PRODUCT OVERVIEW

Protecta Plus

MCB distribution board 250A Edition 1

Our electrical distribution solutions upgrade power in buildings to create safer, more energy efficient and more productive environments, enabling our customers and their customers to do more with less.

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Protecta Plus
General features of the series

With the new Protecta Plus system, ABB has developed a new and personalised series of MCB distribution boards which can be expanded over time. The wide internal accessibility ensures a quick and easy approach to the electrical components assembly. The neutral and earth bars positioned on the inner sides of the distribution board are completely isolated to ensure better safety for users.

Main construction features
- Structure in epoxy coated metal sheets, 1 mm, textured finish
- Wall installation for indoor environments
- Degree of protection - IP43 with door, IP30 without door
- Mechanical resistance: IK07
- Busbar rating: 250A
- Number of ways: 4, 8, 12, 16, 20, 24
- Maximum ambient temperature +35 °C
- Compliance with IEC BS EN 61439 1-2
- Simple wiring of all cabinets, both horizontally and vertically
- Easy internal accessibility that facilitates all the wiring operations and maintenance
- Prepackaged standardized kits for specific applications (e.g. surge protection, metering)

A comprehensive range
The range consists of distribution boards for wall mounting in six heights from 590 mm to 1360 mm, 450 mm width and depth starting from 125 mm, ensuring the development of multiple solutions. Protecta Plus system is easy to design, quick to assemble and reliable to apply.

Ease of wiring
With the new mounting concept, Protecta Plus offers great levels of flexibility and accessibility for installation and wiring. The internal module can be easily removed allowing the wiring of different equipment outside the distribution board. This solution allows for an easier installation with more rapid production times.

Maximum accessibility
Thanks to the particularly large opening angle of the door, Protecta Plus offers the possibility to have optimal access to the distribution board, especially in case of maintenance. The perfectly reversible doors can be installed with right or left opening.

A series of rational solutions developed to achieve a complete range of capabilities and functions with a single type of distribution board to meet different installation requirements, whilst simplifying the work of the installer.

Simplified series connection
The distribution boards can be combined side-by-side through pre-cut cable conduit holes large enough for the passage of wiring harnesses.

Range
depth: 125 mm;
width: 450 mm;
6 heights: 590, 730, 870, 1050, 1220, 1360 mm.

Ergonomics and design
The design of this series is characterized by special features, such as rounded edges for a more efficient ergonomic look.

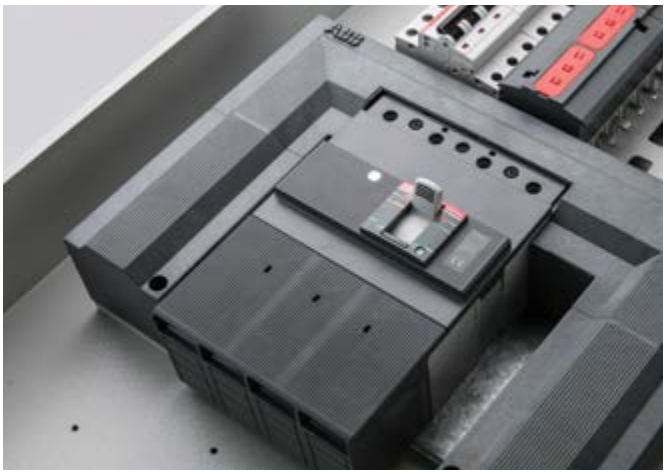
High output capacity
Primary branch capacity up to 100A.

Flexible mounting
The PAN assembly system can easily be removed from the bottom distribution board of the framework, ensuring quick and simple installation.

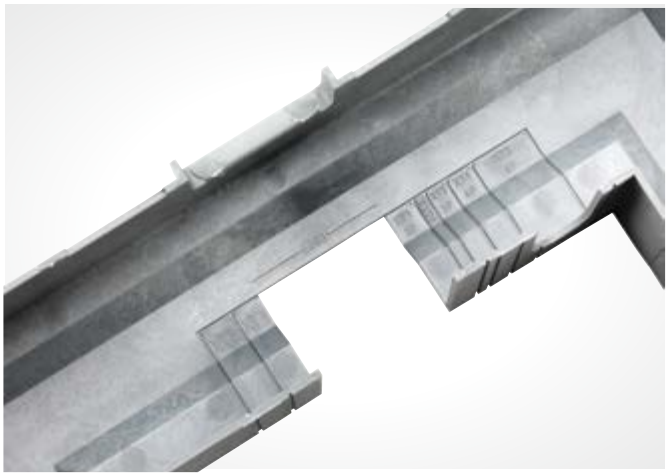
Complete protection
Designed to ensure maximum protection and efficiency, through the prevision for the installation of surge protection devices and counters.

Protecta Plus
The details make the difference

Board width
Protecta Plus has been designed with a width of 450 mm, this combined with the reduced RCBO height of 115 mm gives the installer ample cable room either side of the board.



One Solution
All Protecta Plus boards come as standard with 250A main bars. This gives the user a full range from 125A 3P through to 250A 4P incoming options.

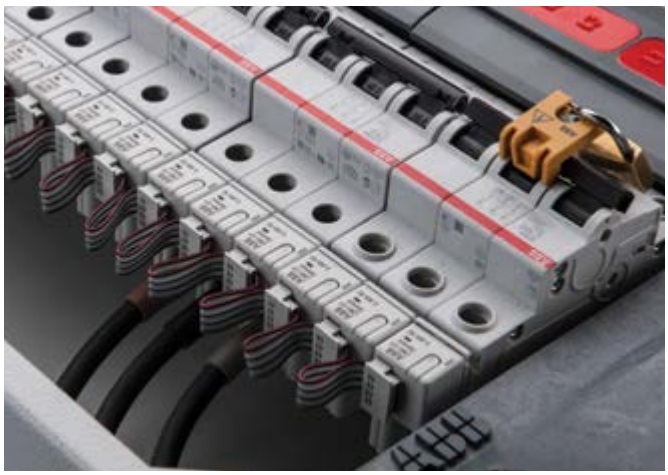


Incoming shroud
The shroud comes ready to accept a 125A 3P incoming devices. The easy break technology and clear indication on the rear allows the user to modify the shroud dependant upon requirements up to 250A 4P.

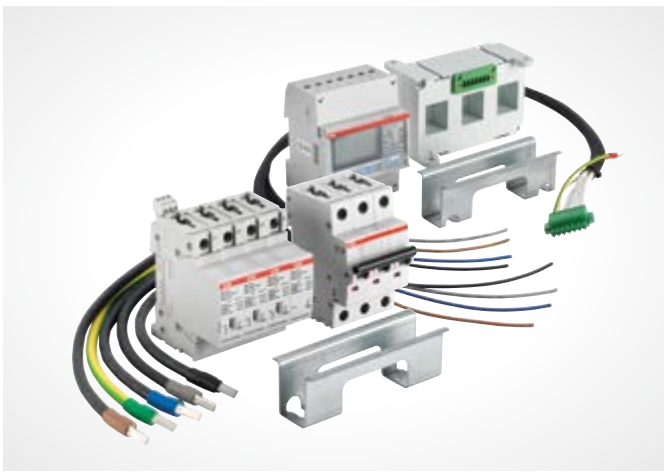
100A Outgoing ways
The first two 3P outgoing ways are fitted with 3 mm branch copper to allow for 100A MCBs to be fitted. This allows for a maximum of **2 x 100A 3P or 6 x 100A 1P** MCBs per board removing the need to move up to high performance boards or panel boards.

Full MCB blank
To aid installation and safety a custom MCB blank has been developed specifically for Protecta Plus.

Clean earth
Earth bars are fitted with removable links allowing the boards to be configured for 50/100% clean earth.



Padlocking facilities
All outgoing devices on Protecta Plus can be padlocked in on/off position for increased safety.



Metering and surge protection
Available in kit form to fit all Protecta Plus TPN boards. The boards have been designed to house these integrally.

CMS

Circuit monitoring systems (CMS) is a unique ultra-compact and high-performance multichannel measurement system for branch monitoring power

Key modular components - MCB S 200
State-of-the-art safety

Twin terminal
for separate feeding of busbar and conductor.

Easy identification
of the product and highly resistant laser marking.

Easy product name,
easy identification.

Contact position indication

IP20
finger safety.

Save your time
all important data available right away.

Quick identification
thanks to laser printed EAN marking.

Captive screws
don't loose what's important to you.

Contact position indication
All System pro M compact® MCBs are equipped with a contact position indication (CPI) on the toggle. You can easily identify, if the MCB is in the ON or OFF position – easy and safe maintenance work is possible.

Approvals printed on the dome
S 200 MCBs comply with IEC/EN 60898-1 and IEC/EN 60947-2 , as well as carrying the relevant approval marks for the markets they are designed for. Certification markings are printed on the dome of the MCB, making it possible to see the markings when mounted.

Locking device for MCBs and RCBOs
Preventing unauthorised or dangerous operation of the operating lever. An adaptor makes it possible to block the operating lever whether switched ON or OFF. The lever is blocked with a padlock having a cross bar section of 3 mm or, as the case may be, 6 mm max. For multi-pole devices, one lock may be fitted per pole.

IP 20 - finger safe terminals
The System pro M compact® MCBs are equiped with 35 mm² + 10 mm² cylinder lift twin terminals, a well proven and reliable technology - designed for sopisticated industrial use.

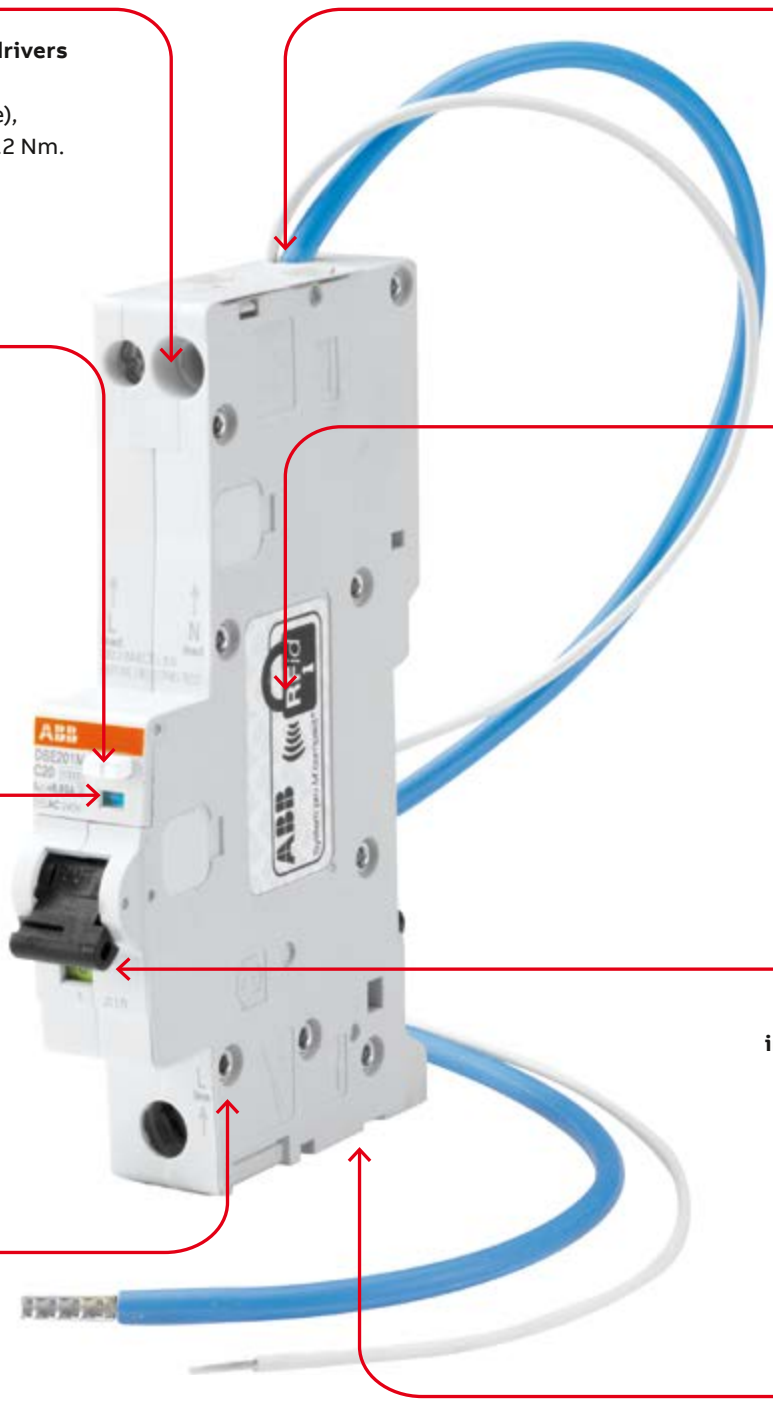
Key modular components - DSE201 M
Compact design, enhanced protection

Space for insulated screwdrivers
Equipped with cage type terminals (16 mm² load side), with tightening torque of 1.2 Nm.

In control
A test button allows the regular check of the functionality of the device: to be pushed every six months.

Earth fault indicator
Blue window in the front of the device to detect any earth fault trip: the cause of trip of the device can be identified in a short time, reducing the downtime for maintenance.

Combination with auxiliary elements
New platform suitable for quick installation in combination with the standard auxiliary elements that can be mounted with RCDs and MCBs.



Easy to install
Fast installation is supported by the two flying leads for neutral cable and functional earth, each integrated in the device, which can be directly connected to the main neutral and earth bars.

Anti-counterfeiting
Equipped with an RFID tag containing a unique serial number assigned by ABB in accordance to ISO/IEC FCD 15693-3 standard in order to authenticate the product.

Real contact position indicator below the toggle
Directly linked to the moving contact of the device, the green/red window in the front of the device can identify the current position of the contacts (open/closed) independently on the toggle position.

Reduced height
Thanks to its reduced height, only 115 mm, DSE201 M makes for easier wiring operation inside the consumer unit or the distribution.

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With its breaking capacity of 10/15kA in only one module width and 115 mm height, DSE201 M series is the perfect solution for a complete protection in commercial and industrial applications, where space optimization is required.

Device status at a glance
Earth fault indicator: blue window above the toggle to immediately detect and identify any earth fault trip, reducing downtime for maintenance. Contact position indicator (CPI): green/red window below the toggle to identify the real position of the contacts independently on the toggle position.

Double slot terminal
Easy to install, , fail-safe line side, terminal to avoid improper connection. Two slots of different dimensions (35 mm^2 and 10 mm^2) available to allow the connection both with cables and busbars.

Load side
The load side terminal accepts cables, both rigid and flexible up to 16 mm^2. Flying leads are straight instead of pigtail ones to reduce the space required for wiring operations.

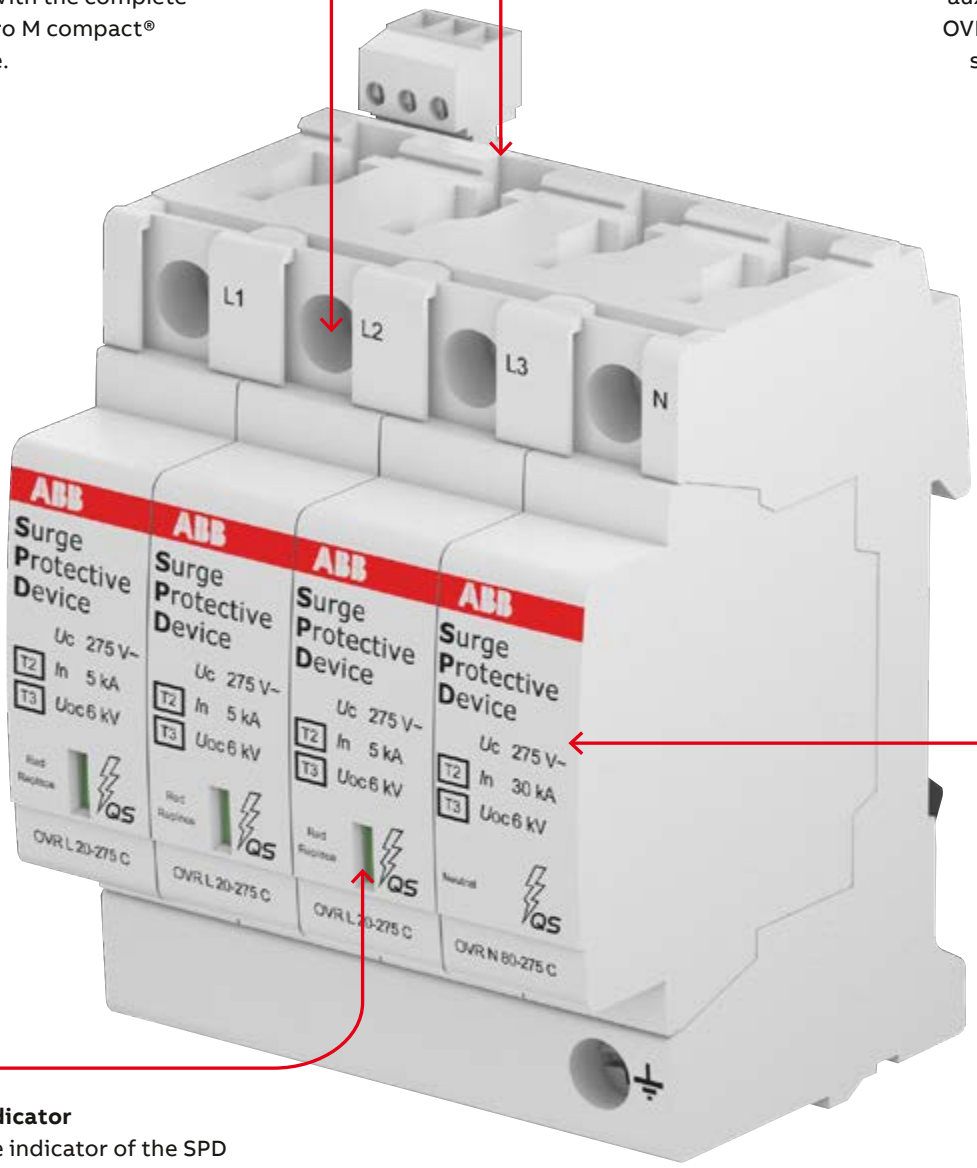
Easy and flexible
Double and bistable clips with a new design for a secure fixing in any type of consumer unit or distribution board. Easy removal from a cluster of RCBOs/MCBs supplied with busbars.

Key modular components

A complete range for your surge protection

Standard pro M terminals
Designed for a better coordination with the complete ABB System pro M compact® modular range.

Auxiliary Contact
Possibility to add an auxiliary contact on the OVR Plus range with the standard ABB option.



Clear information
On the front of the product indicating the technical characteristics of the OVR product.

End-of-life indicator
The end-of-life indicator of the SPD signals the status of the device.
Turning from green to red when the SPD reaches the end of its life.
The optional safety reserve system has a partial-release mechanism, which provides a pre-failure warning.

Complete coordination
The bi-directional cylindrical terminal block of the OVR Plus range allows a complete coordination with the ABB range with considerable time savings in wiring operations. All the devices allow connection through busbars, both from above and from below.

Pluggable feature
The pluggable feature of ABB OVR T1-T2, T2 and T2-T3 surge protective devices (SPDs) facilitates maintenance. Should one or more worn cartridges need to be replaced, the electrical circuit does not have to be isolated nor do the wires have to be removed.

Furse option for critical installations
The Furse ESP 415 CD40 provides continuous operation of sensitive electronic systems in lightning intense environments, offering market-leading levels of protection, making it ideal for high-end applications, such as hospitals, data centres and automated process control systems.

Active status indication
The Furse ESP 415 CD40 offers three way LED status indication, showing full, reduced and no protection. It also notifies the user of loss of phase, loss of power and warning of excessive volts between N-E.

Key modular components - Energy metering

Advanced energy performance analysis

— 01 Modern sub-metering increases energy efficiency and saves money by fair and accurate cost distribution.

Requirements for a deliberate strategy to manage and control energy consumption are having an increasing impact on commercial buildings such as shopping centers, offices, hotels and airports.

Electricity meters in commercial buildings are usually acquired by the property owner and read automatically via a facility or building management system. Just like for private property, modern sub-metering solutions can increase energy efficiency in commercial buildings and make considerable savings.

MID approval facilitates problem-free cost distribution
Meters that are MID approved have the advantage of a certified and verified metering accuracy. This is important if discussions on the fairness of the cost distribution arise.
EQ meters can easily help distribute consumption costs between different tenants, e.g. stores and boutiques in shopping malls, businesses in office blocks, or different airlines and functions (baggage handling, for example) at airports.

The fact that many commercial properties are not designed from the beginning for sub-metering presents no problem. EQ meters fit neatly wherever they are needed.

Mandatory energy declarations
Commercial properties must have an energy declaration that describes the building's energy performance. Its aim is to reduce the climate effect and increase the efficient use of energy, i.e. benefits for both society and the building owner.

Energy declarations require that the electrical consumption for lighting, elevators, heating and ventilation, etc., be accounted for separately. Data collected from individually-located meters (sub-metering) are extremely valuable in this respect. As well as being a legal requirement, it highlights ways to increase efficiency by locating unnecessary energy consumption.

ISO 50001, L2 building regulations, BREEAM and others
Whichever you aim for, analyzing energy consumption is an important early step and in the end also the best way to maintain an achieved level. EQ meters will provide accurate information regarding the electrical energy consumption.

Max demand also cuts energy consumption*
Measuring the highest average power during a set time interval results in the max demand value. Measuring max demand helps dimension a building's electrical installations to its use.

— 01

The EQ series are meters for single phase and three phase metering. The EQ series meters are mounted on a DIN rail and are suitable for installation in distribution boards and small enclosures such as consumer units.

02

02 EQ series meters

The EQ series are suitable in applications where there is a need for reliable energy measurements and where space is limited.

General features
The EQ series meters are versatile meters for many applications and installations. Navigating the meter is easily done via the push-buttons below the display. To configure the meter settings, the set button must be accessed and this button is protected against unauthorized use when the transparent lid on the front of the meter is closed and sealed. The power consumption of the meter is very low, less than 0.8 VA.

Communication*
Data from the EQ series meters can be collected via pulse output or serial communication. The pulse output is a solid state relay that generates pulses proportionally to the measured energy. The meters can also be equipped with built-in serial communication interfaces for M-Bus or Modbus (RS-485).

Instrumentation*
The EQ series meters support reading of instrument values. A large number of electrical properties can be read. Depending on version of the meter the following data is available:

- Active power
- Apparent power
- Reactive power
- Current
- Voltage
- Frequency
- Power factor

Inputs and outputs*
The EQ series support two inputs and two outputs in a fixed configuration. Inputs can be used for counting pulses from e.g. a water meter, or reading status from external devices. Outputs can be used as pulse outputs or controlling external apparatus like a contactor or an alarm (connected via an external relay).

Approvals*
The EQ series meters are type approved according to IEC and they are both type approved and verified according to MID. MID is the Measuring Instruments Directive 2004/22/EC from the European Commission. MID type approval and verification is mandatory for meters in billing applications within EU and EEA. The type approval is according to standards that covers all relevant technical aspects of the meter. These include climate conditions, electromagnetic compatibility (EMC), electrical requirements, mechanical requirements and accuracy.

* Dependant upon EQ Series metal selected

Key modular components - CMS
Circuit monitoring systems

—
01 CMS-600

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02 Connection technology

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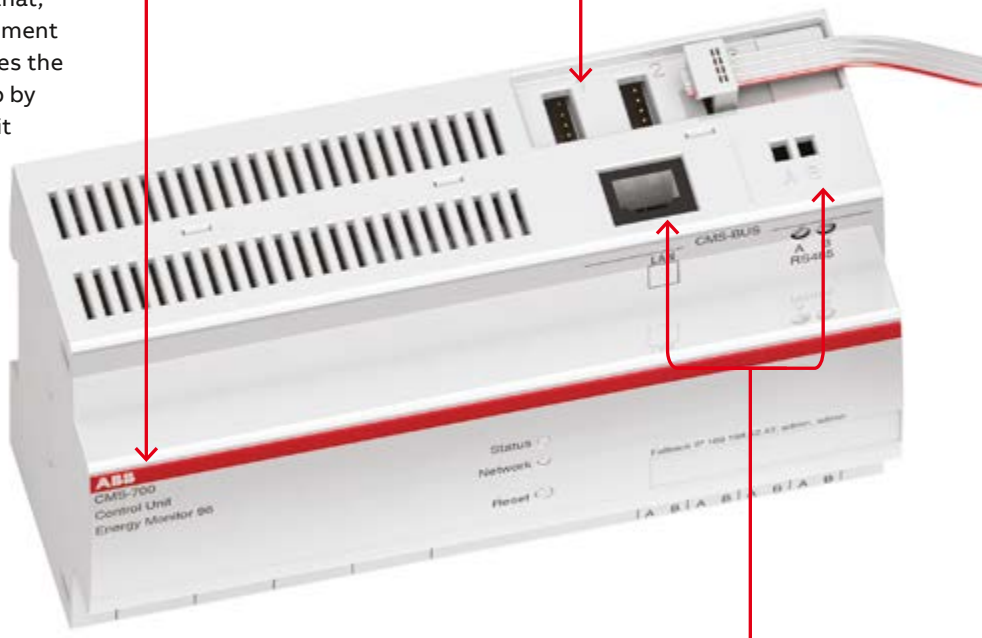
03 Double slot terminal

—
04 CMS sensors

CMS bus interface
A bus interface allows up to 96 sensors to be connected to the Control Unit.

Control Units
The Control Unit is a kind of computing and communication center that, depending on the equipment connected to it, evaluates the different data picked up by the sensors and makes it available via the built-in interfaces.



Serial interfaces
Depending on the unit, numerous interfaces and protocols are available to ensure smooth network implementation: RS485 (Modbus RTU), LAN (TCP/IP and Modbus TCP).

Thanks to the built-in web server, an internet browser or a free Android or iOS app can be used to visualize the values measured. What's more, the measured values can also be exported to CSV files.

The quality of a Circuit Monitoring System is dependent on the strengths of the individual components and how well they interact. ABB's CMS sets the bar particularly high. Regardless of whether we're talking compactness, technology, measurement results, user friendliness or flexibility, every component and every feature of this CMS has been fully optimized in terms of practicality and functionality.

Connection technology
Connecting the sensors to the Control Unit is extremely simple and requires no special tools. All sensors are connected to the Control Unit by means of a flexible flat cable and insulation displacement connectors. The positioning of sensors is fully customizable so that they sit exactly where a measurement is required.

Sensors
The CMS sensors form the heart of the system and they can be mounted anywhere without any problem. Initializing the sensors is also child's play, with the desired identifier being assigned to each individual sensor via the control unit in just a few simple steps. The entire configuration and commissioning procedure takes just a matter of minutes. All measurement functions are available immediately following initialization.

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03


04


Key modular components - ABB i-bus® KNX
Intelligent building solutions

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01 The conventional solution: Many separate cables, separate functionality, little flexibility

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02 The intelligent solution: KNX – a system, a standard, with many interoperable functions for maximum flexibility

In many areas of our private and working lives, the increasing level of automation is a trend that confronts us on a daily basis without actually being noticed.

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Automation in buildings aims to combine individual room functions with one another and to simplify the implementation of individual customer preferences.

KNX is the logical development for implementing traditional and new requirements in electrical building installations, replacing conventional installation techniques.

The intelligent installation bus system efficiently performs the conventional functions and offers an additional broad range of expanded features, which could not be realized without a bus system.

ABB offers consultants, system integrators and electrical installers a comprehensive product range with ABB i-bus® KNX, in order to meet the challenges posed to electrical building installations both today and in the future.
Further information:
http://www.abb.com/knx

Intelligent Building Solutions with ABB i-bus® KNX ensure:

- The right light in every situation by switching, dimming and controlling lights
- Visual protection and protection against sunlight by drive control of rolling shutters and blinds
- The right room temperature in every room by heating and cooling control
- The right air quality by controlling ventilation and climatization
- Automatic functions controlled by timer, movement, presence or meteorological data
- Security by monitoring operating conditions, signaling technical faults, recognizing hazards and triggering alarms
- Everything under control by visualization and manual operation

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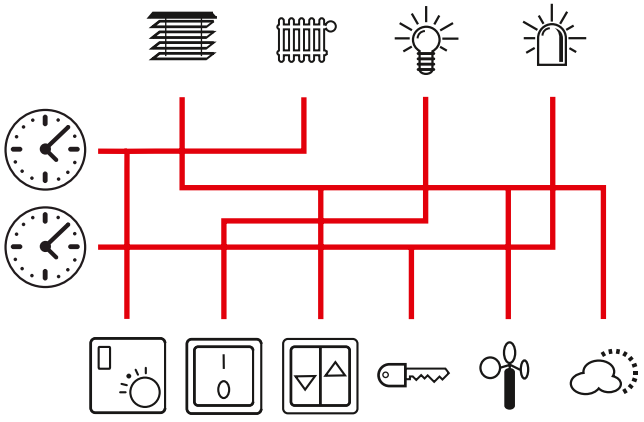
01



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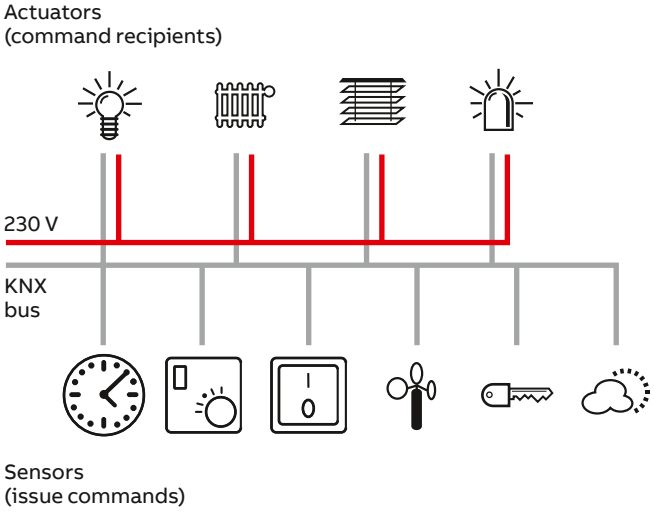


Protecta Plus
Order process

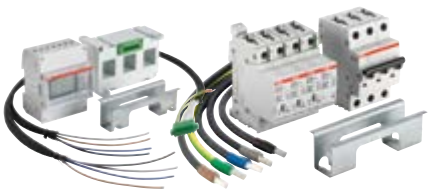
Protecta Plus DB

Vertical split-load board

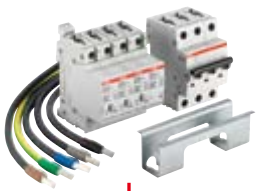
Horizintal split-load board

Incoming kit

2 x Distribution boards



Meter/surge kits (optional)

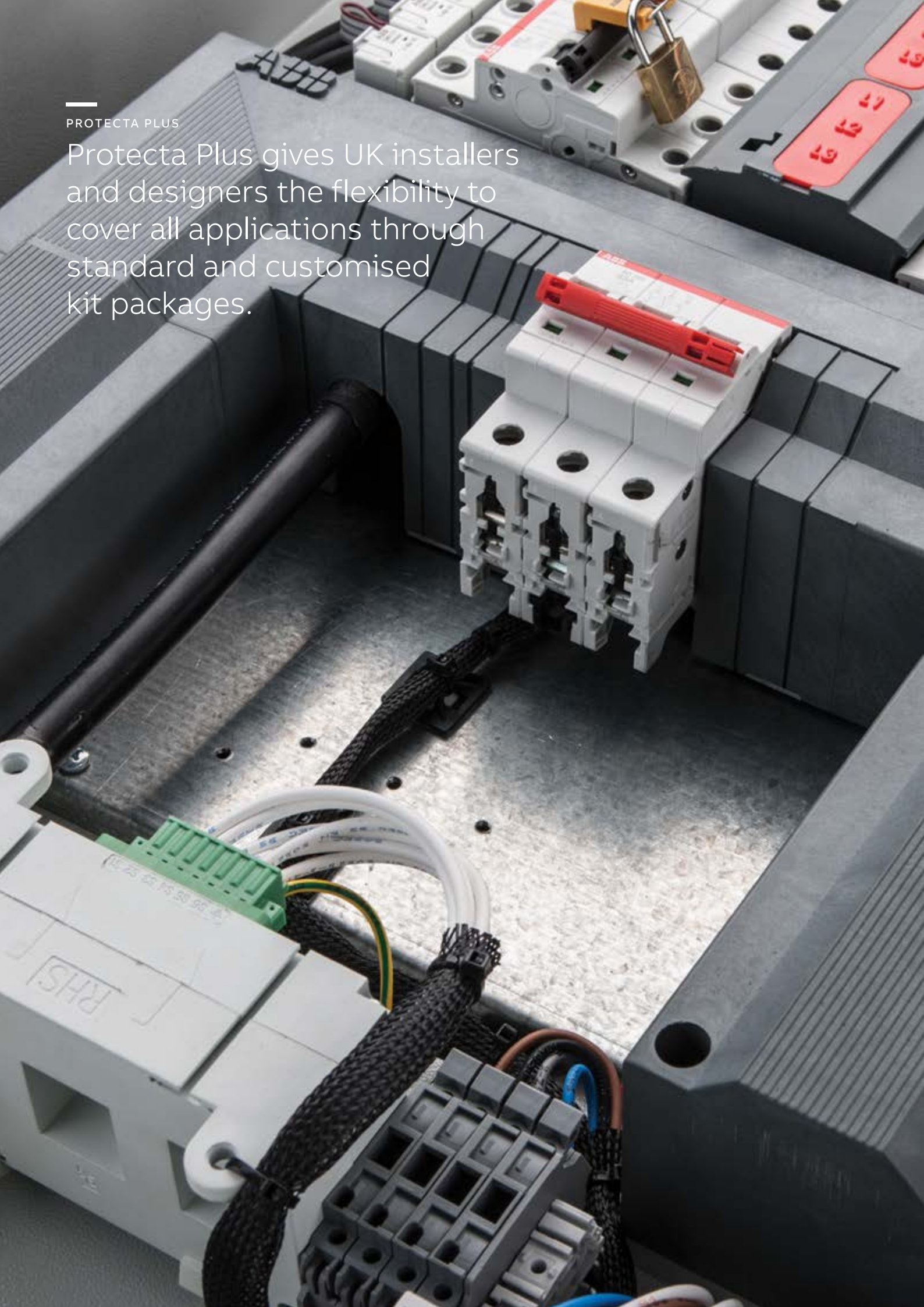


Surge kits (optional)

Surge kits (optional)

MCB/RCBO/Blanks

Accessories



PROTECTA PLUS

Protecta Plus gives UK installers and designers the flexibility to cover all applications through standard and customised kit packages.

Protecta Plus
Order Codes

Pack contents: Standard distribution board
- 250A distribution bar
- RAL7035 textured finish
- Door closing latch

MCB distribution board - Type B

Description	Order codes
Protecta Plus DB 4 Way 250A	EPP-W304
Protecta Plus DB 8 Way 250A	EPP-W308
Protecta Plus DB 12 Way 250A	EPP-W312
Protecta Plus DB 16 Way 250A	EPP-W316
Protecta Plus DB 20 Way 250A	EPP-W320
Protecta Plus DB 24 Way 250A	EPP-W324

Pack contents: Horizontal split load kit
- 2 x MID, Modbus (RS485) & Pulse Meters
- Associated CTs
- Incoming isolators
- Internal cables
- **Requires 2 x MCB distribution board - Type B**

Please note as these kits allow for 4 to 24way boards cutting and crimping of cables is required.

Horizontal split load kit

Description	Order codes
125A 3P Horizontal split load kit - 2 x Meters	EPP-HSL-1253P
125A 4P Horizontal split load kit - 2 x Meters	EPP-HSL-1254P
160A 3P Horizontal split load kit - 2 x Meters	EPP-HSL-1603P
160A 4P Horizontal split load kit - 2 x Meters	EPP-HSL-1604P
250A 3P Horizontal split load kit - 2 x Meters	EPP-HSL-2503P
250A 4P Horizontal split load kit - 2 x Meters	EPP-HSL-2504P

Protecta Plus
Order Codes

Pack contents: Vertical Split Load Boards
- 2/3 MID, Modbus (RS485) & Pulse Meters
- Associated CTs
- Incoming terminals
- Internal cables

Please note, no additional assembly is required. Units will be delivered with meters pre-configured to internal C.T sizing.

Vertical Split Load Boards - 42 variations are available

Order codes	No. of outgoing	Incomer rating (A)	No. of poles
EPP-VSL84	8+4 TPN	-125 -160 -250	3 P 4 P
EPP-VSL88	8+8 TPN		
EPP-VSL128	12+8 TPN		
EPP-VSL1212	12+12 TPN		
EPP-VSL168	16+8 TPN		
EPP-VSL844	8+4+4 TPN		
EPP-VSL1284	12+8+4 TPN		

Example order codes
EPP-VSL1212-1253P 12+12 Way 125A 3P
EPP-VSL168-2503P 16+8 Way 250A 3P

Vertical DB CT ratios
Dual 125 125+100
Dual 160 160+125
Dual 250 250+160
Tri 125 125+100+100
Tri 160 160+125+100
Tri 250 250+160+125

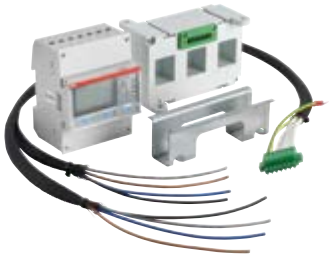
Boards are supplied fully assembled and metering devices configured to C.T. ratio's

Protecta Plus
Order Codes

Pack contents: Incoming kit
- Copper connection kit and fittings
- Incoming device
- Cover plate
- Instruction leaflet

Incoming connection kit

Description	Order codes
125A 3P Switch incoming connection kit	EPP-1253P
125A 4P Switch incoming connection kit	EPP-1254P
100A 4P RCD incoming connection kit 30mA Type AC - Left side neutral	EPP-1004R
160A 3P Switch incoming connection kit	EPP-1603P
160A 4P Switch incoming connection kit	EPP-1604P
250A 3P Switch incoming connection kit	EPP-2503P
250A 4P Switch incoming connection kit	EPP-2504P



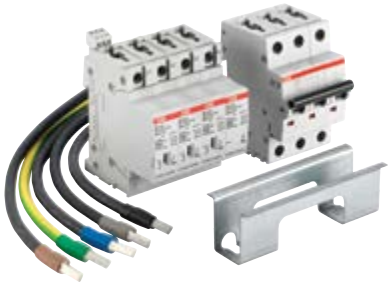
Pack contents: Incoming metering
- 1 x Meter
- 1 x C.T Block
- 1 x Wiring Loom & DIN support
- Instruction leaflet

Please note as these kits allow for 4 to 24way boards cutting and crimping of cables is required.

Incoming metering

Description	Order codes
125A MID Approved c/w pulse output	EPP-METMOD125A
125A MID Approved c/w pulse output & Modbus (RS485)	EPP-METMOD125B
125A MID Approved c/w pulse output, Modbus (RS485) Imp / Exp	EPP-METMOD125C
160A MID Approved c/w pulse output	EPP-METMOD160A
160A MID Approved c/w pulse output & Modbus (RS485)	EPP-METMOD160B
160A MID Approved c/w pulse output, Modbus (RS485) Imp / Exp	EPP-METMOD160C
250A MID Approved c/w pulse output	EPP-METMOD250A
250A MID Approved c/w pulse output & Modbus (RS485)	EPP-METMOD250B
250A MID Approved c/w pulse output, Modbus (RS485) Imp / Exp	EPP-METMOD250C

Protecta Plus
Order Codes



Pack contents: Surge protection
- 1 x Surge unit
- 1 x MCB 3P
- 1 x Wiring Loom & DIN support
- Instruction leaflet

Please note as these kits allow for 4 to 24way boards cutting and crimping of cables is required.

Surge protection

Description	Order codes
Type 2 surge protection - including 63A 3P MCB	EPP-SOULE
Type 2/3 surge protection - including 63A 3P MCB	EPP-FURSE

Pack contents: Contactor control
- 3P contactor
- Control circuit & fuse protection
- Instruction leaflet

Contactor Control

Description	Order codes
125A AC1 rated 3P Contactor	EPP-CON125
160A AC1 rated 3P Contactor	EPP-CON160
250A AC1 rated 3P Contactor	EPP-CON250

Protecta Plus
Order Codes

Pack contents: Top extension boxes
- Fixings
- DIN rail / mounting plate
- RAL7035 textured finish

Extension boxes

Type	No. of modules	Dimensions (mm) Height	(W x D)	Order codes
Hinged door with 1 DIN rail	16	200	450 x 130	EPP-R1016
Hinged door with 2 DIN rail	32	400	450 x 130	EPP-R2032
Plain extension box 200mm		200	450 x 130	EPP-EB20
Plain extension box 400mm		400	450 x 130	EPP-EB40

Pack contents: Type A distribution
- Supplied factory fitted with 100A switch disconnector
- RAL7035 textured finish

MCB Distribution board - Type A

Description	Order codes
Protecta Plus DB 4way 100A	HSMS4C
Protecta Plus DB 7way 100A	HSMS7C
Protecta Plus DB 11way 100A	HSMS11C
Protecta Plus DB 16way 100A	HSMS16C
Protecta Plus DB 20way 100A	HSMS20C

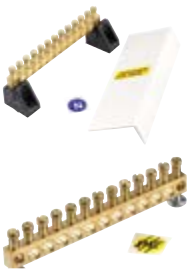
Protecta Plus
Order Codes

Pack contents: Row type boards
- Fixings
- DIN rail / mounting plate
- RAL7035 textured finish

Row type extension boxes

No. of modules	No. of rows	Sided width	Dimension Height	Order codes
36	2	4way DB	590	EPP-R2036
54	3	8way DB	730	EPP-R3054
72	4	12way DB	870	EPP-R4072
90	5	16way DB	1050	EPP-R5090
108	6	20way DB	1220	EPP-R6108
126	7	24way DB	1360	EPP-R7126

Additional N/PE for side extension boxes



Description	Order codes
Protecta Plus - Row Type N-Bar 9	EPP-N-09
Protecta Plus - Row Type N-Bar 13	EPP-N-13
Protecta Plus - Row Type N-Bar 17	EPP-N-17
Protecta Plus - Row Type N-Bar 21	EPP-N-21
Protecta Plus - Row Type E-Bar 9	EPP-PE-09
Protecta Plus - Row Type E-Bar 13	EPP-PE-13
Protecta Plus - Row Type E-Bar 17	EPP-PE-17
Protecta Plus - Row Type E-Bar 21	EPP-PE-21

Terminal cover

Description	Order codes
Protecta Plus - Top Shroud	EPP-TC
Protecta Plus Mains TS - 4 Way	EPP-MTCO4
Protecta Plus Mains TS - 8 Way	EPP-MTCO8
Protecta Plus Mains TS - 12 Way	EPP-MTC12
Protecta Plus Mains TS - 16 Way	EPP-MTC16
Protecta Plus Mains TS - 20 Way	EPP-MTC20
Protecta Plus Mains TS - 20 Way	EPP-MTC24

Protecta Plus
Order Codes

Labels for outgoing circuits

No. of ways	Order codes
4	EPP KIT-LAB04W
8	EPP KIT-LAB08W
12	EPP KIT-LAB12W
16	EPP KIT-LAB16W
20	EPP KIT-LAB20W
24	EPP KIT-LAB24W

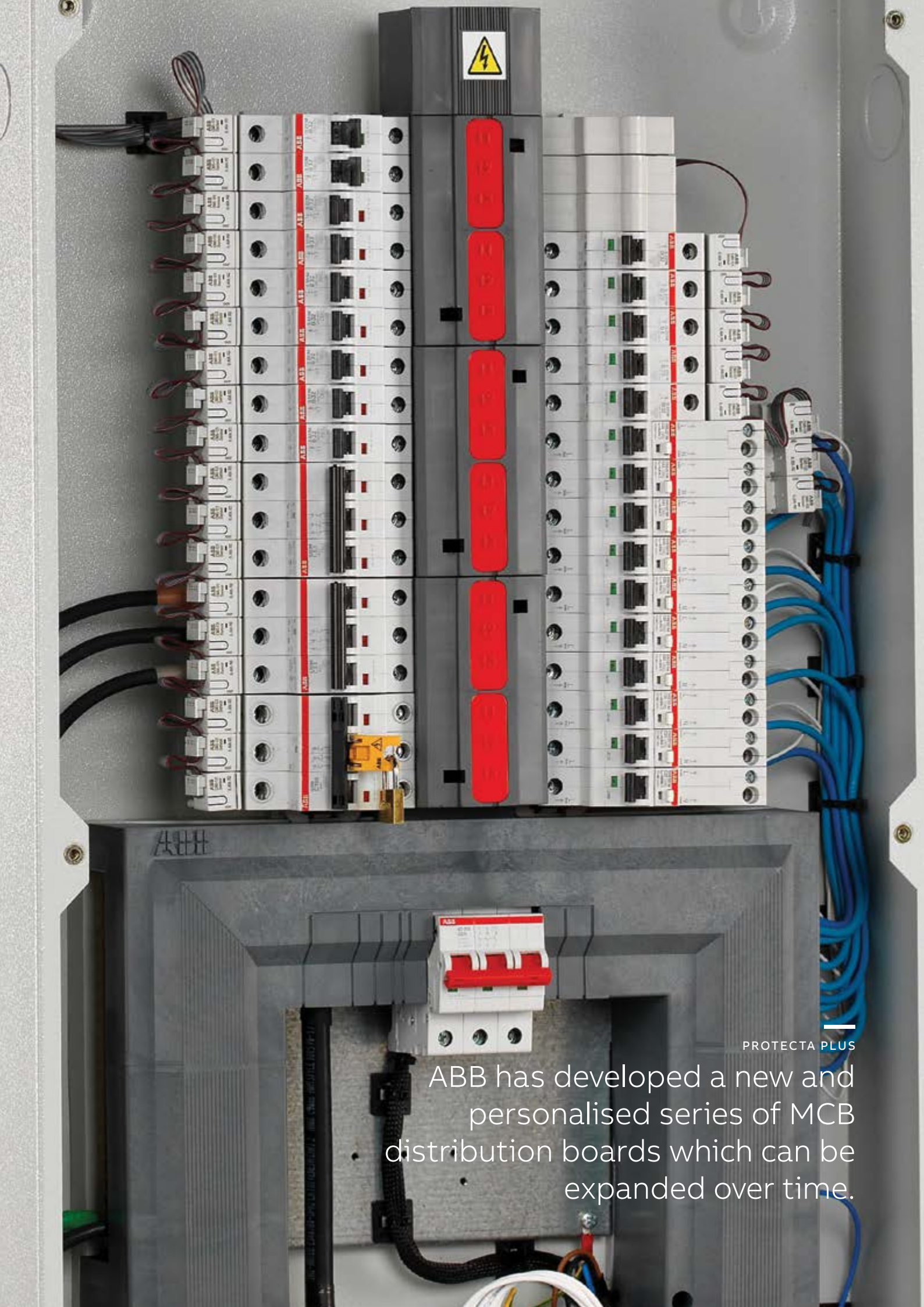
Replacement doors

Description	Order codes
Protecta Plus Trans Door - 4 ways / 2 rows	EPP-TD-04
Protecta Plus Trans Door - 8 ways / 3 rows	EPP-TD-08
Protecta Plus Trans Door - 12 ways / 4 rows	EPP-TD-12
Protecta Plus Trans Door - 16 ways / 4 rows	EPP-TD-16
Protecta Plus Trans Door - 20 ways / 5 rows	EPP-TD-20
Protecta Plus Trans Door - 24 ways / 6 rows	EPP-TD-24
Protecta Plus Solid Door - 4 ways / 2 rows	EPP-ST-04
Protecta Plus Solid Door - 8 ways / 3 rows	EPP-ST-08
Protecta Plus Solid Door - 12 ways / 4 rows	EPP-ST-12
Protecta Plus Solid Door - 16 ways / 4 rows	EPP-ST-16
Protecta Plus Solid Door - 20 ways / 5 rows	EPP-ST-20
Protecta Plus Solid Door - 24 ways / 6 rows	EPP-ST-24

Accessories

Description	Order codes
MCB Blank RAL7035 Grey	EPP-BP1
MCB Blank RAL9004 Black	EPP-BP1B
Lock And Key	EPP-LK KEY
Side By Side Connection Kit	EPP-KIT JOIN
Padlock Adaptor	SA 1
Padlock C/W 2 X Keys	SA 2
125A Single Phase Kit	EPP-KIT-1251P*
250A Single Phase Kit	EPP-KIT-2501P**
Trunking adaptor plate	EPP-TRADT
Protecta Plus - Glandplate Plain	EPP-GP-B
Protecta Plus - Glandplate K Os	EPP-GP KO
19 Modules 30 mm Busbar	PS1/19/30

*** Requires kit EPP-1254P** **** Required kit EPP-2504P**



PROTECTA PLUS

ABB has developed a new and personalised series of MCB distribution boards which can be expanded over time.

MCB - S 200 M series

Order codes

S 200 series M B

Rated current in A	Rated current in kA IEC/EN 60898-1 IEC/EN 60947-2	Order codes 1 Pole	3 Pole
6	10kA/15kA	S201M-B6	S203M-B6
10	10kA/15kA	S201M-B10	S203M-B10
13	10kA/15kA	S201M-B13	S203M-B13
16	10kA/15kA	S201M-B16	S203M-B16
20	10kA/15kA	S201M-B20	S203M-B20
25	10kA/15kA	S201M-B25	S203M-B25
32	10kA/15kA	S201M-B32	S203M-B32
40	10kA/15kA	S201M-B40	S203M-B40
50	10kA/15kA	S201M-B50	S203M-B50
63	10kA/15kA	S201M-B63	S202M-B63
80A	6kA	S201-B80	S203-B80
100A	6kA	S201-B100	S203-B100

S 200 series M C

Rated current in A	Rated current in kA IEC/EN 60898-1 IEC/EN 60947-2	Order codes 1 Pole	3 Pole
6	10kA/15kA	S201M-C6	S203M-C6
10	10kA/15kA	S201M-C10	S203M-C10
13	10kA/15kA	S201M-C13	S203M-C13
16	10kA/15kA	S201M-C16	S203M-C16
20	10kA/15kA	S201M-C20	S203M-C20
25	10kA/15kA	S201M-C25	S203M-C25
32	10kA/15kA	S201M-C32	S203M-C32
40	10kA/15kA	S201M-C40	S203M-C40
50	10kA/15kA	S201M-C50	S203M-C50
63	10kA/15kA	S201M-C63	S202M-C63
80A	6kA	S201-C80	S203-C80
100A	6kA	S201-C100	S203-C100

S 200 series M D

Rated current in A	Rated current in kA IEC/EN 60898-1 IEC/EN 60947-2	Order codes 1 Pole	3 Pole
6	10kA/15kA	S201M-D6	S203M-D6
10	10kA/15kA	S201M-D10	S203M-D10
13	10kA/15kA	S201M-D13	S203M-D13
16	10kA/15kA	S201M-D16	S203M-D16
20	10kA/15kA	S201M-D20	S203M-D20
25	10kA/15kA	S201M-D25	S203M-D25
32	10kA/15kA	S201M-D32	S203M-D32
40	10kA/15kA	S201M-D40	S203M-D40
50	10kA/15kA	S201M-D50	S203M-D50
63	10kA/15kA	S201M-D63	S202M-D63

Please see glossary for complete MCB offering.

MCB - S 200 P series
Order codes

S 200 series P B

	Rated current in A	Rated current in kA IEC/EN 60898-1	Order codes 1 Pole	3 Pole
	6	25kA	S201P-B6	S203P-B6
	10	25kA	S201P-B10	S203P-B10
	13	25kA	S201P-B13	S203P-B13
	16	25kA	S201P-B16	S203P-B16
	20	25kA	S201P-B20	S203P-B20
	25	25kA	S201P-B25	S203P-B25
	32	15kA	S201P-B32	S203P-B32
	40	15kA	S201P-B40	S203P-B40
	50	15kA	S201P-B50	S203P-B50
	63	15kA	S201P-B63	S203P-B63

S 200 series P C

	Rated current in A	Rated current in kA IEC/EN 60898-1	Order codes 1 Pole	3 Pole
	6	25kA	S201P-C6	S203P-C6
	10	25kA	S201P-C10	S203P-C10
	13	25kA	S201P-C13	S203P-C13
	16	25kA	S201P-C16	S203P-C16
	20	25kA	S201P-C20	S203P-C20
	25	25kA	S201P-C25	S203P-C25
	32	15kA	S201P-C32	S203P-C32
	40	15kA	S201P-C40	S203P-C40
	50	15kA	S201P-C50	S203P-C50
	63	15kA	S201P-C63	S203P-C63

S 200 series P D

	Rated current in A	Rated current in kA IEC/EN 60898-1	Order codes 1 Pole	3 Pole
	6	25kA	S201P-D6	S203P-D6
	10	25kA	S201P-D10	S203P-D10
	13	25kA	S201P-D13	S203P-D13
	16	25kA	S201P-D16	S203P-D16
	20	25kA	S201P-D20	S203P-D20
	25	25kA	S201P-D25	S203P-D25
	32	15kA	S201P-D32	S203P-D32
	40	15kA	S201P-D40	S203P-D40
	50	15kA	S201P-D50	S203P-D50
	63	15kA	S201P-D63	S203P-D63

Please see glossary for complete MCB offering.

RCBO DSE201 M - Type A

Order codes

DSE201 M - Type A

Rated residual current IΔn [mA]	Rated current in A	Rated current in kA	Order codes	
			B Characteristic	C Characteristic
10	6	10kA/15kA	DSE201 M B6 A10	DSE201 M C6 A10
	10	10kA/15kA	DSE201 M B10 A10	DSE201 M C10 A10
	16	10kA/15kA	DSE201 M B16 A10	DSE201 M C16 A10
	20	10kA/15kA	DSE201 M B20 A10	DSE201 M C20 A10
	25	10kA/15kA	DSE201 M B25 A10	DSE201 M C25 A10
	32	10kA/15kA	DSE201 M B32 A10	DSE201 M C32 A10
	40	10kA/15kA	DSE201 M B40 A10	DSE201 M C40 A10
	50	10kA	DSE201 M B50 A10	DSE201 M C50 A10
30	6	10kA/15kA	DSE201 M B6 A30	DSE201 M C6 A30
	10	10kA/15kA	DSE201 M B10 A30	DSE201 M C10 A30
	16	10kA/15kA	DSE201 M B16 A30	DSE201 M C16 A30
	20	10kA/15kA	DSE201 M B20 A30	DSE201 M C20 A30
	25	10kA/15kA	DSE201 M B25 A30	DSE201 M C25 A30
	32	10kA/15kA	DSE201 M B32 A30	DSE201 M C32 A30
	40	10kA/15kA	DSE201 M B40 A30	DSE201 M C40 A30
	50	10kA	DSE201 M B50 A30	DSE201 M C50 A30
100	6	10kA/15kA		DSE201 M C6 A100
	10	10kA/15kA		DSE201 M C10 A100
	16	10kA/15kA		DSE201 M C16 A100
	20	10kA/15kA		DSE201 M C20 A100
	25	10kA/15kA		DSE201 M C25 A100
	32	10kA/15kA		DSE201 M C32 A100
	40	10kA/15kA		DSE201 M C40 A100
	50	10kA		DSE201 M C50 A100
300	6	10kA/15kA		DSE201 M C6 A300
	10	10kA/15kA		DSE201 M C10 A300
	16	10kA/15kA		DSE201 M C16 A300
	20	10kA/15kA		DSE201 M C20 A300
	25	10kA/15kA		DSE201 M C25 A300
	32	10kA/15kA		DSE201 M C32 A300
	40	10kA/15kA		DSE201 M C40 A300
	50	10kA		DSE201 M C50 A300

RCBO DSE201 M - Type AC

Order codes

DSE201 M - Type AC

Rated residual current IΔn [mA]	Rated current in A	Rated current in kA	Order codes	
			B Characteristic	C Characteristic
10	6	10kA/15kA	DSE201 M B6 AC10	DSE201 M C6 AC10
	10	10kA/15kA	DSE201 M B10 AC10	DSE201 M C10 AC10
	16	10kA/15kA	DSE201 M B16 AC10	DSE201 M C16 AC10
	20	10kA/15kA	DSE201 M B20 AC10	DSE201 M C20 AC10
	25	10kA/15kA	DSE201 M B25 AC10	DSE201 M C25 AC10
	32	10kA/15kA	DSE201 M B32 AC10	DSE201 M C32 AC10
	40	10kA/15kA	DSE201 M B40 AC10	DSE201 M C40 AC10
	50	10kA	DSE201 M B50 AC10	DSE201 M C50 AC10
30	6	10kA/15kA	DSE201 M B6 AC30	DSE201 M C6 AC30
	10	10kA/15kA	DSE201 M B10 AC30	DSE201 M C10 AC30
	16	10kA/15kA	DSE201 M B16 AC30	DSE201 M C16 AC30
	20	10kA/15kA	DSE201 M B20 AC30	DSE201 M C20 AC30
	25	10kA/15kA	DSE201 M B25 AC30	DSE201 M C25 AC30
	32	10kA/15kA	DSE201 M B32 AC30	DSE201 M C32 AC30
	40	10kA/15kA	DSE201 M B40 AC30	DSE201 M C40 AC30
	50	10kA	DSE201 M B50 AC30	DSE201 M C50 AC30
100	6	10kA/15kA		DSE201 M C6 AC100
	10	10kA/15kA		DSE201 M C10 AC100
	16	10kA/15kA		DSE201 M C16 AC100
	20	10kA/15kA		DSE201 M C20 AC100
	25	10kA/15kA		DSE201 M C25 AC100
	32	10kA/15kA		DSE201 M C32 AC100
	40	10kA/15kA		DSE201 M C40 AC100
	50	10kA		DSE201 M C50 AC100
300	6	10kA/15kA		DSE201 M C6 AC300
	10	10kA/15kA		DSE201 M C10 AC300
	16	10kA/15kA		DSE201 M C16 AC300
	20	10kA/15kA		DSE201 M C20 AC300
	25	10kA/15kA		DSE201 M C25 AC300
	32	10kA/15kA		DSE201 M C32 AC300
	40	10kA/15kA		DSE201 M C40 AC300
	50	10kA		DSE201 M C50 AC300

RCCB F 200 series AC type

Order Codes

F 200 AC type - F202

	Number of poles	Rated residual current IΔn [mA]	Rated current in A	Order codes
	2	10	16	F202 AC-16/0.01
			25	F202 AC-25/0.01
		30	25	F202 AC-25/0.03
			40	F202 AC-40/0.03
			63	F202 AC-63/0.03
			80	F202 AC-80/0.03
			100	F202 AC-100/0.03
		100	25	F202 AC-25/0.1
			40	F202 AC-40/0.1
			63	F202 AC-63/0.1
			80	F202 AC-80/0.1
			100	F202 AC-100/0.1
		300	25	F202 AC-25/0.3
			40	F202 AC-40/0.3
			63	F202 AC-63/0.3
			80	F202 AC-80/0.3
			100	F202 AC-100/0.3
		500	25	F202 AC-25/0.5
			40	F202 AC-40/0.5
			63	F202 AC-63/0.5
			80	F202 AC-80/0.5
			100	F202 AC-100/0.5

RCCB F 200 series AC type
Order Codes

F 200 AC type - F204

Number of poles	Rated residual current IΔn [mA]	Rated current in A	Order codes
4	30	25	F204 AC-25/0.03
		40	F204 AC-40/0.03
		63	F204 AC-63/0.03
		80	F204 AC-80/0.03
		100	F204 AC-100/0.03
	100	25	F204 AC-25/0.1
		40	F204 AC-40/0.1
		63	F204 AC-63/0.1
		80	F204 AC-80/0.1
		100	F204 AC-100/0.1
	300	25	F204 AC-25/0.3
		40	F204 AC-40/0.3
		63	F204 AC-63/0.3
		80	F204 AC-80/0.3
		100	F204 AC-100/0.3
	500	25	F204 AC-25/0.5
		40	F204 AC-40/0.5
		63	F204 AC-63/0.5
		80	F204 AC-80/0.5
		100	F204 AC-100/0.5

Metering EQ series

Order codes

A series - A41

80A SPN 4mod	Description	Order codes
	Pulse output	A41 111 - 100
	Pulse output, RS-485	A41 112 - 100
	Pulse output, M-Bus	A41 113 - 100
	2 output, 2 input, RS-485	A41 312 - 100
	2 output, 2 input. M-Bus	A41 313 - 100

A series - A43

80A TPN 7mod	Description	Order codes
	Pulse output	A43 111 - 100
	Pulse output, RS-485	A43 112 - 100
	Pulse output, M-Bus	A43 113 - 100
	2 output, 2 input, RS-485	A43 312 - 100
	2 output, 2 input, M-Bus	A43 313 - 100

B series - B21

65A SPN 2mod	Description	Order codes
	Pulse output	B21 111 - 100
	Pulse output, RS-485	B21 112 - 100
	Pulse output, M-Bus	B21 113 - 100
	2 output, 2 input, RS-485	B21 312 - 100
	2 output, 2 input, M-Bus	B21 313 - 100

B series - B23

65A TPN 4mod	Description	Order codes
	Pulse output	B23 111 - 100
	Pulse output, RS-485	B23 112 - 100
	Pulse output, M-Bus	B23 113 - 100
	2 output, 2 input, RS-485	B23 312 - 100
	2 output, 2 input, M-Bus	B23 313 - 100

Circuit Monitoring System - CMS
Order Codes

ABB's circuit monitoring system (CMS) is a unique ultra-compact and high-performance multi-channel measurement system for branch monitoring.
The system consists of a control unit and sensors with different measurement ranges and mounting possibilities.

Open core sensors Open-core sensors 18 mm for Pro M & SMISSLINE installation devices with twin terminals

Description	Order codes
80A	CMS-120PS
40A	CMS-121PS
20A	CMS-122PS

Open core sensors Open-core sensors 18 mm for DIN rail mounting (universally usable)

Description	Order codes
80A	CMS-120DR
40A	CMS-121DR
20A	CMS-122DR

Control Units

Description	Order codes
Control Unit CMS-600	CMS-600
Control Unit CMS-700	CMS-700

For more detailed information see p66.

Accessories

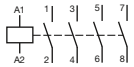
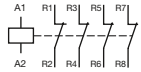
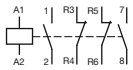
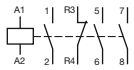
Description	Order Codes
Cable 5m	CMS-802
Sensor connectors (35pcs)	CMS-820

ESB installation contactors

Order Codes

These devices are specifically made for commanding loads and signalling electrical conditions in any low-voltage distribution board. The functions of these devices are particularly switching, pushing and signalling electrical conditions in any installations (low-voltage area)

ESB 24

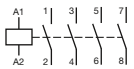
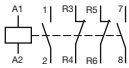
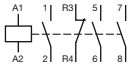
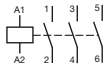
Main poles	Number of modules	Control coil voltage 40-50 Hz	Control coil voltage DC	Order codes
2 N.O. 	2	24 V	24 V	ESB 24-20*
		230...240 V	230...240 V	ESB 24-20*
4 N.O. 	2	12 V	12 V	ESB 24-40*
		24 V	24 V	ESB 24-40*
		110...120 V	110...120 V	ESB 24-40*
		230...240 V	230...240 V	ESB 24-40*
4 N.C. 	2	12 V	12 V	ESB 24-04*
		24 V	24 V	ESB 24-04*
		110...120 V	110...120 V	ESB 24-04*
		230...240 V	230...240 V	ESB 24-04*
2 N.O. 2 N.C. 	2	12 V	12 V	ESB 24-22*
		24 V	24 V	ESB 24-22*
		110...120 V	110...120 V	ESB 24-22*
		230...240 V	230...240 V	ESB 24-22*
	2	12 V	12 V	ESB 24-31*
3 N.O. 1 N.C. 		24 V	24 V	ESB 24-31*
		110...120 V	110...120 V	ESB 24-31*
		230...240 V	230...240 V	ESB 24-31*
	2	12 V	12 V	ESB 24-13*
4 N.O. 3 N.C. 		24 V	24 V	ESB 24-13*
		110...120 V	110...120 V	ESB 24-13*
		230...240 V	230...240 V	ESB 24-13*

*** Ensure voltage is selected**

ESB installation contactors

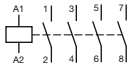
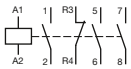
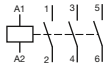
Order Codes

ESB 40

Main poles	Number of modules	Control coil voltage 40-50 Hz	Control coil voltage DC	Order codes
4 N.O. 	3	12 V	12 V	ESB 40-40*
		24 V	24 V	ESB 40-40*
		110...120 V	110...120 V	ESB 40-40*
		230...240 V	230...240 V	ESB 40-40*
2 N.C. 	3	24 V	24 V	ESB 40-22*
		230 V	230 V	ESB 40-22*
1 N.C. 	3	24 V	24 V	ESB 40-31*
		230 V	230 V	ESB 40-31*
3 N.O. 	3	24 V	24 V	ESB 40-30*
		230 V	230 V	ESB 40-30*
2 N.O. 	3	24 V	24 V	ESB 40-20*
		230 V	230 V	ESB 40-20*

*** Ensure voltage is selected**

ESB 63

Main poles	Number of modules	Control coil voltage 40-50 Hz	Control coil voltage DC	Order codes
4 N.O. 	3	12 V	12 V	ESB 63-40*
		24 V	24 V	ESB 63-40*
		110...120 V	110...120 V	ESB 63-40*
		230...240 V	230...240 V	ESB 63-40*
1 N.C. 	3	110 V	110 V	ESB 63-31*
		230 V	230 V	ESB 63-31*
3 N.O. 	3	230 V	230 V	ESB 63-30*
		400 V	400 V	ESB 63-30*
2 N.O. 	3	24 V	24 V	ESB 63-20*
		230 V	230 V	ESB 63-20*
1 N.O. 1 N.C. 	3	230 V	230 V	ESB 63-11*

*** Ensure voltage is selected**

D Line digital time switches
Order Codes

D Line weekly digital time switches
The unique design, with white backlit LCD display, and extreme ease of use with two lines of text menu and only four buttons, make D Line ideal to automate the installation functions.

Thanks to the innovative management of time vacation, the D Line digital time switches allow the exclusion of the normal weekly program in one or more periods of several years or between two different years.

The range includes 1 and 2 channel versions, equipped with large capacity internal battery to maintain operation without power supply and permanent memory EEPROM, to avoid the risk of program loss and to maintain the date and time settings in the event of power failure, irrespective of its duration.

The “Plus” version can transfer different types of program by using a D KEY to be quickly copied in using no digital time switches, avoiding the errors due to future modification. The “SYNCHRO” version can be coupled to the D DCF77 antenna, that allows an automatic synchronization of the digital time switch with the Frankfurt DCF77 time signal, or can be coupled to the D GPS antenna to allows synchronization received from the Global Positioning System.

The D Line is particularly useful in environments and situations where user management is required with a time schedule flexible enough to predict or exclude activities according to time and day of week or month.

D Line switches

D1 D1 Plus

Channels no.	Type	Order codes
1	D1	2CSM258763R0621
1	D1 PLUS	2CSM257583R0621
1	D1 SYNCHRO	2CSM257493R0621
2	D2	2CSM256313R0621
2	D2 PLUS	2CSM277583R0621
2	D2 SYNCHRO	2CSM277363R0621

Accessories

Versions	Type	Order codes
Programming key	D KEY	2CSM277143R0621
Programming software	D SW	2CSM299973R0621
DCF77 antenna	D DCF77	2CSM299983R0621
GPS antenna	D GPS	2CSM299993R0621

Please see page 70 for explanation of types

T Line modular twilight switches
Order Codes

— 01 T1

— 02 T1 PLUS

— 03 LS-D

T Line modular twilight switches
These twilight switches allow to switch ON and switch OFF lighting devices according to a scheduled level of the ambient light. They are used in combination with an external sensor to detect if the ambient light is higher or lower than the set level.

A switching delay prevents them from operating unnecessarily when the light intensity suddenly changes (e.g. lightning, moving vehicles, etc.). The T1 twilight switch in 1 channel is preset at 10 lux.

from factory and is equipped with 2 signalling LEDs that indicate the setpoint value and display the status of the contact . The operating instructions are printed on the side of the product. T1 PLUS switches feature a setpoint that can be adjusted for 4 different scale values (2:40, 20:200, 200:2000, 2000:15000).This makes them ideal for daytime applications where the lux values are very high. With a 10 lux preset factory setting, they are equipped with 2 signalling LEDs that indicate the setpoint value and display the status of the contact.

— **T Line modular twilight switches**

Brightness range lux	Type	Order codes
2:200	T1	2CSM295563R1341
2:15000	T1 PLUS	2CSM295793R1341

Accessories for T Line modular twilight switches
The external sensor is supplied in the same package of the switch, but it's also available separately as spare part. The upper part of the external case (with screw locking), is made up of thermoplastic materials and bears up against ultraviolet rays to guarantee a homogeneous diffusion of the daylight internally. LS-D is also equipped with a cable gland.

— **Accessories**

Brightness range lux	Type	Order codes
External sensor	LS-D	2CSM295723R1341

— 01

— 02

— 03

Modular sockets
Order Codes

British standard modular sockets

	Colour	Modules	Order codes
M1363	Grey	3	M1363
	Grey with light	3	M1363-L

E 90 fuse switch disconnectors
Order Codes

E 90 series fuse switch disconnectors are designed for switching circuits under load, providing protection against short circuits and overloads. The case is made of self-extinguishing thermoplastic material resistant to high temperatures (all materials are UL listed) while the contact clips are in silver plated copper.
E 90 fuse switch disconnectors can be sealed or padlocked to ensure operator safety during maintenance. Versions with blown fuse indicator allow to check whether the fuse is still working correctly or not. For easy and quick installation E 90 range is totally compatible with connecting bars, terminals and caps of S 200 MCBs.
Thanks to cURus approval, they can be installed in UL certified machines.

E 90 fuse switch disconnectors for 10.3 x 38 mm fuses (AC-22B)

	Number of poles	Rated current In	Modules	Order codes
E92	1	32	1	E 91/32
	1	32	1	E 91/32s
	3	32	3	E 93/32
	3	32	3	E 93/32s
E94				
				

Fuses not included

CMS

The CMS system allows users to measure AC and DC currents for up to 64 individual lines. Data can be remotely monitored via desktop or mobile device app.

Protecta Plus

Technical specifications

Technical features

Description		
Standards/requirements		IEC BS EN 61439-1&2, ed.2 (2011-08)
Rated current		
Maximum load		250A at ambient temperature +35°
Rated operational voltage (Ue)		415 V AC
Rated frequency		50/60 Hz
Rated insulation voltage (Ui)		690 V
Rated conditional short circuit current (Icc)		35 kA
Neutral size		2 Brass bar each size (7*10) mm
Earth size		2 Brass bars each size (7*10) mm
Degree of protection	With Door	IP 43
	Pan Assembly	IP 20
Mechanical impact strength	Cabinet enclosures	IK 07
Housing and door material		
Material Type		Cold rolled sheet steel 1 mm
Color		RAL 7035
Coating Type (Powder or)		Electrostatic powder coating, textured finish
Door opening angle		180°
Position of knockouts		Top and bottom
Type of Door Closure		Latch (Optional Lock)
Incoming cable connections*		125A >50 mm
		160A >70 mm
		250A >95 mm

***For requirements above stated figures seek advise from technical services**

Protecta Plus
Dimensions

01 Type B Distribution boards

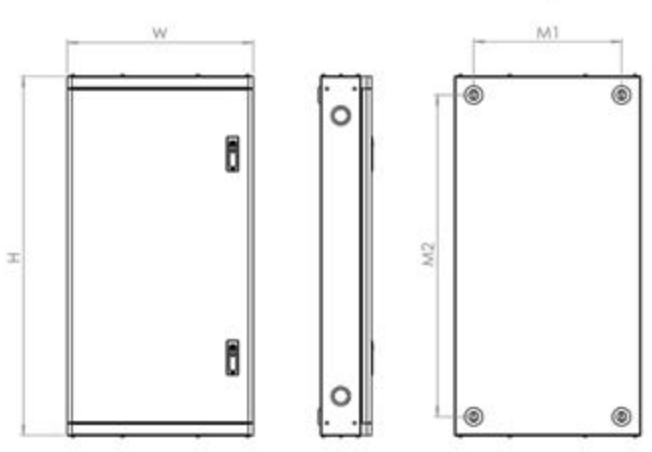
02 Extension boxes

Type B Distribution boards

	Height mm	Width mm	Depth mm	M1 mm	M2 mm
EPP-W304	590	450	125	358	500
EPP-R2036	590	450	125	358	500
EPP-W308	730	450	125	358	640
EPP-R3054	730	450	125	358	640
EPP-W312	870	450	125	358	780
EPP-R4072	870	450	125	358	780
EPP-W316	1,050	450	125	358	960
EPP-R5090	1,050	450	125	358	960
EPP-W320	1,220	450	125	358	1,130
EPP-R6108	1,220	450	125	358	1,130
EPP-W324	1,360	450	125	358	1,270
EPP-R7126	1,360	450	125	358	1,270

Extension boxes

	Height mm	Width mm	Depth mm	M1 mm	M2 mm
EPP-EB20	200	450	125	358	110
EPP-EB40	400	450	125	358	310
EPP-RW1016	200	450	125	358	110
EPP-RW2032	400	450	125	358	310
EPP-CON	500	450	125	358	410



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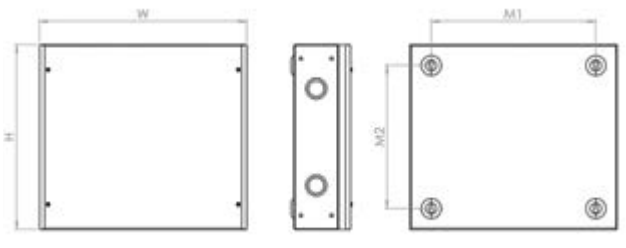


02

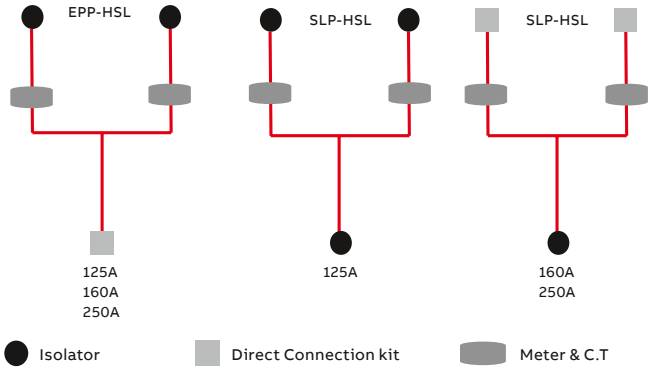
Protecta Plus
Dimensions

01 / 02 Horizontal split-load boards

	Height mm 125/160A	Height mm 250A	Width mm	Depth mm
EPP-HSL 2x4way	990	1,190	900	125
EPP-HSL 2x8way	1,130	1,330	900	125
EPP-HSL 2x12way	1,270	1,470	900	125
EPP-HSL 2x16way	1,450	1,650	900	125
EPP-HSL 2x20way	1,620	1,820	900	125
EPP-HSL 2x24way	1,760	1,960	900	125

EPP-HSL kits are aligned from the base of the DB. SLP-HSL assemblies are aligned from the top od the DB. SLP-HSL are complete assemblies designed for projects.

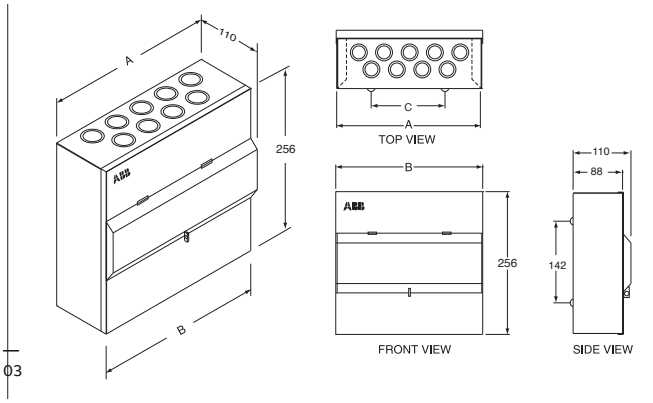
01



02

03 Housemaster compact sheet steal consumer unit (surface mounted)

	Number of modules	A mm	B mm	C mm
HSMS 04C	4way	152	155	77
HSMS 07C	7way	207	210	133
HSMS 11C	11way	257	263	187
HSMS 16C	16way	265	368	292
HSMS 20C	20way	437	440	360



03

Protecta Plus
Dimensions

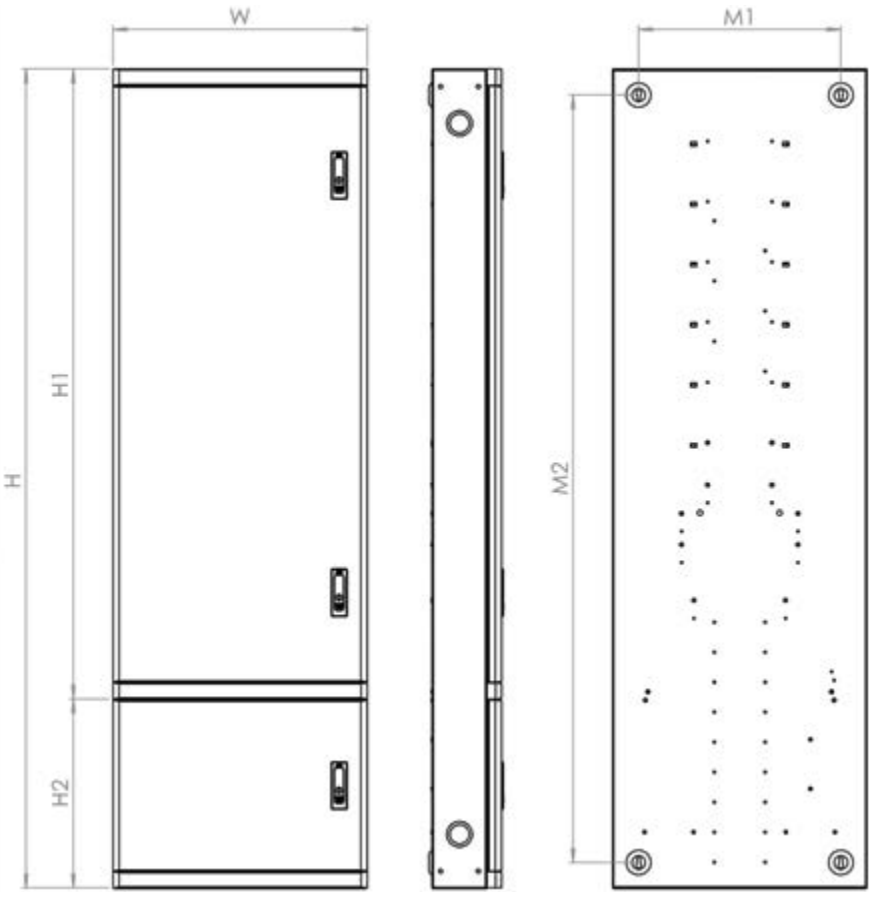
01 Vertical split-load board

02 Metering layout

Vertical split-load boards

125/160/250A	Height mm	Width mm	Depth mm	M1 mm	M2 mm
EPP-VSL 8+4	1,090	450	125	358	1,000
EPP-VSL 8+8	1,270	450	125	358	1,180
EPP-VSL 12+8	1,440	450	125	358	1,350
EPP-VSL 12+12*	1,580	450	125	358	1,490
EPP-VSL 16+8*	1,580	450	125	358	1,490
EPP-VSL 8+4+4*	1,380	450	125	358	1,290
EPP-VSL 12+4+4*	1,690	450	125	358	1,600

* Please ensure RCBO lead lengths are considered.



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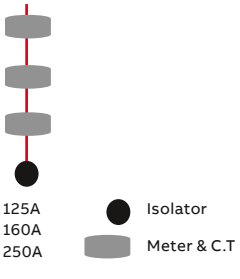


02

MCBs technical details

Definitions according to standards for miniature circuit breakers

Rated insulation voltage (U_i) according IEC/EN 60664-1:
Root mean square (R.M.S.) withstand voltage value assigned by the manufacturer to the equipment or to a part of it, characterizing the specified (long-term) withstand capability of its insulation.

—

The rated insulation voltage is not necessarily equal to the rated voltage of the equipment which is primarily related to functional performance.

IEC/EN 60898-1
Miniature Circuit Breakers according IEC/EN 60898-1 are intended for the protection against over-currents of wiring installations in buildings and similar applications; they are designed for use by uninstructed people and for not being maintained.

This part of IEC/EN 60898 applies for a.c. air-break circuit-breakers for operation at 50 Hz or 60 Hz, having a rated voltage not exceeding 440 V (between phases), a rated current not exceeding 125 A and a rated short-circuit capacity not exceeding 25,000 A. As far as possible, it is in line with the requirements contained in IEC/EN 60947-2.

Rated short-circuit capacity (Icn)
The rated short-circuit capacity of a circuit-breaker is the value of the ultimate short-circuit breaking capacity assigned to that circuit-breaker by the manufacturer.
The sequence of operations shall be: O – t – CO

Service short-circuit capacity (Ics)
A circuit-breaker having a given rated short-circuit capacity has a corresponding fixed service short-circuit capacity (Ics).
This is therefore generally not indicated.

Rated operational voltage (U_n)
The rated voltage of a circuit-breaker is the value of voltage, assigned by the manufacturer, to which its performance (particularly the short-circuit performance) is referred.
The same circuit-breaker may be assigned a number of rated voltages and associated rated short-circuit capacities.

The voltage which appears across the terminals of a pole of a circuit-breaker after the breaking of the current.

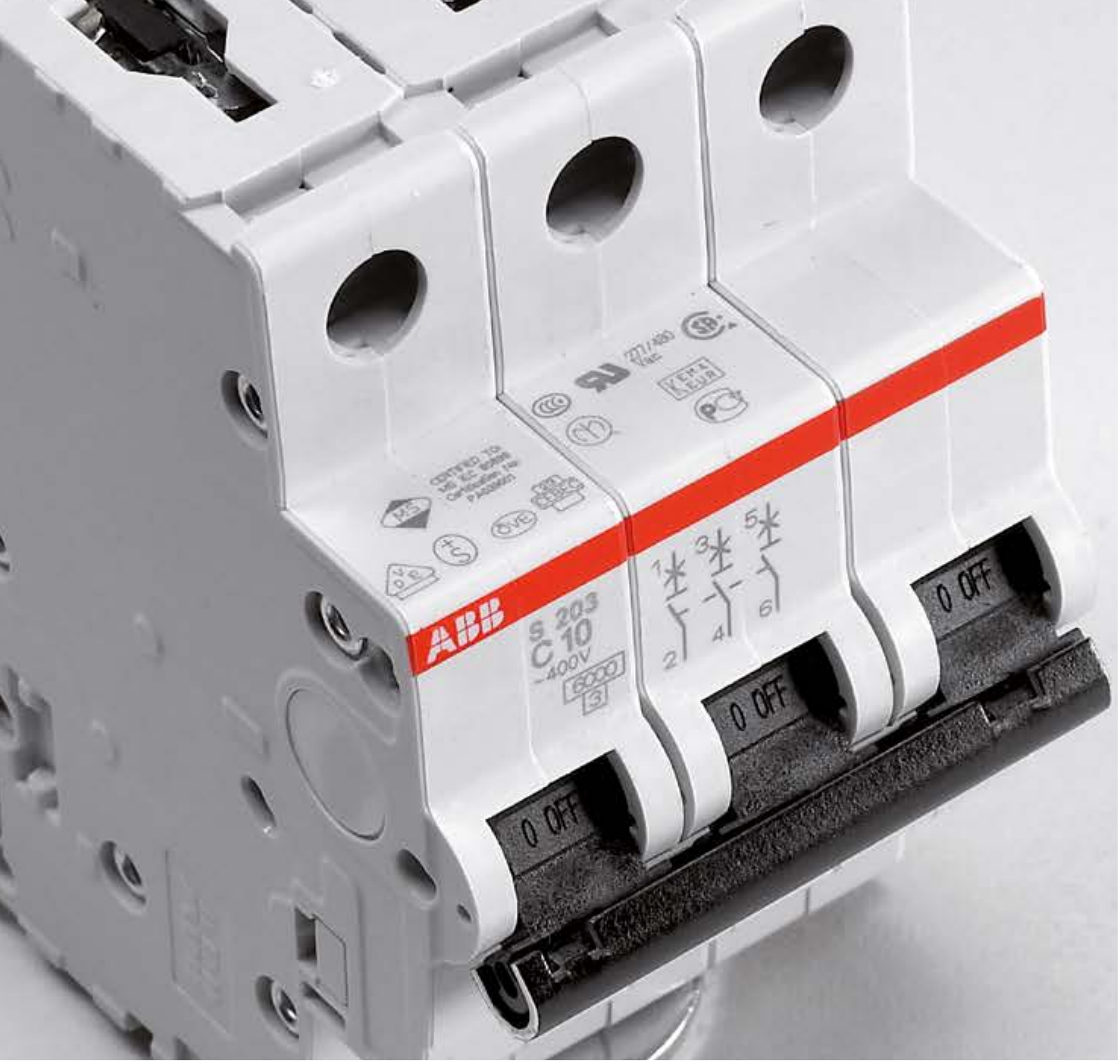
The value of the power frequency recovery voltage shall be equal to 110% of the rated voltage of the circuit-breaker under test.

IEC/EN 60947-2
This part of the IEC/EN 60947 applies to circuit-breakers, the main contacts of which are intended to be connected to circuits, the rated voltage of which does not exceed 1,000 V AC or 1,500 V DC
It applies whatever the rated currents, the method of construction or the proposed applications of the circuit-breakers may be.
The circuit-breakers are designed for use by instructed people.

Rated ultimate short-circuit breaking capacity Icu
The rated ultimate short-circuit breaking capacity of a circuit-breaker is the value of ultimate short-circuit breaking capacity assigned to that circuit-breaker by the manufacturer for the corresponding rated operational voltage.
It is expressed as the value of the prospective breaking current, in kA (r.m.s. value of the AC component in the case of AC).

The sequence of operations shall be: O – t – CO

Rated service short-circuit breaking capacity Ics
The rated service short-circuit breaking capacity of a circuitbreaker is the value of service short-circuit breaking capacity assigned to that circuit-breaker by the manufacturer for the corresponding rated operational voltage. It is expressed as a value of prospective breaking current, in kA, corresponding to one of the specified percentages of the rated ultimate



—
01 The rated insulation voltage is not necessarily equal to the rated voltage of the equipment which is primarily related to functional performance

shortcircuit breaking capacity and rounded up to the nearest whole number. It may be expressed as a percentage of Icu (for example Ics = 25% Icu).

The sequence of operations shall be:
O – t – CO – t – CO

The following symbols are used for defining the sequence of operatons:

O	represents an opening operation.
CO	represents a closing operation followed by an automatic opening.
t	represents the time interval between two short-circuit operations.

Rated operational voltage (U_e)
The rated operational voltage of an equipment is a value of voltage which, combined with a rated operational current, determines the application of the equipment and to which the relevant tests and the utilization categories are referred.

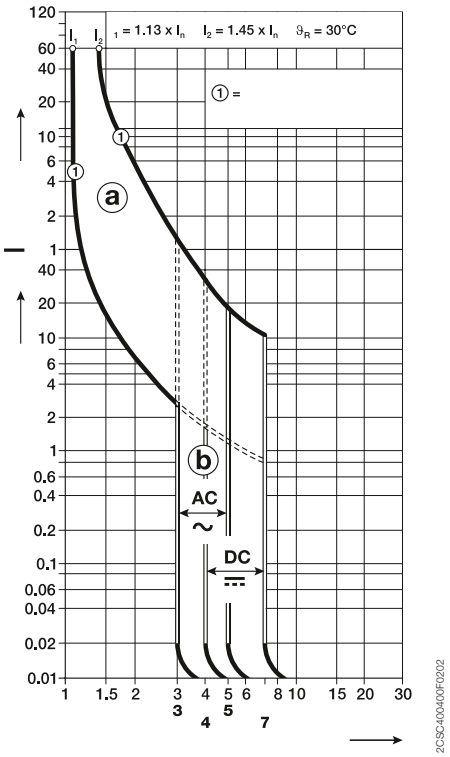
For single-pole equipment it is generally stated as the voltage across the pole. For multi pole equipment it is generally stated as the voltage between phases.

Equipment may be assigned a number of combinations of rated operational voltage and associated making and breaking capacities for different duties and utilization categories.

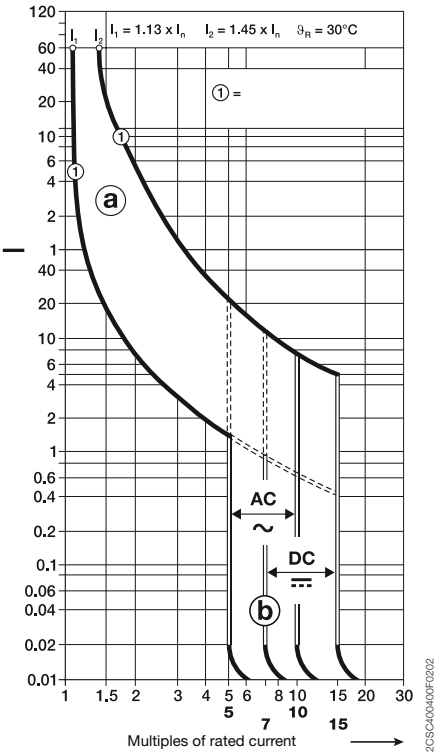
MCBs technical details

Definitions according to standards for miniature circuit breakers

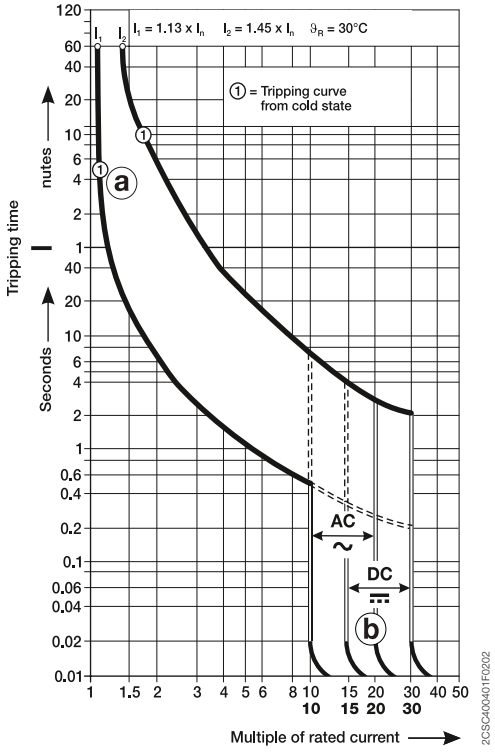
Characteristic B IEC-EN60898



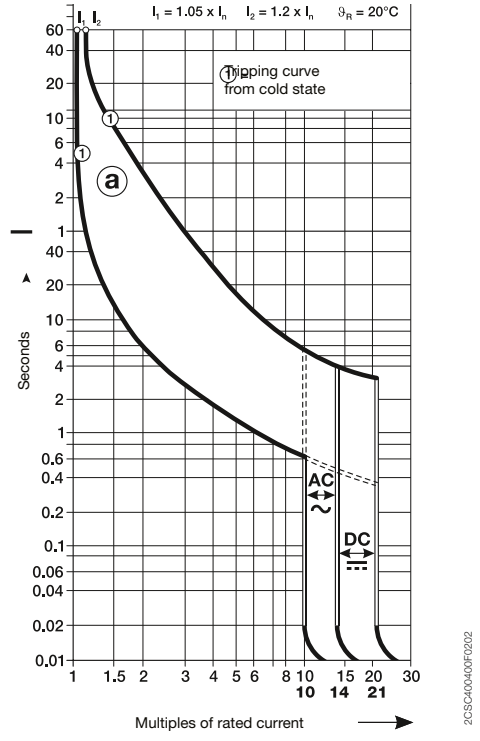
Characteristic C IEC-EN60898



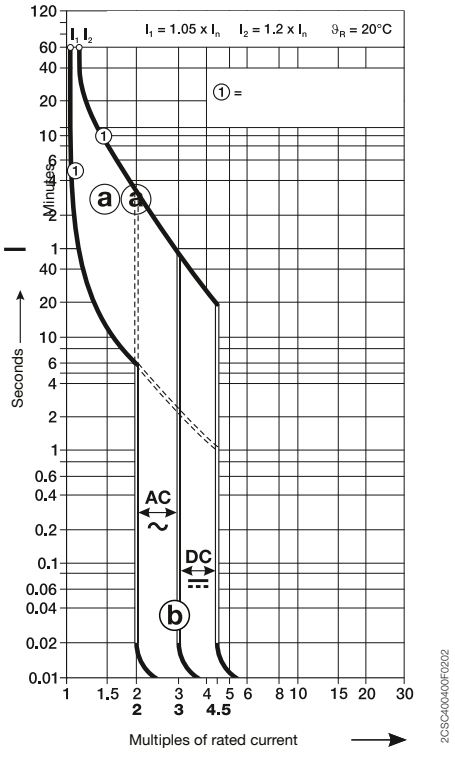
Characteristic D IEC-EN60898

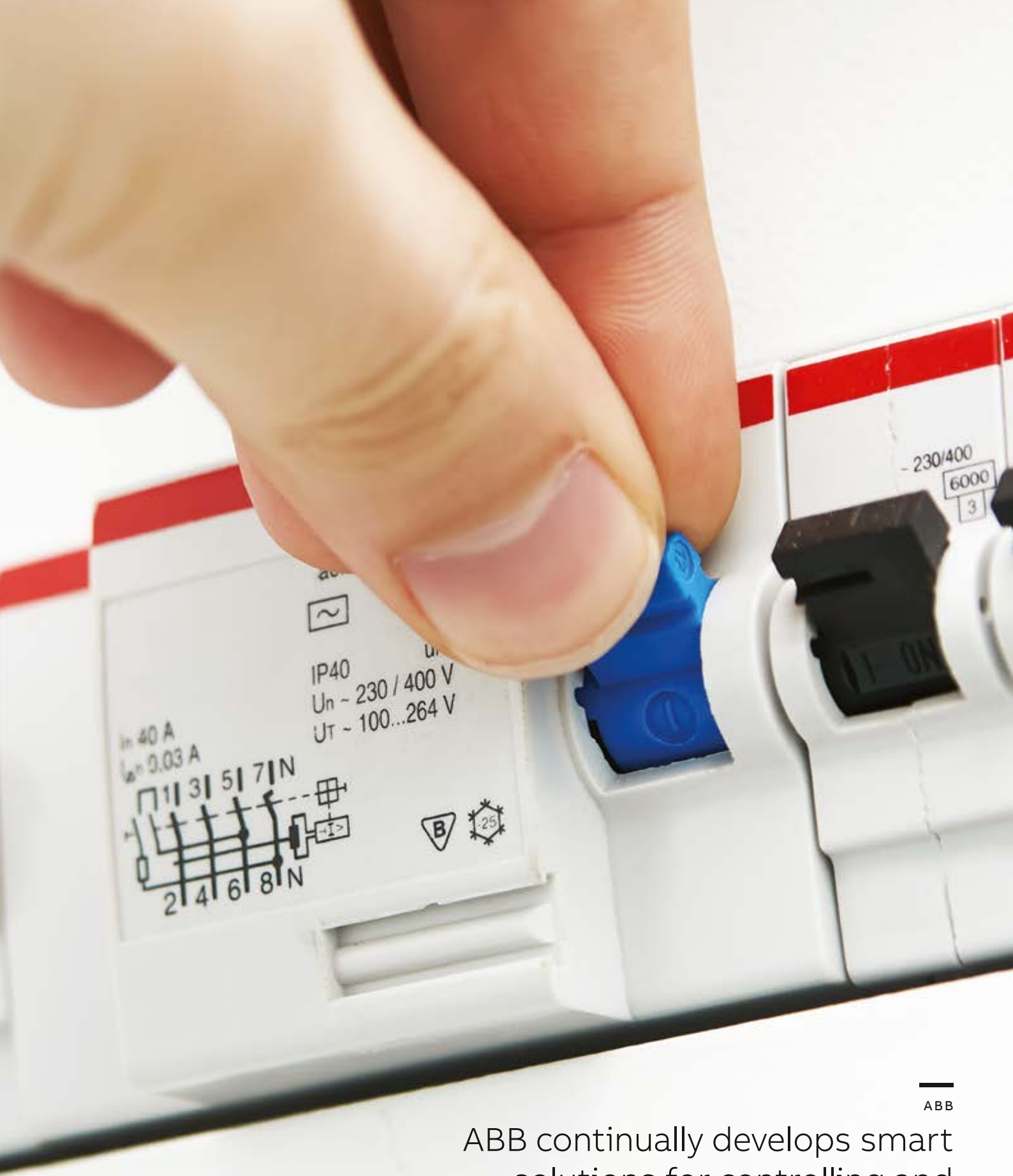


Characteristic K IEC-EN60947-2



Characteristic Z IEC-EN60947-2





ABB

ABB continually develops smart solutions for controlling and monitoring the flow of electricity, as well as improving energy efficiency in buildings and critical power applications.

MCB

S 200 Series technical features

Technical features

General data	Specifications		S 200 M	S 200P
	Standards		IEC/EN 60898-1, IEC/EN 60947-2	IEC/EN 60898-1, IEC/EN 60947-2
			UL 1077, CSA 22.2 No. 235	UL 1077, CSA 22.2 No. 235
	Poles	–		1P, 2P, 3P, 4P, 1P+N, 3P+N
	Tripping characteristics	–	B, C, D, K, Z	B, C, D, K, Z
	Rated current I_n	A	0.5...63A	–
	Rated current f	Hz	50/60Hz	50/60Hz
	Rated insulation voltage U^i acc. to IEC/EN 60664-1	–	440V AC (phase to phase)	250 V AC (phase to ground), 500 V AC (phase to phase)
	Overvoltage category	–	III	–
	Pollution degree	–	3	2
Data acc. to IEC/EN 60898-1 (except S200M UC data acc. to IEC/EN60898-2)	Rated operational voltage U_n	V	1P: 230/400V AC; 1P+N: 230V AC ; 2... 4P: 400V AC; 3P+N: 400V	1P: 230V AC, 220V DC 2P: 400V AC, 440V DC 3...4P: 400V AC*
	Max. power frequency recovery voltage (U_{max})	V	1P: 253V AC; 1P+N: 253V AC; 2P: 440V AC; 3...4P: 440V AC; 3P+N: 440V AC	1P: 230V AC, 220V DC 2P: 400V AC, 440V DC 3...4P: 400V AC*
	Min. operating voltage	V	12V AC - 12V DC	–
	Rated short-circuit capacity I_{cn}	kA	10kA	≤ 25A: 25kA > 25A: 15kA
	Energy limiting class (B, C up to 40 A)	–	3	3
	Rated impulse withstand voltage Uimp. (1.2/50µs)	kV	–	–
	Dielectric test voltage	kV	2kV (50/60Hz, 1 min.)	2kV (50/60Hz, 1 min.)
	Reference temperature for tripping characteristics	°C	B, C, D: 30°C	30°C
	Electrical endurance	ops.	In < 32A: 20,000 ops (AC), In ≥ 32A: 10,000 ops. (AC); 1,000 ops. (DC);	–
Data acc. to IEC/EN 60947-2	Rated operational voltage U_e	V		1P: 230V AC; 1P+N: 230V AC; 2...4P: 400V AC; 3P+N: 400V AC
	Max. power frequency recovery voltage (U_{max})	V		1P: 253V AC; 1P+N: 253V AC; 2P...4P: 440V AC; 3P+N: 440V AC; 1P: 72V DC; 2P: 125V DC
	Min. operating voltage	V	12V AC - 12V DC	12 V AC - 12V DC
	Rated ultimate short-circuit breaking capacity I_{cu}	kA	15kA	≤ 25A: 25kA ≥ 32A: 15kA
	Rated service short-circuit breaking capacity I_{cs}	kA	≤ 40A: 11.2kA 50, 63A: 7.5kA	≤ 25A: 12.5kA ≤ 32...40A: 11.2kA 50, 63A: 7.5kA
	Rated impulse withstand voltage U^{imp}. (1.2/50µs)	kV	4kV (test voltage 6.2kV at sea level, 5kV at 2,000m)	–
	Dielectric test voltage	kV	2kV (50/60Hz, 1 min.)	–
	Reference temperature for tripping characteristics	°C	B, C, D: 55°C; K, Z: 20°C	B, C: 55°C; K, Z: 20°C
	Electrical endurance	ops.	In < 32A: 20,000 ops (AC), In ≥ 32A: 10,000 ops. (AC); 1,000 ops. (DC); (1 cycle 2s - ON, 13s - OFF, In ≤ 32A), (1 cyle 2s - ON, 28s - OFF, In > 32A)	In < 32A: 20,000 ops (AC), In ≥ 32A: 10,000 ops. (AC); 1,000 ops. (DC); (1 cycle 2s - ON, 13s - OFF, In ≤ 32A), (1 cyle 2s - ON, 28s - OFF, In ≥ 32A)

Note: * Only acc. to IEC/EN 60898-1 r switching

MCB

S 200 80A-100A series technical features

Technical features

General Data	S 200 80A-100A
Standards	IEC/EN 60898-1, IEC/EN 60947-2
Poles	1P, 2P, 3P, 4P, 1P+N, 3P+N
Tripping characteristics	B, C
Rated current I_n	80 A, 100 A
Rated frequency f	50/60 Hz
Rated insulation voltage Ui acc. to IEC/EN 60664-1 (VDE 0110-1)	440 V AC
Overvoltage category	III
Pollution degree	2
IEC/EN 60898-1 (VDE 0641-11)	
Rated operational voltage U_n	1P: 230/400 V AC; 1P+N: 230 V AC; 2P, 3P, 4P, 3P+N: 400 V AC
Max. power frequency recovery voltage U_{max}	1P: 253/440 V AC; 1P+N: 253 V AC; 2P, 3P, 4P, 3P+N: 440 V AC
Min. operating voltage	12 V AC
Rated short-circuit capacity I_{cn}	6 kA
Rated impulse withstand voltage U_{imp} (1.2/50µs)	4 kV (test voltage 6.2 kV at sea level, 5 kV at 2,000 m)
Dielectrical test voltage	2 kV (50/60 Hz, 1 min.)
Reference temperature for tripping characteristics	B, C: 30 °C
Electrical endurance	10,000 ops. (AC); one cycle 2 s - ON, 28 s - OFF
IEC/EN 60947-2 (VDE 0660-101)	
Rated operational voltage U_e	1P, 1P+N: 230 V AC; 2P, 3P, 4P, 3P+N: 400 V AC
Max. power frequency recovery voltage U_{max}	1P, 1P+N: 253 V AC; 2P, 3P, 4P, 3P+N: 440 V AC
Min. operating voltage	12 V AC
Rated ultimate short-circuit breaking capacity I_{cu}	6 kA
Rated service short-circuit breaking capacity I_{cs}	6 kA
Rated impulse withstand voltage U_{imp} (1.2/50 µs)	4 kV (test voltage 6.2 kV at sea level, 5 kV at 2,000 m)
Dielectrical test voltage	2 kV (50/60 Hz, 1 min.)
Reference temperature for tripping characteristics	B, C: 55 °C
Electrical endurance	10,000 ops. (AC); one cycle 2 s - ON, 28 s - OFF
Mechanical data	
Housing	Insulation group I, RAL 7035
Toggle	Insulation group II, black, sealable
Contact position indication	Real CPI (red ON/green OFF)
Protection degree acc. to DIN EN 60529	IP20[(1)], IP40 in enclosure with cover
Mechanical endurance	20,000 ops.
Shock resistance acc. to DIN EN 60068-2-27	25 g, 2 shocks, 13 ms
Vibration resistance acc. to DIN EN 60068-2-6	5 g, 20 cycles at 5…150…5 Hz at 0.8 I_n
Environmental conditions (Damp heat cyclic) acc. to DIN EN 60068-2-30	28 cycles with 55 °C/90-96 % and 25 °C/95-100 %
Ambient temperature	-25 ... +55 °C
Storage temperature	-40 ... +70 °C

MCB

S200 80A-100A series technical features and tripping characteristics

Installation features

Installation	S 200 80A-100A
Terminal	Failsafe bi-directional cache clamp
Cross-section of conductors (top/bottom)	solid, stranded: 50 mm^2 / 50 mm^2
	flexible: 50 mm^2 / 50 mm^2
Cross-section of busbars (top/bottom)	16 mm^2 / 16 mm^2
Torque	3.0 Nm
Screwdriver	Nr. 2 Pozidriv
Mounting	On DIN rail 35 mm acc. to EN 60715 by fast clip
Mounting position	any
Supply	any
Dimensions and weight	
Mounting dimensions acc. to DIN 43880	Mounting dimension 1
Pole dimensions (H x T x B) mm	88.8 x 69 x 17.5
Pole weight	approx. 126 g
Combination with auxiliary elements	
Auxiliary contact	Yes
Signal/auxiliary contact	Yes
Shunt trip	Yes
Unervoltage release	Yes
Motor Operating Device	Yes

Tripping characteristics

					Thermal release [1]	Electromagnetic release [2]		
Data acc. to	**Tripping characteristics**	**Rated current I_n**	**Currents: conventional non-tripping current I_1**	**Conventional tripping current I_2**	**Tripping time**	**Range of instantaneous tripping**		**Tripping time**
DIN EN 60898-1	B	**80 up to 100 A**	1.13 · I_n	1.45 · I_n	> 2 h < 2 h	3 · I_n	5 · I_n	0.1 ... 90 s < 0.1 s
(VDE 0641-11)	C	**80 up to 100 A**	1.13 · I_n	1.45 · I_n	> 2 h < 2 h	5 · I_n	10 · I_n	0.1 ... 30 s < 0.1 s

[1] The thermal releases are calibrated to a nominal reference ambient temperature; for B and C the reference value is 30 °C.
In the case of higher ambient temperatures, the current values fall by approx. 6 % for each 10 K temperature rise.
[2] The indicated tripping values of electromagnetic tripping devices apply to a frequency of 50/60 Hz. The thermal release operates independent of frequency.

RCBO DSE201 M

Technical features

Technical features

Electrical features			
Standards			IEC 61009-1; IEC 61009-2-2; AS/NZS 61009
Type (wave form of the earth leakage sensed)			AC, A
Number of poles			1P+N
Rated current I_n		A	6≤ In ≤ 50
Rated sensitivity $I_{\Delta n}$		mA	10, 30, 100, 300
Rated voltage U_e		V	230-240
Insulation voltage U_i		V	500 V AC
Overvoltage category			III
Pollution degree			2
Max. operating voltage		V	264
Min. operating voltage for protection against IΔn residual sinusoidal alternating currents		V	85
Min. operating voltage of circuit test		V	195
Rated frequency		Hz	50/60
Rated breaking capacity acc. to IEC 61009	ultimate I_{cn}	A	10000
		kA	15 (for 6A≤ In ≤ 40A)
	ultimate I_{cn}	kA	10 (for In = 50A)
Rated breaking capacity acc. to IEC 60947-2	service I_{cs}	kA	7.5
Rated residual breaking capacity $I_{\Delta m}$		kA	10
Rated impulse withstand voltage (1.2/50) U_{imp}		kV	4 kV (test voltage 6.2kV at sea level, 5kV at 2000m)
Dielectric test voltage at ind. freq. for 1 min.		kV	2.5 kV (50 / 60Hz, 1 min.)
Thermomagnetic release - characteristic	B: 3 $I_n \le I_m \le 5\ I_n$		■
	C: 5 $I_n \le I_m \le 10\ I_n$		■
Surge current resistance (wave 8/20)		A	250
Mechanical data			
Housing			insulation group II, RAL 7035
Toggle			insulation group IIIA, black, sealable in ON-OFF positions
Contact position indication			CPI on toggle (I ON / 0 OFF)
Electrical life		operations	10000
Mechanical life		operations	20000
Protection degree	housing		IP4X
	terminals		IP2X
Shock resistance acc. to IEC/EN 60068-2-27			30g - 2 shocks - 13ms
Vibration resistance acc. to IEC/EN 60068-2-6			0.35mm or 5g - 20 cycles at 5...150...5 Hz without load
Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30		°C/RH	28 cycles with 55°C/90-96% and 25°C/95-100%
Reference temperature for setting of thermal element		°C	30
Ambient temperature (with daily average ≤ +35 °C)		°C	-25...+55
Storage temperature		°C	-40...+70

RCBO DSE201 M

Technical features and dimentions

Installation features

Installation			
Terminal type	top (load side)		failsafe cage (shock protected)
	bottom (line side)		failsafe bi-directional cylinder-lift terminal (shock protected)
Terminal size for cables	load side (top)	mm²	16
	line side (bottom)	mm²	25
Terminal size for busbars	load side (top)		only for wire connection
	line side (bottom)	mm²	10 (Standard ABB busbar / distribution board system)
Tightening torque	top (load side)	Nm	1.2
	bottom (line side)	Nm	2.8
Neutral load cable	Type		low smoke halogen free
	Lenght	mm	750
	Section	mm²	2.5 mm² up to 20 A; 4 mm² up to 50 A
	Color		blue
Functional earth cable	Type		low smoke halogen free
	Lenght	mm	750
	Section	mm²	0.75
	Color		white
Mounting			on DIN rail EN 60715 (35 mm) by means of fast clip device in consumer unit Type A according to IEC 61439-1&3, BS EN 61439-1&3, in distribution board Type B according to IEC 61439-1&3, BS EN 61439-1&3.
Supply from			bottom terminal
Dimensions and weight			
Dimensions (H x D x W)		mm	100 x 68.9 x 17.6
Weight		g	180
Combination with auxiliary elements			
Auxiliary contact	yes		
Signal contact / auxiliary switch yes			
Shunt trip yes			
Undervoltage release yes			
Overvoltage release yes			
Auxiliary contact for MCBs bottom fitting yes			
Signal contact / auxiliary switch	yes		
Shunt trip	yes		
Undervoltage release	yes		
Overvoltage release	yes		
Auxiliary contact for MCBs bottom fitting	yes		

01 50A version is 115 mm height

RCCB F 200 series
Technical features

Technical features

Features	Specifications			F 200AC
Electrical features	Standards			IEC/EN 61008-1; IEC/EN 61008-2-1, UL 1053 (1)
	Type (wave form of the earth leakage		–	AC
	Poles		–	2P, 4P (for 125 A only 4P)
	Rated current I_n		A	16, 25, 40, 63, 80, 100, 125
	Rated sensitivity $I\Delta_n$		A	0.01-0.03-0.1-0.3-0.5 50/60Hz
	Rated voltage U_e		V	230/400 - 240/415
			V	480Y/277 (up to 100 A
	Insulation voltage U_i	–	V	500
	Max. operating voltage of circuit test		V	110 (185 for 125 A); 195 for F 200 left neutral 170 (150 for 125 A); 300 for F 200 left neutral for IDn = 30 mA (5)
			V	277 (up to 100 A); 480 for F 200 left neutral (4)
	Min. operating voltage of circuit test		V	110 (185 for 125 A); 195 for F 200 left neutral 170 (150 for 125 A); 300 for F 200 left neutral for IDn = 30 mA (5)
	Rated frequency		Hz	50…60
	Rated conditional short-circuit current Inc=IΔ (3)		kA	277 (up to 100 A); 480 for F 200 left neutral (4)
	Rated residual breaking capacity IΔm=Im		kA	1 (1.25 for 125 A)
	Rated impulse withstand voltage (1.2/50) U_{imp}		kV	4
	Dielectric test voltage at ind. freq. for 1 min.		kV	2.5
	Overvoltage category		–	III, disconnector abilities
	Surge current resistance (wave 8/20)		A	250
Mechanical features	Toggle		–	Blue sealable in ON-OFF position
	Contact position indicator (CPI)		–	Yes
	Electrical life	–	–	10000 (2000 for 125 A)
	Mechanical life	–	–	20000 (5000 for 125 A)
	Protection degree	Housing		IP4X
		Terminals		IP2X
	Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30		°C/RH	28 cycles with 55°C/90-96% and 25°C/95
	Ambient temperature (with daily average ≤ +35 °C)		°C	-25…+55 (-25…+40 for 125A)
	Storage temperature	–	°C	-40…+70
Installation	Terminal type			Failsafe bi-directional cylinder-lift terminal at top and bottom (shock protected) (cage for In > 63A) (2)
	Terminal size top/bottom for cable		mm²	25/25 (35/35 single slot terminal for In > 63A)
		UL/CSA	AWG	18-4 (up to 63A)
	Terminal size top/bottom for busbar	IEC	mm²	10/10 (not for In = 80-100A)
		UL/CSA	AWG	18-8 (up to 63A)
	Tightening torque		Nm	2.8 (3 for In = 125A)
		UL/CSA	in-lbs.	25 (up to 63A)
	Tool		–	Nr. 2 Pozidriv
	Mounting		–	On DIN rail EN 60715 (35mm) by means of fast clip device
	Connection		–	From top and bottom
	Withdrawal from busbar		–	It is possible without using any tools only from the bottom (not for 125A)
Dimensions and weight	Dimensions (H x D x W)		mm	85 x 69 x 35
	Weight		g	200
Combination with auxiliary elements	Combinable with:	Auxiliary contact		Yes (no for 125A)
		Signal contact/auxiliary switch		Yes
		Shunt trip		Yes (no for 125A)
		undervoltage release		Yes (no for 125A)

(1) Ground-fault sensing and relaying equipment-component (up to 63 A).
(2) Prior to connection of aluminium conductors (≥ 4 mm²) ensure that their contact points are cleaned, brushed and coated with grease.
(3) For S700-E/K 100A, S750-E 63A, S750DR-E/K 63A and other SCPD coordination values see Chapter 3 of Solutions for electrical distribution in buildings – technical details.
(4) F200 left neutral has not the UL certification and the UL mark.
(5) Only for versions with marking according to EN 61008-1; EN 61008-2-1.

EQ Meter - A series

Technical features

Technical features

	A41	A43
Voltage/current inputs		
Nominal voltage	230 V AC	3x230/400 V AC
Voltage range	57.7 - 288 V AC (-20% - +15%)	3x57.7/100 ... 288/500 V AC (-20% - +15%)
Power dissipation voltage circuits	0.8 VA (0.8 W) total	
Power dissipation current circuits	0.007 VA (0.007 W) at 230 V AC and I_b	0.007 VA (0.007 W) per phase at 230 V AC and I_b
Base current I_b	5 A	5 A
Rated current I_n	-	-
Reference current I_{ref}	5 A	5 A
Transitional current I_{tr}	0.5 A	0.5 A
Maximum current I_{max}	80 A	80 A
Minimum current I_{min}	0.25 A	0.25 A
Starting current I_{st}	< 20 mA	< 20 mA
Terminal wire area	1 - 25 mm^2	1 - 25 mm^2
Recommended tightening torque	3 Nm	3 Nm
Communication		
Terminal wire area	0.5 - 1 mm^2	0.5 - 1 mm^2
Recommended tightening torque	0.25 Nm	
Transformer ratios		
Configurable voltage ratio (VT)	-	-
Configurable current ratio (CT)	-	-
Pulse indicator (LED)		
Pulse frequency	1000 imp/kWh	1000 imp/kWh
Pulse length	40 ms	40 ms
General data		
Frequency	50 or 60 Hz ± 5%	
Accuracy Class	B (Cl.1) or Reactive Cl. 2	A (Cl.2), B (Cl.1) or Reactive Cl. 2
Active energy	1%	1%, 2%
Display of energy	Pixel oriented	
Environmental		
Operating temperature	-40°C - +70°C	
Storage temperature	-40°C - +85°C	
Humidity	75% yearly average, 95% on 30 days/year	
Resistance to fire and heat	Terminal 960°C, cover 650°C (IEC 60695-2-1)	
Resistance to water and dust	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.	
Mechanical environment	Class M2 in accordance with the Measuring Instrument Directive (MID). (2004/22/EC).	
Electromagnetic environment	Class E2 in accordance with the Measuring Instrument Directive (MID), (2004/22/EC).	
Outputs		
Current	2 - 100 mA	
Voltage	5 - 240 V AC/DC. For meters with only 1 output, 5 - 40 V DC.	
Pulse output frequency	Programmable: 1 - 999999 imp/kWh	
Pulse length	Programmable: 10 - 990 ms	
Terminal wire area	0.5 - 1 mm^2	
Recommended tightening torque	0.25 Nm	
Inputs		
Voltage	0 - 240 V AC/DC	
OFF	0 - 12 V AC/DC	
ON	57-240 V AC/24 - 240 V DC	
Min. pulse length	30 ms	
Terminal wire area	0.5 - 1 mm^2	
Recommended tightening torque	0.25 Nm	
EMC compatibility		
Impulse voltage test	6 kV 1.2/50 µs (IEC 60060-1)	
Surge voltage test	4 kV 1.2/50 µs (IEC 61000-4-5)	
Fast transient burst test	4 kV (IEC 61000-4-4)	
Immunity to electromagnetic HF-fields	80 MHz - 2 GHz at 10 V/m (IEC 61000-4-3)	
Immunity to conducted disturbance	150 kHz - 80 MHz, (IEC 61000-4-6)	
Immunity to disturbance with harmonics	2kHz - 150kHz	
Radio frequency emission	EN 55022, class B (CISPR22)	
Electrostatic discharge	15 kV (IEC 61000-4-2)	
Standards	IEC 62052-11, IEC 62053-21 class 1 & 2, IEC 62053-22 class 0,5 S, IEC 62053-23 class 2, IEC 62054-21, GB/T 17215.211-2006, GB/T 17215.321-2008 class 1 & 2, GB/T 17215.322-2008 class 0,5 S, GB 4208-2008, EN 50470-1, EN 50470-3 category A, B & C	
Mechanical		
Material	Polycarbonate in transparent front glass, bottom case, upper case and terminal cover, Glass reinforced polycarbonate in terminal block.	
Dimensions		
Width	70 mm	123 mm
Height	97 mm	97 mm
Depth	65 mm	65 mm
DIN modules	4	7

*) Only A44 552 - 110 and A44 553 - 110

EQ Meter - B series

Technical features

Technical features

	B21	B23	B24
Voltage/current inputs			
Nominal voltage	230 V AC	3 x 230/400 V AC	
Voltage range	220-240 V AC (-20% - +15%)	3 x 220-240 V AC (-20% - +15%)	
Power dissipation voltage circuits	0.9 VA (0,4 W) total	1.6 VA (0.7 W) total	
Power dissipation current circuits	0.014 VA (0.014 W) at 230 V AC and I_b	0.007 VA (0.007 W) per phase at 230 V AC and I_b	
Base current I_b	5 A		-
Rated current I_n	-		1 A
Reference current I_{ref}	5 A		-
Transitional current I_{tr}	0.5 A		0.05 A
Maximum current I_{max}	65 A		6 A
Minimum current I_{min}	0.25 A		0.02 A
Starting current I_{st}	< 20 mA		< 1 mA
Terminal wire area	1 - 25 mm²		0.5 - 10 mm²
Recommended tightening torque	3 Nm		1.5 Nm
Communication			
Terminal wire area	0.5 - 1 mm²		
Recommended tightening torque	0.25 Nm		
Transformer ratios			
Configurable current ratio (CT)	-		1/9 - 9999/1
Pulse indicator (LED)			
Pulse frequency	**1000 imp/kWh**	**1000 imp/kWh**	**5000 imp/kWh**
Pulse length	40 ms	40 ms	40 ms
General data			
Frequency	50 or 60 Hz ± 5%		
Accuracy Class	B (Cl. 1) and Reactive Cl. 2	B (Cl. 1) and Reactive Cl. 2	B (Cl. 1) or C (Cl. 0,5 S) and Reactive Cl. 2
Active energy	1%	1%	0.5%, 1%
Display of energy	6 digit LCD	7 digit LCD	
Environmental			
Operating temperature	-40°C - +70°C		
Storage temperature	-40°C - +85°C		
Humidity	75% yearly average, 95% on 30 days/year		
Resistance to fire and heat	Terminal 960 °C, cover 650°C (IEC 60695-2-1)		
Resistance to water and dust	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.		
Mechanical environment	Class M2 in accordance with the Measuring Instrument Directive (MID), (2004/22/EC).		
Electromagnetic environment	Class E2 in accordance with the Measuring Instrument Directive (MID), (2004/22/EC).		
Outputs			
Current	2 - 100 mA		
Voltage	5 - 240 V AC/DC. For meters with only 1 output 5 - 40 V DC.		
Pulse output frequency	Programmable: 1 - 999999 imp/kWh		
Pulse length	Programmable: 10 - 990 ms		
Terminal wire area	0.5 - 1 mm²		
Recommended tightening torque	0.25 Nm		
Inputs			
Voltage	0 - 240 V AC/DC		
OFF	0 - 12 V AC/DC		
ON	57 - 240 V AC/24 - 240 V DC		
Min. pulse length	30 ms		
Terminal wire area	0.5 - 1 mm²		
Recommended tightening torque	0.25 Nm		
EMC compatibility			
Impulse voltage test	6 kV 1.2/50µs (IEC 60060-1)		
Surge voltage test	4 kV 1.2/50µs (IEC 61000-4-5)		
Fast transient burst test	4kV (IEC 61000-4-4)		
Immunity to electromagnetic HF-fields	80 MHz - 2 GHz (IEC 61000-4-6)		
Immunity to conducted disturbance	150kHz - 80MHz (IEC 61000-4-6)		
Immunity to disturbance with harmonics	2kHz - 150kHz		
Radio frequency emission	EN 55022, class B (CISPR22)		
Electrostatic discharge	15 kV (IEC 61000-4-2)		
Standards	IEC 62052-11, IEC 62053-21 class 1 & 2, IEC 62053-22 class 0,5 S, IEC 62053-23 class 2, IEC 62054-21, GB/T 17215.211-2006, GB/T 17215.312-2008 class 1 & 2, GB/T 17215.322-2008 class 0,5 S, GB 4208-2008, EN 50470-1, EN 50470-3 category A, B & C		
Mechanical			
Material	Polycarbonate in transparent front glass. Glass reinforced polycarbonate in bottom case and upper case. Polycarbonate in terminal cover.		
Dimensions			
Width	35 mm	70 mm	
Height	97 mm	97 mm	
Depth	65 mm	65 mm	
DIN modules	2	4	

EQ Meter - A series

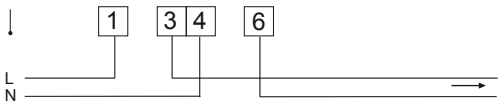
Wiring diagram

01 Terminal block A41

02 Terminal block A43

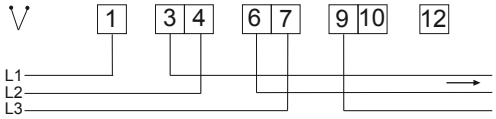
03 Terminal block A44

Terminal block A41 (A)

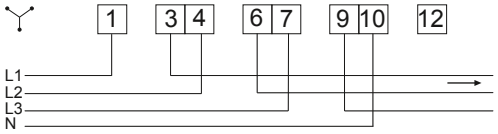


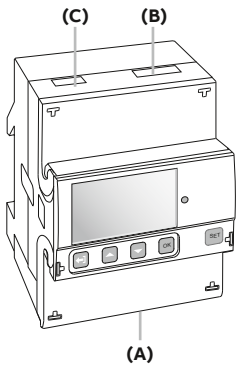
Terminal block A43 (A)

3 wire connection, 2 elements

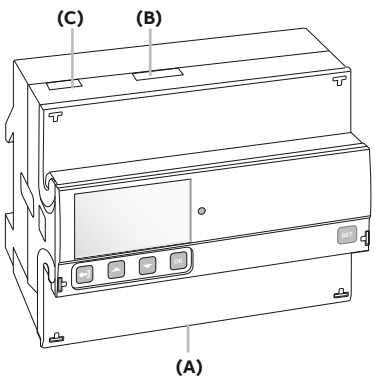


4 wire connection, 3 elements

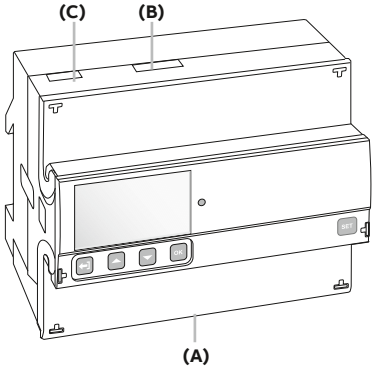




01



02



03

EQ Meter - B series

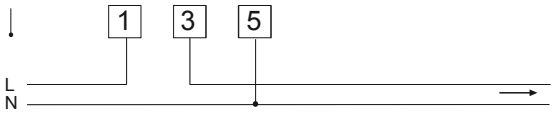
Wiring diagram

01 Terminal block B21

02 Terminal block B23

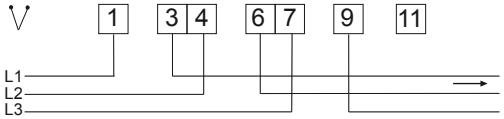
03 Terminal block B24

Terminal block B21

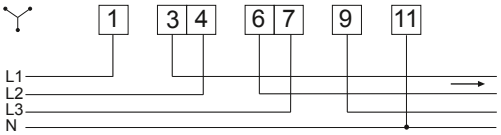


Terminal block B23

3 wire connection, 2 elements

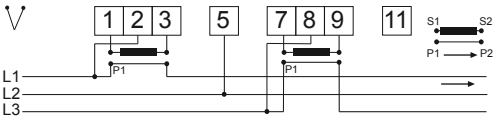


4 wire connection, 3 elements

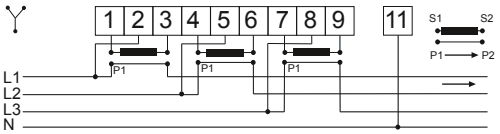


Terminal block B24

3 wire connection, 2 elements



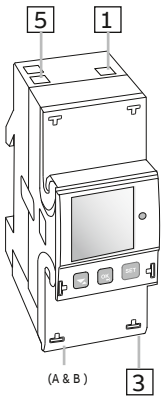
4 wire connection, 3 elements



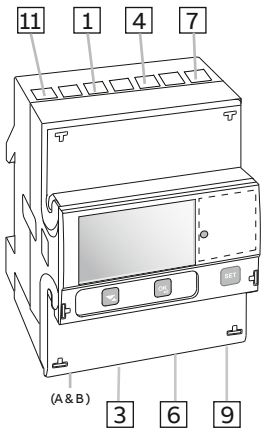
1	Phase in
3	Phase out
5	Neutral

1 4 7	Phase in
3 6 9	Phase out
11	Neutral

1 4 7	Current in
2 5 8	Voltage
3 6 9	Current out
11	Neutral



01



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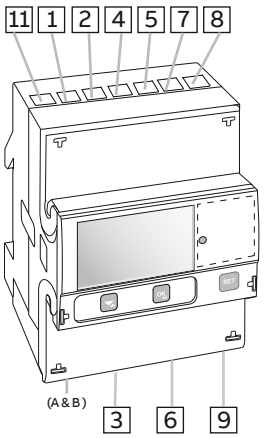


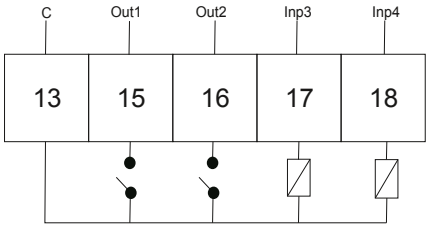
03

EQ Meter - A/B series

Inputs/ouputs and communication

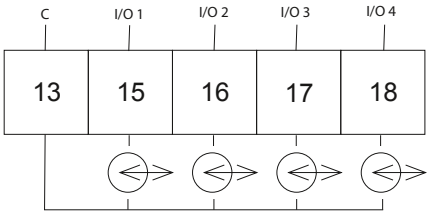
Inputs / outputs (B)

2 outputs, 2 inputs

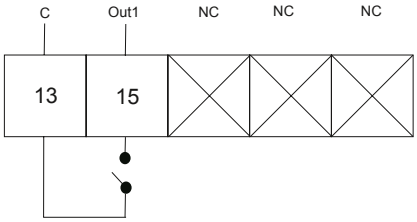


External power supply needed 5-240 VAC/VDC...

4 Configurable inputs/outputs



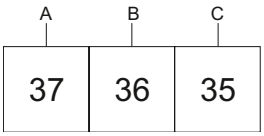
1 output



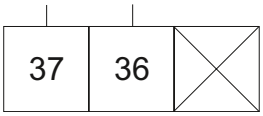
External power supply needed 5-40VDC...

Communication (C)

RS-485



M-Bus



ABB

With a broad range of market-leading products and solutions, a global sales network and customised support, ABB provides flexibility that improves energy performance, whatever the requirements.

Circuit Monitoring System - CMS

Technical features

Control unit CMS 600

Control Unit CMS-600 – «Modbus RTU»Unit 600		
Supply voltage	[V DC]	24 (±10%)
Power input	[W]	4 – 24 (dep. on number of sensors)
Interface		RS485 2-wire
Protocol		Modbus RTU
Data rate	[Baud]	2400…115200
Refresh time		≤1 sec with max. 64 sensors
Insulation strength	[V AC]	400
Screw-type terminals		0.5…2.5 mm², max. 0.6 Nm
Mounting method		35 mm DIN rail (DIN 50022) or SMISSLINE TP plug base
Dimensions	[mm]	71.8 x 87.0 x 64.9 (4 WM)
Operating temperature	[°C]	–25…+70
Bearing temperature	[°C]	–40…+85
Standards		IEC 61010-1 UL 508/ CSA C22.2 No. 14

Control unit CMS 700

Control Unit CMS-700		
Supply voltage	[V AC]	80 – 277 (L1-N, +5%)
Frequency	[Hz]	50 / 60
Power input (L1-N)	[W]	5…40 (dep. on number of sensors)
Power input, current transformer, secondary side	[VA]	Current circuit <2 (per phase)
Voltage measurement range	[V AC]	80 – 277 (L1, L2, L3-N)
Measurement range, current transformer,	[A]	nominal: 5, max.: 6
Harmonic component	[Hz]	up to 2000
Data rate of Modbus RTU	[Baud]	RS485 2-wire, 2400…115200
Refresh time		≤1 sec with max. 96 sensors
LAN	[Mbit/s]	100
Conductor cross-section	[mm²]	0.5…2.5
Mounting method		35 mm DIN rail (DIN 50022)
Degree of protection		IP20
Dimensions	[mm]	160.0 x 87.0 x 64.9 (9 WM)
Operating temperature	[°C]	-25…+60
Bearing temperature	[°C]	-40… +85
Standards		IEC61010-1 UL 508/ CSA C22.2 No. 14
Main circuit accuracy		
Voltage		±1%
Current		±1%
Harmonic component		1%
Active power		±2%
Apparent power		±2%
Reactive power		±2%
Power factor		±0.2%

Circuit Monitoring System - CMS
Technical features

Open-core sensors 18 mm

	Sensor type			CMS-120xx	CMS-121xx	CMS-122xx
CMS 120PS 	Measurement range		[A]	80	40	20
	Measuring method					TRMS, AC 50 / 60 Hz, DC
	Peak factor, distorted waveform			≤ 1.5	≤ 3	≤ 6
	AC accuracy (TA = +25 °C)*					≤ ±1 %
	AC temperature coefficient*					≤ ±0.04 %
CMS 120DR	DC accuracy (TA = +25 °C)*			≤ ±1.2 %	≤ ±1.4 %	≤ ±1.8 %
	DC temperature coefficient*			≤ ±0.14 %	≤ ±0.24 %	≤ ±0.44 %
	Resolution		[A]			0.01
	Sampling rate, internal		[Hz]			5000
	Response time (±1 %)		[sec]			typ. 0.34
	Conductor penetration		[mm]			9,6
	Insulation strength					690 AC / 1500 DC
CMS 120DR	Operating/storage temperature		[°C]			−25 ... +70 / −40 ... +85
	Dimensions	CMS-120PS Serie	**[mm]**			17.4 x 41.0 x 26.5
		CMS-120CA Serie	**[mm]**			17.4 x 41.0 x 29.0
		CMS-120DR Serie	**[mm]**			17.4 x 51.5 x 43.2
	Standards					IEC 61010-1 | UL508 / CSA C22.2 No 14

*All accuracy specifications refer to the relevant full scale value and apply to 25 °C. In the case of open-core sensors, the position of the cable influences the precision.

ESB installation contactors

Technical features

ESB installation contactors technical features

Main Pole - Utilization Characteristics according to IEC						
Contactor types:	AC operated		ESB20/EN20			
	AC/DC operated			ESB24/ EN24	ESB40/ EN40	ESB63
Rated operational voltage Ue max.		V	250	400		
Rated frequency limits		Hz	50/60		DC or 50/60 Hz	
Utilization category AC-1 / AC-7a						
for air temperature close to contactor < 55 °C Max. rated operational current Ie AC-1 / AC-7a		(NO) A	20	24	40	63
		(NC) A	20	24	30	30
Rated operational power AC-1/ AC-7a	230 V - 1 phase	(NO) kW	4	5.5	9.2	14.5
	400 V - 3 phases	(NO) kW	-	16	26	41
	230 V - 1 phase	(NC) kW	4	5.3	8.8	6.9
	400 V - 3 phases	(NC) kW	-	16	26	26
Utilization category AC-3 / AC-7b						
for air temperature close to contactor < 55 °C Max. rated operational current Ie AC-3/AC-7b	230 V - 1 phase	A	9	9	22	30
	400 V - 3 phases	A	-	9	22	30
Rated operational power AC-3/ AC-7b	230 V - 1 phase	kW	1.1	1.3	3.7	5
	400 V - 3 phases	kW	-	4	11	15
Rated making capacity AC-3/AC-7b					10 x Ie / AC-3	
Rated breaking capacity AC-3/AC-7b					8 x Ie / AC-3	
Short-circuit protection for contactors gG type fuse		A	20	35	63	80
Rated short-time withstand current Icw at 40 °C ambient temp., in free air, from a cold state	10 s	A	72	72	176	240
Heat dissipation per pole	Ie / AC-1/AC-7a	W	1	3	4	6
Max. electrical switching frequency	– for AC-1 / AC-7a	cycles/h	300			
	– for AC-3 / AC-7b	cycles/h	600			
Electrical durability	– for AC-1 / AC-7a	cycles	150000	150000	150000	150000
	– for AC-3 / AC-7b	cycles	150000	500000	170000	240000
Mechanical durability	– millions of operating cycles		1.000.000			

ESB installation contactors
Technical features

ESB installation contactors technical features

Main Pole - Utilization Characteristics according to IEC						
Contactor types:	AC operated		ESB20/EN20			
	AC/DC operated			ESB24/EN24	ESB40/EN40	ESB63
Coil operating limits acc. to IEC 60947-4-1						0.85 ... 1.1 x Uc (at θ m 55 °C)
Drop-out voltage in % of Uc			approx. 20 ... 75 %			approx. 20 ... 70 %
Frequency range		Hz	50/60			50/60 or DC
Coil consumption	Average pull-in value	VA / W	8 / 5	4 / 4	5 / 5	65 / 65
	Average holding value	VA / W	3.2 / 1.2	4 / 4	5 / 5	4.2 / 4.2

Main Pole - Utilization Characteristics according to IEC					
Contactor types:	AC operated	ESB20/EN20			
	AC/DC operated		ESB24/EN24	ESB40/EN40	ESB63
Connecting capacity (min. ... max.) Main pole terminals					
Rigid	1 x mm²		1.5 ... 10		1.5 ... 25
	2 x mm²		1.5 ... 4		1.5 ... 10
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529 Protection against direct contact in acc. with EN 50274					
	All terminals				IP20

EH04... Auxiliary Contact Block - Utilization Characteristics according to IEC							
Contactor types:	AC operated			ESB20			
	AC/DC operated				ESB24	ESB40	ESB63
Rated operational voltage Ue max.			V	-	500		
Conventional free air thermal current Ith							
q < 40 °C			A	-	6		
Rated frequency limits			Hz	-	50/60		
Rated operational current Ie / AC-15 acc. to IEC 60947-5-1	240 V	50/60 Hz	A	-	4		
	415 V	50/60 Hz	A	-	3		
	500 V	50/60 Hz	A	-	2		
Making capacity	acc. to IEC 60947-5-1			-	11 x Ie AC-15		
Breaking capacity	acc. to IEC 60947-5-1			-	11 x Ie AC-15		
Short-circuit protection gI type fuse			A	-	10		
Minimum switching capacity with failure rate acc. to IEC 60947-5-4			V/mA	-	17 / 5		
Heat dissipation per pole at 6 A			W	-	0.1		

D Line digital time switches

Technical features

D Line technical features

General data							
		D1	**D1 PLUS**	**D1 SYNCHRO**	**D2**	**D2 PLUS**	**D2 SYNCHRO**
Rated voltage	[V]						230 AC ± 10%
Rated pulsating voltage	[kV]						4
Contact type							Contact relay in free exchange from potential
Programming key		-	■	■	-	■	■
External input		■	■	-	■	■	-
DCF77 antenna		-	-	■	-	-	■
GPS antenna		-	-	■	-	-	■
Programming software		-	■	■	-	■	■
250 V contact capacity							
Ohm loads	[A]						16 16
Inductive loads	[A]						10 2
Rated frequency	[Hz]						50-60
Time base							quartz
Minimum switching	[sec.]						1
Max programs per cycle	[n°]						64 (can be coupled in day blocks)
Running reserve	[year]						6 from the first start-up (lithium battery)
External input	[n°]		1	-		2	-
Activity suspension							From 1 day to 12 months
Operating precision	[sec./ day]						± 0.5
Max. dissipated power	[VA]			6.5			7.8
Max. switch power	[VA]						3500
Incandescent lamps	[W]						3000
Non-rephased fluorescent lamps	[W]						1100
Fluorescent tube lamps rephased in parallel	[W]						900
Fluorescent tube lamps with electronic reactor	[W]						7 ÷ 23 (max. 23 lamp.)
Fluorescent tube lamps rephased in series	[W]						1100
Protection degree	[IP]						20
Max. terminal cross-section	[mm²]						6
Terminals							In positive safety with captive screw
Tightening torque	[Nm]						0.5
Installation type							DIN rail
Operating temperature	[°C]						-5 ... +55
Storage temperature	[°C]						-10 ... +65
Modules	[n°]						2
Reference standards							EN 60730-1; EN 60730-2-7

T Line twilight switches
Technical features

T1 technical features

General data				
			T1	**T1 PLUS**
Rated supply voltage		[V]		110 ÷ 230 AC
Contact type				1NO
Switching capacity				
resistive load cosj 1		[A]		16
inductive load cosj 0.6		[A]		3
incandescent lamps		cosj 1		max 3600 W
fluorescent lamps		cosj0.8		max 3600 W
fluorescent - duo./electronic lamps		cosj0.9		max 300 W
Rated frequency		[Hz]		50-60
Switching delay				
ON		[s]	30 ±10%	15...120 ±10%
OFF		[s]	40 ±10%	15...120 ±10%
Brightness range		[lx]	2:200	2:40 20:200 200:2000 2000:15000
Protection degree				
twilight switch			IP20	IP20
sensor			IP65	IP65
Operating temperature				
twilight switch		[°C]		-25...+55
sensor		[°C]		-40...+70
Storage temperature				
twilight switch		[°C]		-40...+70
sensor		[°C]		-50...+80
Power consumption		[VA]		4.5
Max. commutable power		[W]		3500
Max. terminal cross-section		[mm²]		2.5
Terminals				loss-proof screw
Tightening torque	terminals	[Nm]		0.5
	sensor screw	[Nm]		0.4
	Mounting			on DIN rail
	Switching status indication/ brightness range			red Led / green Led
	Max wiring length	[m]		100
	Modules			1
	Reference standards			EN 60669-1; EN 60669-2-1; EN 60730-1

T1 & T1 PLUS twilight switch
Control and automation technical features

01 Daytime

02 Evening operation

03 Late evening mode

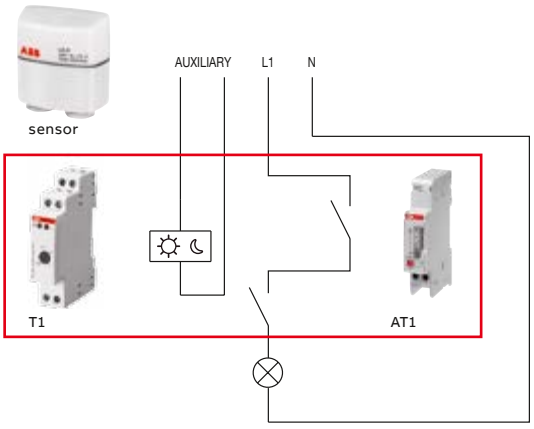
T1 twilight switch

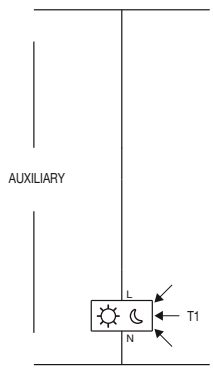
Operating principle
The diagram shows an example of the installation of the T1 twilight switch in the lighting system of a commercial establishment. When the external light falls below a certain level (e.g. during the evening when the shop is closed), the device switches on the window lights and the shop sign. The lights can be switched off late evening to reduce power consumption thanks to the AT1 switch timer.

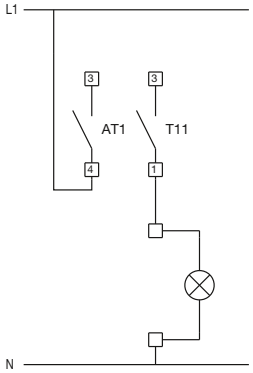
Application environments
The installation of the T1 twilight switch with an AT electromechanical timer is particularly useful in settings and situations where energy saving is a prime concern (shops, office corridors and public passageways, car parks,
parks, etc.).

Example of installation
As shown in the diagrams, one of the possible applications is the installation of a T1 twilight switch in the lighting system of a commercial establishment.

When the external light falls below a certain level (e.g. when the shop is closed), the twilight switch switches on the window lights and the sign. The lights can be switched off late evening to reduce power consumption thanks to the AT1 switch timer which keeps the circuit open until the next morning. When the external light returns to above the threshold value, the twilight switch relay returns to the open position.







LIGHTING

01 02 03

—
04

—
05

—
04 Required light levels

—
05 Excessive light levels

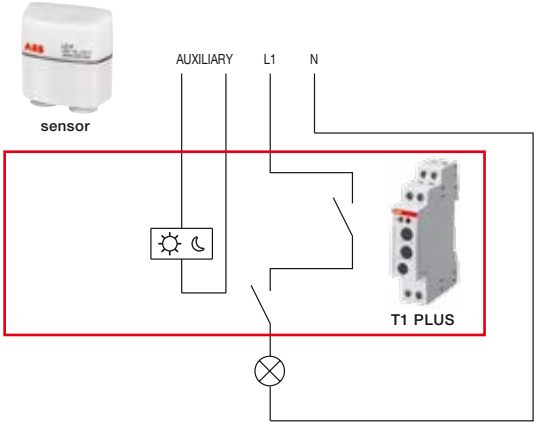
T1 PLUS twilight switch

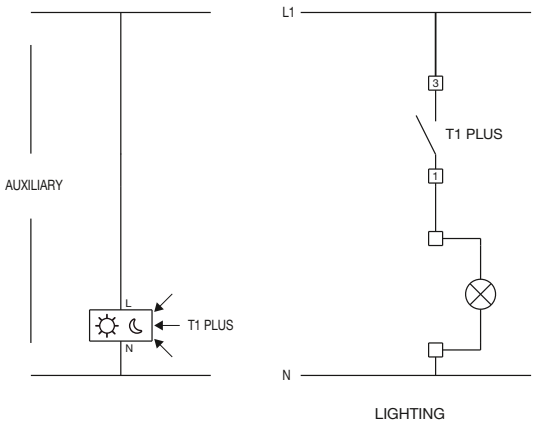
Operating principle
The diagram shows an example of the installation of the T1 PLUS twilight switch in the lighting system of a greenhouse. When the external light exceeds a certain level (e.g. during the warmest hours of the day, i.e. early afternoon), the device activates the shading system, e.g. roller blinds. Thanks to the option to advance or delay the activation-deactivation time, the T1 PLUS can also maintain the roller blinds closed in the case of passing clouds.

Application environments
The installation of the T1 PLUS twilight switch is particularly useful in settings and situations where lighting control is required for locations where there are consistently high brightness values, thus guaranteeing substantial savings in energy consumption (greenhouses, arcades, photovoltaic plants, etc.).

Example of installation
As shown in the diagrams, one of the possible options is to install a T1 PLUS twilight switch in the lighting system of a greenhouse.
When the external light exceeds a certain level (for example during peak hours in the early afternoon) the twilight switch activates the roller blinds, protecting the plants in the greenhouse against burning by the strong sunlight.

When the external light returns to below the threshold value, the twilight switch relay opens the blinds to allow the sunlight to pass through.





Glossary

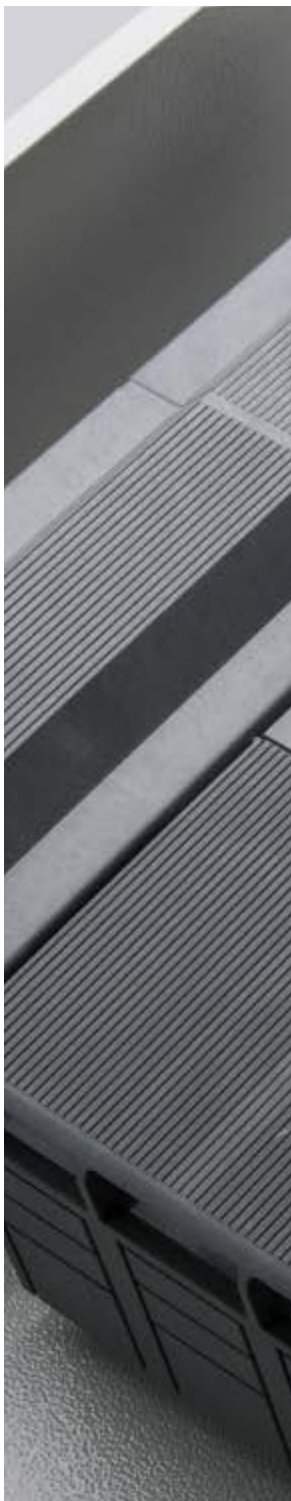
Detailed product information

MDRC Products (MCB etc)

Brochure title	Link	Order code
Solutions for electrical installation in buildings (Catalogue) 2017	http://search-ext.abb.com/library/Download.aspx?DocumentID=9AKK106930A8017&LanguageCode=en&DocumentPartId=&Action=Launch	2CHC 000 001 C0201 - 03/2017 (9AKK106930A8017)
Solutions for electrical installation in buildings (Technical details) 2017	http://search-ext.abb.com/library/Download.aspx?DocumentID=9AKK106930A8027&LanguageCode=en&DocumentPartId=&Action=Launch	2CHC 000 001 C0201 - 03/2017 (9AKK106930A8027)

ABB Limited
Electrification Products Division
Tower Court
Foleshill Enterprise Park
Courtaulds Way
Coventry CV6 5NX
Tel: +44 (0) 333 999 9900
E-Mail: LV.Enquiries@gb.abb.com
Twitter: @ABBUKEP

new.abb.com/uk/protecta-plus



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