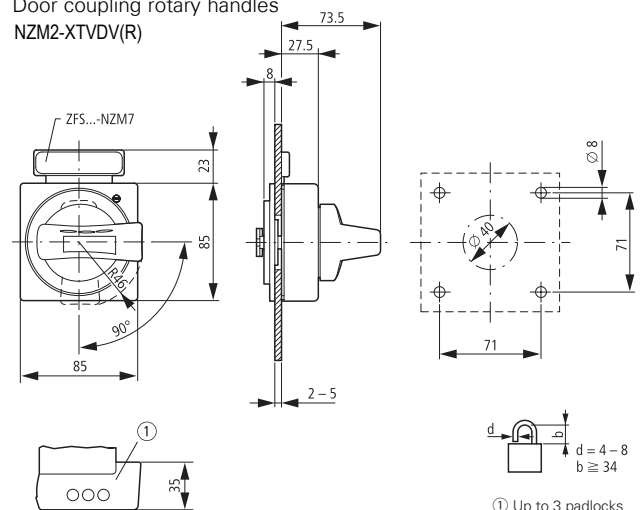
Size 2 - Circuit breaker, Switch disconnecter, 4 pole
NZMB2-4, NZMN2-4, NZMH2-4, PN2-4, N2-4



- ① Blow-out area, minimum distance to other parts ≥ 35 mm
- ② Minimum distance to adjacent parts ≥ 5 mm

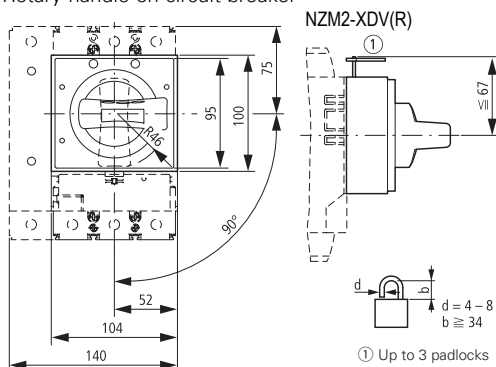
Size 2 - Accessories

Door coupling rotary handles
NZM2-XTVDV(R)



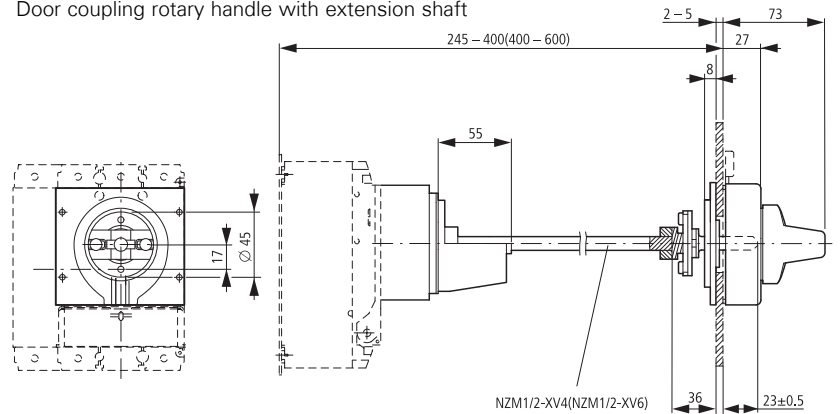
- ① Up to 3 padlocks

Rotary handle on circuit breaker



- ① Up to 3 padlocks

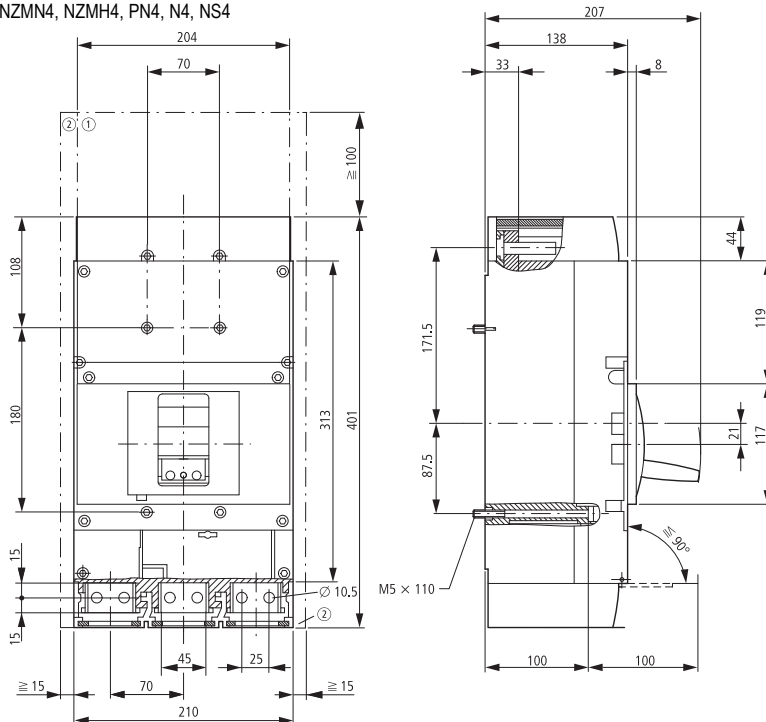
Door coupling rotary handle with extension shaft



IEC MCCB

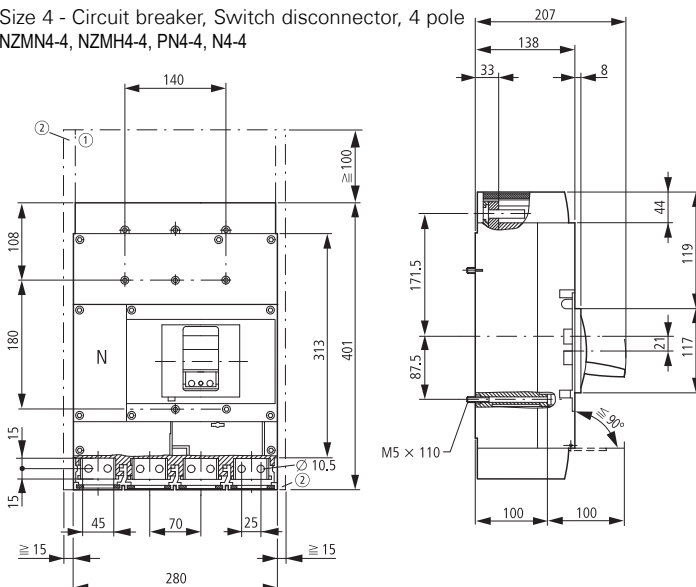
Dimensions

Size 4 - Circuit breaker, Switch disconnector, 3 pole
NZMN4, NZMH4, PN4, N4, NS4



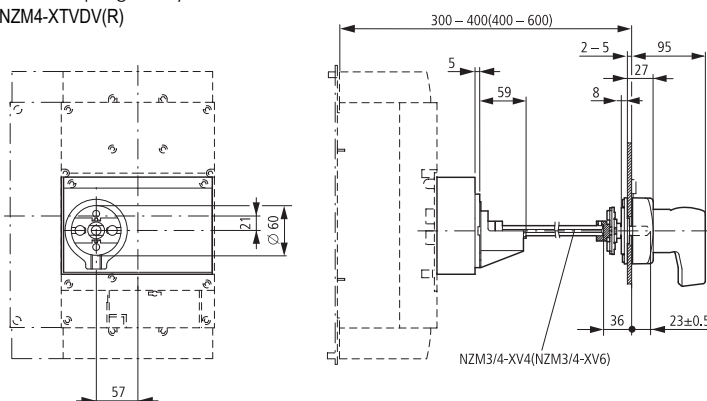
- ① Blow-out area, minimum distance to other parts ≥ 35 mm
- ② Minimum distance to adjacent parts ≥ 5 mm

Size 4 - Circuit breaker, Switch disconnector, 4 pole
NZMN4-4, NZMH4-4, PN4-4, N4-4



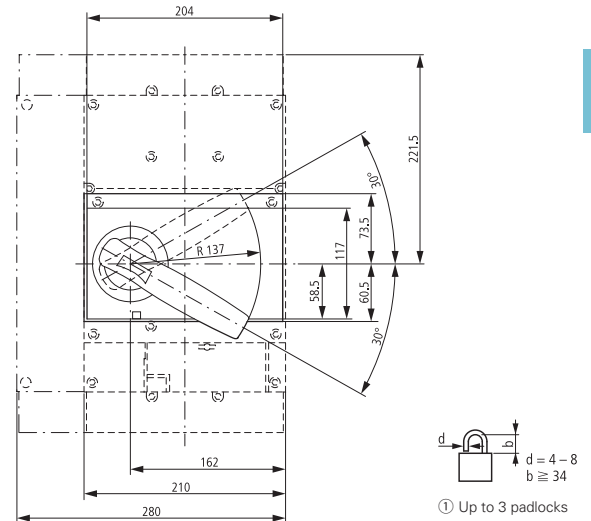
- ① Blow-out area, minimum distance to other parts ≥ 35 mm
- ② Minimum distance to adjacent parts ≥ 5 mm

Door coupling rotary handle with extension shaft
NZM4-XTVDV(R)

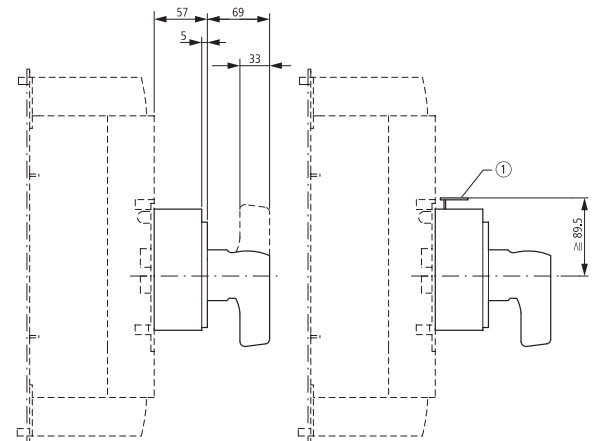


Size 4 - Accessories

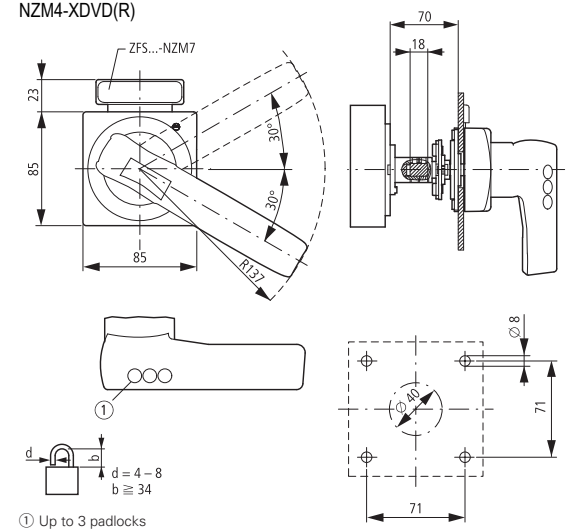
Rotary handle on circuit breaker
NZM4-XDV(R)



- ① Up to 3 padlocks



Door coupling rotary handle
NZM4-XDVR(R)



- ① Up to 3 padlocks

IEC Chassis Products

xIC Isolation Chassis



Eaton's xIC Isolation Chassis is a busbar arrangement suitable for use with Eaton xPole 6kA and 10kA MCBs and RCBOs. A unique feature of Eaton's xIC Isolation Chassis is that each tee-off can be switched OFF or ON with a tool so that, while working within safe working practices, individual circuit protection devices can be removed from the desired tee-off, with the tee-off fully isolated from the main busbar as a true switch disconnecter is utilised on each tee-off of the busbar arrangement. This feature reduces the need for the entire busbar system to be isolated which is particularly advantageous in mission critical sites such as data centres and hospitals and other critical installations requiring minimal power disruptions such as airports, power stations and education facilities.

Busbar arrangement performance

- Rated current I_n 250A
- Rated short-time current I_{cw} 36kA for 0.1s, I_{cw} 10kA for 1.0s
- Rated current of outgoing circuit 63A
- Rated impulse withstand voltage U_{imp} 4kV
- Rated voltage U_n 415V
- Testing limited to clauses 10.11.5.3.2, 10.11.5.3.3, 10.3, 10.4 and 10.9 of IEC 61439.1 Ed. 2.0

Isolation device performance

- Rated operational current I_e 63A
- Utilisation category (disconnecter) AC21B
- Testing to client requirements using clause 8.3.4.1 of IEC 60947.3 Ed. 3.1

General features & safety enhancements

- Switch-Disconnecter requires a tool to operate it from OFF to ON and also ON to OFF
- All tee-offs are insulated and isolated from the busbar by an interlocked isolating switch
- Inbuilt interlock won't allow the switch-disconnector to be operated unless the protection device is fitted correctly to the tee-off
- Sliding insulated cover over each protective device line terminal which prevents access to the terminal screw until the tee-off is isolated
- Proudly Australian made
- Dual feed with large connection tags
- Eaton xIC Isolation Chassis has a distinctive Electrical Orange housing

Operating instructions

Turn on the MCB or RCBO

Once the tee-off is energised, the load can be switched ON using the toggle switch on the MCB or RCBO



Fitting MCB or RCBO

Fitting an MCB to the tee-off will deactivate the internal locking device. The tee-off will stay de-energised



Turn off the MCB or RCBO

Always switch off the MCB or RCBO first



Remove the MCB or RCBO

When removing the MCB or RCBO the tee-off cover springs out, locking the device



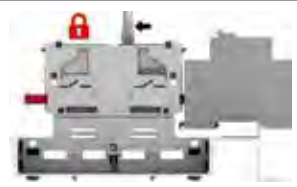
Energising the tee-off

Using a thin tool, (eg. S6 screwdriver), move the sliding disconnecter from the OFF to the ON position. This will energise the tee-off and a cover will move out to block access to the live screw head



De-energise the tee-off

Using a thin tool, (eg. S6 screwdriver), move the sliding disconnecter from the ON to the OFF position. This will de-energise the tee-off and the screw cover will move back into the module body to return access to the screw head









Description

Item no.

xIC 250A DIN Isolation chassis 12 pole	XIC3/12-DF
xIC 250A DIN Isolation chassis 18 pole	XIC3/18-DF
xIC 250A DIN Isolation chassis 24 pole	XIC3/24-DF
xIC 250A DIN Isolation chassis 30 pole	XIC3/30-DF
xIC 250A DIN Isolation chassis 36 pole	XIC3/36-DF
xIC 250A DIN Isolation chassis 42 pole	XIC3/42-DF
xIC 250A DIN Isolation chassis 48 pole	XIC3/48-DF
xIC 250A DIN Isolation chassis 60 pole	XIC3/60-DF
xIC 250A DIN Isolation chassis 72 pole	XIC3/72-DF
xIC 250A DIN Isolation chassis 84 pole	XIC3/84-DF
xIC 250A DIN Isolation chassis 96 pole	XIC3/96-DF

Split chassis (dual tariff) versions available, contact Eaton.

Suitable for both Eaton 6kA and 10kA MCBs and RCBOs

		
Suitable for PLS6 6kA 1P MCBs Page 68	Suitable for PLS6 6kA 3P MCBs Page 68	Suitable for eRB6 6kA 1P RCBOs Page 72
		
Suitable for PLSM 10kA 1P MCBs Page 69	Suitable for PLSM 10kA 3P MCBs Page 69	Suitable for eRBM 10kA 1P RCBOs Page 72

Refer to dimension page 109

IEC Chassis Products

xCap DIN MCB chassis

Eaton's 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.

- 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 dual 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

① For 'dual 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

Description	Item no.
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

Split chassis simplicity

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



Suitable for both Eaton 6kA and 10kA MCBs and RCBOs



Suitable for PLS6
6kA 1P MCBs
Page 68



Suitable for PLS6
6kA 3P MCBs
Page 68



Suitable for eRB6
6kA 1P RCBOs
Page 72



Suitable for PLSM
10kA 1P MCBs
Page 69



Suitable for PLSM
10kA 3P MCBs
Page 69



Suitable for eRBM
10kA 1P RCBOs
Page 72

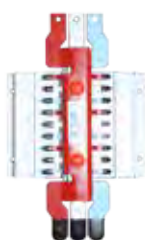
Refer to dimension page 108

IEC Chassis Products

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, 400 A, 1 module, suits 6 & 10 kA miniature circuit breakers and RCBO's											
12	18	230	258	95	-	-	-	XCH4003/12			
18			312		-	-	-	XCH4003/18			
24			366		-	-	-	XCH4003/24			
30			420		-	-	-	XCH4003/30			
36			474		-	-	-	XCH4003/36			
42			528		-	-	-	XCH4003/42			
48			582		-	-	-	XCH4003/48			
60			690		-	-	-	XCH4003/60			
72			798		-	-	-	XCH4003/72			
84			852		-	-	-	XCH4003/84			
96			1040		-	-	-	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).

IEC Chassis Products

Eaton SASY 60i busbar system

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

Description	Item no.
Busbar system components.	
IEC busbar support 3 pole 630A suitable for 12-30mm x 5/10mm copper profiles.	BBS-3/FL
End cover, to cover the busbar ends for BBS-3/FL	ES-BBS-3/FL
Busbar cover, suitable for 12-30mm x 5mm busbar - 1000mm long	BBC-FL5
Busbar cover, suitable for 12-30mm x 10mm busbar - 1000mm long	BBC-FL10
Incoming connection kit components.	
300A rated connection kit suitable for 6-50mm 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-XKR4
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 252.



BBS-3/FL



BBC-FL10



BBA-TP3-120



NZM2-XAD250



IEC Chassis Products

Moulded case circuit breaker chassis for NZM

High current chassis

Description	Rating	Item no.
High current Chassis Tested to:		
<ul style="list-style-type: none"> 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



CH06NZM1-72P



CH06NZM1-18P/NZM2-12P



CH10NZM2-48P

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

IEC Chassis Products

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 ①
Chassis 1000A NZM3 6 Pole	1000A 50kA 1 sec	CH10NZM3-6P ①
Chassis 1000A NZM3 9 Pole	1000A 50kA 1 sec	CH10NZM3-9P ①
Chassis 1000A NZM3 12 Pole	1000A 50kA 1 sec	CH10NZM3-12P ①
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



CH10NZM1-18P/NZM2-12P



CH20NZM1-6P/NZM2-12P/NZM3-6P

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, please contact Eaton.

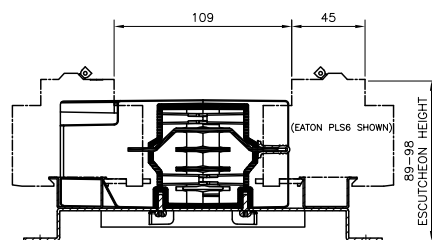
① Connection block NZM3-XKR13 required for fitting NZM3 to CH10 and CH20 chassis.

Low Voltage Circuit Protection & Switchgear

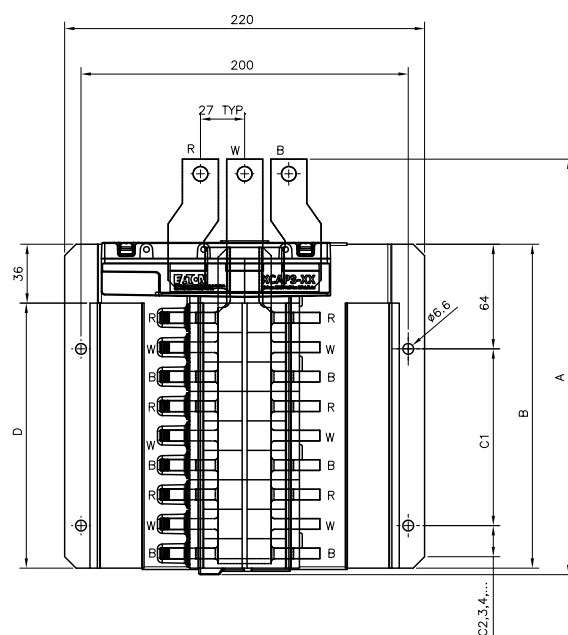
IEC Chassis Products

xCap DIN chassis dimensions

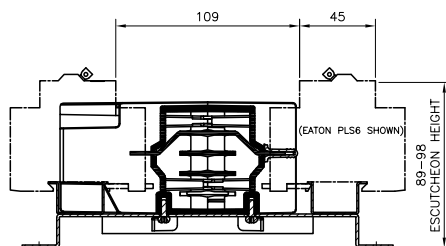
xCap chassis DIN 18mm top feed



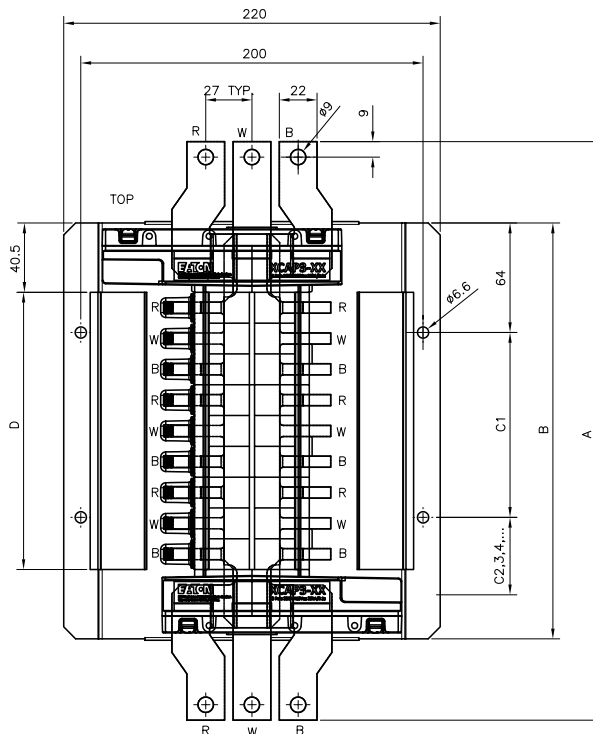
Item no.	No. of Poles	Dimensions												D
		A	B	C1	C2	C3	C4	C5/ C6	C7	C8	C9/ C10	C11	C12/ C13	
XCAP3/12	12	200	144	54	-	-	-	-	-	-	-	-	-	108
XCAP3/18	18	254	198	108	-	-	-	-	-	-	-	-	-	162
XCAP3/24	24	338	252	54	54	54	-	-	-	-	-	-	-	216
XCAP3/30	30	362	306	108	108	-	-	-	-	-	-	-	-	270
XCAP3/36	36	416	360	54	27	27	27	27	27	54	-	-	-	324
XCAP3/42	42	470	414	162	162	-	-	-	-	-	-	-	-	378
XCAP3/48	48	524	468	54	54	27	27	27	27	27	54	-	-	432
XCAP3/60	60	632	576	54	54	27	27	27	27	27	27	27	54	540
XCAP3/72	72	740	684	148.5	148.5	148.5	148.5	-	-	-	-	-	-	648
XCAP3/84	84	848	792	175.5	175.5	175.5	175.5	-	-	-	-	-	-	756
XCAP3/96	96	956	900	135	135	135	135	135	-	-	-	-	-	864



xCap chassis DIN 18mm dual feed



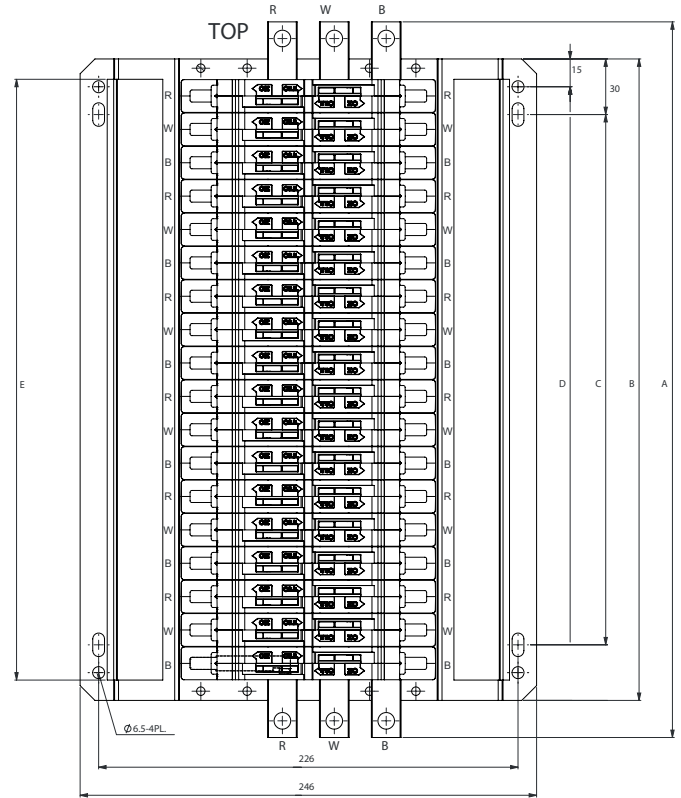
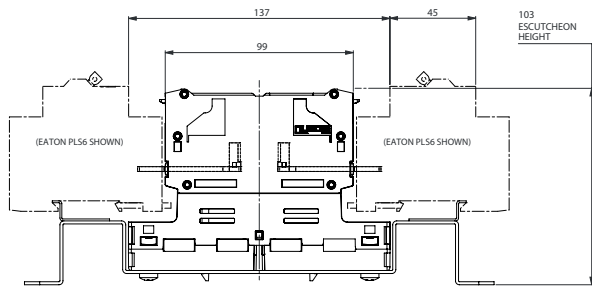
Item no.	No. of Poles	Dimensions												D
		A	B	C1	C2	C3	C4	C5/ C6	C7	C8	C9/ C10	C11	C12/ C13	
XCAP3/12-DF	12	284	189	54	-	-	-	-	-	-	-	-	-	108
XCAP3/18-DF	18	338	243	108	-	-	-	-	-	-	-	-	-	162
XCAP3/24-DF	24	392	297	54	54	54	-	-	-	-	-	-	-	216
XCAP3/30-DF	30	446	351	108	108	-	-	-	-	-	-	-	-	270
XCAP3/36-DF	36	500	405	54	27	27	27	27	27	54	-	-	-	324
XCAP3/42-DF	42	554	459	162	162	-	-	-	-	-	-	-	-	378
XCAP3/48-DF	48	608	513	54	54	27	27	27	27	27	54	-	-	432
XCAP3/60-DF	60	716	621	54	54	27	27	27	27	27	27	27	54	540
XCAP3/72-DF	72	824	729	148.5	148.5	148.5	148.5	-	-	-	-	-	-	648
XCAP3/84-DF	84	932	837	175.5	175.5	175.5	175.5	-	-	-	-	-	-	756
XCAP3/96-DF	96	1040	945	135	135	135	135	135	-	-	-	-	-	864



IEC Chassis Products

xIC Isolation Chassis dimensions

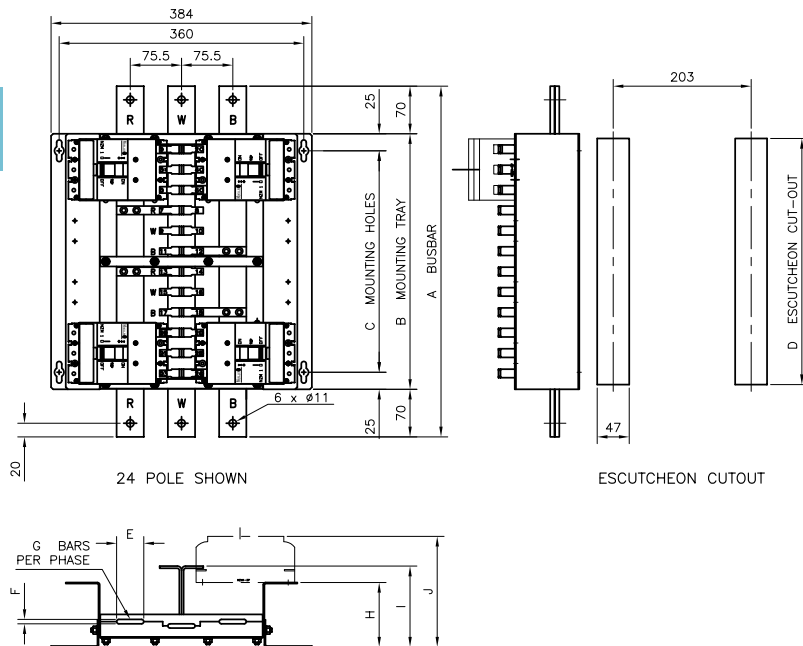
Item no.	No. of Poles	Dimensions				
		A	B	C	D	E
XIC3/12-DF	12	170	130	70	100	108
XIC3/18-DF	18	224	184	124	154	162
XIC3/24-DF	24	278	238	178	208	216
XIC3/30-DF	30	332	292	232	262	270
XIC3/36-DF	36	386	346	286	316	324
XIC3/42-DF	42	440	400	340	370	378
XIC3/48-DF	48	494	454	394	424	432
XIC3/60-DF	60	602	562	502	532	540
XIC3/72-DF	72	710	670	610	640	648
XIC3/84-DF	84	818	778	718	748	756
XIC3/96-DF	96	926	886	826	856	864



IEC Chassis Products

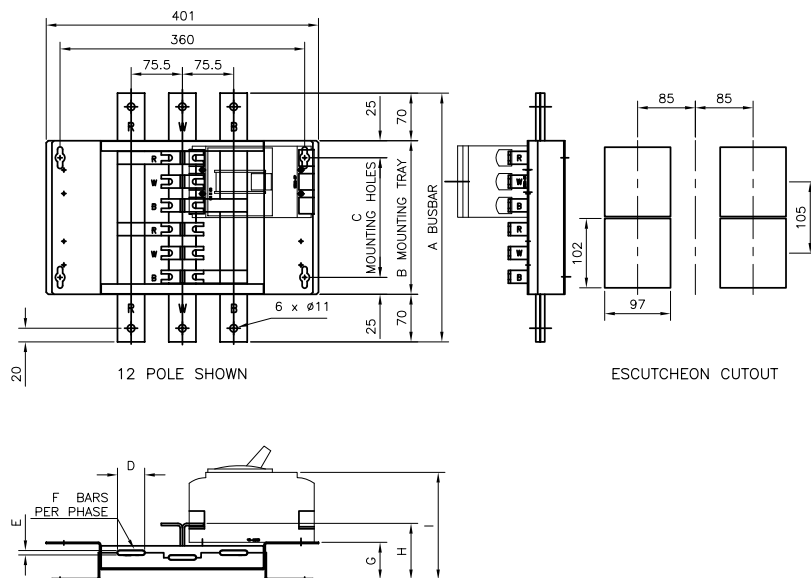
Moulded case circuit breaker chassis for NZM dimensions

xBar Chassis for NZM1



Item no.	Dimensions									
	A	B	C	D	E	F	G	H	I	J
CH06NZM1-6P	246	106	56	92	40	6.35	1	95	119	163
CH06NZM1-12P	336	196	146	182	40	6.35	1	95	119	163
CH06NZM1-18P	426	286	236	272	40	6.35	1	95	119	163
CH06NZM1-24P	516	376	326	362	40	6.35	1	95	119	163
CH06NZM1-30P	606	466	416	452	40	6.35	1	95	119	163
CH06NZM1-36P	696	556	506	542	40	6.35	1	95	119	163
CH06NZM1-42P	786	646	596	632	40	6.35	1	95	119	163
CH06NZM1-48P	876	736	686	722	40	6.35	1	95	119	163
CH06NZM1-60P	1056	916	866	902	40	6.35	1	95	119	163
CH06NZM1-72P	1236	1096	1046	1082	40	6.35	1	95	119	163
CH10NZM1-6P	246	106	56	92	50	10	1	95	119	163
CH10NZM1-12P	336	196	146	182	50	10	1	95	119	163
CH10NZM1-18P	426	286	236	272	50	10	1	95	119	163
CH10NZM1-24P	516	376	326	362	50	10	1	95	119	163
CH10NZM1-30P	606	466	416	452	50	10	1	95	119	163
CH10NZM1-36P	696	556	506	542	50	10	1	95	119	163
CH10NZM1-42P	786	646	596	632	50	10	1	95	119	163
CH10NZM1-48P	876	736	686	722	50	10	1	95	119	163
CH10NZM1-60P	1056	916	866	902	50	10	1	95	119	163
CH10NZM1-72P	1236	1096	1046	1082	50	10	1	95	119	163
CH20NZM1-6P	246	106	56	92	50	10	2	105	129	173
CH20NZM1-12P	336	196	146	182	50	10	2	105	129	173
CH20NZM1-18P	426	286	236	272	50	10	2	105	129	173
CH20NZM1-24P	516	376	326	362	50	10	2	105	129	173
CH20NZM1-30P	606	466	416	452	50	10	2	105	129	173
CH20NZM1-36P	696	556	506	542	50	10	2	105	129	173
CH20NZM1-42P	786	646	596	632	50	10	2	105	129	173
CH20NZM1-48P	876	736	686	722	50	10	2	105	129	173
CH20NZM1-60P	1056	916	866	902	50	10	2	105	129	173
CH20NZM1-72P	1236	1096	1046	1082	50	10	2	105	129	173

xBar Chassis for NZM2



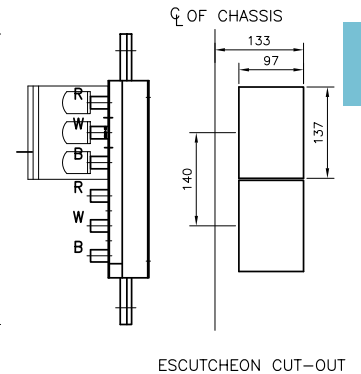
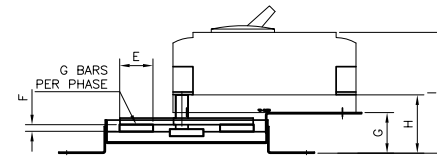
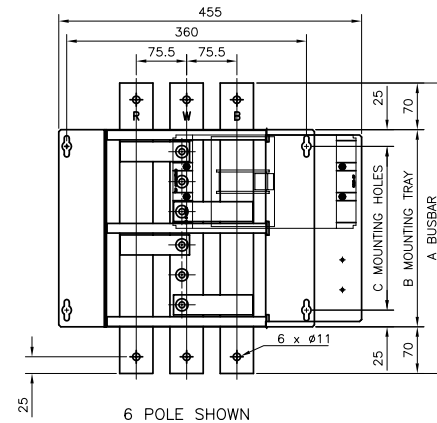
Item no.	Dimensions								
	A	B	C	D	E	F	G	H	I
CH06NZM2-6P	261	121	71	40	6.35	1	55	83	158
CH06NZM2-12P	366	226	176	40	6.35	1	55	83	158
CH06NZM2-18P	471	331	281	40	6.35	1	55	83	158
CH06NZM2-24P	576	436	386	40	6.35	1	55	83	158
CH06NZM2-30P	681	541	491	40	6.35	1	55	83	158
CH06NZM2-36P	786	646	596	40	6.35	1	55	83	158
CH06NZM2-42P	891	751	701	40	6.35	1	55	83	158
CH06NZM2-48P	996	856	806	40	6.35	1	55	83	158
CH10NZM2-6P	261	121	71	50	10	1	55	83	158
CH10NZM2-12P	366	226	176	50	10	1	55	83	158
CH10NZM2-18P	471	331	281	50	10	1	55	83	158
CH10NZM2-24P	576	436	386	50	10	1	55	83	158
CH10NZM2-30P	681	541	491	50	10	1	55	83	158
CH10NZM2-36P	786	646	596	50	10	1	55	83	158
CH10NZM2-42P	891	751	701	50	10	1	55	83	158
CH10NZM2-48P	996	856	806	50	10	1	55	83	158
CH20NZM2-6P	261	121	71	50	10	2	65	93	168
CH20NZM2-12P	366	226	176	50	10	2	65	93	168
CH20NZM2-18P	471	331	281	50	10	2	65	93	168
CH20NZM2-24P	576	436	386	50	10	2	65	93	168
CH20NZM2-30P	681	541	491	50	10	2	65	93	168
CH20NZM2-36P	786	646	596	50	10	2	65	93	168
CH20NZM2-42P	891	751	701	50	10	2	65	93	168
CH20NZM2-48P	996	856	806	50	10	2	65	93	168

IEC Chassis Products

Moulded case circuit breaker chassis for NZM dimensions

Item no.	Dimensions								
	A	B	C	D	E	F	G	H	I
CH06NZM3-6P	261	121	71	40	6.35	1	55	83	158
CH06NZM3-12P	366	226	176	40	6.35	1	55	83	158
CH06NZM3-18P	471	331	281	40	6.35	1	55	83	158
CH06NZM3-24P	576	436	386	40	6.35	1	55	83	158
CH06NZM3-30P	681	541	491	40	6.35	1	55	83	158
CH06NZM3-36P	786	646	596	40	6.35	1	55	83	158
CH06NZM3-42P	891	751	701	40	6.35	1	55	83	158
CH06NZM3-48P	996	856	806	40	6.35	1	55	83	158
CH10NZM3-6P	261	121	71	50	10	1	55	83	158
CH10NZM3-12P	366	226	176	50	10	1	55	83	158
CH10NZM3-18P	471	331	281	50	10	1	55	83	158
CH10NZM3-24P	576	436	386	50	10	1	55	83	158
CH10NZM3-30P	681	541	491	50	10	1	55	83	158
CH10NZM3-36P	786	646	596	50	10	1	55	83	158
CH10NZM3-42P	891	751	701	50	10	1	55	83	158
CH10NZM3-48P	996	856	806	50	10	1	55	83	158
CH20NZM3-6P	261	121	71	50	10	2	65	93	168
CH20NZM3-12P	366	226	176	50	10	2	65	93	168
CH20NZM3-18P	471	331	281	50	10	2	65	93	168
CH20NZM3-24P	576	436	386	50	10	2	65	93	168
CH20NZM3-30P	681	541	491	50	10	2	65	93	168
CH20NZM3-36P	786	646	596	50	10	2	65	93	168
CH20NZM3-42P	891	751	701	50	10	2	65	93	168
CH20NZM3-48P	996	856	806	50	10	2	65	93	168

xBar Chassis for NZM3



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Low Voltage Circuit Protection & Switchgear

Air circuit breakers

IZMX Air circuit breakers



Eaton IZMX16

The IZMX16 of the IZMX series is the smallest 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 an A4 sheet of paper! 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 600mm wide section. This fact provides for a more cost-effective setup of the section and, in addition, it helps to save operating space. 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 for the customer.

Eaton IZMX40

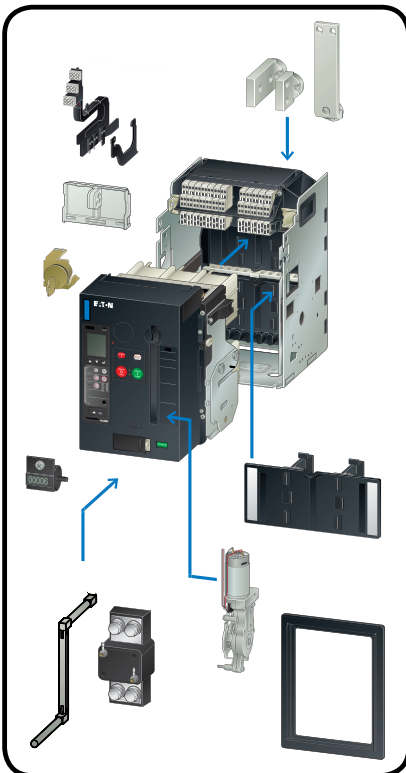
The IZMX40 of the IZMX series is a circuit breaker for up to 4000A with depth less than 400mm for the drawout version, without the need to install any additional "copper mines" in the connection area.

Tests to integrate it into Eaton switchgear systems, such as Modan, xEnergy, Power Xpert and Capitole 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 to fit circuit breaker accessories.

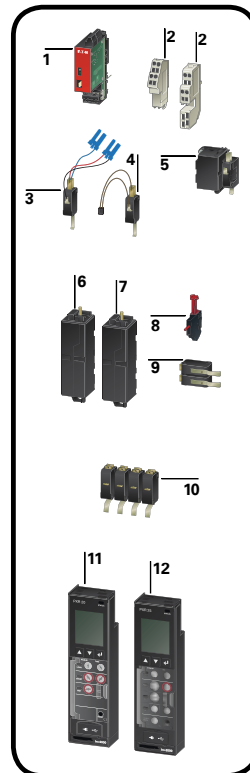
Plug & Play accessories

Parts and accessories unique for IZMX16



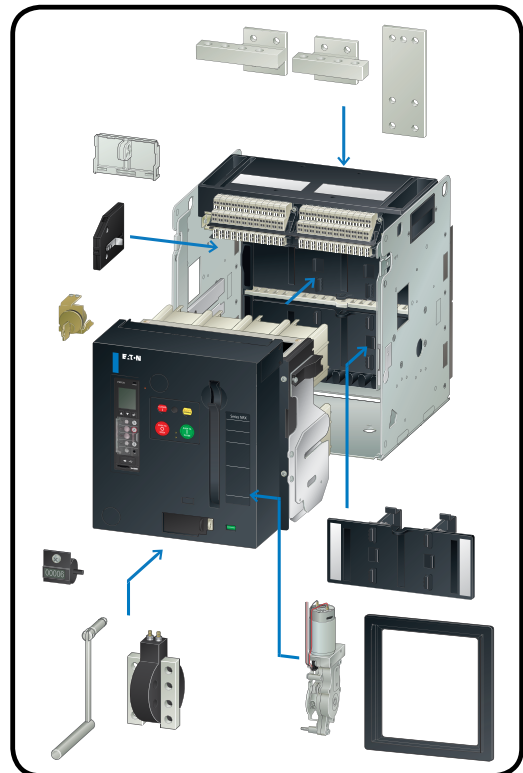
- 1 **Communication modules**
Profibus DP, Modbus, Ethernet and Modbus onboard
- 2 **Control circuit terminal units**
Either 2 or 12 units
- 3 **Latch check switch**
For external application usage
- 4 **Latch check switch**
For use with closing release

Interchangeable accessories between IZMX16 & IZMX40



- 5 **Closing releases**
Closes the breaker by an electrical signal
- 6 **Shunt releases**
Opens the breaker by an electrical signal
- 7 **Undervoltage releases**
Opens the breaker due to voltage drop in the control circuit
- 8 **Red-pop trip indicator**
Red-pop trip indicator signals a trip by the trip unit

Parts and accessories unique for IZMX40



- 9 **Trip indicator switches**
Overcurrent trip switch (OTS) signals a trip by the trip unit for remote signalling
- 10 **Auxiliary contacts**
Signalling switch ON-OFF
- 11 **Trip unit - V type**
PXR20-2F LSI/LSIG
- 12 **Trip unit - U type**
PXR25-2S LSI/LSIG

Air circuit breakers

IZMX Air circuit breakers

Important functions and characteristics

Arcflash Reduction Maintenance System™

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

For Australia and New Zealand, Eaton's Arcflash Reduction Maintenance System is a complimentary safety inclusion on both PXR20 and PXR25 trip units.



Remote switching

Remote switching requires two magnetic coils (shunt trip and closing spring release). These coils will activate the mechanism of the OFF and ON buttons. After two switching actions have been carried out, a stored energy spring mechanism needs to be recharged manually. With an additional motor drive, the recharging action can be automated.

Safety: If the second switching action was an ON action, a third action for switch-off or tripping through the energy of the spring will be ensured.

Safety: OFF commands will always be given priority. A permanent command for the operating current trip enables the user to lock the circuit breaker in the OFF position.

Thanks to the powerful stored energy spring, the circuit breaker will carry out the switch command sent to the magnetic coil in less than 35ms. So the IZMX series circuit breakers are suitable for synchronisation tasks.

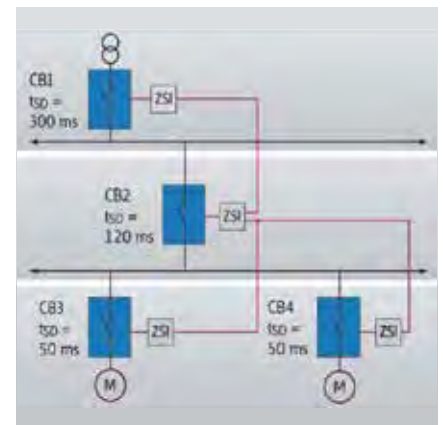


Zone selective interlocking ZSI

Circuit breakers are directly connected to a signal line, without any additional modules. So, in case of a fault in installation wiring, 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 selective interlocking feature - compared with 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.



Low Voltage Circuit Protection & Switchgear

Air circuit breakers

IZMX Air circuit breakers

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

The higher resolution dot matrix display has been enhanced to be always active, constantly displaying the status of zone selective interlocking (ZSI), battery condition and rated current I_n . All data can be transferred via Modbus, Profibus or Ethernet communication function and for security, a password can be added to avoid unauthorised changes.



Power Xpert Release (PXR) with multiple new features

- Large LCD combined with cursor operation for more function and information
- Battery status, ZSI and I_n visible anytime
- ZSI – the better selective protection is always on-board
- Modbus on-board for PXR20 and PXR25
- 3 free alarm contacts available
- Improved Diagnostics with breaker health (graph), events and run time
- Password protection
- LSI protection can be changed to LI (without time selectivity) or LS (without Instantaneous = 100% selective)
- OFF setting available for ground fault (G) and non-delayed instantaneous trip (I)
- MicroUSB port for testing and additional function setup via PC and software PXPM



'Free download' software Power Xpert Protection Manager (PXPM) for interaction with PXR



- Disable / enable functions
- Reading / changing settings (not basic protection settings)
- Waveform capture
- Multiple test procedures with final test protocol print including date/time stamp
- Print settings and curves

Testers no longer require specialised test tools thanks to the much better software solution in combination with the integrated secondary injection test hardware. This is free of charge.

The Power Xpert Release trip unit platform enables engineers to configure and test circuit breakers from a PC via a USB port. As a result, it is easier for users to interact with the trip unit and store or print test data so they can improve their control and maintenance regimes.



Load your settings and record them. If any values are changed a "final setting adjustments" screen shows the original and revised settings, highlighting any that were modified. The sheet can be saved or printed.



Using the software is easy and self explaining. The cursor above a selectable function opens a window with its explanation. Depending on the selection the next logical selection opens.

Value added complimentary inclusions to the PXR trip units for Australia and New Zealand are:

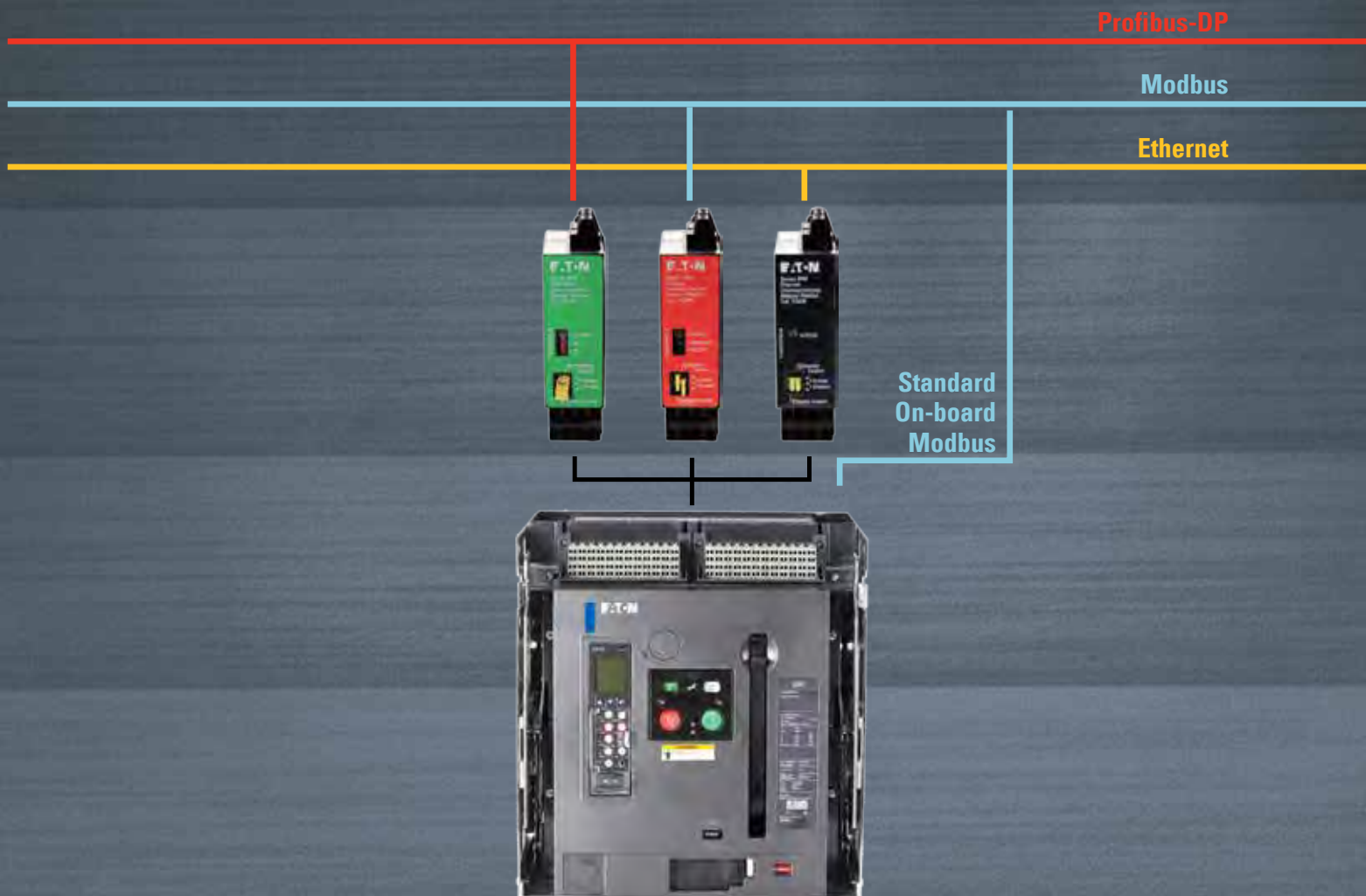
**Standard
On-board
Modbus**

**Eaton Arcflash
Reduction
Maintenance
System™**

**Residual
Ground Fault
protection**

FULLY LOADED PXR

Increased operating safety and flexibility based on communication



The standard on-board Modbus will allow the use of Modbus protocol to effectively only 'read' the breaker data i.e. breaker status and breaker measurements. If 'control' of the breaker is required i.e. remote open and close of the breaker via the motor operators then the external CAM modules are needed (which also allow 'read' function) three different CAM Module options are available.

Thanks to its ability to communicate, the IZMX circuit breaker series taps new opportunities for power distribution. It provides all the information that is relevant for operation and forwards it to a data acquisition system.

This way the transparency of the system can be increased and response times to statuses such as overcurrent, phase imbalance and overvoltage can be reduced. By quickly intervening in a process, system standstills can be prevented or preventive maintenance actions can be planned.

Consequently, the availability of the system can be increased as well.

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

Standard On-board Modbus communication is standard on both the PXR20 and PXR25 trip units which will allow both monitoring of breaker status and breaker data.

Low Voltage Circuit Protection & Switchgear

Air circuit breakers

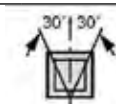
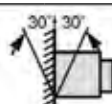
IZMX Circuit breaker technical data and performance



IZMX16



IZMX40

General							
Standards		IEC/EN 60947			IEC/EN 60947		
Ambient temperature	Storage °C	-25 - +70			-25 - +70		
	Operating (open) °C	-25 - +70			-25 - +70		
Mounting position							
Utilization category		B			B		
Protection type		IP20, IP55 device with protective cover, IP41 with door sealing frame					
Direction of incoming supply		as required			as required		
Switching capacity							
Rated Current (In)		630A, 800A, 1000A, 1250A, 1600A			800A, 1000A, 1250A, 1600A, 2000A, 2500A, 3200A, 4000A		
Type of circuit breaker		B	N	H	B	N	H
Rated impulse withstand voltage (Uimp , VAC)		12000	12000	12000	12000	12000	12000
Rated insulation voltage (Ui , VAC)		1000	1000	1000	1000	1000	1000
Rated operational voltage (Ue , VAC)		690	690	690	690	690	690
Ultimate breaking capacity (Icu , kA)	240V 50/60Hz	42	85	85	66	85	105
	440V 50/60Hz	42	50	66	66	85	105
	690V 50/60Hz	42	42	42	66	75	75
Rated service breaking capacity (Ics , kA)	240V 50/60Hz	42	50	65	66	85	105
	440V 50/60Hz	42	50	50	66	85	105
	690V 50/60Hz	42	42	42	66	75	75
Rated short-time withstand current (Icw , kA)		1s/3s	42/-	42/-	42/-	66/53	85 ¹⁾ /66
Rated short-circuit making capacity (Icm , kA)	440V 50/60Hz	88	105	145	145	187	231
	690V 50/60Hz	88	88	88	145	165	165
Operating delays (ms)	Closing delay	25			30		
	Closing delay electrical (via SR)	30			35		
	Opening delay electrical (via ST)	25			22		
	Opening delay electrical (via UVR)	50			37		
Maximum operating frequency (Operations/h)		60			60		
Durability and installation characteristics							
Lifespan		630A-1600A			800A-1600A	2000A	2500A-4000A
Dimensions (H x W x D, mm)	Mechanical, w/o maintenance	12500			12500	10000	10000
	Mechanical, w/ maintenance	25000			25000	20000	20000
	Electrical, w/o maintenance	10000			10000	8000 ²⁾	6000 ³⁾
	Fixed 3P	338 x 210 x 184			398 x 376 x 298		
Weight (kg)	Fixed 4P	338 x 279 x 184			398 x 492 x 298		
	Withdrawable 3P	360 x 254 x 289			456 x 426 x 393		
	Withdrawable 4P	360 x 324 x 289			456 x 541 x 393		
	Fixed 3P / 4P	15 / 20			45 / 56		
Weight (kg)	Withdrawable breaker only 3P / 4P	21 / 26			69 / 86		
	Withdrawable cassette only 3P / 4P	18 / 21			29 / 35		
	Withdrawable combined 3P / 4P	39 / 47			98 / 121		

1) 75kA at 690VAC

2) 6000 operations for B, N and H type at 690VAC,

3) 2500 operations at 690VAC

Air circuit breakers

IZMX Trip unit technical data and specifications



	V Type (PXR20-2F) IZMX-PXR IZMX16/40V	U Type (PXR25-2S) IZMX-PXRU IZMX16/40U
Protective options	LSI/LSIG	LSI/LSIG
Overload protection (L)		
Overload trip (I_r), x I_n	0.4, 0.5, 0.6, 0.7, 0.75, 0.8, 0.9, 0.95, 0.98, 1.0	0.4, 0.5, 0.6, 0.7, 0.75, 0.8, 0.9, 0.95, 0.98, 1.0
Long delay time t_r (6 x I_r)	0.5, 1, 2, 4, 7, 10, 12, 15, 20, 24 s	0.5, 1, 2, 4, 7, 10, 12, 15, 20, 24 s
Short-time delayed short-circuit protection (S)		
Short delayed pickup (I_{sd}), x I_r	1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 10	1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 10
Short delay time, flat characteristic curve (t_{sd})	0.0, 0.1, 0.2, 0.3, 0.4, 0.5 s ¹⁾	0.0, 0.1, 0.2, 0.3, 0.4, 0.5 s ¹⁾
Short delay time at 8 x I_r , I^2t curve (t_{sd})	0.1, 0.3, 0.4, 0.5 s	0.1, 0.3, 0.4, 0.5 s
Non-delayed short-circuit protection (I)		
Non-delayed pickup (I_l), x I_n	OFF, 2, 4, 5, 6, 7, 8, 10, 12, 15	OFF, 2, 4, 5, 6, 7, 8, 10, 12, 15
Optional ground fault protection (G)		
Ground/Earth fault alarm (A), x I_n	0.2, 0.4, 0.6, 1.0	0.2, 0.4, 0.6, 1.0
Ground/Earth pickup (I_g), x I_n	OFF, 0.2, 0.4, 0.6, 0.8, 1.0	OFF, 0.2, 0.4, 0.6, 0.8, 1.0
Short delay time, flat characteristic curve (t_g)	0.1, 0.2, 0.3, 0.4, 0.5 s	0.1, 0.2, 0.3, 0.4, 0.5 s
Short delay time at 0.625 x I_n , I^2t curve (t_g)	0.1, 0.2, 0.3, 0.4, 0.5 s	0.1, 0.2, 0.3, 0.4, 0.5 s
Over-temperature trip	•	•
Thermal memory	•	•
Zone selectivity ZSI	•	•
Making current release (MCR)	•	•
Further functions		
System diagnostic		
Status/Overload LED	•	•
Cause of trip LEDs	•	•
Current at trip point (display indication)	•	•
High load or ground fault alarm contact	•	•
System monitor		
LCD display	• ²⁾	• ²⁾
Current metering accuracy	±1% of Reading	±1% of Reading
Voltage (%) L to L	-	±1% of Reading ³⁾
Power and energy (%)	-	± 2% of Reading ³⁾
Apparent power kVA and demand	-	• ³⁾
Reactive power kVAR	-	• ³⁾
Power factor	-	• ³⁾
Communications		
Onboard (ModBus)	•	•
External (CAM Module)	o	o
Power supply requirement	+24 V DC, optional	+24 V DC, optional
Additional functions		
Test Capability	Integral, PC + Power Xpert (free download)	Integral, PC + Power Xpert (free download)
Maintenance Mode ARMS (Arc Flash Reduction Maintenance System™)	•	•
Trip log	•	•
Electronic operations counter	•	•
Waveform capture	•	•
Breaker health monitor	•	•

1) 0.1s: trip time is 0.06s to 0.1s; 0s: nominal clear time is 60ms with auxiliary power and 120ms without.

2) Requires external 24VDC control voltage supply when continuous current below 20% of I_n

3) Requires external PT module (IZMX-PXR-PTM-2) for voltage sensing input to trip unit

• Standard o Optional - not available

Low Voltage Circuit Protection & Switchgear

Air circuit breakers

IZMX Circuit breaker and Trip unit ordering information

IZMX16 Standard Breaker Inclusions:

All breakers supplied with cassette, safety shutters, operations counter, IP41 door escutcheon, padlockable pushbutton covers, interlock trip indicator. Supplied standard with 2A/2B auxiliary contacts and connection tags that can be positioned in either horizontal or vertical position.

IZMX40 Standard Breaker Inclusions:

All breakers supplied with cassette, safety shutters, operations counter, IP41 door escutcheon, padlockable pushbutton covers, interlock trip indicator. Supplied standard with 4A/4B auxiliary contacts and horizontal connection tags. For vertical connection tags, please contact Eaton.

PXR20 Trip Unit Standard Inclusions:

LCD display with current measurement display, Zone selective interlocking (ZSI), Status/overload LED, Cause of trips LEDs, Integral test capability. Additional PXR20 'Fully Loaded' inclusions are: LSI/LSIG Residual ground fault, Standard Modbus and Eaton Arcflash Reduction Maintenance System™

PXR25 Trip Unit Standard Inclusions:

LCD display with current, voltage, power and energy measurement display, Zone selective interlocking (ZSI), Status/overload LED, Cause of trips LEDs, Integral test capability. Additional PXR25 'Fully Loaded' inclusions are: LSI/LSIG Residual ground fault, Standard Modbus and Eaton Arcflash Reduction Maintenance System™

Current Rating	Icu rating (kA) 415Vac	Ics rating (kA) 415Vac	Icw rating (kA) - 1sec 415Vac	3 Pole Item no.	4 Pole Item no.
IZMX16 Manual Charge Withdrawable Breaker with PXR20 (2F) LSI/LSIG Trip Unit					
630A	66	50	42	NAS6073W2F7NMNN2YJ4X	NAS6074W2F7NMNN2YJ4X
800A	66	50	42	NAS6083W2F8NMNN2YJ4X	NAS6084W2F8NMNN2YJ4X
1000A	66	50	42	NAS6103W2FANMNN2YJ4X	NAS6104W2FANMNN2YJ4X
1250A	66	50	42	NAS6133W2FCNMNN2YJ4X	NAS6134W2FCNMNN2YJ4X
1600A	66	50	42	NAS6163W2FDNMNN2YJ4X	NAS6164W2FDNMNN2YJ4X
IZMX40 Manual Charge Withdrawable Breaker with PXR20 (2F) LSI/LSIG Trip Unit					
800A	66	66	66	RAS6083W2F8NMNN4YJ5X	RAS6084W2F8NMNN4YJ5X
1000A	66	66	66	RAS6103W2FANMNN4YJ5X	RAS6104W2FANMNN4YJ5X
1250A	66	66	66	RAS6133W2FCNMNN4YJ5X	RAS6134W2FCNMNN4YJ5X
1600A	66	66	66	RAS6163W2FDNMNN4YJ5X	RAS6164W2FDNMNN4YJ5X
2000A	66	66	66	RAS6203W2FMNMNN4YJ5X	RAS6204W2FMNMNN4YJ5X
2500A	66	66	66	RAS6253W2FNNMNN4YJ5X	RAS6254W2FNNMNN4YJ5X
3200A	66	66	66	RAS6323W2FQNMNN4YJ5X	RAS6324W2FQNMNN4YJ5X
4000A	66	66	66	RAS6403W2FRNMNN4YJ5X	RAS6404W2FRNMNN4YJ5X
IZMX16 Manual Charge Withdrawable Breaker with PXR25 (2S) LSI/LSIG Trip Unit					
630A	66	50	42	NAS4073W2S7NMNN2YJ4X	NAS4074W2S7NMNN2YJ4X
800A	66	50	42	NAS4083W2S8NMNN2YJ4X	NAS4084W2S8NMNN2YJ4X
1000A	66	50	42	NAS4103W2SANMNN2YJ4X	NAS4104W2SANMNN2YJ4X
1250A	66	50	42	NAS4133W2SCNMNN2YJ4X	NAS4134W2SCNMNN2YJ4X
1600A	66	50	42	NAS4163W2SDNMNN2YJ4X	NAS4164W2SDNMNN2YJ4X
IZMX40 Manual Charge Withdrawable Breaker with PXR25 (2S) LSI/LSIG Trip Unit					
800A	66	66	66	RAS6083W2S8NMNN4YJ5X	RAS6084W2S8NMNN4YJ5X
1000A	66	66	66	RAS6103W2SANMNN4YJ5X	RAS6104W2SANMNN4YJ5X
1250A	66	66	66	RAS6133W2SCNMNN4YJ5X	RAS6134W2SCNMNN4YJ5X
1600A	66	66	66	RAS6163W2SDNMNN4YJ5X	RAS6164W2SDNMNN4YJ5X
2000A	66	66	66	RAS6203W2SMNMNN4YJ5X	RAS6204W2SMNMNN4YJ5X
2500A	66	66	66	RAS6253W2SNMNN4YJ5X	RAS6254W2SNMNN4YJ5X
3200A	66	66	66	RAS6323W2SQNMNN4YJ5X	RAS6324W2SQNMNN4YJ5X
4000A	66	66	66	RAS6403W2SRNMNN4YJ5X	RAS6404W2SRNMNN4YJ5X
IZMX16 Manual Charge Withdrawable Breaker Non-Auto					
630A	-	-	42	NAS4073WSW0NMNN2NJ4X	NAS4074WSW0NMNN2NJ4X
800A	-	-	42	NAS4083WSW0NMNN2NJ4X	NAS4084WSW0NMNN2NJ4X
1000A	-	-	42	NAS4103WSW0NMNN2NJ4X	NAS4104WSW0NMNN2NJ4X
1250A	-	-	42	NAS4133WSW0NMNN2NJ4X	NAS4134WSW0NMNN2NJ4X
1600A	-	-	42	NAS4163WSW0NMNN2NJ4X	NAS4164WSW0NMNN2NJ4X
IZMX40 Manual Charge Withdrawable Breaker Non-Auto					
800A	-	-	66	RAS6083WSW0NMNN4NJ5X	RAS6084WSW0NMNN4NJ5X
1000A	-	-	66	RAS6103WSW0NMNN4NJ5X	RAS6104WSW0NMNN4NJ5X
1250A	-	-	66	RAS6133WSW0NMNN4NJ5X	RAS6134WSW0NMNN4NJ5X
1600A	-	-	66	RAS6163WSW0NMNN4NJ5X	RAS6164WSW0NMNN4NJ5X
2000A	-	-	66	RAS6203WSW0NMNN4NJ5X	RAS6204WSW0NMNN4NJ5X
2500A	-	-	66	RAS6253WSW0NMNN4NJ5X	RAS6254WSW0NMNN4NJ5X
3200A	-	-	66	RAS6323WSW0NMNN4NJ5X	RAS6324WSW0NMNN4NJ5X
4000A	-	-	66	RAS6403WSW0NMNN4NJ5X	RAS6404WSW0NMNN4NJ5X

For other configurations please contact Eaton.

Air circuit breakers

IZMX Circuit breaker and Trip unit ordering information

Suitable Frame Size	Description	Item no.
IZMX16/40	IZMX PXR Trip unit external power supply	EASY400-POW
IZMX16/40	IZMX PXR25 Trip unit external voltage transformer	IZMX-PXR-PTM-2
IZMX16/40	IZMX Modbus external communications cam module	IZMX-MCAM-2
IZMX16/40	IZMX Ethernet external communication cam module	IZMX-ECAM-2
IZMX16/40	IZMX Profibus external communications cam module	IZMX-PCAM-2
IZMX16	IZMX16 Neutral sensor for 3 pole LSIG function	IZMX-CT16-N-2
IZMX40	IZMX40 Neutral sensor for 3 pole LSIG function	IZMX-CT40-N-2
IZMX16	IZMX16 Motor operator 24Vdc	IZMX-M16-24DC-2
IZMX16	IZMX16 Motor operator 48Vdc	IZMX-M16-48DC-2
IZMX16	IZMX16 Motor operator 110-127Vac / 110-125Vdc	IZMX-M16-110AD-2
IZMX16	IZMX16 Motor operator 220-240Vac / 200-250Vdc	IZMX-M16-230AD-2
IZMX40	IZMX40 Motor operator 24Vdc	IZMX-M40-24DC-2
IZMX40	IZMX40 Motor operator 48Vdc	IZMX-M40-48DC-2
IZMX40	IZMX40 Motor operator 110-127Vac / 110-125Vdc	IZMX-M40-110AD-2
IZMX40	IZMX40 Motor operator 220-240Vac / 200-250Vdc	IZMX-M40-230AD-2
IZMX16/40	IZMX Shunt trip 24Vdc	IZMX-ST24DC-2
IZMX16/40	IZMX Shunt trip 48Vdc	IZMX-ST48DC-2
IZMX16/40	IZMX Shunt trip 110-125Vac/dc	IZMX-ST110AD-2
IZMX16/40	IZMX Shunt trip 220-240Vac/dc	IZMX-ST230AD-2
IZMX16/40	IZMX Closing release coil 24Vdc	IZMX-SR24DC-2
IZMX16/40	IZMX Closing release coil 48Vdc	IZMX-SR48DC-2
IZMX16/40	IZMX Closing release coil 110-125Vac/dc	IZMX-SR110AD-2
IZMX16/40	IZMX Closing release coil 220-240Vac/dc	IZMX-SR230AD-2
IZMX16/40	IZMX Latch check switch	IZMX-LCS-2
IZMX16/40	IZMX Undervoltage release 24Vdc	IZMX-UVR24DC-2
IZMX16/40	IZMX Undervoltage release 48Vdc	IZMX-UVR48DC-2
IZMX16/40	IZMX Undervoltage release 110-125Vac/dc	IZMX-UVR110AD-2
IZMX16/40	IZMX Undervoltage release 220-240Vac/dc	IZMX-UVR220AD-2
IZMX16/40	IZMX Undervoltage release 380-415Vac/dc	IZMX-UVR400AD-2
IZMX16/40	IZMX Withdrawable secondary circuit terminal, 8 piece bag	IZMX-SEC-TB8-W-2
IZMX16/40	IZMX Withdrawable secondary circuit terminal, 20 piece bag	IZMX-SEC-TB20-W-2
IZMX16/40	IZMX Withdrawable secondary circuit terminal, 30 piece bag	IZMX-SEC-TB30-W-2
IZMX16	IZMX16 Withdrawable IP41 door escutcheon	IZMX-DEG16-W-2
IZMX40	IZMX40 Withdrawable IP41 door escutcheon	IZMX-DEG40-W-2
IZMX16	IZMX16 Withdrawable IP55 door cover	NFDCKTW
IZMX40	IZMX40 Withdrawable IP55 door cover	RFDCKTW
IZMX16	IZMX16 Plastic padlockable On-Off cover	IZMX-PLPC16-P-2
IZMX40	IZMX40 Plastic padlockable On-Off cover	IZMX-PLPC40-P-2
IZMX16/40	IZMX Castell locking adaptor kit, no lock	IZMX-KLP-SO-CASTELL-2
IZMX16	IZMX16 Withdrawable Type 2 mechanical interlock adaptor	IZMX-MIL-2C-W16-2
IZMX40	IZMX40 Withdrawable Type 2 mechanical interlock adaptor	IZMX-MIL-2C-W40-2
IZMX16	IZMX16 Withdrawable Type 31/33 mechanical interlock adaptor	IZMX-MIL-3133C-W16-2
IZMX40	IZMX40 Withdrawable Type 31/33 mechanical interlock adaptor	IZMX-MIL-3133C-W40-2
IZMX16	IZMX16 Withdrawable Type 32 mechanical interlock adaptor	IZMX-MIL-32C-W16-2
IZMX40	IZMX40 Withdrawable Type 32 mechanical interlock adaptor	IZMX-MIL-32C-W40-2
IZMX16/40	IZMX Mechanical interlock cable kit, 1520mm long (2 cables)	IZMX-MIL-CAB1520-2
IZMX16/40	IZMX Mechanical interlock cable kit, 1830mm long (2 cables)	IZMX-MIL-CAB1830-2
IZMX16/40	IZMX Mechanical interlock cable kit, 2440mm long (2 cables)	IZMX-MIL-CAB2440-2
IZMX16/40	IZMX Mechanical interlock cable kit, 3050mm long (2 cables)	IZMX-MIL-CAB3050-2

Accessory Notes:

Field fitted shunt trip or undervoltage release also requires 1 piece of secondary control circuit terminal.

Field fitted motor operator requires 1 x motor operator, 1 x shunt trip, 1 x closing release coil, 1 x latch check switch and 3 pieces of secondary control circuit terminals.

Field fitted external communications cam module options also require 1 piece of secondary control circuit terminal.

Maximum number of shunt trips is two, if this option is used then it is not possible to fit an undervoltage release.

Type 2 mechanical interlock arrangement requires 1 adaptor kit per each breaker and 1 set of cables.

Type 31 mechanical interlock arrangement requires 1 adaptor kit per each breaker and 2 sets of cables.

Type 32 or 33 mechanical interlock arrangement requires 1 adaptor kit per each breaker and 3 sets of cables.

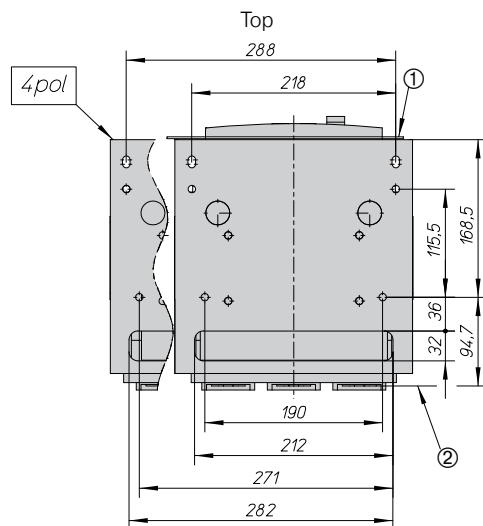
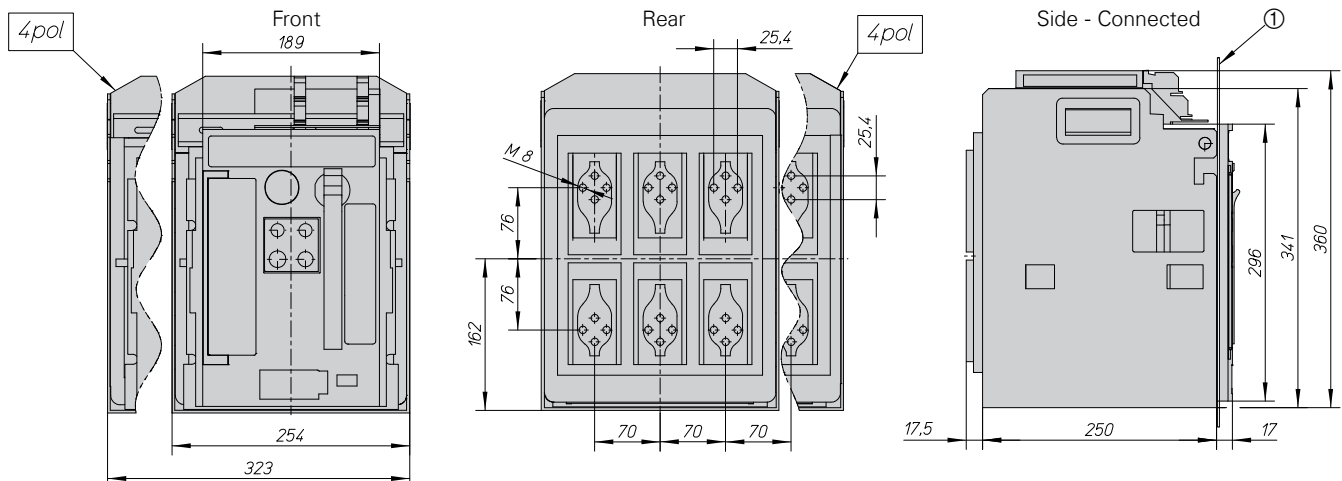
For other accessory items please contact Eaton.

Low Voltage Circuit Protection & Switchgear

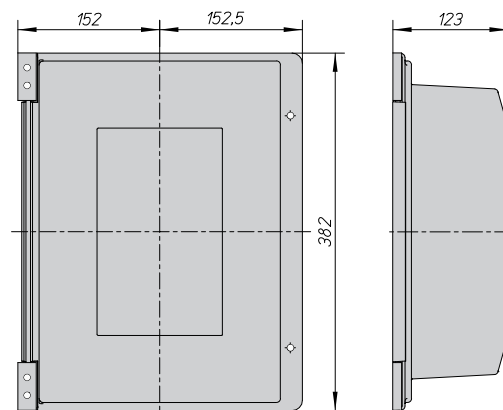
Air circuit breakers

IZMX16 Dimensions (mm)

Withdrawable unit

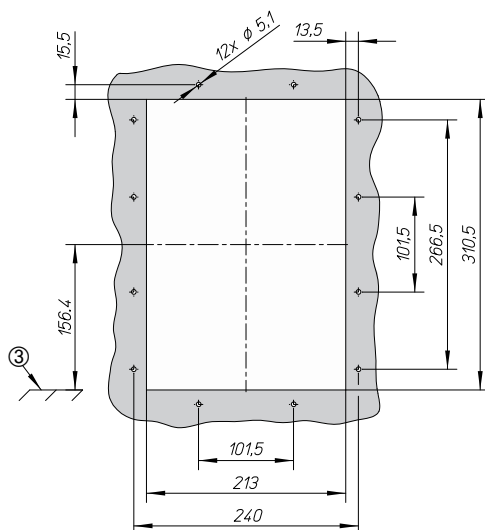


IZMX16 Door cover - NFDCKTW

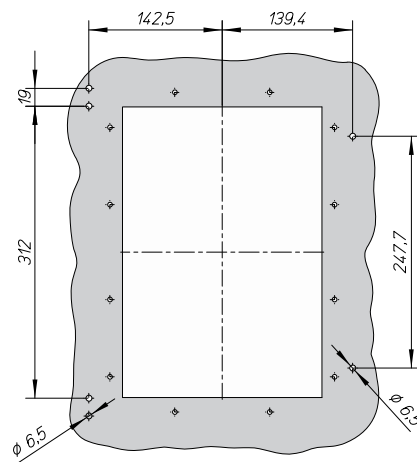


Door cut-out IZMX16

IZMX-DEG1B-W-2



NFDCKTW



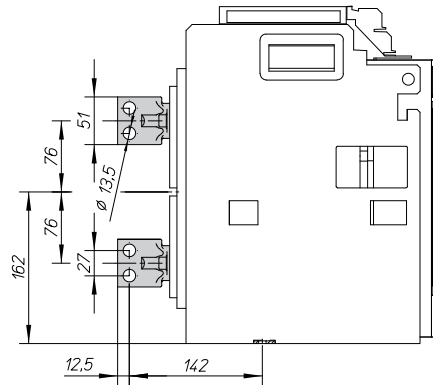
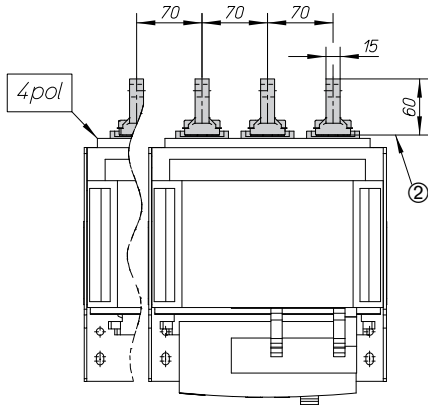
- ① Door/Cover
- ② Contact Surface

Air circuit breakers

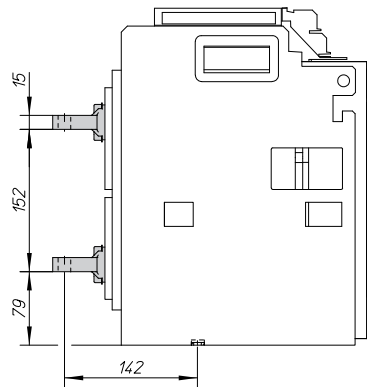
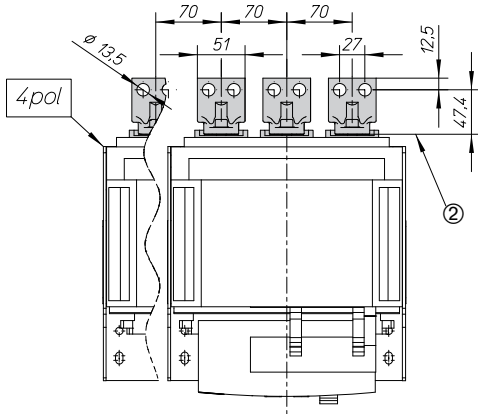
IZMX16 Dimensions (mm)

Withdrawable unit

Terminal adapter horizontal/vertical - vertical mounted



Terminal adapter horizontal/vertical - horizontal mounted

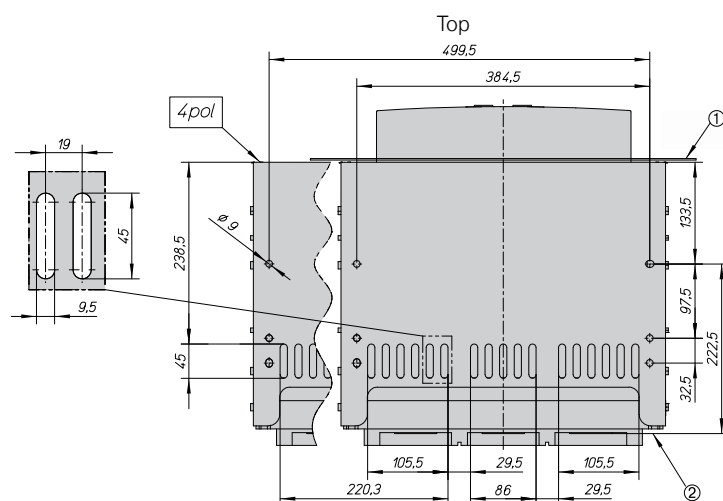
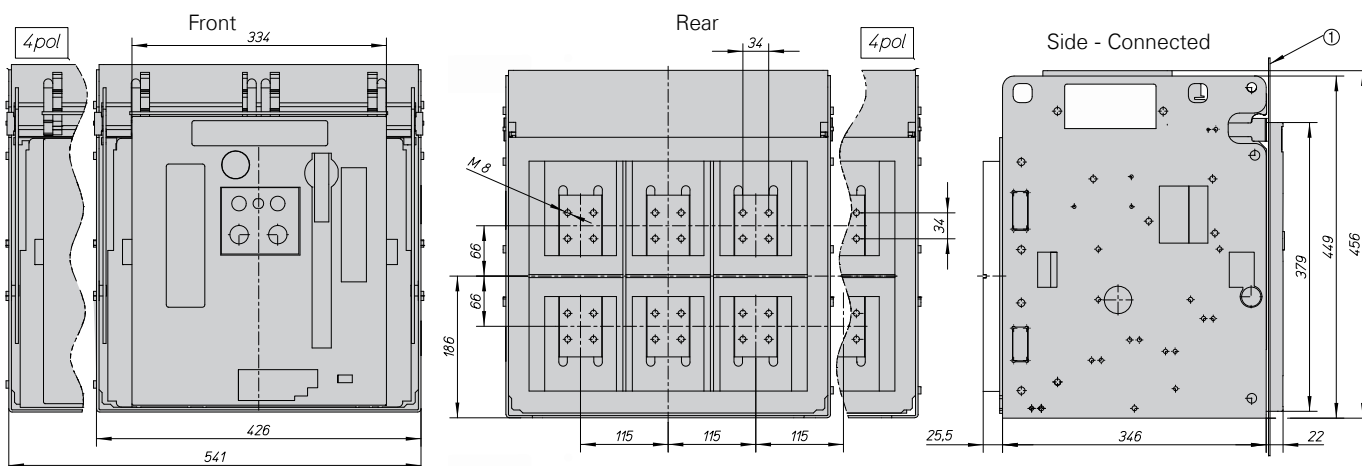


Low Voltage Circuit Protection & Switchgear

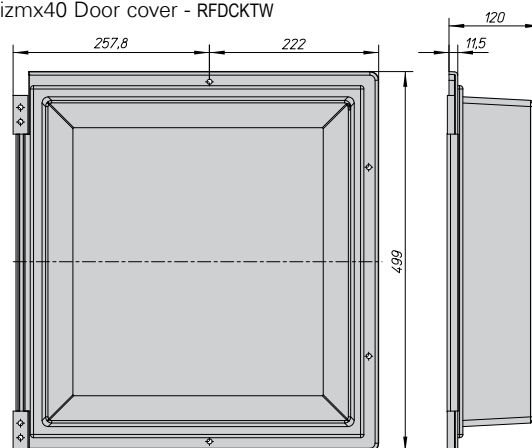
Air circuit breakers

IZMX40 Dimensions (mm)

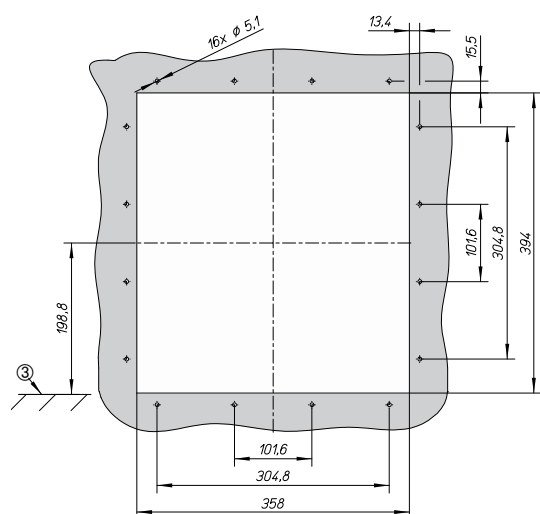
Withdrawable unit



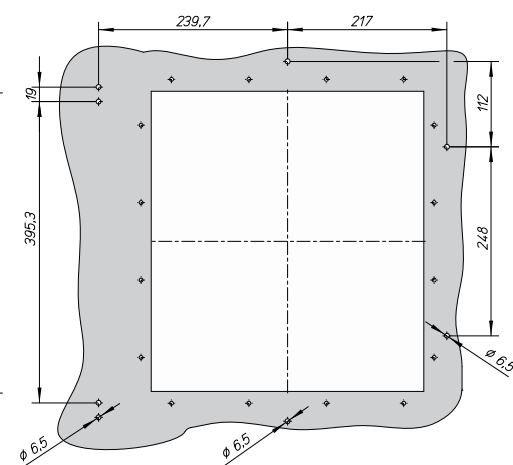
izmx40 Door cover - RFDCKTW



Door cut-out IZMX40
IZMX-DEG140-W-2



RFDCKTW



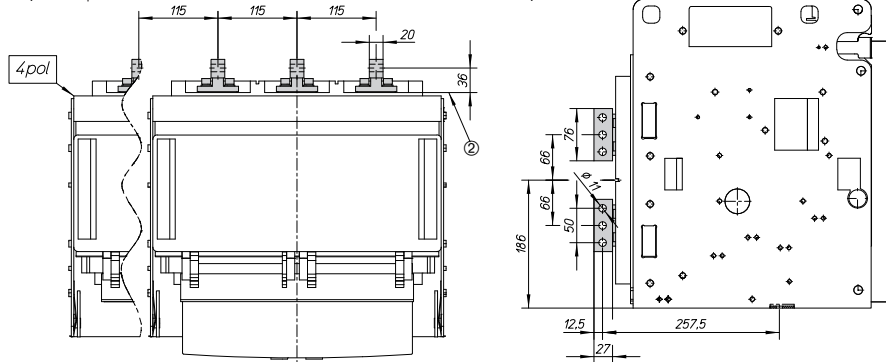
- ① Door/Cover
- ② Contact Surface

Air circuit breakers

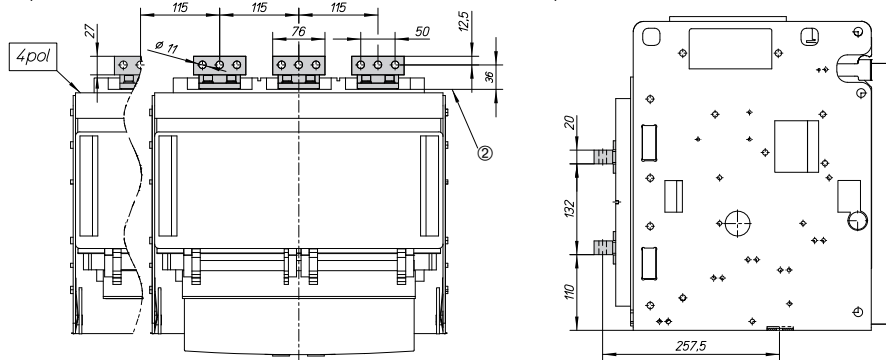
IZMX40 Dimensions (mm)

Withdrawable unit

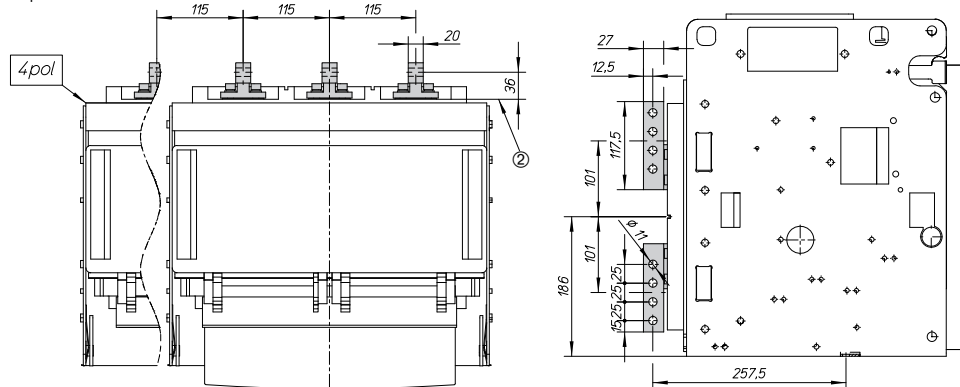
Terminal adapter horizontal/vertical - vertical mounted (Terminals up to 3200 A)



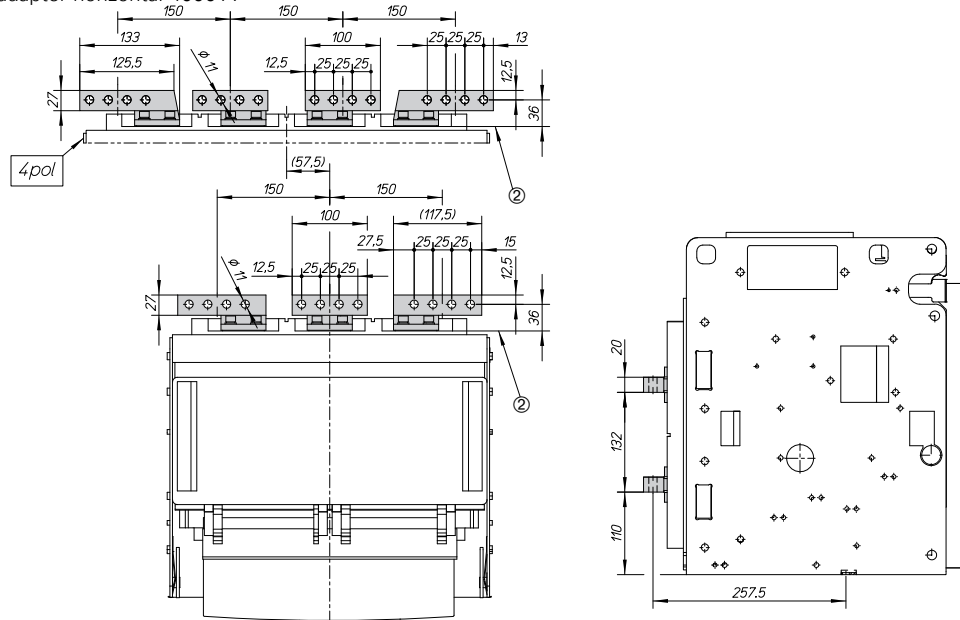
Terminal adapter horizontal/vertical - horizontal mounted (Terminals up to 3200 A)



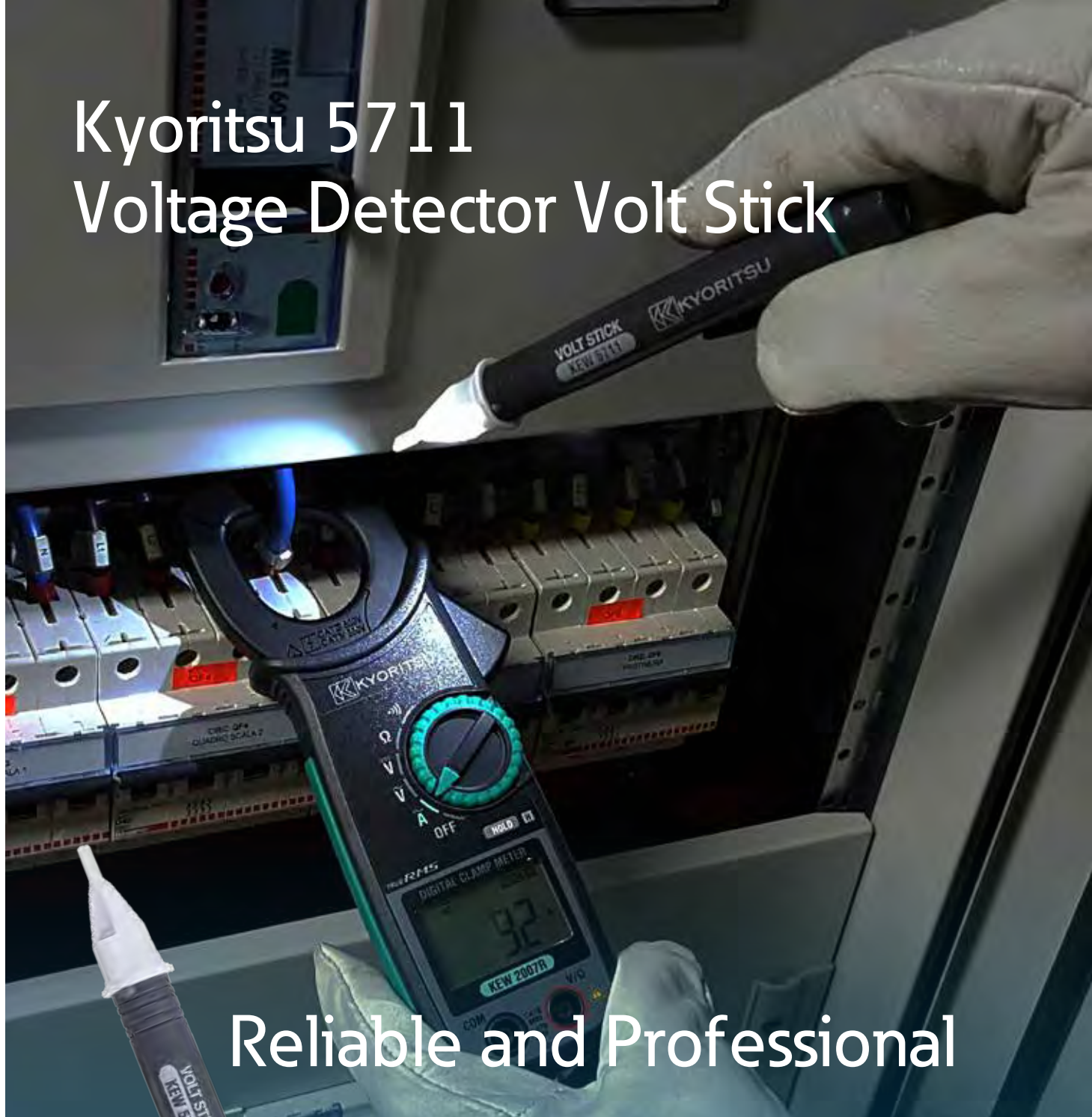
Terminal adapter vertical 4000 A



Terminal adapter horizontal 4000 A



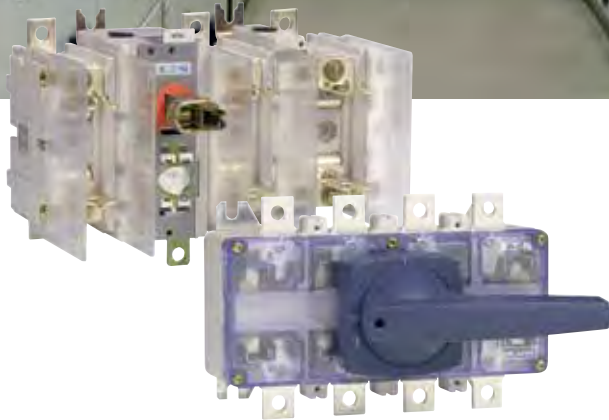
Kyoritsu 5711 Voltage Detector Volt Stick



Reliable and Professional

- Audible buzzer & visual red LED indicates presence of AC voltage
- Auto check function for battery and internal circuit
- Dual sensitivity
Low(Lo) sensitivity helps to recognise the Phase from Neutral in sockets.
High(Hi) sensitivity for checking the presence of voltage from a further distance.
- Self-function test
The 5711 performs self-function test when the button is pressed. If abnormality is found during the test, it gives 3 short beeps, 3 long beeps, 3 short beeps
- Bright white LED light integrated into the tip
- Safety Standard - IEC 61010-1 CATIV W 600V / CATIII 1000V Pollution degree 2

Proven solutions for switching and isolation.



EATON
Powering Business Worldwide

Incorporating the latest technological advances, Eaton's 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.

Switches

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



Dumeco panelboard switches

Description	Item no.
Main switch 3 pole 250A - DIN Cutout	PB250MS3PD
Main switch 3 pole 400A - DIN Cutout	PB400MS3PD
Main switch 4 pole 250A - DIN Cutout	PB250MS4PD
Main switch 4 pole 400A - DIN Cutout	PB400MS4PD
Terminal Cover for 250A/400A Main Switches	1314735
Main switch to DIN chassis link kit 250A	PB250LINK
Replacement handle with shaft	4102003

Switches & disconnectors

Dumeco switches & disconnectors

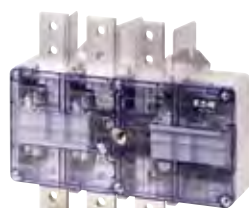
Dumeco switch disconnectors 125-3150A

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



1314203



1814595



6093242



1050246



1818069

Dumeco: 3 pole base mount (switch only)

Current rating	AC-23A kW 415V	Rated shorttime withstand - I _{cs}	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 - I _{cs}	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.

Switches & disconnectors

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	1818076
Handle, K-Line K6D - 2 position changeover, with 14mm door coup, IP65 for DMV1250/1600/2000	1818078*
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.



1314314



1818076



1818034

Switches & disconnectors

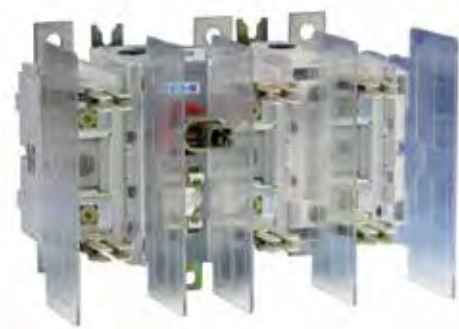
QSA switches & disconnectors

QSA switch disconnecter fuses - SDFs

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

Switch Fuse Disconnectors features:

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



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

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



1320201



1318027

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

* Products have AC-23A rating.



1318533

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.



1319831



1818037

Switches & disconnectors

QSA switches & disconnectors

QSA plug-in switch disconnecter fuses

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

Switch Disconnector Fuses features:

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



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

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

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 - I _{cs}	Description	Handle type	Shaft X-section	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 QSA and QA: 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



1319831



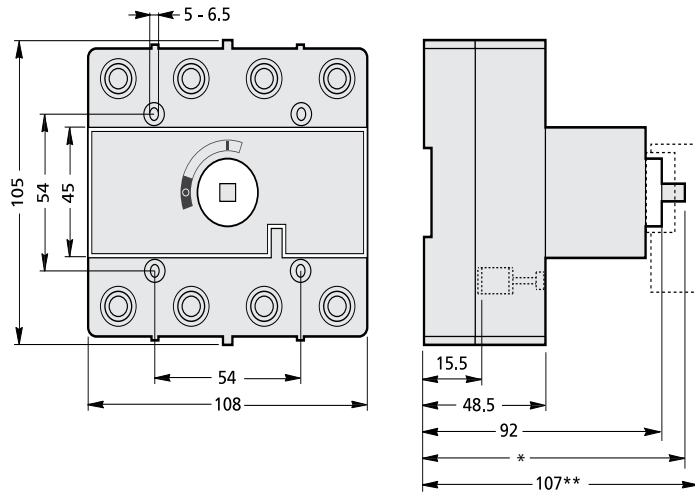
1818069

Switches & disconnectors

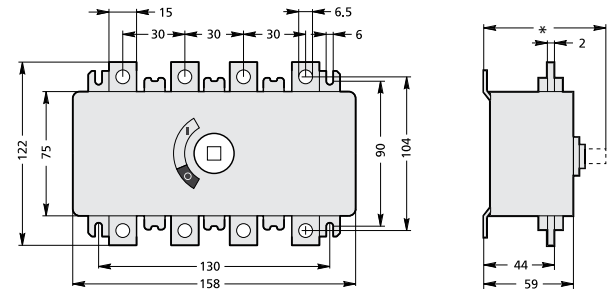
Dimensions

Dimension apply to 3 pole as well as 4 pole switch disconnectors

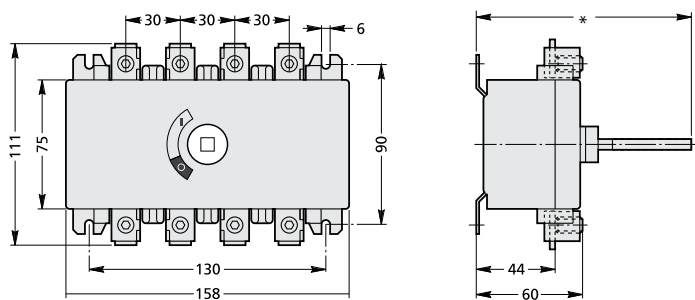
Dumeco, type DMM 125



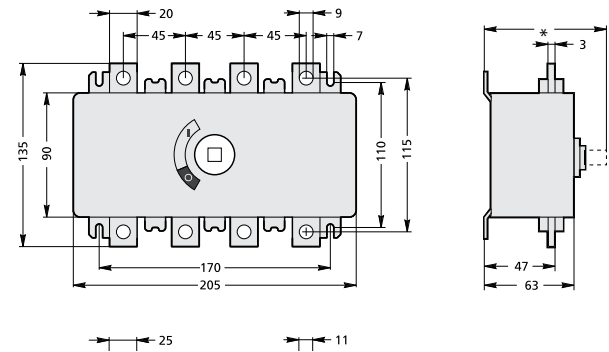
Dumeco, type DMV 160N



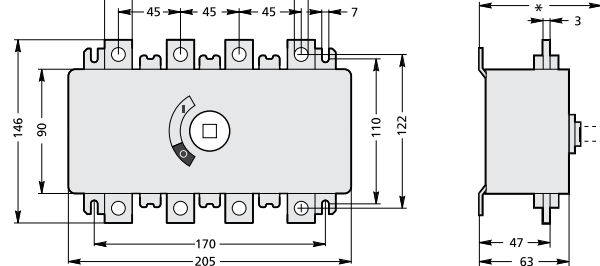
Dumeco, type DMV 160N
(connecting contacts with pillar terminals)



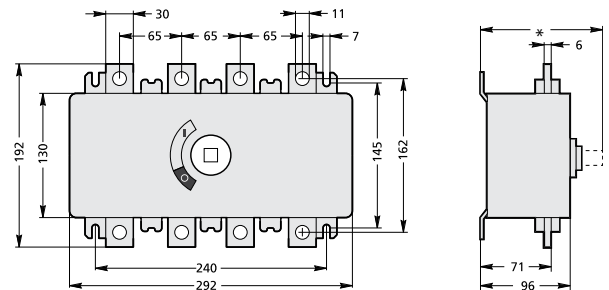
Dumeco, type DMV 250N



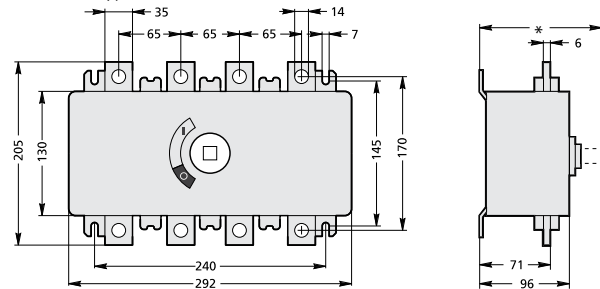
Dumeco, type DMV 400N



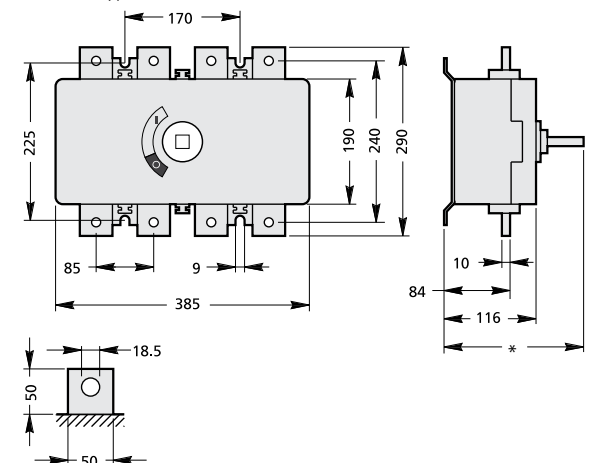
Dumeco, type DMV 630N



Dumeco, type DMV 1000N



Dumeco, type DMV 1250N



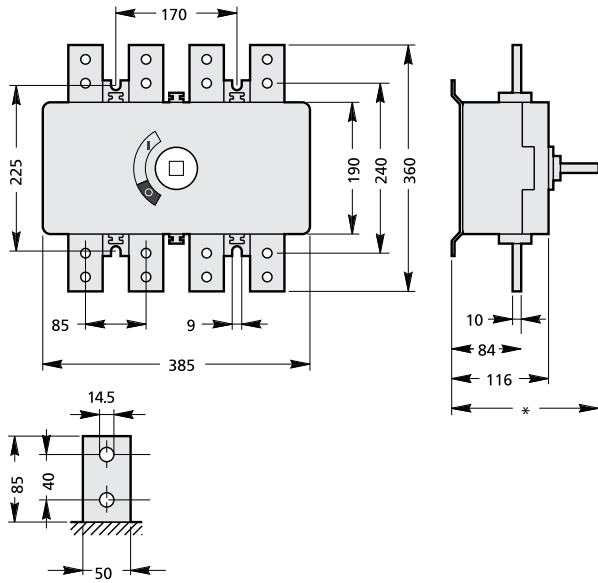
* Dependant on the applied operating extension shaft

Switches & disconnectors

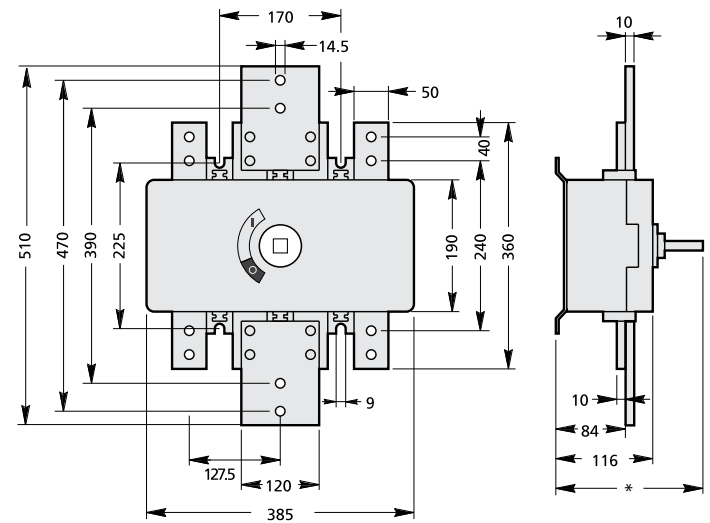
Dimensions

Dimension apply to 3 pole as well as 4 pole switch disconnectors

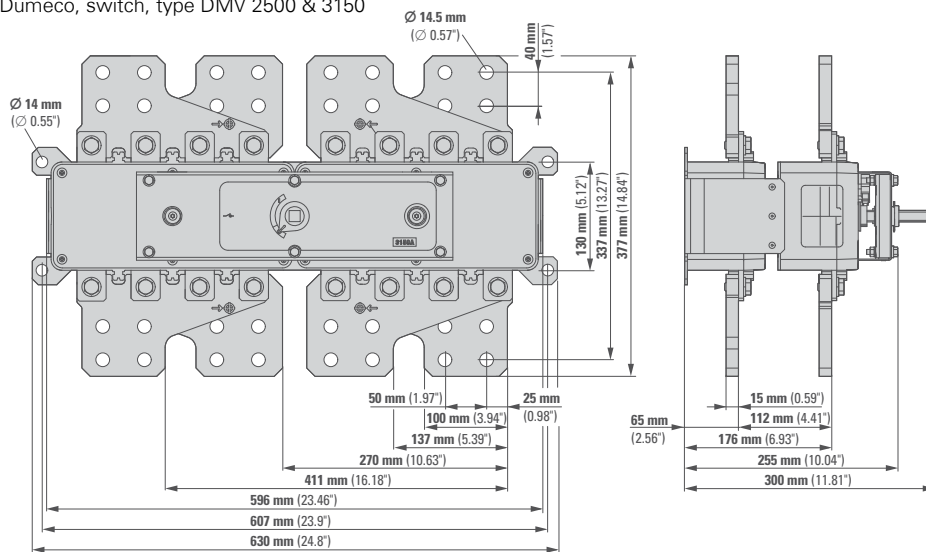
Dumeco, type DMV 1600N



Dumeco, type DMV 2000N



Dumeco, switch, type DMV 2500 & 3150

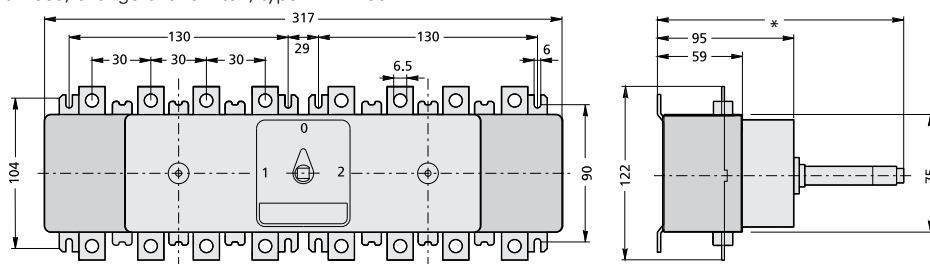


* Dependant on the applied operating extension shaft

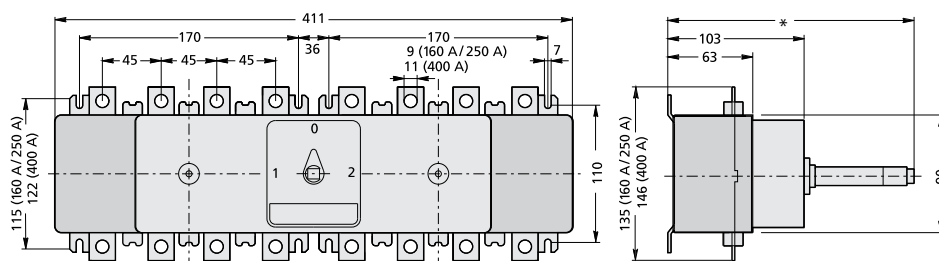
Switches & disconnectors

Dimensions

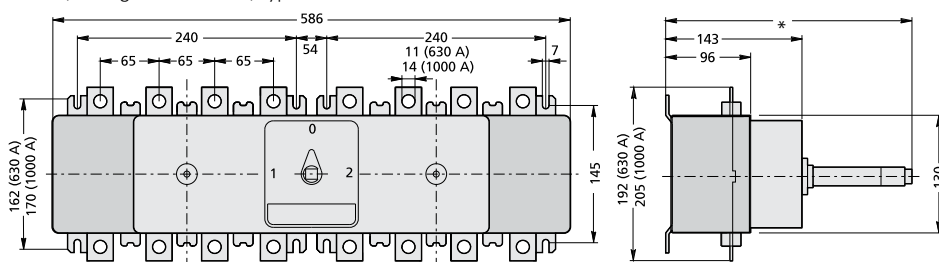
Dumeco, change-over switch, type DMV 160N



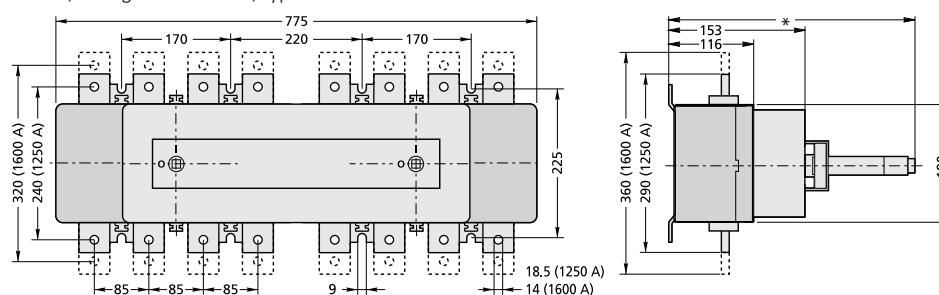
Dumeco, change-over switch, type DMV 250N & 400N



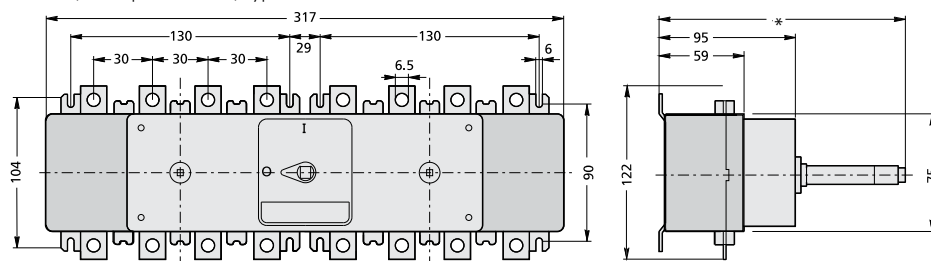
Dumeco, change-over switch, type DMV 630N & 1000N



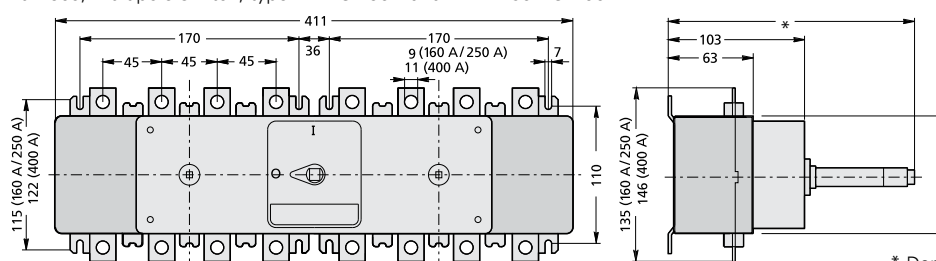
Dumeco, change-over switch, type DMV 1250N & 1600N



Dumeco, multipole switch, type DMV 160N



Dumeco, multipole switch, type DMVS 160N and DMV 250N & 400N

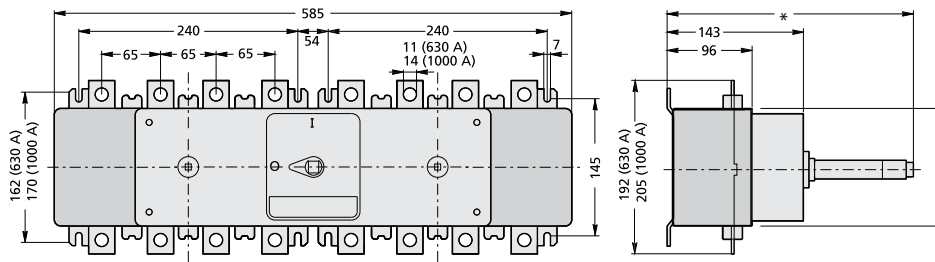


* Dependant on the applied operating extension shaft

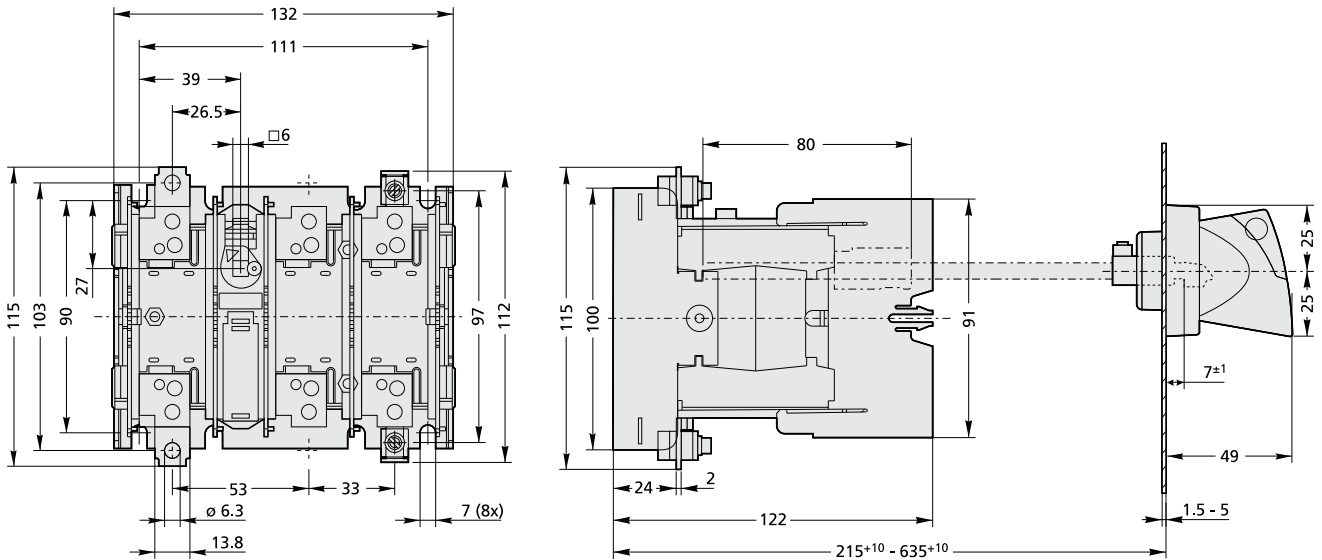
Switches & disconnectors

Dimensions

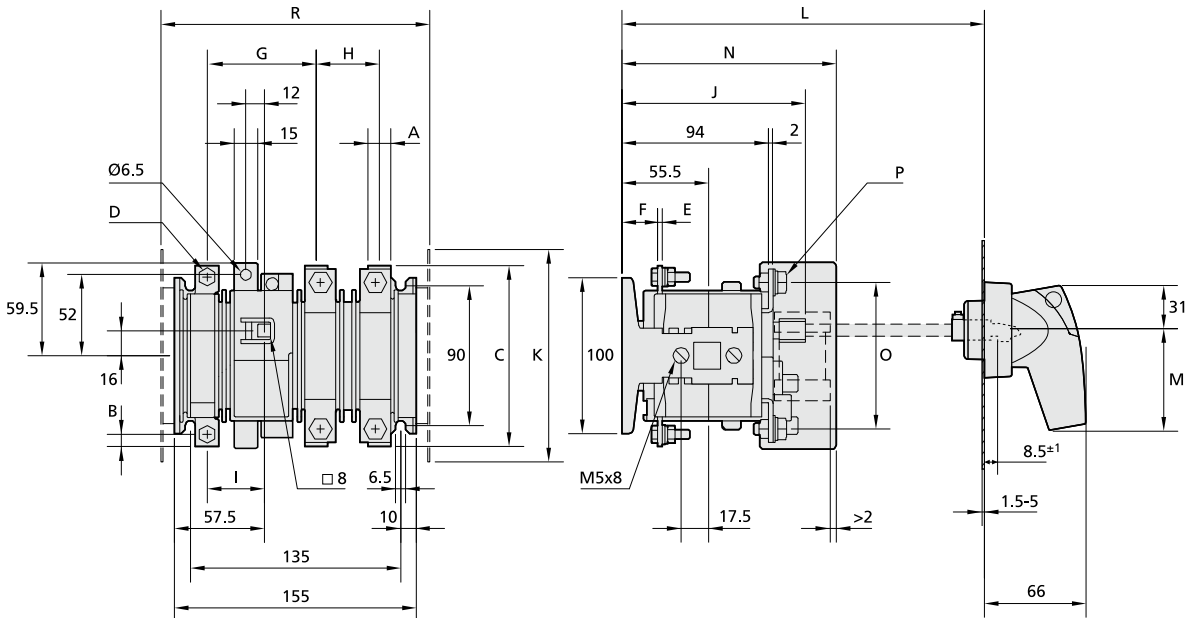
Dumeco, multipole switch, type DMV 630N & 1000N



Switch-disconnector-fuses, type QSA 40 - 63 A, BS fuse-link, frame size 0, dimensional drawings



Switch-disconnector-fuses, type QSA 63 - 160 A, BS fuse-link, frame size 1, dimensional drawings



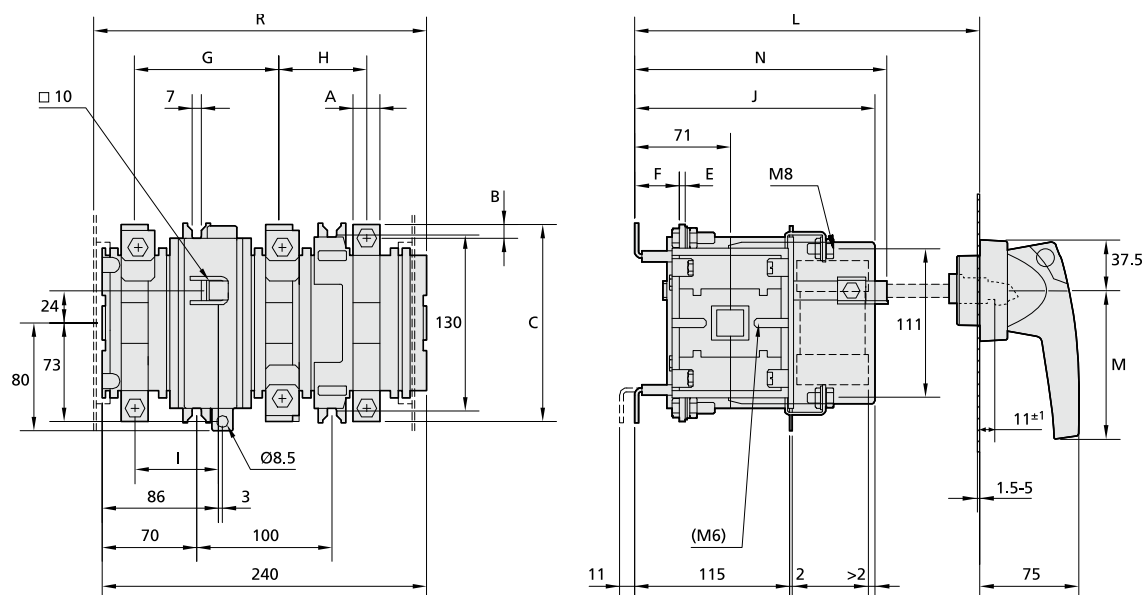
Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R
QSA 63N1-A3	12	6	100	M5	2	24	72	38.5	38	118	95	200 ⁺¹⁰ -620 ⁺¹⁰	62	155.5	73	M5	-
QSA 100N1-A4	15	7.5	116	M6	3	23	70	40.5	37	118	120	200 ⁺¹⁰ -620 ⁺¹⁰	62	137.5	94	M8	-
QSA 125N1-B2	15	7.5	116	M6	3	23	70	40.5	37	118	150	200 ⁺¹⁰ -620 ⁺¹⁰	62	137.5	112	M8	184
QSA 160N1-B2	20	10	127	M8	3	23	65	45.5	35	118	150	200 ⁺¹⁰ -620 ⁺¹⁰	62	137.5	112	M8	184

Low Voltage Circuit Protection & Switchgear

Switches & disconnectors

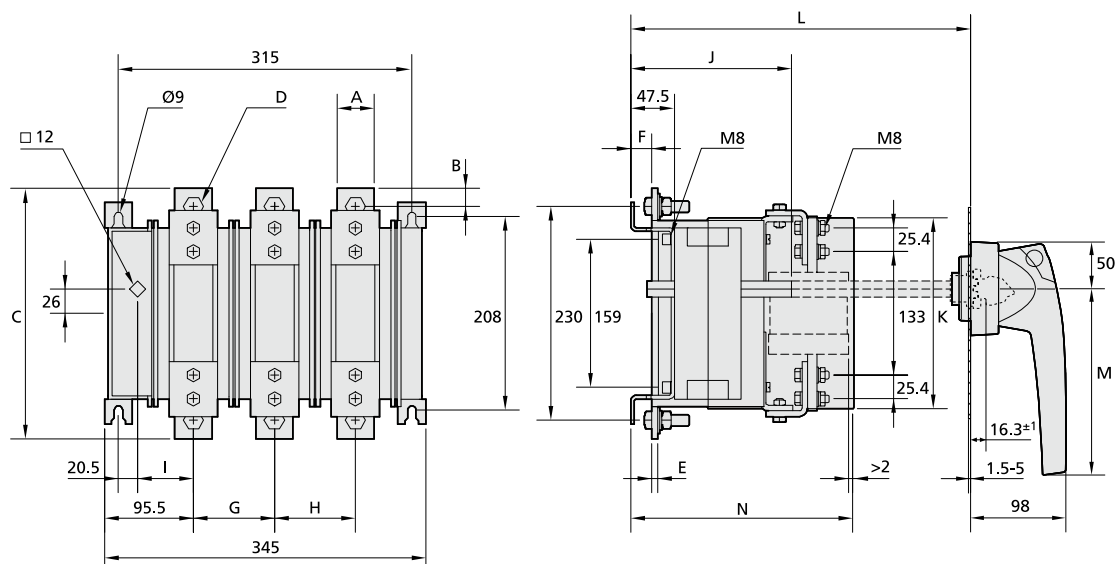
Dimensions

Switch-disconnector-fuses, type QSA 200 - 400 A, BS fuse-link, frame size 2, dimensional drawings



Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	R
QSA 200N-B2	20	10	146	M8	4	33	107	65	62	188	120	205 ⁺¹⁵ -625 ⁺¹⁵	140	178	-
QSA 250N-B4	25	12.5	160	M10	4	29	107	65	59.5	188	160	205 ⁺¹⁵ -625 ⁺¹⁵	140	198	246.5
QSA 315N-B4	25	12.5	160	M10	6	27	107	65	59.5	188	160	205 ⁺¹⁵ -625 ⁺¹⁵	140	198	246.5
QSA 400N-B4	25	12.5	160	M10	6	27	107	65	59.5	188	160	205 ⁺¹⁵ -625 ⁺¹⁵	140	198	246.5

Switch-disconnector-fuses, type QSA 630 - 800 A, BS fuse-link, frame size 3, dimensional drawings



Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N
QSA 630-C3/3	40	20	270	M12	6	23	87	87	60	173	205	320 ⁺¹⁰ -620 ⁺¹⁰	200	240
QSA 800-C3/3	40	20	270	M12	6	23	87	87	60	173	205	320 ⁺¹⁰ -620 ⁺¹⁰	200	240

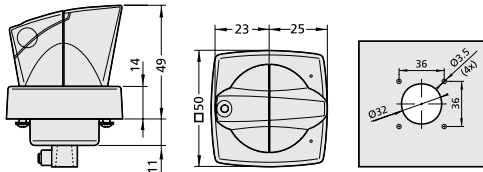
Handles

K-Line handles

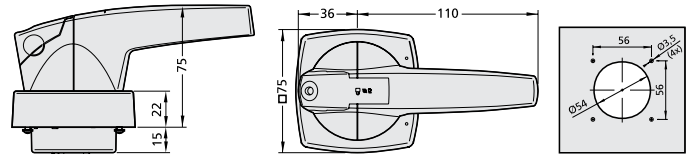
The K-Line handle was designed to enable a uniform handle design to be used with both the Dumeco & Q-Line switch products. The design & range of product variations within the K-Line product range also allows it to be used on other manufactures switch products including circuit breakers to give a uniform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

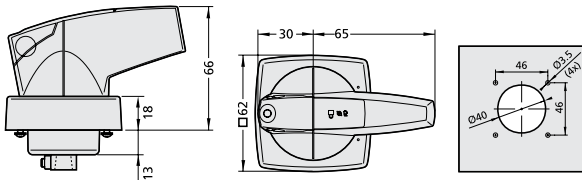
- The K-Line range of product can be fitted to products with a shaft diameter of 6, 8, 10, 12 & 14mm square
- IP65 Ingress protection rating
- Various locking applications e.g. padlock in ON position
- Fixed position of the handle when the door is open



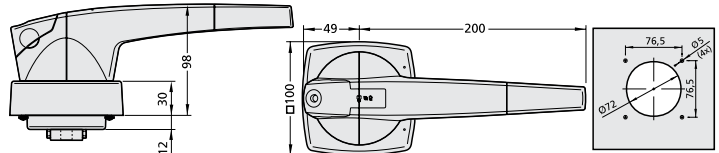
Type K1D - suitable for 6mm square shafts



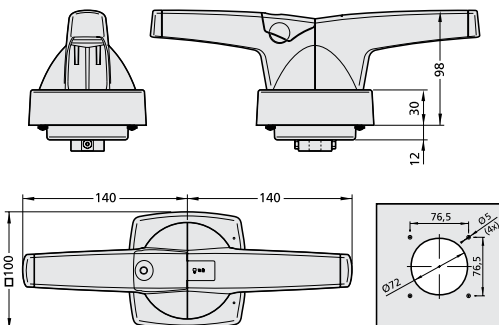
Type K3KD - suitable for 10mm square shafts



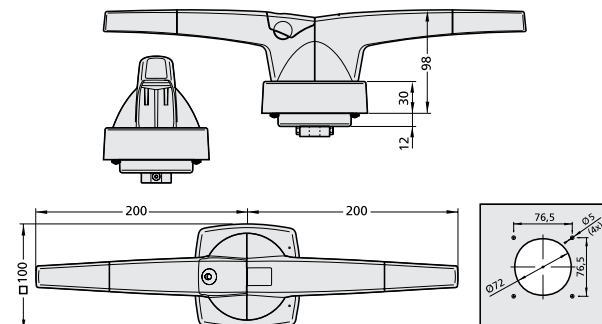
Type K2D & K2SD - versions available for both 6mm + 8mm square shafts



Type K4D - suitable for 12mm square shafts



Type K5D - suitable for 14mm square shafts



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

LV Switchgear accessories

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, 1NO + 1NC	1	1	6028293
Auxiliary contact to suit Q-Line switches - Frame size 1, 2, 1NO + 1NC	2	1	6028293
Auxiliary contact to suit Q-Line switches - Frame size 3, 1NO + 1NC	1	1	6101137

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 pole & 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



1314398



6028293



1314230



1319411



1319432



1319438



1319439



1319417



1318268

LV Switchgear accessories

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



1818111



1818033



1818055



1818104



1319831



1319332



1050247



1319398

LV Switchgear accessories

Q-line/Dumeco accessories

Side termination kits: QA & QSA switches



1319502



1319508



Switched Neutral



Solid Neutral

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.

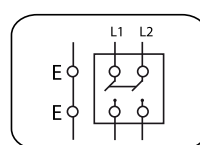
4th pole & neutral link kits: Q-Line switches

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

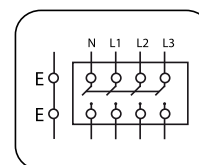
MEMPROOF Enclosed weather/dust proof isolators 20-63A

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 947.3 240/415Vac 50/60Hz
- 4 conduit/cable entries
- High Impact Strength
- Padlocking in the OFF position
- Includes double screw earth terminal



Double pole



Triple pole and Switched Neutral

Triple pole & switched neutral

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

Double pole

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



MP203N

LV Fuse gear

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 light 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 light cut-outs

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



The protection you rely on.

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.

BUSSMANN SERIES

British Standard (BS) Fuse Links and Fuse Holders

Fuse links for general industrial applications with Q1 fusing factor, general purpose (gG) and motor protection (gM) characteristics for general industrial and motor applications.

Standard: BS88 part 1 to 6, IEC 60269 part 1 and 2

Rated voltage: 415, 550 and 690Vac

Rated current: 2 to 1250A

Breaking capacity: 80kA

Operating class: gG and gM

Sizes: A1 to A4, B1 to B4, C1 to C3, D2, E1, F1 and F2 and non standard sizes

Fuse holders: Full range of fuse holders available (Red Spot, Camaster and Safeloc)

Applications: Residential, commercial and industrial



Bussmann series BS88 industrial fuse links

Item no.	Bussmann/GE 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				



NSD32

LV Fuse gear

Bussmann series BS88 industrial fuse links

Item no.	Bussmann/GE Item no.	Amps	Fuse holder	Volts	Dim	Box qty
SSD2	SS2	2		240	47.0mm	20
SSD4	SS4	4				
SSD6	SS6	6				
SSD10	SS10	10				
SSD16	SS16	16				
SSD20	SS20	20				
SSD25	SS25	25				
SSD32	SS32	32				
ESD2		2	63ENS* SC63*	550	68.0mm	20
ESD4		4				
ESD6		6				
ESD10		10				
ESD16		16				
ESD20		20				
ESD25		25				
ESD32		32				
ESD40	ES40	40	63ENS* SC63*	415	68.0mm	20
ESD50	ES50	50				
ESD63	ES63	63				
ESD63M80	ES63M80	63M80				
ESD63M100		63M100				
Offset bolted tags						
STD2	LST2	2		240	35.0mm	20
STD4	LST4	4				
STD6	LST6	6				
STD10	LST10	10				
STD16	LST16	16				
STD20	LST20	20				
STD25	LST25	25				
STD32	LST32	32				
NITD2	NIT2L	2	CM32FC RS20*	550	44.5mm	20
NITD4	NIT4L	4				
NITD6	NIT6L	6				
NITD10	NIT10L	10				
NITD16	NIT16L	16				
NITD20	NIT20L	20				
NITD25	NIT25L	25				
NITD32	NIT32L	32				
NITD20M25	NIT20M25L	20M25	CM32FC RS32*	415	44.5mm	20
NITD20M32	NIT20M32L	25M32				
NITD32M40	NIT32M40L	32M40				
NITD32M50	NIT32M50L	32M50				
NITD32M63	NIT32M63L	32M63				



SSD32



ESD63



STD10



NITD6

LV Fuse gear

Bussmann series BS88 industrial fuse links

Item no.	Bussmann/GE Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Offset bolted tags						
AAO2	TIA2L	2	CM32F RS32 RS63	550	73.5mm	20
AAO4	TIA4L	4				
AAO6	TIA6L	6				
AAO10	TIA10L	10				
AAO16	TIA16L	16				
AAO20	TIA20L	20				
AAO25	TIA25L	25				
AAO32	TIA32L	32				
AAO32M40	TIA32M40L	32M40				
AAO32M50	TIA32M50L	32M50				
AAO32M63	TIA32M63L	32M63				
BAO35	TIS35L	35	CM63F RS63	550	73.5mm	20
BAO40	TIS40L	40				
BAO50	TIS50L	50				
BAO63	TIS63L	63				
BAO63M80	TIS63M80L	63M80				
BAO63M100	TIS63M100L	63M100				
OSD80	OS80	80	CM100F	415	73.0mm	20
OSD100	OS100	100				
OSD100M125	OS100M125	100M125				
OSD100M160		100M160				
CEO32		32	RS100*	550	94.0mm	10
CEO40		40				
CEO50		50				
CEO63		63				
CEO80	TCP80L	80				
CEO100	TCP100L	100				
CEO100M125	TCP100M125L	100M125	RS100*	415	94.0mm	10
CEO100M160	TCP100M160L	100M160				
CEO100M200	TCP100M200L	100M200				
DEO125	TFP125L	125		415	94.0mm	5
DEO160	TFP160L	160				
DEO200	TFP200L	200				
DEO200M250	TFP200M250L	200M250				
DEO200M315	TFP200M315L	200M315				
Centre bolted tags - 2 hole fixing.						
AC2		2		550	97.5mm	20
AC4		4				
AC6		6				
AC10		10				
AC16		16				
AC20		20				
AC25		25				
AC32		32				
BC40		40				
BC50		50				
BC63		63				
BC63M80		63M80				
BC63M100		63M100				



AAO32



BAO63



OSD100



DEO200



AC32

LV Fuse gear

Bussmann series BS88 industrial fuse links

Item no.	Bussmann/GE Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Centre bolted tags - 2 hole fixing.						
AD2		2	RS200*	550	111.5mm	20
AD4		4				
AD6		6				
AD10		10				
AD16		16				
AD20		20				
AD25		25				
AD32		32				
BD40		40				
BD50		50				
BD63		63				
CD80	TC80L	80	RS200*	550	111.0mm	10
CD100	TC100L	100	RS200*	415	111.0mm	10
CD100M125		100M125				
CD100M160		100M160				
CD100M200		100M200	RS200*	415	111.0mm	5
DD125	TF125L	125				
DD160	TF160L	160				
DD200	TF200L	200				
DD200M250	TF200M250L	200M250				
DD200M315	TF200M315L	200M315				
ED250	TKF250L	250		415	111mm	1
ED315	TKF315L	315				
ED355	TMF355L	355				
ED400	TMF400L	400		550	111mm	1
ED315M400	TKF315M400L	315M400				
ED400M500		400M500				
EFS125		125	RS400*	415	133mm	1
EFS160		160				
EFS200		200				
EFS250	TKM250L	250				
Centre bolted tags - 4 hole fixing.						
EFS315	TKM315L	315		415	133/ 184mm	1
EF355	TM355L	355		415	133/ 184mm	1
EF400	TM400L	400		415		
EF400M500		400M500			550	
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				



AD32



DD200



ED315



EFS315



FF630

LV Fuse gear

Bussmann series BS88 industrial fuse links



GG710



200N20



NITD6



H07-660

Item no.	Bussmann/GE Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Centre bolted tags - 4 hole fixing.						
GF710	TLM710L	710		550	133/ 184mm	1
GF800	TLM800L	800				
GG710		710		550	167/ 231mm	1
GG800		800				
GG1000		1000				
GG1250		1250				
GH710		710		550	149mm	1
GH800		800				
GH1000		1000				
GH1250		1250				
Special tag arrangements - 660Vac / 400Vdc.						
125N20		125		660	92.5mm	1
160N20		160				
200N20		200				
250N20		250				
315N20		315				
355P20		355				
400P20		400				
450R20		450				
500R20		500				
560R20		560				
630R20		630				
710S20		710		550	92.5mm	1
800S20		800				
Offset bolted tags						
	NIT2	2	CM32FC RS20*	550	44.5mm	20
	NIT4	4				
	NIT6	6				
	NIT10	10				
	NIT16	16				
	NIT20	20				
	NET25	25	CM32FC RS32*	440	44.5mm	20
	NET32	32				
	NIT20M25	20M25	CM32FC RS32*	415	44.5mm	20
	NIT20M32	25M32				
	NIT32M40	32M40				
	NIT32M50	32M50				
	NIT32M63	32M63				
Offset bolted tags - 660V.						
2H07-660	TIA2	2	CM63F RS63*	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				

LV Fuse gear

Bussmann series BS88 industrial fuse links

Item no.	Bussmann/GE Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Offset bolted tags - 660V.						
	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				
2K09-660	TBC2	2	RS200*	660	111mm	1
4K09-660	TBC4	4				
6K09-660	TBC6	6				
10K09-660	TBC10	10				
16K09-660	TBC16	16				
20K09-660	TBC20	20				
25K09-660	TBC25	25				
32K09-660	TBC32	32				
40K09-660	TBC40	40				
50K09-660	TBC50	50				
63K09-660	TBC63	63				
	TBC63M100	63M100				
80L09-660	TC80	80	RS200*	660	111mm	20
100L09-660	TC100	100				
125M09-660	TF125	125		660	111mm	20
160M09-660	TF160	160				
200M09-660	TF200	200				
	TF200M250	200M250				
	TF200M315	200M315				
250N09-660	TKF250	250		660	111mm	1
315N09-660	TKF315	315				
	TKF315M355	315M355				



K07-660



L14-660



K08-660



L09-660



M09-660

LV Fuse gear

Bussmann series BS88 industrial fuse links and fuse holders

Item no.	Bussmann/GE Item no.	Amps	Fuse holder	Volts	Dim	Box qty
Centre bolted tags - 660V.						
355P09-660	TMF355	355		660	111mm	1
400P09-660	TMF400	400				
125N11-660		125		660	133mm	1
160N11-660		160				
200N11-660		200				
250N11-660	TKM250	250				
315N11-660	TKM315	315				
355P11-660	TM355	355		660	184 / 133mm	1
400P11-660	TM400	400				
450R11-660	TTM450	450		550	184 / 133mm	1
500R11-660	TTM500	500				
560R11-660	TTM560	560				
630R11-660	TTM630	630				
450R12-660	TT450	450		550	231 / 167mm	1
500R12-660	TT500	500				
560R12-660	TT560	560				
630R12-660	TT630	630				
	TLM670	670		660	184 / 133mm	1
	TLM710	710				
	TLM750	750				
	TLM800	800				
Item no.	Description	Amps	Fuse holder	Volts	Dim	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*			



SAFEloc

LV Fuse gear

Bussmann series BS88 industrial fuse links and fuse holders

Item no.	Description	Amps	Fuse holder	Volts	Dim	Box qty
CAMaster fuse holders						
CM32FC	Front wired		NITD	32	690	10
CM32F	Front wired		AAO	32		
CM63F	Front wired		BAO	63		5
CM100F	Front wired		OSD	100		
CM32FCW	Front wired, white		NITD	32	690	10
CM32FW	Front wired, white		AAO	32		
CM63FW	Front wired, white		BAO	63		5
CM100FW	Front wired, white		OSD	100		



CAMaster

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



CAMaster accessories - Studs

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				



Safeclip fuseholder - black



Safeclip fuseholder - white

LV Fuse gear

Bussmann series BS88 industrial fuse links and fuse holders



Red spot fuseholder - black



Red spot fuseholder - white



RS63LOCK

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

LV Fuse gear

Type J Feeder Pillar Fuse Links

Cylindrical type fuse links designed to be used with wedge type fuse carriers on BS applications. These fuse links will be used by Electrical Authorities in distribution pillars, open type substation boards, heavy duty cut-outs and underground connection boxes. Can also be fitted in pole or wall mounted outdoor service fuse links.

Standard:	BS88 Part 5
Rated voltage:	415Vac
Rated current:	20 to 800A
Breaking capacity:	80kA
Operating class:	gG
Sizes:	76, 82 and 92mm centres
Fuse holders:	Designed to be used with wedge type fuse carriers
Applications:	Utilities (Available in cylindrical slotted or non slotted tag versions)



Bussmann series BS88 'J' type industrial fuse links

Item no.	Amps	Fuse holder	Volts	Dim	Box qty
20MJ25-6	20				
32MJ25-6	32				
40MJ25-6	40				
63MJ25-6	63				
80MJ25-6	80		415	46 x 39 mm	5
100MJ25-6	100				
125MJ25-6	125				
160MJ25-6	160				
200MJ25-6	200				
250MJ25-6	250				
63MJ26-6	63				
80MJ26-6	80				
100MJ26-6	100				
125MJ26-6	125		415	76mm	5
160MJ26-6	160				
200MJ26-6	200				
250MJ26-6	250				
20MJ30-8	20				
32MJ30-8	32				
40MJ30-8	40				
50MJ30-8	50		415	82mm	5
63MJ30-8	63				
80MJ30-7	80				
100MJ30-7	100				
125MJ30-7	125				
160MJ30-7	160				
200MJ30-7	200				
250MJ30-7	250		415	82mm	5
315MJ30-7	315				
355PJ30-7	355				
400PJ30-7	400				
20MJ31-8	20				
25MJ31-8	25				
32MJ31-8	32				
40MJ31-8	40				
50MJ31-8	50				
63MJ31-8	63				
80MJ31-7	80				
100MJ31-7	100		415	92mm	5
125MJ31-7	125				
160MJ31-7	160				
200MJ31-7	200				
250MJ31-7	250				
315MJ31-7	315				
355PJ31-7	355				
400PJ31-7	400				



MJ30-8



MJ31-7

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

House Service Cut-Out Fuse Links and Fuse Holders

Cylindrical fuse links to be used in connection with house service cut-out for utility/residential applications. Modular fuse holders to be used with our KR85 and LR85 range.

Standard:	ASTA Certified and tested in accordance to BS1361 and AS2005
Rated voltage:	415Vac
Rated current:	20 to 100A
Breaking capacity:	33kA
Operating class:	gG
Sizes:	22.2 and 30.2mm
Fuse holders:	60/80SP for KR Series or 100SP for LR Series
Applications:	Protection of incoming cables into residential and commercial properties



Bussmann series BS88 industrial fuse links and fuse holders

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



House service fuse holder clear



House service fuse holder black

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



100KR85



80LR85

LV Fuse gear

Bussmann series BS88 industrial fuse links

Item no.	Amps	Fuse holder	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				



C180-5A

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		



C1520

Item no.	Description	Amps	Volts	Dim	Box qty
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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			



059-0144

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			

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

Bussmann series BS88 industrial fuse links



059-0114



059-0148



059-0123

Item no.	Description	Amps	Fuse holder	Volts	Dim	Box qty
Joint service / nato fuse links						
059-0114	Offset bolted tag	0.5		440	Tag 45mm Fix Ctr	25
059-0115	Offset bolted tag	1				
059-0116	Offset bolted tag	2				
059-0117	Offset bolted tag	3				
059-0118	Offset bolted tag	5				
059-0119	Offset bolted tag	7				
059-0120	Offset bolted tag	10				
059-0121	Offset bolted tag	15				
011-9679	Offset bolted tag	20				
012-0140	Offset bolted tag	30				
059-0148	Ferrule	10		440	16.7 X 38 mm	25
059-0149	Ferrule	15				
059-0150	Ferrule	20				
059-0151	Ferrule	30				
059-0122	Offset bolted tag	10		440	Tag 56mm Fix Ctr	25
059-0123	Offset bolted tag	15				
059-0124	Offset bolted tag	20				
059-0125	Offset bolted tag	30				
012-0067	Offset bolted tag	40				
011-9127	Offset bolted tag	50				
012-0141	Offset bolted tag	60				

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



HD36



RSL63H

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

LV Fuse gear

IEC Cylindrical Fuse Links and Fuse Holders

Cylindrical fuse links for industrial applications, class gG. Available with indicator or striker.
Cylindrical fuse links for industrial applications, class aM (Motor protection). Available with indicator.
Modular fuse holders specifically designed for the protection of general industrial and commercial applications such as power distribution, lighting, cable and motor protection.

Standard:	IEC 60269
Rated voltage:	400, 500 and 690Vac
Rated current:	0.5 to 125A
Breaking capacity:	20 to 120kA
Operating class:	gG and gM
Sizes:	8x31, 10x38, 14x51 and 22x58mm
Fuse holders:	Full range of fuse holders available (CH Series)
Applications:	Industrial and commercial



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		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	CHM1DU	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

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	8
CCP-3-30M	C10G, C10M			3	
CCP-1-DCM	PVM		80Vdc	1	
CCP-PLC-IND	Remote fuse indicator				
CCP-AUX	Auxillarm contact				
DIN industrial fuse links - 500V - gG.					

C08G

C10G

C14G

C22M

CHM1DU

CCP - compact circuit protector

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

NH DIN Industrial Fuse Links & Bases

A square bodied range of industrial fuse links for a wide variety of applications.

NH fuse bases with thermoplastic bodies, DIN rail and/or screw mounting (size 4 screw mounting only).

Range of accessories including phase barriers, IP20 finger-safe protection kits and neutral links available.

Standard: IEC 60269 and VDE 0636

Rated voltage: 400, 500 and 690Vac

Rated current: 2 to 1250A

Breaking capacity: 120kA

Operating class: gG and aM

Sizes: 000 to 4 (size 4 bolted only version)

Fuse holders: Available for all fuse links sizes

Applications: Industrial & commercial (Available with Dual Indication and Insulated Metal Gripping Lugs)



Bussmann series DIN industrial fuses & fuse holders

Item no.	Type	Fuse holder	Amps	Volts	Size	Box qty
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 (Stand-ard)	SD1-D TD1-D	10	500	1	3
16NHG01B			16			
20NHG01B			20			
25NHG01B			25			
32NHG01B			32			
40NHG01B			40			
50NHG01B			50			
63NHG01B			63			
80NHG01B			80			
100NHG01B			100			
125NHG01B			125			
160NHG01B			160			
200NHG1B			200			
224NHG1B			224			
250NHG1B			250			
50NHG02B	gG/gL (Standard)	SD2-D TD2-D	50	500	2	3
63NHG02B			63			
80NHG02B			80			
100NHG02B			100			
125NHG02B			125			
160NHG02B			160			
200NHG02B			200			
224NHG02B			224			
250NHG02B			250			
315NHG2B			315			
355NHG2B			355			
400NHG2B			400			
DIN industrial fuse links - 500V - gG.						



NHG000B



NHG01B



NHG02B

LV Fuse gear

Bussmann series DIN industrial fuses & fuse holders

Item no.	Type	Fuse holder	Amps	Volts	Size	Box qty
250NHG03B	gG/gL (Standard)	SD3-D TD3-D	250	500	3	3
315NHG03B			315			
355NHG03B			355			
400NHG03B			400			
500NHG3B			500			
630NHG3B			630			



NHG03B

DIN industrial fuse links - 690V - gG.						
10NHG000B-690	gG/gL (Standard)	SD00-D TD00-D	10	690	000	3
16NHG000B-690			16			
20NHG000B-690			20			
25NHG000B-690			25			
32NHG000B-690			32			
40NHG000B-690			40			
50NHG00B-690	gG/gL (Standard)	SD00-D TD00-D	50	690	00	3
63NHG00B-690			63			
80NHG00B-690			80			
100NHG00B-690			100			



NHG000B-690

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	gG/gL (Standard)	SD3-D TD3-D	224	690	3	3
250NHG2B-690			250			
315NHG2B-690			315			
250NHG3B-690			250			
315NHG3B-690			315			
355NHG3B-690			355			
400NHG3B-690	gG/gL (Standard)	SD3-D TD3-D	400	690	3	3
500NHG3B-690			500			



NHG1B-690

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	aM (Motor start)	SD00-D TD00-D	40	690	00	3
50NHM00B-690			50			
63NHM00B-690			63			
80NHM00B-690			80			
100NHM00B-690	aM (Motor start)	SD1-D TD1-D	100	690	1	3
50NHM1B-690			50			
63NHM1B-690			63			
80NHM1B-690			80			
100NHM1B-690			100			
125NHM1B-690			125			
160NHM1B-690			160			



6NHM000B-690

LV Fuse gear

Busmann series DIN industrial fuses & fuse holders



NHM2B-690

Item no.	Type/Description	Fuse holder	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	aM (Motor start)	SD3-D TD3-D	250	690	3	3
250NHM3B-690			315			
315NHM3B-690			355			
355NHM3B-690			400			
400NHM3B-690			500			

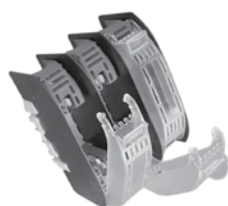
Fuse holders to suit DIN industrial fuse links

SD00-D	Single pole base	160	690	00	1
SD1-D		250	690	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	



TD00-D

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

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

Item no.	Description	Poles	Amps	Volts	Size	Box qty
EBH00O3TM8	Horizontal disconnect	3	160	690	00	-
EBH1O3TM1		3	250		1	
EBH2O3TM1		3	400		2	
EBH3O3TM2		3	630		3	

LV Fuse gear

D & DO Fuse Links and Fuse Bases

Class gG D and DO fuse links for industrial and domestic applications. All these fuse links incorporate a visual indicator of fuse operation.

Standard:	IEC 60269 and VDE 0636
Rated voltage:	400 and 500Vac
Rated current:	2 to 100A
Breaking capacity:	50kA
Operating class:	Time-delay and ultra-rapid
Sizes:	D1 to DV, D01 to D03
Fuse holders:	Available for all fuse links sizes
Applications:	Industrial & commercial (DIN rail mounting with accessories available: screw caps, gauge rings, etc.)



Bussmann series DIN industrial fuses & fuse holders

Item no.	Description	Body dim	Amps	Volts	Size	Box qty
2NZ01	Neozed fuse links	36 X 11mm	2	440	D01	5
4NZ01	Neozed fuse links		4			
6NZ01	Neozed fuse links		6			
10NZ01	Neozed fuse links		10			
16NZ01	Neozed fuse links		16			
20NZ02	Neozed fuse links	36 X 15mm	20	440	D02	5
25NZ02	Neozed fuse links		25			
35NZ02	Neozed fuse links		35			
50NZ02	Neozed fuse links		50			
63NZ02	Neozed fuse links		63			
80NZ03	Neozed fuse links	43 X 22.5mm	80	440	D03	5
100NZ03	Neozed fuse links		100			
2NZ01R	Neozed fuse links - ultra rapid	36 X 11mm	2	440	D01	5
4NZ01R	Neozed fuse links - ultra rapid		4			
6NZ01R	Neozed fuse links - ultra rapid		6			
10NZ01R	Neozed fuse links - ultra rapid		10			
16NZ01R	Neozed fuse links - ultra rapid		16			
20NZ02R	Neozed fuse links - ultra rapid	36 X 15mm	20	440	D02	5
25NZ02R	Neozed fuse links - ultra rapid		25			
35NZ02R	Neozed fuse links - ultra rapid		35			
50NZ02R	Neozed fuse links - ultra rapid		50			
63NZ02R	Neozed fuse links - ultra rapid		63			
2D16	Diazed fuse links - standard	50 x 13mm	2	500	D1	5
4D16	Diazed fuse links - standard		4			
6D16	Diazed fuse links - standard		6			
10D16	Diazed fuse links - standard		10			
16D16	Diazed fuse links - standard		16			
20D16	Diazed fuse links - standard		20			
25D16	Diazed fuse links - standard		25			
2D27	Diazed fuse links - standard	50 x 21.5mm	2	500	D11	5
4D27	Diazed fuse links - standard		4			
6D27	Diazed fuse links - standard		6			
10D27	Diazed fuse links - standard		10			
16D27	Diazed fuse links - standard		16			
20D27	Diazed fuse links - standard		20			
25D27	Diazed fuse links - standard		25			
35D33	Diazed fuse links - standard	50 x 27mm	35	500	D111	5
50D33	Diazed fuse links - standard		50			
63D33	Diazed fuse links - standard		63			
80D125	Diazed fuse links - standard	50 x 33mm	80	500	D1V	1
100D125	Diazed fuse links - standard		100			



NZ01



16D27

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

Bussmann series DIN industrial fuses & fuse holders

Item no.	Description	Body dim	Amps	Volts	Size	Box qty
125D200	Diazed fuse links - standard	50 x 46mm	125	500	DV	1
160D200	Diazed fuse links - standard		160			
200D200	Diazed fuse links - standard		200			
2D16Q	Diazed fuse links - quick	50 x 13mm	2	500	D1	5
4D16Q	Diazed fuse links - quick		4			
6D16Q	Diazed fuse links - quick		6			
10D16Q	Diazed fuse links - quick		10			
16D16Q	Diazed fuse links - quick		16			
20D16Q	Diazed fuse links - quick		20			
25D16Q	Diazed fuse links - quick		25			
2D27Q	Diazed fuse links - quick	50 x 21.5mm	2	500	D11	5
4D27Q	Diazed fuse links - quick		4			
6D27Q	Diazed fuse links - quick		6			
10D27Q	Diazed fuse links - quick		10			
16D27Q	Diazed fuse links - quick		16			
20D27Q	Diazed fuse links - quick		20			
25D27Q	Diazed fuse links - quick		25			
35D33Q	Diazed fuse links - quick	50 x 27mm	35	500	D111	5
50D33Q	Diazed fuse links - quick		50			
63D33Q	Diazed fuse links - quick		63			
2D16R	Diazed fuse links - ultra rapid	50 x 13mm	2	500	D1	5
4D16R	Diazed fuse links - ultra rapid		4			
6D16R	Diazed fuse links - ultra rapid		6			
10D16R	Diazed fuse links - ultra rapid		10			
16D16R	Diazed fuse links - ultra rapid		16			
20D16R	Diazed fuse links - ultra rapid		20			
25D16R	Diazed fuse links - ultra rapid		25			
2D27R	Diazed fuse links - ultra rapid	50 x 21.5mm	2	500	D11	5
4D27R	Diazed fuse links - ultra rapid		4			
6D27R	Diazed fuse links - ultra rapid		6			
10D27R	Diazed fuse links - ultra rapid		10			
16D27R	Diazed fuse links - ultra rapid		16			
20D27R	Diazed fuse links - ultra rapid		20			
25D27R	Diazed fuse links - ultra rapid		25			
35D33R	Diazed fuse links - ultra rapid	50 x 27mm	35	500	D111	5
50D33R	Diazed fuse links - ultra rapid		50			
63D33R	Diazed fuse links - ultra rapid		63			

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



6D16Q



25D16R



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LV Fuse gear

North American Fuse Links and Fuse Holders

Standard:	UL Listed and CSA Certified
Rated voltage:	Up to 600Vac
Rated current:	0.1 to 6000A
Breaking capacity:	Up to 300kA
Operating class:	Time-delay, fast-acting as per UL requirements
Sizes:	Midget, Class CC, G, H, J, K5, H, L, RK5, RK1 and T
Fuse holders:	Modular Fuse Holder (finger protection) for Midget and Class CC fuse links Finger-safe protected fuse base for Class J fuse links
Applications:	Suitable for applications or equipments to be exported to the USA or other UL markets



Bussmann series North American fuse links & fuse holders.

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, 12, 15	10 x 38mm	250	T/Delay	10
	20, 25, 30		125		
			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	
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				
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			

BAF

FNA

KTK-R



SC

Item no.	Amp	Volts	Poles	Box qty
Fuseholders to suit supplementary power fuse links.				
BM6031SQ	30	600	1	1
BM6033SQ			3	
Fuseholders to suit supplementary power fuse links - Class CC.				
BC6031SQ	30	600	1	1
BC6033SQ			3	

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

Bussmann series North American fuse links & fuse holders.



JUN



JJS



T60030-3CR



H30100-1SR

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			
	Power fuse links - general purpose				
NON (A)	0.125, 0.5, .75, 1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 10,12, 15, 20, 25, 30	10 x 51	250	Non Delay	10
	35, 40, 45, 50, 60	21 x 76			
	70, 80, 90, 100	149.0	250	Non Delay	1
	110, 125, 150, 175, 200	181.0			
	225, 250, 300, 350, 400	219.0			
	450, 500, 600	264.0			
NOS (A)	1, 2, 2.5, 3, 4, 5, 6, 7, 8, 10, 12, 15, 20, 25, 30	21 x 127	600	Non Delay	10
	35, 40, 45, 50, 60	27 x 140			
	70, 80, 90, 100	200.0	600	Non Delay	1
	110, 125, 150, 175, 200	244.0			
	225, 250, 300, 350, 400	295.0			
	450, 500, 600	340.0			

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

LV Fuse gear

Bussmann series North American fuse links & fuse holders.

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			250
	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			600
	110, 125, 150, 175, 200	245.0			
	225, 250, 300, 350, 400	295.0			
	450, 500, 600	340.0			
Power fuse links - Class J low peak.					
LPJ- (A) SP	1 to 30	21 X 58	600	Dual element, time delay	10
	35, 40, 45, 50, 60	27 X 60			
	70, 80, 90, 100	92.0			600
	110, 125, 150, 175, 200	111.0			
	225, 250, 300, 350, 400	133.0			
	450, 500, 600				
JKS- (A)	1 to 30	21 X 58	600	Quick acting	10
	35, 40, 45, 50, 60	27 X 60			
	70, 80, 90, 100	92.0			600
	110, 125, 150, 175, 200	111.0			
	225, 250, 300, 350, 400	133.0			
	450, 500, 600	152.0			



LPN-RK



LPS-RK



KTN-R



KTS-R



FRN-R



FRS-R



LPJ



JKS

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

Bussmann series North American fuse links & fuse holders.



KTU



KRP-C

Item no.	Amp rating	Size	Volts	Type	Box qty
Power fuse links - Class L low peak.					
KTU (A)	601 to 1200	Contact cooper electrical for size	600	Fast act- ing type	1
	1500, 2000				
	2500, 3000				
	3500, 4000				
	4500, 5000				
	6000				
KLU (A)	601 to 1200	Contact cooper electrical for size	600	Time de- lay type	1
	1500, 1600				
	1800, 2000				
	2500, 3000				
	4000				
KRP-C (A) SP	601 to 1200	Contact cooper electrical for size	600	Time de- lay type	1
	1350, 1400, 1500, 1600, 1800, 1900, 2000				
	2001, 2400, 2500, 3000				
	3500, 3800, 4000				
	4500, 5000				
	6000				



R300



J600

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			2	
R30060-3CR	60	300	3	
R30100-1CR			1	
R30100-3CR			3	
R60030-1CR	30	600	1	
R60030-3CR			3	
R60060-1CR			1	
R60060-3CR	60	600	3	
R60100-1CR			1	
R60100-3CR			3	
Fuse holders to suit power fuse links - Class RK1 & RK5.				
J60030-1CR	30	600	1	1
J60030-3CR			3	
J60060-1CR			1	
J60060-3CR	60	600	3	
J60100-1CR			1	
J60100-3CR			3	

LV Fuse gear

Ferrule Style Fuse Links

Standard:	UL/CSA
Rated voltage:	700Vac. DC ratings available
Rated current:	1 to 100A
Breaking capacity:	20kA
Operating class:	aR
Sizes:	From to 6x32 to 25x146mm
Applications:	Used for the protection of DC common bus, DC drives, power converters/rectifiers and reduced voltage starters



Bussmann series high speed fuse links.

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	



FWA-5A10F



FWA-45A21F



FWX-15A14F

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

Bussmann series high speed fuse links.



FWH-500A6F



FWC-6A10F



FWP-1A14F



FWP-25A22F

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

LV Fuse gear

Bussmann series high speed fuse links.

Item no.	Description	Body dim	Amps	Volts	I ² T	Box qty
High speed fuse links - ferrule type.						
FWP-20A22FI	With indicator	22 x 58	20	700 Vac / Vdc	260	10
FWP-25A22FI			25		410	
FWP-32A22FI			32		605	
FWP-40A22FI			40		750	
FWP-50A22FI			50		1600	
FWP-63A22FI			63		3080	
FWP-80A22FI			80		6600	
FWP-100A22FI			100		12500	
FWJ-20A14F		14 x 67		1000Vac / 800Vdc		10
FWJ-25A14F						
FWJ-30A14F						
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 1000Vdc	2760	
FWL-30A20F			30		4300	
FWS-2A20FI	With indicator	20 x 127mm	2	2000Vac	2.4	10
FWS-6A20FI			6	1000Vdc	81	
FWS-8A20FI			8		192	
FWS-10A20FI			10	1500Vac	277	
FWS-12A20FI			12	1000Vdc	380	
FWS-15A20FI			15		500	
FWL-20A20FI			20		1550	
FWL-25A20FI			25	1250Vac 1000Vdc	2760	
FWL-30A20FI			30		4300	



FWJ-25A14F



FWS-6A20F



FWS-12A20FI

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

British Standard high speed Fuse Links

Standard: BS88 part 4 and IEC 60269-4

Rated voltage: 240 and 690Vac

Rated current: 6 to 710A

Breaking capacity: 200kA

Operating class: aR

Sizes: Refer to relevant data sheets, available upon request

Applications: Used for the protection of DC common bus, DC drives, power converters/rectifiers and reduced voltage starters

Bussmann series high speed fuse links.

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	
6CT	GSB5	64mm	6	690Vac 500Vdc	12	20
10CT	GSB10		10		48	
12CT			12		65	
16CT	GSB15		16		110	
20CT	GSB20		20		220	



10LCT



100LET



400LMMT



20CT

LV Fuse gear

Bussmann series high speed fuse links.

Item no.	Description	Fix ctrs	Amps	Volts	I ² T	Box qty
High speed fuse links - British standard.						
25ET	GSG25	64mm	25	690Vac 500Vdc	250	10
32ET	GSG30		32		350	
35ET	GSG35		35		500	
40ET	GSG40		40		900	
45ET	GSG45		45		1100	
56ET	GSG55		56		1500	
63ET	GSG63		63		2000	
80ET	GSG80		80		4000	
35FE	GSG35	64mm	35	690Vac 500Vdc	200	10
40FE	GSG40		40		300	
45FE	GSG45		45		450	
50FE	GSG50		50		600	
63FE	GSG55		63		750	
71FE			71		950	
80FE	GSG80		80		1500	
90FE	GSG85		90		2100	
100FE			100		2800	
75EET	GSG75	70mm	75	690Vac 500Vdc		5
90EET	GSG85		90		4500	
110EET	GSG110		110		6500	
140EET	GSG150		140		12000	
160EET	GSG160		160		17000	
100FEE		70mm	100	690Vac 500Vdc	2400	5
120FEE	GSG125		120		3100	
140FEE	GSG125		140		3800	
160FEE	GSG160		160		5700	
180FEE			180		8400	
200FEE			200		11400	
180FM	GSG170	85mm	180	690Vac 500Vdc	13500	1
200FM	GSG200		200		18500	
225FM	GSG225		225		26500	
250FM	GSG250		250		37500	
280FM			280		55000	
315FM	GSG315		315		77000	
350FM	GSG325		350		105000	
400FMM	GSG400	85mm	400	690Vac 500Vdc	72500	1
450FMM			450		105000	
500FMM	GSG500		500		150000	
550FMM			550		215000	
630FMM			630		310000	
700FMM			700		420000	



35ET



90EET



180FM



400FMM

LV Fuse gear

Bussmann series high speed fuse links.



200MT



315MMT

Item no.	Description	Fix ctrs	Amps	Volts	I²T	Box qty
High speed fuse links - British standard.						
165MT	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	
180MMT		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					1
TI250	Trip Indicator Fuse			250		
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			

LV Fuse gear

North American hi speed Fuse Links

Standard:	UL/CSA
Rated voltage:	Up to 600Vac
Rated current:	1 to 6000A
Breaking capacity:	200kA
Operating class:	Fast acting
Sizes:	Refer to relevant data sheets, available upon request
Applications:	Suitable for medium power applications for UL markets



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.						
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	A15QS L15S	62mm	400	150 Vac /Vdc	180000	1
FWA -450B			450		-	
FWA -500A			500		120000	
FWA -600A			600		140000	
FWA -700A			700		220000	
FWA -800A			800		280000	
FWA -1000A			1000		510000	
FWA-1000AH	A30QS A25P(A)-4 L25S	48 x 51	1000	150 Vac /Vdc	460000	1
FWA-1200AH			1200		730000	
FWA-1500AH			1500		1400000	
FWA-2000AH		48 X 75	2000		2400000	
FWA-2500AH			2500		4100000	
FWA-3000AH	A30QS A25P(A)-4 L25S	48 x 89	3000		5700000	1
FWA-4000AH		48 x 89	4000		9200000	
FWX-35A	A30QS A25P(A)-4 L25S	61mm	35	250 Vac /Vdc	230	1
FWX-40A			40		310	
FWX-45A			45		390	
FWX-50A			50		520	
FWX-60A			60		740	
FWX-70A		58mm	70		1400	
FWX-80A			80		1850	
FWX-90A			90		2450	
FWX-100A			100		3150	
FWX-125A			125		4850	
FWX-150A	A30QS A25P(A)-4 L25S	58mm	150		6950	1
FWX-175A			175		9300	
FWX-200A			200		12000	



FWA-400B



FWA-2000AH



FWX-600A



FWX-160AH

LV Fuse gear

Bussmann series high speed fuse links.



FWX-1600AH



FWH-150B

Item no.	Description	Fix ctrs	Amps	Volts	I ² T	Box qty
High speed fuse links - North American standard.						
FWX-225A	A30QS A25P(A)-4 L25S	66mm	225	250 Vac / Vdc	14700	1
FWX-250A			250		18100	
FWX-275A			275		21600	
FWX-300A			300		27300	
FWX-350A			350		48600	
FWX-400A			400		66100	
FWX-450A		69mm	450		101000	
FWX-500A			500		128000	
FWX-600A		66 x 89	600	250 Vac / Vdc	188000	
FWX-700A			700		190000	
FWX-800A		66 x 75	800		230000	
FWX-1000AH			1000		360000	
FWX-1200AH		66 x 75	1200		750000	
FWX-1500AH			1500		880000	
FWX-1600AH			1600		1200000	
FWX-2000AH			2000		2300000	
FWX-2500AH			2500		4700000	
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	A50QS A50P L50S	73mm	150	500 Vac / Vdc	4600	
FWH-175B		73mm	175		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 / 228 mm	1400		1000000	
FWH-1600A		158 / 228 mm	1600		1400000	

LV Fuse gear

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-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	A70QS A70P L70S	98mm	150	700 Vac / Vdc	11700	
FWP-175A		98mm	175		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

LV Fuse gear

Square Body Fuse Links

A square bodied range of industrial fuse links for a wide variety of applications.

NH fuse bases with thermoplastic bodies, DIN rail and/or screw mounting (size 4 screw mounting only).

Range of accessories including phase barriers, IP20 finger-safe protection kits and neutral links available.

Standard: IEC 60269-4, DIN 43653 and 43620, UL Recognition and CSA Component acceptance

Rated voltage: 690 and 1250Vac, higher voltage ratings available

Rated current: 10 to 7500A

Breaking capacity: Up to 300kA

Operating class: aR

Sizes: 000, 00, 1 to 5

Applications: Used for the protection of DC common bus, DC drives, power converters/rectifiers and reduced voltage starters. Customs solutions also available



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			10		25.5	
170M1559D			16		48	
170M1560D			20		78	
170M1561D			25		130	
170M1562D			32		270	
170M1563D			40		460	
170M1564D	aR	000	50	690	770	10
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			40		285	
170M3809D			50		550	
170M3810D			63		850	
170M3811D			80		1350	
170M3812D			100		2600	
170M3813D			125		3900	
170M3814D			160		8250	
170M3815D	aR	1	200	690	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			400		79000	
170M5809D			450		115000	
170M5810D			500		155000	
170M5811D			550		215000	
170M5812D	aR	2	630	690	295000	
170M5813D			700		430000	
170M5814D			800		610000	
170M5815D			900		895000	
170M5816D			1000		1300000	
170M5817D			1100		1750000	

170M1558D

170M3808D

170M5808D

LV Fuse gear

Bussmann series high speed fuse links.

Item no.	Description	Size	Amps	Volts	I²T	Box qty
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	
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	2	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	3	350	690	120000	
170M6081			400		175000	
170M6082			450		250000	
170M6083			500		330000	
170M6084			550		435000	
170M6085			630		645000	
170M6086			700		840000	
170M6087			800		1300000	



170M6808D



170M2691



170M4176



170M5881



170M6080

LV Fuse gear

Bussmann series high speed fuse links.



170M1480



170M4116



170M5108

Item no.	Description	Size	Amps	Volts	I ² T	Box qty
High speed fuses - DIN standard - 80mm fixing.						
170M1408			10		25.5	
170M1409			16		48	
170M1410			20		78	
170M1411			25		130	
170M1412			32		270	
170M1413			40		460	
170M1414			50		770	
170M1415	aR	000	63	690	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			40		270	
170M3109			50		515	
170M3110			63		770	
170M3111			80		1250	
170M3112			100		2450	
170M3113			125		3700	
170M3114			160		7500	
170M3115	aR	1*	200	690	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			200		11500	
170M4109			250		21000	
170M4110			315		42000	
170M4111			350		59000	
170M4112			400		91500	
170M4113	aR	1	450	690	120000	
170M4114			500		170000	
170M4115			550		230000	
170M4116			630		350000	
170M4117			700		465000	
170M4118			800		725000	
170M4119	aR	1	900	550	850000	
170M5108			400		74000	
170M5109			450		105000	
170M5110			500		145000	
170M5111			550		190000	
170M5112			630		275000	
170M5113	aR	2	700	690	405000	
170M5114			800		575000	
170M5115			900		840000	
170M5116			1000		1250000	
170M5117			1100		1600000	
170M5118			1250		2400000	

LV Fuse gear

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	
170M5258			400		74000	
170M5259			450		105000	
170M5260			500		145000	
170M5261			550		190000	
170M5262			630		275000	
170M5263	aR	2	700	690	405000	
170M5264			800		575000	
170M5265			900		840000	
170M5266			1000		1250000	
170M5267			1100		1600000	
170M5268			1250		2400000	



170M6109



170M3258



170M4258

LV Fuse gear

Bussmann series high speed fuse links.

Item no.	Description	Size	Amps	Volts	I²T	Box qty
High speed fuses - DIN standard - 110mm fixing.						
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	
170M3470	aR	1	450	690	140000	
170M3471			500		180000	
170M3472			550		230000	
170M3473			630		325000	
170M4458			200		11500	
170M4459			250		21000	
170M4460			315		42000	
170M4461			350		59000	
170M4462			400		91500	
170M4463			450		120000	
170M4464			500		170000	
170M4465			550		230000	
170M4466			630		350000	
170M4467			700		465000	
170M4468			800		725000	

170M5258



170M6258



170M2758



170M3462



LV Fuse gear

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.						
170M4469	aR	1	900	550	850000	
170M5458			400		74000	
170M5459			450		105000	
170M5460			500		145000	
170M5461			550		190000	
170M5462	aR	2	630	690	275000	
170M5463			700		405000	
170M5464			800		575000	
170M5465			900		840000	
170M5466			1000		1250000	
170M5467	aR	2	1100	600	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	
Fuse holders to suit High speed fuse links						
170H3003	To suit 80mm		630	1000		
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			



170M5458



170M6462



170H3004

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

Bussmann series Glass tube fuse links

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	32 to 10A	250	Ceramic	Fast T/Delay
S501-(A)-R	32 to 10A	250	Ceramic	Fast T/Delay
S505-(A)-R	32 to 10A	250	Ceramic	Fast T/Delay
3AG fuse links - 6.3 X 32mm.				
Fast-acting, glass tube				
Optional axial leads available				
1/4 x 1-1/4 (6.3mm x 32mm) physical size				
Glass tube, nickel-plated brass endcap construction				
UL Listed product meets standard 248-14				
AGC-(A)	1/4 to 10A 15 to 50A	250 32	Glass	Fast
3AG fuse links - 6.3 X 32mm.				
Time-delay				
Optional axial leads available				
1/4 x 1 1/4 (6.4 x 31.7mm) physical size				
Glass tube, nickel-plated brass endcap construction				
UL Listed product meets standard 248-14				
MDL-(A)	1/4 to 8A 15, 20, 25, 30, 35, 40, 50	250 32	Glass	T/Delay
3AG fuse links - 6.3 X 32mm.				
ABC-(A)	1/4 to 30A	250	Ceramic	Fast T/Delay
MDA-(A)	1/4 to 30A	250	Ceramic	Fast T/Delay
1AG fuse links - 6.3 X 16mm.				
Fast acting				
1/4" x 5/8" (6.3mm x 15.9mm) physical size				
Glass tube, nickel-plated brass endcap construction				
Optional leaded version available				
UL Listed product meets standard 248-14				
AGA-(A)	630mA to 5A 6 to 30A	250 32	Glass	Fast
7AG fuse links - 6.3 X 22mm.				
Fast-acting				
1/4" x 7/8" (6.3 x 22.2mm) physical size				
Glass tube, nickel-plated brass endcap construction				
Mounts in inline holders HHB, HHH, HRK or 1/4" clips				
AGW-(A)	1 to 30A	32	Glass	Fast
8AG fuse links - 6.3 X 25mm.				
AGX-(A)	1/1 to 2A 2.5 to 7A 8 to 30A	250 125 32	Glass	Fast
5AG fuse links - 10.3 X 38mm.				
AGU-(A)	1 to 3A 4 to 30A	250 32	Glass	Fast
Fuse holders.				
HTC-55M	6.3	250	Panel mount	M205
HKP	30	250	Panel mount	3AG



AGC



AGW



AGU



HKP

LV Fuse gear

Bussmann series Surge protection

Eaton's Bussmann™ series one-pole IEC Class II modular surge arresters for TN and TT systems feature local easyID™ visual status indication and optional remote contact signaling. The unique module locking system fixes the protection module to the base.

System volts: 275, 320, 385, 440, 600

The unique nature of Photovoltaic (PV) installations make them vulnerable to damage from lightning strikes and overvoltage events. Bussmann® series DIN-Rail PV Surge Protection Devices (SPDs) combine surge and lightning protection for complete PV protection from overvoltage events.

PV SPD with integrated overcurrent protection ensures complete device isolation for enhanced system safety

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 fuse kits

Item no.	Description
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

Bussmann series automotive

Item no.	Amp rating	Volts	Type	MOQ
Automotive Blade Fuses				
The ATL, ATR, ATM, ATC and MAX blade fuses are commonly used in most domestic and imported cars today. All Bussmann blade fuses meet or exceed OEM and SAE standards				
ATM-(A)	2, 3, 4, 5, 7.5, 10, 15, 20, 25, 30	32	Fast Mini	5
ATM-(A)LP	5, 7.5, 10, 15, 20, 25, 30	32	Fast Lo Profile	5
ATC-(A)	1, 2, 3, 4, 5, 7.5, 10, 15, 20, 25, 30, 40	32	Fast Std	5
MAX-(A)	20, 30, 40, 50, 60, 70, 80	32	Fast Large	1
AMI-(A)	100-300A	32		
AMG-(A)	50-100A			
HMID	Fuseholder to suit AMI		1	
HMEG	Fuseholder to suit AMG		1	
Automotive Low-Voltage Limiter				
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			



ATM-(A)



MAX-(A)



ANL (A)

Low Voltage Circuit Protection & Switchgear

LV Fuse gear

Bussmann series solar products.

Bussmann series solar products.

Eaton's Bussmann series range of 14 x 51 mm package fuse links is specifically designed for protecting an isolating photovoltaic strings. These fuse links are capable of interrupting low overcurrents associated with faulted PV systems (reverse current, multi array fault).

Rated voltage: 1000 V d.c. (25 and 32 A)
1100 V d.c. (15 and 20 A)

Rated current: 15 to 32 A

Breaking capacity: 10 kA

Operating class: gPV and UL PV fuse links



CHPV2U



PV-1A10F



SD2-D-PV

Item no.	Description	Body dim	Amps	Volts	Box qty
Photovoltaic fuse links - ferrule fuse holders.					
CHPV1U		10 X 38mm	30	1000 Vdc	12
CHPV2U					6
CHPV1IU	With indicator	10 X 38mm	30	1000	12
CHPV2IU					6
CH141D-PV		10 X 38mm	30	1000 Vdc	6

Photovoltaic fuse links

PV-1A10F			1		
PV-2A10F			2		
PV-3A10F			3		
PV-4A10F			4		
PV-5A10F			5		
PV-6A10F	Solar fuse - ferrule	10 X 38mm	6	1000 Vdc	10
PV-8A10F			8		
PV-10A10F			10		
PV-12A10F			12		
PV-15A10F			15		
PV-20A10F			20		
PV-15A14F			15		
PV-20A14F	Solar fuse - ferrule	14 X 51mm	20		
PV-25A14F			25		
PV-32A14F			32		
PV-15A14LF			15		
PV-20A14LF	Solar fuse - ferrule	14 X 65mm	20	1300 Vdc	10
PV-25A14LF			25		
PV-32A14LF			32		

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

LV Fuse gear

Bussmann series solar products.

Bussmann series solar products.

Eaton's Bussmann series NH size and XL package photovoltaic fuse links are specifically designed to protect and isolate photovoltaic array combiners and disconnects. These fuse links are capable of interrupting low overcurrents associated with faulted PV systems (reverse current, multi-array fault).

Rated voltage:	NH - 1000 V d.c. XL - 1000, 1100, 1200, 1500 V d.c.
Rated current:	NH - 32 to 400 A XL - 50 to 600 A
Breaking capacity:	NH - 50 kA XL - 1000 V d.c. (Size 01 and 3: 50kA, Size 1 and 2: 33kA) 1500 V d.c. : 30kA
Operating class:	gPV and UL PV fuse links

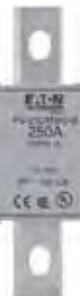
Item no.	Description	Amps	Volts	Body size	Box qty
Photovoltaic fuse links.					
PV-32ANH1	Solar fuse - blade	32	1000 Vdc	1	1
PV-40ANH1		40			
PV-50ANH1		50			
PV-63ANH1		63			
PV-80ANH1		80			
PV-100ANH1		100			
PV-125ANH1		125			
PV-160ANH1	Solar fuse - blade	160	1000 Vdc	01	1
PV-63A-01XL		50			
PV-80A-01XL		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-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-200ANH1



PV-250ANH2



PV-250ANH2-B



PV-250A2XL-D

MV Fuse gear

Bussmann series medium voltage fuse links.

Air Fuse Links

Standard: BS 2692-1
 Rated voltage: 3.6 to 72.5kV
 Rated current: 3.15 to 160A
 Breaking capacity: Up to 40kA
 Operating class: Back-up
 Applications: Suitable for primary side transformer protection, fuse switch combination, unit fuse bases and fuse switches



24ADIHA25



3.6ABWNA6.3

Item no.	Amps	Volts	Lth	Dis	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	12kV	359	76	3
12BFGHA63	63				
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 - VT for use in air.					
3.6ABWNA3.15 AIR3.3/3	3.15	3.6kV	142	25.4	1
3.6ABWNA6.3	6.3				
3.6ABCNA3.15	3.15	3.6kV	195	25.4	1
3.6ABCNA6.3	6.3				
3.6ABCNA10	10				
7.2VTDNN1	1	7.2Kv	142		1
7.2ABWNA3.15 VTF6.6/3	3.15			25.4	1
7.2ABWNA6.3	6.3			25.4	1
7.2VTDNN0.62	0.62				
7.2ABCNA3.15	3.15			25.4	1
7.2ABCNA6.3	6.3				
12VTDNN0.5 VTF11/0.5	0.5	12kV	195	25.4	1
12VTDNN1 VTF11/1	1				
12ABCNA3.15 VTF11/3	3.15				
24ABGNA3.15	3.15				
		24kV	359	25.4	1

MV Fuse gear

Bussmann series medium voltage fuse links.

Oil Fuse Links

Standard:	IEC 60282-1, BS 2692-1 and ESI Standard 12-8
Rated voltage:	3.6 to 24kV
Rated current:	6.3 to 250A
Breaking capacity:	Up to 50kA
Operating class:	Back-up
Applications:	Primary side transformer protection and oil filled switch combination unit
Other:	Fitted with a pyrotechnic striker for open fuse indication



Item no.		Amps	Volts	Lth	Dis	MOQ
Medium voltage fuse links for use in oil.						
12OEFMA6.3	KEBXO5	6.3				
12OEFMA10	KEBXO10	10				
12OEFMA16	KEBXO16	16				
12OEFMA20	KEBXO20	20				
12OEFMA25	KEBXO25	25				
12OEFMA31.5		31.5				
12OEFMA40	KEBXO40	40	12kV	254	63.5	3
12OEFMA50	KEBXO50	50				
12OEFMA63	KEBXO63	63				
12OHFMA71		71				
12OHFMA80	KEBXO80	80				
12OHFMA90		90				
12OHFMA100		100				
12OHGMA6.3	KEMXO5	6.3				
12OHGMA10	KEMXO10	10				
12OHGMA16	KEMXO16	16				
12OHGMA20	KEMXO20	20				
12OHGMA25	KEMXO25	25				
12OHGMA31.5		31.5				
12OHGMA40	KEMXO40	40	12kV	359	63.5	3
12OHGMA50	KEMXO50	50				
12OHGMA63	KEMXO63	63				
12OHGMA71		71				
12OHGMA80	KEMXO80	80				
12OHGMA90	KEMXO90	90				
12OHGMA100	KEMXO100	100				
12OLGMA125	KEMXO120	125				
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			
36OBGNA3.15		3.15	36kV	359	25.4	1



12OEFMA820



7.2OBCNA3.15

MV Fuse gear

Bussmann series medium voltage fuse links.

DIN Fuse Links

Standard: DIN 43625, IEC 60282-1 and VDE 0670-4

Rated voltage: 3.6 to 36kV

Rated current: 6.3 to 400A

Breaking capacity: 20 to 63kA

Operating class: Back-up

Applications: Suitable for primary side transformer protection, fuse switch combination, unit fuse bases and fuse switches



12TDLEJ25



24TDMEJ20



3.6WDLSJ50

Item no.	Amps	Volts	Lth	Dis	MOQ
Medium voltage fuse links - DIN standard.					
12TDLEJ6.3	6.3				
12TDLEJ10	10				
12TDLEJ16	16				
12TDLEJ20	20				
12TDLEJ25	25	12kV	292	51	3
12TDLEJ31.5	31.5				
12TDLEJ40	40				
12TDLEJ50	50				
12TDLEJ63	63				
12THLEJ80	80	12kV	292	67	3
12THLEJ100	100				
12TKLEJ125	125	12kV	292	76	3
12TXLEJ160	160	12kV	292	88	3
12TXLEJ200	200				
24TDMEJ6.3	6.3				
24TDMEJ10	10				
24TDMEJ16	16				
24TDMEJ20	20	24kV	442	51	3
24TDMEJ25	25				
24TDMEJ31.5	31.5				
24TDMEJ40	40				
24TDMEJ50	50				
24THMEJ63	63	24kV	442	67	3
24THMEJ80	80				
24THMEJ100	100				
24TXMEJ125	125	24kV	442	88	3
24TXMEJ160	160				
Medium voltage fuse links - DIN motor start.					
3.6WDLSJ50	50				
3.6WDLSJ63	63				
3.6WDLSJ80	80				
3.6WDLSJ100	100	3.6kV	292	51	3
3.6WDLSJ125	125				
3.6WFLSJ160	160				
3.6WFLSJ200	200				
3.6WKLSJ250	250				
3.6WKLSJ315	315	3.6kV	292	76	3
3.6WKLSJ400	400				
7.2WFMSJ25	25				
7.2WFMSJ31.5	31.5				
7.2WFMSJ40	40				
7.2WFMSJ50	50				
7.2WFMSJ63	63				
7.2WFMSJ80	80				
7.2WFMSJ100	100	7.2kV	442	76	3
7.2WFMSJ125	125				
7.2WFMSJ160	160				
7.2WKMSJ200	200				
7.2WKMSJ224	224				
7.2WKMSJ250	250				
7.2WKMSJ315	315				

MV Fuse gear

Bussmann series medium voltage fuse links.

Motor Start Fuse Links

Standard:	IEC 60282-1, DIN 43625 and BS 2692
Rated voltage:	2.75 to 7.2kV
Rated current:	6.3 to 400A
Breaking capacity:	Up to 63kA
Operating class:	Back-up
Applications:	Provide short-circuit protection in motor circuits to both the motor starter & cables
Other:	Fitted with a pyrotechnic striker for open fuse indication



Item no.	Amps	Volts	Lth	Dis	MOQ
Medium voltage fuse links - BS motor start.					
3.6WDFHO50	50	3.6kV	254a	51	3
3.6WDFHO63	63				
3.6WDFHO80	80				
3.6WDFHO100 K81PEX100	100				
3.6WDFHO125 K81PEX125	125				
3.6WFFHO160 K81PEX160	160				
3.6WFFHO200 K81PEX200	200	3.6kV	254a	76	3
3.6WKFHO250 K81PEX250	250				
3.6WKFHO315 K81PEX315	315				
3.6WKFHO355 K81PEX350	355				
3.6WKFHO400	400				
K81PRX450	450				
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				



3.6WKFHO250



7.2WFNHO125

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



Mounting clips



PKA6 Electronic combined MCB/RCD device

ELQ-TD Combined MCB/RCD device

- Electronic combined MCB/RCD device
- Permanent connected flexible neutral conductor (750 mm)
- Rated breaking capacity 6 kA
- Contact position indicator red - green
- C curve tripping characteristic
- Australian approval numbers NSW20024 and NSW26670
- European quality

Eaton tested and approved as direct replacement of Eaton ELQ RCBO product in Eaton distribution boards and load centre assemblies

- Combined MCB/RCD device
- Permanent connected neutral conductor (950mm)
- Rating breaking capacity 6kArms
- Suitable for sliding clip tray arrangements
- Complies with AS/NZS 3190:2016 and AS/NZS 3111:2009+A1-2
- Australian approval number NSW27675



Powering Business Worldwide

Electronic combined MCB/RCD devices PKA6, 1+N-pole

PKA6 Residual Current operated circuit Breaker with Overcurrent protection (RCBO)

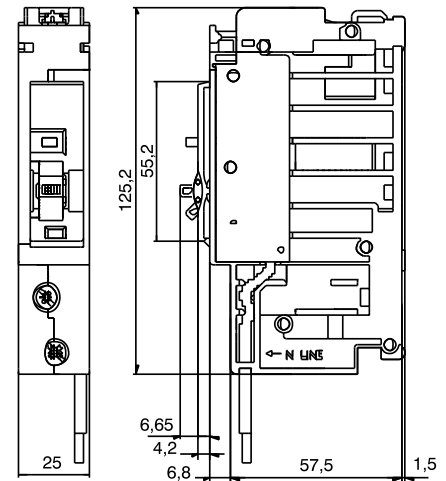
- Electronic combined MCB/RCD device
- Permanent connected flexible neutral conductor (750 mm)
- Contact position indicator red - green
- C curve tripping characteristic
- Rated breaking capacity 6 kA
- Australian approval numbers NSW20024 and NSW26670
- European quality
- Eaton tested and approved as direct replacement of Eaton ELO RCBO product in Eaton distribution boards and load centre assemblies

Electronic Combined RCD/MCB Devices PKA6 1+N-pole Conditionally surge current-proof 250 A, type AC

Sensitivity (mA)	Rating (A)	Units per package	Item no.
Characteristic C			
30mA	10	1/30	PKA6-10/1N/C/003
30mA	13	1/30	PKA6-13/1N/C/003
30mA	16	1/30	PKA6-16/1N/C/003
30mA	20	1/30	PKA6-20/1N/C/003
30mA	25	1/30	PKA6-25/1N/C/003
30mA	32	1/30	PKA6-32/1N/C/003
30mA	40	1/30	PKA6-40/1N/C/003
10mA	10	1/30	PKA6-10/1N/C/001
10mA	13	1/30	PKA6-13/1N/C/001
10mA	16	1/30	PKA6-16/1N/C/001
10mA	20	1/30	PKA6-20/1N/C/001
10mA	25	1/30	PKA6-25/1N/C/001
10mA	32	1/30	PKA6-32/1N/C/001
10mA	40	1/30	PKA6-40/1N/C/001
100mA	10	1/30	PKA6-10/1N/C/01
100mA	13	1/30	PKA6-13/1N/C/01
100mA	16	1/30	PKA6-16/1N/C/01
100mA	20	1/30	PKA6-20/1N/C/01
100mA	25	1/30	PKA6-25/1N/C/01
100mA	32	1/30	PKA6-32/1N/C/01
100mA	40	1/30	PKA6-40/1N/C/01



Dimensions (mm)



DIN Fuse Back-Up Data

RCBO Item no.	Breaking Capacity (kA _{rms})	Eaton Upstream Fuse Link Item no.	Three-phase prospective short-circuit current (kA _{rms})	Pre-arcing I _{pt} (A ² s)	Total I _{pt} @ 500V (A ² s)	Peak cut-off current @ 50kA _{rms} (kA _{pk})	Watts Loss (W)
PKA6-10/1N/C/xxx	6	F5GG200U1	50	97,000	368,600	18	15
PKA6-16/1N/C/xxx	6	F5GG200U1	50	97,000	368,600	18	15
PKA6-20/1N/C/xxx	6	F5GG200U1	50	97,000	368,600	18	15
PKA6-25/1N/C/xxx	6	F5GG200U1	50	97,000	368,600	18	15
PKA6-32/1N/C/xxx	6	F5GG250U1	50	151,300	574,900	25	19
PKA6-40/1N/C/xxx	6	F5GG250U1	50	151,300	574,900	25	19

Over 60 Years of Service to the Australian Electrical Industry

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 benchmark for Miniature Circuit Breakers

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.



Quicklag Miniature circuit breakers

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

Key Features

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

Quicklag MCB

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

* Non-Auto Breaker.

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

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

* Non-Auto Breaker.

ST2 operates on 90-440 Vac, 60-250 Vdc

Some other voltage shunt trips available consult Eaton

Quicklag MCB

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
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
Tee-off Insulation Cap	1521-1287/1
Busbar Comb 24-Pole	1521-0070/15
250 A main switch kit for xBoard Plus Quicklag	XDBPQ-M/S

① Not suitable for ELQ.



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. NSW27675
- Trip indication window
- Test button with preventative accidental push design

ELQ Earth leakage breaker

Sensitivity (mA)	Rating (A)	Item no.
30mA	10	ELQ110C3TD
30mA	16	ELQ116C3TD
30mA	20	ELQ120C3TD
30mA	25	ELQ125C3TD
30mA	32	ELQ132C3TD
10mA	10	ELQ110C1TD
10mA	16	ELQ116C1TD
10mA	20	ELQ120C1TD
10mA	25	ELQ125C1TD
10mA	32	ELQ132C1TD
100mA	10	ELQ110C10TD
100mA	16	ELQ116C10TD
100mA	20	ELQ120C10TD
100mA	25	ELQ125C10TD
100mA	32	ELQ132C10TD



ELQ specific Accessories

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

① Suitable for panel mount applications only.



Quicklag MCB

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.

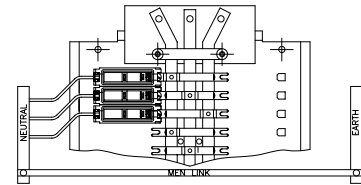
Key Features

- 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).

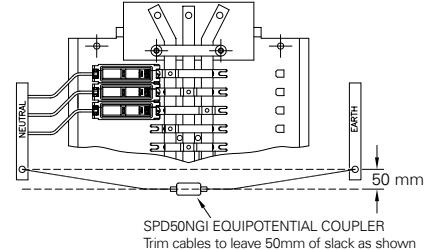
Dimensions

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

Main board or M.E.N configuration



Distribution board or non M.E.N configuration



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

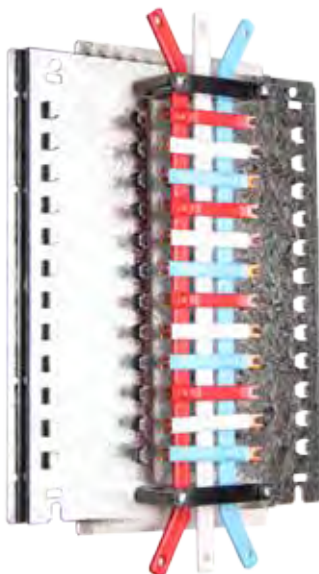
One Quickmov™ per phase is required for multi-phase installations.

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 vertical & horizontal type - 250A rated

Pole capacity	Item no. Vertical	Height * (mm)	Item no. Horizontal	Height * (mm)
12	Q12PV Ⓢ	229	Q12PH	229
18	Q18PV Ⓢ	305	Q18PH	305
24	Q24PV Ⓢ	381	Q24PH	381
30	Q30PV Ⓢ	457	Q30PH	457
36	Q36PV Ⓢ	534	Q36PH	534
42	Q42PV Ⓢ	610	Q42PH	610
48	Q48PV Ⓢ	686	Q48PH	686
60	Q60PV Ⓢ	838	Q60PH	838
72	Q72PV Ⓢ	991		
78	Q78PV Ⓢ	1067		
84	Q84PV Ⓢ	1143		
96	Q96PV Ⓢ	1291		
108	Q108PV-400 Ⓢ	1444		

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

Ⓢ 108 pole only available in 400A rating

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

Chassis with 100A main switch

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

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

Chassis half-width type

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

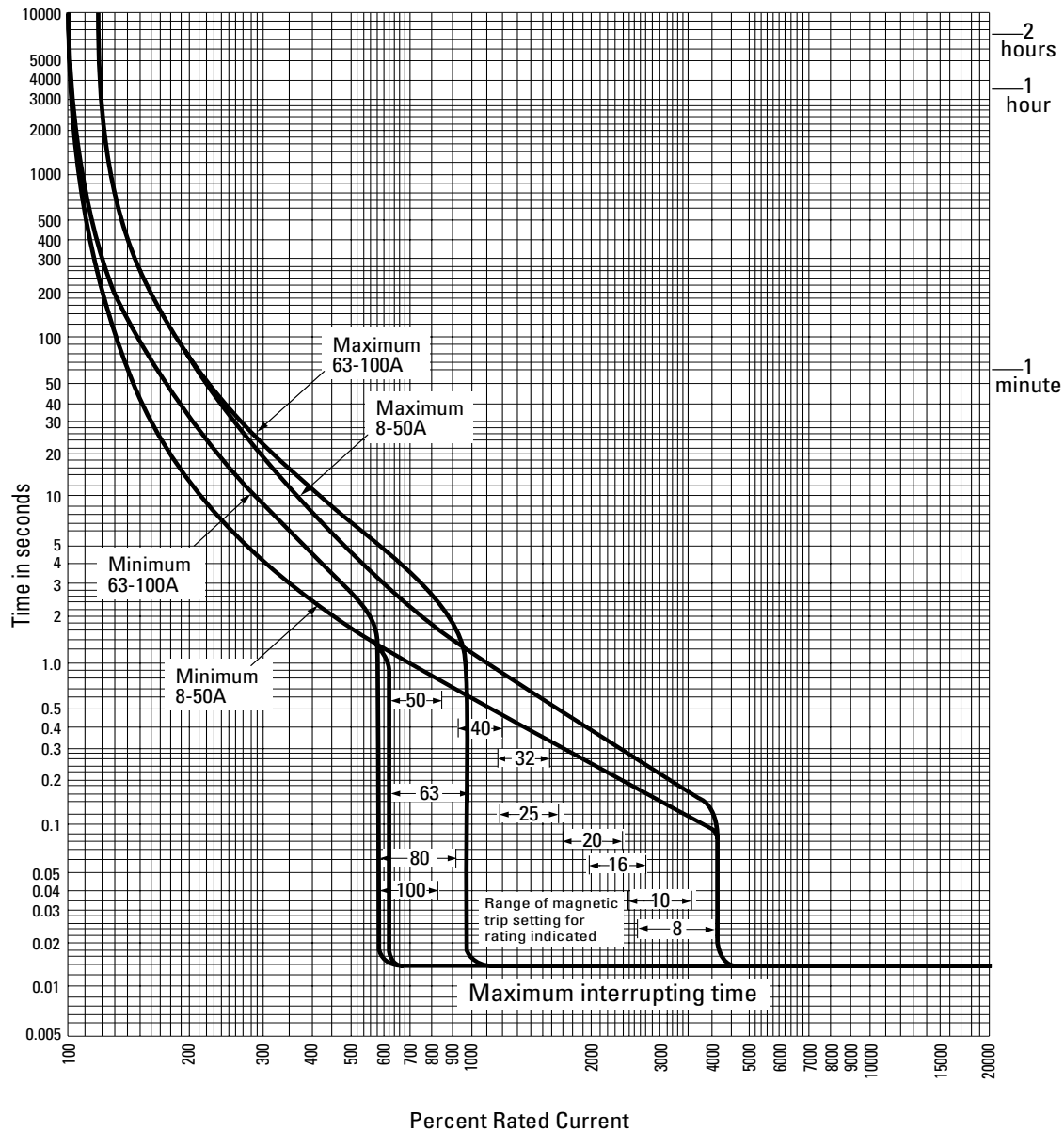
* Busbars extend 42mm over both sides of mounting pan. Half-Width Chassis are made to order.

Low Voltage Circuit Protection & Switchgear

Quicklag MCB

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.

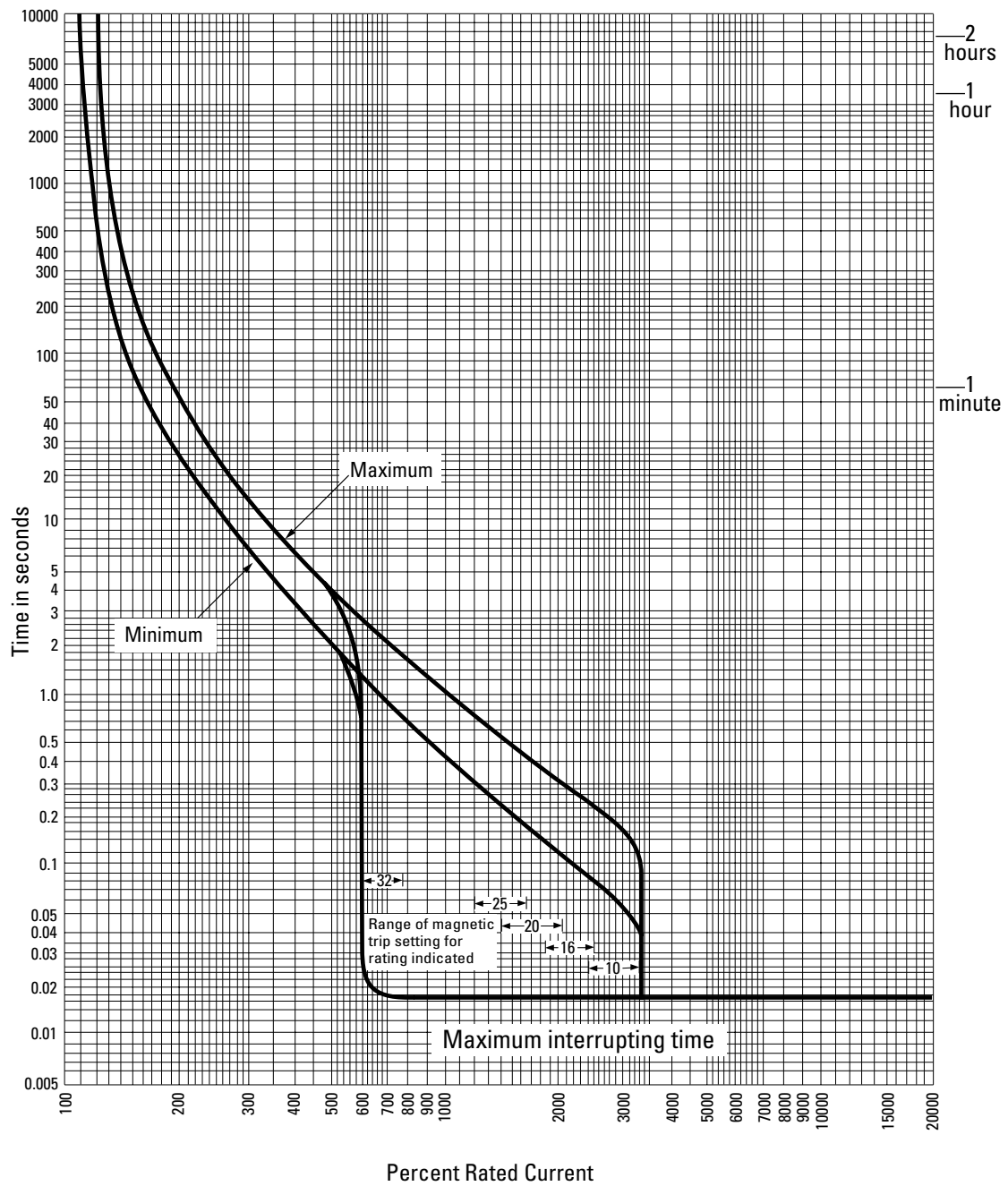
Specifications - The specifications in this publication were correct at the time the publication went to press. Eaton reserves the right to change the specifications of its products without notice.

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.

Quicklag MCB

Technical data

Quicklag ELQ time current curve



Low Voltage Circuit Protection & Switchgear

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.

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.

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.

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.

Quicklag MCB

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:
 $U_o = 230V$
 I_a = 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:
 $U_o = 230V$
 I_a = Known Value (derived from published Quicklag trip curves)
 ρ = Resistivity values shown in the standard
 S_{ph} & S_{pe} = 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

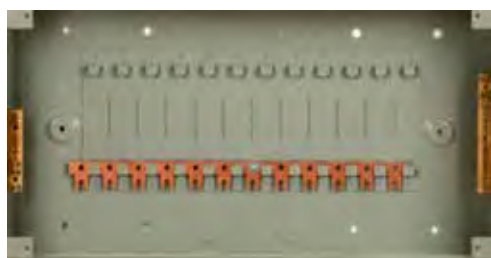
Fuse Manufacturer	Fuse Type	Fuse Item No.	Fuse Rating (A)	i ² -t Value Pre-Arching (AMP ² -sec)	i ² -t Value Total @ 415VAC (AMP ² -sec)	i ² -t Value Total @ 550VAC (AMP ² -sec)	i ² -t Value Total @ 600VAC (AMP ² -sec)	Peak Cut-Off Current @ 50kA (kA)	Watts Loss (W)
Bovara-Crady	DIN	AC-1	160	0.52 x 105	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

Low Voltage Circuit Protection & Switchgear

Quicklag MCB

LCQ Metal loadcentres

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



Surface Mount LCQ Loadcentres

Key Features

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

Dimensions

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

Quicklag LCQ metal loadcentres

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

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

Typical Ordering Examples (12 pole):

Surface mount: LCQ12S

Flush mount: LCQ12S + LCQ12FKIT

Surface mount with door: LCQ12S + LCQDRKIT12

Flush mount with door: LCQ12S + LCQ12FKIT + LCQDRKIT12

Accessories

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



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Kyoritsu 3131M

Mining spec. Analogue Insulation Tester



Because safety
has no compromise.



- Test insulation up to 100M Ω at 250V, 200M Ω at 500V, 400M Ω at 1000V
- Lamp and audible warning for LIVE circuit
- Press-To-Test button (non-locking)
Automatic discharge of circuit capacitance when test button is released
- Fuse protected - continuity range only
- Back light function to facilitate working at poorly lit conditions
- Fixed test leads for added safety with fixed alligator clips on test leads
- Safety Standard - IEC61010-1 CATIII, 300V Pollution degree 2, IEC61010-031, IEC 61557-1/2/4, IEC60529(IP54), IEC61326-1(EMC)

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series C, moulded case circuit breakers - FW/HFW

255A 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)	
For both Series C FW/HFW and 'The Rock' F Frame	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

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



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.

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

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

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
Alarm switch with pigtail lead connection for magnetic only breakers	MA1L1LPK 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) - style no.4208B81G02	373/1128
Padlockable handle lock hasp (2,3,4 pole only, Padlock not included, PLK1) - style no.4210B81G01	373/1121
Non-padlockable handle block (LKD1 Lockdog) - style no.4210B80G01	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, F frame on E Frame Chassis	E-FB3P ③
Terminal kit, 32A 6mm ² (kit of 3)	T32FB
Terminal Kit (3T150FB), 160A 25-95mm ² (kit of 3)	T160FB
Terminal kit, 225A 25-95mm ² (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	1517-2021/1
Interphase barriers (2)	IPB1
Terminal shields, plastic (2), 3-pole	TSF
Insulation sheet mining breaker	1543-0245/1
Rotary handle kit - metal handle with mechanism & 30cm shaft - IP66	WHM1R12X
F Frame VariDepth mechanism - style no.373D958G23	373/1120*
Handle only, VariDepth - style no.504C323G07	1517-0488/1 *
Weatherproof handle, VariDepth - style no.504C323G08	1517-0488/2 *
Shaft, 165mm for VariDepth - style no.47A4446G36	368/187 *
Shaft, 260mm for VariDepth - style no.47A4446G37	368/186 *
Pole Filler - F frame	FPF
Mounting hardware - 1 Pole F Frame	4218B80G15
Mounting hardware M4 - style no.4218B80G12	373/1123

- ① Factory fitted only. No internal accessories can be used with the 1-pole F-frame.
 UVH undervoltage release is for use with FWF & HFWF MCCB's only.
 WUVH undervoltage release is for use with FW & HFW MCCB's only.
 MUVH undervoltage release is for use with HMCP MCCB's, please contact Eaton for ordering details.

- 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.

- * For VariDepth option please select mechanism, handle and shaft.



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

Supplied with chassis mounting screws for the LINE side & terminals fitted on the LOAD side

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series C, moulded case circuit breakers - J Frame

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

J Frame 250A

Thermal magnetic breaker is made up of two components, frame & interchangeable trip unit.

**J Frame
+
Trip unit
Breaker**



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)
For both Series C and 'The Rock' J Frame	3 pole	254 x 105 x 103	5.0
	4 pole	254 x 140 x 103	6.8

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

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
4 pole 160-200A	JT4200TA
4 pole 200-250A	JT4250TA



JT3250TA

Trip unit - (thermal magnetic)

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

J Frame magnetic only trip unit

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

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

Series C, moulded case circuit breakers - J Frame 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 250A 25-185mm ² conductor (1)	T250KB
Terminal shields, plastic (2)	TSJ
Insulation sheet mining breaker	1543-0246/1
Interphase barriers (2)	IPB3
Rotary handle kit - metal handle with mechanism & 30cm shaft - IP66	WHM2R12X
J Frame VariDepth mechanism - style no.5092A62G04	392/1024 *
Handle only, VariDepth - style no.504C323G07	1517-0488/1 *
Weatherproof handle, VariDepth - style no.504C323G08	1517-0488/2 *
Shaft, 165mm - VariDepth - style no.47A4446G36	368/187 *
Shaft, 260mm - VariDepth - style no.47A4446G37	368/186 *
Mounting hardware M6x70 - style no.4218B80G13	392/1019

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.

* For VariDepth option please select mechanism, handle and shaft.



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

Supplied standard with screw terminals for both the LINE and LOAD side connections

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series C, moulded case circuit breakers - K Frame

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



K Frame 400A

Thermal magnetic or electronic breaker with interchangeable trip units is made up of two components, frame and trip unit.

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

Approvals - IEC947-2

Dimensions	H x W x D (mm)	Weight (kg)
For both Series C and 'The Rock' K Frame	257 x 140 x 103	6.0

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

1100V mining circuit breaker - K Frame

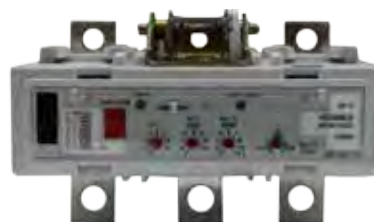
Description	PSCC at 1000V	PSCC at 1100V	Item no.
125-400A K Frame	14kA	12kA	E2KM3400F

Thermal magnetic trip units

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

Electronic trip units

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



KES3400LSI

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.

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

Series C, moulded case circuit breakers - K Frame 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 - suitable for line or load (3 pole)	KPEKM3
Keeper Nut Kit - Line side	KPR3AM
Keeper Nut Kit - Load side	KPR3BM
Terminal Hardware Kit (3 Pole)	KTH
T300K Terminal 225A 35-185mm ² conductor (1)	T300K
T350K Terminal 400A 120-240mm ² conductor (1)	T350K
Threaded terminal adaptor (3)	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
Insulation sheet mining breaker	1543-0247/1
Rotary Metal Handle IP66 Black 30cm Shaft with mechanism	WHM3R12X
K Frame VariDepth mechanism - style no.5092A62G01	393/1128 *
Handle only, VariDepth - style no.504C323G07	1517-0488/1 *
Weatherproof handle, VariDepth - style no.504C323G08	1517-0488/2 *
Shaft, 165mm, VariDepth - style no.5092A62G01	368/187 *
Shaft, 260mm, VariDepth - style no.47A4446G37	368/186 *
Mounting hardware M6x50 Four (4) required	2031-1206



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

Supplied standard with screw terminals for both the LINE and LOAD side connections

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.

* For VariDepth option please select mechanism, handle and shaft.

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series C, moulded case circuit breakers - L Frame

L Frame 630A & 800A

Thermal magnetic or electronic breaker with interchangeable trip units is made up of two components, frame and trip unit.

L Frame

+

Thermal Magnetic Trip Unit

Thermal Magnetic Breaker

L Frame

+

Digitrip Unit

+

Rating Plug

Electronic Breaker



Trip units	630A interchangeable, 800A fixed			
Thermal setting	adjustable 80-100% x I _n			
Magnetic setting	adjustable (5-10 x I _n)			
Approvals	IEC947-2			
Dimensions		H x W x D (mm)	Weight (kg)	
For both Series C and 'The Rock' L Frame	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 (only)

(630AF & 800AF 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

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.

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

1100V mining circuit breaker - L Frame

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



LEM3600T

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

Aftermarket and mining MCCB

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
Insulation sheet mining breaker	1543-0248/1
Rotary Metal Handle IP66 Black 30cm Shaft with mechanism	WHM4R12X
L Frame VariDepth mechanism - style no.5092A62G05	394/1246 *
Handle only, VariDepth mechanism - style no.504C323G07	1517-0488/1 *
Weatherproof handle, VariDepth - style no.504C323G08	1517-0488/2 *
Shaft, 165mm, VariDepth - style no.47a4446g36	368/187 *
Shaft, 260mm, VariDepth - style no.47a4446g37	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.

* For VariDepth option please select mechanism, handle and shaft.



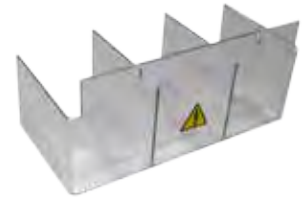
A3X4PK



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

Supplied standard with screw terminals for both the LINE and LOAD side connections

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series G, moulded case circuit breaker - N Frame

N Frame 1600 A

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

Dimensions		H x W x D (mm)	Weight (kg)
For both	3 pole	406 x 210 x 140	21.3
Series G and 'The Rock' N Frame	4 pole	406 x 280 x 140	28.3

"The Rock" 1100V mining circuit breakers - N Frame 1200 A



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

Ampere rating	3 pole item no.	4 pole item no.
320 ~ 800A	NGS308032M	NGS408032M
500 ~ 1250A	NGS312532M	NGS412532M
630 ~ 1600A Front	NGSF316032M	NGSF416032M
630 ~ 1600A Rear	NGS316032M	NGS416032M

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

Ampere rating	3 pole item no.	4 pole item no.
320 ~ 800A	NGS308036M	NGS408036M
500 ~ 1250A	NGS312536M	NGS412536M
630 ~ 1600A Front	NGSF316036M	NGSF416036M
630 ~ 1600A Rear	NGS316036M	NGS416036M

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

Ampere rating	3 pole item no.	4 pole item no.
320 ~ 800A	NGH308032M	NGH408032M
500 ~ 1250A	NGH312532M	NGH412532M
630 ~ 1600A Front	NGHF316032M	NGHF416032M
630 ~ 1600A Rear	NGH316032M	NGH416032M

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

Ampere rating	3 pole item no.	4 pole item no.
320 ~ 800A	NGH308036M	NGH408036M
500 ~ 1250A	NGH312536M	NGH412536M
630 ~ 1600A Front	NGHF316036M	NGHF416036M
630 ~ 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

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

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

Current rating	PSCC at 1000V	PSCC at 1100V	Item no.
600A N Frame	25kA	20kA	E2NM3600W
700A N Frame	25kA	20kA	E2NM3700W
800A N Frame	25kA	20kA	E2NM3800W
900A N Frame	25kA	20kA	E2NM3900W
1000A N Frame	25kA	20kA	E2NM310W
1200A N Frame	25kA	20kA	E2NM312W

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

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

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
Insulation sheet mining breaker	1543-0249/1
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

Supplied standard with screw terminals for both the LINE and LOAD side connections

Low Voltage Circuit Protection & Switchgear

Aftermarket and mining MCCB



Series G, moulded case
circuit breaker - R Frame

"The Rock" 1100V mining
circuit breakers -
R Frame 2000 A



R frame 2500 A

Electronic trip unit characteristics

- 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)

Dimensions		H x W x D (mm)	Weight (kg)
For both Series G and 'The Rock' R Frame	3 pole	406 x 394 x 229	47
	4 pole	406 x 508 x 229	54

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

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

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.

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.

For Rock breakers refer to page 209 for Rock technical data, for ordering essential terminal shields/barriers and checking clearances.

Aftermarket and mining MCCB

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

Accessory - R Frame

Description	Item no.
Alarm switch with pigtail lead connection	A1L6RPK ①
Alarm switch, 2 pole with pigtail lead connection	A2L6RPK ①
Auxiliary switch, 2 pole with pigtail lead connection	A2X6RPK ①
Auxiliary switch, 4 pole with pigtail lead connection	A4X6RPK ①
Shunt trip, 24Vdc with pigtail lead connection	SNT6P03K ①
Shunt trip, 120 to 240Vac with pigtail lead connection	SNT6P11K ①
Shunt Trip (R) 480-600VAC with pigtail lead connection	SNT6P18K ①
Shunt trip, 440Vac with pigtail lead connection	SNT6P14K ①
Shunt trip, 48 to 60Vdc with pigtail lead connection	SNT6P23K ①
Shunt Trip (R) Low Energy with pigtail lead connection	LST6RPK ①
Under-voltage Trip (R) 208-240VAC with pigtail lead connection	UVH6RP11K ①
Under-voltage Trip (R) 24VDC with pigtail lead connection	UVH6RP21K ①
Under-voltage Trip (R) 300-500VAC with pigtail lead connection	UVH6RP29K ①
Electrical Operator 240Vac GR or RW Frame	EOP6T11K ①
Handle extension	HEX6
Key interlock provision	KYK6
Padlockable handle lock hasp	HLK6
Insulation sheet mining breaker	1543-0252/1
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

Supplied standard with screw terminals for both the LINE and LOAD side connections

Low Voltage Circuit Protection & Switchgear

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	GWF	Direct physical replacement
GD	NEMA VERSION GW	GWF	Direct physical replacement
GB/GHB/ GC/GHC	NEMA VERSION GW	GWF	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

Aftermarket and mining MCCB

"The Rock" 1100V mining circuit breaker application data

Adapter plates

Description	Item no.
Adaptor to replace NZM with E2FM	ROCKLBSTRF
Adaptor to replace NZM with E2JM	ROCKLBSTRJ
Adaptor to replace NZM with E2LM	ROCKLBSTRL
Adaptor to replace NZM with 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

- 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.
- All breakers must be mounted with an insulation sheet between them & the mounting plate. The size of the sheet & sheet material is shown in the next column. For mounting details refer to the figure in the next column.
- If any mining frame breakers are installed behind a non-insulating escutcheon which is located within 50mm from the face of the breaker, a terminal shield 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	-	-	1543-0252/1

*Select either phase barriers or terminal shields. Both come in sets of two.
Ordering quantities for line and load side connections:
Phase barriers - 2 sets. Terminal shields - 1 set.
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:

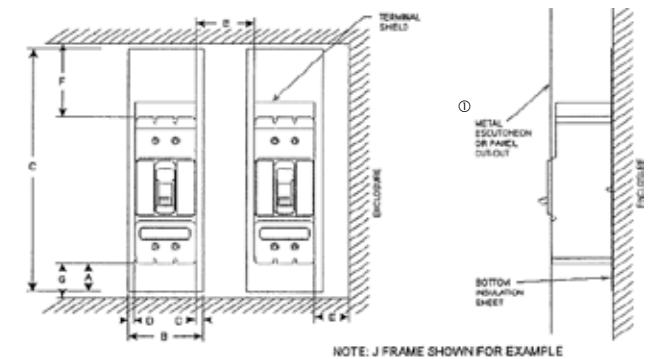
Thermal class: E (120°C) Dielectric strength: 80kV/mm
Service temperature: -70 to +130°C Breakdown voltage: 20kV
Resistivity @ 25°C: 1.8×10^{16} ohm-cm

Insulation sheet & minimum mounting dimensions

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

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

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



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

Clearance & creepage distances

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

Heinemann Hydraulic-Magnetic circuit breakers

1U Series Slimline



The 1U Series Slimline is the first hydraulic magnetic breaker to use a snap action mechanism which improves reliability, safety and performance. The contacts are controlled by a stored energy mechanism that closes in one swift motion when the operator switches the handle to the ON position. This prevents premature contact failure and improves efficiency for higher current ratings.

- Compact size allows greater design flexibility and saves valuable rack space
- Patented snap action technology for improved performance and reliability
- World's first circuit breaker designed for 1U height rack-mount applications
- ULT 489 listed for branch circuit protection and conform to IEC standards

AMR Series



The AMR Series is the logical choice for applications requiring greater interrupting performance coupled with the sensitivity of hydraulic-magnetic protection. The precisely tailored time delays and ability to interrupt high currents makes the AMR Series ideal for critical applications. It is the solution for demanding applications requiring up to 50,000 amperes high interrupting capacity.

- Shock-tested for shock in accordance with MIL-STD-202
- Vibration-tested in accordance with MIL-STD-202
- Dielectric strength tested in accordance with MIL-STD-202
- Insulation resistance of 100 megaohms minimum at 500 Vdc, per MIL-STD-202
- Flammability specifications of UL 94-VO case, UL 94-HB handle and IEC 45545-2 for Railways standards
- Direct replacement for discontinued AM and NAM/S models

AM1P Series



The AM1P uses a parallel wiring configuration to deliver 200 amperes in a 2-pole design and 300 amperes in a 3-pole design. The AM1P employs a proprietary technology known as PCE (Precision Current Equalisation). This technology ensures that current flows evenly through all poles and nuisance tripping is eliminated.

- Shock-tested for shock in accordance with MIL-STD-202, Method 213, Test Condition I
- Vibration-tested in accordance with MIL-STD-202, Method 204, while carrying full-rated current
- Minimum life of 10,000 on/off operations, with 6,000 at rated current and voltage, and 4,000 at no load
- Dielectric strength tested in accordance with MIL-STD-202, Method 1500 volts at 50/60 Hz, 1100 Vdc
- UL 489A listed.

C Series



The C Series is popular for outdoor locations, in either high temperature or low temperature environments where nuisance tripping might have been a problem in the past. The C Series is built for a wide range of applications and has one of the most versatile designs. From heating and air conditioning to modern railcars, the C Series breaker is built for the most demanding industrial applications.

- Environmental, Vibration and Shock Resistant; MIL-SPEC qualification for fungus resistance, humidity, salt spray resistance and shock vibration resistance
- Heat-Induced Nuisance Tripping Eliminated; designed to "hold in" at 100% continuous rated current, regardless of ambient temperatures from -40°C +85°C
- Immediate Reset After Trip; can be reset (closed) immediately after an overcurrent trip without a "cooling off" period
- 1/2 Cycle High Inrush Tolerance; available with different levels of tolerance to 1/2 cycle current spikes. Standard tolerance is 8x the continuous current rating (25x also available)
- Overcurrent Curves, Long, Medium or Short Delay; time characteristic curves are available as Short, Medium and Long Delay

MDBS-4Ph Series



Modular Power Distribution Busbar System; ideal for a wide range of AC or AC-DC applications, such as generator sets, rail, and marine applications. The PDM-A100 Series Busbar Power Distribution system makes AC power distribution more compact, flexible, and easy to install - saving valuable space while reducing labour and material costs. Power is supplied to circuit breakers by using Eaton's innovative bus system rather than by individual wiring or complicated buswork.

- Pre-engineered compact power distribution bus system design saving installation time
- Number, type (AC VS DC), and location of loads can be easily changed by adjusting the busbar components
- Pluggable breakers allow for quick connection and the ability to disconnect
- Products are built to order according to specifications - to accommodate any application needs
- Optimised terminal connection blocks internal to the module drastically reduces the amount of physical space needed
- Mounting brackets on the top and bottom allow for front or rear mounting

Heinemann Hydraulic-Magnetic circuit breakers

GH Series

The GH Series breaker offers the benefits of hydraulic-magnetic protection in a compact, economical design. Their ability to furnish both close-rated locked rotor protection and running overcurrent protection without derating in extreme and highly variable ambient conditions makes them a popular choice in a variety of industries - air conditioning, electric heating, computer main frame and central processing, transportation and many others

- Fungus and Humidity Resistance - in accordance with MIL-STD-202 (all ferrous parts treated with a special moisture-resistant finish. Special springs and fungus-resistant cases, covers and handles are also used)
- Shock - tested in accordance with MIL-STD-202, Method 213, Test Condition I (100G's at 6 milliseconds)
- Vibration - tested in accordance with MIL-STD-202, Method 204, 10 to 500 Hz, 0.06-inch total excursion on three mutually perpendicular plan



GJ Series

Series GJ Circuit Breakers are the logical choice for high-current service entrance and panelboard installations, as well as for the control and protection of commercial and industrial lighting, transformers, motors and power supplies. The precisely tailored time delays and ability to interrupt high currents make them ideal for critical applications with inductive or other loads of up to 250 amperes.

- Fungus and Humidity Resistance - MIL-STD-202; springs, cases and handles are made from fungus-resistant materials, along with ferrous parts that incorporate a special moisture-resistant finish
- Shock - MIL-STD-202, Method 213
- 100g's for 6 milliseconds (Time delay breakers only)
- Vibration - MIL-STD-202, Method 24, 10 to 500 Hz, 0.06-inch total excursion on three mutually perpendicular planes (time delay breakers only). Testing completed at full rated current 50/60 Hz



GJ1P Series

The GJ1P breakers offer high-quality circuit protection for DC applications from 100 to 1200 amperes. Their precisely tailored time delays and ability to interrupt high currents makes them ideally suited for critical applications. On overloads exceeding 1000 – 1400% of rating, there is no intentional time delay and the breaker interrupts currents of as much as 100,000 amperes at 65 Vdc up to 1200 amperes.

- UL listed series GJ1P (UL 489) models are available in a choice of fast, medium or slow response times to accurately match load conditions
- Order in "series trip," "mid-trip" and "switch only" constructions and are available front- or back-mounted, front- or back-connected, with optional auxiliary switches for signaling



J Series

Series J is one of the most versatile breaker lines offered. Eaton's J Series can be used in a wide variety of applications including telecom, rail, marine and mobile equipment. Multiple mounting and handle configurations allow you to customise your equipment. These include rocker handles, snap-in mounting, sealed toggle actuators and colour-coded handles.

- Small and lightweight, saving valuable space in crowded control panels or weight in portable equipment
- Magnetically actuated, minimising the heat generated by the breaker and allowing it to be mounted in densely packed panels with no effect on performance
- Fast, easy panel mounting - Its round bezel eliminates square cuts during panel fabrication, and shortens panel production time
- Cutout preparation is as simple as punching or drilling three common-center holes per breaker Ready to except either standard push-on or screw terminal connections
- Ready for your global applications
- In addition to UL 1077, the breaker also carries CSA and IEC 380 approvals



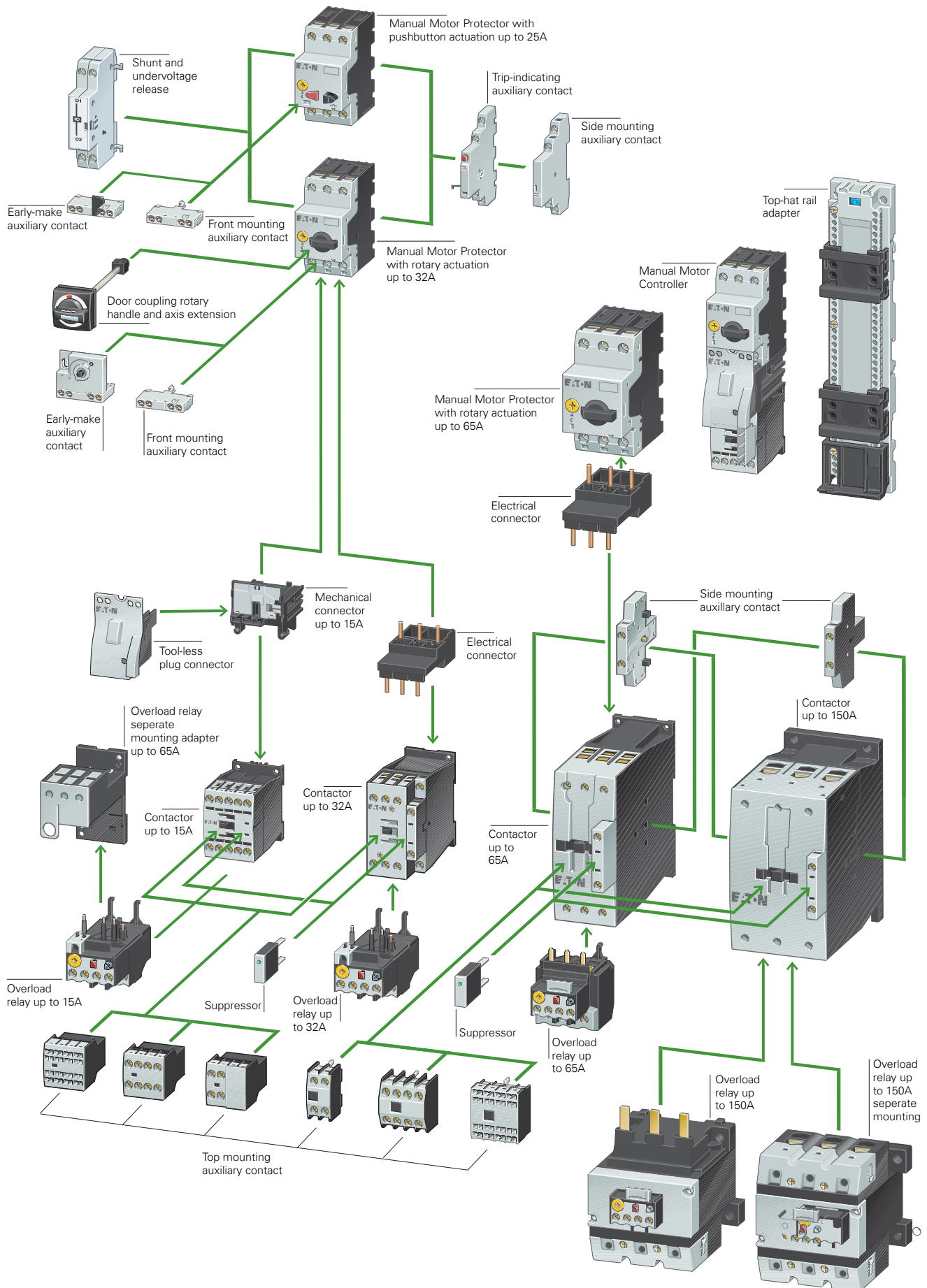
KD Series

The KD Series resettable pushbutton circuit protector provides basic thermal protection, has ratings from 0.25 – 20 amperes and is UL recognised. The KD Pushbutton Circuit Protector provides circuit protection similar to a fuse but does not require replacement after a fault. This resettable design allows your customer to stay online and eliminate downtime. The KD series is used where equipment may be exposed to dust or moisture, two styles of protective boots are available, one which protects the breaker from splashing water and another which seals the panel opening

- Easily installed in a 5/8" round or D-Shaped panel cutout.
- Mounted from either the front or rear and is held in place by special hardware
- Tested to meet the requirements of UL 1077, and is recognised as a supplemental protector by UL
- Trips without delay on short circuit, and with a controlled delay upon sustained overloads.
- The contacts open with a positive snap action, upon tripping, thereby suppressing the arc



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.

Mini contactor relays

Rated operational current AC-15		Conventional free air thermal current	Aux. contact	Item no.	
220 V, 230 V, 240 V	380 V, 400 V, 415 V				
I _e	I _e				
A	A	I _{th}			
A	A	A			
6	3	10	4 N/O	-	DILER-40(...)
			3 N/O	1 NC	DILER-31(...)
			2 N/O	2 NC	DILER-22(...)

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(...)

IEC Miniature overload relays

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

Motor full load current (FLC)	Trip class	Contact configuration	Item no.
0.1 – 0.16A 0.16 – 0.24A 0.24 – 0.4A 0.4 – 0.6A	10A	1NO-1NC	ZE-0,16 ZE-0,24 ZE-0,4 ZE-0,6
0.6 – 1A 1 – 1.6A 1.6 – 2.4A	10A	1NO-1NC	ZE-1,0 ZE-1,6 ZE-2,4
2.4 – 4A 4 – 6A 6 – 9A 9 – 12A	10A	1NO-1NC	ZE-4 ZE-6 ZE-9 ZE-12



DILER-40



DILEEM-10



ZE-0,16

Xstart IEC Mini contactors

IEC Miniature controls accessories

(auxiliary contacts for mini contactors, front (top) mounted)



11DILE

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.



RCDILE250

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.



Mechanical interlock

Description	Item no.
Mechanical Interlock	MVDILE

Note: For two contactors with AC or DC operated coils that are horizontally or vertically mounted, the distance between contactors is 0 mm



Reversing link kit

Description	Item no.
Main current wiring for reversing contactors & starters.	MVS-WB-EM

Note: Reversing Link Kit does not include mechanical interlock. Order part No. MVDILE for Mechanical Interlock.



Star-delta link kit

Description	Item no.
Main current wiring for star-delta combinations. Includes the Star-Delta Bridge.	MVS-SB-EM



Other accessories

Description	Item no.
Connector for mechanically arranging contactors in combinations.	V0DILE
Shroud IP40 Sealable Shroud, snap fit	HDILE

Note: 0 mm distance between contactors with connector.

Xstart IEC control relays

Basic devices with positively driven contacts



Rated operational current AC-15 240 V I_e A	415 V I_e A	Conventional free air thermal current I_{th} A	Aux. contact	Item no.
4	4	16	4 N/O -	DILA-40(...)
			3 N/O 1 NC	DILA-31(...)
			2 N/O 2 NC	DILA-22(...)

Xstart IEC Contactors

IEC Contactors

- AC-3 contactor ratings to 1600A & AC-1 contactor ratings to 2600A
- Panel or DIN-Rail mounting to 72A
- IP20 finger & back-of-hand proof
- Built-in NO or NC auxiliary contacts to 38A
- Built-in surge suppression on DC coils Frame B-G & AC or DC coils on Frame L-R
- Can be used with ZB or ZEB overload relays
- Can be used with PKZM or PKE for manual Motor controllers



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	DILM32-01(...)
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

IEC Contactors

Full voltage non-reversing 3-pole contactors

IEC ratings

AC-3 Ie (A)	AC-1 (60°C) Ie = Ith (A)	Maximum kW ratings AC-3 3-Phase Motors 50 – 60 Hz			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

DIL DC contactor

Thanks to the use of proven hybrid technology, the contacts in Eaton DC contactors have a long lifespan and low contact wear. Hybrid contactors feature two mechanical contacts – a extinguishing contact and a break contact – that are connected in series.

Efficient and compact

- With up to 150,000 operations, these DIL DC contactors have a lifespan that is six times longer than that of comparable devices
- Lower switching contact wear as a result of extremely short arcing times
- Convenient to switch on and off: either conventionally or directly with a programmable logic controller (PLC)

Reliable and flexible

- Wide control voltage range of 110 V – 250 V AC, 110 V – 350 V DC
- Bi-directional operation (polarity insensitivity) ensures ease of use
- Wide temperature range of -40 °C to +70 °C

Ideal for a large variety of applications

- Solar power
- Rail traffic
- Marine & Offshore
- Energy storage
- Automotive charging infrastructure
- DC grids

Description	Item no.
DC-1 contactor 300A/1000V	DILD300/22(RDS250)
DC-1 contactor 600A/1000V	DILD600/22(RDS250)



Xstart IEC Contactors

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

IEC 4-Pole Contactors, frame B – frame G

le (A) AC-3	le = lth (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, w/o 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(...)

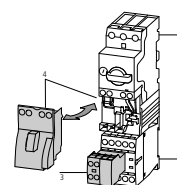
Note: Weld resistant contactors for capacitors, with inrush current peaks up to 180 I_n

Accessories - Auxiliary contacts

Conventional thermal current, Open at 60°C lth = le, 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 [®]
16	2	1NO-1NC	DILA-XHIT11 [®]
16	2	2NC	DILA-XHIT02 [®]
16	4	2NO-2NC	DILA-XHIT22 [®]
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-C



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.

® 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



Frame C



Frame D-G



DILM1000-XHI11-SI



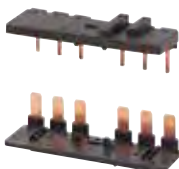
DILM12-XMV



DILM32-XMV



DILM500-XMV



DILM32-XRL

Xstart IEC Contactors

Accessories

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 — Side mount			
16	1	1NO	DILA-XHI10-S
16	1	1NC	DILA-XHI01-S
Frame C — Side mount			
10	2	1NO-1NC	DILM32-XHI11-S
Frame D — G Front (top) mount			
16	2	2NO	DILM150-XHI20
16	2	2NC	DILM150-XHI02
16	2	1NO-1NC	DILM150-XHI11
16	4	4NO	DILM150-XHI40
16	4	4 NC	DILM150-XHI04
16	4	2NO-2NC	DILM150-XHI22
16	4	3NO-1NC	DILM150-XHI31
16	4	1NO-3NC	DILM150-XHI13
16	4	1NO-1NC, 1ECNO-ILONC	DILM150-XHIV22

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).

Xstart IEC Contactors

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	DILMP32 - DILMP45	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	DILMP32 - DILMP45	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	DILA	DILM12-XSPVL240
24 - 48 AC	DILM17 - DILM32	DILM32-XSPVL48
130 - 240 AC	DILK12 - DILK25	DILM32-XSPVL240
24 - 48 AC	DILL..	DILM32-XSPVL240
24 - 48 AC	DILMP32 - DILMP45	DILM32-XSPVL240
24 - 48 AC	DILM40 - DILM95	DILM95-XSPVL48
130 - 240 AC	DILK33 - DILK50	DILM95-XSPVL240
130 - 240 AC	DILMP63 - DILMP200	DILM95-XSPVL240
Diode suppressor		
12 - 250 DC	DILM7 - DILM15	DILM12-XSPD
	DILMP20	
	DILA	



DILM12-XSPR48



DILM12-XSPV48



DILM12-XSPVL48



DILM12-XSPD

Xstart IEC Contactors

Accessories

Paralleling links for main contacts*



DILM12-XP1



DILM32-XP1



DILM150-XP1



DILM12-XS1



DILM400-XS1



DILM12-XSL



DILM32-XSL



DILM32-XIP2X



DILM65-XIP2X

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

Xstart IEC Contactors

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	DILM32-XTEE11(RAC240)
	DILA	
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	DILM32-XTED11-1(RAC130)
	DILMP20	DILM32-XTED11-10(RAC130)
	DILMP32 - DILMP45	DILM32-XTED11-100(RAC130)
	DILA	
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	DILM32-XTEY20(RAC240)
	DILA	



DILM32-XTEE11(RA24)



DILM32-XTED11-1(RA24)



DILM32-XTEY20(RA24)

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



DIL-SWD-32-001



DILM12-XMCP/E

Xstart IEC Contactors

Accessories

Sealable shrouds - Transparent

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



DILM32-XTEPLH

Suppressor circuits for vacuum contactors (on load side)

For use with	Item no.
DILM580 DILM650 DILM750 DILM820 DILM1000	DILM1000-XSM
DILH2000 DILH2200 DILH2600	DILH2600-XSM



DILM1000-XSM

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 _e A	400V I _e A	DC 220V I _e A			
2	2	0.03	24	...DILM DILMP... DILL... DILK...	ETS4-VS3



DILM225A-XHB

Notes: Contactor coils with rated operational current > 2 A must be actuated via the DILER-G mini contactor relay.
Rated operational current DC: Making and breaking conditions DC-13, time L/R 300ms

Replacement coils for DILM contactors

For use with	DC voltage Item no.	AC voltage Item no.
DILM17 DILM25 DILM32 DILM38	DILM32-XSP (RDC24) *	DILM32-XSP (240V50HZ)
DILM40 DILM50 DILM65 DILM72	DILM65-XSP (RDC24) *	DILM65-XSP (240V50HZ)
DILM80 DILM95	DILM95-XSP (RDC24) *	DILM95-XSP (240V50HZ)
DILM115 DILM150 DILM170	DILM150-XSP (RDC24) *	DILM150-XSP (RAC240)
DILM185A DILM225A	DILM225A-XSP (RDC24) *	DILM225A-XSP (RAC240)



ETS4-VS3



DILM32-XSP(RDC24)

For use with	DC voltage Item no.	AC voltage Item no.
DILM250 DILM300A	DILM250-XSP/E (RA250)	DILM250-XSP/E (RA250)
DILM400 DILM500	DILM500-XSP/E (RA250)	DILM500-XSP/E (RA250)
DILM580 DILM650 DILM750 DILM820 DILM1000	DILM1000-XSP/E (RA250)	DILM1000-XSP/E (RA250)
DILH1400	-	DILH1400-XSP/E (RAW250)
DILM250-S DILM300A-S	-	DILM250-S-XSP/E (220-240V50/60HZ)
DILM400-S DILM500-S	-	DILM500-S-XSP/E (220-240V50/60HZ)

* (Includes electronic module)

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.



CMD(24VDC)

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.

Description	Item no.
Contactors monitoring device, 24VDC	CMD(24VDC)
Contactors monitoring device, 240VAC	CMD(220-240VAC)

Overload relays



Description	Thermal overload relays	Electronic overload relays	Advanced motor protection relays
Type	ZB	ZEB	C445
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	0.3 - 800A (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 – 40
Reset type	Selectable manual / automatic	Selectable manual / automatic	Selectable manual / automatic / programmable / remote
Communications with I/O	—	Yes	Yes (Modbus, ETHERNET/IP, 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



ZB12-2,4



ZB32-16



ZB65-57



ZB150-100



ZB150-70/KK



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

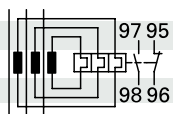
Note: Short circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.
Trip Class: 10A. Suitable for protection of EEx e-motors.



Z5-160/FF225A

Current transformer operated overload relay

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



ZB32-XEZ

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.
ZW7...	
ZE, Z5	
ZB12, ZB32	M22-DZ-B-GB14
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		ZEB12-1,65
Without	1 - 5	1NO - 1NC		ZEB12-5
Without	4 - 20	1NO - 1NC		ZEB12-20
With	0.33 - 1.65	1NO - 1NC	DILM7	ZEB12-1,65-GF
With	1 - 5	1NO - 1NC	DILM9	ZEB12-5-GF
With	4 - 20	1NO - 1NC	DILM12	ZEB12-20-GF
With			DILM15	



ZEB12-1,65

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)



ZEB32-1,65

ZEB32 direct mounting

Ground fault detection	Setting range of overload releases I_r , A	Auxiliary contact	For use with...	Item no.
Without	0.33 - 1.65	1NO - 1NC	DILM17 DILM25 DILM32 DILM38	ZEB32-1,65
Without	1 - 5	1NO - 1NC		ZEB32-5
Without	4 - 20	1NO - 1NC		ZEB32-20
Without	9 - 45	1NO - 1NC		ZEB32-45
With	0.33 - 1.65	1NO - 1NC		ZEB32-1,65-GF
With	1 - 5	1NO - 1NC		ZEB32-5-GF
With	4 - 20	1NO - 1NC		ZEB32-20-GF
With	9 - 45	1NO - 1NC		ZEB32-45-GF

ZEB32 separate mounting

Ground fault detection	Setting range of overload releases I_r , A	Auxiliary contact	For use with...	Item no.
Without	0.33 - 1.65	1NO - 1NC	DILM17 DILM25 DILM32 DILM38	ZEB32-1,65/KK
Without	1 - 5	1NO - 1NC		ZEB32-5/KK
Without	4 - 20	1NO - 1NC		ZEB32-20/KK
Without	9 - 45	1NO - 1NC		ZEB32-45/KK
With	0.33 - 1.65	1NO - 1NC		ZEB32-1,65-GF/KK
With	1 - 5	1NO - 1NC		ZEB32-5-GF/KK
With	4 - 20	1NO - 1NC		ZEB32-20-GF/KK
With	9 - 45	1NO - 1NC		ZEB32-45-GF/KK



ZEB65-45

ZEB65 & ZEB150 electronic overload relay

- Phase-failure sensitivity
- Test/off pushbutton
- Reset button
- Manual/Auto reset selectable
- Protection with heavy starting duty (Class 5-30)

ZEB65 direct mounting

Ground fault detection	Setting range of overload releases I_r , A	Auxiliary contact	For use with...	Item no.
Without	9 - 45	1NO - 1NC	DILM40 DILM50 DILM65 DILM72	ZEB65-45
With	9 - 45	1NO - 1NC		ZEB65-45-GF
Without	20 - 100	1NO - 1NC		ZEB65-100
With	20 - 100	1NO - 1NC		ZEB65-100-GF

ZEB150 direct mounting

Ground fault detection	Setting range of overload releases I_r , A	Auxiliary contact	For use with...	Item no.
Without	20 - 100	1NO - 1NC	DILM80 DILM95 DILM115 DILM150	ZEB150-100
With	20 - 100	1NO - 1NC		ZEB150-100-GF

ZEB150 separate mounting

Ground fault detection	Setting range of overload releases I_r , A	Auxiliary contact	For use with...	Item no.
Without	20 - 100	1NO - 1NC	DILM80 DILM95 DILM115 DILM150	ZEB150-100/KK
With	20 - 100	1NO - 1NC		ZEB150-100-GF/KK

Overload relays

ZEB accessories

Current sensors

Setting range of overload releases I_n , A	For use with...	Item no.
60 - 300	ZEB32-5-GF/KK ZEB32-5/KK	ZEB-XCT300
120 - 600		ZEB-XCT600
200 - 1000		ZEB-XCT1000
300 - 1500		ZEB-XCT1500

Remote reset

Description	Item no.
Remote reset module 24Vdc*	C440-XCOM
Remote reset module 120Vac*	ZEB-XRR-120
Remote reset module 24Vac*	ZEB-XRR-24

* Customer can wire remote mounted button to reset module (that is, 22mm pushbutton (M22-D-B-GB14-K10))

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.



EMT6



EMT6-DB



EMT6-DBK



CS-TE

Overload relays

C445 Global motor management relay

The Power Xpert® C445 motor management relay is Eaton's newest addition to the C400 series of advanced motor protection. With industry-leading diagnostic capabilities, energy usage analytics, and an unrivaled compact footprint, the C445 can be seamlessly integrated into a variety of systems and applications. Power options - 120/240 Vac or 24 Vdc

C445 motor management relay has a fully programmable trip and alarm thresholds with time delays. The Modular pass-through design with scalable options for current, voltage, power, energy protections and monitoring. With the voltage loss restart functionality, the C445 allows for automatic recovery in the event of undervoltage conditions without the need for user intervention, and the advanced diagnostics allows for quick and accurate identification of the root cause of a fault in line, load and motor conditions. The pre-programmed operation mode allows fast, easy, error-free installation for the majority of applications.



Product range

- 0.3–800 A
- 415V/690 Vac, 3.3k Vac with voltage transformers
- 20–80 Hz operation
- Selectable trip class (5–40)

On-board I/O

- 4 digital inputs
- 120 Vac or 24 Vdc
- 3 relay outputs
- 2N/O, 1C/O

On-board communication options

- EtherNet/IP
- Modbus TCP, Modbus RTU
- PROFIBUS DP
- USB

Control user interface - C445UM

Easy and safe monitoring, control and parameter setting

Door-mounted display enables safe and complete device diagnostics and parameter setting without opening the MCC door. Contextual LCD buttons provide intuitive navigation through monitoring menus. Optionally use control buttons for compact local control without the need for hardwiring.



RUNNING LED

- ON: Running
- Flashing: Starting



STOPPED LED

- ON: Stopped
- Flashing: Inhibited



AUTO LED

- ON: Controlled by remote source

Measurement module



The pass-through design measurement module samples the current, voltage, power and energy data consumed by the electric motor and continuously passes it electronically to the base control module via a cable connection. For applications with limited mounting space, users can mount the base control module directly onto the 45 mm measurement module, achieving a best-in-class compact footprint.

- 45, 55 and 90 mm frames provide direct pass-through capability from 0.3 to 136 A
- External current transformer (CT) kits available for applications up to 800 A
- Standard current-based monitoring and protection with options for voltage and PTC inputs

Frame size	Current range (A)	Current (I) sensing	Voltage (V) sensing	PTC sensing	Item no.
45 mm	0.3-2.4	Yes	.	.	C445MA-2P4I
		Yes	.	Yes	C445MA-2P4P
		Yes	Yes	.	C445MA-2P4V
		Yes	Yes	Yes	C445MA-2P4A
	1-5	Yes	.	.	C445MA-005I
		Yes	.	Yes	C445MA-005P
		Yes	Yes	.	C445MA-005V
		Yes	Yes	Yes	C445MA-005A
	4-32	Yes	.	.	C445MA-032I
		Yes	.	Yes	C445MA-032P
		Yes	Yes	.	C445MA-032V
		Yes	Yes	Yes	C445MA-032A
55 mm	6-45	Yes	.	.	C445MA-045I
		Yes	.	Yes	C445MA-045P
		Yes	Yes	.	C445MA-045V
		Yes	Yes	Yes	C445MA-045A
	9-72	Yes	.	.	C445MB-072I
		Yes	.	Yes	C445MB-072P
		Yes	Yes	.	C445MB-072V
		Yes	Yes	Yes	C445MB-072A
90 mm	11-90	Yes	.	.	C445MC-090I
		Yes	.	Yes	C445MC-090P
		Yes	Yes	.	C445MC-090V
		Yes	Yes	Yes	C445MC-090A
	17-136	Yes	.	.	C445MC-136I
		Yes	.	Yes	C445MC-136P
		Yes	Yes	.	C445MC-136V
		Yes	Yes	Yes	C445MC-136A

Overload relays

C445 Global motor management relay

Base control module

The core of the C445 system, the base control module contains all of the protection, monitoring and control algorithms in addition to native I/O points. An interchangeable communication card slot allows for various communications with a single base unit.

- 120/240 Vac or 24 Vdc power source options
- Four 120 Vac or 24 Vdc inputs, 2N/O and 1C/O relay outputs
- Optional communications
- USB, Modbus RTU, Modbus TCP, EtherNet/IP, PROFIBUS DP
- Multiple pre-configured operation modes



Power source	Voltage range	Digital inputs	Relay outputs	On-board communications	Item no.
120/240 Vac	0–690 Vac	(4) 120 Vac	(2) Form A, (1) Form C (non-latching)	—	C445BA-SANN
				Modbus Serial	C445BA-SANM
			(2) Form A, (1) Form C (latching)	—	C445BA-SALN
				Modbus Serial	C445BA-SALM
		(4) 24 Vdc	(2) Form A, (1) Form C (non-latching)	—	C445BA-SDNN
				Modbus Serial	C445BA-SDNM
24 Vdc	0–690 Vac	(4) 120 Vac	(2) Form A, (1) Form C (non-latching)	—	C445BD-SANN
				Modbus Serial	C445BD-SANM
			(2) Form A, (1) Form C (latching)	—	C445BD-SALN
				Modbus Serial	C445BD-SALM
		(4) 24 Vdc	(2) Form A, (1) Form C (non-latching)	—	C445BD-SDNN
				Modbus Serial	C445BD-SDNM
		(4) 24 Vdc	(2) Form A, (1) Form C (non-latching)	—	C445BD-SDNN
				Modbus Serial	C445BD-SDNM
			(2) Form A, (1) Form C (latching)	—	C445BD-SDLN
				Modbus Serial	C445BD-SDLM

External Current Transformers

Use CTs and 1–5 A C445MA-005_ measurement module. CT kit does not include measurement module (order separately)

CT Range (A)	Description	Terminal Size	Item no.
17–300	300:5 single-phase CT, 1.25 inch dia hole, UL and CSA ANSI/ IEEE C57.13, 50–400 Hz, 600 Vac, 10 kV, relay class C50, accuracy 0.3% B0.1	(2) 8–32 brass terminals, comes with mounting bracket kit	XCT300-5
75–600	600:5 single-phase CT, 2.00 inch dia hole, UL and CSA ANSI/ IEEE C57.13, 50–400 Hz, 600 Vac, 10 kV, relay class C50, accuracy 0.3% B0.1	(2) 8–32 brass terminals, comes with mounting bracket kit	XCT600-5
100–800	800:5 single-phase CT, 2.50 inch dia hole, UL and CSA ANSI/ IEEE C57.13, 50–400 Hz, 600 Vac, 10 kV, relay class C50, accuracy 0.3% B0.1	(2) 8–32 brass terminals, comes with mounting bracket kit	XCT800-5

Connection Cables and Accessories

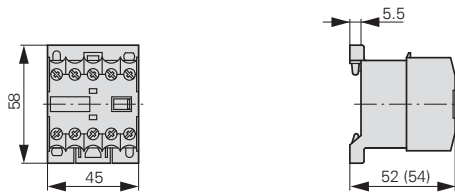
D77E connection cables are required to connect the base control module to the measurement module and to the user interface. Order the appropriate lengths for each connection. User interface wiring harnesses are required to utilize the digital inputs on the user interface. Order one wiring harness per user interface to connect to these inputs. C445XS-USBMICRO and C445XS-USBLEADS are used to connect the Power Xpert inControl tool (see next page for details). C445XS-USBRJ12 is used for firmware upgrades.

Description	Item no.
Connection cable (base control module to measurement module or user interface), 13 cm length, 600 V rating	D77E-QPIP13
Connection cable (base control module to measurement module or user interface), 13 cm length, 1000 V rating	D77E-QPIP13-HV
Connection cable (base control module to measurement module or user interface), 25 cm length, 600 V rating	D77E-QPIP25
Connection cable (base control module to measurement module or user interface), 25 cm length, 1000 V rating	D77E-QPIP25-HV
Connection cable (base control module to measurement module or user interface), 100 cm length, 600 V rating	D77E-QPIP100
Connection cable (base control module to measurement module or user interface), 100 cm length, 1000 V rating	D77E-QPIP100-HV
Connection cable (base control module to measurement module or user interface), 200 cm length, 600 V rating	D77E-QPIP200
Connection cable (base control module to measurement module or user interface), 300 cm length, 600 V rating	D77E-QPIP300
Connection cable (base control module to measurement module or user interface), 300 cm length, 1000 V rating	D77E-QPIP300-HV
User interface digital inputs wiring harness, 50 cm, 16 AWG wires	C445XU-050
User interface digital inputs wiring harness, 100 cm, 16 AWG wires	C445XU-100
User interface digital inputs wiring harness, 200 cm, 16 AWG wires	C445XU-200
User interface digital inputs wiring harness, 300 cm, 16 AWG wires	C445XU-300
Spare parts kit—terminal connectors, mounting feet	C445XS-TERM
Standard USB A male to micro USB male cable	C445XS-USBMICRO
Standard USB A male to loose leads cable (for use with Modbus Serial terminals)	C445XS-USBLEADS
Standard USB A male to RJ-12 cable (for firmware upgrades)	C445XS-USBRJ12

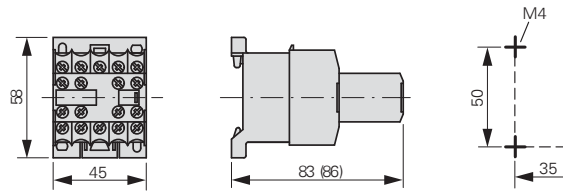
Dimensions

Mini contactor relays

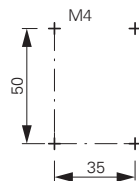
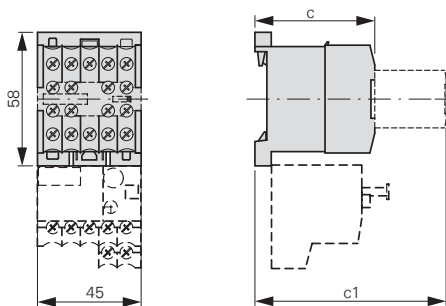
DILER-...(-C)
DILER-...-G(-C)



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



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



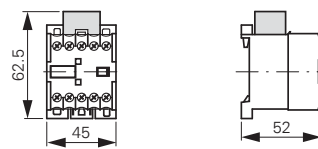
Part no.	c	c1
DILE(E)M-...(-G)	52	83
DILE(E)M-...-G(-C)	54	86

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

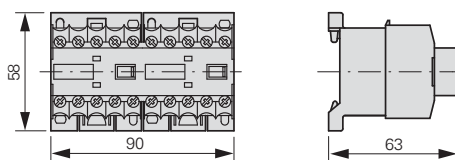


Suppressor circuit

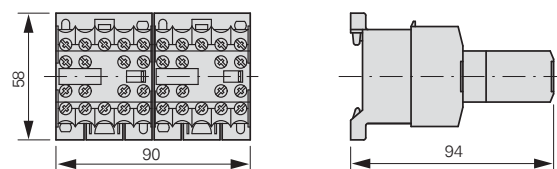
RCDILE...
VGDILE



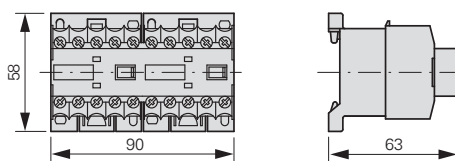
2DILE-... + MVDILE
2DILE-...-G + MVDILE



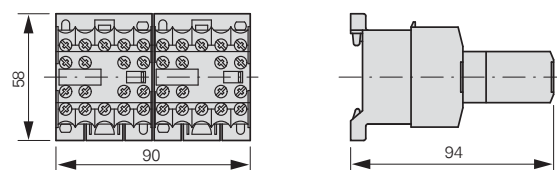
2DILE-... + MVDILE + ...DILE
2DILE-...-G + MVDILE + ...DILE



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

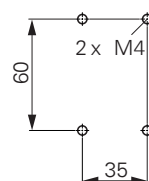
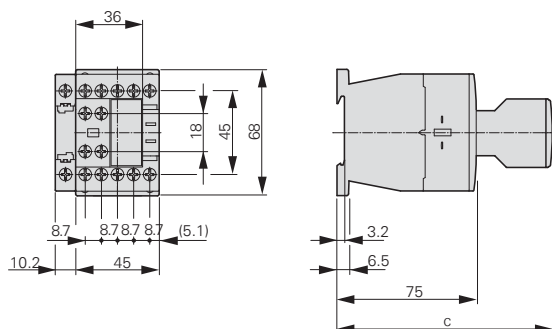


2DILE-... + MVDILE + ...DILE
2DILE-...-G + MVDILE + ...DILE



Contactors with auxiliary contact module

DILM7...DILM15
DILA...

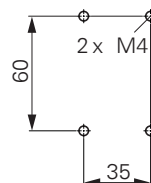
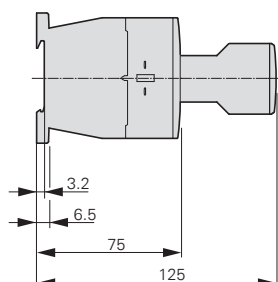
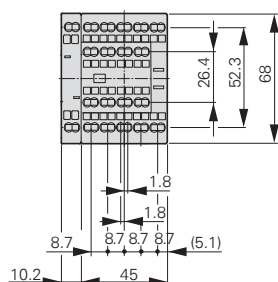


Part no.	c
DILM32-XHI	117
DILA-XHI	117
DILA-XHI...T	125

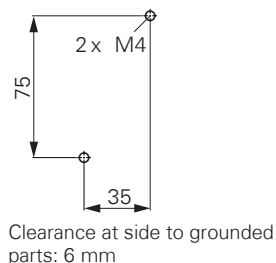
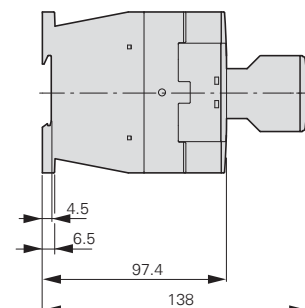
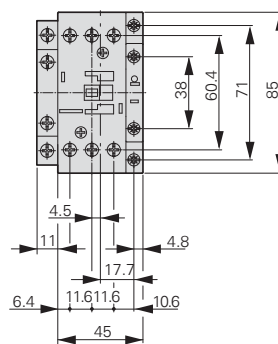
Dimensions

Contactors

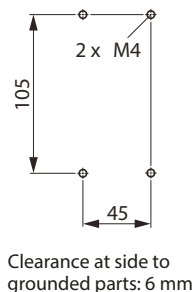
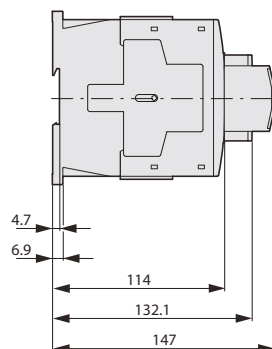
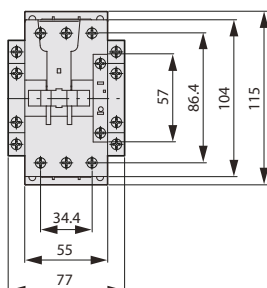
DILMC7...DILMC15
DILAC...
DILA-XHIC...



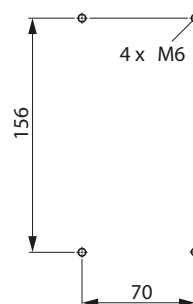
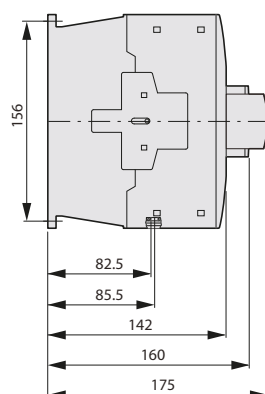
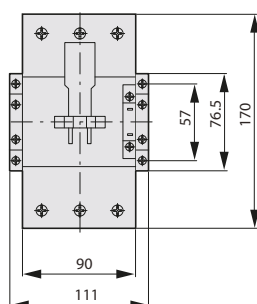
DILM17...DILM38
DILMC17...DILMC32
DILMF8...DILMF32



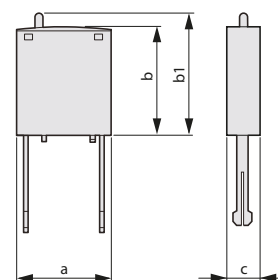
DILM40...DILM72



DILM80...DILM170



Suppressor circuit



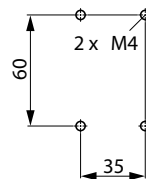
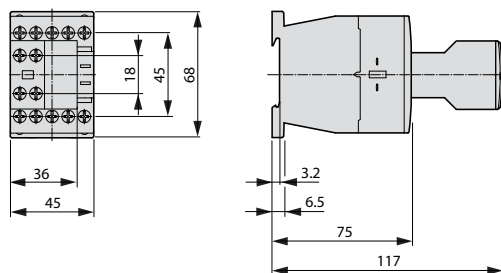
Part no.	a	b
DILM12-XSP...	25	28
DILM32-XSP...	25	28
DILM95-XSP...	25	28

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

Dimensions

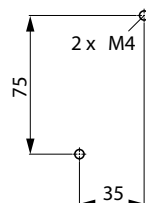
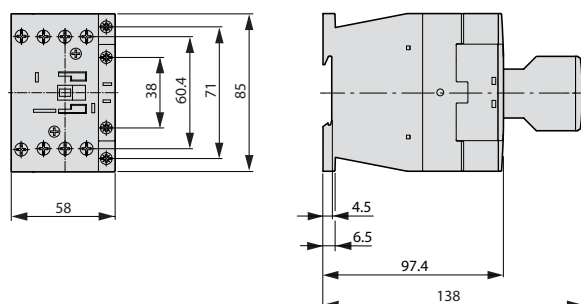
Contactor with auxiliary contact module

DILMP20



DILMP32

DILMP45

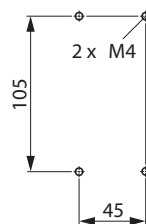
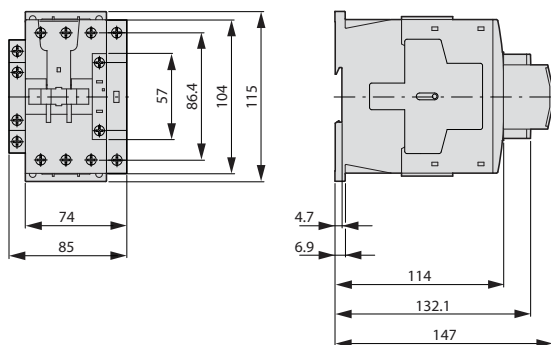


Distance at side to grounded parts: 6 mm

Contactors

DILMP63

DILMP80

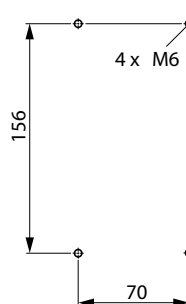
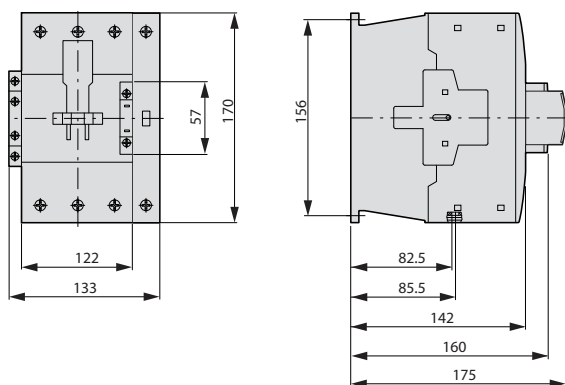


Distance at side to grounded parts: 6 mm

DILMP125

DILMP160

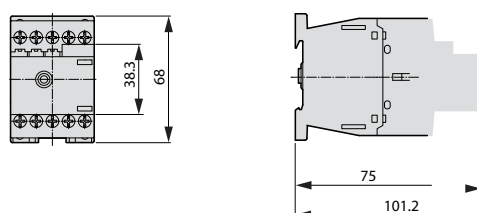
DILMP200



Clearance at side to earthed parts: 10 mm

Motor suppressor module

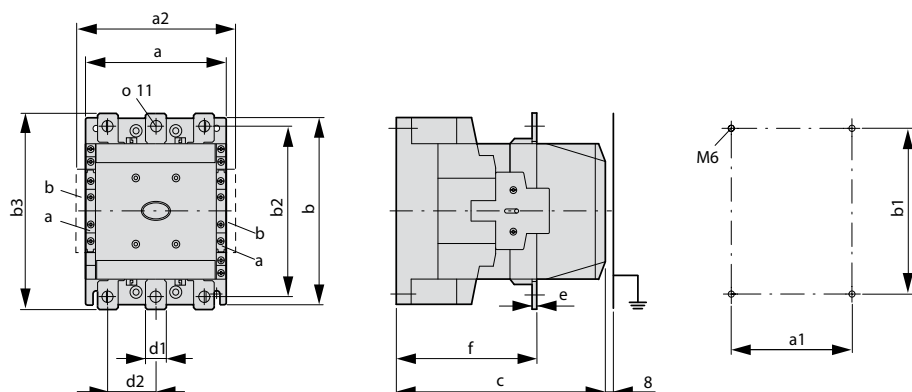
DILM12-XMSM



Dimensions

Complete units

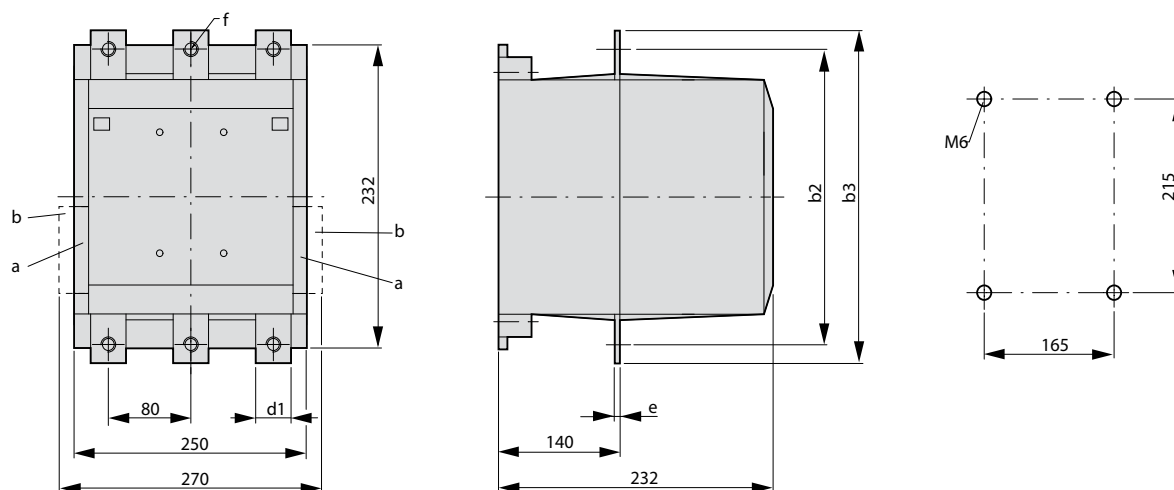
DILM185A...DILM500
DILM250-S...DILM570-S



a DILM1000-XHI...-SI
b DILM1000-XHI11-SA

Part no.	a	a1	a2	b	b1	b2	b3	d1	d2	e	c	f
DILM185A	140	120	160	180	160	165	190	20	41	5	158	83
DILM225A	140	120	160	180	160	165	190	20	41	5	158	83
DILM250	140	120	160	180	160	164	189	25	48	5	208	140
DILM300A	140	120	160	180	160	164	189	25	48	5	208	140
DILM400	160	130	180	200	180	184	209	25	48	6	216	140
DILM500	160	130	180	200	180	189	219	38	57	6	216	140
DILM570	160	130	180	200	180	189	219	38	57	6	216	140

DILM580...DILM1000



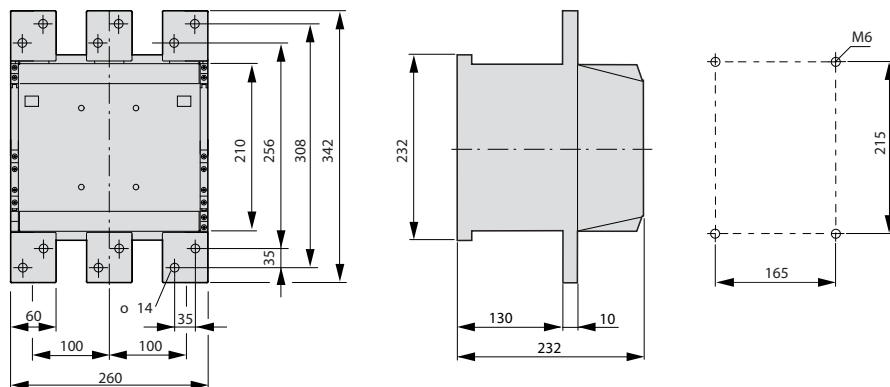
a DILM820-XHI...-SI
b DILM820-XHI11-SA

Part no.	b2	b3	d1	e	f
DILM580	256	296	45	6	13.5
DILM650	256	296	45	6	13.5
DILM750	256	296	45	6	13.5
DILM820	256	296	45	6	13.5
DILM1000	256	296	45	10	13.5

Dimensions

AC-1 contactors greater than 1000A

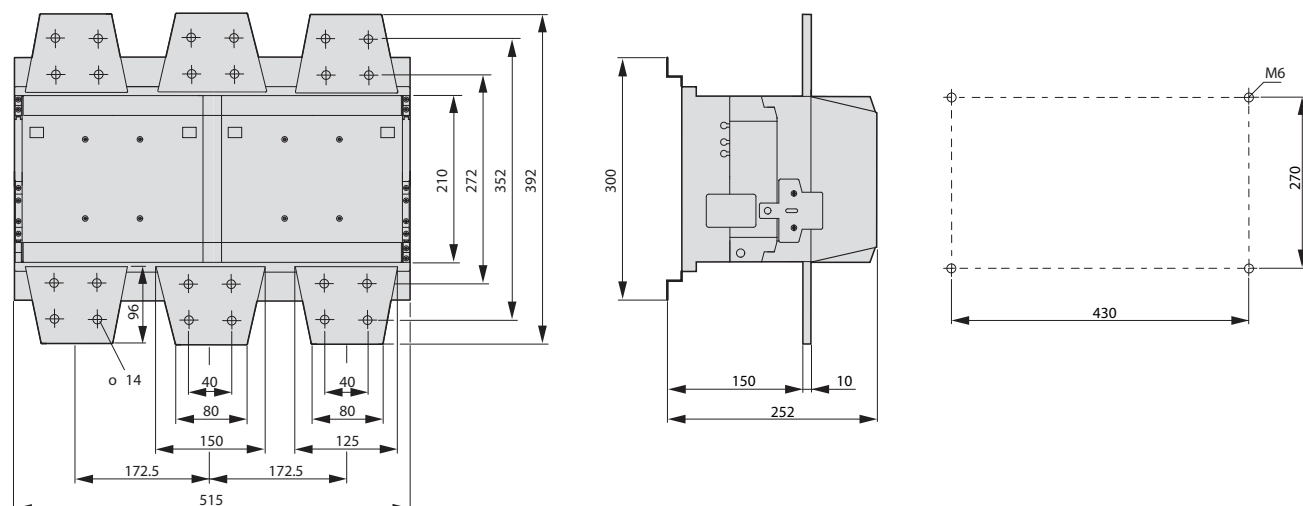
DILH1400



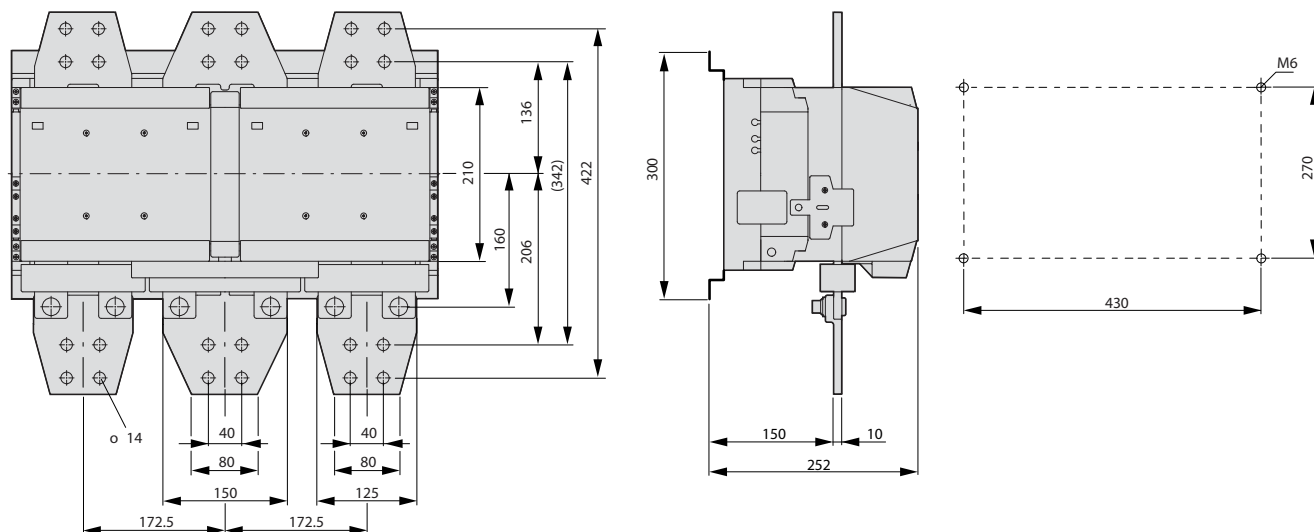
DILM1600

DILH2000

DILH2200



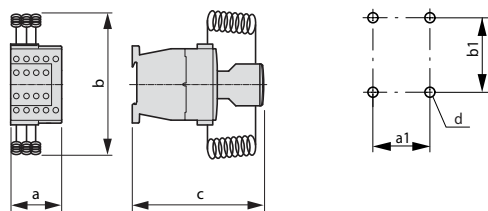
DILH2600



Dimensions

Contactor for capacitors

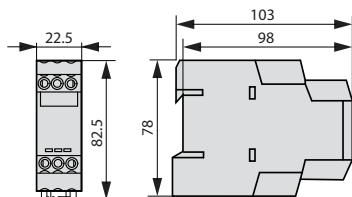
DILK...



Part no.	a	b	c	a1	b1	d
DILK12	45	135	138	35	75	2 x M4
DILK20	45	135	138	35	75	2 x M4
DILK25	45	135	138	35	75	2 x M4
DILK33	55	190	147	45	105	2 x M4
DILK50	55	190	147	45	105	2 x M4

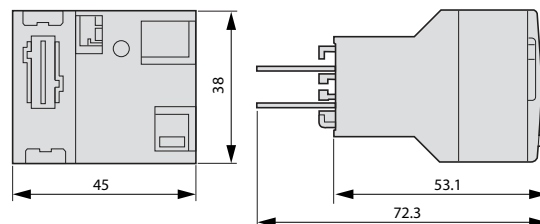
Contactor monitoring devices

CMD(...)



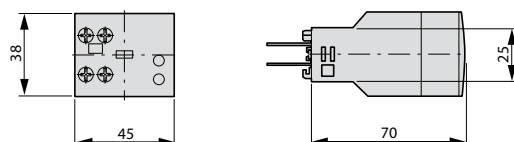
SWD contactor modules

DIL-SWD-32-...



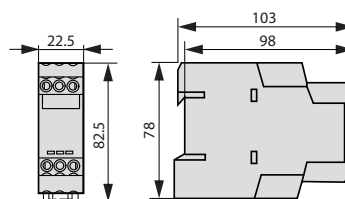
Electronic timer modules

DILM...XTE



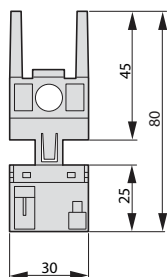
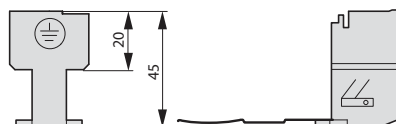
Amplifier module

ETS4-VS3

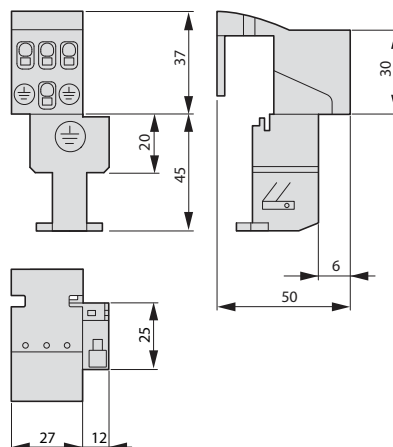


Wiring set for motor feeder plug

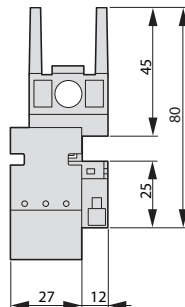
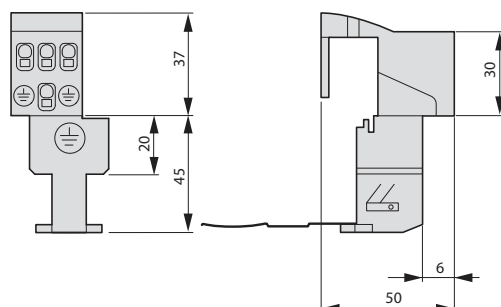
DILM12-XMCE



DILM12-XMCP/T

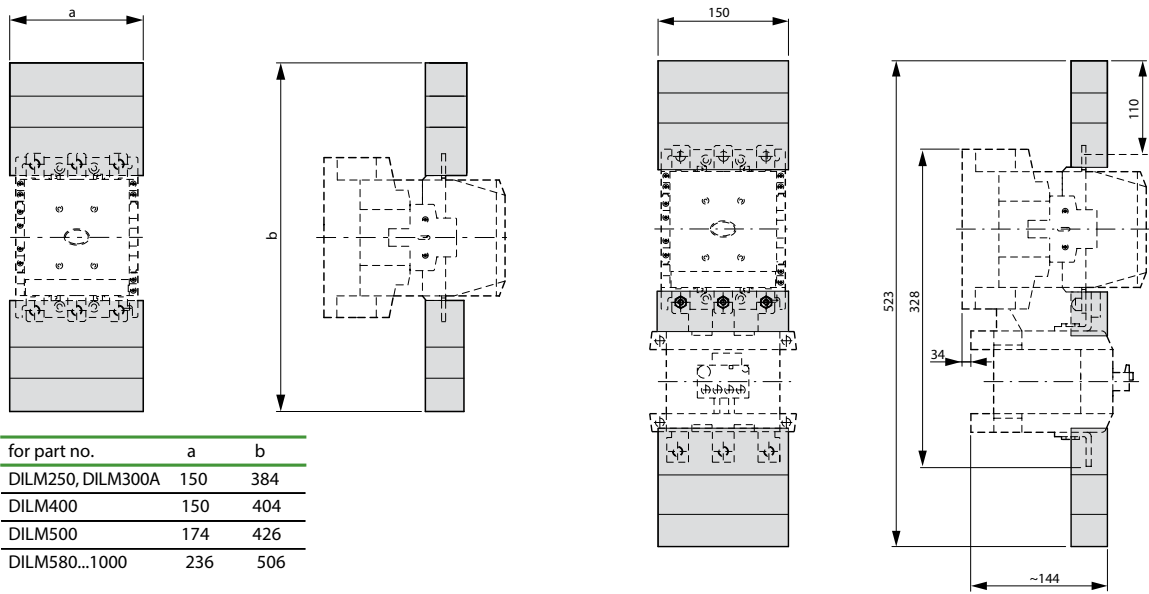


DILM12-XMCP/E

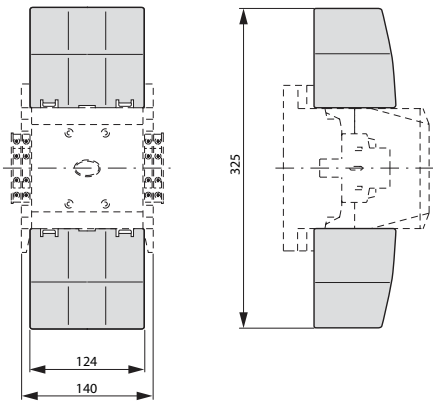


Dimensions

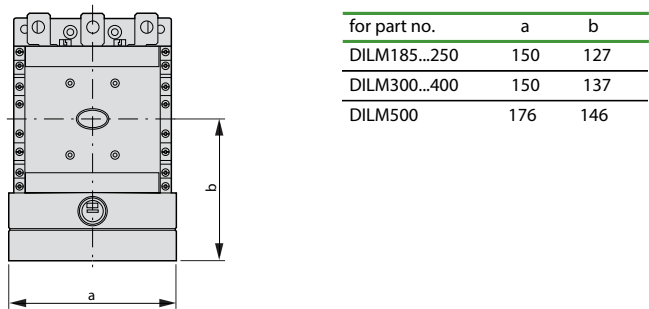
Contactors with terminal shrouds



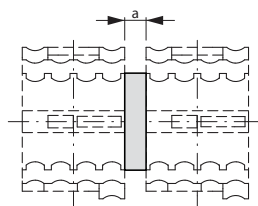
DILM185A...DILM225A + DILM225A-XHB



Contactors with star-point bridge and terminal shrouds

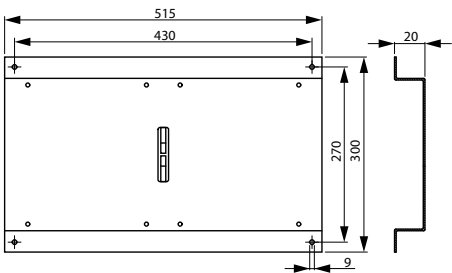


Mechanical interlock
DILM500-XMV



for part no.	a
DILM185...500	15

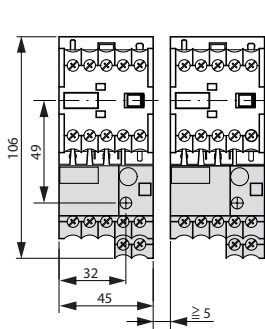
DILM820-XMV



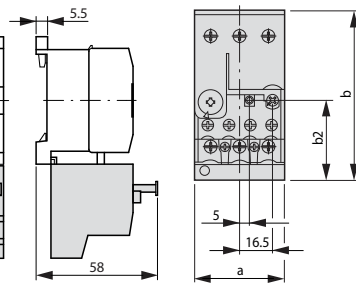
Dimensions

Overload relays

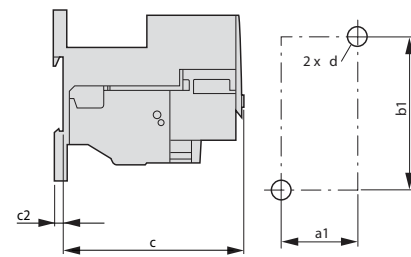
ZE-...



ZB32-XEZ

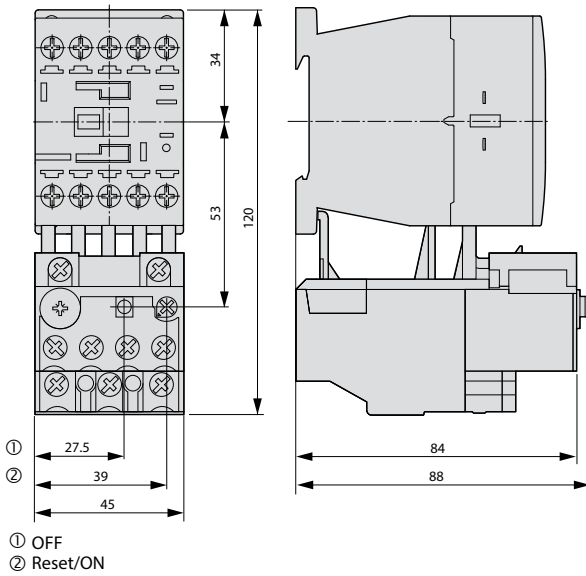


ZB65-XEZ

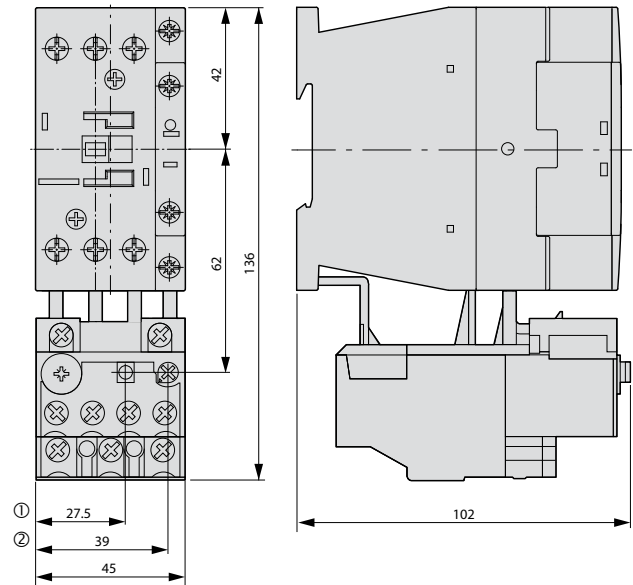


	ZB32	ZB65
a	45	60
b	85	86
c	90.5	112
c2	3.8	4.7
a1	35	50
b1	75	75
b2	40.5	47
d	M4	M5

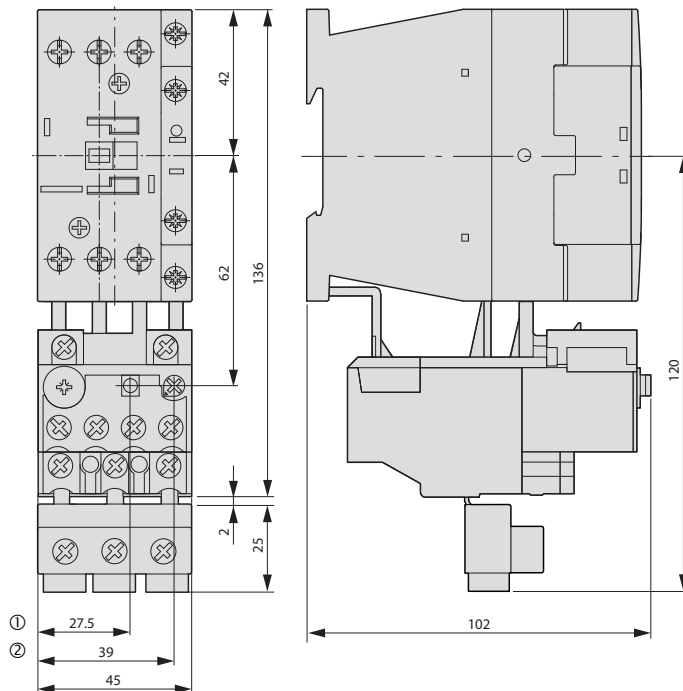
ZB12



ZB32



ZB32-38



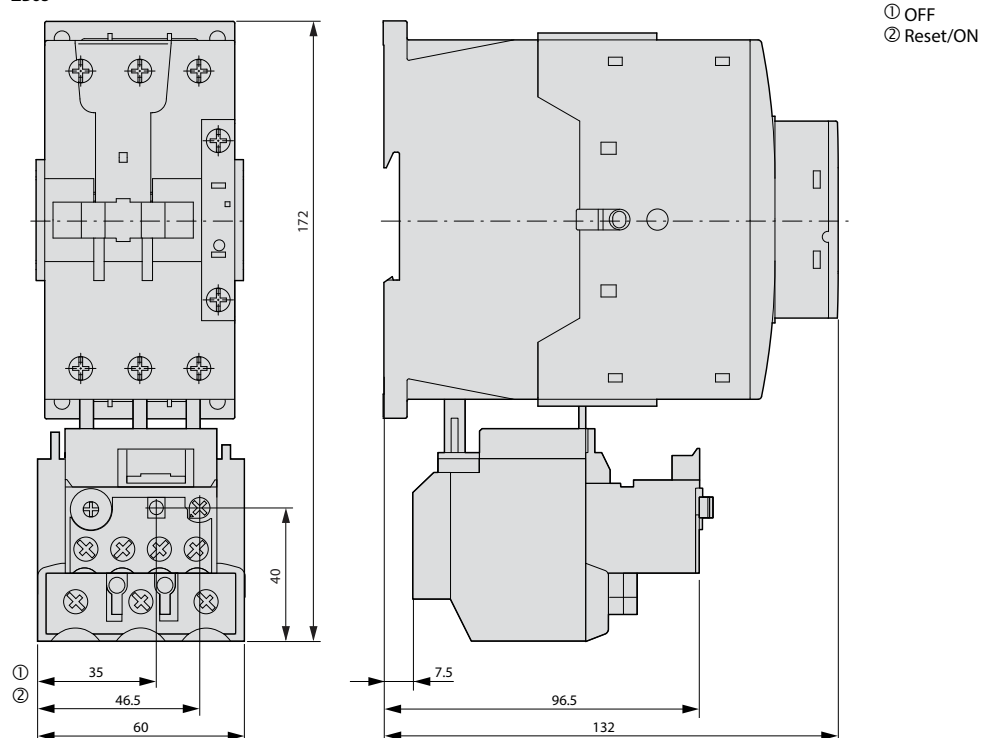
Automatic fault notification

- View 10 fault que
- View trip snapshot

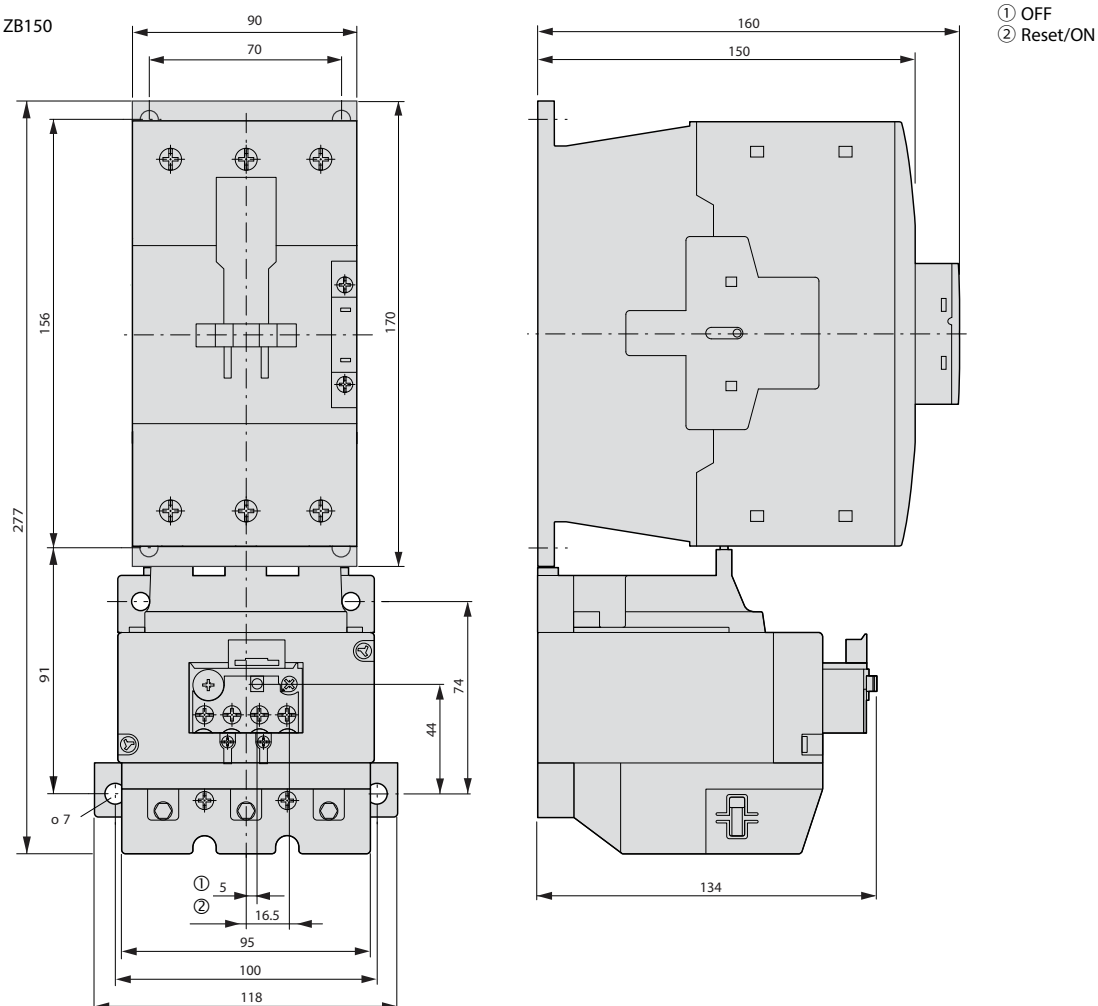
Dimensions

Overload relays

ZB65



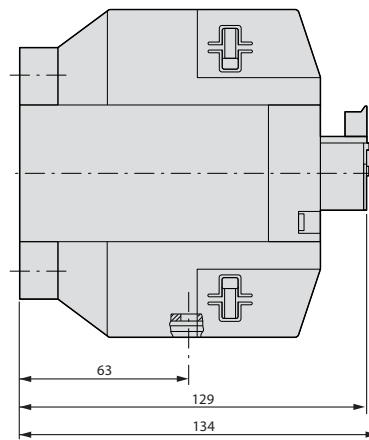
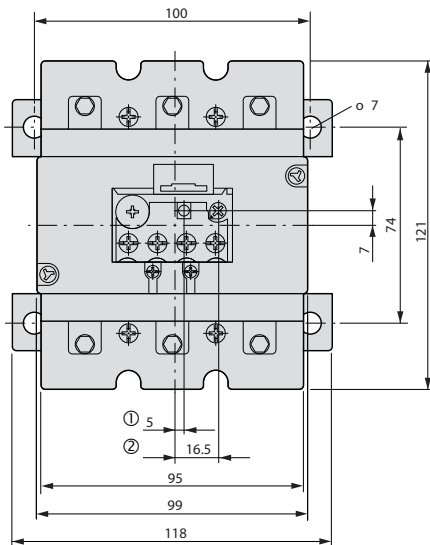
ZB150



Dimensions

Overload relays

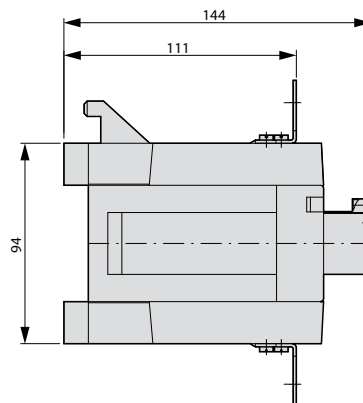
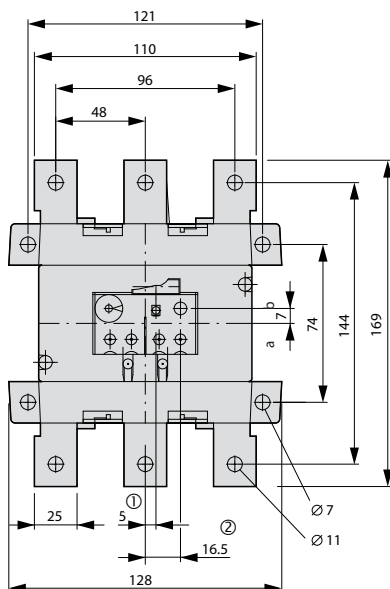
ZB150-50/KK



- ① OFF
- ② Reset/ON

Z5 overload relays greater than 150A

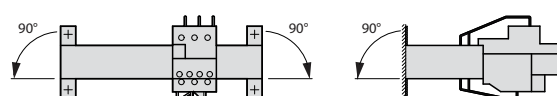
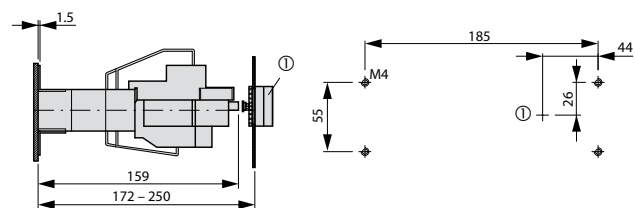
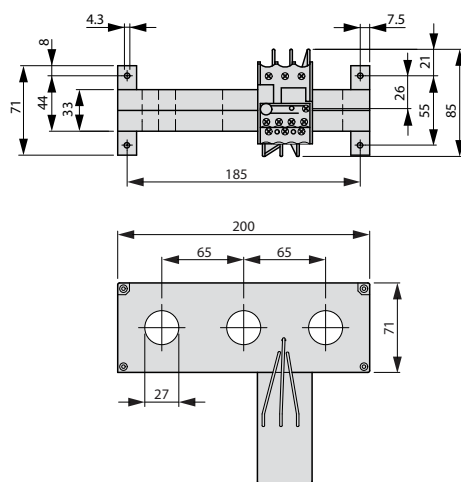
Z5.../FF250



- ① OFF
- ② Reset/ON

Current transformer-operated overload relays

ZW7-...

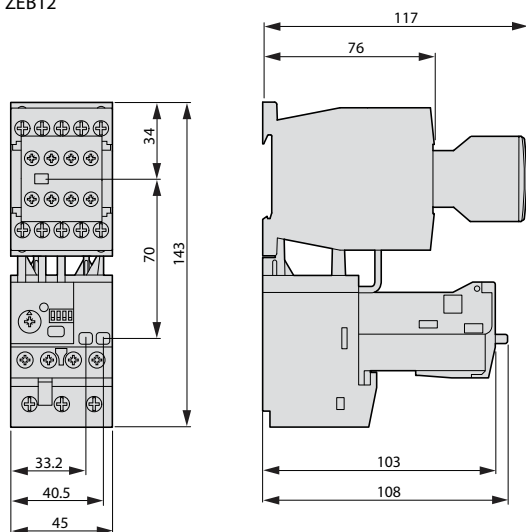


- ① Reset/ON

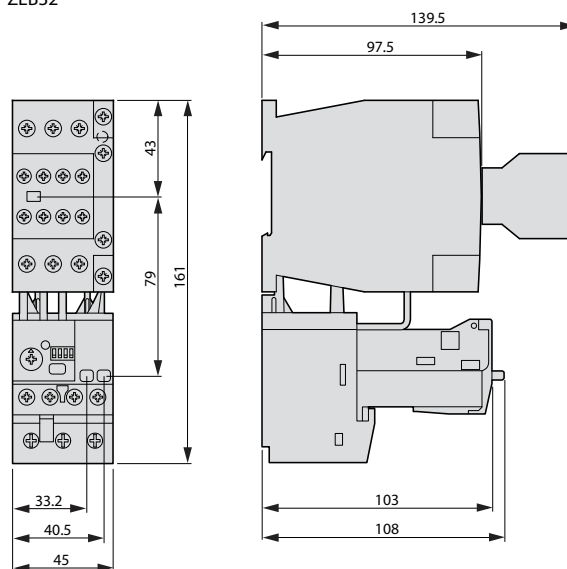
Dimensions

Electronic overload relays

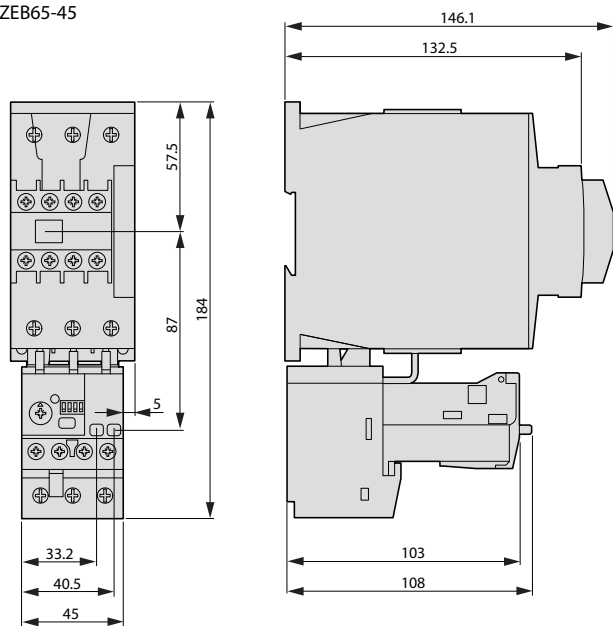
ZEB12



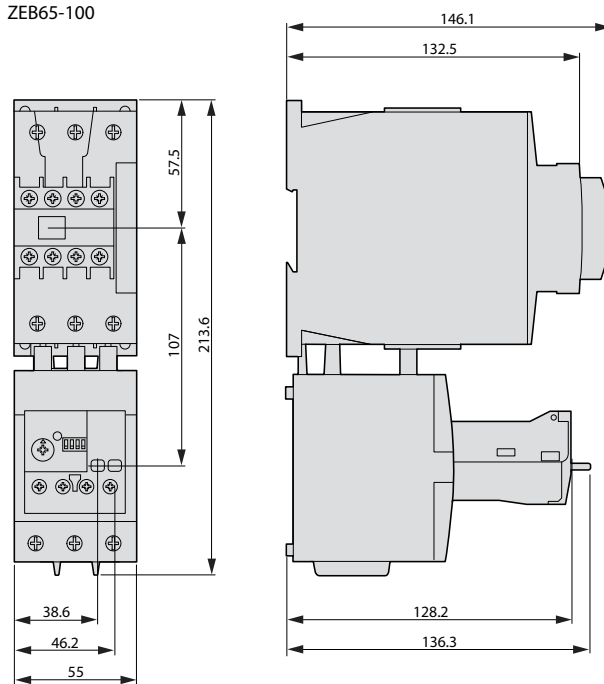
ZEB32



ZEB65-45



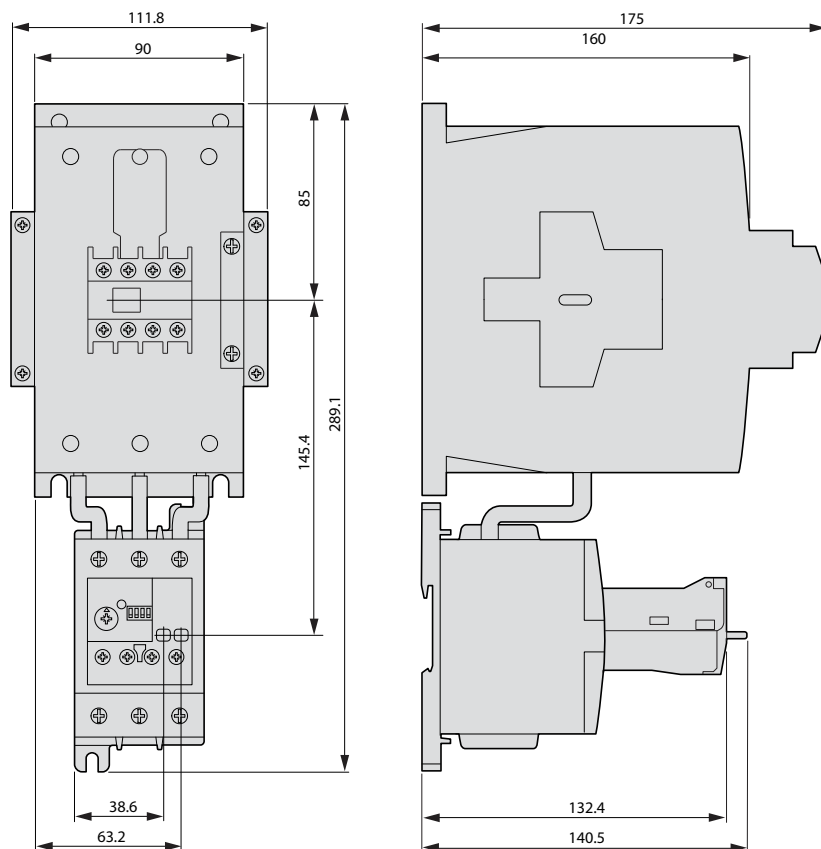
ZEB65-100



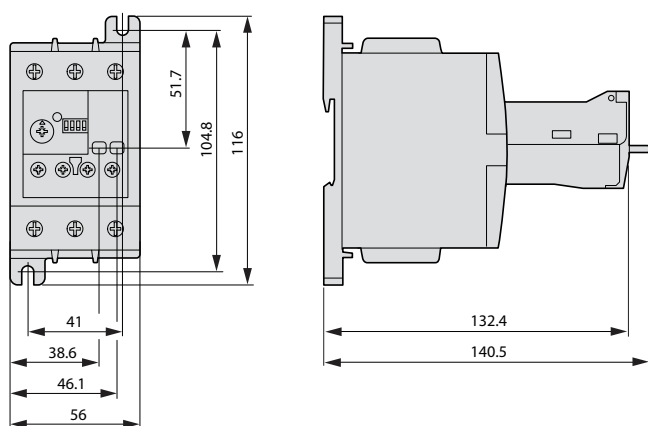
Dimensions

Electronic overload relays

ZEB150-100



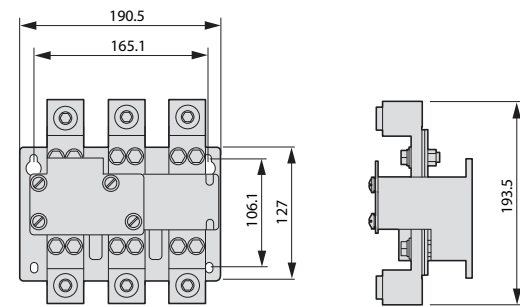
ZEB150-100/KK



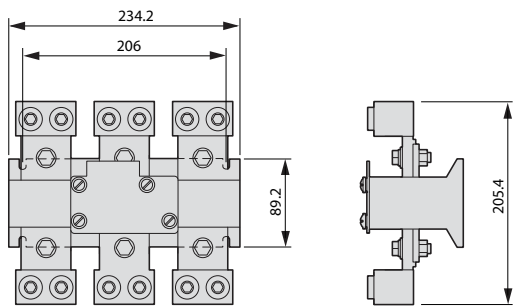
Dimensions

Current sensors

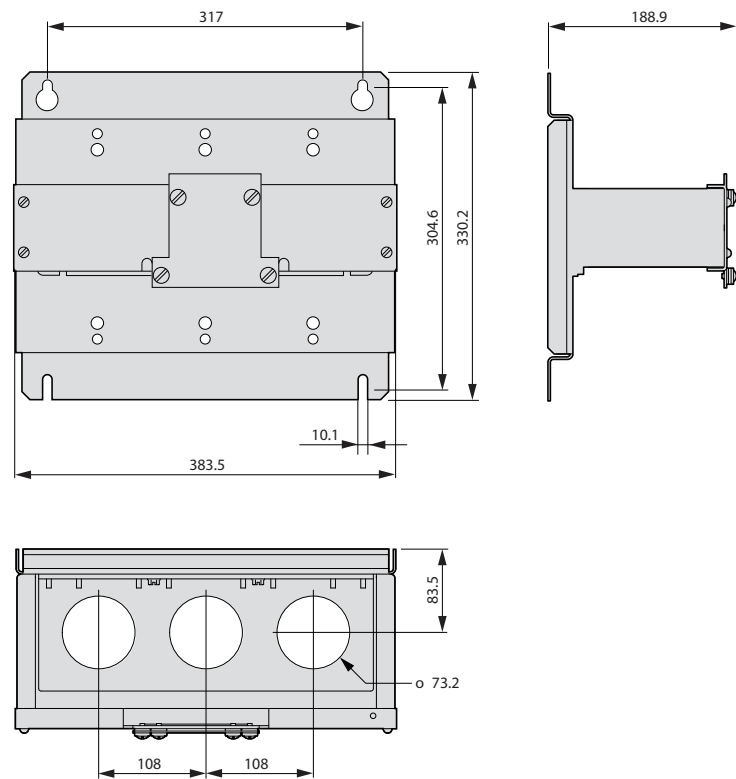
ZEB-XCT300



ZEB-XCT600

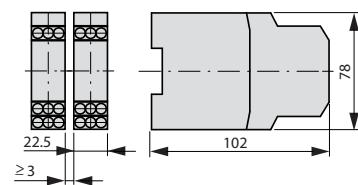


ZEB-XCT1000
ZEB-XCT1500



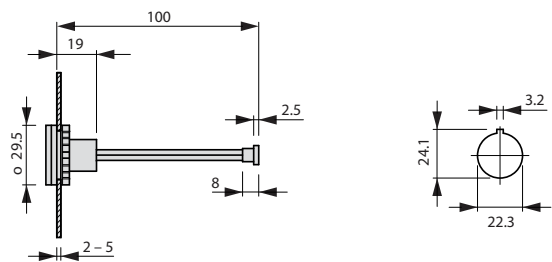
EMT6 thermistor overload relays for machine protection

EMT6...

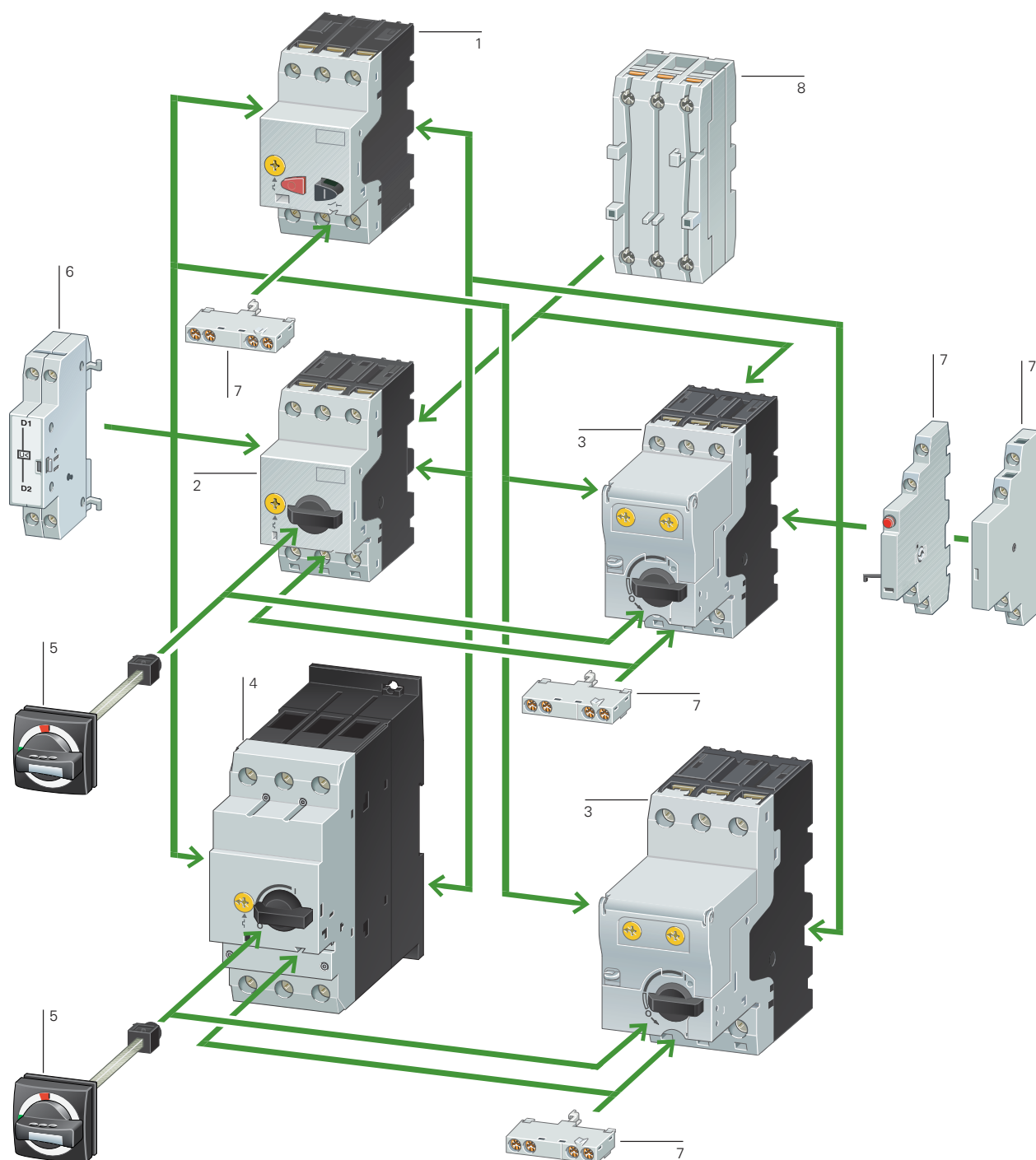


External reset button

M22-DZ-B
M22-DZ-X



IEC Manual motor protectors





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

Motor Protectors


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 mot

SF = 1 -> I_r = 0.9 x I_n 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



PKZM01-1



PKZM0-1



PKZM4-16



AK-PKZ0

Motor Protectors

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	3 ... 12 A	PKE12 PKE32	PKE-XTU-12	PKE-XTUA-12
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	8 ... 32 A	PKE32	PKE-XTU-32	PKE-XTUA-32
2.2	8.7	-	-				
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

Motor Protectors

Electronic motor-protective circuit-breaker PKE



PKE-XTUA-32



PKE-XTUWA-32



PKE-SWD-SP



NHI21-PKZ0



VHI20-PKZ0

Motor rating kW	Rated motor current AC-3			Overload release setting range	Base unit	Control unit Standard	Control unit Advanced (with COM interface)
	240V A	415V A	660 V 690 V A				
	Motor-protective circuit-breaker, Coordination type "1" & "2"						
22	-	-	23.8	8 ... 32 A	PKE32	PKE-XTU-32	PKE-XTUA-32
30	-	-	32				
5.5	19.6	-	-				
7.5	26.4	-	-				
11	38	21.7	-				
15	51	29.3	17	16...65 A	PKE65	PKE-XTU-65	PKE-XTUA-65
18.5	63	36	20.9				
22	-	41	23.8				
30	-	55	32				
37	-	-	39				
45	-	-	47				
55	-	-	58				
2.2	8.7	-	-				
3	11.5	-	-				
4	14.8	8.5	-				
5.5	19.6	11.3	-	8...32 A	PKE65	PKE-XTUW-32	PKE-XTUWA-32
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

Motor Protectors

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
Rotary Handle Mechanism IP65 Black — For use on main switches to IEC / EN 60204 where PKZ0 is mounted 90° from vertical. FOR USE WITH xEnergy	PKZ0-XHT-MCC

① With ON/OFF switch position & "+" (tripped), lockable with 3 padlocks, 4 – 8 mm hasp. Can be locked in the OFF position, if required.

② Rotary handle mechanisms ship with door interlock disabled. See instruction publication with product for how to enable door interlock.

③ Not for use with VHI20-PKZ0 early-make front-mount auxiliary contact.



PKZ0-XH



PKZ0-XRH-MCC

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
For use as a main switch to EN 60204 in MCC power distribution systems and with PKE installed when rotated by 90° FOR USE WITH xEnergy	black	PKE-XHT-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



A-PKZ0(110V50HZ)



U-PKZ0(24VDC)



PL-PKZ0



CL-PKZ0

Motor Protectors

IEC Manual motor protectors accessories

Three-phase commoning links ①

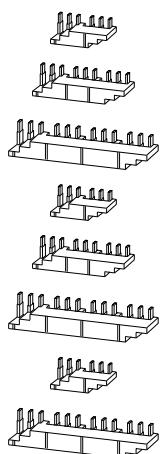
For Use with...	Qty. MMP	Length of link (mm)	Unit width (mm)	Item no.
Frame B				
MMP With No Side-Mounted Auxiliaries or Voltage Releases	2	90	45	B3.0/2-PKZ0
	3	135	45	B3.0/3-PKZ0
	4	180	45	B3.0/4-PKZ0
	5	225	45	B3.0/5-PKZ0
For motor-protective circuit-breaker each with an auxiliary contact or trip-indicating 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.



Motor Protectors

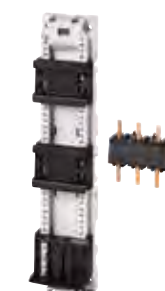
IEC Manual motor protectors accessories

Combination connection kits for connection of rotary MMP with IEC contactor

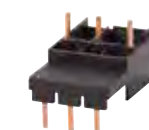
For use with...	Description	Item no.
Non-Reversing Starters		
PKE/PKZMO + DILM7-15 DS7 (4-12A)	Comprised of: Mechanical connection element for PKZMO & contactor Main current wiring between PKZMO & contactor in tool-less plug connection Cable guidance Use contactor auxiliary switch DILA-XHIT... Control 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

Motor Protectors

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.



BBA0-25



BBA4L-63



BBA0R-32



BBA-XSM

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



IF IT'S IN A CATALOGUE YOU CAN FIND IT ON
POWEREDGE™
 LEARN. SHARE. ORGANISE.



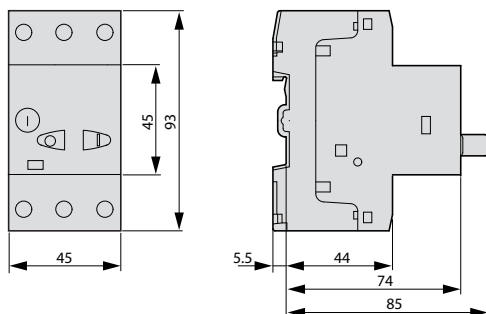
INTERACT WITH EATON USING THE
FREE EATON INTERACTIVE APP
 SIMPLY DOWNLOAD & OPEN THE APP,
 SELECT AR MODE, & SCAN THE LOGO TO INTERACT

Dimensions

Motor Protectors

Motor-protective circuit breaker

PKZM01...

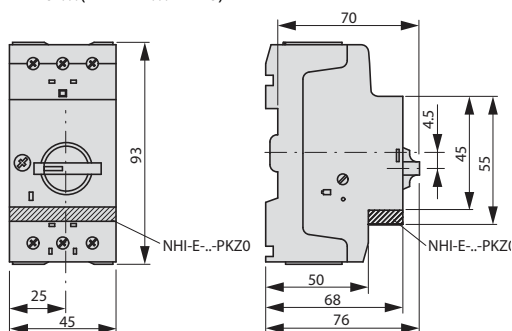


Motor-protective circuit breaker

Transformer-protective circuit breakers

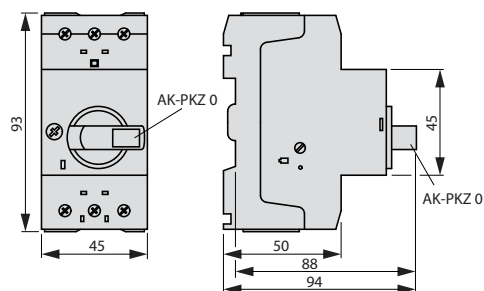
Motor-protective circuit breaker with auxiliary contacts

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



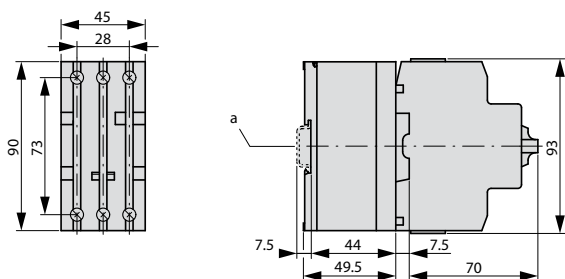
Motor-protective circuit breaker with lockable rotary handles

PKZM0-...+AK-PKZ0



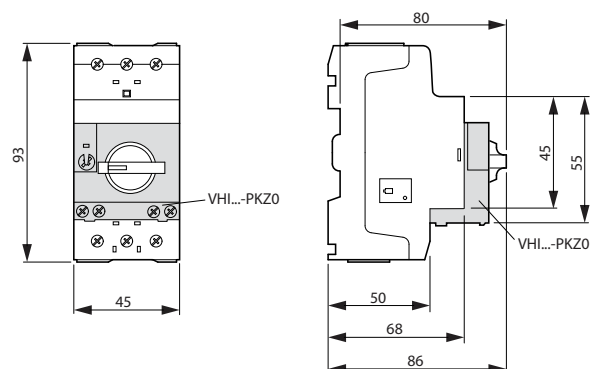
Current limiters

CL-PKZ...



Motor-protective circuit breaker with early-make auxiliary contacts

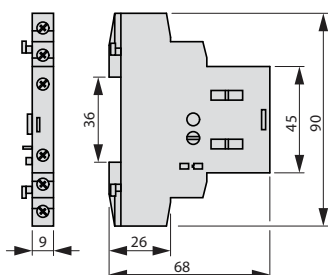
PKZM0-...+VHI-...-PKZ0



① Top-hat rail IEC/EN 60715

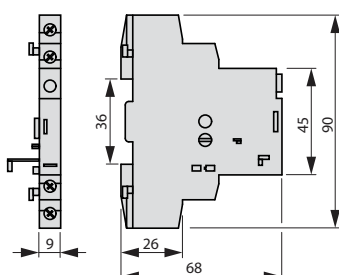
Standard auxiliary contacts

NHI...-PKZ0



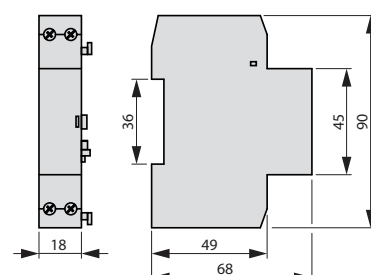
Trip indicators

AGM2...-PKZ0



Shunt release - undervoltage release

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



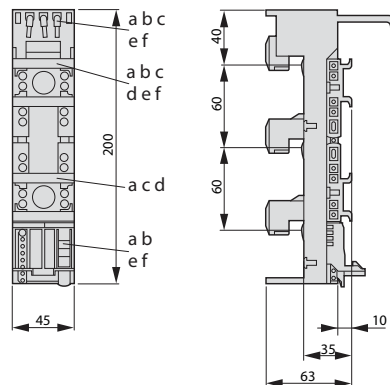
Dimensions

Motor Protectors

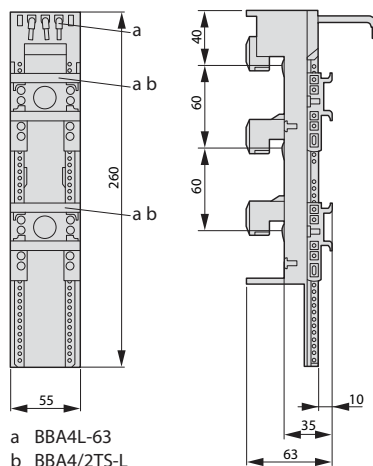
Busbar adaptors

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



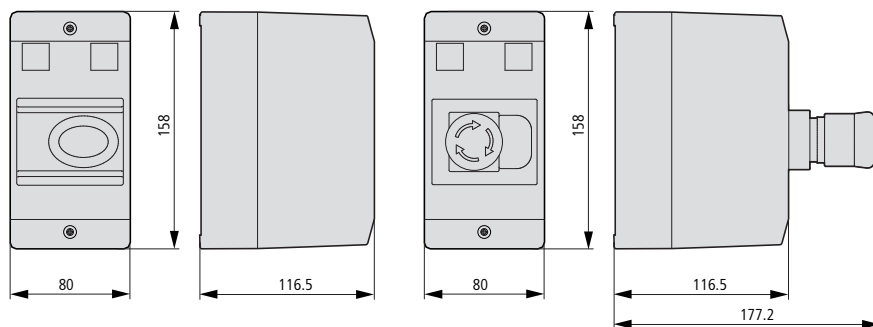
a BBA4L-63
b BBA4/2TS-L

Insulated enclosures for surface mounting

CI-PKZ01
CI-PKZ01-G

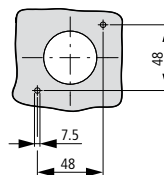
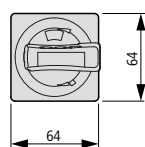
CI-PKZ01-PVT
CI-PKZ01-PVS

CI-PKZ01-SVB
CI-PKZ01-SVB-V

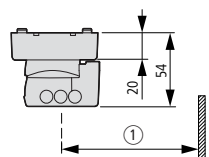


Door coupling handles

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

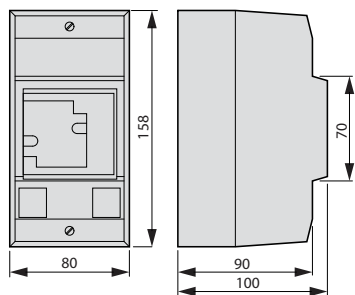


① At least 100 mm from cover hinge

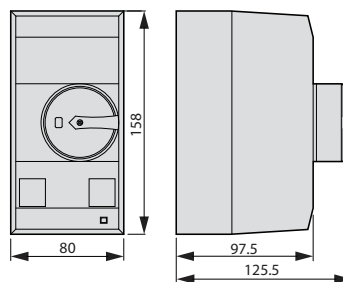
Dimensions

Motor Protectors

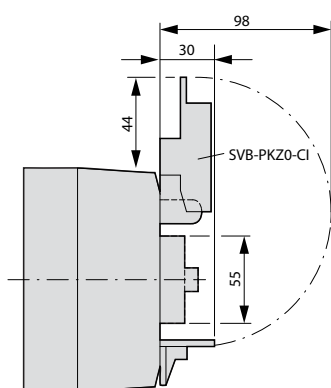
Insulated enclosures for surface mounting CI-PKZ0-M



CI-PKZ10G...M

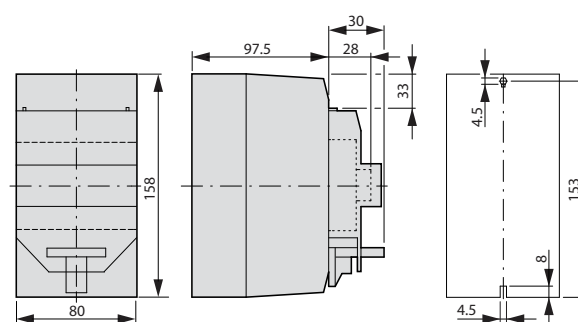


CI-PKZ0-...M + SVB-PKZ0-CI

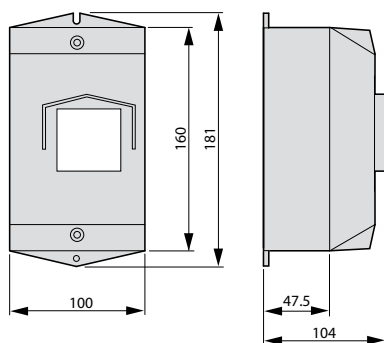


Drilling dimensions

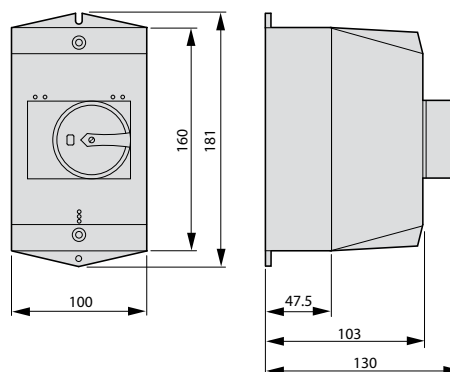
CI-PKZ0-...M



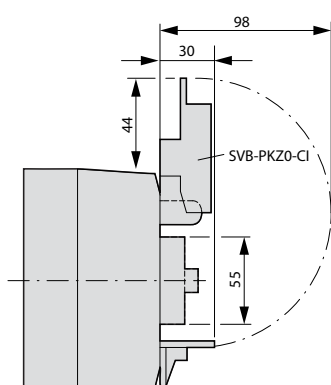
CI-K2-PKZ0



CI-K2-PKZ0G(R)(V)

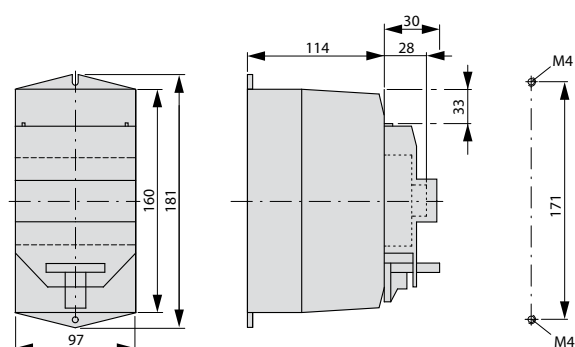


CI-K2-PKZ0-G(R)(V) + SVB-PKZ0-CI



Drilling dimensions

CI-K2-PKZ0...

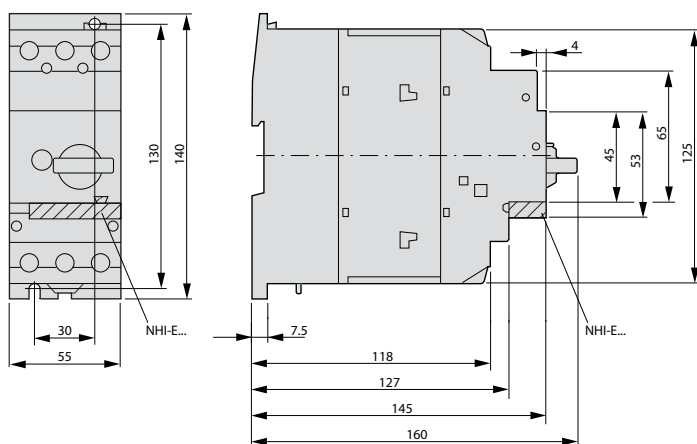


Dimensions

Motor Protectors

Motor-protective circuit breakers

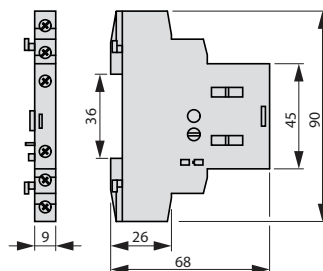
PKZM4-...



Standard auxiliary contacts

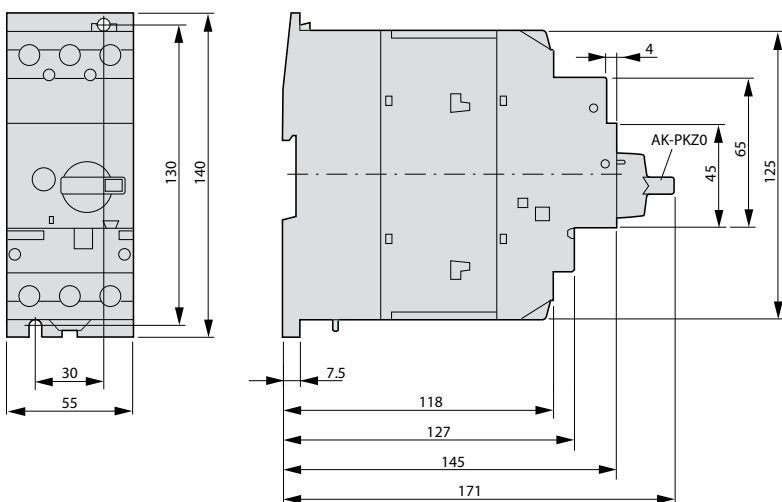
NHI...-PKZ...

NHI...-PKZ0



Motor-protective circuit breakers with lockable cover

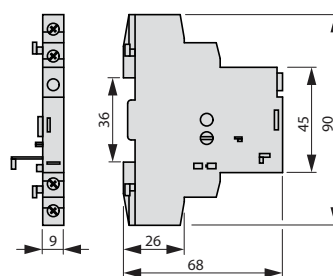
PKZM4-... +AK-PKZ0



TriTrup indicators

AGM2...-PKZ...

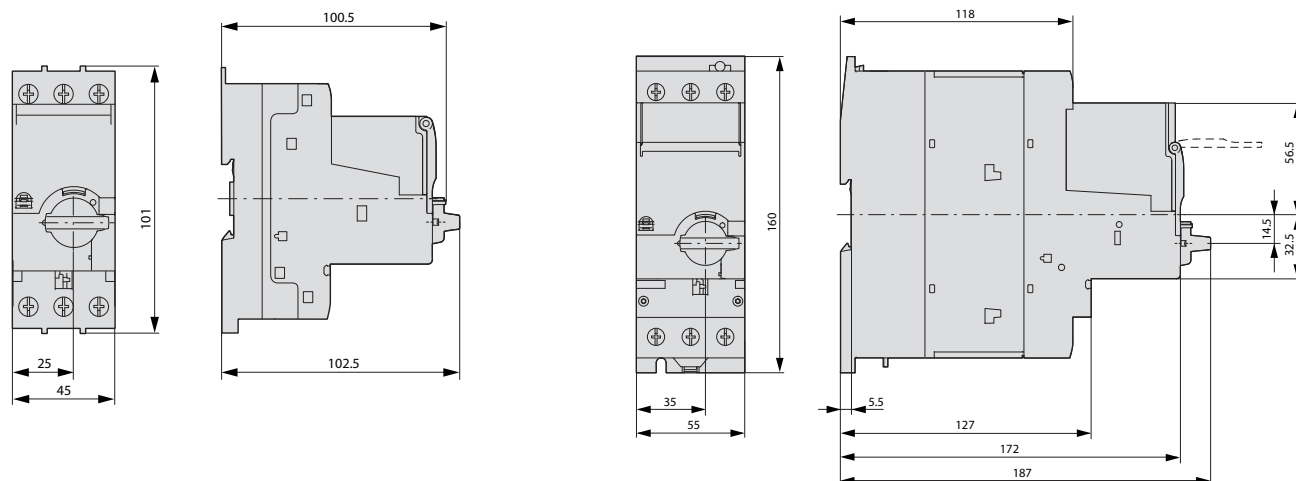
AGM2...-PKZ0



PKE Motor-protective circuit breakers

PKE12, PKE32

PKE65

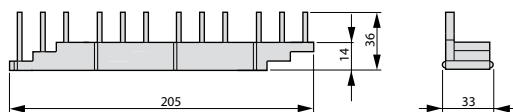


Dimensions

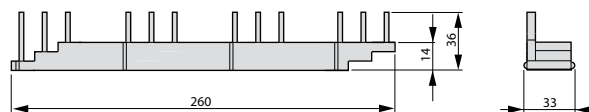
Motor Protectors

Three-phase commoning links

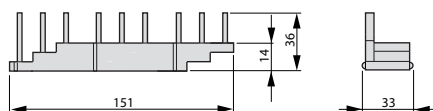
B3.0/4-PKZ4



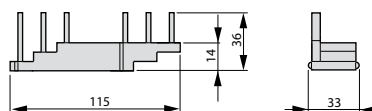
B3.2/4-PKZ4



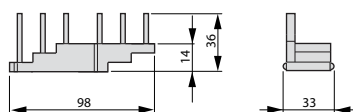
B3.0/3-PKZ4



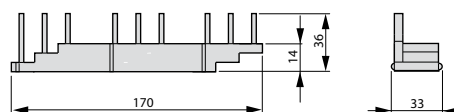
B3.2/2-PKZ4



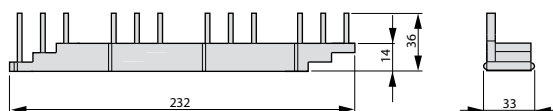
B3.0/2-PKZ4



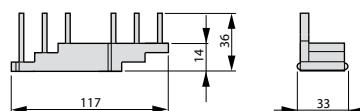
B3.1/3-PKZ4



B3.1/4-PKZ4

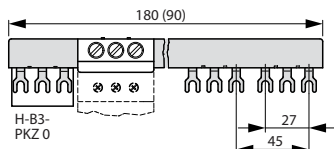


B3.1/2-PKZ4



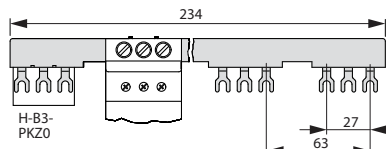
B3.0/4-PKZ0

B3.0/2-PKZ0



B3.2/4-PKZ0

B3.2/2-PKZ0

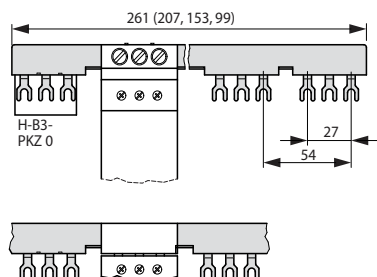


B3.1/5-PKZ0

B3.1/3-PKZ0

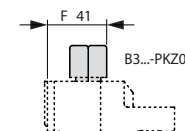
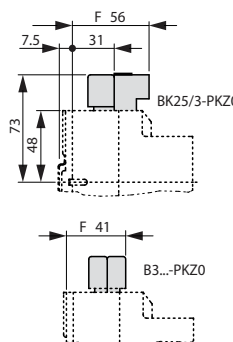
B3.1/4-PKZ0

B3.1/2-PKZ0



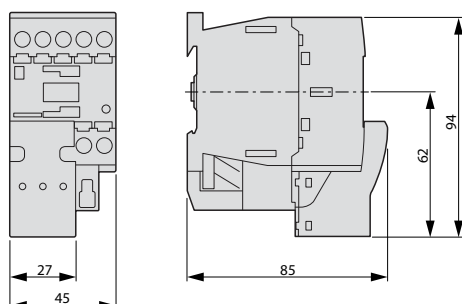
Incoming terminals

BK25/3-PKZ0



Overlapping mounting to extend the three-phase commoning link

Motor plug DILM12-XMCP/T



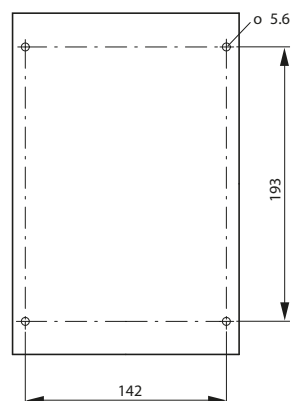
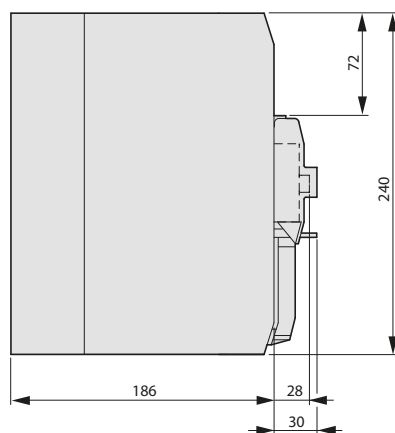
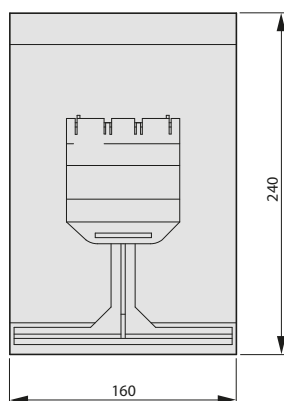
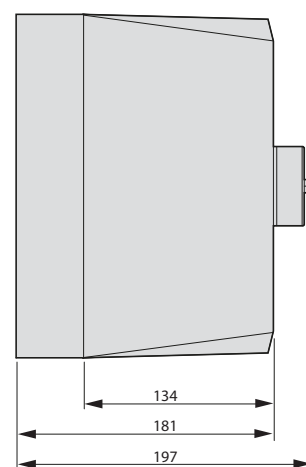
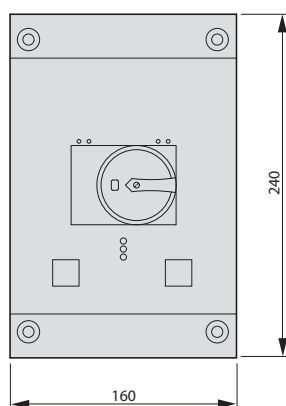
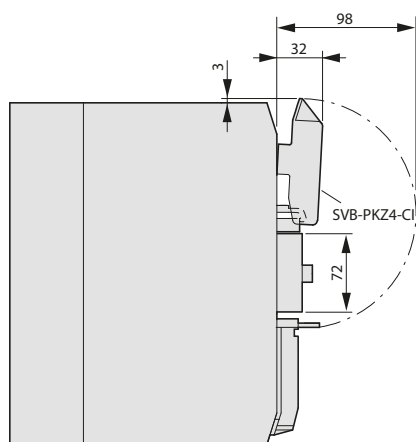
Dimensions

Motor Protectors

Insulated enclosures for surface mounting

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

CI-K4-PKZ4-G



Drilling dimensions
CI-K4-PKZ4-G(R)



Display, Switch, Control and Set – Simply easy



EATON

Powering Business Worldwide

The control relay easy500/700/800 offer all the technical opportunities to implement solutions in industry and building automation, machine engineering and in apparatus construction as well as trade applications. A host of different device versions with various functions, voltage types, expansion and networking options are available for implementing the right solution. With their different performance classes easy500, easy700 and easy800, the easyRelays provide the optimum solution for small, medium and large control tasks.

The combination of a control relay easy800 with direct connection to the communication system for SmartWire-DT switchgear provides an innovative solution in control panel design and construction. The renowned simple handling of easyRelay and the efficient SmartWire-DT connection technology provide considerable savings in terms of time and costs during planning, commissioning and maintenance.

Starters

DOL starters

IP65 Surface mounting starter, fitted with start & stop/reset pushbuttons.



EDOL40NO240

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.

Overload relays



EDOL25TOL

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.

Spare coils



EDOLCOIL240A

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

Coils suit all starter sizes.

Starters

DOL starters

Rated operational current AC-3, 415 V I _e , A	Max. rating for three-phase motors, 50 – 60 Hz		Individual components of the combination		DOL starter ① Item no.
	AC-3, 80/ 415 V P, kW	AC-4, 80/ 415 V P, kW	Contactors Q11 Item no.	Contactors 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

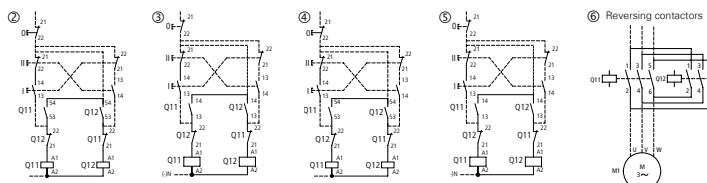
① Specify voltage & frequency when ordering.

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.



DOLRS4/U(...V50HZ)



DOLRS4/I(...V50HZ)

Star-delta starters

Rated operational current AC-3, 380/415 V I _e , A	Max. rating for three-phase motors, 50 – 60 Hz AC-3, 380/415 V P, kW	Max. change over time S	Individual components of the combination			
			Mains contactor Q11 Item No.	Delta contactor Q15 Item No.	Star contactor Q13 Item No.	Star-delta starter Item No. ①
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

Overload relay settings

A: I_n × 0.58

B: I_n × 1

C: I_n × 0.58

Starting

≤ 15 s

15 – 40 s

> 40 s

Protection of the motor in Y- and d configuration

Only partial motor protection in star position

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.

① Specify voltage & frequency when ordering.

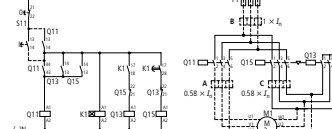
Standard voltages: V AC: 24 V, 110 V, 240 V, 415 V at 50 Hz

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.

③ SDES37 – SDES75

④





Contactors

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 noise, no arc flash
- No atmospheric contamination of the contacts
- Derating is not required at higher voltages
- Mounting in any position



V201KRCJZ1



V201KTCJZ1



V201KVCJZ1

Vacuum contactors

Description	Item no.
160A	V201KRCJZ1
320A	V201KTCJZ1
540A	V201KVCJZ1
610A	V201KZCJZ1

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).

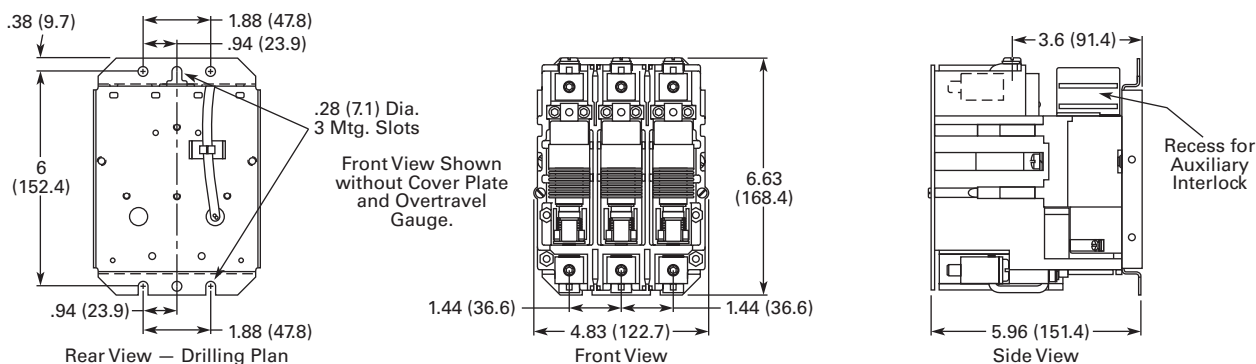
④ 250 Vdc can be directly applied to the Size 5 and 6 coil rated for 240 Vac/60 Hz (cannot be applied to Size 4).

Dimensions

1000V Mining contactors

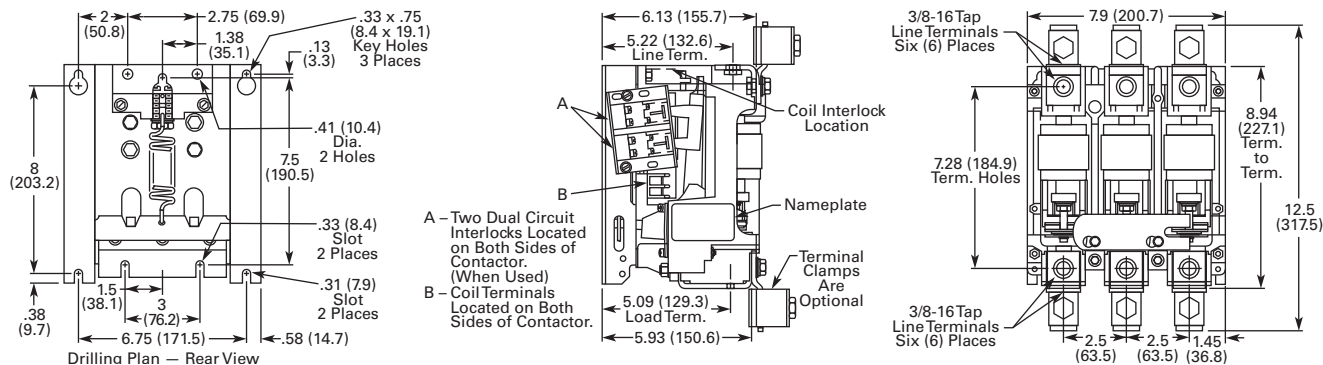
Open type contactors and starters - size 4 and 160A

Size 4 and 160A non-revising contactor



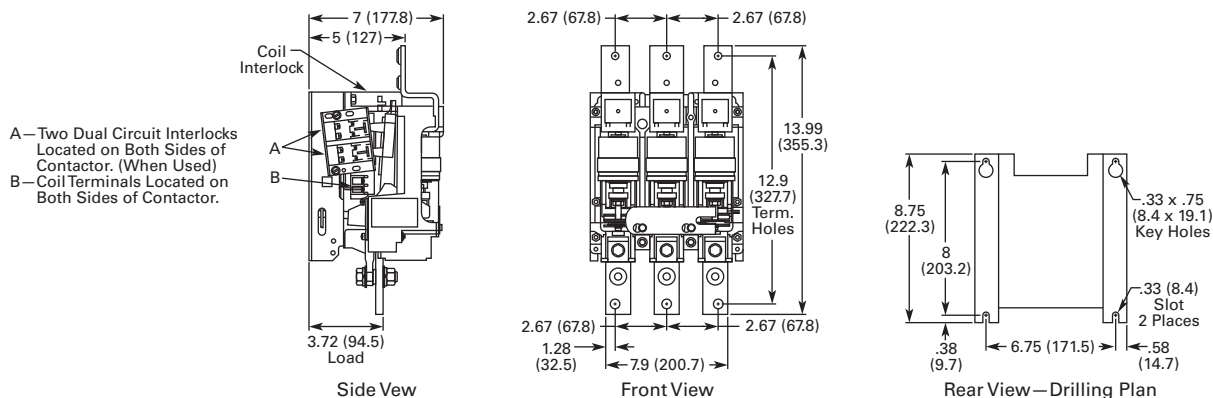
Open type contactors and starters - size 5 and 320A

Size 5 and 320A non-revising contactor



Open type contactors and starters - size 6, 540A and 610A

Size 6, 540 and 610A non-revising contactor



Solutions you can depend upon.



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

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.



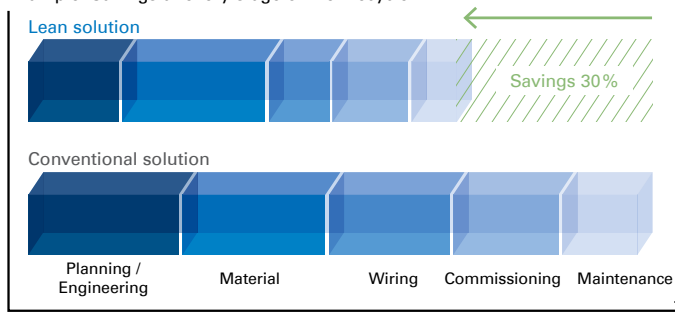
Eaton – the Right Drive for your Technology.

In the field of plant and machinery construction Eaton is your single-source provider. Whether energy management, automation, signaling or solutions all around the motor – Eaton covers the entire machine. Variable frequency drives, soft starters, motor starters and hydraulics components provide solutions for all tasks involving drives.

Lean Solution powered by SmartWire-DT®

Machinery construction needs a technology that simplifies its processes. SmartWire-DT moves the I/O level to the devices, allowing simple, quickly engineered structures without an I/O level at the PLC. Data transparency simplifies diagnostics and maintenance, thereby reducing wiring, testing and commissioning time and costs by up to 85%.

Example: Savings at every stage of the lifecycle



Soft starters

DS7 Soft starters

With a focus on small size and ease of installation, the Eaton DS7 line of reduced-voltage solid-state soft start controllers is designed to meet your needs for reliable and efficient soft starting. Designed to control the acceleration and deceleration of three-phase motors, the DS7 Series is available for current ranges from 4 to 180A.

SmartWire-DT

DS7 with SmartWire-DT interface completely eliminates the need for conventional control wiring. This has several advantages; No incorrect wiring. Faster wiring. Cost saving. The interface can be used to send control commands to the DS7 SmartWire-DT and change and diagnose its parameter configuration; in addition, the control electronics can be powered via the SmartWire-DT cable.

- 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. All DS7 frame sizes can be configured for single-phase operation at 200–480 Vac main voltages
- 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

DS7 Soft starters accessories

Overload relays

For use with...	Item no.
DS7-34...SX004...	ZB12-4
DS7-34...SX007...	ZB12-10
DS7-34...SX009...	
DS7-34...SX012...	
DS7-34...SX016...	ZB32-16
DS7-34...SX024...	ZB32-24
DS7-34...SX032...	ZB32-32

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-FAN-100
DS7-34...SX041...	
DS7-34...SX055...	
DS7-34...SX070...	
DS7-34...SX081...	
DS7-34...SX100...	
DS7-34...SX135...	DS7-FAN-200
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...	

Electric contact module

For use with...	Item no.
DS7-34...SX016...	PKZM0-XM32DE
DS7-34...SX024...	
DS7-34...SX032...	



PKZM0-XDM12



BBA0L-25



ZB12-4



DS7-FAN-032

Soft starters

S811+ Soft starters

The Eaton S811+ Soft Starter is an electronic, self-contained, panel- or enclosure-mounted motor soft-starting device. It is intended to provide three-phase induction motors with a smooth start, both mechanically and electrically. The S811+ Soft Starters utilize six SCRs connected in a full wave power bridge. Varying the SCR conduction period controls the voltage applied to the motor. This in turn controls the torque developed by the motor. After the motor reaches speed, internal contacts are closed to bypass the SCRs.

The S811+ Soft Starter utilizes a Digital Interface Module (DIM) that allows the user to configure the device, read and write system parameters, and evaluate fault codes for troubleshooting. The DIM includes an easy-to-read display and keypad to scroll through the parameters. The Digital Interface Module allows the user to modify control parameters, enable or disable protections, set system variances from Fault TRIP to Fault WARNING, set communication variables, monitor system parameters such as line voltages and currents and access the fault queue.

- Built-in overload protection, and run bypass contactor
- Adjustable ramp times, torque control, and 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.

S811+ Soft starters accessories

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

Variable speed starter

DE1 PowerXL variable speed starter

Eaton's new device category is closing the gap between conventional motor starters and variable frequency drives. It combines all the benefits in one device: The IP20 PowerXL™ DE1 Variable Speed Starter. Ease of use and reliability or variable motor speed and improved energy efficiency.

Beyond the out-of-the-box commissioning that eliminates the need for parameterization, the user also has the option of using the plug-in DXE-EXT-SET configuration module to adjust the default settings of key parameters such as ramp time, motor protection and control terminal function to fit the current application. All that is needed is a screwdriver.

Furthermore the DE1 naturally also offers the opportunity to carry out the parameterization using the external remote device with LED display, which is part of the PowerXL product portfolio. Furthermore, the drivesConnect software also keeps the new Variable Speed Starter easy to use, just like it does for the entire PowerXL family. The software allows DE1 users the parameterization or readout via laptop, and to copy parameters from one drive to another with the parameter copy stick.

- Out-of-the-box commissioning without parameterisation
- Trip-free design ensures maximum machine availability
- As easy to install and use as a motor starter
- Variable motor speed for energy efficiency
- No special drives, engineering skills or knowledge required
- Optional configuration with parameterization module
- Optional communication via SmartWire-DT and other accessories



Input / Output voltage [V]	Motor [kW]	Motor [HP]	Input phases	Output phases	Output current [A]	Size	Item no. selection with EMC filter
220 – 240	0.25	0.3	1	3	1.4	1	DE1-121D4FN-N20N
	0.37	0.5	1	3	2.3	1	DE1-122D3FN-N20N
	0.55	0.5	1	3	2.7	1	DE1-122D7FN-N20N
	0.75	0.75	1	3	4.3	1	DE1-124D3FN-N20N
	1.5	2	1	3	7	1	DE1-127D0FN-N20N
	2.2	3	1	3	9.6	2	DE1-129D6FN-N20N
400 – 480	0.37	0.5	3	3	1.3	1	DE1-341D3FN-N20N
	0.75	1	3	3	2.1	1	DE1-342D1FN-N20N
	1.5	2	3	3	3.6	1	DE1-343D6FN-N20N
	2.2	3	3	3	5	2	DE1-345D0FN-N20N
	3	3	3	3	6.6	2	DE1-346D6FN-N20N
	4	5	3	3	8.5	2	DE1-348D5FN-N20N
	5.5	7.5	3	3	11.3	2	DE1-34011FN-N20N
	7.5	10	3	3	16	2	DE1-34016FN-N20N*

Accessories

Description	Item no.
DE1 parameterization module	DXE-EXT-SET
Parameter copy stick	DX-COM-STICK2
Remote display	DX-KEY-LED2

Variable speed drive

DC1 PowerXL variable speed drive

DC1's compact size, simple installation process coupled with constant torque ratings make the DC1 the ideal drive for use with all types of machinery including conveyors, packaging machines, pumps and fans.

The PowerXL DC1 variable frequency drives come as standard with the Modbus RTU and CANopen fieldbus system. The user can connect to other fieldbus systems such as EthernetIP and ModbusTCP easily via fieldbus modules. As an alternative to the fieldbus connection, it can also be incorporated in the SmartWire-DT communication system. This makes it possible to not only parameterize the PowerXL frequency inverters centrally via the SmartWire-DT interface, but also to send them control commands and read diagnostic data from them.

Simplifying technology

With their self-explanatory keys to part numbers, auto-tune function, convenient parameterization (only 14 basic parameters) and fast engineering and commissioning these devices help minimize planning, installation and technical support costs.

The PowerXL™ variable speed drives can be programmed with keypad and LED or OLED (multi-language display) and from a PC. With a Bluetooth PC stick parameter settings can be quickly transferred to other devices.

- High overload capability:
150% for 60 sec,
175% for 2 sec
- Integrated Modbus RTU and CANopen
- Standard IP20 protection
- Integrated PID controller
- V/Hz control with voltage boost
- Plug-in modules to expand the number of relays
- Onboard I/O:
4 inputs (2 DI and 2 DI/AI)
1 output (1 DO/AO)
1 relay output
- Optional high protection degree (IP66)
- Higher ambient temperature: +50°C
- Ability to work with singlephase motor applications
- Contactor style wiring
- Conformal coated boards
- Bluetooth copy/paste stick
- Easy menu navigation
- Ease of control wiring - detachable terminal pad
- Lean connectivity through use of SmartWire-DT
- Onboard RFI filter
- PC tool for easy configuration

240V IP20 / 1-ph in, 1-ph out

1-phase 240V IP20 VSD with inbuilt emc filter (Suitable for single phase 240V AC motors)

Description	Frame size	High overload		Low overload		Item no.
		P [kW]	I(H)	P [kW]	I(L)	
DC1 Drive 240V 0.37 kW CT IP20, 1PH Motor	FS1	0.37	4.3	0.37	4.3	DC1-S24D3FN-A20CE1
DC1 Drive 240V 0.75 kW CT IP20, 1PH Motor	FS1	0.75	7	0.75	7	DC1-S27D0FN-A20CE1
DC1 Drive 240V 1.1 kW CT IP20, 1PH Motor	FS2	1.1	10.5	1.1	10.5	DC1-S2011FB-A20CE1

240V IP20 / 1-ph in, 3-ph out

1-phase 240V IP20 VSD with inbuilt emc filter (Suitable for three phase 240V AC motors)

Description	Frame size	High overload		Low overload		Item no.
		P [kW]	I(H)	P [kW]	I(L)	
DC1 Drive 240V 0.37 kW CT IP20, 3PH Motor	FS1	0.37	2.3	0.37	2.3	DC1-122D3FN-A20CE1
DC1 Drive 240V 0.75 kW CT IP20, 3PH Motor	FS1	0.75	4.3	0.75	4.3	DC1-124D3FN-A20CE1
DC1 Drive 240V 1.5 kW CT IP20, 3PH Motor	FS1	1.5	7	1.5	7	DC1-127D0FN-A20CE1
DC1 Drive 240V 1.5 kW CT IP20, 3PH Motor (BCU)	FS2	1.5	7	1.5	7	DC1-127D0FB-A20CE1
DC1 Drive 240V 2.2 kW CT IP20, 3PH Motor	FS2	2.2	10.5	2.2	10.5	DC1-12011FB-A20CE1
DC1 Drive 240V 4 kW CT IP20, 3PH Motor	FS2	4	15.3	4	15.3	DC1-12015NB-A20CE1

* Note: DC1-12015NB-A20CE1 does not have inbuilt rfi filter.

415V IP20 / 3-ph in, 3-ph out

3-phase 415V IP20 VSD with inbuilt emc filter (Suitable for three phase 415V AC motors)

Description	Frame size	High overload		Low overload		Item no.
		P [kW]	I(H)	P [kW]	I(L)	
DC1 Drive 415V 0.75 kW CT IP20, 3PH Motor	FS1	0.75	2.2	0.75	2.2	DC1-342D2FN-A20CE1
DC1 Drive 415V 1.5 kW CT IP20, 3PH Motor	FS1	1.5	4.1	1.5	4.1	DC1-344D1FN-A20CE1
DC1 Drive 415V 1.5 kW CT IP20, 3PH Motor (BCU)	FS2	1.5	4.1	1.5	4.1	DC1-344D1FB-A20CE1
DC1 Drive 415V 2.2 kW CT IP20, 3PH Motor	FS2	2.2	5.8	2.2	5.8	DC1-345D8FB-A20CE1
DC1 Drive 415V 4 kW CT IP20, 3PH Motor	FS2	4	9.5	4	9.5	DC1-349D5FB-A20CE1
DC1 Drive 415V 5.5 kW CT IP20, 3PH Motor	FS3	5.5	14	5.5	14	DC1-34014FB-A20CE1
DC1 Drive 415V 7.5 kW CT IP20, 3PH Motor	FS3	7.5	18	7.5	18	DC1-34018FB-A20CE1
DC1 Drive 415V 11 kW CT IP20, 3PH Motor	FS3	11	24	11	24	DC1-34024FB-A20CE1
DC1 Drive 415V 15 kW CT IP20, 3PH Motor	FS4	15	30	15	30	DC1-34030FB-A20CE1
DC1 Drive 415V 18.5 kW CT IP20, 3PH Motor	FS4	18.5	39	18.5	39	DC1-34039FB-A20CE1
DC1 Drive 415V 22 kW CT IP20, 3PH Motor	FS4	22	46	22	46	DC1-34046FB-A20CE1

Variable speed drive

DC1 PowerXL variable speed drive

240V IP66 / 1-ph in, 1-ph out

1-phase 240V IP66 VSD with inbuilt emc filter (Suitable for single phase 240V AC motors)

Description	Frame	High overload		Low overload		Item no.
	size	P [kW]	I(H)	P [kW]	I(L)	
DC1 Drive 240V 0.37 kW CT IP66, 1PH Motor	FS1	0.37	4.3	0.37	4.3	DC1-S24D3FN-A66CE1
DC1 Drive 240V 0.37 kW CT IP66, 1PH Motor (SW)	FS1	0.37	4.3	0.37	4.3	DC1-S24D3FN-A66SCE1
DC1 Drive 240V 0.75 kW CT IP66, 1PH Motor	FS1	0.75	7	0.75	7	DC1-S27D0FN-A66CE1
DC1 Drive 240V 0.37 kW CT IP66, 1PH Motor (SW)	FS1	0.75	7	0.75	7	DC1-S27D0FN-A66SCE1
DC1 Drive 240V 1.1 kW CT IP66, 1PH Motor	FS2	1.1	10.5	1.1	10.5	DC1-S2011FB-A66CE1
DC1 Drive 240V 1.1 kW CT IP66, 1PH Motor (SW)	FS2	1.1	10.5	1.1	10.5	DC1-S2011FB-A66SCE1

240V IP66 / 1-ph in, 3-ph out

1-phase 240V IP66 VSD with inbuilt emc filter (Suitable for three phase 240V AC motors)

Description	Frame	High overload		Low overload		Item no.
	size	P [kW]	I(H)	P [kW]	I(L)	
DC1 Drive 240V 0.37 kW CT IP66, 3PH Motor	FS1	0.37	2.3	0.37	2.3	DC1-122D3FN-A66CE1
DC1 Drive 240V 0.37 kW CT IP66, 3PH Motor (SW)	FS1	0.37	2.3	0.37	2.3	DC1-122D3FN-A66SCE1
DC1 Drive 240V 0.75 kW CT IP66, 3PH Motor	FS1	0.75	4.3	0.75	4.3	DC1-124D3FN-A66CE1
DC1 Drive 240V 0.75 kW CT IP66, 3PH Motor (SW)	FS1	0.75	4.3	0.75	4.3	DC1-124D3FN-A66SCE1
DC1 Drive 240V 1.5 kW CT IP66, 3PH Motor	FS1	1.5	7	1.5	7	DC1-127D0FN-A66CE1
DC1 Drive 240V 1.5 kW CT IP66, 3PH Motor (SW)	FS1	1.5	7	1.5	7	DC1-127D0FN-A66SCE1
DC1 Drive 240V 1.5 kW CT IP66, 3PH Motor (BCU)	FS2	1.5	7	1.5	7	DC1-127D0FB-A66CE1
DC1 Drive 240V 1.5 kW CT IP66, 3PH Motor (BCU SW)	FS2	1.5	7	1.5	7	DC1-127D0FB-A66SCE1
DC1 Drive 240V 2.2 kW CT IP66, 3PH Motor	FS2	2.2	10.5	2.2	10.5	DC1-12011FB-A66CE1
DC1 Drive 240V 2.2 kW CT IP66, 3PH Motor (SW)	FS2	2.2	10.5	2.2	10.5	DC1-12011FB-A66SCE1
DC1 Drive 240V 4 kW CT IP66, 3PH Motor	FS2	4	15.3	4	15.3	DC1-12015NB-A66CE1
DC1 Drive 240V 4 kW CT IP66, 3PH Motor (SW)	FS2	4	15.3	4	15.3	DC1-12015NB-A66SCE1

* Note: DC1-12015NB-A66CE1 & DC1-12015NB-A66SCE1 do not have inbuilt rfi filter.

415V IP66 / 3-ph in, 3-ph out

3-phase 415V IP66 VSD with inbuilt emc filter (Suitable for three phase 415V AC motors)

Description	Frame	High overload		Low overload		Item no.
	size	P [kW]	I(H)	P [kW]	I(L)	
DC1 Drive 415V 0.75 kW CT IP66, 3PH Motor	FS1	0.75	2.2	0.75	2.2	DC1-342D2FN-A66CE1
DC1 Drive 415V 0.75 kW CT IP66, 3PH Motor (SW)	FS1	0.75	2.2	0.75	2.2	DC1-342D2FN-A66SCE1
DC1 Drive 415V 1.5 kW CT IP66, 3PH Motor	FS1	1.5	4.1	1.5	4.1	DC1-344D1FN-A66CE1
DC1 Drive 415V 1.5 kW CT IP66, 3PH Motor (SW)	FS1	1.5	4.1	1.5	4.1	DC1-344D1FN-A66SCE1
DC1 Drive 415V 1.5 kW CT IP66, 3PH Motor (BCU)	FS2	1.5	4.1	1.5	4.1	DC1-344D1FB-A66CE1
DC1 Drive 415V 1.5 kW CT IP66, 3PH Motor (BCU SW)	FS2	1.5	4.1	1.5	4.1	DC1-344D1FB-A66SCE1
DC1 Drive 415V 2.2 kW CT IP66, 3PH Motor	FS2	2.2	5.8	2.2	5.8	DC1-345D8FB-A66CE1
DC1 Drive 415V 2.2 kW CT IP66, 3PH Motor (SW)	FS2	2.2	5.8	2.2	5.8	DC1-345D8FB-A66SCE1
DC1 Drive 415V 4 kW CT IP66, 3PH Motor	FS2	4	9.5	4	9.5	DC1-349D5FB-A66CE1
DC1 Drive 415V 4 kW CT IP66, 3PH Motor (SW)	FS2	4	9.5	4	9.5	DC1-349D5FB-A66SCE1
DC1 Drive 415V 5.5 kW CT IP66, 3PH Motor	FS3	5.5	14	5.5	14	DC1-34014FB-A66CE1
DC1 Drive 415V 5.5 kW CT IP66, 3PH Motor (SW)	FS3	5.5	14	5.5	14	DC1-34014FB-A66SCE1
DC1 Drive 415V 7.5 kW CT IP66, 3PH Motor	FS3	7.5	18	7.5	18	DC1-34018FB-A66CE1
DC1 Drive 415V 7.5 kW CT IP66, 3PH Motor (SW)	FS3	7.5	18	7.5	18	DC1-34018FB-A66SCE1

Options & accessories

Description	Item no.
Expansion Module 2 Relay O/P 1 Analog O/P	DXC-EXT-2R01AO
Expansion Module 2 Relay O/P	DXC-EXT-2R0
Expansion Module 4 Digital I/P, 110Vac	DXC-EXT-IO110
Expansion Module 4 Digital I/P, 240Vac	DXC-EXT-IO230
Simulation Kit C/W 3Di 1Ro 3Sw 1Pot	DXC-EXT-LOCSIM
Parameter Copy Stick, Bluetooth	DX-COM-STICK2
Remote Keypad, Led Display, IP54, 3M Cable	DX-KEY-LED2
Remote Keypad, Oled Display, IP54, 3M Cable	DX-KEY-OLED
Smartwire-DT Plugin Module	DX-NET-SWD3
Ethernet Comms Module 2 X RJ45	DX-NET-ETHERNET2-2
Usb/RS485 Convertor With RJ45 Cable,	DX-COM-PCKIT
Usb To RJ45 Cable 3M Modbus Rtu	DX-CBL-PC-3M0

Description	Item no.
Patch Cable With RJ45 Plugs, 0.5M	DX-CBL-RJ45-0M5
Patch Cable With RJ45 Plugs, 1.0M	DX-CBL-RJ45-1M0
Patch Cable With RJ45 Plugs, 3.0M	DX-CBL-RJ45-3M0
Bus Terminating Resistor	EASY-NT-R
Splitter, RJ45, 3 Sockets	DX-SPL-RJ45-3SL
Splitter, RJ45, 2 Sockets + 1 Plug	DX-SPL-RJ45-2SL1PL
Splitter, RJ45, 2 Sockets + 1 Plug, Modbus RTU	DX-SPL-RJ45
Splitter, RJ45, 1 Socket + 1 Plug, Modbus RTU, Term	DX-SPL-RJ45-TERM
Cable Mounting Adaptor, Line Side, FS1	DX-EMC-MNT-1N
Cable Mounting Adaptor, Line Side, FS2	DX-EMC-MNT-2N
Cable Mounting Adaptor, Line Side, FS3	DX-EMC-MNT-3N
Cable Mounting Adaptor, Load Side, FS1	DX-EMC-MNT-1M
Cable Mounting Adaptor, Load Side, FS2	DX-EMC-MNT-2M
Cable Mounting Adaptor, Load Side, FS3	DX-EMC-MNT-3M

Variable speed drive

DG1 PowerXL variable speed drive



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 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

Variable speed drive

DG1 PowerXL variable speed drive

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



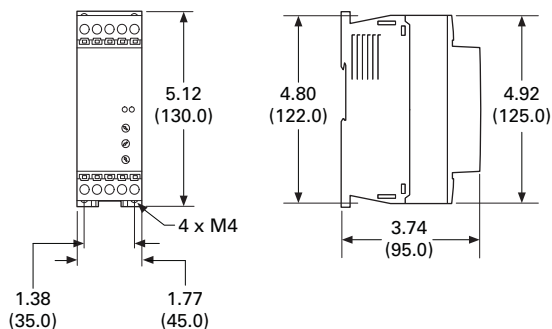
DXG-ACC-FR2N12KIT

Drives & soft starters

Soft starter controllers dimensions

Dimensions (approximate dimensions in inches (mm))

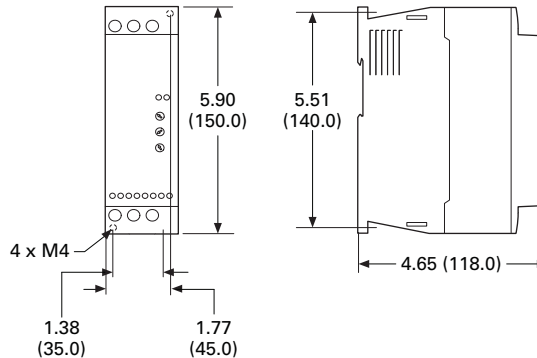
Frame 1



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

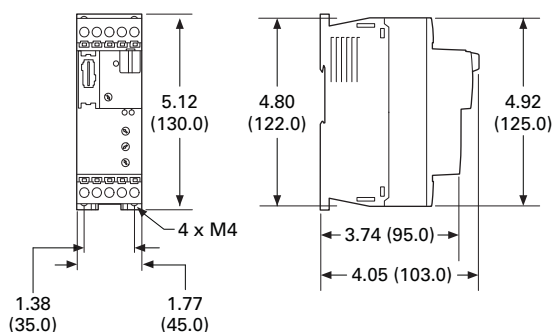
Frame 2



Item no.

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

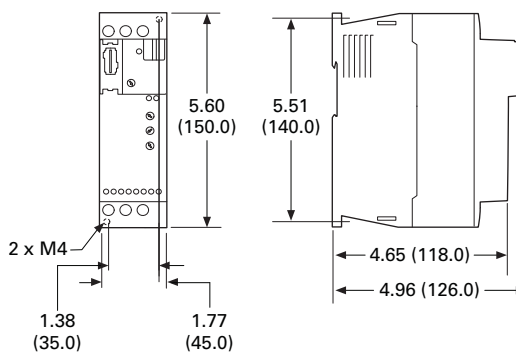
Frame 1—SmartWire-DT



Item no.

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

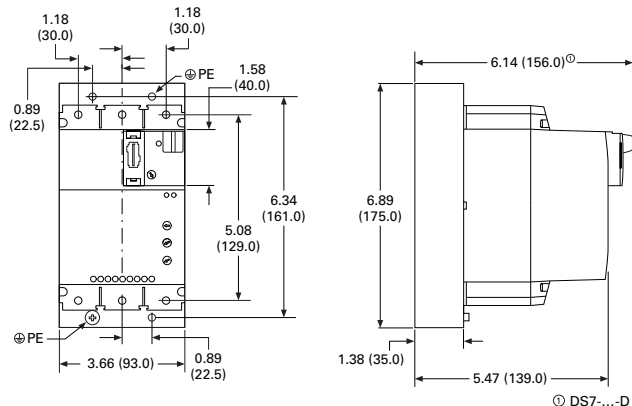
Frame 2—SmartWire-DT



Item no.

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

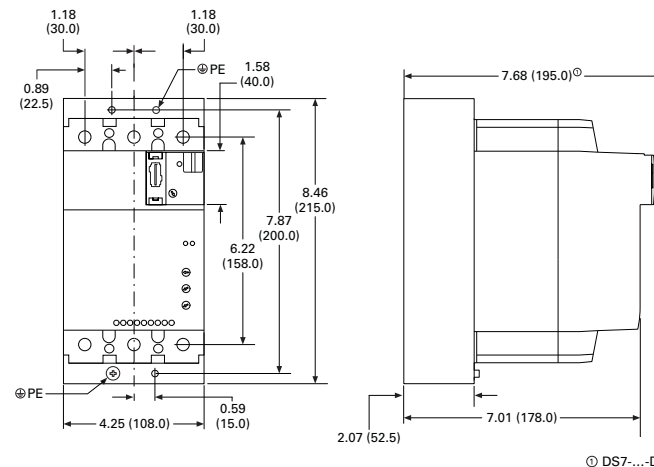
Frame 3—SmartWire-DT and Standard (Non SmartWire-DT)



Item no.

DS7-340SX041N0-N	DS7-342SX041N0-N	DS7-34DSX041N0-D
DS7-340SX055N0-N	DS7-342SX055N0-N	DS7-34DSX055N0-D
DS7-340SX070N0-N	DS7-342SX070N0-N	DS7-34DSX070N0-D
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)



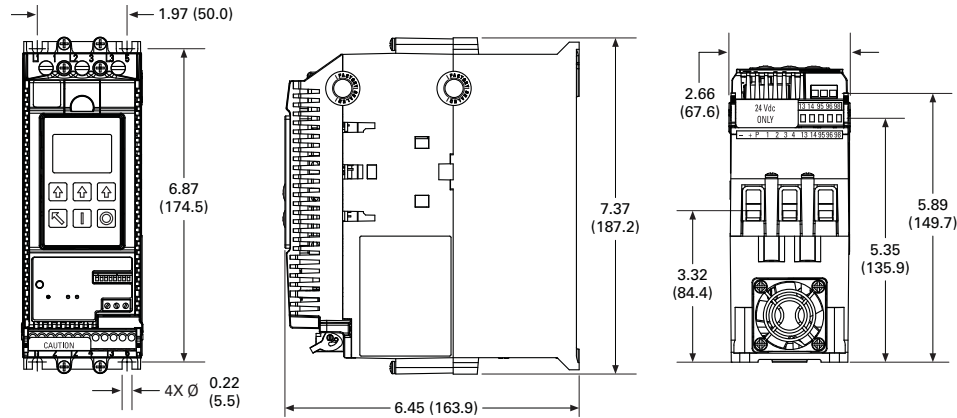
Item no.

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

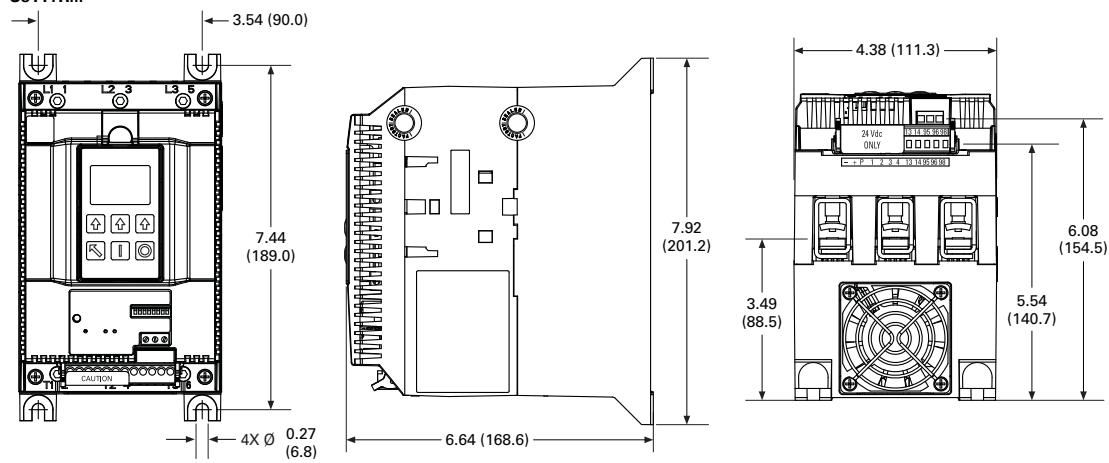
Soft starter dimensions

Dimensions (approximate dimensions in inches (mm))

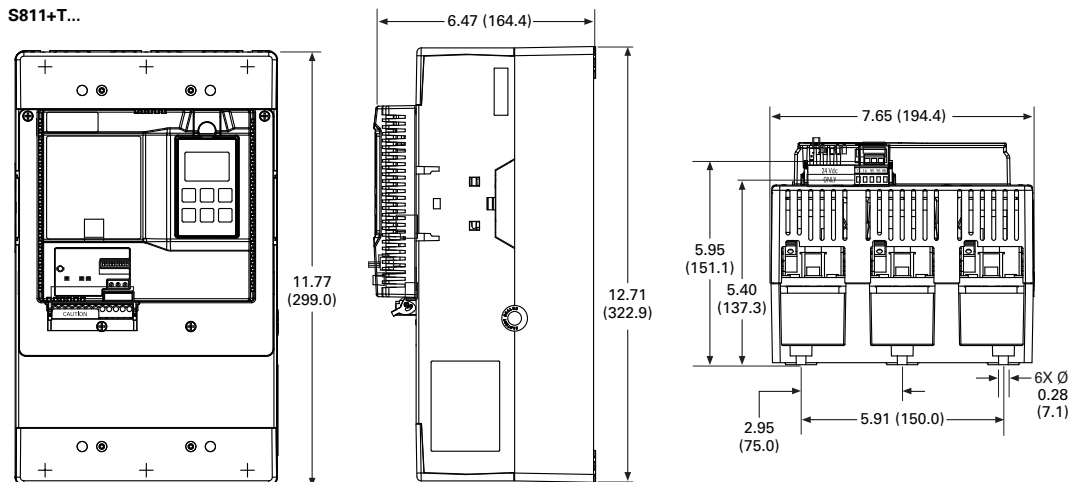
S811+N...



S811+R...



S811+T...

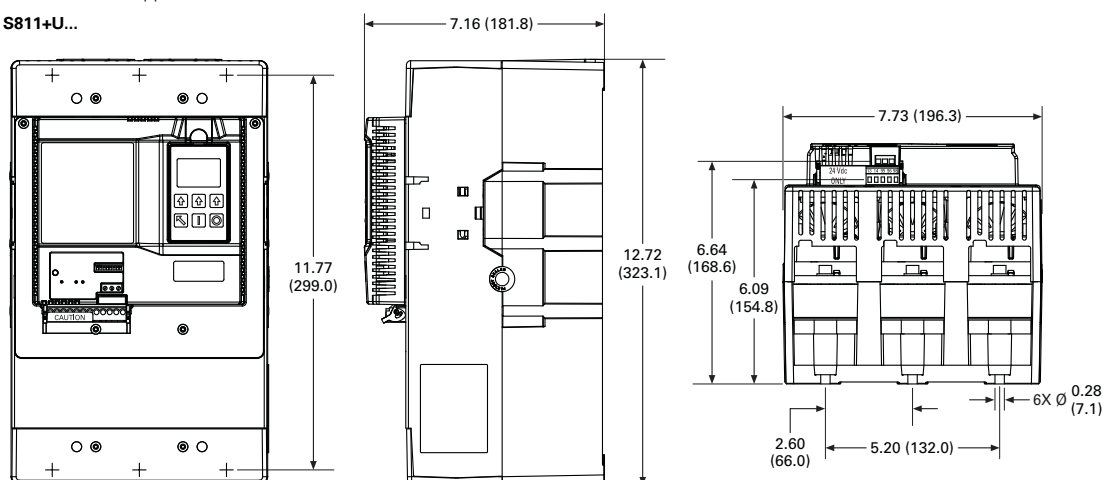


Drives & soft starters

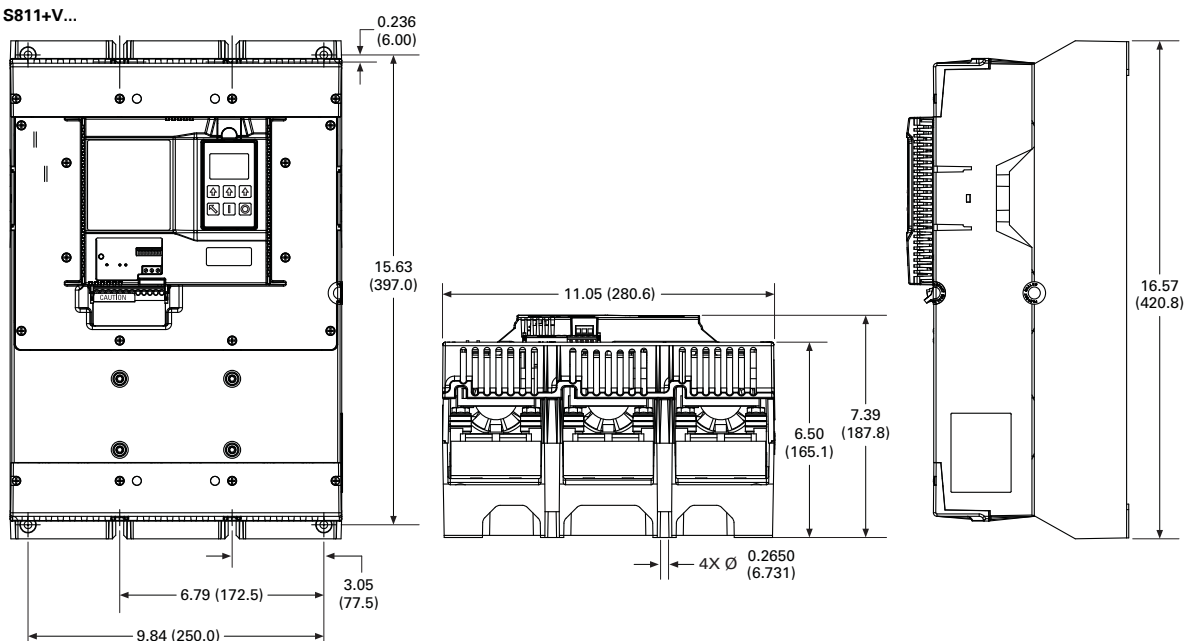
Soft starter dimensions

Dimensions (approximate dimensions in inches (mm))

S811+U...



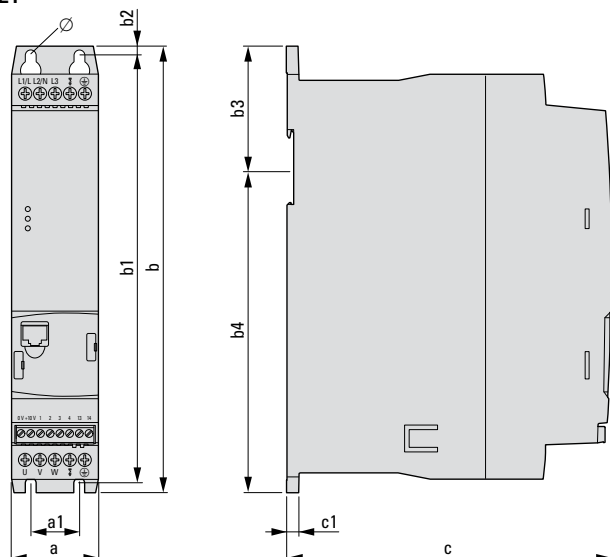
S811+V...



Speed starter dimensions

Dimensions (approximate dimensions in inches (mm))

DE1

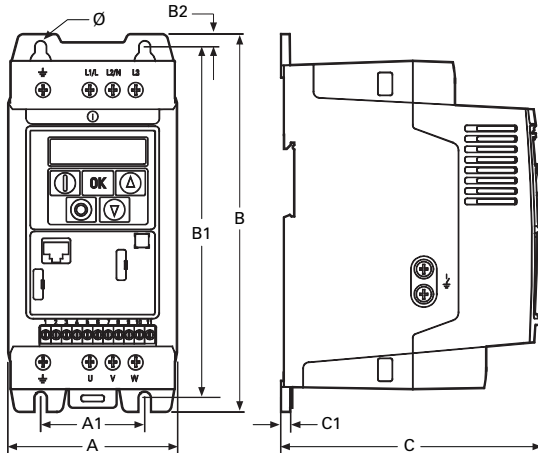


	a	a1	b	b1	b2	b3
FS1	45 (1.77)	25 (0.98)	230 (9.06)	220 (8.88)	5 (0.2)	64 (2.52)
FS2	90 (3.54)	50 (1.97)	230 (9.06)	220 (8.66)	5 (0.2)	64 (2.52)
	b4	c	c1	Ø1	Ø2	kg (lbs)
FS1	166 (6.54)	168 (6.61)	6.5 (0.26)	5.1 (0.2)	10 (0.39)	1.04 (2.29)
FS2	166 (6.54)	168 (6.61)	6.5 (0.26)	5.1 (0.2)	10 (0.39)	1.68 (3.7)

DC1 drive dimensions

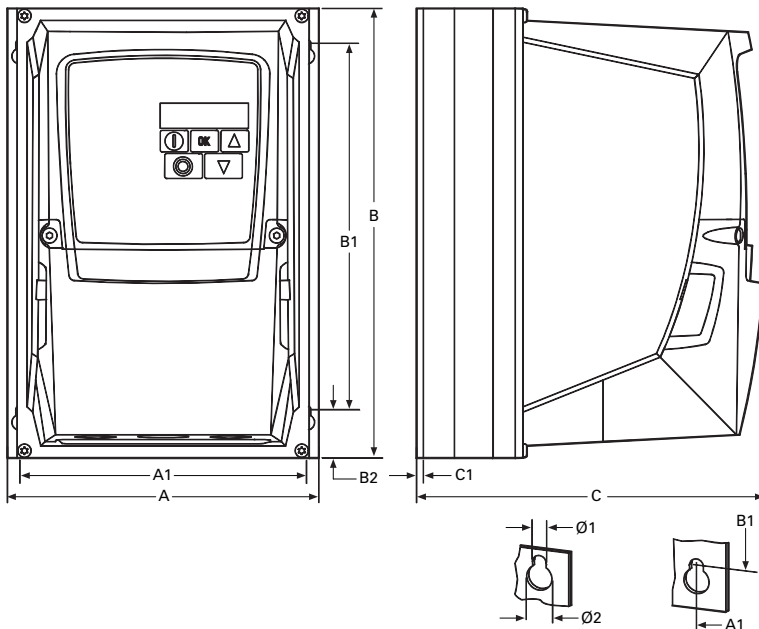
Dimensions (approximate dimensions in inches (mm))

DC1, Sizes FS1–FS4, Degree of Protection IP20/NEMA 0



Frame Size	A	A1	B	B1	B2	C	C1	Ø1	Ø2	Weight lbs (kg)
FS1	3.19 (81)	1.97 (50)	7.24 (184)	6.69 (170)	0.28 (7)	4.88 (124)	0.16 (4)	0.24 (6)	0.47 (12)	2.43 (1.1)
FS2	4.21 (107)	2.95 (75)	99 (231)	8.46 (215)	0.31 (8)	5.98 (152)	0.20 (5)	0.24 (6)	0.47 (12)	5.73 (2.6)
FS3	5.16 (131)	3.94 (100)	10.75 (273)	104 (255)	0.33 (8.5)	6.89 (175)	0.20 (5)	0.24 (6)	0.47 (12)	8.82 (4)
FS4	6.30 (160)	—	16.54 (420)	—	—	8.35 (212)	—	—	—	—

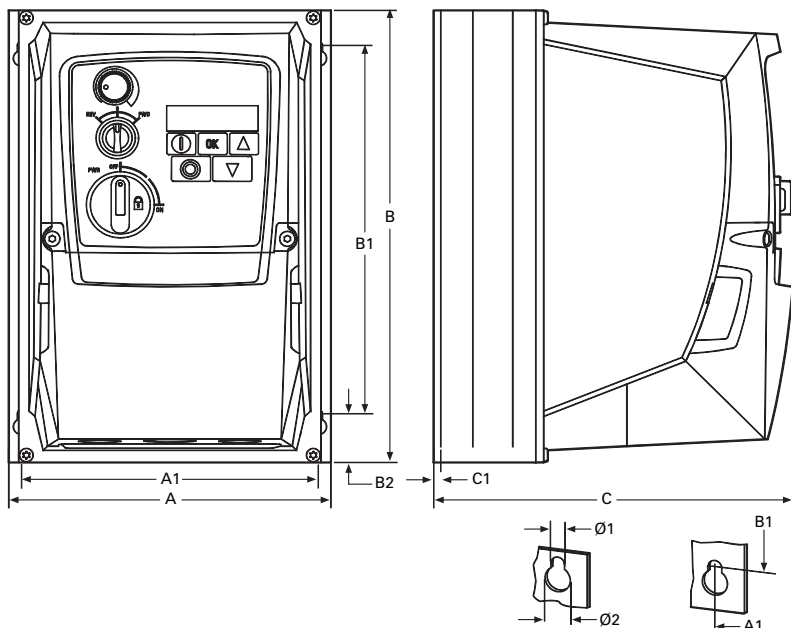
DC1, Sizes FS1–FS3, Degree of Protection IP66/NEMA 4



Frame Size	A	A1	B	B1	B2
FS1	6.34 (161)	5.85 (148.5)	9.13 (232)	7.44 (189)	0.98 (25)
FS2	7.40 (188)	6.93 (176)	10.12 (257)	7.87 (200)	1.12 (28.5)
FS3	8.29 (210.5)	7.78 (197.5)	12.20 (310)	9.90 (251.5)	1.31 (33.4)
FS4	6.30 (160)	—	16.54 (420)	—	—

Frame Size	C	C1	Ø1	Ø2	Weight lbs (kg)
FS1	7.24 (184)	0.14 (3.5)	0.15 (4)	0.31 (8)	5.51 (2.5)
FS2	7.58 (192)	0.14 (3.5)	0.16 (4.2)	0.33 (8.5)	10.36 (4.7)
FS3	9.21 (234)	0.14 (3.5)	0.16 (4.2)	0.33 (8.5)	17.42 (7.9)
FS4	8.35 (212)	—	—	—	—

DC1, Sizes FS1–FS3, Degree of Protection IP66/NEMA 4, with Local Controls



Frame Size	A	A1	B	B1	B2
FS1	6.34 (161.0)	5.85 (148.5)	9.13 (232.0)	7.44 (189.0)	0.98 (25.0)
FS2	7.40 (188.0)	6.93 (176.0)	10.12 (257.0)	7.87 (200.0)	1.12 (28.5)
FS3	8.29 (210.5)	7.78 (197.5)	12.20 (310.0)	9.90 (251.5)	1.31 (33.4)

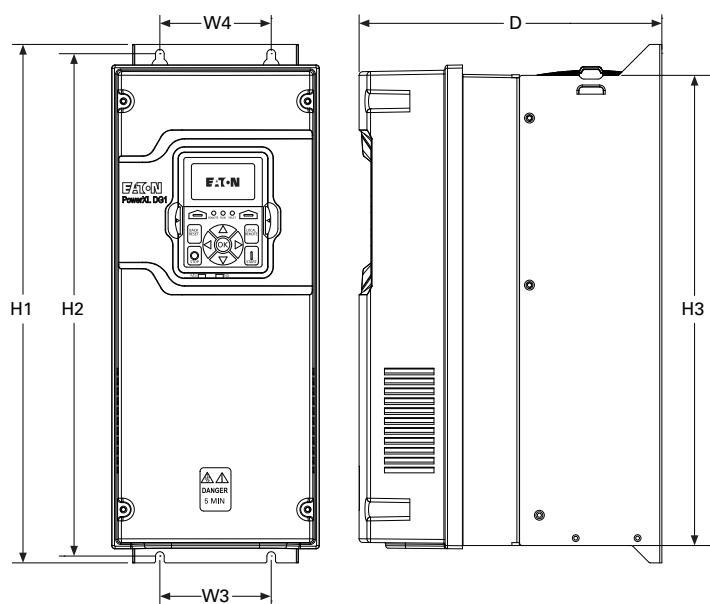
Frame Size	C	C1	Ø1	Ø2	Weight lbs (kg)
FS1	7.24 (184.0)	0.14 (3.5)	0.15 (4.0)	0.31 (8.0)	6.17 (2.8)
FS2	7.58 (192.0)	0.14 (3.5)	0.16 (4.2)	0.33 (8.5)	11.02 (5.0)
FS3	9.21 (234.0)	0.14 (3.5)	0.16 (4.2)	0.33 (8.5)	18.08 (8.2)

Drives & soft starters

DG1 drive dimensions

Dimensions (approximate dimensions in inches (mm))

PowerXL Series



Frame size	Voltage	hp (CT/IH)	kW	Amperes (CT/IH)	D	H1	H2	H3	W1	W2	W3	W4	Ø	Weight Lb (kg)
FR1	230 Vac	0.75–3	0.55–2.2	3.7–11	7.91	12.87	12.28	11.50	6.02	4.80	3.94	3.94	0.28	14.33
	480 Vac	1–5	0.75–4	2.2–9	(200.9)	(327.0)	(312.0)	(292.0)	(153.0)	(122.0)	(100.0)	(100.0)	(7.0)	(6.5)
	600 Vac	2–5	1.5–3.7	3.3–7.5										
FR2	230 Vac	5–7.5	3–5.5	12.5–25	9.63	16.50	15.98	14.96	6.61	5.28	3.54	3.54	0.28	23.37
	480 Vac	7.5–15	5.5–11	12–23	(244.7)	(419.0)	(406.0)	(380.0)	(167.8)	(134.0)	(90.0)	(90.0)	(7.0)	(10.6)
	600 Vac	7.5–15	5.5–11	10–18										
FR3	230 Vac	10–15	7.5–11	31–48	10.44	21.97	21.46	20.41	8.06	7.24	4.92	4.92	0.35	49.82
	480 Vac	20–30	15–22	31–46	(265.1)	(558.0)	(545.0)	(518.5)	(204.6)	(184.0)	(125.0)	(125.0)	(9.0)	(22.6)
	600 Vac	20–30	15–22	22–34										
FR4	230 Vac	20–30	15–22	61–88	11.57	24.80	24.31	23.26	9.36	9.13	8.07	8.07	0.35	77.60
	480 Vac	40–60	30–45	61–87	(294.0)	(630.0)	(617.5)	(590.7)	(237.7)	(232.0)	(205.0)	(205.0)	(9.0)	(35.2)
	600 Vac	40–60	30–45	41–62										
FR5	230 Vac	40–60	30–45	114–170	13.41	34.98	29.65	27.83	11.34	11.10	8.66	8.66	0.35	154.32
	480 Vac	75–125	55–90	105–170	(340.7)	(888.5)	(753.0)	(707.0)	(288.0)	(282.0)	(220.0)	(220.0)	(9.0)	(70.0)
	600 Vac	75–125	55–90	80–125										
FR6	230 Vac	75–100	55–75	211–248	14.61	40.75	33.27	31.38	19.13	18.90	15.75	15.75	0.35	246.91
	480 Vac	150–200	110–132	205–245	(371)	(1035)	(845)	(797)	(486)	(480)	(400)	(400)	(9.0)	(112)
	600 Vac	150–200	110–132	144–208										



Functional safety for persons, machine and the environment.

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. 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.

Stacklights

Signal towers are just as essential to the smooth and safe operation of machines and systems as they are at airports and supermarkets. This is why Eaton has designed its signal towers in such a way as to be able to accommodate extremely versatile light and acoustic modules. On top of this, their high IP66 degree of protection ensures that they can be used virtually anywhere.

In terms of signaling systems, light intensity and signal strength are as crucial to a system's efficiency as are the speed and ease with which complete towers can be assembled and disassembled, e.g., in order to transport a machine.

This efficiency can be increased even further by effectively integrating signal towers into an automation solution. Within this context, a SmartWire-DT connection not only significantly reduces wiring complexity, but also considerably enhances a system's communication capabilities.

Pushbuttons

The ergonomically shaped button elements are matched to the shape of a fingertip for even more comfortable operation. RMQ-Titan pilot devices can be flexibly used in a wide range of applications thanks to their IP67/IP69K degree of protection.

The Emergency-STOP buttons for the worldwide usable control circuit device product range RMQ-Titan are available as palm switches/mushroom actuators with a diameter of 38, 45 or 60 mm. Control circuit devices RMQ-Titan are ingeniously simple to connect with SmartWire-DT.

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.



Powering Business Worldwide

Cam switches, Indication, Pushbuttons

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.

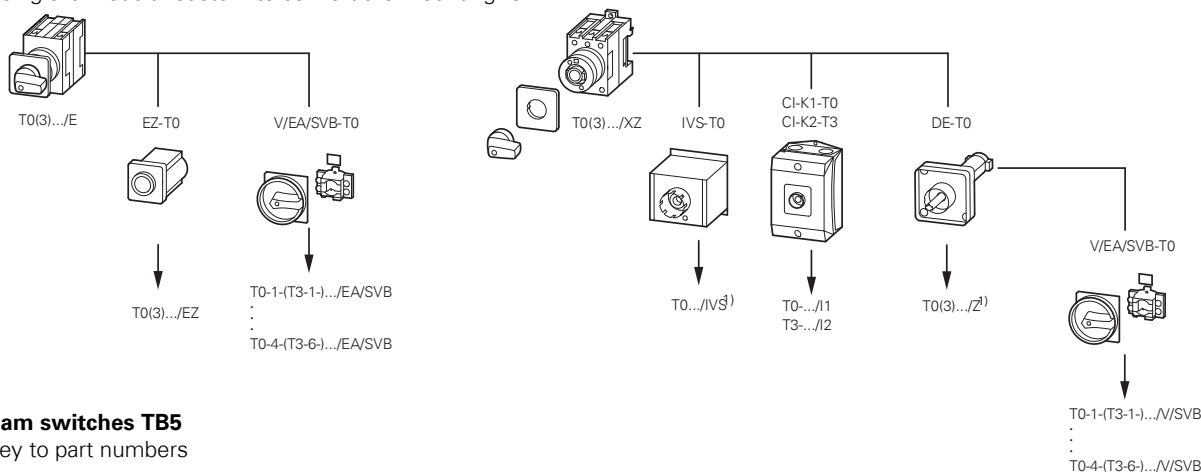
Our "T Cam Switches" catalog has over 800 popular standard contact sequences. The following pages feature a selection of our standard contact sequences. T cam switches and P switch-disconnectors are manufactured without PCB, CFC, asbestos and silicon. The contacts are cadmium free. The CI-K... insulated 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

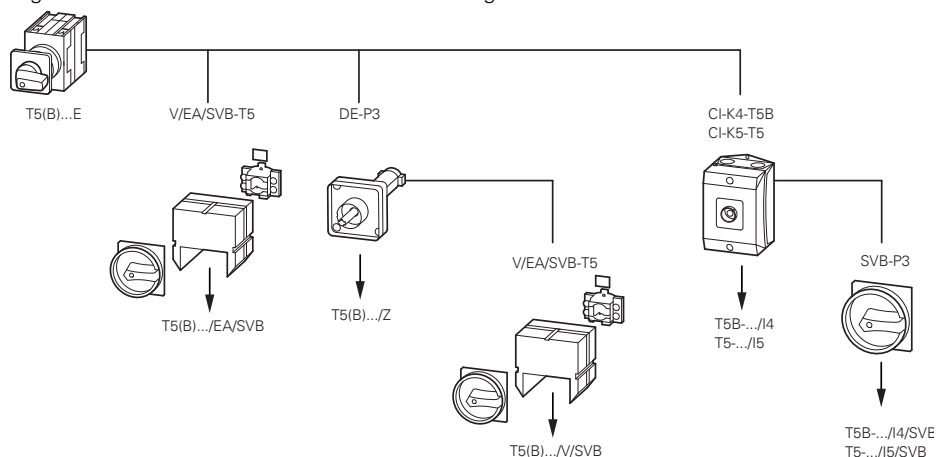


Cam switches TB5

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

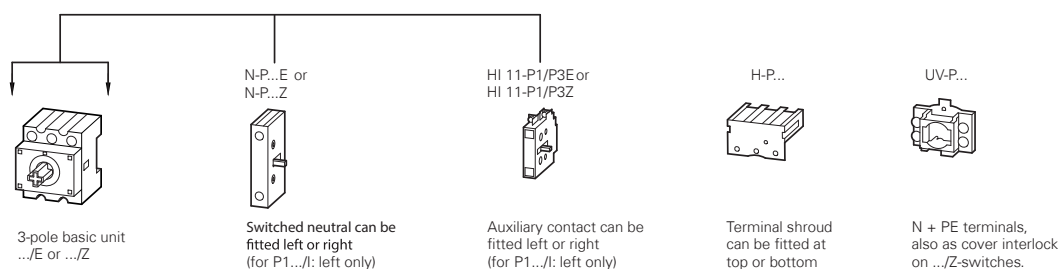


Switch-disconnectors P1 and P3

Key to part numbers

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

Add-on functions due to modular systems



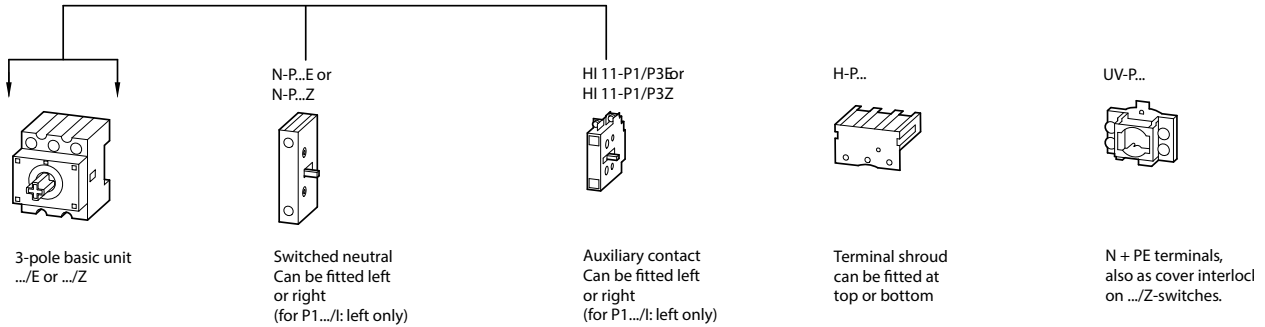
Cam switches

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

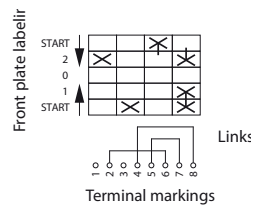
The TM mini cam switch is a particularly small switch with a small space requirement. It is ideally suited for small voltages and currents such as electronic controls. For greater safety the contacts are gold plated.

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

Cam switches



Front plate number	Main circuit poles	Auxiliary circuits	Flush mounting Front IP65	Centre mounting Front IP65	Surface mounting IP65	Service distribution board mounting Front IP30	Rear mounting Front IP65
		N/O N/C	Item no.	Item no.	Item no.	Item no.	Item no.
On-Off switches 20A							
 FS 908	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 20A							
 FS 684	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
 FS 943	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
 FS 4011	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 20A							
 FS 684	3	- -	T0-3-8401/E	T0-3-8401/EZ	T0-3-8401/I1	T0-3-8401/IVS	T0-3-8401/Z
ON-OFF switches 20A							
 FS 415	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 20A							
 FS 1410759	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 20A							
 FS 9440	3	- -	T0-3-8048/E	T0-3-8048/EZ		T0-3-8048/IVS	T0-3-8048/Z
Step switches 20A							
 FS 606	1	- -	T0-2-8231/E	T0-2-8231/EZ	T0-2-8231/I1	T0-2-8231/IVS	T0-2-8231/Z
 FS 420	1	- -	T0-2-8241/E	T0-2-8241/EZ	T0-2-8241/I1	T0-2-8241/IVS	T0-2-8241/Z
Changeoverswitches 20A							
 FS 1401	1	- -	T0-1-15431/E	T0-1-15431/EZ	T0-1-15431/I1	T0-1-15431/IVS	T0-1-15431/Z
	2	- -	T0-2-15432/E	T0-2-15432/EZ	T0-2-15432/I1	T0-2-15432/IVS	T0-2-15432/Z
	3	- -	T0-3-15433/E	T0-3-15433/EZ	T0-3-15433/I1	T0-3-15433/IVS	T0-3-15433/Z

Cam switches



Main circuit poles	Auxiliary circuits		Rated uninterrupted current Ia, A	Main switches surface mounting IP65 Item no.	Main switches flush mounting front IP65 Item no.	Main switches rear mounting front IP65 Item no.	Main switches rear mounting front IP65 Metal shaft for panel depth 400mm Item no.
	N/O	N/C					
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



SVB-T0



SVB-SW-T0



V/EA/SVB-T0



V/EA/SVB-SW-T0



KNB-T0



KNB-RT-P3

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 switch- ing 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			
Maintenance key		T0... P1...	KNK-T0
Maintenance key		P3...	KNK-P3

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



S-T0



SVA-T3



SVC-T3

Cam switches



N-P1E



PE-P5-125/160Z



HI21-P5-125/160Z



IVS-T0



UV-T0



ZVV-T0



ZAV-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
		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 and 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



H1-t5



VR-T0



MBS-12



C1-K1-T0-2

Description	For use with	Item no.
IP65 insulated enclosures	1 - 2 contact units	T0-.../Z
	3 - 4 contact units	T0-.../Z
	1 - 2 contact units	T3-.../Z
	3 - 4 contact units	T3-.../Z
	5 contact units	T3-.../Z
	1 - 2 contact units	T0-.../Z
	3 - 4 contact units	T0-.../Z
	1 - 2 contact units	T3-.../Z
	3 - 4 contact units	T3-.../Z
	5 contact units	T3-.../Z
	1 - 2 contact units	T5B-.../E
	3 - 4 contact units	T5B-.../E
	1 - 2 contact units	T5-.../Z
	3 - 4 contact units	T5-.../Z
	Only available together with basic unit	T0-.../I1
	Only available together with basic unit	T3-.../I2 P1-.../I2
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



K-C1-K5

Switch-Disconnectors

T0, P1 and P3 enclosed switch-disconnectors with pre-assembled steel EMC screen

Electromagnetic compatibility (EMC) refers to the ability of the device to function despite electromagnetic disturbances in the environment without electromagnetically disturbing other devices in the surroundings.

The operation of three-phase motors is becoming more and more common via variable speed drives or frequency inverters, and the use of such equipment can cause EMC disturbance to rise significantly. If interruption cannot be avoided, then an ideal mitigation method to maintain EMC compliance is to clamp the screened cables to a steel screening plate.

We have now enlarged our reliable CI-K offering with a range of enclosed Switchdisconnectors with pre-assembled steel screening plates for applications where EMC compliance is necessary. The new enclosed products feature units with current ratings of 20 A to 63 A, and can be used for motor applications up to 30 kW (AC-23A) for 415 V nominal current.

- Well known Reliable Eaton Series switchgear
- Robust IP65 Polycarbonate compact enclosures
- Cable clamps provide robust and trouble free connection to the screening plate
- A range of cable clamps to suit all cable diameters is supplied as standard
- Various Auxiliary switch options to suit customer needs
- Red/Yellow or Black lockable handle options.



T0-2-1/I2H/MBS/SVB



P1-25/I2H/MBS/SVB-SW



P3-63/I4/MBS/SVB/Hi11

Description	Max. Amp. rating	Motor Rating AC-23A, 415 V	Item no.
3P, red/yellow handle	20 A	5.5 kW	T0-2-1/I2H/MBS/SVB
3P, black handle	20 A	5.5 kW	T0-2-1/I2H/MBS/SVB-SW
3P + N, red/yellow handle	20 A	5.5 kW	T0-2-8900/I2H/MBS/SVB
3P + N, black handle	20 A	5.5 kW	T0-2-8900/I2H/MBS/SVB-SW
3P + 1 NO, red/yellow handle	20 A	5.5 kW	T0-2-15679/I2H/MBS/SVB
3P + 1 NO, black handle	20 A	5.5 kW	T0-2-15679/I2H/MBS/SVB-SW
3P + N + 1 NO / 1 NC, red/yellow handle	20 A	5.5 kW	T0-3-15680/I2H/MBS/SVB
3P + N + 1 NO / 1 NC, black handle	20 A	5.5 kW	T0-3-15680/I2H/MBS/SVB-SW
3P + 2 NO / 1 NC, red/yellow handle	20 A	5.5 kW	T0-3-15683/I2H/MBS/SVB
3P + 2 NO / 1 NC, black handle	20 A	5.5 kW	T0-3-15683/I2H/MBS/SVB-SW
6P + 1 NO / 1 NC, red/yellow handle	20 A	5.5 kW	T0-4-15682/I2H/MBS/SVB
6P + 1 NO / 1 NC, black handle	20 A	5.5 kW	T0-4-15682/I2H/MBS/SVB-SW
3P, red/yellow handle	25 A	11 kW	P1-25/I2H/MBS/SVB
3P, black handle	25 A	11 kW	P1-25/I2H/MBS/SVB-SW
3P + 1 NO / 1 NC, red/yellow handle	25 A	11 kW	P1-25/I2H/MBS/SVB/Hi11
3P + 1 NO / 1 NC, black handle	25 A	11 kW	P1-25/I2H/MBS/SVB-SW/Hi11
3P, red/yellow handle	32 A	15 kW	P1-32/I2H/MBS/SVB
3P, black handle	32 A	15 kW	P1-32/I2H/MBS/SVB-SW
3P + 1 NO / 1 NC, red/yellow handle	32 A	15 kW	P1-32/I2H/MBS/SVB/Hi11
3P + 1 NO / 1 NC, black handle	32 A	15 kW	P1-32/I2H/MBS/SVB-SW/Hi11
3P, red/yellow handle	63 A	30 kW	P3-63/I4/MBS/SVB
3P, black handle	63 A	30 kW	P3-63/I4/MBS/SVB-SW
3P + 1 NO / 1 NC, red/yellow handle	63 A	30 kW	P3-63/I4/MBS/SVB/Hi11
3P + 1 NO / 1 NC, black handle	63 A	30 kW	P3-63/I4/MBS/SVB-SW/Hi11

Accessories	Item no.
Empty enclosure with screening plate for T0-1	CI-K2H-T0-1-MBS
Empty enclosure with screening plate for T0-2	CI-K2H-T0-2-MBS
Empty enclosure with screening plate for T0-3, T0-4	CI-K2H-T0-4-MBS
Empty enclosure with screening plate for T3-1, T3-2	CI-K2H-T3-2-MBS
Empty enclosure with screening plate for T3-3, T3-4	CI-K2H-T3-4-MBS
Metal screening plate for CI-K2	MBS-I2
Metal screening plate for CI-K4	MBS-I4

Switch-Disconnectors

P1 and P3 switch-disconnectors with metal extension shafts

The P1 and P3 versions with Metal Extension Shafts fills a well know gap in the P Switch-Disconnecter range. This now opens up new potential in the Panel Building market and use in Machine Control Panels with disconnection from 25A - 100A. With the new extension shafts our reliable P switches can be mounted in electrical cabinets of up to 600mm 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.

- Well known P Switch-Disconnecter performance and reliability with low power losses.
- Switches can quickly be mounted on DIN rail or fitted to the mounting plate.
- Time & cost saving – Switches available as complete packages saving on order admin, packaging and assembly time. Also available with pre-built switched N and Auxiliary contacts.
- Simple interlock in ON with SVB handle and lockable in OFF with up to 3 x 8mm padlocks.
- By using K Line handles door can also be interlocked in OFF position. Also a defeatable option in the ON position for fault finding without disconnecting the power supply.

Description	Item no.	
Basic Switches type P.../XM	3P 25A	P1-25/XM
	3P 32A	P1-32/XM
	3P 63A	P3-63/XM
	3P 100A	P3-100/XM
Metal Shafts	Shaft for 400mm deep cabinet	P1/P3-M400
	Shaft for 600mm deep cabinet	P1/P3-M600
Operating Handles Moeller series knobs and handles provide door interlock when in the ON position. SVB Main Switch Handles can be locked in OFF with up to 3 x 8 mm padlocks.	Black Knob for P1	KNB-P1/M
	Black Knob for P3	KNB-P3/M
	Lockable Main Switch Handle P1 Red/Yellow	SVB-P1/M
	Lockable Main Switch Handle P3 Red/Yellow	SVB-P3/M
	Lockable Main Switch Handle P1 Black	SVB-SW-P1/M
	Lockable Main Switch Handle P3 Black	SVB-SW-P3/M
K-Line Knobs and Handles Provide door interlock when in the ON position and also when locked in the OFF position. The door interlock can also be defeated in the ON position by using a special tool. Lockable with up to 2 x 6 mm padlocks, or Cylinder lock.	Knob for P1, Blue, padlockable	K1DB/P
	Knob for P1, Red/Yellow, padlockable	K1DR/P
	Knob for P1, Grey, padlockable	K1DG/P
	Knob for P3, Blue, padlockable	K2SDB/P
	Knob for P3, Red/Yellow, padlockable	K2SDR/P
	Knob for P3, Grey, padlockable	K2SDG/P
	Knob for P3, Blue, Cylinder lock/key	K2SDB/C
	Knob for P3, Red/Yellow, Cylinder lock/key	K2SDR/C
Switched N, Auxiliary Contacts	Switched Neutral for P1	N-P1Z
	Switched Neutral for P3	N-P3Z
	1 N/O, 1N/C for P1 or P3	HI11-P1/P3Z
Switch, Shaft and Handle combinations. Most combinations can be ordered as single packs to reduce order administration and packaging (only with 400 mm shaft). Here are some common examples:	25A 3P P1 switch, with shaft for 400 mm cabinet, with Lockable Main switch Handle, Red/Yellow	P1-25/M4/ SVB
	32A 3P P1 switch, with 1NO/1NC Auxiliary, shaft for 400mm cabinet, with Lockable Main switch Handle, black	P1-32/M4/ HI11/SVB-SW
	63A 3P P3 switch, with shaft for 400 mm cabinet, with K Line K2 Knob, padlockable, Red/Yellow	P3-63/M4/K2-PR



P1-32/XM



KNB-P1/M



SVB-P1/M



K1DB/P



K2SDG/C



P1-32/M4/ HI11/SVB-SW

Stacklights

SL7 and SL4 range

The Eaton SL7 and SL4 stacklights provide reliable control over all key processes and machine availability. Available in two sizes, 70 mm (SL7) and 40 mm (SL4), the new stacklights are engineered to keep you informed about potential material requirements, downtime and hazards. Modules are available in a wide selection of audible, illuminating and mounting options that are well suited to adapt to any industrial application.



SL7 and SL4 stacklights

- Six lens colors: red, amber, yellow, green, blue, white
- Continuous, flashing, strobe and multi-strobe lighting functions
- Mono-tone, dual-tone and multi-tone audible alarms
- LED or incandescent lighting options
- Control up to five modules on a single stack, 10 with dual-arm base
- 24V, 120 Vac and 230 Vac operating voltages
- Simplified twist-and-lock assembly, no tools required
- Compact components reduce inventory requirements and increase flexibility
- Versatile hardware for quick installation and minimized downtime
- Slim 40 mm size (SL4) is ideal for applications with constrained space
- Lean automation with SmartWire-DT connectivity
- Ideal for indoor and outdoor usage
- Easily configurable components
- Simple bayonet mounting mechanism for quick assembly
- Flexible mounting and lighting options
- Volume-adjustable alarms
- Operating temperatures: -30° to +60°C



As noise levels and distractions in today's production facilities continue to increase, a stacklight with the ability to demand your immediate attention is of utmost importance. You can count on the innovative audible and visual features of Eaton's SL series stacklights to keep you informed more reliably than ever before.

All six lamp modules are available with filament lamps, continuous light LEDs, flashing LEDs, strobe LEDs, or high-performance LEDs. This way, the modules brightness and colours can be adapted to the specific needs of customers and to varying international market requirements. The same holds true for the acoustic modules. 8 different signals and volumes that can be adjusted up to 100dB allow for optimal adaptation to an ambient condition

Disassemble

Signal towers can be disassembled in order to transport the corresponding machine. With Eatons rapid mounting system this can be done in a matter of seconds.

1. Loosen the mounting ring
2. Remove the signal towers
3. Put the protection cap on.

Re-assembling and mounting the signal tower, both electrically and mechanically, is just as simple.

Stacklights

SL7 range

Complete devices

Continuous light, LED, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Number of modules	Color	Function	Item no.
Base Module with Foot and 100 mm Tube				
24 Vac/Vdc	2	Red/Green		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	Item no.
24 Vac/Vdc	Blue		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		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		SL7-L230-B
	Green		SL7-L230-G
	Red		SL7-L230-R
	White		SL7-L230-W
	Yellow		SL7-L230-Y
	Amber		SL7-L230-A



White



Amber



Yellow

Flashing light, UL type 4/4X/13, IP66, 2 Hz

Rated operational voltage (Ue V)	Color	Function	Item no.
24 Vac/Vdc	Blue		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		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		SL7-BL230-B
	Green		SL7-BL230-G
	Red		SL7-BL230-R
	White		SL7-BL230-W
	Yellow		SL7-BL230-Y
	Amber		SL7-BL230-A



Green



Blue



Red

Stacklights

SL7 range

Light module with LED

Strobe light, UL type 4/4X/13, IP66, 1.4 Hz



White



Amber



Yellow



Green



Blue



Red

Rated operational voltage (Ue V)	Color	Function	Item no.
24 Vac/Vdc	Blue		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		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		SL7-FL230-B
	Green		SL7-FL230-G
	Red		SL7-FL230-R
	White		SL7-FL230-W
	Yellow		SL7-FL230-Y
	Amber		SL7-FL230-A

SL7 Light module with high-output LED

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Item no.
High-performance LED for maximum signaling effect			
24 Vac/Vdc	Blue		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

Strobe light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Item no.
High-performance LED for maximum signaling effect, 1.4 Hz			
24 Vac/Vdc	Blue		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

Multi-Strobe light, UL type 4/4X/13, IP66


Rated operational voltage (Ue V)	Color	Function	Item no.
High-performance LED for maximum signaling effect, 1–2.6 Hz			
24 Vac/Vdc	Blue		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

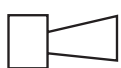

SL7 Light module for incandescent bulb

Continuous light, UL type 4/4X/13, IP66

Rated operational voltage (U _e V)	Color	Function	Item no.
Without Light Elements, Incandescent Bulb, Maximum 7W			
<250 Vac/Vdc	Blue		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

Rated operational voltage (U _e V)	Rated operational current (I _e mA)	Color	Function	Sound type	Item no.
Adjustable with internal DIP switches. Sound pressure 100 dB, adjustable with internal potentiometer. f = 2800 Hz.					
24 Vac/Vdc	Maximum 92	Black			SL7-AP24
110/120 Vac	Maximum 41				SL7-AP120
230/240 Vac	Maximum 43				SL7-AP230



SL7-AP24



Continuous tone or pulsed tone, external actuation, UL type 4/4X/13, IP66 ①

Rated operational voltage (U _e V)	Rated operational current (I _e mA)	Color	Function	Sound type	Item no.
Assigned two inputs (two modules). Sound pressure 100 dB, adjustable with internal potentiometer. f = 2800 Hz.					
24 Vac/Vdc	Maximum 92	Black			SL7-AP24-E
110/120 Vac	Maximum 41				SL7-AP120-E
230/240 Vac	Maximum 43				SL7-AP230-E



SL7-AP120-E

Continuous tone or pulsed tone, external actuation, UL type 4/4X/13, IP66 ①

Rated operational voltage (U _e V)	Rated operational current (I _e mA)	Color	Function	Sound type	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			SL7-AP24-M
110/120 Vac	Maximum 45				SL7-AP120-M
230/240 Vac	Maximum 43				SL7-AP230-M



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	For use with..	Item no.
Base with aluminum tube and plastic foot Spring-loaded terminals	100 mm	Black	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	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	SL7-L... SL7-BL... SL7-FL... SL7-AP...	SL7-CB-IMH
Base with built-in (pre-assembled) fixing screws Spring-loaded terminals		Black	SL7-L... SL7-BL... SL7-FL... SL7-AP...	SL7-CB-IMS
Base with external fixing holes Spring-loaded terminals		Black	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	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		SL7-L... SL7-BL... SL7-FL... SL7-AP...	SL7-SWD



SL7-CB-250



SL7-CB-EMH



SL7-CB-_



SL7-CB-FW



SL7-CB-D

For vertical mounting—includes cover, maximum 5 modules

Description	Tube length	Color	For use with..	Item no.
Vertical base with bracket Spring-loaded terminals		Black	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	For use with..	Item no.
Base with external fixing holes Spring-loaded terminals		Black	SL7-L... SL7-BL... SL7-FL... SL7-AP...	SL7-CB-D

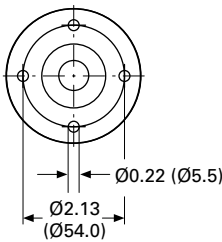
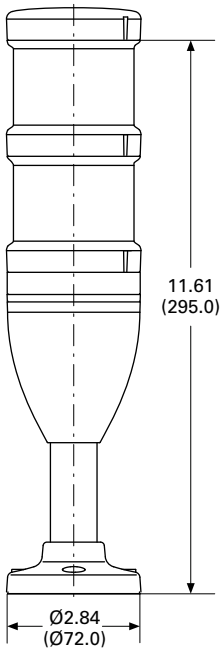
Stacklights

SL7 range dimensions

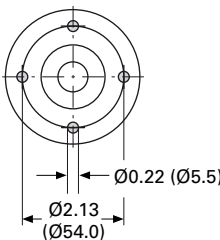
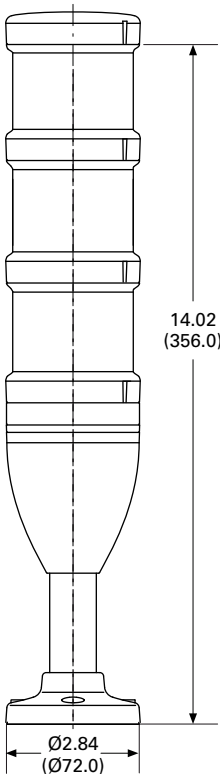
Approx. dimension in Inches (mm)

Complete devices

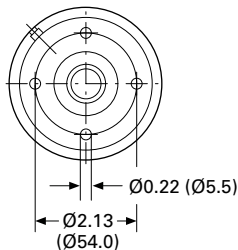
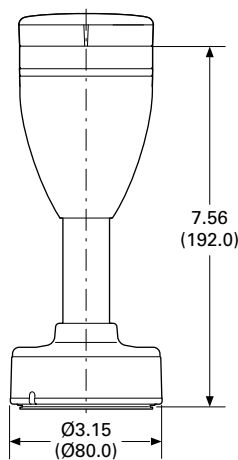
SL7-100-LRG-24LED



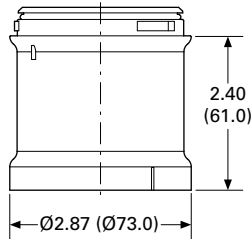
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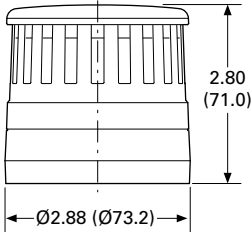
SL7-SWD



Light modules



Acoustic modules



Stacklights

SL4 range

Complete devices

Continuous light, LED, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Number of modules	Color	Function	Item no.
Base Module with Foot and 100 mm Tube				
24 Vac/Vdc	2	Red/Green		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	Item no.
24 Vac/Vdc	Blue		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		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		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	Item no.
24 Vac/Vdc	Blue		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		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		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



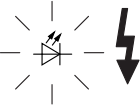


Red

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	Item no.
24 Vac/Vdc	Blue		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		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		SL4-FL230-B
	Green		SL4-FL230-G
	Red		SL4-FL230-R
	White		SL4-FL230-W
	Yellow		SL4-FL230-Y
	Amber		SL4-FL230-A



White

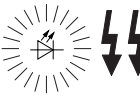


Amber



Yellow

Multi-strobe light, UL type 4/4X/13, IP66

Rated operational voltage (Ue V)	Color	Function	Item no.
LED for effective signaling effect with various strobe sequences, 1–2.6 Hz			
24 Vac/Vdc	Blue		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




Green



Blue

SL4 Light module for Incandescent bulb

Continuous light, UL type 4/4X/13, IP66

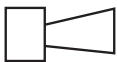

Rated operational voltage (Ue V)	Color	Function	Item no.
Without light elements, incandescent bulb, maximum 4W			
<250 Vac/Vdc	Blue		SL4-L-B
	Green		SL4-L-G
	Red		SL4-L-R
	White		SL4-L-W
	Yellow		SL4-L-Y
	Amber		SL4-L-A



Red

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	Item no.
Adjustable with internal DIP switches. Sound pressure 80 dB, adjustable with internal potentiometer. f = 4000 Hz.					
24 Vac/Vdc	Maximum 39	Black			SL4-AP24
110/120 Vac	Maximum 21				SL4-AP120
230/240 Vac	Maximum 21				SL4-AP230



SL4-AP24

Stacklights

SL4 range

SL4 Base modules

For horizontal mounting—Includes cover, maximum 5 modules



SL4-PIB-_



SL4-PIB-IMH



SL4-PB-EMH



SL4-FMS-_



SL4-PIB-FW



SL4-PIB-D

Description	Tube length	Color	For use with..	Item no.
Base with aluminum tube and plastic foot Spring-loaded terminals	100 mm	Black aluminum color tube	SL4-L...	SL4-PIB-100
	250 mm		SL4-BL...	SL4-PIB-250
	400 mm		SL4-FL... SL4-AP...	SL4-PIB-400
Base with aluminum tube and 3/4 in NPT threaded base Spring-loaded terminals	100 mm	Black aluminum color tube	SL4-L...	SL4-PIB-T-100
	250 mm		SL4-BL...	SL4-PIB-T-250
	400 mm		SL4-FL... SL4-AP...	SL4-PIB-T-400
Base with internal (on the inside) fixing holes Spring-loaded terminals		Black	SL4-L... SL4-BL... SL4-FL... SL4-AP...	SL4-PIB-IMH
Base with built-in (pre-assembled) fixing screws Spring-loaded terminals		Black	SL4-L... SL4-BL... SL4-FL... SL4-AP...	SL4-PIB-IMS
Base with external fixing holes Spring-loaded terminals		Black	SL4-L... SL4-BL... SL4-FL... SL4-AP...	SL4-PIB-EMH
Base with base adapter for slipping onto place (rapid mounting and wiring system) Screw terminals	100 mm	Black aluminum color tube	SL4-L...	SL4-FMS-100
	250 mm		SL4-BL...	SL4-FMS-250
	400 mm		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		SL4-L... SL4-BL... SL4-FL... SL4-AP...	SL4-SWD

For vertical mounting—includes cover, maximum 5 modules

Description	Tube length	Color	For use with..	Item no.
One-sided base with bracket Spring-loaded terminals		Black	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	For use with..	Item no.
Base with external fixing holes Spring-loaded terminals		Black	SL4-L... SL4-BL... SL4-FL... SL4-AP...	SL4-PIB-D

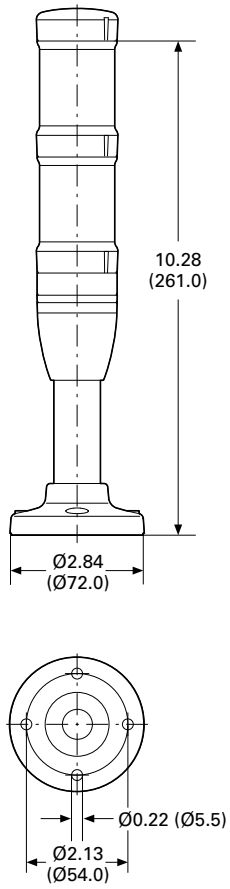
Stacklights

SL4 range dimensions

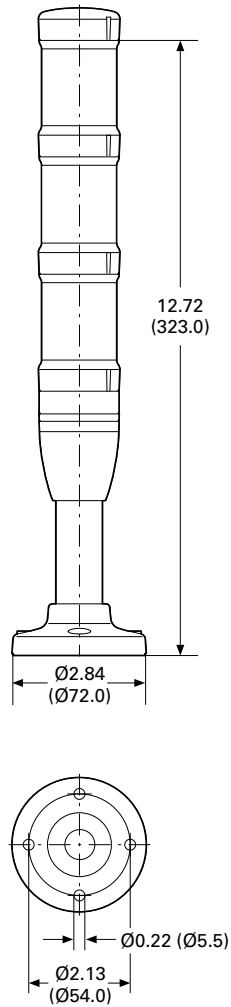
Approx. dimension in Inches (mm)

Complete devices

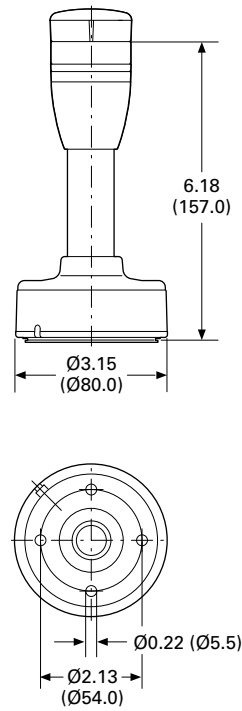
SL4-100-LRG-24LED



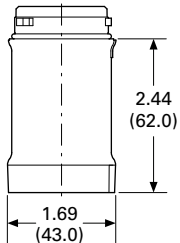
SL4-100-LRYG-24LED



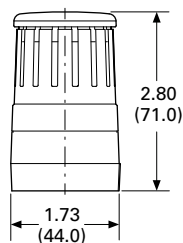
SL4-SWD



Light modules



Acoustic modules



Stacklights

Stacklights - SL range accessories

Mounting brackets



SL7/4-FW

Description	For use with..	Item no.
Mounting brackets for vertical Mounting, plastic	SL4-PIB.. SL7-CB..	SL7/4-FW
M20 cable gland for vertical mounting, Metal (includes mounting bracket)	SL4-PIB-T.. SL7-CB-T..	SL7/4-FW-T



SL7/4-FW-T

Incandescent bulb tool

Description	For use with..	Item no.
Tool for replacing incandescent bulb	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)	For use with..	Item no.
3000	12	5	SL7-L...	SL7-L12
	24	6.5		SL7-L24
	120	7		SL7-L120
	230	6.5		SL7-L230



SL7-L12

Mounting: Ba15d - SL4 series

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



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Pushbuttons

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

Pushbuttons



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
Emergency-stop actuators	Key-release mushroom button with 1 key, MS1 individual lock mechanism	 1NC	M22-PVS/K01
	Pull to release	 1NC	M22-PV/K01
	Pull to release	 1NO/1NC	M22-PV/K11
Selector switch actuators	Two positions, stay-put	– 1NO	M22-WRK/K10
	Three positions, stay-put	– 2NO	M22-WRK3/K20
Key-operated actuators	Two positions, stay-put, with 1 key	– 1NO/1NC	M22-WRS/K11

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

Pushbuttons

22.5mm Pushbuttons




























RMQ - Titan

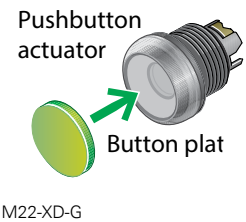
Pushbutton actuators, IP67

- 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

Pushbuttons

22.5mm Pushbuttons

RMQ - Titan

Actuators



M22-PV



M22-PVL



M22-PVS



M22-PL-PV



FAK-RV/KC01/IY



FAK-RV/KC11/IY

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

Fixing adapters, contact blocks



M22-A



M22K10



M22-AK11

















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

Pushbuttons


























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



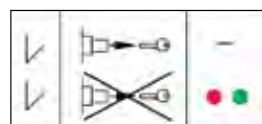
M22-DLH-W



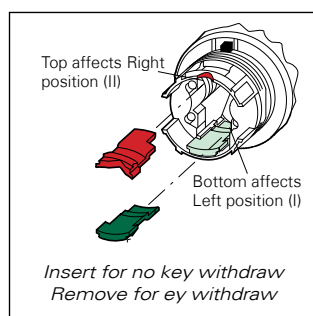
M22-L-R



M22-LH-B



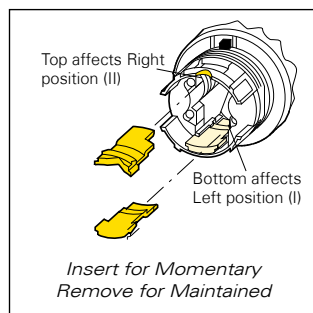
M22-XC-R



Insert for no key withdraw
Remove for key withdraw



M22-XC-Y



Insert for Momentary
Remove for Maintained

Pushbuttons

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	momentary	momentary	momentary	momentary
Key withdraw positions									
	I O II	I O II	I O II	I O II	I O II	I O II	I O II	I O II	I O II
Two slot affects right position	-			-				-	
Bottom slot affects left position	-		-			-			

Shading indicates standard switch configuration

Pushbuttons

22.5mm Pushbuttons

RMQ - Titan

Selector switch actuators

Description	Function:		Button plate	Front ring: titanium Item no.
	└ = Stay-put ✓ = V position	↳ = Spring-return		
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:			Colour of thumb-grip	Item No.	
	└ = Stay-put	└ = Spring-return				
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-WRS



M22-WRLK-R

Pushbuttons

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
	0-1-0-2-0-3-0-4	–	4-way selector switch actuators	M22-XCK2

Surface mounting enclosures, flush mounting plates

Number of ways Qty.		Colour	Item no.
Surface mounting enclosures			
1			M22-I1
2			M22-I2
3			M22-I3
4			M22-I4
6			M22-I6
Description	Number of ways Qty.	Colour	Item no.
Flush mounting plates			
Legend plates cannot be used if pushbuttons are fitted in vertical column without apertures, if required.			
Aluminium with yellow paint finish for emergency-stop buttons	1		M22-EY1
Aluminium, light anodized	1		M22-E1
	2		M22-E2
	3		M22-E3
	4		M22-E4
	5		M22-E5
	6		M22-E6

Pushbuttons


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			
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	3 individual screw terminals, P _{max} = 0.5 W Accuracy of resistance value: ±10% (linear)		1	M22-R1K
			4.7	M22-R4K7
			10	M22-R10K
			47	M22-R47K
			100	M22-R100K
			470	M22-R470K

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



M22-H1



M22-B



M22-T-D



M22-T-DD



M22-TC



M22-R30



M22-GR



M22-AMC



M22-MS



M22-IVS



M22-XW



M22-XGWK



M22-DZ-B-GB14



M22-R10K



M22-XAK1

Pushbuttons

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.



Pushbuttons

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

Cam switches, Indication, Pushbuttons

Pushbuttons

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.

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.

Pushbuttons

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.

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.

Cam switches, Indication, Pushbuttons

Pushbuttons

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)

Pushbuttons

30.5mm Pushbuttons

Illuminated operators, illuminated pushbutton lenses



Plastic illuminated lenses

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



Glass illuminated lenses (chrome)

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



Glass illuminated lenses (chrome) (corrosion resistant)

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

Press-to-test light units



Press-To-Test Indicating Lights - Direct Voltage

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

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

Press-to-test indicating lights - transformer type

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

Press-to-test indicating lights - resistor type

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

Illuminated pushbutton light units



Illuminated pushbuttons - transformer type

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

Direct Voltage Indicating Light Unit

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

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

*LED only 6-240V



STEP 1



Select a lens from above.

STEP 2



Select illuminated pushbutton light from above

STEP 3



Select bulb (if not supplied)

STEP 4



Select contact block.

Cam switches, Indication, Pushbuttons

Pushbuttons

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

Resistor type light modules for push-pull operators

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

STEP 1



Select a lens from above.

STEP 2



Select push-pull operator from above

STEP 3



Select light unit from above

STEP 4



Select bulb (supplied)

STEP 5



Select contact block.

Pushbuttons

30.5Mm pushbuttons

Illuminated operators, bulbs



Incandescent bulbs

Supply voltage	Watts	Item no.
6.3V	0.9W	28-2225-33
24V	1.2W	28-2225-13
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

Cam switches, Indication, Pushbuttons

Pushbuttons

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



E34K1

T341M



E34L1

E34A1

Selector switch knobs & levers

Knobs & levers

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

* For maintained operators only.

Selector switches & joystick operators, cam selection guide

Cam selection chart showing contact sequence

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

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

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

STEP 1



Select
bare shaft
operator

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.

Pushbuttons

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.

Pushbuttons

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.

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.

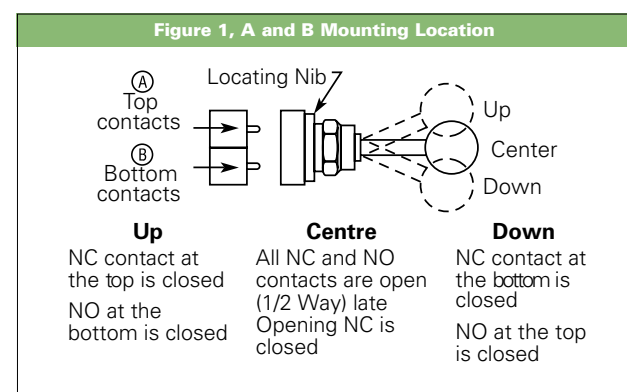
NO = Normally Open, NC = Normally Closed, LONC = Late Opening Normally Closed.

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

Description	Item no.
2 Position joystick operator	
2 position operator - Momentary Up & Down	T452
4 Position joystick operators (spring return only)	
4 position - Without Latch	T450
4 position - With Latch	T460
4 Position joystick operators (maintained)	
4 position - Without Latch	10250T451_*
4 position - With Latch	10250T461_*

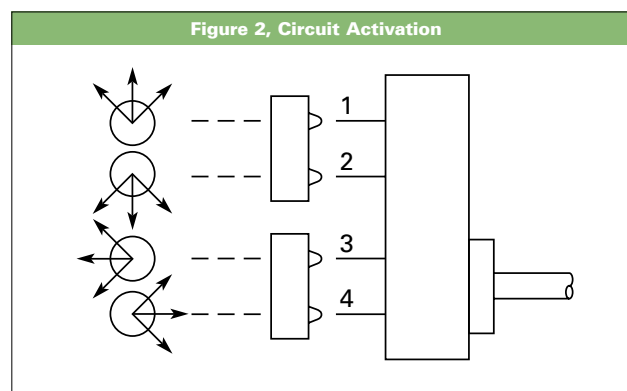
*Maintained Position - For maintained position (non-spring return), locate required maintained position or positions of operating lever in the Maintained table below & add appropriate Suffix Number to the Item Number selected from the table above.

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.

Pushbuttons

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 (non-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 (padlockable)

Operator head	Contacts	Padlock included	Item no.
Metal Mushroom 45mm	1LONC	NO	ESM9/5
	1LONC	YES	ESM9/5P
	1ECNO,1LONC	NO	ESM9/6
	1ECNO,1LONC	YES	ESM9/6P
Metal Palm 63.5mm	1LONC	NO	ESP6/5
	1LONC	YES	ESP6/5P
	1ECNO,1LONC	NO	ESP6/6
	1ECNO,1LONC	YES	ESP6/6P



ESM9/6



T3500

Stop start pushbutton station

Description	Item no.
Fibreglass Enclosure. Start: green pushbutton with boot Stop: red padlockable mushroom with boot	T3500

Pushbuttons

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
	Blue	91000TA46
	Black	TA47
	Red	TA48
	Green	TA49
Protective boot for extended pushbutton operators	Yellow	TA50
	Black	TA3
	Red	TA4
	Green	TA10
Protective boot for illuminated pushbuttons.	Clear	TA85
	Black	TA25
	Black	TA88
Protective boot for momentary mushroom operators on page 295. Not suitable for use with T140 operator.		

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.	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

Pushbuttons

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_ _
Aluminium T-Range, medium size, black unless marked "red"	TM_ _
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_ _

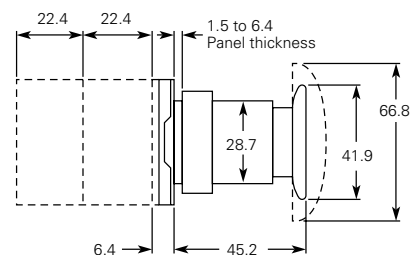
Legend	T-Range large Item no.	T-Range medium Item no.	E34 universal Item no.
Blank	TJ36	TM36	TSP76
Blank (red)	TJ37	TM37	TSP77
Off (red)	TJ24	TM24	E34SP24
On	TJ25	TM25	E34SP25
Run	TJ31	TM31	E34SP31
Start	TJ33	TM33	E34SP33
Stop (red)	TJ34	TM34	E34SP34

Cam switches, Indication, Pushbuttons

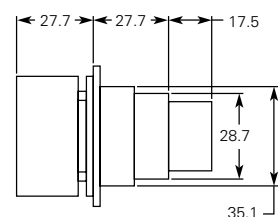
Pushbuttons

30.5mm Pushbuttons

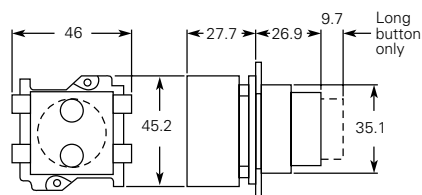
30.5mm Pushbuttons, dimensions & technical data



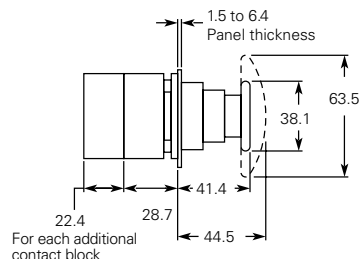
Push-Pull Switch



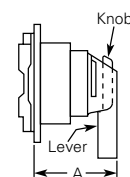
Illuminated Pushbutton



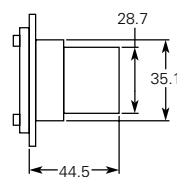
Flush and long pushbutton half shroud is the same as the long pushbutton with lower half of guard ring cut back



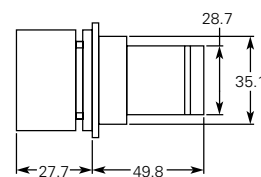
Mushroom and jumbo head pushbutton



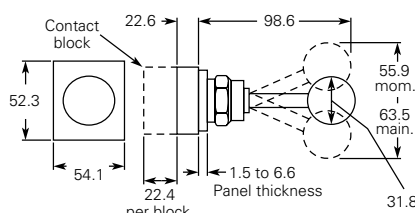
Operator	Dim. A
Knob	35.1
Lever	38.1



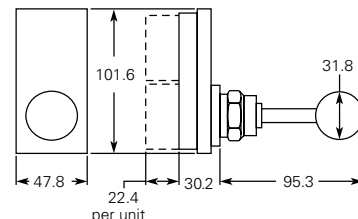
Key operated selector switch



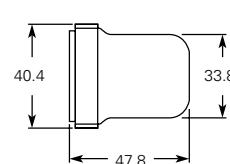
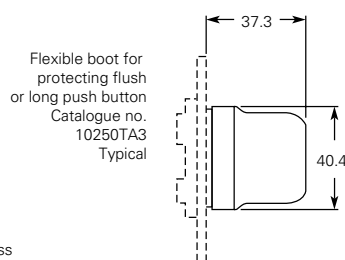
Illuminated Selector Switch



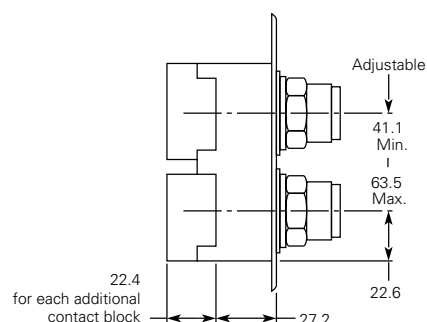
2-position joystick operator



4-position joystick operator



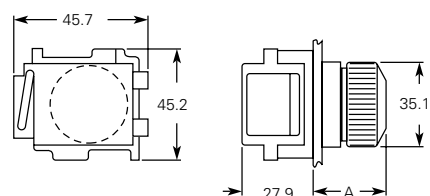
Transparent flexible boot for illuminated pushbutton
Catalogue no. 10250TA25



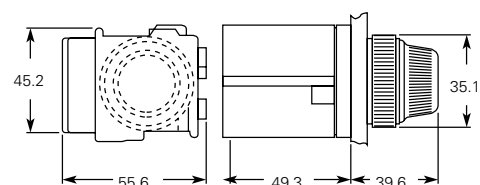
Maintained Pushbutton
Catalog No. 10250TA66
Typical

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

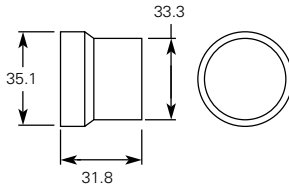
316 Stainless steel enclosure dimensions

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

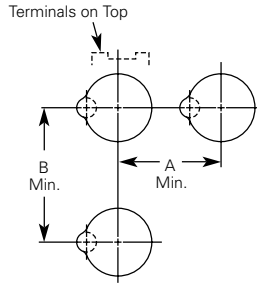
Pushbuttons

30.5mm Pushbuttons

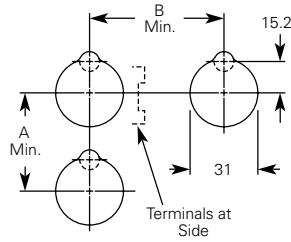
30.5mm Pushbuttons, dimensions & technical data



Extended Retaining Nut
Catalog No. 10250TA12



Horizontal Rows



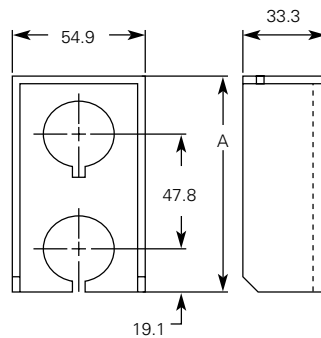
Vertical Rows

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

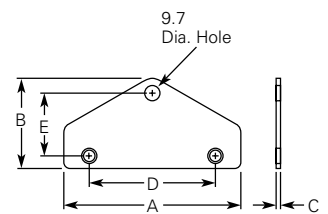
Number of elements	Dimension A
2	101.6
3	149.4
4	202.2
7	339.9

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

Cam switches, Indication, Pushbuttons

Pushbuttons

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

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EAO Pushbuttons

EAO is a global manufacturer of Human Machine Interface products and solutions, from switches, keypads and keyboards to complete custom built control panels. EAO Human Machine Interfaces applications across a range of target industries including Transportation, Machinery, Heavy duty and Special vehicles and Automotive.

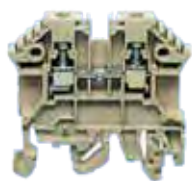
With decades of experience as a global provider, EAO have the knowledge and products to satisfy all of your application needs and quality expectations. EAO products and systems meet all the relevant national and international standards and specifications for the global transport industry.

The series 56 and 57 high quality switch range includes both push buttons and indicators.

The series 04 high quality switch range, includes mushrooms headed switches, key switches and emergency stops as well as push buttons and indicators.



Your Expert Partner for Human Machine Interfaces



M 2.5



M 2.5

Wiring accessories

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 334

Wiring accessories

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



M 4



M 5

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 334

* Other colours available on request.



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Wiring accessories

Feed-through terminals

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



Type	35mm	50mm
Current	135 amps - 750V / 125 amps - 800V	168 amps - 1000V
Width / Strip Length / Screw	16mm / 20mm / M5 all.	20mm / 27mm / M8 all.
Cable	2.5mm-35mm stranded / 2.5mm -50mm solid	25mm-50mm stranded / 16mm-50mm solid

Description	Reference	35mm Item no.	Description	Reference	50mm Item no.
35mm terminal beige	1494.2	RK35PA	50mm terminal beige	1120.2	RK50PA
End plate beige	2116.2	AP35PA	End plate beige	-	Not Required
Partition beige	2117.2	TW35PA	Partition grey	-	Not Required
35mm terminal blue	1494.5	RK35PAB	35mm terminal blue	1120.5	RK50PAB
End plate Blue	2116.5	AP35PAB	End section Blue	-	Not Required
Partition blue	2117.5	TW35PAB	-	-	-
Cross Connection 2P bare	2164.0	Q.235	Cross Connection 2P insul.	2763.2	AQI250
Cross Connection 3P bare	2165.0	Q.335	Cross Connection 3P bare	2764.2	AQI350
Cross Connection 10P bare	2167.0	Q.1035			
Cover 1P	2820.0	AD1/16			
Test Socket	2127.0	STB16/4			
Test Plug	2051.0	PS4			
End clamp Economy TS35	2005.2	ES35PA	End clamp Economy TS35	2005.2	ES35PA
End clamp TS35 (9.5mm)	2828.0	ES35KST	End clamp TS35 (9.5mm)	2828.0	ES35KST
End clamp metal TS35 (11mm)	2761.9	HES35ST	End clamp metal TS35 (11mm)	2761.9	HES35ST



Type	95mm	150mm
Current	250 amps - 1000V	355 amps - 1000V
Width / Strip Length / Screw	25mm / 30mm / M8 all	31mm / 38mm / M10 all.
Cable	35mm-95mm stranded / 25mm -95mm solid	35mm-150mm stranded / 35mm-185mm solid

Description	Reference	95mm Item no.	Description	Reference	150mm Item no.
95mm terminal beige	1122.2	RK95PA	150mm terminal beige	1124.2	RK150PA
End plate	-	Not Required	End plate	-	Not Required
Partition	-	Not Required	Partion	-	Not Required
95mm terminal blue	1122.5	RK95PAB	150mm terminal blue	1124.5	RK150PAB
End plate	-	Not Required	End Plate	-	Not Required
Partition	-	Not Required	-	-	-
Cross Connection 2P insul.	2765.2	AQI295	Cross Connection 2P insul.	2767.2	AQI2150
Cross Connection 3P bare	2766.2	AQI395	Cross Connection 3P bare	2768.2	AQI3150
-	-	-	Warning Tag	2806.0	AD1/150
End clamp Economy TS35	2005.2	ES35PA	End clamp Economy TS35	2005.2	ES35PA
End clamp TS35 (9.5mm)	2828.0	ES35SKT	End clamp TS35 (9.5mm)	2828.0	ES35SKT
End clamp metal TS35 (11mm)	2761.9	HES35ST	End clamp metal TS35 (11mm)	2761.9	HES35ST

For marking systems, refer to page 334. For mounting rails, refer to page 335.

Wiring accessories

Feed-through terminals

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

Type	240mm
Current	453 amps - 1000V
Width / Strip Length / Screw	36mm / 38mm / M10 all.
Cable	70mm-240mm stranded / 70mm -240mm solid

HSK High Current
Terminals (available
on request).



M 10

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 334. For mounting rails, refer to page 335.

Earth terminals

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

Type	2.5mm	4mm
Width / Strip Length / Screw	6mm / 10mm / M2.5	8mm / 12mm / M3
Cable	0.2mm-2.5mm stranded / 0.2mm -4mm solid	0.2mm-4mm stranded / 0.2mm-6mm solid



M 2.5



M 3

Description	Reference	2.5mm Item no.	Description	Reference	4mm Item no.
2.5mm Earth terminal	1056.2	SL2535	4mm Earth terminal	1212.2	SL435

Type	10mm	16mm
Width / Strip Length / Screw	10mm / 12mm / M4	12mm / 12mm / M5
Cable	0.2mm-10mm stranded / 0.2mm-10mm solid	2.5mm-16mm stranded / 2.5mm-25mm solid



M 4



M 5

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

Wiring accessories

Earth terminals

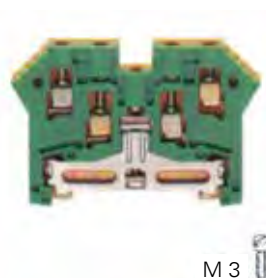
Through-type earth terminals (yellow/green)
(suitable for 35mm DIN rail)



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 335.



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 334. For mounting rails, refer to page 335.

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 334. For mounting rails, refer to page 335.

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



M 3



M 3

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



M 3



M 3

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 334. For mounting rails, refer to page 335.

Wiring accessories

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 334. For mounting rails, refer to page 335.



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

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.
Terminal beige	1101.2	SIK10PA
Terminal beige	1102.2	SIK10ZPA
LED - 12VDC / 24VAC	1113.2	SSTSIKLED12
LED - 30VDC / 60VAC	1114.2	SSTSIKLED30
LED - 60VDC / 120VAC	1115.2	SSTSIKLED60
LED - 115VDC / 230VAC	1116.2	SSTSIKLED115
End clamp Economy TS35	2005.2	ES35PA
End clamp TS35 (9.5mm)	2828.0	ES35SKT
End clamp metal TS35 (11mm)	2761.9	HES35ST
Fuses to suit:		
5 x 25mm:		
1A	2096.0	SIK251A
2A	2097.0	SIK252A
4A	2098.0	SIK254A
6.3A	2099.0	SIK256.3A
5 x 20mm:		
1A	2406.0	SIK201A
2A	2407.0	SIK202A
4A	2408.0	SIK204A
6.3A	2409.0	SIK206.3A



Fuse terminals (suitable for 35mm DIN Rail)

Type	4mm 5mm X 20mm/25mm	10mm 5mm X 20mm/25mm
Width / Strip Length	8mm / 9mm	12mm / 12mm
Cable	0.2mm-4mm stranded / 0.2mm-4mm solid	0.2mm-10mm stranded / 0.2mm-10mm solid

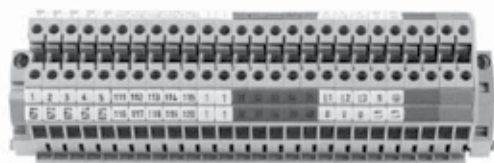


Description	Reference	4mm Item no.	Description	Reference	10mm Item no.
4mm terminal	2190.2	STK1PA	10mm terminal	1092.6	SK135
End section	2046.2	APSI1PA	End section	2047.6	APSK1KRG
End clamp Economy TS35	2005.2	ES35PA	End clamp Economy TS35	2005.2	ES35PA
End clamp TS35 (9.5mm)	2828.0	ES35SKT	End clamp TS35 (9.5mm)	2828.0	ES35SKT
End clamp metal TS35 (11mm)	2761.9	HES35ST	End clamp metal TS35 (11mm)	2761.9	HES35ST

For marking systems, refer to page 334. For mounting rails, refer to page 335.
For fuses see above.

Wiring accessories

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.

Wiring accessories

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



TS357.5



ES35PA



HES35ST

Wiring duct, surface mounting

Wiring duct available in slotted closed & open or solid wall variations.

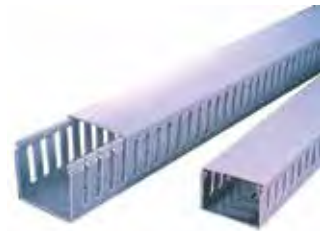
- High impact strength
- Self extinguishing 94V - 0 PVC
- Service temperature 850C
- Ducting comes with lids

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



Cam switches, Indication, Pushbuttons

Wiring accessories



Cable Tie Saddles



Cable Ties, Surface Mounting

Cable accessories

Cable ties

- UL approved nylon 66, 94V-2
- One piece design ensures strong locking
- Service temperature -400C to +1050C
- High temperature 1850C, 94V-0 available on request
- Packed quantity 100

Dimensions (mm)	Colour	Tensile strength	Bundle Diameter	Item no.
100 x 2.5	Clear	8 kg	25 mm	FBCT1002C
190 x 4.8	Clear	22 kg	52 mm	FBCT1904C
280 x 4.8	Clear	22 kg	81 mm	FBCT2804C
370 x 4.8	Clear	22 kg	102 mm	FBCT3704C
280 x 7.6	Clear	55 kg	81 mm	FBCT2807C
380 x 7.6	Clear	55 kg	110 mm	FBCT3807C
450 x 7.6	Clear	55 kg	120 mm	FBCT4507C
450 x 8.0	Clear	80 kg	133 mm	FBCT4508C
550 x 8.0	Clear	80 kg	168 mm	FBCT5508C
812 x 9.0	Clear	80 kg	246 mm	FBCT8129C
1168 x 9.0	Clear	80 kg	360 mm	FBCT11689C
100 x 2.5	Black	8 kg	25 mm	FBCT1002B
150 x 3.6	Black	18 kg	39 mm	FBCT1503B
190 x 4.8	Black	22 kg	52 mm	FBCT1904B
280 x 4.8	Black	22 kg	81 mm	FBCT2804B
370 x 4.8	Black	22 kg	102 mm	FBCT3704B
280 x 7.6	Black	55 kg	81 mm	FBCT2807B
380 x 7.6	Black	55 kg	110 mm	FBCT3807B
450 x 7.6	Black	55 kg	120 mm	FBCT4507B
450 x 8.0	Black	80 kg	133 mm	FBCT4508B
550 x 8.0	Black	80 kg	168 mm	FBCT5508B
1168 x 9.0	Black	80 kg	360 mm	FBCT11689B

Cable tie saddles

- Available in screw-in or stick-on
- Colour - white

Dimensions (mm)	Mounting	Item no.
19 x 9.5	Screw-on	FBTM0
15 x 10	Screw-on	FBTM1
23 x 16	Screw-on	FBTM2
21 x 21	Stick-on	FBTM21214
28 x 28	Stick-on + screw-on	FBTM28284



Flexible bushing



Cable glands

Flexible bushing

- Cut to suit any shape hole
- Protects cables from sharp edges
- Manufactured P.E. Natural

Thickness	Max. Thickness	Item no.
1.0	1.0	FBMB10
1.6	1.0 - 1.6	FBMB16
2.4	1.6 - 2.4	FBMB24
3.2	2.4 - 3.2	FBMB32
4.5	3.2 - 4.5	FBMB45

Cable glands

- Manufactured from UL approved nylon 66 94V-2 black
- Temperature -400C to +1050C
- "Cable grab claw" stays on gland body to reduce installation time
- IP68 rating

Thread size, metric, (mm)	Suits cable outside dia.	Item no.
16	5 - 10	FBAG16
20	6 - 13	FBAG20
25	10-18	FBAG25
32	16 - 22	FBAG32
40	20 - 27	FBAG40
50	30 - 41	FBAG50
63	40 - 53	FBAG63

Spiral banding

- Manufactured from P.E.
- Binds cables & protects them from damage

Wrapping range (mm)	Band width	Dia. (inner)	Dia. (outer)	Item no.
4 - 50	7.0	4.0	6.0	FBSW06
6 - 60	10.8	6.0	8.0	FBSW08
7.5 - 60	11.4	7.5	10	FBSW10
9 - 65	13.9	9.0	12	FBSW12
12 - 75	15	12	15	FBSW15
15 - 100	18.2	15	19	FBSW19



Spiral banding

Cost Optimization Clever Communication SmartWire-DT



Lean Connectivity and Lean Automation involve the use of lean methodology on engineering and automation processes. Complex wiring becomes unnecessary, remote intelligence is created, entire device levels are eliminated, including of course the associated procurement and maintenance costs.

With SmartWire-DT, Eaton has initiated a new age in the connectivity between the individual switch cabinet components. SmartWire-DT replaces the control wiring in all components right down to the sensor, and enables direct and continuous communication between the central controller and the controlled sections of the plant.

One system, countless possibilities: Independently of the selected bus system of the higher-level control, up to 99 devices can be interconnected with the new SmartWire-DT line up to a maximum overall total length of 600 m. The "green" cable interconnects the devices inside and outside the control panel.

SmartWire-DT the basis for Lean Connectivity

SmartWire-DT reduces the wiring effort and expense with many switchgear systems up to 85% and helps along the entire value-added chain – from the design to the construction, to the commissioning up to system expansion – in the reduction of costs. SmartWire-DT relies on the tried-and-tested Eaton industrial switchgear and grants intelligent communication features.



Powering Business Worldwide

Programmable logic controllers

XC100/XC200



XC-CPU101-C64K-8DI-6DO

- 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.

XC200

Controller with 8 digital inputs (2 counters, 2 interrupt inputs, 1 incremental input) & 6 digital outputs, Ethernet & RS232 interface for programming & communication, CANopen interface, slot for memory card, USB interface, RUN/STOP switch & LED indicators.

XC-CPU...

Description	Item no.
64 kByte user memory	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	XC-CPU201-EC256K-8DI-6DO
2 mByte user memory	XC-CPU201-EC512K-8DI-6DO
256 kByte user memory Integrated Web server	XC-CPU201-EC256K-8DI-6DO-XV
2 mByte user memory Web server	XC-CPU201-EC512K-8DI-6DO-XV
4 mByte user memory Integrated Web server	XC-CPU202-EC4M-8DI-6DO-XV

Text display for XC100

- Backlit LCD
- Membrane keypad
- 1 slot for XC100
- 3 spare slots for XI/OC modules
- Numerical keypad
- Arrow keys
- Contrast setting adjustable via software

Description	Item no.
Operation with XC-CPU101-...-XV 4 lines x 20 characters, resolution 122 x 32 pixels, 9 function keys	XV-101-K42
Operation with XC-CPU101-...-XV 8 lines x 40 characters, resolution 240 x 64 pixels, 15 function keys	XV-101-K84



XC-CPU121-2C256K

- 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

XC121

Description	Item no.
Can be locally expanded with I/O module XIO-EXT-121-1 256 kByte program memory, 244 kByte data memory	XC-CPU121-2C256K



XIO-EXT121-1

I/O expansion for XC121

- Expansion unit with digital and analog inputs/outputs
- expandable with XI/OC signal modules (except XIOC-NET-DP-M)
- pluggable spring-cage terminals

Description	Item no.
Local I/O expansions for PLC XC121 10 digital inputs 24 V DC, of which 6 interrupt 8 digital inputs/outputs 24 V DC, 0.5 A 2 analog inputs 0 - 10 V 2 analog inputs 0 - 20 mA 2 analog inputs Pt100 RTD 2 analog outputs 0 - 10 V	XIO-EXT121-1

Programmable logic controllers

XIOC

- Compact I/O system for connection to XC100/200 Modular PLCs
- XC100/200 expandable with up to 15 XI/OC modules
- Optionally, screw terminals or spring-loaded terminals for digital/analogue modules

Description		Item no.
Digital modules	8 inputs, 24 V DC	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	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	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	XIOC-NET-DP-M
	Profibus DP slave module	XIOC-NET-DP-S
	Suconet K master module	XIOC-NET-SK-M
	Serial interface RS 232C, RS 485, RS 422. Operating modes: Transparent mode, Modbus master, slave, SUCOM A, Suconet-K slave	XIOC-SER
	Serial interfaces RS232C, RS485, RS422. Modes of operation; Transparent mode, Modbus master/slave SUCOM-A, DNP protocol	XIOC-TC1



XIOC-8DI



XIOC-8AI-I2



XIOC-1CNT-100KHZ



XIOC-NET-DP-M

Programmable logic controllers

Accessories XIOC-...



XIOC-TERM-18T



XIOC-BP-XC1



XT-MEM-MM512M



EASY-NT-30



XIOC-NOP



XT-RJ45-ETH-RS232

Description	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	XIOC-TERM30-CNT4
40-pole connector for digital module, with 4 m cable XIOC-32DI, XIOC-32DO	XIOC-TERM32
Basic rack for mounting XC100/200 on top-hat rail, expandable	Width: 2 slots for controller XIOC-BP-XC
Basic rack for mounting XC100/200 on top-hat rail, expandable	Width: 3 slots for controller & one XI/OC module XIOC-BP-XC1
Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 2 slots for XI/OC modules XIOC-BP-2
Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 3 slots for XI/OC modules XIOC-BP-3
Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 3 slots for XI/OC modules Note: module carriers for expansion to maximum 15 modules must be plugged into the 5th slot XIOC-BP-EXT

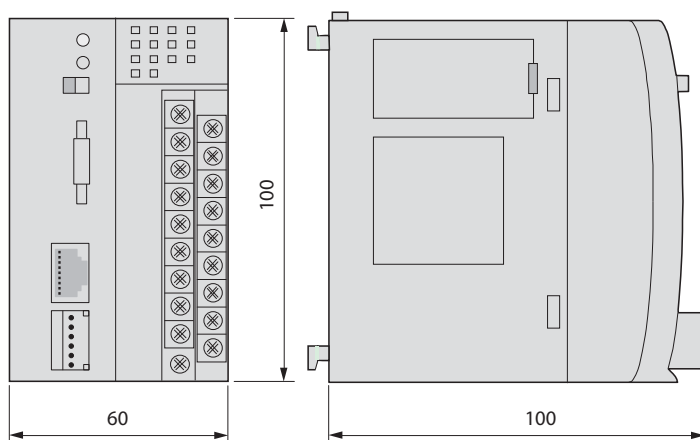
Other accessories

XIOC-..., XTT...

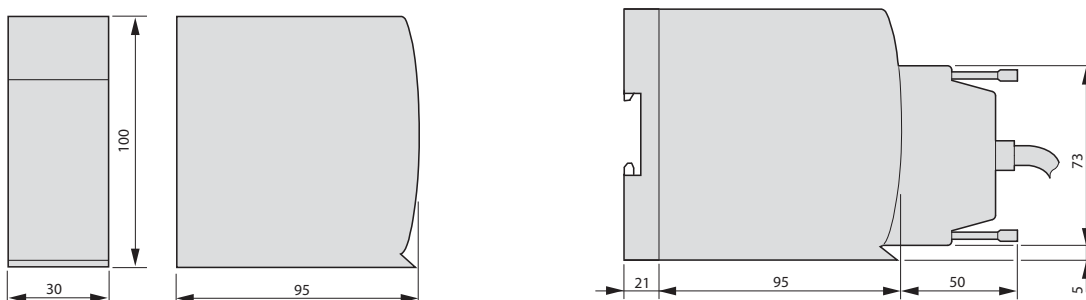
Description	Item no.
Multi-media card - for storage of programs, data, recipes	
- 512 MByte	XT-MEM-MM512M
- 32 MByte	XT-MEM-MM32M
Battery	For back-up of real-time clock & retentive data XT-CPU-BAT1
Programming cable	
2 m length D-sub, 9-pin, serial	XT-SUB-D/RJ45
2 m length Ethernet cross, 2 m	XT-CAT5-X-2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



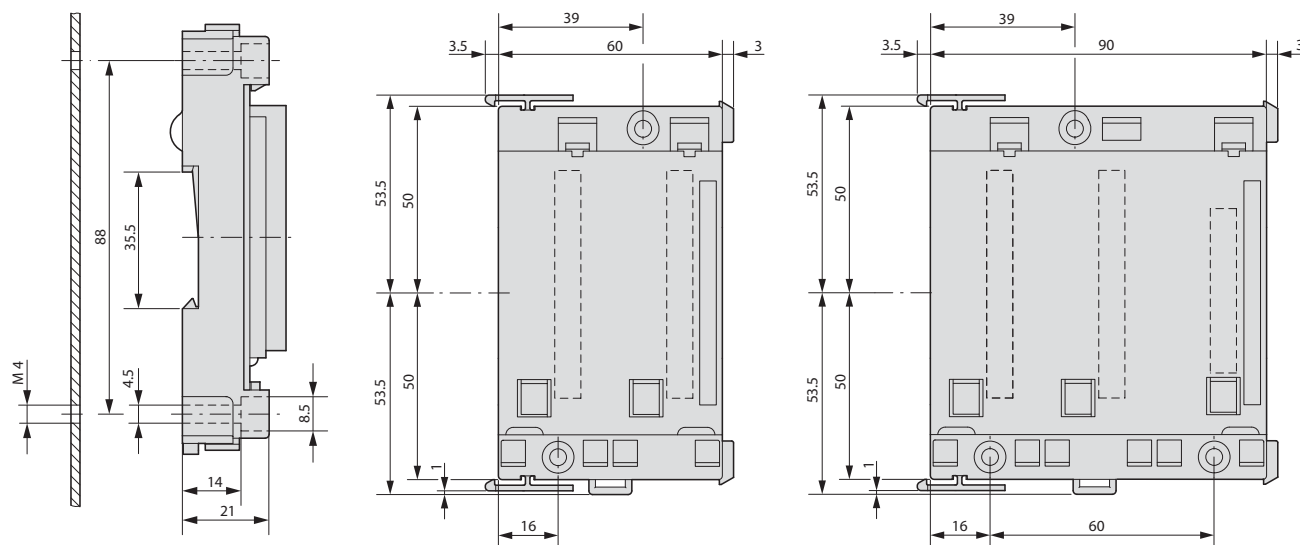
XIOC...



Backplanes

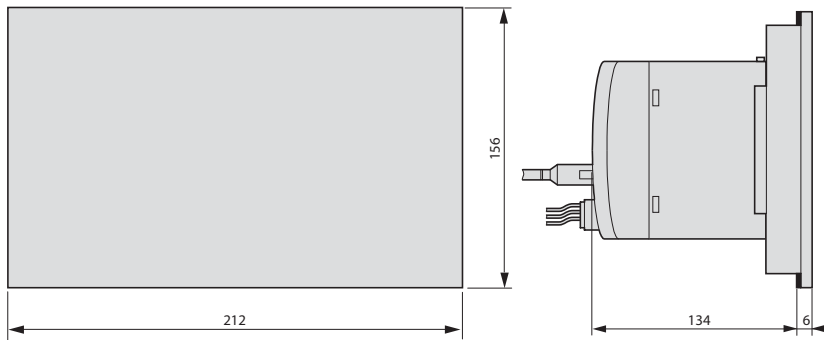
XIOC-BP-2
XIOC-BP-XC

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

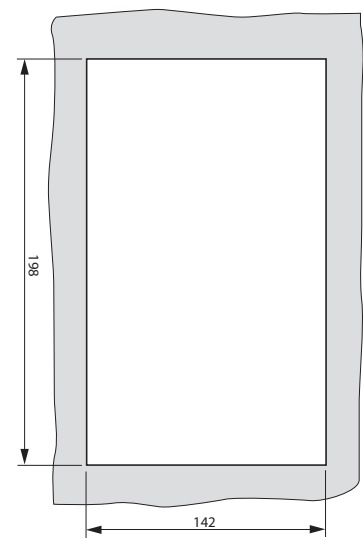
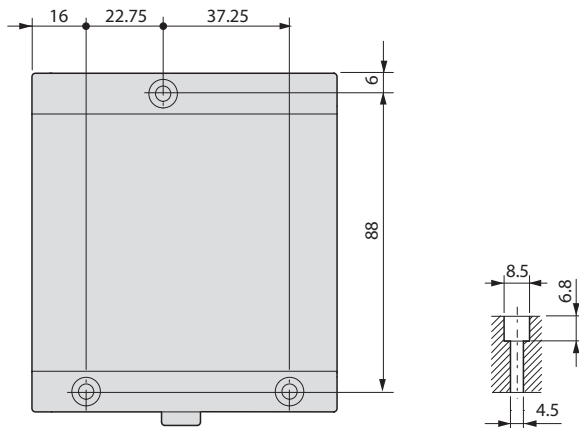
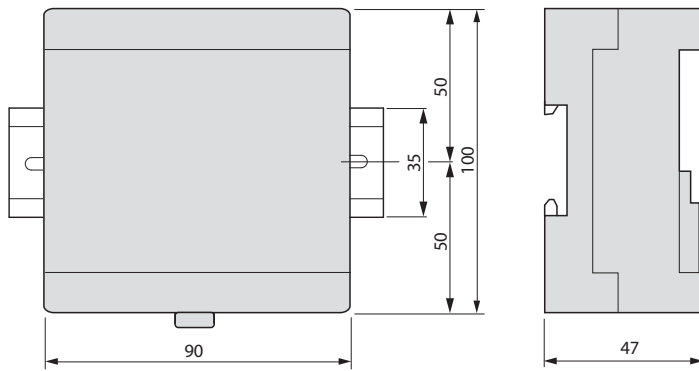


Programmable logic controllers

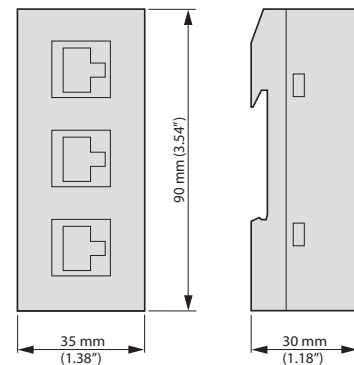
XV-101...



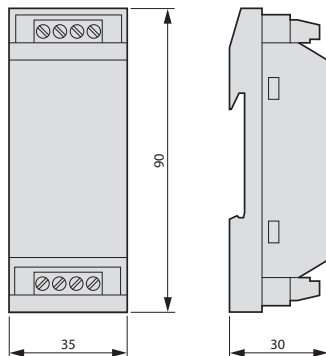
Mounting dimensions

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

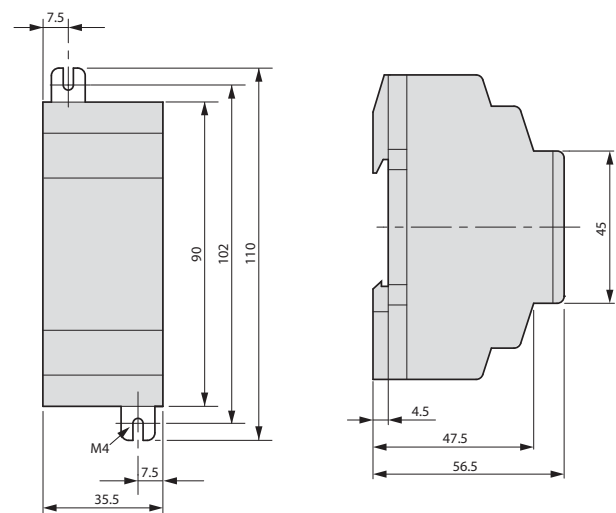
XT-RJ45-ETH-RS232



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

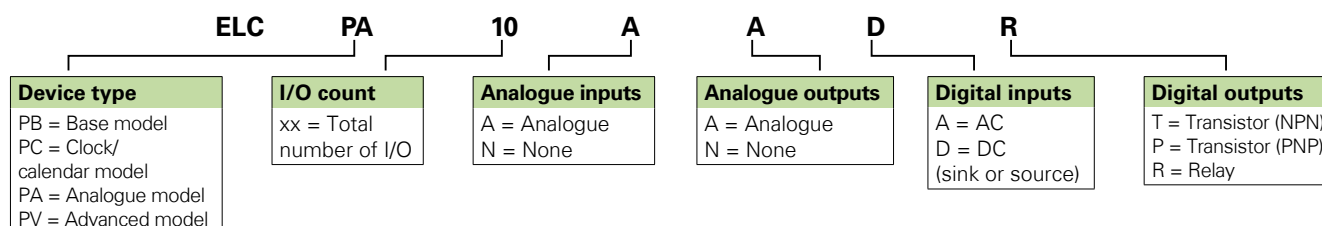


ELC-PA



ELC-PV

Controllers and modules



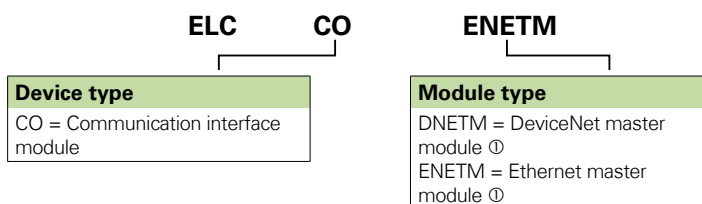
Description	Inputs	Outputs	Analogue	High speed I/O	Max. current	Item no.
ELC-PB module and 14 I/O built-in	(8) 24 Vdc	(6) Relay, 1.5A	-	(2) 20 kHz inputs	150 mA	ELC2-PB14NNDR
	(8) 24 Vdc	6) Transistor, 100 mA	-			ELC2-PB14NNDT
ELC-PC module and 12 I/O built-in	(8) 24 Vdc	4) Relay, 1.5A	-	(1) 30 kHz inputs	150 mA	ELC2-PC12NNDR
	(8) 24 Vdc	(4) Transistor, 100 mA	-			ELC2-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	ELC2-PA10AADR
	(4) 24 Vdc	(2) Relay, 1.5A	-			ELC2-PA10AADT
ELC-PV module and 28 I/O built-in	(16) 24 Vdc	(12) Relay, 1.5A	-	(2) 200 kHz inputs	220 mA	ELC2-PV28NNDR
	(16) 24 Vdc	(12) Transistor, 100 mA	-			ELC2-PV28NNDT

Programmable logic controllers

Master communication modules



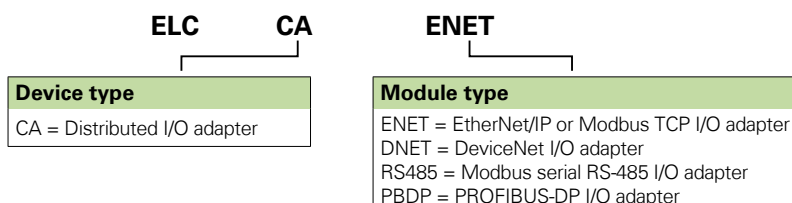
ELC-EX16NNDR



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

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

Distributed I/O adapters

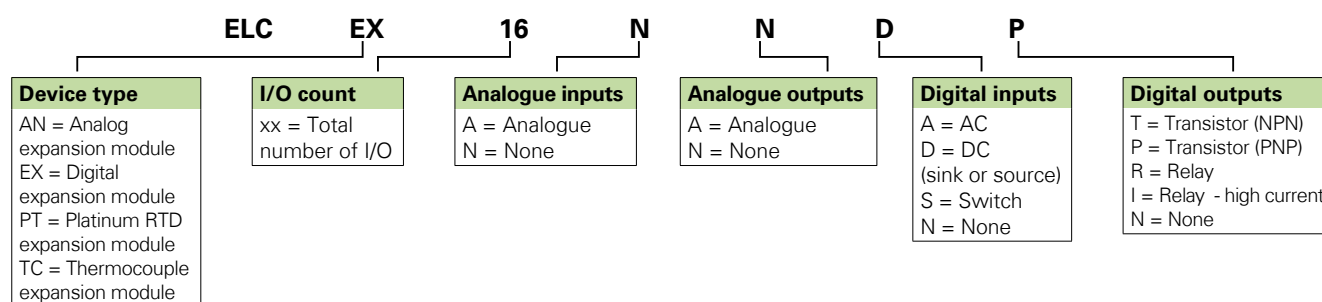


Features

- 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)



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



ELC-AN04ANNN

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



ELC-485APTR

RS-485 Adapter module (right side bus—end module)

Passive RS-485 connection device module.

RJ12 port for connecting to a drive.

2-pin screw terminal to connect to ELC controller.

Male and female DB9 connectors to connect to other RS-485 devices.

Description	Connector type	Item no.
RS-485 Connect adapter module	RJ12, DB9 (male and female) 2-pin screw terminals	ELC-485APTR

Accessories

Power supplies

All ELC controllers, analog and specialty expansion modules operate from 24 Vdc

Description	Input power	Output volts	Output current (A)	Watts	Item no.
24 watt, 1 amp power supply	100–240 Vac 50/60 Hz	24 Vdc	1A	24	ELC-PS01
48 watt, 2 amp power supply	100–240 Vac 50/60 Hz	24 Vdc	2A	48	ELC-PS02



ELC-PS01

Cables

Description	Item no.
Cable to connect a PC or an ELC-GP unit to ELC, 3 meters (DB 9-pin female to 8-pin DIN)	ELC-CBPCELC3
Cable to connect a PC or an ELC-GP unit to ELC, 1 meter with right angle connector (DB 9-pin female to 8-pin DIN)	ELC-CBPCELC1

Storage devices

The ELC-ACPGMXFR module is a multifunction device that provides the ability to back up an application already loaded onto one of the ELC controllers. It will store system settings, passwords and the application, including the data registers for pre-loaded recipes

Description	Item no.
Program transfer module for ELC controllers	ELC-ACPGMXFR

Programming software

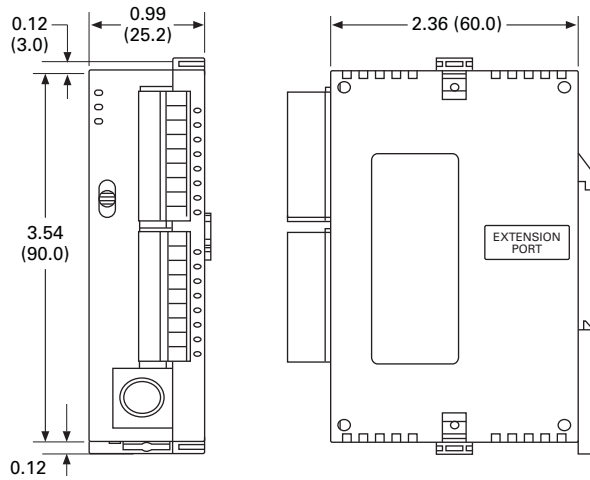
ELCSoft programming software configures all ELC controllers. Program in ladder, sequential function chart or instruction language.

Description	Item no.
Programming Software for ELC Controllers	ELCSOFT

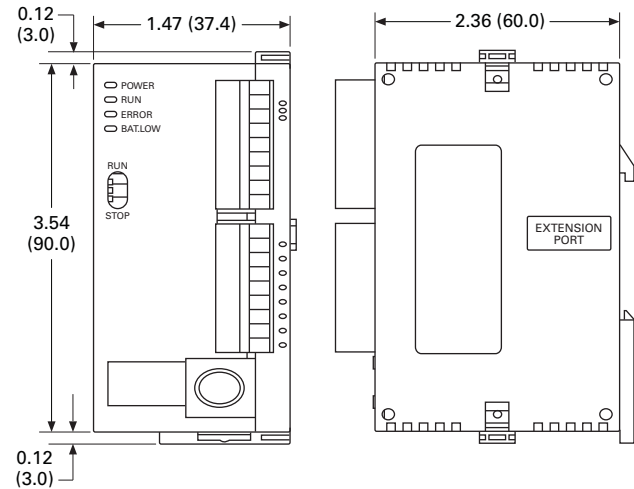
Programmable logic controllers

Dimensions (approximate dimensions in inches (mm))

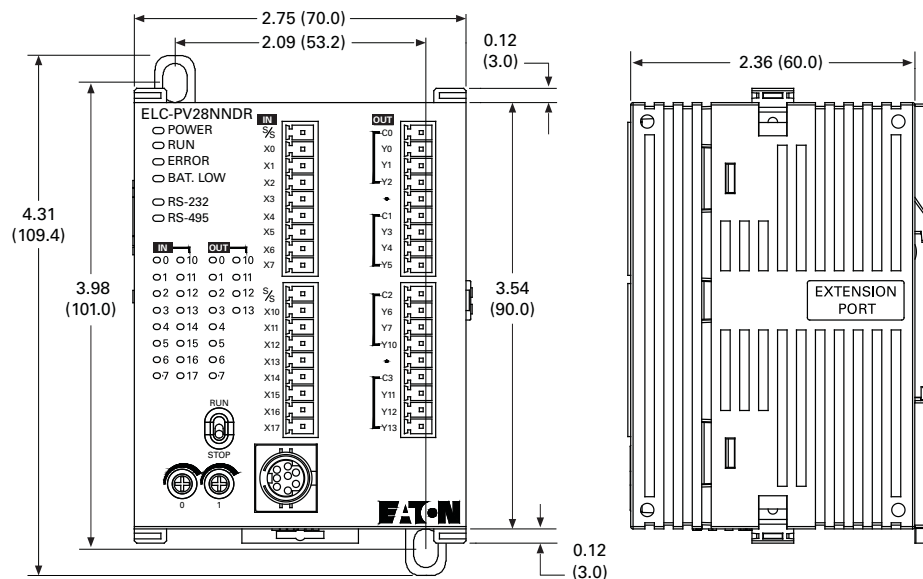
ELC-PB14 controllers



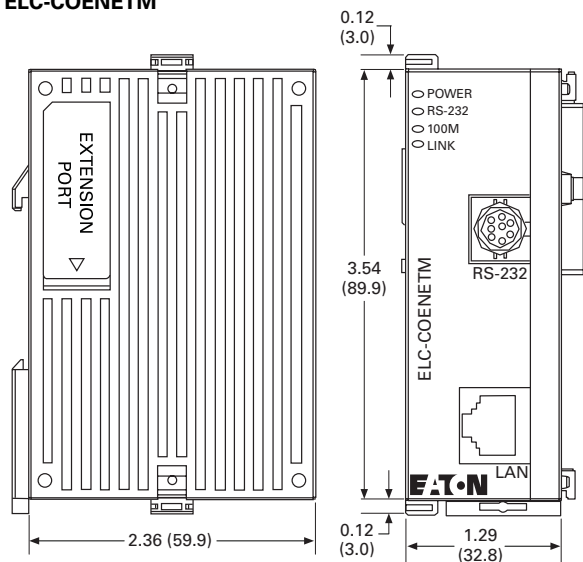
ELC-PC12, ELC-PH12 and ELC-PA10 controllers



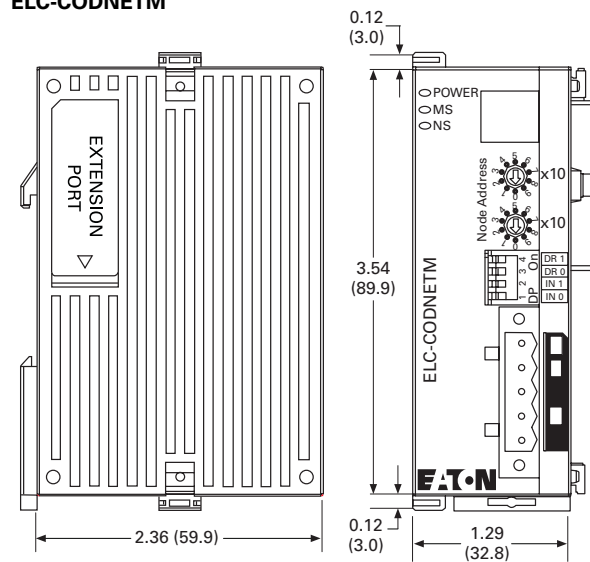
ELC-PV controller



ELC-COENETM



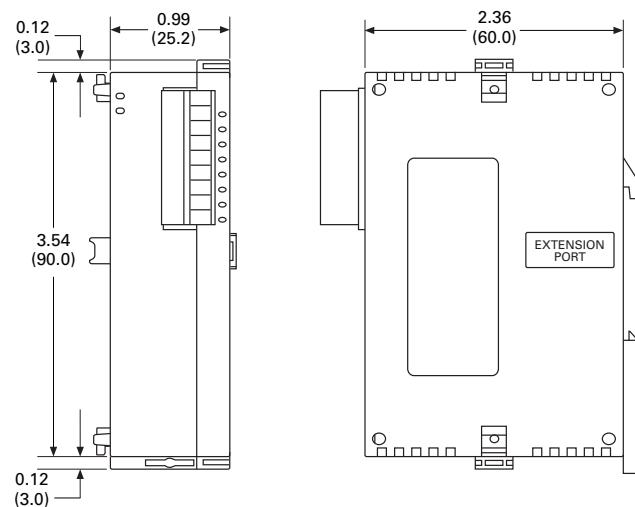
ELC-CODNETM



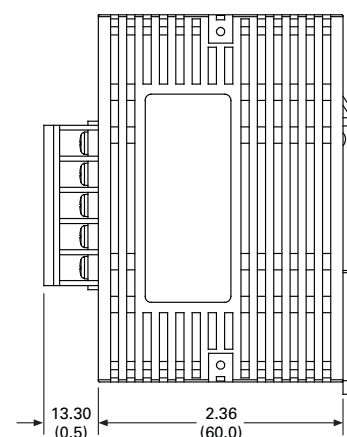
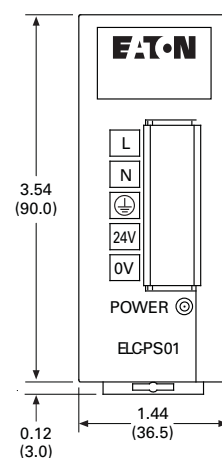
Programmable logic controllers

Dimensions (approximate dimensions in inches (mm))

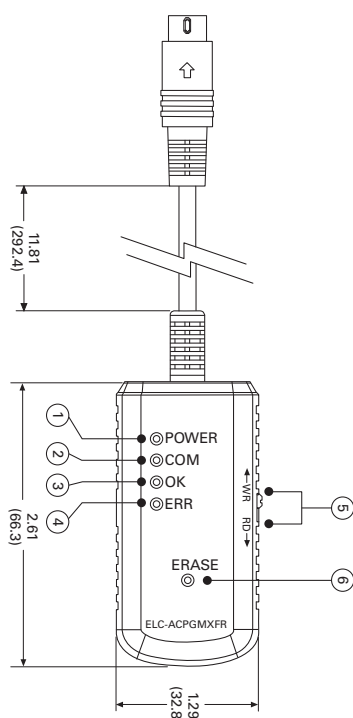
Right side specialty and expansion modules



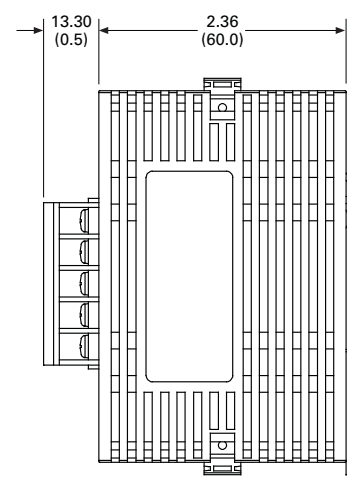
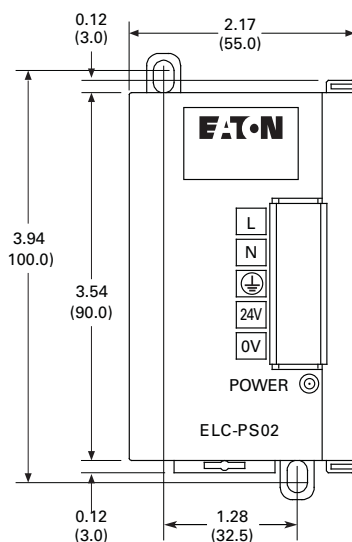
ELC-PS01



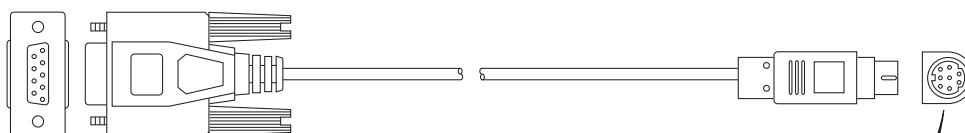
ELC-ACPGMXFR storage device



ELC-PS02



ELC-CBPCEL1 cable (right angle connector not shown) and ELC-CBPCEL3 cable (straight connector as shown)



PC/HMI COM Port 9 PIN D-SUB Female				PLC COM1 Port 8 PIN MINI DIN			
Rx	2	↔	5	Tx	2	↔	5
Tx	3	↔	4	Rx	3	↔	4
GND	5	↔	8	GND	5	↔	8
1	7	↔	1,2	5V	7	↔	1,2
4	8	↔				↔	
6		↔				↔	



Operator interface

HMI operator interface

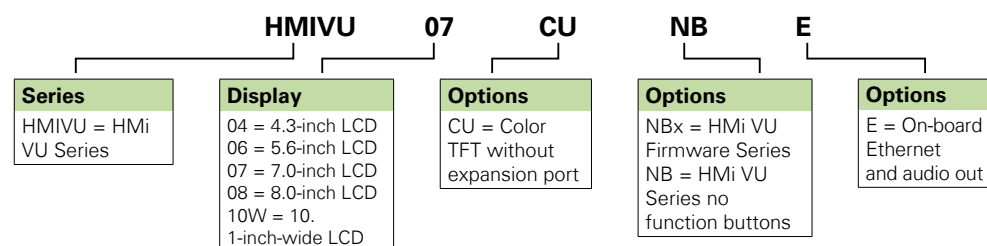
Positioned between the ELC graphics panels and the XV series of operator interfaces, HMI is the workhorse of the industry. Ideal for machinery OEMs, the HMI series provides the most value with the latest technology and advanced feature set in an economical hardware and software package. All units offer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

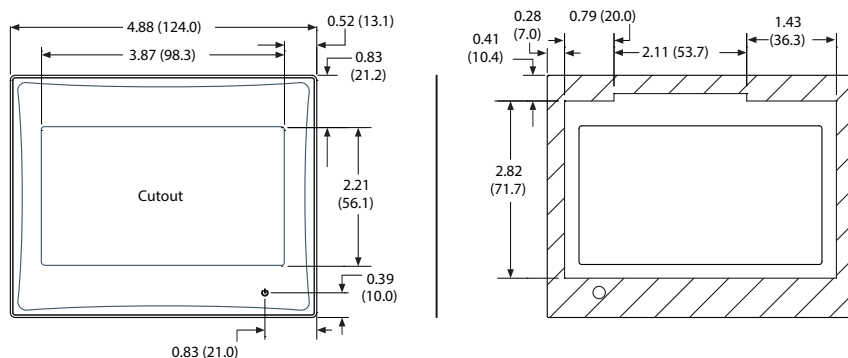
- Ethernet and serial communication drivers
- Up to four simultaneous protocols
- Screen manager
- Over 70 on-screen objects
- Pop-up screens
- Animated graphics
- Conditional visibility
- Built-in picture library
- Create your own picture library
- Multi-language
- Eight levels of security
- Macro editing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

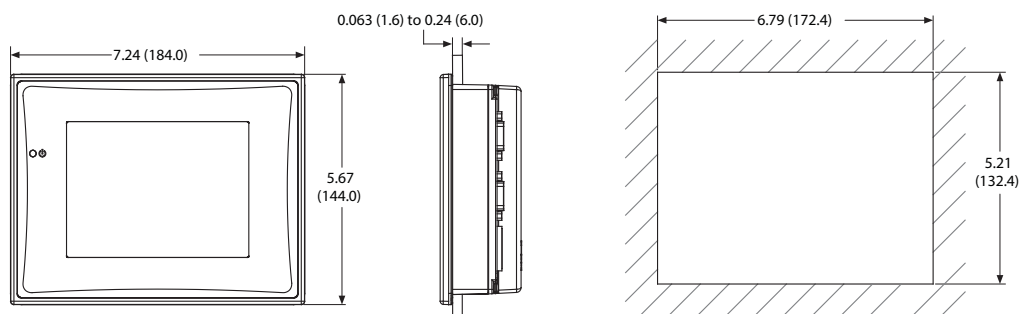
Operator interface

Dimensions (approximate dimensions in inches (mm))

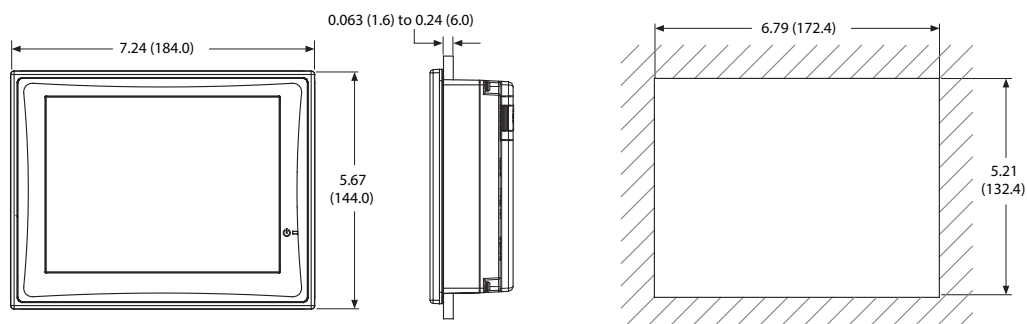
HMIVU04



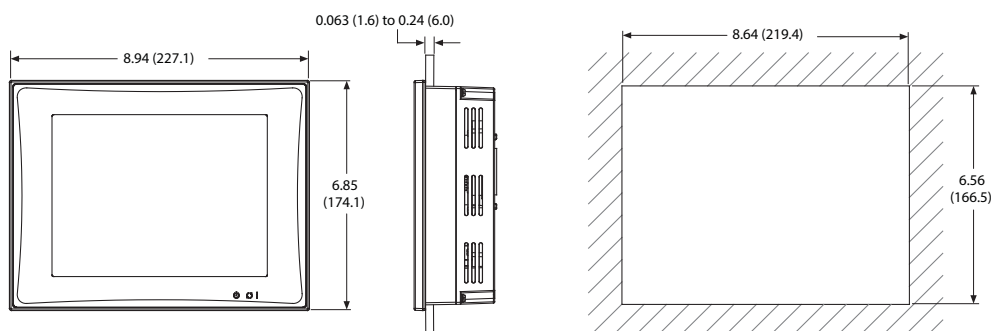
HMIVU06



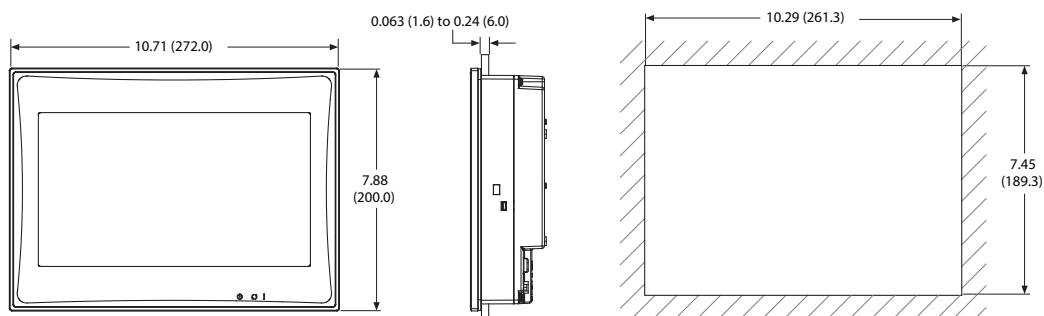
HMIVU07



HMIVU08



HMIVU10



Industrial Wireless Communications



For over 30 years, Eaton's ELPRO wireless business has helped companies in more than 80 countries improve the management of their assets by offering a full range of reliable and secure wireless communication systems.

Eaton's wireless business has a full range of products to help your facility safely and reliably use wireless technology to accomplish even your most critical needs. Our products can be used in a variety of applications, including water/wastewater, oil and gas, mining, logistical warehousing, utility, solar and industrial automation.

We specialize in connectivity solutions for long-haul data communications in both licensed and licensed-free bands.

We offer scalable solutions from basic point-to-point connection to large scale mesh deployments. Our solutions also cover both machine-to-machine and field instruments to control rooms.

Eaton's industrial wireless solutions can provide the most fundamental improvement in process automation. Innovative customers are using wireless to raise their overall equipment effectiveness, enhance safety and improve production quality. Coupled with far lower capital deployment costs, wireless infrastructure has moved beyond a convenience to a competitive advantage and an essential building block for automation.

Gain flexible control to streamline operations for greater quality & improved information management.

We offer solutions that extend the boundary of monitoring and control into the most challenging and remote environments.

Integrate critical processes & manage the growing diversity of automation technologies.

We support the integration into existing systems and environments controlled by SCADA, DCS, PLC or PC-based automation, enabling you to choose the best solution for your needs.

Increase productivity at production startup, meet compliance deadlines & resolve ongoing maintenance problems.

We help you gain insight into local and remote sites, conserving your resources and budget.

Improve safety by reducing or eliminating the need to expose workers to existing or potential hazards. Our solutions serve critical applications ranging from mine slope wall detection to safety shower alerts.

Reduce total costs with simple to complex wireless architectures, and over small or large sites. We provide wire-free economics while delivering wirelike reliability.



Powering Business Worldwide

Wireless

Industrial Wireless Communications

Wireless Ethernet

Ethernet is increasing in capability and importance in today's world. Eaton is on the forefront of this technology, offering Ethernet data solutions that provide users the flexibility of selecting a technology matching their own unique application requirements. Full product portfolio includes unlicensed frequencies, as well as a full line of Ethernet networking solutions. These products also help in replacing the Ethernet cables.

Ethernet Modem Features

- 802.11b/g and 802.11a standard-compliant options
- 2.412–2.472 GHz frequency (802.11b/g) and 15–400 mW RF power
- Transmit and receive antenna diversity
- Access point/client and bridge/router configuration
- Serial client/server/multicast Modbus® TCP to RTU gateway
- 10/100baseT IEEE 802.3 Ethernet
- Spanning tree (self-healing) support
- Deterministic AP-to-AP mesh network repeatability
- Fast roaming for AP-to-AP handover
- IEEE 802.11i secure 128-bit AES encryption (WPA2)
- MAC and IP address filtering
- Digital I/O channel transfer
- Configurable settings for high-noise environments
- Over-the-air network diagnostics and configuration
- VLAN tagging support for bridging and routing modes



Ethernet Switch Features Common

- IEEE 802.3 10Base-T, 802.3u 100Base-TX
- Fan-less cooling
- –40 to +75 °C operating temperature
- Redundant power inputs
- Industrial robust design
- Flow control on full-duplex data
- RJ-45 connectors with auto MDI/MDI-X functionality
- Store-and-forward switching architecture
- Relay alarm contact for system events
- Supports surge protection 3000 Vdc for power line
- DIN Rail Mounting



Unmanaged Ethernet Switch

- 5 port or 8 port option

Managed Ethernet Switch

- 8 port option
- Redundant ring (recovery time <20 ms @ 50 switches)
- IGMP snooping and query for multimedia applications
- IEEE 802.1X authentication and RADIUS support
- IEEE 802.1d spanning tree and IEEE 802.1w RSTP
- Port-based VLAN, 802.1Q VLAN tag, GVRP, QinQ
- IEEE 802.1p CoS-prioritized queues per port
- Bandwidth control for ingress filtering and egress limiting
- System log server/client
- SNMP v1, v2c, v3, and traps



Description	Item no.
Ethernet Modems	
Ethernet Modem: 2.4GHz, 802.11b/g, 400mW, DSSS, 108Mbps, antenna diversity	EL-245U-E-G-AU
Cellular Modems	
3G Ethernet/Serial Cellular Modem: GSM/CDMA	EL-615M-1
4G/LTE Ethernet/Serial Cellular Modem: GSM/CDMA (Europe/Australia)	EL-645M-1-EU
Ethernet Switches	
Unmanaged Ethernet Switch, 5-Port	EL-1050E-T
Unmanaged Ethernet Switch, 8-Port	EL-1080E-T
Managed Ethernet Switch, 8-Port, Fast Ethernet	EL-2080E-T

Wireless

Industrial Wireless Communications

Wireless I/O

Eaton offers a range of wireless I/O modules that can transmit both digital and analog signals over the wireless network. Cutting-edge capabilities provide industry-leading reliability to ensure secure and reliable communications. Expansion I/O is available to support even the largest of networks.

**215U-2 Wireless I/O & Gateway Features**

- WPA2 secure 2.412–2.472 GHz frequency (802.11 b/g) 200 mW RF power
- I/O, Ethernet, or RS-232/RS-485 serial data and Modbus RTU/TCP gateway
- ProMesh intelligent communications network protocol
- Provides Wi-Fi hot-spot access to I/O data and dashboard
- Web-based dashboard allows monitoring and control of critical I/O
- Quick back-to-back I/O mode for cable replacement applications
- Over-the-air network configuration
- Back to Back pre configuration option as a matched pair or user configurable
- Expandable digital and analog I/O

905U-L-T & 905U-L-R**Common Features**

- Small I/O capability - use where a simple one-way link is required. Uni-directional, one way communications.
- Transmitter and receiver units factory-configured as a matching pair, or user-configurable as part of a larger wireless I/O network.
- Secure data encryption.
- WIB-net intelligent wireless protocol, peer-to-peer communications,
- Immediate exception reporting plus configurable high-scan updates. Power supply 9 – 30VDC, 24VDC analog loop supply internally generated.

Transmitter Unit Features

- Powerful 900MHz frequency-hopping 1W transmitter.
- External inputs – two digital/pulse inputs, one analog input (0-20mA, 4-20mA), and one thermocouple mV input.
- Internally calculated values – analog and thermocouple setpoint status, pulse count, power supply voltage
- Local output for setpoint status: generated by comparing analog input to high and low setpoints.

Receiver Unit Features

- Three digital contact outputs and one analog output (0-20mA, 4-20mA). Communications failure indication and configurable output.
- Outputs can be configured as retained or reset (fail-safe) on communications failure.
- LED indication of radio signal strength

115S I/O Expansion products Features

- Provides several I/O port variations for expanding applications
- Combine units (daisy chain) to accommodate additional I/O needs
- Expansion I/O for ELPRO transceiver I/O and Ethernet products
- Modbus RTU slave I/O expansion capability



Description	Item no.
Wireless I/O - Radio Telemetry	
I/O-Gateway Radio: Basic Unit 2.4GHz, 802.11b/g, 200mW, DSSS OFDM	EL-215U-2-BGN
I/O Radio Kit - Basic back-to back with Omni-directional Antennas. Includes: (2) 215U-2 Modules, (2) MD2400 Antennas, (1) USB Cable, (1) USB Driver Stick	EL-215U-2-BGN-P1
I/O Radio Kit - Point-to-Point with Panel Antennas. Includes (2) 215U-2 Modules, (2) PAN2400-12-N Antennas, (2) CC3-SMA Cables, (1) USB Cable, (1) USB Driver Stick	EL-215U-2-BGN-P2
I/O Radio Kit - Back-to-back with Panel Mount Antennas. Includes (2) 215U-2 Modules, (2) CSNEXTG-GSM3G-2 Antennas, (1) USB Cable, (1) USB Driver Stick	EL-215U-2-BGN-P3
I/O Radio Kit - Back-to-back with no Antennas. Includes: (2) 215U-2 Modules, (1) USB Cable, (1) USB Driver Stick	EL-215U-2-BGN-P4
I/O Radio (Transmitter Only): 900MHz, 1W, I/O = (2)DI/PI + (1)AI + (1)TCI	EL-905U-L-T-AU
I/O Radio (Receiver Only): 900MHz, 1W, I/O = (3)DO + (1)AO	EL-905U-L-R-AU
I/O Radio Kit: (1)905U-LT + (1)905U-LR + (2)DG900-1 + (1)SER-RJ45, paired radios	EL-905U-L-P1-AU
I/O Radio Kit: (1)905U-LT + (1)905U-LR + (2)CFD890EL + (1)SER-RJ45, paired radios	EL-905U-L-P2-AU
I/O Radio Kit: (1)905U-LT + (1)905U-LR + (1)SER-RJ45, paired radios. MUST add antennas.	EL-905U-L-P3-AU
I/O to Serial Expansion Modules	
Serial to I/O Expansion Module: I/O = (16)DIO + (4)PI	EL-115S-11-24
Serial to I/O Expansion Module: I/O = (8)DIO + (4 floating / 8 commoned)AI	EL-115S-12-24
Serial to I/O Expansion Module: I/O = (8)DIO + (8)AO	EL-115S-13-24

Wireless

Industrial Wireless Communications

Description	Item no.
Omni-directional Antenna	
900MHz, 100mm (4") long, -2dBi gain, includes SMA(male) connector for direct mount to radio/modem	ANTWH900-SMA
900MHz, 200mm (8") long, -2dBi gain, includes 900mm (3ft) cable w/SMA(male) connector & mounting kit	ANTDG900-1
900MHz, 200mm (8") long, -5dBi gain, includes 4.8m (16ft) cable w/SMA(male) connector & mounting kit	ANTDG900-5
900MHz, 400mm (16") long, unity gain (0dB) (1.0dBi loss inc cable), includes 4.8m (16ft) cable w/SMA(male) connector & mounting kit	ANTCFD890EL
900MHz, 400mm (16") long, unity gain (0dB) (1.0dBi loss inc cable), includes 4.8m (16ft) cable w/SMA(male) connector & mounting kit with IECEX/ATEX approvals for use in zone 2 hazardous areas	ANTCFD890EL-EX
900MHz, 800mm (32") long, 5dBi gain, N-type (female) connector. Includes mounting kit. MUST add CC3/10/20 cable	ANTSG900EL
900MHz, 1.4m (55") long, 8dBi gain, N-type(female) connector. MUST add BR-COLKIT mounting kit and CC3/10/20 cable	ANTSG900-6
2.4GHz, 75mm (3") long, -2dBi gain, includes SMA(male) connector for direct mount to radio/modem	ANTWH2400-SMA
2.4GHz, 230mm (9") long, -1dBi gain (3.7dBi loss inc cable), includes 4.8m (16ft) cable w/ SMA(male) connector & mounting kit	ANTMD2400-EL
2.4GHz, 230mm (9") long, -1dBi gain (3.7dBi loss inc cable), includes 4.8m (16ft) cable w/ SMA(male) connector & mounting kit with IECEX/ATEX approvals for use in zone 2 hazardous areas	ANTMD2400EL-EX
2.4GHz, 550mm (22") long, 5dBi gain, N-type(female) connector. Includes mounting kit. MUST add CC3/10/20-SMA cable	ANTSG2400-EL
2.4GHz, 850mm (33") long, 10dBi gain, N-type(female) connector. Includes mounting kit. MUST add CC3/10/20-SMA cable	ANTZ2400-EL
Yagi Antenna:	
900MHz, 800mm (32") long, 9dBi gain, N-type(female) connector. MUST add CC3/10/20 cable. Now includes mounting bracket.	ANTYU6/900
2.4GHz, 700mm (28") long, 18dBi gain, N-type(female) connector. Includes mounting kit. MUST add CC3/10/20-SMA cable	ANTY2400-18EL
824-2500MHz 1.8/2.0/3.5 dBi Omni-directional Cellular Antenna, IP65 , 1,250mm Cable, SMA Male connector with integral 13mm stud mount	ANTCSNEXTG-GSM3G-2
Directional Panel Antenna: 2.4GHz, 104 x 104 x 174mm, 12dBi gain, N-type (female) connector, Includes mounting kit. MUST add CC3/10/20-SMA cable	ANTPAN2400-12-N
Cellular Antennas	
Omni-directional Cellular Antenna: 120mm (5") long, 2dBi gain, includes 3m (10ft) cable w/ SMA(male) connector & magnetic base mount	ANTWHGSM-3
824-2500MHz 1.8/2.0/3.5 dBi Omni-directional Cellular Antenna, IP65 , 1,250mm Cable, SMA Male connector with integral 13mm stud mount	ANTCSNEXTG-GSM3G-2
825-960MHz 6dBi / 1710-2190MHz 3dBi Dual Band Cellular Antenna, 200mm Cable, N-female connector with mounting Bracket	ANTSGNEXTG-GSM-6
Surge Diverters	
Lightning Surge Diverter for antenna cable: SMA(male) to SMA(female). Do not use for 5.8GHz.	SURCSD-SMA-2500
Lightning Surge Diverter for antenna cable: Bulkhead N-type (female) to N-type (female) DC-6GHz 30W without earth tail.	SURCSD-N-6000
Power Supply Surge Diverter: 240VAC / 280VDC @ 15A	SURMA15/D/2/SI
I/O Signal Surge Diverter, protects 2 x 2-wire / 1 x 4-wire	SURIOP32D
Cables	
Antenna Coaxial Cable	
3m (10ft) long, N-type(male) to SMA(male), loss = 0.8dB@450MHz, 1dB@900MHz, 2dB@2.4GHz, 4dB@5.8GHz	CC3-SMA
3m (10ft) long, N-type (male) to N-type (male), loss =0.8dB@450MHz, 1.0dB@900MHz, 2.0dB@2.4GHz, 4.0dB@5.8GHz (Use with CSD-N-6000)	CC3-N
10m (33ft) long, N-type(male) to SMA(male), loss = 2.5dB@450MHz, 3.2dB@900MHz, 5.9dB@2.4GHz. Do not use for 5.8GHz	CC10-SMA
10m (33ft) long, N-type (male) to N-type (male), loss =2.5dB@450MHz, 3.2dB@900MHz, 5.9dB@2.4GHz. Do not use for 5.8GHz (Use with CSD-N-6000)	CC10-N
20m (66ft) long, N-type(male) to SMA(male), loss = 4.8dB@450MHz, 6.2dB@900MHz. Do not use for 2.4GHz or 5.8GHz	CC20-SMA
Antenna Coaxial Tail Cable: 600mm (24") long, N-type(male) to SMA(male), loss = 0.6dB@450MHz, 0.8dB@900MHz, 1.2dB@2.4GHz, 2.6dB@5.8GHz	CCTAIL-SMA-M
Ethernet cable: 1.8m (6ft) long, RJ45(male) to RJ45(male) - Straight-through	CBLETH-C5A
Serial Cable: 0.9m (3ft) long, RJ45(male) to DB9(female) - Straight-through. (Used to program 905U-L Modules)	CBLSER-RJ45
USB 2.0 CABLE -TYPE A to TYPE B , 1M LONG (Used to configure 215units). Note: 215U-2/ units include this cable.	CBLUSB-ATOB
Power Supplies	
AC Plug Pack Universal Input, 24V DC 1.25A Output - US wall plug	PS-WW-24-XP-24DC-AU
Power Supply: DIN mount, transforms 85-264Vac to 24Vdc @ 2.5A.	PSG60E

Intrinsic Safety

MTL intrinsic safety solutions

MTL products, part of Eaton's Crouse-Hinds series portfolio, stand for safety in the harshest of environments. With over 40 years experience within the process industry, Eaton's MTL product range is designed and manufactured with you in mind. Starting with the MTL100 zener barrier, our comprehensive portfolio of solutions for high-consequence harsh and hazardous environments has grown and gained customer recognition worldwide.

For over forty years Eaton's MTL intrinsic safety interface products have been world leading, producing barriers, isolators and integrated IS to help prevent explosions in process industries. Whatever the application, our products help to protect investments in hazardous areas.

The products range from industry renowned (IS) barriers and isolators through to sophisticated process control products, all designed for the harsh environments often encountered in the process industry. As part of our 'customer commitment' process, we regularly produce educational reference material to assist users in understanding the latest regulations and directives.



MTL intrinsic safety barriers

DIN-rail mounted safety barriers

The MTL7700 range follows closely in the footsteps of the MTL700 but as a DIN-rail mounting barrier providing quick and easy installation without the need for special hardware. Removable terminals are used for ease of installation, maintenance and for providing a loop disconnect by simply unplugging the terminals from the side of the module. The barriers clamp simply and securely onto standard T-section DIN-rail, simultaneously making a reliable IS earth connection.

When the MTL7700 range is used in conjunction with the MTL7798 power feed module the user has a fully protected, electronically fused supply to many barriers with no additional wiring required. The MTL7700 is the replacement for the MTL700 range, which is now terminated. A special adaptor bracket is available to mount the MTL7700 on the MTL700 earth bar.



MTL intrinsic safety isolators

Backplane mounted intrinsic safety isolators

The MTL4500 range is the next generation of backplane mounting intrinsic safety isolators. Utilising innovative planar transformer technology at its heart and extensive automation in construction, the MTL4500 range offers industry leading features and performance in a single package.

It is designed with the requirements of system vendors in mind, for 'project focussed' applications such as Distributed Control Systems (DCS), Emergency Shutdown Systems (ESD) and Fire and Gas monitoring (F&G). With fast module installation, easier system integration, improved performance from low-power circuit designs and more I/O channels in each module giving the highest packing density on the market plus 3 port isolation as standard.



DIN-rail mounted intrinsic safety isolators

The MTL5500 range of intrinsic safety isolators are DIN-rail mounting and meet the needs of the IS interface market for "application focussed" projects. These range from single instrument loops, through various combinations and enclosures to fully equipped cabinets, across all industries where hazardous areas exist.

The MTL5500 range has a slim, compact housing and the range of module options contains both single and multiple channel devices which enables the user to choose the functionality and integrity needed without sacrificing cabinet space. The modules can be used for a wide variety of interface tasks for process instrumentation. All signal wiring is made through removable connectors which facilitates fast installation and simple maintenance procedures.

Intrinsic Safety

MTL intrinsic safety solutions

In today's process industries there are increasing demands for greater efficiency, higher reliability and lower cost of ownership of field equipment and supporting networks. Eaton offers end to end or part solutions to meet the requirements of your project. Eaton is proud to present its range of MTL industrial strength networking products.

Designed to meet the most demanding process applications worldwide, our complete portfolio of ruggedised Ethernet connectivity devices offer harsh and hazardous area classifications, combined with our 40 year pedigree of understanding process industry requirements.

MTL intrinsically safe indicators

Loop powered indicators

The 660 range of indicators are loop powered units and the low voltage drop across their input terminals allows them to be installed in almost any 2-wire, 4-20mA loop. Large liquid crystal displays make the process variables easily visible at a distance and a backlight option may also be ordered for use in low light conditions.

Process units are configured into the display area. Instant readout of percentage or loop current is available at the push of a button. Field mounting units are housed in a rugged aluminium IP67, NEMA 4X case. GRP options are available for highly corrosive atmospheres.



MTL intrinsically safe alphanumeric displays

Field and panel mounting displays

The MTL646/7 text displays are located in the hazardous area where they display alphanumeric data and graphics from a safe area host controller. This is transmitted by a serial data link passing through an MTL5051 isolating interface. This serves the dual purpose of isolating the IS indicator and converting RS232 or RS422 serial data to the MTL signal level and vice versa.

Bi-directional communication permits operators to acknowledge messages and to request process action when necessary. If required, an audible or visual alarm can be connected to attract the operators attention.



MTL intrinsically safe Ethernet

HD IS Ethernet network camera

Eaton's MTL RUGICAM high definition (HD) IS Ethernet network camera and accessories enable plant managers across process industries worldwide to ensure they are operating safely in hazardous zone 1 and zone 2 areas.

The first of its kind for the hazardous area market, the lightweight MTL RUGICAM camera monitors and provides enhanced visual safety to control and automation systems installed on site, and provides additional security and visibility to specific hazardous locations in plants so safe operation can be maintained. Connecting directly to compatible IS Ethernet systems up to 100 metres via a Cat5e cable or WiFi, allows for quick and easy maintenance, enabling plants to save time and associated costs.

- Rugged case with 6mm toughened glass for harsh environments
- IS approval allows for safe, live network maintenance
- HD resolution of 1080p and enhanced image analysis
- Micro-SD card slot that can be used as an optional back-up
- Supports live video streaming via a H.264 compressed video format and motion JPEG with user-selectable frame rates
- Available with an optional Infra-Red (IR) or white LED lights unit that enhances the camera's low light capabilities



Relay controllers

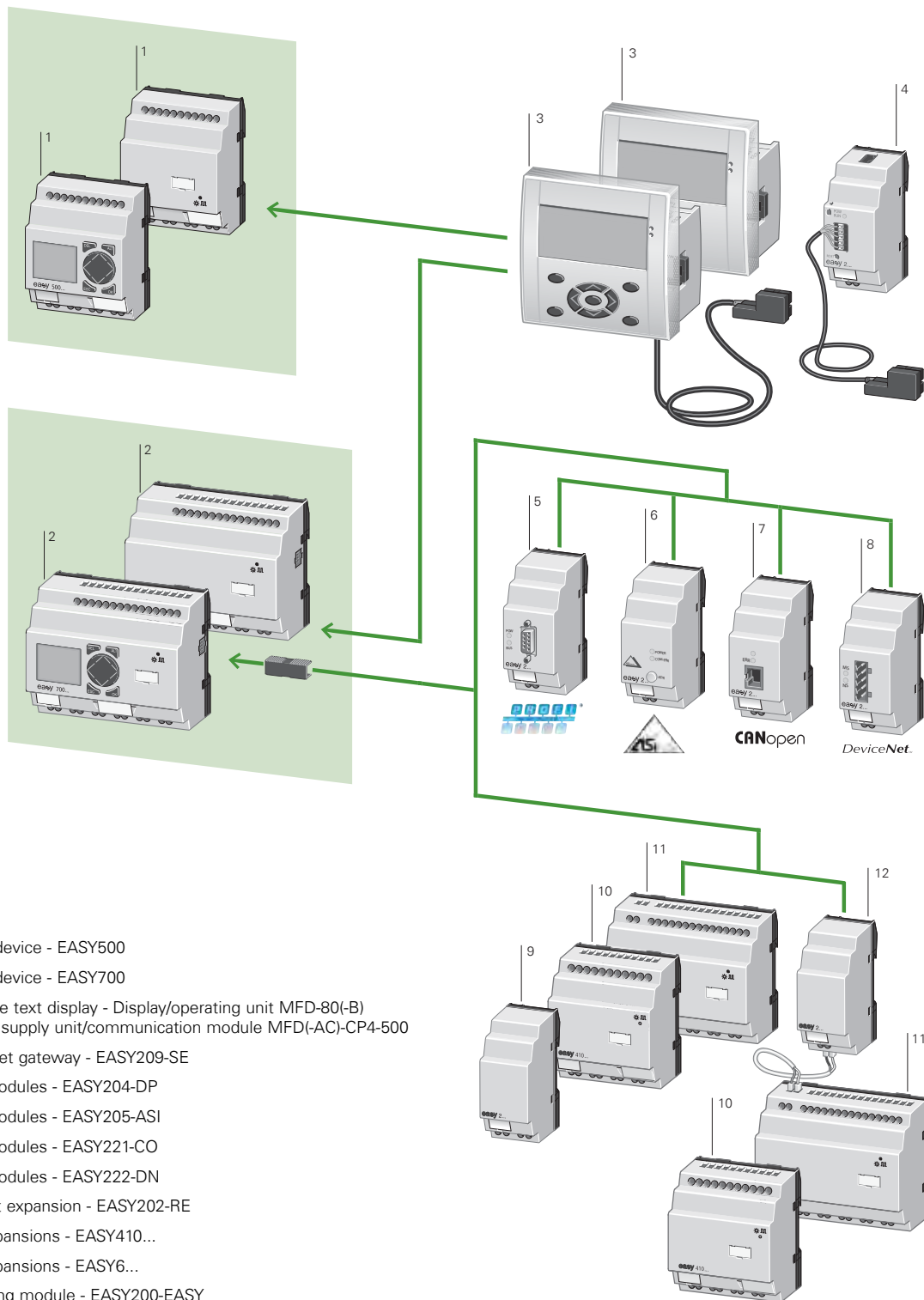
Control, monitor, protect.

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

Relay controllers

easy relay controllers

Base units 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



easy500



easy700



easy800



IF IT'S IN A CATALOGUE YOU CAN FIND IT ON
POWEREDGE™
 LEARN. SHARE. ORGANISE.



INTERACT WITH EATON USING THE
FREE EATON INTERACTIVE APP
 SIMPLY DOWNLOAD & OPEN THE APP,
 SELECT AR MODE, & SCAN THE LOGO TO INTERACT

Relay controllers

easy relay controllers

MFD-Titan display/keypad, CPU, I/O modules



MFD-80-B

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 logo	MFD-80-B
–	With keypad, without Eaton logo	MFD-80-B-X
–	Without keypad, with Eaton logo	MFD-80
–	Without keypad, without Eaton logo	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-CP8-ME

MFD-Titan display/keypad, CPU, I/O modules

Inputs			Outputs			Range of temperature	Item no.
Digital	of which can be used as analog	Pt 100/ Ni 1000	Relay 10 A (UL)	Transistor	Analog		
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

Relay controllers

easy relay controllers

Expansions, bus modules, Ethernet gateway

Description	Inputs		Outputs		Supply voltage	For use with...	Item no.
	Digital/ Analogue	Relay 10 A (UL)	Transistor	Analogue			
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
	6	4	–	-	24 V DC		EASY410-DC-RE
Can be used through easyLink	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



EASY618-AC-RE



EASY200-EASY



EASY209-SE



MFD-CP4-500

Relay controllers

easy relay controllers

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



EASY-PC-CAB



EASY-LINK-DS



MFD-800-CAB5

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-NET	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

Relay controllers

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



EASY400-POW



EASY256-HCI



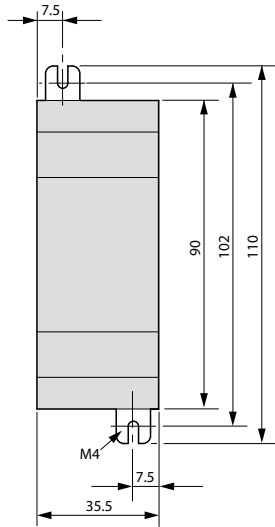
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Relay controllers

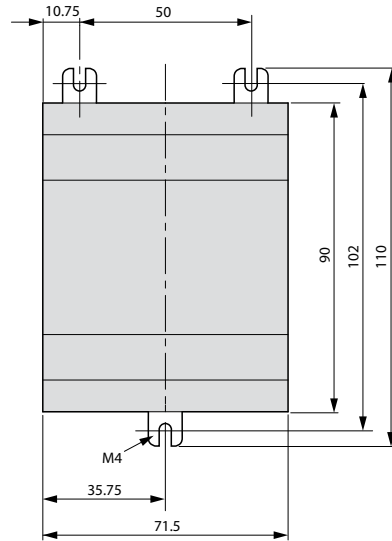
easy relay controllers

Dimension

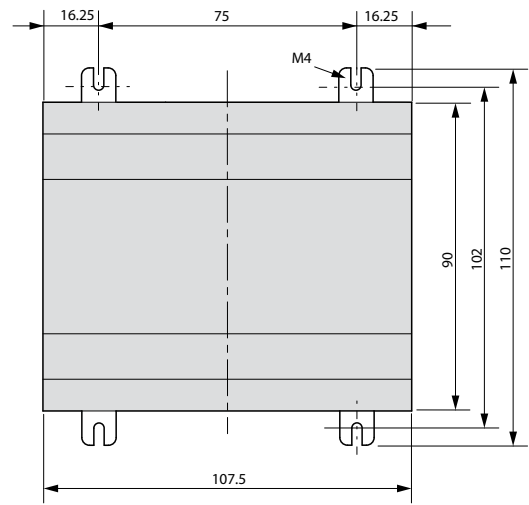
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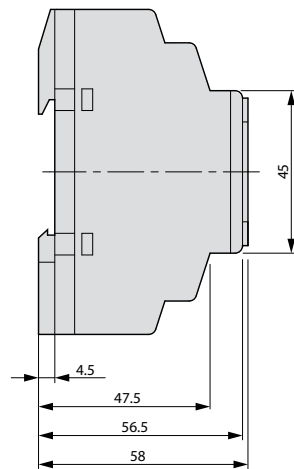
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easy500



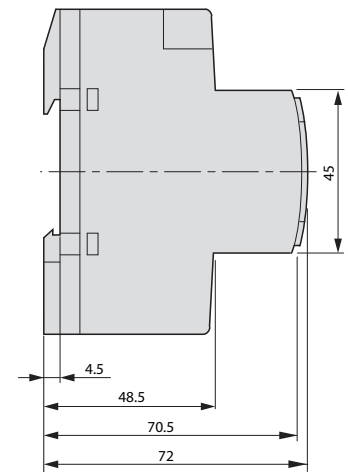
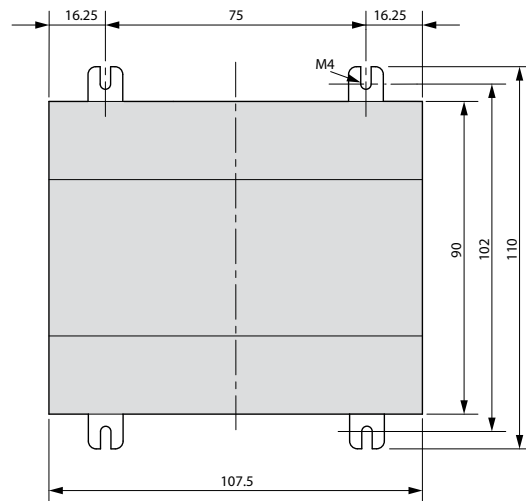
easy600
easy700



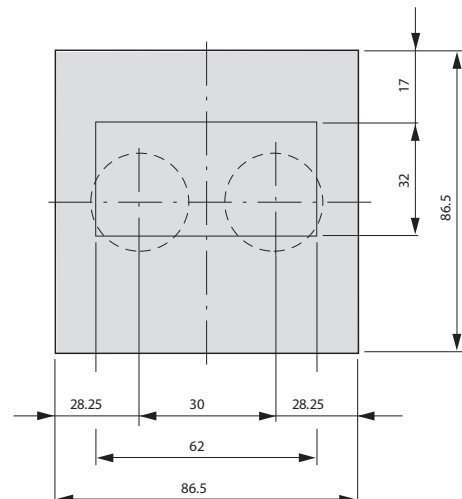
easy200
easy400
easy500
easy600
easy700



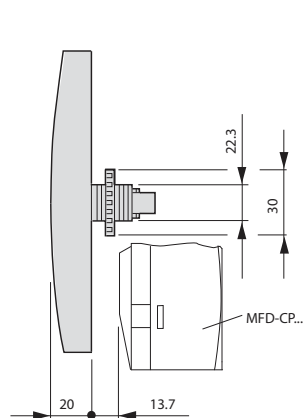
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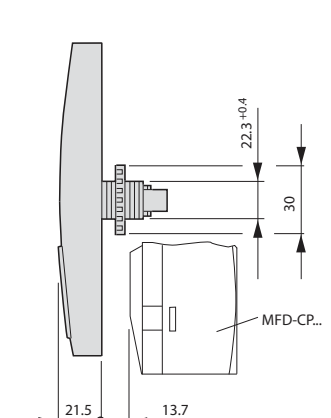
MFD-80...



MFD-80



MFD-80-B

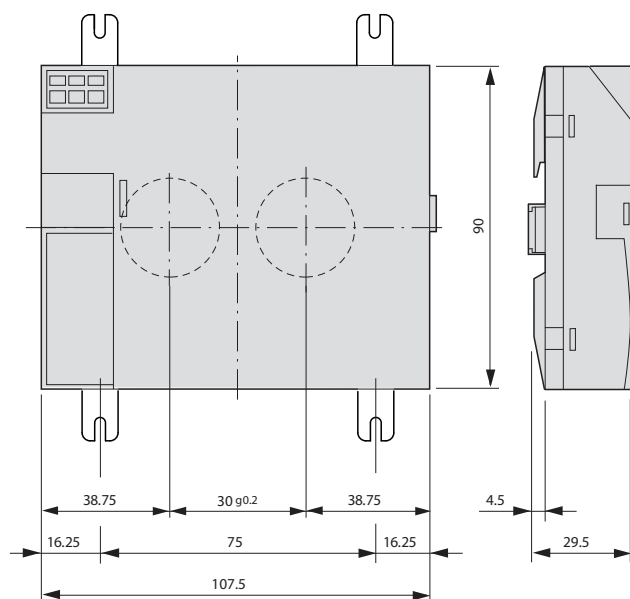


Relay controllers

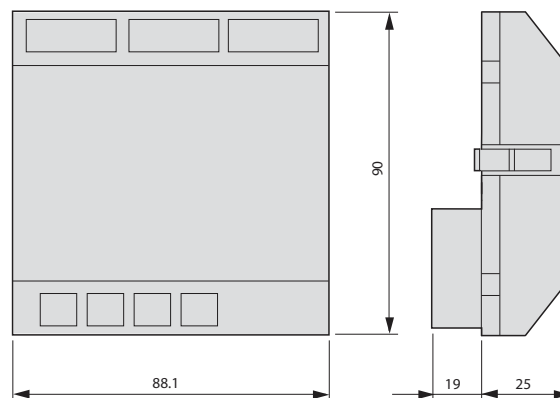
easy relay controllers

Dimension

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

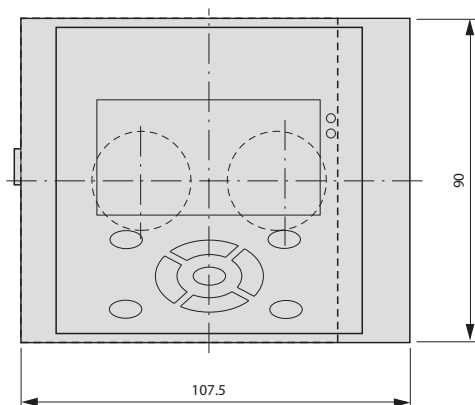


MFD-R..., MFD-T..., MFD-AC-R16

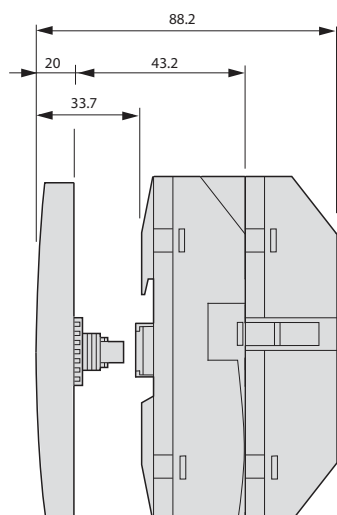
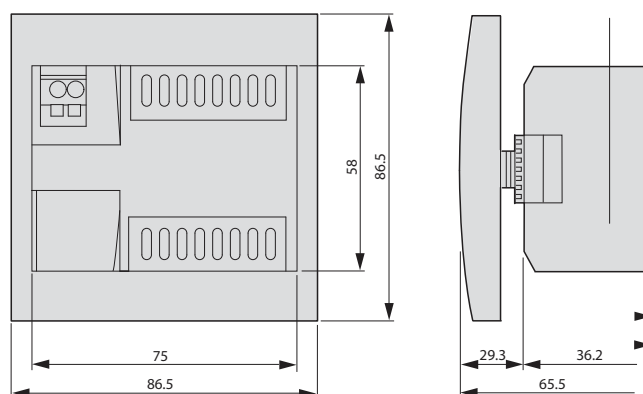


MFD-80... + MFD-CP... + MFD-R.../MFD-T...

MFD-80... + MFD-AC-CP... + MFD-AC-R16



MFD-80... + MFD-CP4



DC power supplies

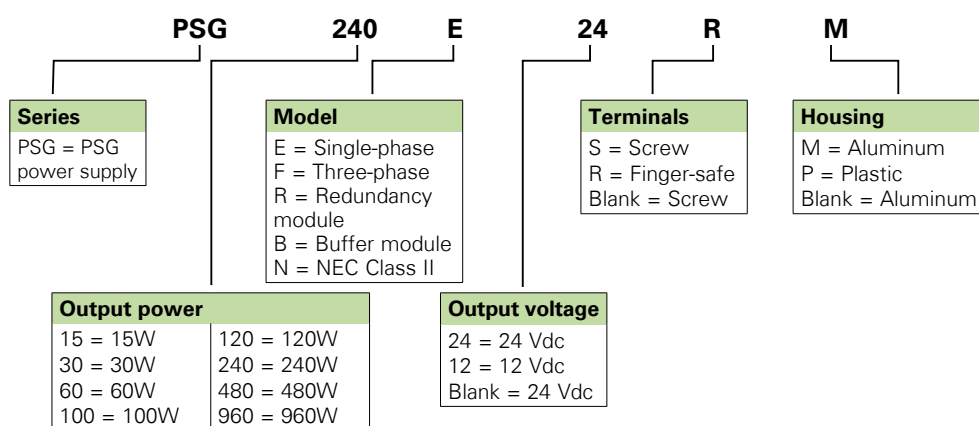
Eaton's PSG Series of power supplies is designed to be a high-performance, high-quality line of products covering a majority of 12 Vdc and 24 Vdc control applications.

Features, benefits and functions

- Universal input voltages: 100–240 Vac for single-phase 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 fingersafe 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 12VDC 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

Time switches

Analogue and Digital Time switches

Time switches 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 time switches.

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 time switches

- 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 time switches

Digital time switches

- 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, 2 channel, 10 yr power reserve	TSDW2CO



Digital time switches

Software & memory card

Description	Item no.
Programming software, cable & memory card	TSAMEMKIT
Memory card	TSAMEM

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, SPDT	TRL04
18mm DIN Multifunction Timer - 7 modes, SPDT	TRL07
18mm DIN Multifunction Timer - 7 modes, DPDT	TRL27
18mm CHCY Timer, DPDT	TRW27



Timing relays

Electronic ETR2



ETR2-12



ETR2-44



ETR2-11-D



ETR4-11-A



ETR4-70-A

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	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			5 - 10 h 5 - 100 h

Electronic ETR4

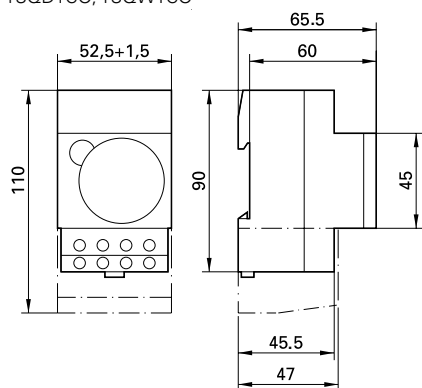
Description	Rated operational current AC-11		Conventional thermal current I _{th} A	Time range	Item no. 24 - 240 V AC, 50/60 Hz 24 - 240 V DC	Item no. 400 V AC, 50/60 Hz
	230 V I _e A	400 V I _e A				
Star-delta switching timing functions	3	3	6	3 - 60 s	ETR4-51-A	ETR4-51-W
On-delayed timing functions	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	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 s 5 - 100 s 15 - 300 s 1.5 - 30 min 15 - 300 min 1.5 - 30 h 5 - 100 h	ETR4-70-A	-

Time switches

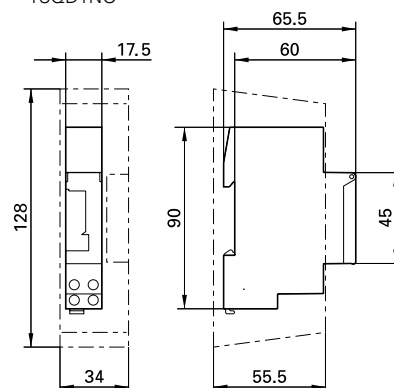
Dimensions (mm)

Analogue

TSQD1CO, TSQW1CO

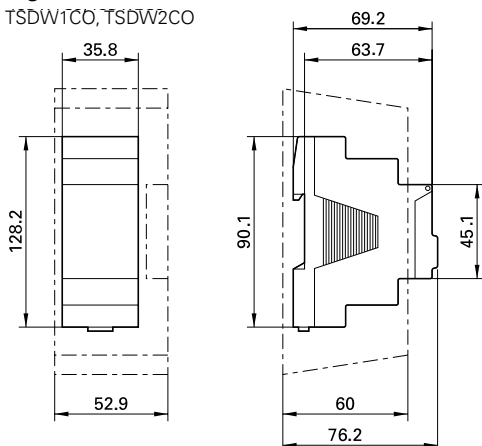


TSQD1NO

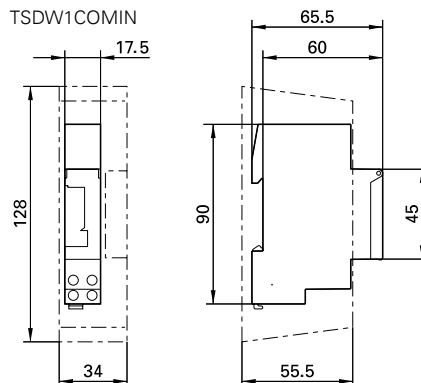


Digital

TSDW1CO, TSDW2CO



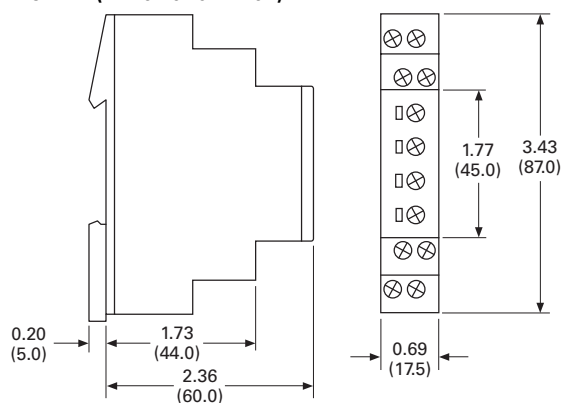
TSDW1COMIN



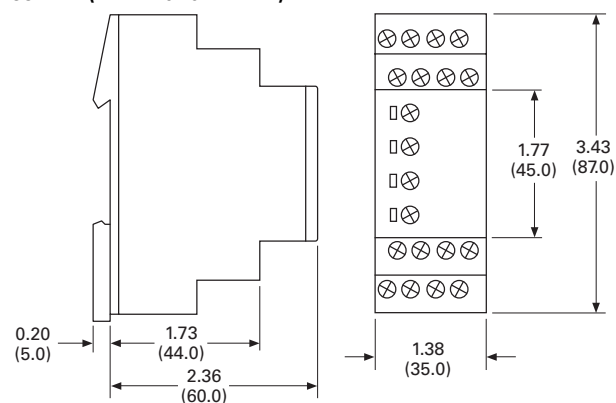
Timers

Dimensions [inches (mm)]

17,5 mm (TRL04 and TRL07)



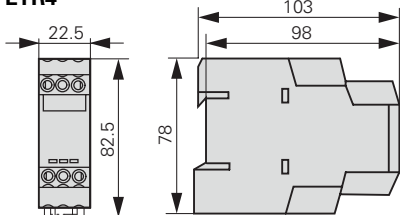
35 mm (TRL27 and TRW27)



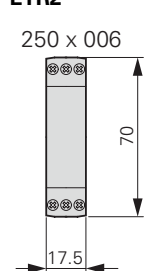
Timing relays

Dimensions (mm)

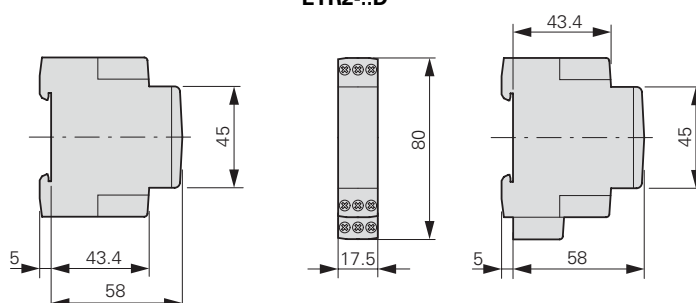
ETR4



ETR2



ETR2...D



Plug-in relays

D1 range



Eaton D1RF 1-pole relays

- The contact operation can be easily checked by Push-to-Test button
- Flag indicator shows relay status in manual or powered condition
- LED status lamp shows coil ON or OFF status— ideal for use in low light applications
- Push-to-Test button allows for manual operation of relay without the need for coil power
- Lock-down door holds pushbutton and contacts in the operate position when activated
- Finger-grip cover allows operator to remove relays from sockets easily
- ID tag/write label to identify relays in multiple relay circuits
- Bipolar LED allows for reverse polarity applications

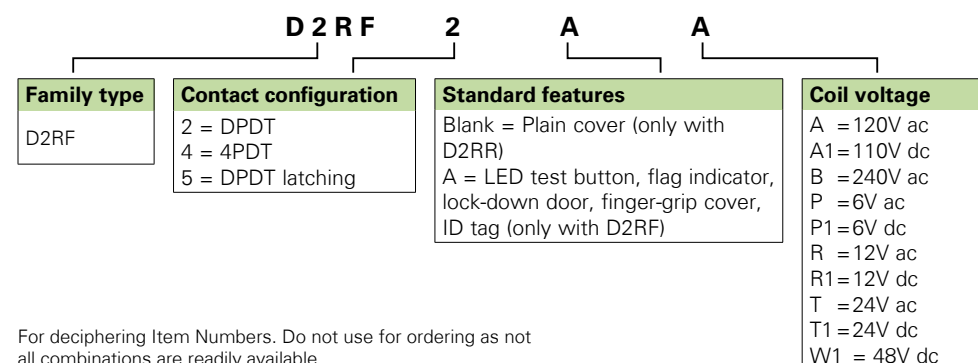
D 1 R F 1 A A			
Family type	Contact configuration	Standard features	Coil voltage
D1RF	1 = SPDT	Blank = Mechanical flag indicator (only with D1RR) A = LED test button, flag indicator, lock-down door, finger-grip cover, ID tag (only with D1RR) 1 = LED and mechanical flag indicator	A = 120 Vac A1 = 110 Vdc B = 240 Vac P = 6 Vac P1 = 6 Vdc R = 12Vac R1 = 12 Vdc T = 24 Vac T1 = 24 Vdc W = 48 Vac W1 = 48 Vdc

Eaton D1RF1 1-pole relays

Description	Voltage	Item no.
Relay 20A 24V DC 1 Pole	24V DC	D1RF1T1
Relay 20A 24V AC 1 Pole	24V AC	D1RF1T
Relay 20A 240V AC 1 Pole	240V AC	D1RF1B
Relay 20A 110V AC 1 Pole	110V AC	D1RF1A
Relay 20A 110V DC 1 Pole	110V DC	D1RF1A1
1-pole base D1 relay DIN mount		D1RAA
Hold down clip		PMC-1781

Plug-in relays

D2 range



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		D2PAL
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		<div>A = 120Vac</div> <div>A1=110Vdc</div> <div>B = 240Vac</div> <div>P = 6Vac</div> <div>P1=6Vdc</div> <div>R = 12Vac</div> <div>R1=12Vdc</div> <div>T = 24Vac</div> <div>T1=24Vdc</div> <div>W1= 48Vdc</div>

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		<div>D12 = 12V dc</div> <div>D120U = 120V ac / 110V dc</div> <div>D24 = 24V dc</div> <div>D230U = 23Vac / dc</div>	G = Yes Blank = No



XR Terminal block interface relays

- 6mm wide (1P), 14mm wide (2P) relay screw connection or spring-cage
- Plug-in jumpers or bridges available
- SPDT or DPDT contacts rated 6A
- DIN rail mount, LED indication
- Field-replaceable pluggable miniature relay
- 12VDC to 110VDC/120VAC available
- 10A High current series in SPDT

Description	Item no.
XR Relay, 1P, 6A, 12VDC, screw conn	XRU1D12
XR Relay, 1P, 6A, 120VAC/110VDC, screw conn	XRU1D120U
XR Relay, 1P, 6A, 230VAC/220VDC, screw conn	XRU1D230U
XR Relay, 1P, 6A, 24VDC, screw conn	XRU1D24
XR Relay, 1P, 6A, 24VAC/DC, screw conn	XRU1D24U

XR Relay, 2P, 6A, 12VDC, screw conn	XRU2D12
XR Relay, 2P, 6A, 120VAC/110VDC, screw conn	XRU2D120U
XR Relay, 2P, 6A, 230VAC/220VDC, screw conn	XRU2D230U
XR Relay, 2P, 6A, 24VDC, screw conn	XRU2D24
XR Relay, 2P, 6A, 24VAC/DC, screw conn	XRU2D24U

Description	Item no.
XR Relay, 1P, 6A, 12VDC, spring-cage	XRP1D12
XR Relay, 1P, 6A, 120VAC/110VDC, spring-cage	XRP1D120U
XR Relay, 1P, 6A, 230VAC/220VDC, spring-cage	XRP1D230U
XR Relay, 1P, 6A, 24VDC, spring-cage	XRP1D24
XR Relay, 1P, 6A, 24VAC/DC, spring-cage	XRP1D24U

XR Relay, 2P, 6A, 230VAC/220VDC, spring-cage	XRP2D230U
XR Relay, 1P, 10A, 12VDC, screw conn	XRU1H12
XR Relay, 1P, 10A, 120VAC/110VDC, screw conn	XRU1H120U
XR Relay, 1P, 10A, 230VAC/220VDC, screw conn	XRU1H230U
XR Relay, 1P, 10A, 24VDC, screw conn	XRU1H24

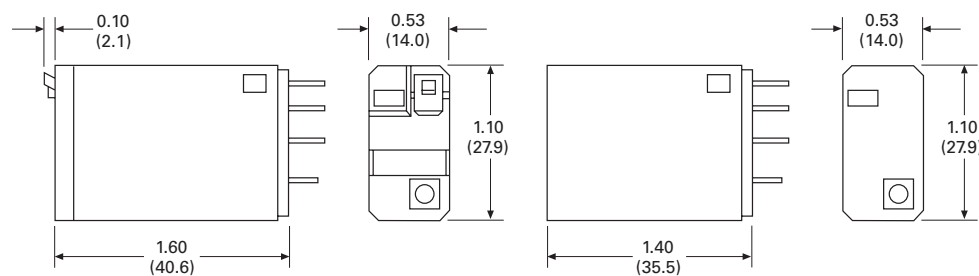
Accessories

Description	Item no.
2-position snap-in Jumper, grey	XRAFBST2GY
80-position snap-in Jumper, grey	XRAFBST500GY
Power Terminal Block	XRAPLCEsk
End Cover	XRAATPBK

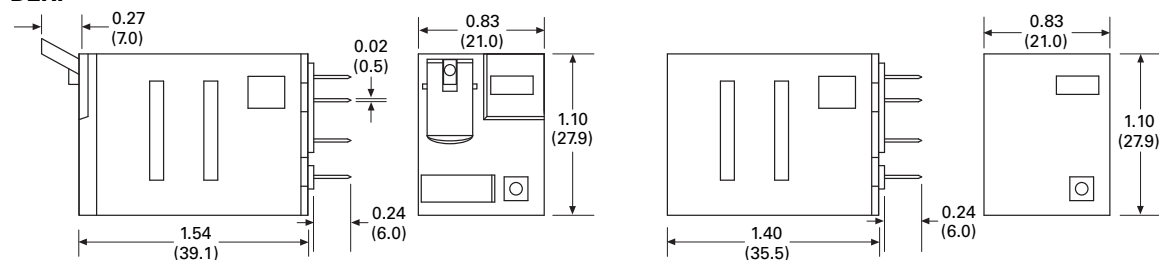
Plug-in relays

Dimensions (mm)

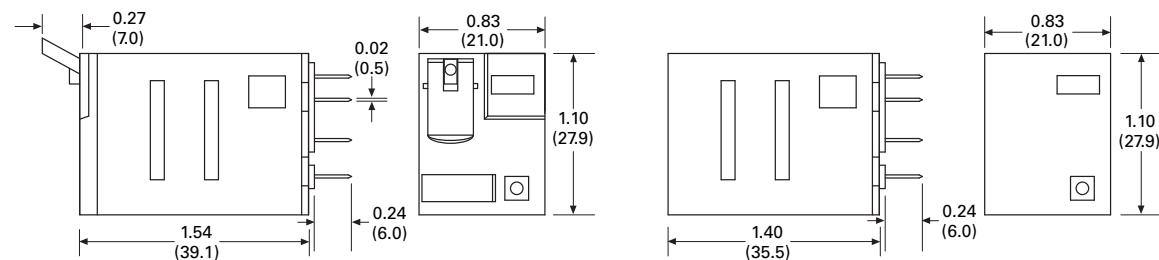
D1RF



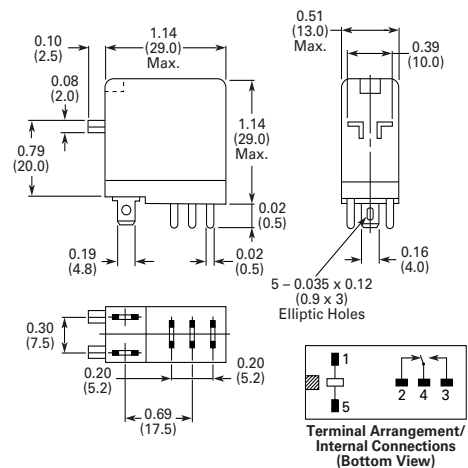
D2RF



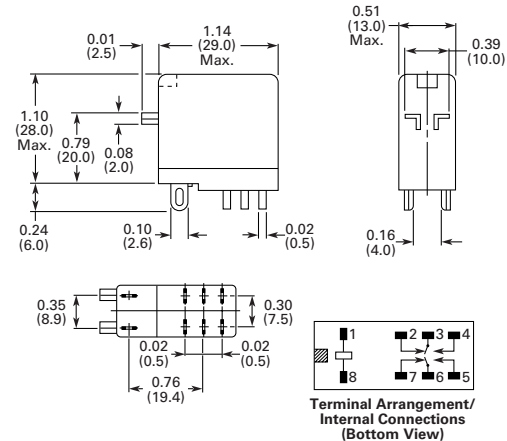
D2RF4



D4PR1



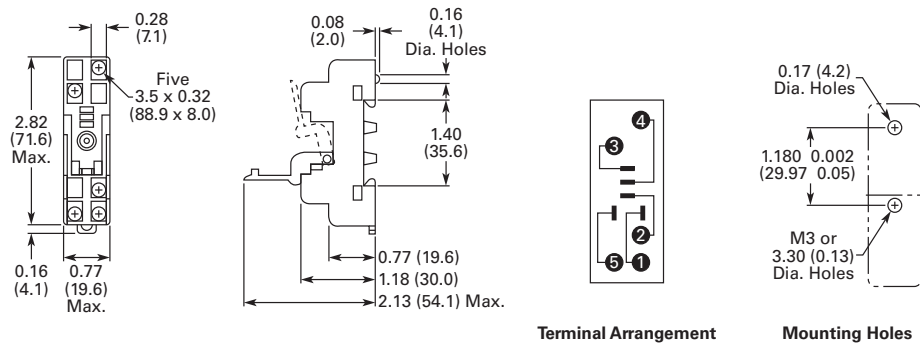
D4PR2



Plug-in relays

Dimensions

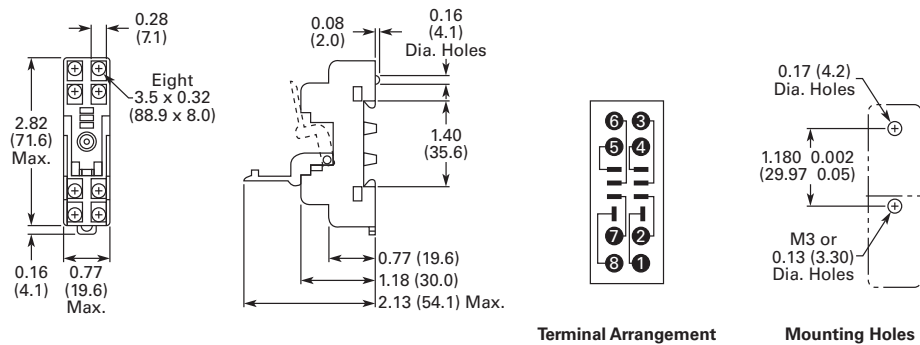
D4PA1



Terminal Arrangement

Mounting Holes

D4PA2



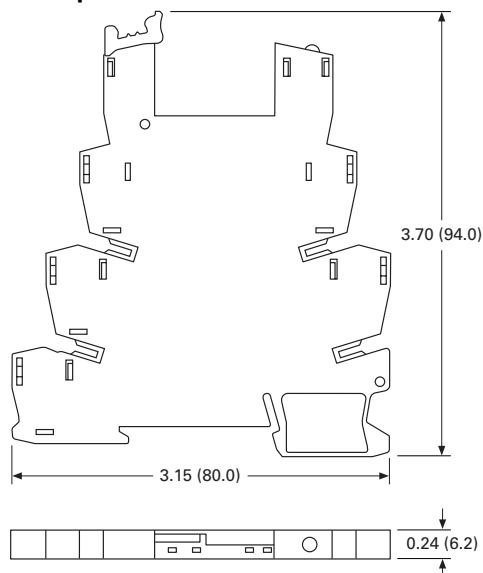
Terminal Arrangement

Mounting Holes

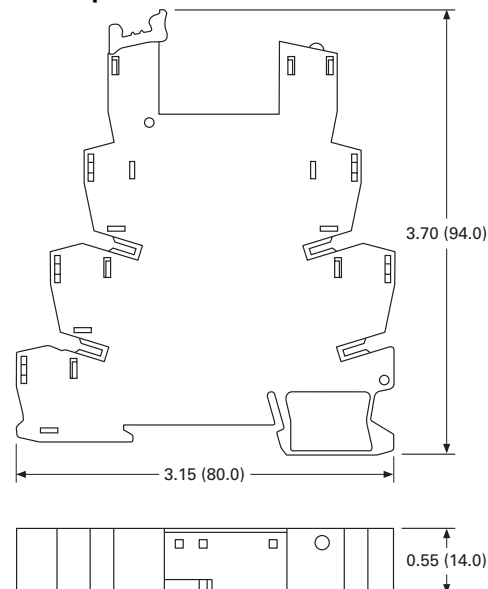
Interface relays

Dimensions

XRU 1 pole

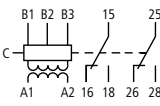


XRU 2 pole



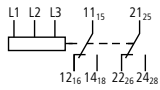
EMR measuring & monitoring relays

Current, phase, sequence relays, phase imbalance monitoring

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	

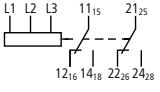
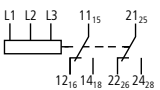


EMR4-F500-2

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				

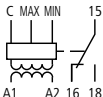
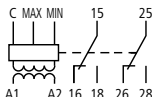
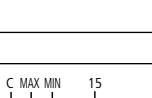
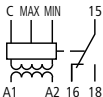


EMR5-A300-1-C

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	Imbalance = 2 - 25 % of phase voltage mean value		160 - 300 V AC, 50/60 Hz	EMR5-A300-1-C
• 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				
Power supply from measuring circuit Three-phase monitoring				
• Phase sequence	Imbalance = 2 - 25 % of phase voltage mean value		300 - 500 V AC, 50/60 Hz	EMR5-A400-1
• Phase failure				
• Asymmetry				
• Imbalance threshold values adjustable				
• On-delay: None = 0 or adjustable from 0.1 to 30 s				



EMR4-N500-2-A

Description	Response sensitivity	Circuit symbol	Supply voltage	Item no.
Liquid level monitoring relays EMR4-N...				
<ul style="list-style-type: none">• 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
<ul style="list-style-type: none">• Fill level monitoring of conductive liquids• Mixture ratio monitoring of conductive liquids• Selectable on-delay or off-delay between 0.5 - 10 s	250 Ω - 500 kΩ		24 - 240 V AC, 50/60 Hz 24 - 240 V DC	EMR4-N500-2-A
<ul style="list-style-type: none">• Selectable on-delay or off-delay between 0.5 - 10 s	250 Ω - 500 kΩ		220 - 240 V AC, 50/60 Hz	EMR5-N80-1-B
Liquid level monitoring relays EMR5N...				
<ul style="list-style-type: none">• 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



EMR5-N80-1-B

EMR measuring & monitoring relays



EMR5-AWM720-2



EMR5-AWN500-1



EMR5-R400-1-A

Description	Monitoring voltage per phase	Threshold value ①	Circuit symbol	Supply voltage	Width mm	Item no.
Phase monitoring relay EMR5-(A)W...						
Power supply from measuring circuit Three-phase monitoring	160 - 300 V AC, 50/60 Hz	U _{max} 220 - 300 V AC U _{min} 160 - 230 V AC		60 - 300 V AC, 50/60 Hz	22.5	EMR5-AW300-1-C
<ul style="list-style-type: none"> Phase sequence Phase failure Overvoltage Undervoltage Asymmetry Adjustable threshold values for overvoltage/undervoltage and imbalance 	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
<ul style="list-style-type: none"> On-/Off-delay: None = 0 or adjustable between 0.1 - 30 s 	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
	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
	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 Three-phase monitoring	90 - 170 V AC, 50/60 Hz	U _{max} 120 - 170 V AC U _{min} 90 - 130 V AC		90 - 170 V AC, 50/60/100 Hz	22.5	EMR5-AWN170-1-E
<ul style="list-style-type: none"> Phase sequence Phase failure Overvoltage Undervoltage Asymmetry Neutral cable break (not) 	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
<ul style="list-style-type: none"> EMR5-AWN500-1) Adjustable threshold values for overvoltage/undervoltage and imbalance 	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
<ul style="list-style-type: none"> 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

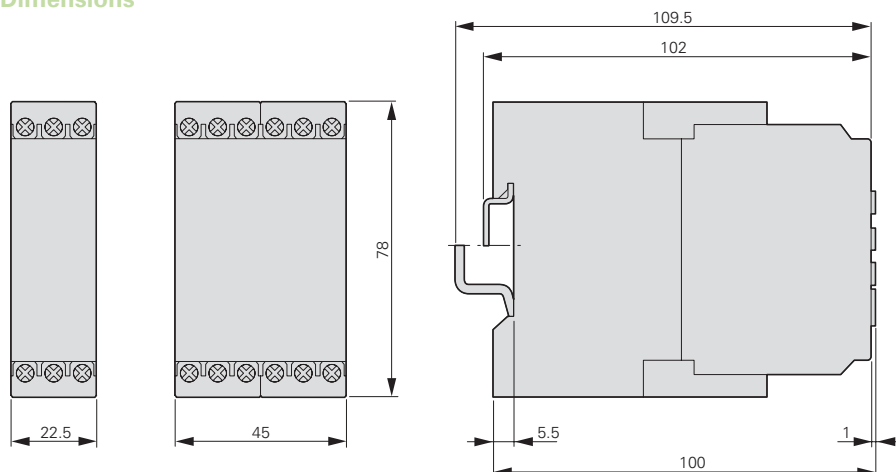
① Imbalance = 2 - 25% of phase voltage mean value

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 Test via local test button or remote test operation. Status display via LED (according to VDE 0413/Part 2) Tripping function memory	1 - 110 kΩ		0-400V AC 45-65 Hz	EMR5-R400-1-A
Monitors the insulation resistance in non-grounded DC supply systems. Selector switch for open- or closed-circuit principle. Test and reset via local test button or remote test operation. Status indication via LEDs	10 - 110 kΩ		0-300V DC or 0-250V AC 15-400Hz	EMR5-R250-1-A
The EMR5-R400-2-A serves to monitor insulation resistance in accordance with IEC 61557-8 in unearthed IT AC systems, IT AC systems with galvanically connected DC circuits, or unearthed IT DC systems.			0-600 V DC or 0-400 V AC, 15-400 Hz	EMR5-R400-2-A
The coupling module EMR5-RC690 is a passive device not needing any control supply voltage. It serves to connect the insulation monitoring relay EMR5-R400-2-A to systems up to 690 V AC and 1000 V DC. Hence the EMR5-RC690 is connected between the system to be monitored and the EMR5-R400-2-A			1000V DC or 690V AC	EMR5-RC690

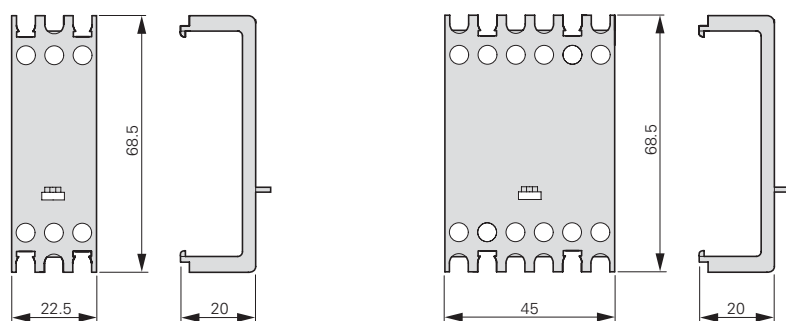
Description	Width mm	Item no.
Sealable shroud EMR4-PH...	22.5	EMR4-PH22
	45	EMR4-PH45

EMR measuring & monitoring relays

Dimensions



EMR4-PH...



True RMS sensor

VoltageWatch EVT range



Eaton's VoltageWatch™ sensor is a high-performance, true RMS sensor for sensing voltage in single- and three-phase 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.

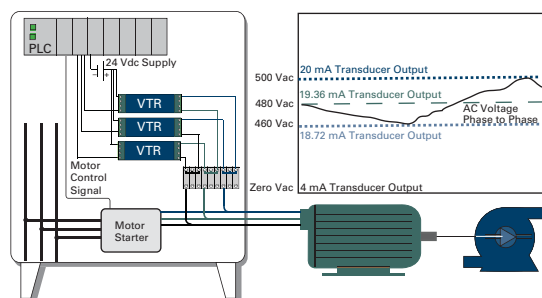
Designed with an industry standard 4–20 mA output, VoltageWatch is easily coupled to a data logger, panel meter or PLC to enable basic trending of operational status of low voltage circuits up to real-time monitoring and reporting of supply voltage levels.

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 three-phase 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



Example application - Phase loop

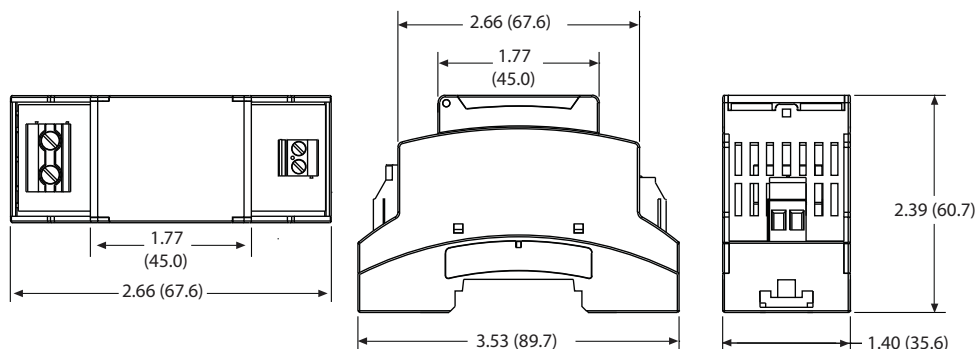
Standard family name	Nominal range	Output type	Supply voltage
EVT = VoltageWatch sensor	1 = 120V 3 = 240V 4 = 480V	420 = 4–20 mA	24L = 24V Loop powered



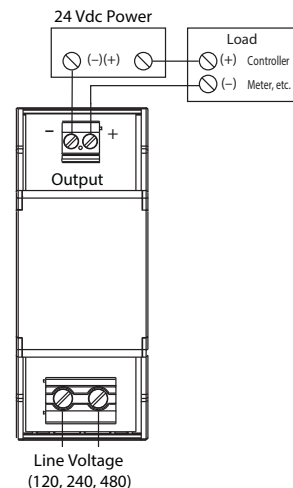
VoltageWatch EVT—top terminal current sensors

Power supply	Output signal	Nominal voltage	Item no.
24 Vdc loop powered	4–20 mA	120	EVT1-420-24L
		240	EVT3-420-24L
		480	EVT4-420-24L

Dimensions (approximate dimensions in inches (mm))



Wiring diagram



Current switches

ECS range CurrentWatch

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 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.

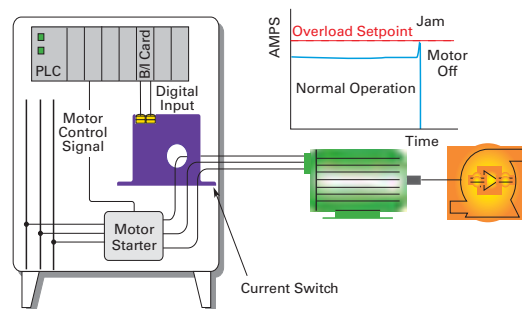
Changes in current can be sensed with the ECS Series. A change in current may indicate motor failure, belt loss/slippage or mechanical failure. Any of these events can cause the current to drop significantly, tripping the switch and notifying the controller.

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

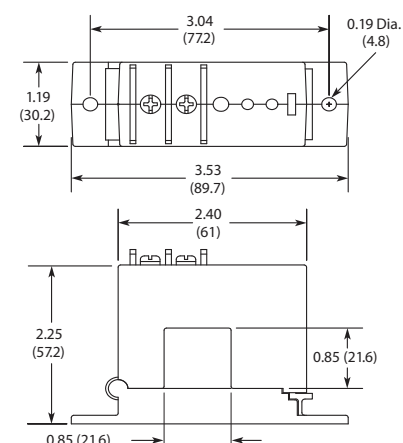
Power supply	Aperture Size	Output Signal	Setpoint and LED Configuration	Item no.
Solid-Core Housing				
Self powered (no external power needed)	0.74 in (19 mm)	Normally open	Adjustable 1–150A setpoint with LED	ECSNOASC
			Fixed 1.0A setpoint no LED	ECSNOFSC
			Fixed 5.5A setpoint no LED	ECSNOFSCY1
		Normally closed	Adjustable 1–150A setpoint with LED	ECSNCASC
			Fixed 1.0A setpoint no LED	ECSNCFSC
Split-Core Housing				
Self powered (no external power needed)	0.85 in (21.6 mm)	Normally open	Adjustable 1.75–150A setpoint with LED	ECSNOASP
			Fixed 1.5A setpoint no LED	ECSNOFSP
		Normally closed	Adjustable 1.75–150A setpoint with LED	ECSNCASP
			Fixed 1.5A setpoint no LED	ECSNCFSP

Accessories

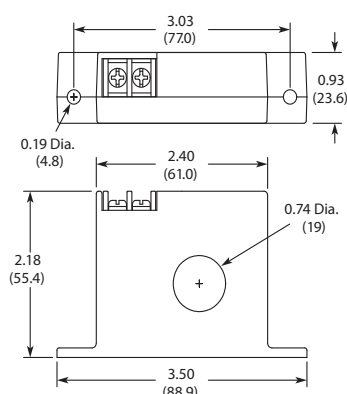
Description	Item no.
DIN rail mounting kit	EDINKIT

Dimensions (approximate dimensions in inches (mm))

Split core housing



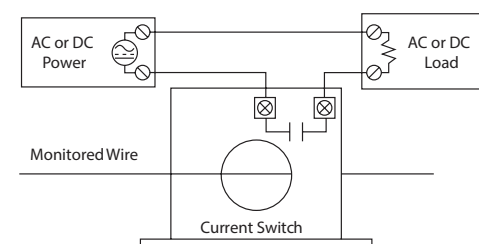
Solid-core housing



Wiring diagram

ECS CurrentWatch current switches

Normally open (NO) models shown



Pressure switches

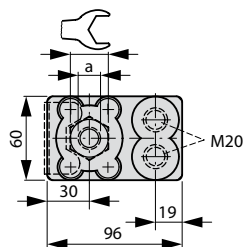


Description		Max. operating pressure	Item no.
Pressure switches with main contacts IP65, 3 pole			
Preferred setting range from bar	Preferred setting range to bar		
0.9	4	<p>Min. switching differential: 0.6 bar Example: Cut-out pressure 3.3 bar Cut-in pressure 2.2 bar</p>	7 MCSN4
2	10	<p>Min. switching differential: 1.4 bar Example: Cut-out pressure 8.5 bar Cut-in pressure 4.5 bar</p>	15 MCSN11
5	15	<p>Min. switching differential: 2.4 bar Example: Cut-out pressure 14.5 bar Cut-in pressure 7.5 bar</p>	25 MCSN16
8	22	<p>Min. switching differential: 3.0 bar Example: Cut-out pressure 17.5 bar Cut-in pressure 7.8 bar</p>	25 MCSN22
Pressure switch with auxiliary contacts, IP65			
1 changeover contact		<p>Min. switching differential: 0.2 bar Example: Cut-out pressure 3.3 bar Cut-in pressure 2.2 bar</p>	7 MCS4
1 changeover contact with gold-plated		<p>Min. switching differential: 0.2 bar Example: Cut-out pressure 3.3 bar Cut-in pressure 2.2 bar</p>	7 MCS4-G
1 changeover contact		<p>Min. switching differential: 0.3 bar Example: Cut-out pressure 8.5 bar Cut-in pressure 4.5 bar</p>	15 MCS11
1 changeover contact with gold-plated		<p>Min. switching differential: 0.3 bar Example: Cut-out pressure 8.5 bar Cut-in pressure 4.5 bar</p>	15 MCS11-G
1 changeover contact		<p>Min. switching differential: 0.7 bar Example: Cut-out pressure 17.5 bar Cut-in pressure 7.8 bar</p>	25 MCS22
1 changeover contact with gold-plated		<p>Min. switching differential: 0.7 bar Example: Cut-out pressure 17.5 bar Cut-in pressure 7.8 bar</p>	25 MCS22-G

Pressure switches

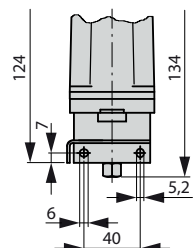
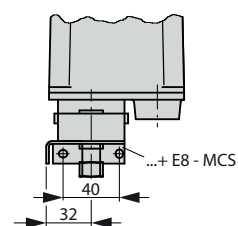
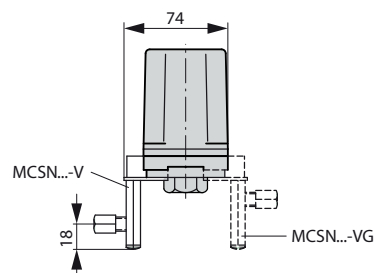
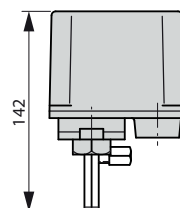
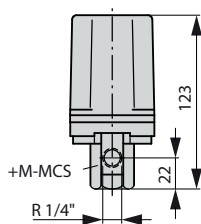
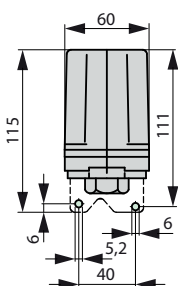
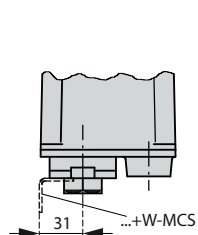
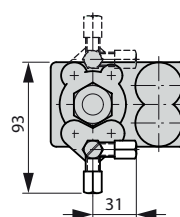
Dimensions

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



Limit switches

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



Assembled switch



Switch body



Single pole



Double pole

Indicating light	Switch body Item no.		Receptacle Item no.
None	E50SA, 1N.O.-1N.C.	Single Pole (5 Terminal)	E50RA
LED (24 - 120V AC/DC)	E50SAL, 1N.O.-1N.C.		-
None	E50SB, 2N.O.-2N.C.	Double pole (9 Terminal)	E50RB
LED (24 - 120V AC/DC)	E50SBL, 2N.O.-2N.C.		-



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

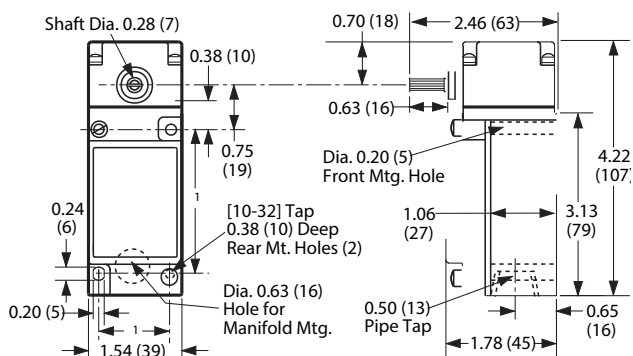
Operating head type	Item no.
Side Pushbutton, Maintained - E50DH1	E50DH1
Top Pushbutton, Spring Return - E50DT1	E50DT1
Top Pushbutton, Adjustable Spring Return - E50DT2	E50DT2
Top Push Roller, Spring Return - E50DT3	E50DT3
Wobble Head Spring Return	
Standard Duty	E50DW1
Heavy-Duty High Strength Steel	E50DW2

Switches

Plug-in switches

Dimensions (approximate dimensions in inches (mm))

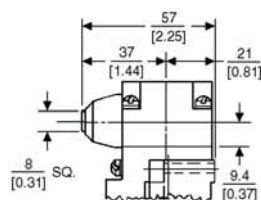
Standard



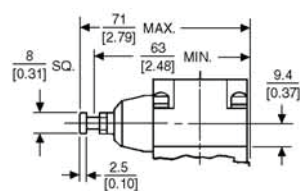
Side push operators

(approximate dimensions in mm (inches))

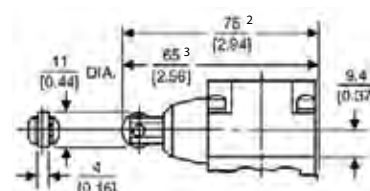
Pushbutton



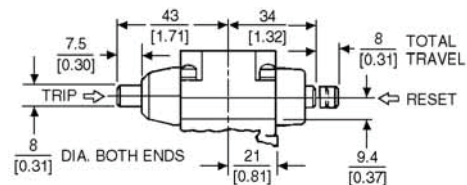
Adjustable pushbutton



Roller

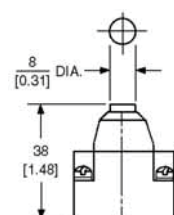


Maintained pushbutton

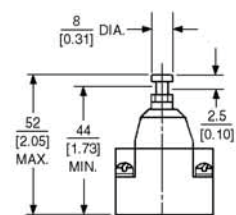


Top push operators

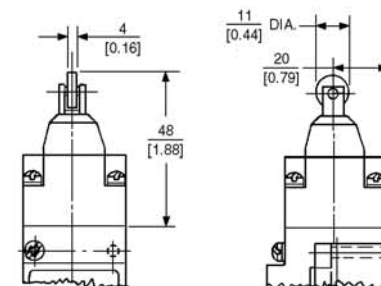
Pushbutton



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

Limit switches

Roller type operators

For rotary head switches: E50 Plug-In, E50 6P+, and 10316 series



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

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



E50KL537

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).

⑥ High-grade stainless steel.

Limit switches

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

Limit switches

Dimensions

Standard roller

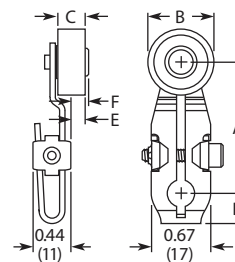
Approximate dimensions in inches (mm)

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).

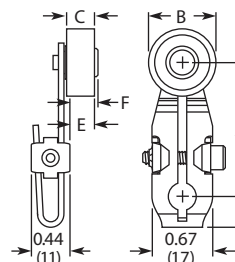
Roller Type Operators



Roller on reverse side

Approximate dimensions in Inches (mm)

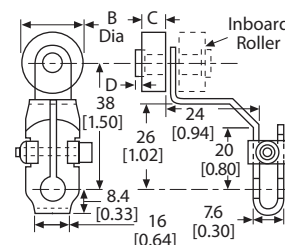
Item no.	A Lever Length ¹	B Roller Diameter	C Roller Width	D	E	F
E50KL580	1.50 (38.1)	0.69 (17.5)	0.25 (6.4)	0.34 (8.6)	0.18 (4.6)	0.24 (6.1)
E50KL310	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)
E50KL579	1.50 (38.1)	0.75 (19.0)	0.32 (8.1)	0.34 (8.6)	0.27 (6.9)	0.31 (7.9)
E50KL536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

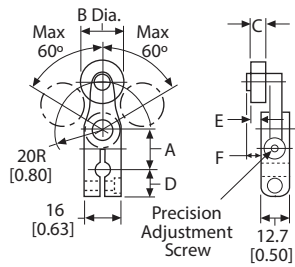
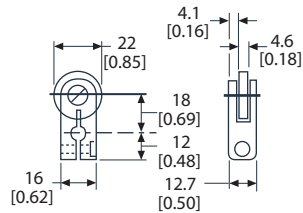
Limit switches

Limit Switches

Dimensions

Bantam lever

Approximate dimensions
in mm [in]



Precision Adjustment

Approximate Dimensions in mm [in]

Item no.	A Lever Length ¹	B Roller Diameter	C Roller Width	D	E	F
E50KL340	17.5 [0.69]	19.0 [0.75]	8.1 [0.32]	12.2 [0.48]	6.1 [0.24]	7.1 [0.28]
E50KL465	Roller length: 38.1 [1.50]	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]	17.5 [0.69]	6.4 [0.25]	5.8 [0.23]	7.6 [0.30]
E50KL201		19.0 [0.75]	8.1 [0.32]	7.4 [0.29]	8.4 [0.33]
E50KL201SPL ³		19.0 [0.75]	8.1 [0.32]	7.4 [0.29]	8.4 [0.33]
E50KL538		19.0 [0.75]	8.1 [0.32]	7.4 [0.29]	8.4 [0.33]
E50KL599		19.0 [0.75]	12.7 [0.50]	11.6 [0.46]	12.2 [0.48]
E50KL537		19.0 [0.75]	25.4 [1.00]	22.9 [0.90]	24.1 [0.95]
E50KL598	12.7 [0.50] to 82.6 [3.25]	102.0 [4.00]	2.8 [0.11]	4.8 [0.19]	24.1 [0.95]
E50KL31	12.7 [0.50] to 95.2 [3.75]	—	—	—	—
E50KL443	41.3 [1.63] to 95.2 [3.75]	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

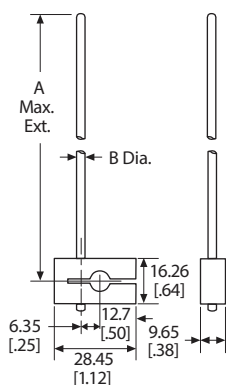
- ¹ Length from the operating shaft axis to the roller axis (or to the tip for non-roller operators).
- ² By reassembling lever, minimum length can be reduced another 12.7 mm [0.5 in].
- ³ High-grade stainless steel.

Limit switches

Limit Switches

Dimensions

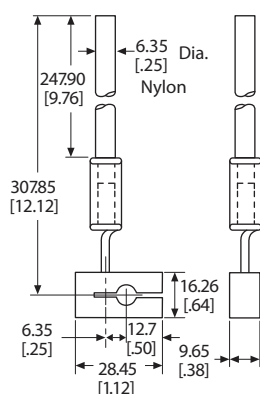
Rod type operators



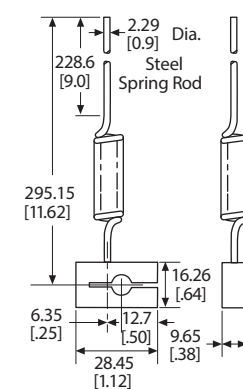
Adjustable rod

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]

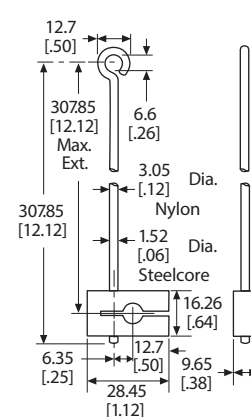
Spring rod—E50KL556



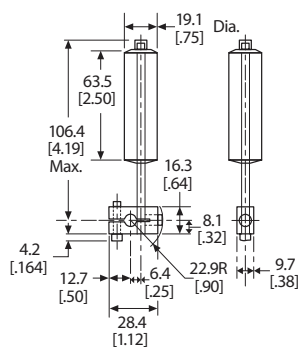
Spring rod—E50KL421



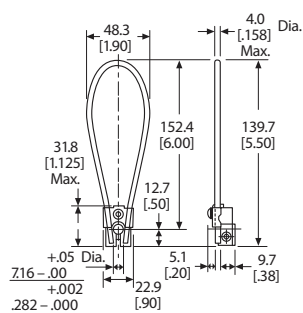
Adjustable wire



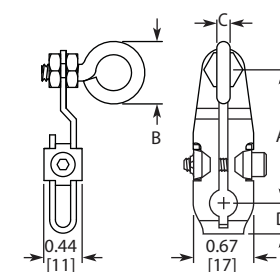
Adjustable wide roller lever



Nylatron loop—E50KL142



Eye bolt



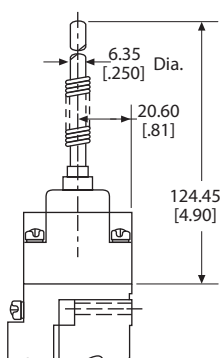
Notes

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

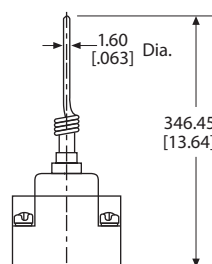
Catalog Number	A Rod Length ²	B Rod Diameter	C Rod Width	D
E50KL33	38.1 [1.50]	4.8 [0.1875] Loop ID: 9.5 [0.375]	13.1 [0.52]	8.6 [0.34]

Wobble Type Operators

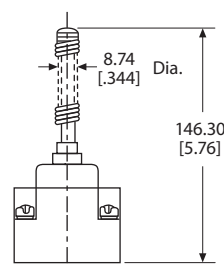
Nylon Rod



Stainless Steel Rod



Coil Spring



Limit switches

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.

Limit switches

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			Force to operate contacts (g)	Minimum return force (g)	Item no.
	Travel to operate contacts	Travel to reset contacts	Total travel			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)



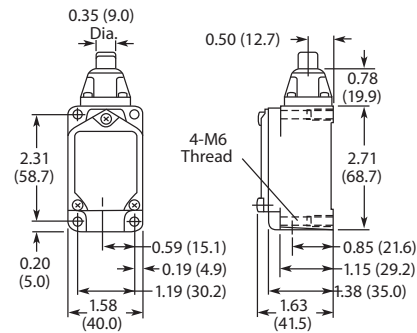
Wobble Stick (Whisker)

Limit switches

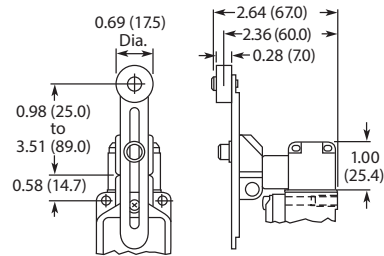
Limit switches

Dimensions

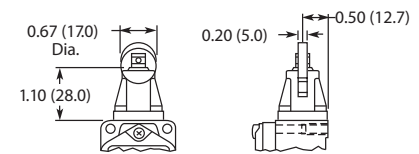
Switch Body with E49M11BP1



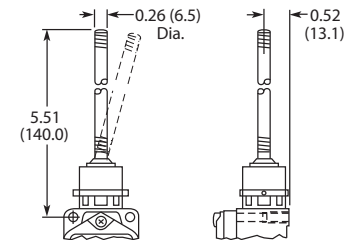
E49M11UP1



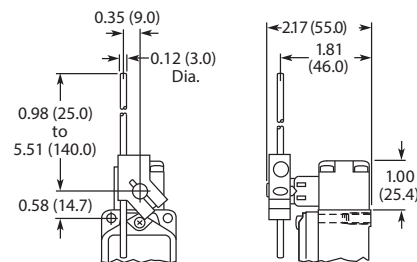
E49M11CP1/E49M11CP2



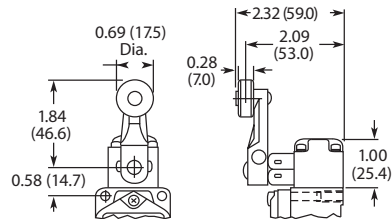
E49M11VP1



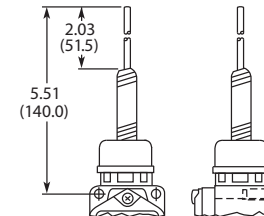
E49M11DP1



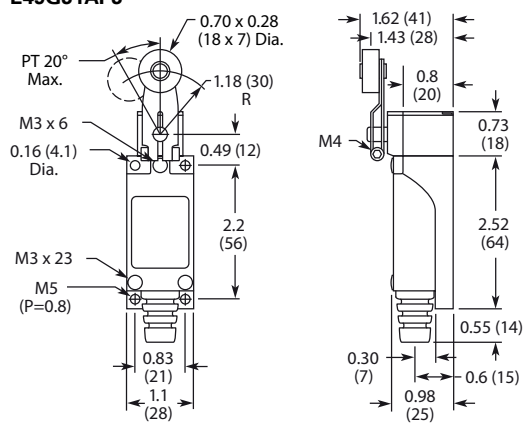
E49M11AP1



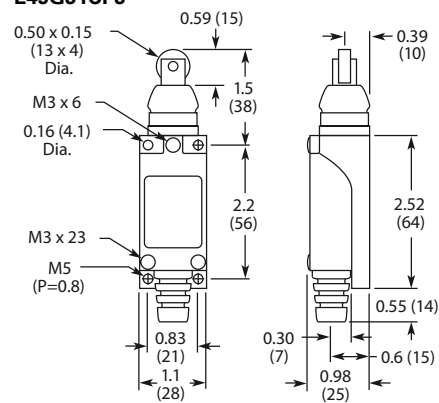
E49M11XM1



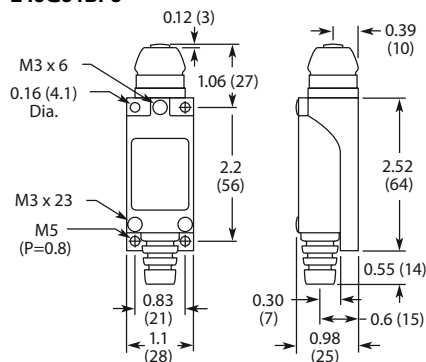
E49G31AP3



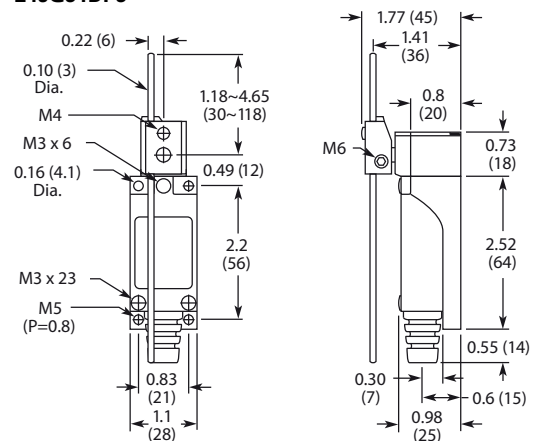
E49G31CP3



E49G31BP3



E49G31DP3

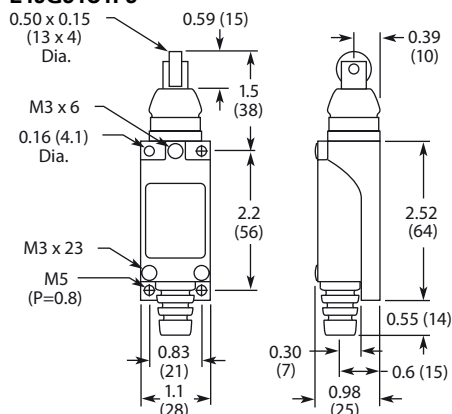


Limit switches

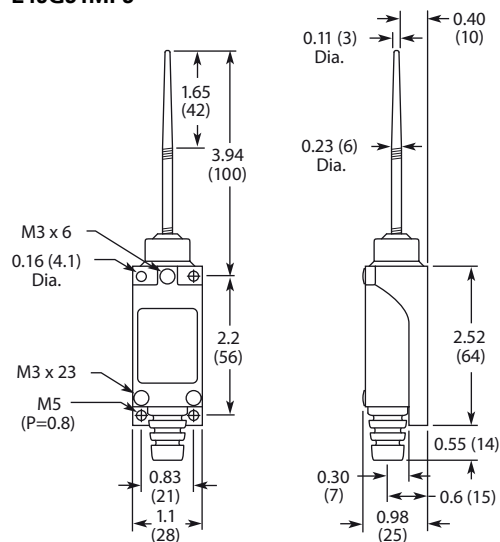
Limit switches

Dimensions

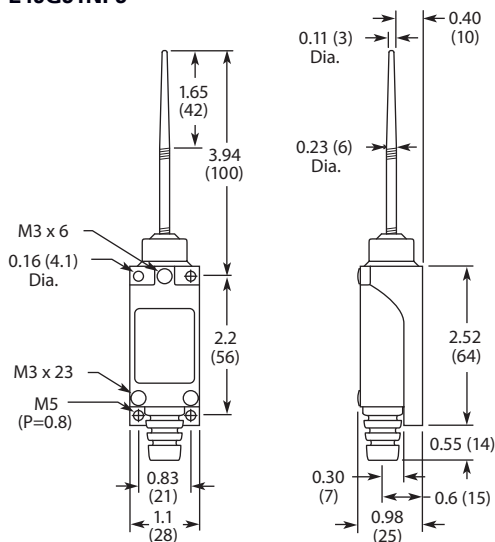
E49G31C1P3



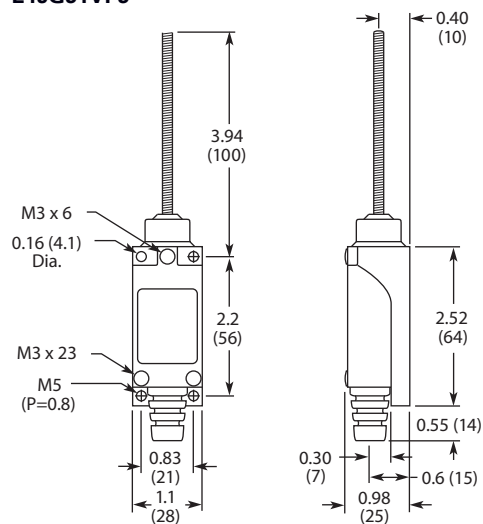
E49G31MP3



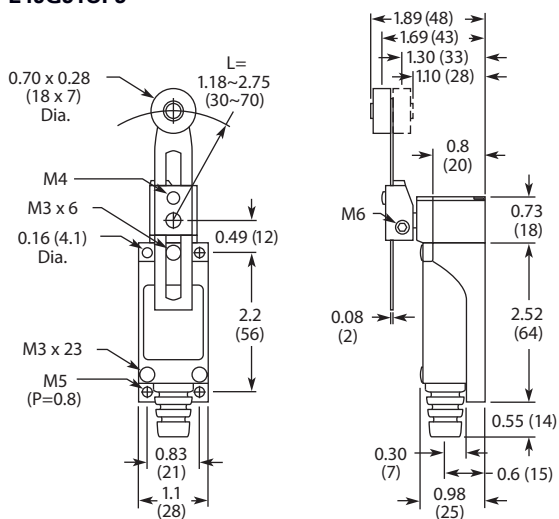
E49G31NP3



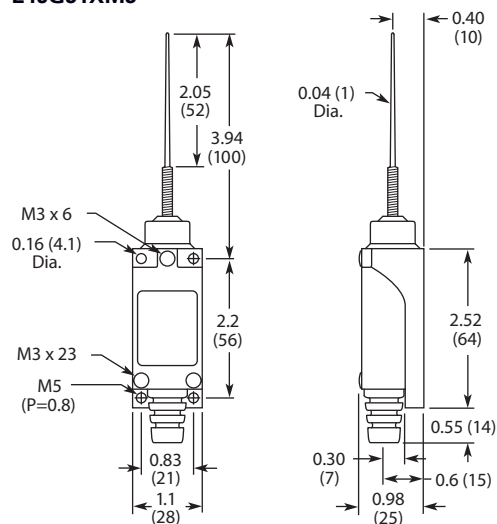
E49G31VP3



E49G31UP3



E49G31XM3



Position switches

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)

Position switches

LS-Titan position switches

Operating heads

Description	Plastic Item no.	Metal Item no.
Rounded plunger, center fixing		
For installation in M18 × 1 enclosure wall or mounting plate drilling	LS-XZS	
Roller plunger, center fixing		
For installation in M18 × 1 enclosure wall or mounting plate drilling	LS-XZRS	
Roller plunger	LS-XP	LSM-XP
Roller lever		
Large	LS-XLB	
Short	LS-XLS	
Long	LS-XL	LSM-XL
Angled roller lever	LS-XLA	LSM-XLA
Rotary lever	LS-XRL	LSM-XRL
Adjustable roller lever		
18 mm roller	LS-XRLA	LSM-XRLA
30 mm roller	LS-XRLA30	
40 mm rubber roller	LS-XRLA40R	
40 mm roller	LS-XRLA40	
Actuating rod		
Rod from insulated material	LS-XRR	LSM-XRR
Metal rod	LS-XRRM	LSM-XRRM
Spring rod		
Not to be used as a safety position switch Use only in conjunction with snap-action contact.	LS-XS	LSM-XS
Actuating rod	LS-XOR	
Fixing adapters		
Actuation through front element RMQ-Titan®	M22-LS	



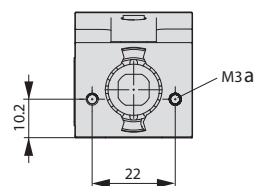
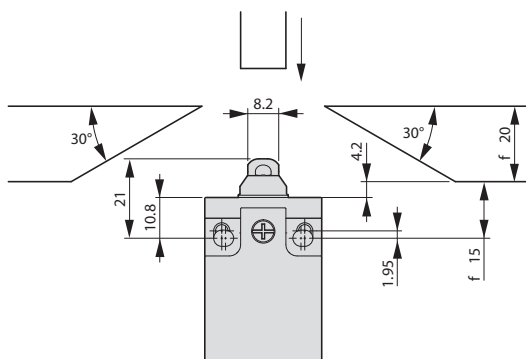
Position switches

LS-Titan position switches

Dimensions

Basic units, non expandable (front fixing)

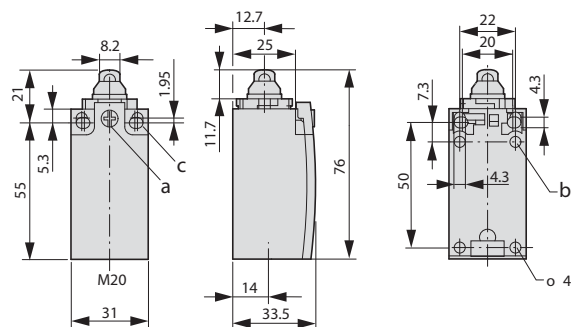
LS(M)-.../F



① Screw-in depth max. 12 mm

Basic units, expandable,

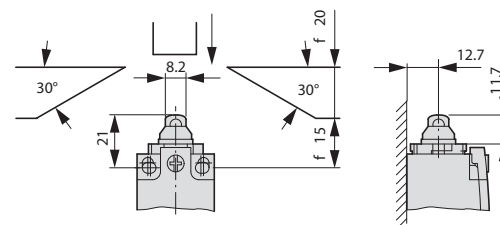
LS-..., LSM-..., LSE-...



① Tightening torque of cover screw: 0.8 Nm \pm 0.2 Nm

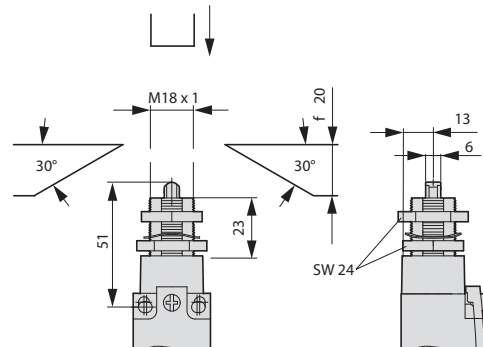
② Only with LS (insulated version)

③ Fixing screw 2 x M4 \geq 30
M_A = 1.5 Nm



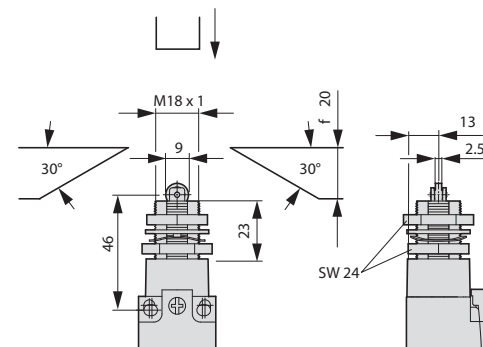
Rounded plunger, center fixing

LS-XZS



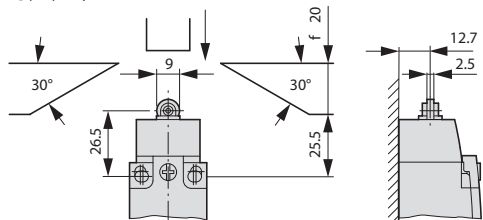
Roller plunger, center fixing

LS-XZRS



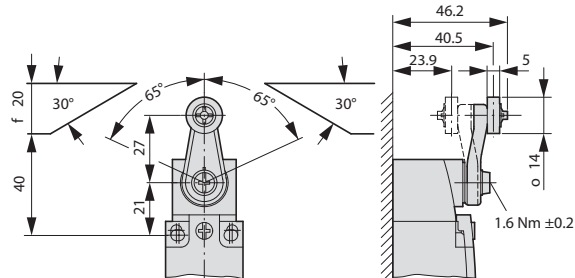
Roller plunger

LS(M)-.../P



Rotary lever

LS(M)-.../RL

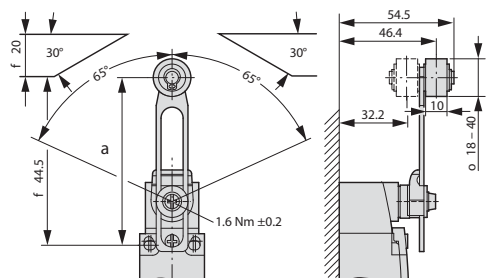


Position switches

LS-Titan position switches

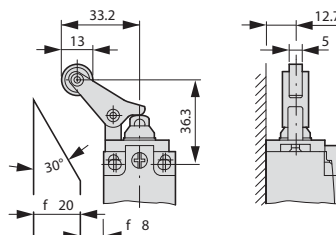
Dimensions

Adjustable roller lever LS(M)-.../RLA

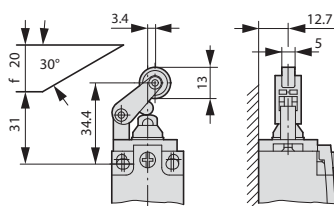


① Setting range from 54.5 to 97

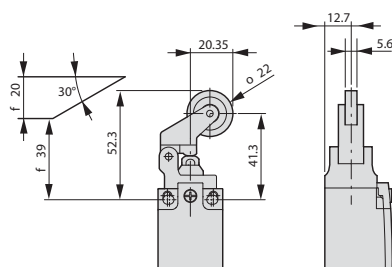
Angled roller lever LS(M)-XLA



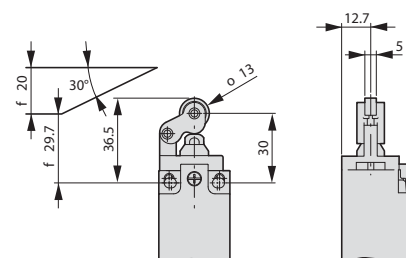
Roller lever LS(M)-.../L



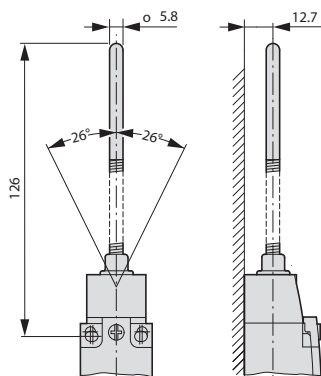
LS(M)-.../LB



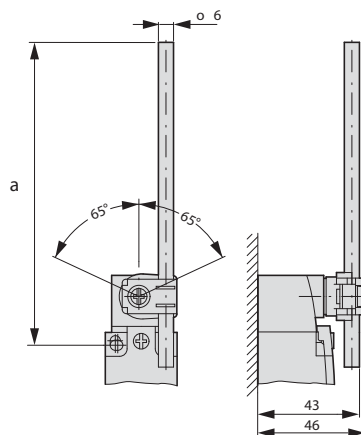
LS(M)-.../LS



Spring rod LS(M)-.../S

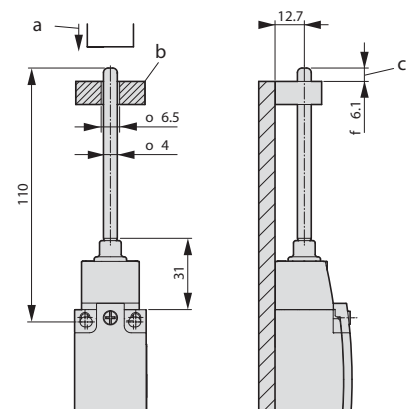


Actuating rod LS(M)-.../RR



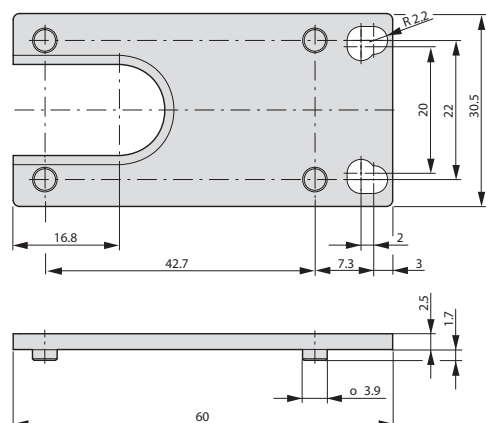
① LS.../RR ≤ 150
LS.../RRM ≤ 210

Actuating rod LS(M)-.../OR

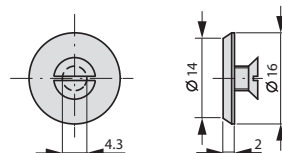


① Approach direction, vertical
② Guide is done by customer, not included
③ Max. push-through

Adapter plate LS-XAP



Locating plate FS-AT



Sensors

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-DOB ☺	E57-12GS02-D1DB ☺
	4 mm	Unshielded	NPN/PNP	2-meter cable	E57-12GU04-D	E57-12GU04-D1
				4-pin micro DC connector	E57-12GU04-DOB ☺	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-DOB ☺	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 ☺
10–30 Vdc	16 mm			3-pin micro AC connector	E57-18GE16-AAB ☺	E57-18GE16-A1AB ☺
	5 mm	Shielded	NPN/PNP	2-meter cable	E57-18GS05-D	E57-18GS05-D1
				4-pin micro DC connector	E57-18GS05-DOB ☺	E57-18GS05-D1DB ☺
	8 mm	Unshielded	NPN/PNP	2-meter cable	E57-18GU08-D	E57-18GU08-D1
				4-pin micro DC connector	E57-18GU08-DOB ☺	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-DOB ☺	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-DOB ☺	E57-30GS10-D1DB ☺
	15 mm	Unshielded	NPN/PNP	2-meter cable	E57-30GU15-D	E57-30GU15-D1
				4-pin micro DC connector	E57-30GU15-DOB ☺	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-DOB ☺	E57-30GE25-D1DB ☺

☺ ☺ See listing of compatible connector cables



12mm diameter



18mm diameter



30mm diameter

Sensors

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

Sensors

Global proximity sensors

Three-wire sensors

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	2-meter cable	E57-30GE29-C	E57-30GE29-C1
				4-pin micro DC connector	E57-30GE29-CDB ☹	E57-30GE29-C1DB ☹
			PNP	2-meter cable	E57-30GE29-G	E57-30GE29-G1
				4-pin micro DC connector	E57-30GE29-GDB ☹	E57-30GE29-G1DB ☹

☺ See listing of compatible connector cables



18mm diameter






30mm diameter

Sensors

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

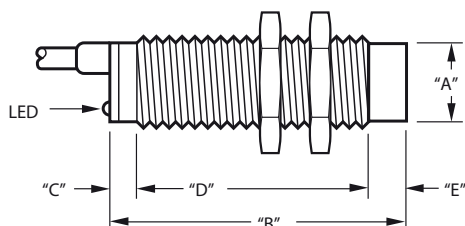


Nano-style

Dimensions

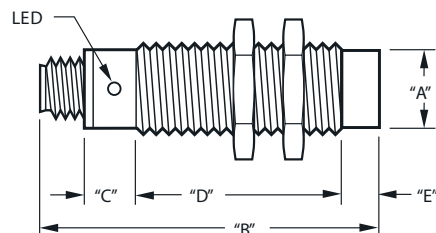
Two-wire sensors

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-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

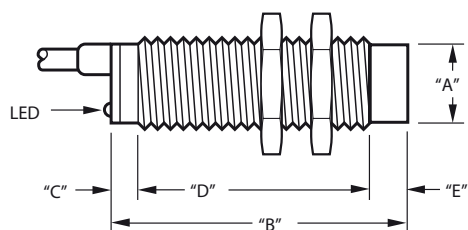
Sensors

Global proximity sensors

Dimensions

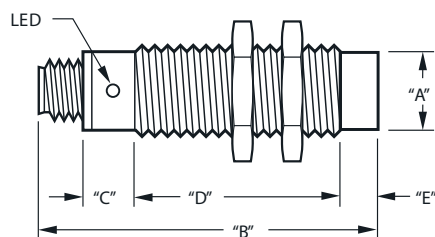
Three-wire sensors

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

Sensors

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

Sensors

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

Sensors

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



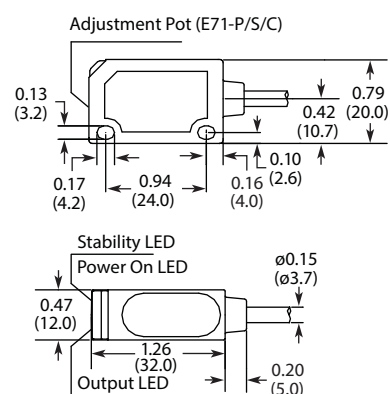
Accessories

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

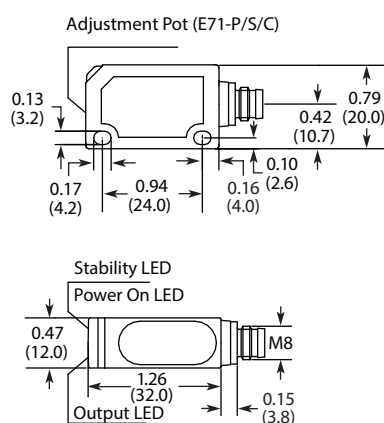


Dimensions

Cable Models

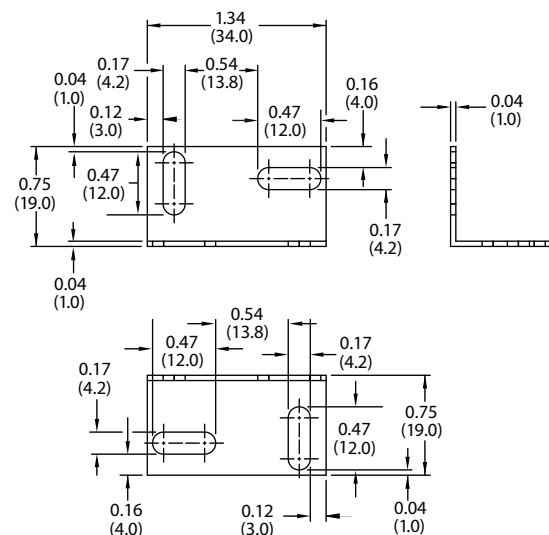


Nano-Connector Models



Accessories

E71-MTB1—Mounting Bracket





Rhomberg

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

Rhomberg inductive prox NAMUR 2 wire

- 2 Wire (Blue Cable)
- Designed to DIN 19234
- Interfaces with Rhomberg SC320 or SC300 relay

Description	Item no.
M12 Dia. 2mm sensing distance shielded	RI01202FNC
M12 Dia. 4mm sensing distance unshielded	RI01204SNC
M18 Dia. 5mm sensing distance shielded	RI01805FNC
M18 Dia. 8mm sensing distance unshielded	RI01808SNC
M30 Dia. 10mm sensing distance shielded	RI03010FNC
M30 Dia. 15mm sensing distance unshielded	RI03015SNC
M40 Dia. 20mm sensing distance shielded	RI04020FNC
M40 Dia. 25mm sensing distance unshielded	RI04025SNC
Switching amplifier/relay for NAMUR sensors plug in	SC300/*-SP
Control relay for rhomberg photo electric sensors plug in	SC410/*-SP
11 Pin DIN rail base	S3B

Add "-MTP" for sensors with plug instead of cable & request pricing.

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac.

Rhomberg

General purpose capacitive proximity sensors

Rhomberg 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



Rhomberg capacitive prox 2 wire AC

- 20-250Vac, 50/60Hz
- Series & parallel connection compatible
- 400mA max load current

Description	Item no.
M18 Dia. 5mm sensing distance shielded AC 2 wire	RC11805F**
M18 Dia. 10mm sensing distance unshielded AC 2 wire	RC11810S**
M30 Dia. 10mm sensing distance shielded AC 2 wire	RC13010F**
M30 Dia. 20mm sensing distance unshielded AC 2 wire	RC13020S**

Add "MTP" for sensors with plug instead of 2m standard cable & request pricing.
 ** Specify NO or NC.

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.



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Rhomberg

Monitoring relays

Rhomberg 3-phase sequence/failure/asymmetry relays

- Protects against phase imbalance or asymmetry, phase loss or phase reversal
- Insensitive to regenerated EMF
- Sensitivity (Nps) adjustment
- Loss of neutral detection in SP431



Description	Item no.
Ph Fail, Ph Seq, Ph Asy detection with 1 C/O & LEDs	AP430/*S
Ph Fail, Ph Seq, Ph Asy detection with 2 C/O & LEDs	AP430/*D
Ph Fail, Ph Seq, Ph Asy detection Plug In 1 C/O & LEDs	SP430/*-SP
Ph Fail, Ph Seq, Ph Asy detection Plug In 2 C/O & LEDs	SP430/*-DP
Ph Fail, Ph Seq, Ph Asy loss of neutral detection plug in	SP431/*-SP
Ph Fail, Ph Seq detection plug in with LEDs	SP433/*-SP
11 Pin DIN rail base	S3B

* Specify voltage: 110, 115, 220, 380, 400, 415 & 525Vac.

Rhomberg current relays/monitors (AC & DC) single phase

- 11 Pin plug in or DIN rail mount relay (with plug in terminals)
- Single pole & 2 pole configuration
- 250Vac/10A relay
- Slimline & Slimline-D series



Description	Item no.
Current monitor 5 Amp AC/DC selectable with time delay plug in	SP103/*-SP
Current monitor for DC shunt selectable with time delay plug in	SP104/*-SP
Current window comparator AC adjustable with time delay plug in	SP123/*-SP
single phase reverse power monitor for ac current	SP510/**-SP
11 Pin DIN rail base	S3B

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac.

** Specify voltage: 24, 110, 240, 415Vac.

Rhomberg voltage monitors (AC & DC) & frequency relays

- 11 Pin plug in or DIN rail mount relay (with plug in terminals)
- 250Vac/10A relay
- Slimline & Slimline-D series

Description	Item no.
Voltage Comparator adj delay DPDT 415VAC	AP231/400AD
Overvoltage & undervoltage monitoring relay, 24VDC	AP224/24VDCS
Overvoltage & undervoltage monitoring relay, 240VAC	AP224/240VACS
Voltage Monitor 1-Ph Selectable with Time Delay Plug In	SP201/*-SP
Voltage Window Comparator 1-Ph selectable with time delay plug in	SP221/*-SP
Voltage Window Comparator 3-Ph selectable with time delay plug in	SP231/**-SP
Voltage Window Comparator 3-Ph + N over & under	SP232/**-SP
Frequency Monitor Over & Under 50Hz	SP320/**-SP
11 Pin DIN rail base	S3B

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac

** Specify voltage: 24, 110, 240, 415Vac.

Monitoring relays

Rhomberg bases for monitoring relays

- Shrouded terminals



Description	Item no.
11 Pin DIN rail socket / base	S3B

Rhomberg motor/pump protection relays

- Borehole pump protection
- Auto-calibrating
- Overload (blocking/closed valve) protection
- Underload (running dry) protection with auto restart timer
- Max 4kw without external CT
- Over & under voltage protection
- Phase sequence/failure monitoring
- Liquid level control



Description	Item no.
Motor/pump protection relay 240Vac single phase	MP820/240AS
Motor/pump protection relay 400-415Vac three phase	MP830/415AS

Rhomberg

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.



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.



Rhomberg

Timers

Rhomberg multi-function DIN rail & plug in

- Delayed-on, interval, recycling functions 22.5mm size
- 0.2 Sec. To 100 hours
- DPDT Relay (5A per contact)



Description	Item no.
0.2 Sec - 100 Hrs 2 Timed Contacts DIN Rail	AT100/**D
0.2 Sec - 120 Sec 2 Timed Contacts 11 Pin	ST100/**DP
22 Sec - 240 Min 2 Timed Contacts 11 Pin	ST101/**DP
0.2 Sec - 100 Hrs 1 Timed Contact DIN Rail	AT110/**S
0.2 Sec - 120 Sec 2 Timed Contacts 11 Pin (Hold or Pulse Reset NPN)	ST110/**DP
22 Sec - 240 Min 2 Timed Contacts 11 Pin (Hold or Pulse Reset NPN)	ST111/**DP
11 Pin DIN Rail Base (Accepts Retainer Clip with Plug in Timers)	S3B

* Specify voltage: 12, 24Vdc, 24, 110, 240, 415Vac.

** Specify voltage: 30Vdc, 250, 415Vac.

Rhomberg asymmetrical recycling din rail & plug in

- Asymmetrical recycling - on or off cycle first
- DPDT Relay (5A per contact)
- DIN Rail & plug in 22.5mm size



Description	Item no.
0.2 Sec - 240 Min 2 Timed Contacts DIN Rail	AT200/**D
T1 = 0 - 120s, T2 = 0 - 120s 2 Timed Contacts 11 Pin	ST200/**DP
T1 = 0 - 120s, T2 = 22s - 240m 2 Timed Contacts 11 Pin	ST201/**DP
T1 = 22s - 240m, T2 = 22s - 240m 2 Timed Contacts 11 Pin	ST202/**DP
T1 = 22s - 240m, T2 = 0 - 120s 2 Timed Contacts 11 Pin	ST203/**DP
Multi Function Type 0.2 Sec - 120 Sec 1 Timed Contact 11 Pin	ST210/**SP
11 Pin DIN Rail Base (Accepts Retainer Clip with Plug in Timers)	S3B

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac

** Specify voltage: 30Vdc & 250, 415Vac

Rhomberg special function timers

- No power delayed off functions - 'true off delay'
- Multi start attempt timer for repeated starting attempts of standby generator sets with start failure alarm output
- Slim housing (22.5mm)



Description	Item no.
0.2 Sec - 120 Sec No Power Delay OFF Timer 1 Timed Contact 11 Pin	ST300/**SP
22 Sec - 240 Min No Power Delay OFF Timer 1 Timed Contact 11 Pin	ST301/**SP
Multi Start Attempt Timer 1 C/O	AT500/**S
11 Pin DIN Rail Base (Accepts Retainer Clip with Timer)	S3B

* Specify voltage: 12, 24Vdc & 24, 110, 240, 415Vac.

Rhomberg star delta timers

- Star time adjustable up to 60 sec. (30 Sec. Max adjustment available on request)
- Pause time 75msec (50msec available on request)
- Relay rests in "centre-off" position during pause & power off state
- 5A Relay output



Description	Item no.
Star Time Adjustable Pause Time 75msec Fixed 1 C/O DIN Rail	AT130/**AS
Star Time Adjustable Pause Time 75msec Fixed 1 C/O Plug in	ST130/**-SP
11 Pin DIN Rail Base (Accepts Retainer Clip with St310)	S3B

* Specify voltage: 110, 240, 415Vac

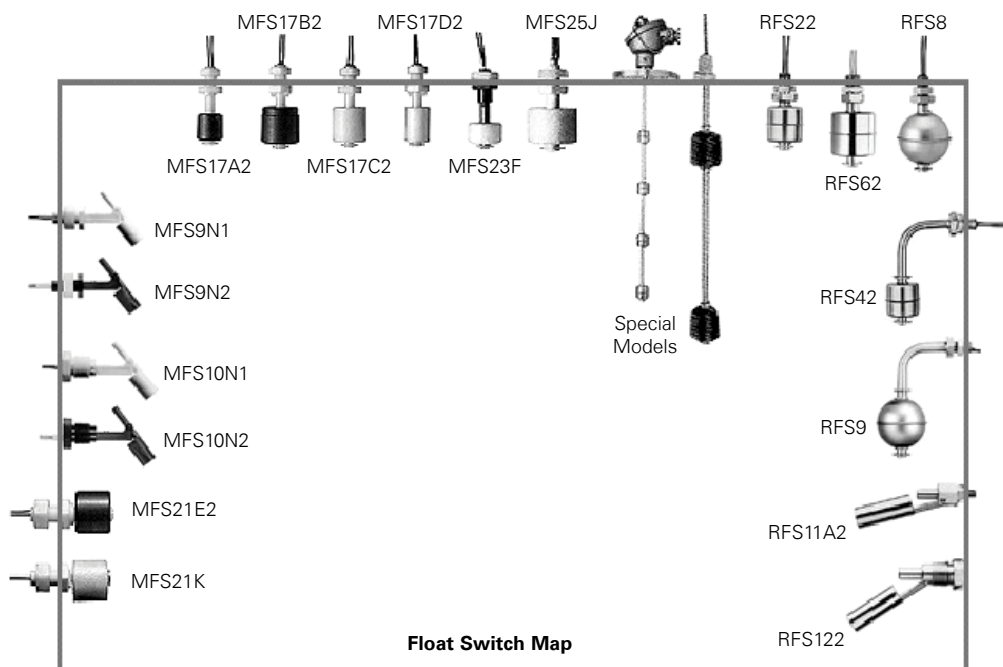
Riko

Riko float switches

- Stainless & plastic type floats
- Horizontal & vertical types
- 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



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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.



Kyoritsu test and measurement

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

Model 1052

- Top accuracy - 0.09% basic DC accuracy
- Dual display 6,000 counts, Bar graph with 31 segments
- True-RMS or MEAN value detection modes
- Internal memory - data download & live monitoring
- Wide operating temperature range (from -10 to +55°C)
- Complies with IEC 61010-1 CATIV 600V, CATIII 1000V



2012R



1052

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 digital multimeter VAT IV 300V, True RMS, AC/DC V, AC/DC A, ohm, Hz, uF, diode	1021R
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

Kyoritsu test and measurement

Analogue multimeters

Model 1109S

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

Description	Item no.
Kyoritsu analogue multimeter with dB & hFE	1109S
Kyoritsu analogue multimeter with temperature & continuity buzzer.	1110



1109S

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

Model 2127R

- True-RMS, 1000A AC
- Peak Hold for inrush current
- ø33mm Tear Drop shaped jaw easy to use in tight places
- Safety standard IEC 61010-1, CATIV 300V/ CATIII 600V

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
Kewtech digital clamp meter AC-1000A AC, 33mm Dia. TRMS	2117R
Kewtech digital clamp meter AC-1000A AC, CAT IV 300V, 33mm Dia. TRMS	2127R
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



2200



2127R



2046R

Clamp meters AC/DC

Model 2046R

- CAT. IV 600V rating
- Current up to 600A AC/DC
- Voltage up to 600V AC/DC
- Continuity buzzer
- Frequency, capacitance and temperature measurement
- LED Non-contact voltage detection
- Display: 6039 counts with bar graph
- Lowest resolution 0.1A

Description	Item no.
Kyoritsu digital clamp meter AC/DC, True RMS, 600A AC, 33mm Dia., CAT. IV 600V.	2046R
Kyoritsu digital clamp meter AC/DC, 1000A AC, CAT. IV 600V.	2055
Kyoritsu digital clamp meter AC/DC, True RMS, 1000A AC, 40mm Dia., CAT. IV 600V.	2056R
Kewtech digital clamp meter AC/DC-400A AC, 30mm Dia.	KT203
Kyoritsu digital clamp meter AC/DC-2000A AC, 55mm Dia.	2003A
Kyoritsu digital clamp meter AC/DC True RMS, 2000A AC, 55mm Dia.	2009R
Kyoritsu digital clamp meter AC/DC miniature-300A AC, 24mm Dia.	2033
Kyoritsu digital clamp meter AC/DC open slot-100A AC, 10mm Dia.	2300R

Clamp meters DC milliamp

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
Kyoritsu 2510 DC milliamp process clamp meter, memory and bluetooth features	2510



2500

Kyoritsu Test and measurement

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

Model 2431

- Frequency Selector Switch to eliminate the effect of harmonics.
- Auto power-off function
- Rotary switch for easy one finger power on and range selection.

2434



2431



Description	Item no.
Kyoritsu digital clamp meter AC leakage, 40mm Dia., AC 100Amp., Filter, Peak 10ms.	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 - 250V/500V/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

Model 3007A

- Bar graph to display insulation resistance.
- Displays the value of external AC voltage
- Auto null function
- Trac-Lok mode to conserve battery life on insulation and continuity tests
- Live circuit warning beeper.
- 200mA continuity measuring current, Minimum 1mA current on insulation tests to IEC 61557.

3132A



3007A



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

High voltage insulation testers

Model 3124

- Permits a wide range of insulation testing up to 100GΩ at variable test voltage from 1kV to 10kV.
- DC voltage output for recorders.
- Output voltage is shown on the digital display.
- After tests, automatically discharges the charges stored in the circuit under test.
- Operated by rechargeable Nickel-Cadmium batteries.

3124



Description	Item no.
Kyoritsu analogue HV insulation tester 2.5kV	3121A
Kyoritsu analogue HV insulation tester 5kV	3122A
Kyoritsu analogue HV insulation tester 5/10kV	3123A
Kyoritsu analogue HV insulation tester 1 - 10kV	3124
Kyoritsu digital HV insulation tester 5kV	3125
Kyoritsu digital HV insulation tester 5kV with DAR & filter function	3126
Kyoritsu digital HV insulation tester 12kV with PI, DAR, DDI & SV	693128

Kyoritsu Test and measurement

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 digital earth tester, IP67 waterproof, cable reel set	4105DL
Kyoritsu digital earth tester, IP67 waterproof (Hard Case)	4105DL-H
Kyoritsu analogue earth resistance tester 4 wire	4106
Kyoritsu digital earth tester clamp	4200



4105A

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

Model 4140

- Anti-Trip Technology (ATT) for complete trip free Loop testing on all RCDs rated 30mA and above.
- Dual Display allows simultaneous measurements like Loop & PFC/PSC.
- Two wire connection for Loop L-L, L-N and PSC testing
- Phase rotation, Voltage and Frequency measurements.
- Water and Dust proof (IP54)

Description	Item no.
Kyoritsu digital loop impedance tester with PSC	4118A
Kyoritsu Loop/PSC/PFC tester with ATT, phase rotation, V & Hz, IP54	4140
Kewtech KT45 Loop/PSC with ATT	69KT45
Kewtech KT60 Loop/PSC/RCD with ATT	69KT60



4118A



4140

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

Description	Item no.
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 ATT	696016
Kyoritsu digital multi function tester (4 in 1) PV, insulation, earth and volts	6024PV



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 with Auto Ramp.	5406A
Kyoritsu digital RCD/ELCB tester 100 – 400V operating voltage. Battery operated	695410



5406A



6205

Kyoritsu Test and measurement

Portable appliance testers

Model 6205

- Suitable for performing tests required by AS/NZS3760
- Incorporates Class I, Class II, Insulation (250/500V), Run leakage, Load current, Polarity, RCD & Voltage test
- Internal memory with option for tag printer
- USB for data transfer

Description	Item no.
Kyoritsu 6205 portable appliance tester, hand held, battery powered	6205*
Kyoritsu 696201A portable appliance tester	696201A

*Available Q2 2018



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)
- 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
- Complies with IEC61000-4-30 Class S



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

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



695020-00

Description	Item no.
Kyoritsu current/voltage logger (no clamps)	695020-00
Kyoritsu current/voltage logger with voltage sensor (no clamps)	695020-01

Kyoritsu Test and measurement

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
- Penlight (white LED)
- IP65 rating
- IEC61010-1CAT.IV 600V/ CAT.III 690V

Model 5711

- Audible buzzer & visual red LED indicates presence of AC voltage
- Auto check function for battery and internal circuit
- Dual sensitivity - Low(Lo) sensitivity helps to recognise the Phase from Neutral in sockets. High(Hi) sensitivity for checking the presence of voltage from a further distance.
- Self-function test when the button is pressed. If abnormality is found during the test, it gives 3 short beeps, 3 long beeps, 3 short beeps
- Bright white LED light integrated into the tip



KT170-AU



5711

Description	Item no.
Kewtech voltage tester with phase checking & continuity	KT170-AU
Kyoritsu non-contact voltage tester, dual range 20-1000VAC 50/60Hz	5711

Test kits

Model 6141

Electrical test kit includes:
3132A insulation tester

1009 digital multimeter
KT200 AC clamp meter

Description	Item no.
Kyoritsu contractor kit containing models 3132A/1009/KT200	6141
Eaton young apprentice kit containing models 2046R/1009/KT170-AU	614YAK



6141

Phase rotation meters

Model 8035

- Non contact phase rotation testing
- The insulated crocodile clips for cables from

ø2.4 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



8035

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



5202

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



5510



698212USB



8115



8130



8125



8923



7154B

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

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

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	Leakage current	✓	✓	✓	8130-01
Flexible clamp sensor 3CH 1000A Ø 110mm		✓	✓	✓	8130-03
Leakage clamp sensor 1000mA max. Ø 24mm		✓		✓	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

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

Sunon, professional provider of thermal solutions.



Sunon DC & AC fans, blowers and coolers

Sunon designs and manufactures a full range of high-performance fans, blowers and coolers, and is committed to supplying the widest selection of quality axial fans and blowers.

This includes DC brushless fans, micro DC blowers, CPU coolers, graphic card coolers and AC fans. Sunon manufactures some of the industries smallest, thinnest and most power efficient fans and blowers in sizes ranging from 8mm to 250mm in outside diameter, and from 4mm to 38mm in thickness. There are more than 700 different models are available.

The fans, blowers and coolers find application in a wide range of industries and products. Sunon products are used in many of the world's most popular markets, including medical and manufacturing equipment, as well as in personal computers, workstations, servers, networking hubs, scanners, printers, projectors and in other office equipment, and is equally at home in the appliance market, with applications for refrigerators and air conditioners.

SUNON®

CGLine+



All safety luminaires are important. They help protect the life and health of people. Emergency lighting must be fully functional to provide protection in case of failure of the general lighting

EATON

Powering Business Worldwide

Even if a single safety luminaire or exit sign luminaire fails, depending on the particular local conditions, there is a significant risk of accidents, for example in a stairway. For this very reason legislation requires continuous testing of the emergency lighting.

An additional duration test for the duration of the rated operating time must be performed once a year. This test checks whether there is still sufficient battery capacity available. Eaton has implemented automatic test functions in all CGLine+ self-contained luminaires. A microprocessor monitors and controls all functions of the luminaires automatically. The required duration tests, are performed automatically.

The CGLine+ Web-Controller initiates the tests, displays the results centrally and stores them with ease in a paperless form in an electronic log book. The electronic log book can be printed off and shown on demand.

Emergency lighting

CrystalWay exit sign luminaire



CrystalWay is an exclusive escape sign panel luminaire with LED technology, unobtrusive, thin & slim electronic base (Height: only 22mm). It has a concise design with highly transparent frame and replaceable inner screen-printed pictograms. The CrystalWay has reduced battery costs on account of especially low power consumption, and low operating costs on account of low effective power of 3.7 W only.

- Minimum maintenance effort and increased safety via use of LEDs with high service life (50,000 hours)
- Optimal recognition via high luminance of white contrast colour > 500 cd/m²
- Integrated CGLine+ monitoring capability
- Integrated automatic self-test function
- Includes set of pictograms (arrow right, left, centre, blank)
- Options: Housing for ceiling recessing
Wire suspension
Pictograms for wall mounting
Central battery system

GuideLed exit sign luminaire



Longevity, instant start-up, high efficiency and small construction size are the features that make LEDs especially suitable for emergency and safety lighting. But precise matching along with low temperatures and low operating current guarantees high luminous efficacy with maximum service life.

- Lightguide technology for perfect illumination in line with standards and for a special slender design
- High efficiency LEDs for a higher operational safety and especially low power consumption
- Versatile installation options in a continuous design without visible screw fastenings
- Minimum service requirement due to high service life of the LEDs (50,000 h)
- Lithium batteries as standard
- Integrated CGLine+ monitoring capability
- Integrated automatic self-test function
- Options: Housing for ceiling recessing
Wire suspension
Pictograms for wall mounting
Central battery system

Emergency lighting

LED Kwiklite - KLED

The new generation Kwiklite offers one of the highest classifications in today's market. Available as a LED fitting, the new generation Kwiklite provides a solution to most applications.

A unique combination of a powerful down light and evenly illuminated exit panel provides an exceptionally high level of threshold light over the surrounding floor area, minimising the quantity of additional emergency luminaires required.

- Maintained
- One box solution - pictograph
- Long life, 50,000 hour energy efficient 3W LED
- 24m viewing distance
- IP65 enclosure available
- Slide on universal mounting bracket for wall or ceiling mount
- Options: Wire guard
Cantilever bracket
Legend kit - EXIT



Economy LED Kwiklite - KLEDE

KLEDE is an attractive 3W LED exit sign designed to provide performance, uniformity and low energy usage at an 8W fluorescent price point.

- Maintained
- One box solution - pictograph
- Long life, 50,000 hour energy efficient 3W LED
- 24m viewing distance
- Slide on universal mounting bracket for wall or ceiling mount
- Options: Wire guard
Cantilever bracket
Legend kit - EXIT
IP65 enclosure
CGLine+
Central battery system



Velos LED Blade

Velos blade emergency exit sign incorporates an intelligent technology that monitors the LEDs light source, upon failure of an LED the remaining LED light output is increased to maintain luminance on the legend. With class leading performance and attractive modern styling, the Velos utilises cutting edge materials and LED light source providing a functional yet stylish emergency exit sign.

This blade emergency exit sign uses the latest innovations in plastic material to provide superior luminance across the face of the legend and provides improved visibility in low level light situations (high level smoke).

- Maintained
- One box solution - pictograph
- Long life, 60,000 hour energy efficient 3W LED
- 24m viewing distance
- Recess mount
- Options: Legend kit - EXIT
Retrofit faceplate
Surface mount enclosure
CGLine+
Central battery system



Velos LED Surface Mount Blade

Velos blade uses the latest innovations in plastic material to provide superior luminance across the face of the legend and provides improved visibility in low level light situations (high level smoke).

Velos, with class leading performance and attractive modern styling, utilises cutting edge materials and LED light source providing a functional yet stylish emergency exit sign. Velos incorporates an intelligent technology that monitors the LEDs light source, upon failure of an LED the remaining LED light output is increased to maintain luminance on the legend.

- Maintained
- 24m viewing distance
- One box solution - pictograph
- Long life, 60,000 hour energy efficient 3W LED
- Surface mount - ceiling, wall and slope surface
- Recess mount - ceiling, wall and slope surface
- Options: CGLine+
Central battery system



Emergency luminaires

UFO LED

recessed UFO LED is a stylish, modern and easy to install non maintained luminaire suitable for both new and retrofit applications.

LED technology offers new possibilities for emergency lighting, allowing luminaires to be more discreet, use less energy, have a lower environmental impact and require dramatically less maintenance than before.

- Non maintained
- Recessed
- LED
- Superior light output
- Versatile construction
- Theatre option
- Choice of spinning assembly sizes
- Ideal for both new & retrofit applications
- Options: CGLine+ Central battery system

UFO surface mount

UFO-LED surface mount has been designed to ease installation, reduce power consumption and minimise maintenance,

- Non maintained applications
- Surface mount LED
- Superior light output
- Modern light weight construction
- Ideal for both new & retrofit
- Available as a complete luminaire or conversion kit for existing UFO-LED's
- Options: CGLine+ monitored Central battery system

ETBT battens

ETBT battens are designed for wall, ceiling or suspended indoor applications and are particularly suitable for high ceiling warehouses, halls or underground car parks where extra width is required to cover junction boxes with standard wide body size is ideal retrofit for existing T8 T5 wide body project battens

Mains and emergency battens with reliable high output LED also offer a variety of option in the form of diffused, wire guards luminaires with motion sensor technology to reduce overall energy usage in standby application such as stairwell, corridor, plant room.

- IP20
- Supplied with diffuser or wire guard
- Suitable for direct fix, trunking, conduit or chain suspension
- BESA entries across range
- End cable entry via knockout in bare, diffused & wire guard
- Options: Mains only 220/240VAC 50/60Hz Self-contained emergency CGLine+ Computer monitored system Central battery system Motion sensor

VersaLite

VersaLite is a versatile general purpose, IP65 rated, K10 weatherproof luminaire Linear LED light engines and efficient control gear provide class leading performance; they are protected by a polycarbonate housing and prismatic diffuser delivering a uniform lit appearance. 2 hour non-maintained lithium battery emergency version available.

With matching mains, emergency and with optional motion sensor, VersaLite delivers choice and flexibility to suit a wide range of applications

- Fixture level L70 50,000hrs
- Fast fix mounting clips for rapid installation
- Uniform lit appearance, no shadowing
- 4650 lumen output (42W)
- Impact and heat resistant prismatic polycarbonate diffuser secured with anti-tamper diffuser clips
- High efficiency of 110 (lm/cW)
- Lithium batteries
- Options: Mains only 220/240VAC 50/60Hz Self-contained emergency CGLine+ Computer monitored system Central battery system Motion sensor



Emergency luminaires

LED Gemini Junior flood light

Combining flexibility and ease of installation, Gemini Junior LED floodlight represents exceptional value for money.

This competitive beam projector is suitable for a wide variety of installations, with a choice of top or side mounting of the lamp heads, with multi directional swivel and tilt facility ensuring that exactly the right aiming angle is achieved.

Twin LED's provide peace of mind, covering individual lamp failure in addition to mains and charging status. When cost is paramount, Gemini Junior is an excellent choice for factory and high ceiling applications.

- Non-maintained
- Exceptional performance
3 hour duration self-contained emergency luminaire
- Can be used for high risk task area applications
- NiCd batteries for reduced weight and carry handle for ease of install
- 20mm knock out on both sides for cable entry
- Multi-direction lamp heads for application
- 2 high intensity LED heads and twin LED indicators
- Options:
CGline+ monitored
Central battery system



Fulleon signalling devices

At Eaton we provide optimised protection of people, assets and reputation for business continuity in a variety of different product categories. As a leader in life safety for decades, our signalling devices are developed to comply with industry codes and standards such as AS7240-3, AS7240-11 and AS7240-23. Setting the new standard, our signalling devices provide best-in-class efficiency and clear and intelligible communications.

RoLP Sounder



- Market leading conventional sounder
- Used across many functions: security, general signalling and process alarms

RoLP Solista Sounder beacon



- Low current LED sounder beacon
- Device is extremely efficient
- Ideal for notification purposes where sounder circuit capacity is limited

RoLP Solista Maxi Sounder beacon



- Enhanced version of the RoLP Solista providing higher sound output on six key tones
- Suitable for use where higher noise levels require a more powerful sounder

Asserta Mini Sounder beacon



- 105dB(A) output, IP66 rating
- Low current consumption
- Ideal for general signalling in industrial environments

Asserta Midi Sounder beacon



- 112dB(A) output, IP66 rating
- Low current consumption
- Ideal for general signalling in industrial environments

Asserta Maxi Sounder beacon



- 120dB(A), IP66 rating
- Low current consumption
- Ideal for general signalling in industrial environments

Solista Maxi beacon



- Allows the users a choice between economy and performance
- Economy mode performs extremely efficiently requiring as little as 3mA
- Can be switched to attain a much higher light output

Fulleon Solista Xenon beacon



- Flexible solution, offering wide operating voltage and automatic synchronisation
- Powered by Xenon technology
- Cost effective solution that can compliment audible alarms in high noise environments

Flashni Base sounder



- Audible and visual device which requires one single installation point
- Greatly reduces installation cost and is less obtrusive than two devices
- Versions are available with the sounder and beacon linked, or with separate terminals

The safety you rely on.



CROUSE-HINDS SERIES



Powering Business Worldwide

Our Crouse-Hinds series products stand for safety in the harshest of environments when power management is most critical. While it all began with the Condulet, the Crouse-Hinds series portfolio has grown into the premier name for comprehensive solutions for high-consequence harsh and hazardous environments.

Crouse-Hinds series solutions round out a complete Eaton portfolio that brings you reliable, efficient and safe electrical power management solutions.

Industrial & hazardous lighting solutions

Crouse-Hinds series IHB high bay



Crouse-Hinds series IHB LED luminaires are the perfect replacement for 250W-1,500W+ HID and 2-10 lamp T8, T12 and T5HO fluorescent high bay fixtures. Designed for light industrial locations that require continuous and consistent light levels, require frequent on-and-off of lights and are difficult to re-lamp.

- High efficacy: up to 117 LPW
- Complete portfolio replaces 250W-1,500W+ HID and 2-8 lamp T8, T12 and T5HO fluorescent lamps
- Customer payback of 1-3 years and lower total cost of ownership compared to HID and fluorescent lighting 80 CRI
- Up to 67% energy savings over traditional HID fixtures
- Damp location rated
- Versatile mounting options
- Optional 0-10V dimming capabilities
- Operating ambient: -40°C to +60°C

Crouse-Hinds series Champ® Pro PFM



Crouse-Hinds series Champ® Pro PFM LED floodlights are designed to provide full-spectrum, crisp, white light. With eight versions available from 3,000 to 50,000 lumens, the Champ Pro PFM floodlight provides years of high quality lighting and maintenance-free performance. Ideal for indoor and outdoor wall or pole mounted area lighting in manufacturing plants, mine sites, processing areas, platforms, loading docks and parking areas.

- Reduced footprint - PFM3L through PFM13L models are now 25% smaller and 10 lbs. lighter
- High efficiency LEDs and drivers provide over 100 lumens per watt
- Up to 70% reduction in energy used versus equivalent HID fixtures
- Engineered for long life in extreme ambients. 3L-13L models rated for 60,000 hours in -40°C to 65°C ambients
- 25L-50L models rated 60,000 hours in -40°C to 55°C ambients
- 7x6 and 3x3 floodlight pattern options provides maximum light distribution
- Full frame yoke utilizes the SFA6 slipfitter and SWB6 wall mount bracket, making it ideal for retrofit or new installations

Industrial & hazardous lighting solutions

Crouse-Hinds series Champ® Pro PVM

Crouse-Hinds series Champ® Pro PVM luminaires are designed to provide full spectrum, crisp, white light with custom Type I, III and V distribution. Nine versions of the PVM series are available, providing ideal solutions for a wide range of heavy industrial, non-hazardous applications, including areas with mounting heights up to 60 feet, type 4X, marine, wet locations and hose-down environments, and locations requiring continuous and consistent light levels in extreme ambient temperatures.

- Rated life of 60,000 hours @ 55°C operating ambient and 24/7 continuous operation for 365 days. Economic life of 170,000 hours @ 25°C ambient
- Cool white (5000K, 70 CRI) and warm white (3000K, 80 CRI)
- Energy-efficient technology - up to 77% energy savings over HID fixtures
- High efficiency drivers provide reliable operation in the harshest environments. Various AC and DC input voltage options are available to suit virtually any drive requirement
- Advanced heat sink design ensures low LED junction temperature and sustained lumen performance
- Available with lever lock connectors and standard three pole terminal block for easy installation
- Compact modular fixture attaches onto existing Champ mounting module



Crouse-Hinds series LEL pendant

Crouse-Hinds series LEL Pendant luminair is used in heavy industrial, chemical, petrochemical or pharmaceutical facilities, platforms, shipyard, electric power, loading docks, and wastewater treatment.

- High Efficient & Energy saving - Up to 66% energy-saving comparing to HID luminaire.
- Perfect Temperature and Optical Performance - Robust and innovative heatsink design ensures long life in extreme environments.
- Easy wiring maintenance - Integrated junction box for easier wiring maintenance
- Industry-Best Safety Reliability - Meet the explosion-protection requirements in zone 1, robust design with extremely low profile and weight (<5kg).
- Great mounting Flexibility - U shape yoke mount provides the greatest mounting flexibility.



Crouse-Hinds series Endure™

Crouse-Hinds series IP66, stainless steel Endure™ LED Luminaire features the patented, modular LED LightBAR™ technology. The Endure™ LED Luminaire is available with one or two LightBAR™ configurations in Type 2 or Type 5 distributions. Ideal for a variety of complex, non-hazardous applications such as mining, food processing, marine, wastewater treatment, heavy manufacturing, and general wash-down areas.

- White light - provides superior color rendering and ambient clarity. Optics are precisely designed to shape the distribution, maximizing efficiency and application spacing
- Energy efficiency and longer life - 50,000 hours rated life and up to 60% more energy-efficient than the 70W high pressure sodium equivalent
- Reduction in light pollution - controlled distribution of light means far less light loss
- IP66 ingress protection rating and -30°C to 50°C ambient temperature rating - ensure trouble-free operation in a variety of harsh and complex applications

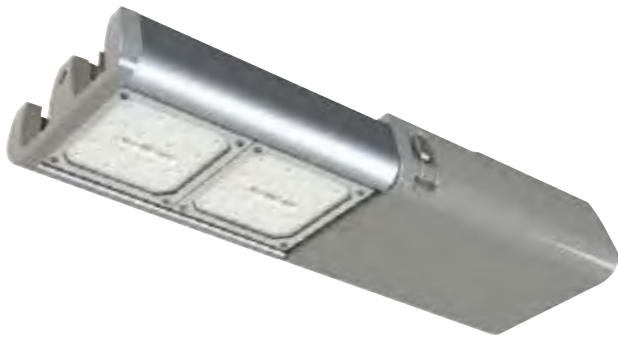


Industrial & hazardous lighting solutions

Crouse-Hinds series Navion™

Crouse-Hinds series Navion™ area, site and roadway LED luminaire combines world class optical performance, energy efficiency, and outstanding versatility to meet the requirements of any area, site or roadway lighting application. Heavy-duty construction and easy installation features make the Navion luminaire the right choice for site lighting applications and municipal streets. UL/cUL listed for wet locations, optional IP66 enclosure rating available.

- Tool-less entry with hinged, removable power door for easy maintenance
- Rugged, die-cast aluminum housing
- Operates in -40°C to 40°C ambient temperatures (optional 50°C high ambient configuration)
- 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation
- Optional occupancy sensor and wireless control and monitoring system



Crouse-Hinds series HLL linear LED lighting

Crouse-Hinds series HLL series is an extremely robust linear LED luminaire in an aluminum housing with a high impact polycarbonate diffuser for use in Zone 1, 2, 21 and 22 arduous environments.

The use of high quality LED chips, along with Crouse-Hinds' industry knowhow in extracting heat from electrical products in hazardous, gaseous environment, ensures benchmark longevity for HLL in operation. With the added benefits of energy savings, lower maintenance, overall lower cost of ownership and importantly, contributes to a greener environment.

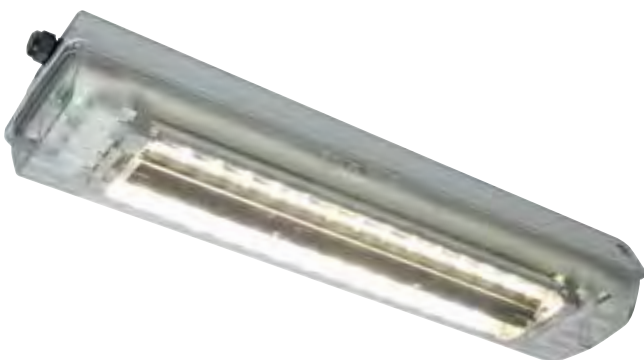
- Enhance safety and productivity - Instant illumination and restrike. T5/6 temperature rating to safely operate in the most hazardous environments.
- High efficient & energy saving - High efficiency LED & drivers optimize lumen performance.
- Easy installation - Suitable for all of existing linear fluorescent mounting brackets.
- Quick & easy maintenance - Easy access to drivers and wiring.
- Long life - Patented thermal design ensure long life in extreme environments.



Crouse-Hinds series eLLK series luminaire

Crouse-Hinds series fluorescent lamp series eLLK is made in glass mat reinforced polyester, suitable for Zone 1/Zone 2/ Zone 21/Zone 22 hazardous application areas. With its excellent mechanical properties and stability features, it is ideal for use as general or task lighting in areas where low mounting heights or other space restrictions exist.

- Bipin fluorescent lamp
- EOL compliance
- Central locking
- Hinged diffuser with double sided 20 latching points central locking system
- Built in safety switches
- Zone 1 twin circuit electronic ballast
- Through wiring
- >100K hours electronic ballast longevity proven in service
- Direct retrofit with CEAG LED modules on EVG 09 ballast
- LED ready – retrofit-able on site with plugin (LED modules purchased separately)



Crouse-Hinds series lighting solutions

Ephesus Arena Pro

The Arena Pro LED lighting solution by Ephesus takes sports lighting to a whole new level. Our innovative optics and advanced color-tuning technology can create a warmer, richer light ideal for basketball and other court sports, or a cooler light more desirable for hockey. What's more, the Arena Pro technology can easily be adjusted to deliver picture perfect lighting for any other special event your arena hosts.

- **High CRI**
Renders more true-to-life colors.
- **Tunable Technology**
Tunable CCT for multi-use facilities that require a single light for use with multiple events. Tunable CRI/color spectrum reduces need for filtering (as required by HD broadcast) and results in the clearest possible picture while maintaining foot candles delivered and simplifying setup time for camera crews.
- **Enhanced Lensing and Options**
More precise optics reduce stray light and allow for dramatic lighting cutoff (per NBA specification). Optional scoreboard visor.
- **Exceeds National HDTV Requirements**
Zero flicker up to 8K frames per second (for super slowmotion recording).
TLCI greater than 65.
- **Ultra-Low EMI Noise Generation**
No interference with other building communication systems.



Ephesus Stadium Pro

Bring the dynamics of the game to life with consistent and precisely delivered light that meets the stringent demands of international HDTV broadcasting, digital photography and slow-motion recording. Get the Ephesus solution that will give teams, players and legions of their fans an all-around exceptional event experience. The Stadium Pro is the ultimate light for versatility and the best player, fan and broadcast experience

- Color tuning options from 4000-6500K (4800-5600K to maintain FC)
- Low stand-by current for minimal power consumption
- Ability to generate unique fan experience effects
- Multi-sport options to optimize color and illumination
- Integrated laser mount for precise aiming



Ephesus All Field series

The All Field Series is the ideal solution for professional caliber outdoor sports lighting with features designed with municipal, high school, collegiate and semi-professional outdoor sports venues in mind. Offering versatility for any outdoor sport including football, soccer, baseball, lacrosse and field hockey, the All Field light delivers maintenance-free, professional sports lighting with a great return on investment

- Custom-engineered optics direct light precisely where needed while minimizing glare.
- Multiple control options available for operational flexibility and fan experience effects.
- Rugged, weather-tight design ensures durability even in harsh environments.
- Versatile mounting bracket is designed for ease of installation in new or retrofit situations.
- Telemetry to monitor health and status of each light is enabled through Bluetooth Low Energy capabilities.
- Ultra-low EMI noise generation eliminates interference with surrounding electrical systems.
- Solid-state design means no moving parts and nothing to wear out or replace, providing maintenance-free operation for hundreds of thousands of hours.



Back-up protection solutions.



Powering Business Worldwide

Eaton's Power Quality solutions provide the confidence that power problems will not disrupt your systems, data and operation. Delivered through more than 50 years of solid performance, in-depth knowledge of customer applications, continuous innovations and world-class services. Eaton solutions have been recognised by UPS users and industry experts for delivering highest customer value and satisfaction, as well as for demonstrating most insight into customer needs among all UPS vendors

Single phase UPS

Eaton 3S UPS



Protection against power problems

The Eaton 3S UPS helps to protect your computer equipment in case of everyday events such as lightning strikes, storms, over-demand on the utility grid, accidents, and natural disasters knocking out power without warning. In the event of a total blackout, the unit provides sufficient battery backup time to last through most 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.

The 3S also protects telephone, broadband and Ethernet line from "back door" power surges. The shutdown software makes it possible to automatically save your work and shut down your application without losing any data. Once the power is restored, you can continue working exactly where you left off

Easy integration and installation

An attractive design and glossy finish make the 3S a perfect fit for the modern office environment. The 3S comes with a fixed input cable and 6 Australian outlets for easy connection of typical computer configurations with peripherals.

The 3S features a HID-compliant USB port (cable supplied), for automatic integration with common operating systems (Windows/Mac OS/Linux). The compact unit fits on or under your desk or can be mounted on a wall, and the easy-to-replace battery helps to extend UPS service life.

Ideal for protecting

- Computers and peripherals
- Broadband modems (internet and TV)
- IP telephony equipment
- POS equipment

Technology: Series 3 (Standby)
Rating: 550 & 700VA
Voltage: 240Vac
Backup time: Typical 5 min
Configuration: Powerboard style

Technical specifications

Rating (VA/W)	550VA / 330W	700VA / 420W
Safety/EMC	IEC 62040-1, IEC 60950-1, IEC 62040-2, CB Report, CE mark, C-Tick, A-Tick	
EMC	IEC 62040-2, C-Tick	
Dimensions	86 h x 140 w x 335 d mm	86 h x 170 w x 335 d mm
Weight	2.9 kg	3.8 kg
Warranty	2 years	
Warranty+	Optional Warranty Uplifts	

Single phase UPS

Eaton 5E UPS

The 5E line interactive uninterruptible power system (UPS) provides affordable power protection for your personal computers, home, office and other electronic devices. While packed with valuable features such as ANZ power receptacles and USB communications, the compact size is ideal for limited office and home working spaces.

Features

- Automatic Voltage Regulation (AVR) stabilises fluctuating power sources
- Microprocessor control design ensures high reliability
- Up to three ANZ receptacles, allowing easy equipment connection
- Eaton UPS Companion software monitors power conditions and gracefully shuts down computer applications prior to battery depletion
- User replaceable batteries allow easy maintenance
- Start-on-battery provides portable power capability

Ideal for protecting

- Computers and Peripherals
- POS Equipment

Technology: Series 5 (Line Interactive)
 Rating: 650 / 850 / 1100 / 1500 / 2000VA
 Voltage: 230V
 Backup Time: Typical 5 min
 Configuration: Tower



Technical Specifications

Technology	Line Interactive (Automatic Voltage Regulation)				
Rating, VA/Watts	650VA / 360W	850VA / 480W	1100VA / 660W	1500VA / 900W	2000VA / 1200W
Dimensions	148 h x 100 w x 288 d mm		180 h x 133 w x 330 d mm		
Weight	4.6 kg	5.1 kg	9.3 kg	10.5 kg	10.5 kg
Warranty	2 years				
Warranty+	Optional warranty uplifts				

Eaton 5S UPS

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's 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 5S can be installed vertically over or under a desk, or horizontally under a screen. Its compact, slimline form factor even allows it to be easily integrated into environments with space constraints. The 5S features an HID-compliant USB port, for automatic integration with common operating systems (Windows/ Mac OS/Linux). The 5S is also compatible with Eaton UPS Companion power management software. All models come bundled with a USB cable for PC connection.

Reduce wasted energy consumption from standby power drain of connected peripheral equipment with ECO Control function (850-1600VA models)

Ideal for protecting

- Workstations
- Business Telephony
- Network devices
- Point-of-sale equipment

Technology: Series 5 (Line Interactive)
 Rating: 550-1600VA
 Voltage: 240 Vac
 Backup time: Typical 4 min
 Configuration: Tower



Technical Specifications

Rating (VA/W)	550VA/330W	700VA/420W	850VA/510W	1200VA/750W	1600VA/1000W
Safety & EMC	IEC/EN 62040-1, IEC/EN 62040 -2, CB Report, CE mark C-Tick				
Dimensions	250 h x 87 w x 260 d mm			250 h x 87 w x 382 d mm	
Weight	4.96kg	5.98kg	6.50kg	9.48kg	11.08kg
Warranty	2 years				



Single phase UPS

Eaton 5P UPS

Manageability

The LCD display provides clear information on the UPS's status and measurements on a single screen (in seven languages). Load segment control enables prioritised shutdowns of nonessential equipment to maximise battery runtime for critical devices, and can also be used to remotely reboot locked-up network equipment or to manage scheduled shutdowns and sequential start-ups.

The 5P offers Serial and USB connectivity, plus an extra slot for an optional communication card (including SNMP/Web card or relay contact card). Eaton's Intelligent Power® Software Suite compatible with all major OS including virtualization software such as VMware and Hyper-V is included with each UPS.

Availability and Flexibility

5P is available as a tower or rack form factor to cater for varied deployment applications. Eaton ABM® battery management technology uses an innovative three-stage charging technique that only recharges the battery when necessary, so the battery experiences less corrosion and service life is prolonged by up to 50%. Batteries can be hot-swapped without ever having to shut down connected equipment. With an optional, hot-swap maintenance bypass module, you can even replace the entire UPS.

Performance and Efficiency

With an optimised electrical design, the 5P can provide up to 98% efficiency, contributing to lower cooling and utility costs. When operating in battery mode the 5P provides a high quality output signal for any sensitive equipment connected, such as active PFC servers.

Ideal for protecting:

- Servers
- Switches
- Routers
- Storage devices

Technology: Series 5 (Line Interactive)
 Rating: 650-1550VA
 Voltage: 230 Vac
 Backup time: 5-10 minutes
 Configuration: Rack and Tower mount

Technical Specifications				
Rating (VA/W)	650VA / 420W	850VA / 600W	1150VA / 770W	1550VA / 1100W
UPS Dimensions (mm) & weight (kg)-Tower	150 w x 345 d x 230 h / 7.8kg	150 w x 345 d x 230 h / 10.4kg	150 w x 345 d x 230 h / 11.1kg	150 w x 445 d x 230 h / 15.6kg
UPS Dimensions (mm) & weight (kg)-Rack	438 w x 364 d x 43.2 h(1RU) / 8.6kg	438 w x 509 d x 43.2 h(1RU) / 13.8kg	438 w x 509 d x 43.2 h(1RU) / 14.6kg	438 w x 554 d x 43.2 h(1RU) / 19.4kg
Warranty	3 years			



Eaton 5SX UPS

Manageability

The LCD interface provides clear status of the UPS key parameters such as input and output voltage, load and battery level, and estimated runtime. Essential configuration capabilities are also offered for output voltage, audible alarm and sensitivity.

The 5SX offers USB and serial connectivity. USB port is HID compliant for automatic integration into Windows, Mac OS and Linux. A slot for an optional communication card (including SNMP/Web card or relay contact card) is also available. Eaton's Intelligent Power® Software Suite insures compatibility with all major OS including virtualization software.

Flexibility

R/T models authorizes either tower or rack installation -pedestals are included, rail kits are an optional extra. The 5SX has easy battery replacement from front panel to extend UPS life, and up to 4 EBM's can be added for longer runtimes.

Reliability

When operating in battery mode the 5SX provides a high quality output signal for any sensitive equipment connected - pure sinewave output. The buck and boost operation corrects a wide range of input voltage variations through continuous regulation, without the use of batteries. Eaton ABM® battery management technology uses an innovative three-stage charging system that extends battery life by up to 50%, giving a stronger, longer battery life.

Ideal for protecting

- NAS, Network equipment
- ATMs, Ticket machines, Kiosks

Technical Specifications			
Rating (VA/W)	1250VA/1125W	1750VA/1575W	3000VA/2700W
Dimensions (mm)	522 d x 441.2 h x 86.2(2U) w		647 g x 441.2 h x 86.2(2U) w
Weight (kg)	25.4	26.6	35.3
Warranty	2 years		

Single phase UPS

Eaton 5PX UPS

The Eaton 5PX provides exceptional efficiency, manageability and metering capabilities for IT managers

Manageability

The LCD display provides clear information on the UPS's status and measurements on a single screen (in seven languages). For the first time in the industry the 5PX can meter energy consumption right down to the managed outlet groups. kWh values can be monitored using the LCD or Eaton's Intelligent Power® Software Suite. The load segment control enables prioritised shutdowns of nonessential equipment to maximise battery runtime for critical devices.

The 5PX offers Serial and USB connectivity, plus an extra Mini Slot for an optional communication card (including SNMP/Web card or relay contact card). Eaton's Intelligent Power® Software Suite compatible with all major OS including virtualisation software such as VMware and Hyper-V is included with each UPS

Availability and Flexibility

The 5PX comes in a rack/tower convertible cabinet - pedestal and rail kits are included with all models at no extra charge. Eaton ABM® battery management technology uses an innovative three-stage charging technique that only recharges the battery when necessary, so the battery experiences less corrosion and service life is prolonged by up to 50%. Batteries can be hot-swapped without ever having to shut down connected equipment. With an optional, hot-swap maintenance bypass module, you can even replace the entire UPS, there is also the possibility to add more runtime.

Performance and Efficiency

The 5PX can provide up to 99% efficiency, reducing cooling and utility costs with its optimised electrical design. With a power factor of 0.9, the 5PX delivers more real output power. It powers more servers than other UPSs with equivalent VA ratings and lower power factors. The 5PX is compatible with all modern IT equipment.



Ideal for protecting

- Servers
- Switches
- Routers
- Storage devices

Technology:	Series 5 (Line Interactive)
Rating:	1500-3000VA
Voltage:	230 Vac
Configuration:	Rack-mount / Tower convertible

Technical Specifications				
Rating (VA/W)	1500VA / 1350W	2000VA / 1800W	2200VA / 1980W	3000VA / 2700W
UPS and EBM Dimensions (mm)	441w x 522d x 86.2h (2U)	441w x 522d x 86.2h (2U)	441w x 522d x 86.2h (2U)	441w x 647d x 86.2h (RT2U)
UPS Weight (kg)	27.6 kg	28.5 kg	28.5 kg	38.08 (RT2U), 37.33 (RT3U)
Weight of the EBM	32.8 kg	32.8 kg	32.8 kg	46.4kg (RT2U), 44.4kg (RT3U)
Warranty	3 years			

Eaton 9130 UPS

The Eaton 9130 UPS, resolves utility power problems and delivers superior power protection for IT and networking equipment, medical systems, manufacturing process control — or anywhere critical equipment and applications require clean, continuous power.

Double-conversion design for superior power protection

The 9130 is constantly monitoring power conditions—regulating both voltage and frequency. Even when presented with the most severe power problems, this UPS's output remains within two percent of nominal voltage. With a wide input voltage range, the 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 9130 transfers to battery with zero interruption in power, making this an ideal UPS for sensitive and critical equipment.

More real power for less cost.

High 0.9 output power factor enables the 9130 to provide its full power capability to modern IT equipment that may have a wide range of leading and lagging power factors. With a 0.99 input power factor, this UPS avoids the disturbances that some energy converters tend to cause.



Ideal for protecting

- Servers and Networking gear
- Telecommunications, VoIP, security systems
- Diagnostics and Medical screening
- Patient record archives
- Manufacturing systems
- Chip fabrication
- Pharmaceutical production
- Chemical processing

Technology:	Series 9, (Double Conversion On Line)
Rating:	700 - 6000VA
Voltage:	208-240Vac
Configuration:	Tower

Technical Specifications						
Rating	700VA	1000VA	1500VA	2000VA	3000VA	6000VA
Dimensions (mm)	160w x 355d x 250h	160w x 383d x 250 h	160w x 435d x 250h	214w x 410d x 345h	214w x 410d x 345h	242w x 542d x 575h
Weight (kg)	12.2	14.5	19.0	34.5	34.5	75.5
Warranty	2 years					

Single phase UPS

Eaton 9PX UPS



Eaton's 9PX can meter energy consumption right down to the managed outlet groups. kWh values can be monitored using the LCD or Eaton's Intelligent Power® Software.

The graphical LCD display provides clear information on the UPS's status and measurements on a single screen. Enhanced configuration capabilities are also available. Load segment control enables prioritised shutdown of non-essential equipment to maximize battery runtime for critical devices.

9PX offers Serial and USB connectivity, plus an extra slot for an optional communication card. Eaton's Intelligent Power® Software seamlessly integrates with leading virtualisation environments and cloud orchestrations tools.

Eaton ABM® battery management technology uses an innovative three-stage charging technique that extends battery life by up to 50% ensuring stronger, longer battery life

Eaton 9PX UPS - 2kVA/1800W is designed to provide 0.9 power factor powering more servers with equivalent VA ratings and lower power factors. 9PX 2000 is available in RT2U format (optimised for rack mounting), pedestal and rail kits are included with all models. More runtime can be added with up to 4 external hot-swappable battery modules, able to run systems for hours if necessary.

Eaton 9PX UPS 1-3 kVA delivers 11% more power than any other UPS as well as powering more servers with equivalent VA ratings and lower power factors. 9PX 2200 & 3000 are available in RT2U format (optimised for rack mounting) or RT3U (for tower or short-depth racks), pedestal and rail kits are included with all models. More runtime can be added with up to 4 external hot-swappable battery modules, able to run systems for hours if necessary.

Eaton 9PX 5-11 kVA constantly monitors power conditions and regulates voltage and frequency. With a 0.9 power factor, the 9PX delivers 28% more power than other UPSs in its class. It powers more servers than other UPSs with equivalent VA ratings and lower power factors. With a RT (Rack/tower) versatile form factor, the 9PX is the most compact solution in its class delivering up to 5400W in only 3U and 10kW in only 6U. More runtime can be added with up to 12 external hot-swappable battery modules, able to run systems for hours if necessary. The additional battery modules are automatically recognised by the UPS.

Surge protection devices

In nanoseconds a power surge can do major damage to sensitive equipment and data. It can come from anywhere, and like a bullet, you only know it has been by the destruction left behind. That's why surge protection is so critical. And why Eaton builds so much quality into our full line of surge protection products. Eaton has a world beating reputation for Power Quality and a full range of surge protection solutions, covering every eventuality.



Eaton SPDV60/T60
Shunt Surge Diverter,
1 Pole 60kA



Eaton SPD3200
Shunt Surge Diverter,
3 Phase 200kA



Eaton DSFi
Series Filter with
Shunt Surge Diverter,
1 Phase 5-32A,
40kA Primary



Eaton SPD100
Shunt Surge Diverter,
1 & 3 Phase, 40kA and 100kA



Eaton CSFi
Series Filter with
Shunt Surge Diverter,
1 Phase 3-25A,
25kA Primary



Eaton PPFi
Series Power and
Noise Filter with Shunt
Surge Diverter 3 Phase,
100-800A, 80-240kA



Eaton PSFi
Portable Surge Filter,
1 Phase 10A & 16A,
25kA Primary and
140kA Primary



Eaton ESFi
Series filter with Shunt Surge
Diverter Class II/Cat C & B,
1 & 3 Phase 63-80A,
100kA Series Surge Filters



Eaton Quickmov™
Integrated Surge
Protection Device
(Internally HRC Fused)
1 Pole 60kA



Eaton SF8RM
Single Phase Rack
Mounted Filter /PDU

Eaton ePDU

Maximise your available power

- Utilise all available power, through Intelligent Power® monitoring

Ensure you have the power you need, where you need it

- Combinations of IEC C13, C19 and local sockets
- Manage your moves and changes in the data centre and redistribute your power
- Know what power is available for you to add servers or capacity, or if you are reaching capacity

Maximum availability

- Designed for the data centre environment and to fit in any industry standard rack
- Rugged Aluminium chassis, with multiple mounting options
- Available in 0U Vertical, and 1U or 2U horizontal options
- High quality components and state-of-the-art technology and circuitry



Basic ePDU

Designed for reliable and cost effective power distribution, Basic ePDUs have the form factor and outlet choices to meet your needs.

Designed for the Data Centre: All ePDUs, including basic ePDUs, are made of rugged aluminium or steel chassis and incorporate fully shrouded circuit breakers and switches, they are designed to be highly reliable, and designed to last.

Transfer Switch

The STS source transfer switch is a simple and effective solution to manage the redundancy provided by two independent power sources. STS handles the automatic or manual transfer of your loads between two independent power sources without interrupting the supply of power (< 6 milliseconds). Either of the two sources may be designated as the preferred source with the other becoming the alternate source. In the event of a failure, transfer from one to the other is automatic and instantaneous.

Monitored ePDU

Monitored ePDUs monitor the current draw to allow for provisioning and load balancing of servers, and to ensure current draw is not approaching breaker limits.

- Monitoring: Monitor current on input and each branch circuit to ensure accurate load balancing
- Control: Monitor and measure remotely over Ethernet or via LED interface on unit

Advanced Monitored ePDU

Advanced Monitored ePDUs give the data centre manager the detailed information and understanding they need to efficiently and effectively run their data centre

- Monitoring: Highly accurate individual outlet monitoring, branch circuit monitoring and the ePDU as a whole, for V, W, A and kWhrs. Also monitor temperature and humidity in the rack via optional sensors

Control: Monitor and measure key properties and alerts remotely over Ethernet or via Advanced LCD screen on the unit. Communication protocols include HTTP / HTTPS, DHCP, SNMP v1 and v3, SNTp, SMTP, Telnet, IPv4 & IPv6

Switched ePDU

Switched ePDUs give control to the Data Centre manager – be able to remotely shut off or restart equipment, and ensure that it starts up in the correct sequence with the correct delays.

- Switching: on and off control of individual outlets, together with cycling and sequencing of outlets, branch circuits and the ePDU as a whole
- Monitoring: Highly accurate monitoring of the ePDU as a whole for V, W, A and kWhr. Also monitor temperature and humidity in the rack via optional sensors

Control: Monitor over Ethernet or via Advanced LCD screen on the unit, control via Ethernet. Communication protocols include HTTP / HTTPS, DHCP, SNMP v1 and v3, SNTp, SMTP, Telnet, IPv4 & IPv6

Managed ePDU

Managed ePDUs offer the data centre managers the maximum functionality – fully Intelligent Power distribution for – complete understanding and control, of Data Centre power distribution, including:

- Monitoring: highly accurate individual outlet, branch circuit, and full ePDU monitoring for V, W, A and kWhrs. Also monitor temperature and humidity in the rack via optional sensors
- Switching: individual outlet, sequencing of outlets with delays or cycling enables remote reboot of equipment
- Control: Monitor and control remotely over Ethernet and via Advanced LCD screen on the unit. Communication protocols include HTTP / HTTPS, DHCP, SNMP v1 and v3, SNTp, SMTP, Telnet, IPv4 & IPv6

Manage your power consumption

- Control your operating costs by monitoring and tracking consumption from rack to branch, right down to the individual server
- Easily identify physical branch sections and related breakers through Colour-coded sections
- Accurate V, W, A and kWhr measurement enables analysis and tracking
- Enables you to see what your servers are doing

Complete control and understanding

- Control your power distribution and consumption
- Build knowledge base of what is going on
- Switch, sequence outlets and outlet groups as well as individually monitor – you have complete control



UPS Racks

Eaton FlexPDU, Eaton HotSwap MBP



The no hassle solution for improving availability and adding flexibility for single phase UPSs.

Eaton FlexPDU

Having the right connectors just where you need them

- FlexPDUs (Power Distribution Units) are flexible mounting multiway socket blocks for easy connection of multiple loads either as free-standing or on rack-mounted UPSs
- FlexPDUs have a large number of sockets (3x3 pin ANZ outlets, 12 IEC 10 A sockets) which fit into a very compact unit (1U - 19")
- FlexPDUs are easy to implement into any type of installation: they can be rack mounted horizontally (1U) or vertically or directly onto all Eaton RT format (rack/tower) UPSs

Eaton HotSwap MBP

- High availability for all UPSs up to 11 kVA.
- HotSwap MBP provides a maintenance bypass for all UPSs. UPSs can be hot swapped or upgraded without interrupting the power supply.
- HotSwap MBP are available with multiple power ratings: 3000 VA, 6000 VA, 11000 VA, 11000 VA (3 ph Input).
- HotSwap MBP provides compatibility with any UPS now and in the future from Eaton or any other supplier
- The HotSwap MBP 3000 VA is available with different output connectors: 3x3 pin ANZ outlets, IEC or terminal blocks (Hard-Wired version). When used with a 9PX or 9SX the HotSwap MBP 6000 VA and above are providing information on the Bypass status through the UPS LCD screen.
- HotSwap MBP units can be installed as required; at the back, side, top of the UPSs, or rack-mounted.

RE series enclosures

Eaton offers multiple RE Series configurations, making it easy to choose the solution that best fits your needs. These include solutions for server, networking and colocation installations. Through its high-quality and flexible design, the RE Series Enclosure minimizes installation time and reduces costs while serving as the foundation of a complete data center infrastructure solution.

As more companies shift mission-critical IT systems to virtualized infrastructures, data center professionals face increasing pressure to consolidate resources and lower costs. The RE Series Enclosure meets these challenges by providing flexible configurations across a range of environments, from network closets to Data Centers.

Save time

ePDU and cable management mounting support tool-less installation of full or half-height 0U ePDU's.

- Toolless ePDU mounting Fast installation for all Eaton 0U ePDU's
- Fully Configured Enclosures Save time installing accessories with pre-installed rack options
- Easy Access to Equipment Split side panels offer greater access and easy removal

Save money

With cable and airflow management options available in each RE Series configuration, you can save money on heating and cooling costs, as well as cable management accessories.

- In-field Modification A wide-range of cable, airflow management and top panel options allow you to configure each rack in-field.
- Configured Enclosures - Create your own configuration to the exact specifications of your applications.
- Bundled Solutions - Minimize data center cost by purchasing the full Eaton power and enclosure system.

Reduce Risk

The highly secure combination lock protects valuable IT resources from internal and external threats. High load capacity and airflow ensures maximum equipment performance and safety.

- Key & Combo Lock Standard handle offers single and 3-point locking options.
- High-flow doors - Front doors feature a 78% open perforation pattern for max air intake and exhaust.
- High Load Capacity - Enhanced structural stability with 1500kg static rating (Server Racks).



Surge protection devices

In nanoseconds a power surge can do major damage to sensitive equipment and data. It can come from anywhere, and like a bullet, you only know it has been by the destruction left behind. That's why surge protection is so critical. And why Eaton builds so much quality into our full line of surge protection products. Eaton has a world beating reputation for Power Quality and a full range of surge protection solutions, covering every eventuality.



Eaton SPDV60/T60
Shunt Surge Diverter,
1 Pole 60kA



Eaton CSFi
Series Filter with Shunt
Surge Diverter, 1 Phase
3-25A, 25kA Primary



Eaton SPD1
Shunt Surge Diverter, 1 and
3 Phase, 40kA and 100kA



Eaton ESFi
Series filter with Shunt Surge Diverter
Class II/Cat C & B, 1 & 3 Phase
63-80A, 100kA Series Surge Filters



Eaton SPD3200
Shunt Surge Diverter,
3 Phase 200kA



Eaton DSFi
Series Filter with Shunt
Surge Diverter, 1 Phase
5-32A, 40kA Primary



Eaton PSFi
Portable Surge Filter, 1
Phase 10A & 16A, 25kA
Primary and 140kA Primary



Eaton SF8RM
Single Phase Rack
Mounted Filter /PDU

3 Phase UPS Solutions

Eaton have an extensive range of 3 Phase UPS systems to meet your application. The range includes standalone, parallel and multiple module hot swappable systems for power rating from 8kW to 1200kW.

With over 50 years of experience Eaton have developed the most resilient and economical UPS systems in the world. Our 'Hot Sync' technology reduces single point of failure in redundant systems making them more resilient and reliable. Our Energy Saver System brings the UPS efficiency to 99% during this mode of operation, saving the customer money on their electricity bill and reducing the overall carbon emissions to operate the equipment.



DC Product Solutions

Eaton offers highly efficient, highly reliable, modular DC power systems, with built-in redundancy and secure, always on-line, battery backup. Our smaller compact DC solutions are well suited to rack mount indoor and outdoor enclosures and other space limited installations. Expert advice is available on the system that will best suit your needs, from small and medium private enterprise DC power systems, through to any situation in a large-scale core Telecom network or Industrial facility. We can also provide support with alternative energy solutions such as off grid solar and hybrid solar/diesel power sources. Eaton DC systems feature advanced remote monitoring & control, and we have available complimentary sealed lead acid batteries.

Rectifier Module	24V & 48V, 0.9kW to 5.8kW
Solar Charger Module	48V, 2kW
Inverter Modules	48V > 110V & 230V, 1.0kVA to 3.5kVA
DC-DC Converters	12V, 24V, 48V, 0.5kW
Rectifier Systems	48V, 0.9kW to 384kW 24V, 1.4kW to 179kW
Inverter Systems	48V > 110V, 230V 2kVA standalone 48V > 110V, 230V 18kVA, modular 48V > 230V 35kVA, modular
Solar Systems	48V, 24kW
Sealed LA Batteries	12V, 55Ah, 100Ah, 150Ah FT
Outdoor Enclosures	Single & Double Bay. Power + Equip HEX, DX, Forced Air



Technical information

Photovoltaic - Switch-disconnectors up to 1500 V (Temperature impact, derating)

Reduction of the rated operating current (derating) at different ambient temperatures, fitting positions, degrees of protection and jumper kits IEC EN 60947

Rated operating current (A)													
Load disconnector switch	Touch protection	Jumper kit	Fitting position load disconnector switch ①	20°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
N2-4-160-S1(15)-DC	IP2X	NZM2-4-XKV2P NZM2-4-XKV2POU-K NZM2-4-XKV1P-K	V	160	160	160	160	160	160	160	160	160	160
		NZM2-4-XKV12P NZM2-4-XKV12POU-K NZM2-4-XKV11P-K	H	160	160	160	160	160	160	160	160	160	160
	IP2X	NZM2-4-XKV1P-K	V	160	160	160	160	160	160	160	160	160	152
		NZM2-4-XKV2P	V	160	160	160	160	160	160	160	160	152	144
N2-4-200-S1(15)DC	IP00	NZM2-4-XKV12P-K	V	200	200	200	200	200	200	200	200	200	200
		NZM2-4-XKV12P-K	H	200	200	200	200	200	200	200	200	200	190
	IP2X	NZM2-4-XKV2P-K	V	200	200	200	200	200	200	200	200	190	180
		NZM2-4-XKV2P-K	H	200	200	200	200	200	200	200	200	190	180
	IP00	NZM2-4-XKV12P NZM2-4-XKV12POU-K NZM2-4-XKV11P-K	H	200	200	200	200	200	200	200	190	180	170
		NZM2-4-XKV2P NZM2-4-XKV2POU-K NZM2-4-XKV1P-K	V	200	200	200	200	200	200	190	180	170	160
	IP2X	NZM2-4-XKV12POU NZM2-4-XKV11P	H	200	200	200	200	200	190	180	170	160	-
		NZM2-4-XKV2POU NZM2-4-XKV1P	V	200	200	200	200	190	180	170	160	-	-
N2-4-250-S1(15)-DC	IP00	NZM2-4-XKV12P-K	V	250	250	250	250	250	250	238	225	213	200
		NZM2-4-XKV12P-K	H	250	250	250	250	250	238	225	213	200	-
	IP2X	NZM2-4-XKV2P-K	H	250	250	250	250	238	225	213	200	-	-
		NZM2-4-XKV2P-K	H	250	250	250	250	238	225	213	200	-	-
	IP00	NZM2-4-XKV12P NZM2-4-XKV12POU-K NZM2-4-XKV11P-K	H	250	250	250	238	225	213	200	-	-	-
		NZM2-4-XKV2P NZM2-4-XKV2POU-K NZM2-4-XKV1P-K	V	250	250	238	225	213	200	-	-	-	-
	IP00	NZM2-4-XKV12POU NZM2-4-XKV11P	H	250	238	225	213	200	-	-	-	-	-
		NZM2-4-XKV12P-K	H	250	238	225	213	200	-	-	-	-	-
N3-4-320-S1(15)-DC	IP2X	NZM3-4-XKV2P NZM3-4-XKV2POU NZM3-4-XKV1P	V	320	320	320	320	320	320	320	320	320	320
		NZM3-4-XKV12P NZM3-4-XKV12POU NZM3-4-XKV11P	H	320	320	320	320	320	320	320	320	320	320
N3-4-400-S1(15)-DC	IP2X	NZM3-4-XKV2P NZM3-4-XKV2POU-K NZM3-4-XKV1P-K	V	400	400	400	400	400	400	400	400	400	400
		NZM3-4-XKV12P NZM3-4-XKV12POU NZM3-4-XKV11P	H	400	400	400	400	400	400	400	400	400	388
	IPX2	NZM3-4-XKV2POU	V	400	400	400	400	400	400	400	400	388	376
		NZM3-4-XKV1P	H	400	400	400	400	400	400	400	388	376	364
N3-4-500-S1(15)-DC	IP00	NZM3-4-XKV12P-K	V	500	500	500	500	500	500	485	470	455	440
		NZM3-4-XKV12P-K	H	500	500	500	500	500	485	470	455	440	425
	IP2X	NZM3-4-XKV2P-K	V	500	500	500	500	485	470	455	440	425	410
		NZM3-4-XKV2P-K	H	500	500	500	485	470	455	440	425	410	400
N3-4-550-S1(15)-DC	IP2X	NZM3-4-XKV2P NZM3-4-XKV2POU-K NZM3-4-XKV1P-K	V	500	500	485	470	455	440	425	410	400	-
		NZM3-4-XKV12POU NZM3-4-XKV11P	H	500	485	470	455	440	425	410	400	-	-
	IP00	NZM3-4-XKV12P-K	V	550	550	550	550	550	534	517	501	484	468
		NZM3-4-XKV12P-K	H	550	550	550	550	534	517	501	484	468	451
N3-4-630-S1(15)-DC	IP00	NZM3-4-XKV12P NZM3-4-XKV12POU-K NZM3-4-XKV11P-K	H	550	550	550	534	517	501	484	468	451	435
		NZM3-4-XKV2P NZM3-4-XKV2POU-K NZM3-4-XKV1P-K	V	550	550	534	517	501	484	468	451	435	418
	IP00	NZM3-4-XKV12POU NZM3-4-XKV11P	H	550	534	517	501	484	468	451	435	418	402
		NZM3-4-XKV12P-K	H	550	534	517	501	484	468	451	435	418	402
N4-4-800-S1(15)-...	IP2X (IP00)	+ NZM4-4-XKV1P	V	800	800	800	800	800	800	800	800	800	800
		(+ NZM4-4-XKV2P-K)	H	800	800	800	800	800	800	800	800	800	800
		(+ NZM4-4-XKV1P-K)	V	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
		(+ NZM4-4-XKV1P)	H	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
N4-4-1000-S1(15)-...	IP2X (IP00)	+ NZM4-4-XKV2P	V	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
		(+ NZM4-4-XKV2P)	H	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
		(+ NZM4-4-XKV2P)	H	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
		(+ NZM4-4-XKV2P)	V	1250	1250	1250	1250	1250	1250	1250	1250	1213	1188
		(+ NZM4-4-XKV1P)	H	1250	1250	1250	1250	1250	1250	1250	1250	1250	1213
		(+ NZM4-4-XKV1P)	V	1250	1250	1250	1250	1250	1213	1188	1163	1138	1113
		(+ NZM4-4-XKV1P)	H	1250	1250	1250	1250	1213	1188	1163	1138	1113	1088
		(+ NZM4-4-XKV1P)	H	1250	1250	1250	1250	1213	1188	1163	1138	1113	1088

① V= vertical mount, H= horizontal mount

Rated operating current (A)

Load disconnect switch	Touch protection	Jumper kit	Fitting position load disconnect switch ①	20°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
N4-4-1400-S1(15)-DC	IP00	+ NZM4-4-XKV2P-K + NZM4-4-XKV1P-K	V	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
			H	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
	IP2X (IP00)	+ NZM4-4-XKV2P (+ NZM4-4-XKV12P)	V	1400	1400	1400	1400	1358	1330	1302	1274	1260	-
			H	1400	1400	1400	1358	1330	1302	1274	1260	-	-
		+ NZM4-4-XKV1P (+ NZM4-4-XKV11P)	V	1400	1330	1302	1274	1260	-	-	-	-	-
			H	1358	1302	1274	1260	-	-	-	-	-	-
N4-4-1600-S1(15)-DC	IP00	+ NZM4-4-XKV2P-K	V	1600	1600	1600	1600	1576	1552	1528	1512	1500	1472
			H	1600	1600	1600	1576	1552	1528	1512	1500	1472	1448
		+ NZM4-4-XKV1P-K	V	1600	1600	1576	1552	1528	1512	1500	1472	1448	1420
			H	1600	1576	1552	1528	1512	1500	1472	1448	1420	-

① V = vertical mount, H = horizontal mount

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 running④	≤17	6	1	0.65	1	0.17	0.65	≤100	10	1.05	0.45	8	1.05	0.45	
			≥17	6	1	0.65	6	1	0.65	≥100	12	1.05	0.45	10	1.05	0.45	
	AC-4	Squirrel-cage motors: starting, plugging, inching	≤17	6	1	0.65	6	1	0.65	≤100	12	1.05	0.45	10	1.05	0.45	
			≥17	6	1	0.35	6	1	0.35	≥100	12	1.05	0.35	10	1.05	0.35	
	AC-5A	Switching of electric discharge lamp controls	-	-	-	-	-	-	-	-	3.0	1.05	0.45	3.0	1.05	0.45	
	AC-5B	Switching of incandescent lamps	-	-	-	-	-	-	-	-	-	1.5②	1.05②	1.5②	1.05②	-	
	AC-6A ③	Switching of transformers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	AC-6B ③	Switching of capacitor banks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	AC-7A	Slightly inductive loads in household appliances and similar applications	As specified by the manufacturer				-	-	-	-	1.5	1.05	0.8	1.5	1.05	0.8	
	AC-7B	Motor-loads for household applications	As specified by the manufacturer				-	-	-	-	-	8.0	1.05①	8.0	1.05①	-	
	AC-8A	Hermetic refrigerant compressor Motor control with manual resetting of overload releases ⑤	As specified by the manufacturer				-	-	-	-	-	6.0	1.05①	6.0	1.05①	-	
	AC-8B	Hermetic refrigerant compressor Motor control with automatic resetting of overload releases ⑤	As specified by the manufacturer				-	-	-	-	-	6.0	1.05①	6.0	1.05①	-	
Kind of current	Utilisation category	Typical applications	Verification of electrical endurance							Verification of rated making and breaking capacities							
			Make				Break			Make				Break			
			$\frac{I_e}{A}$	$\frac{I}{I_e}$	$\frac{U}{U_e}$	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}	I _{Ue}	cos φ	I _c	I _{Ur}	cos φ	I _{le}	I _{Ue}	cos φ	I _c	I _{lr}	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}	I _{Ue}	t _{0.95}	I _c	I _{Ur}	t _{0.95}	I _{le}	I _{Ue}	t _{0.95}	I _c	I _{lr}	t _{0.95}
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 Ⓞ	1	1	6.P Ⓞ	1.1	1.1	6.P Ⓞ	1.1	1.1	6.P Ⓞ
	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 I _{le}	U _r U _{Ue}	cos φ	I _{le} A	I _{le}	U _{Ue}	cos φ	I _c I _{le}	I _r I _{le}	cos φ
AC	AC-20 A(B) ⑧	Connecting and disconnecting under no-load conditions	All values	⑦	⑦	⑦	⑦	⑦	⑦	All values	⑦	1.05	⑦	⑦	1.05	⑦
	AC-21 A(B) ⑧	Switching of resistive loads, including slight overloads	All values	1	1	0.95	1	1	0.95	All values	1.5	1.05	0.95	1.5	1.05	0.95
	AC-22 A(B) ⑧	Switching of mixed resistive and inductive loads, including slight overloads	All values	1	1	0.8	1	1	0.8	All values	3	1.05	0.65	3	1.05	0.65
	AC-23 A(B) ⑧	Switching of motor loads or other highly inductive loads	All values	1	1	0.65	1	1	0.65	I _{le} ≤ 100 I _{le} ≥ 100	10 10	1.05 1.05	0.45 0.35	8 8	1.05 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 _A	I _{le}	U _{Ue}	L/R ms	I _c	U _{Ur}	L/R ms	I _A	I _{le}	U _{Ue}	L/R ms	I _c	I _r	cos φ
DC	DC-20 A(B) ⑧	Connecting and disconnecting under no-load conditions	All values	⑦	⑦	⑦	⑦	⑦	⑦	All values	⑦	1.05	⑦	⑦	1.05	⑦
	DC-21 A(B) ⑧	Switching of resistive loads, including slight overloads	All values	1	1	1	1	1	1	All values	1.5	1.05	1	1.5	1.05	1
	DC-22 A(B) ⑧	Switching of mixed resistive and inductive loads, including slight overloads (e.g. series motors)	All values	1	1	2	1	1	2	All values	4	1.05	2.5	4	1.05	2,5
	DC-23 A(B) ⑧	Switching of highly inductive loads (e.g. series motors)	All values	1	1	7.5	1	1	7.5	All values	4	1.05	15	4	1.05	15

Ⓞ 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.

Ⓞ 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.

Ⓞ 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

First Numeral				Second Numeral			
Protection against the ingress of solid particles				Protection against harmful ingress of water			
IP	Requirements	Example	Protection of persons against access to hazardous parts with:	IP	Requirements	Example	Protection from water
0	No protection		Nonprotected	0	No protection		Nonprotected
1	Full penetration of 50 mm diameter sphere not allowed. Contact with hazardous parts not permitted.		Back of hand	1	Protected against vertically falling drops of water. Limited ingress permitted.		Vertically dripping
2	Full penetration of 12.5 mm diameter sphere not allowed. The jointed test finger shall have adequate clearance from hazardous parts.		Finger	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	The access probe of 2.5 mm diameter shall not penetrate.		Tool	3	Protected against sprays to 60° from the vertical. Limited ingress permitted.		Limited spraying
4	The access probe of 1.0 mm diameter shall not penetrate.		Wire	4	Protected against water splashed from all directions. Limited ingress permitted.		Splashing from all directions
5	Limited ingress of dust permitted (no harmful deposit).		Wire	5	Protected against jets of water. Limited ingress permitted.		Hosing jets from all directions
6	Totally protected against the ingress of dust.		Wire	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

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.

Installation relays Z-R, installation contactors Z-SCH for lighting systems

			Z-R.20/..	Z-SCH/25/..	Z-SCH/40/..	Z-SCH/63/..	Z-SC
The decisive factors are the type, connection and current consumption of lamps during switch-on and in permanent operation. Only 90 % of the continuous current of switching devices should be used in view of higher current consumption as a result of increases of voltage. The maximum number of lamps per phase that can be operated by a switching device is dependent on the nominal current and making current of lamps on the one hand, and on the continuous current and making capacity of the switching devices on the other. Thus, e.g. in lead-lag circuits, the continuous current of contactors can be used, while this is not possible in fluorescent tubes with separate compensation.							
Utilisation category AC 1							
Rated operational current at 60 °C	Ie AC 1	A	20	25	40	63	–
Making capacity							
Root mean square	Ieff	A	120	165	300	400	–
Peak value	Ipeak	A	170	233	424	565	–
Utilisation category AC 5a							
Rated operational power 220 – 240 Vh	cos 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 In). When switching off, only the nominal current is switched off.							
Utilisation category AC 5b	60	0,27	22	28	58	85	–
	100	0,45	13	17	35	51	–
	200	0,91	7	8	17	25	–
	300	1,36	4	5	11	16	–
	500	2,27	3	3	7	10	–
	1000	4,5	1	1	3	5	–

Fluorescent tubes, mercury arc lamps

High and low pressure discharge lamps with mercury vapour, with or without fluorescent-coated glass body are perfectly identical in their electrical behaviour. In order to limit the operational current and pre-conduction current, and to achieve the initial peak voltage, reactance coils are used as ballast. Capacitors are used for compensation of the resulting reactive current, which are either connected in series with the coil (lead-lag circuit) or parallel to the mains (separate compensation, very rarely used now). The high making current in case of separate compensation (max. 30 x nominal current of the capacitor) which goes down quickly is usually attenuated considerably by the feed line.

Utilisation category AC 5a	
Fluorescent lamps without comp. or with series comp.	$I = I_{eAC1} \times 0,5$
Lead-lag circuit (2 x ..)	$I = I_{eAC1} \times 0,35$
Fluorescent tubes parallelcomp.	$I = I_{peak} / 100$ (take into account compensation capacitor)
I / I _{lamp} = 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	–
	50	0,61	–	16	18	38	55	–
Mercury arc lamps, high pressure without compensation e. g.: HQL, HPL	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	–
	50	0,28	7	7	7	32	46	–
	80	0,41	8	5	5	25	35	–
Mercury arc lamps, high pressure with compensation e. g.: HQL, HPL	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	–

Technical information

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

$$I = I_{peak} / 100 \text{ (take into account compensation capacitor)}$$

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
Lamp types	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	–	–

Sodium vapour lamps

For 200 W, 1200 mm high-pressure lamps and low-pressure lamps, reactance coils are used as ballast. For smaller lamps, stray field transformers can be used as ballast. Take into account, the long starting period.

Low pressure lamps		High pressure lamps	
Without compensation		Without compensation	
Making current	1 x Xle, cos f 0,3	Making current	1,4 x Xle, cos f 0,5
Starting time	5 .. 10 min	Starting time	5 .. 10 min (at 1,6 x In), I = Ipeak / 200
Decisive for selection of device	60 % continuous current I = IeAC1 x 0,6	Decisive for selection of device	60% continuous current I = IeAC1 x 0,6
With compensation		With compensation	
Making current	20 x Xle, cos f 0,45	Making current Starting time	20 x Xle, cos f 0,95
Starting time	5 .. 10 min (at 1,6 x In), I = Ipeak / 200	Starting time	5 .. 10 min (at 1,6 x In)

Lamp types	Power ,W	Current, A	Capacitor, µF	Z-R.20/..	Z-SCH/25/..	Z-SCH/40/..	Z-SCH/63/..	Z-SC
Lamp types	max. number of lamps per current path at 230 V, 50 Hz							
Sodium vapour lamps low-pressure without compensation	35	1,5	–	7	9	22	30	–
	55	1,5	–	7	9	22	30	–
	90	2,4	–	4	6	13	19	–
	135	3,5	–	3	4	10	13	–
	150	3,3	–	3	4	10	13	–
	180	3,3	–	3	4	10	13	–
	200	3,3	–	3	4	10	13	–
Sodium vapour lamps low-pressure with compensation	35	0,31	20	3	3	12	16	–
	55	0,42	20	2	2	8	14	–
	90	0,63	30	1	1	5	9	–
	135	0,94	45	1	1	3	6	–
	150	1	40	1	1	3	6	–
	180	1,16	40	1	1	2	5	–
	200	1,32	25	1	–	2	4	–
Sodium vapour lamps high-pressure without compensation	150	1,8	–	5	6	11	22	–
	250	3	–	4	5	7	13	–
	330	3,7	–	3	4	6	10	–
	400	4,7	–	2	2	5	8	–
	1000	10,3	–	1	1	5	4	–
Sodium vapour lamps high-pressure with compensation	150	0,83	20	2	2	7	14	–
	250	1,5	33	2	2	4	8	–
	330	2	40	1	1	3	6	–
	400	2,4	48	1	1	2	5	–
	1000	6,3	106	–	–	1	2	–

Conversion table

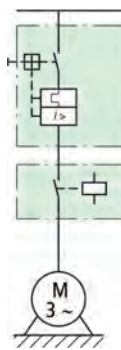
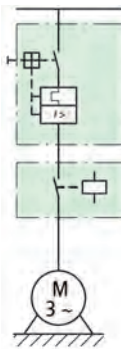
To convert	Multiply by
Inches to millimetres (mm)	25.4
Millimetres to inches	0.03937
Feet to metres (m)	0.3048
Metres to feet (ft)	3.2808
Yards to metres (m)	0.9144
Metres to yards (yd)	1.0936
Miles to kilometres (km)	1.6093
Kilometres to miles	0.6214
Square inches to square millimetres (mm ²)	645.16
Square millimetres to square inches (inch ²)	0.00155
Square yards to square metres (m ²)	0.8361
Square metres to square yards (yd ²)	1.196
Cubic inches to cubic centimetres (cm ³)	16.387
Cubic centimetres to cubic inches (inch ³)	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/inch ²)	14.68
1 bar = 1 kg/cm ² = 735.6 mm Hg = 14.2lb/inch ²	–

Technical information




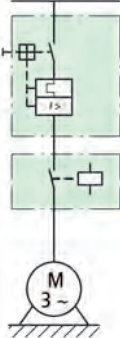
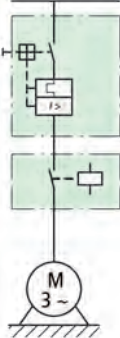
Type "1", type "2" coordination

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	Short-circuit releases,	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 	Li, A 		
Type "2" coordination – direct-on-line starters 400/415 V							
	15	29,3	50	25 – 32	320 – 448	NZMN1-M32	DILM80(...)
	18,5	36	50	32 – 40	320 – 560	NZMN1-M40	DILM80(...)
	22	41	50	40 – 50	400 – 700	NZMN1-M50	DILM80(...)
	30	55	50	50 – 63	504 – 882	NZMN1-M63	DILM80(...)
	37	68	50	63 – 80	640 – 1120	NZMN1-M80	DILM80(...)
	45	81	50	80 – 100	800 – 1250	NZMN1-M100	DILM95(...)
	55	99	50	80 – 100	800 – 1250	NZMN1-M100	DILM115(...)
	75	134	50	125 – 160	1280 – 2240	NZMN2-M160	DILM150(...)
	90	161	50	160 – 200	1600 – 2500	NZMN2-M200	DILM185/22(...)
	110	196	50	160 – 200	1600 – 2500	NZMN2-M200	DILM225/22(...)
	132	231	50	175 – 350	350 – 4900	NZMN3-ME350	DILM250/22(...)
	160	279	50	175 – 350	350 – 4900	NZMN3-ME350	DILM300/22(...)
	200	349	50	175 – 350	350 – 4900	NZMN3-ME350	DILM400/22(...)
	250	437	50	225 – 450	450 – 6300	NZMN3-ME450	DILM500/22(...)
	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 high-breaking-capacity fuses with gL-characteristic (Figure 1).

The handling involved with the Excel file based tool is briefly presented. The result, which allows for common representation of the curves as protected engineering documentation with individual project designations, can be saved, printed or exported to other documents.

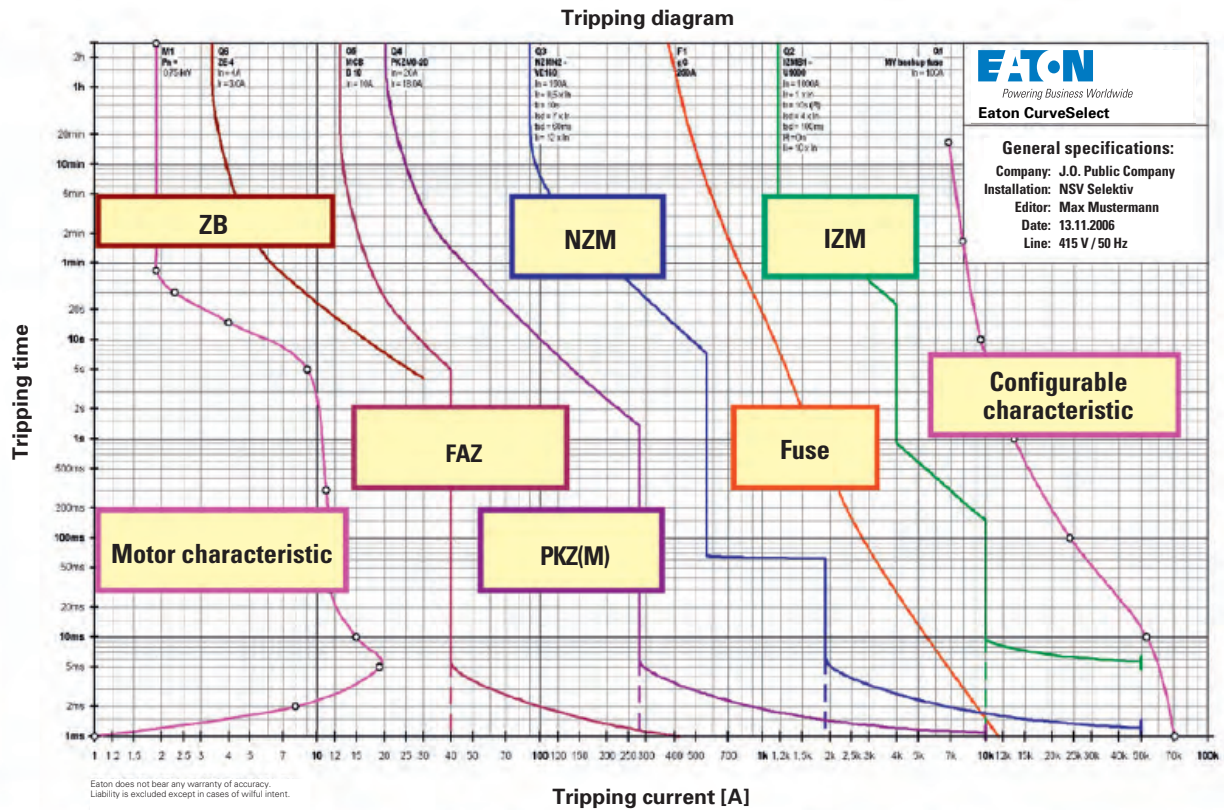


Figure 1: Representation of the tripping characteristic of different protective devices on the same time and current scale, using the example of a h.b.c. fuse characteristic (red), three NZM tripping characteristics (blue) and the tripping characteristic of an IZM (green). The device data and settings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

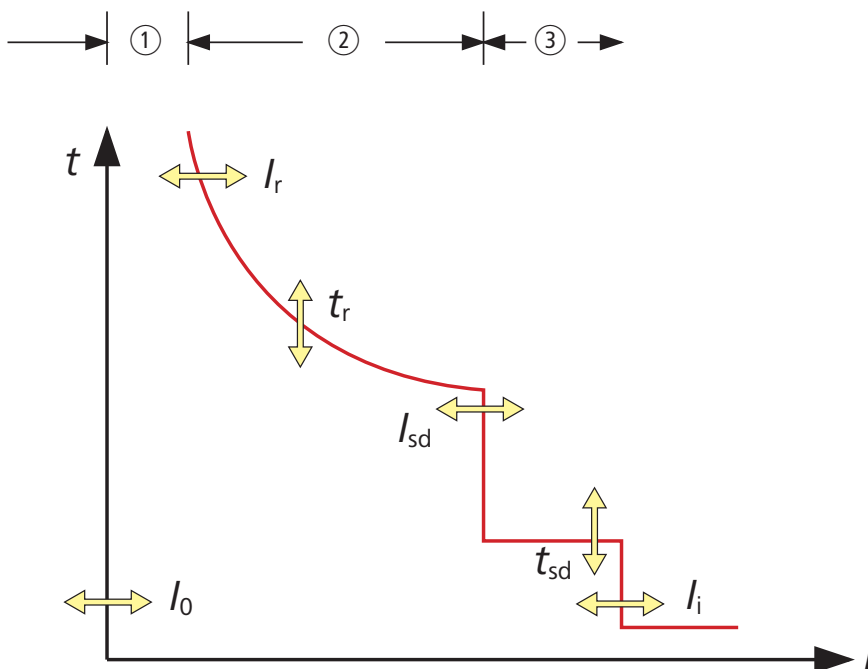


Figure 2: The figure indicates a tripping characteristic with functional ranges
1. Non-trip range/operating range to the left of or under the red tripping characteristic,
2. Overload range, a brief overload is possible,
3. Short-circuit range.
The figure also indicates the variable parameters corresponding to Table 4, which enable applicationspecific design of the characteristic curve.

Software tool "Characteristics Program"

Setting I_i for overload release

- Response value I_i for non-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. Quiet 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

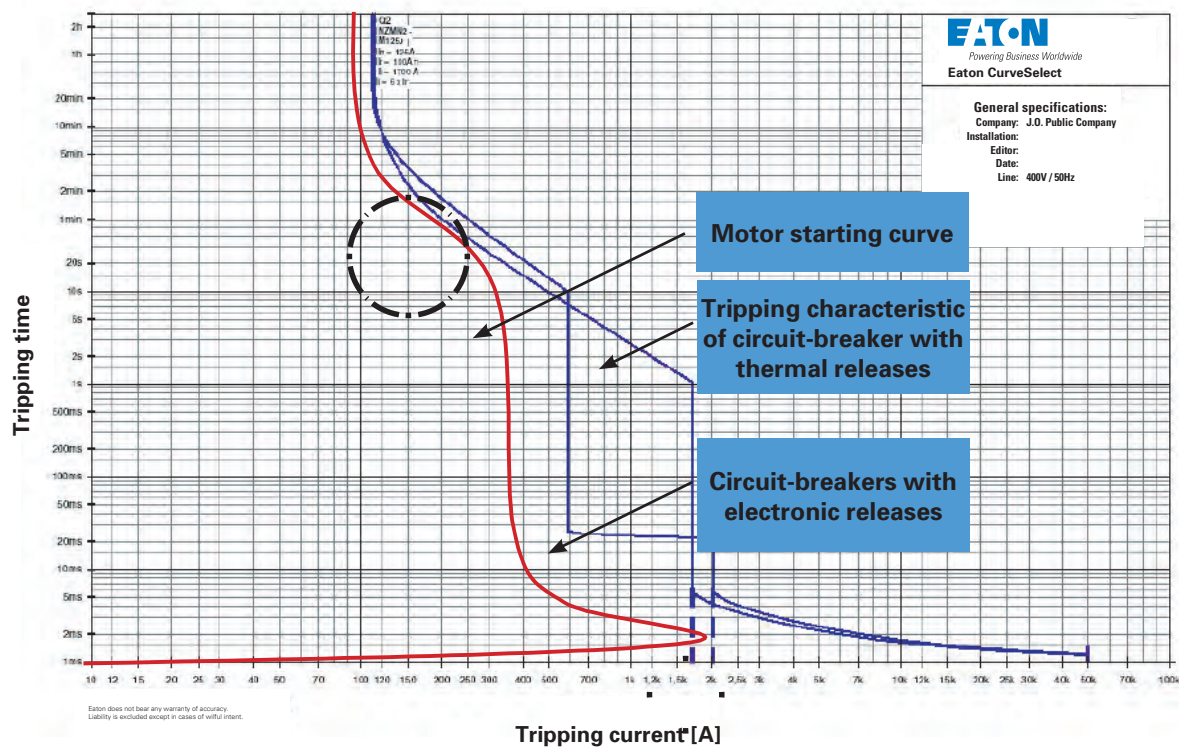


Figure 3: Circuit-breakers with electronic releases enable – by flexible setting features – a more exact matching to the typical current consumption curve of a starting three-phase motor than is possible with the switch on thermal overload releases.

Technical information

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

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+11H	285	10250T70	314	125MJ26-6	149	1314330	136
+12H	285	10250T700M	319	125MJ30-7	149	1314334	126
+ZAV(X1)+ZVV(X1)-T0/P3'	284	10250T700P	319	125MJ31-7	149	1314336	127
#		10250T701M	319	125N11-660	146	1314337	127
011-9127	152	10250T701P	319	125N20	144	1314398	136
011-9483	151	10250T80	314	125NHG00B	154	1314682	127
011-9679	152	10250T81	314	125NHG01B	154	1314692	126
011-9925	151	10250TA101	320	125NHG02B	154	1314693	137
011-9926	151	10250TA102	321	125NHG1B-690	155	1314735	125,136
012-0067	152	10250TA12E34TA12	320	125NHG2B-690	155	1314736	136
012-0140	152	10250TA15E34TA15	320	125NHM1B-690	155	1314830	136
012-0141	152	10250TA46	320	125NHM2B-690	156	1314884	127
02DILE	216	10250TA64	320	12ABCNA3.15	182	1318001	129
04DILE	216	10250TA6E34TA6	320	12AKGHA125	182	1318005	129
059-0107	151	10250TA7	321	12BDGHA10	182	1318008	129
059-0108	151	10250TA95	321	12BDGHA16	182	1318011	128
059-0109	151	10250TB63	311	12BDGHA20	182	1318016	128
059-0110	151	10250TC57	314	12BDGHA25	182	1318020	128
059-0111	151	10250TC58	314	12BDGHA31.5	182	1318023	128
059-0112	151	10250TC59	314	12BDGHA40	182	1318027	128
059-0113	151	10250TC61	314	12BDGHA50	182	1318030	128
059-0114	152	10250TC62	314	12BDGHA6.3	182	1318033	128
059-0115	152	10250TC63	314	12BFGHA100	182	1318046	129
059-0116	152	10250TC64	314	12BFGHA63	182	1318047	129
059-0117	152	1026375	46	12BFGHA71	182	1318048	129
059-0118	152	1026376	46	12BFGHA80	182	1318052	129
059-0119	152	1026377	46	12BFGHA90	182	1318268	136
059-0120	152	1026378	46	12CT	166	1318269	136
059-0121	152	1028915	46	12LCT	166	1318476	136
059-0122	152	1028916	46	120BCNA3.15	183	1318504	129
059-0123	152	1028917	46	120EFMA10	183	1318506	129
059-0124	152	1028922	46	120EFMA16	183	1318526	128
059-0125	152	1028926	46	120EFMA20	183	1318533	128
059-0140	151	1029600	46	120EFMA25	183	1318542	128
059-0141	151	1030	410	120EFMA31.5	183	1318544	128
059-0142	151	1037917	46	120EFMA40	183	1318547	128
059-0143	151	1037919	46	120EFMA50	183	1318548	128
059-0144	151	1037922	46	120EFMA6.3	183	1318685	137
059-0145	151	1037923	46	120EFMA63	183	1318902	136
059-0146	151	1049019	46	120HFMA100	183	1318903	136
059-0147	151	1049-U9	41	120HFMA71	183	1319065	128
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1000_U49	41	1050250	137	120HGMA20	183	1319114	129
1001-U12	41	1050252	127	120HGMA25	183	1319128	129
1009	410	1050253	127	120HGMA31.5	183	1319175	128
100D125	157	1050255	127	120HGMA40	183	1319311	128,129,137
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100FEE	167	1064108	46	120HGMA6.3	183	1319326	128,129,137
100KR85	150	10CT	166	120HGMA63	183	1319331	128,129,137
100L09-660	145	10D16	157	120HGMA71	183	1319332	137
100L14-660	145	10D16Q	158	120HGMA80	183	1319334	137
100LET	166	10D16R	158	120HGMA90	183	1319336	128,129,137
100LR85	150	10D27	157	120LGMA125	183	1319398	137
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100MJ26-6	149	10D27R	158	12DLEJ16	184	1319411	136
100MJ30-7	149	10H07-660	144	12DLEJ20	184	1319413	136
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100NHG00B-690	155	10K09-660	145	12DLEJ40	184	1319418	136
100NHG01B	154	10KR85	150	12DLEJ50	184	1319423	136
100NHG02B	154	10LCT	166	12DLEJ6.3	184	1319425	136
100NHG1B-690	155	10NHG000B	154	12DLEJ63	184	1319426	136
100NHG2B-690	155	10NHG000B-690	155	12HLEJ100	184	1319429	136
100NHM00B-690	155	10NHG01B	154	12HLEJ80	184	1319432	136
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DILM15-10(. . .)	217	DILM65-XP1	222	DS7-FAN-032	265	E2FM3063	198
DILM1600/22(. . .)	218	DILM65-XRL	220	DS7-FAN-100	265	E2FM3080	198
DILM170(. . .)	217	DILM65-XS1	222	DS7-FAN-200	265	E2FM3100	198
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DILM17-01+DILA-XHI20	261	DILM65-XSP(240V50HZ)	224	DX-CBL-PC-3M0	269	E2FM3160	198
DILM17-10(. . .)	217	DILM65-XSP(RDC24)	224	DX-CBL-RJ45-0M5	269	E2JM3250F	200
DILM17-10+DILA-XHI20	261	DILM7-01(. . .)	217	DX-CBL-RJ45-1M0	269	E2K3250T	202
DILM185A/22(. . .)	217	DILM7-01+DILA-XHI20	261	DX-CBL-RJ45-3M0	269	E2K3300T	202
DILM185-XP1	222	DILM7-10(. . .)	217	DXC-EXT-2R0	269	E2K3350T	202
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DILM225A-XHB	224	DILM72(. . .)	217	DXC-EXT-IO110	269	E2K3400TMW	202
DILM225A-XSP(RAC240)	224	DILM750/22(. . .)	218	DXC-EXT-IO230	269	E2KM3400F	202
DILM225A-XSP(RDC24)	224	DILM80(. . .)	217	DXC-EXT-LOC SIM	269	E2L3300T	204
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DILM32-XIP2X	222	DILM95-XSL	222	DXG-ACC-FR2N12KIT	271	E2NM3600W	206
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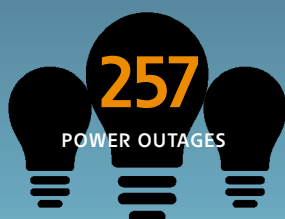
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harsh & hazardous
environments



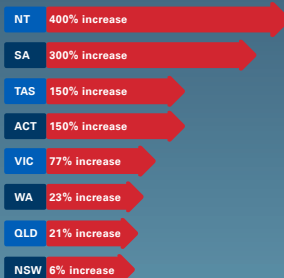
Snapshot of 2016 reported outages in:

Australia

2,635,666
PEOPLE AFFECTED



46% INCREASE IN POWER
OUTAGES FROM 2015

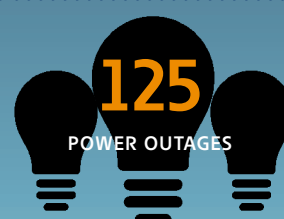


TOTAL DURATION OF OUTAGES



New Zealand

348,503
PEOPLE AFFECTED



NORTH VS SOUTH

Increase in power outages from 2015

31% increase 45% increase

Total duration of outages

2.2 days 2 days

Average duration of outage

40 minutes 65 minutes

Average number of people affected by outage

2,851 2,676

TOTAL DURATION OF OUTAGES





We make what matters work.*

- * At Eaton, we believe that power is a fundamental part of just about everything people do. That's why we're dedicated to helping our customers find new ways to manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. To improve people's lives, the communities where we live and work, and the planet our future generations depend upon. Because this is what really matters. And we're here to make sure it works.

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