Power distribution components

- MCB Distribution boards and enclosures
- MCCB Panelboards
- Switch and protection devices
- Industrial switch and fusegear
- Enclosed motor, heating and lighting control
- HRC cartridge fuselinks & fuse units

Smart solutions

for electrical distribution in commercial and industrial applications

EATON

Powering Business Worldwide

* 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.

To learn more go to: Eaton.com/whatmatters

Powering Business Worldwide

We make what matters work.

Power distribution components

Contents

1 Product overview

Eaton's comprehensive range of power distribution solutions have been developed to meet today's challenging electrical sub-distribution applications in commercial and industrial buildings. Through a proven competency in electrical distribution, Eaton delivers an innovative approach to aid compliance with the wider regulatory requirements associated with modern buildings.

Features & benefits

- Unique 'full form' blanking modules for unused MCB ways. Provides secure shrouding of unused busbar stabs for increased electrical safety. Blanking modules have interlinking form for improved positional security.
- Main busbar is removable for flexible installation.
- Fully shrouded Neutral busbar for increased safety.
- Choice of metering option to suit application needs and aid compliance with latest Building Regulation – part L2.
- Door opens 180° to provide easy access and device operation.
- Standard incomer Switch Disconnector rating of 125A provides higher rated solution for commercial buildings.
- Optional coupling kit available to electrically connect two distribution boards together vertically from a single supply cable to expand number of MCB ways.

General characteristics

Eaton's Memshield 3 MCB Distribution boards have evolved through an intimate knowledge and feedback from Electrical Contractors to provide solutions to a wide range of electrical distribution applications in commercial buildings. Memshield 3 delivers safe, reliable and high performance protection of electrical power distribution systems.

Type A Distribution boards are fully type tested with a conditional short circuit rating of 15kA to BS EN 61439. Associated devices are high performance MCBs, developed for Commercial and Industrial applications, dual rated at 10kA IEC – 60898 & 15kA IEC 60947-2 in B, C or D curves.

1.1 Product overview

Type A, SPN 125A distribution boards

Type A SPN distribution boards

The SPN boards are rated at 125A as standard and available in 5 sizes with a choice of 4, 7, 10, 13 and 16 single pole outgoing ways. A choice of metering solutions are available as standard, providing clear electrical consumption information as well as a permanent capability of visualising information on a variety of other electrical parameters. The metering options have been developed to provide simple solutions to aid compliance with part L2 of the Building Regulations of England and Wales. A wide range of accessories including full profile blanking modules for unused MCB ways and door locking options, enhance electrical safety, whilst clean earth kits and vertical inter-connection kits to join two boards together, improves versatility of the range.

Type A SPN pan assemblies

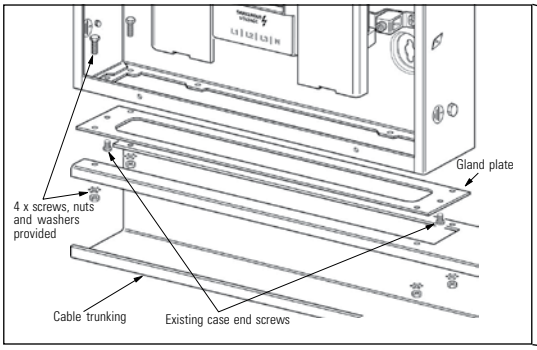
The SPN pan assemblies offer a high degree of flexibility for custom applications and inclusion in other factory built assemblies. SPN types are rated at 125A and available with 4, 7, 10, 13, and 16 single pole outgoing ways.

Incoming devices

A range of incoming options are available, with the 125A SPSN switch disconnector being the most popular. In addition, there are a number of 100A RCCB options, which provide the added security of earth fault protection, covering 30mA–300mA applications. A direct connection terminal arrangement is also available for applications not requiring local isolation. Type A distribution boards can be stacked vertically to expand the number of outgoing ways using the vertical interconnection kit. For larger SP applications, requiring more outgoing ways – see our type B distribution boards with Single phase kit options.

Outgoing devices

For type A distribution boards, there is a choice of single pole MCBs plus RCBOs. MCBs are available in current ratings from 1A–63A, with trip types B, C and D, 10kA to IEC 60898 and 15kA to IEC 60947-2. RCBOs to IEC EN 61009 10kA are also available in a choice of trip sensitivity options from 10mA–100mA.



Cable trunking interface kit fitting diagram

Features & benefits

- Welded 'case end' design board with removable gland plates provides super 'stiff' construction, even with gland plates removed. Construction virtually eliminates distortion during installation, ensuring final assembly fit and alignment.
- Unique cable trunking interface kit simplifies mounting of cable trunking and protects cables.
- Improved Neutral cable clamp design for simple & secure cable connection.
- Unique 'full form' blanking modules for unused MCB ways, provides secure shrouding of unused busbar stabs for increased safety. Blanking modules have interlinking form for improved positional security.
- Removable busbar assembly to assist installation.
- Additional Functional Earthing options and Clean Earth options available.
- Auto-formed, curved construction of main cover adds to board rigidity, with improved appearance.
- Removable door aids installation and 'easy hang' hinge design makes re-attachment of door simple.
- 125A Switch Disconnector Incomer for general commercial building applications.
- 250A options on 18 and 24 way boards.
- Compact 250A options on 18 and 24 way boards, where used with cable trunking.

1.2 Product overview

Type B, TPN 125A/250A distribution boards

General characteristics

Eaton's Memshield 3 MCB distribution boards have evolved through an intimate knowledge and feedback from electrical contractors, consulting engineers and end users to provide solutions to a wide range of electrical distribution applications in commercial buildings. Memshield 3 delivers safe, reliable and high performance protection of electrical power distribution systems.

Type B distribution boards are fully type tested with a conditional short circuit rating of 25kA to BS EN 61439. Associated devices are high performance MCBs, developed for commercial and industrial applications, dual rated at 10kA IEC – 60898 & 15kA IEC 60947-2 in B, C or D curve.

A wide range of accessories including full profile blanking modules for unused MCB ways and door locking options, enhance electrical safety, whilst clean earth kits improve versatility of the range.

Where used with 250A sized incomers, an extension box or the provision of suitable sized cable trunking is required to accommodate incoming cabling. A new cable trunking interface kit is available to provide additional mechanical protection of incoming cables.

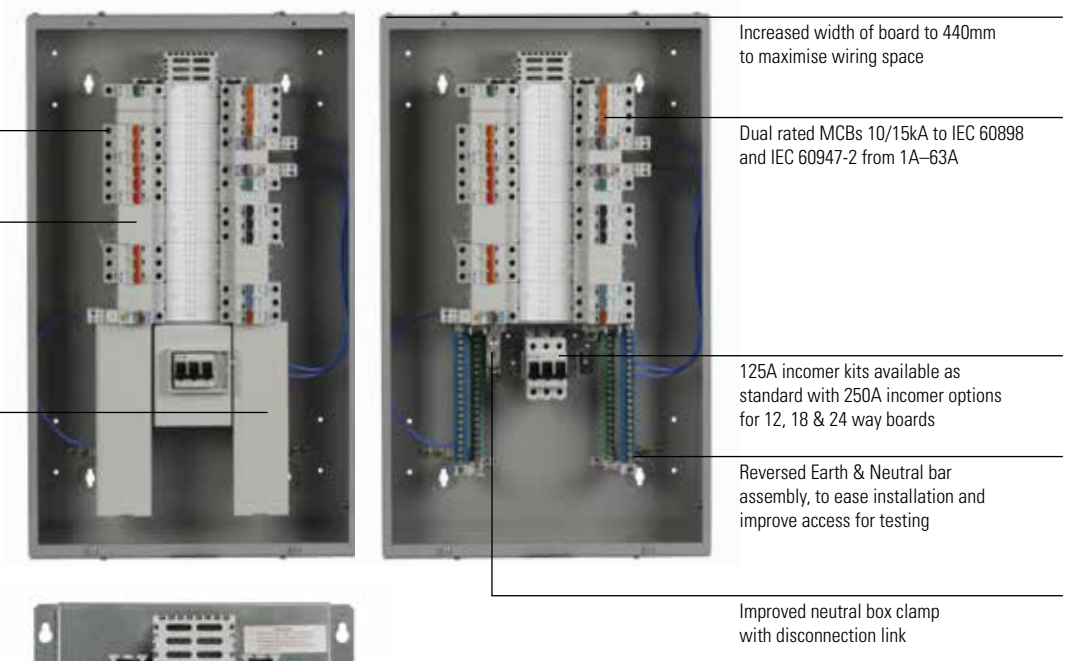
A choice of metering solutions are available as standard, providing clear electrical consumption information as well as a permanent capability of visualising information on a variety of other electrical parameters. The metering options have been developed to provide simple solutions to aid compliance with part L2 of the Building Regulations of England and Wales.

Type B TPN standard distribution boards

The optimised design for 125A TPN applications provides a choice of boards in sizes – 4, 6, 8, 12, 18 and 24 TP ways. 12, 18 & 24 TP way variants are also suitable for 250A applications, where the number of MCB ways could require a larger supply current rating. A choice of incomers are available to suit different applications including RCCB options and a single phasing kit to provide a large single phase board arrangement.

Incoming devices – 125A standard TPN board

The most popular choice will be the 125A switch disconnector incomer option, but other choices include a 4-pole TPSN, 2P SPSN, a range of RCCB switches and a contactor controlled incomer with switch disconnector for remote control of the supply to the board. A direct connection option is also available for applications that do not require local isolation.



Type B SPN pan assemblies

The TPN pan assemblies offer a high degree of flexibility for custom applications and inclusion in other factory built assemblies. 125A TPN types are available with 4, 6, 8, and 12 triple pole outgoing ways. 250A TPN types are available with 12, 18, and 24 triple pole outgoing ways.

125A AFDD type B TPN distribution board

- The optimised design for 125A TPN applications provides a choice of boards in sizes – 14, 24 and 36 AFDD ways and are fully type tested to BS EN 61439.
- Associated devices are high performance AFDDs to IEC/EN-62606, developed for commercial and industrial applications, trip rated at 10kA up to 25A and trip rated a 6kA for 32A and 40A.
- A wide range of accessories including optional internal SPD, multi board separation kits and alignment spacer, full profile blanking modules for unused AFDD ways and door locking options.
- A choice of metering solutions are available as standard including the multi meter pack.

High performance AFDDs to IEC/EN-62606
- trip rated at 10kA up to 25A
- trip rated a 6kA for 32A and 40A

2 x 80A EVG busbars which accommodates incomer and AFDD feeders

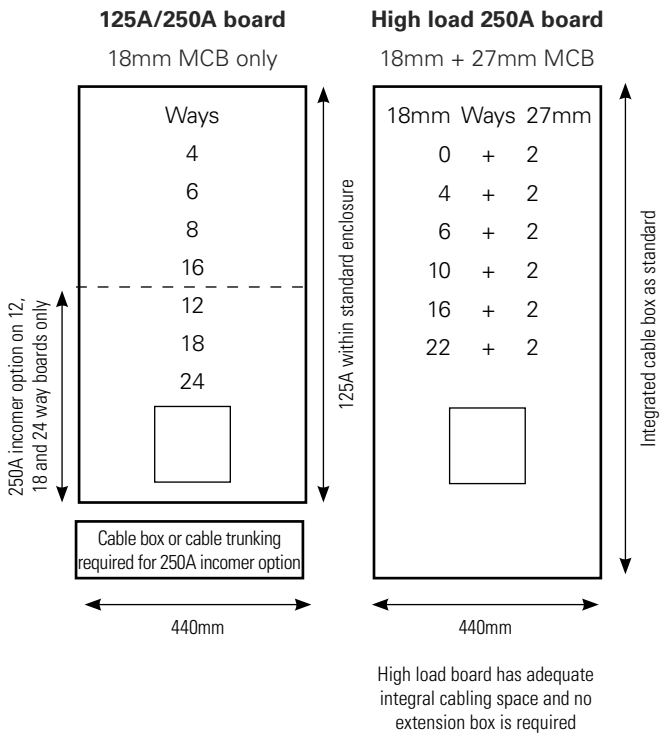
125A incomer kits available as standard (TP and TPSN)

Boards sizes combined to align top and bottom

Same width (440mm) and depth (130mm) as the Type B Distribution board

Optional internal SPD:
- type 1&2
- type 2

Type B, TPN 250A distribution board solutions



Type B TPN 250A High Load distribution boards

Removable gland plates are provided top/bottom for ease of installation

Removable front door to aid accessibility to devices

Covers fit within enclosure dimensions allowing adjacent mounting

Modern, curved edges enhance appearance of board

Choice of SP & TP 18mm dual rated MCBs 10/15kA to IEC 60898 and IEC 60947-2 from 1A–63A

Two TP 27mm MCB ways, rated up to 125A

Secondary cover, slides over two location screws at bottom of board for easier fastening

Type B TPN 250A High Load distribution boards

Developed to respond to the needs of modern commercial building applications, a new 250A TPN range of MCB boards delivers increased versatility by having the ability to supply and protect sub loads up to 125A. Based principally around standard 18mm MCBs and RCBOs, this range has provision for two TP 27mm MCBs, up to 125A.

Available in sizes 2, 6, 8, 12, 18 and 24 TP ways, of which two ways are dedicated to the 27mm MCBs. 27mm MCBs are available SP or TP with ratings from 20A–125A.

Incoming devices – 250A TPN board and 18/24 way 125A board

These incomer options can be used with the 250A board or with the 18 or 24 way variant of the 125A board to provide a greater choice of solutions at 250A.

The most popular choice will be the 250A TPN switch disconnector incomer option, but other choices include MCCB incomers from 160A to 250A and a contactor controlled incomer pack. There is also a direct connection option available for applications that do not require local isolation.

Outgoing devices

For type B distribution boards, there is a choice of single pole or triple pole MCBs plus SP and TP RCBOs. MCBs are available in current ratings from 1A–63A, with trip types B, C and D, 10kA to IEC 60898 and 15kA to IEC 60947-2. RCBOs to IEC 61009 10kA are also available in a choice of trip sensitivity options from 10mA–100mA. For the 250A "High Load" board, provision is given to accommodate a number of 27mm MCBs available in SP or TP sizes from 20A–125A to IEC 60947-2 .

1.4 Product overview

Distribution board metering solutions

200A TPN type B distribution board, with integrated split meter for power/lighting

- TPN distribution board with 'smart' meter for power and lighting loads.
- Unique meter design calculates net values for each busbar section and total board load.
- Meter has both Pulsed and Modbus outputs as standard.
- Embedded vt technology and RJ 11 connections at meter minimises visible wiring.
- Supplied complete with factory fitted 200A Switch Disconnector incomer switch.
- Suitable for TPN and SPN applications as supplied (shorting link included).
- Increased earthing options supplied as standard.

The feature packed Eaton meter packs and boards

To meet the needs of part L2 of the Building Regulations introduced in England and Wales in 2006, Eaton's Memshield 3 meter packs provide simple integration with matched aesthetics. The EBMMPCT250 employs a multi-function, DIN rail mounted meter to measure electrical parameters on LV supplies to TPN distribution boards. It can also be used to meter single-phase loads. The unit is supplied complete with CTs and wiring terminals. This version is suitable for 100A–250A applications and as well as a pulsed output for kWh, the meter can be used to monitor other parameters, including line voltage and current. Electrical connection to the associated distribution board does not occupy any of the outgoing circuits. Modbus and MID certified meter versions are also available – see page 79.

The **EBMMPDC120** is supplied as a 120A direct connection solution, not requiring CTs. Cabling is simple and the meter provides a pulsed output for kWh. The meter is an MID certified unit, providing clear kWh information.

Double meter pack for two standard TPN distribution boards facilitate separate monitoring of "small power" and "lighting" from one main supply.

For single phase EAM boards, a 65A meter pack provides simple integration. (Amps, kW, kWh, kVar and kVarh pulsed output, MID compliant. See page 26 for single phase EAM boards with factory fitted meters, including split power and lighting boards.)

Metering solutions – type A metered boards

- Type A SPN boards with integrated meter.
- Split load versions utilise a two channel meter, feeding two independent busbars and groups of MCB/RCBOs.
- Split load versions provide independent monitoring of "Power" and "Lighting" loads and total load.
- Aids compliance with Part L2 of the Building Regulations (England & Wales).
- See page 120 for dimensions.

Metering solutions – type B meter pack assemblies

Eaton's Memshield 3 meter packs provide simple integration with matched aesthetics. Split metering for separate small power and lighting has been added to the range to meet the needs of the L2 Regulations introduced in England and Wales in 2006. The meters provide a pulsed output for kWh and display other useful parameters, including line voltage and current. Modbus versions are also available and provide remote access to additional electrical parameters. For details refer to page 32. For dimensions refer to page 129.

Energy Monitoring Solutions (EMS)

EMS solutions in standard and Memshield3 enclosures can electronically capture energy data from a number of meters in an installation. These need to be ordered as factory built assemblies.

Multi Meter Pack

- The Multi meter pack allows a 250A supply to be split between multiple EBM boards, but still be metered as a single or combined supply. This allows a single supply to be split and metered between power, lighting, mechanical services, etc. at different customer required currents. As many as 4 load cables per phase can be fitted which then pass through the CTs and on to their prospective EBM boards.
- Optional MCB Load Protection. Protective devices EM*S and EM*H can be added to protect the load circuits. The board can disperse a maximum current of 250A which can be split between a combination of load protecting MCBs.
- The double meter pack is set up with a single plug and play double input meter, 2 CTs and the voltage tap off fuse block, all pre-wired.
- The quad meter pack is setup as the double but with an extra CT and a quad input meter instead of the double input meter. (A further CT can be added if required).
- Optional internal SPD kit available.

Miniature circuit breakers (MCBs)

The Eaton range of 10kA/15kA high performance miniature circuit breakers (MCBs) have been designed to meet the latest UK, European and international standards, with ratings from 1A up to 63A.

The Eaton miniature circuit breakers are designed and tested in accordance with BS EN 60898 and are available in B, C and D characteristic curve as standard.

Technical characteristics

- Modular design, DIN rail mountable.
- 1, 2, 3, and 4-pole MCBs for commercial and Industrial applications.
- Rated braking capacity 10kA to IEC 60898 and 15kA to IEC 60947-2.
- Rated currents from 1–63A in B, C and D characteristics.
- Positive contact indication.
- Box clamp barrier to prevent incorrect cable/busbar insertion.
- Calibrated at 40° C.
- Can be used with both pin and comb type busbars.
- Suitable for use in Eaton Memshield 3 distribution boards and a wide range of other applications.

Toggle colour for commercial MCBs changes dependant on the rating as shown below:

< 2A		16A	
2A		20A	
4A		25A	
6A		32A	
8A		40A	
10A		50A	
13A		63A	

Residual current circuit breakers with overcurrent protection (RCBOs)

The Eaton range of combined residual current circuit breakers with integral overload protection (RCBOs), combine the highest level of protection for both people and circuits for both single phase / single module and three phase / four module devices. Fully comply to IEC 61009.

Technical characteristics – single phase RCBOs

- Available from 6A to 45A in types B and C trip characteristics with a choice of 10mA, 30mA, and 100mA trip sensitivities.
- Compact modular design, DIN rail mountable, one module wide.
- Suitable for use in Memshield 3 single and three phase distribution boards.
- Unswitched neutral.
- Positive contact indication.
- Rated breaking capacity 10kA.
- Trip test button.

Technical characteristics – three phase RCBOs

- Options from 6A to 32A in type B, C, and D trip characteristics with a choice of 30mA, 100mA, and 300mA trip sensitivities.
- Compact modular design, DIN rail mountable, four modules wide.
- Suitable for use in Memshield 3 three phase distribution boards.
- Unswitched neutral.
- Positive contact and earth fault trip indication.
- Rated breaking capacity 10kA.
- Trip test button.

Residual current circuit breakers (RCCBs)

The Eaton range of residual current circuit breakers without integral overload protection (RCCBs), provide protection solutions to a wide range of applications.

The Eaton range of 2 and 4-pole RCDs are available with 10mA, 30mA, 100mA and 300mA sensitivities, and can be equipped with a wide range of modular accessories

Technical characteristics

- Modular design, DIN rail mountable, 2 or 4 modules wide.
- Double and four pole RCD for commercial and industrial applications.
- Rated short circuit capacity 10kA with fuse back up.
- Trip sensitivities 10, 30, 100 and 300mA.
- Positive contact indication.
- Test trip button.
- Rated currents from 16–100A.

The RCBO takes up 4 pole ways in a 3-phase distribution board, i.e. L1 / L2 / L3 and the 4th pole of the device fits over, and is insulated from, the L1 phase position of the neighbour circuit. Therefore the neighbour circuit only has two phase circuits available for single phase circuit feeds.

Arc Fault Detection Devices (AFDD+)

Eaton's range of AFDD's combine the functionality of an MCB, RCD and AFDD in one package designed in accordance to IEC/EN 62606 & IEC/EN 61009. Ratings are available up to 40A with B & C curve characteristics and 30mA sensiivity. Devices are available in current types A.

Features include:

- Variable installation of N on either left or right
- Tripped indication : MCB, RCCB or AFDD with LED indication of arc faults
- Permanent self monitoring including over heating and over holtage
- Rated breaking capacity up to 10kA (6kA above 25A)

Switches and Twilight Switches

Timers & Twilight Switches are applied in any residential, commercial and industrial buildings wherever automatic control is required on predefined times and/or depending on daylight intensity.

The Eaton range comprises of a wide variety of different products which include analogue Timers, digital Timers, Twilight Switches and Staircase Timers.

These Timers can either be controlled by a 50 Hz netsynchronisation, quartz control and time synchronisation or using the DCF signal or GPS antenna, which guarantees 100% accuracy at all times. Except for net-synchronised timers all units do have self power reserve to secure the time setting and program storage in case a power interruption does occur.

Dedicated computer software and memory cards are available to support the programming of our most advanced timers.

Automatic summer and winter time, holiday and random switching programs complete the functionality of our range.

Twilight Switches are supplied with a remote light sensor, which can be easily installed on the outside wall where the required light intensity threshold can be simply adjusted on the modular device itself.

Technical characteristics (depending on type)

- Modular design.
- Analogue and digital timers.
- Time adjustment by 50 Hz net, quartz control, DCF[1)] or GPS signal reception[2)]
- Manual override switching function.
- Power reserve for all quartz and DCF or GPS driven switches.
- Remote Light Sensor for Twilight Switching.

Benefits

- Easily programmable on front of device.
- Computer aided programming software available.
- Compact 18 mm design for restricted space opportunities.
- Separate IP40 covers are available for direct wall mounting.
- High level of accuracy.
- Automatic summer and winter time adjustment.
- Holiday & Random program settings.
- High power reserve up to 10 years.

Notes: 1) Automatic calculation of sunrise and sunset times throughout the year, including the possibility of astro times + / -2 hour shift.
2) The DCF-signal can only be received within a 1000 km radius.

Contactors and impulse switches

Contactors are frequently applied for switching of lamp loads, fans or pumps in both utility as well as industrial areas.

Eaton's "CR" contactors are very specific due to the applied operating coil and the construction of the main contacts. All contactors with ac/dc coils ensure silent operation which is further enhanced by a low power consumption.

Optimal contacts and low heat dissipation guarantee a long lifetime of the contactor which is available in a wide range of characteristics.

Technical characteristics

- Designed according to IEC 60947-4-1 and IEC 61095 standards.
- Suitable for applications in general control, heating & lighting applications.
- Available in 20, 25, 40 & 63 A ratings with up to 4-pole contacts.
- Optional add-on auxiliary contact available.
- DIN modular profile.
- Spacers available to extend lifetime (it is recommended to use 1 spacer between every 2 contactors installed).
- Day/night contactors available with manual override function.

Advantages of Eaton contactors

- Low inrush power for all ac/dc types.
- Availability of combined ac/dc type contactors ensure silent operation.
- Contactors of ac/dc coil type are operable on both ac and dc voltage. The 20 A and 25 A versions are also available with ac coil. All combined ac/dc type versions are equipped with surge protecion on the operating coil.
- Equipped with contact indication.
- Optimal quality of contacts and low heat dissipation ensure a long life time.

1.7 Product overview

MCCB panelboards and pan assemblies

The feature packed Memshield 3 MCCB panelboard distribution system

A complete range of MCCB panelboards and pan assemblies providing all the options you need from a straightforward panelboard to a comprehensive panelboard system. The range now offers a variety of incoming devices and a greater choice of outgoing ways to provide more flexibility and choice to the user.

- 250A, 400A, 630A & 800A panelboard versions available.
- Can be configured for incomer device at top of panelboard.
- 3 or 4 pole incoming devices can be fitted.
- 4 to 18 outgoing TP ways.
- Outgoing MCCBs up to 400A, available in 25, 36 and 50kA breaking capacity.
- All TP & 4P MCCBs have adjustable thermal and magnetic trip units as standard except for 630A and 800A incomer MCCBs which are fixed thermal / adjustable magnetic trip. MCCBs with additional trip unit functionality are available to special order:
  - Distribution circuit protection, electronic.
  - Motor protection, thermal/magnetic.
  - Motor protection, electronic.
  - Motor protection without overload release.
  - Selective (discriminative) and generator protection, electronic.
- Enclosure degree of protection IP3X (wall-mounted)
- Form 2b type 2 segregation.
- Form 3b type 2 segregation - with finger guards fitted.
- Tin–plated busbar systems throughout the range.
- Incoming and outgoing metering options to ensure Part L2 Building Regulations compliance. Plug-in cabling system provides for faster and error-proof installation.
- Reliable & safe operation assured through DEKRA testing & certification.
- Wide range of extension boxes, metering, surge protection, and earth leakage incomer options available.
- Versatile solution, accommodating different frame size outgoing MCCBs to best match application needs.
- Enhanced safety through fully shrouded incoming devices, to protect against contact with live parts.
- Enhanced safety with outgoing neutral terminal barries.
- Blanking plates finger protect unused outgoing ways.

Option to remove top and bottom cross rails provides the ability to lay cables into the board instead of feeding them through the gland plate aperture, resulting in big time savings.

The brand-new Memshield 4 MCCB 4-pole panelboard system up to Form 4 / Type 6

A Eaton's 4-pole panelboard system combines highest levels of electrical safety in a late stage with increased efficiency and reduced downtime thanks to system components available off the shelf.

Memshield 4 is cost effective, customizable and optimized to speed up change-over time and the fitting of additional circuits. High levels of separation and compartmentalisation enabling increased operator safety. Design and layout are perfectly coordinated with the existing Memshield 3 panelboard range.

- 400A and 800A panelboard versions available.
- The design suits for top or bottom incomer configuration.
- 4-pole fully shrouded IPXXB plug-in busbar assembly.
- Efficient design enables multiple number of outgoing options (SPN, TPN, 4P) of different frame sizes
- Compact off the shelf panelboard system as well as MCCBs.
- Minimize the gap between small switchboards / factory-built-assemblies and well established Memshield 3 MCCB 3-pole panelboard system

Surge protection devices (SPD) for MCB distribution boards and MCCB panelboards

In order to enable designers, specifiers, and installers to comply with surge protection requirements in BS 7671:2018 - IET Wiring Regulations - 18th Edition (Section 534), Eaton has a combined lightning current and surge arrester, as well as an individual surge arrester to provide a coordinated solution for lightning protection and surge suppression fully tested to BS EN 62305. This range of coordinated enclosed kits provides peace of mind that all equipment has comprehensive transient overvoltage protection caused by lightning strokes and switching in low voltage systems.

Surge arrester protection for distribution boards

EM3SSK1T2 (SPN distribution boards) & **EM3SSK3T2 / EBMAFDDSPDT2 / EBMMPSLSPDT2** PN distribution boards) technical summary:

- For the protection of low voltage distribution systems against transient overvoltage caused by indirect lightning strike and switching operations.
- The 3+1 circuit offers a universal solution for surge protection in low voltage distribution systems.
- Suitable for TT- and TN-S systems according to IEC 60364-5-53 Clause 534.
- IEC 61643-11 class II tested SPD.
- EN 61643-11 type 2 SPD

Combined lightning arrester and surge arrester protection for distribution boards and panelboards

EM3SSK3T12 / EBMAFDDSPDT12 / EBMMPSLSPDT12 (TPN distribution boards) & **EPBN1SPD123 / EM4PBSPD34** (panelboards) technical summary:

- Lightning protection classes III and IV in accordance with IEC 62305.
- For the protection of low voltage distribution systems against transient overvoltage caused by direct and indirect lightning strike and switching operations.
- Application according to IEC 60364-5-53 Clause 534.
- IEC 61643-11 combined class I and II tested SPD.
- EN 61643-11 combined type 1 and 2 SPD.

Combined lightning arrester and surge arrester protection for panelboards

EPBN1SPD1234 / EM4PBSPD1234 (panelboards) technical summary:

- Lightning protection classes I, II, III and IV in accordance with IEC 62305.
- For the protection of low voltage distribution systems against direct lightning strike into the overhead power supply line or external lightning protection system and against indirect lightning stroke and switching operations.
- Application according to IEC 60364-5-53 Clause 534.
- IEC 61643-11 combined class I and II tested SPD.
- EN 61643-11 combined type 1 and 2 SPD.
- No discharge of ionised gases during operation.

Glasgow fuse-switch-disconnectors & switch-disconnectors

For many years, the Glasgow product name has been synonymous with quality, trust and reliability and as part of our long standing commitment to its tried and tested design we've reinvested for the future by re-tooling the whole range. All units are supplied with fuselinks or switchlinks fitted. Glasgow fuse switch disconnectors and switch disconnectors meet the constructional requirements for isolation of and are type tested to BS EN 60947-3. Conditional short circuit current rating tests at a value of 80kA rms Ue 415V have been carried out with Eaton HRC fuses fitted. Five frame sizes are available to provide a range from 63A to 800A, with utilisation category AC22A and AC23A Ue 415V ratings. Switch-disconnectors fitted with copper links give assigned AC20A Ui 660V and AC21A Ue 415V ratings. All units have retractable operating handles which drive overcentre mechanisms incorporating powerful operating springs. Opening and closing of the switches is thus independent of the action of the operator. Moving contact assemblies can be removed to facilitate installation or for contact inspection or renewal. Flag "on-off" indication is provided and terminal cover shields prevent contact with live metal. TPSN indicates triple-pole and switched neutral, the neutral pole making first and breaking last. Rated Insulation Voltage Ui 660V.

Enclosures

Surface-mounting enclosures comprise heavy gauge steel body plates incorporating cast iron frame members and are rustprotected, with a light grey paint finish (RAL7004). Front access doors, which are detachable, are fitted with dust-excluding gaskets and are interlocked to prevent opening when the switch is 'on'. The interlock can be defeated by a competent person for maintenance purposes. Operating handles may be locked in both the 'on' and 'off' positions. Castell type interlocks can be supplied to special order. Internal fixing holes allow units to be mounted closely side by side and all models have removable top and bottom end plates. These are pierced for connections, divided into front and rear (fixed) portions to simplify cabling using Eaton's MEM series split-type cable boxes, and provided with undrilled cover plates.

Fuses

Glasgow units are designed for use with HRC cartridge fuse links to BS88: Part 2. 63A and 100A units employ off-set contact fuse links. Details of suitable types of HRC cartridge fuse links are listed on page 101. All performance tests have been carried out using Eaton BS88 fuselinks.

Motor ratings

The motor ratings assigned to TPN switch-disconnector units are utilisation category AC23A (frequent operation) to BS EN 60947-3, which calls for make and break testing at 10 and 8 times rated current respectively for units having a motor rating up to and including 100 Amps. Ratings for switch-disconnector-fuses are dependent on suitable HRC fuses being fitted.

Auxiliary equipment

A comprehensive range of extension boxes and spreader boxes is available. Units are fitted with HRC Fuselinks of maximum rating but will accept fuselinks of a lower rating, refer to the Paramount HRC Fuselinks section on page 101. SPSN and TPSN indicate switched neutral. Neutral makes first and breaks last. If DP fuse-switch-disconnectors are required, use SPSN and replace the supplied switch link with a compatible fuselink.

Definitions of utilisation category

AC20a – Connecting and disconnecting under no load condition.

AC21a – Switching of resistive loads including moderate overloads.

AC22a – Switching of mixed resistive and inductive loads including moderate overloads.

AC23a – Switching of motor, or other high inductive loads.

Cable extension boxes

Fabricated sheet steel boxes boxes can be fitted top/bottom of Glasgow switch units to provide additional space for spreading multi-core PVC insulated cables with solid aluminium conductors and for some larger cables with stranded copper conductors. For 1–3PCB, a plain flame retardant plywood plate is provided for fitting between the box and switch unit, the steel endplate supplied fitted to the switch unit being used on the box's cable entry side. For 4PCB, a plain steel plate is provided for cable entry on box. The switch enclosure has 8mm thick insulated endplates fitted both ends. For 5–6PCB, a 10mm thick insulated plate is provided for cable entry on box. The switch enclosure has 10mm thick insulated endplates fitted both ends, 5PCB includes a flame-retardant plywood packer for fitting between PCB and switch unit's endplate to provide lid flange clearance.

Spreader boxes

Cast metal split pattern, supplied with fixing bolts and plain bushes. Two types are available, suitable for straight or angled entry. They permit conductor spreading of larger PVC cables and fit directly on to Glasgow fuse-switch-disconnectors and switch-disconnectors.

Glasgow busbar chamber system

Eaton's busbar chamber system is designed to provide either compact, wall-mounting installations or – by using optional pedestal sets – easily assembled switchboards. Every facility is provided to enable Eaton's switchgear and distribution gear to be mounted easily and economically to busbar chambers which can be applied either to a suitable load-bearing vertical surface; or, by means of a pedestal set, affixed to a vertical surface which need not be load-bearing.

Busbar chambers

These are produced in 100, 200, 400, 630 and 800 Amp. ratings and in four nominal lengths. 100, 200 and 400 Amp units are available in all four sizes; 630 and 800 Amp ratings are offered in the three longest units only. All units in the range share the same height and depth dimensions. Similarly the twin busbars are located in precisely the same positions throughout the range and vary in size only in their front-to-back dimensions according to rating. Detachable end plates enable all units to be extended by coupling to a second busbar chamber using extension sets. Both top and bottom plates are also readily detachable so that marking out and machining can be carried out conveniently on a bench to accommodate Eaton's switchgear either above or below the chamber. Complete mounting kits, including templates, are available for mounting all Exel and Glasgow switchgear. Eaton chambers are fabricated from rust-protected sheet steel with a light grey paint finish. They have been type tested to BS EN 61439 with a rated conditional short circuit current rating of 63kA at Ue 550V and a rated short-time withstand current Icw 20 times nominal rated current for one second. They are designed for use in factory-built assemblies to BS EN 61439. All chambers are subjected to an on-line dielectric test unit which provides a high voltage test between poles; and from poles to earth. Earth continuity is also tested. Rated insulation voltage 660V.

Connection sets for Glasgow fuse-switch-disconnectors & switch-disconnectors

Cable clamps covering all ratings are available for switchgear up to 200A. For connecting Glasgow units of 160A and above, solid copper connection sets are recommended as cost effective and convenient. These comprise pre-formed, insulated links in 4-pole sets supplied with all necessary clamps and fasteners. The appropriate switchgear mounting set (41, 51 or 61 BBMS) must be used with connection sets for 160–800A Glasgow units.

Busbar cable clamps and sockets

Incoming main cable clamps or sockets are not supplied due to the wide range which would be necessary to meet all requirements. Busbar cable clamps comprise plated brass U-clamps and steel slides with all bolts and washers. They are suitable for the connection of small solid or stranded copper conductors and also aluminium conductors using a barrier grease. Busbar cable sockets are plated brass castings complete with clamps and fixings, suitable for the termination of either copper or aluminium conductors. Both clamps and sockets allow for clamping on the busbars without drilling. For cabling direct on to busbars of 630–800A rating a special cable extension is required which can be made to special order.

Switchgear mounting sets

Available for all ratings of Exel switch-disconnectors/switchdisconnector fuses and Glasgow fuse-switch disconnectors and switchdisconnectors enabling these units to be mounted simply and efficiently either above or below the busbar chamber. Each mounting set comprises a template with instructions for machining the top/bottom plate of the busbar chamber; clamping channels, ready pierced for fasteners; all necessary fastenings; and, for Glasgow units, insulated shields and switch filler plates where appropriate.

Exel 2 switch-disconnectors & switch-disconnector fuses

Exel 2 switch disconnectors and switch-disconnector fuses meet the constructional requirements for isolation of and are type tested to BS EN 60947-3. Switches are of the quick make and break type, suitable for use on AC or DC. Units have removable moving contact assemblies to facilitate wiring. Exel 2 surface-mounting enclosures are fabricated from rust-protected sheet steel with a light grey paint finish. Removable blank top and bottom end plates (except for 20 and 32A top end plates which incorporate knockouts) and gasket doors give IP41 protection. Chromium-plated front operated handles, with "ON (I) OFF (O)" indication, and internal fixing enabling units to be mounted closely side by side. Interiors comprise porcelain bases fitted with non-ferrous conducting components.

Fuses and fuse carriers

HRC fuse carriers are designed for offset contact fuse links to BS 88: Part 2. Eaton HRC fuse links fitted to switchdisconnector- fuses are suitable on systems up to 415V AC. Eaton fuses used in these products are also suitable for 250V DC systems. All performance tests have been carried out using Eaton BS88 fuselinks. Units are fitted with HRC Fuselinks of maximum rating but will accept fuselinks of a lower rating, refer to the Paramount HRC Fuselinks section on page 101. HRC pattern switchfuses are fitted with type SCH carriers (20A, 32A, 63A-moulded; 100A, 125A-porcelain).

Motor ratings

The motor ratings assigned to TPN switch-disconnector units are utilisation category AC23A (frequent operation) to BS EN 60947-3, which calls for make and break testing at 10 and 8 times rated current respectively for units having a motor rating up to and including 100 Amps. Ratings for switch-disconnector-fuses are dependent on suitable HRC fuses being fitted.

Cable size

Maximum cable sizes are: 20A–6mm^2, 32A–10mm^2, 63A–35mm^2, 100/125A–70mm^2.

Type test compliance with standards

This range has been satisfactorily type-tested in accordance with BS EN 60947-3 with Eaton HRC fuselinks fitted.

Rotary isolators

Local switch-disconnectors standard duty, 20–63A, IP65, 3, 3+N, 6, and 8 poles

Complying with IEC/EN 60947-3, VDE 0660, and IEC/EN 60204, the surface mounting range of rotary switch disconnectors are suitable for on load switching of general distribution a.c. power circuits and infrequent duty motor isolation.

Light grey, moulded silicon and halogen free thermoplastic enclosures provide protection to IP65 making them suitable for most indoor and outdoor environmental conditions.

These compact isolators are fitted with red/yellow operating handles padlockable in the 'OFF' position with up to three padlocks.

The enclosure design allows for easy access for cabling. Solid neutral and earth termination points are a standard feature.

Changeover switches

20-63A, IP65, 4 pole

Suitable for on-load control of alternative supplies. Surface mounted, 4 pole on-load changeover switches have a rated voltage of 690V.

Switches comply with IEC/EN 60947-3, VDE 0660, IEC/EN 60204.

In all cases ample cable space is provided for both incoming and outgoing cables. Each unit is provided with an insulated IP65 black handle which may be padlocked in the 'OFF' position. Clear 'ON' (I) and 'OFF' (O) indication is provided.

Exel – distribution fuseboards

The Exel fuseboard range is available with standard enclosures to IP4X for the complete range of 20A to 200A distribution boards. A variety of extra features have been incorporated in the range including increased cabling space, superior door latches and locking devices (there is a choice of barrel lock or padlocking device), improved lid hinges and a unique safety carrier which effectively blanks off a single fuse-way allowing the circuit to be worked on in safety. Safety carriers have no provision for accepting a fuselink. The Exel distribution fuse boards are designed to comply with the requirements of BSEN 61439-2. All phase parts are fully shrouded so that additional circuits may be wired and connected in safety whilst the existing circuits remain live and on load. The type of enclosure available gives protection to IP4X and is supplied with removable endplates. The range covers a wide variety of ratings from 20–200A; 20A and 32A with up to 12 ways in SPN and TPN configurations; 63A up to 8 ways, 100A up to 8 ways and 200A 4 way in TPN configurations. All ratings available with moulded HRC carriers to BS88: Part 2. Testing has been carried out using Eaton 'S' type HRC fuselinks. Fuse base mouldings are of high quality thermosetting material. The fuse units have skirted fuse carriers to prevent accidental contact with live parts when inserting or withdrawing a carrier. Separate shields are provided for the base contacts to prevent accidental contact when the carrier has been withdrawn. All fuseboards are suitable for systems with a rated insulation voltage Ue 660V AC, 500V DC.

Safety carriers

A range of safety carriers are available for insertion in a fusebase when its normal fuse carrier has been removed for isolation. The safety carriers are marked yellow for identification and have no provision for fuselink fixing.

Enclosures

Rust protected sheet steel IP4X enclosures have a light grey paint finish and are fitted with internal fixing holes. Enclosures have a robust, reliable construction. Enclosures for units from 20A to 100A are of all welded construction, 200A IP4X units have cast corner pieces. Removable top and bottom endplates incorporate knockouts on 20A and 32A units while 63–200A boards have blank endplates. Blank endplates are available on request for 20A and 32A boards. The enclosure allows gasketed access doors to be reversed for left hand or right hand opening. All sides are free from external projections and fuseboards can be mounted in inverted form if required.

Main terminations

32A, 2-way fuseboards have the main phase termination (tunnel type) attached to the fusebanks. All other fuseboards have the main terminations mounted on the back of the enclosure and are intended for use with cable sockets (sweating or crimp type) which are not provided. Busbar and main terminals are fully shrouded. A cable shroud to cover the cable socket is provided.

Earthing and neutral bars

Multi-way earthing bars are fitted with an integral earth bolt and have an outgoing terminal per fuse. They are rail mounted adjacent to the fully rated neutral bars. Neutral bars have main terminals of the same capacity as the phase terminals and have one outgoing terminal per fuse. Earth/neutral bar rails are fitted at the bottom of enclosures on 20A and 32A fuseboards and at the top on all others.

HRC cartridge fuselinks, carriers and bases

Eaton's comprehensive range offers a selection of fuses to cater for many applications: Compact 415V a.c. S type industrial fuselinks complying with BS EN 60269-1 (BS88 – 1) or BS88 – 2 with ratings from 2 to 1250A. Skilful design techniques have meant that power dissipation has frequently been reduced despite the significant reduction in barrel size. Many ratings have also been tested for use in circuits up to 250V d.c.

Compact 415V a.c. S type motor circuit protection fuselinks complying with BS EN 60269-1 (BS88 – 1) or BS88 – 2 with ratings from 20M25A to 400M500A. This extended range of fuselinks is designed to withstand the inrush current associated with direct on line start motors whilst saving cost on the size of equipment to which they are fitted by virtue of their small dimensions.

Compact 240V and 415V a.c. SS, SN and SP type offset blade contact fuselinks complying with BS EN 60269-1 (BS88 – 1) or BS88 – 6 with ratings from 2 to 63A for use in industrial and commercial installations.

Compact 415V a.c. J type feeder pillar fuselinks complying with BS88 – 2 (formerly BS88: Part 5) for use by the Electricity Supply Industry in distribution systems. Ratings from 63–400A with 82mm fixing centres and 63–800A with 92mm fixing centres for wedge tightening contacts and 63–250A in ferrule form for single phase pole mounted cut outs.

Eaton HRC fuselinks are manufactured to exacting standards using precision assembly methods and undergo rigorous quality checking before dispatch including resistance testing all production. This ensures that performance will be consistent and conform with published characteristics within close tolerances. Type tests on Eaton equipment have been performed using Eaton fuselinks.

Eaton industrial and general purpose fuselinks have a breaking range and utilisation category gG which replaces the old class Q1 fusing factor. "g" indicates a full range breaking capacity fuselink and "G" indicates a fuselink for general application.

Eaton motor circuit protection fuselinks have a breaking range and utilisation category gM indicating a full range breaking capacity fuselink for the protection of motor circuits. These fuselinks have a dual current rating separated by the letter "M".

The lower current rating is the maximum continuous rating which also determines the rating and size of equipment to which the fuse is fitted. The higher current rating is the time current characteristic of the fuselink which determines its ability to withstand the motor starting current. Their selection frequently permits the use of lower rated switch and/or fusegear than would be the case using gG fuselinks with a consequent cost saving. Type gG fuselinks however may still be used and are the preferred option for assisted start motors where starting currents are reduced.

Eaton fuselinks are designed and manufactured in accordance with a Quality Management System in accordance with ISO 9001. Most fuselinks are ASTA Certified for a breaking capacity of 80kA at 415V a.c. and are endorsed ASTA 20 CERT showing compliance with the rules of the ASTA 20 scheme which includes assessment of the Quality Management System to ISO 9002 and detailed auditing of fuselink manufacture.

Eaton have for many years participated in developing and influencing fuse standards through BEAMA and BSI at national level and IEC at international level and therefore are able to produce designs incorporating forthcoming changes to standards.

Fuse carriers and bases – specification

A range of moulded HRC fuse units designed to accept bolt-in and clip-in HRC fuselinks.

Each unit is fully shrouded to prevent accidental contact with live parts when inserting or withdrawing a carrier and once the carrier has been removed completely.

The carrier and base mouldings are manufactured from high quality thermosetting material.

Units accepting bolt-in HRC fuselinks are available in ratings of 20, 32, 63, 100 and 200A and can be supplied in front connected, front/busbar connected, front/back connected and back connected versions.

They are designed to comply with BS88 – 2 and are suitable for systems up to 660V. Suitable HRC fuselinks are also to BS88 – 2. A full range of neutral links is available.

Those units which accept the clip-in fuselinks are rated at 32A and 63A, 415V.

They comply with BS88 – 2 and accept clip-in HRC fuselinks to the same standard.

Clip-in type units allow fuselinks to be replaced very simply – no tools are required. Fuselinks are removed from the carrier using side pressure on the fuselink end tags while replacement involves a simple push fit only.

Terminal capacities: 20A 6mm^2, 32A 16mm^2, 63A 35mm^2, 100A 70mm^2, 200A 150mm^2.

Fuse units are available in four types:

Type A – providing for busbar connection at one end and cable termination at the other.

Type B – providing for cable connection at each end.

Type C – with back connecting studs.

Type D – providing for cable connection at one end with back connecting stud at the other.

Fuse units have been ASTA certified to BS88 – 2 and are suitable for systems up to 660V.

100A fuse units may be fitted with AAO, BAO or OSD fuselinks having 73mm fixing centres if used with adaptor **100MFLK**.

Memshield 3 MCB distribution boards and enclosures

Eaton's Memshield 3 MCB distribution boards have evolved through an intimate knowledge and feedback from electrical contractors, consulting engineers and end users to provide solutions to a wide range of electrical distribution applications in commercial buildings. Memshield 3 delivers safe, reliable and high performance protection of electrical power distribution systems in accordance with BS EN 61439.

2.1 Memshield 3 MCB distribution boards and enclosures

Type A, SPN distribution boards

See page 118 for technical data and overall dimensions

EAM10

125A SPN, type A distribution boards

- When more than 16 SP ways are required, see our TPN board ranges, complete with single phase kit options
- Enclosure degree of protection IP3X (wall-mounted)

Description	Rating (A)	Total no. of outgoing ways	Eaton list number
4 way SPN, type A distribution board	125	4	**EAM4**
7 way SPN, type A distribution board	125	7	**EAM7**
10 way SPN, type A distribution board	125	10	**EAM10**
13 way SPN, type A distribution board	125	13	**EAM13**
16 way SPN, type A distribution board	125	16	**EAM16**

EAMS1251N

Incoming devices for SPN, type A distribution boards

- Incoming devices supplied separate to distribution board

Description	Rating (A)	Poles	Sensitivity (mA)	Eaton list number
Switch-disconnector	125	SPSN	–	**EAMS1251N**
RCCB incoming device for SPN, type A distribution board	90	1P+N	30	**EAMS100HE**
RCCB incoming device for SPN, type A distribution board	90	1P+N	100	**EAMS100ME**
RCCB incoming device for SPN, type A distribution board	90	1P+N	300	**EAMS100LE**
Direct connection kit for SPN, type A distribution board	100	1P+N	–	**EAMBT1002**

EAMMP65

Metered SPN, type A distribution boards & standard meter packs

- Type A SPN boards, fitted with multifunction meters, can display; Amps, kW, kWh, kVar and kVarh pulsed output etc.
- Split load versions utilise a two channel meter, feeding two independent busbars and groups of MCB/RCBOs
- Split load versions provide independent monitoring of "Power" and "Lighting" loads and total load.
- Aids compliance with Part L2 of the building regulations (England & Wales and Section 6 Scotland)
- Enclosure degree of protection IP3X (wall-mounted)

Description	Rating (A)	Total no. of outgoing ways	Installed meter, characteristics[3)]	Eaton list number
Meterpack for SPN, type A distribution boards	65	–	Pulsed output, kWh	**EAMMP65**
9 way SPN, type A distribution board[1)]	65	9	Pulsed output, kWh	**EAM9M**
9 way SPN, type A distribution board[1)]	65	9	Modbus	**EAM9MB**
12 way SPN, type A distribution board[1)]	65	12	Pulsed output, kWh	**EAM12M**
12 way SPN, type A distribution board[1)]	65	12	Modbus	**EAM12MB**
Split metered SPN, type A distribution board[1), 2)]	100	9 + 3	Pulsed output, kWh	**EAMSL93M**
Split metered SPN, type A distribution board[1), 2)]	100	9 + 3	Modbus	**EAMSL93MB**
Split metered SPN, type A distribution board[1), 2)]	100	6 + 6	Pulsed output, kWh	**EAMSL66M**
Split metered SPN, type A distribution board[1), 2)]	100	6 + 6	Modbus	**EAMSL66MB**

[1)] Includes factory fitted switch disconnector and single channel meter
[2)] Includes two channel meter, 65A max load per channel
[3)] Output type is Pulsed or Modbus

EM3SSK1T2

Surge protection device for SPN, type A distribution boards

- See page 117 for technical data

Description	Eaton list number
Enclosed surge protection kit for SPN boards – type 2	**EM3SSK1T2**

EMDH104

Outgoing devices, MCBs – 10/15kA, single pole

- Trip types B, C and D
- Dual rated, 10kA to IEC 60898 and 15kA to IEC 60947-2

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	1	18	10/15	**EMBH101**	**EMCH101**	**EMDH101**
Miniature circuit breaker	2	18	10/15	**EMBH102**	**EMCH102**	**EMDH102**
Miniature circuit breaker	4	18	10/15	**EMBH104**	**EMCH104**	**EMDH104**
Miniature circuit breaker	6	18	10/15	**EMBH106**	**EMCH106**	**EMDH106**
Miniature circuit breaker	8	18	10/15	**EMBH108**	**EMCH108**	**EMDH108**
Miniature circuit breaker	10	18	10/15	**EMBH110**	**EMCH110**	**EMDH110**
Miniature circuit breaker	13	18	10/15	**EMBH113**	**EMCH113**	**EMDH113**
Miniature circuit breaker	16	18	10/15	**EMBH116**	**EMCH116**	**EMDH116**
Miniature circuit breaker	20	18	10/15	**EMBH120**	**EMCH120**	**EMDH120**
Miniature circuit breaker	25	18	10/15	**EMBH125**	**EMCH125**	**EMDH125**
Miniature circuit breaker	32	18	10/15	**EMBH132**	**EMCH132**	**EMDH132**
Miniature circuit breaker	40	18	10/15	**EMBH140**	**EMCH140**	**EMDH140**
Miniature circuit breaker	50	18	10/15	**EMBH150**	**EMCH150**	**EMDH150**[1)]
Miniature circuit breaker	63	18	10/15	**EMBH163**	**EMCH163**	**EMDH163**[1)]

[1)] 15kA to IEC60947-2 rating only

EMCH116R30C

Outgoing devices, RCBOs single pole – trip type C – 30mA sensitivity

- Eaton's range of residual current circuit breakers with integral overload protection (RCBOs), are manufactured to IEC/EN 61009 and meet the latest European and international standards.
- For other RCBO sensitivity options refer to full details on page 45.

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type C SP	6	C	30	**EMCH106R30C**
Eaton RCBO 10A 10kA type C SP	10	C	30	**EMCH110R30C**
Eaton RCBO 16A 10kA type C SP	16	C	30	**EMCH116R30C**
Eaton RCBO 20A 10kA type C SP	20	C	30	**EMCH120R30C**
Eaton RCBO 25A 10kA type C SP	25	C	30	**EMCH125R30C**
Eaton RCBO 32A 10kA type C SP	32	C	30	**EMCH132R30C**
Eaton RCBO 40A 10kA type C SP	40	C	30	**EMCH140R30C**
Eaton RCBO 45A 10kA type C SP	45	C	30	**EMCH145R30C**

EMBH116R30C

Outgoing devices, RCBOs single pole – trip type B – 30mA sensitivity

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type B SP	6	B	30	**EMBH106R30C**
Eaton RCBO 10A 10kA type B SP	10	B	30	**EMBH110R30C**
Eaton RCBO 16A 10kA type B SP	16	B	30	**EMBH116R30C**
Eaton RCBO 20A 10kA type B SP	20	B	30	**EMBH120R30C**
Eaton RCBO 32A 10kA type B SP	32	B	30	**EMBH132R30C**
Eaton RCBO 40A 10kA type B SP	40	B	30	**EMBH140R30C**
Eaton RCBO 45A 10kA type B SP	45	B	30	**EMBH145R30C**

EMDL

EMPL

General accessories for SPN, type A distribution boards

Description	Eaton list number
MCB blanking module – 18mm	**EMBP**
Half MCB blanking strip – 9mm	**EMABP**
Universal device lockout attachment – fits MCBs, RCCBs and RCBOs	**ASPDL**
Padlock suitable for ASPDL	**PD2**
Door barrel lock with 2 keys	**EMDL**
Door padlocking kit	**EMPL**
Padlock suitable for EMPL	**PD1**
Vertical coupling kit for connecting 2 SPN Distribution boards (125A max. total load)[1)]	**EAMCK**
Clean earth for A board 5 terminals	**EAME5**
Clean earth for A board 11 terminals	**EAME11**
One pole 100A single module direct connection device	**ASLTT1001**

[1)] Incominging device required for each linked distribution boards

See page 118 for technical data and overall dimensions

EBM81

125A/250A TPN, type B distribution boards

- Enclosure degree of protection IP4X (wall-mounted)

Description	Rating (A)	Total no. of outgoing ways	Eaton list number
4 way TPN, type B distribution board	125	4	**EBM41**
6 way TPN, type B distribution board	125	6	**EBM61**
8 way TPN, type B distribution board	125	8	**EBM81**
12 way TPN, type B distribution board	125	12	**EBM121**
16 way TPN, type B distribution board	125	16	**EBM161**
12 way TPN, type B distribution board	125/225[1)]	12	**EBM122**
18 way TPN, type B distribution board	125/250[1)]	18	**EBM182**
24 way TPN, type B distribution board	125/250[1)]	24	**EBM242**

[1)] 225A/250A options – if used with cable extension box or with cable trunking. See 250A incomer options below
Note: Maximum loading EBM122 -225A

EBM121D

125A SPSN, type B distribution board

- SPSN main switch disconnector fitted
- Enclosure degree of protection IP4X (wall-mounted)

Description	Rating (A)	Total no. of outgoing ways	Eaton list number
12 way SPSN type B distribution board	125	12	**EBM121D**

EBMS1253

125A incomer options for type B distribution boards

- Incoming devices supplied separate to distribution board.
- Maximum Cable capacity 50mm²

Description	Rating (A)	Pole configuration	Eaton list number
Switch disconnector	125	TP	**EBMS1253**
Switch disconnector kit (including single phasing link)	125	SPSN	**EBMS1251N**
Switch disconnector	125	TPSN	**EBMS1253N**
Direct connection (lugs connector)	125/250	TP	**EBMBT2503**
30mA RCCB[1)]	100	TPSN	**EBMR30**
100mA RCCB[1)]	100	TPSN	**EBMR100**
300mA RCCB[1)]	100	TPSN	**EBMR300**
300mA RCCB with time delay	100	TPSN	**EBMR300T**
Switch disconnector feeding 125A TP AC1 contactor, housed in extension box	125	TP	**EBMCC1253**

[1)] Includes 50mm² terminal adapter

EBM62H

250A TPN, type B high load distribution board

- These boards include 2 TPN outgoing ways for 27mm MCB (upto 125A)
- Adequate integral cabling space means that no extension box is required.
- Enclosure degree of protection IP4X (wall-mounted)
- Fitted with door lock as standard.

Description	Rating (A)	Total no. of 18mm TP outgoing ways (63A max)	Total no. of 27mm TP outgoing ways (125A max)	Total no. of outgoing ways	Eaton list number
2 way TPN, type B distribution board	200	0	2	2	**EBM22H**
6 way TPN, type B distribution board	250	4	2	6	**EBM62H**
8 way TPN, type B distribution board	250	6	2	8	**EBM82H**
12 way TPN, type B distribution board	250	10	2	12	**EBM122H**
18 way TPN, type B distribution board	250	16	2	18	**EBM182H**
24 way TPN, type B distribution board	250	22	2	24	**EBM242H**

EBMMB250

250A incomer options for type B distribution boards

- Incoming devices supplied separate to distribution board.
- Where used with **EBM122** or **EBM242**, a separate cable extension box or suitable cable trunking is required
- Maximum Cable capacity 120mm^2

Description	Rating (A)	Pole configuration	Eaton list number
Switch-disconnector	250	TP	**EBMS2503**
Direct connection (lugs connector)	250	TP	**EBMBT2503**
MCCB incomer kit (includes MCCB)	250	TP	**EBMMB250**
MCCB incomer kit (includes MCCB)	200	TP	**EBMMB200**
MCCB incomer kit (includes MCCB)	160	TP	**EBMMB160**
Switch disconnector feeding 250A TP AC1 contactor, housed in extension box	250	TP	**EBMCC2503**
Single phase conversion kit for 250A rated board only (requires **EBMS2503** to be ordered seperately)			**EBMS25**

EBMSL642MB

Split metered power and lighting board – 200A TPN, type B

- Includes factory fitted 200A switch disconnector and two channel meter
- Adequate integral cabling space means that no extension box is required.
- Enclosure degree of protection IP4X (wall-mounted)
- Meter has both pulsed and Modbus outputs as standard.
- Fitted with door lock as standard.
- Single phasing kit included to be used if required

Description	Rating (A)	Total no. of outgoing ways	Installed meter, characteristics	Eaton list number
Split metered TPN, type B distribution board	200	6+4	Modbus + pulsed output, kWh	**EBMSL642MPMB**
Split metered TPN, type B distribution board	200	8+6	Modbus + pulsed output, kWh	**EBMSL862MPMB**
Split metered TPN, type B distribution board	200	10+8	Modbus + pulsed output, kWh	**EBMSL1082MPMB**
Split metered TPN, type B distribution board	200	14+10	Modbus + pulsed output, kWh	**EBMSL14102MPMB**

EM3SSK3T12

Surge protection device for type B distribution boards

- See page 117 for technical data
- Includes 63A TP type C MCB for protection/isolation

Description	Eaton list number
Enclosed surge protection kit for TPN boards – type 1&2	**EM3SSK3T12**
Enclosed surge protection kit for TPN boards – type 2	**EM3SSK3T2**

EBMAFDD141

125A AFDD type B TPN distribution board

- Enclosure will accept Eaton 2-pole, 3 module, AFDDs
- Optional internal SPD
- Enclosure degree of protection IP4X (wall mounted)
- Short circuit rating 10kA

see page 119 for technical data and page 125 for overall dimensions

Description	Rating (A)	Total no. of AFDD outgoing ways	Eaton List number
14 way AFDD, TPN, type B distritbution board	125	14	**EBMAFDD141**
24 way AFDD, TPN, type B distritbution board	125	24	**EBMAFDD241**
36 way AFDD, TPN, type B distritbution board	125	36	**EBMAFDD361**

Incomer options

- Incomer devices supplied separately to distribution boards
- Maximum cable capacity 50mm²

Description	Rating (A)	Pole configuration	Eaton List number
Switch Disconnector - 4 pole	125	TPSN	**EMS1253N**
Switch Disconnector - 3 pole	125	TP	**EMS1253**
Neutral link kit - required when using 3 pole device	125		**EBMAFDDN**

EBMAFDDSPDT2

Surge Protection Device for AFDD distribution board

- Includes 63A TPN type C MCB for protection and isolation
- Includes all connecting cables and fixings

Description	Eaton List number
Surge protection kit for AFDD DB - type 2	**EBMAFDDSPDT2**
Surge protection kit for AFDD DB - type 1&2	**EBMAFDDSPDT12**

Accessories for AFDD distribution board

Description	Eaton List number
Separation shield - to separate boards mounted on top of each other.	**EBMAFDDSS**
Single phasing kit	**EBMAFDDSP**
Multi board alignment spacer - 20mm	**EBMAFDDS20**

EBMMPCT250

Meterpack assemblies – TPN, type B distribution boards

Description	Rating (A) (total load)	Installed meter, characteristics	Eaton list number
Meterpack for TPN, type B distribution boards	250	Pulsed output, kWh	**EBMMPCT250**
Meterpack for TPN, type B distribution boards	250	Modbus + pulsed output, kWh	**EBMMPCT250M**
Meterpack for TPN, type B distribution boards	250	MID certified meter	**EBMMPCT250MID**
Double meterpack for 2 x TPN, type B distribution boards	250	Pulsed output, kWh	**EBMMPSL250**
Double meterpack for 2 x TPN, type B distribution boards	250	Modbus + pulsed output, kWh	**EBMMPSL250M**
Double meterpack for 2 x TPN, type B distribution boards	250	MID certified meter	**EBMMPSL250MID**
Double meterpack for 2 x TPN, type B distribution boards	125	Pulsed output, kWh	**EBMMPSL125**
Double meterpack for 2 x TPN, type B distribution boards	125	Modbus + pulsed output, kWh	**EBMMPSL125M**
Double meterpack for 2 x TPN, type B distribution boards	125	MID certified meter	**EBMMPSL125MID**
Meterpack for TPN, type B distribution boards	120	MID certified meter	**EBMMPDC120**

EBMMPSL250DMID

Multi meterpack assemblies

- Delivered as 250A lugs incomer
- Feed off load side terminals with up to 4 load cables per phase to multiple boards (not supplied).
- Optional load side protective devices EM*S and EM*H can be added to the load circuits (not supplied).
- Load cables can be grouped and passed through the CTs to suit metering requirements which allows a 250A supply to be split between multiple boards but still be metered as single or combined load.
- 2 or 4 channel input meter provided.
- 2 or 3 CTs provided (can add 4th in RH side of Multi meter pack or in adjoining boards).
- Optional internal SPD
- Short circuit rating 10kA

see page 124 for technical data and page 130 for overall dimensions

Description	Rating (A) (Total Load)	Installed meter characteristics	Eaton List number
Multi meterpack - double	250	MID certified meter	**EBMMPSL250DMID**
Multi meterpack - quad	250	Modbus + pulsed output	**EBMMPSL250QM**

EBMMPSLSPDT12

Surge protection device for MMP

- Includes 63A TP type C MCB for protection and isolation and all connecting cables and fixings

Description	Eaton List number
Surge protection kit for Multi meter packs - type 2	**EBMMPSLSPDT2**
Surge protection kit for Multi meter packs - type 1&2	**EBMMPSLSPDT12**

Accessories

Description	Eaton List number
Bridging spacer H50xW880 - to provide larger cabling space to feed parallel boards	**EBMMPSLS50**

Optional 3P MCB load protection

Protective devices EM*S and EM*H can be added to protect the load circuits. The board can disperse a maximum current of 250A which can be split between a combination of MCBs – see table below.

EM*S - 125A 27mm 3P MCB = 81mm wide

EM*H - 63A 18mm 3P MCB = 54mm wide

Available space on din rail = 272mm.

Maximum Thermal Ratings

LUGS Incomer = 250A max

EM*S - 125A 27mm MCB = 102A max

EM*H - 63A 18mm MCB = 55A max

Required Load cables: Tri-Rated to BS 6231

125A MCB = 50mm²

63A MCB = 16mm²

Possible 3P MCB Combinations:

Number of protected circuits

2	3	3	3	3	4	4	4	5
EM*S +	EM*S	EM*S	EM*S	EM*H	EM*S	EM*S	EM*H	EM*H
EM*S +	EM*S	EM*S	EM*H	EM*H	EM*S	EM*H	EM*H	EM*H
	EM*S	EM*H	EM*H	EM*H	EM*H	EM*H	EM*H	EM*H
					EM*H	EM*H	EM*H	EM*H
								EM*H
212A	250A	250A	212A	165A	250A	250A	220A	250A

Protective device's maximum combined current

+ 106A if only 2 devices (this includes all load MCBs)

EMDH104

Outgoing devices – MCBs – 10/15kA, single pole

- Trip types B, C and D
- Dual rated, 10kA to IEC 60898 and 15kA to IEC 60947-2

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	1	18	10 /15	**EMBH101**	**EMCH101**	**EMDH101**
Miniature circuit breaker	2	18	10 /15	**EMBH102**	**EMCH102**	**EMDH102**
Miniature circuit breaker	4	18	10 /15	**EMBH104**	**EMCH104**	**EMDH104**
Miniature circuit breaker	6	18	10 /15	**EMBH106**	**EMCH106**	**EMDH106**
Miniature circuit breaker	8	18	10 /15	**EMBH108**	**EMCH108**	**EMDH108**
Miniature circuit breaker	10	18	10 /15	**EMBH110**	**EMCH110**	**EMDH110**
Miniature circuit breaker	13	18	10 /15	**EMBH113**	**EMCH113**	**EMDH113**
Miniature circuit breaker	16	18	10 /15	**EMBH116**	**EMCH116**	**EMDH116**
Miniature circuit breaker	20	18	10 /15	**EMBH120**	**EMCH120**	**EMDH120**
Miniature circuit breaker	25	18	10 /15	**EMBH125**	**EMCH125**	**EMDH125**
Miniature circuit breaker	32	18	10 /15	**EMBH132**	**EMCH132**	**EMDH132**
Miniature circuit breaker	40	18	10 /15	**EMBH140**	**EMCH140**	**EMDH140**
Miniature circuit breaker	50	18	10 /15	**EMBH150**	**EMCH150**	**EMDH150**[1)]
Miniature circuit breaker	63	18	10 /15	**EMBH163**	**EMCH163**	**EMDH163**[1)]

[1)] 15kA to IEC60947-2 rating only

EMCH310

Outgoing devices – MCBs – 10/15kA, three pole

- Trip types B, C and D
- Dual rated, 10kA to IEC 60898 and 15kA to IEC 60947-2

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	1	54	10/15	**EMBH301**	**EMCH301**	**EMDH301**
Miniature circuit breaker	2	54	10/15	**EMBH302**	**EMCH302**	**EMDH302**
Miniature circuit breaker	4	54	10/15	**EMBH304**	**EMCH304**	**EMDH304**
Miniature circuit breaker	6	54	10/15	**EMBH306**	**EMCH306**	**EMDH306**
Miniature circuit breaker	8	54	10/15	**EMBH308**	**EMCH308**	**EMDH308**
Miniature circuit breaker	10	54	10/15	**EMBH310**	**EMCH310**	**EMDH310**
Miniature circuit breaker	13	54	10/15	**EMBH313**	**EMCH313**	**EMDH313**
Miniature circuit breaker	16	54	10/15	**EMBH316**	**EMCH316**	**EMDH316**
Miniature circuit breaker	20	54	10/15	**EMBH320**	**EMCH320**	**EMDH320**
Miniature circuit breaker	25	54	10/15	**EMBH325**	**EMCH325**	**EMDH325**
Miniature circuit breaker	32	54	10/15	**EMBH332**	**EMCH332**	**EMDH332**
Miniature circuit breaker	40	54	10/15	**EMBH340**	**EMCH340**	**EMDH340**
Miniature circuit breaker	50	54	10/15	**EMBH350**	**EMCH350**	**EMDH350**[1)]
Miniature circuit breaker	63	54	10/15	**EMBH363**	**EMCH363**	**EMDH363**[1)]

[1)] 15kA to IEC60947-2 rating only

EMCS1100

Outgoing devices (for 250A high load distribution board only) – MCBs, single pole

Rated current In (A)	Width (mm)	Short circuit rating (IEC/EN 60947-2)	Eaton list number Trip type B	Trip type C	Trip type D
20	27	25kA	**EMBS120**	**EMCS120**	**EMDS120**
32	27	25kA	**EMBS132**	**EMCS132**	**EMDS132**
40	27	25kA	**EMBS140**	**EMCS140**	**EMDS140**
50	27	25kA	**EMBS150**	**EMCS150**	**EMDS150**
63	27	25kA	**EMBS163**	**EMCS163**	**EMDS163**
80	27	20kA	**EMBS180**	**EMCS180**	**EMDS180**
100	27	20kA	**EMBS1100**	**EMCS1100**	**EMDS1100**
125	27	15kA	**EMBS1125**	**EMCS1125**	–

EMCS3125

Outgoing devices (for 250A high load distribution board only) – MCBs, three pole

Rated current In (A)	Width (mm)	Short circuit rating (IEC/EN 60947-2)	Eaton list number Trip type B	Trip type C	Trip type D
20	81	25kA	**EMBS320**	**EMCS320**	**EMDS320**
32	81	25kA	**EMBS332**	**EMCS332**	**EMDS332**
40	81	25kA	**EMBS340**	**EMCS340**	**EMDS340**
50	81	25kA	**EMBS350**	**EMCS350**	**EMDS350**
63	81	25kA	**EMBS363**	**EMCS363**	**EMDS363**
80	81	20kA	**EMBS380**	**EMCS380**	**EMDS380**
100	81	20kA	**EMBS3100**	**EMCS3100**	**EMDS3100**
125	81	15kA	**EMBS3125**	**EMCS3125**	–

EMCH116R30C

Outgoing devices, RCBOs single pole – trip type C – 30mA sensitivity

- Eaton's range of residual current circuit breakers with integral overload protection (RCBOs), are manufactured to IEC/EN 61009 and meet the latest European and international standards.
- For other RCBO sensitivity options refer to full details on page 45.

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type C SP	6	C	30	**EMCH106R30C**
Eaton RCBO 10A 10kA type C SP	10	C	30	**EMCH110R30C**
Eaton RCBO 16A 10kA type C SP	16	C	30	**EMCH116R30C**
Eaton RCBO 20A 10kA type C SP	20	C	30	**EMCH120R30C**
Eaton RCBO 25A 10kA type C SP	25	C	30	**EMCH125R30C**
Eaton RCBO 32A 10kA type C SP	32	C	30	**EMCH132R30C**
Eaton RCBO 40A 10kA type C SP	40	C	30	**EMCH140R30C**
Eaton RCBO 45A 10kA type C SP	45	C	30	**EMCH145R30C**

EMBH116R30C

Outgoing devices, RCBOs single pole – trip type B – 30mA sensitivity

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type B SP	6	B	30	**EMBH106R30C**
Eaton RCBO 10A 10kA type B SP	10	B	30	**EMBH110R30C**
Eaton RCBO 16A 10kA type B SP	16	B	30	**EMBH116R30C**
Eaton RCBO 20A 10kA type B SP	20	B	30	**EMBH120R30C**
Eaton RCBO 25A 10kA type B SP	25	B	30	**EMBH125R30C**
Eaton RCBO 32A 10kA type B SP	32	B	30	**EMBH132R30C**
Eaton RCBO 40A 10kA type B SP	40	B	30	**EMBH140R30C**
Eaton RCBO 45A 10kA type B SP	45	B	30	**EMBH145R30C**

187204

Outgoing AFDD 2-pole (3 Module)

- Arc Fault Detection Device acc. to IEC/EN-62606
- Trip types B and C
- Fully combined with residual current circuit breaker (RCCB) and miniature circuit breaker (MCB)

Description	Rating (A)	Short circuit rating (kA)	Trip type	Eaton article number
10A B 2P 30mA Type A	10	10	B	AFDD-10/2/B/003-A
13A B 2P 30mA Type A	13	10	B	AFDD-13/2/B/003-A
16A B 2P 30mA Type A	16	10	B	AFDD-16/2/B/003-A
20A B 2P 30mA Type A	20	10	B	AFDD-20/2/B/003-A
25A B 2P 30mA Type A	25	10	B	AFDD-25/2/B/003-A
32A B 2P 30mA Type A	32	6	B	AFDD-32/2/B/003-A
40A B 2P 30mA Type A	40	6	B	AFDD-40/2/B/003-A
10A C 2P 30mA Type A	10	10	C	AFDD-10/2/C/003-A
13A C 2P 30mA Type A	13	10	C	AFDD-13/2/C/003-A
16A C 2P 30mA Type A	16	10	C	AFDD-16/2/C/003-A
20A C 2P 30mA Type A	20	10	C	AFDD-20/2/C/003-A
25A C 2P 30mA Type A	25	10	C	AFDD-25/2/C/003-A
32A C 2P 30mA Type A	32	6	C	AFDD-32/2/C/003-A
40A C 2P 30mA Type A	40	6	C	AFDD-40/2/C/003-A

169639

Outgoing devices, 10kA 3P +N RCBOs

- Conditionally surge current-proof 250A.
- Sensitivity type A, providing protection against AC and pulsating DC earth fault currents.
- Trip types B, C, and D
- Trip sensitivity 30mA, 100mA or 300mA

Description Characteristic B	Rating (A)	Sensitivity (mA)	Type designation	Eaton list number
3P+N RCBO 10A 10kA trip B	10	30	mRBM4-10/3/B/003-A-UK-PT	**169636**
3P+N RCBO 13A 10kA trip B	13	30	mRBM4-13/3/B/003-A-UK-PT	**169637**
3P+N RCBO 16A 10kA trip B	16	30	mRBM4-16/3/B/003-A-UK-PT	**169638**
3P+N RCBO 20A 10kA trip B	20	30	mRBM4-20/3/B/003-A-UK-PT	**169639**
3P+N RCBO 10A 10kA trip B	10	100	mRBM4-10/3/B/01-A-UK-PT	**169670**
3P+N RCBO 13A 10kA trip B	13	100	mRBM4-13/3/B/01-A-UK-PT	**169671**
3P+N RCBO 16A 10kA trip B	16	100	mRBM4-16/3/B/01-A-UK-PT	**169584**
3P+N RCBO 20A 10kA trip B	20	100	mRBM4-20/3/B/01-A-UK-PT	**169585**
3P+N RCBO 10A 10kA trip B	10	300	mRBM4-10/3/B/03-A-UK-PT	**169598**
3P+N RCBO 13A 10kA trip B	13	300	mRBM4-13/3/B/03-A-UK-PT	**169599**
3P+N RCBO 16A 10kA trip B	16	300	mRBM4-16/3/B/03-A-UK-PT	**169600**
3P+N RCBO 20A 10kA trip B	20	300	mRBM4-20/3/B/03-A-UK-PT	**169601**

Description Characteristic C	Rating (A)	Sensitivity (mA)	Type designation	Eaton list number
3P+N RCBO 6A 10kA trip C	6	30	mRBM4-6/3/C/003-A-UK-PT	**169640**
3P+N RCBO 10A 10kA trip C	10	30	mRBM4-10/3/C/003-A-UK-PT	**169641**
3P+N RCBO 13A 10kA trip C	13	30	mRBM4-13/3/C/003-A-UK-PT	**169642**
3P+N RCBO 16A 10kA trip C	16	30	mRBM4-16/3/C/003-A-UK-PT	**169643**
3P+N RCBO20A 10kA trip C	20	30	mRBM4-20/3/C/003-A-UK-PT	**169644**
3P+N RCBO 25A 10kA trip C	25	30	mRBM4-25/3/C/003-A-UK-PT	**169645**
3P+N RCBO 32A 10kA trip C	32	30	mRBM4-32/3/C/003-A-UK-PT	**169646**
3P+N RCBO 6A 10kA trip C	6	100	mRBM4-6/3/C/01-A-UK-PT	**169586**
3P+N RCBO 10A 10kA trip C	10	100	mRBM4-10/3/C/01-A-UK-PT	**169587**
3P+N RCBO 13A 10kA trip C	13	100	mRBM4-13/3/C/01-A-UK-PT	**169588**
3P+N RCBO 16A 10kA trip C	16	100	mRBM4-16/3/C/01-A-UK-PT	**169589**
3P+N RCBO 20A 10kA trip C	20	100	mRBM4-20/3/C/01-A-UK-PT	**169590**
3P+N RCBO 25A 10kA trip C	25	100	mRBM4-25/3/C/01-A-UK-PT	**169591**
3P+N RCBO 32A 10kA trip C	32	100	mRBM4-32/3/C/01-A-UK-PT	**169592**
3P+N RCBO 6A 10kA trip C	6	300	mRBM4-6/3/C/03-A-UK-PT	**169602**
3P+N RCBO 10A 10kA trip C	10	300	mRBM4-10/3/C/03-A-UK-PT	**169603**
3P+N RCBO 13A 10kA trip C	13	300	mRBM4-13/3/C/03-A-UK-PT	**169604**
3P+N RCBO 16A 10kA trip C	16	300	mRBM4-16/3/C/03-A-UK-PT	**169605**
3P+N RCBO 20A 10kA trip C	20	300	mRBM4-20/3/C/03-A-UK-PT	**169606**
3P+N RCBO 25A 10kA trip C	25	300	mRBM4-25/3/C/03-A-UK-PT	**169607**
3P+N RCBO 32A 10kA trip C	32	300	mRBM4-32/3/C/03-A-UK-PT	**169608**

Description Characteristic D	Rating (A)	Sensitivity (mA)	Type designation	Eaton list number
3P+N RCBO 6A 10kA trip D	6	30	mRBM4-6/3/D/003-A-UK-PT	**169647**
3P+N RCBO 10A 10kA trip D	10	30	mRBM4-10/3/D/003-A-UK-PT	**169648**
3P+N RCBO 13A 10kA trip D	13	30	mRBM4-13/3/D/003-A-UK-PT	**169649**
3P+N RCBO 16A 10kA trip D	16	30	mRBM4-16/3/D/003-A-UK-PT	**169650**
3P+N RCBO 20A 10kA trip D	20	30	mRBM4-20/3/D/003-A-UK-PT	**169651**
3P+N RCBO 25A 10kA trip D	25	30	mRBM4-25/3/D/003-A-UK-PT	**169652**
3P+N RCBO 6A 10kA trip D	6	100	mRBM4-6/3/D/01-A-UK-PT	**169593**
3P+N RCBO 10A 10kA trip D	10	100	mRBM4-10/3/D/01-A-UK-PT	**169594**
3P+N RCBO 13A 10kA trip D	13	100	mRBM4-13/3/D/01-A-UK-PT	**169618**
3P+N RCBO 16A 10kA trip D	16	100	mRBM4-16/3/D/01-A-UK-PT	**169619**
3P+N RCBO 20A 10kA trip D	20	100	mRBM4-20/3/D/01-A-UK-PT	**169620**
3P+N RCBO 25A 10kA trip D	25	100	mRBM4-25/3/D/01-A-UK-PT	**169621**
3P+N RCBO 6A 10kA trip D	6	300	mRBM4-6/3/D/03-A-UK-PT	**169609**
3P+N RCBO 10A 10kA trip D	10	300	mRBM4-10/3/D/03-A-UK-PT	**169610**
3P+N RCBO 13A 10kA trip D	13	300	mRBM4-13/3/D/03-A-UK-PT	**169611**
3P+N RCBO 16A 10kA trip D	16	300	mRBM4-16/3/D/03-A-UK-PT	**169612**
3P+N RCBO 20A 10kA trip D	20	300	mRBM4-20/3/D/03-A-UK-PT	**169613**
3P+N RCBO 25A 10kA trip D	25	300	mRBM4-25/3/D/03-A-UK-PT	**169614**

EMBP

General accessories, type B

Description	Eaton list number
MCB blanking module – 18mm	**EMBP**
Half MCB blanking strip – 9mm	**EMABP**
MCB blanking module – 27mm	**EMBPH**
Universal device lockout attachment – fits MCBs, RCCBs and RCBOs	**ASPDL**
Lockout attachment for 27mm MCBs	**ASPDL27**
Lockout attachment for 250A switch/MCCB	**131669**
Shunt trip 230-240V AC for 250A switch/MCCB	**158056**
Undervoltage release 230–240V AC for 250A switch/MCCB	**158053**
Padlock suitable for ASPDL & ASPDL27	**PD2**
Door barrel lock with 2 keys	**EMDL**
Door padlocking kit	**EMPL**
Padlock suitable for EMPL	**PD1**
Top/bottom gland plate	**EBMGP4**
IP42 gland plate kit	**EMGP142**
Cable trunking interface kit	**EBMTK**
Spare way label 12 way – pack of 5	**EBLB1**
Spare way label 18 way – pack of 5	**EBLB2**

EBMTK

EBMXPC1

Cable extension boxes, type B

Description	Box height	Eaton list number
Cable spreader extension box	180mm	**EBMXPC1**
Cable spreader extension box	250mm	**EBMXPC2**

EBMNE8

High integrity/clean earth kit

Description	No. of ways	Eaton list number
High integrity/clean earth kit for type B Board	8	**EBMNE8**

Note: Up to 4 high integrity earth bars can be fitted to a type B distribution board

EBMXDC9

Modular enclosures

- Modular enclosures will accept MCBs, RCCBs, RCBOs, fuse modules and command control products.
- Modular enclosures **EBMXDC6** to **EBMXDC45** are fitted with earth and neutral bars as standard.
- Modular enclosures **EBMXDC15** and **EBMXDCG15** have same profile width suitable for mounting onto type A, SPN distribution board **EAM13** or any type B, TPN distribution board.

See page 118 for technical data and overall dimensions.

Description	Degree of protection	Capactiy in 18mm modules	Glazed door	Eaton list number
Modular enclosure, 15 module din rail – glazed door	IP3X	15	Yes	**EBMXDCG15**
Modular enclosure, 6 module din rail – unglazed door	IP3X	6	No	**EBMXDC6**
Modular enclosure, 9 module din rail – unglazed door	IP3X	9	No	**EBMXDC9**
Modular enclosure, 15 module din rail – unglazed door	IP3X	15	No	**EBMXDC15**
Modular enclosure, 18 module din rail – unglazed door	IP3X	18	No	**EBMXDC18**
Modular enclosure, 2 x 15 module din rail – unglazed door	IP4X	30	No	**EBMXDC30**
Modular enclosure, 3 x 15 module din rail – unglazed door	IP4X	45	No	**EBMXDC45**
Half MCB blanking strip – 9mm	–	–	–	**EMABP**

EBMXE15

Enclosure accessories

Description	Eaton list number
Additional earth bar (15 additional holes)	**EBMXE15**
Door barrel lock with 2 keys	**EMDL**
Door padlocking kit	**EMPL**
Padlock suitable for **EMPL**	**PD1**

Distribution boards type A and type B – cable capacities

Cable capacities	Type A	Type B
125A switch disconnector	50mm²	50mm²
100A RCCB (type A = 90A)	35mm²	50mm²
250A switch disconnector	–	120mm² (+ M8 lugs)
160A–250A MCCB incomer	–	250A = 120mm² (+ M8 lugs)
100A direct connection kit	35mm²	–
250A direct connection lugs	–	120mm² (+ M8 lugs)
125A contactor incomer	–	50mm²
250A contactor incomer	–	120mm² (+ M8 lugs)
Enclosure earth stud	M6	M8
Incoming earth terminal	25mm²	125A = 25mm², 250A = 70mm²
Incomming neutral terminal	90/100A = 35mm², 125A = 50mm²	125A = 50mm², 250A = 120mm² (+ M8 lugs)
Outgoing earth terminal	25mm²	25mm²
Outgoing neutral terminal	25mm²	25mm²

2.4 MCB pan assemblies

Interiors & incoming devices for single phase and three phase

Eaton MCB pan assemblies offer a high degree of flexibility for custom applications. SPN types are available with 4, 7, 10, 13, and 16 ways. TPN types are available with 4, 6, 8, 12,18 and 24 ways.

Technical characteristics

- Eaton MCB pan assemblies are suitable for inclusion in other factory built assemblies and as replacements for distribution board interiors.
- MCB pan assemblies feature fully shrouded busbars.

See pages 120 for the technical details of Eaton MCB pan assemblies.

EAMP10

125A SPN type A pan assemblies with earth & neutral bars

Description	Rating (A)	Total no. of outgoing ways	Eaton list number
4 way SPN, type A pan assembly	125	4	**EAMP4**
7 way SPN, type A pan assembly	125	7	**EAMP7**
10 way SPN, type A pan assembly	125	10	**EAMP10**
13 way SPN, type A pan assembly	125	13	**EAMP13**
16 way SPN, type A pan assembly	125	16	**EAMP16**

EAMS1251N

Incoming devices for SPN, type A pan assemblies

- Incoming devices supplied separate to pan assembly

Description	Rating (A)	Poles	Sensitivity (mA)	Eaton list number
Switch-disconnector	125	SPSN	–	**EAMS1251N**
RCCB	100	1P+N	30	**EAMS100HE**
RCCB	100	1P+N	100	**EAMS100ME**
RCCB	100	1P+N	300	**EAMS100LE**
Direct connection kit	100	1P+N	–	**EAMBT1002**

EBMP61

125A/250A TPN type B pan assemblies with earth & neutral bars

Description	Rating (A)	Total no. of outgoing ways	Eaton list number
4 way TPN, type B pan assembly	125	4	**EBMP41**
6 way TPN, type B pan assembly	125	6	**EBMP61**
8 way TPN, type B pan assembly	125	8	**EBMP81**
12 way TPN, type B pan assembly	125	12	**EBMP121**
12 way TPN, type B pan assembly	225	12	**EBMP122**
18 way TPN, type B pan assembly	250	18	**EBMP182**
24 way TPN, type B pan assembly	250	24	**EBMP242**

EBMS1253

125A incomer options for type B pan assemblies

- Incoming devices supplied separate to pan assembly
- Maximum cable capacity Isolator 50mm² and RCCB 35mm²

Description	Rating (A)	Pole configuration	Eaton list number
Switch disconnector	125	TP	**EBMS1253**
Switch disconnector kit (including single phasing link)	125	SPSN	**EBMS1251N**
Switch disconnector	125	TPSN	**EBMS1253N**
Direct connection (lugs connector)	250	TP	**EBMBT2503**
30mA RCCB	100	TPSN	**EBMR30**
100mA RCCB	100	TPSN	**EBMR100**
300mA RCCB	100	TPSN	**EBMR300**
300mA RCCB with time delay	100	TPSN	**EBMR300T**

EBMMB250

250A incomer options for type B pan assemblies

- Incoming devices supplied separate to pan assembly
- Maximum Cable capacity 120mm^2

Description	Rating (A)	Pole configuration	Eaton list number
Switch-disconnector	250	TP	**EBMS2503**
Direct connection (lugs connector)	250	TP	**EBMBT2503**
MCCB incomer kit (includes mCCB)	250	TP	**EBMMB250**
MCCB incomer kit (includes MCCB)	200	TP	**EBMMB200**
MCCB incomer kit (includes mCCB)	160	TP	**EBMMB160**
Single phase conversion kit for 250A rated board only (requires **EBMS2503** to be ordered separately)			**EBMS25**

Memshield Spares

Description	Art.no.	Eaton list number
MSHD3 BUSBAR END SHIELD	Y7-195812	**EBMSH4083SP**
MSHD3 B N/E 4/6/8W SHIELD	Y7-195813	**EBMSH4084SP**
MSHD3 B 250A MCCB INT SHIELD	Y7-195814	**EBMSH4087SP**
MSHD3 B 250A MCCB TERM SHIELD	Y7-195815	**EBMSH4088SP**
MSHD3 B N/E 12/18W SHIELD	Y7-195816	**EBMSH4091SP**
MSHD3 B N/E 24W SHIELD	Y7-195817	**EBMSH4092SP**
MSHD3 B 250A SMART METER LINK SHIELD	Y7-195818	**EBMSH4099SP**
MSHD3 DOOR HANDLE	Y7-195819	**EBMDHSP**
M3 COMBINED METER -PULSED AND MODBUS	Y7-195820	**EBMMT39SP**
M3 3-PH ENERGY METER EM210 M045 PULSED	Y7-195821	**EBMMT45SP**
M3 3-PH ENERGY METER EM210 M046 MODBUS	Y7-195822	**EBMMT46SP**
M3 3-PH ENERGY METER EM210 PFBD MID	Y7-195823	**EBMMT47SP**
M3 TAPTITE SCREWS M5x8 S/SLOT PHD ENIB ST	Y7-195824	**EBMSC3844SP**

3 Distribution board switch and protection devices

Eaton provides a comprehensive range of modular solutions for circuit protection and control. Eaton's 10/15kA MCBs are high performance current limiting devices with the ability to disconnect overloads and short circuits. They are available with trip types B, C and D with many features of benefit to all customers. RCBOs with overload protection combine protection for people and circuits in a single module width device where space is at a premium.

Double pole and four pole RCCBs are available in a range of current ratings and four trip sensitivities, 10, 30, 100 and 300mA.

MCBs are available in current ratings from 1A–63A, with trip types B, C and D, 10kA to IEC 60898 and 15kA to IEC 60947-2

See page 126 for technical data and overall dimensions

EMDH104

Miniature circuit breakers – dual rated 10/15kA, single pole

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	1	18	10/15	**EMBH101**	**EMCH101**	**EMDH101**
Miniature circuit breaker	2	18	10/15	**EMBH102**	**EMCH102**	**EMDH102**
Miniature circuit breaker	4	18	10/15	**EMBH104**	**EMCH104**	**EMDH104**
Miniature circuit breaker	6	18	10/15	**EMBH106**	**EMCH106**	**EMDH106**
Miniature circuit breaker	8	18	10/15	**EMBH108**	**EMCH108**	**EMDH108**
Miniature circuit breaker	10	18	10/15	**EMBH110**	**EMCH110**	**EMDH110**
Miniature circuit breaker	13	18	10/15	**EMBH113**	**EMCH113**	**EMDH113**
Miniature circuit breaker	16	18	10/15	**EMBH116**	**EMCH116**	**EMDH116**
Miniature circuit breaker	20	18	10/15	**EMBH120**	**EMCH120**	**EMDH120**
Miniature circuit breaker	25	18	10/15	**EMBH125**	**EMCH125**	**EMDH125**
Miniature circuit breaker	32	18	10/15	**EMBH132**	**EMCH132**	**EMDH132**
Miniature circuit breaker	40	18	10/15	**EMBH140**	**EMCH140**	**EMDH140**
Miniature circuit breaker	50	18	10/15	**EMBH150**	**EMCH150**	**EMDH150**[1)]
Miniature circuit breaker	63	18	10/15	**EMBH163**	**EMCH163**	**EMDH163**[1)]

[1)] 15kA to IEC60947-2 rating only

EMBH125N

Miniature circuit breakers – dual rated 10/15kA, single pole + neutral

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	1	36	10/15	**EMBH101N**	**EMCH101N**	**EMDH101N**
Miniature circuit breaker	2	36	10/15	**EMBH102N**	**EMCH102N**	**EMDH102N**
Miniature circuit breaker	4	36	10/15	**EMBH104N**	**EMCH104N**	**EMDH104N**
Miniature circuit breaker	6	36	10/15	**EMBH106N**	**EMCH106N**	**EMDH106N**
Miniature circuit breaker	8	36	10/15	**EMBH108N**	**EMCH108N**	**EMDH108N**
Miniature circuit breaker	10	36	10/15	**EMBH110N**	**EMCH110N**	**EMDH110N**
Miniature circuit breaker	13	36	10/15	**EMBH113N**	**EMCH113N**	**EMDH113N**
Miniature circuit breaker	16	36	10/15	**EMBH116N**	**EMCH116N**	**EMDH116N**
Miniature circuit breaker	20	36	10/15	**EMBH120N**	**EMCH120N**	**EMDH120N**
Miniature circuit breaker	25	36	10/15	**EMBH125N**	**EMCH125N**	**EMDH125N**
Miniature circuit breaker	32	36	10/15	**EMBH132N**	**EMCH132N**	**EMDH132N**
Miniature circuit breaker	40	36	10/15	**EMBH140N**	**EMCH140N**	**EMDH140N**
Miniature circuit breaker	50	36	10/15	**EMBH150N**	**EMCH150N**	**EMDH150N**[1)]
Miniature circuit breaker	63	36	10/15	**EMBH163N**	**EMCH163N**	**EMDH163N**[1)]

[1)] 15kA to IEC60947-2 rating only

EMCH220

Miniature circuit breakers – dual rated 10/15kA, double pole

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	1	36	10/15	**EMBH201**	**EMCH201**	**EMDH201**
Miniature circuit breaker	2	36	10/15	**EMBH202**	**EMCH202**	**EMDH202**
Miniature circuit breaker	4	36	10/15	**EMBH204**	**EMCH204**	**EMDH204**
Miniature circuit breaker	6	36	10/15	**EMBH206**	**EMCH206**	**EMDH206**
Miniature circuit breaker	8	36	10/15	**EMBH208**	**EMCH208**	**EMDH208**
Miniature circuit breaker	10	36	10/15	**EMBH210**	**EMCH210**	**EMDH210**
Miniature circuit breaker	13	36	10/15	**EMBH213**	**EMCH213**	**EMDH213**
Miniature circuit breaker	16	36	10/15	**EMBH216**	**EMCH216**	**EMDH216**
Miniature circuit breaker	20	36	10/15	**EMBH220**	**EMCH220**	**EMDH220**
Miniature circuit breaker	25	36	10/15	**EMBH225**	**EMCH225**	**EMDH225**
Miniature circuit breaker	32	36	10/15	**EMBH232**	**EMCH232**	**EMDH232**
Miniature circuit breaker	40	36	10/15	**EMBH240**	**EMCH240**	**EMDH240**
Miniature circuit breaker	50	36	10/15	**EMBH250**	**EMCH250**	**EMDH250**[1)]
Miniature circuit breaker	63	36	10/15	**EMBH263**	**EMCH263**	**EMDH263**[1)]

[1)] 15kA to IEC60947-2 rating only

EMCH363

Miniature circuit breakers – dual rated 10/15kA, three pole

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	1	54	10/15	**EMBH301**	**EMCH301**	**EMDH301**
Miniature circuit breaker	2	54	10/15	**EMBH302**	**EMCH302**	**EMDH302**
Miniature circuit breaker	4	54	10/15	**EMBH304**	**EMCH304**	**EMDH304**
Miniature circuit breaker	6	54	10/15	**EMBH306**	**EMCH306**	**EMDH306**
Miniature circuit breaker	8	54	10/15	**EMBH308**	**EMCH308**	**EMDH308**
Miniature circuit breaker	10	54	10/15	**EMBH310**	**EMCH310**	**EMDH310**
Miniature circuit breaker	13	54	10/15	**EMBH313**	**EMCH313**	**EMDH313**
Miniature circuit breaker	16	54	10/15	**EMBH316**	**EMCH316**	**EMDH316**
Miniature circuit breaker	20	54	10/15	**EMBH320**	**EMCH320**	**EMDH320**
Miniature circuit breaker	25	54	10/15	**EMBH325**	**EMCH325**	**EMDH325**
Miniature circuit breaker	32	54	10/15	**EMBH332**	**EMCH332**	**EMDH332**
Miniature circuit breaker	40	54	10/15	**EMBH340**	**EMCH340**	**EMDH340**
Miniature circuit breaker	50	54	10/15	**EMBH350**	**EMCH350**	**EMDH350**[1)]
Miniature circuit breaker	63	54	10/15	**EMBH363**	**EMCH363**	**EMDH363**[1)]

[1)] 15kA to IEC60947-2 rating only

EMCH410

Miniature circuit breakers – dual rated 10/15kA, four pole

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	1	72	10/15	**EMBH401**	**EMCH401**	**EMDH401**
Miniature circuit breaker	2	72	10/15	**EMBH402**	**EMCH402**	**EMDH402**
Miniature circuit breaker	4	72	10/15	**EMBH404**	**EMCH404**	**EMDH404**
Miniature circuit breaker	6	72	10/15	**EMBH406**	**EMCH406**	**EMDH406**
Miniature circuit breaker	8	72	10/15	**EMBH408**	**EMCH408**	**EMDH408**
Miniature circuit breaker	10	72	10/15	**EMBH410**	**EMCH410**	**EMDH410**
Miniature circuit breaker	13	72	10/15	**EMBH413**	**EMCH413**	**EMDH413**
Miniature circuit breaker	16	72	10/15	**EMBH416**	**EMCH416**	**EMDH416**
Miniature circuit breaker	20	72	10/15	**EMBH420**	**EMCH420**	**EMDH420**
Miniature circuit breaker	25	72	10/15	**EMBH425**	**EMCH425**	**EMDH425**
Miniature circuit breaker	32	72	10/15	**EMBH432**	**EMCH432**	**EMDH432**
Miniature circuit breaker	40	72	10/15	**EMBH440**	**EMCH440**	**EMDH440**
Miniature circuit breaker	50	72	10/15	**EMBH450**	**EMCH450**	**EMDH450**[1)]
Miniature circuit breaker	63	72	10/15	**EMBH463**	**EMCH463**	**EMDH463**[1)]

[1)] 15kA to IEC60947-2 rating only

Miniature circuit breakers, MCBs, 27mm, 20A-125A

MCBs are available in current ratings from 20A–125A, with trip types B, C and D, 15kA to 25kA to IEC 60947-2

See page 127 for technical data and overall dimensions

Miniature circuit breakers - single pole

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	20	27	25kA	**EMBS120**	**EMCS120**	**EMDS120**
Miniature circuit breaker	32	27	25kA	**EMBS132**	**EMCS132**	**EMDS132**
Miniature circuit breaker	40	27	25kA	**EMBS140**	**EMCS140**	**EMDS140**
Miniature circuit breaker	50	27	25kA	**EMBS150**	**EMCS150**	**EMDS150**
Miniature circuit breaker	63	27	25kA	**EMBS163**	**EMCS163**	**EMDS163**
Miniature circuit breaker	80	27	20kA	**EMBS180**	**EMCS180**	**EMDS180**
Miniature circuit breaker	100	27	20kA	**EMBS1100**	**EMCS1100**	**EMDS1100**
Miniature circuit breaker	125	27	15kA	**EMBS1125**	**EMCS1125**	–

Miniature circuit breakers - three pole

Description	Rated current (A)	Width (mm)	Short circuit rating (kA)	Eaton list number Trip type B	Trip type C	Trip type D
Miniature circuit breaker	20	81	25kA	**EMBS320**	**EMCS320**	**EMDS320**
Miniature circuit breaker	32	81	25kA	**EMBS332**	**EMCS332**	**EMDS332**
Miniature circuit breaker	40	81	25kA	**EMBS340**	**EMCS340**	**EMDS340**
Miniature circuit breaker	50	81	25kA	**EMBS350**	**EMCS350**	**EMDS350**
Miniature circuit breaker	63	81	25kA	**EMBS363**	**EMCS363**	**EMDS363**
Miniature circuit breaker	80	81	20kA	**EMBS380**	**EMCS380**	**EMDS380**
Miniature circuit breaker	100	81	20kA	**EMBS3100**	**EMCS3100**	**EMDS3100**
Miniature circuit breaker	125	81	15kA	**EMBS3125**	**EMCS3125**	–

See page 128 for technical data and overall dimensions

EAM162H

RCCBs – 2-pole double module – 10mA–30mA sensitivity

Description	Poles	Rating (A)	Sensitivity (mA)	Eaton list number
16A 2-pole RCCB 10mA	2P	16	10	**EAM162V**
16A 2-pole RCCB 30mA	2P	16	30	**EAM162H**
25A 2-pole RCCB 30mA	2P	25	30	**EAM252H**
40A 2-pole RCCB 30mA	2P	40	30	**EAM402H**
63A 2-pole RCCB 30mA	2P	63	30	**EAM632H**
80A 2-pole RCCB 30mA	2P	80	30	**EAM802H**
100A 2-pole RCCB 30mA	2P	100	30	**EAM1002H**

EAM402M

RCCBs – 2-pole double module – 100mA sensitivity

Description	Poles	Rating (A)	Sensitivity (mA)	Eaton list number
25A 2-pole RCCB 100mA	2P	25	100	**EAM252M**
40A 2-pole RCCB 100mA	2P	40	100	**EAM402M**
63A 2-pole RCCB 100mA	2P	63	100	**EAM632M**
80A 2-pole RCCB 100mA	2P	80	100	**EAM802M**
100A 2-pole RCCB 100mA	2P	100	100	**EAM1002M**

EAM802L

RCCBs – 2-pole double module – 300mA sensitivity

Description	Poles	Rating (A)	Sensitivity (mA)	Eaton list number
25A 2-pole RCCB 300mA	2P	25	300	**EAM252L**
40A 2-pole RCCB 300mA	2P	40	300	**EAM402L**
80A 2-pole RCCB 300mA	2P	80	300	**EAM802L**
100A 2-pole RCCB 300mA	2P	100	300	**EAM1002L**

EAM404H

RCCBs – 4-pole – 30mA sensitivity

Description	Poles	Rating (A)	Sensitivity (mA)	Eaton list number
40A 4-pole RCCB 30mA	4P	40	30	**EAM404H**
63A 4-pole RCCB 30mA	4P	63	30	**EAM634H**
80A 4-pole RCCB 30mA	4P	80	30	**EAM804H**
100A 4-pole RCCB 30mA	4P	100	30	**EAM1004H**

EAM404M

RCCBs – 4-pole – 100mA sensitivity

Description	Poles	Rating (A)	Sensitivity (mA)	Eaton list number
40A 4-pole RCCB 100mA	4P	40	100	**EAM404M**
63A 4-pole RCCB 100mA	4P	63	100	**EAM634M**
80A 4-pole RCCB 100mA	4P	80	100	**EAM804M**
100A 4-pole RCCB 100mA	4P	100	100	**EAM1004M**

EAM404L

RCCBs – 4-pole – 300mA sensitivity

Description	Poles	Rating (A)	Sensitivity (mA)	Eaton list number
40A 4-pole RCCB 300mA	4P	40	300	**EAM404L**
63A 4-pole RCCB 300mA	4P	63	300	**EAM634L**
80A 4-pole RCCB 300mA	4P	80	300	**EAM804L**
100A 4-pole RCCB 300mA	4P	100	300	**EAM1004L**
100A 4-pole RCCB 300mA	4P	100	300, trip time delay	**EAM1004LT**

3.3 Distribution board switch and protection devices

Residual current circuit breaker with overcurrent protection (RCBOs)

See page 129 for technical data and overall dimensions

EMBH106R10C

RCBOs single pole – trip type B – 10mA sensitivity

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type B SP	6	B	10	**EMBH106R10C**
Eaton RCBO 10A 10kA type B SP	10	B	10	**EMBH110R10C**
Eaton RCBO 16A 10kA type B SP	16	B	10	**EMBH116R10C**
Eaton RCBO 20A 10kA type B SP	20	B	10	**EMBH120R10C**
Eaton RCBO 32A 10kA type B SP	32	B	10	**EMBH132R10C**

EMBH110R30C

RCBOs single pole – trip type B – 30mA sensitivity

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type B SP	6	B	30	**EMBH106R30C**
Eaton RCBO 10A 10kA type B SP	10	B	30	**EMBH110R30C**
Eaton RCBO 16A 10kA type B SP	16	B	30	**EMBH116R30C**
Eaton RCBO 20A 10kA type B SP	20	B	30	**EMBH120R30C**
Eaton RCBO 25A 10kA type B SP	25	B	30	**EMBH125R30C**
Eaton RCBO 32A 10kA type B SP	32	B	30	**EMBH132R30C**
Eaton RCBO 40A 10kA type B SP	40	B	30	**EMBH140R30C**
Eaton RCBO 45A 10kA type B SP	45	B	30	**EMBH145R30C**

EMBH116R100C

RCBOs single pole – trip type B – 100mA sensitivity

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type B SP	6	B	100	**EMBH106R100C**
Eaton RCBO 10A 10kA type B SP	10	B	100	**EMBH110R100C**
Eaton RCBO 16A 10kA type B SP	16	B	100	**EMBH116R100C**
Eaton RCBO 20A 10kA type B SP	20	B	100	**EMBH120R100C**
Eaton RCBO 32A 10kA type B SP	32	B	100	**EMBH132R100C**

EMCH120R10C

RCBOs single pole – trip type C – 10mA sensitivity

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type C SP	6	C	10	**EMCH106R10C**
Eaton RCBO 10A 10kA type C SP	10	C	10	**EMCH110R10C**
Eaton RCBO 16A 10kA type C SP	16	C	10	**EMCH116R10C**
Eaton RCBO 20A 10kA type C SP	20	C	10	**EMCH120R10C**
Eaton RCBO 32A 10kA type C SP	32	C	10	**EMCH132R10C**

EMCH110R30C

RCBOs single pole – trip type C – 30mA sensitivity

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type C SP	6	C	30	**EMCH106R30C**
Eaton RCBO 10A 10kA type C SP	10	C	30	**EMCH110R30C**
Eaton RCBO 16A 10kA type C SP	16	C	30	**EMCH116R30C**
Eaton RCBO 20A 10kA type C SP	20	C	30	**EMCH120R30C**
Eaton RCBO 25A 10kA type C SP	25	C	30	**EMCH125R30C**
Eaton RCBO 32A 10kA type C SP	32	C	30	**EMCH132R30C**
Eaton RCBO 40A 10kA type C SP	40	C	30	**EMCH140R30C**
Eaton RCBO 45A 10kA type C SP	45	C	30	**EMCH145R30C**

EMCH132R100C

RCBOs single pole – trip type C – 100mA sensitivity

Description	Rating (A)	Trip type	Sensitivity (mA)	Eaton list number
Eaton RCBO 6A 10kA type C SP	6	C	100	**EMCH106R100C**
Eaton RCBO 10A 10kA type C SP	10	C	100	**EMCH110R100C**
Eaton RCBO 16A 10kA type C SP	16	C	100	**EMCH116R100C**
Eaton RCBO 20A 10kA type C SP	20	C	100	**EMCH120R100C**
Eaton RCBO 32A 10kA type C SP	32	C	100	**EMCH132R100C**

169608

RCBOs 3P+N 10kA

- Conditionally surge current-proof 250A.
- Sensitivity type A, providing protection against AC and pulsating DC earth fault currents.
- Trip types B, C, and D
- Trip sensitivity 30mA, 100mA or 300mA

Description Characteristic B	Rating (A)	Sensitivity (mA)	Type designation	Eaton list number
3P+N RCBO 10A 10kA trip B	10	30	mRBM4-10/3/B/003-A-UK-PT	**169636**
3P+N RCBO 13A 10kA trip B	13	30	mRBM4-13/3/B/003-A-UK-PT	**169637**
3P+N RCBO 16A 10kA trip B	16	30	mRBM4-16/3/B/003-A-UK-PT	**169638**
3P+N RCBO 20A 10kA trip B	20	30	mRBM4-20/3/B/003-A-UK-PT	**169639**
3P+N RCBO 10A 10kA trip B	10	100	mRBM4-10/3/B/01-A-UK-PT	**169670**
3P+N RCBO 13A 10kA trip B	13	100	mRBM4-13/3/B/01-A-UK-PT	**169671**
3P+N RCBO 16A 10kA trip B	16	100	mRBM4-16/3/B/01-A-UK-PT	**169584**
3P+N RCBO 20A 10kA trip B	20	100	mRBM4-20/3/B/01-A-UK-PT	**169585**
3P+N RCBO 10A 10kA trip B	10	300	mRBM4-10/3/B/03-A-UK-PT	**169598**
3P+N RCBO 13A 10kA trip B	13	300	mRBM4-13/3/B/03-A-UK-PT	**169599**
3P+N RCBO 16A 10kA trip B	16	300	mRBM4-16/3/B/03-A-UK-PT	**169600**
3P+N RCBO 20A 10kA trip B	20	300	mRBM4-20/3/B/03-A-UK-PT	**169601**

Description Characteristic C	Rating (A)	Sensitivity (mA)	Type designation	Eaton list number
3P+N RCBO 6A 10kA trip C	6	30	mRBM4-6/3/C/003-A-UK-PT	**169640**
3P+N RCBO 10A 10kA trip C	10	30	mRBM4-10/3/C/003-A-UK-PT	**169641**
3P+N RCBO 13A 10kA trip C	13	30	mRBM4-13/3/C/003-A-UK-PT	**169642**
3P+N RCBO 16A 10kA trip C	16	30	mRBM4-16/3/C/003-A-UK-PT	**169643**
3P+N RCBO20A 10kA trip C	20	30	mRBM4-20/3/C/003-A-UK-PT	**169644**
3P+N RCBO 25A 10kA trip C	25	30	mRBM4-25/3/C/003-A-UK-PT	**169645**
3P+N RCBO 32A 10kA trip C	32	30	mRBM4-32/3/C/003-A-UK-PT	**169646**
3P+N RCBO 6A 10kA trip C	6	100	mRBM4-6/3/C/01-A-UK-PT	**169586**
3P+N RCBO 10A 10kA trip C	10	100	mRBM4-10/3/C/01-A-UK-PT	**169587**
3P+N RCBO 13A 10kA trip C	13	100	mRBM4-13/3/C/01-A-UK-PT	**169588**
3P+N RCBO 16A 10kA trip C	16	100	mRBM4-16/3/C/01-A-UK-PT	**169589**
3P+N RCBO 20A 10kA trip C	20	100	mRBM4-20/3/C/01-A-UK-PT	**169590**
3P+N RCBO 25A 10kA trip C	25	100	mRBM4-25/3/C/01-A-UK-PT	**169591**
3P+N RCBO 32A 10kA trip C	32	100	mRBM4-32/3/C/01-A-UK-PT	**169592**
3P+N RCBO 6A 10kA trip C	6	300	mRBM4-6/3/C/03-A-UK-PT	**169602**
3P+N RCBO 10A 10kA trip C	10	300	mRBM4-10/3/C/03-A-UK-PT	**169603**
3P+N RCBO 13A 10kA trip C	13	300	mRBM4-13/3/C/03-A-UK-PT	**169604**
3P+N RCBO 16A 10kA trip C	16	300	mRBM4-16/3/C/03-A-UK-PT	**169605**
3P+N RCBO 20A 10kA trip C	20	300	mRBM4-20/3/C/03-A-UK-PT	**169606**
3P+N RCBO 25A 10kA trip C	25	300	mRBM4-25/3/C/03-A-UK-PT	**169607**
3P+N RCBO 32A 10kA trip C	32	300	mRBM4-32/3/C/03-A-UK-PT	**169608**

Description Characteristic D	Rating (A)	Sensitivity (mA)	Type designation	Eaton list number
3P+N RCBO 6A 10kA trip D	6	30	mRBM4-6/3/D/003-A-UK-PT	**169647**
3P+N RCBO 10A 10kA trip D	10	30	mRBM4-10/3/D/003-A-UK-PT	**169648**
3P+N RCBO 13A 10kA trip D	13	30	mRBM4-13/3/D/003-A-UK-PT	**169649**
3P+N RCBO 16A 10kA trip D	16	30	mRBM4-16/3/D/003-A-UK-PT	**169650**
3P+N RCBO 20A 10kA trip D	20	30	mRBM4-20/3/D/003-A-UK-PT	**169651**
3P+N RCBO 25A 10kA trip D	25	30	mRBM4-25/3/D/003-A-UK-PT	**169652**
3P+N RCBO 6A 10kA trip D	6	100	mRBM4-6/3/D/01-A-UK-PT	**169593**
3P+N RCBO 10A 10kA trip D	10	100	mRBM4-10/3/D/01-A-UK-PT	**169594**
3P+N RCBO 13A 10kA trip D	13	100	mRBM4-13/3/D/01-A-UK-PT	**169618**
3P+N RCBO 16A 10kA trip D	16	100	mRBM4-16/3/D/01-A-UK-PT	**169619**
3P+N RCBO 20A 10kA trip D	20	100	mRBM4-20/3/D/01-A-UK-PT	**169620**
3P+N RCBO 25A 10kA trip D	25	100	mRBM4-25/3/D/01-A-UK-PT	**169621**
3P+N RCBO 6A 10kA trip D	6	300	mRBM4-6/3/D/03-A-UK-PT	**169609**
3P+N RCBO 10A 10kA trip D	10	300	mRBM4-10/3/D/03-A-UK-PT	**169610**
3P+N RCBO 13A 10kA trip D	13	300	mRBM4-13/3/D/03-A-UK-PT	**169611**
3P+N RCBO 16A 10kA trip D	16	300	mRBM4-16/3/D/03-A-UK-PT	**169612**
3P+N RCBO 20A 10kA trip D	20	300	mRBM4-20/3/D/03-A-UK-PT	**169613**
3P+N RCBO 25A 10kA trip D	25	300	mRBM4-25/3/D/03-A-UK-PT	**169614**

ASPDL

Padlocking devices

For MCBs, RCCBs, RCBOs & switch disconnectors

- The wide range of Eaton devices are complimented by a range of padlocking devices.
- For MCBs and RCCBs the device mechanism is trip free which allows it to be padlocked 'ON' for security, but in the event of a fault condition the device will still operate to disconnect the fault. The device will move to the tripped position when the lock is removed. These devices can also be padlocked in the 'OFF' position.

Description	Eaton list number
Universal device lockout attachment – fits MCBs, RCCBs and RCBOs	**ASPDL**
Lockout attachment for 27mm MCBs	**ASPDL27**
Padlock	**PD2**

ASALMSN

Auxiliary and alarm contacts including test function

For 18mm MCB & RCBO

Auxiliary and alarm contact devices can be fitted together on one MCB. Each is incorporated in a 1/2 module (9 mm) casing with terminals protected to IP 20 capable of accepting cable up to 2.5 mm². These devices are designed and manufactured to IEC 60947-5-1 and incorporate a changeover switch providing remote indication of an MCB which has tripped under fault conditions.

Technical characteristics

- This auxiliary switch allows remote indication of the position of the MCB contacts.
- Auxiliary and Alarm contact ratings:
  - AC14 240 Vac 50Hz, 6A.
  - DC14 125 Vdc, 1A.
- The auxiliary contact will not differentiate between an MCB that is "off" or "tripped".
- The auxiliary contact can be used in conjunction with a remote supply and signal lamps, bells or buzzers.

Description	Quantity per carton	Eaton list number
Auxiliary switch incorporating a test function	1	**ASAUXSN**[1)]
Alarm switch incorporating reset and test function	1	**ASALMSN**[1)]

[1)] Not suitable for use in distribution boards

ASSNTSN415

Shunt trips

For 18mm MCB & RCBO

Technical characteristics

- Suitable for all Eaton MCBs including those with either auxiliary or alarm contacts.
- A shunt trip and undervoltage release can be fitted together on one MCB.
- Each is incorporated in a 1 module (18 mm) casing with terminals protected to IP 20 capable of accepting cable up to 2.5 mm².
- The shunt trip and UVR are simply clipped to the left hand side of an MCB and have terminals at one end to allow connection to pan assemblies and comb busbar.
- A shunt release provides remote trippping of an MCB with three voltage options for AC & DC applications.

Description	dc characteristics	ac characteristics	Quantity per carton	Eaton list number
MCB shunt trip	48 V–60 Vdc	48 V–110 Vac	1	**ASSNTSN110**[1)]
MCB shunt trip	110 Vdc	240 Vac	1	**ASSNTSN415**[1)]

[1)] Not suitable for use in distribution boards
Other voltages are available.

ASUVRSC230

Under voltage release

For 18mm MCB & RCBO

- Under voltage release (UVR) for remote tripping of an emergency stop loop.
- The UVR is simply clipped to the left hand side of an MCB and have terminals at one end to allow connection to pan assemblies and comb busbar.

Description	ac characteristics	Quantity per carton	Eaton list number
Under voltage release	240 Vac	1	**ASUVRSC230**[1)]

[1)] Not suitable for use in distribution boards

Eaton's wide range of modular timers and twilight switches are suitable for any residential or commercial application offering automatic lighting control. Contactors are frequently applied for switching of lamp loads, fans or pumps in both utility as well as industrial areas.

4.1 MODULAR SWITCHES / TIMERS AND TWILIGHT SWITCHES

4.2 CONTACTORS

4.3 TRANSFORMERS AND EARTH LEAKAGE RELAYS

4.1 Modular control and switching devices

Timers and twilight switches

Timers & Twilight Switches are applied in any residential, commercial and industrial buildings wherever automatic control is required on predefined times and/or depending on daylight intensity.

The Eaton range comprises of a wide variety of different products which include analogue Timers, digital Timers, Twilight Switches and Staircase Timers.

These Timers can either be controlled by a 50Hz net-synchronisation, quartz control and time synchronisation or using the DCF signal or GPS antenna,which guarantees 100% accuracy at all times. Except for net-synchronised timers all units do have self power reserve to secure the time setting and program storage in case a power interruption does occur.

Dedicated computer software and memory cards are available to support the programming of our most advanced timers. Automatic summer and winter time, holiday and random switching programs complete the functionality of our range.

Twilight Switches are supplied with a remote light sensor, which can be easily installed on the outside wall where the required light intensity threshold can be simply adjusted on the modular device itself.

Technical characteristics (depending on type)

- Modular design.
- Analogue and digital timers.
- Time adjustment by 50 Hz net, quartz control, DCF1)
- or GPS signal reception 2).
- Manual override switching function.
- Power reserve for all quartz and DCF or GPS driven switches.
- Remote light sensor for twilight switching.

Benefits

- Easily programmable on front of device.
- Computer aided programming software available.
- Compact 18 mm design for restricted space opportunities.
- Separate IP40 covers are available for direct wall mounting.
- High level of accuracy.
- Automatic summer and winter time adjustment.
- Holiday & Random program settings.
- High power reserve up to 10 years.

Notes:

[1] Automatic calculation of sunrise and sunset times throughout the year, including the possibility of astro times + / -2 hour shift.

[2] The DCF-signal can only be received within a 1000 km radius.

Universal declaration type coding

Type coding - analogue switches

TS	Q	D	1NO
TS	S	D	1NO
TS	Q	D	1CO
TS	S	D	1CO
TS	Q	W	1CO

TS = Switch
Q / S = Quartz / 50 Hz net-synchronisation
D / W = Day / week programme
1NO / 1CO = Create / change (contact configuration)

Type coding - digital switches

TS	D	W	1CO	-
TS	D	W	2CO	-
TS	D	W	1CO	A
TS	D	W	1CO	DG
TS	D	W	1CO	MIN

TS = Switch
D = Digital
W = Week programme
1CO / 2CO = Exchange / 2 x changeover (contact configuration)
A = Astroclock
DG = DCF or GPS controlled
MIN = Compact 18mm design version

Type coding - digital switches and accessories

TS	A	DCF
TS	A	GPSKIT
TS	A	MEMKIT
TS	A	MEM

TS = Switch
A = Accessory
DCF = DCF-antenna
GPSKIT = Antenna for GPS signal reception including power supply
MEMKIT = Programming software kit
MEM = Memory

Type coding - twilight switches

SR	S	D	1NO	-
SR	S	W	1NO	-
SR	C	D	1CO	-
SR	S	D	1CO	W

SR = Twilight switch
S / C = With or without sensor
D / W = DIN rail mounting / surface mounting
1NO / 1CO = Create / change (contact configuration)
W = Wide adjustable sensitivity (2 - 50000 lux)

Technical characteristics (dependant of type)

- Supply voltage 230 V / 50 - 60 Hz (50 Hz for just synchronised versions)
- 50 Hz-mains synchronised or Quartz controlled.
- Daily or weekly programme.
- Manual override switching function.
- Compact 18mm design for restricted space opportunities.

See page 54 for accessories
See page 131 for technical data

167391

Analogue time switches - 50 Hz mains synchronised

Standard version

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Day	50 Hz-net	1	CO	-	15 min.	52.5 mm	TSSD1CO	1	**167391**

167389

Analogue time switches - 50 Hz mains synchronised

18 mm compact design

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Day	50 Hz-net	1	NO	-	15 min.	17.5mm	TSSD1NO	1	**167389**

167390

Analogue time switches - Quartz controlled

Standard version

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Day	Quartz	1	CO	200 hrs	15 min.	52.5 mm	TSQD1CO	1	**167390**

167388

Analogue time switches - Quartz controlled

18 mm compact design

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Day	Quartz	1	NO	3 y rs	15 min.	17.5 mm	TSQD1NO	1	**167388**

167392

Analogue weekly timer switches - Quartz controlled

Standard version

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Week	Quartz	1	CO	200 hrs	2 hrs	52.5 mm	TSQW1CO	1	**167392**

Technical characteristics

- Operating voltage 230 V / 50 - 60 Hz.
- 1 or 2 channel.
- Quartz controlled.
- 3 to 10 year power reserve.
- Weekly programme.
- Manual ON (and depending on type OFF) switching.
- Text-oriented user guidance in display.
- Display back light (switchable).
- Compact 18mm design for restricted space.
- Automatic summer and winter adjustment.
- Holiday programme.
- Zero crossing switching relay for longer life.
- Integrated operating hour counter.
- TSDW1CO-1, TSDW2CO-1, TSDW1COA-1, TSDW1CODG:
- Interface for memory.

See page 133 for technical data

167379

Digital weekly time switches, 1 channel

Standard version

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Week	Quartz	1	CO	10 year	1 min.	35.8 mm	TSDW1CO-1	1	**196848**

167383

Digital weekly time switches, 1 channel

1TE wide version

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Week	Quartz	1	CO	3 year	1 min.	17.5 mm	TSDW1COMIN	1	**167383**

167382

Digital weekly time switches, 1 channel

Version with Antenna connection

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Week	Quartz, DCF / GPS	1	CO	10 year	1 sec.	35.8 mm	TSDW1CODG	1	**167382**

167381

Digital weekly time switches, 1 channel

Astronomical

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Week	Quartz with astronomical	1	CO	10 year	1 min.	35.8 mm	TSDW1COA-1	1	**196850**

167380

Timeswitch dig 2CO week

Standard version

Program range	Type	Channels	Contact configuration	Power reserve	Min. cycling time	Width	Type	QPC	Eaton list number
Week	Quartz	2	2 x CO	10 year	1 min.	35.8 mm T	TSDW2CO-1	1	**196849**

Technical characteristics

- Operating voltage 220 - 240 V / 50 - 60 Hz.
- 1 channel.
- Controlled by external light sensor (supplied).
- Built-in time delay included for unwanted switching e.g. due to car lamp influences (adjustable to type SRSD1COW and SRCD1CO).Manual ON (and depending on type OFF) switching.
- Text-oriented user guidance in display.
- Switching status indication.
- Adjustable light intensity level.

SRCD1CO

- Manual ON and OFF switching.
- Back lit display.
- Automatic summer and winter time adjustment.
- Holiday programme.
- Zero crossing switching relay for longer life.
- Integrated operating hour counter.
- Memory interface.
- Test function.

See page 54 for accessories
See page 135 for the technical data

196845

Sun relay 2-2000lux

18 mm compact design

Description	Channels	Adjustable sensitivity	Contact configuration	Width	Type	QPC	Eaton list number
Twilight switch with light sensor	1	Sun relay 2-2000lux	NO	17.5 mm	SRSD1NOW	1	**196845**

196845

Sun relay 2-2000lux

Advanced version, 1 channel

Description	Channels	Adjustable sensitivity	Contact configuration	Width	Type	QPC	Eaton list number
Twilight switch with light sensor	1	2 - 200 lux	CO	54 mm	SRSD1NOW	1	**196845**

196847

Sun relay 1-99000lux + time switch

Combined version

Program range	Channels	Adjustable sensitivity	Contact configuration	Width	Type	QPC	Eaton list number
Week	1	2 - 200 lux	CO	72 mm	SRCD1COD	1	**196847**

Technical characteristics

- Operating voltage 220 - 230 V / 50 - 60 Hz.
- 1 channel.
- Integrated light sensor.
- Time delay included for unwanted switching, adjustable (e.g. due to car lamp influences).
- Back or bottom cable entry.
- Adjustable light intensity on the outside.
- Large light level (180 degrees).
- Test button.
- Degree of protection: IP55.

See page 54 for accessories
See page 135 for technical data

167376

Sun relay 2-200/1000lux wallmount

1 channel

Program range	Channels	Adjustable sensitivity	Contact configuration	Width	Type	QPC	Eaton list number
Week	1	2 - 2.000 lux	NO	85 mm	SRSW1NOW	1	**196846**

167384

Antenna for DCF signal reception

- By using DCF reception 100% accuracy is obtained. A DCF antenna is required to be mounted on an outside wall. The DCF signal reception is only operable when the timer is connected to the remote DCF antenna and fed by a DCF power supply.
- DCF antenna for digital TSDW1CODG.

Description	Type	QPC	Eaton list number
DCF-antenna 1	TSADCF	1	**167384**

167385

Antenna includes power supply for GPS signal reception

- Antenna includes power supply for TSDW1CODG.

Description	Type	QPC	Eaton list number
Antenna for GPS signal reception, includes power supply	TSAGPSKIT	1	**167385**

167387

Programming software kit

- For SRCD1COD, TSDW1CO-1, TSDW2CO-1, TSDW1COA-1, TSDW1CODG

Description	Type	QPC	Eaton list number
Programming software kit including adaptor cable, software and memory card	TSAMEMKIT	1	**167386**
Memory card	TSAMEM	1	**167387**

See pages 131-136 for timers and twilight switches technical data and overall dimensions.

- For other coil voltages contact technical support

See pages 137-138 for contactors technical data and overall dimensions.

CR2011230A

Contactors, 20 A – ac coil

When several contactors are mounted it is advisable to fit a blanking module, List number **EMBP**, every two contactors.

Description	Rating (A)	Coil voltage (Vac)	Coil voltage (Vdc)	Width (mm)	Contacts	Eaton list number
Contactor	20	230	–	18	1 NO + 1 NC	**CR2011230A**
Contactor	20	230	–	18	2 NC	**CR2002230A**
Contactor	20	230	–	18	2 NO	**CR2020230A**

CR2020024

Contactors, 20 A – ac/dc coil

When several contactors are mounted it is advisable to fit a blanking module, List number **EMBP**, every two contactors.

Description	Rating (A)	Coil voltage (Vac)	Coil voltage (Vdc)	Width (mm)	Contacts	Eaton list number
Contactor	20	230	220	18	1 NO + 1 NC	**CR2011230**
Contactor	20	230	220	18	2 NC	**CR2002230**
Contactor	20	230	220	18	2 NO	**CR2020230**

CR2540230A

Contactors, 25 A – ac coil

When several contactors are mounted it is advisable to fit a blanking module, List number **EMBP**, every two contactors.

Description	Rating (A)	Coil voltage (Vac)	Coil voltage (Vdc)	Width (mm)	Contacts	Eaton list number
Contactor	25	230	–	36	2 NO + 2 NC	**CR2522230A**
Contactor	25	230	–	36	3 NO	**CR2530230A**
Contactor	25	230	–	36	4 NC	**CR2504230A**
Contactor	25	230	–	36	4 NO	**CR2540230A**

CR2504024

Contactors, 25 A – ac/dc coil

When several contactors are mounted it is advisable to fit a blanking module, List number **EMBP**, every two contactors.

Description	Rating (A)	Coil voltage (Vac)	Coil voltage (Vdc)	Width (mm)	Contacts	Eaton list number
Contactor	25	230	220	36	2 NO + 2 NC	**CR2522230**
Contactor	25	230	220	36	3 NO	**CR2530230**
Contactor	25	230	220	36	4 NC	**CR2504230**
Contactor	25	230	220	36	4 NO	**CR2540230**

CR4030024

Contactors, 40 A – ac/dc coil

When several contactors are mounted it is advisable to fit a blanking module, List number **EMBP**, every two contactors.

Description	Rating (A)	Coil voltage (Vac)	Coil voltage (Vdc)	Width (mm)	Contacts	Eaton list number
Contactor	40	230	220	54	2 NC	**CR4002230**
Contactor	40	230	220	54	2 NO	**CR4020230**
Contactor	40	230	220	54	3 NO	**CR4030230**
Contactor	40	230	220	54	4 NO	**CR4040230**

CR6320230

Contactors, 63 A – ac/dc coil

When several contactors are mounted it is advisable to fit a blanking module, List number **EMBP**, every two contactors.

Description	Rating (A)	Coil voltage (Vac)	Coil voltage (Vdc)	Width (mm)	Contacts	Eaton list number
Contactor	63	230	220	54	2 NO	**CR6320230**
Contactor	63	230	220	54	4 NO	**CR6340230**

CRM2540230A

Day/night contactors, 20–25 A – ac coil

When several contactors are mounted it is advisable to fit a blanking module or spacer every two contactors. Day/night contactors do have a manual override function, which enables the user to bring the contactor in either a forced "ON" or "OFF" position. The contactor can only be brought into the forced "ON" position when it is de-energised. When the contactor is energised the operation will return into the normal/automatic position.

Description	Rating (A)	Coil voltage (Vac)	Width (mm)	Contacts	Eaton list number
Contactor	20	230	18	2 NO	**CRM2020230A**
Contactor	25	230	36	4 NO	**CRM2540230A**

CRA611

Auxiliary contacts

Can be connected at the right-side of the contactor.

Description	Rating (A)	Width (mm)	Contacts	Eaton list number
Auxiliary	6	9	1 NO + 1 NC	**CRA611**
Auxiliary	6	9	2 NO	**CRA620**

TR-G3/8

Transformers

Description	Volts	Amps	Width (mm)	Module	Eaton list number
Bell Transformer 2 module	12	0.6	36	2	**TR-G3/8**
	4/8	1.0	36	2	**TR-G3/8**

Earth leakage relays & CTs

Suitable for use with all Eaton MCCBs & MCBs to provide add-on earth leakage protection functionality. The earth leakage relay is used with an **ELRCT** series current transformer (core balance) and an appropriate MCB/MCCB shunt trip or undervoltage release. Power supply required 220-240V ac, 50/60Hz. Output contacts (volt-free) rated at 250V ac, 6A. Power and system LEDs show status of the relay, CT continuity, level of earth leakage, earth leakage trip. Eaton earth leakage relays are designed & tested in accordance with IEC61008-1.

See page 139 for dimensional details.

PFR-5

Earth leakage relays – adjustable trip

Description	Sensitivity	Time delay	Width	Eaton list number
Earth leakage relay	Adjustable 30mA,100mA, 300mA, 500mA, 1A, 3A, 5A	Adjustable 0.02, 0.1, 0.3, 0.5, 1, 3, 5s	36mm	**PFR-5**

PFR-003

Earth leakage relays – fixed trip

Description	Sensitivity	Time delay	Width	Eaton list number
Earth leakage relay	Fixed 30mA	Instantaneous (0.02s)	36mm	**PFR-003**
Earth leakage relay	Fixed 300mA	Instantaneous (0.02s)	36mm	**PFR-03**

PFR-W-20–
PFR-W-105

Current transformers (core balance)

- One current transformer required per relay.

Description	Inner dimension	Eaton list number
Current Transformer	20mm diameter	**PFR-W-20**
	30mm diameter	**PFR-W-30**
	35mm diameter	**PFR-W-35**
	70mm diameter	**PFR-W-70**
	105mm diameter	**PFR-W-105**
	140mm diameter	**PFR-W-140**
	210mm diameter	**PFR-W-210**

5 Memshield 3 MCCB panelboards and associated devices

A complete range of MCCB panelboards and pan assemblies providing all the options you need from a straightforward panelboard to a comprehensive panelboard system. The range now offers a variety of incoming devices and a greater choice of outgoing ways to provide more flexibility and choice to the user.

Memshield 3 MCCB panelboards and associated devices

Incoming device ratings up to 250A – outgoing device ratings up to 160A

Specification

- Panelboards to IEC61439-2
- Form 3b Type 2 - with finger guards fitted
- Busbar system KEMA certified 50kA Icc, Icw 25kA 1s
- Enclosure degree of protection IP3X (wall-mounted)
- MCCBs to IEC60947-2. kA ratings shown are Ics=Icu at 400V ac
- Switch disconnectors to IEC60947-3

Features

- 4, 6, 8, or 12 outgoing TP ways
- Outgoing devices; NZM1 16A–125A SP & 20A–160A TP
- Tin–plated busbars
- Outgoing neutral terminal barriers
- Can be configured for incomer device at top of panelboard
- Removable side gland plates as standard
- Wide range of extension boxes, metering, surge protection, and earth leakage incomer options available

See pages 141-143 for dimensions.

EPBN1425

- Minimum ordering requirement: panelboard + incoming device + incomer connection kit + outgoing devices + blanking plates

Description	Associated incoming device	Current rating (A)	No. of ways	Eaton list number
Incoming rating up to 250A, outgoing ratings up to 160A	NZM2 MCCB or N2 switch disconnector or direct lugs connection	250	4	**EPBN1425**
			6	**EPBN1625**
			8	**EPBN1825**
			12	**EPBN11225**

NZMC2-A250KCO

MCCB incoming device

- 36kA or 50kA options
- Select appropriate incomer device from table below
- Maximum cable capacity 185mm²
- Adjustable trip. Thermal trip adjustment 0.8 to 1 x In, Magnetic trip adjustment 6 to 10 x In

Poles	Incoming device type	Current rating (A)	Eaton list number Short circuit rating 36kA	50kA
3-pole	NZM2 MCCB	160	**NZMC2-A160-KCO**	**NZMN2-A160-KCO**
		200	**NZMC2-A200-KCO**	**NZMN2-A200-KCO**
		250	**NZMC2-A250-KCO**	**NZMN2-A250-KCO**
4-pole (3 phase and switched neutral)	NZM2 MCCB	160	**NZMC2-4-A160-KCO**	**NZMN2-4-A160-KCO**
		200	**NZMC2-4-A200-KCO**	**NZMN2-4-A200-KCO**
		250	**NZMC2-4-A250-KCO**	**NZMN2-4-A250-KCO**

N2-250KCO

Switch disconnector (non-automatic) incoming device

- Select appropriate incomer device from table below
- Maximum cable capacity 185mm²

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	N2 Switch disconnector	250	**N2-250-KCO**
4-pole	N2 Switch disconnector	250	**N2-4-250-KCO**

EPBKN125L

Incomer connection kit/metering connection kit

- See incoming metering section below to order metering components

Poles	Maximum rating (A)	Eaton list number
3-pole incomer connection kit	250	**EPBKN1253**
3-pole incomer connection kit – includes metering CT and CT to meter cable	250	**EPBKN1253M**
4-pole incomer connection kit	250	**EPBKN1254**
4-pole incomer connection kit – includes metering CT and CT to meter cable	250	**EPBKN1254M**
Direct connection lugs kit	250	**EPBKN125L**
Direct connection lugs kit – includes metering CT and CT to meter cable	250	**EPBKN125LM**
Adapter kit for use when incomer device mounted at top of panelboard	230	**EPBKTFSN2**[1]

[1] Maximum rating of panelboard when top fed is 230A

NZMB1-1-AF63 and NZMB1-A160

Outgoing devices – NZM1 frame MCCBs

- Maximum cable capacity 70mm²
- Single pole fixed trip. Triple pole thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating (A)	Eaton list number Single pole 25kA	Triple pole 25kA[1] [2]
16	**NZMB1-1-AF16**	–
20	**NZMB1-1-AF20**	**NZMB1-A20**
25	**NZMB1-1-AF25**	**NZMB1-A25**
32	**NZMB1-1-AF32**	**NZMB1-A32**
40	**NZMB1-1-AF40**	**NZMB1-A40**
50	**NZMB1-1-AF50**	**NZMB1-A50**
63	**NZMB1-1-AF63**	**NZMB1-A63**
80	**NZMB1-1-AF80**	**NZMB1-A80**
100	**NZMB1-1-AF100**	**NZMB1-A100**
125	**NZMB1-1-AF125**	**NZMB1-A125**
160	–	**NZMB1-A160**

[1] 36kA triple pole also available, change 'B' to 'C' in list number, ie **NZMC1-A125**

[2] 50kA triple pole also available, change 'B' to 'N' in list number, ie **NZMN1-A125**

EPBN1BP1

Accessories

Description	Eaton list number
SP blanking module NZM1 frame (i.e. order 3 per TP way)	**EPBN1BP1**
Panel door lock with 2 keys (have same key code)	**EPBDLK1**
Finger guard for outgoing NZM1 1P required for Form 3b Type 2	**NZM1-1-XIPK**
Finger guard for outgoing NZM1 3P required for Form 3b Type 2	**NZM1-XIPK**
Shunt trip 208-250AC/DC for NZM1 (excl. 1P)	**259744**
Shunt trip 208-250AC/DC for NZM3/N3	**259763**
Undervoltage release 208–240AC for NZM1 (excl. 1P)	**259471**
Undervoltage release 208–240AC for NZM3/N3	**259499**
Handle lock for MCCB type NZM1	**260199**
Handle lock for MCCB types NZM2 and NZM3	**260201**

EPBN1425SXB

Cable extension boxes – side mounted

Description	Eaton list number
To fit 4 way panelboard **EPBN1425**	**EPBN1425SXB**
To fit 6 way panelboard **EPBN1625**	**EPBN1625SXB**
To fit 8 way panelboard **EPBN1825**	**EPBN1825SXB**
To fit 12 way panelboard **EPBN11225**	**EPBN11225SXB**

EPBN1EX250

Cable extension boxes – top/bottom mounted

Description	Eaton list number
250mm high	**EPBN1EX250**

EPBN1CX250

Corner filler boxes

Description	Eaton list number
For use where top/bottom/meter boxes are fitted in conjunction with side cable boxes	**EPBN1CX250**

EPBN1EXDIN

Din rail extension boxes

Description	Height	Number 18mm Din modules	Eaton list number
For housing din rail mounted command/control equipment, ie timers/contactors	250mm	15	**EPBN1EXDIN**

Metering components – refer to pages 82-85 for more explanation

(Requires appropriate 'Incomer metering connection kit' option from previous page)

EPBMETER1

Incoming metering – digital

- Includes both Modbus and Pulsed outputs

Description	Eaton list number
Incomer meter enclosure (can be fitted to top or bottom of panelboard). Meter not included	**EPBN1EX250M**
Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individua/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)	**EPBMETER1***
Voltage supply to meter tap off kit (includes protection fuses). One per panelboard required, irrespective of number of meters	**EPBN1SUPM**

* MID version see page 79

5.1 Memshield 3 MCCB panelboards and associated devices

Incoming device ratings up to 250A – outgoing device ratings up to 160A

EPBN11225SXM

Outgoing side mounted metering – digital

Description	Number of meter spaces in metering enclosure	Number of meter blanking plates included	Eaton list number
Side mounted metering enclosure to fit 4 way panelboard **EPBN1425**	2	1	**EPBN1425SXM**[1)]
Side mounted metering enclosure to fit 6 way panelboard **EPBN1625**	3	2	**EPBN1625SXM**[1)]
Side mounted metering enclosure to fit 8 way panelboard **EPBN1825**	4	3	**EPBN1825SXM**[1)]
Side mounted metering enclosure to fit 12 way panelboard **EPBN11225**	6	5	**EPBN11225SXM**[1)]
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM1 frame MCCBs. 160A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EPBCTMT160**
Three phase splitter box to allow separate monitoring of a three phase current transformer on individual energy meters			**EPBCTMT3P**
Meter includes both Modbus and Pulsed outputs Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individua/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)			**EPBMETER1***
Voltage supply to meter tap off kit (includes protection fuses), not required if incoming metering is being used			**EPBN1SUPM**
Extra long (2m) meter to meter voltage supply linking cable with connectors			**EPBN3LKKTM**
Extra long (3m) CT to meter plug-in cable			**EPBN3LKRJ45**
CT supporting mount to allow CT to be fitted in side mounted cable extension box if terminal shields being fitted to MCCBs			**EPBSXBCTMT**
Spare blanking plate for unused meter ways in metering enclosure			**EM96BP**

[1)] Suffix 'M' indicates cut-outs for meters and hinged door for outgoing metering suitable for left and right hand applications. Can be used with side mounted cable extension boxes if required

* MID version see page 81

EPBN1SPD123

Transient voltage surge suppression units, externally mounted in own enclosure

- See page 83 for full technical specification
- Includes 63A TP NZM1 MCCB for protection/isolation
- See page 142 for dimensions

Description	Eaton list number
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes III and IV in accordance with IEC 62305	**EPBN1SPD123**
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes I, II, III and IV in accordance with IEC 62305	**EPBN1SPD1234**

EPBKEL250

Earth leakage protection

- Direct bolt-on module used in conjunction with 4-pole incomer device, 250A maximum rating
- Sensitivity adjustable from 0.1A to 3A. Time delay adjustable from 60ms to 450ms

Description	Eaton list number
Earth leakage protection add-on kit for incomer device. 250mm high extension box included	**EPBKEL250**

Cable size summary

Incoming cables	
MCCB or switch disconnector size max/type	185mm^2/tunnel terminals
Direct connection lugs incomer	M8
Neutral	M8
Earth	M10
Outgoing cables	
NZM1 MCCB size max/type	70mm^2/cable clamp (95mm^2 can be fitted depending on cable manufacturer)
Neutral size max/type	50mm^2 tunnel terminals and 2 x M8 bolts
Earth size max/type	50mm^2 tunnel terminals

Memshield 3 MCCB panelboards and associated devices

Incoming device ratings up to 400A – outgoing device ratings up to 160A

Specification

- Panelboards to IEC61439-2. Form 3b Type 2
- Form 3b Type 2 - with finger guards fitted
- Busbar system KEMA certified 50kA Icc, Icw 30kA 1s
- Enclosure degree of protection IP3X (wall-mounted)
- MCCBs to IEC60947-2. kA ratings shown are Ics=Icu at 400V ac
- Switch disconnectors to IEC60947-3

Features

- 6 or 12 outgoing TP ways
- Outgoing devices; NZM1 16A–125A SP & 20A–160A TP
- Tin–plated busbars
- Outgoing neutral terminal barriers
- Can be configured for incomer device at top of panelboard
- Removable side gland plates as standard
- Wide range of extension boxes, metering, surge protection, and earth leakage incomer options available

See pages 141 -143 for dimensions.

EPBN1640

- Minimum ordering requirement: panelboard + incoming device + incomer connection kit + outgoing devices + blanking plates

Description	Associated incoming device	Current rating (A)	No. of ways	Eaton list number
Incoming rating up to 400A, outgoing ratings up to 160A	NZM3 MCCB or N3 switch disconnector or direct lugs connection	400	6	**EPBN1640**
			12	**EPBN11240**

NZMN3-A400

MCCB incoming device

- 50kA
- Select appropriate incomer device from table below
- Maximum cable capacity 240mm²
- Adjustable trip. Thermal trip adjustment 0.8 to 1 x In, Magnetic trip adjustment 6 to 10 x In

Poles	Incoming device type	Current rating (A)	Eaton list number Short circuit rating
3-pole	NZM3 MCCB	250	**NZMN3-A250**
		320	**NZMN3-A320**
		400	**NZMN3-A400**
4-pole (3 phase and switched neutral)	NZM3 MCCB	250	**NZMN3-4-A250**
		320	**NZMN3-4-A320**
		400	**NZMN3-4-A400**

N3-400

Switch disconnector (non-automatic) incoming device

- Select appropriate incomer device from table below
- Maximum cable capacity 240mm²

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	N3 switch disconnector	400	**N3-400**
4-pole	N3 switch disconnector	400	**N3-4-400**

EPBKN2403

Incomer connection kit/metering connection kit

- See incoming metering section below to order metering components

Poles	Maximum rating (A)	Eaton list number
3-pole incomer connection kit	400	**EPBKN2403**
3-pole incomer connection kit – includes metering CT and CT to meter cable	400	**EPBKN2403M**
4-pole incomer connection kit	400	**EPBKN2404**[1]
4-pole incomer connection kit – includes metering CT and CT to meter cable	400	**EPBKN2404M**
Direct connection lugs kit	400	**EPBKN240L**
Direct connection lugs kit – includes metering CT and CT to meter cable	400	**EPBKN240LM**
Adapter kit for use when incomer device mounted at top of panelboard	370	**EPBKTFSN3**[2]

[1] Requires use of cable extension box **EPBN2EX250**

[2] Maximum rating of panelboard when top fed is 370A

NZMB1-1-AF63 and NZMB1-A160

Outgoing devices – NZM1 frame MCCBs

- Maximum cable capacity 70mm²
- Single pole fixed trip. Triple pole thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating (A)	Eaton list number Single pole 25kA	Triple pole 25kA[1] [2]
16	**NZMB1-1-AF16**	–
20	**NZMB1-1-AF20**	**NZMB1-A20**
25	**NZMB1-1-AF25**	**NZMB1-A25**
32	**NZMB1-1-AF32**	**NZMB1-A32**
40	**NZMB1-1-AF40**	**NZMB1-A40**
50	**NZMB1-1-AF50**	**NZMB1-A50**
63	**NZMB1-1-AF63**	**NZMB1-A63**
80	**NZMB1-1-AF80**	**NZMB1-A80**
100	**NZMB1-1-AF100**	**NZMB1-A100**
125	**NZMB1-1-AF125**	**NZMB1-A125**
160	–	**NZMB1-A160**

[1] 36kA triple pole also available, change 'B' to 'C' in list number, ie **NZMC1-A125**

[2] 50kA triple pole also available, change 'B' to 'N' in list number, ie **NZMN1-A125**

EPBDLK1

Accessories

Description	Eaton list number
SP blanking module NZM1 frame (i.e. order 3 per TP way)	**EPBN1BP1**
Panel door lock with 2 keys (have same key code)	**EPBDLK1**
Finger guard for outgoing NZM1 1P required for Form 3b Type 2	**NZM1-1-XIPK**
Finger guard for outgoing NZM1 3P required for Form 3b Type 2	**NZM1-XIPK**
Shunt trip 208–250AC/DC for NZM1 (excl. 1P)	**259744**
Shunt trip 208–250AC/DC for NZM3/N3	**259763**
Undervoltage release 208–240AC for NZM1 (excl. 1P)	**259471**
Undervoltage release 208–240AC for NZM3/N3	**259499**
Handle lock for MCCB type NZM1	**260199**
Handle lock for MCCB types NZM2 and NZM3	**260201**

EPBN21240SXB

Cable extension boxes – side mounted

Description	Eaton list number
To fit 6 way panelboard **EPBN1640**	**EPBN2640SXB**
To fit 12 way panelboard **EPBN11240**	**EPBN21240SXB**

EPBN2EX250

Cable extension boxes – top/bottom mounted

Description	Eaton list number
250mm high	**EPBN2EX250**

EPBN2CX250

Corner filler boxes

Description	Eaton list number
For use where top/bottom/meter boxes are fitted in conjunction with side cable boxes	**EPBN2CX250**

EPBN2EXDIN

Din rail extension boxes

Description	Height	Number 18mm Din modules	Eaton list number
For housing din rail mounted command/control equipment, ie timers/contactors	250mm	15	**EPBN2EXDIN**

Metering components – refer to pages 82-85 for more explanation

(Requires appropriate 'Incomer metering connection kit' option from previous page)

EPBN2EX250M

Incoming metering – digital

- Includes both Modbus and Pulsed outputs
- See page 79 for detailed selection guide

Description	Eaton list number
Incomer meter enclosure (can be fitted to top or bottom of panelboard). Meter not included	**EPBN2EX250M**
Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individual/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)	**EPBMETER1***
Voltage supply to meter tap off kit (includes protection fuses). One per panelboard required, irrespective of number of meters	**EPBN3SUPM**

* MID version see page 79

EPBN21240SXM

Outgoing side mounted metering – digital

- See page 81 for detailed selection guide

Description	Number of meter spaces in metering enclosure	Number of meter blanking plates included	Eaton list number
Side mounted metering enclosure to fit 6 way panelboard EPBN1640	3	2	**EPBN2640SXM**[1]
Side mounted metering enclosure to fit 12 way panelboard EPBN11240	6	5	**EPBN21240SXM**[1]
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM1 frame MCCBs. 160A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EPBCTMT160**
Three phase splitter box to allow separate monitoring of a three phase current transformer on individual energy meters			**EPBCTMT3P**
Meter includes both Modbus and Pulsed outputs Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individual/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)			**EPBMETER1***
Voltage supply to meter tap off kit (includes protection fuses), not required if incoming metering is being used			**EPBN3SUPM**
Extra long (2m) meter to meter voltage supply linking cable with connectors			**EPBN3LKKTM**
Extra long (3m) CT to meter plug-in cable			**EPBN3LKRJ45**
CT supporting mount to allow CT to be fitted in side mounted cable extension box if terminal shields being fitted to MCCBs			**EPBSXBCTMT**
Spare blanking plate for unused meter ways in metering enclosure			**EM96BP**

[1] Suffix 'M' indicates cut-outs for meters and hinged door for outgoing metering suitable for left and right hand applications. Can be used with side mounted cable extension boxes if required

* MID version see page 81

EPBN1SPD123

Transient voltage surge suppression units, externally mounted in own enclosure

- See page 83 for full technical specification
- Includes 63A TP NZM1 MCCB for protection/isolation
- See page 142 for dimensions

Description	Eaton list number
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes III and IV in accordance with IEC 62305	**EPBN1SPD123**
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes I, II, III and IV in accordance with IEC 62305	**EPBN1SPD1234**

EPBKEL400

Earth leakage protection

- Kit comprises 350mm high extension box fitted with earth leakage relay, core balance transformer, all cables/terminals/protection fuses, and 230V shunt trip (for tripping of incomer device). Requires 4-pole incomer device. 400A maximum rating
- Sensitivity adjustable from 30mA to 5A. Time delay adjustable from 0.02 to 5 seconds

Description	Eaton list number
Earth leakage protection add-on module for incomer device	**EPBKEL400**

Cable size summary

Incoming cables	
MCCB or switch disconnector size max/type	240mm^2/M12 bolt
Direct connection lugs incomer	M12
Neutral	M8
Earth	M10
Outgoing cables	
NZM1 MCCB size max/type	70mm^2/cable clamp. (95mm^2 can be fitted depending on cable manufacturer)
Neutral size max/type	50mm^2 tunnel terminals and 2 x M8 bolts
Earth size max/type	50mm^2 tunnel terminals

Specification

- Panelboards to IEC61439-2
- Form 3b Type 2 - with finger guards fitted
- Busbar system KEMA certified 50kA Icc, Icw 35kA 1s
- Enclosure degree of protection IP3X (wall-mounted)
- MCCBs to IEC60947-2. kA ratings shown are Ics=Icu at 400V ac
- Switch disconnectors to IEC60947-3

Features

- 6, 12 or 18 outgoing TP ways
- Outgoing devices; these panelboards utilise two frame sizes of MCCB: NZM2 125A–250A TP, and NZM1 SP 16A–125A or TP 20A–160A
- Tin–plated busbars
- Outgoing neutral terminal barriers
- Can be configured for incomer device at top of panelboard
- Removable side gland plates as standard
- Wide range of extension boxes, metering, surge protection, and earth leakage incomer options available

See pages 141 -143 for dimensions.

EPBN2640

- Minimum ordering requirement: panelboard + incoming device + incomer connection kit + outgoing devices + blanking plates

Description	Associated incoming device	Current rating (A)	No. of outgoing ways	Eaton list number
Incoming rating up to 400A, outgoing ratings up to 250A	NZM3 MCCB or N3 Switch Disconnector or direct lugs connection	400	6 (2 x 250A + 4 x 160A)	**EPBN2640**
			12 (2 x 250A + 10 x 160A)	**EPBN21240**
			18 (2 x 250A + 16 x 160A)	**EPBN21840**

NZMN3-A400

MCCB incoming device

- 50kA
- Select appropriate incomer device from table below
- Maximum cable capacity 240mm²
- Adjustable trip. Thermal trip adjustment 0.8 to 1 x In, Magnetic trip adjustment 6 to 10 x In

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	NZM3 MCCB	250	**NZMN3-A250**
		320	**NZMN3-A320**
		400	**NZMN3-A400**
3-pole	Electronic Incomer devices options	160	**NZMN2-VX160-T**
		250	**NZMN2-VX250-T**
		400	**NZMN3-VX400-T**
4-pole (3 phase and switched neutral)	NZM3 MCCB	250	**NZMN3-4-A250**
		320	**NZMN3-4-A320**
		400	**NZMN3-4-A400**
4-pole	Electronic Incomer devices options	160	**NZMN2-4-VX160-T**
		250	**NZMN2-4-VX250-T**
		400	**NZMN3-4-VX400-T**

N3-400

Switch disconnector (non-automatic) incoming device

- Select appropriate incomer device from table below
- Maximum cable capacity 240mm²

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	N2 switch disconnector	400	**N3-400**
4-pole	N2 switch disconnector	400	**N3-4-400**

5.3 Memshield 3 MCCB panelboards and associated devices

Incoming device ratings up to 400A – outgoing device ratings up to 250A

EPBKN2404

Incomer connection kit/metering connection kit

- See incoming metering section below to order metering components

Poles	Maximum rating (A)	Eaton list number
3-pole incomer connection kit	400	**EPBKN2403**
3-pole incomer connection kit – includes metering CT and CT to meter cable	400	**EPBKN2403M**
4-pole incomer connection kit	400	**EPBKN2404**[1]
4-pole incomer connection kit – includes metering CT and CT to meter cable	400	**EPBKN2404M**
Direct connection lugs kit	400	**EPBKN240L**
Direct connection lugs kit – includes metering CT and CT to meter cable	400	**EPBKN240LM**
Adapter kit for use when incomer device mounted at top of panelboard	370	**EPBKTFSN3**[2]

[1] Requires use of cable extension box **EPBN2EX250**

[2] Maximum rating of panelboard when top fed is 370A

Outgoing devices – NZM2 frame MCCBs

- Maximum cable capacity 185mm²
- Up to 2 can be fitted
- Adjustable trip. Thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating (A)	Eaton list number Triple pole 36kA	Triple pole 50kA
125	**NZMC2-A125-BT**	**NZMN2-A125-BT**
160	**NZMC2-A160-BT**	**NZMN2-A160-BT**
200	**NZMC2-A200-BT**	**NZMN2-A200-BT**
250	**NZMC2-A250-BT**	**NZMN2-A250-BT**

Electronic devices options

- Adjustable trip overloads 40-100% x In
- Instantaneous S/C release fixed 18 x In
- Delayed S/C release 2-10 x Ir

Rating (A)	Eaton list number Triple pole 50kA	Eaton list number- Earth Fault Protection
100	**NZMN2-VX100-BT**	**NZM2-VX100-T**
160	**NZMN2-VX160-BT**	**NZMN2-VX160-T**
250	**NZMN2-VX250-BT**	**NZMN2-VX250-T**
400		**NZMN3-VX400-T**

NZMB1-1-AF63 and NZMB1-A160

Outgoing devices – NZM1 frame MCCBs

- Maximum cable capacity 70mm²
- Single pole fixed trip. Triple pole thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating (A)	Eaton list number Single pole 25kA	Triple pole 25kA	Triple pole 36kA[1]
16	**NZMB1-1-AF16**	–	–
20	**NZMB1-1-AF20**	**NZMB1-A20**	**NZMC1-A20**
25	**NZMB1-1-AF25**	**NZMB1-A25**	**NZMC1-A25**
32	**NZMB1-1-AF32**	**NZMB1-A32**	**NZMC1-A32**
40	**NZMB1-1-AF40**	**NZMB1-A40**	**NZMC1-A40**
50	**NZMB1-1-AF50**	**NZMB1-A50**	**NZMC1-A50**
63	**NZMB1-1-AF63**	**NZMB1-A63**	**NZMC1-A63**
80	**NZMB1-1-AF80**	**NZMB1-A80**	**NZMC1-A80**
100	**NZMB1-1-AF100**	**NZMB1-A100**	**NZMC1-A100**
125	**NZMB1-1-AF125**	**NZMB1-A125**	**NZMC1-A125**
160	–	**NZMB1-A160**	**NZMC1-A160**

[1] 50kA triple pole also available, change 'C' to 'N' in list number, ie **NZMN1-A125**

EPBN1BP1 tunnel terminals

Accessories

Description	Eaton list number
SP blanking module NZM1 frame (i.e. order 3 per TP way)	**EPBN1BP1**
TP blanking module NZM2 frame	**EPBN2BP3**
Panel door lock with 2 keys (have same key code)	**EPBDLK1**
Finger guard for outgoing NZM1 1P required for Form 3b Type 2	**NZM1-1-XIPK**
Finger guard for outgoing NZM1 3P required for Form 3b Type 2	**NZM1-XIPK**
Finger guard for outgoing NZM2 3P required for Form 3b Type 2	**NZM2-XIPK**
Shunt trip 208–250AC/DC for NZM1 (excl. 1P)	**259744**
Shunt trip 208–250AC/DC for NZM2/N2	**259763**
Shunt trip 208–250AC/DC for NZM3/N3	**259763**
Undervoltage release 208–240AC for NZM1 (excl. 1P)	**259471**
Undervoltage release 208–240AC for NZM2/N2	**259499**
Undervoltage release 208–240AC for NZM3/N3	**259499**
Handle lock for MCCB type NZM1	**260199**
Handle lock for MCCB types NZM2 and NZM3	**260201**

EPBN2640SXB

Cable extension boxes – side mounted

Description	Eaton list number
To fit 6 way panelboard **EPBN2640**	**EPBN2640SXB**
To fit 12 way panelboard **EPBN21240**	**EPBN21240SXB**
To fit 18 way panelboard **EPBN21840**	**EPBN21840SXB**

EPBN2EX250

Cable extension boxes – top/bottom mounted

Description	Eaton list number
250mm high	**EPBN2EX250**

EPBN2CX250

Corner filler boxes

Description	Eaton list number
For use where top/bottom/meter boxes are fitted in conjunction with side cable boxes	**EPBN2CX250**

EPBN2EXDIN

Din rail extension boxes

Description	Height	Number 18mm Din modules	Eaton list number
For housing din rail mounted command/control equipment, ie timers/contactors	250mm	18	**EPBN2EXDIN**

Metering components – refer to pages 82-85 for more explanation

(Requires appropriate 'Incomer metering connection kit' option from previous page)

EPBN2EX250M

Incoming metering – digital

- Includes both Modbus and Pulsed outputs
- See page 79 for detailed selection guide

Description	Eaton list number
Incomer meter enclosure (can be fitted to top or bottom of panelboard). Meter not included	**EPBN2EX250M**
Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individual/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)	**EPBMETER1***
Voltage supply to meter tap off kit (includes protection fuses). One per panelboard required, irrespective of number of meters	**EPBN3SUPM**

* MID version see page 79

EPBN21240SXM

Outgoing side mounted metering – digital

- See page 81 for detailed selection guide

Description	Number of meter spaces in metering enclosure	Number of meter blanking plates included	Eaton list number
Side mounted metering enclosure to fit 6 way panelboard EPBN2640	3	2	**EPBN2640SXM**[1]
Side mounted metering enclosure to fit 12 way panelboard EPBN21240	6	5	**EPBN21240SXM**[1]
Side mounted metering enclosure to fit 18 way panelboard EPBN21840	9	8	**EPBN21840SXM**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM1 frame MCCBs. 160A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EPBCTMT160**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM2 frame MCCBs. 250A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EPBCTMT250**
Three phase splitter box to allow separate monitoring of a three phase current transformer on individual energy meters			**EPBCTMT3P**
Meter includes both Modbus and Pulsed outputs Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individual/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)			**EPBMETER1**
Voltage supply to meter tap off kit (includes protection fuses), not required if incoming metering is being used			**EPBN3SUPM**
Extra long (2m) meter to meter voltage supply linking cable with connectors			**EPBN3LKKTM**
Extra long (3m) CT to meter plug-in cable			**EPBN3LKRJ45**
CT supporting mount to allow CT to be fitted in side mounted cable extension box if terminal shields being fitted to MCCBs			**EPBSXBCTMT**
Spare blanking plate for unused meter ways in metering enclosure			**EM96BP**

[1] Suffix 'M' indicates cut-outs for meters and hinged door for outgoing metering suitable for left and right hand applications. Can be used with side mounted cable extension boxes if required

EPBN1SPD123

Transient voltage surge suppression units, externally mounted in own enclosure

- See page 83 for full technical specification
- Includes 63A TP NZM1 MCCB for protection/isolation
- See page 142 for dimensions

Description	Eaton list number
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes III and IV in accordance with IEC 62305	**EPBN1SPD123**
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes I, II, III and IV in accordance with IEC 62305	**EPBN1SPD1234**

EPBKEL400

Earth leakage protection

- Kit comprises 350mm high extension box fitted with earth leakage relay, core balance transformer, all cables/terminals/protection fuses, and 230V shunt trip (for tripping of incomer device). Requires 4-pole incomer device. 400A maximum rating
- Sensitivity adjustable from 30mA to 5A. Time delay adjustable from 0.02 to 5 seconds

Description	Eaton list number
Earth leakage protection add-on kit for incomer device	**EPBKEL400**

Cable size summary

Incoming cables	
MCCB or switch disconnector size max/type	240mm^2/M12 bolt
Direct connection lugs incomer	M12
Neutral	M8
Earth	M10
Outgoing cables	
NZM2 MCCB size max/type	185mm^2/cable clamp
NZM1 MCCB size max/type	70mm^2/cable clamp. (95mm^2 can be fitted depending on cable manufacturer)
Neutral size max/type	50mm^2 tunnel terminals and 4 x M8 bolts
Earth size max/type	50mm^2 tunnel terminals and 4 x M8 bolts

Memshield 3 MCCB panelboards and associated devices

Incoming device ratings up to 630A – outgoing device ratings up to 250A

Specification

- Panelboards to IEC61439-2
- Form 3b Type 2 - with finger guards fitted
- Busbar system KEMA certified 50kA Icc, Icw 50kA 1s
- Enclosure degree of protection IP3X (wall-mounted)
- MCCBs to IEC60947-2. kA ratings shown are Ics=Icu at 400V ac
- Switch disconnectors to IEC60947-3

Features

- 8, 12 or 18 outgoing TP ways
- Outgoing devices; these panelboards utilise two frame sizes of MCCB: NZM2 125A–250A TP, and NZM1 SP 16A–125A or TP 20A–160A
- Tin–plated busbars
- Outgoing neutral terminal barriers
- Can be configured for incomer device at top of panelboard
- Removable side gland plates as standard
- Wide range of extension boxes, metering, surge protection, and earth leakage incomer options available
- Door lock included

See pages 141-143 for dimensions.

EPBN2863

- Minimum ordering requirement: panelboard + incoming device + incomer connection kit + outgoing devices + blanking plates

Description	Associated incoming device	Current rating (A)	No. of outgoing ways	Eaton list number
Incoming rating 630A, outgoing ratings up to 250A	NZMLW MCCB or NLW CBS or direct lugs connection	630	8 (4 x 250A + 4 x 160A)	**EPBN2863**
			12 (4 x 250A + 8 x 160A)	**EPBN21263**
			18 (4 x 250A + 14 x 160A)	**EPBN21863**

NZMLW-630

MCCB incoming device

- 50kA
- Select appropriate incomer device from table below
- Maximum cable capacity 2 x 300mm²
- Thermal trip adjustment 50 -100% In, Magnetic trip adjustment 2 to 8 x In

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	NZMLW MCCB	630	**NZMLW-A630**
4-pole (3 phase and switched neutral)	NZMLW MCCB	630	**NZMLW-4-A630**

NLW-630

Circuit breaker switch incoming device

- 50kA
- Select appropriate incomer device from table below
- Maximum cable capacity 2 x 300mm²

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	NLW Circuit breaker switch	630	**NLW-630**
4-pole	NLW Circuit breaker switch	630	**NLW-4-630**

EPBKN2633

Incomer connection kit/metering connection kit

- See incoming metering section below to order metering components

Poles	Maximum rating (A)	Eaton list number
3-Pole incomer connection kit	630	**EPBKN2633**
3-Pole incomer connection kit – includes metering CT and CT to meter cable	630	**EPBKN2633M**
4-Pole incomer connection kit	630	**EPBKN2634**
4-Pole incomer connection kit – includes metering CT and CT to meter cable	630	**EPBKN2634M**
Direct connection lugs kit	630	**EPBKN263L**
Direct connection lugs kit – includes metering CT and CT to meter cable	630	**EPBKN263LM**
Adapter kit for use when incomer device mounted at top of panelboard	570	**EPBKTFSLW**[1)]

[1)] Maximum rating of panelboard when top fed is 570A

5.4 Memshield 3 MCCB panelboards and associated devices

Incoming device ratings up to 630A – outgoing device ratings up to 250A

NZMC2-A250-BT

Outgoing devices – NZM2 frame MCCBs

- Maximum cable capacity 185mm²
- Up to 4 can be fitted
- Adjustable trip. Thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating (A)	Eaton list number Triple pole 36kA	Triple pole 50kA
125	**NZMC2-A125-BT**	**NZMN2-A125-BT**
160	**NZMC2-A160-BT**	**NZMN2-A160-BT**
200	**NZMC2-A200-BT**	**NZMN2-A200-BT**
250	**NZMC2-A250-BT**	**NZMN2-A250-BT**

Electronic devices options

- Adjustable trip overloads 40-100% x In
- Instantaneous S/C release fixed 18 x In
- Delayed S/C release 2-10 x Ir

Rating (A)	Eaton list number Triple pole 50kA	Eaton List Number- Earth Fault Protection
100	**NZMN2-VX100-BT**	**NZM2-VX100-T**
160	**NZMN2-VX160-BT**	**NZMN2-VX160-T**
250	**NZMN2-VX250-BT**	**NZMN2-VX250-T**

NZMB1-1-AF63 and NZMB1-A160

Outgoing devices – NZM1 frame MCCBs

- Maximum cable capacity 70mm²
- Single pole fixed trip. Triple pole thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating (A)	Eaton list number Single pole 25kA	Triple pole 25kA	Triple pole 36kA[1)]
16	**NZMB1-1-AF16**	–	–
20	**NZMB1-1-AF20**	**NZMB1-A20**	**NZMC1-A20**
25	**NZMB1-1-AF25**	**NZMB1-A25**	**NZMC1-A25**
32	**NZMB1-1-AF32**	**NZMB1-A32**	**NZMC1-A32**
40	**NZMB1-1-AF40**	**NZMB1-A40**	**NZMC1-A40**
50	**NZMB1-1-AF50**	**NZMB1-A50**	**NZMC1-A50**
63	**NZMB1-1-AF63**	**NZMB1-A63**	**NZMC1-A63**
80	**NZMB1-1-AF80**	**NZMB1-A80**	**NZMC1-A80**
100	**NZMB1-1-AF100**	**NZMB1-A100**	**NZMC1-A100**
125	**NZMB1-1-AF125**	**NZMB1-A125**	**NZMC1-A125**
160	–	**NZMB1-A160**	**NZMC1-A160**

[1)] 50kA triple pole also available, change 'C' to 'N' in list number, ie **NZMN1-A125**

EPBN1BP1

Accessories

Description	Eaton list number
SP blanking module NZM1 frame (i.e. order 3 per TP way)	**EPBN1BP1**
TP blanking module NZM2 frame	**EPBN2BP3**
Finger guard for outgoing NZM1 1P required for Form 3b Type 2	**NZM1-1-XIPK**
Finger guard for outgoing NZM1 3P required for Form 3b Type 2	**NZM1-XIPK**
Finger guard for outgoing NZM2 3P required for Form 3b Type 2	**NZM2-XIPK**
Shunt trip 208–250AC/DC for NZM1 (excl. 1P)	**259744**
Shunt trip 208–250AC/DC for NZM2/N2	**259763**
Shunt trip 110V–240VAC for NZMLW/NLW	**SNT4LP11K**
Undervoltage release 208–240AC for NZM1 (excl. 1P)	**259471**
Undervoltage release 208–240AC for NZM2/N2	**259499**
Undervoltage release 240VAC for NZMLW/NLW	**UVH4LP11K**
Handle lock for MCCB type NZM1	**260199**
Handle lock for MCCB types NZM2 and NZM3	**260201**

EPBN21863SXB

Cable extension boxes – side mounted

Description	Eaton list number
To fit 8 way panelboard **EPBN2863**	**EPBN21263SXB**
To fit 12 way panelboard **EPBN21263**	**EPBN21263SXB**
To fit 18 way panelboard **EPBN21863**	**EPBN21863SXB**

EPBN3EX250

Cable extension boxes – top/bottom mounted

Description	Eaton list number
250mm high	**EPBN3EX250**

EPBNCX250

Corner filler boxes

Description	Eaton list number
For use where top/bottom/meter boxes are fitted in conjunction with side cable boxes	**EPBN2CX250**

EPBN3EXDIN

Din rail extension boxes

Description	Height	Number 18mm Din modules	Eaton list number
For housing din rail mounted command/control equipment, ie timers/contactors	250mm	30	**EPBN3EXDIN**

Metering components – refer to pages 82-85 for more explanation

(Requires appropriate 'Incomer metering connection kit' option from previous page)

EPBN3EX250M

Incoming metering – digital

- Includes both Modbus and Pulsed outputs
- See page 79 for detailed selection guide

Description	Eaton list number
Incomer meter enclosure (can be fitted to top or bottom of panelboard). Meter not included	**EPBN3EX250M**
Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individual/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)	**EPBMETER1***
Voltage supply to meter tap off kit (includes protection fuses). One per panelboard required, irrespective of number of meters	**EPBN3SUPM**

* MID version see page 79

EPBN21263SXM

Outgoing side mounted metering – digital

- See page 81 for detailed selection guide

Description	Number of meter spaces in metering enclosure	Number of meter blanking plates included	Eaton list number
Side mounted metering enclosure to fit 8 way panelboard **EPBN2863**	6	5	**EPBN21263SXM**
Side mounted metering enclosure to fit 12 way panelboard **EPBN21263**	6	5	**EPBN21263SXM**
Side mounted metering enclosure to fit 18 way panelboard **EPBN21863**	9	8	**EPBN21863SXM**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM1 frame MCCBs. 160A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EPBCTMT160**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM2 frame MCCBs. 250A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EPBCTMT250**
Three phase splitter box to allow separate monitoring of a three phase current transformer on individual energy meters			**EPBCTMT3P**
Meter includes both Modbus and Pulsed outputs Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individual/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)			**EPBMETER1***
Voltage supply to meter tap off kit (includes protection fuses), not required if incoming metering is being used			**EPBN3SUPM**
Extra long (2m) meter to meter voltage supply linking cable with connectors			**EPBN3LKKTM**
Extra long (3m) CT to meter plug-in cable			**EPBN3LKRJ45**
CT supporting mount to allow CT to be fitted in side mounted cable extension box if terminal shields being fitted to MCCBs			**EPBSXBCTMT**
Spare blanking plate for unused meter ways in metering enclosure			**EM96BP**

[1] Suffix 'M' indicates cut-outs for meters and hinged door for outgoing metering suitable for left and right hand applications. Can be used with side mounted cable extension boxes if required

* MID version see page 81

EPBN1SPD123

Transient voltage surge suppression units, externally mounted in own enclosure

- See page 83 for full technical specification
- Includes 63A TP NZM1 MCCB for protection/isolation
- See page 142 for dimensions

Description	Eaton list number
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes III and IV in accordance with IEC 62305	**EPBN1SPD123**
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes I, II, III and IV in accordance with IEC 62305	**EPBN1SPD1234**

EPBKEL800

Earth leakage protection

- Kit comprises 350mm high extension box fitted with earth leakage relay, core balance transformer, all cables/terminals/protection fuses, and 230V shunt trip (for tripping of incomer device). Requires 4-pole incomer device. 630A maximum rating
- Sensitivity adjustable from 30mA to 5A. Time delay adjustable from 0.02 to 5 seconds

Description	Eaton list number
Earth leakage protection add-on kit for incomer device	**EPBKEL800**

Cable size summary

Incoming cables	
MCCB or switch disconnector size max/type	2 x 300mm^2/M10 bolt
Direct connection lugs incomer	M12
Neutral	M12
Earth	M10
Outgoing cables	
NZM2 MCCB size max/type	185mm^2/cable clamp
NZM1 MCCB size max / type	70mm^2/cable clamp. (95mm^2 can be fitted depending on cable manufacturer)
Neutral size max / type	50mm^2 tunnel terminals and 4 x M8 bolts
Earth size max / type	50mm^2 tunnel terminals and 8 x M8 bolts

Memshield 3 MCCB panelboards and associated devices

Incoming device ratings up to 800A – outgoing device ratings up to 400A

Specification

- Panelboards to IEC61439-2. Form 3b Type 2
- Form 3b Type 2 - with finger guards fitted
- Busbar system KEMA certified 50kA Icc, Icw 50kA 1s
- Enclosure degree of protection IP3X (wall-mounted)
- Outgoing MCCBs to IEC60947-2. kA ratings shown are Ics=Icu at 400V ac
- Incoming MCCB/circuit breaker switch to IEC60947-2 Icu 50kA, Ics 25kA

Features

- 8, 12 or 18 outgoing TP ways
- Outgoing devices; these panelboards utilise three frame sizes of MCCB: NZM3 250A -400A, NZM2 125A–250A TP, and NZM1 SP 16A–125A or TP 20A–160A
- Tin–plated busbars
- Outgoing neutral terminal barriers
- Can be configured for incomer device at top of panelboard
- Removable side gland plates as standard
- Wide range of extension boxes, metering, surge protection, and earth leakage incomer options available
- Door lock included

See pages 141-143 for dimensions.

EPBN31280

- Minimum ordering requirement: panelboard + incoming device + incomer connection kit + outgoing devices + blanking plates

Description	Associated incoming device	Current rating (A)	No. of outgoing ways	Eaton list number
Incoming rating 800A, outgoing ratings up to 400A	NZMLW MCCB or NLW CBS	800	8 (2 x 400A + 2 x 250A + 4 x 160A)	**EPBN3880**
			12 (2 x 400A + 4 x 250A + 6 x 160A)	**EPBN31280**
			18 (2 x 400A + 4 x 250A + 12 x 160A)	**EPBN31880**

NZMLW-800

MCCB incoming device

- 50kA
- Select appropriate incomer device from table below
- Maximum cable capacity 2 x 300mm²
- Thermal trip adjustment 50 - 100% In, Magnetic trip adjustment 2 to 8 x In

Poles	Incoming device type	Current rating (A)	Eaton list number Short circuit rating 50kA
3-pole	NZMLW MCCB	800	**NZMLW-A800**
4-pole (3 phase and switched neutral)	NZMLW MCCB	800	**NZMLW-4-A800**

NLW-800

Circuit breaker switch incoming device

- 50kA
- Select appropriate incomer device from table below
- Maximum cable capacity 2 x 300mm²

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	NLW Circuit breaker switch	800	**NLW-800**
4-pole	NLW Circuit breaker switch	800	**NLW-4-800**

EPBKN3803

Incomer connection kit/metering connection kit

- See incoming metering section below to order metering components

Poles	Maximum rating (A)	Eaton list number
3-Pole incomer connection kit	800	**EPBKN3803**
3-Pole incomer connection kit – includes metering CT and CT to meter cable	800	**EPBKN3803M**
4-Pole incomer connection kit	800	**EPBKN3804**
4-Pole incomer connection kit – includes metering CT and CT to meter cable	800	**EPBKN3804M**
Adapter kit for use when incomer device mounted at top of panelboard	720	**EPBKTFSLW**[1)]

[1)] Maximum rating of panelboard when top fed is 720A

5.5 Memshield 3 panelboards and associated devices

Incoming device ratings up to 800A – outgoing device ratings up to 400A

NZMN3-A400-BT

Outgoing devices – NZM3 frame MCCBs.

- Maximum cable capacity 240mm²
- Up to 2 can be fitted
- Adjustable trip. Thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating (A)	Eaton list number Triple pole 50kA
250	**NZMN3-A250-BT**
320	**NZMN3-A320-BT**
400	**NZMN3-A400-BT**

Electronic devices options

- Adjustable trip overloads 40-100% x In
- Instantaneous S/C release fixed 18 x In
- Delayed S/C release 2-10 x Ir

Rating (A)	Eaton list number Triple pole 50kA
400	**NZMN3-VX400-T**

Outgoing devices – NZM2 frame MCCBs

- Maximum cable capacity 185mm²
- Up to 4 can be fitted
- Adjustable trip. Thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating (A)	Eaton list number Triple pole 36kA	Triple pole 50kA
125	**NZMC2-A125-BT**	**NZMN2-A125-BT**
160	**NZMC2-A160-BT**	**NZMN2-A160-BT**
200	**NZMC2-A200-BT**	**NZMN2-A200-BT**
250	**NZMC2-A250-BT**	**NZMN2-A250-BT**

Electronic devices options

- Adjustable trip overloads 40-100% x In
- Instantaneous S/C release fixed 18 x In
- Delayed S/C release 2-10 x Ir

Rating (A)	Eaton list number Triple pole 50kA	Eaton list number- Earth Fault Protection
100	**NZMN2-VX100-BT**	**NZM2-VX100-T**
160	**NZMN2-VX160-BT**	**NZMN2-VX160-T**
250	**NZMN2-VX250-BT**	**NZMN2-VX250-T**

NZMB1-1-AF63 and NZMB1-A160

Outgoing devices – NZM1 frame MCCBs

- Maximum cable capacity 70mm²
- Single pole fixed trip. Triple pole thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating (A)	Eaton list number Single pole 25kA	Triple pole 25kA	Triple pole 36kA[1)]
16	**NZMB1-1-AF16**	–	–
20	**NZMB1-1-AF20**	**NZMB1-A20**	**NZMC1-A20**
25	**NZMB1-1-AF25**	**NZMB1-A25**	**NZMC1-A25**
32	**NZMB1-1-AF32**	**NZMB1-A32**	**NZMC1-A32**
40	**NZMB1-1-AF40**	**NZMB1-A40**	**NZMC1-A40**
50	**NZMB1-1-AF50**	**NZMB1-A50**	**NZMC1-A50**
63	**NZMB1-1-AF63**	**NZMB1-A63**	**NZMC1-A63**
80	**NZMB1-1-AF80**	**NZMB1-A80**	**NZMC1-A80**
100	**NZMB1-1-AF100**	**NZMB1-A100**	**NZMC1-A100**
125	**NZMB1-1-AF125**	**NZMB1-A125**	**NZMC1-A125**
160	–	**NZMB1-A160**	**NZMC1-A160**

[1)] 50kA triple pole also available, change 'C' to 'N' in list number, ie **NZMN1-A125**

EPBN3BP3

Accessories

Description	Eaton list number
SP blanking module NZM1 frame (i.e. order 3 per TP way)	**EPBN1BP1**
TP blanking module NZM2 frame	**EPBN2BP3**
TP blanking module NZM3 frame	**EPBN3BP3**
Finger guard for outgoing NZM1 1P required for Form 3b Type 2	**NZM1-1-XIPK**
Finger guard for outgoing NZM1 3P required for Form 3b Type 2	**NZM1-XIPK**
Finger guard for outgoing NZM2 3P required for Form 3b Type 2	**NZM2-XIPK**
Finger guard for outgoing NZM3 3P required for Form 3b Type 2	**NZM3-XIPK**
Shunt trip 208–250AC/DC for NZM1 (excl. 1P)	**259744**
Shunt trip 208–250AC/DC for NZM2/N2	**259763**
Shunt trip 208–250AC/DC for NZM3/N3	**259763**
Shunt trip 110V–240VAC for NZMLW/NLW	**SNT4LP11K**
Undervoltage release 208–240AC for NZM1 (excl. 1P)	**259471**
Undervoltage release 208–240AC for NZM2/N2	**259499**
Undervoltage release 208–240AC for NZM3/N3	**259499**
Undervoltage release 240VAC for NZMLW/NLW	**UVH4LP11K**
Handle lock for MCCB type NZM1	**260199**
Handle lock for MCCB types NZM2 and NZM3	**260201**

EPBN21863SXB

Cable extension boxes – side mounted

Description	Eaton list number
To fit 8 way panelboard **EPBN3880**	**EPBN21263SXB**
To fit 12 way panelboard **EPBN31280**	**EPBN21863SXB**
To fit 18 way panelboard **EPBN31880**	**EPBN31880SXB**

EPBN3EX250

Cable extension boxes – top/bottom mounted

Description	Eaton list number
250mm high	**EPBN3EX250**

EPBN2CX250

Corner filler boxes

Description	Eaton list number
For use where top/bottom/meter boxes are fitted in conjunction with side cable boxes	**EPBN2CX250**

EPBN3EXDIN

Din rail extension boxes

Description	Height	Number 18mm Din modules	Eaton list number
For housing din rail mounted command/control equipment, ie timers/contactors	250mm	30	**EPBN3EXDIN**

Metering components – refer to pages 82-85 for more explanation

(Requires appropriate 'Incomer metering connection kit' option from previous page)

EPBN3EX250M

Incoming metering – digital

- Includes both Modbus and Pulsed outputs
- See page 79 for detailed selection guide

Description	Eaton list number
Incomer meter enclosure (can be fitted to top or bottom of panelboard). Meter not included	**EPBN3EX250M**
Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individual/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)	**EPBMETER1***
Voltage supply to meter tap off kit (includes protection fuses). One per panelboard required, irrespective of number of meters	**EPBN3SUPM**

* MID version see page 79

EPBN21263SXM

Outgoing side mounted metering – digital

- See page 81 for detailed selection guide

Description	Number of meter spaces in metering enclosure	Number of meter blanking plates included	Eaton list number
Side mounted metering enclosure to fit 8 way panelboard **EPBN3880**	6	5	**EPBN21263SXM**
Side mounted metering enclosure to fit 12 way panelboard **EPBN31280**	9	8	**EPBN21863SXM**
Side mounted metering enclosure to fit 18 way panelboard **EPBN31880**	9	8	**EPBN31880SXM**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM1 frame MCCBs. 160A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EPBCTMT160**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM2 frame MCCBs. 250A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EPBCTMT250**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM3 frame MCCBs. 400A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors.			**EPBCTMT400**
Three phase splitter box to allow separate monitoring of a three phase current transformer on individual energy meters			**EPBCTMT3P**
Meter includes both Modbus and Pulsed outputs Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individual/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)			**EPBMETER1***
Voltage supply to meter tap off kit (includes protection fuses), not required if incoming metering is being used			**EPBN3SUPM**
Extra long (2m) meter to meter voltage supply linking cable with connectors			**EPBN3LKKTM**
Extra long (3m) CT to meter plug-in cable			**EPBN3LKRJ45**
CT supporting mount to allow CT to be fitted in side mounted cable extension box if terminal shields being fitted to MCCBs			**EPBSXBCTMT**
Spare blanking plate for unused meter ways in metering enclosure			**EM96BP**

[1] Suffix 'M' indicates cut-outs for meters and hinged door for outgoing metering suitable for left and right hand applications. Can be used with side mounted cable extension boxes if required

* MID version see page 81

EPBN1SPD123

Transient voltage surge suppression units, externally mounted in own enclosure

- See page 83 for full technical specification
- Includes 63A TP NZM1 MCCB for protection/isolation
- See page 142 for dimensions

Description	Eaton list number
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes III and IV in accordance with IEC 62305	**EPBN1SPD123**
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes I, II, III and IV in accordance with IEC 62305	**EPBN1SPD1234**

EPBKEL800

Earth leakage protection

- Kit comprises 350mm high extension box fitted with earth leakage relay, core balance transformer, all cables/terminals/protection fuses, and 230V shunt trip (for tripping of incomer device). Requires 4-pole incomer device. 800A maximum rating
- Sensitivity adjustable from 30mA to 5A. Time delay adjustable from 0.02 to 5 seconds

Description	Eaton list number
Earth leakage protection add-on kit for incomer device	**EPBKEL800**

Cable size summary

Incoming cables	
MCCB or switch disconnector size max/type	2 x 300mm^2/M12 bolt
Neutral	M12
Earth	M10
Outgoing cables	
NZM3 MCCB size max/type	240mm^2/cable clamp
NZM2 MCCB size max /type	185mm^2/cable clamp
NZM1 MCCB size max /type	70mm^2/cable clamp. (95mm^2 can be fitted depending on cable manufacturer)
Neutral size max/type	50mm^2 tunnel terminals and 4 x M8 bolts
Earth size max/type	50mm^2 tunnel terminals and 8 x M8 bolts

When configuring panelboard incoming metering, simply identify panelboard and incomer type, then order the following modules detailed in the selection chart below:-

1. Incoming meter connection kit
2. Incoming meter enclosure
3. Meter
4. Voltage supply to meter tap-off kit
5. Top or bottom mounted cable extension box (When necessary see note)

Plug-in connectivity is provided between meter, CT and supply.

Incoming metering can be configured with outgoing metering.

Meter connection arrangement

Incoming metering module selection

Meter module	Panelboard	EPBN1425, EPBN1625, EPBN1825, EPBN11225 250A 3P MCCB/switch	EPBN1425, EPBN1625, EPBN1825, EPBN11225 250A 4P MCCB/switch	EPBN1425, EPBN1625, EPBN1825, EPBN11225 250A 3P lugs	EPBN1640, EPBN11240 400A 3P MCCB/switch	EPBN1640, EPBN11240 400A 4P MCCB/switch	EPBN1640, EPBN11240 400A 3P lugs	EPBN2640, EPBN21240, EPBN21840 400A 3P MCCB/switch	EPBN2640, EPBN21240, EPBN21840 400A 4P MCCB/switch	EPBN2640, EPBN21240, EPBN21840 400A 3P lugs
Incoming metering connection kit	**EPBKN1253M**	✓								
	EPBKN1254M		✓							
	EPBKN125LM			✓						
	EPBKN2403M				✓			✓		
	EPBKN2404M					✓			✓	
	EPBKN240LM						✓			✓
Incoming meter enclosure	**EPBN1EX250M**	✓	✓	✓						
	EPBN2EX250M				✓	✓	✓	✓	✓	✓
Meter	**EPBMETER1**	✓	✓	✓	✓	✓	✓	✓	✓	✓
Meter (MID)	**EMC3P-P2P1**	✓	✓	✓	✓	✓	✓	✓	✓	✓
Voltage supply to meter tap-off kit	**EPBN1SUPM**	✓	✓	✓						
	EPBN3SUPM				✓	✓	✓	✓	✓	✓
Cable extension box[1)]	**EPBN2EX250**				✓	✓		✓	✓	

Meter module	Panelboard	EPBN2863, EPBN21263, EPBN21863 630A 3P MCCB/switch	EPBN2863, EPBN21263, EPBN21863 630A 4P MCCB/switch	EPBN2863, EPBN21263, EPBN21863 630A 3P lugs	EPBN3880, EPBN31280 800A 3P MCCB/switch	EPBN3880, EPBN31280 800A 4P MCCB/switch
Incoming metering connection kit	**EPBKN2633M**	✓				
	EPBKN2634M		✓			
	EPBKN3803M				✓	
	EPBKN3804M					✓
	EPBKN263LM			✓		
Incoming meter enclosure	**EPBN3EX250M**	✓	✓	✓	✓	✓
Meter	**EPBMETER1**	✓	✓	✓	✓	✓
Meter (MID)	**EMC3P-P2P1**	✓	✓	✓	✓	✓
Voltage supply to meter tap-off kit	**EPBN3SUPM**	✓	✓	✓	✓	✓
Cable extension box[1)]	**EPBN3EX250**	✓	✓		✓	✓

[1)] When incoming meter enclosure is fitted at the feed end of the panelboard there is no need for a cable extension box

5.6 Memshield 3 MCCB panelboards and associated devices

Plug-in incoming metering

Meter

Meter is available with pulsed and modbus outputs.

Simply installed with 2 locking screws.

Incoming meter enclosure

250mm high enclosure with hinged front door.

Simply bolted to the top or the bottom of the panelboard.

Voltage supply tap-off

Provision to fit tap-off to either the left and/or right hand side of the pan assembly. Only 1 per panelboard is required but provision to fit two is an option.

Incoming metering connection kit

This includes all copper connectors, CT, shielding and CT to meter cable. Can be top or bottom fed.

This does not include the incoming device, which has to be ordered separately.

Left hand Neutral terminal barrier removed for clarity

Cable extension box (when necessary)

250mm high enclosure, fitted incoming end.

When incoming meter enclosure is fitted at the feed end of the 400A/630A/800A boards there is no need for a cable extension box.

When configuring panelboard outgoing metering, simply identify panelboard and number of outgoing breaker type, then order the following modules detailed in the selection chart below:-

1. Outgoing CT kit
2. Outgoing side mounted meter extension box
3. Meter
4. Voltage supply to meter tap-off kit
5. Extra long meter to meter voltage linking kit to feed to meter extension box on other side of panelboard if necessary
6. Extra long CT to meter linking cable if required
7. Three phase splitter box to allow separate monitoring of a three phase current transformer on individual energy meters if required

Plug-in connectivity is provided between meter, CT and supply.

Outgoing metering can be configured with incoming metering.

Meter connection arrangement

Outgoing metering module selection

Meter module	Panelboard	EPBN1425	EPBN1625	EPBN1825	EPBN11225	EPBN1640	EPBN11240	EPBN2640	EPBN21240	EPBN21840	EPBN2863	EPBN21263	EPBN21863	EPBN3880	EPBN31280	EPBN31880
Outgoing CT kit (1 off required per outgoing way)	**EPBCTMT160 (NZM1 160A)**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	EPBCTMT250 (NZM2 250A)							✓	✓	✓	✓	✓	✓	✓	✓	✓
	EPBCTMT400 (NZM3 400A)													✓	✓	✓
Outgoing side mounted meter extension box	**EPBN1425SXM**	✓														
	EPBN1625SXM		✓													
	EPBN1825SXM			✓												
	EPBN11225SXM				✓											
	EPBN2640SXM					✓		✓								
	EPBN21240SXM						✓		✓							
	EPBN21840SXM									✓						
	EPBN21263SXM										✓	✓		✓		
	EPBN21863SXM												✓		✓	
	EPBN31880SXM															✓
Meter	**EPBMETER1**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Meter (MID)	**EMC3P-P2P1**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Voltage supply to meter tap-off kit	**EPBN1SUPM**	✓	✓	✓	✓											
	EPBN3SUPM					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CT mount for outgoing meter cable way [1]	**EPBSXBCTMT**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Extra long meter to meter voltage linking kit	**EPBN3LKKTM**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Extra long CT to meter linking kit	**EPBN3LKRJ45**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Three phase splitter box	**EPBCTMT3P**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

[1] Only required when terminal shields are fitted to outgoing MCCBs. The CT can be fitted in a side-mounted cable extension box. One CT mount per outgoing CT.

[2] For single phase metering use TP CT kit and just use one of the phases

Meter

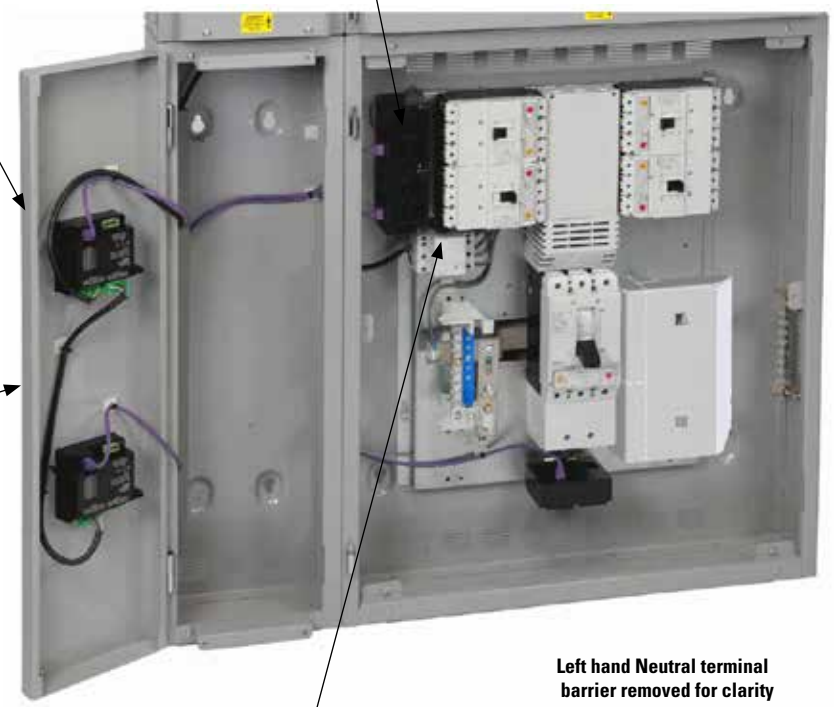
Meter is available with pulsed and modbus outputs.

Simply installed with 2 locking screws.

Outgoing meter kit

One kit per outgoing way, includes CT, CT to meter cable, and meter to meter voltage linking cable.

NZM1 – 160A max
NZM2 – 250A max
NZM3 – 400A max



Left hand Neutral terminal barrier removed for clarity

Outgoing side mounted meter extension box

Can be fitted on the left and right hand side of the panelboard.

All outgoing meter apertures, except one, have removable blanking shields fitted.

Three phase splitter box

Allows for separate monitoring of a three phase current transformer on individual energy meters

Voltage supply tap-off

Provision to fit tap-off to either the left and/or right hand side of the pan assembly. Only 1 per panelboard is required but provision to fit two is an option.

Extra long CT to meter linking cable

Required when CT is fitted on opposite side to meter extension box. 3m long.

Extra long meter to meter voltage linking kit

Required when:
Incoming and outgoing metering on one side = 1 off
Outgoing metering on both sides = 2 off
Incoming and outgoing metering on both sides = 3 off

2m long

In order to enable designers, specifiers, and installers to comply with surge protection requirements in BS 7671 - IET Wiring Regulations - 17th Edition (Section 534), these combined lightning arrester and surge suppression devices have been developed specifically for applications with MCCB panelboards ensuring outstanding product performance for all sensitive, mission critical and general purpose loads. Providing protection from direct and indirect lightning strikes, the IEC 61643 tested devices have impressive voltage protection levels (U_p), nominal discharge current (8/20) µs I_n & maximum discharge current I_{max} for transient surge suppression, combined with impulse current I_{imp} (10/350) µs for lightning strike protection. These devices are fully compliant with BS EN 62305.

EPBN1SPD123 technical summary:

- For the protection of low voltage distribution systems against transient overvoltage caused by direct and indirect lightning strike and switching operations.
- Application according to IEC 60364-5-53 Clause 534.
- Test class I, II, III in accordance with IEC 61643-11.
- SPD-type T1, T2, T3 in accordance with EN 61643-11.
- Lightning protection classes III and IV in accordance with IEC 62305.

EPBN1SPD1234 technical summary:

- For the protection of low voltage distribution systems against direct lightning strike into the overhead power supply line or external lightning protection system and against indirect lightning strike and switching operations.
- Application according to IEC 60364-5-53 Clause 534.
- Test class I, II, III in accordance with IEC 61643-11.
- SPD-type T1, T2, T3 in accordance with EN 61643-11.
- No discharge of ionised gases during operation.
- Lightning protection classes I, II, III and IV in accordance with IEC 62305.

EPBN1SPD123

Description	Eaton list number
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes III and IV in accordance with IEC 62305	**EPBN1SPD123**
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes I, II, III and IV in accordance with IEC 62305	**EPBN1SPD1234**

5.9 Memshield 3 MCCB panelboards and associated devices

MCCB pan assemblies

MCCB pan assemblies, interiors, three phase, with earth & neutral bars

- Eaton MCCB pan assemblies offer a high degree of flexibility, suitable for inclusion in other factory built assemblies and as replacements for panelboard interiors.
- For incoming and outgoing device compatibility see associated panelboard details.

See pages 141-142 for dimensional drawings

EPBPN31280

Product range

Description	Current rating (A)	Total no of outgoing ways	Eaton list number
Memshield 3 panelboard pan assembly 250A, 4 Way. Outgoing up to 160A	250	4	**EPBPN1425**
Memshield 3 panelboard pan assembly 250A, 6 Way. Outgoing up to 160A	250	6	**EPBPN1625**
Memshield 3 panelboard pan assembly 250A, 8 Way. Outgoing up to 160A	250	8	**EPBPN1825**
Memshield 3 panelboard pan assembly 250A, 12 Way. Outgoing up to 160A	250	12	**EPBPN11225**
Memshield 3 panelboard pan assembly 400A, 6 Way. Outgoing up to 160A	400	6	**EPBPN1640**
Memshield 3 panelboard pan assembly 400A, 12 Way. Outgoing up to 160A	400	12	**EPBPN11240**
Memshield 3 panelboard pan assembly 400A, 6 Way. Outgoing up to 250A	400	6	**EPBPN2640**
Memshield 3 panelboard pan assembly 400A, 12 Way. Outgoing up to 250A	400	12	**EPBPN21240**
Memshield 3 panelboard pan assembly 400A, 18 Way. Outgoing up to 250A	400	18	**EPBPN21840**
Memshield 3 panelboard pan assembly 630A, 8 Way. Outgoing up to 250A	630	8	**EPBPN2863**
Memshield 3 panelboard pan assembly 630A, 12 Way. Outgoing up to 250A	630	12	**EPBPN21263**
Memshield 3 panelboard pan assembly 630A, 18 Way. Outgoing up to 250A	630	18	**EPBPN21863**
Memshield 3 panelboard pan assembly 800A, 8 Way. Outgoing up to 400A	800	8	**EPBPN3880**
Memshield 3 panelboard pan assembly 800A, 12 Way. Outgoing up to 400A	800	12	**EPBPN31280**
Memshield 3 panelboard pan assembly 800A, 18 Way. Outgoing up to 400A	800	18	**EPBPN31880**

Memshield 4 MCCB 4-pole panelboards and associated devices

Eaton's 4-pole panelboard system combines highest levels of electrical safety in a late stage with increased efficiency and reduced downtime thanks to system components available off the shelf.

Memshield 4 is cost effective, customizable and optimized to speed up change-over time and the fitting of additional circuits.

High levels of separation and compartmentalisation enabling increased operator safety. Design and layout are perfectly coordinated with the existing Memshield 3 panelboard range.

Meeting the true spirit of the requirements acc.to BS EN 61439-2.

6.1 Memshield 4 MCCB 4-pole panelboards and associated devices

Incoming device ratings up to 400A - outgoing device ratings up to 250A

Specification

- Panelboards acc.to BS EN 61439-2
- Panelboard is supplied as Form 4 Type 6 group mounted
- 4-pole fully shrouded IPXXB plug-in busbar assembly
- Busbar system DEKRA certified at Icw 50kA / 1s
- Enclosure degree of protection IP3X (wall-mounted)
- MCCBs acc.to IEC/EN 60947-2
- Switch disconnectors acc.to IEC/EN 60947-3

See pages 147-150 for dimensions.

Features

- 8, 14 or 18 outgoing ways
- Efficient design enables multiple number of outgoing options (SPN, TPN, 4P)
- Standard off the shelf circuit breakers fit to the assembly
- Outgoing devices: these panelboards utilise two frame sizes of MCCBs: NZM2 125-250A TPN/4P, NZM1 SPN 16-125A and/or TPN/4P 20-160A
- Easily reconfigurable to meet fully compartmentalised approach either Form 4 / Type 2 or Form 4 / Type 6
- The design suits for top or bottom (as standard) incomer configuration
- Removable end rails and gland plates for better access during installation
- Wide range of extension boxes, plinths, metering, surge protection and earth leakage incomer options available
- Provision for line side connection for sprinkler systems

EM4PB840

Minimum ordering requirement: Panelboard + incoming device + incomer connection kit + feeder adapters + outgoing devices + blanking modules and associated components for Group Mounted or Compartmentalised

Description	Associated incoming device	Current rating (A)	No. of outgoing ways based on NZM1 TPN/4P group mounted *)	Eaton list number
Incoming rating up to 400A, Outgoing ratings up to 250A	NZM3 MCCB or N3 Switch Disconnector or direct lugs connection kit	400	8	**EM4PB840**
			14	**EM4PB1440**
			18	**EM4PB1840**

*) see Selection tool for permutations

NZMN3-A400

MCCB incoming device

- 50 kA (Icu=Ics at 400/415 VAC)
- Select appropriate incomer device from table below
- Maximum cable capacity 240mm²
- Adjustable trip. Thermal trip adjustment 0.8 to 1 x In, Magnetic trip adjustment 6 to 10 x In

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	NZM3 MCCB	250	**NZMN3-A250**
		320	**NZMN3-A320**
		400	**NZMN3-A400**
	Digital NZM3 MCCB	400	**NZMN3-VX400**
		400	**NZMN3-AX400**
		400	**NZMN3-VX400-T**
4-pole (3 phase and switched neutral)	NZM3 MCCB	250	**NZMN3-4-A250**
		320	**NZMN3-4-A320**
		400	**NZMN3-4-A400**
	Digital NZM3 MCCB	400	**NZMN3-4-AX400**
		400	**NZMN3-4-VX400**
		400	**NZMN3-4-VX400-T**

N3-400

Switch disconnector (non-automatic) incoming device

- Select appropriate incomer device from table below
- Maximum cable capacity 240mm²

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	N3 switch disconnector	400	**N3-400**
4-pole	N3 switch disconnector	400	**N3-4-400**

EM4PBK404

Incoming connection kit / metering connection kit

Poles / description	Maximum rating (A)	Eaton list number
TPN / 4-pole incomer connection kit	400	**EM4PBK404**
TPN / 4-pole incomer connection kit - includes metering CT and connection cable to energy meter	400	**EM4PBK404M**
Direct connection lugs kit	400	**EM4PBK404L**
Direct connection lugs kit - includes metering CT and connection cable to energy meter	400	**EM4PBK404LM**
Neutral link incomer when using 3-pole incoming device	400	**EM4PBNK40**

EM4PBFAN14

Feeder adaptors

- incl. carriage, copper conductors and plug-in contacts

Type of MCCB / poles	Maximum frame rating (A)	Eaton list number
NZM1 SPN phase 1 / Neutral (L1N)	125	**EM4PBFAN1L1N**
NZM1 SPN phase 2 / Neutral (L2N)	125	**EM4PBFAN1L2N**
NZM1 SPN phase 3 / Neutral (L3N)	125	**EM4PBFAN1L3N**
NZM1 TPN / 4-pole	160	**EM4PBFAN14**
NZM2 TPN / 4-pole	250	**EM4PBFAN24**

NZMN2-A250-BT

Outgoing devices / feeders - NZM2 frame MCCBs

- Maximum cable capacity 185mm²
- Thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating / description (A)	Eaton list number Triple pole 50kA ~	Eaton list number TPN/4-pole 50kA ~
125	**NZMN2-A125-BT**	**NZMN2-4-A125*)**
160	**NZMN2-A160-BT**	**NZMN2-4-A160-BT**
200	**NZMN2-A200-BT**	**NZMN2-4-A200-BT**
250	**NZMN2-A250-BT**	**NZMN2-4-A250-BT**
Group mounted/Comp. Form 4 Type 2 neutral link for outgoing section when using 3-pole outgoing device	**EM4PBGMN2N**	–

*) 2 sets of box terminals NZM2-4-250-XKC has to be ordered separately
~ For 36kA variant, in the MCCB part number, replace NZMN2... with NZMC2...

EM4PBGMN2N

Electronic Trip Unit

- Adjustable trip overloads 40-100% x In
- Instantaneous S/C release fixed 18 x In
- Delayed S/C release 2-10 x Ir

NZM3 Electronic 3 Pole devices (50kA)

Amps	Eaton List Number Triple pole (50kA)	Eaton List Number- Ground fault protection
250	**NZMN3-VX250**	**NZMN3-VX250-T**

NZM2 Electronic 3 Pole devices (50kA)

100	**NZMN2-VX100-BT**	**NZMN2-VX100-T**
160	**NZMN2-VX160-BT**	**NZMN2-VX160-T**
250	**NZMN2-VX250-BT**	**NZMN2-VX250-T**

NZM2 Electronic 4 Pole devices (50kA)

100	**NZMN2-4-VX100-BT**	**NZMN2-4-VX100-T**
160	**NZMN2-4-VX160-BT**	**NZMN2-4-VX160-T**
250	**NZMN2-4-VX250-BT**	**NZMN2-4-VX250-T**

*When using 3 pole device EM4PBGMN2N neutral link needs to be used.

NZMB1-1-AF63 & NZMN1-A160

Outgoing devices / feeders - NZM1 frame MCCBs

- Maximum cable capacity 70mm²
- Thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating / description (A)	Eaton list number Single pole 25kA	Eaton list number Triple pole 50kA #	Eaton list number TPN/4-pole 50kA #
16	**NZMB1-1-AF16**		
20	**NZMB1-1-AF20**	**NZMN1-A20**	**NZMN1-4-A20**
25	**NZMB1-1-AF25**	**NZMN1-A25**	**NZMN1-4-A25**
32	**NZMB1-1-AF32**	**NZMN1-A32**	**NZMN1-4-A32**
40	**NZMB1-1-AF40**	**NZMN1-A40**	**NZMN1-4-A40**
50	**NZMB1-1-AF50**	**NZMN1-A50**	**NZMN1-4-A50**
63	**NZMB1-1-AF63**	**NZMN1-A63**	**NZMN1-4-A63**
80	**NZMB1-1-AF80**	**NZMN1-A80**	**NZMN1-4-A80**
100	**NZMB1-1-AF100**	**NZMN1-A100**	**NZMN1-4-A100**
125	**NZMB1-1-AF125**	**NZMN1-A125**	**NZMN1-4-A125**
160	–	**NZMN1-A160**	**NZMN1-4-A160**
Group mounted/Comp. Form 4 Type 2 neutral link for outgoing section when using 1-pole / 3-pole outgoing device	**EM4PBGMN1N**	**EM4PBGMN1N**	–

For 25kA variant, in the MCCB part number, replace NZMN1... with NZMB1... and for 36kA variant replace NZMN1... with NZMC1..

EM4PBGMN1N

6.1 Memshield 4 MCCB 4-pole panelboards and associated devices

Incoming device ratings up to 400A - outgoing device ratings up to 250A

EM4PBGMBP

Accessories - Group Mounted approach

Description	used for	Eaton list number
Blanking plate		**EM4PBGMBP**
Finger guards are mandatory to each outgoing device cable termination for compliance with Form 4 Type 6	NZM1 SPN	**NZM1-1-XIPK**
	NZM1 TPN (non-switched neutral)	**NZM1-XIPK**
	NZM1 4P (switched neutral)	**NZM1-4-XIPK**
Finger guards are mandatory to each outgoing device cable termination for compliance with Form 4 Type 6	NZM2 TPN (non-switched neutral)	**NZM2-XIPK**
	NZM2 4P (switched neutral)	**NZM2-4-XIPK**

NZM1-4-XIPK

Form 4 Type 6 group mounted

Possible outgoing arrangement of NZM1/NZM2 depending on form of separation

- Note a mixture of NZM1 and NZM2 breakers can be fitted (not part of the table) - see Selection tool for permutations

		Max. number of NZM1 (only) breakers can be fitted		Max. number of NZM2 (only) breakers can be fitted	
Board reference / description	**Type of feeder**	**Compartmentalised**	**Group Mounted**	**Compartmentalised**	**Group Mounted**
EM4PB840 / 8-way board	NZM1 - 1P and N	12	16	–	–
	NZM1 - 3P and N / 4P	6	8	–	–
	NZM2 - 3P and N / 4P	–	–	6	6
EM4PB1440 / 14-way board	NZM1 - 1P and N	20	28	–	–
	NZM1 - 3P and N / 4P	12	14	–	–
	NZM2 - 3P and N / 4P	–	–	10	12
EM4PB1840 / 18-way board	NZM1 - 1P and N	26	36	–	–
	NZM1 - 3P and N / 4P	14	18	–	–
	NZM2 - 3P and N / 4P	–	–	12	14

Form 4 Type 6 compartmentalised

Compartmentalised kits to upgrade the standard Form 4 Type 6 group mounted design to higher form of separation

- Minimum ordering requirement for compartmentalisation: Overall fitting + incomer + outgoer kit per device or unused way (select neutral link when 3-pole devices are used as outgoer)

EM4PBCK

EM4PBCKN242

EM4PBCKN246

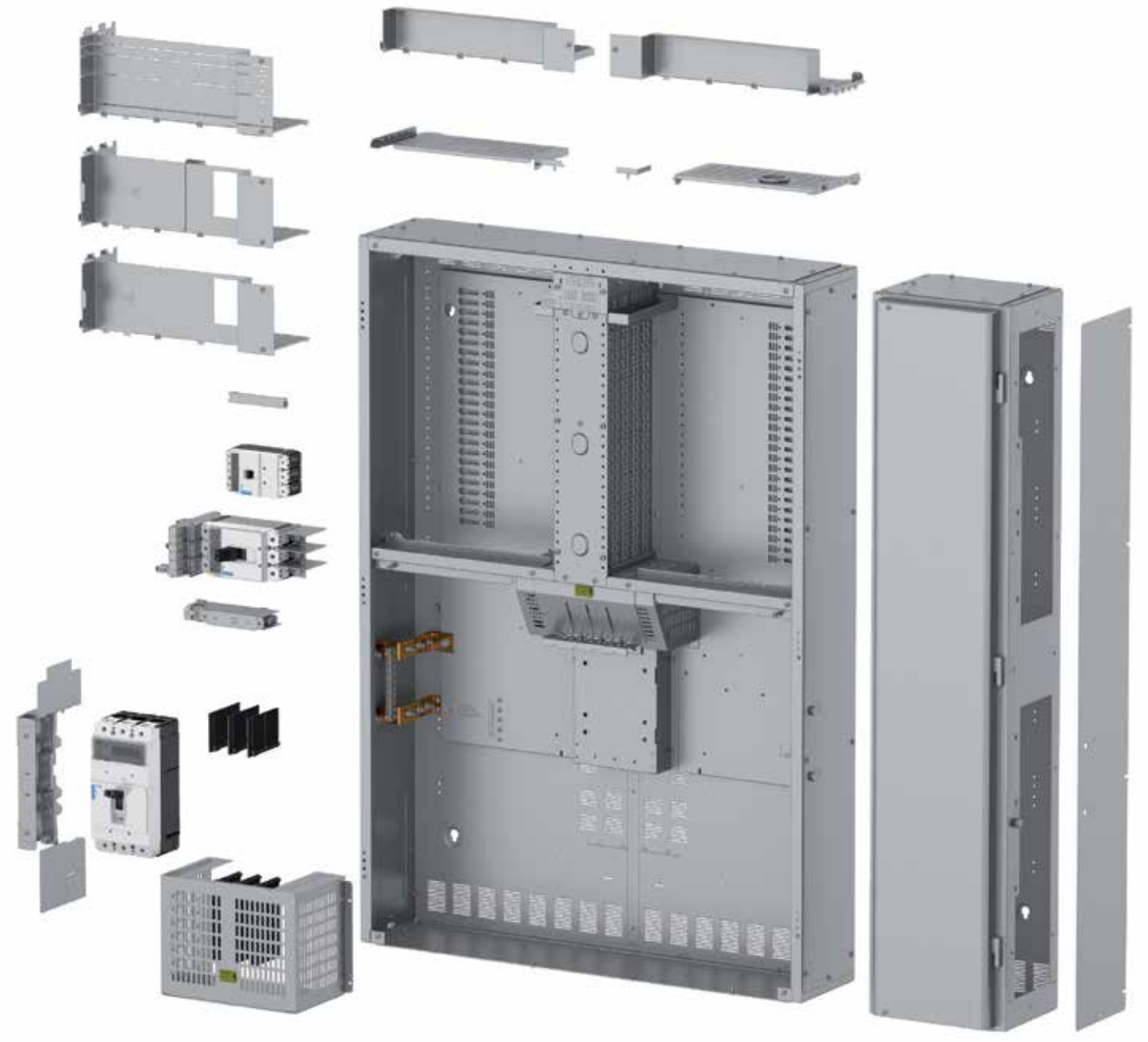
Type of Compartmentalised kit	used for	Form of separation	Eaton list number
Overall fitting kit	MCCB Panelboard EM4PB... 400/800A	Form 4 Type 2 / Type 6	**EM4PBCK**
Incomer kit	NZM3 MCCB / N3 switch disconnector	Form 4 Type 2 / Type 6	**EM4PB40CKINC**
Outgoer kit	NZM1 SPN	Form 4 Type 2	**EM4PBCKN122**
	NZM1 TPN / 4-pole		**EM4PBCKN142**
	NZM2 TPN / 4-pole		**EM4PBCKN242**
Outgoer kit	NZM1 SPN	Form 4 Type 6	**EM4PBCKN126**
	NZM1 TPN / 4-pole		**EM4PBCKN146**
	NZM2 TPN / 4-pole		**EM4PBCKN246**
Neutral link	NZM1 Neutral	Form 4 Type 6	**EM4PBCKN1N**
	NZM2 Neutral		**EM4PBCKN2N**
Unused way	–	Form 4 Type 2 / Type 6	**EM4PBCKUW**

EM4PBCKN24BK

Accessories - Compartmentalised approach

Description	Eaton list number
Blanking plate NZM1 SPN	**EM4PBCKN12BK**
Blanking plate NZM1 TPN / 4-pole	**EM4PBCKN14BK**
Blanking plate NZM2 TPN / 4-pole	**EM4PBCKN24BK**

Exploded view of new panelboard approach incl. accessories



6.2 Memshield 4 MCCB 4-pole panelboards and associated devices

Incoming device ratings up to 800A - outgoing device ratings up to 400A

Specification

- Panelboards acc.to BS EN 61439-2
- Panelboard is supplied as Form 4 Type 6 group mounted
- 4-pole fully shrouded IPXXB plug-in busbar assembly
- Busbar system DEKRA certified at Icw 50kA / 1s
- Enclosure degree of protection IP3X (wall-mounted)
- MCCBs acc.to IEC/EN 60947-2
- Switch disconnectors acc.to IEC/EN 60947-3

See pages 147-150 for dimensions.

Features

- 6, 12 or 16 outgoing ways
- Efficient design enables multiple number of outgoing options (SPN, TPN, 4P)
- Standard off the shelf circuit breakers fit to the assembly
- Outgoing devices: these panelboards utilise three frame sizes of MCCBs: NZM3 250-400A TPN/4P (fixed position, lower left/right), NZM2 125-250A TPN/4P (completely variable), NZM1 SPN 16-125A and/or TPN/4P 20-160A (completely variable)
- Easily reconfigurable to meet fully compartmentalised approach either Form 4 / Type 2 or Form 4 / Type 6
- The design suits for top or bottom (as standard) incomer configuration
- Removable end rails and gland plates for better access during installation
- Wide range of extension boxes, plinths, metering, surge protection and earth leakage incomer options available
- Provision for line side connection for sprinkler systems

EM4PB680

Minimum ordering requirement: Panelboard + incoming device + incomer connection kit + feeder adapters + outgoing devices + blanking modules and associated components for Group Mounted or Compartmentalised

Description	Associated incoming device	Current rating (A)	No. of outgoing ways based on NZM1 TPN/4P group mounted *)	Eaton list number
Incoming rating up to 800A, Outgoing ratings up to 400A	NZMLW MCCB or NLW Switch Disconnector or direct lugs connection kit	800	6	**EM4PB680**
			12	**EM4PB1280**
			16	**EM4PB1680**

*) see Selection tool for permutations

NZMLW-800

MCCB incoming device

- 50kA
- Select appropriate incomer device from table below
- Maximum cable capacity 2 x 300mm²
- Thermal trip adjustment 0.5 to 1 x In, Magnetic trip adjustment 2 to 8 x In

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	NZMLW MCCB	630	**NZMLW-A630**
.		800	**NZMLW-A800**
4-pole (3 phase and switched neutral)	NZMLW MCCB	630	**NZMLW-4-A630**
		800	**NZMLW-4-A800**

NLW-800

Switch disconnector (non-automatic) incoming device

- 50kA
- Select appropriate incomer device from table below
- Maximum cable capacity 2 x 300mm²

Poles	Incoming device type	Current rating (A)	Eaton list number
3-pole	NLW switch disconnector	630	**NLW-630**
.		800	**NLW-800**
4-pole	NLW switch disconnector	630	**NLW-4-630**
		800	**NLW-4-800**

EM4PBK804

Incoming connection kit / metering connection kit

Poles / description	Maximum rating (A)	Eaton list number
TPN / 4-pole incomer connection kit	800	**EM4PBK804**
TPN / 4-pole incomer connection kit - includes metering CT and connection cable to energy meter	800	**EM4PBK804M**
Direct connection lugs kit	800	**EM4PBK804L**
Direct connection lugs kit - includes metering CT and connection cable to energy meter	800	**EM4PBK804LM**
Neutral link incomer when using 3-pole incoming device	800	**EM4PBNK80**

EM4PBFAN14

Feeder adaptors

- incl. carriage, copper conductors and plug-in contacts

Type of MCCB / poles	Maximum frame rating (A)	Eaton list number
NZM1 SPN phase 1 / Neutral (L1N)	125	**EM4PBFAN1L1N**
NZM1 SPN phase 2 / Neutral (L2N)	125	**EM4PBFAN1L2N**
NZM1 SPN phase 3 / Neutral (L3N)	125	**EM4PBFAN1L3N**
NZM1 TPN / 4-pole	160	**EM4PBFAN14**
NZM2 TPN / 4-pole	250	**EM4PBFAN24**
NZM3 TPN / 4-pole	400	**EM4PBFAN34**

NZMN3-A400-BT

Outgoing devices / feeders - NZM3 frame MCCBs

- Maximum cable capacity 240mm²
- Up to 2 breakers can be fitted (lower left/right)
- Thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

EM4PBGMN3N

Rating / description (A)	Eaton list number Triple pole 50kA x	Eaton list number TPN/4-pole 50kA x
250	**NZMN3-A250 *)**	**NZMN3-4-A250 *)**
320	**NZMN3-A320 *)**	**NZMN3-4-A320 *)**
400	**NZMN3-A400 *)**	**NZMN3-4-A400 *)**
Group mounted/Comp. Form 4 Type 2 neutral link for outgoing sectionwhen using 3-pole outgoing device	**EM4PBGMN3N**	–

*) when using finger guards to fulfill Form 4 Type 6 one set of box terminals NZM3-XKC (3-pole) or NZM3-4-XKC (4-pole) has to be ordered separately
x For 36kA variant, in the MCCB part number,replace NZMN3... with NZMC3...

NZMN2-A250-BT

Outgoing devices / feeders - NZM2 frame MCCBs

- Maximum cable capacity 185mm²
- Thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

EM4PBGMN2N

Rating / description (A)	Eaton list number Triple pole 50kA ~	Eaton list number TPN/4-pole 50kA ~
125	**NZMN2-A125-BT**	**NZMN2-4-A125 **)**
160	**NZMN2-A160-BT**	**NZMN2-4-A160-BT**
200	**NZMN2-A200-BT**	**NZMN2-4-A200-BT**
250	**NZMN2-A250-BT**	**NZMN2-4-A250-BT**
Group mounted/Comp. Form 4 Type 2 neutral link for outgoing section when using 3-pole outgoing device	**EM4PBGMN2N**	–

**) 2 sets of box terminals NZM2-4-250-XKC has to be ordered separately
~ For 36kA variant, in the MCCB part number,replace NZMN2... with NZMC2...

Electronic Trip Unit

- Adjustable trip overloads 40-100% x In
- Instantaneous S/C release 18 x In
- Delayed S/C release 2-10 x Ir

NZM3 Electronic 3 Pole devices (50kA)

Amps	Eaton List Number Triple pole (50kA)	Eaton List Number-Ground fault protection
250	**NZMN3-VX250**	**NZMN3-VX250-T**
400	**NZMN3-VX400**	**NZMN3-VX400-T**

NZM3 Electronic 4 Pole devices (50kA)

Amps	Eaton List Number Triple pole (50kA)	Eaton List Number-Ground fault protection
400	**NZMN3-4-VX400**	**NZMN3-4-VX400-T**

NZM2 Electronic 3 Pole devices (50kA)

Amps	Eaton List Number Triple pole (50kA)	Eaton List Number-Ground fault protection
100	**NZMN2-VX100-BT**	**NZMN2-VX100-T**
160	**NZMN2-VX160-BT**	**NZMN2-VX160-T**
250	**NZMN2-VX250-BT**	**NZMN2-VX250-T**

NZM2 Electronic 4 Pole devices (50 kA)

Amps	Eaton List Number Triple pole (50kA)	Eaton List Number-Ground fault protection
100	**NZMN2-4-VX100-BT**	**NZMN2-4-VX100-T**
160	**NZMN2-4-VX160-BT**	**NZMN2-4-VX160-T**
250	**NZMN2-4-VX250-BT**	**NZMN2-4-VX250-T**

When using 3 pole device EM4PBGMN3N neutral link needs to be used
*) when using finger guards to fulfill Form 4 Type 6 one set of box terminals
NZM3-XKC (3-pole) or NZM3-4-XKC (4 pole) has to be ordered separately

6.2 Memshield 4 MCCB 4-pole panelboards and associated devices

Incoming device ratings up to 800A - outgoing device ratings up to 400A

NZMB1-1-AF63 & NZMN1-A160

Outgoing devices / feeders - NZM1 frame MCCBs

- Maximum cable capacity 70mm²
- Thermal trip adjustment 0.8 to 1 x In, magnetic trip adjustment 6 to 10 x In

Rating / description (A)	Eaton list number Single pole 25kA	Eaton list number Triple pole 50kA #	Eaton list number TPN/4-pole 50kA #
16	**NZMB1-1-AF16**		
20	**NZMB1-1-AF20**	**NZMN1-A20**	**NZMN1-4-A20**
25	**NZMB1-1-AF25**	**NZMN1-A25**	**NZMN1-4-A25**
32	**NZMB1-1-AF32**	**NZMN1-A32**	**NZMN1-4-A32**
40	**NZMB1-1-AF40**	**NZMN1-A40**	**NZMN1-4-A40**
50	**NZMB1-1-AF50**	**NZMN1-A50**	**NZMN1-4-A50**
63	**NZMB1-1-AF63**	**NZMN1-A63**	**NZMN1-4-A63**
80	**NZMB1-1-AF80**	**NZMN1-A80**	**NZMN1-4-A80**
100	**NZMB1-1-AF100**	**NZMN1-A100**	**NZMN1-4-A100**
125	**NZMB1-1-AF125**	**NZMN1-A125**	**NZMN1-4-A125**
160	–	**NZMN1-A160**	**NZMN1-4-A160**

EM4PBGMN1N

Group mounted/Comp. Form 4 Type 2 neutral link for outgoing section when using 1-pole / 3-pole outgoing device	**EM4PBGMN1N**	**EM4PBGMN1N**	–

For 25kA variant, in the MCCB part number, replace NZMN1... with NZMB1... and for 36kA variant replace NZMN1... with NZMC1...

EM4PBGMBP

Accessories - Group Mounted approach

Description	used for	Eaton list number
Blanking plate		**EM4PBGMBP**
Finger guards are mandatory to each outgoing device cable termination for compliance with Form 4 Type 6	NZM1 SPN	**NZM1-1-XIPK**
	NZM1 TPN (non-switched neutral)	**NZM1-XIPK**
	NZM1 4P (switched neutral)	**NZM1-4-XIPK**
Finger guards are mandatory to each outgoing device cable termination for compliance with Form 4 Type 6	NZM2 TPN (non-switched neutral)	**NZM2-XIPK**
	NZM2 4P (switched neutral)	**NZM2-4-XIPK**
Finger guards are mandatory to each outgoing device cable termination for compliance with Form 4 Type 6	NZM3 TPN (non-switched neutral)	**NZM3-XIPK**
	NZM3 4P (switched neutral)	**NZM3-4-XIPK**

NZM1-4-XIPK

Form 4 Type 6 group mounted

Possible outgoing arrangement of NZM1/NZM2 with or without option for NZM3 depending on form of separation

- Note a mixture of NZM1 and NZM2 breakers besides the NZM3 on fixed position can be fitted (not part of the table) - see Selection tool for permutations

		Max. number of NZM1 (only) breakers can be fitted				Max. number of NZM2 (only) breakers can be fitted			
		Compart-mental-ised	Group Mounted	Compart-mental-ised	Group Mounted	Compart-mental-ised	Group Mounted	Compart-mental-ised	Group Mounted
Board reference / description	Type of feeder	(2 pcs. of NZM3 not incorporated)		(2 pcs. of NZM3 incorporated)		(2 pcs. of NZM3 not incorporated)		(2 pcs. of NZM3 incorporated)	
EM4PB680 / 6-way board	NZM1 - 1P and N	8	12	2	4	–	–	–	–
	NZM1 - 3P and N / 4P	4	6	2	2	–	–	–	–
	NZM2 - 3P and N / 4P	–	–	–	–	4	4	–	2
EM4PB1280 / 12-way board	NZM1 - 1P and N	18	24	12	16	–	–	–	–
	NZM1 - 3P and N / 4P	10	12	6	8	–	–	–	–
	NZM2 - 3P and N / 4P	–	–	–	–	8	10	6	6
EM4PB1680 / 16-way board	NZM1 - 1P and N	20	32	14	20	–	–	–	–
	NZM1 - 3P and N / 4P	12	16	8	10	–	–	–	–
	NZM2 - 3P and N / 4P	–	–	–	–	10	12	6	8

Form 4 Type 6 compartmentalised

EM4PBCK

EM4PBCKN242

EM4PBCKN246

Compartmentalised kits to upgrade the standard Form 4 Type 6 group mounted design to higher form of separation

Minimum ordering requirement for compartmentalisation: Overall fitting + incomer + outgoer kit per device or unused way (select neutral link when 3-pole devices are used as outgoer)

Type of Compartmentalised kit	used for	Form of separation	Eaton list number
Overall fitting kit	MCCB Panelboard EM4PB... 400/800A	Form 4 Type 2 / Type 6	**EM4PBCK**
Incomer kit	NZMLW MCCB / NLW switch disconnector	Form 4 Type 2 / Type 6	**EM4PB80CKINC**
Outgoer kit	NZM1 SPN	Form 4 Type 2	**EM4PBCKN122**
	NZM1 TPN / 4-pole		**EM4PBCKN142**
	NZM2 TPN / 4-pole		**EM4PBCKN242**
	NZM3 TPN / 4-pole		**EM4PBCKN342**
Outgoer kit	NZM1 SPN	Form 4 Type 6	**EM4PBCKN126**
	NZM1 TPN / 4-pole		**EM4PBCKN146**
	NZM2 TPN / 4-pole		**EM4PBCKN246**
	NZM3 TPN / 4-pole		**EM4PBCKN346**
Neutral link	NZM1 Neutral	Form 4 Type 6	**EM4PBCKN1N**
	NZM2 Neutral		**EM4PBCKN2N**
	NZM3 Neutral		**EM4PBCKN3N**
Unused way	–	Form 4 Type 2 / Type 6	**EM4PBCKUW**

EM4PBCKN24BK

Accessories - Compartmentalised approach

Description	Eaton list number
Blanking plate NZM1 SPN	**EM4PBCKN12BK**
Blanking plate NZM1 TPN / 4-pole	**EM4PBCKN14BK**
Blanking plate NZM2 TPN / 4-pole	**EM4PBCKN24BK**
Blanking plate NZM3 TPN / 4-pole	**EM4PBCKN34BK**

EM4PB68SXB

Cable extension boxes - side mounted

Description	Eaton list number
To fit 6/8-way panelboard EM4PB680 / EM4PB840	**EM4PB68SXB**
To fit 12/14-way panelboard EM4PB1280 / EM4PB1440	**EM4PB1214SXB**
To fit 16/18-way panelboard EM4PB1680 / EM4PB1840	**EM4PB1618SXB**

EM4PB250EX

Cable extension box - top/bottom mounted

Description	Eaton list number
250mm high	**EM4PB250EX**

EM4PB250EXDIN

DIN-rail extension box - top/bottom mounted

Description	Number of 18mm modular units	Eaton list number
250mm high - for housing DIN rail mounted command/ control equipment like timers, contactors, etc.	2 banks of 15 (30 in total)	**EM4PB250EXDIN**

EM4PB300CX

Corner filler box - top/bottom mounted

Description	Eaton list number
250mm high / 300mm wide - for use where top/bottom or meter extension boxes are fitted in conjunction with cableways on the sides	**EM4PB300CX**

EM4PB100PL

Plinth options - bottom mounted

Description	Eaton list number
100mm high - for entire panelboard range	**EM4PB100PL**
100mm high / 300mm wide - for use where plinth option is fitted in conjunction with cableways on the sides	**EM4PB100PLCX**

EM4PBLE

Lifting eye kit

Description	Eaton list number
Set of 2 pieces mounted on the top of the panelboard	**EM4PBLE**

Transient voltage surge suppression units, vertical mounted either next to main incomer or inside cable extension box (lateral)

- Includes all necessary cables and connections to install the SPD. However it DOES NOT include the 4 Pole 63A NZM1 MCCB and Feeder Adaptor - which MUST BE ordered separately

Description	Eaton list number
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes III and IV in accordance with IEC 62305	**EM4PBSPD34**
SPD-type T1, T2, T3 in accordance with EN 61643-11, lightning protection classes I, II, III and IV in accordance with IEC 62306	**EM4PBSPD1234**

EM4PBKEL404

Earth leakage protection

- Kit comprises an adjustable Earth Leakage relay, CT and UVR to suit the incoming MCCB and associated connection cables / terminals
- Sensitivity adjustable from 30mA to 5A. Time delay adjustable from 0.02 to 5 seconds

Description	Eaton list number
Earth leakage protection add-on kit for 400A / 4-pole incomer	**EM4PBKEL404**
Earth leakage protection add-on kit for 800A / 4-pole incomer	**EM4PBKEL804**

Live side connection kit

- Kit for enabling the connection of cables to feed an externally mounted switch-disconnector-fuse to the live side of the incoming device for sprinkler circuits

Description	Eaton list number
Live side connection kit for 400/800A MCCB incoming device	**EM4PBLSC**

EM4PB250EXM

EM4PB68SXM

Incoming / outgoing metering equipment - digital

Description	Number of meter spaces in metering enclosure	Number of meter blanking plates included	Eaton list number
Incoming meter extension box - top/bottom mounted - 250mm high (meter not included)	1	0	**EM4PB250EXM**
Outgoing meter extension box - side mounted - to fit 6/8-way panelboard EM4PB680 / EM4PB840	6	5	**EM4PB68SXM**
Outgoing meter extension box - side mounted - to fit 12/14-way panelboard EM4PB1280 / EM4PB1440	8	7	**EM4PB1214SXM**
Outgoing meter extension box - side mounted - to fit 16/18-way panelboard EM4PB1680 / EM4PB1840	10	9	**EM4PB1618SXM**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM1 frame MCCBs. 160A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EM4PBCTMT160**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM2 frame MCCBs. 250A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors			**EM4PBCTMT250**
Outgoing CT Kit (1 off required per metered outgoing TP way) to suit NZM3 frame MCCBs. 400A maximum rating. Includes CT to meter plug-in cable and meter to meter voltage supply linking cable with connectors.			**EM4PBCTMT400**
Voltage supply to meter tap off kit (includes protection fuses), one per panelboard required, irrespective of number of meters			**EM4PBVT**
Meter includes both Modbus and Pulsed outputs (MID certified) Multifunction meter measuring parameters: Voltage (P-P / P/N) (individual/average) Current (I1, I2, I3) (individual/average) Frequency Power factor (individual/average) Active, reactive, apparent power (individual/total) Active, reactive, apparent energy (total)			**EMC3P-P2P1**
Multifunction meter - as above but NOT MID certified			**EPBMETER1**
Three phase splitter box to allow separate monitoring of a three phase current transformer on individual energy meters			**EPBCTMT3P**
Extra long (2m) meter to meter voltage supply linking cable with connectors			**EPBN3LKKTM**
Extra long (2.5m) CT to meter plug-in cable			**EPBN3LKRJ45**
Spare blanking plate for unused meter ways in metering enclosure			**EM96BP**

EM4PBP680

MCCB pan assemblies

- Eaton MCCB pan assemblies offer a high degree of flexibility, suitable for inclusion in other factory built assemblies and as replacement for panelboard interiors.
- For incoming and outgoing device compatibility see associated panelboard details.

Description	Current rating (A)	No. of outgoing ways based on NZM1 TPN/4P group mounted *)	Eaton list number
Memshield 4 panelboard pan assembly 400A, 8-way, outgoing up to 250A	400	8	**EM4PBP840**
Memshield 4 panelboard pan assembly 400A, 14-way, outgoing up to 250A		14	**EM4PBP1440**
Memshield 4 panelboard pan assembly 400A, 18-way, outgoing up to 250A		18	**EM4PBP1840**
Memshield 4 panelboard pan assembly 800A, 6-way, outgoing up to 400A	800	6	**EM4PBP680**
Memshield 4 panelboard pan assembly 800A, 12-way, outgoing up to 400A		12	**EM4PBP1280**
Memshield 4 panelboard pan assembly 800A, 16-way, outgoing up to 400A		16	**EM4PBP1680**

*) see Selection tool for permutations

7 Industrial switch & fusegear

Eaton's MEM series products have earned a worldwide reputation for reliable high quality switch and fusegear – and above all market leading status.

Constantly updated and refined to comply with the very latest international standards, the market leading switchgear range, specialist heavy duty items and dedicated distribution and control equipment fulfils the diverse requirements of the contractor, specifier, OEM and distributor alike.

See page 151 for technical data and overall dimensions.

103GNL

Glasgow switch-disconnector

- All listed are TPN

Nominal unit	Nominal rating, rating, Ie AC21 (A)	Copper switch links fitted	Motor ratings AC23A Ue 415V kW	HP	Eaton list number
63	125	63MLK	22	30	**63GNL**
100	125	100MLK	22	30	**103GNL**
160 (use 200A switch-disconnector)	–	–	–	–	**–**
200	315	200MLK	90	125	**203GNL**
315 (use 400A switch-disconnector)	–	–	–	–	**–**
400	630	400MLK	110	150	**403GNL**
500 (use 630A switch-disconnector)	–	–	–	–	**–**
630	1000	630MLK	225	300	**603GNL**
800	1000	800MLK	300	400	**803GNL**

Stud size: 63/100A = tunnel terminal, 160/200A = M10, 300/400 = M14, 500/800A = see page 152, "copper terminal plate"
Note: A Glasgow Switch-Disconnector can be fitted with fuselinks to change it into a fuse-switch-disconnector

203GNC

Glasgow fuse-switch-disconnector

- Units are fitted with HRC Fuselinks of maximum rating but will accept fuselinks of a lower rating, refer to the HRC Fuselinks section on page 114.
- SPSN and TPSN indicate switched neutral.
- Neutral makes first and breaks last.

Nominal unit rating, Ie (A)	Eaton 415V fuse(s) fitted	Suitable fuselinks	Suitable copper switch links	Motor ratings AC23A Ue 415V kW	HP	Poles	Eaton list number
63	BA063	AA0 & BA0	63MLK	22	30	SPSN	**61GNC**
						DP	[1]
						TPN	**63GNC**
						TPSN	**64GC**
100	CE0100	CE0	100MLK	22	30	SPSN	**101GNC**
						DP	[1]
						TPN	**103GNC**
						TPSN	**104GC**
160	DD160	AD, BD,CD & DD	200MLK	90	125	SPSN	**151GNC**
						DP	[1]
						TPN	**153GNC**
						TPSN	**154GC**
200	DD200	AD, BD, CD & DD	200MLK	90	125	SPSN	**201GNC**
						DP	[1]
						TPN	**203GNC**
						TPSN	**204GC**
315	ED315	AD, BD, CD, DD & ED	400MLK	110	150	TPN	**303GNC**
						TPSN	**304GC**
400	ED400	AD, BD, CD, DD & ED	400MLK	110	150	TPN	**403GNC**
						TPSN	**404GC**
500	FF500	EF & FF	630MLK	225	300	TPN	**503GNC**
630	FF630	EF & FF	630MLK	225	300	TPN	**603GNC**
						TPSN	**604GC**
800	GF800	EF, FF & GF	800MLK	300	400	TPN	**803GNC**
						TPSN	**804GC**

[1] If DP fuse-switch-disconnectors are required, use SPSN and replace the supplied switch link with a compatible fuselink.
Stud size: 63/100A = tunnel terminal, 160/200A = M10, 300/400 = M14, 500/800A = see page 152, "copper terminal plate"

Note: A Glasgow Fuse Switch-Disconnector can be fitted with copper links to change it into a Switch-disconnector

50CSB

Spreader boxes

- Provide additional space for spreading multi-core PVC insulated cables
- Supplied with fixing bolts and plain bushes
- Adapter plates required for each unit, see page 99

Nominal unit rating, Ie (A)	Eaton list number	
	Straight	45° angled
63	**50CSB**	**50CSBA**
100	**50CSB**	**50CSBA**
160/200	**60CSB**	**60CSBA**
315/400	**70CSB**	**70CSBA**
500/630	**90CSB**	
800	**90CSB**	

Extension boxes

- For fitting to Glasgow switch units to provide additional space for spreading multi-core PVC insulated cables with solid aluminium conductors and for some larger cables with stranded copper conductors

Nominal unit rating (A)	Fuse switch-disconnector/switch-disconnector	Eaton list number
63	61GNC	**1PCB**[1]
	63GNC/63GNL	**2PCB**[1]
	64GC	
100	101GNC	**1PCB**[2]
	103GNC/103GNL	**2PCB**[2]
	104GC	
160	151GNC	**2PCB**[3]
	153GNC	**3PCB**[3]
	154GC	
200	201GNC	**2PCB**
	203GNC/203GNL (315A AC21)	**3PCB**
	204GC	
315	303GNC	**4PCB**
	304GC	
400	403GNC/use 403GNL (630A AC21)	
	404GC	
500	503GNC	**5PCB**[4]
630	603GNC/use 603GNL (1000A, AC21)	
	604GC	
800	803GNC/use 803GNL (1000A, AC21)	
	804GC	

[1] Not required for copper cables or al. below 35mm²
[2] Not required for copper cables or al. below 50mm²
[3] Not required for copper cables
[4] For parallel cables use 6 PCB + 802 GCC + 2 x 90 CSB or CSBA (see diagram on page 148)

Glasgow maximum cable capacity

Glasgow Nominal Rating (A)	Maximum Cable capacity mm²
63	35
100	50
160	95
200	150
315/400	300
500/630	400 or 2/240
800	2/300

506APL

Adapter plate to fit spreader boxes

- Available for fitting to spreader boxes, tapped to receive Type B compression glands to BS6121-1. Supplied complete with fixing bolts

Nominal unit rating, Ie (A)	Straight spreader box	45° angled spreader box	Cable mm²	PVC SWA stranded cables:		Eaton list number
63	50CSB	50CSBA	16	2-core	4-core	[1]
			25	2-core	4-core	[1]
			35	2-core	4-core	[1]
100	50CSB	50CSBA	25	2-core	4-core	[1]
			35	2-core	4-core	[1]
			50	2-core		[1]
					4-core	**405 APL**
160	50CSB	50CSBA	50	2-core		[1]
					4-core	**405 APL**
			70	2-core		[1]
					4-core	**405 APL**
			95	2-core		**405 APL**
					4-core	**505 APL**
	60CSB	60CSBA	50	2-core		[1]
					4-core	**406 APL**
			70	2-core		[1]
					4-core	**406 APL**
			95	2-core		**406 APL**
					4-core	**506 APL**
200	50CSB	50CSBA	70	2-core		[1]
					4-core	**405 APL**
			95	2-core		**405 APL**
					4-core	**505 APL**
			120	2-core		**405 APL**
					4-core	**505 APL**
	60CSB	60CSBA	70	2-core		[1]
					4-core	**406 APL**
			95	2-core		**406 APL**
					4-core	**506 APL**
			120	2-core		**406 APL**
					4-core	**506 APL**
			150	2-core	4-core	**506 APL**
300/400	70CSB	70CSBA	150	–	4-core	**507 APL**
			185	–	4-core	**637 APL**
			240	–	4-core	**637 APL**
			300	–	4-core	**757 APL**
500/630	90CSB		240	–	4-core	**639 APL**
			300	–	4-core	**759 APL**
			400	–	4-core	**759 APL**
	Parallel cables[2]		2/150	–	4-core	2 x **509 APL**[2]
			2/185	–	4-core	2 x **639 APL**[2]
			2/240	–	4-core	2 x **639 APL**[2]
800	90CSB		2/300	–	4-core	2 x **759 APL**[2]

[1] Sufficient spreading space in switch-disconnector units to mount 'B' gland on to enclosure.

[2] For 500 / 630 & 800A unit applications where parallel cables are used you need to order; **6PCB** + **802GCC** (copper connection piece) + 2x **90CSB** see configuration on page 162.

EBK110SP

Glasgow spares

Nominal unit rating, Ie (A)	Eaton list number
Moving contact fuse carrier; 1 per pole*	
63	**EBK110SP**
100	**OBK103SP**
160…200	**EBK105SP**
315…400	**EBK113SP**
Fixed contact base complete; 1 per pole	
63…100	**102GCEBSP**
160…200	**202GCEBSP**
315…400 (2 per pole)	**402GCEBSP**

*Not suitable for neutral pole

PD1

Handle locking devices

- Facilities are provided for locking off operating handles

Current rating (A)	Eaton list number
Handle locking 63–800	**PD1**[1)]

[1)] Operating handles of all units can be locked 'ON' or 'OFF' using padlock only.

See page 153 for technical data and overall dimensions.

142BBC

Busbar chambers

Nominal unit rating, Ie (A)	Nominal length, mm	Eaton list number
100	550	**142 BBC**
	900	**143 BBC**
	1350	**144 BBC**
	1800	**146 BBC**
200	550	**242 BBC**
	900	**243 BBC**
	1350	**244 BBC**
	1800	**246 BBC**
400	550	**442 BBC**
	900	**443 BBC**
	1350	**444 BBC**
	1800	**446 BBC**
630	900	**643 BBC**
	1350	**644 BBC**
	1800	**646 BBC**
800	900	**843 BBC**
	1350	**844 BBC**
	1800	**846 BBC**

81BBL

Busbar chamber extension sets

Nominal rating, Ie (A)	Eaton list number
630	**81 BBL**
800	**81 BBL**

400FSCS

Connection sets for Glasgow fuse-switch-disconnectors & switch-disconnectors

Nominal rating, Ie (A)	Eaton list number
160, 200	**200 FSCS**
315, 400	**400 FSCS**
500, 630, 800	**800 FSCS**

62BBSK

Busbar clamps and sockets – 100–200A Busbars

Type	Nominal rating, Ie (A)	Bore diameter mm	Capacity mm²	Eaton list	mm	Bolt Size
U-Clamps	20–63	–	25	**2 BBCL**	19	M6
	63–100	–	70	**3 BBCL**	22	M8
	100–200	–	120	**6 BBCL**	38	–

Busbar clamps and lugs connection – 400–800A Busbars

Type	Nominal rating, Ie (A)	Bore diameter mm	Capacity mm²	Eaton list number	mm	Bolt Size
U-Clamps	20–63	–	25	**4 BBCL**	19	M6
	63–100	–	70	**5 BBCL**	22	M8
	100–200	–	120	**6 BBCL**	38	–
Lugs connection	315–400	22.5	240	**82 BBSK**	133	M14

21BBMS

Switchgear mounting sets

Description	Nominal rating, Ie (A)	Eaton list number
Exel Switch-disconnector-fuses/ Switch-disconnectors	20, 32	**11 BBMS**
	63, 100, 125	**21 BBMS**
Glasgow Fuse-switch-disconnectors/ Switch-disconnectors	63, 100	**31 BBMS**
	160, 200	**41 BBMS**
	315, 400	**51 BBMS**
	500, 630, 800	**61 BBMS**

- The difference between 2BBCL/4BBCL is the bolt length(30mm and 50mm respectively).
- The difference between 3BBCL/5BBCL is the bolt length(40mm and 55mm respectively).

See page 155 for technical data and overall dimensions.

15AXTN2

Exel 2 switch-disconnector

Nominal rating, Ie (A)	Utilisation category at Ue 415V to BS EN 60947-3 AC22A (A)	AC23A (A)	250V DC rating to BS5419 DC23 (A)	Blank endplate	Poles	Eaton list number
20	20	–	20[1]	EP 842	SPSN	–
					DP	**15AXD2**
		11	–		TPN	**15AXTN2**
32	32	–	32		SPSN	–
					DP	**30AXD2**
		22	–		TPN	**30AXTN2**
63	63	–	63	EP 539	SPSN	–
					DP	**60AXD2**
	39	–			TPN	**60AXTN2**
100	100	–	100		SPSN	–
					DP	**100AXD2**
		52	–		TPN	**100AXTN2**
125	125	52	–		TPN	**125AXTN2**

SPSN indicates switched neutral. [1] 20A units are DC22.

100KXSC2F

Exel 2 switch-disconnector-fuse

Nominal rating, Ie (A)	Utilisation category at Ue 415V to BS EN 60947-3 AC22A (A)	AC23A (A)	250V DC rating to BS5419 (A)	Blank endplate fitted	Eaton HRC fuses DC23	Poles	Eaton list number
20	20	–	20[1]	EP 842	NITD20	SPSN	**15KXSC2F**[2]
						DP	**15KXDC2F**
		11			NITD20	TPN	**15KXTNC2F**
32	32	–	32	–	AAO32	SPSN	**30KXSC2F**
						DP	**30KXDC2F**
		22		–	–	TPN	**30KXTNC2F**
63	63	–	63	EP 539	BAO63	SPSN	**60KXSC2F**
						DP	**60KXDC2F**
		39		–	BAO63	TPN	**60KXTNC2F**
100	100	–	100	–	CEO100	SPSN	**100KXSC2F**
						DP	**100KXDC2F**
		52		–	CEO100	TPN	**100KXTNC2F**
125	125	52		–	DEO125[2]	TPN	**125KXTNC2F**

SPSN indicates switched neutral. [1] 20A units are DC22.

[2] These units have dual fixings to accept AAO, BAO and OSD fuselinks. 2x M5 screws required

Maximum cable sizes are: 20A–6mm^2, 32A–10mm^2, 63A–35mm^2, 100/125A–70mm^2.

Exel 2 Spares

Description	Rating (A)	Quantity required	Eaton list number
Moving contact assembly	20	1	**OLV727SP**
	32	1	**OLV728SP**
	63	1	**OLV725SP**
	100/125	1	**OLV726SP**
Switch base with arc shroud	32	1 per pole	**230AXEBSP**[1)]
	63	1 per pole	**260AXEBSP**[1)]
	100/125	1 per pole	**2100AXEBSP**[1)]
	100/125	1 per pole	**2100AXDEBSP**
Combined switch/fusebase with arc shroud	32	1 per pole	**230KXEBSP**
	63	1 per pole	**260KXEBSP**
Fusebase only	100/125	1 per pole	**100MBDEBSP**
Arc shroud only	32	1 per pole	#**SH265SP**
	63	1 per pole	#**SH754SP**
	100/125	1 per pole	**CV1109SP**
Neutral Blocks	20/32	1	**30NLX**
	63	1	**60NLX**
	100/125	1	**100NLX**
Exel end plates	20/32		**EP842**
	63/100/125		**#EP539**

[1)] 1 required for switched neutral pole on SPSN switchfuses.

3SCHF

Fuse carriers

Nominal rating Ie (A)	Fuse type fitted	Eaton list number HRC Fuse Carrier
10	NITD10	**1 SCHF**
20	NITD20	**2 SCHF**
32	AAO32	**3 SCHF**
63	BAO63	**6 SCHF**
100	CEO100	**100SCHF**

See pages 159-160 for technical data and overall dimensions.

207149-GV

Rotary isolators

- 20A to 63 A
- IP65
- Red/yellow handle
- Lockable in the 0 (Off) position
- Surface mounting
- IEC 60947-3

Rated current Iu (A)	Motor rating AC-23A, 400V, 50 - 60 Hz (kW)	Poles	Auxiliary contact	Eaton List Number
20	6.5	3	1 NO	**207149**
20	6.5	3+N		**207151**
20	6.5	3+N	1 NO + 1 NC	**207153**
20	6.5	6	1 NO + 1 NC	**207161**
25	13	3	1 NO + 1 NC	**226902**
25	13	3+N		**227860**
32	13	3+N	1 NO + 1 NC	**207202**
32	13	6	1 NO + 1 NC	**207210**
32	13	8		**207212**
63	30	3	1 NO + 1 NC	**207348**
63	30	3+N		**207349**
63	30	3+N	1 NO + 1 NC	**207350**
63	22	6	1 NO + 1 NC	**207246**
63	22	8		**207248**

Changeover switches

- 20A to 63 A
- IP65
- Black handle
- Surface mounting
- IEC 60947-3

Rated current Iu (A)	Motor rating AC-23A, 400V, 50 - 60 Hz (kW)	Poles	Eaton List Number
20	6.5	4	**207136**
32	13	4	**207191**
63	22	4	**207230**

See page 156 for technical data and overall dimensions.

304XTNC

Exel distribution fuseboards

Nominal rating, Ie (A)	Poles	No. of ways	Max. terminal capacity mm² (copper cables) Main	Outgoing	Outgoing terminal bore diameter, mm	Suitable HRC fuselinks	Spare fuse carrier	Eaton list number (without fuselinks)
IP4X enclosures								
20	SPN	4	95	6	4	NITD	20 MFH	**204XSNC**
		6	95	6	4	NITD	20 MFH	**206XSNC**
		8	120	6	4	NITD	20 MFH	**208XSNC**
		12	120	6	4	NITD	20 MFH	**212XSNC**
	TPN	4	95	6	4	NITD	20 MFH	**204XTNC**
		6	95	6	4	NITD	20 MFH	**206XTNC**
		8	120	6	4	NITD	20 MFH	**208XTNC**
32	SPN	4	95	16	5.5	AAO	32 MFH	**304XSNC**
		6	95	16	5.5	AAO	32 MFH	**306XSNC**
		8	150	16	5.5	AAO	32 MFH	**308XSNC**
		12	150	16	5.5	AAO	32 MFH	**312XSNC**
	TPN	4	95	16	5.5	AAO	32 MFH	**304XTNC**
		6	95	16	5.5	AAO	32 MFH	**306XTNC**
		8	150	16	5.5	AAO	32 MFH	**308XTNC**
		12	150	16	5.5	AAO	32 MFH	**312XTNC**
63	TPN	2	240	35	8	AAO & BAO	63 MFH	**602XTNC**
		4	240	35	8	AAO & BAO	63 MFH	**604XTNC**
		6	240	35	8	AAO & BAO	63 MFH	**606XTNC**
		8	240	35	8	AAO & BAO	63 MFH	**608XTNC**
100	TPN	4	240	70	12	CEO[1]	100 MFH	**1004XTNC**
		6	500[2]	70	12	CEO[1]	100 MFH	**1006XTNC**
		8	500[2]	70	12	CEO[1]	100 MFH	**1008XTNC**

All units are supplied without fuselinks which must be ordered separately.

[1] AAO, BAO & OSD fuselinks may be fitted if used with adaptor – Eaton list number **100MFLK.**

[1] Can be adapted to allow fitment of 2–240mm2 max.

8LD

Lid locking facilities

- A choice of locking device is available

Description	Eaton list number
Barrel lock for 20A to 100A units	**1CLX**
Padlock bracket for 20A to 100A units	**9LD**
Padlock for use with above	**PD1**

ETM2209SP

Exel distribution fuseboard – spares

Description	Boards	SP outgoing ways number	Eaton list
Earth bars – 20/32A fuseboards	–	up to 12	**ETM2209SP**
	–	up to 18	**ETM2210SP**
	–	up to 24	**ETM2211SP**
	–	up to 36	**ETM2212SP**
Neutral bars – 20/32A fuseboards	–	up to 12	**ETM2223SP**
	–	up to 18	**ETM2224SP**
	–	up to 24	**ETM2225SP**
	–	up to 36	**ETM2226SP**

8 HRC cartridge fuselinks and fuse units

- Options to suit every application
- Compact 415V fuselinks
- Breaking capacity of 80kA at 415V
- Motor rated fuselinks
- Compact moulded HRC fuse units
- Fully shrouded for safety
- For bolt-in & clip-in fuselinks

See page 157 for overall dimensions.

415V industrial fuselinks – offset bolted contacts

- Compact industrial bolted pattern fuselinks with offset contacts. ASTA 20 Certified BS EN 60269-1 (BS88 – 1) or BS88 – 2 for a breaking capacity of 80 kA at 415V a.c.

NITD10

AAO20

BAO63

CEO100

Fixing centres, mm	BS88 ref	Rating, In Normal (A)	Motor (A)	Dimensional equivalents GEC/Lawson	Brush/Hawker	EATON Paramount	EATON Bussmann
44.5	A1	2	–	NIT2	2F21	2SA2	**NITD2**
		4	–	NIT4	4F21	4SA2	**NITD4**
		6	–	NIT6	6F21	6SA2	**NITD6**
		10	–	NIT10	10F21	10SA2	**NITD10**
		16	–	NIT16	16F21	16SA2	**NITD16**
		20	–	NIT20	20F21	20SA2	**NITD20**
			25	NIT20M25	20M25F21	20SA2M25	**NITD20M25**
			32	NIT20M32	20M32F21	20SA2M32	**NITD20M32**
	–	25	–	NIT25	25F21	25SA2	**NITD25**
		32	–	NIT32	32F21	32SA2	**NITD32**
			40	NIT32M40	–	32SA2M40	**NITD32M40**
			50	NIT32M50	–	32SA2M50	**NITD32M50**
			63	NIT32M63	–	32SA2M63	**NITD32M63**
73	A2	2	–	TIA2	2HO7	2SB3	**AAO2**
		4	–	TIA4	4HO7	4SB3	**AAO4**
		6	–	TIA6	6HO7	6SB3	**AAO6**
		10	–	TIA10	10HO7	10SB3	**AAO10**
		16	–	TIA16	16HO7	16SB3	**AAO16**
		20	–	TIA20	20HO7	20SB3	**AAO20**
		25	–	TIA25	25HO7	25SB3	**AAO25**
		32	–	TIA32	32HO7	32SB3	**AAO32**
			40	TIA32M40	32M40HO7	32SB3M40	**AAO32M40**
			50	TIA32M50	32M50HO7	32SB3M50	**AAO32M50**
			63	TIA32M63	32M63HO7	32SB3M63	**AAO32M63**
	A3	35	–	TIS35	–	35SB4	**BAO35**
		40	–	TIS40	40KO7	40SB4	**BAO40**
		50	–	TIS50	50KO7	50SB4	**BAO50**
		63	–	TIS63	63KO7	63SB4	**BAO63**
			80	TIS63M80	63M80KO7	63SB4M80	**BAO63M80**
			100	TIS63M100	63M100KO7	63SB4M100	**BAO63M100**
	–	80	–	OS80/TIS80	80KO7R	80SO	**OSD80**
		100	–	OS100/TIS100	100KO7R	100SO	**OSD100**
			125	OS100M125/ TIS100M125	–	100SOM125	**OSD100M125**
			160	–	–	100SOM160	**OSD100M160**
		125	–	OOT125	–	125SO	**ODD125**
		160	–	OOT160	–	160SO	**ODD160**
		200	–	–	–	200SO	**ODD200**
94	A4	32	–	TCP32	32L14	32SD5	**CEO32**
		40	–	TCP40	40L14	40SD5	**CEO40**
		50	–	TCP50	50L14	50SD5	**CEO50**
		63	–	TCP63	63L14	63SD5	**CEO63**
		80	–	TCP80	80L14	80SD5	**CEO80**
		100	–	TCP100	100L14	100SD5	**CEO100**
			125	TCP100M125	100M125L14	100SD5M125	**CEO100M125**
			160	TCP100M160	100M160L14	100SD5M160	**CEO100M160**
			200	TCP100M200	100M200L14	100SD5M200	**CEO100M200**

415V industrial fuselinks – offset bolted contacts (contd)

Fixing centres, mm	BS88 ref	Rating, In Normal (A)	Motor (A)	Dimensional equivalents GEC/Lawson	Brush/Hawker	EATON Paramount	EATON Bussmann
	–	125	–	TFP125	125M14	125SD6	**DEO125**
		160	–	TFP160	160M14	160SD6	**DEO160**
		200	–	TFP200	200M14	200SD6	**DEO200**
			250	TFP200M250	200M250M14	200SD6M250	**DEO200M250**
			315	–	–	200SD6M315	**DEO200M315**

These industrial bolted pattern fuselinks are of two types – with offset contacts of ratings 2–200A and with centre contacts of ratings 2–1250A.

They are available to BS references A1 to A4, B1 to B4, C1 to C3, D1 and in certain other sizes.

AC20

415V industrial fuselinks – centre bolted contacts

- Compact industrial bolted pattern fuselinks with centre contacts. ASTA 20 Certified or tested to BS EN 60269-1 (BS88-1) or BS88-2 for a breaking capacity of 80 kA at 415V a.c.

Fixing centres, mm	BS88 ref	Rating In Normal (A)	Motor	Dimensional equivalents GEC/Lawson	Brush/Hawker	EATON Paramount	EATON Bussmann
97	–	2	–	TB2	2KO8	2SE3	**AC2**
		4	–	TB4	4KO8	4SE3	**AC4**
		6	–	TB6	6KO8	6SE3	**AC6**
		10	–	TB10	10KO8	10SE3	**AC10**
		16	–	TB16	16KO8	16SE3	**AC16**
		20	–	TB20	20KO8	20SE3	**AC20**
		25	–	TB25	25KO8	25SE3	**AC25**
		32	–	TB32	32KO8	32SE3	**AC32**
111	–	2	–	TBC2	2KO9	2SF3	**AD2**
		4	–	TBC4	4KO9	4SF3	**AD4**
		6	–	TBC6	6KO9	6SF3	**AD6**
		10	–	TBC10	10KO9	10SF3	**AD10**
		16	–	TBC16	16KO9	16SF3	**AD16**
		20	–	TBC20	20KO9	20SF3	**AD20**
		25	–	TBC25	25KO9	25SF3	**AD25**

AD32

		32	–	TBC32	32KO9	32SF3	**AD32**
97	–	40	–	TB40	40KO8	40SE4	**BC40**
		50	–	TB50	50KO8	50SE4	**BC50**
		63	–	TB63	63KO8	63SE4	**BC63**
97	–	63	80	–	–	63SE4M80	**BC63M80**
			100	–	–	63SE4M100	**BC63M100**
111	B1	40	–	TBC40	40KO9	40SF4	**BD40**
		50	–	TBC50	50KO9	50SF4	**BD50**
		63	–	TBC63	63KO9	63SF4	**BD63**
			80	–	–	63SF4M80	**CD80**
			100	–	–	63SF4M100	**CD100**
		80	–	TC80	80LO9	80SF5	**CD80**
		100	–	TC100	100LO9	100SF5	**CD100**
			125	TC100M125	100M125LO9	100SF5M125	**CD100M125**
			160	TC100M160	100M160LO9	100SF5M160	**CD100M160**
			200	TC100M200	100M200LO9	100SF5M200	**CD100M200**
	B2	125	–	TF125	125MO9	125SF6	**DD125**
		160	–	TF160	160MO9	160SF6	**DD160**

DD200

		200	–	TF200	200MO9	200SF6	**DD200**
			250	TF200M250	200M250M09	200SF6M250	**DD200M250**
			315	–	–	200SF6M315	**DD200M315**
	B3	250	–	TKF250	250NO9	250SF7	**ED250**
		315	–	TKF315	315NO9	315SF7	**ED315**
			400	–	–	315SF7M400	**ED315M400**
133	–	250	–	TKM250	250N11	250SG7	**EFS250**
		315	–	TKM315	315N11	315SG7	**EFS315**

EF400

FF630

GH1250

415V industrial fuselinks – centre bolted contacts (contd)

Fixing centres, mm	BS88 ref	Rating In Normal (A)	Motor (A)	Dimensional equivalents GEC/Lawson	Brush/Hawker	EATON Paramount	EATON Bussmann
111	B4	355	–	TMF355	355PO9	355SF8	**ED355**
		400	–	TMF400	400PO9	400SF8	**ED400**
			500	TMF400M500	–	400SF8M500	**ED400M500**
133/184	C1	355	–	TM355	355P11	355SH8	**EF355**
		400	–	TM400	400P11	400SH8	**EF400**
133/184	C2	450	–	TTM450	450R11	450SH9	**FF450**
		500	–	TTM500	500R11	500SH9	**FF500**
		560	–	TTM560	560R11	560SH9	**FF560**
		630	–	TTM630	630R11	630SH9	**FF630**
165/229	–	450	–	TT450	450R12	450SY9	**FG450**
		500	–	TT500	500R12	500SY9	**FG500**
		630	–	TT630	630R12	630SY9	**FG630**
133/184	C3	710	–	TLM710	700S11	710SH10	**GF710**
		800	–	TLM800	800S11	800SH10	**GF800**
165/229	–	710	–	TLT710	700S12	710SY10	**GG710**
		800	–	TLT800	800S12	800SY10	**GG800**
149	D1	1000	–	TXU1000	1000U44	1000SJ11	**GH1000**
		1250	–	TXU1250	1250U44	1250SJ11	**GH1250**

NSD20

NSD type offset blade fuselinks

- ASTA 20 Certified or tested to BS EN 60269-1 (BS88-1) and BS88-6 for a breaking capacity of 80 kA at 415V a.c. For use in industrial and commercial installations.

Overall length, mm	Overall dia. mm	Rating In Normal (A)	Motor (A)	Equivalents GEC/Lawson	Brush/Hawker	EATON Paramount	EATON Bussmann
60	14	2	–	NS2	2FO6	2SN2	**NSD2**
		4	–	NS4	4FO6	4SN2	**NSD4**
		6	–	NS6	6FO6	6SN2	**NSD6**
		10	–	NS10	10FO6	10SN2	**NSD10**
		16	–	NS16	16FO6	16SN2	**NSD16**
		20	–	NS20	20FO6	20SN2	**NSD20**
			25	NS20M25	20M25FO6	20SN2M25	**NSD20M25**
			32	NS20M32	20M32FO6	20SN2M32	**NSD20M32**
		25	–	NS25	25FO6	25SN2	**NSD25**
		32	–	NS32	32FO6	32SN2	**NSD32**
58	17.5	32	40	NS32M40	–	32SN2M40	**NSD32M40**
			50	NS32M50	–	32SN2M50	**NSD32M50**
			63	NS32M63	–	32SN2M63	**NSD32M63**

ESD63

ESD type offset blade fuselinks

- ASTA 20 Certified to BS EN 60269-1 (BS88 – 1) and BS88 – 6 for a breaking capacity of 80 kA at 415V a.c. For use in industrial and commercial installations.

Overall length, mm	Overall dia. mm	Rating In (A)	Equivalents GEC/Lawson	Brush/Hawker	EATON Paramount	EATON Bussmann
68	17	16	–	–	16SP	**ESD16**
		20	–	–	20SP	**ESD20**
		25	–	–	25SP	**ESD25**
		32	–	–	32SP	**ESD32**
		40	40ES	40GO5	40SP	**ESD40**
		50	50ES	50GO5	50SP	**ESD50**
		63	63ES	63GO5	63SP	**ESD63**

60KR85

KR85 and LR85 type house service cut-out fuselinks

- Type IIa (KR) and IIb (LR) house service cut-out fuselinks. ASTA 20 Certified or tested to BS88-3 for a breaking capacity of 33 kA at 415V a.c. For use in domestic and commercial installations mainly in supply authorities cut-outs.

Overall length, mm	Overall dia. mm	Rating, In Normal (A)	Equivalents GEC/Lawson	Brush/Hawker	EATON Paramount	EATON Bussmann
57	22.23	15	RHF15	15KR85	154R	**15KR85**
		20	RHF20	20KR85	204R	**20KR85**
		30	RHF30	30KR85	304R	**30KR85**
		40	RHF40	40KR85	404R	**40KR85**
		45	–	45KR85	454R	**45KR85**
		50	RHF50	50KR85	504R	**50KR85**
		60	RHF60	60KR85	604R	**60KR85**
		80	RHF80	80KR85	804R	**80KR85**
		100	–	100KR85	1004R	**100KR85**
57	30	30	RHL30	30LR85	304RL	**30LR85**
		60	RHL60	60LR85	604RL	**60LR85**
		80	RHL80	80LR85	804RL	**80LR85**
		100	RHL100	100LR85	1004RL	**100LR85**

STD6

ST type street lighting fuselinks

- ASTA 20 Certified to BS EN 60269-1 (BS88-1) for a breaking capacity of 50kA at 240V a.c.
  Also compies with BS7654 for use in street ligting cut-out.

Fixing centres, mm	Overall length, mm	Overall dia. mm	Rating, In (A)	Equivalents[1] GEC	Brush	EATON Paramount	EATON Bussmann
ST-Type, offset contacts							
38	47	14	2	LST2	2D19L	2LS	**STD2**
			4	LST4	4D19L	4LS	**STD4**
			6	LST6	6D19L	6LS	**STD6**
			10	LST10	10D19L	10LS	**STD10**
			16	LST16	16D19L	16LS	**STD16**
			20	LST20	20D19L	20LS	**STD20**
			25	LST25	25D19L	25LS	**STD25**
			32	LST32	32D19L	32LS	**STD32**

[1]Equivalent columns list fuselinks having similar ratings and fixing centres.

20SSD

SSD type offset blade fuselinks

- ASTA 20 Certified to BS EN 60269-1 (BS88-1) for a breaking capacity of 50kA at 240V a.c.
  Also compies with BS7654 for use in street ligting cut-out.

Fixing centres, mm	Overall length, mm	Overall dia. mm	Rating, In (A)	Equivalents[1] GEC	Brush	EATON Paramount	EATON Bussmann
–	51	12	2	SS2	2DO4	2SS	**SSD2**
			4	SS4	4DO4	4SS	**SSD4**
			6	SS6	6DO4	6SS	**SSD6**
			10	SS10	10DO4	10SS	**SSD10**
			16	SS16	16DO4	16SS	**SSD16**
			20	SS20	20DO4	20SS	**SSD20**
			25	SS25	25DO4	25SS	**SSD25**
			32	SS32	32DO4	32SS	**SSD32**

[1]Equivalent columns list fuselinks having similar ratings and fixing centres.

315MJ30-7

J type feeder pillar fuselinks

- ASTA 20 Certified or tested to BS88 – 2 (formerly BS88: Part 5) for a breaking capacity of 80 kA at 415V a.c.
- Available in standard 82mm and 92mm fixing centres up to 400A and 800A respectively for wedge tightening contacts. Also available in ferrule form up to 250A for pole mounted cut-outs.
- For use by the Electricity Supply Industry in distribution systems.
- Available with silver elements, details on request.

Fixing centres, mm	Equivalents Fluvent	Lawson	SIBA	GEC	EMP	Dorman	Rating, In (A)	EATON Bussmann List number
82	DL2-2	JPU	5002301	JP	2/EJA	JPD	63	**63MJ30-8**
							80	**80MJ30-7**
							100	**100MJ30-7**
							125	**125MJ30-7**
							160	**160MJ30-7**
							200	**200MJ30-7**
							250	**250MJ30-7**
							315	**315MJ30-7**
							355	**355PJ30-7**
							400	**400PJ30-7**

400PJ31-7

92	DL3-2	JSU	5002601	JS	3/EJB	JSD	63	**63MJ31-8**
							80	**80MJ31-7**
							100	**100MJ31-7**
							125	**125MJ31-7**
							160	**160MJ31-7**
							200	**200MJ31-7**
							250	**250MJ31-7**
							315	**315MJ31-7**
							355	**355PJ31-7**
							400	**400PJ31-7**
							450	**450RJ31-7**
							500	**500RJ31-7**
							560	**560SJ31-7**
							630	**630SJ31-6**
							800	**800SJ28**

9.1 Technical data

Memshield 3 type A SPN, type B TPN distribution boards

Distribution boards type A and type B, technical overview

	Type A	Type B
IP Rating	IP3X (when correctly installed on the wall)	IP4X (when correctly installed on the wall)
Enclosure body type	Steel – welded case end with cable glad plate	Steel – welded case end with cable glad plate
Paint specification	RAL 7004 epoxy polyester	RAL 7004 epoxy polyester
Conditional short circuit rating	15kA to BS EN 61439	25kA to BS EN 61439
Busbar short time withstand (Icw)	5kA 0.1s	10kA 0.5s / 17kA 0.25s
Cable capacities		
125A switch disconnector	50mm^2	50mm^2
100A RCCB (type A = 90A)	35mm^2	50mm^2
250A switch disconnector	–	120mm^2 (+ M8 lugs)
160A – 250A MCCB incomer	–	250A = 120mm^2 (+ M8 lugs)
100A direct connection kit	35mm^2	–
250A direct connection lugs	–	120mm^2 (+ M8 lugs)
125A contactor incomer	–	50mm^2
250A contactor incomer	–	120mm^2 (+ M8 lugs)
Enclosure earth stud	M6	M8
Incoming earth terminal	25mm^2	125A = 25mm^2, 250A = 70mm^2
Incomming neutral terminal	90/100A = 35mm^2, 125A = 50mm^2	125A = 50mm^2, 250A = 120mm^2 (+ M8 lugs)
Outgoing earth terminal	25mm^2	25mm^2
Outgoing neutral terminal	25mm^2	25mm^2

Distribution boards AFDD type B, technical overview

IP Rating	IP4X (when correctly installed on the wall)
Enclosure body type	Steel – welded case end with cable glad plate
Paint specification	RAL 7004 epoxy polyester
Conditional short circuit rating Icc	10kA to BS EN 61439
Cable capacities	
125A switch disconnector	50mm2 (box terminal)
250A direct connection lugs	-
125A MCB	-
63A MCB	-
Enclosure earth stud	M8
Incomming neutral Kit terminal	50mm2 (box terminal)

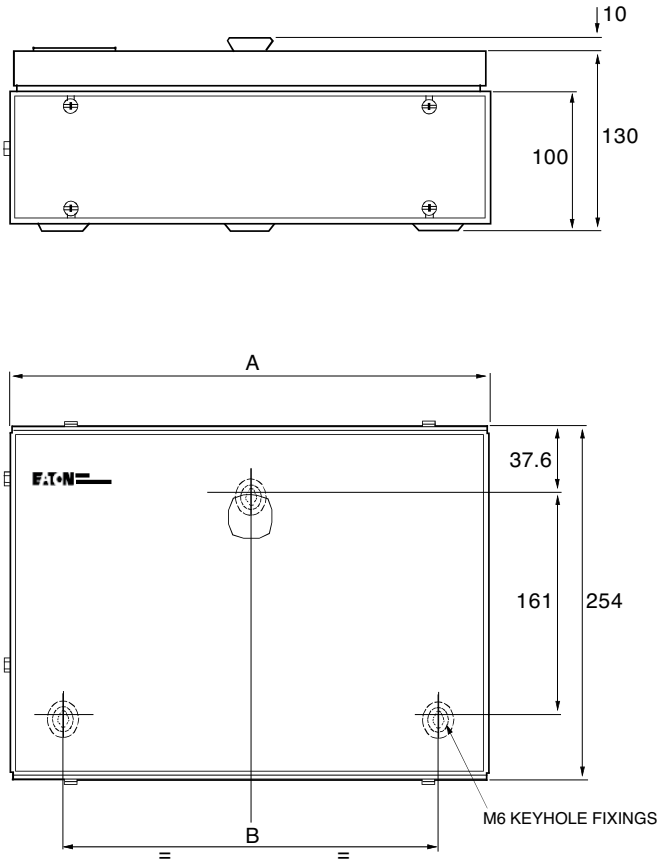
Multi Meter Pack, technical overview

IP Rating	IP4X (when correctly installed on the wall)
Enclosure body type	Steel – welded case end with cable glad plate
Paint specification	RAL 7004 epoxy polyester
Conditional short circuit rating Icc	10kA to BS EN 61439
Cable capacities	
125A switch disconnector	-
250A direct connection lugs	120mm2 (+M8 lugs)
125A MCB	50mm2
63A MCB	35mm2
Enclosure earth stud	M8
Incomming neutral Kit terminal	120mm2 (+M8 lugs)

Type 1/type 2 combined lightning/surge arrester, technical data		**EM3SSK3T12 / EPBN1SPD123 / EM4PBSPD34**	
Electrical		**EBMAFDDSPDT12 / EBMMPSLSPDT12**	**EPBN1SPD124 / EM4PBSPD1234**
Lightning protection	L-N/L-PE /N-PE	system class III, IV	system class I, II, III, IV
Voltage protection level Up	L-N/N-PE	<1.5kV	≤1.5kV/≤2.5kV/≤1.5kV
Maximum continuous operating voltage Uc	L-N/L-PE	280 VAC/260 VAC	350 V AC
Temporary overvoltage test value UT (5 s)	N-PE	348 VAC/370 VAC	415 VAC
Temporary overvoltage test value UT (200ms)	L-N/N-PE	1200 VAC	1200 VAC
Maximum Discharge current (8/20 µs)	L-N/L-PE/N-PE	50 kA / 100 kA	50 kA / 50kA
Nominal discharge current (8/20 µs)	L-N/N-PE	25 kA/50 kA	25 kA/ 25kA/ 100 kA
Impulse discharge current (10/350 µs)	L-N/N-PE	12,5 kA / 50 kA	25kA / 100kA
Total discharge current (10/350 µs)	N-PE	50 kA	100kA
Follow current interrupt rating Ifi		100 A r.m.s	100 A r.m.s
Maximum back-up fuse		160 A (gG)	125 A(gG)
Maximum short circuit current (with fuse)		50 kA rms	100 kA

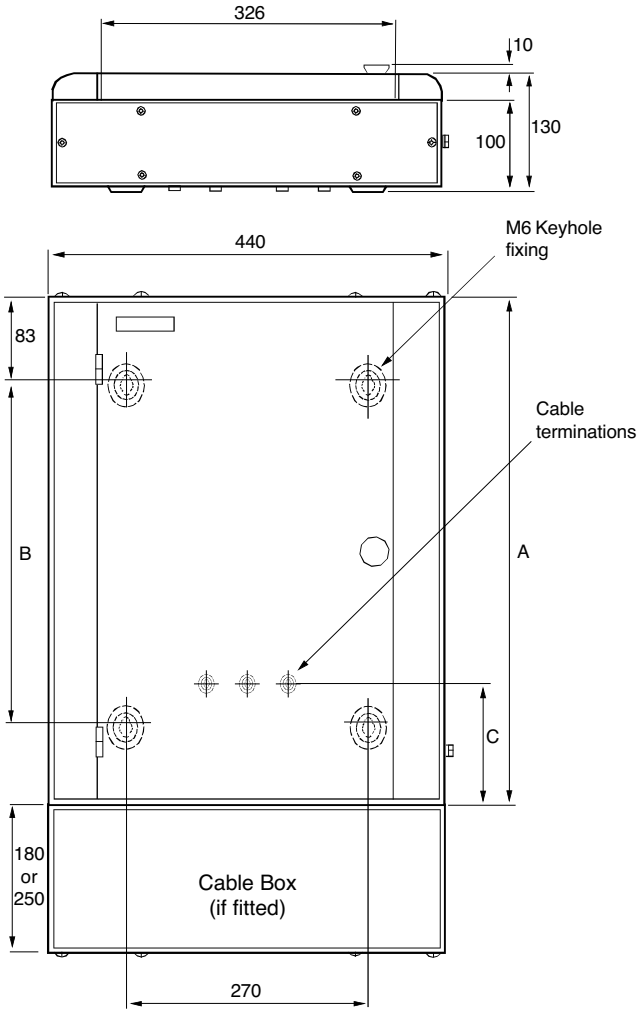
Type 2 surge arrester technical data		**EM3SSK1T2**	**EM3SSK3T2**
Electrical			**EBMAFDDSPDT2 / EBMMPSLSPDT2**
Voltage protection level Up	L-N/N-PE/L-PE	≤1600V/≤1000V/≤1650V	≤1000V/≤1000V/≤1300V
Maximum continuous operating voltage Uc	L-N/N-PE	335VAC/260VAC	280VAC/260VAC
Temporary overvoltage test value UT (5 s)	L-N/L-PE	415 VAC	350 VAC
Temporary overvoltage test value UT (200ms)	N-PE	1200 VAC	1200 VAC
Maximum Discharge current (8/20 µs)	L-N/N-PE/L-PE	40 kA (8/20)µs	40 kA (8/20)µs
Nominal discharge current (8/20 µs)	L-N/N-PE/L-PE	20 kA (8/20)µs	20 kA (8/20)µs
Follow current interrupt rating Ifi	N-PE	100 A r.m.s	100 A r.m.s
Maximum back-up fuse		125 A (gG)	125 A(gG)
Maximum short circuit current (with fuse)		50 kA rms	125 A(gG)
Maximum back-up MCB		PLHT-C100	PLHT-C100
Maximum short circuit current (with fuse)		20 kA rms	20 kA rms

Memshield 3 type A SPN Distribution Board, dimensional drawing



List No.	A (mm)	B (mm)
EAM4, EBMXDC6	238	163
EAMMP65	238	163
EAM7, EBMXDC9	292	217
EAM10	346	271
EAM13, EBMXDC15, EBMXDCG15	440	365
EAM9M/MB	440	365
EAM16, EBMXDC18	454	379
EAM12M/MB	454	379
EAMSL66M/MB	454	379
EAMSL93M/MB	454	379

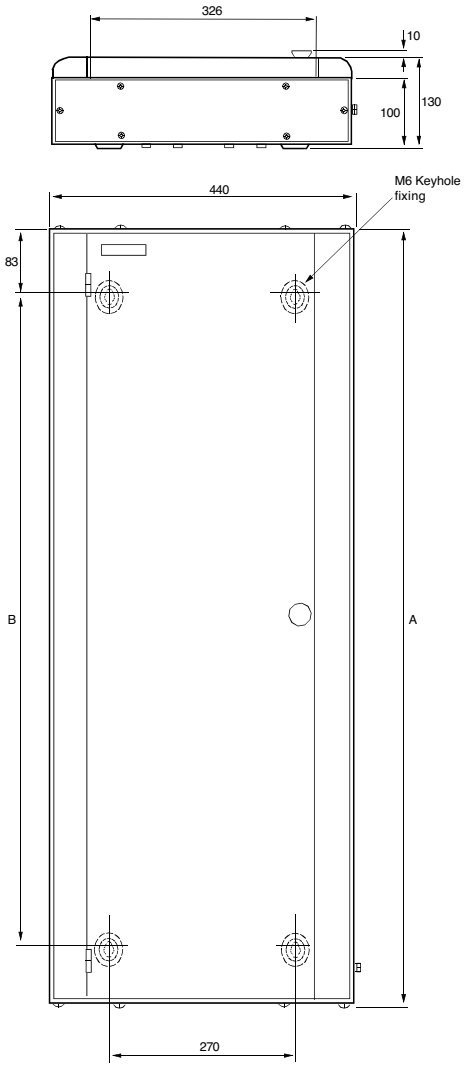
Memshield 3 type B TPN Distribution Board, dimensional drawing



List No.	A (mm)	B (mm)	C (mm) 125A incomer	250A incomer	Lugs incomer
EBM41	429	245	144	–	150
EBM61	482	298	144	–	150
EBM81, EBMXDC30	564	380	173	–	179
EBM121, EBM121D, EBMXDC45	724	540	227	–	233
EBM161	830	540	227	–	233
EBM122	861	677	334	76	340
EBM182	1021	837	334	76	340
EBM242	1180	996	334	76	340
250A high load boards[1)]					
EBM22H	817	633	–	237	500
EBM62H	1020	836	–	296	559
EBM82H	1055	871	–	277	540
EBM122H	1180	996	–	296	559
EBM182H	1342	1158	–	298	561
EBM242H	1501	1317	–	298	561

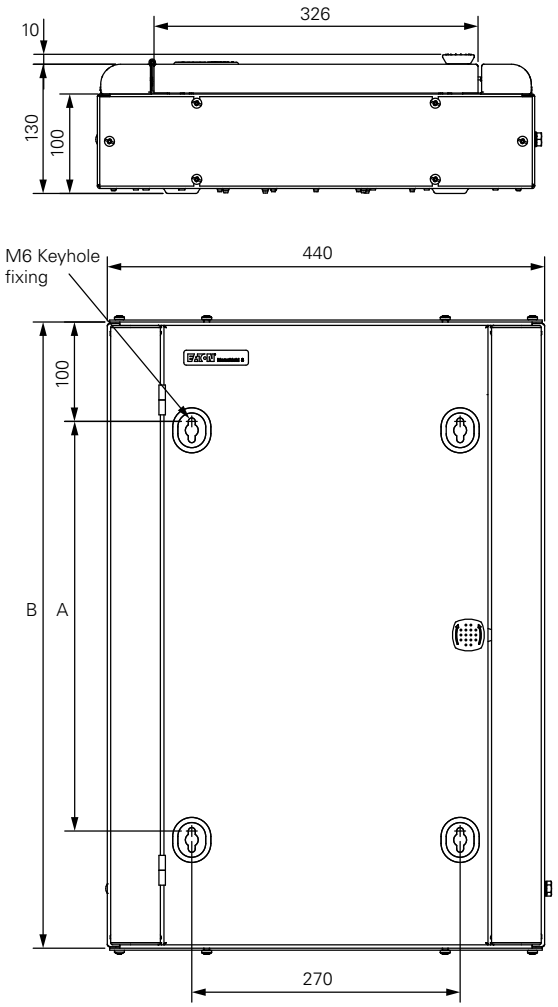
[1)] Cable box not required

Split metered power and lighting board – 200A TPN, dimensional drawing



List No.	A (mm)	B (mm)
EBMSL642MPMB	1130	946
EBMSL862MPMB	1236	1052
EBMSL1082MPMB	1342	1158
EBMSL14102MPMB	1501	1317

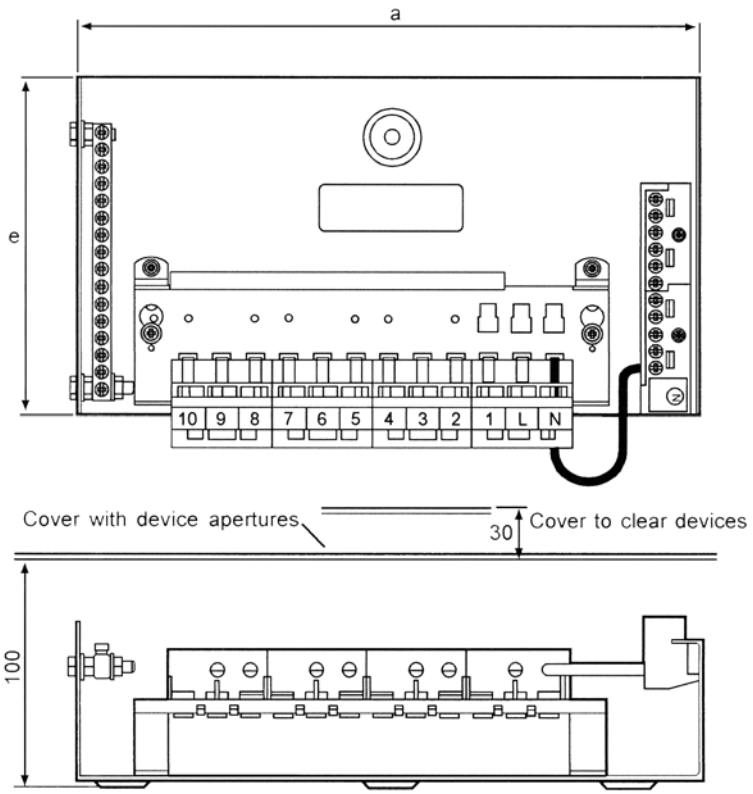
Memshield 3 type B AFDD TPN Distribution Board, dimensional drawing

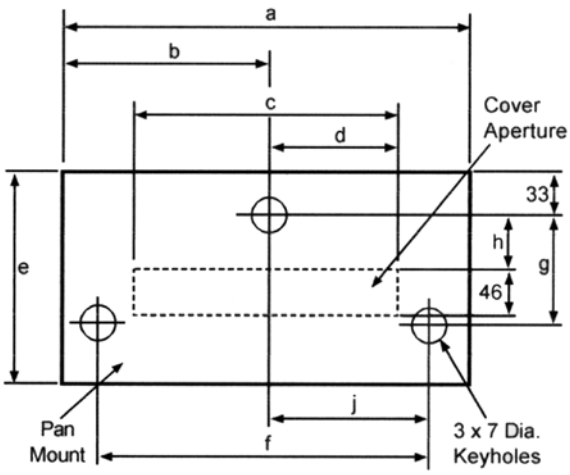


List No.	A (mm)	B (mm)
EBMAFDD141	412	630
EBMAFDD241	682	900
EBMAFDD361	1042	1260

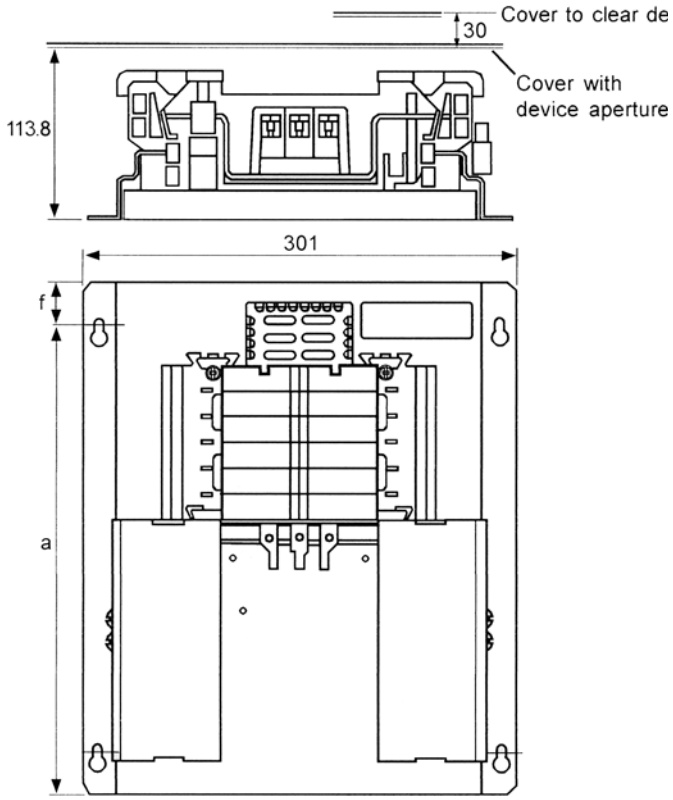
9.1 Technical data

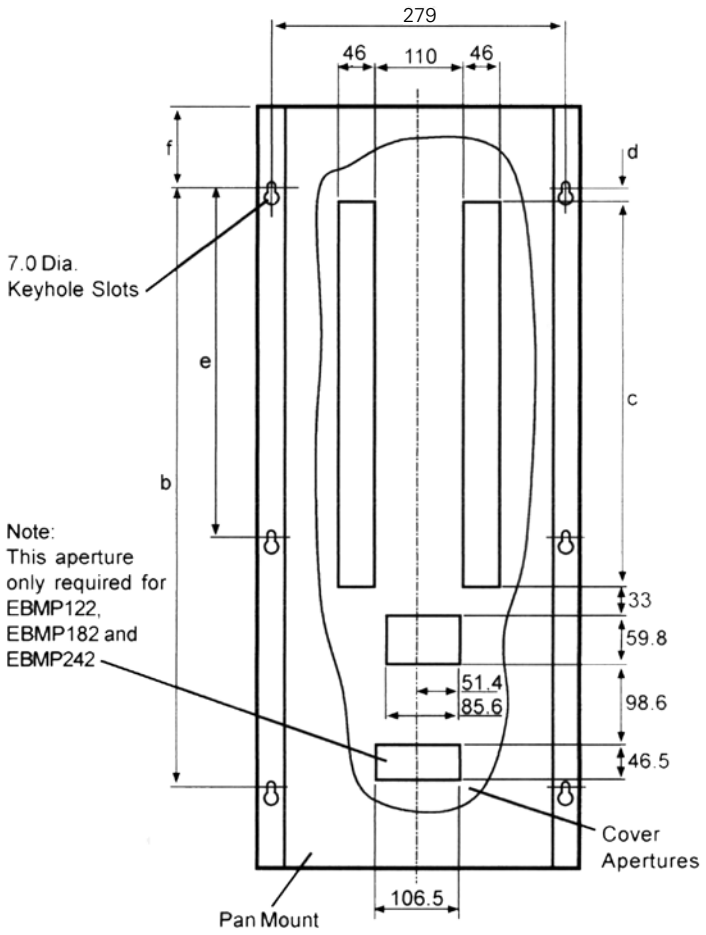
Memshield 3 type A SPN pan assemblies





List No.	Dimensions (mm)									Minimum recommended enclosure size (mm)
	a	b	c	d	e	f	g	h	j	
EAMP4	190	105.5	107.7	48.8	180	160	96	70	77	238 (W) x 254 (L)
EAMP7	274	129.5	160.9	79	180	214	96	70	107	292 (W) x 254 (L)
EAMP10	328	164	214.1	127.5	180	266	96	70	127.5	346 (W) x 254 (L)
EAMP13	382	183.5	267.3	131.3	192	319	109	82	161	440 (W) x 260 (L)
EAMP16	435	226.5	320.5	141.5	198	372	105	79	171	495 (W) x 260 (L)

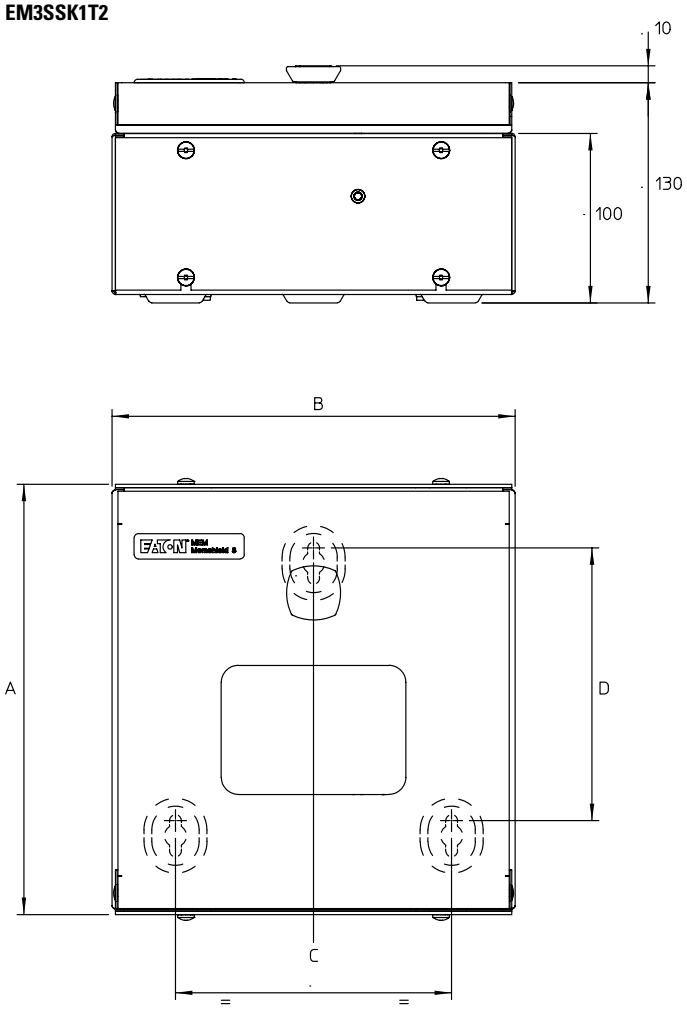




List No.	Dimensions (mm)						Minimum recommended enclosure size (mm)
	a	b	c	d	e	f	
EBMP41	333.6	303.3	107.5	35.7	–	21	440 (W) x 425 (L)
EBMP61	413.7	383.5	160.6	35.7	–	21	440 (W) x 478 (L)
EBMP81	511.5	481.2	213.7	53.2	–	21	440 (W) x 560 (L)
EBMP121	638.1	589.2	319.9	22.2	–	40	440 (W) x 720 (L)
EBMP122	750	710	319.9	16.7	336.5	40	440 (W) x 861 (L)
EBMP182	910	870	479.2	16.7	435	40	440 (W) x 1016 (L)
EBMP242	1070	1030	638.5	16.7	515	40	440 (W) x 1176 (L)

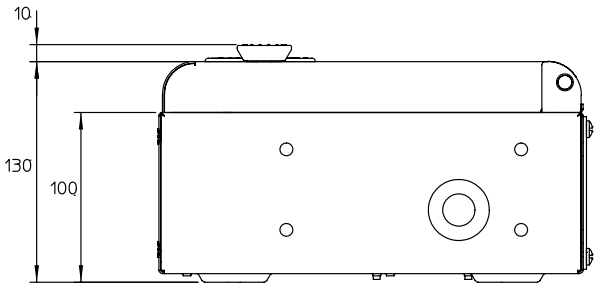
Memshield 3, surge protection devices, dimensional drawings

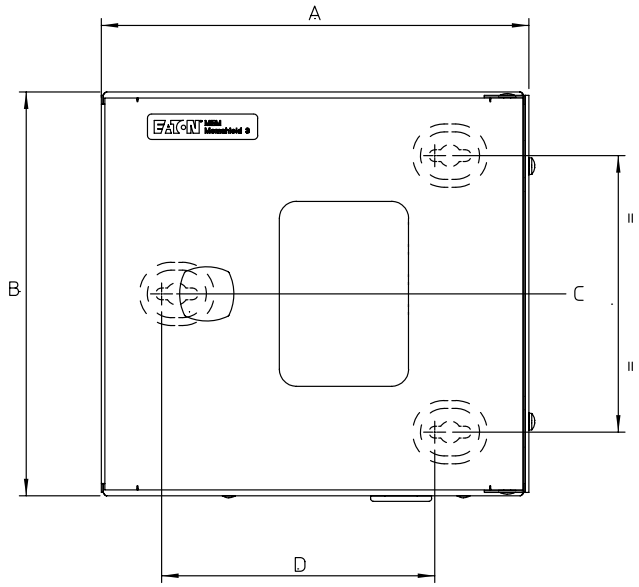
EM3SSK1T2



List No.	A (mm)	B (mm)	C (mm)	D (mm)
EM3SSK1T2	254	238	163	161

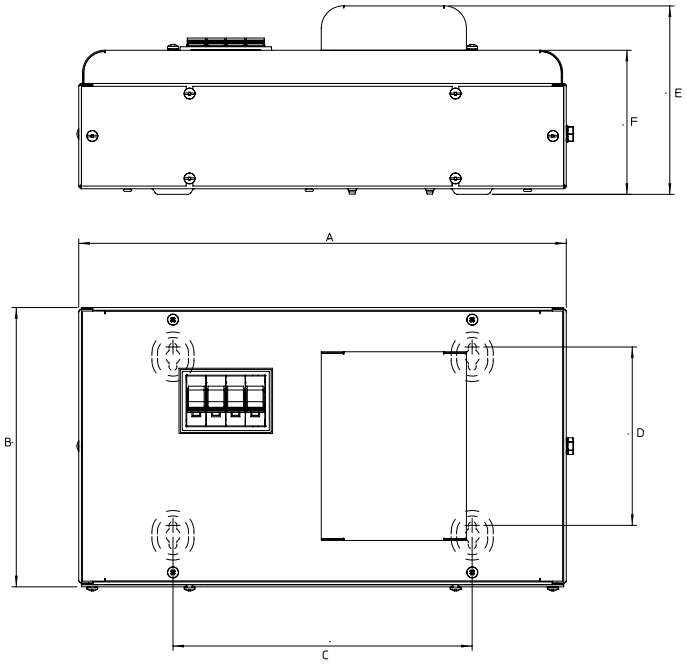
EM3SSKT2/EM3SSKT12





List No.	A (mm)	B (mm)	C (mm)	D (mm)
EM3SSK3T2	254	238	163	161
EM3SSK3T12	254	238	163	161

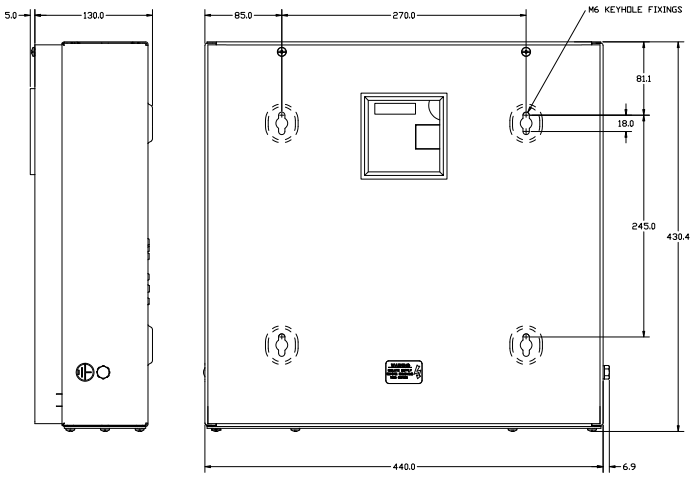
Memshield 3, contactor incomer, dimensional drawings



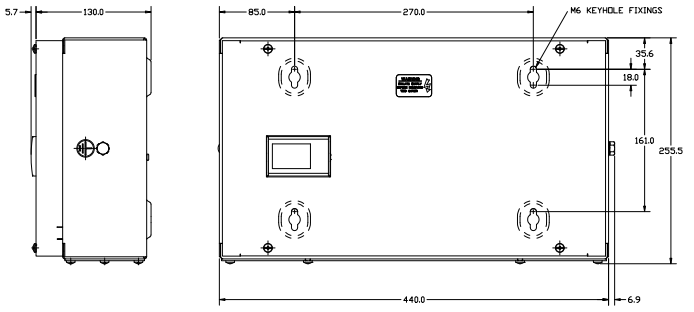
List No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
EBMCC1253	440	252	270	161	170	130
EBMCC2503	440	595	270	501	130	130

Memshield 3, Meter pack assemblies, dimensional drawings

EBMMPCD120

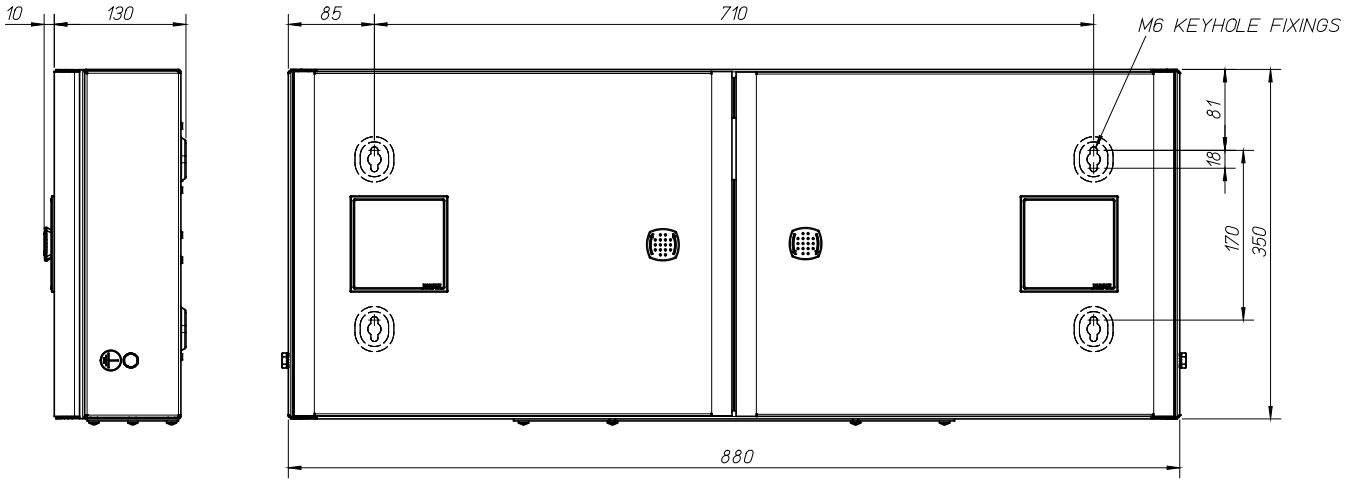


EBMMPCT250/EBMMPCT250M/EBMMPCT250MID

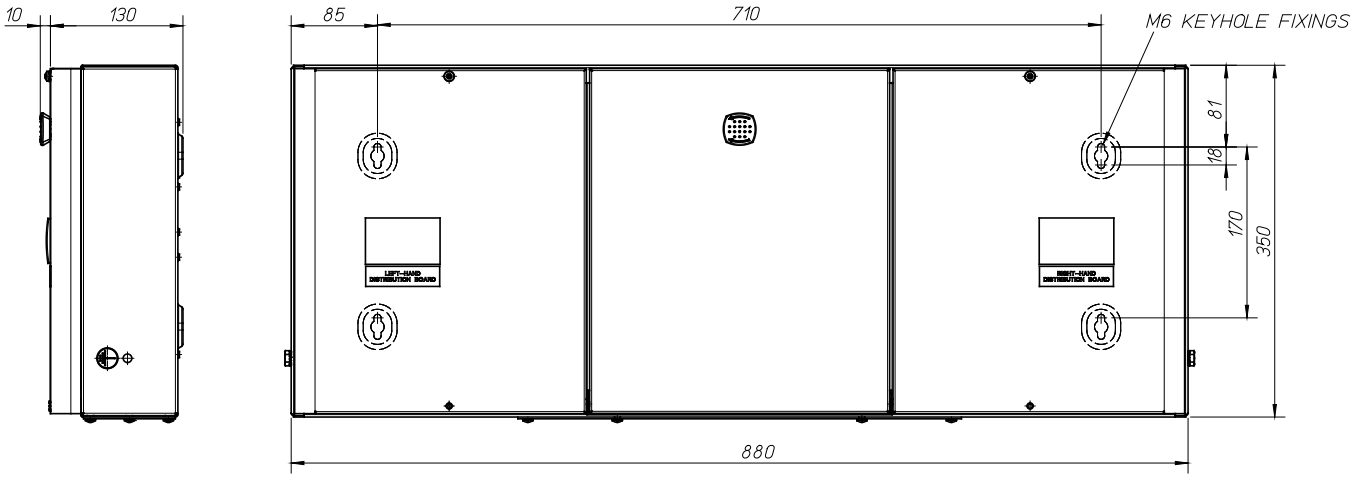


Memshield 3, Meter pack assemblies, dimensional drawings (contd)

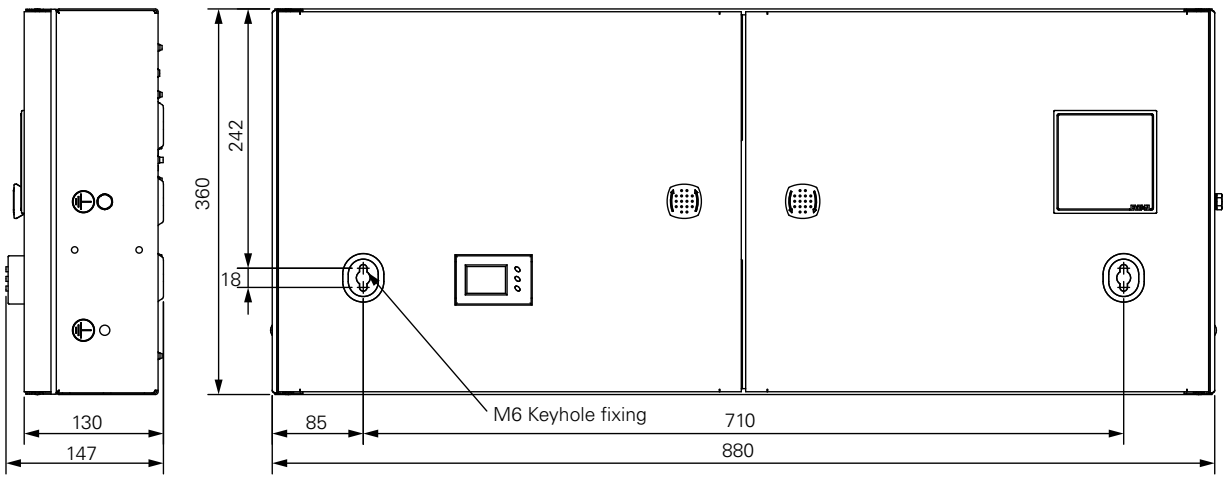
EBMMPSL250/EBMMPSL250M / EBMMPSL250MID



EBMMPSL125/EBMMPSL125M / EPMMPSL125MID



Memshield 3, Multi Meter pack assemblies, dimensional drawings EBMMPSL250DMID/EBMMPSL250QM



18mm miniature circuit breakers (MCBs), technical data

Eaton's range of 10/15kA high performance miniature circuit breakers (MCBs) are manufactured and tested to IEC EN 60898, and IEC EN 60947-2, meeting the latest UK, European and international standards, with ratings from 1A to 63A as standard.

DIN rail mountable and suitable for use with both pin and comb type busbar systems, Eaton's MCBs are suitable for use on 230/400 VAC systems and are calibrated for use at 40°C. These devices suite with the other modular devices including RCBOs, RCCBs and isolators, for use within Eaton Memshield 3 Distribution boards and a wide range of other applications.

The Eaton MCBs are fitted with box clamp terminals suitable for use with cables up to 25mm², and have a unique box clamp barrier to prevent incorrect cable insertion.

Eaton miniature circuit breakers are available with B, C and D characteristic curve as standard. Type C MCBs are most commonly used in commercial and general applications where there are lighting or motor loads involving high switching surges that may cause unwanted operation of type B devices. Type D devices are more commonly used on general industrial applications with much higher inrush surges.

IEC/EN 60898 Type	Instantaneous Trip Current (x In)	Typical Application	Eaton 10/15A MCB type
B	3 to 5	General distribution	EMBH
C	5 to 10	Commercial Light industrial	EMCH
D	10 to 20	General Industrial	EMDH

Type B: Suitable for general, domestic and commercial installations having little or no switching surges.

Type C: Suitable for general use in commercial or industrial applications where the greater use of fluorescent lighting and small motors can produce switching surges, which may cause nuisance tripping of type B breakers.

Type D: Suitable for general industrial applications where there are a lot of high inrush switching surges associated with equipment such as transformers, large motors , welding and X ray equipment.

Earth fault loop impedances (Zs) to provide compliance with BS 7671

The wiring regulations BS 7671 makes specific reference to MCB types and the maximum earth loop impedance allowable to meet the required disconnection times.

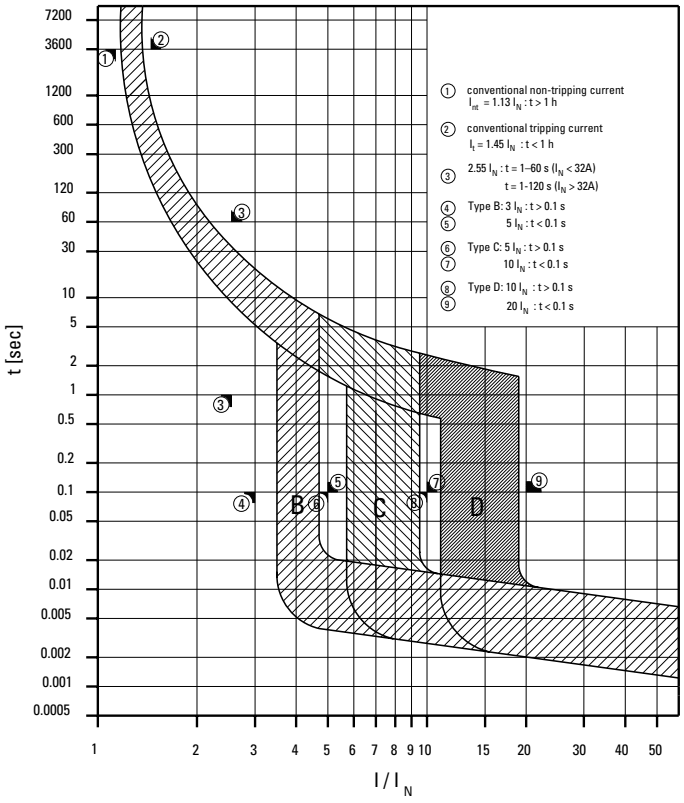
It can be seen that it is much easier to achieve adequate disconnection times with type B devices than it is with types C and indeed type D devices.

Maximum earth fault loop impedance i.e. Zs ohms for final circuits fed from miniature circuit breakers MCBs or RCBOs with Uo of 230V, for instantaneous operation giving compliance with 0.4s disconnection time of Reg 411.3.2.2 and 5s disconnection time of 411.3.2.3

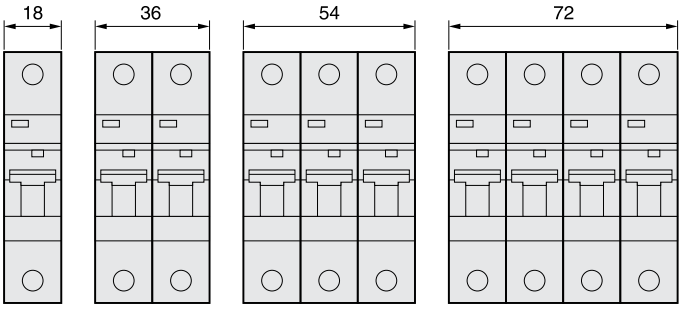
Note: A minimum Voltage factor Cmin = 0.95 has been introduced to take account of variations in supply voltage depending on time, place and transformer settings etc., in accordance with Electricity Safety, Quality and Continuity regulations 2002.

The effect of this is to reduce the previous BS7671 maximum earth loop impedance Zs values by 5%.

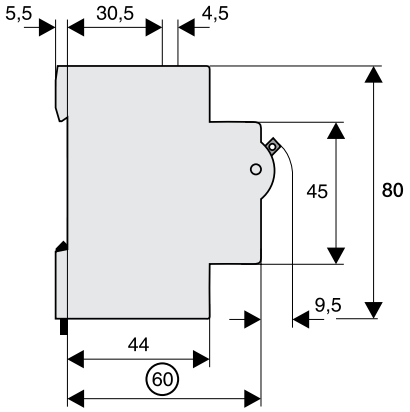
Tripping characteristic type B, C & D



10/15kA MCBs dimensional drawings



1-pole (1P) | 2-pole (2P), 1-pole+N (1P+N) | 3-pole (3P) | 4-pole (4P)



10/15kA MCBs technical data

Product standard	IEC EN 60898 & IEC EN 60947-2
No of poles	1p, 1p&N, 2p, 3p, 4p
Mechanical specification	
Device width (pole)	17.7mm
Terminal type	Box clamp
Terminal capacity	1–25mm2
Terminal Screw	M5 combination
Terminal torque	2.0Nm – 2.4Nm max
Mounting	DIN rail
Degree of protection	IP 20
Positive contact indication	Red/Green flag indicator
Electrical specification	
Rated voltage	230/240 V AC 48V DC (per pole)
Current ratings	1, 2, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63 A
Rated impulse and withstand voltage	4kV (1.2/50) u sec
Rated short circuit capacity	10kA to IEC EN 60898 and 15kA to IEC EN 60947-2
Selectivity class	3 to EN 60898
Tripping characteristic	
Instantaneous tripping current I mt	Type B: 3 In < Imt < 5 In Type C: 5 In < Imt < 10 In Type D: 10In < Imt < 20 In
Conventional non tripping current	I nt = 1.13 In
Conventional tripping current	It = 1.45 In
Ref/Calibration temp	40o C
Number of operating cycles elec	>4000
Number of operating cycles mech	>20000

MCB Max Zs (Ohms) figures (Data in line with BS7671)

Range	In (A)	Disconnection 0.4s	Disconnection 5s
Type B (EMBH Series)	1	43.70	43.70
	2	21.85	21.85
	4	10.93	10.93
	6	7.28	7.28
	8	5.46	5.46
	10	4.37	4.37
	13	3.36	3.36
	16	2.73	2.73
	20	2.19	2.19
	25	1.75	1.75
	32	1.37	1.37
	40	1.09	1.09
	50	0.87	0.87
	63	0.69	0.69
Type C (EMCH Series)	1	21.85	21.85
	2	10.93	10.93
	4	5.46	5.46
	6	3.64	3.64
	8	2.73	2.73
	10	2.19	2.19
	13	1.68	1.68
	16	1.37	1.37
	20	1.09	1.09
	25	0.87	0.87
	32	0.68	0.68
	40	0.55	0.55
	50	0.44	0.44
	63	0.35	0.35
Type D (EMDH Series)	1	10.93	21.85
	2	5.46	10.93
	4	2.73	5.46
	6	1.82	3.64
	8	1.37	2.73
	10	1.09	2.19
	13	0.84	1.68
	16	0.68	1.37
	20	0.55	1.09
	25	0.44	0.87
	32	0.34	0.68
	40	0.27	0.55
	50	0.22	0.44
	63	0.17	0.35

Note : Values take account of minimum voltage factor Cmin - in accordance with BS7671 Amendment 3

27mm style miniature circuit breakers (for 250A distribution boards)

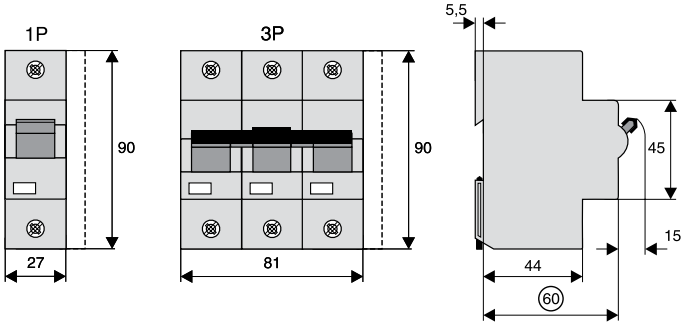
Eaton's 27mm style miniature circuit breakers (MCBs) are manufactured and tested to IEC EN 60947-2, meeting the latest UK, European and international standards, with ratings from 20A to 125A single and triple pole as standard.

Eaton's MCBs are suitable for use on 230/400 VAC systems and are calibrated for use at 40°C. and are available with B, C, and D characteristic curve, with breaking capacities up to 25kA.

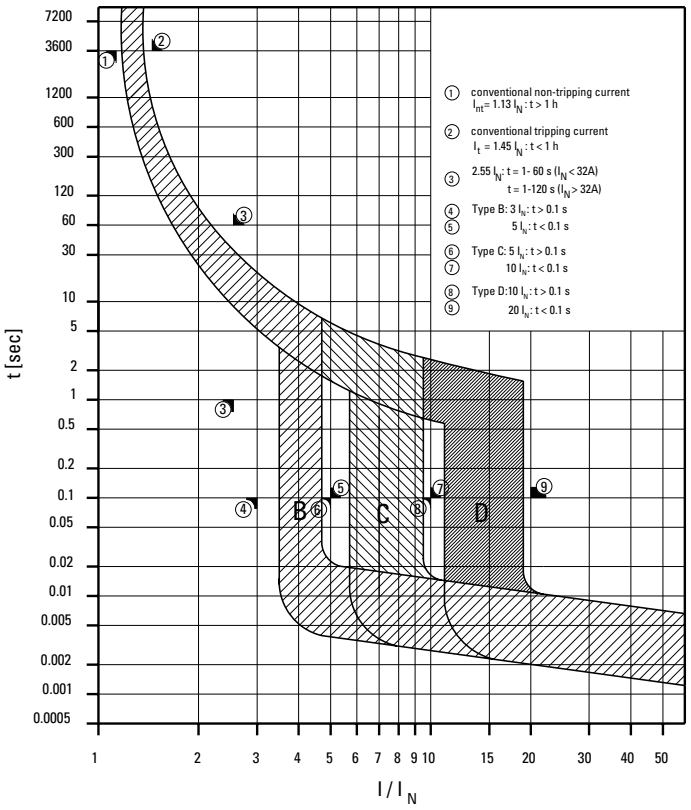
15/25kA MCBs technical data

Product standard	IEC EN 60947-2	
No of poles	1p, 3p	
Mechanical specification		
Device width (pole)	27mm	
Terminal type	Box clamp	
Terminal capacity	2.5 - 50 mm^2	
Terminal Screw	Combination head	
Terminal torque	2.0 - 3.4 Nm max	
Mounting	DIN rail	
Degree of protection	IP 20	
Positive contact indication	Red/Green flag indicator	
Electrical specification		
Rated voltage	230/400 V AC	
	60V DC (per pole)	
Current ratings	63, 80, 100, 125 A	
Rated impulse and withstand voltage	4kV (1.2/50) u sec	
Rated short circuit capacity		
Types B and C	20–63A	– 25kA
	80–100A	– 20kA
	125A	– 15kA
Rated short circuit capacity		
Type D	20–63A	– 25kA
	80A	– 20kA
	100A	– 15kA
Selectivity class	In accordance with class C	
Tripping characteristic		
Instantaneous Tripping current I mt	Type B: 3 In < Imt < 5 In Type C: 5 In < Imt < 10 In Type D: 10In < Imt < 20 In	
Conventional non tripping current	I nt = 1.13 In	
Conventional tripping current	It = 1.45 In	
Ref/Calibration temp	40o C	
Number of operating cycles elec	>20000	

Miniature circuit breakers – dimensional drawings



Tripping characteristic type B, C & D



Eaton Memshield-3 MCB Max Zs (Ohms) Data in line with BS7671

Range	In (A)	Disconnection 0.4s	Disconnection 5s
Type B (EMBS Series)	20	2.19	2.19
	32	1.37	1.37
	40	1.09	1.09
	50	0.87	0.87
	63	0.69	0.69
	80	0.55	0.55
	100	0.44	0.44
	125	0.35	0.35
Type C (EMCS Series)	20	1.09	1.09
	32	0.68	0.68
	40	0.55	0.55
	50	0.44	0.44
	63	0.35	0.35
	80	0.27	0.27
	100	0.22	0.22
	125	0.17	0.17
Type D (EMDS Series)	20	0.55	1.09
	32	0.34	0.68
	40	0.27	0.55
	50	0.22	0.44
	63	0.17	0.35
	80	0.14	0.27
	100	0.11	0.22

Note : Values take account of minimum voltage factor Cmin - in accordance with BS7671 Amendment 3

9.1 Technical data

Residual current circuit breakers (RCCBs)

Residual current circuit breakers (RCCBs) technical data

Eaton's range of residual current circuit breakers without integral Overload protection (RCCBs), are manufactured to IEC EN/61008 and meet the latest European and International standards.

DIN rail mountable in 2 and 4 module widths these RCCBs provide protection solutions to a wide range of applications. With standard thermal ratings of 16A to 100A and trip sensitivities of 10mA, 30mA, 100mA and 300mA, these devices can be equipped with a range of modular accessories.

The Eaton RCCBs suite with the complete range of modular devices, and are for use within Eaton's Memshield 3 distribution boards and other applications.

These devices will accommodate cables up to 35mm^2.

Terminology

RCD – Residual current device:- This is the generic term covering a range of devices that are able to detect residual currents sometimes also referred to as earth leakage current. The residual current is measured by detecting the difference between the current flowing in the live and neutral conductors of a circuit and where the residual current is above a predefined level the RCD will trip. RCDs are available in a range of trip sensitivities for different applications.

RCCB – Residual current circuit breaker is an RCD which will cause disconnection of the electrical supply should it detect a residual current passing through the device, above a specified tripping current limit e.g. 30mA. This device does not provide over current protection and is therefore also referred to as an RCCB without integral over-current protection.

RCBO – Residual current circuit breaker, with overload protection, is an RCCB which will cause disconnection of the electrical supply should it detect a residual current above a specified tripping current limit, combined with integral overload, over-current, and shortcircuit protection associated with a miniature circuit breaker.

The 17th Edition of the IEE wiring regulations BS7671 has placed much greater emphasis on the use of 30mA RCDs to provide "additional protection" in many areas covered by the regulations, such as circuits feeding socket outlets and for the protection of concealed wiring.

Trip sensitivities

10mA – Provides the highest degree of RCD protection in hazardous environments where supplementary protection against electric shock is required. This very high sensitivity should only be applied to final circuits where a high degree of risk exists.

30mA – Provides a high degree of protection against electric shock due to direct and indirect contact. A 30mA RCD will trip within 40mS when a fault current of 150mA is detected.

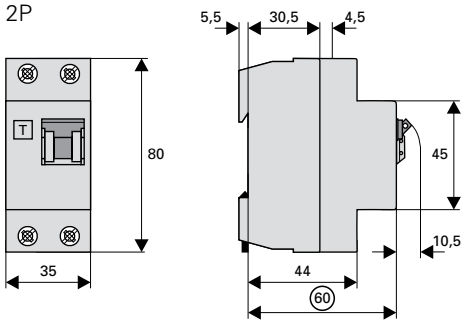
This type of RCD is required to satisfy the requirements for "additional protection" in accordance with BS7671 (IEE wiring regs.)

100mA – Provides a degree of protection against electric shock resulting from indirect contact, and is generally used to protect a group of circuits as well as providing overall protection against Fire risk.

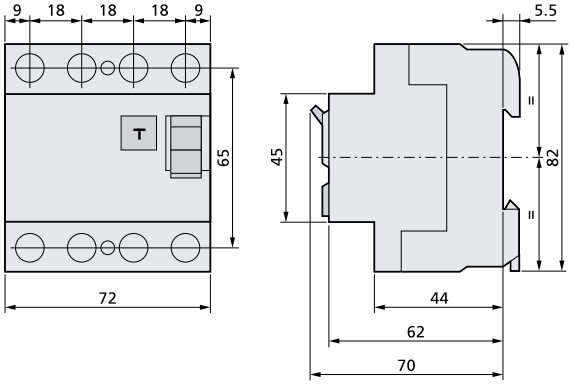
300mA – Provides a lower level of RCD protection in the form of an overall protection against the risk of fire resulting from faults in electrical wiring etc.

RCCB dimensions (mm)

2P



4P



RCCB technical data

Specifications	2-pole RCCB	4-pole RCCB
Product standard	IEC EN 61008	IEC EN 61008
No of poles	2p	4p
Mechanical specification		
Device width	35 mm	70 mm
Terminal type	Box clamp	Box clamp
Terminal capacity	1.5–35mm^2	35mm^2
Terminal Screw	M5 combination	M5 combination
Terminal torque	2.4Nm max	2.4Nm max
Mounting	DIN rail	DIN rail
Degree of protection	IP 20	IP 20
Positive contact indication	Yes (toggle position)	Red/green flag
Electrical specification		
Rated voltage	230/400 V AC	230/400 V AC
Current ratings	16, 40, 63, 80,100 A	16, 40, 63, 80,100 A
Rated impulse and withstand voltage	4kV (1.2/50) u sec	4kV (1.2/50) u sec
Rated short circuit capacity	10kA (with back up)	10kA (with back up)
Sensitivity	AC	AC
Tripping characteristic		
Rated tripping currents	10, 30, 100, 300 mA	10, 30, 100, 300 mA
Tripping type	Instantaneous	Instantaneous
Number of operating cycles elec	>4000	>4000
Number of operating cycles mech	>20000	>20000

Residual current circuit breakers – with overload protection (RCBOs) technical data

Eaton's range of residual current circuit breakers with integral overload protection (RCBOs), are manufactured to IEC EN 61009 and meet the latest European and International standards.

Trip Sensitivity

Provides a high degree of protection against electric shock due to direct contact. A 30mA RCD will trip within 40mS when a fault current of 150mA is detected.

This type of RCD is required to satisfy the requirements for "additional protection" in accordance with BS7671 (IET wiring regs.)

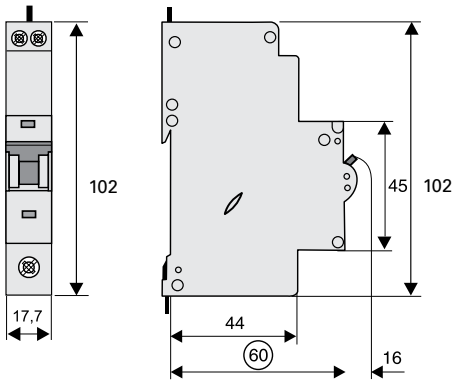
Single phase RCBO technical data

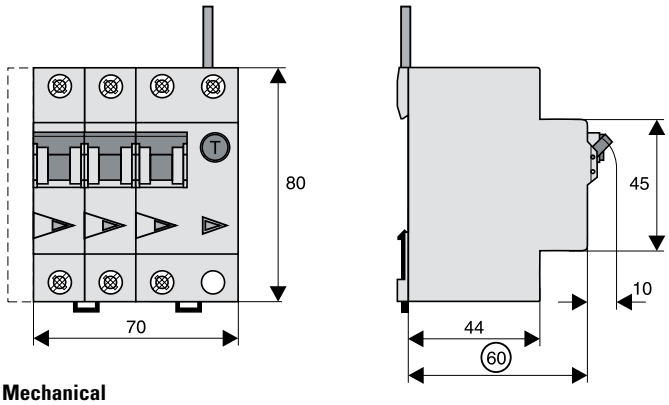
Specifications		
Product standard	IEC EN 61009	
No of poles	1p & solid N	
Mechanical specification		
Device width	17.7 mm	
Terminal type	Lower-Box clamp	Upper-Box clamp
Terminal capacity	1–25mm2	2-16mm2
Terminal Screw	M5 combination	M4 combination
Terminal torque	2.4Nm max	1.5Nm max
Mounting	DIN rail	
Degree of protection	IP 20	
Positive contact indication	Yes (Red/Green flag)	
Electrical specification		
Rated voltage	230/240 V AC	
Current ratings	6, 10, 16, 20, 25, 32, 40, 45A	
Rated impulse and withstand voltage	4kV (1.2/50) u sec	
Rated short circuit capacity	10kA	
Sensitivity	Type A	
Tripping characteristic		
Instantaneous Tripping current I mt	Type B: 3 In < Imt < 5 In Type C: 5 In < Imt < 10 In	
Conventional non tripping current	I nt = 1.13 In	
Conventional tripping current	It = 1.45 In	
Ref/Calibration temp	40o C	
Rated tripping currents	10, 30, 100mA	
Tripping type	Instantaneous	
Number of operating cycles elec	>400	
Number of operating cycles mech	>20000	

Three phase RCBO technical data

Electrical	
Design according to	IEC/EN 61009
Tripping	
line voltage-independent	instantaneous 250A (8/20µs)
	surge current-proof
Rated voltage U_e	240/415V; 50Hz
Rated tripping current $I\square_n$	0, 100, 300 mA
Rated non-tripping current $I\Delta_{no}$	0.5 $I\Delta_n$
Sensitivity	Type A (AC and pulsating DC)
Selectivity class	3
Rated breaking capacity	10 kA
Rated current	6 - 32 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Characteristic	B, C, D
Maximum back-up fuse (short circuit)	100 A gL (>10 kA)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

RCBOs dimensions (mm)





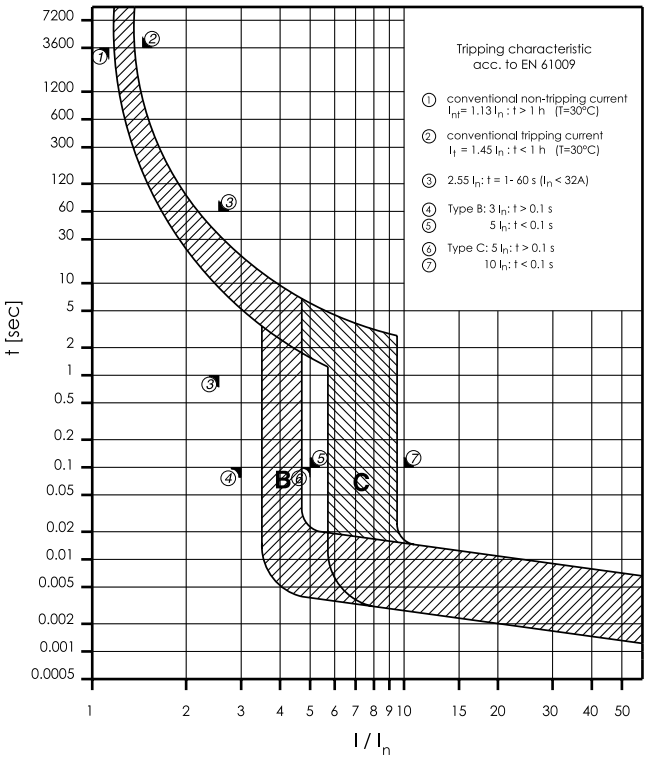
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	70 mm
Upper and lower terminals	open mouthed/lift terminals
Terminal capacity	1 - 25 mm2
Degree of protection	IP20
Operating temperature	-25°C to +40°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Electric Fire Protective Device,
Arc Fault Protection AFDD+, 2-pole

Detects and quenches arc faults in final circuits

- Fully combined with residual current circuit breaker (RCCB) and miniature circuit breaker (MCB)
- Safely detects arcs in cable length up to 70 meter
- Variable installation of N either left or right
- Rated currents from 10 to 40 A
- Tripped indication: MCB, RCCB or AFDD
- LED indication for arc faults
- Permanent self-monitoring
- Overvoltage and overheat monitoring
- 3-position DIN rail clip, permits removal from existing busbar system
- 30 mA rated residual currents
- Tripping characteristics B, C
- Rated breaking capacity up to 10 kA

Tripping Characteristic AFDD+, Characteristics B and C



Technical Data

Electrical

Design according to	IEC/EN 62606, IEC/EN 61009
Current test marks as printed onto the device	
Tripping	
Line-voltage-independent (8/20µs)	instantaneous 250A
	surge-current-proof
Rated voltage U_e	240 V AC; 50 Hz
Operational voltage range	170-264 V
Rated tripping current $I_{\Delta n}$	30 mA
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity	AC and pulsating DC
Selectivity class	3
Rated breaking capacity	
AFDD 10-25A	10 kA
AFDD 32-40A	6 kA
Rated current	10 - 40 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Rated fault breaking capacity $I_{\Delta m}$	
EN 61009	3 kA
IEC 61009	10-16 A: 3 kA
	20-40 A: 500 A

Arc fault tripping times after load current (acc. to IEC/EN62606):

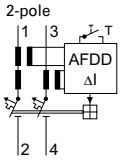
Arc current (A)	Tripping time (s)
2.5	<1
5	<0.5
10	<0.25
16	<0.15
32	<0.12
40	<0.12

Characteristic		B, C
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
Endurance	electrical comp.	≥ 4,000 switching operations
	mechanical comp.	≥ 20,000 switching operations

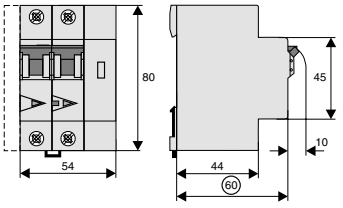
Mechanical

Frame size	45 mm
Device height	80 mm
Device width	54 mm (3MU)
Mounting	3-position DIN rail clip, permits removal from existing busbar system
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1 - 25 mm²
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Connection diagram



Dimensions (mm)



Analogue time switches

	TSSD1CO	TSSD1NO	TSQW1CO	TSQD1CO	TSQD1NO
General					
Operating voltage	230V AC	230 V AC	110 - 230 V AC	110 - 230 V AC	230 - 240 V AC
Frequency	50 Hz	50 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Stand-by power	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W
Time control	Net	Net	Quartz	Quartz	Quartz
Accuracy	acc. Net	acc. Net	± 1 sec. / day	± 1 sec. / day	± 1 sec. / day
Power reserve	-	-	200 hrs / 100 hrs at 110 V	200 hrs/ 100 hrs at 110 V	±3 days
Battery type	-	-	NiMH	NiMH	NiMH
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20	IP20
Ambient temperature	-20 ˚C...+55 ˚C	-20 ˚C...+50 ˚C	-20 ˚C...+55 ˚C	-20 ˚C...+55 ˚C	-10 ˚C...+50 ˚C
Protection class (EN 60730-1)	II	II	II	II	II
Switching contact(s)					
Type of switching contact	1 x CO	1 x NO	1 x CO	1 x CO	1 x NO
Switching capacity at 250 V~, cos = 1	16 A	16 A	16 A	16 A	16 A
Switching capacity at 250 V~, cos = 0,6	4A	4 A	4 A	4 A	4 A
Programming features					
Period of program	Day	Day	Week	Day	Day
Number of channels	1	1	1	1	1
Minimum cycle time	15 min.	15 min.	2 hrs	15 min.	15 min.
Programmable	every 15 min.	every 15 min.	every 2 hrs	every15 min.	every 15 min.
Program steps	96	96	84	96	96
Manual / Hand / Permanent switching [1])	On, Off, Auto	On, Off, Auto	On, Off, Auto	On, Off, Auto	On, Off, Auto
Switching status indication	x	x	x	x	x
Dimensions and weight					
Number of module width	3	1	3	3	1
Dimensions Width	52.5 mm	17.5 mm	52.5 mm	52.5 mm	17.5 mm
Height	90 mm	90 mm	90 mm	90 mm	90 mm
Depth	65.5 mm	65.5 mm	65.5 mm	65.5 mm	65.5 mm
Mounting	DIN-rail	DIN-rail	DIN-rail	DIN-rail	DIN-rail
Terminals					
Terminal screw size	M3.5	M3.5	M3.5	M3.5	M3.5

[1]) **Remark**

ON = Permanent ON

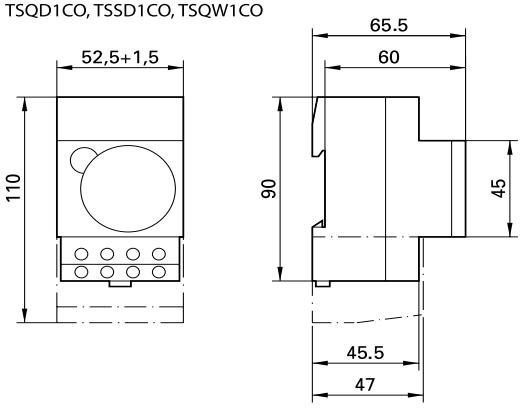
OFF = Permanant OFF

Hands = ON or OFF. valid until next program cycle overrules

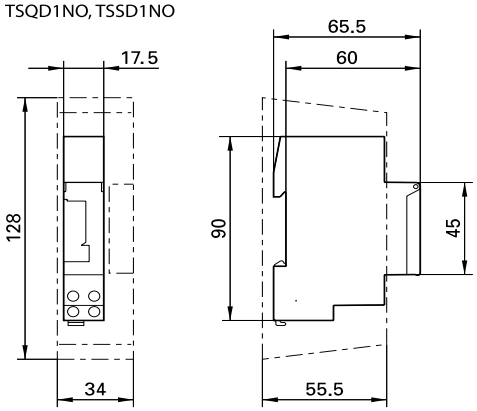
Auto = According program

Analogue daily and weekly timers, dimensional drawings

TSQD1CO, TSSD1CO, TSQW1CO

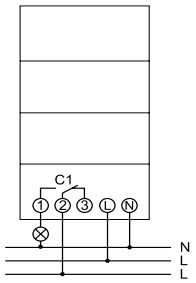


TSQD1NO, TSSD1NO

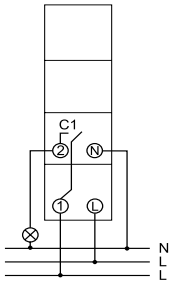


Analogue daily and weekly time switches, wiring diagrams

TSQD1CO, TSSD1CO, TSQW1CO



TSQD1NO, TSSD1NO



Digital timers - week programme

		TSDW1CO	TSDW1COMIN	TSDW2CO	TSDW1COA	TSDW1CODG
General						
Nominal operating voltage		220 - 240 V AC	240 V AC	220 - 240 V AC	230 - 240 V AC	230 - 240 V AC
Frequency		50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Stand-by power		0,8 W	0,4 W	0,8 W	0,8 W	1,4 W
Time base control [1])		Quartz	Quartz	Quartz	Astro	Quartz or DCF / GPS
Accuracy		± 0,5 sec. / day	±0,5 sec. / day	± 0,5 sec. / day	± 0,5 sec. / day	± 0,5 sec. / day
Power reserve		10 year	10 year	10 year	10 year	10 year
Type of battery		Lithium	Lithium (exchangeable)	Lithium	Lithium	Lithium
Protection class (acc. EN 60529)		IP20	IP20	IP20	IP20	IP20
Permissible ambient temperature		-30 ˚C...+55 ˚C	-25 ˚C...+55 ˚C	-30 ˚C...+55 ˚C	-30 ˚C...+55 ˚C	-30 ˚C...+55 ˚C
Protection class at proper installation (acc. EN 60730-1)		II	II	II	II	II
Switching contact(s)						
Type of switching contact		1 x CO	1 x CO	2 x CO	1 x CO	1 x CO
Switching capacity at 250 V~, cosϕ = 1		16 A	16 A	16 A	16 A	16 A
Switching capacity bij 250 V~, cosϕ = 0,6		10 A	6 A	10 A	10 A	10 A
Switching capacity for lighting						
- Incandescent lamp		2600 W	1000 W	2600 W	2600 W	2600 W
- Halogen lamp		2600 W	1000 W	2600 W	2600 W	2600 W
Programming features						
Period of programme		Week	Week	Week	Week	Week
Number of channels		1	1	2	1	1
Minimum switching capacity		10 mA	-	10 mA	10 mA	-
Minimum cycle time		1 min.	1 min.	1 min.	1 min.	1 sec.
Maximum programming steps in memory		56	56	56	56	84
Summer / wintertime automatic (or manual on/off)		Yes	Yes	Yes	Yes	Yes
Random programme		No	No	No	No	Yes (2)
Holiday programme		Yes	Yes	Yes	Yes	Yes
Cycle programme		No	No	No	No	Yes
Astro function		No	No	No	Yes	No
Pulse switching		No	No	No	No	Yes
Manual switching [2])		On, Off, Auto	On, Off, Auto	On, Off, Auto	On, Off, Auto	On, Off, Auto
LCD backlighting		Yes	-	Yes	Yes	Yes
PIN code		Yes	Yes	Yes	Yes	Yes
Dimensions and weight						
Number of module width		2	1	2	2	2
Dimensions	Width	35.8 mm	17.5 mm	35.8 mm	35.8 mm	35.8 mm
	Height	90.1 mm	90 mm	90.1 mm	90.1 mm	90.1 mm
	Depth	69.2 mm	65.5 mm	69.2 mm	69.2 mm	69.2 mm
Mounting		DIN-rail	DIN-rail	DIN-rail	DIN-rail	DIN-rail
Terminals						
Terminal type		Spring	Screw	Spring	Spring	Spring

1) Remark:

Astro function: Automatic calculation of sunrise and sunset times

DCF / GPS: Time synchronization is possible by connecting external antenna (TSADCF of TSAGPSKIT).

[2]) Remark:

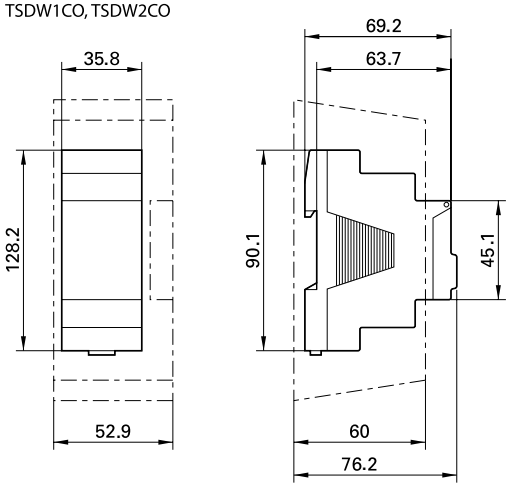
ON = Permanent ON

OFF = Permanent OFF

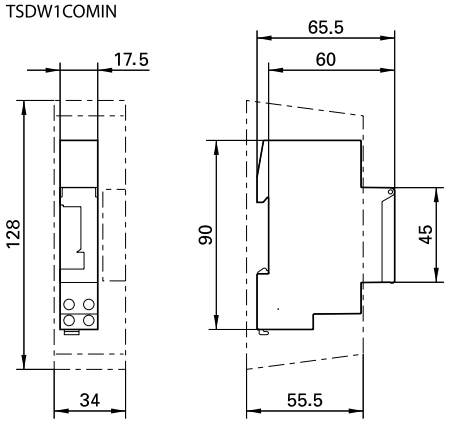
Auto = According Programme

Digital weekly time switches, dimensional drawings

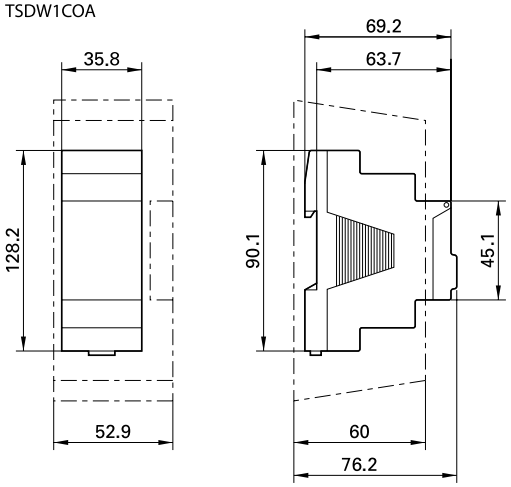
TSDW1CO, TSDW2CO



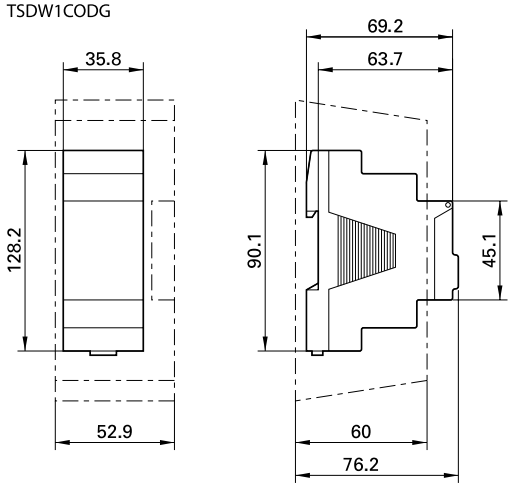
TSDW1COMIN



TSDW1COA

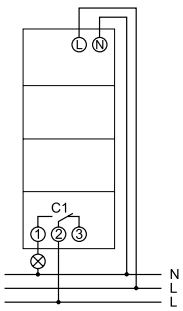


TSDW1CODG

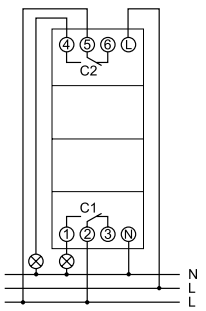


Digital weekly timers, wiring diagrams

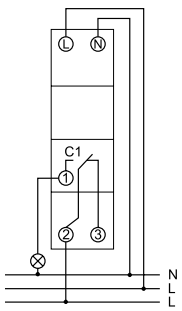
TSDW1CO



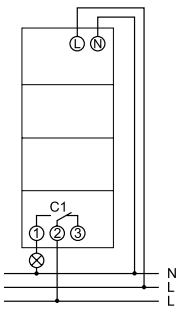
TSDW2CO



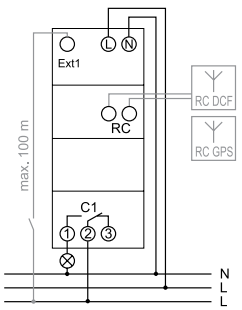
TSDW1COMIN



TSDW1COA



TSDW1CODG

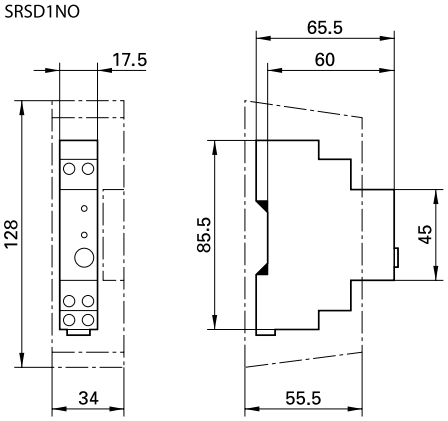


Twilight switches and combination with timer

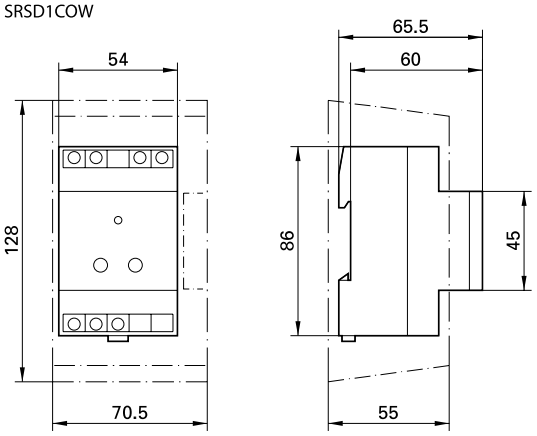
		SRSD1NO	SRSD1COW	SRCD1CO	SRSW1NO
General					
Nominal operating voltage		220 - 240 V AC	220 - 240 V AC	220 - 240 V AC	220 - 230 V AC
Frequency		50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Stand-by power		0,8 W	1,1 W	1,3 W	0,6 W
Photosensitivity		2 - 100 lux	2 - 2000 lux	2 - 2.000 lux	2 - 2.000 lux
Maximum cable length for sensor		25 mtr.	100 mtr.	100 mtr.	-
Maximum cable length for sensor		-25 ˚C...+50 ˚C	-30 ˚C...+55 ˚C	-30 ˚C...+55 ˚C	-35 ˚C...+55 ˚C
Protection class at proper installation - modular device		II	II	II	II
Switching contact(s)					
Type of switching contact		1 x NO	1 x CO	1 x CO	1 x NO
Contact type		Floating	Floating	Floating (not for SELV)	Floating 230 V
Switching capacity at 250 V~,	cos = 1	16 A	16 A	16 A	16 A
Switching capacity at 250 V~,	cos = 0,3	-	-	10 A	10 A
Maximum lamp load:					
- Incandescent lamp		2300 W	2300 W	2600 W	2300 W
- Energy saving lamp		9 x 7 W, 7 x 11 W,	9 x 7 W, 7 x 11 W,	22 x 7 W, 18 x 11 W,	9 x 7 W, 7 x 11 W,
		7x 15 W, 7 x 20W,	7x 15 W, 7 x 20W	16 x 15 W, 16 x 20 W,	7 x 15 W, 7 x 20 W,
		7 x 23 W	7 x 23 W	14 x 23 W	7 x 23 W
- Fluorescent lamp load - single fitting		2300 VA	2300 VA	2300 VA	2300VA
uncompensated (inductive)					
Switching delay off		20 sec.	0 - 20 min.	0 - 59 min.	2 - 100 sec.
Switching status indication (not delayed)		Yes	Yes	-	Yes
Programming features					
Period of programme		-	-	Week	-
Number of channels		-	-	1	-
Programming using software and memory		-	-	Yes	-
Summer / wintertime automatic (or manual on/off)		-	-	Yes	-
Random programme		-	-	No	-
Holiday programme		-	-	Yes	-
Cycle programme		-	-	No	-
LCD backlighting		-	-	Yes	-
Dimensions and weight					
Number of module width		1	2	3	-
Dimensions Width		17.5 mm	54 mm	72 mm	85 mm
Height		85.5 mm	86 mm	86 mm	118.4 mm
Depth		65.5 mm	65.5 mm	65.5 mm	49.4 mm
Terminals					
Terminal type		Screw	Spring	Spring (duo fix)	-

Twilight switches and combinations with timer, dimensional drawings

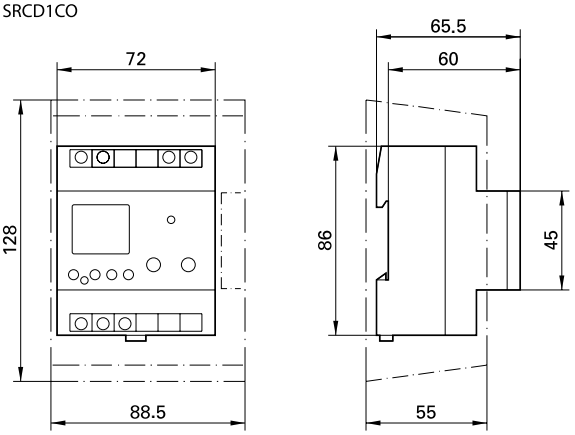
SRSD1NO



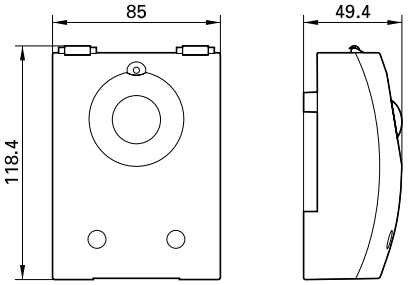
SRSD1COW



SRCD1CO

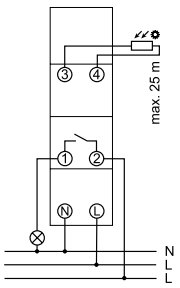


SRSW1NO

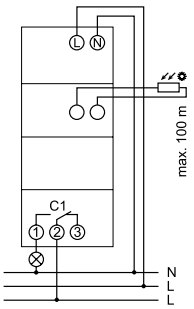


Twilight switches and combinations with timer, wiring diagrams

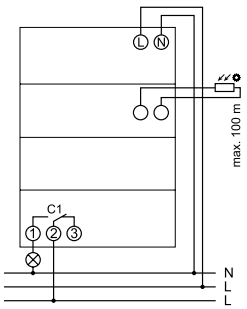
SRSD1NO



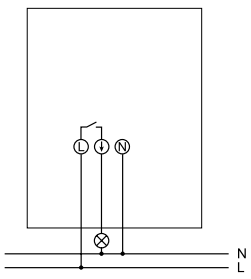
SRSD1COW



SRCD1CO



SRSW1NO



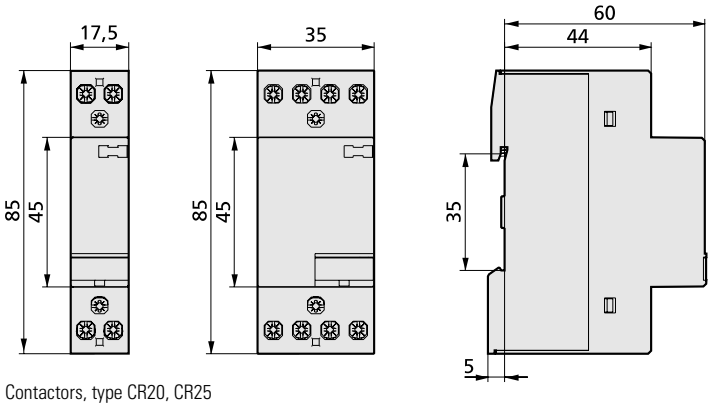
Contactors type CR

Products	Contactors				Aux. contact
Rating	20 A	25 A	40 A	63 A	6A
General					
Standards	IEC 60947-4-1, IEC 61095				IEC 60947-5-1
Nominal operating voltage 1-phase Ue 1-ph.	230 V	230 V	230 V	230 V	230 V
Nominal operating voltage 3-phase Ue 3-ph.	400 V	400 V	400 V	-	-
Overvoltage protection on coil	430 V (*5)	430 V (*5)	430 V	430 V	
Mechanical endurance (switching cycles)	3.000.000	3.000.000	3.000.000	3.000.000	3.000.000
Protection class (acc. DIN 40 050, IEC 529)	IP20	IP20	IP20	IP20	IP20
Permissible ambient temperature	-5…+55 °C	-5…+55 °C	-5…+55 °C	-5…+40 °C	-5…+55 °C
Storage temperature	-30…+80 °C	-30…+80 °C	-30…+80 °C	-30..+80 °C	-30…+80 °C
Contact rating					
Rated insulation voltage Ui	440 V	440 V	500 V	500 V	500 V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz'	50/60 Hz
Rated impulse withstand voltage Uimp	4 kV	4 kV	4 kV	4 kV	4 kV
Rated thermal current Ith	20 A	25 A	40 A	63 A	6 A
AC1/AC7a Rated operational current Ie	20 A	25 A	40 A	63 A	–
AC1/AC7a Operational power rating at Ue = 230 Vac Pmax	4 kW	9 kW	16 kW	24 kW	–
AC1/AC7a Operational power rating at Ue = 400 Vac Pmax	16 kW	26 kW	40 kW	–	–
AC3/AC7b Operational power rating at Ue = 230 Vac Pmax	1,3 kW (*1)	2,2 kW	5,5 kW	8,5 kW	–
AC3/AC7b Operational power rating at Ue = 400 Vac Pmax	4 kW	11 kW	15 kW	-	–
DC1 Rated thermal current at Ue = 24 Vdc Ie	20 A	25 A	40 A	63 A	–
DC1 Rated thermal current at Ue = 110 Vdc Ie	1A	2A	4A	4A	–
DC1 Rated thermal current at Ue = 220 Vdc Ie	0,5 A	0,5 A	0,8 A	0,8 A	–
DC1 Rated thermal current at Ue = 24 Vdc (2-poles in series) Ie	20 A	25 A	40 A	63 A	–
DC1 Rated thermal current at Ue = 110 Vdc (2-poles in series) Ie	3 A	4 A	10 A	10 A	–
DC1 Rated thermal current at Ue = 220 Vdc (2-poles in series) Ie	1,5 A	1,5 A	6 A	6 A	–
DC1 Rated thermal current at Ue = 24 Vdc (3-poles in series)	–	25 A	40 A	63 A	–
DC1 Rated thermal current at Ue =110 Vdc (3-poles in series)	–	6:00 AM	30 A	35 A	–
DC1 Rated thermal current at Ue = 220 Vdc (3-poles in series)	–	2,5 A	20 A	30 A	–
Electrical endurance					
Maximum operating cycles at AC1/AC7a application	200.000 x	200.000 x	100.000 x	100.000 x	–
Maximum operating cycles at AC3/AC7b application	300.000 x	500.000 x	150.000 x	150.000 x	–
Maximum operating cycles at AC5a application	100.000 x	100.000 x	100.000 x	100.000 x	–
Maximum operating cycles at AC5b application	100.000 x (*2)	100.000 x (*2)	100.000 x (*3)	100.000 x (*4)	–
Maximum operating cycles per hour	600 x	600 x	600 x	600 x	600 x
Power dissipation per contact at In	1,7 W	2,2 W	4 W	8 W	–
Maximum back-up fuse	25 A gL	35 A gL	63 A gL	80 A gL	–
Rating	20 A	25 A	40 A	63 A	6 A
Operating coil (for combined ac/dc types only – CR…)					
Coil inrush power (for all voltage ratings)	2,5 W	3 W	5 W	5 W	–
Coil consumption (for all voltage ratings)	2,5 W	3 W	5 W	5 W	–
Closing delay	15-25 ms	15-30 ms	15-20 ms	15-20 ms	–
Opening delay	35-45 ms	50-80 ms	35-45 ms	35-45 ms	–
Operating coil (for ac types only – CR…A)					
Coil inrush power (for all voltage ratings)	13 W/15 VA	17 W/27 VA			–
Coil consumption (for all voltage ratings)	2 W/5 VA	1 W/2.7 VA	–	–	–
Closing delay	15 ms	15-25 ms	–	–	–
Opening delay	10 ms	35-45 ms	–	–	–

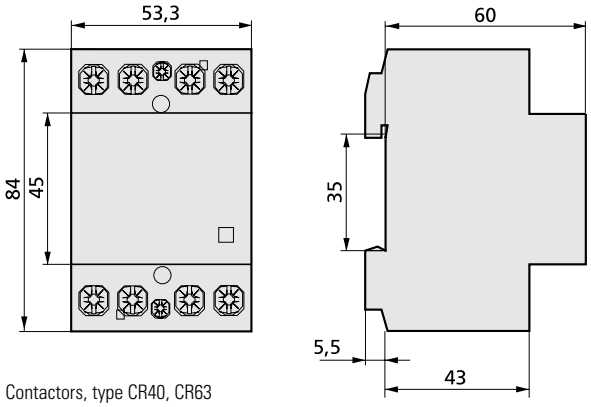
Contactors type CR (continued)

Products	Contactors				Aux. contact
Dimensions					
Width	18 mm	35 mm	54 mm	54 mm	9 mm
Height	85 mm	85 mm	85 mm	85 mm	85 mm
Depth	60 mm	60 mm	60 mm	60 mm	60 mm
Terminals for main & auxiliairy contacts					
Terminal capacity – fine stranded wire	1…6 mm^2	1…6 mm^2	1…16 mm^2	1…16 mm^2	1…2,5 mm^2
Terminal capacity – solid wire	1…10 mm^2	1…10 mm^2	1…25 mm^2	1…25 mm^2	1…2,5 mm^2
Terminal screw size	M3,5	M3,5	M5	M5	M3
Terminal screw head type (Pozidrive)	PZ Size 1	PZ Size 1	PZ Size 2	PZ Size 2	PZ Size 1
Maximum torque	1,2 Nm	1,2 Nm	2,0 Nm	2,0 Nm	0,8 Nm
Terminals for operating coils					
Terminal capacity – fine stranded wire	1…2,5 mm^2	1…2,5 mm^2	1…2,5 mm^2	1…2,5 mm^2	
Terminal capacity – solid wire	1…2,5 mm^2	1…2,5 mm^2	1…2,5 mm^2	1…2,5 mm^2	
Terminal screw size	M3	M3	M3	M3	
Terminal screw head type (Pozidrive)	PZ Size 1	PZ Size 1	PZ Size 1	PZ Size 1	
Maximum torque	0,6 Nm	0,6 Nm	0,6 Nm	0,6 Nm	

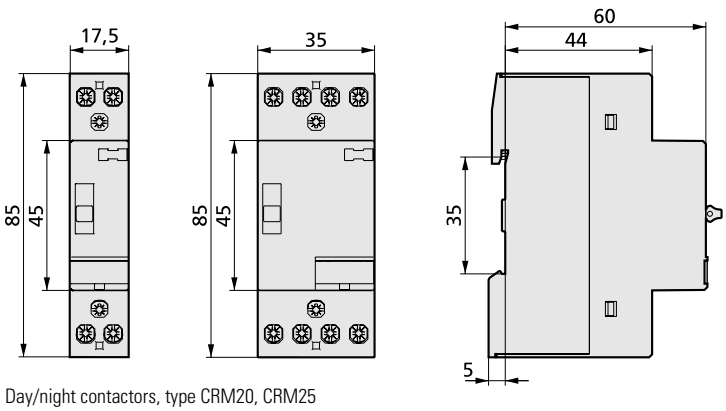
Remarks:
*1) Only applicable for normally open contact(s)
*2) At 1,5 kW
*3) At 3 kW
*4) At 5 kW
*5) For CR… types only (combined ac/dc types), NOT for CR… A types



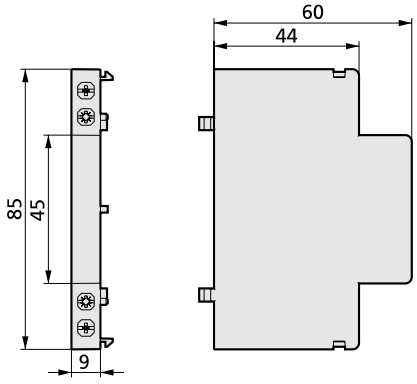
Contactors, type CR20, CR25



Contactors, type CR40, CR63

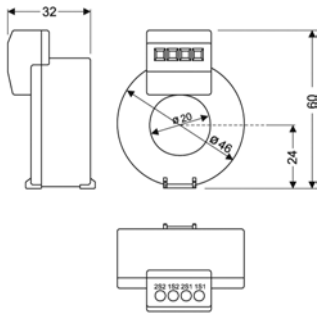


Day/night contactors, type CRM20, CRM25

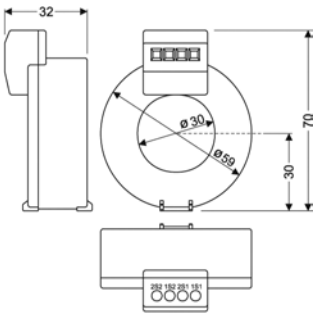


Auxiliairy contact

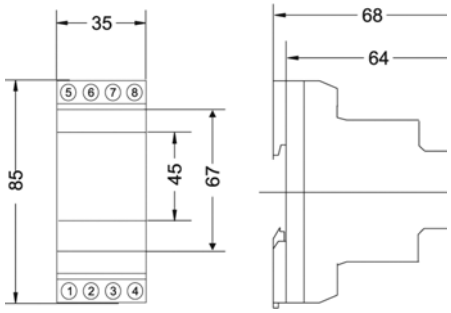
Earth leakage relays and CTs, dimensional drawings



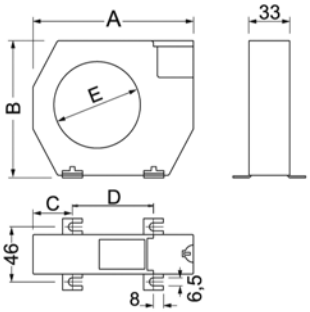
PFR-W-20



PFR-W-30



PFR-W-30



Type	A	B	C	D	E
PFR-W-35	100	79	26	48.5	35
PFR-W-70	130	110	32	66	70
PFR-W-105	170	146	38	94	105
PFR-W-140	220	196	48.5	123	140
PFR-W-210	299	284	69	161	210

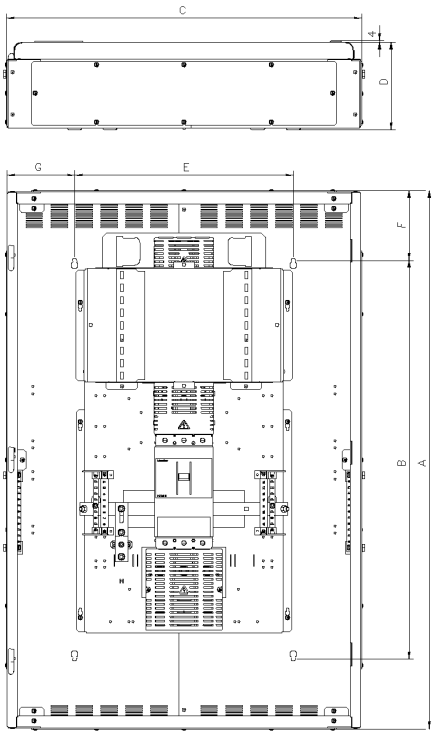
9.2 Technical data

NZM MCCBs, maximum Zs (Ohms) figures to achieve disconnection at 0.4s and 5s

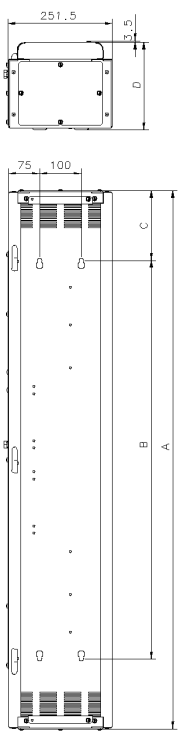
MCCB type	Rating (A)	Disconnection 0.4s		Disconnection 5s	
		Minimum setting	Maximum setting	Minimum setting	Maximum setting
NZM1 range	16	-	1.366	-	1.485
	20	1.821	1.093	1.496	1.188
	32	1.138	0.683	0.936	0.742
	40	0.910	0.546	0.749	0.594
	50	0.729	0.437	0.599	0.475
	63	0.578	0.347	0.475	0.377
	80	0.455	0.274	0.374	0.297
	100	0.364	0.219	0.299	0.238
	125	0.292	0.175	0.239	0.190
	160	0.228	0.137	0.187	0.148
NZM2 range	125	0.292	0.175	0.239	0.190
	160	0.228	0.137	0.187	0.148
	200	0.182	0.109	0.150	0.119
	250	0.145	0.087	0.120	0.095
NZM2 range electronic version	100	1.900	0.199	1.900	0.199
	160	1.188	0.124	1.188	0.124
	250	0.760	0.079	0.760	0.079
NZM3 range	250	0.145	0.087	0.120	0.095
	320	0.114	0.068	0.093	0.074
	400	0.091	0.055	0.075	0.060
NZM3 range electronic version	400	0.475	0.050	0.475	0.050
NZMLW range	630	0.174	0.044	0.174	0.044
	800	0.137	0.034	0.137	0.034

Note : Values take account of minimum voltage factor Cmin - in accordance with BS7671 Amendment 3

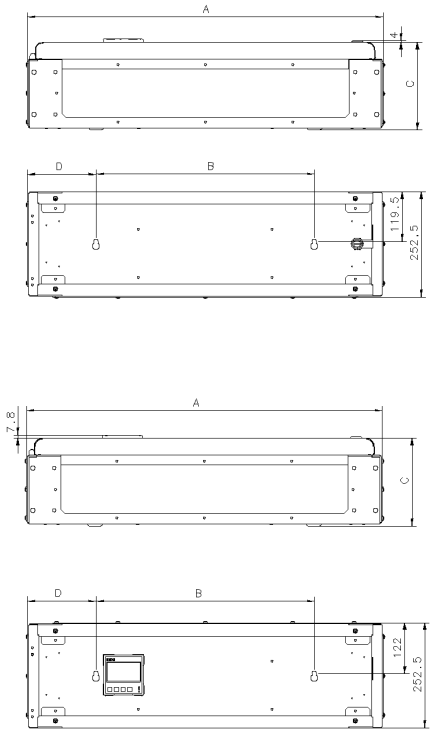
Panelboard dimensional drawings



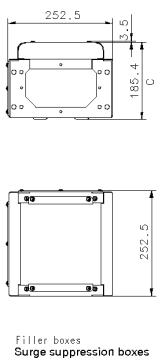
Panelboards



Side extension boxes



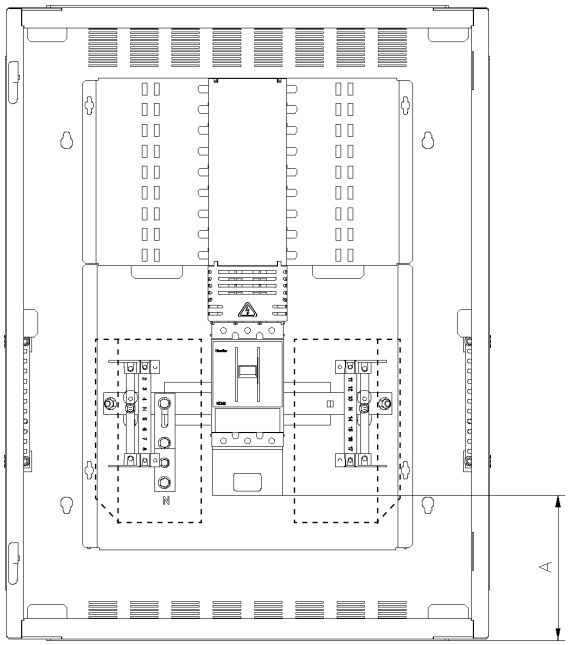
Extension boxes

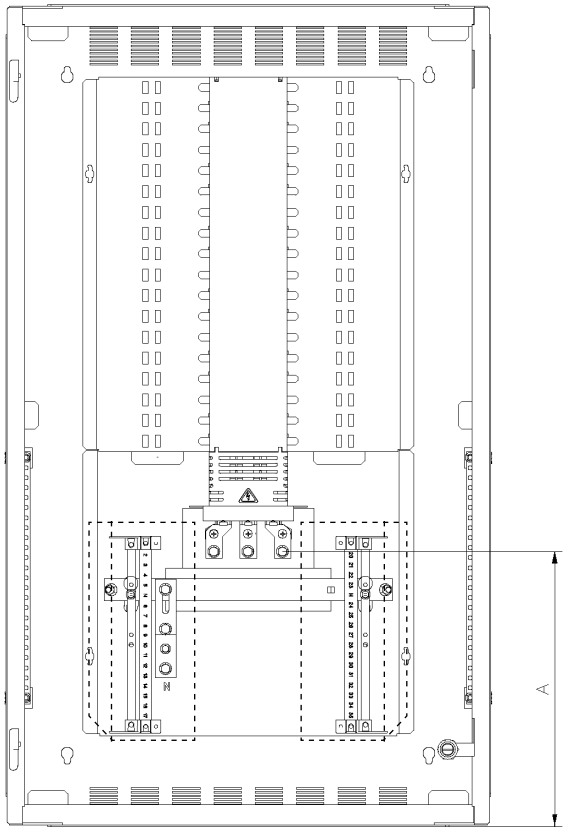


Filler boxes
Surge suppression boxes

Panelboard dimensions

Description	Eaton list number	Dimensions (mm) A	B	C	D	E	F	G
Extension boxes	**EPBN1EX250**	705	525	185.5	90	–	–	–
	EPBN2EX250	855	525	210.5	165	–	–	–
	EPBN3EX250	980	625	210.5	177.5	–	–	–
Filler boxes	**EPBN1CX250**	252.5	–	185.5	–	–	–	–
	EPBN2CX250	252.5	–	210.5	–	–	–	–
Panelboards	**EPBN1425**	830	544	703	185.5	525	143	89
	EPBN1625	920	544	703	185.5	525	188	89
	EPBN1825	1010.5	837.5	703	185.5	525	86.5	89
	EPBN11225	1191.5	1002	703	185.5	525	94.75	89
	EPBN1640	1291.5	956.5	853	210.5	525	167.5	164
	EPBN11240	1563	1228	853	210.5	525	167.5	164
	EPBN2640	1291.5	956.5	853	210.5	525	167.5	164
	EPBN21240	1563	1228	853	210.5	525	167.5	164
	EPBN21840	1834.5	1499.5	853	210.5	525	167.5	164
	EPBN2863	1650	1315	978	210.5	625	167.5	176.5
	EPBN21263	1650	1315	978	210.5	625	167.5	176.5
	EPBN21863	1915.5	1580.5	978	210.5	625	167.5	176.5
	EPBN3880	1650	1315	978	210.5	625	167.5	176.5
	EPBN31280	1915.5	1580.5	978	210.5	625	167.5	176.5
	EPBN31880	2060	1725	978	210.5	625	167.5	176.5
Side cable box	**EPBN1425SXB**	830	544	143	185.5	–	–	–
	EPBN1525SXB	920	544	188	185.5	–	–	–
	EPBN1825SXB	1010.5	837.5	86.5	185.5	–	–	–
	EPBN11225SXB	1191.5	1002	94.75	185.5	–	–	–
	EPBN2640SXB	1291.5	856.5	167.5	210.5	–	–	–
	EPBN21240SXB	1563	1228	167.5	210.5	–	–	–
	EPBN21840SXB	1834.5	1499.5	167.5	210.5	–	–	–
	EPBN21263SXB	1650	1315	167.5	210.5	–	–	–
	EPBN21863SXB	1915.5	1580.5	167.5	210.5	–	–	–
	EPBN31880SXB	2060	1725	167.5	210.5	–	–	–
Meter packs	**EPBN1EX250M**	705	525	185.5	90	–	–	–
	EPBN2EX250M	855	525	210.5	165	–	–	–
	EPBN3EX250M	980	625	210.5	177.5	–	–	–
Side meter box	**EPBN1425SXM**	830	544	143	185.5	–	–	–
	EPBN1525SXM	920	544	188	185.5	–	–	–
	EPBN1825SXM	1010.5	837.5	86.5	185.5	–	–	–
	EPBN11225SXM	1191.5	1002	94.75	185.5	–	–	–
	EPBN2640SXM	1291.5	856.5	167.5	210.5	–	–	–
	EPBN21240SXM	1563	1228	167.5	210.5	–	–	–
	EPBN21840SXM	1834.5	1499.5	167.5	210.5	–	–	–
	EPBN21263SXM	1650	1315	167.5	210.5	–	–	–
	EPBN21863SXM	1915.5	1580.5	167.5	210.5	–	–	–
	EPBN31880SXM	2060	1725	167.5	210.5	–	–	–
Din enclosures	**EPBN1EXDIN**	705	525	185.5	90	–	–	–
	EPBN2EXDIN	855	525	210.5	165	–	–	–
	EPBN3EXDIN	980	625	210.5	177.5	–	–	–
Surge suppression box	**EPBN1SPD123**	252.5	–	185.5	–	–	–	–
	EPBN1SPD1234	252.5	–	185.5	–	–	–	–





Rating (A)	Panelboard/incomer connection kit combination		Dimensions A (mm)
250	**EPBN1425**	**EPBKN1253**	210
	EPBN1625	**EPBKN1253M**	
	EPBN1825	**EPBKN1254**	
	EPBN11225	**EPBKN1254M**	
	EPBN1425		398
	EPBN1625	**EPBKN125L**	
	EPBN1825	**EPBKN125LM**	
	EPBN11225		
400	**EPBN1640**	**EPBKN2403**	380
	EPBN11240	**EPBKN2403M**	
	EPBN2640	**EPBKN2404**	
	EPBN21240	**EPBKN2404M**	
	EPBN21840		
	EPBN1640		731
	EPBN11240	**EPBKN240L**	
	EPBN2640	**EPBKN240LM**	
	EPBN21240		
	EPBN21840		
630	**EPBN2863**	**EPBKN2633**	352
	EPBN21263	**EPBKN2633M**	
	EPBN21863	**EPBKN2634**	
		EPBKN2634M	
	EPBN2863	**EPBKN263L**	775
	EPBN21263	**EPBKN263LM**	
	EPBN21863		
800	**EPBN3880**	**EPBKN3803**	392
	EPBN31280	**EPBKN3803M**	
		EPBKN3804	
		EPBKN3804M	

9.2 Technical data

Panelboard multifunction meter, technical characteristics and specification

- 3 phase 3 or 4 wire system.
- Liquid crystal display with backlight. 4 lines, 4 digits per line to show electrical parameters. 5th line, 8 digits to show energy. Bar graph for current indication as percentage of CT rating.
- 96 x 96mm panel mount, 55mm rear panel.
- Modbus comms & pulse output.
- Fast installation plug-ib cabling for current and voltage inputs. Feed-through voltage supply capability.
- Phase sequence detection and correction capability.
- Multifunction meter measuring parameters:
  - Voltage (P-P / P/N) (individual/average)
  - Current (I1, I2, I3) (individual/average)
  - Frequency
  - Power factor (individual/average)
  - Active, reactive, apparent power (individual/total)
  - Active, reactive, apparent energy (total)
- Display scrolling selectable for automatic or manual.
- Meter is self-powered from voltage supply. Auxiliary voltage supply not required.
- Front panel indicator when Pulse Output or Comms operates.

The range of meter is a class 1 multi-function, panel mounting meter to measure electrical parameters on LV supplies to The meter is a Class 1 multi-function, panel mounting meter to measure electrical parameters on LV supplies to and from TP&N distribution boards. It is ideal for applications such as:

- Energy monitoring.
- Power factor analysis.
- Supply capacity.
- Building regs part L2.
- Building performance.
- Environmental standards e.g. IS14001, EMAS, ECA.
- Climate change levy.
- Carbon trading.
- Carbon footprints.

The six dedicated buttons are labelled as V, I, VAF, PF, P, E. The parameters available by pressing each key are detailed below:

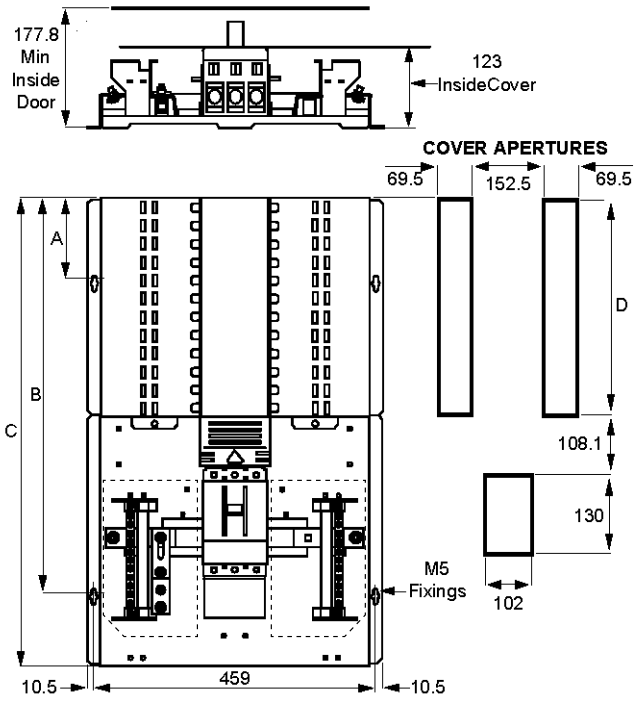
Measurements available via:	
Button 1 (V)	Line to neutral voltage of three phase and average line to line voltage
	Line to line voltage of three phase and average line to line voltage
Button 2 (I)	Phase current of three phase and average phase current.
	Phase current of three phase and maximum phase current.
Button 3 (VAF)	Voltage, current, power factor of first phase and frequency
	Voltage, current, power factor of second phase and frequency
	Voltage, current, power factor of third phase and frequency
	Average value of voltage, current, power factor of three phase and frequency
Button 4 (PF)	Power factor of three phase and average power factor
Button 5 (P)	Active power of three phase and total active power
	Reactive power of three phase and total reactive power
	Apparent power of three phase and total apparent power
	Active, reactive, apparent power and power factor of first phase
	Active, reactive, apparent power and power factor of second phase
	Active, reactive, apparent power and power factor of third phase
	Total active, reactive, apparent power and average power factor of three phase
	Maximum active power demand, reactive power demand, apparent power demand
	Minimum active power demand, reactive power demand
Button 6 (E)	Active energy of three phase
	Apparent energy of three phase
	Reactive energy of three phase

Accuracy

Measurement	**Accuracy**
Voltage VL-N	± 0.5% of full scale
Voltage VL-L	± 0.5% of full scale
Current	± 0.5% of full scale
Frequency	± 0.1% For voltage >20V L-N For voltage >35V L-N
Active power	Class 1
Apparent power	Class 1
Reactive power	Class 1

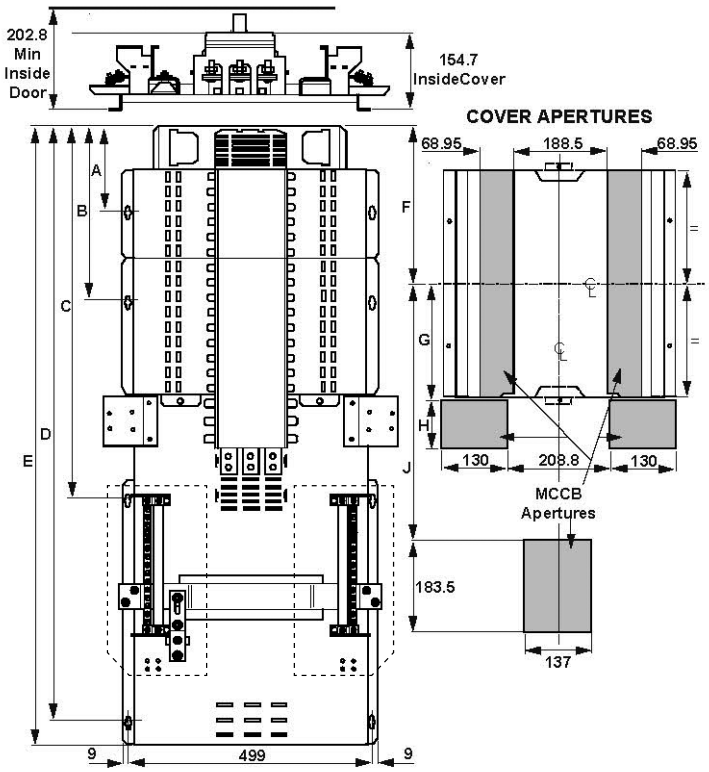
Measurement	**Accuracy**
Power factor	± 0.01
Active energy	Class 1
Apparent energy	Class 1
Reactive energy	Class 1
MAX / MIN active power	Class 1
MAX / MIN reactive power	Class 1
MAX apparent power	Class 1

250A pan assembly dimensions EPBPN1425–EPBPN11225



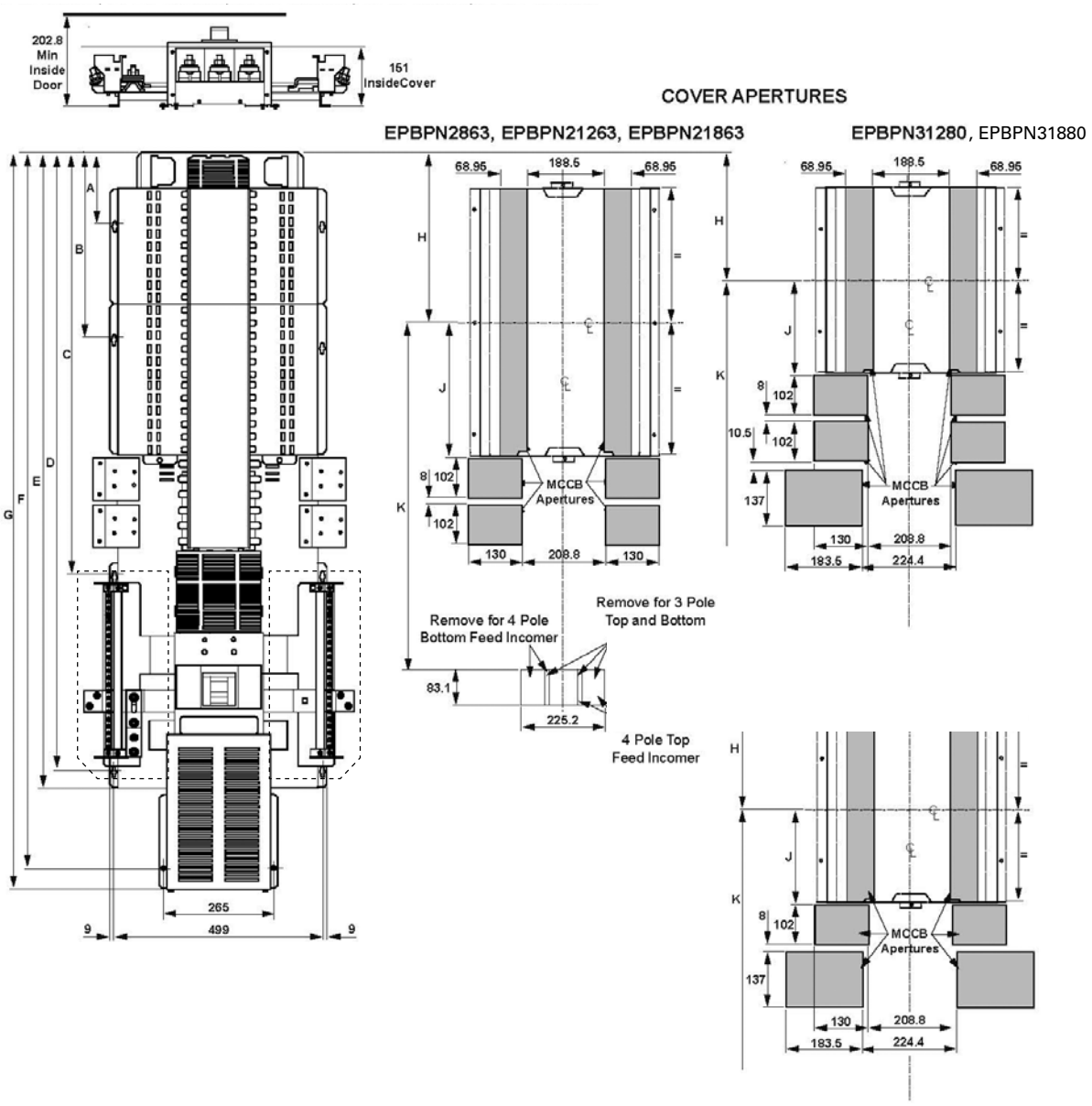
Eaton list number	A	B	C	D
EPBPN1425	29.5	483	592.5	181.5
EPBPN1625	29.5	578.5	683	272
EPBPN1825	131	669	773.5	362.5
EPBPN11225	131	850	954.5	543.5

400A pan assembly dimensions EPBPN1640–EPBPN21840



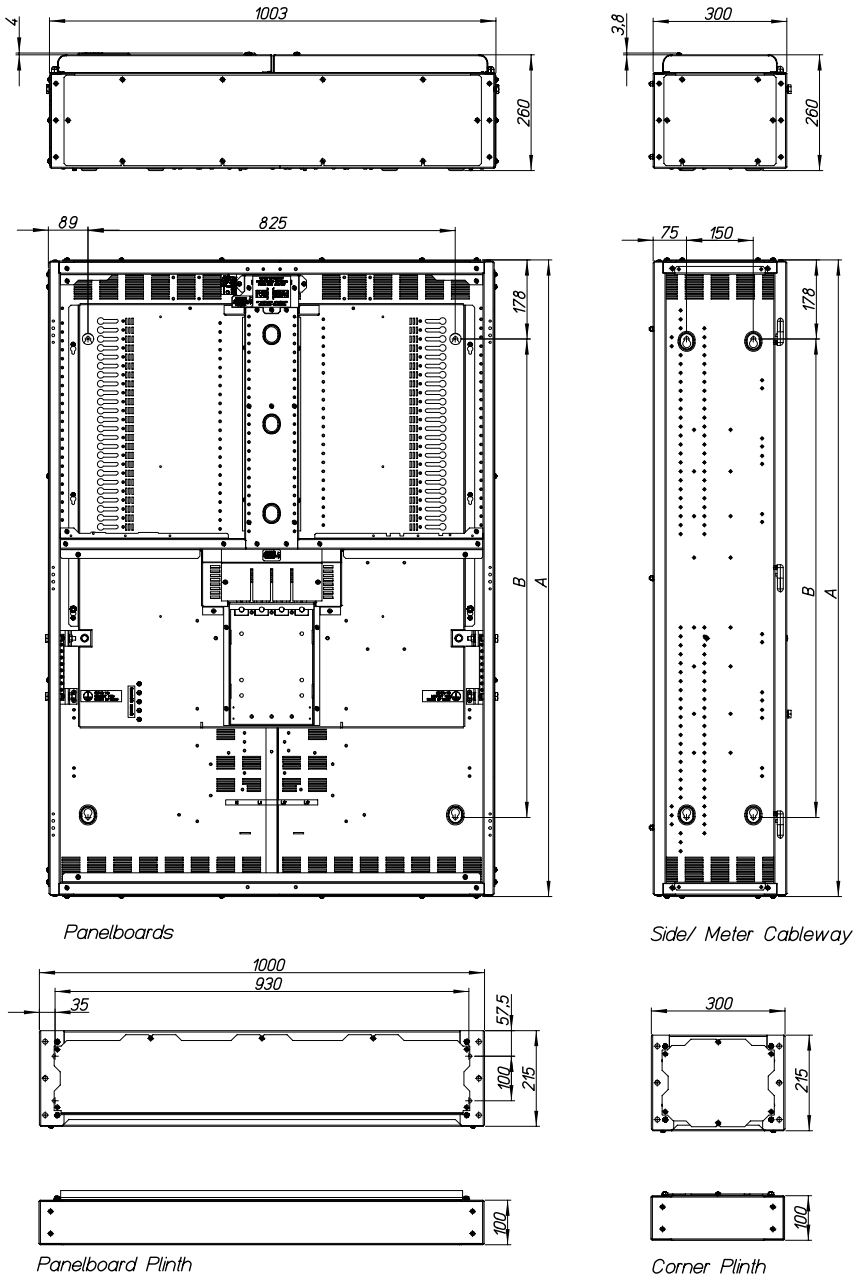
Eaton list number	A	B	C	D	E	F	G	H	J
EPBPN1640	167	N/A	473.5	923	979.5	222.25	N/A	N/A	318.25
EPBPN11240	167	438.5	725.5	1175	1231.8	358	N/A	N/A	454
EPBPN2640	167	N/A	473.5	923	979.5	177	96.75	102	383
EPBPN21240	167	348	745	1194.5	1251	312.75	232.5	102	518.75
EPBPN21840	167	529	1016.5	1466	1522.5	448.25	368.25	102	654.5

630–800A pan assembly dimensions EPBPN2863, EPBPN21263, EPBPN21863, EPBPN3880, EPBPN31280, EPBPN31880



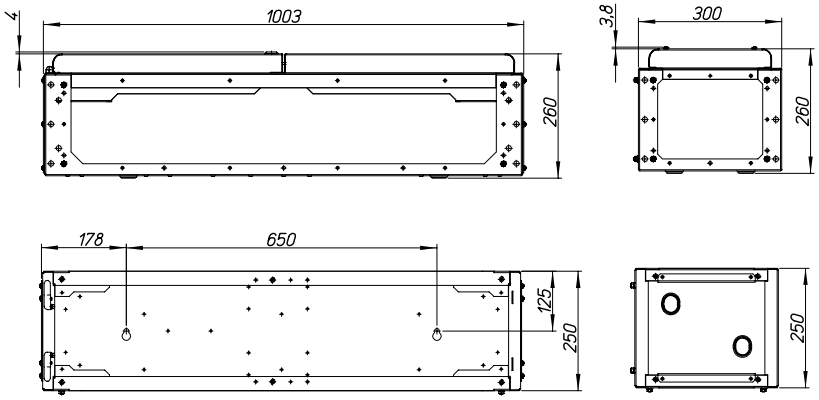
Eaton list number	A	B	C	D	E	F	G	H	J	K
EPBPN2863	162	N/A	538.5	991	1047.5	1240	1291	172	96.75	601.5
EPBPN21263	162	N/A	719.5	1172	1228.5	1421	1472	262.5	187.25	692
EPBPN21863	162	433.5	991	1443.5	1500	1692	1743	398.25	323	828
EPBPN3880	162	N/A	575.5	1028	1084.5	1277	1328	172	96.75	638.5
EPBPN31280	162	N/A	776	1228.5	1285	1477.5	1528.5	217.25	142	794.5
EPBPN31880	162	433.5	1047.5	1500	1556.5	1749	1800	353	277.75	930

Panelboard Dimensional Drawings



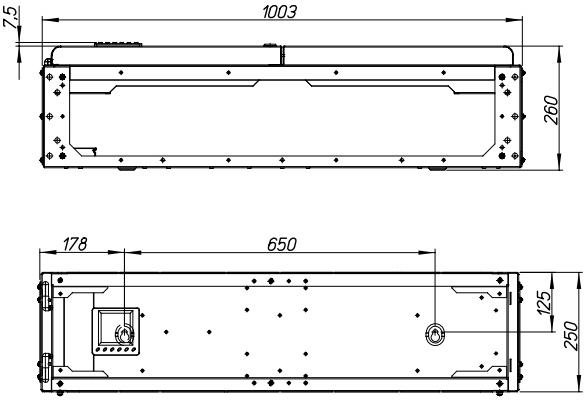
Description	Eaton List Number	A	B
Panelboards	**EM4PB840**	1430	1075
	EM4PB1440	1792	1437
	EM4PB1840	2033	1678
	EM4PB680	1430	1075
	EM4PB1280	1792	1437
	EM4PB1680	2033	1678
Cableways	**EM4PB68SXB**	1430	1075
	EM4PB1214SXB	1792	1437
	EM4PB1618SXB	2033	1678
Metered Cableways	**EM4PB68SXM**	1430	1075
	EM4PB1214SXM	1792	1437
	EM4PB1618SXM	2033	1678

Panelboard/Incomer Connection Kit Combination



Extension/ Earth Leakage/ DIN Box

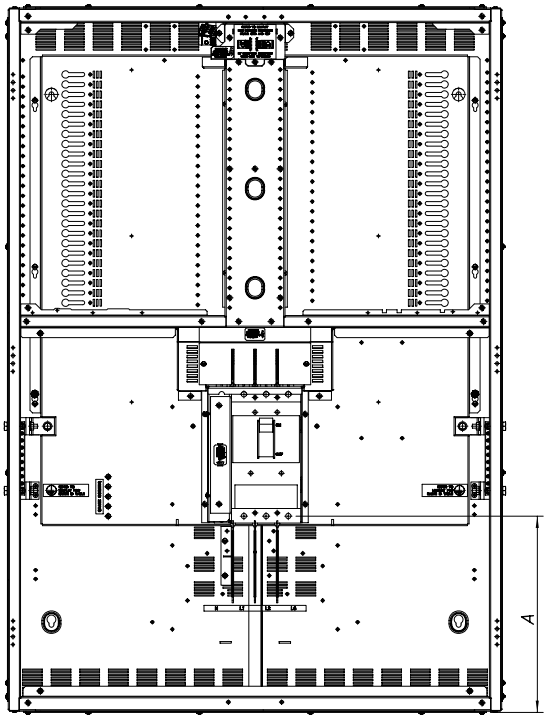
Corner Box



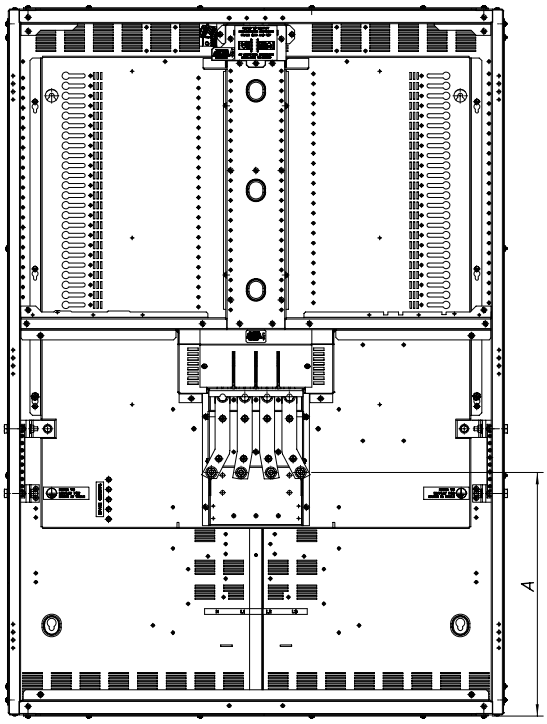
Incoming Meter Box

Rating (A)	Panelboard/Incomer Connection Kit Combination		A
400A	**EM4PB840**	**EM4PBK404**	384
	EM4PB1440	**EM4PBK404M**	231
	EM4PB1840	**EM4PBK404L**	491
		EM4PBK404LM	491
800A	**EM4PB680**	**EM4PBK804**	351
	EM4PB1280	**EM4PBK804M**	230
	EM4PB1680	**EM4PBK804L**	625
		EM4PBK804LM	560

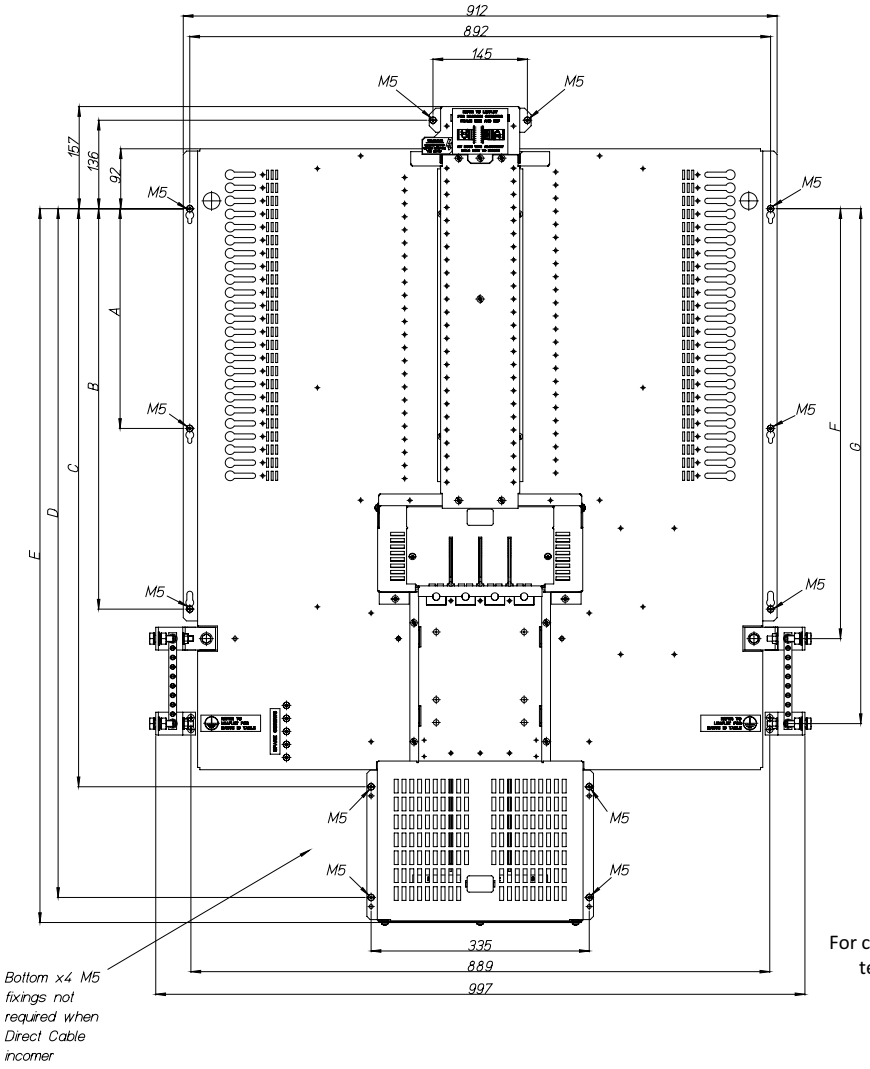
Panelboard MCCB Incomer



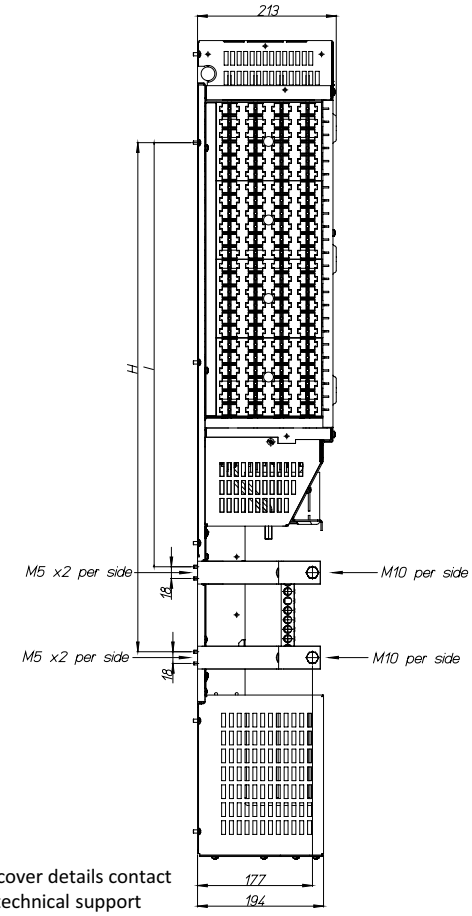
Panelboard Direct Lugs Incomer



Pan Assemblies EM4PBP840, EM4PBP1440, EM4PBP18400



Drawn as 8 way pan with 400A incoming kit

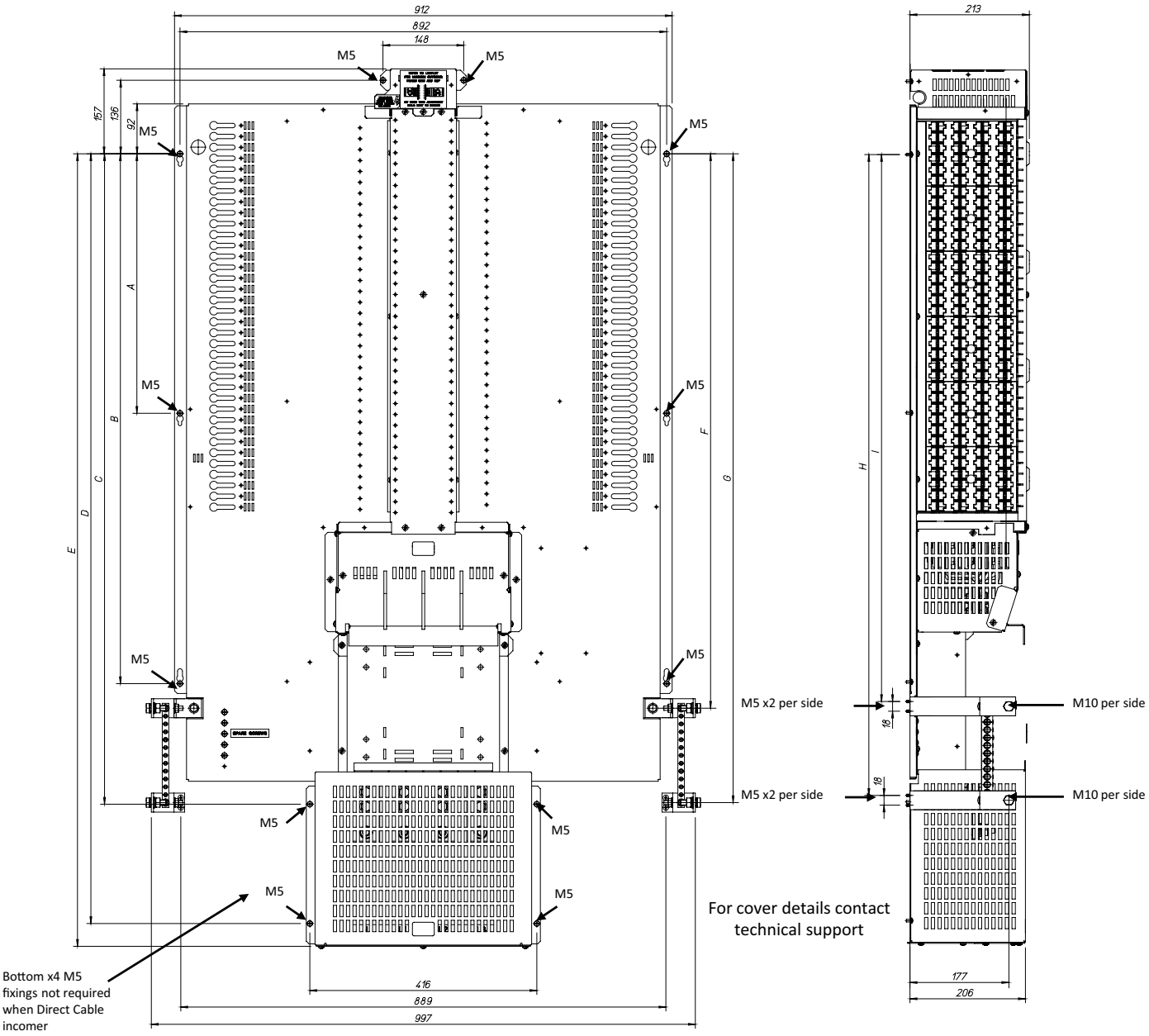


For cover details contact technical support

Pan	A	B	C	D	E	F	G	H	I
EM4PB840 (8 Way)	337.5	615	888	1058	1096	660	791	651	782
EM4PBP1440 (14 Way)	478.5	977	1250	1420	1458	1022	1196	1013	1187
EM4PBP1840 (14 Way)	639	1218	1491	1661	1699	1263	1524	1254	1515

Pan Assemblies EM4PBP680, EM4PBP1280, EM4PBP1680

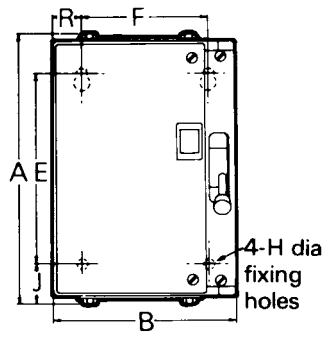
Drawn as 12 way pan with 800A MCCB Incoming Kit

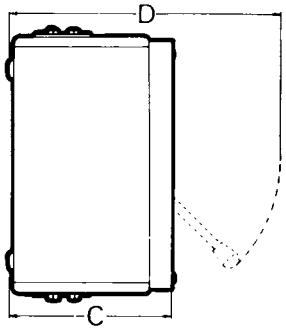


Pan	A	B	C	D	E	F	G	H	I
EM4PBP680 (6 Way)	337.5	615	837	1057	1099	660	791	651	782
EM4PBP1280 (12 Way)	478.5	977	1199	1419	1461	1022	1196	1013	1187
EM4PBP1680 (16 Way)	639	1218	1440	1660	1702	1263	1524	1254	1515

Glasgow fuse-switch-disconnectors and switch-disconnectors dimensions

Nominal unit rating, In (A)	Poles	Dimensions, mm A	B	C	D	E	F	H	J	R
63	SPSN, DP	289	199	180	283	203	127	7.9	43	36
	TPN, TPSN	289	275	180	283	203	203	7.9	43	36
100	SPSN, DP	327	199	180	283	241	127	7.9	43	35
	TPN, TPSN	327	275	180	283	241	203	7.9	43	35
160, 200	SPSN, DP	431	280	229	383	340	140	7	45	70
	TPN, TPSN	431	340	229	383	340	200	7	45	70
315, 400	TPN, TPSN	501	467	291	545	385	375	10	58	46
500, 630, 800	TPN, TPSN	596	680	381	715	440	550	14	78	65





Units have retractable handles. 'D' dimension indicates fully extended operating position.

Rating to BS EN 60947-3 general performance characteristics

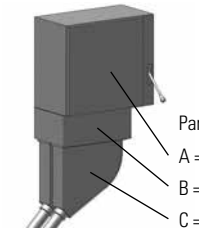
Nominal unit rating, Ie (A)	Utilisation category at Ue 415V to BS EN 60947-3 Switch-disconnectore AC21A Ie	Fuse-switch-disconnector AC22A Ie	AC23A Ie
63	125A	63A	41A
100	125A	100A	41A
160	Use 200A	160A	160A
200	315A	200A	160A
315	Use 400A	315A	200A
400	400A	400A	200A
500	Use 630A	500A	385A
630	630A	630A	385A
800	800A	800A	500A

Operational performance

- In accordance with BS EN 60947-3: "A" categories all ratings have been tested to values specified below:

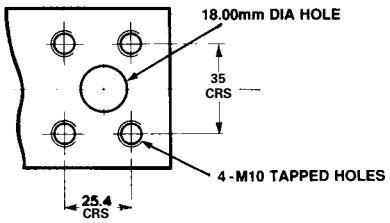
Rated operational current, Ie (A)	Operating cycles Without current	With current	Total
63–100	8,500	1,500	10,000
160–315	7,000	1,000	8,000
400–630	4,000	1,000	5,000
800	2,500	500	3,000

Glasgow parallel cable connection & copper terminal plate



Parallel cable connection
A = **803GNC**
B = **6PCB**
C = **90CSB**

An **802GCC** (copper connection piece) is required in addition to switch enclosure for parallel cable connection.

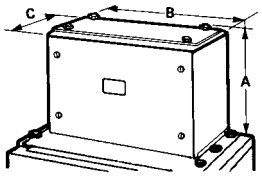


Copper terminal plate

Each copper terminal plate has 1-M16 x 50mm bolt, nut and washers for single hole sockets. 4-M10 tapped holes are also provided for 4 hole sockets or solid copper.

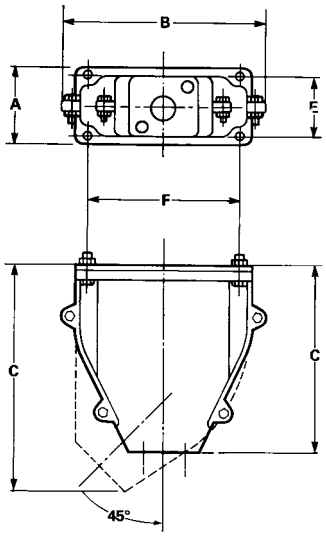
Cable extension boxes dimensions

Eaton list number	Dimensions, mm A	B	C
1PCB	148	133	113
2PCB	148	209	113
3PCB	148	259	132
4PCB	302	347	184
5PCB	213	515	187
6PCB	213	515	327



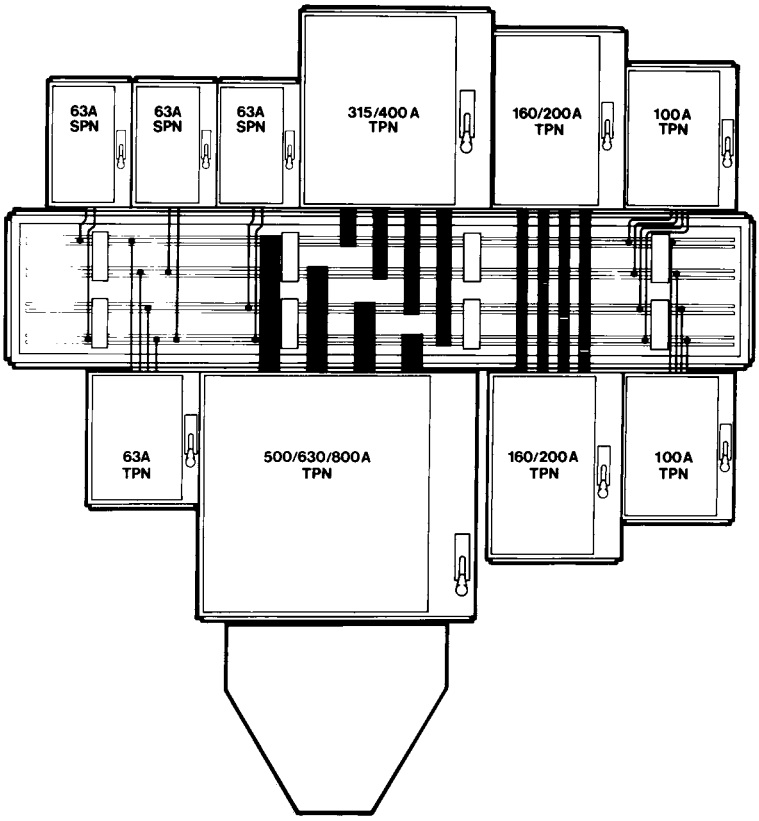
Spreader boxes dimensions

Eaton list number	Dimensions, mm A	B	C	E	F	Fixing bolts No.	Type
Straight entry							
50 CSB	83	232	170	67	171	4	M6
60 CSB	108	283	260	89	216	4	M8
70 CSB	133	384	322	114	318	4	M8
90 CSB	133	530	450	114	457	4	M10
45° Angled entry							
50 CSBA	83	232	250	67	171	4	M6
60 CSBA	108	283	310	89	216	4	M8
70 CSBA	133	384	390	114	318	4	M8



Busbar chambers

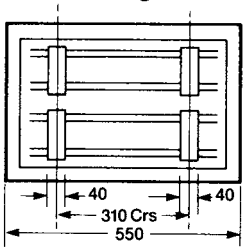
Eaton's busbar chamber system is designed for wall-mounting installations. All units in the range share the same height and depth dimensions. Similarly the twin busbars are located in precisely the same positions throughout the range and vary in size only in their front-to-back dimensions according to rating. Detachable end plates enable all units to be extended by coupling to a second busbar chamber using extension sets.



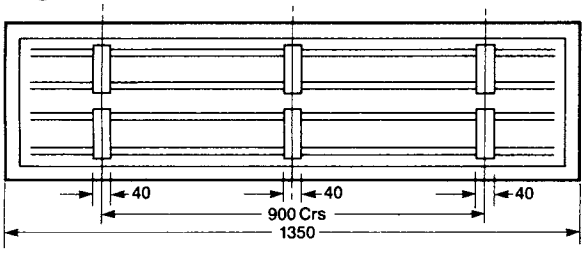
Busbar chamber – dimensions

Nominal length, mm	Dimensions, mm A	B	C	D	E	F	G
550	562	364	222	280	474	–	4
900	912	364	222	280	824	–	4
1350	1362	364	222	280	1274	–	4
1800	1812	364	222	280	1724	862	6

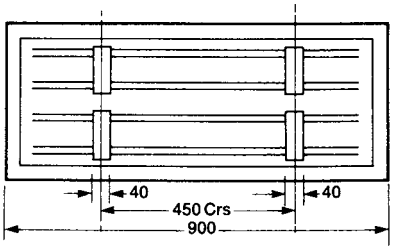
Nominal length chamber 550m



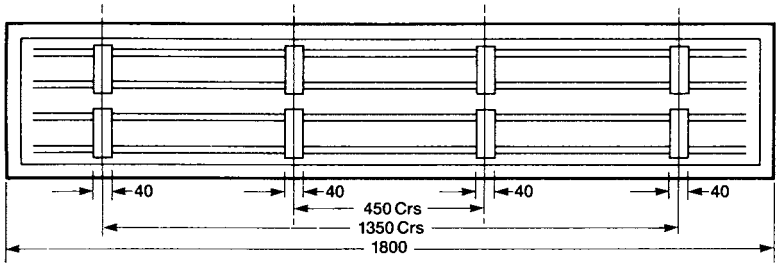
Nominal length chamber 1350mm

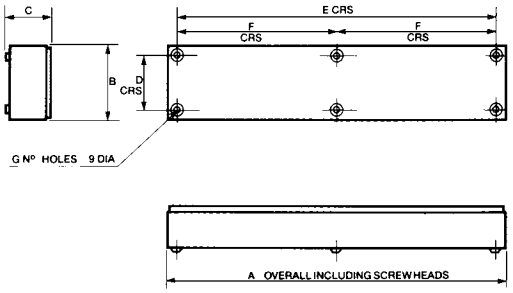


Nominal length chamber 900mm



Nominal length chamber 1800mm





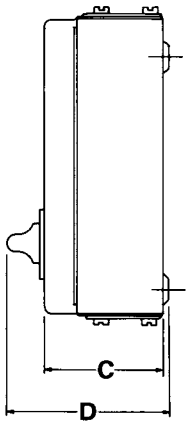
Operational performance

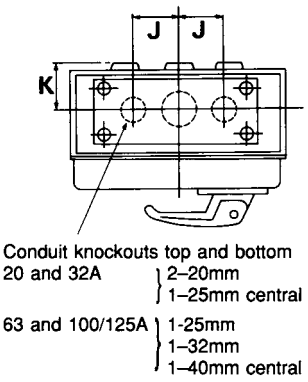
- In accordance with BS EN 60947-3 all ratings have been tested to values specified below:

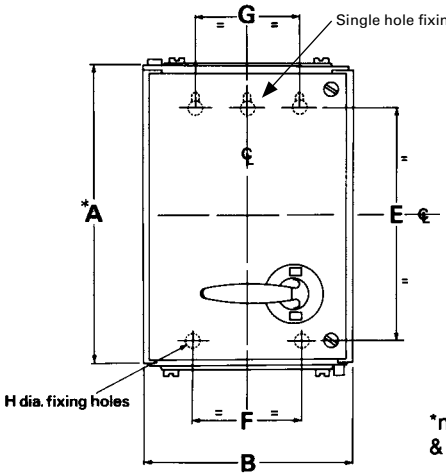
Description	Cycles
Operating cycles without current	8500
Operating cycles at rated current	1500
	Total 10000

Exel 2 dimensions

Current rating, A	Dimensions, mm A	B	C	D	E	F	G	H	J	K
Switch-disconnectors										
20	159	193	92	127	112	114	–	5.6	38.5	34
32	173	245	101	137	116	114	114	6.4	38.5	34
63	230	310	129	173	152	168	168	6.7	58	54
100/125	329	367	167	210	241	221	221	6.7	58	54
Switch-disconnector-fuses										
20	219	193	92	127	171	114	–	5.6	38.5	34
32	267	245	101	137	209	114	114	6.4	38.5	34
63	351	310	129	173	273	168	168	6.7	58	54
100/125	503	367	167	210	416	221	221	6.7	58	54







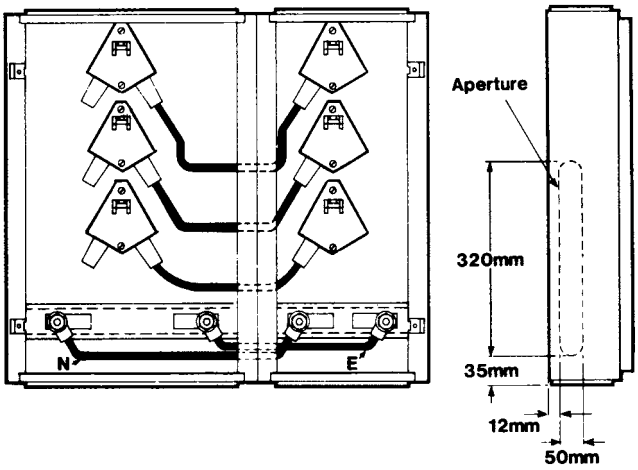
*not including removable endplates & fixing screws.

Performance values

Unit	Short time withstand current (r.m.s. amps for 1 second)	Short circuit making capacity (peak amps at 415v ac)	Rated fused short-circuit (prospective r.m.s. amps at 415v ac)
20A	640A	2.96 kA	80 kA
32A	960A	5.12 kA	80 kA
63A	2000A	6.62 kA	80 kA
100/125A	3750A	8.42 kA	80 kA

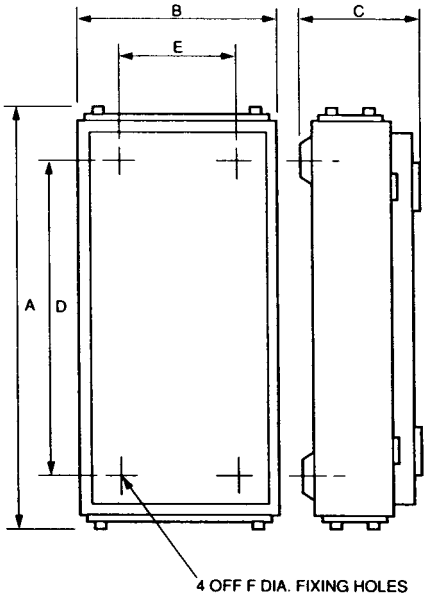
Exel distribution fuseboards – diversity factors

No. of ways	Maximum rated operational current per way, Ie				
	200A	100A	63A	32A	<20A
2	–	1	–	–	–
4	0.8	0.9	0.9	0.9	0.9
6	–	0.8	0.8	0.8	0.8
8	–	0.66	0.8	0.8	0.8
10	–	–	–	0.66	–
12	–	–	–	0.66	–
Therefore, incomer rating =					
2	–	–	126A	–	–
4	640A	360A	227A	115A	72A
6	–	480A	302A	154A	96A
8	–	528A	403A	205A	128A
10	–	–	–	211A	–
12	–	–	–	253A	–



Exel distribution fuseboards – enclosure dimensions IP4X (mm)

Nominal rating, Ie	Poles	Number of ways	A	B	C	D crs	E crs	F dia.
20A	SPN	4	386	304	148	252	191	8
		6	386	304	148	252	191	8
		8	386	368	148	252	255	8
		12	386	448	148	252	335	8
	TPN	4	631	304	148	442	191	8
		6	631	304	148	442	191	8
		8	631	368	148	442	255	8
32A	SPN	4	386	304	148	252	191	8
		6	386	304	148	252	191	8
		8	386	368	148	252	255	8
		12	386	496	148	252	383	8
	TPN	4	710	304	148	576	191	8
		6	710	304	148	576	191	8
		8	710	368	148	576	255	8
		10	710	448	148	576	335	8
		12	710	496	148	576	383	8
63A	TPN	2	546	473	227	458	369	10
		4	972	330	227	884	226	10
		6	972	330	227	884	226	10
		8	972	473	227	884	369	10
100A	TPN	4	1066	330	227	978	226	10
		6	1066	549	227	978	445	10
		8	1066	549	227	978	445	10
200A	TPN	4	1560	529	270	1334	325	10



Exel distribution fuseboards – earth bar terminal capacities

Description	Nominal rating of fuseboard, Ie				
	20A	32A	63A	100A	200A
Main (stud)	M10	M10	M10	M10	M10
Outgoing, mm2	10	10	25	25	70

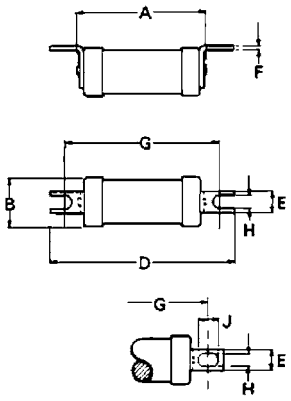
Exel distribution fuseboards – main terminal stud sizes

Description	No. of ways	Nominal rating of fuseboard, Ie 20A	32A	63A	100A	200A
SPN	4	M10	M10	–	–	–
	6	M10	M10	–	–	–
	8	M10	M10	–	–	–
	12	M10	–	–	–	–
TPN	2	–	–	M12	–	–
	3	–	–	M12	–	–
	4	M10	M10	M12	M12	M16
	6	M10	M10	M12	M16	–
	8	M10	M10	M16	M16	–
	10	–	M10	–	–	–
	12	–	M10	–	–	–

[1]Tunnel terminal 35mm^2 max.

415V industrial fuselinks – offset bolted contacts, dimensions

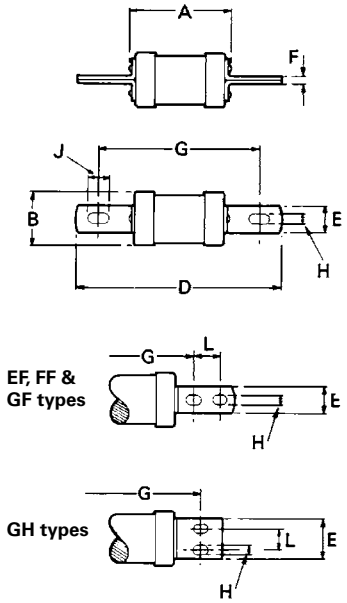
Eaton list number	Dimension, mm A max.	B max.	D max.	E	F	G nom.	H	J
NITD	34	14	54	11	0.8	44.5	4.8	–
NITD(M) (25–40A)	34	14	54	11	0.8	44.5	4.8	–
NITD(M) (50–63A)	36	17.5	55	11	1.2	44.5	4.8	–
AAO	35	14	85	9	1.2	73	5.5	8
AAO(M)	56	22	86	9	1.2	73	5.5	8
BAO	35	17.5	86	9	1.2	73	5.5	8
BAO(M)	56	22	88	13	1.2	73	5.5	10
OS (80–100A)	55	21	86	13	1.2	73	5.5	10
OS(M)	55	26	91	13	1.2	73	5.5	10
ODD (125–200A)	47	31	90	19	3.2	73	6.1	–
CEO	59	22	110	15	3.2	94	9	–
CEO(M) (125–160A)	58	26	109	15	3.2	94	9	11
CEO(M) (200A)	47	31	110	19	3.2	94	9	10
DEO	47	31	110	19	3.2	94	9	10
DEO(M)	47	31	110	19	3.2	94	9	10



AAO, BAO, CEO, DEO & **OS** types

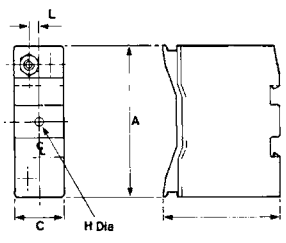
415V industrial fuselinks – centre bolted contacts, dimensions

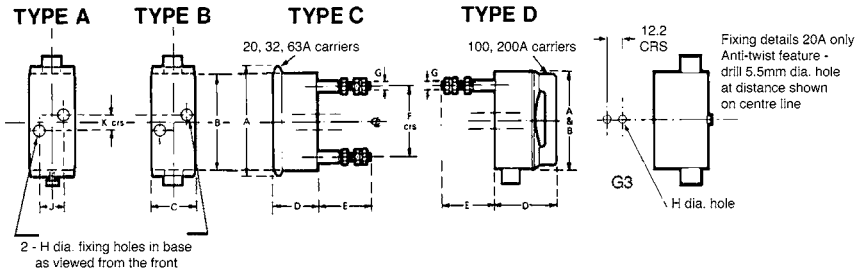
Fuse link type	Dimensions, mm A max.	B max.	D max.	E	F	G nom.	H	J	L
AC	57	22	114	13	1.6	97	7.1	10	–
AD	57	22	129	14	1.6	111	8.7	12	–
BC	57	22	114	13	1.6	97	7.1	10	–
BD	57	22	129	14	1.6	111	8.7	12	–
BC(M)	57	22	114	13	1.6	97	7.1	10	–
BD(M)	58	21	126	14	3.2	111	8.7	11	–
CD	59	22	127	14	3.2	111	8.7	11	–
CD(M) (125–160A)	58	26	126	14	3.2	111	8.7	11	–
CD(M)200	47	31	136	19	3.2	111	9	12.5	–
DD	47	31	136	19	3.2	111	9	12.5	–
DD(M)	47	31	136	19	3.2	111	9	12.5	–
ED	47	31	136	19	3.2	111	9	12.5	–
ED (315)	50	38	136	25	4.8	111	9	12.5	–
ED(M)	50	38	136	25	4.8	111	9	12.5	–
EFSS	47	59	158	19	3.2	133	10.5	12.5	–
EF (315)	50	38	209	25	4.8	133	10.5	12.5	25
ED	50	39	136	25	4.8	111	9	12.5	–
ED(M)	75	53	135	25	4.8	111	9	12.5	–
EF	50	40	209	25	4.8	133	10.5	12.5	25.4
FF	80	74	209	25	6.3	133	10.5	16	25.4
FG	80	74	261	38	6.3	165	10.5	16	32
GF	84	83	209	25	9.5	133	10.5	16	25.4
GG	80	83	261	38	6.3	165	10.5	16	32
GH	83	100	198	63.5	9.5	149	14.3	19	32



Complete fuse units – dimensions

Nominal rating, In	Dimensions, mm A	B	C	D	E	F	G	H	J	K	L	Hole dia. (mm min) insulated stud (types C and D)
20A	87	79	27	50	63	56	6	5.5	–	–	–	12
32A	109	101	31	62	60	78	6	5.5	12.7	6.4	–	12
32A clip-in	75	–	25	57.7	–	–	6	5.5	–	–	4.4	–
63A	118	110	35	72	71	79	8	5.5	12.7	6.4	–	14.5
63A clip-in	88.7	–	31.5	66.34	–	–	8	5.5	–	–	4.8	–
100A	154	154	54	108	80	117	10	6.5	19	22	–	18.5
Compact range												
32A	87	79	27	–	–	56	6	5.5	–	–	–	12
63A	109	101	31	–	–	78	6	5.5	12.7	6.4	–	12
100A	118	110	35	72	71	79	8	5.5	12.7	6.4	–	14.5
200A	154	154	54	108	80	117	10	6.5	19	22	–	18.5





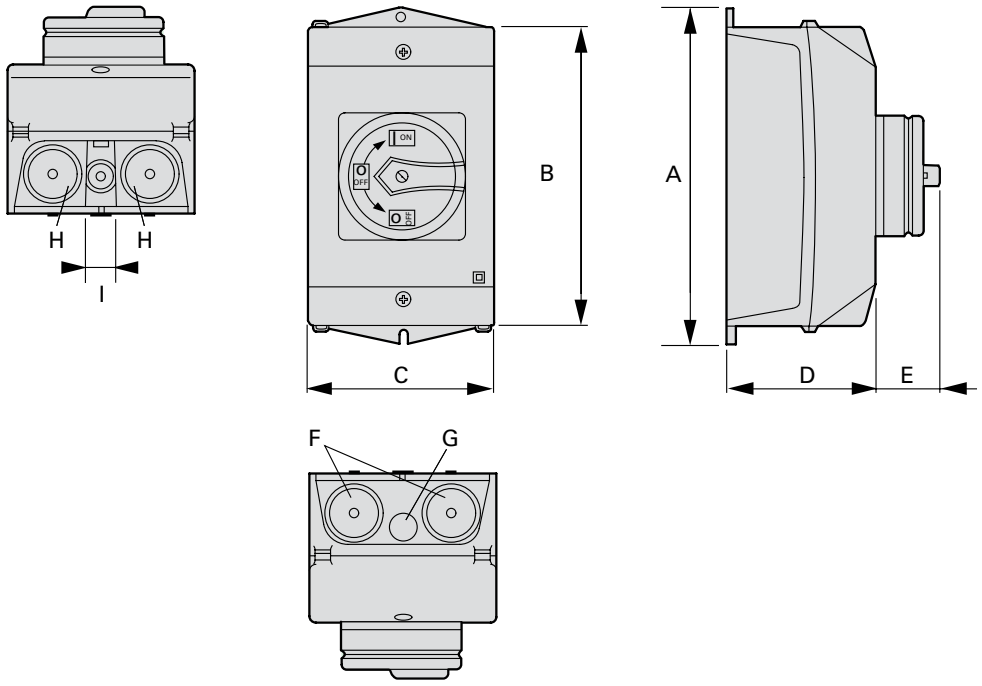
Local switch-disconnectors - rotary isolators, 20–63A, IP65, 3–8 poles

Nominal unit rating Ie (A)	AC-23A Rating (kW) 400V 3ph	AC-23A Rating (kW) 230V 1ph	AC-3 rating, motor load switch (kW) 230V	AC-3 rating, motor load switch (kW) 230V star delta	AC-3 rating, motor load switch (kW) 400V	AC-3 rating, motor load switch (kW) 400V star delta	Rated short-time withstand current Icw 1s (A)	Terminal capacity (flexible with ferules) (mm^2)
20	6.5	3.5	3	4	4	4.5	320	1 x 0.75 - 1.5 2 x 0.75 - 1.5
25	13	7	5.5	5.5	7.5	7.5	640	1 x 1 - 4 2 x 1 - 4
32	13	7.5	6.5	11	12	18.5	650	1 x 0.75 - 4 2 x 0.75 - 4
(3 & 3+N pole)	30	18.5	15	15	30	30	1260	1 x 1.5 - 25 2 x 1.5 - 6
(6 & 8 pole)	22	15	15	22	22	37	1300	1 x 1.5 - 25 2 x 1.5 - 10

Local switch-disconnectors - rotary isolators, 20–63A, IP65, 3–8 poles –dimensions

Eaton List Number	A	B	C	D	E	F	G	H	I
207149	137	120	80	75	35	M20	-	-	-
207151	137	120	80	75	35	M20	-	-	-
207153	137	120	80	95	35	M20	-	-	-
207161	137	120	80	95	35	M20	-	-	-
226902	180	160	100	80	35	M25	-	M25	≤ 8
227860	180	160	100	80	35	M25	-	M25	≤ 8
207202	180	160	100	100	35	M25	-	M25	≤ 8
207210	180	160	100	100	35	M25	-	M25	≤ 8
207212	180	160	100	100	35	M25	-	M25	≤ 8
207348	240	-	160	95	44	M25 / M32	M20	-	-
207349	240	-	160	95	44	M25 / M32	M20	-	-
207350	240	-	160	95	44	M25 / M32	M20	-	-
207246	240	-	160	160	44	-	-	-	-
207248	240	-	160	160	44	-	-	-	-

Dimensions (mm)



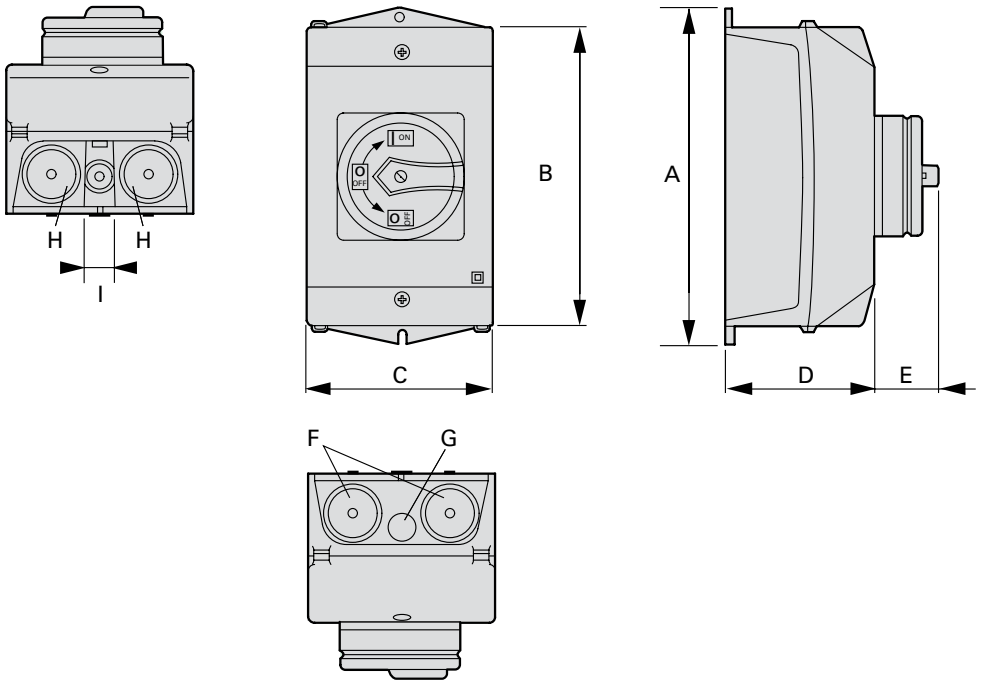
Rotary change over isolators, 20–63A, IP65, 4 poles

Nominal unit rating Ie (A)	AC-23A Rating (kW) 400V 3ph	230V 1ph	230V	AC-3 rating, motor load switch (kW) 230V star delta	400V	400V star delta	Rated short-time withstand current Icw 1s (A)	Terminal capacity (mm^2)
20	6.5	3.5	3	4	4	5.5	320	1 x 1 - 2.5
								2 x 1 - 2.5
32	13	7.5	6.5	11	12	18.5	650	1 x 1- 6
								2 x 1- 6
63	22	15	15	22	22	37	1300	1 x 2.5 - 35
								2 x 2.5 - 16

Local switch-disconnectors - rotary isolators, 20–63A, IP65, 3–8 poles –dimensions

Nominal unit rating Ie (A)	A	B	C	D	E	F	G	H	I
20	137	120	80	95	27	M20	-	-	-
32	180	160	100	100	35	M25	-	M25	≤ 8
63	240	-	160	160	29	M25 / M32	M20	-	-

Dimensions (mm)



The degrees of protection against ingress of foreign bodies and liquids are indicated by the first two characteristic numerals as detailed in tables 1 and 2. For switch and control gear the classification is recognised internationally and is described in detail in BS EN 60529.

First number

Protection against solid foreign objects IP	Requirements	Meaning protection of persons against access to hazardous parts with:
0	No protection	non-protected
1	Full penetration of 50mm diameter sphere not allowed. Contact with hazardous parts not permitted	back of hand
2	Full penetration of 12.5mm diameter sphere not allowed The jointed test finger shall have adequate clearance from hazardous parts	finger
3	The access probe of 2.5mm diameter shall not penetrate	tool
4	The access probe of 1.0mm diameter shall not penetrate	wire
5	Limited ingress of dust permitted (no harmful deposit)	wire
6	Totally protected against ingress of dust	wire

Second number

Protection against harmful ingress of water IP	Requirements	Meaning protection from water
0	No protection.	non-protected
1	Protected against vertically falling drops of water – limited ingress permitted	vertically dripping
2	Protected against vertically falling drops of water with enclosure tilted 15° from the vertical – limited ingress permitted	dripping up to 15° from the vertical
3	Protected against sprays to 60° from the vertical – limited ingress permitted	limited spraying
4	Protected against water splashed from all directions – limited ingress permitted	splashing from all directions
5	Protected against low pressure jets of water from all directions – limited ingress permitted	hosing jets from all directions
6	Protected against strong jets of water – limited ingress permitted	strong hosing jets from all directions.
7	Protected against the effects of immersion between 15cm and 1m	temporary immersion
8	Protected against long periods of immersion under pressure	continuous immersion

Additional letter

(Optional) IP	Requirements	Meaning protection of persons against access to hazardous parts with:
A for use with 0	Penetration of 50mm diameter sphere up to guard face must not contact hazardous parts.	back of hand
B for use with 0 & 1	Test finger penetration to a maximum of 80mm must not contact hazardous parts.	finger
C for use with 1 & 2	Wire of 2.5mm diameter x 100mm long must not contact hazardous parts when spherical stop face is partially entered.	tool
D for use with 1, 2 & 3	Wire of 1.0mm diameter x 100mm long must not contact hazardous parts when spherical stop face is partially entered.	wire

Note: limited penetration allowed with all four additional letters.

Indices

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Indices

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Indices

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United Kingdom
Customer Support Centre
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Fax: +44 (0)8700 540 333
email: ukcommorders@eaton.com

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