Technical catalogue

Devices for installation on the front panel of LV switchboards

2CSC445001D0201

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ABB SACE
and the commitment to safeguarding the environment

ABB SACE is in the front line among the ABB Group's businesses in dedicating considerable resources to achieving the objective of a sustainable development while safeguarding the environment; proof of this lies in the fact that all the company's production sites have been granted ISO 9001 quality system certification, and ISO 14001 certification for their environmental management systems, and the majority of the sites also have a certified integrated quality, environment and safety management system.

In fact, all the business sectors are actively involved in pursuing their environmental management improvement policies for rationalizing their consumption of raw materials and energy, preventing pollution, respecting the water and air sources, containing their noise emissions and reducing the amount of waste deriving from their production processes; they also conduct regular environmental audits at the premises of their main suppliers.
Using analytical methods such as life cycle analysis (LCA), the initial stages of the ABB SACE design activity include the assessment and improvement of the environmental performance of the products throughout their life cycle, so as to ensure their optimal technical and energetic performance in use, to control and reduce their environmental impact in production, and to establish the scenarios for managing their final disposal.

Each of these targets and activities is the outcome of a far-sighted approach in adopting environment-friendly policies and methods for reducing environmental impacts and, just as ABB SACE is a leader on the Italian industrial scene in terms of the quality of its products, so it is in the environmental sense too.

Production unit in Pomezia - Rome

Introduction

The devices for installing in medium- and low-voltage, primary and secondary industrial switchboards represent an ideal addition to the ABB SACE range of equipment for configuring boards as an integrated system of functions.
The range comprises approximately 2000 articles in standard versions, but the components' engineering/standardization also ensure that numerous special versions can be provided, enabling all types of plant requirement to be satisfied.
The standard products come in the sizes 48 mm x 48 mm, 72 mm x 72 mm and 96 mm x 96 mm for the analogue versions and 36 mm x 72 mm, 48 mm x 96 mm, 72 mm x 72 mm and 96 x 96 mm for the digital versions.
The range includes electronic residual-current relays with separate toroidal transformers, a.c. and d.c. analogue and digital measuring devices, indicators and control devices.
To complete the range, there is also a wide choice of accessories, including interchangeable scales, current and voltage transformers and converters, shunts, transducers, switches and other components.
The structural features of the ABB SACE products for switchboard front panels comply with the most severe standard requirements, ensuring the safety in operation and operating efficiency for which ABB is known as a leader in this sector all over the world. In the analogue measuring devices, the indicator function is served by the displacement of a pointer moving along a graduated scale, which enables an immediate reading of the quantities recorded. The digital versions, on the other hand, are equipped with 3- or 4-figure LED displays, depending on the type of product.

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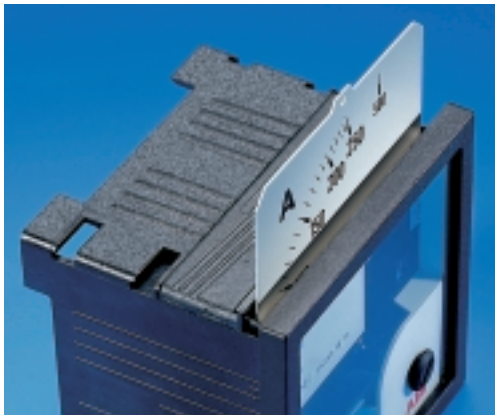
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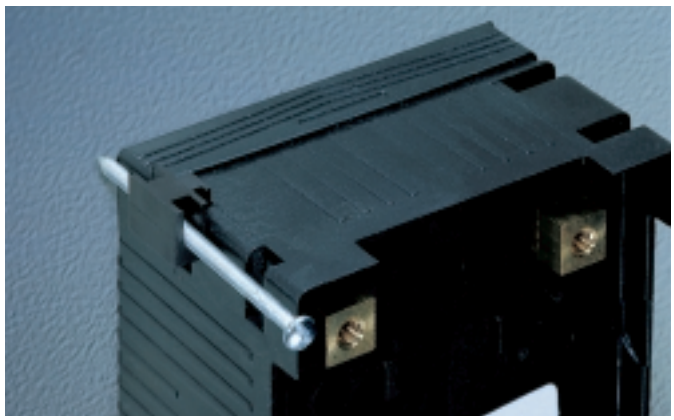
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In both cases, the working temperature is between - 10 °C and +55 °C, with the opportunity to work in even more severe conditions without any substantial changes to the precision class.
The devices' vibration resistance and IP degree of protection are particularly high.
From the point of view of their installation, the steps for fixing the equipment to the panels are facilitated by special screw-on brackets that allow for the equipment to be arranged both horizontally and vertically, thereby optimizing the usage of the available space and facilitating the operator's access to the front of the switchboard.

The ABB SACE range of residual-current relays, measuring devices, indicators and control devices is also available in versions for mounting on DIN rails: to get a better idea of all the products in the range, take a look at the System pro *M* catalogue: ask for a paper copy from the Business on line site, http://bol.it.abb.com

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The photographs show a selection of the products in the range and a few structural details. Enlarged against the background is an LV switchboard, the Power Center MNS R, manufactured at the ABB SACE production unit in San Martino in Strada (LO) and wired with the feeder and related measuring instruments.

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The residual-current relays installed on the front panels of electric switchboards achieve their protective function in combination with an outside toroidal transformer. Thanks to the excellent electromagnetic properties of the core, the transformer works adding the line currents together, recording even the slightest earth fault.

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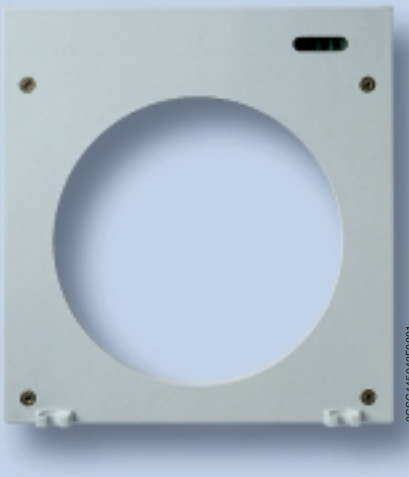
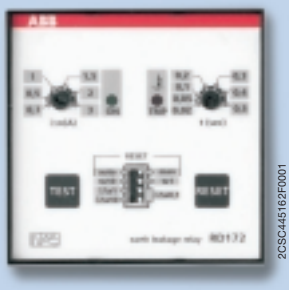
In the event of any leakage in the circuit, the transformer produces a signal on one of its two windings and sends this to the residual-current relay, which in turn achieves different selectivity levels with the residual-current circuit breakers downstream from the circuit: in particular, the sensitivity can be set between 0.025A and 25A, while the tripping time can vary from 0.02 to 5 seconds.

During the routine tests that it is always advisable to perform on the device, the relay sends an electronic earth fault signal to the transformer's secondary winding, which records it and returns it to the relay to check on its timely and efficient tripping, thereby also checking the integrity of the connections between the two devices. Residual-current relays are available in versions 48 mm x 48 mm, 72 mm x 72 mm and 96 mm x 96 mm, all complete with accessories, with special filters to ensure immunity against any outside disturbances applied to the input circuit.

Protection devices





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Protection devices

Technical features

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		RD148	RD196	RD296	RD296-S
Operating voltage	[V]	24, 48, 115, 230 a.c./ 24, 48, 115 d.c.	24, 48, 115, 230, 400 a.c./ 24, 48, 115 d.c.	24, 48, 115, 230, 400 a.c./ 24, 48, 115 d.c.	24, 48, 115, 230, 400 a.c./ 24, 48, 115 d.c.
Operating frequency	[Hz]	50 – 60	50 – 60	50 – 60	50 – 60
Current tripping thresholds I∆n	[A]	from 0.025 to 25	from 0.025 to 25	from 0.025 to 25	from 0.025 to 25
Tripping times	[sec.]	from 0.02 to 5	from 0.02 to 5	from 0.02 to 5	from 0.02 to 5
Number of contacts	[n°]	2	1	2	2
Contact capacity	[A]	5 (250 V a.c.)	from 0.02 to 5	from 0.02 to 5	from 0.02 to 5
Contact type		change-over	change-over	change-over	change-over
Working temperature	[°C]	-10…+60	-10…+60	-10…+60	-10…+60
Storage temperature	[sec.]	-10…+70	-10…+70	-10…+70	-10…+70
Dissipated power	[W]	7 max	7 max	7 max	7 max
Dimensions W x H	[mm]	48 x 48	96 x 96	96 x 96	96 x 96
Applicable standards		CEI EN 62020 IEC 62020	CEI EN 62020 IEC 62020	CEI EN 62020 IEC 62020	CEI EN 62020 IEC 62020


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Residual-current relays

Code	Type	Description
EG 206 5	RD148-24	electronic residual-current relay RD148; IΔn 0.025…25A, tripping times from 0.02 to 5 sec, aux supply 24, 48 V a.c./V d.c. (48 mm x 48 mm)
EG 207 3	RD148-230	electronic residual-current relay RD148; IΔn 0.025…25A, tripping times from 0.02 to 5 sec, aux supply 115 V a.c./ d.c., 230 V a.c. (48 mm x 48 mm)
EH 917 6	RD172-24	electronic residual-current relay RD172; IΔn 0.025…25A, tripping times from 0.02 to 5 sec, aux supply 24, 48 V a.c./V d.c. (72 mm x 72 mm)
EH 918 4	RD172-230	electronic residual-current relay RD172; IΔn 0.025…25A, tripping times from 0.02 to 5 sec, aux supply 115 V a.c./ d.c., 230 V a.c. (72 mm x 72 mm)
EH 850 9	RD272-24	electronic residual-current relay RD272; IΔn 0.025…25 A; tripping times from 0.02 to 5 sec., with tripping signal at 70% of IΔn, aux supply 24, 48 V a.c./V d.c. (72 mm x 72 mm)
EH 851 7	RD272-115	electronic residual-current relay RD272; IΔn 0.025…25 A; tripping times from 0.02 to 5 sec., with tripping signal at 70% of IΔn, aux supply 115 V a.c./V d.c. (72 mm x 72 mm)
EH 852 5	RD272-230	electronic residual-current relay RD272; IΔn 0.025…25 A; tripping times from 0.02 to 5 sec., with tripping signal at 70% of IΔn, aux supply 115, 230, 400 V a.c. (72 mm x 72 mm)
EH 853 3	RD272-DIG-24	electronic residual-current relay same as RD272 + display, aux supply 24, 48 V a.c./V d.c. (72 mm x 72 mm)
EH 854 1	RD272-DIG-115	electronic residual-current relay same as RD272 + display, aux supply 115 V a.c./V d.c. (72 mm x 72 mm)
EH 855 8	RD272-DIG-230	electronic residual-current relay same as RD272 + display, aux supply 115, 230, 400 V a.c. (72 mm x 72 mm)
EG 208 1	RD196-24	electronic residual-current relay RD196; IΔn 0.025…25A, tripping times from 0.02 to 5 sec, aux supply 24, 48 V a.c./V d.c. (96 mm x 96 mm)
EG 209 9	RD196-230	electronic residual-current relay RD196; IΔn 0.025…25A, tripping times from 0.02 to 5 sec, aux supply 115 V a.c./ d.c. and 230, 400 V a.c. (96 mm x 96 mm)

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Code	Type	Description
EG 210 7	RD296-24	electronic residual-current relay RD296; IΔn 0.025…25A, tripping times from 0.02 to 5 sec., with tripping signal at 70% of IΔn, aux supply 24, 48, 115 V a.c./ V d.c. (96 mm x 96 mm)
EH 856 6	RD296-115	electronic residual-current relay RD296; IΔn 0.025…25 A; tripping times from 0.02 to 5 sec., with tripping signal at 70% of IΔn, aux supply 115 V a.c./ V d.c. (96 mm x 96 mm)
EG 211 5	RD296-230	electronic residual-current relay RD296; IΔn 0.025…25A, tripping times from 0.02 to 5 sec., with tripping signal at 70% of IΔn, aux supply 115 V a.c./ V d.c. and 230, 400 V a.c. (96 mm x 96 mm)
EG 212 3	RD296-S-24	electronic residual-current relay RD296-S, same as RD296 + relay tripping retainer in case of power failure, aux supply 24, 48, 115 V a.c./ V d.c. (96 mm x 96 mm)
EH 857 4	RD296-S-115	electronic residual-current relay RD296 + relay tripping retainer in case of power failure, aux supply 115 V a.c./ V d.c. (96 mm x 96 mm)
EG 213 1	RD296-S-230	electronic residual-current relay RD296-S, same as RD296 + relay tripping retainer in case of power failure, aux supply 115 V a.c./ V d.c. and 230, 400 V a.c. (96 mm x 96 mm)
EH 858 2	RD296-DIG-24	electronic residual-current relay same as RD296 + display, aux supply 24, 48 V a.c./ V d.c. (96 mm x 96 mm)
EH 859 0	RD296-DIG-115	electronic residual-current relay same as RD296 + display, aux supply 115 V a.c./V d.c. (96 mm x 96 mm)
EH 860 8	RD296-DIG-230	electronic residual-current relay same as RD296 + display, aux supply 115, 230, 400 V a.c. (96 mm x 96 mm)

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Toroidal transformers

Code	Type	Description
EG 309 7	TR 1	toroidal transformer ø 35 mm
EG 310 5	TR 2	toroidal transformer ø 60 mm
EG 311 3	TR 3	toroidal transformer ø 80 mm
EG 312 1	TR 4	toroidal transformer ø 110 mm
EH 863 2	TR 160	toroidal transformer ø 160 mm
EG 416 0	TR 5	toroidal transformer ø 210 mm
EH 861 6	TR 4A	toroidal transformer ø 110 mm (opening version)
EH 864 0	TR 160A	toroidal transformer ø 160 mm (opening version)
EG 415 2	TR 5A	toroidal transformer ø 210 mm (opening version)

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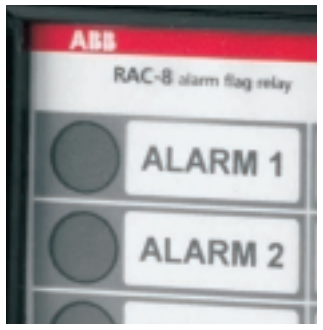
Control devices enable you to fit the switchboard with functions for monitoring its operating status and maintaining the right working conditions.

Among the products in this range, there are alarm concentrators, complete and sophisticated, but nonetheless easy-to-use electronic devices that enable alarms, signals and other information on the operation of any connected devices to be received and generated.

To keep a constant check on the temperature inside the board, it is a good idea to install a temperature control unit, with a sensor for recording and displaying the temperature levels, while flag relays are devices capable of electromagnetically maintaining any alarm status signals in the event of a power failure.



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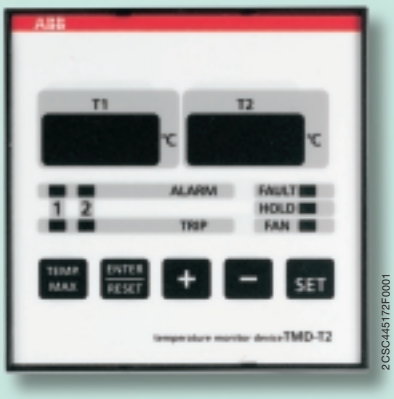
Control devices



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3

Alarm concentrators

These are devices that send and receive alarms and signals with a straightforward and user-friendly operator interface, complete with an alphanumerical LCD/VFD display with 4 lines of 20 characters. The luminous indications can also be displayed using easy-to-read, previously-saved messages. The availability of numerous operating methods in a single product makes the concentrators suitable for installation in a variety of applications, e.g. as alarm and event indicators, for PLC/PC message displays, remote terminals, status/diagnostic indicators, man-machine interfaces, supervisory and control equipment, etc.

Code	Type	Description
EG 832 8	CDA-LCD-485-24V/72-144	alarm concentrator, LCD display, 16 alarms, calendar clock, incorporated buzzer, 485 communication port - Power supply 24 V a.c./d.c. (72 mm x 144 mm x 80 mm)
EH 879 8	CDA-LCD-485-230V/72-144	alarm concentrator, LCD display, 16 alarms, calendar clock, incorporated buzzer, 485 communication port - Power supply 115 V a.c./d.c. and 230 V a.c. (72 mm x 144 mm x 80 mm)
EH 880 6	CDA-LCD-ETR-24V/72-144	alarm concentrator, LCD display, 16 alarms, calendar clock, incorporated buzzer, Ethernet communication port - Power supply 24 V a.c./d.c. (72 mm x 144 mm x 80 mm)
EH 881 4	CDA-LCD-ETR-230V/72-144	alarm concentrator, LCD display, 16 alarms, calendar clock, incorporated buzzer, Ethernet communication port - Power supply 115 V a.c./d.c. and 230 V a.c. (72 mm x 144 mm x 80 mm)
EH 882 2	CDA-LCD-GSM-24V/72-144	alarm concentrator, LCD display, 16 alarms, calendar clock, incorporated buzzer, GSM communication port - Power supply 24 V a.c./d.c. (72 mm x 144 mm x 80 mm)
EH 883 0	CDA-LCD-GSM-230V/72-144	alarm concentrator, LCD display, 16 alarms, calendar clock, incorporated buzzer, GSM communication port - Power supply 115 V a.c./d.c. and 230 V a.c. (72 mm x 144 mm x 80 mm)

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Temperature control units

These are used to control the temperature levels and the efficiency of the forced air circulation around electric machines, transformers, motors, etc.
The temperature is recorded by PT100 and RTD type sensors. For each measuring channel, you can set two alarm levels (alarm-trip) that trip two output relays for remote signaling in the event of a critical temperature being reached.
The values that are recorded and any alarm conditions are displayed on the dual 3-figure display on the front, from where you can also access functions for setting the device with the aid of five programming keys.
In addition, the control units allow for you to save the maximum values and record all tripping events.


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Code	Type	Description
EG 837 7	TMD-T2/96	temperature control unit, 2 temperatures and 2 alarms
EG 836 9	TMD-T4/96	temperature control unit, 4 temperatures and 4 alarms + 485 serial port

Flag relays

These are for recording the alarm status of any devices to whose input they are connected (NO/NC contacts), maintaining the signal even in the event of a power failure, thanks to the electromagnetic indicators with which they are fitted, that become polarized in the case of a power cut. These devices are also particularly able to withstand voltage surges.


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Code	Type	Description
EQ 007 6	RAC-4-24/96	flag relays, 4 alarms, power supply 24, 48 V a.c./d.c. (96 mm x 96 mm)
EQ 009 2	RAC-4-115/96	flag relays, 4 alarms, power supply 115 V d.c. (96 mm x 96 mm)
EQ 010 0	RAC-4-230/96	flag relays, 4 alarms, power supply 115, 230, 400 V a.c. (96 mm x 96 mm)
EQ 011 8	RAC-8-24/96	flag relays, 8 alarms, power supply 24 - 48 V a.c./d.c. (96 mm x 96 mm)
EQ 012 6	RAC-8-115/96	flag relays, 8 alarms, power supply 115 V d.c. (96 mm x 96 mm)
EQ 010 0	RAC-8-230/96	flag relays, 8 alarms, power supply 115, 230, 400 V a.c. (96 mm x 96 mm)

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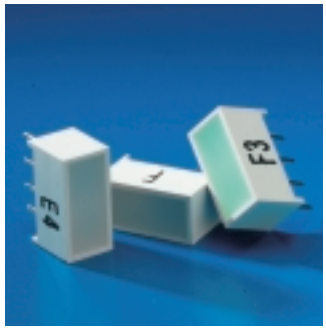

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Fitting switchboards with indicators enables a timely warning about any alarm conditions and failures.
The luminous indicators in this range come in versions with up to 12 LED, either pre-assembled or customizable (by ordering the LED separately); the package includes the labels to attach on the devices to identify each status or alarm indicator.

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Indicators

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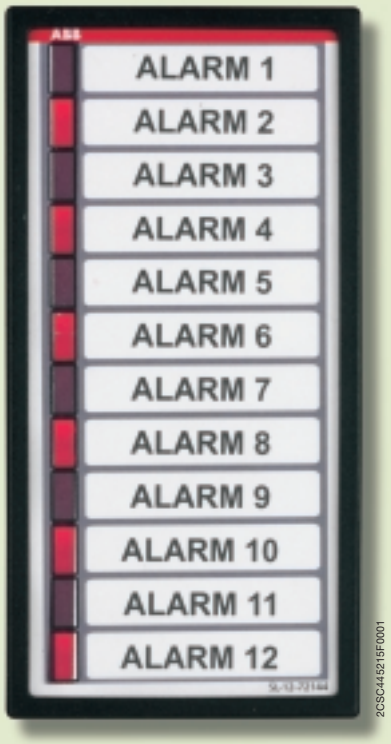

Luminous indicators

These come in versions from 3 to 12 LED with various power supply voltages; they are used to provide a luminous signal of events occurring in the system (e.g. alarms, status indicators, etc). All the versions in the range are complete with pre-printed description labels in Italian and English, and with customizable blank labels.
With the aid of the accessories, you can configure the product according to specific needs, choosing the color of the LED accordingly.

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Code	Type	Description
EQ 014 2	SL-3-24V/48	luminous indicator without LED (max 3 LED) with blank label, power supply 24 V a.c./d.c. (48 mm x 48 mm)
EQ 017 5	SL-4-24V/48	luminous indicator without LED (max 4 LED) with blank label, power supply 24 V a.c./d.c. (48 mm x 48 mm)
EQ 018 3	SL-3-L1-L2-L3-24V/48	luminous indicator with 3 red LED (wordings L1-L2- L3) and with blank label, power supply 24 V a.c./d.c. (48 mm x 48 mm)
EQ 019 1	SL-3-A-C-S-24V/48	luminous indicator with 3 LED (LED green = open, LED red = closed, LED yellow = tripped) and labels with English wording and blank, power supply 24 V a.c./d.c. (48 mm x 48 mm)
EQ 021 7	SL-4-A-C-S-E-24V/48	luminous indicator with 4 LED (LED green = open, LED red = closed, LED yellow = tripped, LED green = withdrawn) and labels with English wording and blank, power supply 24 V a.c./d.c. (48 mm x 48 mm)
EQ 022 5	SL-3-48V/48	luminous indicator without LED (max 3 LED) with blank label, power supply 48 V a.c./d.c. (48 mm x 48 mm)
EQ 023 3	SL-4-48V/48	luminous indicator without LED (max 4 LED) with blank label, power supply 48 V a.c./d.c. (48 mm x 48 mm)
EQ 024 1	SL-3-L1-L2-L3-48V/48	luminous indicator with 3 red LED (wordings L1 -L2- L3) with blank label, power supply 48 V a.c./d.c. (48 mm x 48 mm)
EQ 025 8	SL-3-A-C-S-48V/48	luminous indicator with 3 LED (LED green = open, LED red = closed, LED yellow = tripped) and labels with English wording and blank, power supply 48 V a.c./d.c. (48 mm x 48 mm)
EQ 026 6	SL-4-A-C-S-E-48V/48	luminous indicator with 4 LED (LED green = open, LED red = closed, LED yellow = tripped, LED green = withdrawn) and labels with English wording and blank, power supply 48 V a.c./d.c. (48 mm x 48 mm)
EQ 028 2	SL-3-115V/48	luminous indicator without LED (max 3 LED) with blank label, power supply 115 V a.c./d.c. (48 mm x 48 mm)
EQ 029 0	SL-4-115V/48	luminous indicator without LED (max 4 LED) with blank label, power supply 115 V a.c./d.c. (48 mm x 48 mm)
EQ 031 6	SL-3-A-C-S-115V/48	luminous indicator with 3 LED (LED green = open, LED red = closed, LED yellow = tripped) and labels with English wording and blank, power supply 115 V a.c./d.c. (48 mm x 48 mm)
EQ 032 4	SL-4-A-C-S-E-115V/48	luminous indicator with 4 LED (LED green = open, LED red = closed, LED yellow = tripped, LED green = withdrawn) and labels with English wording and blank, power supply 115 V a.c./d.c. (48 mm x 48 mm)
EQ 033 2	SL-3-230V/48	luminous indicator without LED (max 3 LED) with blank label, power supply 230 V a.c./d.c. (48 mm x 48 mm)
EQ 034 0	SL-4-230V/48	luminous indicator without LED (max 4 LED) with blank label, power supply 230 V a.c./d.c. (48 mm x 48 mm)
EQ 036 5	SL-3-L1-L2-L3-230V/48	luminous indicator with 3 red LED (wordings L1-L2- L3) and blank label, power supply 230 V a.c./d.c. (48 mm x 48 mm)
EQ 037 3	SL-3-A-C-S-230V/48	luminous indicator with 3 LED (LED green = open, LED red = closed, LED yellow = tripped) and labels with English wording and blank, power supply 230 V a.c./d.c. (48 mm x 48 mm)
EQ 039 9	SL-4-A-C-S-E-230V/48	luminous indicator with 4 LED (LED green = open, LED red = closed, LED yellow = tripped, LED green = withdrawn) and labels with English wording and blank, power supply 230 V a.c./d.c. (48 mm x 48 mm)

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Indicators

Ordering codes

Code	Type	Description
EQ 040 7	SL-12-24V/96	luminous indicator without LED (max 12 LED) with Alarm label from 1 to 12 and blank label, power supply 24 V a.c./d.c. (96 mm x 96 mm)
EQ 042 3	SL-12-48V/96	luminous indicator without LED (max 12 LED) with Alarm label from 1 to 12 and blank label, power supply 48 V a.c./d.c. (96 mm x 96 mm)
EQ 043 1	SL-12-115V/96	luminous indicator without LED (max 12 LED) with Alarm label from 1 to 12 and blank label, power supply 115 V a.c./d.c. (96 mm x 96 mm)
EQ 044 9	SL-12-230V/96	luminous indicator without LED (max 12 LED) with Alarm label from 1 to 12 and blank label, power supply 230 V a.c./d.c. (96 mm x 96 mm)
EQ 045 6	SL-12-24/72-144	luminous indicator without LED (max 12 LED) with Alarm label from 1 to 12 and blank label, power supply 24 V a.c./d.c. (72 mm x 144 mm x 80 mm)
EQ 046 4	SL-12-48/72-144	luminous indicator without LED (max 12 LED) with Alarm label from 1 to 12 and blank label, power supply 48 V a.c./d.c. (72 mm x 144 mm x 80 mm)
EQ 047 2	SL-12-115/72-144	luminous indicator without LED (max 12 LED) with Alarm label from 1 to 12 and blank label, power supply 115 V a.c./d.c. (72 mm x 144 mm x 80 mm)
EQ 048 0	SL-12-230/72-144	luminous indicator without LED (max 12 LED) with Alarm label from 1 to 12 and blank label, power supply 230 V a.c./d.c. (72 mm x 144 mm x 80 mm)

Accessories for luminous indicators		
EQ 049 8	RED LED	packet of 5 red LED (for luminous indicators without LED)
EQ 050 6	GREEN LED	packet of 5 green LED (for luminous indicators without LED)
EQ 051 4	YELLOW LED	packet of 5 yellow LED (for luminous indicators without LED)
EQ 054 8	BLUE LED	packet of 5 blue LED (for luminous indicators without LED)
EQ 055 5	TRANSPARENT LED	packet of 5 transparent LED (for luminous indicators without LED)

Overall dimensions ..... **page 8/5**

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Analogue measuring instruments for switchboard front panels record the main electrical quantities and display the reading by means of the displacement of a pointer moving on a graduated scale, which may be linear, quadratic, logarithmic, exponential, etc. The ABB Sace range includes voltmeters, ammeters, wattmeters, varmeters, power factor meters and frequency meters with fixed or mobile coils, depending on the version concerned. As the current flows through the fixed-coil devices, the torque produced by the electromagnetic field moves a metal element solidly attached to the pointer along the quadratic scale. Given its particular resistance to current peaks, devices with fixed coils are more suitable for use with an alternating current. In the mobile coil devices, the field generated by a permanent magnet comes to bear on the mobile coil carrying the current and thus moves the pointer along the graduated linear scale. The clockwise displacement of the pointer depends on the polarity, making these devices suitable only for use with a direct current.

Digital measuring devices are fitted with 3- or 4-figure red LED displays for an immediate reading of the electrical quantities recorded. In a few straightforward steps, you can access a multiscale function that enables you to vary or extend the range of quantities that can be displayed. The product range includes voltmeters, ammeters and multimeters for both direct and indirect measurements (the latter with the aid of current transformers and shunts). The voltmeters and ammeters are suitable for use with both alternating and direct currents, while the multimeters are designed to operate only with an alternating current. The lack of mechanical parts liable to wear and tear makes these instruments particularly advantageous in terms of reliability and durability.

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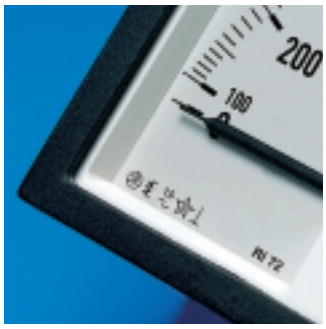

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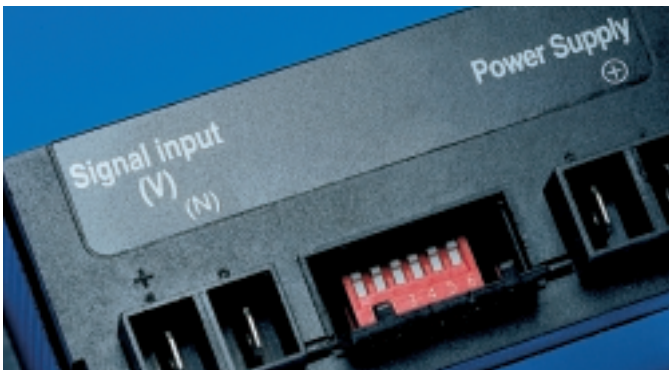

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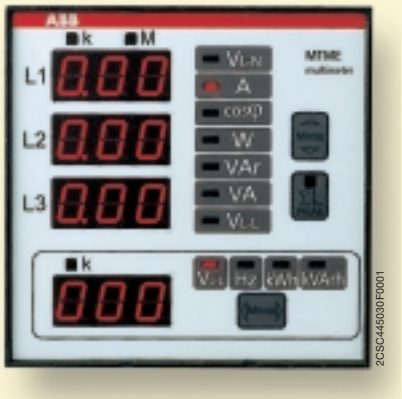
Measuring devices



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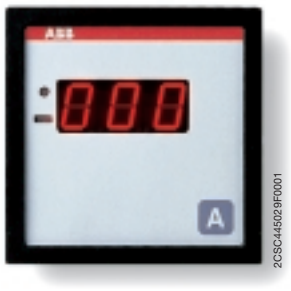

Analogue measuring devices

Technical features

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Rated max reference voltage for insulation	V	650
Test voltage	V	2000 eff. (50 Hz/1 min)
Precision class		1.5 (0.5 for frequency meters)
Overloadability [1]:		
- ammetric windings		up to In x 10/<1 sec.
		up to In x 2/permanent
- voltmetric windings		up to Un x 2/<5 sec.
		up to Un x 1.2/permanent
Working temperature	°C	-20…+40
Storage temperature	°C	-40…+70
Average and max relative humidity (DIN 40040) [2]		65% (yearly average)
		85% (+35 °C/60 days a year)
Vibration resistance (CEI 50-1)	g (9.81 m/s)	0.08-1.8 (0.35 mm/10-55 Hz; 3 axes/6 h)
Degree of protection		IP52 indoors
		IP00 on the terminals (IEC 144, DIN 40050)
		IP40 with suitable terminal covers
Materials:		
- cases and front edge		self-extinguishing thermosetting material
		in accordance with UL94 V-0, fungus and termite resistant
- pointers (DIN 43802) [3]		molded aluminium
- terminals		brass
Assembly		vertical/horizontal with special screw-on brackets[4]
Dimensions W x H x D (DIN 43700/43718)	mm	48 x 48 x 53
		72 x 72 x 53
		96 x 96 x 53
Applicable standards		CEI EN 6051, IEC 51, VDE 0410, BS 89

[1] The overload can be greater for instruments enabled by a CT because the transformer generally keeps the secondary current peaks to within 10 In.
[2] Tropicalization enables the instruments to withstand up to 95% relative humidity max (+35 °C/60 days). In accordance with the DIN standard 40040, they must be protected against any penetration of humidity inside. Terminals, screws, washers, bolts and magnets are protected galvanically against rust, while the electrical circuits are painted with the special Multicolor PC52 varnish.
[3] The pointers' damping time is 1 second. The recorded values are zeroed by pressing the control provided.
[4] With 0.5 mm - 19 mm thick panels, the screws must be attached in the fixing position nearest to the front edge of the measuring device, whereas the 20 mm - 39 mm thick panels require the screws to be fixed in the position furthest away from the front edge.

Voltmeters and ammeters

Available in both alternating current and direct current versions, they come in three standard sizes, 48 mm x 48 mm,72 mm x 72 mm and 96 mm x 96 mm (special versions available on request). The code for the interchangeable scale to fit is specified for the ammeters without a scale.

Code	Type	Description
Analogue voltmeters for alternating current		
EG 214 9	VLM-1-50/48	direct voltmeter with 50 V scale (48 mm x 48 mm)
EG 215 6	VLM-1-60/48	direct voltmeter with 60 V scale (48 mm x 48 mm)
EG 216 4	VLM-1-80/48	direct voltmeter with 80 V scale (48 mm x 48 mm)
EG 217 2	VLM-1-100/48	direct voltmeter with 100 V scale (48 mm x 48 mm)
EG 218 0	VLM-1-150/48	direct voltmeter with 150 V scale (48 mm x 48 mm)
EG 219 8	VLM-1-200/48	direct voltmeter with 200 V scale (48 mm x 48 mm)
EG 220 6	VLM-1-250/48	direct voltmeter with 250 V scale (48 mm x 48 mm)
EG 221 4	VLM-1-300/48	direct voltmeter with 300 V scale (48 mm x 48 mm)
EG 222 2	VLM-1-400/48	direct voltmeter with 400 V scale (48 mm x 48 mm)
EG 223 0	VLM-1-500/48	direct voltmeter with 500 V scale (48 mm x 48 mm)
EG 224 8	VLM-1-600/48	direct voltmeter with 600 V scale (48 mm x 48 mm)
EH 865 7	VLM1-TV-110-100/200/48	voltmeter for TV110/100 transformer with 200 V scale (48 mm x 48 mm)
EG 225 5	VLM1-TV-220-100/300/48	voltmeter for TV220/100 transformer with 300 V scale (48 mm x 48 mm)
EG 226 3	VLM1-TV-380-100/500/48	voltmeter for TV380/100 transformer with 500 V scale (48 mm x 48 mm)
EH 866 5	VLM1-TV-400-100/500/48	voltmeter for TV400/100 transformer with 500 V scale (48 mm x 48 mm)
EG 227 1	VLM1-TV-500-100/600/48	voltmeter for TV600/100 transformer with 600 V scale (48 mm x 48 mm)
EH 867 3	VLM1-TV-600-100/800/48	voltmeter for TV800/100 transformer with 800 V scale (48 mm x 48 mm)
EH 868 1	VLM1-TV-1000-100/1100/48	voltmeter for TV1100/100 transformer with 1100 V scale (48 mm x 48 mm)
EG 249 5	VLM-1-50/72	direct voltmeter with 50 V scale (72 mm x 72 mm)
EG 250 3	VLM-1-60/72	direct voltmeter with 60 V scale (72 mm x 72 mm)
EG 251 1	VLM-1-80/72	direct voltmeter with 80 V scale (72 mm x 72 mm)
EG 252 9	VLM-1-100/72	direct voltmeter with 100 V scale (72 mm x 72 mm)
EG 253 7	VLM-1-150/72	direct voltmeter with 150 V scale (72 mm x 72 mm)
EG 254 5	VLM-1-200/72	direct voltmeter with 200 V scale (72 mm x 72 mm)
EG 255 2	VLM-1-250/72	direct voltmeter with 250 V scale (72 mm x 72 mm)
EG 256 0	VLM-1-300/72	direct voltmeter with 300 V scale (72 mm x 72 mm)
EG 257 8	VLM-1-400/72	direct voltmeter with 400 V scale (72 mm x 72 mm)
EG 258 6	VLM-1-500/72	direct voltmeter with 500 V scale (72 mm x 72 mm)
EG 259 4	VLM-1-600/72	direct voltmeter with 600 V scale (72 mm x 72 mm)
EH 869 9	VLM1-TV-110-100/200/72	voltmeter for TV110/100 transformer with 200 V scale (72 mm x 72 mm)
EG 260 2	VLM1-TV-220-100/300/72	voltmeter for TV220/100 transformer with 300 V scale (72 mm x 72 mm)
EH 870 7	VLM1-TV-400-100/500/72	voltmeter for TV400/100 transformer with 500 V scale (72 mm x 72 mm)
EG 261 0	VLM1-TV-380-100/500/72	voltmeter for TV380/100 transformer with 500 V scale (72 mm x 72 mm)
EG 262 8	VLM1-TV-500-100/600/72	voltmeter for TV500/100 transformer with 600 V scale (72 mm x 72 mm)
EH 871 5	VLM1-TV-600-100/800/72	voltmeter for TV600/100 transformer with 800 V scale (72 mm x 72 mm)
EH 872 3	VLM1-TV-1000-100/1100/72	voltmeter for TV1000/100 transformer with 1100 V scale (72 mm x 72 mm)

Technical details ..... **page 7/14** **Overall dimensions** ..... **page 8/6**

Analogue measuring devices

Ordering codes

Code	Type	Description
EG 419 4	VLM-1-50/96	direct voltmeter with 50 V scale (96 mm x 96 mm)
EG 420 2	VLM-1-60/96	direct voltmeter with 60 V scale (96 mm x 96 mm)
EG 421 0	VLM-1-80/96	direct voltmeter with 80 V scale (96 mm x 96 mm)
EG 422 8	VLM-1-100/96	direct voltmeter with 100 V scale (96 mm x 96 mm)
EG 423 6	VLM-1-150/96	direct voltmeter with 150 V scale (96 mm x 96 mm)
EG 424 4	VLM-1-200/96	direct voltmeter with 200 V scale (96 mm x 96 mm)
EG 425 1	VLM-1-250/96	direct voltmeter with 250 V scale (96 mm x 96 mm)
EG 426 9	VLM-1-300/96	direct voltmeter with 300 V scale (96 mm x 96 mm)
EG 427 7	VLM-1-400/96	direct voltmeter with 400 V scale (96 mm x 96 mm)
EG 428 5	VLM-1-500/96	direct voltmeter with 500 V scale (96 mm x 96 mm)
EG 429 3	VLM-1-600/96	direct voltmeter with 600 V scale (96 mm x 96 mm)
EH 873 1	VLM1-TV-110-100/200/96	voltmeter for TV110/100 transformer with 200 V scale (96 mm x 96 mm)
EG 430 1	VLM1-TV-220-100/300/96	voltmeter for TV220/100 transformer with 300 V scale (96 mm x 96 mm)
EH 874 9	VLM1-TV-400-100/500/96	voltmeter for TV400/100 transformer with 500 V scale (96 mm x 96 mm)
EG 431 9	VLM1-TV-380-100/500/96	voltmeter for TV380/100 transformer with 500 V scale (96 mm x 96 mm)
EG 432 7	VLM1-TV-500-100/600/96	voltmeter for TV500/100 transformer with 600 V scale (96 mm x 96 mm)
EH 875 6	VLM1-TV-600-100/800/96	voltmeter for TV600/100 transformer with 800 V scale (96 mm x 96 mm)
EH 876 4	VLM1-TV-1000-100/1100/96	voltmeter for TV400/100 transformer with 1100 V scale (96 mm x 96 mm)

Technical details ..... **page 7/14** **Overall dimensions** ..... **page 8/6**

Analogue measuring devices

Ordering codes

Code	Type	Description
Analogue voltmeters for direct current		
EG 456 6	VLM-2-10/48	direct voltmeter with 10 V scale (48 mm x 48 mm)
EG 457 4	VLM-2-15/48	direct voltmeter with 15 V scale (48 mm x 48 mm)
EG 458 2	VLM-2-25/48	direct voltmeter with 25 V scale (48 mm x 48 mm)
EG 459 0	VLM-2-40/48	direct voltmeter with 40 V scale (48 mm x 48 mm)
EG 460 8	VLM-2-60/48	direct voltmeter with 60 V scale (48 mm x 48 mm)
EG 461 6	VLM-2-80/48	direct voltmeter with 80 V scale (48 mm x 48 mm)
EG 462 4	VLM-2-100/48	direct voltmeter with 100 V scale (48 mm x 48 mm)
EG 463 2	VLM-2-150/48	direct voltmeter with 150 V scale (48 mm x 48 mm)
EG 464 0	VLM-2-200/48	direct voltmeter with 200 V scale (48 mm x 48 mm)
EG 465 7	VLM-2-250/48	direct voltmeter with 250 V scale (48 mm x 48 mm)
EG 466 5	VLM-2-400/48	direct voltmeter with 400 V scale (48 mm x 48 mm)
EG 467 3	VLM-2-600/48	direct voltmeter with 600 V scale (48 mm x 48 mm)
EG 473 1	VLM-2-10/72	direct voltmeter with 10 V scale 10 V (72 mm x 72 mm)
EG 474 9	VLM-2-15/72	direct voltmeter with 15 V scale 15 V (72 mm x 72 mm)
EG 475 6	VLM-2-25/72	direct voltmeter with 25 V scale 25 V (72 mm x 72 mm)
EG 476 4	VLM-2-40/72	direct voltmeter with 40 V scale 40 V (72 mm x 72 mm)
EG 477 2	VLM-2-60/72	direct voltmeter with 60 V scale 60 V (72 mm x 72 mm)
EG 478 0	VLM-2-80/72	direct voltmeter with 80 V scale 80 V (72 mm x 72 mm)
EG 479 8	VLM-2-100/72	direct voltmeter with 100 V scale 100 V (72 mm x 72 mm)
EG 480 6	VLM-2-150/72	direct voltmeter with 150 V scale 150 V (72 mm x 72 mm)
EG 481 4	VLM-2-200/72	direct voltmeter with 200 V scale 200 V (72 mm x 72 mm)
EG 482 2	VLM-2-250/72	direct voltmeter with 250 V scale 250 V (72 mm x 72 mm)
EG 483 0	VLM-2-400/72	direct voltmeter with 400 V scale 400 V (72 mm x 72 mm)
EG 484 8	VLM-2-600/72	direct voltmeter with 600 V scale 600 V (72 mm x 72 mm)
EG 490 5	VLM-2-10/96	direct voltmeter with 10 V scale (96 mm x 96 mm)
EG 491 3	VLM-2-15/96	direct voltmeter with 15 V scale (96 mm x 96 mm)
EG 492 1	VLM-2-25/96	direct voltmeter with 25 V scale (96 mm x 96 mm)
EG 493 9	VLM-2-40/96	direct voltmeter with 40 V scale (96 mm x 96 mm)
EG 494 7	VLM-2-60/96	direct voltmeter with 60 V scale (96 mm x 96 mm)
EG 495 4	VLM-2-80/96	direct voltmeter with 80 V scale (96 mm x 96 mm)
EG 496 2	VLM-2-100/96	direct voltmeter with 100 V scale (96 mm x 96 mm)
EG 497 0	VLM-2-150/96	direct voltmeter with 150 V scale (96 mm x 96 mm)
EG 498 8	VLM-2-200/96	direct voltmeter with 200 V scale (96 mm x 96 mm)
EG 499 6	VLM-2-250/96	direct voltmeter with 250 V scale (96 mm x 96 mm)
EG 500 1	VLM-2-400/96	direct voltmeter with 400 V scale (96 mm x 96 mm)
EG 501 9	VLM-2-600/96	direct voltmeter with 600 V scale (96 mm x 96 mm)

Technical details ..... **page 7/14** **Overall dimensions** ..... **page 8/6**

Analogue measuring devices

Ordering codes

Code	Type	Description
Analogue ammeters for alternating current		
EG 228 9	AMT1-A1-1/48	direct ammeter with 1 A scale (48 mm x 48 mm)
EG 229 7	AMT1-A1-5/48	direct ammeter with 5 A scale (48 mm x 48 mm)
EG 230 5	AMT1-A1-10/48	direct ammeter with 10 A scale (48 mm x 48 mm)
EG 231 3	AMT1-A1-15/48	direct ammeter with 15 A scale (48 mm x 48 mm)
EG 232 1	AMT1-A1-20/48	direct ammeter with 20 A scale (48 mm x 48 mm)
EG 233 9	AMT1-A1-25/48	direct ammeter with 25 A scale (48 mm x 48 mm)
EG 234 7	AMT1-A1-30/48	direct ammeter with 30 A scale (48 mm x 48 mm)
EG 235 4	AMT1-A1-40/48	direct ammeter with 40 A scale (48 mm x 48 mm)
EG 236 2	AMT1-A1/48	ammeter (1 In) for CT .../5 A without scale for SCL-A1/48 scale(48 mm x 48 mm)
EG 237 0	AMT1-A5/48	ammeter (5 In) for CT .../5 A without scale for SCL-A5/48 scale (48 mm x 48 mm)
EG 263 6	AMT1-A1-1/72	direct ammeter with 1 A scale (72 mm x 72 mm)
EG 264 4	AMT1-A1-5/72	direct ammeter with 5 A scale (72 mm x 72 mm)
EG 265 1	AMT1-A1-10/72	direct ammeter with 10 A scale (72 mm x 72 mm)
EG 266 9	AMT1-A1-15/72	direct ammeter with 15 A scale (72 mm x 72 mm)
EG 267 7	AMT1-A1-20/72	direct ammeter with 20 A scale (72 mm x 72 mm)
EG 268 5	AMT1-A1-25/72	direct ammeter with 25 A scale (72 mm x 72 mm)
EG 269 3	AMT1-A1-30/72	direct ammeter with 30 A scale (72 mm x 72 mm)
EG 270 1	AMT1-A1-40/72	direct ammeter with 40 A scale (72 mm x 72 mm)
EG 271 9	AMT1-A1-50/72	direct ammeter with 50 A scale (72 mm x 72 mm)
EG 272 7	AMT1-A1-60/72	direct ammeter with 60 A scale (72 mm x 72 mm)
EG 273 5	AMT1-A1/72	ammeter (1 In) for CT .../5 A without scale for SCL-A1/72 scale (72 mm x 72 mm)
EG 274 3	AMT1-A5/72	ammeter (5 In) for CT .../5 A without scale for SCL-A5/72 scale (72 mm x 72 mm)
EG 433 5	AMT1-A1-1/96	direct ammeter with 1 A scale (96 mm x 96 mm)
EG 434 3	AMT1-A1-5/96	direct ammeter with 5 A scale (96 mm x 96 mm)
EG 435 0	AMT1-A1-10/96	direct ammeter with 10 A scale (96 mm x 96 mm)
EG 436 8	AMT1-A1-15/96	direct ammeter with 15 A scale (96 mm x 96 mm)
EG 437 6	AMT1-A1-20/96	direct ammeter with 20 A scale (96 mm x 96 mm)
EG 438 4	AMT1-A1-25/96	direct ammeter with 25 A scale (96 mm x 96 mm)
EG 439 2	AMT1-A1-30/96	direct ammeter with 30 A scale (96 mm x 96 mm)
EG 440 0	AMT1-A1-40/96	direct ammeter with 40 A scale (96 mm x 96 mm)
EG 441 8	AMT1-A1-50/96	direct ammeter with 50 A scale (96 mm x 96 mm)
EG 442 6	AMT1-A1-60/96	direct ammeter with 60 A scale (96 mm x 96 mm)
EG 443 4	AMT1-A1/96	ammeter (1 In) for CT .../5 A without scale for SCL-A1/96 scale (96 mm x 96 mm)
EG 444 2	AMT1-A5/96	ammeter (5 In) for CT .../5 A without scale for SCL-A5/96 scale (96 mm x 96 mm)

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Technical details ..... page 7/14 Overall dimensions ..... page 8/6

Analogue measuring devices

Ordering codes

Code	Type	Description
Analogue ammeters for direct current		
EG 468 1	AMT2-A2-0,5/48	direct ammeter with 0.5 A scale (48 mm x 48 mm)
EG 469 9	AMT2-A2-1/48	direct ammeter with 1 A scale (48 mm x 48 mm)
EG 470 7	AMT2-A2-5/48	direct ammeter with 5 A scale (48 mm x 48 mm)
EG 471 5	AMT2-A2-10/48	direct ammeter with 10 A scale (48 mm x 48 mm)
EG 472 3	AMT2-A2/48	ammeter without scale for SCL-A2/48 scale 60 mV (48 mm x 48 mm)
EG 485 5	AMT2-A2-0,5/72	direct ammeter with 0.5 A scale (72 mm x 72 mm)
EG 486 3	AMT2-A2-1/72	direct ammeter with 1 A scale (72 mm x 72 mm)
EG 487 1	AMT2-A2-5/72	direct ammeter with 5 A scale (72 mm x 72 mm)
EG 488 9	AMT2-A2-10/72	direct ammeter with 10 A scale (72 mm x 72 mm)
EG 489 7	AMT2-A2/72	ammeter without scale for SCL-A2/72 scale 60 mV (72 mm x 72 mm)
EG 502 7	AMT2-A2-0,5/96	direct ammeter with 0.5 A scale (96 mm x 96 mm)
EG 503 5	AMT2-A2-1/96	direct ammeter with 1 A scale (96 mm x 96 mm)
EG 504 3	AMT2-A2-5/96	direct ammeter with 5 A scale (96 mm x 96 mm)
EG 505 0	AMT2-A2-10/96	direct ammeter with 10 A scale (96 mm x 96 mm)
EG 506 8	AMT2-A2/96	ammeter without scale for SCL-A2/96 scale 60 mV (96 mm x 96 mm)

Other measuring devices

In addition to the voltmeters and ammeters, the range of analogue measuring instruments for application on single-phase and three-phase lines in alternating current includes wattmeters, varmeters, power factor meters and frequency meters in the three standard sizes, 48 mm x 48 mm, 72 mm x 72 mm and 96 mm x 96 mm (special versions available on request).
The wattmeters, varmeters and power factor meters must be fitted with interchangeable scales (see chapter 6, Accessories) and with the transducers specified in the list.

Code	Type	Description
Analogue wattmeters for alternating current		
EG 507 6	WMT-A3/48	wattmeter for 1 mA transducer without scale for SCL-A3/48 scale (48 mm x 48 mm)
EG 508 4	WMT-A3/72	wattmeter for 1 mA transducer without scale for SCL-A3/72 scale (72 mm x 72 mm)
EG 509 2	WMT-A3/96	wattmeter for 1 mA transducer without scale for SCL-A3/96 scale (96 mm x 96 mm)

Technical details ..... **page 7/16** **Overall dimensions** ..... **page 8/6**

Analogue measuring devices

Ordering codes

Code	Type	Description
Analogue varmeters for alternating current		
EG 510 0	VRM-A4/48	varmeter for 1 mA transducer without scale for SCL-A4/48 scale (48 mm x 48 mm)
EG 511 8	VRM-A4/72	varmeter for 1 mA transducer without scale for SCL-A4/72 scale (72 mm x 72 mm)
EG 512 6	VRM-A4/96	varmeter for 1 mA transducer without scale for SCL-A4/96 scale (96 mm x 96 mm)
Analogue power factor meters for alternating current		
EG 513 4	COS-90/48	power factor meter for 1 mA transducer with 90° scale, capacitive 0.5 - 1 - 0.5 inductive (48 mm x 48 mm)
EG 514 2	COS-240/48	power factor meter for 1 mA transducer with 240° scale, capacitive 0.5 - 1 - 0.5 inductive (48 mm x 48 mm)
EG 515 9	COS-90/72	power factor meter for 1 mA transducer with 90° scale, capacitive 0.5 - 1 - 0.5 inductive (72 mm x 72 mm)
EG 516 7	COS-240/72	power factor meter for 1 mA transducer with 240° scale, capacitive 0.5 - 1 - 0.5 inductive (72 mm x 72 mm)
EG 517 5	COS-90/96	power factor meter for 1 mA transducer with 90° scale, capacitive 0.5 - 1 - 0.5 inductive (96 mm x 96 mm)
EG 518 3	COS-240/96	power factor meter for 1 mA transducer with 240° scale, capacitive 0.5 - 1 - 0.5 inductive (96 mm x 96 mm)
Analogue frequency meters for alternating current		
EG 519 1	FRZ-90/48	frequency meter with 90° scale, 45-65 Hz (48 mm x 48 mm)
EG 520 9	FRZ-90/72	frequency meter with 90° scale, 45-65 Hz (72 mm x 72 mm)
EG 521 7	FRZ-240/72	frequency meter with 240° scale, 45-65 Hz (72 mm x 72 mm)
EG 522 5	FRZ-90/96	frequency meter with 90° scale, 45-65 Hz (96 mm x 96 mm)
EG 523 3	FRZ-240/96	frequency meter with 240° scale, 45-65 Hz (96 mm x 96 mm)

Technical details ..... **page 7/16** **Overall dimensions** ..... **page 8/6**

Digital measuring devices

Technical features

2CSC445031F0001

Power supply voltage	V	230 a.c. (for all versions)
Test voltage	V	2000 eff. (50 Hz/1 min)
Max. signal input		VLM-D1 600 V a.c. VLM-D2 600 V d.c. AMT-D1 5 A AMT-D2 60 mV
Measuring range		VLM-D1 and VLM-D2 600 V a.c./d.c. AMT-D1 and AMT-D2 from 15 A to 999 A (15-25-40-60-99,9-150-250-400-600-999 A)
Precision class		0.5 (± 1 digit)
Working temperature	°C	-10…+55 (± 0.05%)
Storage temperature	°C	-40…+70
Average and max relative humidity (DIN 40040) [1]		65% (yearly average) 85% (+35 °C/60 days a year)
Vibration resistance (CEI 50-1)	g (9.81 m/s)	0.3-5 (0.35-3 mm/5-60 Hz; 3 axes/6 h)
Degree of protection		IP52 indoors IP00 on the terminals (IEC 144, DIN 40050) can be raised to IP40 with suitable terminal covers
Materials:		
- cases and front edge		self-extinguishing thermosetting material in accordance with UL94 V-0, fungus and termite resistant
- pointers[2]		red LED, H 24 mm
- terminals		brass cable clamps for 72 mm x 72 mm devices/ Faston 6.35 mm x 0.8 mm for 96 mm x 96 mm devices
Assembly		vertical/horizontal with special screw-on brackets[3]
Dimensions W x H x D (DIN 43700/43718)	mm	72 mm x 36 mm x 86 mm
		96 mm x 48 mm x 86 mm
		72 mm x 72 mm x 53 x mm
		96 mm x 96 mm x 53 mm
Applicable standards		CEI EN 61010-1

[1] Tropicalization enables the instruments to withstand values up to 95% relative humidity max (+35 °C/30 days a year) and 75% average relative humidity.
[2] When the LED read "EEE", this means that the end of the scale has been reached.
[3] With 0.5 mm - 19 mm thick panels, the screws must be attached in the fixing position nearest to the front edge of the measuring device, whereas the 20 mm - 39 mm thick panels require the screws to be fixed in the position furthest away from the front edge.

Voltmeters and ammeters

Available in both a.c. and d.c. versions, they come in the four standard sizes, 36 mm x 72 mm, 48 mm x 96 mm, 72 mm x 72 mm and 96 mm x 96 mm (special versions available on request).
All the codes in the list can be fitted with transformers and shunts for indirect measurements of the recorded values too.

Code	Type	Description
Digital voltmeters for alternating current and direct current		
EG 530 8	VLM-D1-3/36x72	digital voltmeter with 3-figure LED, end of scale 100/600 V a.c. (36 mm x 72 mm)
EG 533 2	VLM-D2-3/36x72	digital voltmeter with 3-figure LED, end of scale 100/600 V d.c. (36 mm x 72 mm)
EG 536 5	VLM-D1-3/48x96	digital voltmeter with 3-figure LED, end of scale 100/600 V a.c. (48 mm x 96 mm)
EG 539 9	VLM-D2-3/48x96	digital voltmeter with 3-figure LED, end of scale 100/600 V d.c. (48 mm x 96 mm)
EG 445 9	VLM-D1-3/72x72	digital voltmeter with 3-figure LED, end of scale 100/600 V a.c. (72 mm x 72 mm)
EG 447 5	VLM-D2-3/72x72	digital voltmeter with 3-figure LED, end of scale 100/600 V d.c. (72 mm x 72 mm)
EG 815 3	VLM-D1-3/96x96	digital voltmeter with 3-figure LED, end of scale 100/600 V a.c. (96 mm x 96 mm)
EG 817 9	VLM-D2-3/96x96	digital voltmeter with 3-figure LED, end of scale 100/600 V d.c. (96 mm x 96 mm)

Technical details ..... **page 7/21** **Overall dimensions** ..... **page 8/7**

Digital measuring devices
Ordering codes

Code	Type	Description
Digital ammeters for alternating current and direct current		
EG 531 6	AMT-D1-3/36x72	digital ammeter with 3-figure LED, end of scale 999 A for programmable transformer .../5 A (36 mm x 72 mm)
EG 532 4	AMT-D1-4/36x72	digital ammeter with 3 1/2-figure LED, end of scale 999 A for programmable transformer .../5 A (36 mm x 72 mm)
EG 534 0	AMT-D2-3/36x72	digital ammeter with 3-figure LED, end of scale 999 A for programmable shunt .../60 mV (36 mm x 72 mm)
EG 535 7	AMT-D2-4/36x72	digital ammeter with 3 1/2-figure LED, end of scale 999 A for programmable shunt .../60 mV (36 mm x 72 mm)
EG 537 3	AMT-D1-3/48x96	digital ammeter with 3-figure LED, end of scale 999 A for programmable transformer .../5 A (48 mm x 96 mm)
EG 538 1	AMT-D1-4/48x96	digital ammeter with 3 1/2-figure LED, end of scale 999 A for programmable transformer .../5 A (48 mm x 96 mm)
EG 540 7	AMT-D2-3/48x96	digital ammeter with 3-figure LED, end of scale 999 A for programmable shunt .../60 mV (48 mm x 96 mm)
EG 541 5	AMT-D2-4/48x96	digital ammeter with 3 1/2-figure LED, end of scale 999 A for programmable shunt .../60 mV (48 mm x 96 mm)
EG 446 7	AMT-D1-3/72x72	digital ammeter with 3-figure LED, end of scale 999 A for programmable transformer .../5 A (72 mm x 72 mm)
EG 448 3	AMT-D2-3/72x72	digital ammeter with 3-figure LED, end of scale 999 A for programmable shunt .../60 mV (72 mm x 72 mm)
EG 816 1	AMT-D1-3/96x96	digital ammeter with 3-figure LED, end of scale 999 A for programmable transformer .../5 A (96 mm x 96 mm)
EG 818 7	AMT-D2-3/96x96	digital ammeter with 3-figure LED, end of scale 999 A for programmable shunt .../60 mV (96 mm x 96 mm)
Digital voltmeters/ammeters for alternating current and direct current		
EG 819 5	VLM-D1-AMT-D1-3/96x96	digital voltmeter/ammeter with 3-figure LED, end of scale 600 V a.c. and 999 A for programmable transformer .../5 A (96 mm x 96 mm)
EG 820 3	VLM-D2-AMT-D2-3/96x96	digital voltmeter with 3-figure LED, end of scale 600 V d.c. and 999 A for programmable shunt .../60 mV (96 mm x 96 mm)

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Multimeters

These devices combine voltmeter, ammeter, wattmeter, varmeter, power factor meter, frequency meter, active/reactive energy meter and thermometer functions in a single instrument, thereby enabling you to save time and space by comparison with the separate installation of all the corresponding devices.
Designed to work on three-phase 230/400 V a.c. lines, they can be equipped with a current transformer for the additional indirect measurement of the quantities recorded.
The four red LED displays and the LCD display give a reading of the instantaneous values, also providing the average and max values for some quantities.
You can also connect several multimeters and other digital instruments via the EIA 485 serial port.


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Code	Type	Description
LED display multimeters		
EQ 000 1	MTM-B-48	standard digital multimeter MTM-B-48 for measuring phase and between-phase V and I at 230/400 V a.c. in three-phase systems, with enabling by .../5 A transformer (48 mm x 48 mm)
EQ 004 3	MTM-48	digital multimeter MTM-48 for measuring phase and between-phase V, I, P, Q, A, cosφ Hz, °C at 230/400 V a.c., with enabling by .../5 A transformer (48 mm x 48 mm)
EQ 006 8	MTME-48	same as MTM-48 + active and reactive energy measurements for measurements at 230/400 V a.c. with enabling by .../5 A transformer (48 mm x 48 mm)
EH 877 2	MTM-B-72	standard digital multimeter MTM-B-72 for measuring phase and between-phase V and I at 230/400 V a.c. in three-phase systems, with enabling by .../5 A transformer (72 mm x 72 mm)
EG 821 1	MTM-72	digital multimeter MTM-72 for measuring phase and between-phase V, I, P, Q, A, cosφ, Hz, °C at 230/400Va.c., with enabling by .../5 A transformer (72 mm x 72 mm)
EG 822 9	MTME-72	same as MTM-72 + active and reactive energy measurements for measurements at 230/400 V a.c. with enabling by .../5 A transformer (72 mm x 72 mm)
EG 823 7	MTME-I-72	same as MTME-72 + impulse output for measurements at 230/400 V a.c. with enabling by .../5 A transformer (72 mm x 72 mm)
EG 824 5	MTME-485-SUI-72	same as MTME-I-72 + RS485 port but without impulse output for measurements at 230/400 V a.c. with enabling by .../5 A transformer (72 mm x 72 mm)
EH 878 0	MTM-B-96	standard digital multimeter MTM-B-96 for measuring phase and between-phase V and I at 230/400 V a.c. in three-phase systems, with enabling by .../5 A transformer (96 mm x 96 mm)
EG 825 2	MTM-96	digital multimeter MTM-96 for measuring phase and between-phase V, I, P, Q, S, cosφ, Hz, °C at 230/400 V a.c., with enabling by .../5 A transformer (96 mm x 96 mm)
EG 826 0	MTME-96	digital multimeter MTME-96 same as MTM-96 + active and reactive energy measurements for measurements at 230/400 V a.c. tby .../5 A transformer (96 mm x 96 mm)
EG 827 8	MTME-I-96	digital multimeter MTME-I-96 same as MTME-96 + impulse output for measurements at 230/400 V a.c. with enabling by .../5 A transformer (96 mm x 96 mm)
EG 828 6	MTME-485-96	digital multimeter MTME-485-96, same as MTME-I-96 + RS485 port and relay outputs for measurements at 230/400 V a.c. with enabling by .../5 A transformer (96 mm x 96 mm)
EG 834 4	MTME-485-SUI-96	same as MTME-I-96 + RS485 port but without impulse output for measurements at 230/400 V a.c. with enabling by .../5 A transformer (96 mm x 96 mm)
LCD type multimeters		
EG 829 4	MTME-485-LCD-96	same as MTME-485-96 with LCD display

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Energy meters

These devices are for measuring active or reactive energy, or both, in either single-phase or three-phase 230/400 V a.c. networks

Code	Type	Description
EG 524 1	EMT-A-1FN/96	active energy meter single-phase 230 V, 5 A, class 2 (96 mm x 96 mm)
EG 525 8	EMT-A-3F/96	active energy meter three-phase for unbalanced loads 3 wires (Aron), 400 V, 5 A, class 2 (96 mm x 96 mm)
EG 525 6	EMT-A-3FN/96	active energy meter, three-phase + neutral for unbalanced loads 4 wires, 230/400 V, 5 A, class 2 (96 mm x 96 mm)
EG 528 2	EMT-R-3F/96	reactive energy meter three-phase for unbalanced loads 3 wires (Aron), 400 V, 5 A, class 2 (96 mm x 96 mm)
EG 529 0	EMT-R-3FN/96	energy meter three-phase + neutral for unbalanced loads 4 wires, 400 V, 5 A, class 2 (96 mm x 96 mm)

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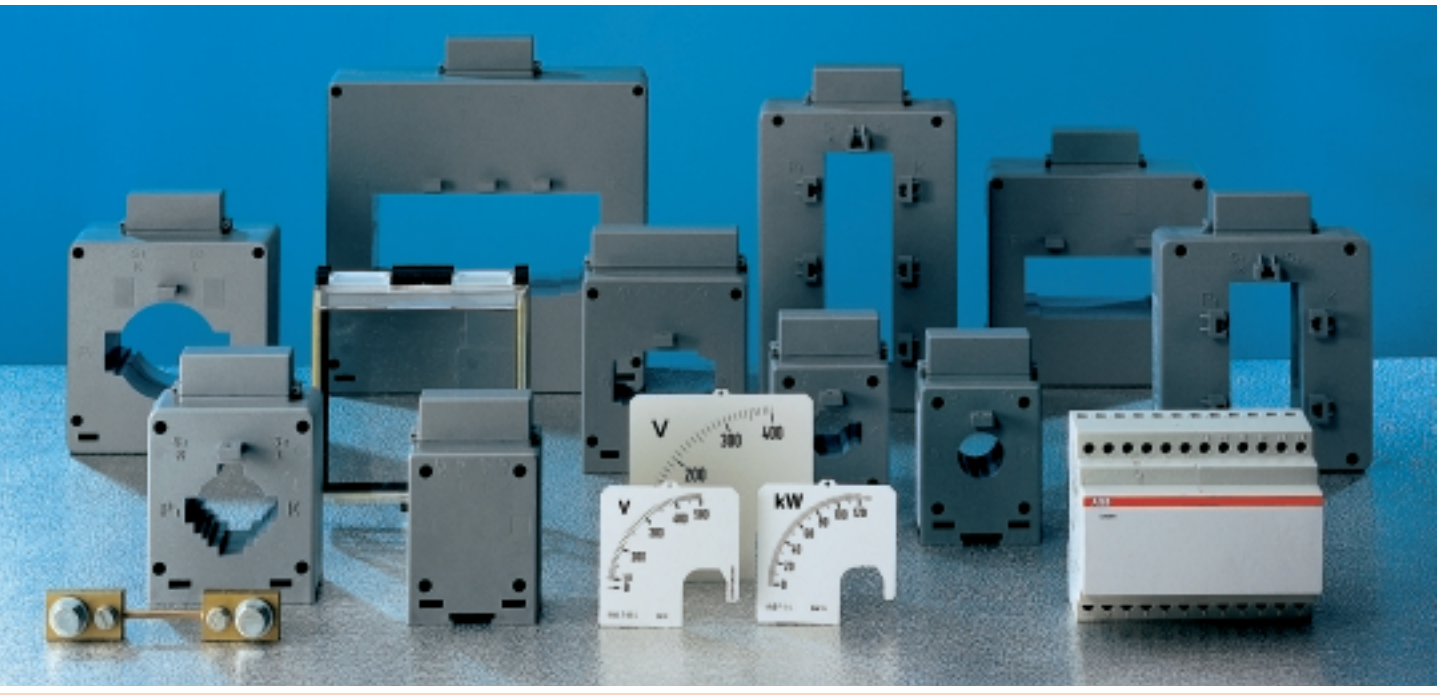

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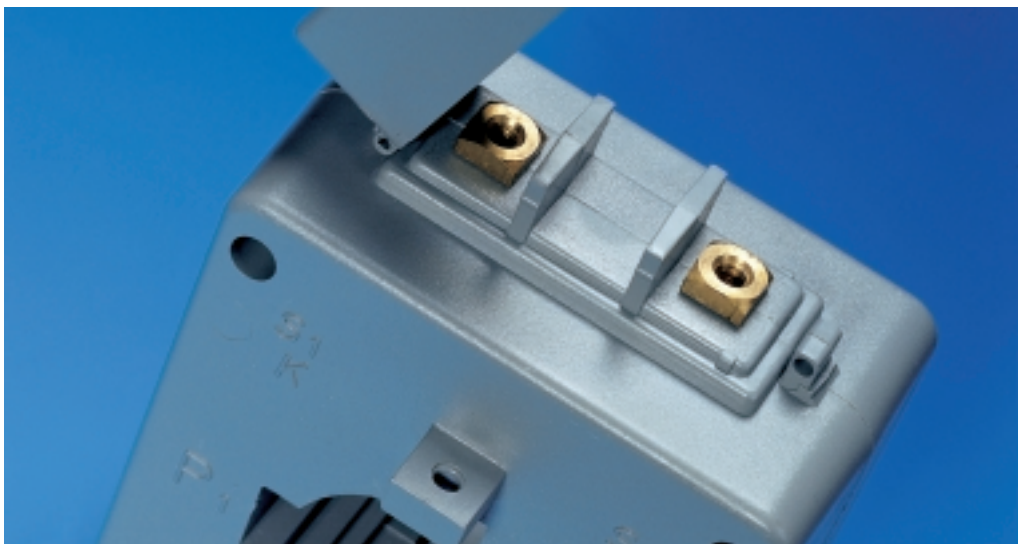

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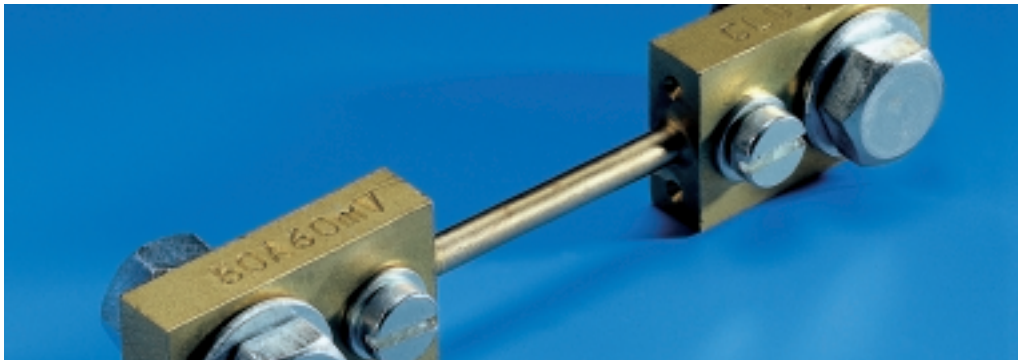

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The ABB Sace range of switchboard front panel devices includes numerous products for installation with the analogue and digital measuring devices to enable their use in different plant conditions and to extend their functions.

The range includes interchangeable scales, 5 A and 1A voltage and current transformers, ammeter and voltmeter transformers and converters, transducers, switches, shunts and other accessories that are quick and easy to install.

With the aid of these components, you can establish the most suitable configuration for each measuring device. For use in particular working conditions, ABB Sace can also cope promptly and effectively with orders for special versions of their measuring devices.

Accessories for measuring devices

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Ordering codes

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Voltage transformers **6**/28
Current and voltage converters **6**/30
Transducers for wattmeters, varmeters and power factor meters **6**/32
Shunts **6**/33
Current and voltage switches **6**/34
Other accessories **6**/35

Interchangeable graduated scales

Using the interchangeable scales enables you to adapt and extend the functions for indicating the electrical quantities recorded by the analogue measuring devices.
For wattmeters and varmeters the choice of graduated scale depends on the input voltages and the type of transducer connected (see Chapter 7, Technical details).

Code	Type	Description
Scales for ammeters in a.c. 48 mm x 48 mm		
EQ 772 5	SCL-A1-1/48	scale A1, end of scale 1 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 775 8	SCL-A1-5/48	scale A1, end of scale 5 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 776 6	SCL-A1-10/48	scale A1, end of scale 10 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 777 4	SCL-A1-15/48	scale A1, end of scale 15 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 778 2	SCL-A1-20/48	scale A1, end of scale 20 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 780 8	SCL-A1-25/48	scale A1, end of scale 25 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 781 6	SCL-A1-30/48	scale A1, end of scale 30 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 783 2	SCL-A1-40/48	scale A1, end of scale 40 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 784 0	SCL-A1-50/48	scale A1, end of scale 50 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 785 7	SCL-A1-60/48	scale A1, end of scale 60 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 786 5	SCL-A1-80/48	scale A1, end of scale 80 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 857 5	SCL-A1-100/48	scale A1, end of scale 100 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 858 3	SCL-A1-150/48	scale A1, end of scale 150 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 859 1	SCL-A1-200/48	scale A1, end of scale 200 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 860 9	SCL-A1-250/48	scale A1, end of scale 250 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 861 7	SCL-A1-300/48	scale A1, end of scale 300 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 862 5	SCL-A1-400/48	scale A1, end of scale 400 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 863 3	SCL-A1-500/48	scale A1, end of scale 500 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 864 1	SCL-A1-600/48	scale A1, end of scale 600 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 865 8	SCL-A1-800/48	scale A1, end of scale 800 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 866 6	SCL-A1-1000/48	scale A1, end of scale 1000 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 867 4	SCL-A1-1500/48	scale A1, end of scale 1500 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 868 2	SCL-A1-2000/48	scale A1, end of scale 2000 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 869 0	SCL-A1-2500/48	scale A1, end of scale 2500 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 870 8	SCL-A1-3000/48	scale A1, end of scale 3000 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 912 8	SCL-A1-4000/48	scale A1, end of scale 4000 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 913 6	SCL-A1-5000/48	scale A1, end of scale 5000 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 914 4	SCL-A1-6000/48	scale A1, end of scale 6000 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EG 915 1	SCL-A1-8000/48	scale A1, end of scale 8000 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)

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Accessories for measuring devices

Ordering codes

Code	Type	Description
EG 916 9	SCL-A1-10000/48	scale A1, end of scale 1000 A for ammeters in a.c. AMT1-A1 (48 mm x 48 mm)
EQ 789 9	SCL-A5-1/48	scale A5, end of scale 1 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 790 7	SCL-A5-5/48	scale A5, end of scale 5 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 791 5	SCL-A5-10/48	scale A5, end of scale 10 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 792 3	SCL-A5-15/48	scale A5, end of scale 15 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 794 9	SCL-A5-20/48	scale A5, end of scale 20 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 795 6	SCL-A5-25/48	scale A5, end of scale 25 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 796 4	SCL-A5-30/48	scale A5, end of scale 30 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 797 2	SCL-A5-40/48	scale A5, end of scale 40 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 798 0	SCL-A5-50/48	scale A5, end of scale 50 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 799 8	SCL-A5-60/48	scale A5, end of scale 60 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EQ 800 4	SCL-A5-80/48	scale A5, end of scale 80 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 917 7	SCL-A5-100/48	scale A5, end of scale 100 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 918 5	SCL-A5-150/48	scale A5, end of scale 150 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 919 3	SCL-A5-200/48	scale A5, end of scale 200 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 920 1	SCL-A5-250/48	scale A5, end of scale 250 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 921 9	SCL-A5-300/48	scale A5, end of scale 300 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 922 7	SCL-A5-400/48	scale A5, end of scale 400 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 923 5	SCL-A5-500/48	scale A5, end of scale 500 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 924 3	SCL-A5-600/48	scale A5, end of scale 600 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 925 0	SCL-A5-800/48	scale A5, end of scale 800 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 926 8	SCL-A5-1000/48	scale A5, end of scale 1000 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 927 6	SCL-A5-1500/48	scale A5, end of scale 1500 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 928 4	SCL-A5-2000/48	scale A5, end of scale 2000 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 929 2	SCL-A5-2500/48	scale A5, end of scale 2500 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 930 0	SCL-A5-3000/48	scale A5, end of scale 3000 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 931 8	SCL-A5-4000/48	scale A5, end of scale 4000 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 932 6	SCL-A5-5000/48	scale A5, end of scale 5000 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 933 4	SCL-A5-6000/48	scale A5, end of scale 6000 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 934 2	SCL-A5-8000/48	scale A5, end of scale 8000 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)
EG 935 9	SCL-A5-10000/48	scale A5, end of scale 10000 A for ammeters in a.c. AMT1-A5 (48 mm x 48 mm)

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Accessories for measuring devices

Ordering codes

Code	Type	Description
Scales for ammeters in a.c. 72 mm x 72 mm		
EQ 801 2	SCL-A1-1/72	scale A1, end of scale 1 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 802 0	SCL-A1-5/72	scale A1, end of scale 5 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 804 6	SCL-A1-10/72	scale A1, end of scale 10 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 805 3	SCL-A1-15/72	scale A1, end of scale 15 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 806 1	SCL-A1-20/72	scale A1, end of scale 20 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 807 9	SCL-A1-25/72	scale A1, end of scale 25 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 808 7	SCL-A1-30/72	scale A1, end of scale 30 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 809 5	SCL-A1-40/72	scale A1, end of scale 40 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 810 3	SCL-A1-50/72	scale A1, end of scale 50 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 811 1	SCL-A1-60/72	scale A1, end of scale 60 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EQ 812 9	SCL-A1-80/72	scale A1, end of scale 80 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 256 9	SCL-A1-100/72	scale A1, end of scale 100 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 257 7	SCL-A1-150/72	scale A1, end of scale 150 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 258 5	SCL-A1-200/72	scale A1, end of scale 200 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 259 3	SCL-A1-250/72	scale A1, end of scale 250 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 260 1	SCL-A1-300/72	scale A1, end of scale 300 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 261 9	SCL-A1-400/72	scale A1, end of scale 400 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 262 7	SCL-A1-500/72	scale A1, end of scale 500 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 263 5	SCL-A1-600/72	scale A1, end of scale 600 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 264 3	SCL-A1-800/72	scale A1, end of scale 800 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 265 0	SCL-A1-1000/72	scale A1, end of scale 1000 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 266 8	SCL-A1-1500/72	scale A1, end of scale 1500 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 267 6	SCL-A1-2000/72	scale A1, end of scale 2000 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 268 4	SCL-A1-2500/72	scale A1, end of scale 2500 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 269 2	SCL-A1-3000/72	scale A1, end of scale 3000 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 270 0	SCL-A1-4000/72	scale A1, end of scale 4000 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 271 8	SCL-A1-5000/72	scale A1, end of scale 5000 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 272 6	SCL-A1-6000/72	scale A1, end of scale 6000 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 273 4	SCL-A1-8000/72	scale A1, end of scale 8000 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)
EH 274 2	SCL-A1-10000/72	scale A1, end of scale 10000 A for ammeters in a.c. AMT1-A1 (72 mm x 72 mm)

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Accessories for measuring devices

Ordering codes

Code	Type	Description
EQ 813 7	SCL-A5-1/72	scale A5, end of scale 1 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 815 2	SCL-A5-5/72	scale A5, end of scale 5 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 816 0	SCL-A5-10/72	scale A5, end of scale 10 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 817 8	SCL-A5-15/72	scale A5, end of scale 15 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 818 6	SCL-A5-20/72	scale A5, end of scale 20 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 820 2	SCL-A5-25/72	scale A5, end of scale 25 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 821 0	SCL-A5-30/72	scale A5, end of scale 30 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 822 8	SCL-A5-40/72	scale A5, end of scale 40 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 823 6	SCL-A5-50/72	scale A5, end of scale 50 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 824 4	SCL-A5-60/72	scale A5, end of scale 60 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EQ 825 1	SCL-A5-80/72	scale A5, end of scale 80 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 275 9	SCL-A5-100/72	scale A5, end of scale 100 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 276 7	SCL-A5-150/72	scale A5, end of scale 150 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 277 5	SCL-A5-200/72	scale A5, end of scale 200 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 278 3	SCL-A5-250/72	scale A5, end of scale 250 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 304 7	SCL-A5-300/72	scale A5, end of scale 300 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 305 4	SCL-A5-400/72	scale A5, end of scale 400 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 306 2	SCL-A5-500/72	scale A5, end of scale 500 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 307 0	SCL-A5-600/72	scale A5, end of scale 600 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 308 8	SCL-A5-800/72	scale A5, end of scale 800 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 309 6	SCL-A5-1000/72	scale A5, end of scale 1000 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 310 4	SCL-A5-1500/72	scale A5, end of scale 1500 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 316 1	SCL-A5-2000/72	scale A5, end of scale 2000 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 317 9	SCL-A5-2500/72	scale A5, end of scale 2500 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 318 7	SCL-A5-3000/72	scale A5, end of scale 3000 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 319 5	SCL-A5-4000/72	scale A5, end of scale 4000 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 320 3	SCL-A5-5000/72	scale A5, end of scale 5000 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 321 1	SCL-A5-6000/72	scale A5, end of scale 6000 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 322 9	SCL-A5-8000/72	scale A5, end of scale 8000 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)
EH 323 7	SCL-A5-10000/72	scale A5, end of scale 10000 A for ammeters in a.c. AMT1-A5 (72 mm x 72 mm)

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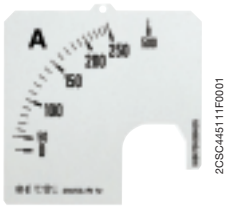
Accessories for measuring devices

Ordering codes



Code	Type	Description
Scales for ammeters in a.c. 96 mm x 96 mm		
EQ 826 9	SCL-A1-1/96	scale A1, end of scale 1 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 827 7	SCL-A1-5/96	scale A1, end of scale 5 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 828 5	SCL-A1-10/96	scale A1, end of scale 10 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 829 3	SCL-A1-15/96	scale A1, end of scale 15 A for ammeters in a.c. AMT1-A1 ((96 mm x 96 mm)
EQ 831 9	SCL-A1-20/96	scale A1, end of scale 20 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 833 5	SCL-A1-25/96	scale A1, end of scale 25 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 834 3	SCL-A1-30/96	scale A1, end of scale 30 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 835 0	SCL-A1-40/96	scale A1, end of scale 40 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 836 8	SCL-A1-50/96	scale A1, end of scale 50 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 837 6	SCL-A1-60/96	scale A1, end of scale 60 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 838 4	SCL-A1-80/96	scale A1, end of scale 80 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 449 0	SCL-A1-100/96	scale A1, end of scale 100 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 450 8	SCL-A1-150/96	scale A1, end of scale 150 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 451 6	SCL-A1-200/96	scale A1, end of scale 200 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 452 4	SCL-A1-250/96	scale A1, end of scale 250 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 453 2	SCL-A1-300/96	scale A1, end of scale 300 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 454 0	SCL-A1-400/96	scale A1, end of scale 400 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 460 7	SCL-A1-500/96	scale A1, end of scale 500 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 461 5	SCL-A1-600/96	scale A1, end of scale 600 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 462 3	SCL-A1-800/96	scale A1, end of scale 800 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 463 1	SCL-A1-1000/96	scale A1, end of scale 1000 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 464 9	SCL-A1-1500/96	scale A1, end of scale 1500 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 465 6	SCL-A1-2000/96	scale A1, end of scale 2000 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 466 4	SCL-A1-2500/96	scale A1, end of scale 2500 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 467 2	SCL-A1-3000/96	scale A1, end of scale 3000 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 468 0	SCL-A1-4000/96	scale A1, end of scale 4000 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 469 8	SCL-A1-5000/96	scale A1, end of scale 5000 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 475 5	SCL-A1-6000/96	scale A1, end of scale 6000 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 476 3	SCL-A1-8000/96	scale A1, end of scale 8000 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EH 477 1	SCL-A1-10000/96	scale A1, end of scale 10000 A for ammeters in a.c. AMT1-A1 (96 mm x 96 mm)
EQ 839 2	SCL-A5-1/96	scale A5, end of scale 1 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EQ 840 0	SCL-A5-5/96	scale A5, end of scale 5 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EQ 841 8	SCL-A5-10/96	scale A5, end of scale 10 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EQ 842 6	SCL-A5-15/96	scale A5, end of scale 15 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EQ 843 4	SCL-A5-20/96	scale A5, end of scale 20 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)

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Technical details ..... **page 7/37**

Accessories for measuring devices

Ordering codes

Code	Type	Description
EQ 844 2	SCL-A5-25/96	scale A5, end of scale 25 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EQ 845 9	SCL-A5-30/96	scale A5, end of scale 30 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EQ 846 7	SCL-A5-40/96	scale A5, end of scale 40 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EQ 847 5	SCL-A5-50/96	scale A5, end of scale 50 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EQ 848 3	SCL-A5-60/96	scale A5, end of scale 60 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EQ 849 1	SCL-A5-80/96	scale A5, end of scale 80 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 478 9	SCL-A5-100/96	scale A5, end of scale 100 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 479 7	SCL-A5-150/96	scale A5, end of scale 150 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 480 5	SCL-A5-200/96	scale A5, end of scale 200 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 481 3	SCL-A5-250/96	scale A5, end of scale 250 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 482 1	SCL-A5-300/96	scale A5, end of scale 300 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 483 9	SCL-A5-400/96	scale A5, end of scale 400 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 484 7	SCL-A5-500/96	scale A5, end of scale 500 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 485 4	SCL-A5-600/96	scale A5, end of scale 600 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 486 2	SCL-A5-800/96	scale A5, end of scale 800 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 487 0	SCL-A5-1000/96	scale A5, end of scale 1000 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 488 8	SCL-A5-1500/96	scale A5, end of scale 1500 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 489 6	SCL-A5-2000/96	scale A5, end of scale 2000 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 490 4	SCL-A5-2500/96	scale A5, end of scale 2500 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 491 2	SCL-A5-3000/96	scale A5, end of scale 3000 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 492 0	SCL-A5-4000/96	scale A5, end of scale 4000 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 493 8	SCL-A5-5000/96	scale A5, end of scale 5000 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 494 6	SCL-A5-6000/96	scale A5, end of scale 6000 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 495 3	SCL-A5-8000/96	scale A5, end of scale 8000 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)
EH 496 1	SCL-A5-10000/96	scale A5, end of scale 10000 A for ammeters in a.c. AMT1-A5 (96 mm x 96 mm)

Scales for ammeters in d.c. 48 mm x 48 mm		
EH 620 6	SCL-A2-20/48	scale A2, end of scale 20 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
EH 621 4	SCL-A2-100/48	scale A2, end of scale 100 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
EH 622 2	SCL-A2-150/48	scale A2, end of scale 150 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
EH 623 0	SCL-A2-200/48	scale A2, end of scale 200 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
EH 624 8	SCL-A2-250/48	scale A2, end of scale 250 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
EH 625 5	SCL-A2-300/48	scale A2, end of scale 300 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
EH 626 3	SCL-A2-400/48	scale A2, end of scale 400 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)

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Accessories for measuring devices

Ordering codes

2CSC445111F0001

2CSC445111F0001

2CSC445113F0001

Code	Type	Description
EH 627 1	SCL-A2-500/48	scale A2, end of scale 500 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
EH 628 9	SCL-A2-600/48	scale A2, end of scale 600 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
EH 629 7	SCL-A2-800/48	scale A2, end of scale 800 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
EH 630 5	SCL-A2-1000/48	scale A2, end of scale 1000 A for ammeters in d.c. AMT1-A2 (48 mm x 48 mm)
Scales for ammeters in d.c. 72 mm x 72 mm		
EH 631 3	SCL-A2-20/72	scale A2, end of scale 20 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 632 1	SCL-A2-100/72	scale A2, end of scale 100 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 633 9	SCL-A2-150/72	scale A2, end of scale 150 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 634 7	SCL-A2-200/72	scale A2, end of scale 200 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 635 4	SCL-A2-250/72	scale A2, end of scale 250 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 636 2	SCL-A2-300/72	scale A2, end of scale 300 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 637 0	SCL-A2-400/72	scale A2, end of scale 400 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 638 8	SCL-A2-500/72	scale A2, end of scale 500 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 639 6	SCL-A2-600/72	scale A2, end of scale 600 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 640 4	SCL-A2-800/72	scale A2, end of scale 800 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
EH 641 2	SCL-A2-1000/72	scale A2, end of scale 1000 A for ammeters in d.c. AMT1-A2 (72 mm x 72 mm)
Scales for ammeters in d.c. 96 mm x 96 mm		
EH 642 0	SCL-A2-20/96	scale A2, end of scale 20 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 643 8	SCL-A2-100/96	scale A2, end of scale 100 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 644 6	SCL-A2-150/96	scale A2, end of scale 150 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 645 3	SCL-A2-200/96	scale A2, end of scale 200 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 646 1	SCL-A2-250/96	scale A2, end of scale 250 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 647 9	SCL-A2-300/96	scale A2, end of scale 300 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 648 7	SCL-A2-400/96	scale A2, end of scale 400 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 649 5	SCL-A2-500/96	scale A2, end of scale 500 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 650 3	SCL-A2-600/96	scale A2, end of scale 600 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 651 1	SCL-A2-800/96	scale A2, end of scale 800 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
EH 652 9	SCL-A2-1000/96	scale A2, end of scale 1000 A for ammeters in d.c. AMT1-A2 (96 mm x 96 mm)
Scales for wattmeters 48 mm x 48 mm		
EG 968 0	SCL-A3-500W/48	scale A3, end of scale 500 W for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 969 8	SCL-A3-1000W/48	scale A3, end of scale 1000 W for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 970 6	SCL-A3-1500W/48	scale A3, end of scale 1500 W for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 971 4	SCL-A3-2000W/48	scale A3, end of scale 2000 W for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 972 2	SCL-A3-2500W/48	scale A3, end of scale 2500 W for wattmeters WMT-A3/48 (48 mm x 48 mm)

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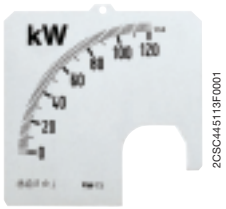
Accessories for measuring devices

Ordering codes

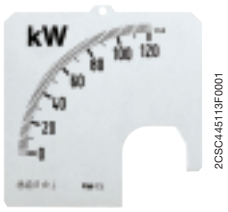


Code	Type	Description
EG 973 0	SCL-A3-3000W/48	scale A3, end of scale 3000 W for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 974 8	SCL-A3-4000W/48	scale A3, end of scale 4000 W for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 975 5	SCL-A3-5000W/48	scale A3, end of scale 5000 W for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 976 3	SCL-A3-6000W/48	scale A3, end of scale 6000 W for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 977 1	SCL-A3-8000W/48	scale A3, end of scale 8000 W for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 978 9	SCL-A3-10kW/48	scale A3, end of scale 10 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 979 7	SCL-A3-12kW/48	scale A3, end of scale 12kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 980 5	SCL-A3-16kW/48	scale A3, end of scale 16kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 981 3	SCL-A3-20kW/48	scale A3, end of scale 20 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 982 1	SCL-A3-24kW/48	scale A3, end of scale 24kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 983 9	SCL-A3-30kW/48	scale A3, end of scale 30 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 984 7	SCL-A3-32kW/48	scale A3, end of scale 32kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 985 4	SCL-A3-40kW/48	scale A3, end of scale 40 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 986 2	SCL-A3-48kW/48	scale A3, end of scale 48kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 987 0	SCL-A3-50kW/48	scale A3, end of scale 50 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 988 8	SCL-A3-60kW/48	scale A3, end of scale 60 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 989 6	SCL-A3-64kW/48	scale A3, end of scale 64kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 990 4	SCL-A3-80kW/48	scale A3, end of scale 80 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 991 2	SCL-A3-100kW/48	scale A3, end of scale 100 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 992 0	SCL-A3-120kW/48	scale A3, end of scale 120 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 993 8	SCL-A3-160kW/48	scale A3, end of scale 160 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 994 6	SCL-A3-200kW/48	scale A3, end of scale 200 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 995 3	SCL-A3-240kW/48	scale A3, end of scale 240 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 996 1	SCL-A3-300kW/48	scale A3, end of scale 300 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 997 9	SCL-A3-320kW/48	scale A3, end of scale 320 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 998 7	SCL-A3-400kW/48	scale A3, end of scale 400 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EG 999 5	SCL-A3-480kW/48	scale A3, end of scale 480 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EH 043 1	SCL-A3-500kW/48	scale A3, end of scale 500 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EH 044 9	SCL-A3-600kW/48	scale A3, end of scale 600 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EH 045 6	SCL-A3-640kW/48	scale A3, end of scale 640 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EH 046 4	SCL-A3-800kW/48	scale A3, end of scale 800 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EH 047 2	SCL-A3-1000kW/48	scale A3, end of scale 1000 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EH 048 0	SCL-A3-1200kW/48	scale A3, end of scale 1200 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)

Technical details ..... **page 7/37**

Accessories for measuring devices

Ordering codes



Code	Type	Description
EH 049 8	SCL-A3-1600kW/48	scale A3, end of scale 1600 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
EH 050 6	SCL-A3-2000kW/48	scale A3, end of scale 2000 kW for wattmeters WMT-A3/48 (48 mm x 48 mm)
Scales for wattmeters 72 mm x 72 mm		
EH 327 8	SCL-A3-500W/72	scale A3, end of scale 500 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 328 6	SCL-A3-1000W/72	scale A3, end of scale 1000 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 329 4	SCL-A3-1500W/72	scale A3, end of scale 1500 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 330 2	SCL-A3-2000W/72	scale A3, end of scale 2000 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 331 0	SCL-A3-2500W/72	scale A3, end of scale 2500 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 332 8	SCL-A3-3000W/72	scale A3, end of scale 3000 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 333 6	SCL-A3-4000W/72	scale A3, end of scale 4000 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 334 4	SCL-A3-5000W/72	scale A3, end of scale 5000 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 335 1	SCL-A3-6000W/72	scale A3, end of scale 6000 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 336 9	SCL-A3-8000W/72	scale A3, end of scale 8000 W for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 347 6	SCL-A3-10kW/72	scale A3, end of scale 10 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 348 4	SCL-A3-12kW/72	scale A3, end of scale 12kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 349 2	SCL-A3-16kW/72	scale A3, end of scale 16kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 350 0	SCL-A3-20kW/72	scale A3, end of scale 20 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 351 8	SCL-A3-24kW/72	scale A3, end of scale 24kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 352 6	SCL-A3-30kW/72	scale A3, end of scale 30 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 353 4	SCL-A3-32kW/72	scale A3, end of scale 32kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 354 2	SCL-A3-40kW/72	scale A3, end of scale 40 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 356 7	SCL-A3-48kW/72	scale A3, end of scale 48kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 357 5	SCL-A3-50kW/72	scale A3, end of scale 50 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 358 3	SCL-A3-60kW/72	scale A3, end of scale 60 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 359 1	SCL-A3-64kW/72	scale A3, end of scale 64kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 360 9	SCL-A3-80kW/72	scale A3, end of scale 80 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 361 7	SCL-A3-100kW/72	scale A3, end of scale 100 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 362 5	SCL-A3-120kW/72	scale A3, end of scale 120 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 363 3	SCL-A3-160kW/72	scale A3, end of scale 160 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 364 1	SCL-A3-200kW/72	scale A3, end of scale 200 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 365 8	SCL-A3-240kW/72	scale A3, end of scale 240 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 366 6	SCL-A3-300kW/72	scale A3, end of scale 300 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 367 4	SCL-A3-320kW/72	scale A3, end of scale 320 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 368 2	SCL-A3-400kW/72	scale A3, end of scale 400 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)

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Accessories for measuring devices

Ordering codes

Code	Type	Description
EH 369 0	SCL-A3-480kW/72	scale A3, end of scale 480 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 373 2	SCL-A3-500kW/72	scale A3, end of scale 500 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 374 0	SCL-A3-600kW/72	scale A3, end of scale 600 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 375 7	SCL-A3-640kW/72	scale A3, end of scale 640 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 376 5	SCL-A3-800kW/72	scale A3, end of scale 800 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 377 3	SCL-A3-1000kW/72	scale A3, end of scale 1000 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 378 1	SCL-A3-1200kW/72	scale A3, end of scale 1200 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 379 9	SCL-A3-1600kW/72	scale A3, end of scale 1600 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
EH 380 7	SCL-A3-2000kW/72	scale A3, end of scale 2000 kW for wattmeters WMT-A3/72 (72 mm x 72 mm)
Scales for wattmeters 96 mm x 96 mm		
EH 502 6	SCL-A3-500W/96	scale A3, end of scale 500 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 503 4	SCL-A3-1000W/96	scale A3, end of scale 1000 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 504 2	SCL-A3-1500W/96	scale A3, end of scale 1500 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 505 9	SCL-A3-2000W/96	scale A3, end of scale 2000 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 506 7	SCL-A3-2500W/96	scale A3, end of scale 2500 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 507 5	SCL-A3-3000W/96	scale A3, end of scale 3000 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 508 3	SCL-A3-4000W/96	scale A3, end of scale 4000 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 509 1	SCL-A3-5000W/96	scale A3, end of scale 5000 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 523 2	SCL-A3-6000W/96	scale A3, end of scale 6000 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 524 0	SCL-A3-8000W/96	scale A3, end of scale 8000 W for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 525 7	SCL-A3-10kW/96	scale A3, end of scale 10 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 526 5	SCL-A3-12kW/96	scale A3, end of scale 12 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 527 3	SCL-A3-16kW/96	scale A3, end of scale 16 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 528 1	SCL-A3-20kW/96	scale A3, end of scale 20 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 529 9	SCL-A3-24kW/96	scale A3, end of scale 24 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 532 3	SCL-A3-30kW/96	scale A3, end of scale 30 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 533 1	SCL-A3-32kW/96	scale A3, end of scale 32 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 534 9	SCL-A3-40kW/96	scale A3, end of scale 40 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 535 6	SCL-A3-48kW/96	scale A3, end of scale 48 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 536 4	SCL-A3-50kW/96	scale A3, end of scale 50 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 537 2	SCL-A3-60kW/96	scale A3, end of scale 60 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 538 0	SCL-A3-64kW/96	scale A3, end of scale 64 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 539 8	SCL-A3-80kW/96	scale A3, end of scale 80 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 540 6	SCL-A3-100kW/96	scale A3, end of scale 100 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)

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Accessories for measuring devices

Ordering codes

Code	Type	Description
EH 541 4	SCL-A3-120kW/96	scale A3, end of scale 120 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 542 2	SCL-A3-160kW/96	scale A3, end of scale 160 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 543 0	SCL-A3-200kW/96	scale A3, end of scale 200 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 544 8	SCL-A3-240kW/96	scale A3, end of scale 240 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 545 5	SCL-A3-300kW/96	scale A3, end of scale 300 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 546 3	SCL-A3-320kW/96	scale A3, end of scale 320 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 547 1	SCL-A3-400kW/96	scale A3, end of scale 400 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 548 9	SCL-A3-480kW/96	scale A3, end of scale 480 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 549 7	SCL-A3-500kW/96	scale A3, end of scale 500 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 559 6	SCL-A3-600kW/96	scale A3, end of scale 600 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 560 4	SCL-A3-640kW/96	scale A3, end of scale 640 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 561 2	SCL-A3-800kW/96	scale A3, end of scale 800 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 562 0	SCL-A3-1000kW/96	scale A3, end of scale 1000 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 563 8	SCL-A3-1200kW/96	scale A3, end of scale 1200 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 564 6	SCL-A3-1600kW/96	scale A3, end of scale 1600 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)
EH 565 3	SCL-A3-2000kW/96	scale A3, end of scale 2000 kW for wattmeters WMT-A3/96 (96 mm x 96 mm)

Scales for varmeters 48 mm x 48 mm		
EH 196 7	SCL-A4-500Var/48	scale A4, end of scale 500 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 197 5	SCL-A4-1000Var/48	scale A4, end of scale 1000 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 198 3	SCL-A4-1500Var/48	scale A4, end of scale 1500 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 199 1	SCL-A4-2000Var/48	scale A4, end of scale 2000 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 200 7	SCL-A4-2500Var/48	scale A4, end of scale 2500 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 201 5	SCL-A4-3000Var/48	scale A4, end of scale 3000 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 202 3	SCL-A4-4000Var/48	scale A4, end of scale 4000 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 203 1	SCL-A4-5000Var/48	scale A4, end of scale 5000 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 204 9	SCL-A4-6000Var/48	scale A4, end of scale 6000 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 205 6	SCL-A4-8000Var/48	scale A4, end of scale 8000 Var for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 206 4	SCL-A4-10kVar/48	scale A4, end of scale 10 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 207 2	SCL-A4-12kVar/48	scale A4, end of scale 12 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 208 0	SCL-A4-16kVar/48	scale A4, end of scale 16 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 209 8	SCL-A4-20kVar/48	scale A4, end of scale 20 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 210 6	SCL-A4-24kVar/48	scale A4, end of scale 24 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)

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Code	Type	Description
EH 211 4	SCL-A4-30kVar/48	scale A4, end of scale 30 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 212 2	SCL-A4-32kVar/48	scale A4, end of scale 32 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 215 5	SCL-A4-40kVar/48	scale A4, end of scale 40 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 216 3	SCL-A4-48kVar/48	scale A4, end of scale 48 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 217 1	SCL-A4-50kVar/48	scale A4, end of scale 50 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 218 9	SCL-A4-60kVar/48	scale A4, end of scale 60 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 219 7	SCL-A4-64kVar/48	scale A4, end of scale 64 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 220 5	SCL-A4-80kVar/48	scale A4, end of scale 80 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 225 4	SCL-A4-100kVar/48	scale A4, end of scale 100 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 226 2	SCL-A4-120kVar/48	scale A4, end of scale 120 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 227 0	SCL-A4-160kVar/48	scale A4, end of scale 160 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 228 8	SCL-A4-200kVar/48	scale A4, end of scale 200 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 229 6	SCL-A4-240kVar/48	scale A4, end of scale 240 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 230 4	SCL-A4-300kVar/48	scale A4, end of scale 300 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 235 3	SCL-A4-320kVar/48	scale A4, end of scale 320 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 236 1	SCL-A4-400kVar/48	scale A4, end of scale 400 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 237 9	SCL-A4-480kVar/48	scale A4, end of scale 480 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 238 7	SCL-A4-500kVar/48	scale A4, end of scale 500 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 239 5	SCL-A4-600kVar/48	scale A4, end of scale 600 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 245 2	SCL-A4-640kVar/48	scale A4, end of scale 640 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 246 0	SCL-A4-800kVar/48	scale A4, end of scale 800 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 247 8	SCL-A4-1000kVar/48	scale A4, end of scale 1000 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 248 6	SCL-A4-1200kVar/48	scale A4, end of scale 1200 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 249 4	SCL-A4-1600kVar/48	scale A4, end of scale 1600 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)
EH 250 2	SCL-A4-2000kVar/48	scale A4, end of scale 2000 kVar for varmeters VRM-A4/48 (48 mm x 48 mm)

Scales for varmeters 72 mm x 72 mm		
EH 394 8	SCL-A4-500Var/72	scale A4, end of scale 500 Var for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 395 5	SCL-A4-1000Var/72	scale A4, end of scale 1000 Var for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 396 3	SCL-A4-1500Var/72	scale A4, end of scale 1500 Var for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 397 1	SCL-A4-2000Var/72	scale A4, end of scale 2000 Var for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 398 9	SCL-A4-2500Var/72	scale A4, end of scale 2500 Var for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 399 7	SCL-A4-3000Var/72	scale A4, end of scale 3000 Var for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 400 3	SCL-A4-4000Var/72	scale A4, end of scale 4000 Var for varmeters VRM-A4/72 (72 mm x 72 mm)

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Accessories for measuring devices

Ordering codes

Code	Type	Description
EH 401 1	SCL-A4-5000Var/72	scale A4, end of scale 5000 Var for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 404 5	SCL-A4-6000Var/72	scale A4, end of scale 6000 Var for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 405 2	SCL-A4-8000Var/72	scale A4, end of scale 8000 Var for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 406 0	SCL-A4-10kVar/72	scale A4, end of scale 10 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 407 8	SCL-A4-12kVar/72	scale A4, end of scale 12 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 408 6	SCL-A4-16kVar/72	scale A4, end of scale 16 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 409 4	SCL-A4-20kVar/72	scale A4, end of scale 20 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 418 5	SCL-A4-24kVar/72	scale A4, end of scale 24 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 419 3	SCL-A4-30kVar/72	scale A4, end of scale 30 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 420 1	SCL-A4-32kVar/72	scale A4, end of scale 32 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 421 9	SCL-A4-40kVar/72	scale A4, end of scale 40 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 422 7	SCL-A4-48kVar/72	scale A4, end of scale 48 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 423 5	SCL-A4-50kVar/72	scale A4, end of scale 50 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 424 3	SCL-A4-60kVar/72	scale A4, end of scale 60 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 425 0	SCL-A4-64kVar/72	scale A4, end of scale 64 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 426 8	SCL-A4-80kVar/72	scale A4, end of scale 80 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 427 6	SCL-A4-100kVar/72	scale A4, end of scale 100 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 428 4	SCL-A4-120kVar/72	scale A4, end of scale 120 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 429 2	SCL-A4-160kVar/72	scale A4, end of scale 160 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 435 9	SCL-A4-200kVar/72	scale A4, end of scale 200 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 436 7	SCL-A4-240kVar/72	scale A4, end of scale 240 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 437 5	SCL-A4-300kVar/72	scale A4, end of scale 300 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 438 3	SCL-A4-320kVar/72	scale A4, end of scale 320 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 439 1	SCL-A4-400kVar/72	scale A4, end of scale 400 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 440 9	SCL-A4-480kVar/72	scale A4, end of scale 480 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 441 7	SCL-A4-500kVar/72	scale A4, end of scale 500 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 442 5	SCL-A4-600kVar/72	scale A4, end of scale 600 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 443 3	SCL-A4-640kVar/72	scale A4, end of scale 640 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 444 1	SCL-A4-800kVar/72	scale A4, end of scale 800 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 445 8	SCL-A4-1000kVar/72	scale A4, end of scale 1000 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 446 6	SCL-A4-1200kVar/72	scale A4, end of scale 1200 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 447 4	SCL-A4-1600kVar/72	scale A4, end of scale 1600 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)
EH 448 2	SCL-A4-2000kVar/72	scale A4, end of scale 2000 kVar for varmeters VRM-A4/72 (72 mm x 72 mm)

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Accessories for measuring devices

Ordering codes

Code	Type	Description
Scales for varmeters 96 mm x 96 mm		
EH 579 4	SCL-A4-500Var/96	scale A4, end of scale 500 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 580 2	SCL-A4-1000Var/96	scale A4, end of scale 1000 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 581 0	SCL-A4-1500Var/96	scale A4, end of scale 1500 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 582 8	SCL-A4-2000Var/96	scale A4, end of scale 2000 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 583 6	SCL-A4-2500Var/96	scale A4, end of scale 2500 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 584 4	SCL-A4-3000Var/96	scale A4, end of scale 3000 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 585 1	SCL-A4-4000Var/96	scale A4, end of scale 4000 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 586 9	SCL-A4-5000Var/96	scale A4, end of scale 5000 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 587 7	SCL-A4-6000Var/96	scale A4, end of scale 6000 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 588 5	SCL-A4-8000Var/96	scale A4, end of scale 8000 Var for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 589 3	SCL-A4-10kVar/96	scale A4, end of scale 10 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 590 1	SCL-A4-12kVar/96	scale A4, end of scale 12 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 591 9	SCL-A4-16kVar/96	scale A4, end of scale 16 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 592 7	SCL-A4-20kVar/96	scale A4, end of scale 20 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 593 5	SCL-A4-24kVar/96	scale A4, end of scale 24 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 594 3	SCL-A4-30kVar/96	scale A4, end of scale 30 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 595 0	SCL-A4-32kVar/96	scale A4, end of scale 32 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 596 8	SCL-A4-40kVar/96	scale A4, end of scale 40 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 597 6	SCL-A4-48kVar/96	scale A4, end of scale 48 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 598 4	SCL-A4-50kVar/96	scale A4, end of scale 50 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 599 2	SCL-A4-60kVar/96	scale A4, end of scale 60 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 600 8	SCL-A4-64kVar/96	scale A4, end of scale 64 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 601 6	SCL-A4-80kVar/96	scale A4, end of scale 80 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 602 4	SCL-A4-100kVar/96	scale A4, end of scale 100 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 603 2	SCL-A4-120kVar/96	scale A4, end of scale 120 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 604 0	SCL-A4-160kVar/96	scale A4, end of scale 160 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 605 7	SCL-A4-200kVar/96	scale A4, end of scale 200 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 606 5	SCL-A4-240kVar/96	scale A4, end of scale 240 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 608 1	SCL-A4-300kVar/96	scale A4, end of scale 300 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 609 9	SCL-A4-320kVar/96	scale A4, end of scale 320 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 610 7	SCL-A4-400kVar/96	scale A4, end of scale 400 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 611 5	SCL-A4-480kVar/96	scale A4, end of scale 480 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 612 3	SCL-A4-500kVar/96	scale A4, end of scale 500 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)

Technical details ..... **page 7/37**

Accessories for measuring devices

Ordering codes

Code	Type	Description
EH 613 1	SCL-A4-600kVar/96	scale A4, end of scale 600 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 614 9	SCL-A4-640kVar/96	scale A4, end of scale 640 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 615 6	SCL-A4-800kVar/96	scale A4, end of scale 800 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 616 4	SCL-A4-1000kVar/96	scale A4, end of scale 1000 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 617 2	SCL-A4-1200kVar/96	scale A4, end of scale 1200 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 618 0	SCL-A4-1600kVar/96	scale A4, end of scale 1600 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)
EH 619 8	SCL-A4-2000kVar/96	scale A4, end of scale 2000 kVar for varmeters VRM-A4/96 (96 mm x 96 mm)

Technical details ..... **page 7/37**

Current transformers

Used for transforming primary currents up to 6000 A into secondary currents from .../5 A and .../1 A max for indirectly powering analogue and digital measuring devices.
The wound primary versions come together with the corresponding bar or terminal; in the through primary versions the bar or cable has to be inserted in the hole provided in the device.

Standard type current transformers

Code	Type	Code	Type	Description
Transformers with wound primary, primary and secondary current takeoff on terminals				
.../5 A		**.../1 A**		
-	-	**EQ 346 8**	CTA/1-1	Iprim 1 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 000 1	CTA/5	**EQ 347 6**	CTA/5-1	Iprim 5 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 005 0	CTA/10	**EQ 348 4**	CTA/10-1	Iprim 10 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 006 8	CTA/15	**EQ 349 2**	CTA/15-1	Iprim 15 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 010 0	CTA/20	**EQ 351 8**	CTA/20-1	Iprim 20 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 019 1	CTA/25	**EQ 352 6**	CTA/25-1	Iprim 25 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 020 9	CTA/40	**EQ 353 4**	CTA/40-1	Iprim 40 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 024 1	CTA/50	**EQ 354 2**	CTA/50-1	Iprim 50 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 025 8	CTA/60	**EQ 355 9**	CTA/60-1	Iprim 60 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 026 6	CTA/80	**EQ 356 7**	CTA/80-1	Iprim 80 A, class 0.5 - 5 VA, class 1 - 7 VA
EH 027 4	CTA/100	**EQ 357 5**	CTA/100-1	Iprim 100 A, class 0.5 - 5 VA, class 1 - 7 VA
-	-	**EQ 358 3**	CTA1/1-1	Iprim 1 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 028 2	CTA1/5	**EQ 359 1**	CTA1/5-1	Iprim 5 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 029 0	CTA1/10	**EQ 360 9**	CTA1/10-1	Iprim 10 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 030 8	CTA1/15	**EQ 361 7**	CTA1/15-1	Iprim 15 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 035 7	CTA1/20	**EQ 362 5**	CTA1/20-1	Iprim 20 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 036 5	CTA1/25	**EQ 363 3**	CTA1/25-1	Iprim 25 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 037 3	CTA1/40	**EQ 364 1**	CTA1/40-1	Iprim 40 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 038 1	CTA1/50	**EQ 365 8**	CTA1/50-1	Iprim 50 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 039 9	CTA1/60	**EQ 366 6**	CTA1/60-1	Iprim 60 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 040 7	CTA1/80	**EQ 367 4**	CTA1/80-1	Iprim 80 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 055 5	CTA1/100	**EQ 368 2**	CTA1/100-1	Iprim 100 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 056 3	CTA1/150	**EQ 369 0**	CTA1/150-1	Iprim 150 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 057 1	CTA1/200	**EQ 370 8**	CTA1/200-1	Iprim 200 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 058 9	CTA1/250	**EQ 371 6**	CTA1/250-1	Iprim 250 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 059 7	CTA1/300	**EQ 372 4**	CTA1/300-1	Iprim 300 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 060 5	CTA1/400	**EQ 373 2**	CTA1/400-1	Iprim 400 A, class 0.5 - 10 VA, class 1 - 20 VA
EH 065 4	CTA1/500	**EQ 374 0**	CTA1/500-1	Iprim 500 A, class 0.5 - 10 VA, class 1 - 20 VA
-	-	**EQ 375 7**	CTA2/1-1	Iprim 1 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 066 2	CTA2/5	**EQ 376 5**	CTA2/5-1	Iprim 5 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 067 0	CTA2/10	**EQ 377 3**	CTA2/10-1	Iprim 10 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 068 8	CTA2/15	**EQ 378 1**	CTA2/15-1	Iprim 15 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 069 6	CTA2/20	**EQ 379 9**	CTA2/20-1	Iprim 20 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 070 4	CTA2/25	**EQ 380 7**	CTA2/25-1	Iprim 25 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 073 8	CTA2/40	**EQ 381 5**	CTA2/40-1	Iprim 40 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 074 6	CTA2/50	**EQ 382 3**	CTA2/50-1	Iprim 50 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 075 3	CTA2/60	**EQ 383 1**	CTA2/60-1	Iprim 60 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 076 1	CTA2/80	**EQ 384 9**	CTA2/80-1	Iprim 80 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 077 9	CTA2/100	**EQ 385 6**	CTA2/100-1	Iprim 100 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 088 6	CTA2/150	**EQ 386 4**	CTA2/150-1	Iprim 150 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 089 4	CTA2/200	**EQ 387 2**	CTA2/200-1	Iprim 200 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 097 7	CTA2/250	**EQ 388 0**	CTA2/250-1	Iprim 250 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 098 5	CTA2/300	**EQ 389 8**	CTA2/300-1	Iprim 300 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 099 3	CTA2/400	**EQ 390 6**	CTA2/400-1	Iprim 400 A, class 0.5 - 20 VA, class 1 - 35 VA
EH 100 9	CTA2/500	**EQ 391 4**	CTA2/500-1	Iprim 500 A, class 0.5 - 20 VA, class 1 - 35 VA

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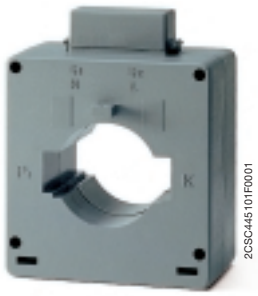
Accessories for measuring devices

Ordering codes



Code	Type	Code	Type	Description
Current transformers for primary current				
from cable ø 21 mm, horizontal bar 20 mm x 10 mm or vertical bar 20 mm x 10 mm				
.../5 A		**.../1 A**		
EH 685 9	CT3/40	**EQ 392 2**	CT3/40-1	Iprim 40 A, class 3 - 2 VA
EH 686 7	CT3/50	**EQ 393 0**	CT3/50-1	Iprim 50 A, class 3 - 2 VA
EH 687 5	CT3/60	**EQ 394 8**	CT3/60-1	Iprim 60 A, class 3 - 2 VA
EH 688 3	CT3/80	**EQ 395 5**	CT3/80-1	Iprim 80 A, class 3 - 3 VA
EH 689 1	CT3/100	**EQ 396 3**	CT3/100-1	Iprim 100 A, class 1 - 3 VA
EH 690 9	CT3/150	**EQ 397 1**	CT3/150-1	Iprim 150 A, class 0.5 - 3 VA
EH 691 7	CT3/200	**EQ 399 7**	CT3/200-1	Iprim 200 A, class 0.5 - 3 VA
EH 692 5	CT3/250	**EQ 400 3**	CT3/250-1	Iprim 250 A, class 0.5 - 5 VA
EH 693 3	CT3/300	**EQ 401 1**	CT3/300-1	Iprim 300 A, class 0.5 - 5 VA
EH 694 1	CT3/400	**EQ 402 9**	CT3/400-1	Iprim 400 A, class 0.5 - 6 VA
EH 695 8	CT3/500	**EQ 403 7**	CT3/500-1	Iprim 500 A, class 0.5 - 6 VA
EH 696 6	CT3/600	**EQ 404 5**	CT3/600-1	Iprim 600 A, class 0.5 - 6 VA
Current transformers for primary current				
from cable ø 32 mm, horizontal bar 25 mm x 20 mm, 30 mm x 25 mm, 40 mm x 10 mm or vertical bar 20 mm x 25 mm, 30 mm x 20 mm, 40 mm x 10 mm				
.../5 A		**.../1 A**		
EH 697 4	CT4/100	**EQ 405 2**	CT4/100-1	Iprim 100 A, class 1 - 3 VA
EH 698 2	CT4/150	**EQ 406 0**	CT4/150-1	Iprim 150 A, class 1 - 3 VA
EH 699 0	CT4/200	**EQ 407 8**	CT4/200-1	Iprim 200 A, class 0.5 - 4 VA
EH 700 6	CT4/250	**EQ 408 6**	CT4/250-1	Iprim 250 A, class 0.5 - 6 VA
EH 701 4	CT4/300	**EQ 409 4**	CT4/300-1	Iprim 300 A, class 0.5 - 6 VA
EH 702 2	CT4/400	**EQ 411 0**	CT4/400-1	Iprim 400 A, class 0.5 - 10 VA
EH 703 0	CT4/500	**EQ 412 8**	CT4/500-1	Iprim 500 A, class 0.5 - 10 VA
EH 704 8	CT4/600	**EQ 414 4**	CT4/600-1	Iprim 600 A, class 0.5 - 10 VA
EH 705 5	CT4/800	**EQ 415 1**	CT4/800-1	Iprim 800 A, class 0.5 - 10 VA
EH 706 3	CT4/1000	**EQ 416 9**	CT4/1000-1	Iprim 1000 A, class 0.5 - 10 VA
Current transformers for primary current				
from cable ø 30 mm, horizontal bar 30 mm x 30 mm, 40 mm x 25 mm, 50 mm x 20 mm or vertical bar 30 mm x 10 mm				
.../5 A		**.../1 A**		
EH 707 1	CT5/250	**EQ 417 7**	CT5/250-1	Iprim 250 A, class 0.5 - 3 VA
EH 708 9	CT5/300	**EQ 418 5**	CT5/300-1	Iprim 300 A, class 0.5 - 4 VA
EH 709 7	CT5/400	**EQ 419 3**	CT5/400-1	Iprim 400 A, class 0.5 - 6 VA
EH 710 5	CT5/500	**EQ 420 1**	CT5/500-1	Iprim 500 A, class 0.5 - 10 VA
EH 711 3	CT5/600	**EQ 421 9**	CT5/600-1	Iprim 600 A, class 0.5 -10 VA
EH 712 1	CT5/800	**EQ 422 7**	CT5/800-1	Iprim 800 A, class 0.5 - 10 VA
EH 713 9	CT5/1000	**EQ 423 5**	CT5/1000-1	Iprim 1000 A, class 0.5 - 10 VA
EH 714 7	CT5/1200	**EQ 424 3**	CT5/1200-1	Iprim 1200 A, class 0.5 - 10 VA
EH 715 4	CT5/1500	**EQ 425 0**	CT5/1500-1	Iprim 1500 A, class 0.5 - 20 VA
Current transformers for primary current				
from cable ø 50 mm, horizontal bar 50 mm x 20 mm, 60 mm x 20 mm				
.../5 A		**.../1 A**		
EH 716 2	CT6/250	**EQ 426 8**	CT6/250-1	Iprim 250 A, class 0.5 - 5 VA
EH 717 0	CT6/300	**EQ 427 6**	CT6/300-1	Iprim 300 A, class 0.5 - 5 VA
EH 718 8	CT6/400	**EQ 428 4**	CT6/400-1	Iprim 400 A, class 0.5 - 6 VA
EH 719 6	CT6/500	**EQ 429 2**	CT6/500-1	Iprim 500 A, class 0.5 - 6 VA
EH 720 4	CT6/600	**EQ 430 0**	CT6/600-1	Iprim 600 A, class 0.5 - 10 VA
EH 721 2	CT6/800	**EQ 431 8**	CT6/800-1	Iprim 800 A, class 0.5 - 10 VA
EH 722 0	CT6/1000	**EQ 432 6**	CT6/1000-1	Iprim 1000 A, class 0.5 - 20 VA
EH 723 8	CT6/1200	**EQ 433 4**	CT6/1200-1	Iprim 1200 A, class 0.5 - 20 VA
EH 724 6	CT6/1500	**EQ 434 2**	CT6/1500-1	Iprim 1500 A, class 0.5 - 30 VA
EH 725 3	CT6/2000	**EQ 435 9**	CT6/2000-1	Iprim 2000 A, class 0.5 - 30 VA
EH 726 1	CT6/2500	**EQ 436 7**	CT6/2500-1	Iprim 2500 A, class 0.5 - 30 VA

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Accessories for measuring devices

Ordering codes

Code	Type	Code	Type	Description
Current transformers for primary current				
from 2 cables ø 35 mm each or vertical bar 80 mm x 30 mm, 2 bars x 80 mm x 5 mm, 2 bars x 80 mm x 10 mm, 3 bars x 80 mm x 5 mm				
.../5 A		**.../1 A**		
EH 727 9	CT8/300	**EQ 437 5**	CT8/300-1	Iprim 300 A, class 0.5 - 5 VA
EH 728 7	CT8/400	**EQ 438 3**	CT8/400-1	Iprim 400 A, class 0.5 - 6 VA
EH 729 5	CT8/500	**EQ 439 1**	CT8/500-1	Iprim 500 A, class 0.5 - 10 VA
EH 730 3	CT8/600	**EQ 441 7**	CT8/600-1	Iprim 600 A, class 0.5 - 10 VA
EH 731 1	CT8/800	**EQ 442 5**	CT8/800-1	Iprim 800 A, class 0.5 - 10 VA
EH 732 9	CT8/1000	**EQ 443 3**	CT8/1000-1	Iprim 1000 A, class 0.5 - 10 VA
EH 733 7	CT8/1200	**EQ 444 1**	CT8/1200-1	Iprim 1200 A, class 0.5 - 15 VA
EH 734 5	CT8/1500	**EQ 445 8**	CT8/1500-1	Iprim 1500 A, class 0.5 - 20 VA
EH 735 2	CT8/2000	**EQ 446 6**	CT8/2000-1	Iprim 2000 A, class 0.5 - 20 VA
EH 736 0	CT8/2500	**EQ 447 4**	CT8/2500-1	Iprim 2500 A, class 0.5 - 20 VA
EH 737 8	CT8/3000	**EQ 448 2**	CT8/3000-1	Iprim 3000 A, class 0.5 - 20 VA
Current transformers for primary current				
from 2 cables ø 50 mm each or horizontal bar 80 mm x 50 mm, 100 mm x 50 mm, 125 mm x 50 mm				
.../5 A		**.../1 A**		
EH 748 5	CT8-V/400	**EQ 449 0**	CT8-V/400-1	Iprim 400 A, class 0.5 - 6 VA
EH 749 3	CT8-V/500	**EQ 450 8**	CT8-V/500-1	Iprim 500 A, class 0.5 - 10 VA
EH 750 1	CT8-V/600	**EQ 451 6**	CT8-V/600-1	Iprim 600 A, class 0.5 - 10 VA
EH 751 9	CT8-V/800	**EQ 452 4**	CT8-V/800-1	Iprim 800 A, class 0.5 - 10 VA
EH 752 7	CT8-V/1000	**EQ 453 2**	CT8-V/1000-1	Iprim 1000 A, class 0.5 - 10 VA
EH 753 5	CT8-V/1200	**EQ 454 0**	CT8-V/1200-1	Iprim 1200 A, class 0.5 - 10 VA
EH 754 3	CT8-V/1500	**EQ 456 5**	CT8-V/1500-1	Iprim 1500 A, class 0.5 - 10 VA
EH 755 0	CT8-V/2000	**EQ 457 3**	CT8-V/2000-1	Iprim 2000 A, class 0.5 - 20 VA
EH 756 8	CT8-V/2500	**EQ 458 1**	CT8-V/2500-1	Iprim 2500 A, class 0.5 - 20 VA
Current transformers for primary current				
from 3 cables ø 35 mm each or vertical bar 100 mm x 10 mm, 2 bars x 100 mm x 5 mm, 2 bars x 100 mm x 10 mm, 3 bars x 100 mm x 5 mm, 3 bars x 100 mm x 10 mm, 4 bars x 100 mm x 5 mm, 125 mm x 3 mm, 100 mm x 5 mm, 2 bars 125 mm x 5 mm, 3 bars 125 mm x 5 mm, 4 bars 125 mm x 5 mm				
.../5 A		**.../1 A**		
EH 738 6	CT12/500	**EQ 459 9**	CT12/500-1	Iprim 500 A, class 0.5 - 10 VA
EH 739 4	CT12/600	**EQ 460 7**	CT12/600-1	Iprim 600 A, class 0.5 - 10 VA
EH 740 2	CT12/800	**EQ 461 5**	CT12/800-1	Iprim 800 A, class 0.5 - 15 VA
EH 741 0	CT12/1000	**EQ 463 1**	CT12/1000-1	Iprim 1000 A, class 0.5 - 20 VA
EH 742 8	CT12/1200	**EQ 464 9**	CT12/1200-1	Iprim 1200 A, class 0.5 - 20 VA
EH 743 6	CT12/1500	**EQ 465 6**	CT12/1500-1	Iprim 1500 A, class 0.5 - 20 VA
EH 744 4	CT12/2000	**EQ 466 4**	CT12/2000-1	Iprim 2000 A, class 0.5 - 30 VA
EH 745 1	CT12/2500	**EQ 467 2**	CT12/2500-1	Iprim 2500 A, class 0.5 - 40 VA
EH 746 9	CT12/3000	**EQ 469 8**	CT12/3000-1	Iprim 3000 A, class 0.5 - 40 VA
EH 747 7	CT12/4000	**EQ 470 6**	CT12/4000-1	Iprim 4000 A, class 0.5 - 50 VA
EH 884 8	CT12/5000	**EQ 471 4**	CT12/5000-1	Iprim 5000 A, class 0.5 - 50 VA
EH 891 3	CT12/6000	**EQ 472 2**	CT12/6000-1	Iprim 6000 A, class 0.5 - 50 VA
Current transformers for primary current				
from cable ø 21 mm, horizontal bar 20 mm x 10 mm or vertical bar 20 mm x 10 mm				
.../5 A		**.../1 A**		
EH 757 6	CT12-V/800	**EQ 473 0**	CT12-V/800-1	Iprim 800 A, class 0.5 - 10 VA
EH 758 4	CT12-V/1000	**EQ 474 8**	CT12-V/1000-1	Iprim 1000 A, class 0.5 - 10 VA
EH 759 2	CT12-V/1200	**EQ 475 5**	CT12-V/1200-1	Iprim 1200 A, class 0.5 - 10 VA
EH 760 0	CT12-V/1250	**EQ 477 1**	CT12-V/1250-1	Iprim 1250 A, class 0.5 - 10 VA
EH 761 8	CT12-V/1500	**EQ 478 9**	CT12-V/1500-1	Iprim 1500 A, class 0.5 - 12 VA
EH 762 6	CT12-V/2000	**EQ 479 7**	CT12-V/2000-1	Iprim 2000 A, class 0.5 - 15 VA
EH 763 4	CT12-V/2500	**EQ 480 5**	CT12-V/2500-1	Iprim 2500 A, class 0.5 - 20 VA
EH 764 2	CT12-V/3000	**EQ 481 3**	CT12-V/3000-1	Iprim 3000 A, class 0.5 - 20 VA
EH 892 1	CT12-V/4000	**EQ 483 9**	CT12-V/4000-1	Iprim 4000 A,

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Compact type current transformers

Code	Type	Type	Description
Current transformers for primary current from cable ø max 21 mm			
.../5 A		**.../1 A**	
EH 101 7	CT-M1/40	**EQ 484 7** CT-M1/40-1	Iprim 40 A, class 3 - 2 VA
EH 106 6	CT-M1/50	**EQ 486 2** CT-M1/50-1	Iprim 50 A, class 3 - 2 VA
EH 107 4	CT-M1/60	**EQ 487 0** CT-M1/60-1	Iprim 60 A, class 3 - 2 VA
EH 126 4	CT-M1/80	**EQ 489 6** CT-M1/80-1	Iprim 80 A, class 3 - 3 VA
EH 129 8	CT-M1/100	**EQ 490 4** CT-M1/100-1	Iprim 100 A, class 1 - 3 VA
EH 138 9	CT-M1/150	**EQ 491 2** CT-M1/150-1	Iprim 150 A, class 1 - 4 VA
EH 139 7	CT-M1/200	**EQ 492 0** CT-M1/200-1	Iprim 200 A, class 0.5 - 3 VA
EH 140 5	CT-M1/250	**EQ 493 8** CT-M1/250-1	Iprim 250 A, class 0.5 - 3 VA
Current transformers for primary current from cable ø max 23 mm or from horizontal bar 20x12 - 25x15 - 30x10 mm			
.../5 A		**.../1 A**	
EH 148 8	CT-M3/100	**EQ 494 6** CT-M3/100-1	Iprim 100 A, class 1 - 2 VA
EH 149 6	CT-M3/150	**EQ 495 3** CT-M3/150-1	Iprim 150 A, class 1 - 3 VA
EH 150 4	CT-M3/200	**EQ 497 9** CT-M3/200-1	Iprim 200 A, class 1 - 3 VA
EH 152 0	CT-M3/250	**EQ 498 7** CT-M3/250-1	Iprim 250 A, class 0.5 - 2 VA
EH 153 8	CT-M3/300	**EQ 499 5** CT-M3/300-1	Iprim 300 A, class 0.5 - 2 VA
EH 154 6	CT-M3/400	**EQ 500 0** CT-M3/400-1	Iprim 300 A, class 0.5 - 3 VA
Current transformers for primary current from cable ø max 30 mm or horizontal/vertical bar 25x25 - 30x20 - 40x10 mm			
.../5 A		**.../1 A**	
EH 155 3	CT-M4/100	**EQ 502 6** CT-M4/100-1	Iprim 100 A, class 1 - 3 VA
EH 156 1	CT-M4/150	**EQ 503 4** CT-M4/150-1	Iprim 150 A, class 1 - 3 VA
EH 157 9	CT-M4/200	**EQ 504 2** CT-M4/200-1	Iprim 200 A, class 0.5 - 4 VA
EH 158 7	CT-M4/250	**EQ 505 9** CT-M4/250-1	Iprim 250 A, class 0.5 - 6 VA
EH 159 5	CT-M4/300	**EQ 506 7** CT-M4/300-1	Iprim 300 A, class 0.5 - 6 VA
EH 160 3	CT-M4/400	**EQ 507 5** CT-M4/400-1	Iprim 400 A, class 0.5 - 10 VA
EH 164 5	CT-M4/500	**EQ 508 3** CT-M4/500-1	Iprim 500 A, class 0.5 - 10 VA
EH 165 2	CT-M4/600	**EQ 509 1** CT-M4/600-1	Iprim 600 A, class 0.5 - 10 VA
Current transformers for primary current from horizontal bar 50x12 mm			
.../5 A		**.../1 A**	
EH 166 0	CT-M5/250	**EQ 510 9** CT-M5/250-1	Iprim 250 A, class 1 - 3 VA
EH 167 8	CT-M5/300	**EQ 511 7** CT-M5/300-1	Iprim 300 A, class 0.5 - 4 VA
EH 168 6	CT-M5/400	**EQ 512 5** CT-M5/400-1	Iprim 400 A, class 0.5 - 4 VA
EH 169 4	CT-M5/500	**EQ 513 3** CT-M5/500-1	Iprim 500 A, class 0.5 - 6 VA
EH 171 0	CT-M5/600	**EQ 514 1** CT-M5/600-1	Iprim 600 A, class 0.5 -6 VA
EH 172 8	CT-M5/800	**EQ 515 8** CT-M5/800-1	Iprim 800 A, class 0.5 - 10 VA
EH 177 7	CT-M5/1000	**EQ 516 6** CT-M5/1000-1	Iprim 1000 A, class 0.5 - 10 VA
Current transformers for primary current from two cables ø max 22 mm or from horizontal bar 50x23 - 63x20 mm			
.../5 A		**.../1 A**	
EH 195 9	CT-M6/300	**EQ 517 4** CT-M6/300-1	Iprim 400 A, class 0.5 - 5 VA
EH 214 8	CT-M6/400	**EQ 518 2** CT-M6/400-1	Iprim 400 A, class 0.5 - 6 VA
EH 234 6	CT-M6/500	**EQ 519 0** CT-M6/500-1	Iprim 500 A, class 0.5 - 6 VA
EH 240 3	CT-M6/600	**EQ 520 8** CT-M6/600-1	Iprim 600 A, class 0.5 -6 VA
EH 244 5	CT-M6/800	**EQ 522 4** CT-M6/800-1	Iprim 800 A, class 0.5 - 10 VA
EH 251 0	CT-M6/1000	**EQ 523 2** CT-M6/1000-1	Iprim 1000 A, class 0.5 - 10 VA
EH 255 1	CT-M6/1200	**EQ 524 0** CT-M6/1200-1	Iprim 1250 A, class 0.5 - 15 VA
EH 279 1	CT-M6/1500	**EQ 525 7** CT-M6/1500-1	Iprim 1500 A, class 0.5 - 20 VA

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Miniaturized type current transformers

Code	Type	Type	Description
Current transformers for primary current from cable ø max 13 mm (min distance between centers of cables = 27 mm)			
.../5 A		**.../1 A**	
EQ 056 3	CT-SM1/40	**EQ 526 5**	CT-SM1/40-1	Iprim 40 A, class 3 - 2 VA
EQ 057 1	CT-SM1/50	**EQ 527 3**	CT-SM1/50-1	Iprim 50 A, class 3 - 2 VA
EQ 059 7	CT-SM1/60	**EQ 528 1**	CT-SM1/60-1	Iprim 60 A, class 3 - 3 VA
EQ 060 5	CT-SM1/75	**EQ 529 9**	CT-SM1/75-1	Iprim 75 A, class 3 - 3 VA
EQ 061 3	CT-SM1/80	**EQ 530 7**	CT-SM1/80-1	Iprim 80 A, class 3 - 3 VA
EQ 062 1	CT-SM1/100	**EQ 531 5**	CT-SM1/100-1	Iprim 100 A, class 1 - 3 VA
EQ 063 9	CT-SM1/120	**EQ 532 3**	CT-SM1/120-1	Iprim 120 A, class 1 - 5 VA
EQ 064 7	CT-SM1/125	**EQ 534 9**	CT-SM1/125-1	Iprim 125 A, class 1 - 5 VA
EQ 065 4	CT-SM1/150	**EQ 535 6**	CT-SM1/150-1	Iprim 150 A, class 1 - 5 VA
Current transformers for primary current from cable ø max 11 mm or horizontal bar 15x5 mm (min distance between centers of cables or bars = 27 mm)			
.../5 A		**.../1 A**	
EQ 067 0	CT-SM2/60	**EQ 536 4**	CT-SM2/60-1	Iprim 60 A, class 3 - 3 VA
EQ 068 8	CT-SM2/75	**EQ 537 2**	CT-SM2/75-1	Iprim 75 A, class 3 - 3 VA
EQ 069 6	CT-SM2/80	**EQ 538 0**	CT-SM2/80-1	Iprim 80 A, class 3 - 3 VA
EQ 071 2	CT-SM2/100	**EQ 539 8**	CT-SM2/100-1	Iprim 100 A, class 1 - 3 VA
EQ 072 0	CT-SM2/120	**EQ 540 6**	CT-SM2/120-1	Iprim 120 A, class 1 - 5 VA
EQ 073 8	CT-SM2/125	**EQ 541 4**	CT-SM2/125-1	Iprim 125 A, class 1 - 5 VA
EQ 078 7	CT-SM2/150	**EQ 542 2**	CT-SM2/150-1	Iprim 150 A, class 1 - 5 VA
Current transformers for primary current from cable ø max 18 mm (min distance between centers of cables = 45 mm)			
.../5 A		**.../1 A**	
EQ 079 5	CT-SM3/40	**EQ 543 0**	CT-SM3/40-1	Iprim 40 A, class 3 - 3 VA
EQ 080 3	CT-SM3/50	**EQ 544 8**	CT-SM3/50-1	Iprim 50 A, class 3 - 4 VA
EQ 081 1	CT-SM3/60	**EQ 545 5**	CT-SM3/60-1	Iprim 60 A, class 3 - 5 VA
EQ 082 9	CT-SM3/75	**EQ 769 1**	CT-SM3/75-1	Iprim 75 A, class 3 - 5 VA
EQ 083 7	CT-SM3/80	**EQ 546 3**	CT-SM3/80-1	Iprim 80 A, class 3 - 5 VA
EQ 084 5	CT-SM3/100	**EQ 547 1**	CT-SM3/100-1	Iprim 100 A, class 1 - 5 VA
EQ 086 0	CT-SM3/120	**EQ 548 9**	CT-SM3/120-1	Iprim 120 A, class 1 - 3 VA
EQ 087 8	CT-SM3/125	**EQ 549 7**	CT-SM3/125-1	Iprim 125 A, class 1 - 3 VA
EQ 088 6	CT-SM3/150	**EQ 550 5**	CT-SM3/150-1	Iprim 150 A, class 0.5 - 5 VA
EQ 090 2	CT-SM3/200	**EQ 551 3**	CT-SM3/200-1	Iprim 200 A, class 0.5 - 5 VA
EQ 093 6	CT-SM3/250	**EQ 552 1**	CT-SM3/250-1	Iprim 250 A, class 0.5 - 10 VA
EQ 094 4	CT-SM3/300	**EQ 553 9**	CT-SM3/300-1	Iprim 300 A, class 0.5 - 10 VA
Current transformers for primary current from cable ø max 25 mm (min distance between centers of cables = 45 mm)			
.../5 A		**.../1 A**	
EQ 095 1	CT-SM4/200	**EQ 554 7**	CT-SM4/200-1	Iprim 200 A, class 0.5 - 5 VA
EQ 097 7	CT-SM4/250	**EQ 555 4**	CT-SM4/250-1	Iprim 250 A, class 0.5 - 6 VA
EQ 098 5	CT-SM4/300	**EQ 556 2**	CT-SM4/300-1	Iprim 300 A, class 0.5 - 6 VA
EQ 100 9	CT-SM4/400	**EQ 557 0**	CT-SM4/400-1	Iprim 400 A, class 0.5 - 10 VA
Current transformers for primary current from horizontal bar 15x5 - 20x5 - 25x5 - 25x6.5 mm or from vertical bar 15x5 - 20x5 mm (min distance between centers of bars = 35 mm)			
.../5 A		**.../1 A**	
EQ 102 5	CT-SM5/100	**EQ 558 8**	CT-SM5/100-1	Iprim 100 A, class 1 - 4 VA
EQ 103 3	CT-SM5/120	**EQ 559 6**	CT-SM5/120-1	Iprim 120 A, class 1 - 4 VA
EQ 104 1	CT-SM5/125	**EQ 560 4**	CT-SM5/125-1	Iprim 125 A, class 1 - 4 VA
EQ 105 8	CT-SM5/150	**EQ 561 2**	CT-SM5/150-1	Iprim 150 A, class 1 - 4 VA
EQ 107 4	CT-SM5/200	**EQ 562 0**	CT-SM5/200-1	Iprim 200 A, class 1 - 4 VA
EQ 108 2	CT-SM5/250	**EQ 563 8**	CT-SM5/250-1	Iprim 250 A, class 1 - 4 VA
EQ 109 0	CT-SM5/300	**EQ 564 6**	CT-SM5/300-1	Iprim 300 A, class 0.5 - 4 VA

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Accessories for measuring devices

Ordering codes

Code	Type	Type	Description
Current transformers for primary current from cable ø max 32 mm (min distance between centers of cables = 45 mm)			
.../5 A		**.../1 A**	
EQ 110 8	CT-SM6/300	**EQ 565 3**	CT-SM6/300-1	Iprim 300 A, class 0.5 - 5 VA
EQ 111 6	CT-SM6/400	**EQ 566 1**	CT-SM6/400-1	Iprim 400 A, class 0.5 - 6 VA
EQ 112 4	CT-SM6/500	**EQ 567 9**	CT-SM6/500-1	Iprim 500 A, class 0.5 - 10 VA
EQ 113 2	CT-SM6/600	**EQ 569 5**	CT-SM6/600-1	Iprim 600 A, class 0.5 - 10 VA
Current transformers for primary current from horizontal bar 29x9.5 - 29x10.5 - 29x12.5 - 30x5 - 30x6 - 30x8 - 30x10 - 2x30x5 - 2x32x5 mm or from vertical bar 32x5 mm (min distance between centers of horizontal bars = 45 mm, of vertical bars = 35 mm)			
.../5 A		**.../1 A**	
EQ 114 0	CT-SM7/200	**EQ 873 1**	CT-SM7/200-1	Iprim 200 A, class 1 - 5 VA
EQ 115 7	CT-SM7/250	**EQ 874 9**	CT-SM7/250-1	Iprim 250 A, class 1 - 5 VA
EQ 116 5	CT-SM7/300	**EQ 875 6**	CT-SM7/300-1	Iprim 300 A, class 0.5 - 5 VA
EQ 117 3	CT-SM7/400	**EQ 876 4**	CT-SM7/400-1	Iprim 400 A, class 0.5 - 6 VA
EQ 118 1	CT-SM7/500	**EQ 877 2**	CT-SM7/500-1	Iprim 500 A, class 0.5 - 10 VA
EQ 119 9	CT-SM7/600	**EQ 878 0**	CT-SM7/600-1	Iprim 600 A, class 0.5 -10 VA
Current transformers for primary current from horizontal bar 30x30 - 30x45 - 37x9.5 - 37x13 - 50x10 - 55x9.5 - 55x13 - 63x5 - 2x50x5 - 2x50x10 - 2x63x5 -3x50x5 mm or from vertical bar 50x5 - 2x50x5 - 2x50x10 - 3x50x5 mm (min distance between centers of horizontal bars)			
.../5 A		**.../1 A**	
EQ 120 7	CT-SM8/200	**EQ 879 8**	CT-SM8/200-1	Iprim 200 A, class 1 - 5 VA
EQ 121 5	CT-SM8/250	**EQ 880 6**	CT-SM8/250-1	Iprim 250 A, class 1 - 5 VA
EQ 124 9	CT-SM8/300	**EQ 881 4**	CT-SM8/300-1	Iprim 300 A, class 0.5 - 5 VA
EQ 125 6	CT-SM8/400	**EQ 882 2**	CT-SM8/400-1	Iprim 400 A, class 0.5 - 5 VA
EQ 126 4	CT-SM8/500	**EQ 883 0**	CT-SM8/500-1	Iprim 500 A, class 0.5 - 10 VA
EQ 127 2	CT-SM8/600	**EQ 884 8**	CT-SM8/600-1	Iprim 600 A, class 0.5 -10 VA
EQ 129 8	CT-SM8/800	**EQ 885 5**	CT-SM8/800-1	Iprim 800 A, class 0.5 - 10 VA
EQ 130 6	CT-SM8/1000	**EQ 886 3**	CT-SM8/1000-1	Iprim 1000 A, class 0.5 - 15 VA
EQ 131 4	CT-SM8/1250	**EQ 887 1**	CT-SM8/1250-1	Iprim 1250 A, class 0.5 - 15 VA
EQ 132 2	CT-SM8/1500	**EQ 888 9**	CT-SM8/1500-1	Iprim 1500 A, class 0.5 - 15 VA
Current transformers for primary current from vertical bar 2x63x5 - 3x63x5 mm (min distance between centers of bars = 45 mm)			
.../5 A		**.../1 A**	
EQ 133 0	CT-SM9/400	**EQ 889 7**	CT-SM9/400-1	Iprim 400 A, class 0.5 - 5 VA
EQ 134 8	CT-SM9/500	**EQ 890 5**	CT-SM9/500-1	Iprim 500 A, class 0.5 - 10 VA
EQ 135 5	CT-SM9/600	**EQ 891 3**	CT-SM9/600-1	Iprim 600 A, class 0.5 -10 VA
EQ 137 1	CT-SM9/800	**EQ 892 1**	CT-SM9/800-1	Iprim 800 A, class 0.5 - 10 VA
EQ 138 9	CT-SM9/1000	**EQ 893 9**	CT-SM9/1000-1	Iprim 1000 A, class 0.5 - 15 VA
EQ 139 7	CT-SM9/1250	**EQ 894 7**	CT-SM9/1250-1	Iprim 1250 A, class 0.5 - 15 VA
EQ 141 3	CT-SM9/1500	**EQ 895 4**	CT-SM9/1500-1	Iprim 1500 A, class 0.5 - 15 VA

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Current transformers for protection devices

Code	Type	Code	Type	Description
Transformers with wound primary, primary and secondary current on terminals				
.../5 A		**.../1 A**		
EQ 142 1	CTP1 5P5/5	**EQ 902 8**	CTP1 5P5/5-1	Iprim 5 A, 4 VA (5P5)
EQ 143 9	CTP1 5P5/10	**EQ 903 6**	CTP1 5P5/10-1	Iprim 10 A, 4 VA (5P5)
EQ 144 7	CTP1 5P5/15	**EQ 904 4**	CTP1 5P5/15-1	Iprim 15 A, 4 VA (5P5)
EQ 145 4	CTP1 5P5/20	**EQ 905 1**	CTP1 5P5/20-1	Iprim 20 A, 4 VA (5P5)
EQ 147 0	CTP1 5P5/25	**EQ 906 9**	CTP1 5P5/25-1	Iprim 25 A, 4 VA (5P5)
EQ 148 8	CTP1 5P5/40	**EQ 907 7**	CTP1 5P5/40-1	Iprim 40 A, 4 VA (5P5)
Transformers with wound primary, primary and secondary current on terminals				
.../5 A		**.../1 A**		
EQ 149 6	CTP1 5P10/5	**EQ 908 5**	CTP1 5P10/5-1	Iprim 5 A, 2 VA (5P10)
EQ 150 4	CTP1 5P10/10	**EQ 909 3**	CTP1 5P10/10-1	Iprim 10 A, 2 VA (5P10)
EQ 151 2	CTP1 5P10/15	**EQ 910 1**	CTP1 5P10/15-1	Iprim 15 A, 2 VA (5P10)
EQ 152 0	CTP1 5P10/20	**EQ 911 9**	CTP1 5P10/20-1	Iprim 20 A, 2 VA (5P10)
EQ 154 6	CTP1 5P10/25	**EQ 912 7**	CTP1 5P10/25-1	Iprim 25 A, 2 VA (5P10)
EQ 155 3	CTP1 5P10/40	**EQ 913 5**	CTP1 5P10/40-1	Iprim 40 A, 2 VA (5P10)

Transformers with wound primary, primary current from built-in central bar 25x3 mm up to 300 A, 25x5 mm from 400 to 500 A and secondary current on terminals				
.../5 A		**.../1 A**		
EQ 157 9	CTP2 5P5/50	**EQ 914 3**	CTP2 5P5/50-1	Iprim 50 A, 4 VA (5P5)
EQ 158 7	CTP2 5P5/60	**EQ 915 0**	CTP2 5P5/60-1	Iprim 60 A, 4 VA (5P5)
EQ 160 3	CTP2 5P5/80	**EQ 916 8**	CTP2 5P5/80-1	Iprim 80 A, 4 VA (5P5)
EQ 161 1	CTP2 5P5/100	**EQ 917 6**	CTP2 5P5/100-1	Iprim 100 A, 4 VA (5P5)
EQ 162 9	CTP2 5P5/150	**EQ 918 4**	CTP2 5P5/150-1	Iprim 150 A, 4 VA (5P5)
EQ 163 7	CTP2 5P5/200	**EQ 919 2**	CTP2 5P5/200-1	Iprim 200 A, 4 VA (5P5)
EQ 164 5	CTP2 5P5/250	**EQ 920 0**	CTP2 5P5/250-1	Iprim 250 A, 4 VA (5P5)
EQ 166 0	CTP2 5P5/300	**EQ 921 8**	CTP2 5P5/300-1	Iprim 300 A, 4 VA (5P5)
EQ 167 8	CTP2 5P5/400	**EQ 619 8**	CTP2 5P5/400-1	Iprim 400 A, 4 VA (5P5)
EQ 168 6	CTP2 5P5/500	**EQ 620 6**	CTP2 5P5/500-1	Iprim 500 A, 4 VA (5P5)
Transformers with wound primary, primary current from built-in central bar 25x3 mm up to 300 A, 25x5 mm from 400 to 500 A and secondary current on terminals				
.../5 A		**.../1 A**		
EQ 169 4	CTP2 5P10/50	**EQ 621 4**	CTP2 5P10/50-1	Iprim 50 A, 2 VA (5P10)
EQ 170 2	CTP2 5P10/60	**EQ 624 8**	CTP2 5P10/60-1	Iprim 60 A, 2 VA (5P10)
EQ 171 0	CTP2 5P10/80	**EQ 625 5**	CTP2 5P10/80-1	Iprim 80 A, 2 VA (5P10)
EQ 174 4	CTP2 5P10/100	**EQ 626 3**	CTP2 5P10/100-1	Iprim 100 A, 2 VA (5P10)
EQ 175 1	CTP2 5P10/150	**EQ 627 1**	CTP2 5P10/150-1	Iprim 150 A, 2 VA (5P10)
EQ 176 9	CTP2 5P10/200	**EQ 628 9**	CTP2 5P10/200-1	Iprim 200 A, 2 VA (5P10)
EQ 179 3	CTP2 5P10/250	**EQ 629 7**	CTP2 5P10/250-1	Iprim 250 A, 2 VA (5P10)
EQ 180 1	CTP2 5P10/300	**EQ 630 5**	CTP2 5P10/300-1	Iprim 300 A, 2 VA (5P10)
EQ 181 9	CTP2 5P10/400	**EQ 631 3**	CTP2 5P10/400-1	Iprim 400 A, 2 VA (5P10)
EQ 182 7	CTP2 5P10/500	**EQ 632 1**	CTP2 5P10/500-1	Iprim 500 A, 2 VA (5P10)

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Accessories for measuring devices

Ordering codes

Code	Type	Type	Description
Current transformers for primary current from cable ø max. 30 mm or from horizontal bar 30x30 - 40x25 - 50x20 mm, vertical bar 30x10 mm			
EQ 183 5	CTP5 5P5/250	**EQ 633 9** CTP5 5P5/250-1	Iprim 250 A, 4 VA (5P5)
EQ 184 3	CTP5 5P5/300	**EQ 634 7** CTP5 5P5/300-1	Iprim 300 A, 4 VA (5P5)
EQ 185 0	CTP5 5P5/400	**EQ 635 4** CTP5 5P5/400-1	Iprim 400 A, 4 VA (5P5)
EQ 187 6	CTP5 5P5/500	**EQ 636 2** CTP5 5P5/500-1	Iprim 500 A, 4 VA (5P5)
EQ 188 4	CTP5 5P5/600	**EQ 637 0** CTP5 5P5/600-1	Iprim 600 A, 4 VA (5P5)
EQ 189 2	CTP5 5P5/800	**EQ 638 8** CTP5 5P5/800-1	Iprim 800 A, 4 VA (5P5)
EQ 191 8	CTP5 5P5/1000	**EQ 639 6** CTP5 5P5/1000-1	Iprim 1000 A, 4 VA (5P5)
EQ 192 6	CTP5 5P5/1200	**EQ 640 4** CTP5 5P5/1200-1	Iprim 1200 A, 6 VA (5P5)
EQ 193 4	CTP5 5P5/1500	**EQ 641 2** CTP5 5P5/1500-1	Iprim 1500 A, 8 VA (5P5)

Current transformers for primary current from cable ø max 30 mm or from horizontal bar 30x30 - 40x25 - 50x20 mm, vertical bar 30x10 mm

.../5 A		.../1 A		
EQ 194 2	CTP5 5P10/250	**EQ 642 0**	CTP5 5P10/250-1	Iprim 250 A, 2 VA (5P10)
EQ 195 9	CTP5 5P10/300	**EQ 643 8**	CTP5 5P10/300-1	Iprim 300 A, 2 VA (5P10)
EQ 198 3	CTP5 5P10/400	**EQ 644 6**	CTP5 5P10/400-1	Iprim 400 A, 2 VA (5P10)
EQ 199 1	CTP5 5P10/500	**EQ 645 3**	CTP5 5P10/500-1	Iprim 500 A, 2 VA (5P10)
EQ 200 7	CTP5 5P10/600	**EQ 646 1**	CTP5 5P10/600-1	Iprim 600 A, 2 VA (5P10)
EQ 201 5	CTP5 5P10/800	**EQ 647 9**	CTP5 5P10/800-1	Iprim 800 A, 2 VA (5P10)
EQ 202 3	CTP5 5P10/1000	**EQ 648 7**	CTP5 5P10/1000-1	Iprim 1000 A, 2 VA (5P10)
EQ 203 1	CTP5 5P10/1200	**EQ 649 5**	CTP5 5P10/1200-1	Iprim 1200 A, 3 VA (5P10)
EQ 204 9	CTP5 5P10/1500	**EQ 650 3**	CTP5 5P10/1500-1	Iprim 1500 A, 4 VA (5P10)

Current transformers for primary current from cable ø max 50 mm or from horizontal bar 50x20 - 60x20 mm

.../5 A		.../1 A		
EQ 206 4	CTP6 5P5/250	**EQ 651 1**	CTP6 5P5/250-1	Iprim 250 A, 6 VA (5P5)
EQ 207 2	CTP6 5P5/300	**EQ 652 9**	CTP6 5P5/300-1	Iprim 300 A, 6 VA (5P5)
EQ 208 0	CTP6 5P5/400	**EQ 653 7**	CTP6 5P5/400-1	Iprim 400 A, 10 VA (5P5)
EQ 210 6	CTP6 5P5/500	**EQ 654 5**	CTP6 5P5/500-1	Iprim 500 A, 10 VA (5P5)
EQ 213 0	CTP6 5P5/600	**EQ 655 2**	CTP6 5P5/600-1	Iprim 600 A, 10 VA (5P5)
EQ 214 8	CTP6 5P5/800	**EQ 656 0**	CTP6 5P5/800-1	Iprim 800 A, 15 VA (5P5)
EQ 215 5	CTP6 5P5/1000	**EQ 657 8**	CTP6 5P5/1000-1	Iprim 1000 A, 20 VA (5P5)
EQ 217 1	CTP6 5P5/1200	**EQ 658 6**	CTP6 5P5/1200-1	Iprim 1200 A, 20 VA (5P5)
EQ 218 9	CTP6 5P5/1500	**EQ 659 4**	CTP6 5P5/1500-1	Iprim 1500 A, 30 VA (5P5)

Current transformers for primary current from cable ø max 50 mm or from horizontal bar 50x20 - 60x20 mm

.../5 A		.../1 A		
EQ 220 5	CTP6 5P10/250	**EQ 661 0**	CTP6 5P10/250-1	Iprim 250 A, 2 VA (5P10)
EQ 222 1	CTP6 5P10/300	**EQ 662 8**	CTP6 5P10/300-1	Iprim 300 A, 3 VA (5P10)
EQ 223 9	CTP6 5P10/400	**EQ 663 6**	CTP6 5P10/400-1	Iprim 400 A, 4 VA (5P10)
EQ 224 7	CTP6 5P10/500	**EQ 664 4**	CTP6 5P10/500-1	Iprim 500 A, 4 VA (5P10)
EQ 225 4	CTP6 5P10/600	**EQ 665 1**	CTP6 5P10/600-1	Iprim 600 A, 4 VA (5P10)
EQ 227 0	CTP6 5P10/800	**EQ 666 9**	CTP6 5P10/800-1	Iprim 800 A, 5 VA (5P10)
EQ 228 8	CTP6 5P10/1000	**EQ 667 7**	CTP6 5P10/1000-1	Iprim 1000 A, 6 VA (5P10)
EQ 229 6	CTP6 5P10/1200	**EQ 668 5**	CTP6 5P10/1200-1	Iprim 1200 A, 6 VA (5P10)
EQ 230 4	CTP6 5P10/1500	**EQ 669 3**	CTP6 5P10/1500-1	Iprim 1500 A, 10 VA (5P10)

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Accessories for measuring devices

Ordering codes

Code	Type	Type	Description
Current transformers for primary current from 2 cables ø max 30 mm each or from horizontal bar 60x30 - 80x30 mm			
.../5 A		**.../1 A**	
EQ 231 2	CTP8 5P5/300	**EQ 670 1**	CTP8 5P5/300-1	Iprim 300 A, 5 VA (5P5)
EQ 234 6	CTP8 5P5/400	**EQ 671 9**	CTP8 5P5/400-1	Iprim 400 A, 6 VA (5P5)
EQ 235 3	CTP8 5P5/500	**EQ 672 7**	CTP8 5P5/500-1	Iprim 500 A, 15 VA (5P5)
EQ 236 1	CTP8 5P5/600	**EQ 673 5**	CTP8 5P5/600-1	Iprim 600 A, 20 VA (5P5)
EQ 237 9	CTP8 5P5/800	**EQ 674 3**	CTP8 5P5/800-1	Iprim 800 A, 20 VA (5P5)
EQ 239 5	CTP8 5P5/1000	**EQ 675 0**	CTP8 5P5/1000-1	Iprim 1000 A, 20 VA (5P5)
EQ 240 3	CTP8 5P5/1200	**EQ 676 8**	CTP8 5P5/1200-1	Iprim 1200 A, 30 VA (5P5)
EQ 241 1	CTP8 5P5/1500	**EQ 677 6**	CTP8 5P5/1500-1	Iprim 1500 A, 20 VA (5P5)
EQ 242 9	CTP8 5P5/2000	**EQ 678 4**	CTP8 5P5/2000-1	Iprim 2000 A, 12 VA (5P5)
EQ 243 7	CTP8 5P5/2500	**EQ 679 2**	CTP8 5P5/2500-1	Iprim 2500 A, 15 VA (5P5)
Current transformers for primary current from 2 cables ø max 30 mm each or from horizontal bar 60x30 - 80x30 mm			
.../5 A		**.../1 A**	
EQ 244 5	CTP8 5P10/300	**EQ 680 0**	CTP8 5P10/300-1	Iprim 300 A, 3 VA (5P10)
EQ 245 2	CTP8 5P10/400	**EQ 681 8**	CTP8 5P10/400-1	Iprim 400 A, 3 VA (5P10)
EQ 247 8	CTP8 5P10/500	**EQ 682 6**	CTP8 5P10/500-1	Iprim 500 A, 8 VA (5P10)
EQ 248 6	CTP8 5P10/600	**EQ 683 4**	CTP8 5P10/600-1	Iprim 600 A, 8 VA (5P10)
EQ 249 4	CTP8 5P10/800	**EQ 684 2**	CTP8 5P10/800-1	Iprim 800 A, 10 VA (5P10)
EQ 250 2	CTP8 5P10/1000	**EQ 685 9**	CTP8 5P10/1000-1	Iprim 1000 A, 10 VA (5P10)
EQ 251 0	CTP8 5P10/1200	**EQ 686 7**	CTP8 5P10/1200-1	Iprim 1200 A, 15 VA (5P10)
EQ 252 8	CTP8 5P10/1500	**EQ 687 5**	CTP8 5P10/1500-1	Iprim 1500 A, 6 VA (5P10)
EQ 253 6	CTP8 5P10/2000	**EQ 688 3**	CTP8 5P10/2000-1	Iprim 2000 A, 6 VA (5P10)
EQ 280 9	CTP8 5P10/2500	**EQ 689 1**	CTP8 5P10/2500-1	Iprim 2500 A, 8 VA (5P10)
Current transformers for primary current from 2 cables ø max 30 mm each or from horizontal bar 60x30 - 80x30 mm			
.../5 A		**.../1 A**	
EQ 281 7	CTP8 5P15/300	**EQ 690 9**	CTP8 5P15/300-1	Iprim 300 A, 1.5 VA (5P15)
EQ 282 5	CTP8 5P15/400	**EQ 691 7**	CTP8 5P15/400-1	Iprim 400 A, 1.5 VA (5P15)
EQ 283 3	CTP8 5P15/500	**EQ 693 3**	CTP8 5P15/500-1	Iprim 500 A, 4 VA (5P15)
EQ 284 1	CTP8 5P15/600	**EQ 694 1**	CTP8 5P15/600-1	Iprim 600 A, 4 VA (5P15)
EQ 285 8	CTP8 5P15/800	**EQ 695 8**	CTP8 5P15/800-1	Iprim 800 A, 6 VA (5P15)
EQ 286 6	CTP8 5P15/1000	**EQ 697 4**	CTP8 5P15/1000-1	Iprim 1000 A, 5 VA (5P15)
EQ 287 4	CTP8 5P15/1200	**EQ 698 2**	CTP8 5P15/1200-1	Iprim 1200 A, 6 VA (5P15)
EQ 288 2	CTP8 5P15/1500	**EQ 699 0**	CTP8 5P15/1500-1	Iprim 1500 A, 2 VA (5P15)
EQ 289 0	CTP8 5P15/2000	**EQ 700 6**	CTP8 5P15/2000-1	Iprim 2000 A, 5 VA (5P15)
EQ 850 9	CTP8 5P15/2500	**EQ 701 4**	CTP8 5P15/2500-1	Iprim 2500 A, 6 VA (5P15)
Current transformers for primary current from 2 cables ø max 30 mm each or from horizontal bar 60x30 - 80x30 mm			
.../5 A		**.../1 A**	
EQ 851 7	CTP8 5P20/300	**EQ 703 0**	CTP8 5P20/300-1	Iprim 300 A, 1 VA (5P20)
EQ 852 5	CTP8 5P20/400	**EQ 704 8**	CTP8 5P20/400-1	Iprim 400 A, 1 VA (5P20)
EQ 853 3	CTP8 5P20/500	**EQ 706 3**	CTP8 5P20/500-1	Iprim 500 A, 2 VA (5P20)
EQ 854 1	CTP8 5P20/600	**EQ 707 1**	CTP8 5P20/600-1	Iprim 600 A, 2 VA (5P20)
EQ 855 8	CTP8 5P20/800	**EQ 708 9**	CTP8 5P20/800-1	Iprim 800 A, 3 VA (5P20)
EQ 856 6	CTP8 5P20/1000	**EQ 710 5**	CTP8 5P20/1000-1	Iprim 1000 A, 2 VA (5P20)
EQ 857 4	CTP8 5P20/1200	**EQ 711 3**	CTP8 5P20/1200-1	Iprim 1200 A, 3 VA (5P20)
EQ 858 2	CTP8 5P20/1500	**EQ 712 1**	CTP8 5P20/1500-1	Iprim 1500 A, 1 VA (5P20)
EQ 859 0	CTP8 5P20/2000	**EQ 713 9**	CTP8 5P20/2000-1	Iprim 2000 A, 3 VA (5P20)
EQ 860 8	CTP8 5P20/2500	**EQ 714 7**	CTP8 5P20/2500-1	Iprim 2500 A, 4 VA (5P20)

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Accessories for measuring devices

Ordering codes

Code	Type	Code	Type	Description
Current transformers for primary current from 2 cables ø max 50 mm each or from horizontal bar 80x50 - 100x50 - 125x50 mm				
.../5 A		**.../1 A**		
EQ 861 6	CTP12 5P5/400	**EQ 716 2**	CTP12 5P5/400-1	Iprim 400 A, 8 VA (5P5)
EQ 862 4	CTP12 5P5/500	**EQ 717 0**	CTP12 5P5/500-1	Iprim 500 A, 8 VA (5P5)
EQ 863 2	CTP12 5P5/600	**EQ 718 8**	CTP12 5P5/600-1	Iprim 600 A, 8 VA (5P5)
EQ 864 0	CTP12 5P5/800	**EQ 719 6**	CTP12 5P5/800-1	Iprim 800 A, 12 VA (5P5)
EQ 865 7	CTP12 5P5/1000	**EQ 721 2**	CTP12 5P5/1000-1	Iprim 1000 A, 15 VA (5P5)
EQ 866 5	CTP12 5P5/1200	**EQ 722 0**	CTP12 5P5/1200-1	Iprim 1200 A, 20 VA (5P5)
EQ 867 3	CTP12 5P5/1500	**EQ 724 6**	CTP12 5P5/1500-1	Iprim 1500 A, 20 VA (5P5)
EQ 868 1	CTP12 5P5/2000	**EQ 725 3**	CTP12 5P5/2000-1	Iprim 2000 A, 25 VA (5P5)
EQ 869 9	CTP12 5P5/2500	**EQ 726 1**	CTP12 5P5/2500-1	Iprim 2500 A, 30 VA (5P5)
EQ 870 7	CTP12 5P5/3000	**EQ 727 9**	CTP12 5P5/3000-1	Iprim 3000 A, 40 VA (5P5)
EQ 871 5	CTP12 5P5/4000	**EQ 728 7**	CTP12 5P5/4000-1	Iprim 4000 A, 50 VA (5P5)
Current transformers for primary current from 2 cables ø max 50 mm each or from horizontal bar 80x50 - 100x50 - 125x50 mm				
.../5 A		**.../1 A**		
EQ 872 3	CTP12 5P10/400	**EQ 729 5**	CTP12 5P10/400-1	Iprim 400 A, 4 VA (5P10)
EQ 313 8	CTP12 5P10/500	**EQ 733 7**	CTP12 5P10/500-1	Iprim 500 A, 4 VA (5P10)
EQ 314 6	CTP12 5P10/600	**EQ 734 5**	CTP12 5P10/600-1	Iprim 600 A, 4 VA (5P10)
EQ 315 3	CTP12 5P10/800	**EQ 735 2**	CTP12 5P10/800-1	Iprim 800 A, 6 VA (5P10)
EQ 316 1	CTP12 5P10/1000	**EQ 736 0**	CTP12 5P10/1000-1	Iprim 1000 A, 8 VA (5P10)
EQ 317 9	CTP12 5P10/1200	**EQ 737 8**	CTP12 5P10/1200-1	Iprim 1200 A, 10 VA (5P10)
EQ 318 7	CTP12 5P10/1500	**EQ 738 6**	CTP12 5P10/1500-1	Iprim 1500 A, 10 VA (5P10)
EQ 319 5	CTP12 5P10/2000	**EQ 739 4**	CTP12 5P10/2000-1	Iprim 2000 A, 12 VA (5P10)
EQ 320 3	CTP12 5P10/2500	**EQ 740 2**	CTP12 5P10/2500-1	Iprim 2500 A, 15 VA (5P10)
EQ 321 1	CTP12 5P10/3000	**EQ 741 0**	CTP12 5P10/3000-1	Iprim 3000 A, 20 VA (5P10)
EQ 322 9	CTP12 5P10/4000	**EQ 742 8**	CTP12 5P10/4000-1	Iprim 4000 A, 25 VA (5P10)
Current transformers for primary current from 2 cables ø max 50 mm each or from horizontal bar 80x50 - 100x50 - 125x50 mm				
.../5 A		**.../1 A**		
EQ 323 7	CTP12 5P15/400	**EQ 743 6**	CTP12 5P15/400-1	Iprim 400 A, 3 VA (5P15)
EQ 324 5	CTP12 5P15/500	**EQ 744 4**	CTP12 5P15/500-1	Iprim 500 A, 3 VA (5P15)
EQ 325 2	CTP12 5P15/600	**EQ 745 1**	CTP12 5P15/600-1	Iprim 600 A, 3 VA (5P15)
EQ 326 0	CTP12 5P15/800	**EQ 746 9**	CTP12 5P15/800-1	Iprim 800 A, 4 VA (5P15)
EQ 327 8	CTP12 5P15/1000	**EQ 747 7**	CTP12 5P15/1000-1	Iprim 1000 A, 6 VA (5P15)
EQ 328 6	CTP12 5P15/1200	**EQ 748 5**	CTP12 5P15/1200-1	Iprim 1200 A, 6 VA (5P15)
EQ 329 4	CTP12 5P15/1500	**EQ 749 3**	CTP12 5P15/1500-1	Iprim 1500 A, 6 VA (5P15)
EQ 330 2	CTP12 5P15/2000	**EQ 750 1**	CTP12 5P15/2000-1	Iprim 2000 A, 8 VA (5P15)
EQ 331 0	CTP12 5P15/2500	**EQ 751 9**	CTP12 5P15/2500-1	Iprim 2500 A, 10 VA (5P15)
EQ 332 8	CTP12 5P15/3000	**EQ 752 7**	CTP12 5P15/3000-1	Iprim 3000 A, 15 VA (5P15)
EQ 333 6	CTP12 5P15/4000	**EQ 753 5**	CTP12 5P15/4000-1	Iprim 4000 A, 15 VA (5P15)
Current transformers for primary current from 2 cables ø max 50 mm each or from horizontal bar 80x50 - 100x50 - 125x50 mm				
.../5 A		**.../1 A**		
EQ 334 4	CTP12 5P20/400	**EQ 754 3**	CTP12 5P20/400-1	Iprim 400 A, 2 VA (5P20)
EQ 335 1	CTP12 5P20/500	**EQ 755 0**	CTP12 5P20/500-1	Iprim 500 A, 2 VA (5P20)
EQ 336 9	CTP12 5P20/600	**EQ 756 8**	CTP12 5P20/600-1	Iprim 600 A, 2 VA (5P20)
EQ 337 7	CTP12 5P20/800	**EQ 757 6**	CTP12 5P20/800-1	Iprim 800 A, 3 VA (5P20)
EQ 338 5	CTP12 5P20/1000	**EQ 758 4**	CTP12 5P20/1000-1	Iprim 1000 A, 4 VA (5P20)
EQ 339 3	CTP12 5P20/1200	**EQ 759 2**	CTP12 5P20/1200-1	Iprim 1200 A, 5 VA (5P20)
EQ 340 1	CTP12 5P20/1500	**EQ 760 0**	CTP12 5P20/1500-1	Iprim 1500 A, 5 VA (5P20)
EQ 341 9	CTP12 5P20/2000	**EQ 761 8**	CTP12 5P20/2000-1	Iprim 2000 A, 6 VA (5P20)
EQ 343 5	CTP12 5P20/2500	**EQ 764 2**	CTP12 5P20/2500-1	Iprim 2500 A, 8 VA (5P20)
EQ 344 3	CTP12 5P20/3000	**EQ 767 5**	CTP12 5P20/3000-1	Iprim 3000 A, 10 VA (5P20)
EQ 345 0	CTP12 5P20/4000	**EQ 768 3**	CTP12 5P20/4000-1	Iprim 4000 A, 12 VA (5P20)

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Summing current transformers

Used to calculate the vector sum of the currents of two or more lines in the same voltage system.
The max reference insulation voltage is 0.72 kV – 3 kV.

Code	Type	Description
Summing current transformers .../5 A		
EH 894 7	CTS-5-5	summing current transformer 5+5 = 5 A, 6 VA (6 DIN modules)
EH 896 2	CTS-5-5-5	summing current transformer 5+5+5 = 5 A, 6 VA (6 DIN modules)
EH 897 0	CTS-5-5-5-5	summing current transformer 5+5+5+5 = 5 A, 6 VA (6 DIN modules)
Summing current transformers .../1 A		
EH 898 8	CTS-1-1	summing current transformer 1+1 = 1 A, class 0.5 - 10 VA
EH 899 6	CTS-1-1-1	summing current transformer 1+1+1 = 1 A, class 0.5 - 10 VA
EH 900 2	CTS-1-1-1-1	summing current transformer 1+1+1+1 = 1 A, class 0.5 - 10 VA

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Voltage transformers

Used for transforming primary voltages up to 600 V into secondary voltages of …/100 V max for indirectly powering analogue and digital measuring devices.

Code	Type	Description
Voltage transformers with self-extinguishing plastic housing, class 0.5, 3 VA		
EH 905 1	TV-100/100	voltage transformer prim. 100 V/sec. 100 V, 3 VA, class 0.5
EH 768 3	TV-110/100	voltage transformer prim. 110 V/sec.100 V, 6 VA, class 0.5
EH 906 9	TV-115/100	voltage transformer prim. 115 V/sec. 100 V, 3 VA, class 0.5
EH 769 1	TV-230/100	voltage transformer prim. 230 V/sec. 100 V, 6 VA, class 0.5
EH 770 9	TV-380/100	voltage transformer prim. 380 V/sec. 100 V, 6 VA, class 0.5
EH 771 7	TV-400/100	voltage transformer prim. 400 V/sec. 100 V, 6 VA, class 0.5
EH 914 3	TV-440/100	voltage transformer prim. 440 V/sec. 100 V, 3 VA, class 0.5
EH 772 5	TV-500/100	voltage transformer prim. 500 V/sec. 100 V, 6 VA, class 0.5
Voltage transformers with self-extinguishing plastic housing, class 0.5, 3 VA (root of three)		
EH 919 2	TV-100-R3/100	voltage transformer prim. 100 V/sec. 100 V, 1.5 VA, class 1
EH 920 0	TV-110-R3/100	voltage transformer prim. 110 V/sec. 100 V, 1.5 VA, class 1
EH 921 8	TV-115-R3/100	voltage transformer prim. 125 V/sec. 100 V, 1.5 VA, class 1
EH 922 6	TV-230-R3/100	voltage transformer prim. 230 V/sec. 100 V, 1.5 VA, class 1
EH 923 4	TV-380-R3/100	voltage transformer prim. 380 V/sec. 100 V, 1.5 VA, class 1
EH 924 2	TV-400-R3/100	voltage transformer prim. 400 V/sec. 100 V, 1.5 VA, class 1
EH 925 9	TV-440-R3/100	voltage transformer prim. 440 V/sec. 100 V, 1.5 VA, class 1
EH 926 7	TV-500-R3/100	voltage transformer prim. 550 V/sec. 100 V, 1.5 VA, class 1

Voltage transformers with metallic housing, class 0.5, 10 VA		
EH 280 9	TV2-100/100	voltage transformer prim. 100 V/sec. 100 V, 10 VA, class 0.5
EH 282 5	TV2-110/100	voltage transformer prim. 110 V/sec. 100 V, 10 VA, class 0.5
EH 285 8	TV2-115/100	voltage transformer prim. 115 V/sec. 100 V, 10 VA, class 0.5
EH 286 6	TV2-230/100	voltage transformer prim. 230 V/sec. 100 V, 10 VA, class 0.5
EH 287 4	TV2-380/100	voltage transformer prim. 380 V/sec. 100 V, 10 VA, class 0.5
EH 288 2	TV2-400/100	voltage transformer prim. 400 V/sec. 100 V, 10 VA, class 0.5
EH 289 0	TV2-440/100	voltage transformer prim. 440 V/sec. 100 V, 10 VA, class 0.5
EH 290 8	TV2-500/100	voltage transformer prim. 500 V/sec. 100 V, 10 VA, class 0.5
EH 294 0	TV2-600/100	voltage transformer prim. 600 V/sec. 100 V, 10 VA, class 0.5
Voltage transformers with metallic housing, class 0.5, 5 VA (root of three)		
EH 295 7	TV2-100-R3/100	voltage transformer prim. 100 V:R3/sec. 100 V, 5 VA, class 0.5
EH 296 5	TV2-110-R3/100	voltage transformer prim. 110 V:R3/sec. 100 V, 5 VA, class 0.5
EH 297 3	TV2-115-R3/100	voltage transformer prim. 115 V:R3/sec. 100 V, 5 VA, class 0.5
EH 298 1	TV2-230-R3/100	voltage transformer prim. 230 V:R3/sec. 100 V, 5 VA, class 0.5
EH 299 9	TV2-380-R3/100	voltage transformer prim. 380 V:R3/sec. 100 V, 5 VA, class 0.5
EH 300 5	TV2-400-R3/100	voltage transformer prim. 400 V:R3/sec. 100 V, 5 VA, class 0.5
EH 311 2	TV2-440-R3/100	voltage transformer prim. 440 V:R3/sec. 100 V, 5 VA, class 0.5
EH 315 3	TV2-500-R3/100	voltage transformer prim. 500 V:R3/sec. 100 V, 5 VA, class 0.5
EH 324 5	TV2-600-R3/100	voltage transformer prim. 600 V:R3/sec. 100 V, 5 VA, class 0.5
Voltage transformers with metallic housing, class 0.5, 20 VA		
EH 326 0	TV3-100/100	voltage transformer prim. 100 V/sec. 100 V, 20 VA, class 0.5
EH 338 5	TV3-110/100	voltage transformer prim. 110 V/sec. 100 V, 20 VA, class 0.5
EH 339 3	TV3-115/100	voltage transformer prim. 115 V/sec. 100 V, 20 VA, class 0.5
EH 340 1	TV3-230/100	voltage transformer prim. 230 V/sec. 100 V, 20 VA, class 0.5
EH 341 9	TV3-380/100	voltage transformer prim. 380 V/sec. 100 V, 20 VA, class 0.5
EH 370 8	TV3-400/100	voltage transformer prim. 400 V/sec. 100 V, 20 VA, class 0.5
EH 371 6	TV3-440/100	voltage transformer prim. 440 V/sec. 100 V, 20 VA, class 0.5
EH 384 9	TV3-500/100	voltage transformer prim. 500 V/sec. 100 V, 20 VA, class 0.5
EH 387 2	TV3-600/100	voltage transformer prim. 600 V/sec. 100 V, 20 VA, class 0.5

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Accessories for measuring devices

Ordering codes

Code	Type	Description
Voltage transformers with metallic housing, class 0.5, 10 VA (root of three)		
EH 388 0	TV3-100-R3/100	voltage transformer prim. 100 V:R3/sec. 100 V, 10 VA, class 0.5
EH 389 8	TV3-110-R3/100	voltage transformer prim. 110 V:R3/sec. 100 V, 10 VA, class 0.5
EH 390 6	TV3-115-R3/100	voltage transformer prim. 115 V:R3/sec. 100 V, 10 VA, class 0.5
EH 391 4	TV3-230-R3/100	voltage transformer prim. 230 V:R3/sec. 100 V, 10 VA, class 0.5
EH 402 9	TV3-380-R3/100	voltage transformer prim. 380 V:R3/sec. 100 V, 10 VA, class 0.5
EH 410 2	TV3-400-R3/100	voltage transformer prim. 400 V:R3/sec. 100 V, 10 VA, class 0.5
EH 412 8	TV3-440-R3/100	voltage transformer prim. 440 V:R3/sec. 100 V, 10 VA, class 0.5
EH 413 6	TV3-500-R3/100	voltage transformer prim. 500 V:R3/sec. 100 V, 10 VA, class 0.5
EH 414 4	TV3-600-R3/100	voltage transformer prim. 600 V:R3/sec. 100 V, 10 VA, class 0.5
Voltage transformers with metallic housing, class 0.5, 50 VA		
EH 415 1	TV4-100/100	voltage transformer prim. 100 V/sec. 100 V, 50 VA, class 0.5
EH 430 0	TV4-110/100	voltage transformer prim. 110 V/sec. 100 V, 50 VA, class 0.5
EH 432 6	TV4-115/100	voltage transformer prim. 115 V/sec. 100 V, 50 VA, class 0.5
EH 433 4	TV4-230/100	voltage transformer prim. 230 V/sec. 100 V, 50 VA, class 0.5
EH 455 7	TV4-380/100	voltage transformer prim. 380 V/sec. 100 V, 50 VA, class 0.5
EH 457 3	TV4-400/100	voltage transformer prim. 400 V/sec. 100 V, 50 VA, class 0.5
EH 458 1	TV4-440/100	voltage transformer prim. 440 V/sec. 100 V, 50 VA, class 0.5
EH 470 6	TV4-500/100	voltage transformer prim. 500 V/sec. 100 V, 50 VA, class 0.5
EH 473 0	TV4-600/100	voltage transformer prim. 600 V/sec. 100 V, 50 VA, class 0.5
Voltage transformers with metallic housing, class 0.5, 25 VA (root of three)		
EH 497 9	TV4-100-R3/100	voltage transformer prim. 100 V:R3/sec. 100 V, 25 VA, class 0.5
EH 498 7	TV4-110-R3/100	voltage transformer prim. 110 V:R3/sec. 100 V, 25 VA, class 0.5
EH 499 5	TV4-115-R3/100	voltage transformer prim. 115 V:R3/sec. 100 V, 25 VA, class 0.5
EH 500 0	TV4-230-R3/100	voltage transformer prim. 230 V:R3/sec. 100 V, 25 VA, class 0.5
EH 510 9	TV4-380-R3/100	voltage transformer prim. 380 V:R3/sec. 100 V, 25 VA, class 0.5
EH 522 4	TV4-400-R3/100	voltage transformer prim. 400 V:R3/sec. 100 V, 25 VA, class 0.5
EH 531 5	TV4-440-R3/100	voltage transformer prim. 440 V:R3/sec. 100 V, 25 VA, class 0.5
EH 550 5	TV4-500-R3/100	voltage transformer prim. 500 V:R3/sec. 100 V, 25 VA, class 0.5
EH 552 1	TV4-600-R3/100	voltage transformer prim. 600 V:R3/sec. 100 V, 25 VA, class 0.5
Voltage transformers with metallic housing, class 0.5, 100 VA		
EH 553 9	TV5-100/100	voltage transformer prim. 100 V/sec. 100 V, 100 VA, class 0.5
EH 554 7	TV5-110/100	voltage transformer prim. 110 V/sec. 100 V, 100 VA, class 0.5
EH 555 4	TV5-115/100	voltage transformer prim. 115 V/sec. 100 V, 100 VA, class 0.5
EH 558 8	TV5-230/100	voltage transformer prim. 230 V/sec. 100 V, 100 VA, class 0.5
EH 566 1	TV5-380/100	voltage transformer prim. 380 V/sec. 100 V, 100 VA, class 0.5
EH 567 9	TV5-400/100	voltage transformer prim. 400 V/sec. 100 V, 100 VA, class 0.5
EH 568 7	TV5-440/100	voltage transformer prim. 440 V/sec. 100 V, 100 VA, class 0.5
EH 569 5	TV5-500/100	voltage transformer prim. 500 V/sec. 100 V, 100 VA, class 0.5
EH 570 3	TV5-600/100	voltage transformer prim. 600 V/sec. 100 V, 100 VA, class 0.5
Voltage transformers with metallic housing, class 0.5, 50 VA (root of three)		
EH 571 1	TV5-100-R3/100	voltage transformer prim. 100 V:R3/sec. 100 V, 50 VA, class 0.5
EH 572 9	TV5-110-R3/100	voltage transformer prim. 110 V:R3/sec. 100 V, 50 VA, class 0.5
EH 574 5	TV5-115-R3/100	voltage transformer prim. 115 V:R3/sec. 100 V, 50 VA, class 0.5
EH 575 2	TV5-230-R3/100	voltage transformer prim. 230 V:R3/sec. 100 V, 50 VA, class 0.5
EH 576 0	TV5-380-R3/100	voltage transformer prim. 380 V:R3/sec. 100 V, 50 VA, class 0.5
EH 578 6	TV5-400-R3/100	voltage transformer prim. 400 V:R3/sec. 100 V, 50 VA, class 0.5
EH 792 3	TV5-440-R3/100	voltage transformer prim. 440 V:R3/sec. 100 V, 50 VA, class 0.5
EH 793 1	TV5-500-R3/100	voltage transformer prim. 500 V:R3/sec. 100 V, 50 VA, class 0.5
EH 794 9	TV5-600-R3/100	voltage transformer prim. 600 V:R3/sec. 100 V, 50 VA, class 0.5

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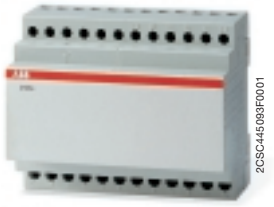
Current and voltage converters

They produce a direct current or voltage output signal independent of the load and directly proportional to the input current or voltage signal.
The electronic circuit guarantees high reliability and accuracy of operation, extension of the measurement field, resistance to temperature changes and vibrations, and limited power absorption from the circuit being measured.
Thanks to the speed of centralized data acquisition (even over considerable distances) and the availability of different types of output, that can be selected by adjusting the minidip switches, they are suitable for installation in plants demanding particular attention to the production, distribution and use of electrical energy.



Code	Type	Description
Current converters with a.c. supply (inputs in a.c./d.c.)		
EH 836 8	CONV-I-1-24CA	current converter, supply 24 V a.c., inputs 1 and 5 A a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4...20 mA d.c. (3 modules)
EH 837 6	CONV-I-1-48CA	current converter, supply 48 V a.c., inputs 1 and 5 A a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4...20 mA d.c. (3 modules)
EH 838 4	CONV-I-1-110CA	current converter, supply 110 V a.c., inputs 1 and 5 A a.c./selectable outputs 1-5-10 V d.c. e 1-5-10-20-4...20 mA d.c. (3 modules)
EH 839 2	CONV-I-1-230CA	current converter, supply 230 V a.c., inputs 1 and 5 A a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4...20 mA d.c. (3 modules)
EH 840 0	CONV-I-2-24CA	current converter, supply 24 V a.c., inputs 60 mV d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 841 8	CONV-I-2-48CA	current converter, supply 48 V a.c., inputs 60 mV d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 842 6	CONV-I-2-110CA	current converter, supply 110 V a.c., inputs 60 mV d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 843 4	CONV-I-2-230CA	current converter, supply 230 V a.c., inputs 60 mV d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
Current converters with supply in d.c. (inputs in a.c./d.c.)		
EH 844 2	CONV-I-1-24CC	current converter, supply 24 V d.c., inputs 1 and 5 A a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 845 9	CONV-I-1-48CC	current converter, supply 48 V d.c., inputs 1 and 5 A a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 846 7	CONV-I-1-110CC	current converter, supply 110 V d.c., inputs 1 and 5 A a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 847 5	CONV-I-2-24CC	current converter, supply 24 V d.c., inputs 60 mV d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 848 3	CONV-I-2-48CC	current converter, supply 48 V d.c., inputs 60 mV d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 849 1	CONV-I-2-110CC	current converter, supply 110 V d.c., inputs 60 mV d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)

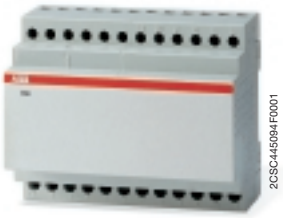
Technical details ..... **page 7/45** **Overall dimensions** ..... **page 8/21**

Accessories for measuring devices

Ordering codes

Code	Type	Description
Voltage converters with supply in a.c. (inputs in a.c./d.c.)		
EH 822 8	CONV-V-1-24CA	voltage converter, supply 24 V a.c., inputs 120-300-500 V a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 823 6	CONV-V-1-48CA	voltage converter, supply 48 V a.c., inputs 120-300-500 V a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 824 4	CONV-V-1-110CA	voltage converter, supply 110 V a.c., inputs 120-300-500 V a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 825 1	CONV-V-1-230CA	voltage converter, supply 230 V a.c., inputs 120-300-500 V a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 826 9	CONV-V-2-24CA	voltage converter, supply 24 V a.c., inputs 120-300-500 V d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 827 7	CONV-V-2-48CA	voltage converter, supply 48 V a.c., inputs 120-300-500 V d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 828 5	CONV-V-2-110CA	voltage converter, supply 110 V a.c., inputs 120-300-500 V d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 829 3	CONV-V-2-230CA	voltage converter, supply 230 V a.c., inputs 120-300-500 V d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
Voltage converters with supply in d.c. (inputs in a.c./d.c.)		
EH 830 1	CONV-V-1-24CC	voltage converter, supply 24 V d.c., inputs 120-300-500 V a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 831 9	CONV-V-1-48CC	voltage converter, supply 48 V d.c., inputs 120-300-500 V a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 832 7	CONV-V-1-110CC	voltage converter, supply 110 V d.c., inputs 120-300-500 V a.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (3 modules)
EH 833 5	CONV-V-2-24CC	voltage converter, supply 24 V d.c., inputs 120-300-500 V d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 834 3	CONV-V-2-48CC	voltage converter, supply 48 V d.c., inputs 120-300-500 V d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)
EH 835 0	CONV-V-2-110CC	voltage converter, supply 110 V d.c., inputs 120-300-500 V d.c./selectable outputs 1-5-10 V d.c. and 1-5-10-20-4…20 mA d.c. (6 modules)

Technical details ..... **page 7/45** **Overall dimensions** ..... **page 8/21**



Transducers for wattmeters, varmeters and power factor meters

They need to be used for the indirect insertion of analogue wattmeters, varmeters and power factor meters.
They can be powered on either 230 V or 400 V, selecting the most suitable output from among the eight options available (1, 5, 10 V d.c. and 1, 5, 10, 20, 4/20 mA d.c.) by means of an electronic programming key. There is a galvanic separation between the inputs and outputs.

Code	Type	Description
Transducers for wattmeters		
EH 653 7	CNV-W-1	transducer for wattmeters, single-phase
EH 654 5	CNV-W-2	transducer for wattmeters, three-phase, balanced without neutral (3 wires)
EH 655 2	CNV-W-3	transducer for wattmeters, three-phase, unbalanced without neutral (3 wires), ARON
EH 656 0	CNV-W-4	transducer for wattmeters, three-phase, balanced without neutral (4 wires)
EH 657 8	CNV-W-5	transducer for wattmeters, three-phase, unbalanced without neutral (4 wires)
Transducers for varmeters		
EH 658 6	CNV-V-1	transducer for varmeters, single-phase
EH 659 4	CNV-V-2	transducer for varmeters, three-phase, balanced without neutral (3 wires)
EH 660 2	CNV-V-3	transducer for varmeters, three-phase, unbalanced without neutral (3 wires), ARON
EH 661 0	CNV-V-4	transducer for varmeters, three-phase, balanced without neutral (4 wires)
EH 662 8	CNV-V-5	transducer for varmeters, three-phase, unbalanced without neutral (4 wires)
Transducers for power factor meters		
EH 663 6	CNV-C-1	transducer for power factor meters, single-phase, 230/440 V a.c.
EH 664 4	CNV-C-2	transducer for power factor meters, three-phase, balanced without neutral (3 wires), 230/440 V a.c.

Technical details ..... page 7/48 Overall dimensions ..... page 8/21

Shunts

Used for indirectly inserting d.c. digital measuring devices.

Code	Type	Description
Shunts 60 mV		
EG 132 3	SNT 1/5	shunt 60 mV d.c., 5 A
EG 135 6	SNT 1/6	shunt 60 mV d.c., 6 A
EG 181 0	SNT 1/10	shunt 60 mV d.c.,10 A
EG 125 7	SNT 1/15	shunt 60 mV d.c., 15 A
EG 126 5	SNT 1/20	shunt 60 mV d.c., 20 A
EG 127 3	SNT 1/25	shunt 60 mV d.c., 25 A
EG 128 1	SNT 1/30	shunt 60 mV d.c., 30 A
EG 129 9	SNT 1/40	shunt 60 mV d.c., 40 A
EG 182 8	SNT 1/50	shunt 60 mV d.c., 50 A
EG 130 7	SNT 1/60	shunt 60 mV d.c., 60 A
EG 131 5	SNT 1/80	shunt 60 mV d.c., 80 A
EG 183 6	SNT 1/100	shunt 60 mV d.c., 100 A
EG 136 4	SNT 1/150	shunt 60 mV d.c., 150 A
EG 162 0	SNT 1/200	shunt 60 mV d.c., 200 A
EG 184 4	SNT 1/250	shunt 60 mV d.c., 250 A
EG 185 1	SNT 1/400	shunt 60 mV d.c., 400 A
EG 186 9	SNT 1/500	shunt 60 mV d.c., 500 A
EG 187 7	SNT 1/600	shunt 60 mV d.c., 600 A
EG 188 5	SNT 1/800	shunt 60 mV d.c., 800 A
EG 189 3	SNT 1/1000	shunt 60 mV d.c., 1000 A
EG 190 1	SNT 1/1500	shunt 60 mV d.c., 1500 A
EG 191 9	SNT 1/2000	shunt 60 mV d.c., 2000 A
EG 192 7	SNT 1/2500	shunt 60 mV d.c., 2500 A
EH 915 0	SNT 1/4000	shunt 60 mV d.c., 4000 A
EH 916 8	SNT 1/6000	shunt 60 mV d.c., 6000 A
Shunts 150 mV		
EH 795 6	SNT1 1/5	shunt 150 mV d.c., 5 A
EH 796 4	SNT1 1/6	shunt 150 mV d.c., 6 A
EH 797 2	SNT1 1/10	shunt 150 mV d.c.,10 A
EH 798 0	SNT1 1/15	shunt 150 mV d.c., 15 A
EH 799 8	SNT1 1/20	shunt 150 mV d.c., 20 A
EH 800 4	SNT1 1/25	shunt 150 mV d.c., 25 A
EH 802 0	SNT1 1/30	shunt 150 mV d.c., 30 A
EH 803 8	SNT1 1/40	shunt 150 mV d.c., 40 A
EH 804 6	SNT1 1/50	shunt 150 mV d.c., 50 A
EH 805 3	SNT1 1/60	shunt 150 mV d.c., 60 A
EH 806 1	SNT1 1/80	shunt 150 mV d.c., 80 A
EH 807 9	SNT1 1/100	shunt 150 mV d.c., 100 A
EH 809 5	SNT1 1/150	shunt 150 mV d.c., 150 A
EH 810 3	SNT1 1/200	shunt 150 mV d.c., 200 A
EH 811 1	SNT1 1/250	shunt 150 mV d.c., 250 A
EH 812 9	SNT1 1/400	shunt 150 mV d.c., 400 A
EH 813 7	SNT1 1/500	shunt 150 mV d.c., 500 A
EH 814 5	SNT1 1/600	shunt 150 mV d.c., 600 A
EH 815 2	SNT1 1/800	shunt 150 mV d.c., 800 A
EH 816 0	SNT1 1/1000	shunt 150 mV d.c., 1000 A

Technical details ..... **page 7/53** **Overall dimensions** ..... **page 8/22**

Current and voltage switches

For use in three-phase systems to enable a single measuring device to be used to measure the voltage and current settings adjusted by the switches. Designed for installation on DIN rails.

Code	Type	Description
Voltage and current switches		
EH 774 1	QCV - 4/48	3-position voltage switch (48 mm x 48 mm)
EH 775 8	QCA - 4/48	4-position current switch (48 mm x 48 mm)
EH 776 6	QCV - 7/48	7-position voltage switch (48 mm x 48 mm)
EH 783 2	QCV - 4/64	3-position voltage switch (64 mm x 64 mm)
EH 784 0	QCA - 4/64	4-position current switch (64 mm x 64 mm)
EH 785 7	QCV - 7/64	7-position voltage switch (64 mm x 64 mm)
Spares for voltage and current switches		
EH 786 5	M-QCV - 4/48	spare flange with handle for 3-position voltage switch (48 mm x 48 mm)
EH 787 3	M-QCA - 4/48	spare flange with handle for 4-position current switch (48 mm x 48 mm)
EH 788 1	M-QCV - 7/48	spare flange with handle for 7-position voltage switch (48 mm x 48 mm)
EH 789 9	M-QCV - 4/64	spare flange with handle for 3-position voltage switch (64 mm x 64 mm)
EH 790 7	M-QCA - 4/64	spare flange with handle for 4-position current switch (64 mm x 64 mm)
EH 791 5	M-QCV - 7/64	spare flange with handle for 7-position voltage switch (64 mm x 64 mm)

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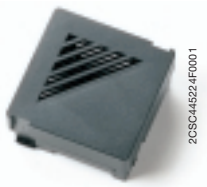
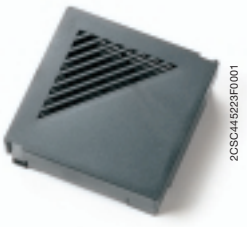
Technical details ..... page 7/54 Overall dimensions ..... page 8/23





Caps and terminal covers

Providing protection against any accidental bumping or contact, they also assure a degree of protection to IP55.
They come in three standard sizes, 48 mm x 96 mm, 72 mm x 72 mm and 96 mm x 96 mm.

Code	Type	Description
Transparent caps		
EH 777 4	COP-48-96	transparent cap to IP55 for devices 48 x 96 mm
EH 778 2	COP-72	transparent cap to IP55 for devices 72 x 72 mm
EH 779 0	COP-96	transparent cap to IP55 for devices 96 x 96 mm
Terminal covers		
EH 780 8	COP-M-48	terminal cover for devices 48 x 48 mm
EH 781 6	COP-M-72	terminal cover for devices 72 x 72 mm
EH 782 4	COP-M-96	terminal cover for devices 96 x 96 mm

Technical details

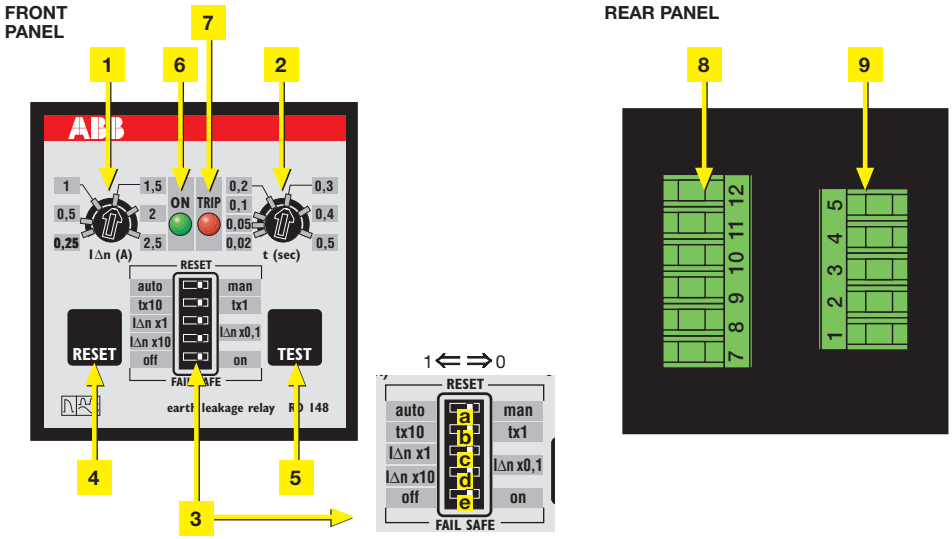
Contents

Protection devices **7**/2
Control devices **7**/8
Measuring devices **7**/14
Accessories for measuring devices **7**/37

Residual-current relays

Front operator functions

RD148



1. Potentiometer for adjusting tripping current time
2. Potentiometer for adjusting tripping time
3. Programming microswitches:

   a) in position 1 automatic reset, in position 0 manual reset

   b) choice of constant for calibrating the tripping time; in position 1 ➔ K=10, in position 0 ➔ K=1

   c) and **d)** choice of constant for calibrating the tripping current; c) and d) in position 0 ➔ K=0.1; c) in position 1 and d) in position 0 ➔ K=1; c) and d) in position 1 ➔ K=10

   e) in position 1, output relays normally de-energized; in position 0, output relays normally energized (positive safety)
4. Test pushbutton
5. Manual reset pushbutton
6. Green LED indicating presence of auxiliary supply
7. Red LED indicating that the relay has been tripped
8. Output terminals
9. Terminals for auxiliary supply and connection to separate toroidal transformer

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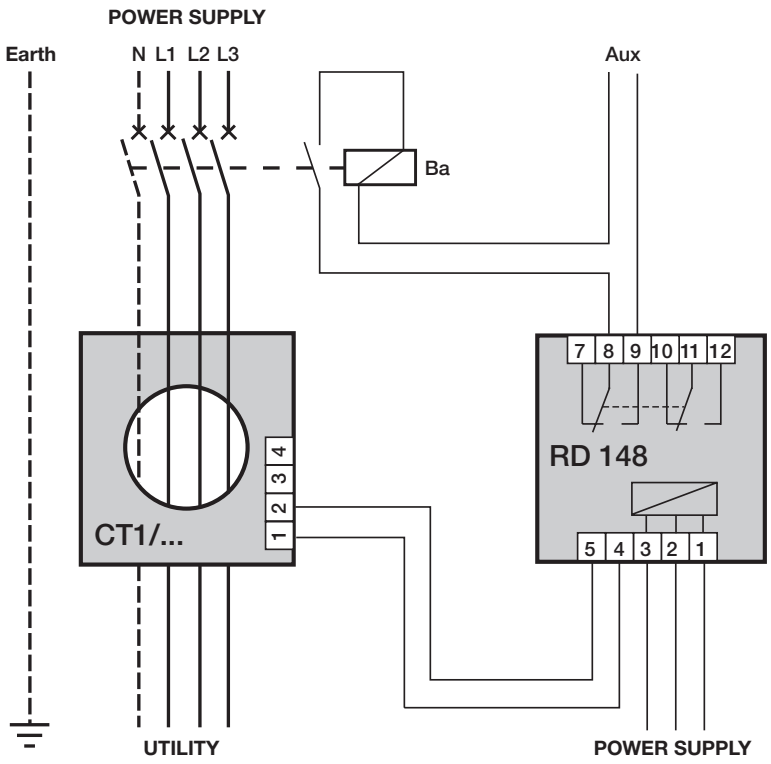
7

Product description and codes ..... page 2/1

Wiring diagrams

All phase conductors and the neutral conductor (if any) must pass through the separate toroidal transformer.
The earthing conductor must not pass through the separate toroidal transformer.

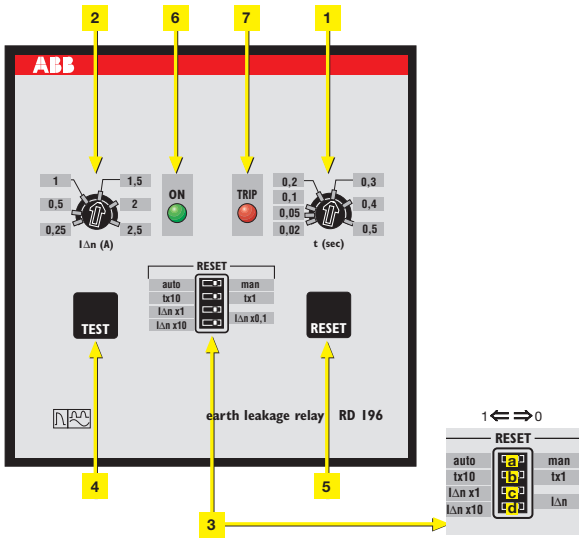
RD148



Note:
1 The diagram shows the application with the minimum-voltage opening coil and the relay in energized mode when tripped (fail safe off). For use in de-energized mode (fail safe on) connect the minimum-voltage coil to terminals 8-9 (NO contact in untripped condition).
2 The relay's contact with terminals 10-11-12 can be used for a remote tripped relay signal.

Product description and codes ..... page 2/1

RD172, RD196



1. Potentiometer for adjusting tripping time
2. Potentiometer for adjusting tripping current time
3. Programming microswitches:

   a) in position 1 automatic reset, in position 0 manual reset

   b) choice of constant for calibrating the tripping time; in position 1 ➔ K=10, in position 0 ➔ K=1

   c) and **d)** choice of constant for calibrating the tripping current; c) and d) in position 0 ➔ K=0.1; c) in position 1 and d) in position 0 ➔ K=1; c) and d) in position 1 ➔ K=10
4. Test pushbutton
5. Manual reset pushbutton
6. Green LED indicating presence of auxiliary supply
7. Red LED indicating that the relay has been tripped

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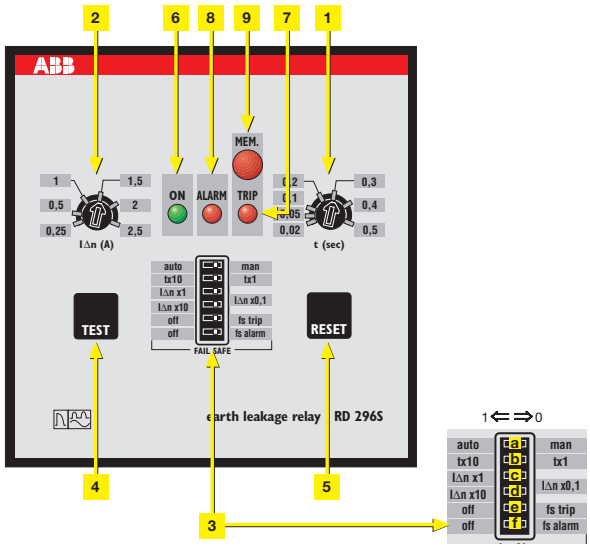
RD272, RD296, RD 296-S



1. Potentiometer for adjusting tripping time
2. Potentiometer for adjusting tripping current time
3. Programming microswitches:

   a) in position 1 automatic reset, in position 0 manual reset

   b) choice of constant for calibrating the tripping time; in position 1 ➔ K=10, in position 0 ➔ K=1

   c) and **d)** choice of constant for calibrating thetripping current; c) and d) in position 0 ➔ K=0.1; c) in position 1 and d) in position 0 ➔ K=1; c) and d) in position 1 ➔ K=10

   e) in position 1, TRIP output relay normally de-energized; in position 0, TRIP output relay normally energized (positive safety)

   f) in position 1, ALARM output relay normally de-energized; in position 0, ALARM output relay normally energized (positive safety)
4. Test pushbutton
5. Manual reset pushbutton
6. Green LED indicating presence of auxiliary supply
7. Red LED indicating that the relay has been tripped
8. Red LED indicating an alarm
9. Mechanical tripped relay indicator (for RD296-S)

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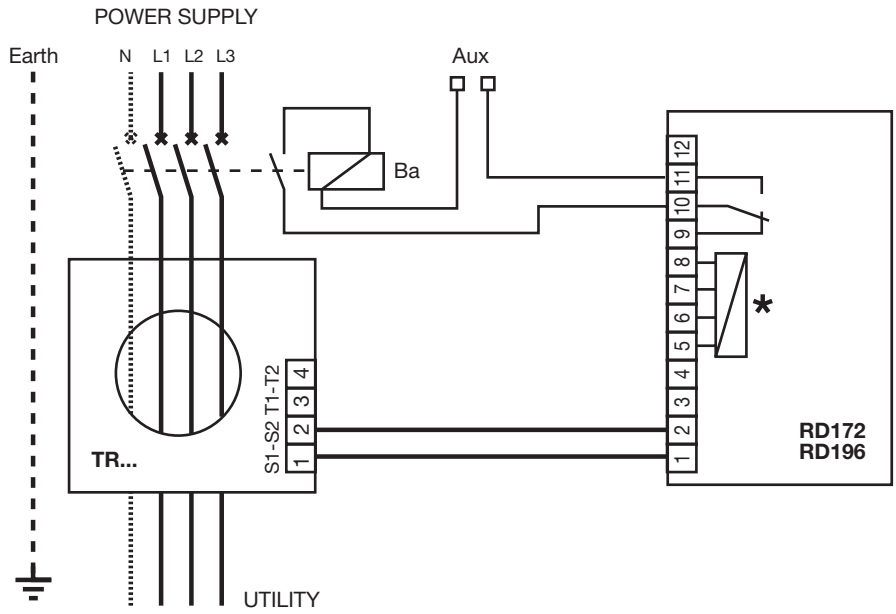
Product description and codes ..... page 2/1

RD172, RD196



Wiring diagram with circuit breaker with current-impulse coil.

The output contact can also be used just for signaling that the relay has been tripped, instead of being connected to circuit breaker opening coils.

*** Auxiliary supply**

RD172-230/RD196-230
- terminals 5-8 = 380-415V ac
- terminals 5-7 = 220-240V ac
- terminals 5-6 = 110-125V ac/dc

RD172-24/RD196-24
- terminals 5-8 = 48V dc
- terminals 5-7 = 24V dc

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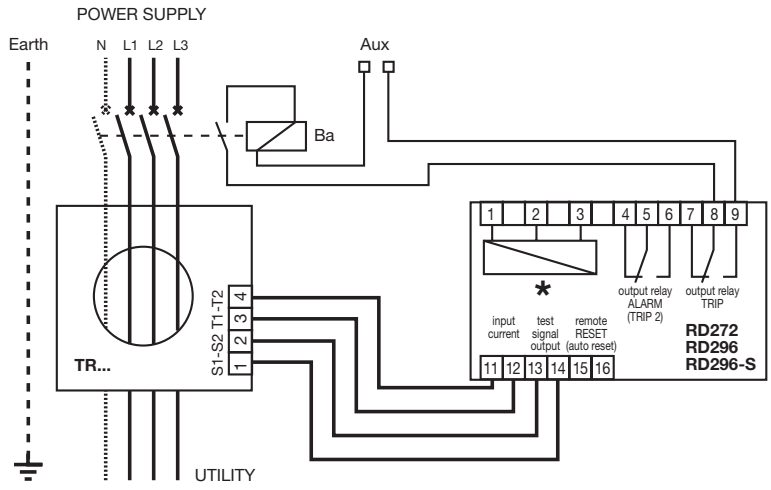
RD272, RD296, RD 296-S



Example of wiring diagram with circuit breaker with current-impulse coil with output relay energized (fail safe off).

The output contacts can only be used for signaling that the relay has been tripped. To be more precise, the ALARM relay enables the current signal beyond 60% of the threshold setting (if ALARM ON is selected).

*** Auxiliary supply**

RD272-230, RD296-230, RD 296-S-230
- terminals 1-2 = 110-125V ac
- terminals 2-3 = 220-240V ac
- terminals 1-3 = 380-415V ac

RD272-115, RD296-115, RD 296-S-115
- terminals 1-2 = 100-125V ac/dc

RD272-24, RD296-24, RD296-S-24
- terminals 1-2 = 24V ac/dc
- terminals 1-3 = 48V ac/dc

Connection to the toroidal transformer
Terminals 11-12 for connecting to the measurement winding; terminals 13-14 for connecting to the test winding.

Connection for remote or auto-reset
Terminals 15-16 for connecting to a separate button with an NO contact;short circuit the terminals to obtain the automatic reset function.

Connection of the output relay contacts
Terminals 7-8-9 for TRIP relay contact 7-8 is normally closed if FAIL SAFE OFF is selected or with no auxiliary supply; with FAIL SAFE ON, the contact will be normally open in untripped conditions.

Terminals 4-5-6 for ALARM relay (TRIP 2) contact 7-8 is normally closed if FAIL SAFE OFF is selected or with no auxiliary supply; with FAIL SAFE ON, the contact will be normally open in untripped conditions.

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Product description and codes ..... page 2/1

Toroidal transformers

More technical characteristics

		TRM	TR1	TR2	TR3	TR4	TR4A	TR160	TR160A	TR5	TR5A
Core		closed	closed	closed	closed	closed	openable	closed	openable	closed	openable
Available internal diameter	[mm]	29	35	60	80	110	110	160	160	210	210
Weight	[kg]	0.17	0.22	0.28	0.45	0.52	0.6	1.35	1.6	1.45	1.85
Minimum measurable current	[mA]	25	25	25	100	100	250	250	500	250	500
Installation position		Any									
Operating temperature	[°C]	-10…+70									
Storage temperature	[°C]	-20…+80									
Transformation ratio		500/1									
Dielectric test voltage at industrial freq. for 1 min.	[kV]	2.5									
Max. permanent overload	[A]	1000									
Max. thermal overload	[kA]	40/1 sec.									
Connections		Screw terminal boards, max. section 2.5 mm^2									
Protection degree		IP20									

Generality

They must be mounted with residual current monitors upstream the lines or loads to be protected; all active conductors (phases and neutral) of single-phase as well as of three-phases lines must pass through them.

In this way these devices perform the vector sum of line currents detecting the possible homopolar differential currents that leak to earth: their core of sheet iron has high magnetic properties that allow to detect even very low leakage currents.

The choice of a toroidal transformer depends on the conductor or on the bar to be used.

It is suggested to use the openable versions in case of revamping or upgrading of an existing installation.

Installation

All active conductors can be introduced in the toroidal transformers without the need of respecting any specific sense of introduction (P1-P2 or P2-P1). The output signal must be picked up from terminals 1 (S1) and 2 (S2) and connected to the residual current monitor, while terminals 3 and 4 must be connected to the test output of those relays of MFPP range with this function. With RD2 they must remain disconnected. For this connection it is better to use twisted or shielded cables, possibly far from busbars. The minimum recommended section of connection cables should have a maximum resistance of 3 Ω; anyway consider a maximum length of connection of 20 m for 0.5 mm^2 and of 100 m for 2.5 mm^2.

For versions with openable core it is necessary to control that the contact surface of the two semi-cores is clean, that bolts are tight and that connection cables connections on both sides are intact.

Connection cables with metallic shielding or armor must be earthed downstream the toroidal transformer; if they run within the transformer they must be earthed in the opposite direction.

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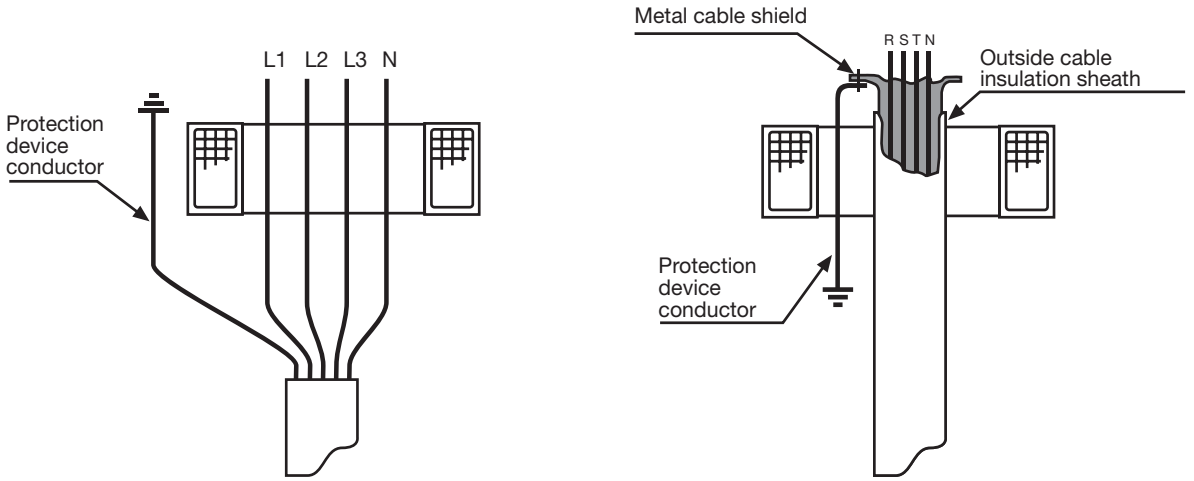
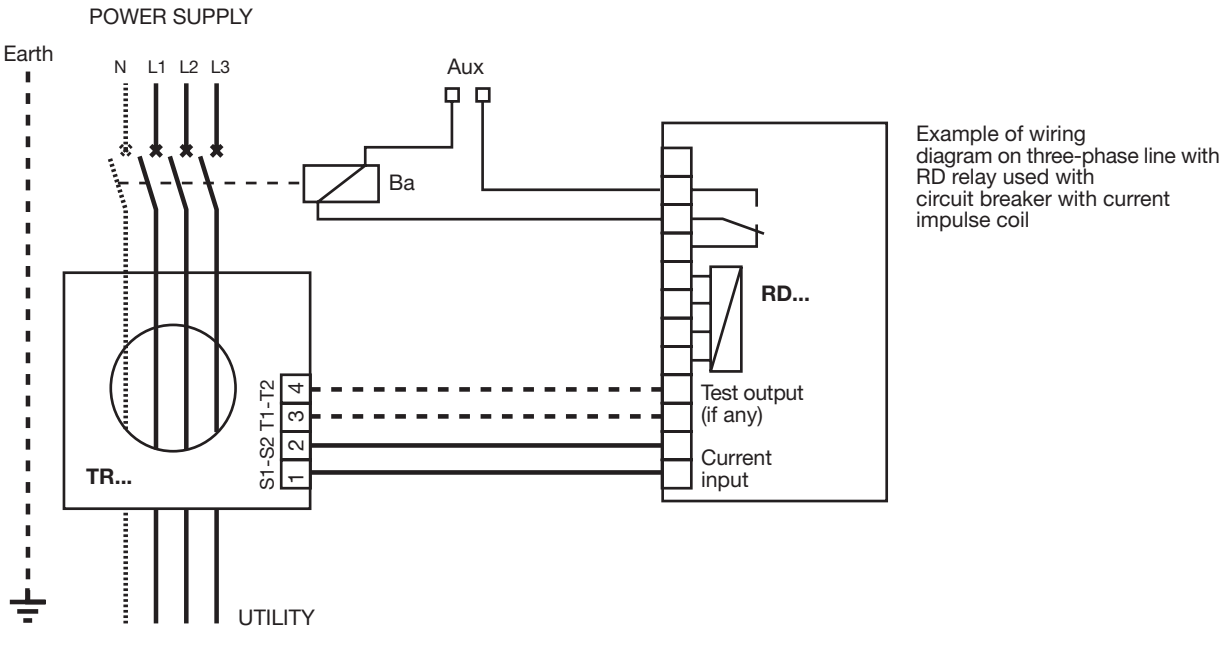
Product description and codes ..... page 2/1



In the event of specific line overcurrents (e.g. motor starting, transformer energising, etc.):
- install the toroidal transformer on a straight stretch of cable
- position the cables centrally inside the transformer

use transformers with a diameter greater than the minimum required, using a diameter up to twice the diameter of the cables, if necessary.



Example of wiring diagram on three-phase line with RD relay used with circuit breaker with current impulse coil

Product description and codes ..... page 2/1

Alarm concentrators

Technical features

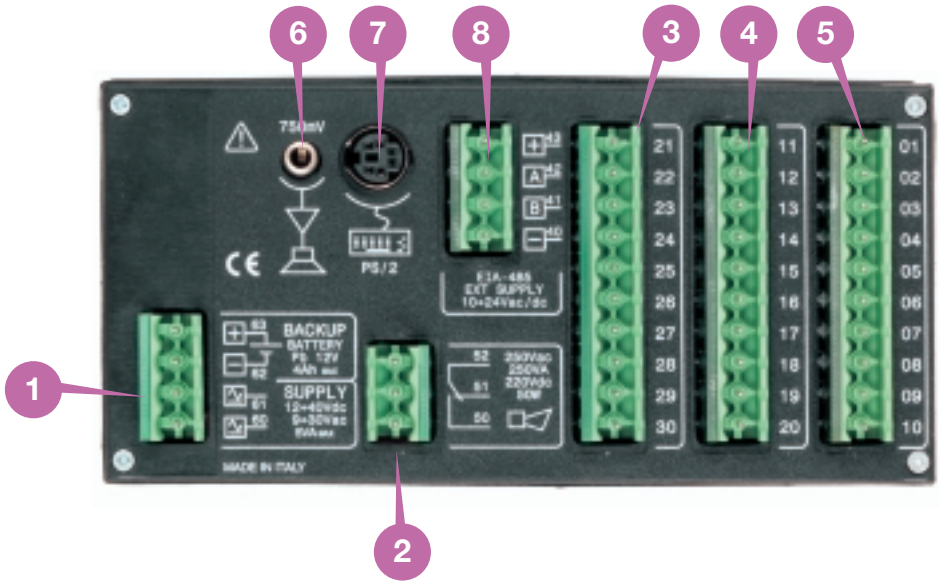
Supply voltage	V	24/230 a.c.
Frequency	Hz	0÷1000
Max consumption	VA	5
Working temperature	°C	0 … +60
Storage temperature	°C	-20 … +70
Relative humidity		35 … 75%
Degree of protection		IP40
Display		LCD/VFD alphanumerical with four lines of 20 characters
Container material in accordance with DIN 43700		noryl self-extinguishing
Assembly		with screws on each side
Working position		any
Withdrawable terminal connection 2P		1.5 mm² 16 AWG
Line fuse		auto-resetting incorporated
Inputs		
- Applicable voltage	V	24 a.c./d.c. ±20%
- Test voltage	V	2500/50 Hz - 1 min
- Insulation voltage	V	300 RMS
- Absorption	mA	7/24 V
- Withdrawable terminal connection 10P		1.5 mm² 16 AWG
Auxiliary outputs		
- Switching voltage	V	250 a.c./50 d.c.
- Switching current	mA	500
- Switching current		2A cosφ = 1
- Total switching current	mA	1000
- Switching power per output	W	20
- Total switching power	W	50
- Withdrawable terminal connection 3P		1.5 mm² 16 AWG
Service PORT PS/2 (audio output 80 … 4000 Hz)		
- Voltage	V	5 d.c.
- Level	mV	750
- Round connector connection		mini DIN 6-pole
- Pin connection		3.5 mm stereo jack
EIA-485 port (real time clock)		
- Length of line	m	1200
- Precision		±15 min/year
- Termination resistance		EXTERNAL 120 (adjusted from front keyboard or PS/2)
- Bias resistance (fail-safe) incorporated	kΩ	1
- Back up		10 days without a battery
- Withdrawable terminal connection 4P		1.5 mm² 16 AWG (suitable for synchronising via communication line)
Messages memory (EEPROM)		
- Standard version	Kb	2 (9 messages)
- Expansion	Kb	4
- Expansion	Kb	6
- Expansion	Kb	8
- Expansion	Kb	10

Product description and codes ..... page 3/1

Components and functions

- 16 direct inputs or 60 binary inputs
- EIA-485 port for remote control
- NO/NC input selection
- Optoisolated inputs
- Expandable modular design
- Realtime clock without battery
- Simplified pushbutton panel (with remotable indications)
- 8 groups with programmable behavior
- Programming from front keys
- Programming from standard keyboard PS/2
- Programming from PC
- SPDT cumulative contact
- Group outputs
- Internal generator of six audio tones
- Incorporated loudspeaker
- Audio output for tone diffusion
- Events associable with internal timer
- Events associable with internal clock
- Backlit liquid crystal display
- Fluorescent display
- Screen saver
- GSM module for text messages data and fax, Ethernet module
- Interfaceable with data logger fo Windows®

Rear connection panel



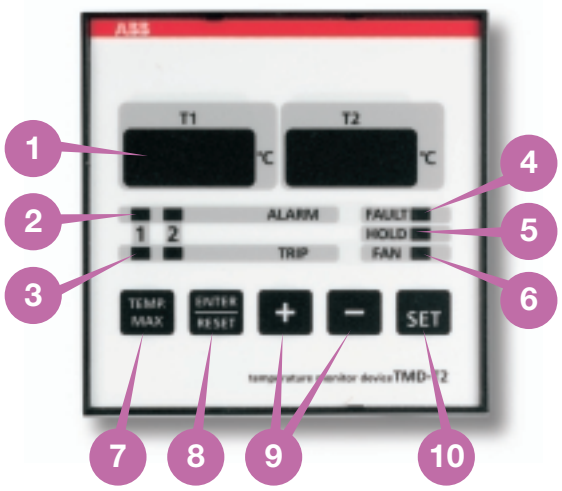
1	Power supply and optional backup battery	**5**	Inputs for outside keys or group outputs
2	Onboard relay SPDT contact	**6**	Audio output for separate amplifier 750 mV
3	Inputs 9÷16 (common to terminals 9, 10)	**7**	PS/2 port for extended keyboard and accessories
4	Inputs 1÷8 (common to terminals 19, 20)	**8**	EIA-485 insulated interface

Product description and codes ..... page 3/1

Temperature control units

Technical features

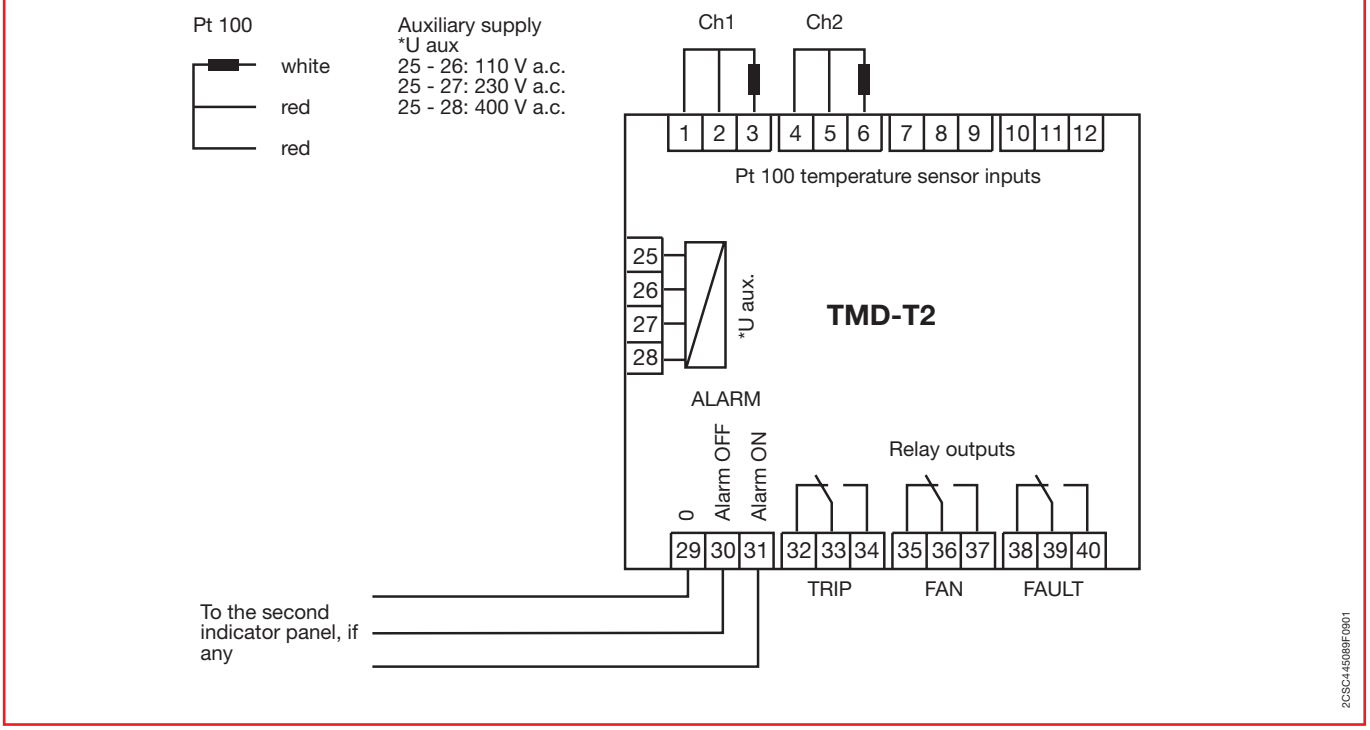
Auxiliary power supply voltage	V	100 … 125, 220 … 240, 380 … 415/50-60 Hz
Max consumption	VA	4
Measuring inputs		2 from RTD Pt100
Measurement range	°C	0 … +220 ±2 °C
Tripping time lag – hysteresis		5 s/2 °C
Display of measurements		LED, 7 segments, figures
Outputs		1 at 12 V d.c., 3 to relay NO-C-NC, 8 A resistive load
Output functions		alarm, trip, fan, self-test
Programmable functions		ALARM, TRIP, HOLD, FAN, MAX T.
Connections		removable screw terminal board, max cross-section 2.5 mm²
Insulation	Vrms	2500/50 Hz - 1 min
Degree of protection		IP52 on front panel can be raised to IP65 with optional cover code EH 777 4, EH 779 0
		IP20 on rear panel
Working temperature	°C	-10 … +55, max humidity 90%
Storage temperature	°C	-25 … +80
Standards		CEI EN 50081-2, CEI EN 50082-2, CEI 14.1, CEI EN 60255



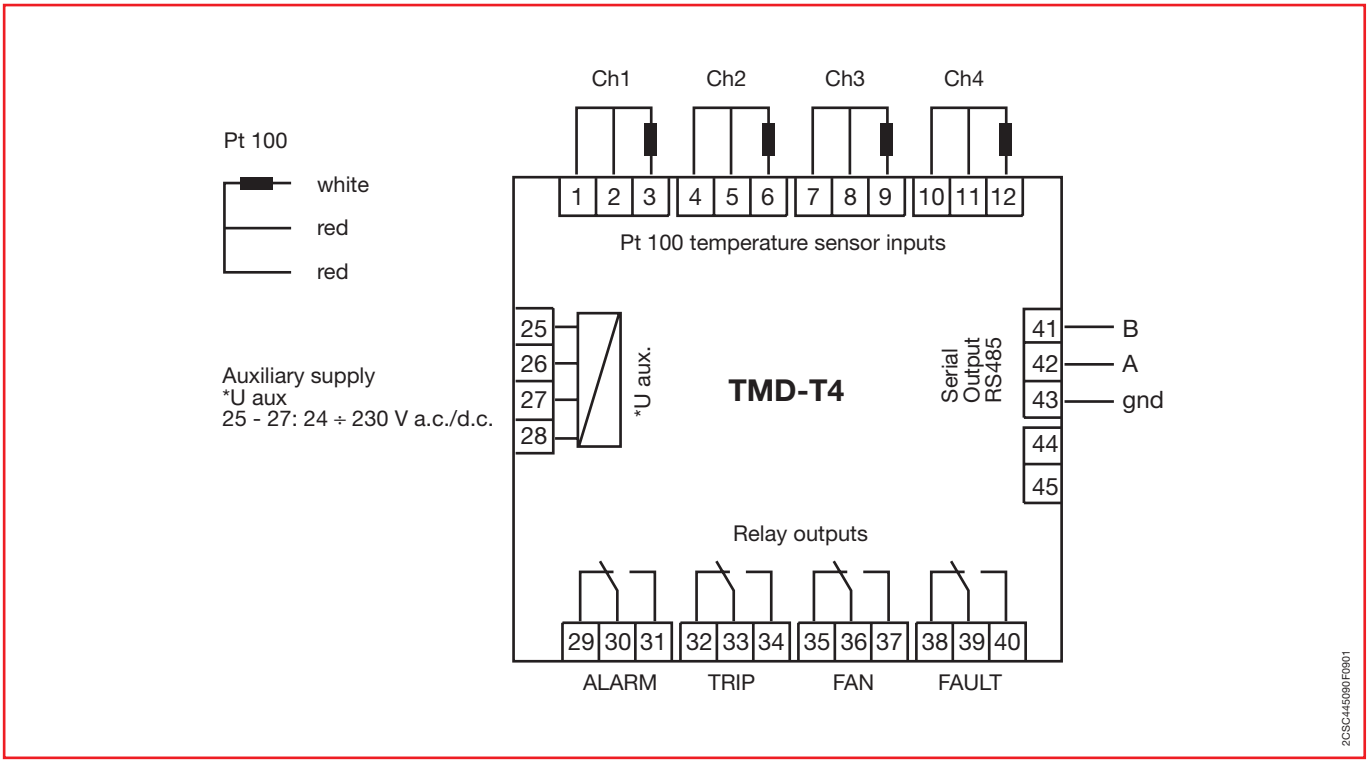
1 Display for viewing temperature values and settings
2 ALARM LED for viewing alarm status of measuring channels
3 TRIP LED for viewing trip status (second-level alarm) of measuring channels
4 FAULT LED for indicating temperature control unit and sensor faults
5 HOLD LED for indicating whether manual reset function is enabled
6 FAN LED for indicating whether fan output is enabled
7 MAX T. pushbutton for selecting to view the max temperature level
8 ENTER/RESET pushbutton for confirming the programmed settings and for manually resetting any alarms that have been tripped
9 +/- pushbuttons for selecting the measuring channels and for adjusting the programming parameters
10 SET pushbutton with status LED for accessing and programming the device's settings

Product description and codes ..... page 3/1

TMD-T2



TMD-T4



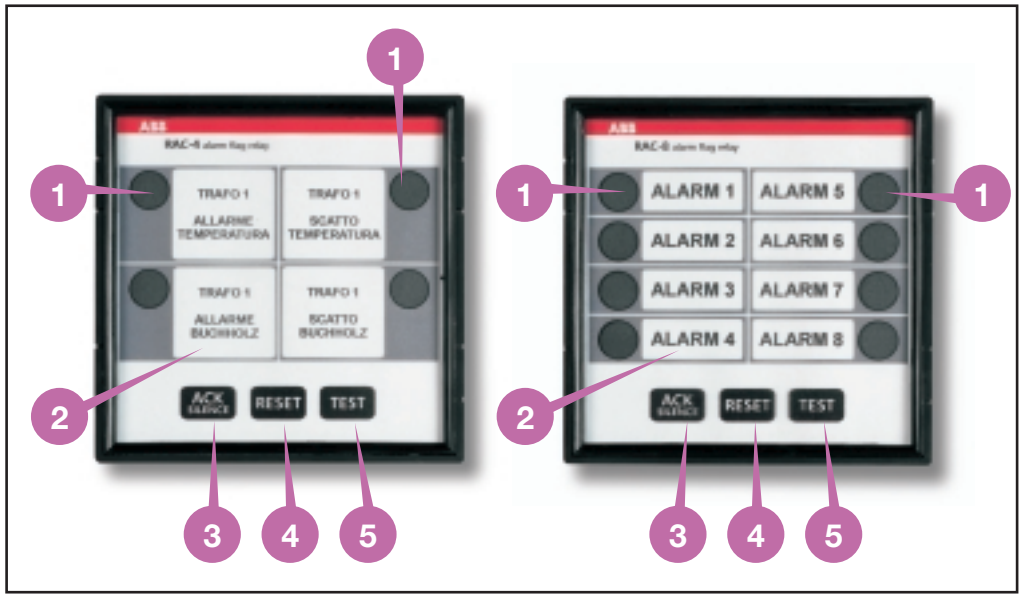
Product description and codes ..... page 3/1

Flag relays

Technical features

Auxiliary power supply voltage	V	115-230-400 a.c./ 24-24-115 d.c. +15/20%
Frequency	Hz	50/60
Carrying capacity of output contacts	A	8 (250 V cosφ = 1)
Nature of switching		contacts (NO-C-NC)
Insulation voltage	V	2.5 kV
Working temperature	°C	-10…+60
Storage temperature	°C	-20…+70
Max humidity		90%
Self-consumption	VA	3
Degree of protection		IP 20 rear panel IP 40 (with terminal cover cap) IP55 (with front cap)
Alarm signal		red mechanical signal
Container		self-extinguishing thermoplastic
Cable connections		max 2.5 mm^2
Standards		CEI EN 61010-1, CEI 41.1

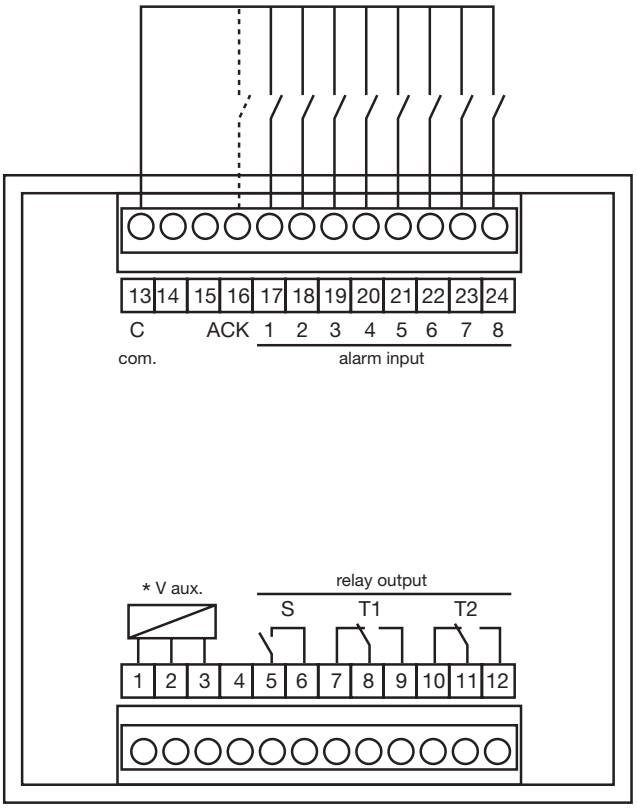
Front operator functions



1 Alarm signal card
2 Key to alarms
3 Pushbutton for silencing alarms
4 Pushbutton for cancelling alarms
5 Pushbutton for testing alarm signals

Product description and codes ..... page 3/1

RAC-4, RAC-8



*** Auxiliary supply**

RAC-8-230
- terminals 1-2 = 115V ac
- terminals 2-3 = 230V ac
- terminals 1-3 = 400V ac

RAC-8-24
- terminals 1-2 = 24V ac/dc
- terminals 1-3 = 48V ac/dc

RAC-8-115
- terminals 1-2 = 115V ac/dc

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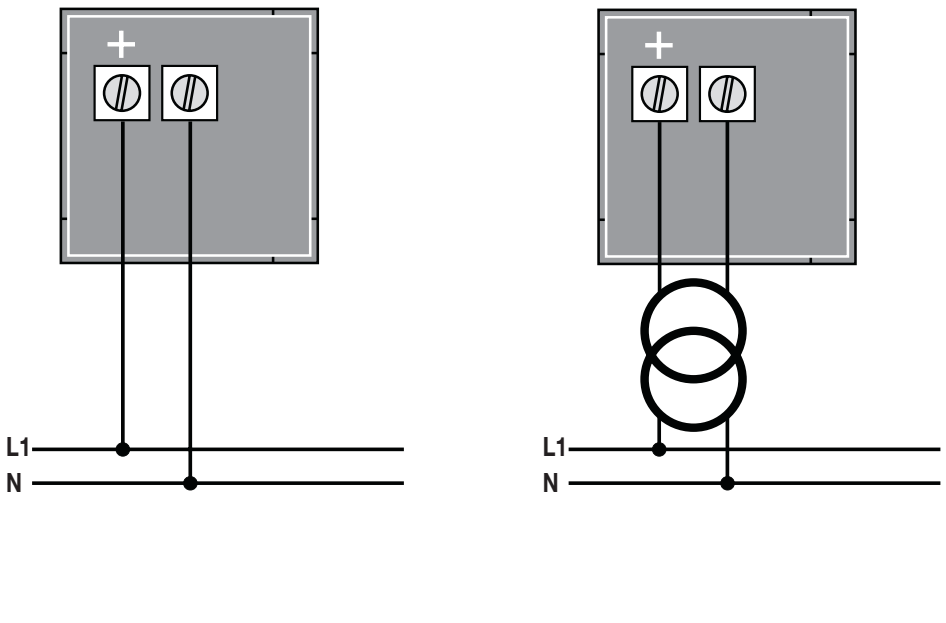
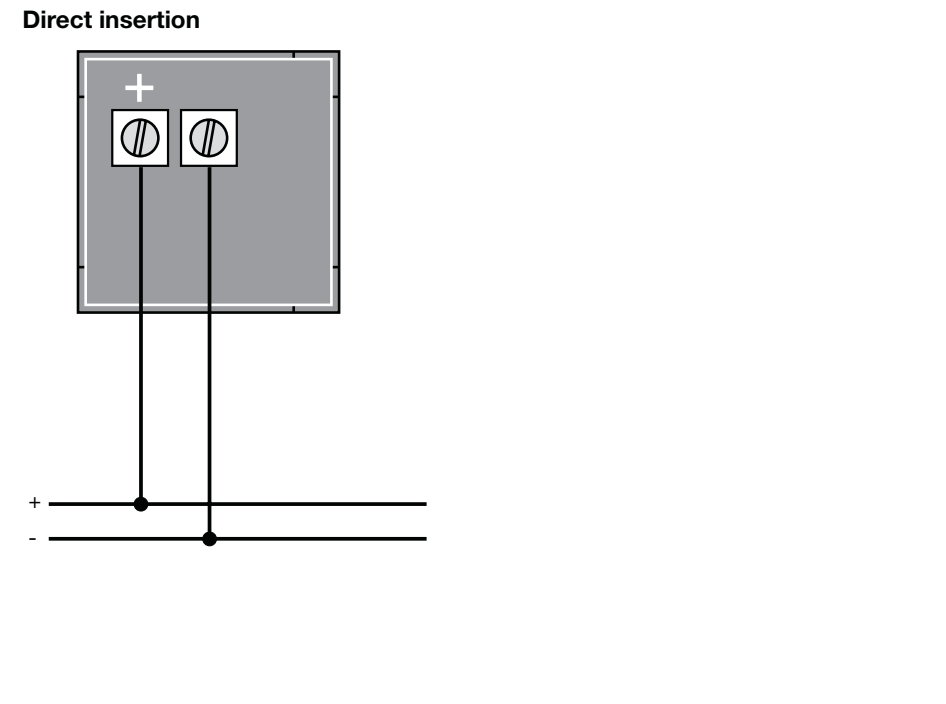
Product description and codes ..... page 3/1

Analogue voltmeters and ammeters

Analogue voltmeters for alternating current

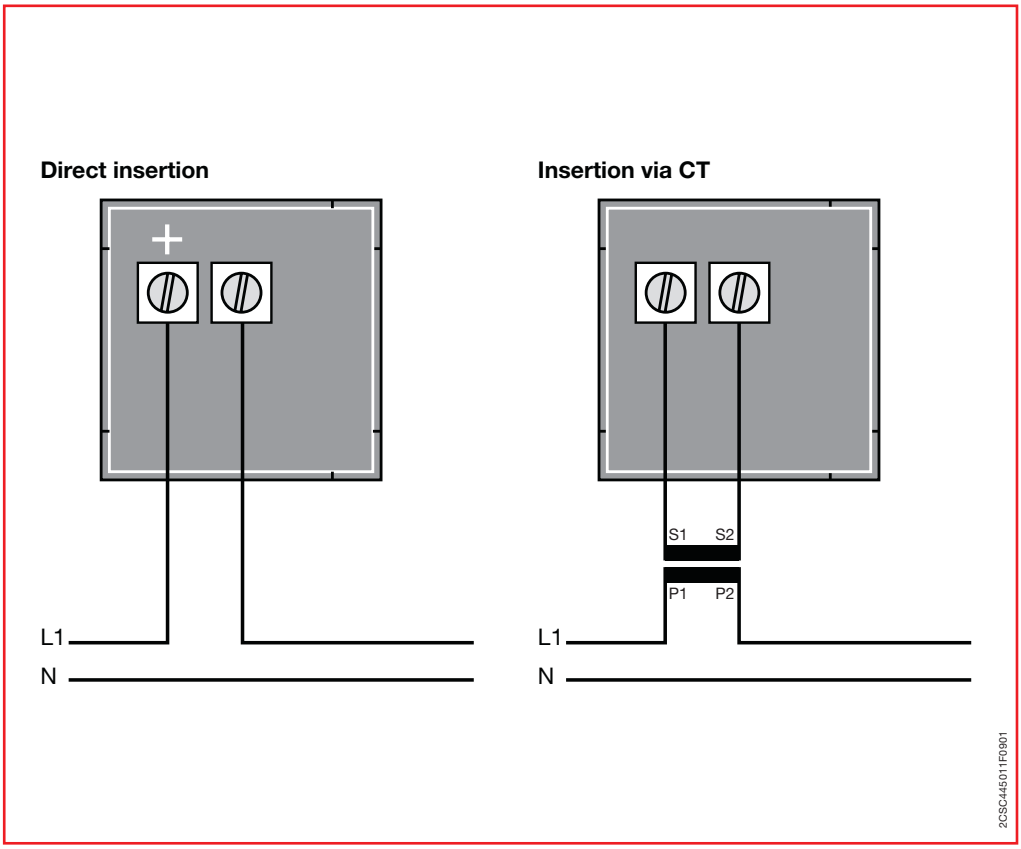


Analogue voltmeters for direct current

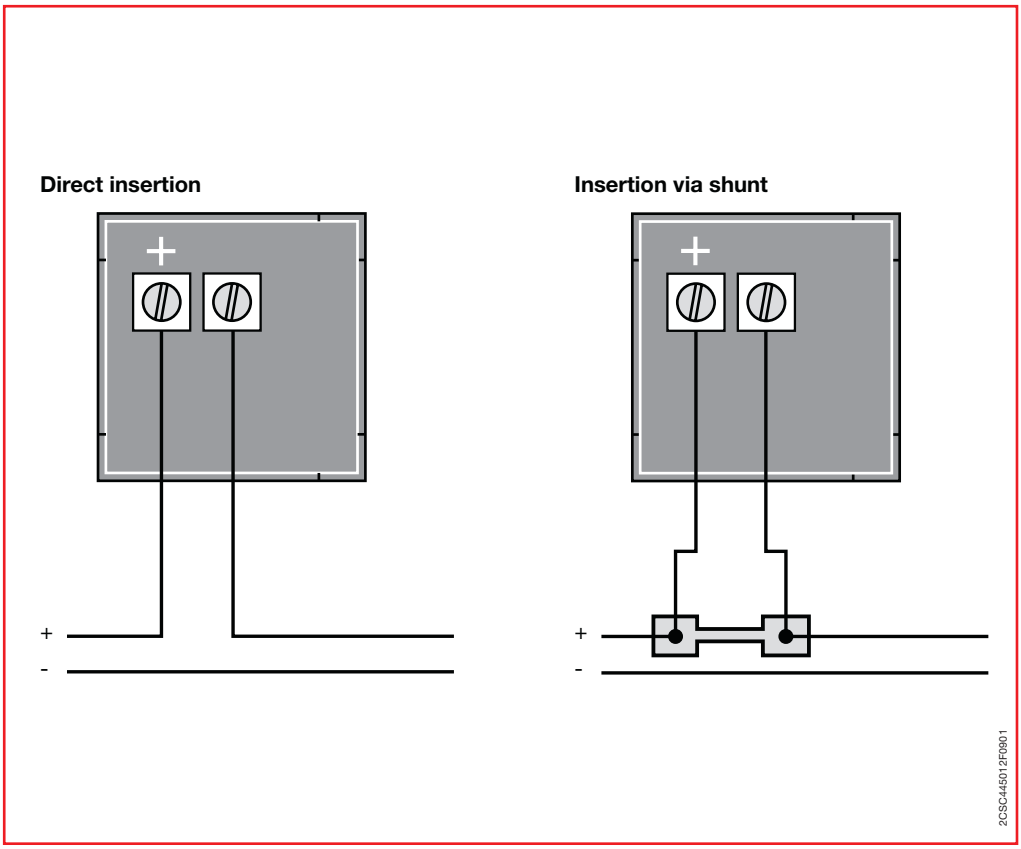


Product description and codes ..... page 5/1

Analogue ammeters for alternating current



Analogue ammeters for direct current



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Product description and codes ..... page 5/1

Wattmeters, voltmeters and other analogue instruments

When you choose the intrchangeable scale for wattmeters and varmeters, you have to consider the direct input voltage and the type of transducer connected; the chart can provide a quick refence guide.

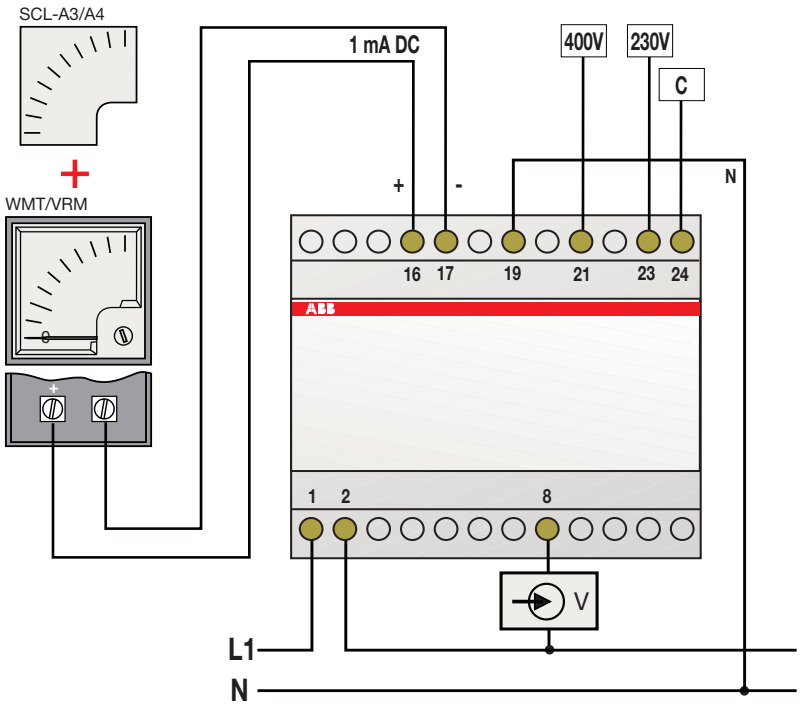
Current transformer	Wattmeter and varmeter, single-phase			Wattmeter and varmeter, three-phase		
	100 V	230 V	400 V	100 V	230 V	400 V
5/5 A	500 W (VAR)	1000 W (VAR)	2000 W (VAR)	1000 W (VAR)	2000 W (VAR)	4000 W (VAR)
10/5 A	1000 W (VAR)	2000 W (VAR)	4000 W (VAR)	2000 W (VAR)	4000 W (VAR)	8000 W (VAR)
15/5 A	1500 W (VAR)	3000 W (VAR)	6000 W (VAR)	3000 W (VAR)	6000 W (VAR)	12 kW (kVAR)
20/5 A	2000 W (VAR)	4000 W (VAR)	8000 W (VAR)	4000 W (VAR)	8000 W (VAR)	16 kW (kVAR)
25/5 A	2500 W (VAR)	5000 W (VAR)	10 kW (kVAR)	5000 W (VAR)	10 kW (kVAR)	20 kW (kVAR)
30/5 A	3000 W (VAR)	6000 W (VAR)	12 kW (kVAR)	6000 W (VAR)	12 kW (kVAR)	24 kW (kVAR)
40/5 A	4000 W (VAR)	8000 W (VAR)	16 kW (kVAR)	8000 W (VAR)	16 kW (kVAR)	32 kW (kVAR)
50/5 A	5000 W (VAR)	10 kW (kVAR)	20 kW (kVAR)	10 kW (kVAR)	20 kW (kVAR)	40 kW (kVAR)
60/5 A	6000 W (VAR)	12 kW (kVAR)	24 kW (kVAR)	12 kW (kVAR)	24 kW (kVAR)	48 kW (kVAR)
80/5 A	8000 W (VAR)	16 kW (kVAR)	32 kW (kVAR)	16 kW (kVAR)	32 kW (kVAR)	64 kW (kVAR)
100/5 A	10 kW (kVAR)	20 kW (kVAR)	40 kW (kVAR)	20 kW (kVAR)	40 kW (kVAR)	80 kW (kVAR)
150/5 A	15 kW (kVAR)	30 kW (kVAR)	60 kW (kVAR)	30 kW (kVAR)	60 kW (kVAR)	120 kW (kVAR)
200/5 A	20 kW (kVAR)	40 kW (kVAR)	80 kW (kVAR)	40 kW (kVAR)	80 kW (kVAR)	160 kW (kVAR)
250/5 A	25 kW (kVAR)	50 kW (kVAR)	100 kW (kVAR)	50 kW (kVAR)	100 kW (kVAR)	200 kW (kVAR)
300/5 A	30 kW (kVAR)	60 kW (kVAR)	**120 kW (kVAR)**	60 kW (kVAR)	120 kW (kVAR)	240 kW (kVAR)
400/5 A	40 kW (kVAR)	80 kW (kVAR)	160 kW (kVAR)	80 kW (kVAR)	160 kW (kVAR)	320 kW (kVAR)
500/5 A	50 kW (kVAR)	100 kW (kVAR)	200 kW (kVAR)	100 kW (kVAR)	200 kW (kVAR)	400 kW (kVAR)
600/5 A	60 kW (kVAR)	120 kW (kVAR)	240 kW (kVAR)	120 kW (kVAR)	240 kW (kVAR)	480 kW (kVAR)
800/5 A	80 kW (kVAR)	160 kW (kVAR)	320 kW (kVAR)	160 kW (kVAR)	320 kW (kVAR)	640 kW (kVAR)
1000/5 A	100 kW (kVAR)	200 kW (kVAR)	400 kW (kVAR)	200 kW (kVAR)	400 kW (kVAR)	800 kW (kVAR)
1500/5 A	150 kW (kVAR)	300 kW (kVAR)	600 kW (kVAR)	300 kW (kVAR)	600 kW (kVAR)	1200 kW (kVAR)
2000/5 A	200 kW (kVAR)	400 kW (kVAR)	800 kW (kVAR)	400 kW (kVAR)	800 kW (kVAR)	1600 kW (kVAR)
2500/5 A	250 kW (kVAR)	500 kW (kVAR)	1000 kW (kVAR)	500 kW (kVAR)	1000 kW (kVAR)	2000 kW (kVAR)

Example of how to consult the chart

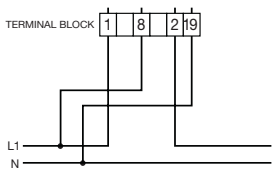
With a 400 V single-phase wattmeter or varmeter with a current of 300/5 A the end of scale required is 120 kW.

Product description and codes ..... page 5/1

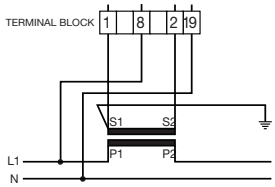
Wattmeters and varmeters for alternating current - Single-phase line



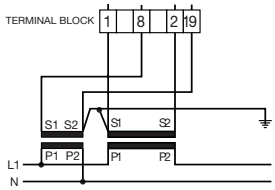
Direct insertion



Insertion via CT (.../5A)



Insertion via CT (.../5A) and VT (.../100V)



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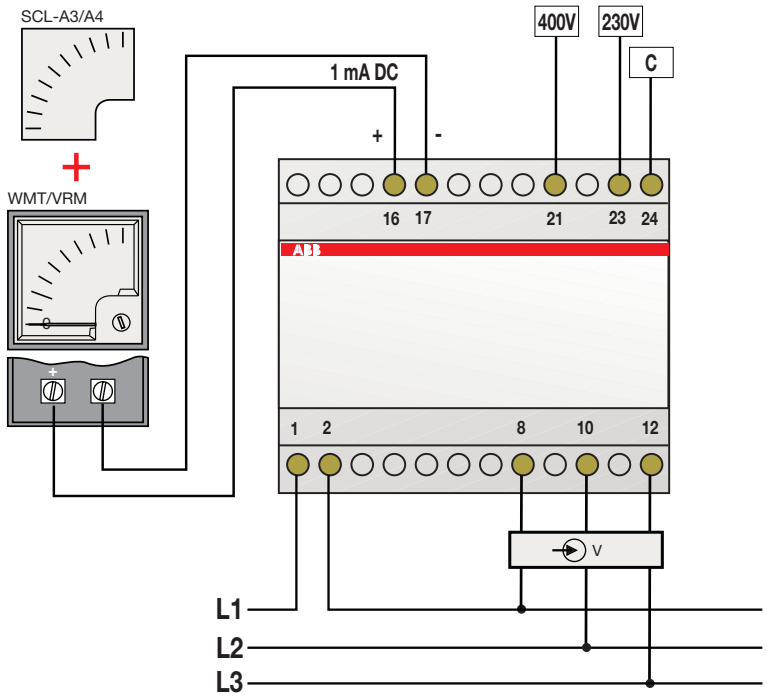
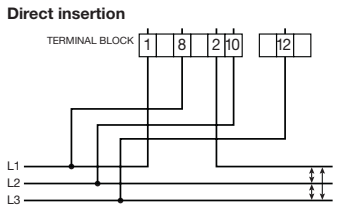
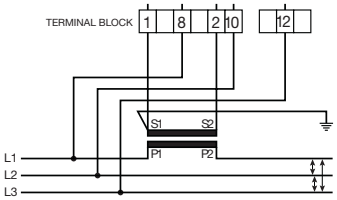
Wattmeters and varmeters for alternating current - Three-phase line, balanced without neutral (3 wires)



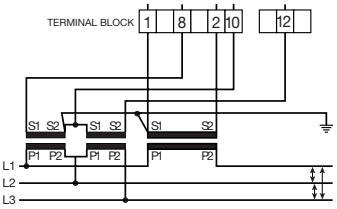
Direct insertion



Insertion via CT (.../5A)



Insertion via CT (.../5A) and VT (.../100V)



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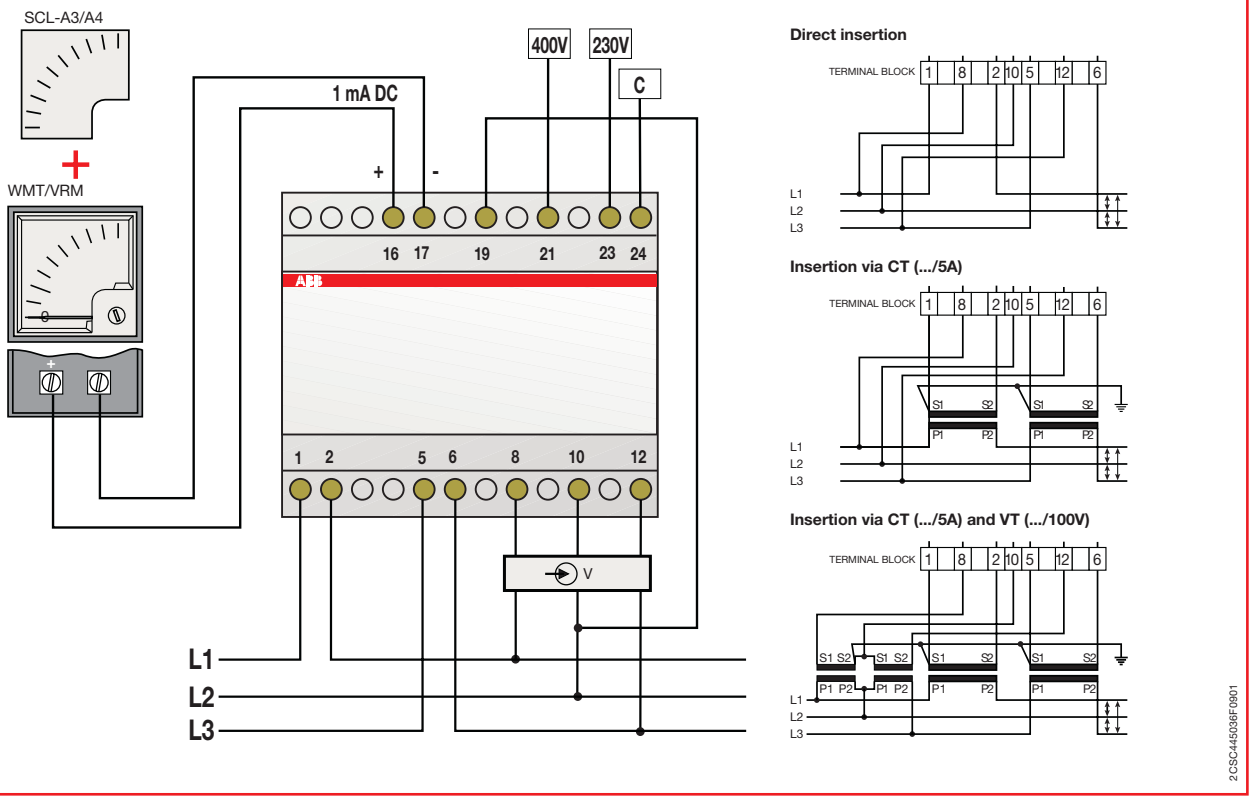
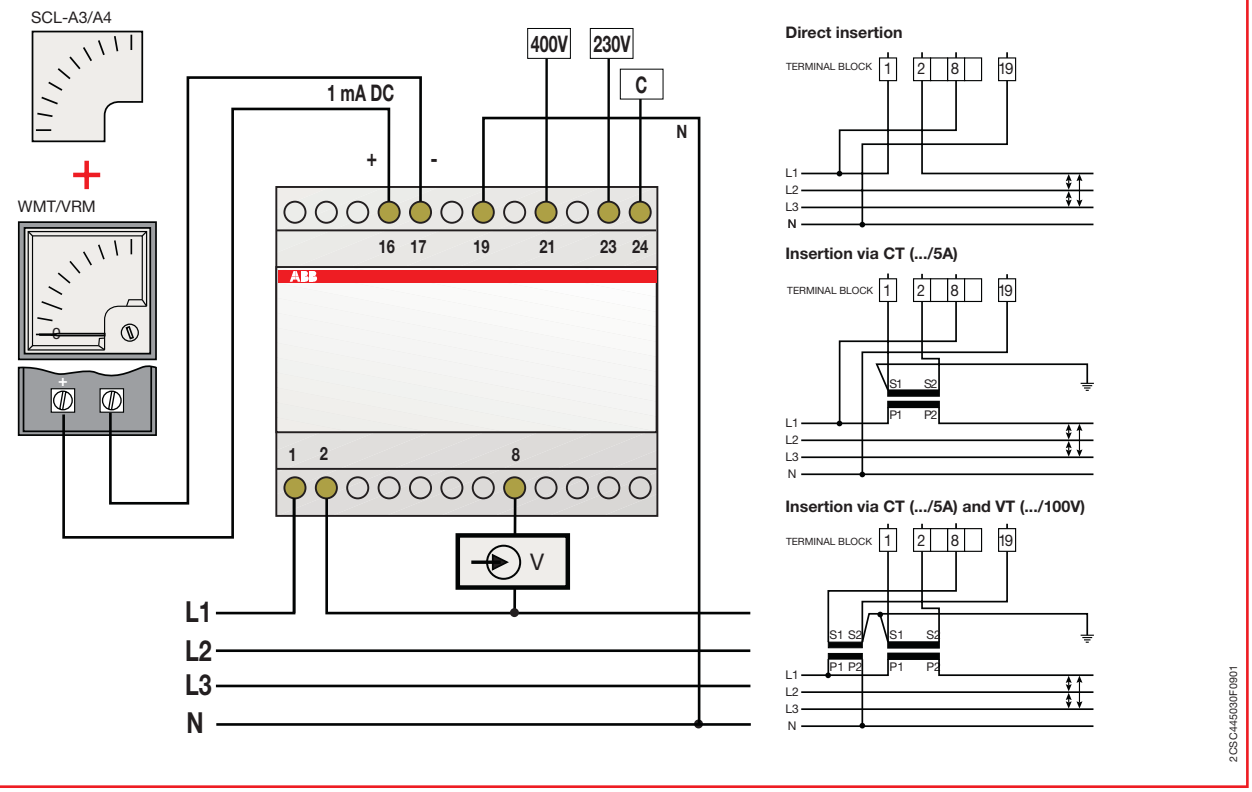
Product description and codes ..... page 5/1

Wattmeters and varmeters for alternating current - Three-phase line unbalanced without neutral (3 wires)

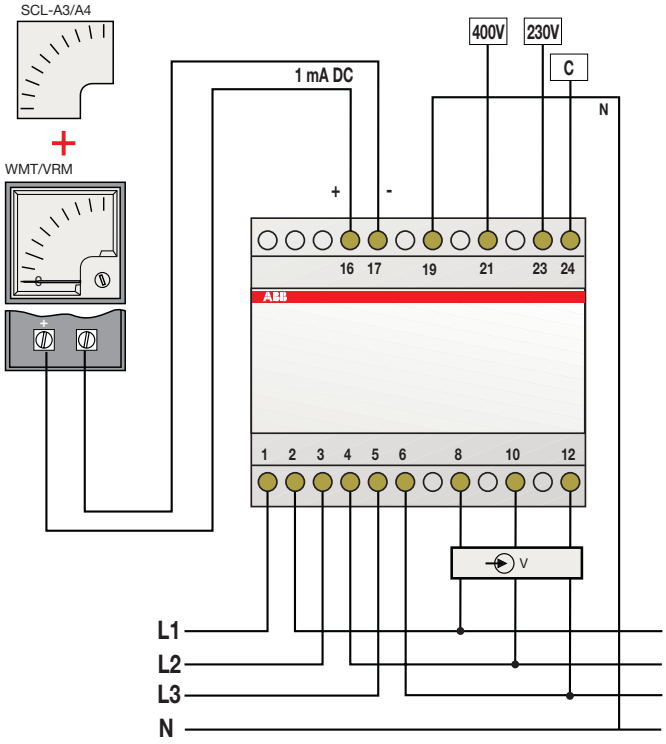


Wattmeters and varmeters for alternating current - Three-phase line, balanced with neutral (4 wires)

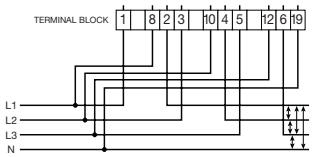


Product description and codes ..... page 5/1

Wattmeters and varmeters for alternating current - Three-phase line, unbalanced with neutral (4 wires)



Direct insertion



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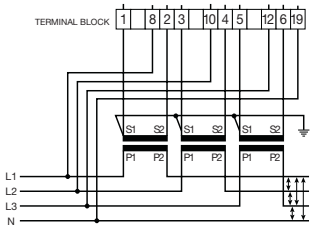
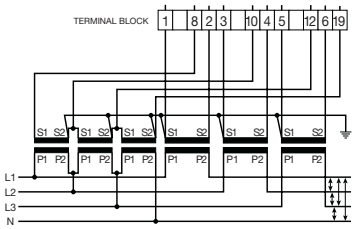


Insertion via CT (.../5A) and VT (.../100V)



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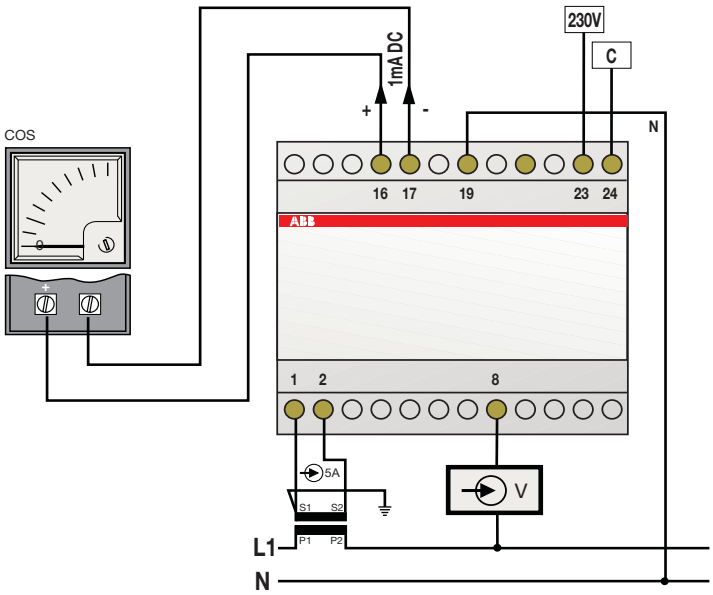
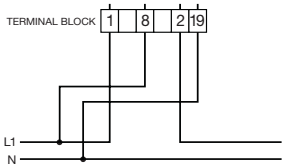
Power factor meters for alternating current - Single-phase line

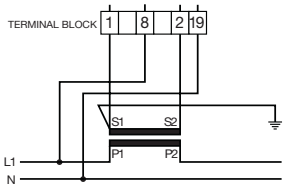


Signal converter switch
alongside minidip switches – view from rear of instrument with lever shifted to right, proportional to phase angle (output in degrees, for connection to analogue reader)

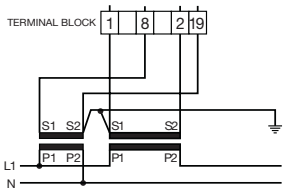
Direct insertion



Insertion via CT (.../5A)



Insertion via CT (.../5A) and VT (.../100V)



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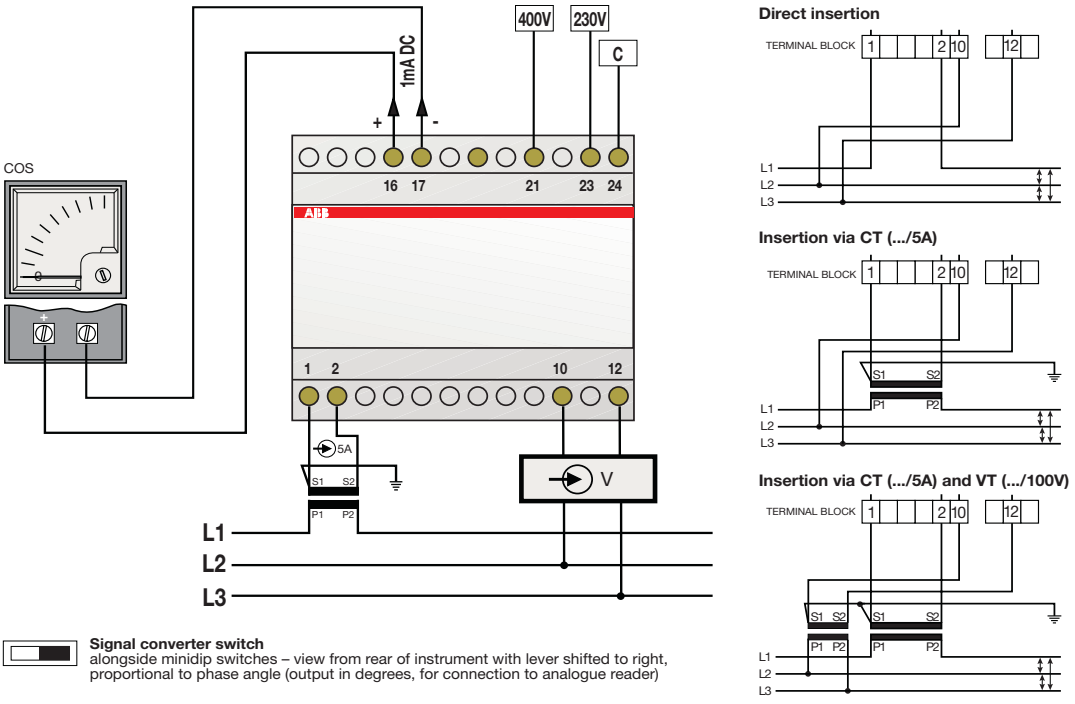
Product description and codes ..... page 5/1

Power factor meters for alternating current - Three-phase line, balanced without neutral (3 wires)



Signal converter switch
alongside minidip switches – view from rear of instrument with lever shifted to right, proportional to phase angle (output in degrees, for connection to analogue reader)

Direct insertion

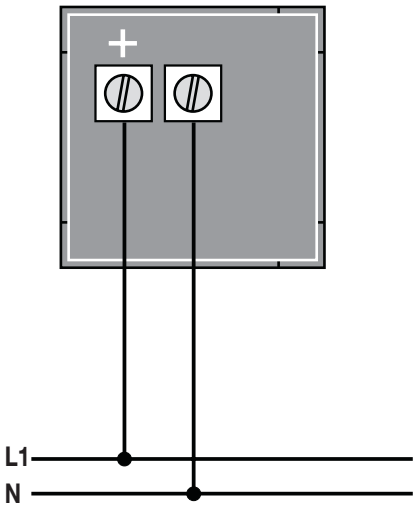
Insertion via CT (.../5A)

Insertion via CT (.../5A) and VT (.../100V)

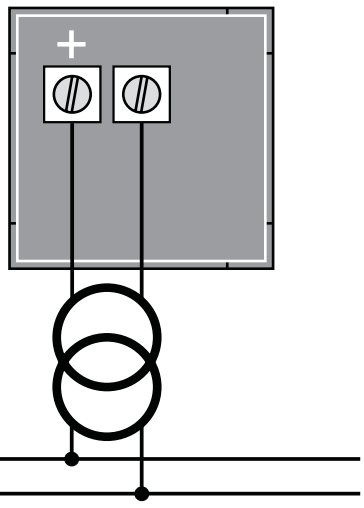
2CSC445016F0901

Frequency meters for alternating current - Single-phase line

Direct insertion



Insertion via VT



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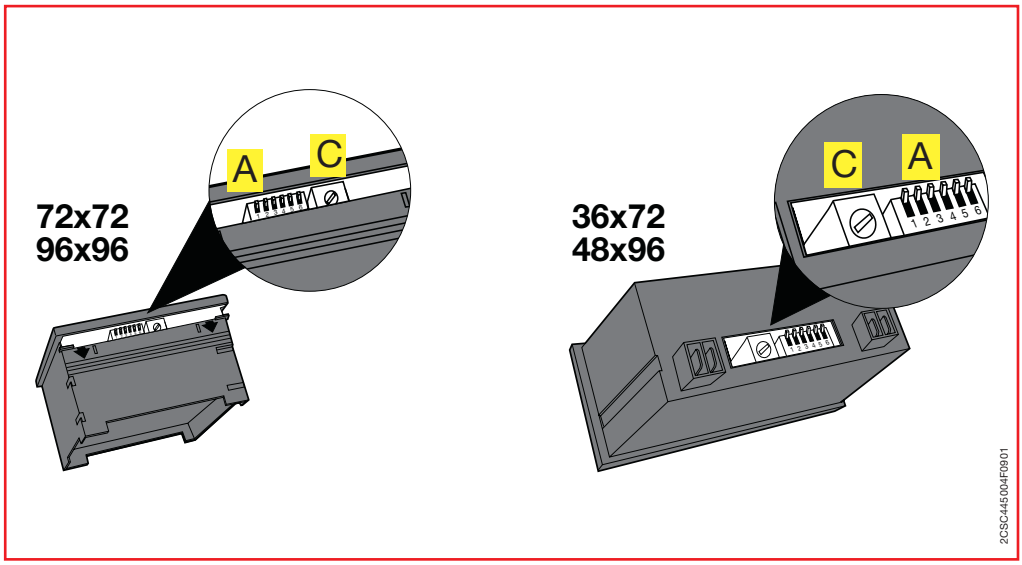
Product description and codes ..... page 5/1

Digital voltmeters and ammeters

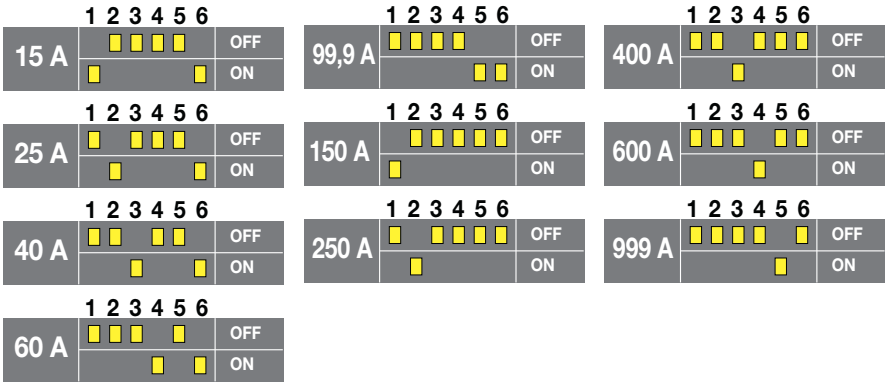
To change the end of scale for digital voltmeters and ammeters:

1. make sure that the instruments are disconnected
2. access the programming key (A)

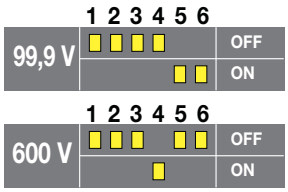


3. position the programming key switches as illustrated in the diagrams
4. to adjust the end of scale turn the potentiometer (C)

Ammeters



Voltmeters



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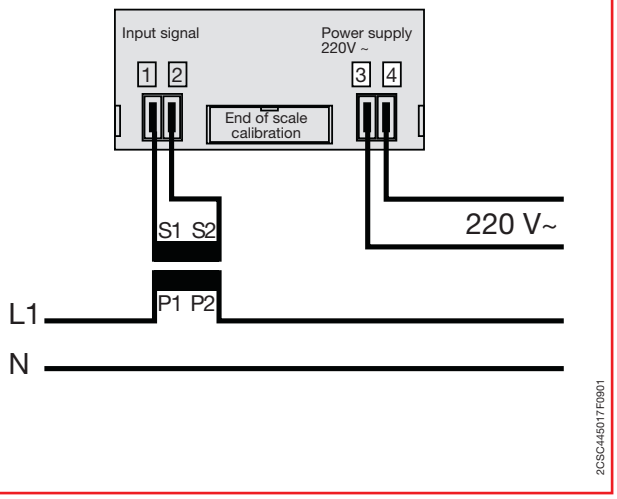
Note: the primary of the transformers and shunts must coincide with the specified capacity.

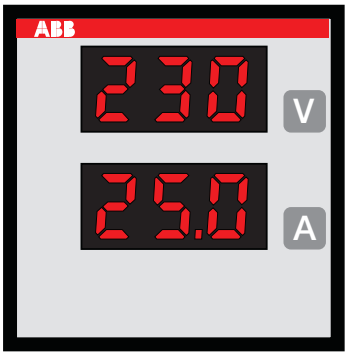
7

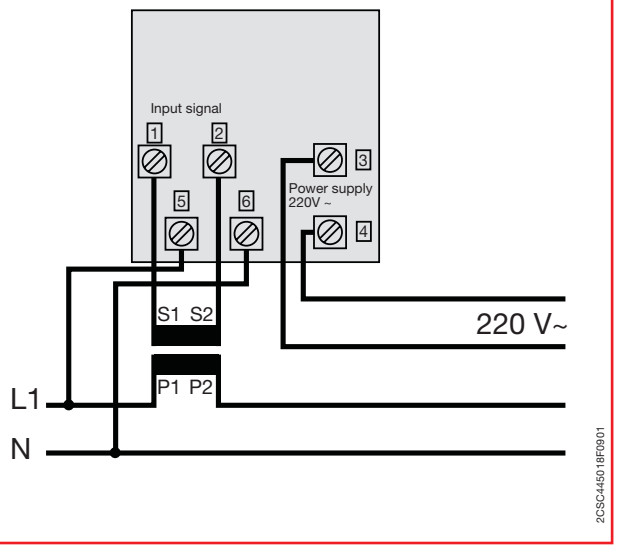
Product description and codes ..... page 5/11

Digital voltmeters and ammeters



Double digital voltmeters and ammeters





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Product description and codes ..... page 5/1

LED multimeters

Technical features

Aux supply voltage	V	230/440 a.c.
Rated frequency	Hz	50/60
Rated input voltages	V	20-500
Permanent overload		20%
Programmable current values for CT	A	0.02-10000
Insulation voltage	KV	2.5
Max relative humidity		90%
Degree of protection		IP20
Working temperature	°C	-10...+60
Storage temperature	°C	-25...+70
Dissipated power	W	<3
Min/max cross section of connection	mm^2	0.5-2.5
Weight	kg	0.4
Dimensions	DIN modules	6
Applicable standards		CEI-EN 61010-1

Measurable quantities

Quantity		Corresponding display
Voltages between phases	V, kV	VL1-VL2, VL2-VL3, VL3-VL1
Phase voltages	V, kV	VL1-N, VL2-N, VL3-N
Phase currents	A, kA	I1, I2, I3
Active phase power	W, kW	P1, P2, P3
Reactive phase power	VAr, kVAr	QL1, QL2, QL3
Apparent phase power	VA, kVA	S1, S2, S3
Phase power factors	ψ	PF1, PF2, PF3
Temperature	°C	from 0 to 60
Average value summation	Σ	VL-L, VL-N, I, P, Q
Peak value summation	Σ	I, P

A Pushbutton for viewing quantities of the three-phase system (ΣL) and peak values

B Pushbutton for selecting the quantity to show on the display F

C Pushbutton for selecting the quantity to show on the display G

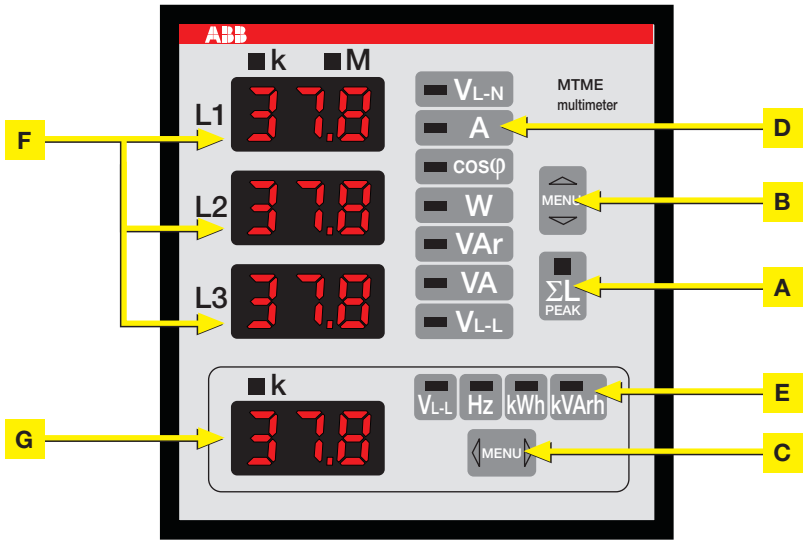
D LED bar for showing the quantity on the display F

E LED bar for showing the quantity on the display G

F Three displays for showing the quantities for each phase. LED k and M indicate the multiplication factor, if any (k ➔ x 1000, M ➔ x 1000000), or the choice of active/reactive energy meter function.

G Display showing the quantity indicated by the E LED bar. The value of the voltages refers to the three-phase system. The LED k indicates the reading in kilo (x 1000).

A+C By simultaneously pressing the two keys you can access the device programming mode, the menu for viewing the maximum values, the menu for canceling the peak values and the active/reactive energy meter functions.



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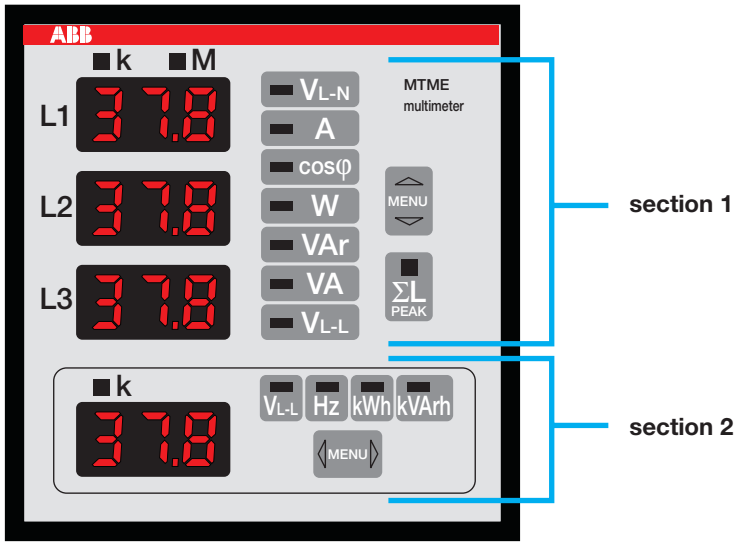
Product description and codes ..... page 5/1

MTM multimeters are divided into two sections: the first has three displays F, keys A and B and the LED bar D, the second (at the bottom) includes the display G, key C and the LED bar E.
With the exception of the peak values, maximum values and energy metering values, you can work on one zone without changing the data displayed on the other.



Viewing the measurements in section 1

The reading of the measurements is shown on the display F, where the three measurements for phases L1, L2 and L3 and the three between-phase voltages VL1-L2, VL2-L3, VL3-L1 for the quantity indicated by one of the LEDs D coming on.
By pressing button B you can select the quantities that can be displayed by the LED D. Pressing button A on the central display (L2) displays the quantity selected in a three-phase value (the average of the single phases for voltages, currents, power factors and the sum of the single phases for the power ratings) and the LED inside the button comes on. Pressing button A again returns you to the display of the phase quantities. The unit of measure can be expressed in kilo or Mega, as indicated by the corresponding LED. The capacitive power factor is represented by a minus sign "-" on the first digit on the display, e.g. the reading "-.95" indicates a capacitive power factor of 0.95 .

Viewing the measurements in section 2

By pressing button C you can select the quantities to view, indicated by the LED E; the voltage values refer to the three-phase system, the frequency of the channel L1 and the temperature of the internal sensor.

Viewing the energy meter counters

The recording of the active and reactive energy values, selected by button C, is shown on the display F (in this multimeter usage mode, the display G has no function) with a reading up to 9 digits (maximum reading = 99999999.9): To be more precise, the display L1 shows the first 3 digits, the display L2 shows the next 3 digits and the display L3 shows the last three digits; for example, if L1=000, L2=028, L3=53.2, then the reading equates to 2853.2 kWh.

Connection on the serial line RS485

Using the asynchronous RS485 serial line, you can connect several MTM multimeters together and to a computer, PLC and other compatible devices. The EIA485 interface enables a multi drop connection for connecting several instruments in the same network; the recommended maximum

Product description and codes ..... page 5/1

length for the connection on RS485 is 1200 m, or using low attenuation cables and signal amplifiers for longer distances. You can connect up to 32 units in the network, then it becomes necessary to insert a signal repeater to cope with a further 32 instruments; however, the larger the number of devices, the slower their reaction time will be.

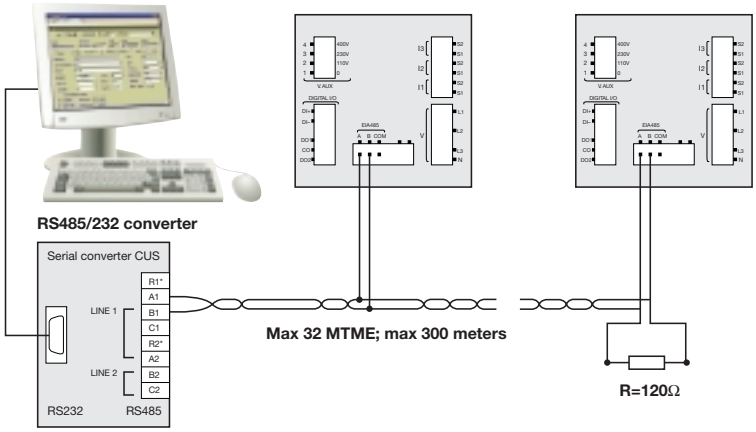
Communication parameters

BAUD RATE	9600
DATA BIT	8
STOP BIT	1
PARITÀ	None

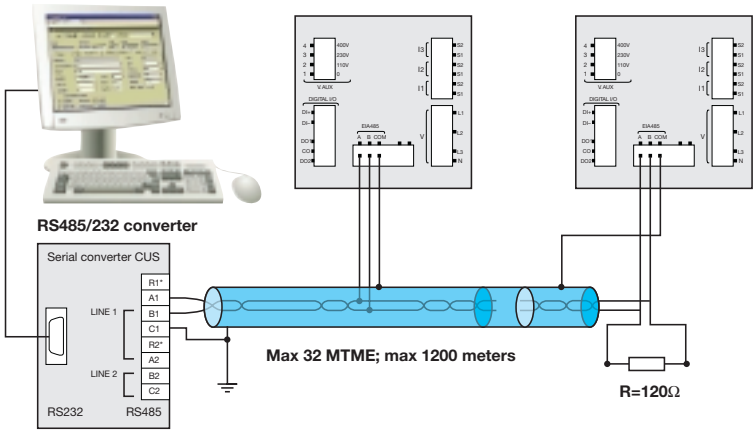
With the multimeter versions without an RS485 serial port, you need to insert a serial converter between the multimeter and the RS232 output of the connected devices. On lines longer than 500 m, it is also necessary to insert a terminal line resistance (Rt=100 Ohm - 120 Ohm) between the pair of twisted cables, placing it between the converter and the end of the network (the last instrument connected); if you use a shielded cable, the shield must be earthed.
To make the communication even more reliable, it is preferable to use twisted cables with a cross section of at least 0.36 mm^2 (22AWG) and with a capacity of less than 60 pF/m (e.g. BELDEN cable type EIA RS485- ref. 3105A)
In places where electrical energy transport cables are installed and in all electrically disturbed environments, it is advisable to use 100/120 Ohm-1/2 W resistors placed between the common for the 485 outputs and the shield conductor.

Connection to unshielded cable and shielded cable

Connection with unshielded cable



Connection with shielded cable



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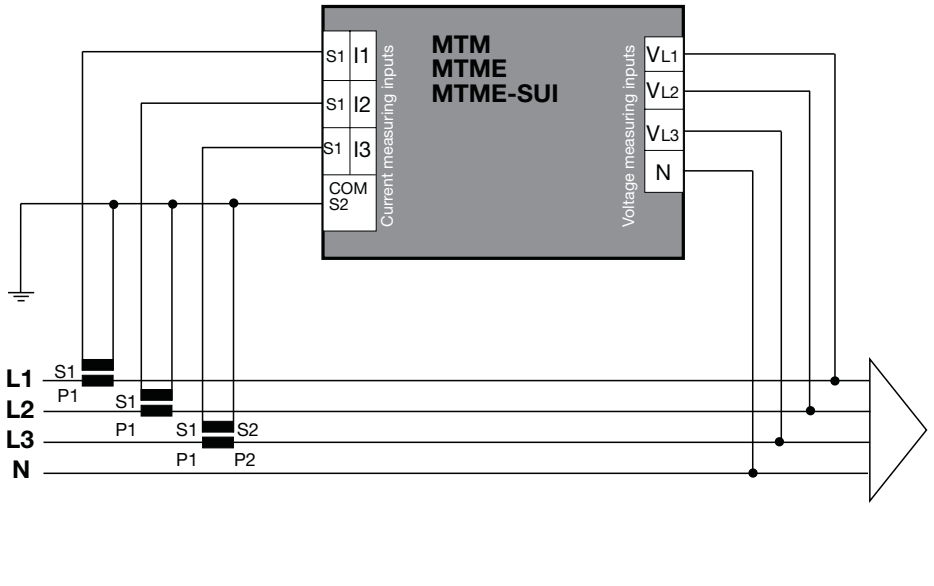
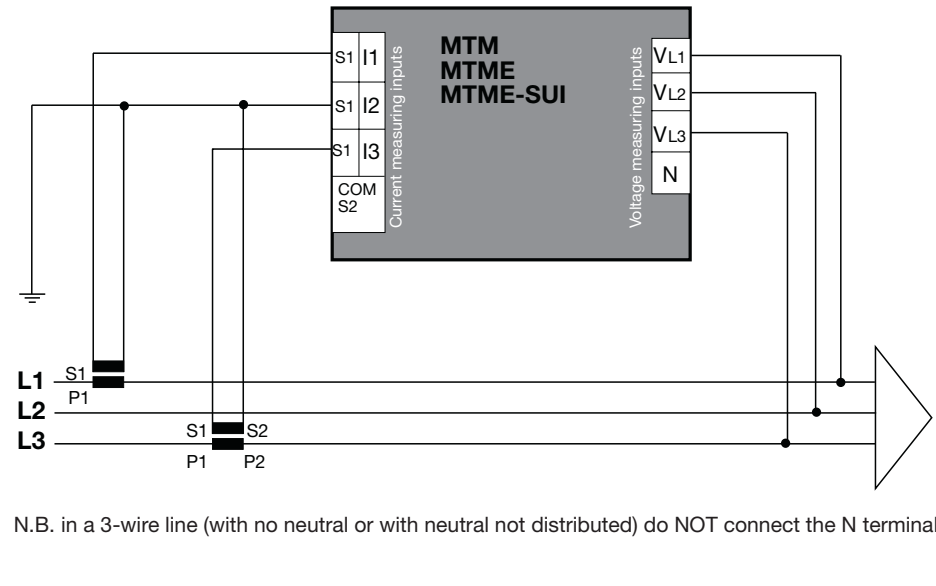
Product description and codes ..... page 5/1

Three-phase line (4 wires)



Three-phase line (3 wires): connection with two transformers



N.B. in a 3-wire line (with no neutral or with neutral not distributed) do NOT connect the N terminal

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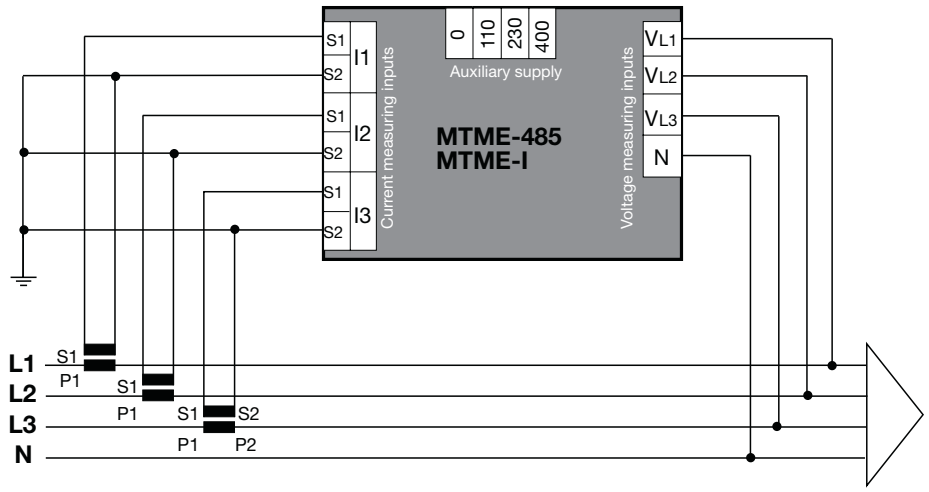
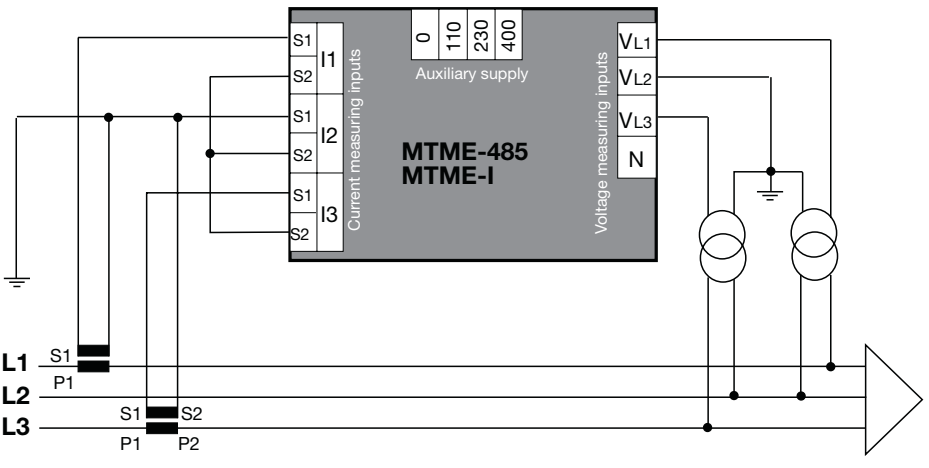
Product description and codes ..... page 5/1

Three-phase line (4 wires)



N.B. in a 3-wire line (with no neutral or with neutral not distributed) do NOT connect the N terminal

Three-phase line (3 wires): connection with two voltage transformers and 2 current transformers



N.B. where possible, it is advisable to use 3 CTs (especially for unbalanced loads)

Product description and codes ..... page 5/1

LCD multimeters

Technical features

Supply		
- Voltage	V rms	115 +15%/-10% 120 +10%/-15% 230 +15%/-10% 240 +10%/-15%
- Frequency	Hz	45…65
- Power absorbed	VA	< 6
- Fuse		T0.1A (to be installed)
Measurement accuracy		
- Voltages		± 0.25%, ± 0.3% F.S.
- Currents		± 0.25%, ± 0.3% F.S.
- Active power		± 0.5%, ± 0.1% F.S. (from cosφ = 0.3 ind. to cosφ = -0.3 cap.)
- Power factor (cosφ)		± 0.5%, ± 0.005 (from cosφ = 0.3 ind. to cosφ = -0.3 cap.)
- Frequency		± 0.2%, ± 0.1 Hz for 40.0…99.9 Hz ± 0.2%, ± 1 Hz for 100…500 Hz
Current inputs		
- Range		50 mA…5 A rms
- Overload		1.4 permanent
- Maximum dissipated power	MV	75
- Condition	A rms	5 with Imax
- Direction of current		automatic recognition and adaptation on start-up, independent for each phase
Voltage inputs		
- Range	V rms	5…500 (L-N)
- Max nondestructive	V rms	550
- Input impedance L-N	MΩ	> 2 between each phase and neutral
Max energy value per phase	MWh (MVArh)	4294,9 with KA and KV =1
Max three-phase energy value	MWh (MVArh)	4294,9 with KA and KV =1
Minimum energy displayable	Wh (VArh)	1 x KA x KV
Working temperature	°C	0…50
Relative humidity		90% max with no condensation at 40 °C
Storage temperature	°C	-10…+60

Measurable quantities

Equivalent three-phase voltage
Voltages between phases
Equivalent three-phase current
Three-phase power factor (with conventional sign)
Three-phase active power
Three-phase average active power and corresponding maximum value
Three-phase reactive power
Three-phase average apparent power and corresponding maximum value
Three-phase active energy
Three-phase reactive energy
ThdF
Power factor for each phase, with an indication of the type of phase displacement of the inductive or capacitive load (with conventional sign)
Active and reactive energy for each phase

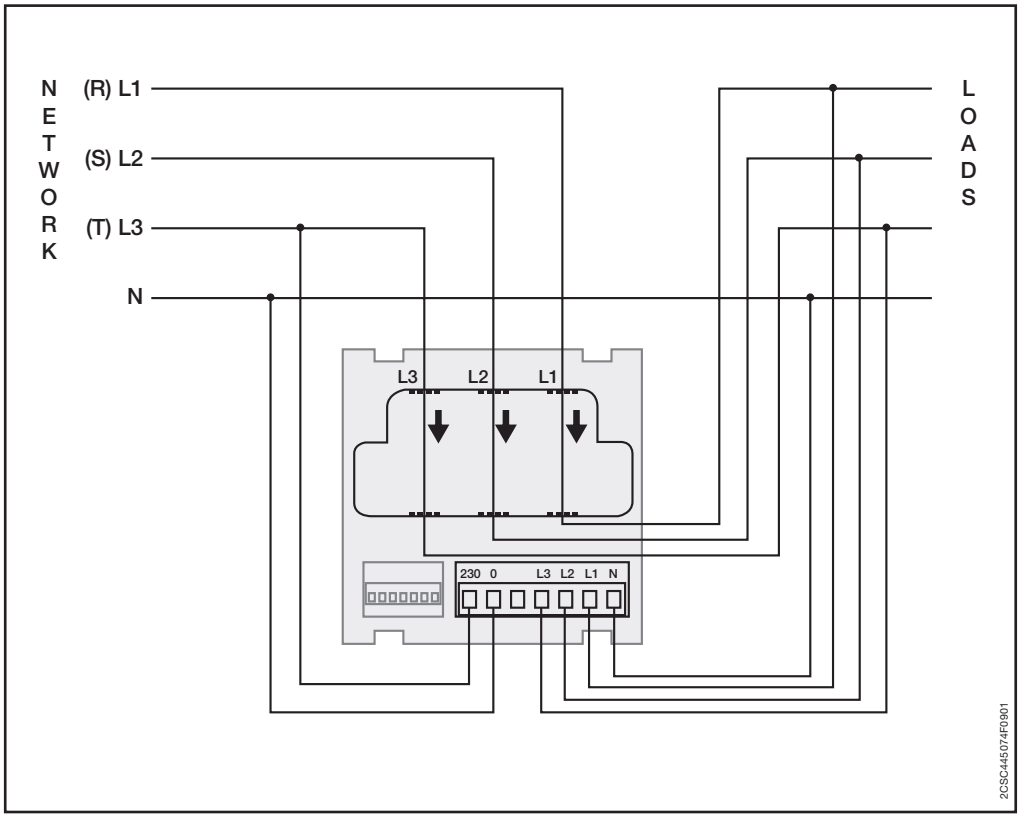
Calculation done twice every second.
All listed quantities are shown on the backlit liquid crystal display, provided on the MTME-485-LCD multimeter front panel; the values beyond the scale (> 5% of the end of scale) are indicated by dashes (- - -).

Connection on the serial line RS485

Using the asynchronous RS485 serial line, you can connect several MTME-485-LCD multimeters together and to a computer, PLC and other compatible devices.
The two pulsing outputs for energy metering can also be converted into single-threshold alarm outputs.

Product description and codes ..... page 5/1

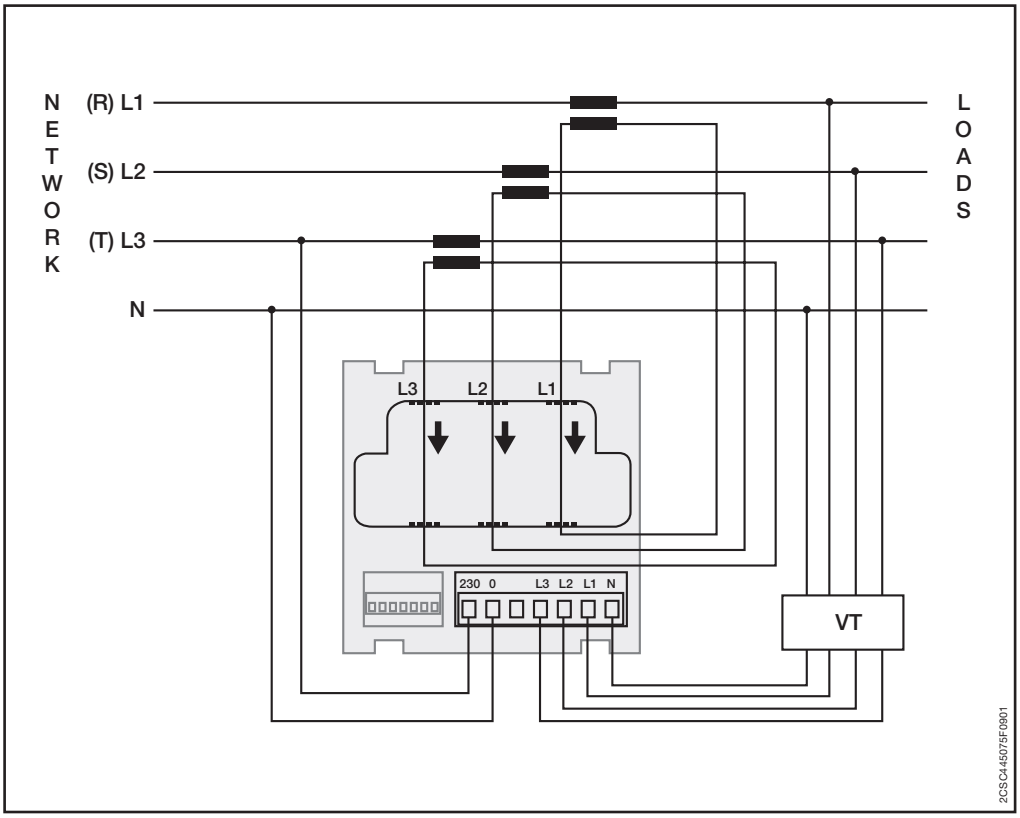
Direct connection in three-phase lines



Important!
Make sure that the ammeter and voltmeter terminals are connected to currents and voltages for the same line..
The right direction for the flow of current is determined automatically by the multimeter when it is switched on, by controlling the voltage and current of each phase, providing you comply with the right cycling of the voltages and currents when you connect the cables to the voltmeter terminals and wire the corresponding terminals in the ammeter bushings.

Product description and codes ..... page 5/1

Indirect connection with two CTs and two VTs in three-phase lines



Important!
Make sure that the ammeter and voltmeter terminals are connected to currents and voltages for the same line.
Using CT/VT, you need to set the right value for the transformation ratio on the relevant page on the setup menu, e.g. with a CT 250/5, you need to input the value of 50 for the transformation ratio or KA.
The right direction for the flow of current is determined automatically by the multimeter when it is switched on, by controlling the voltage and current of each phase, providing you comply with the right cycling of the voltages and currents when you connect the cables to the voltmeter terminals and wire the corresponding terminals in the ammeter bushings.

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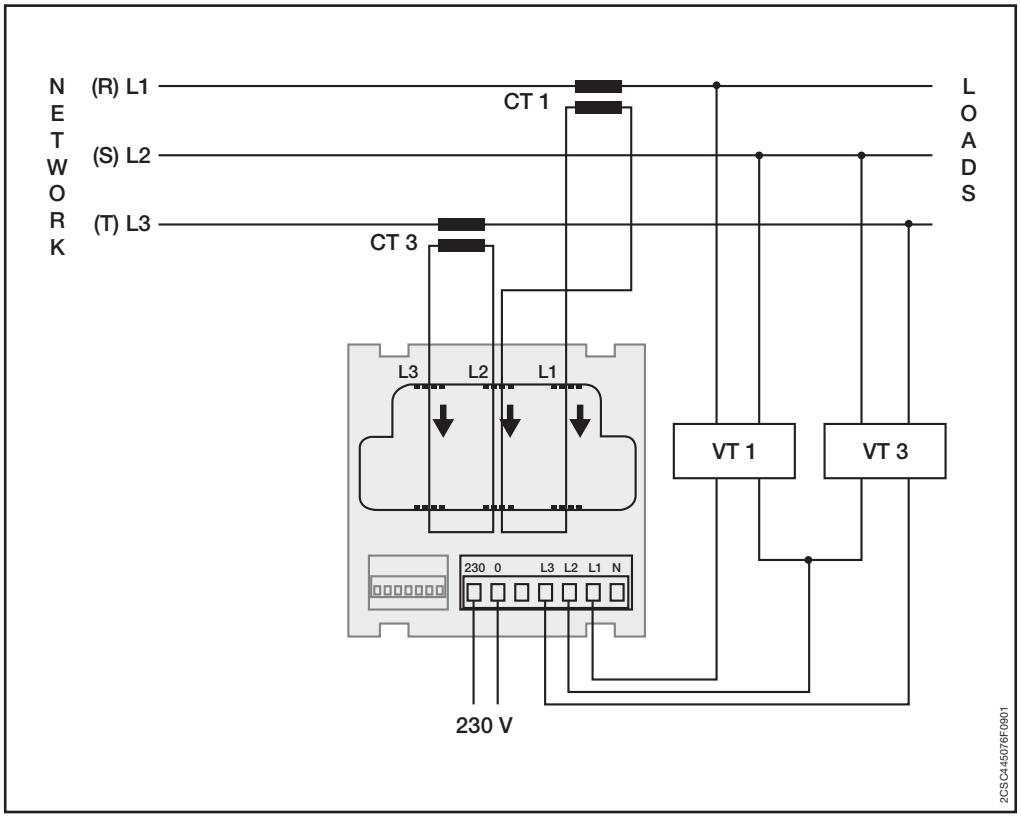
Product description and codes ..... page 5/1

Indirect connection with two CTs and two VTs in three-phase lines



Important!
Make sure that the ammeter and voltmeter terminals are connected to currents and voltages for the same line.
Using CT/VT, you need to set the right value for the transformation ratio on the relevant page on the setup menu, e.g. with a CT 250/5, you need to input the value of 50 for the transformation ratio or KA.

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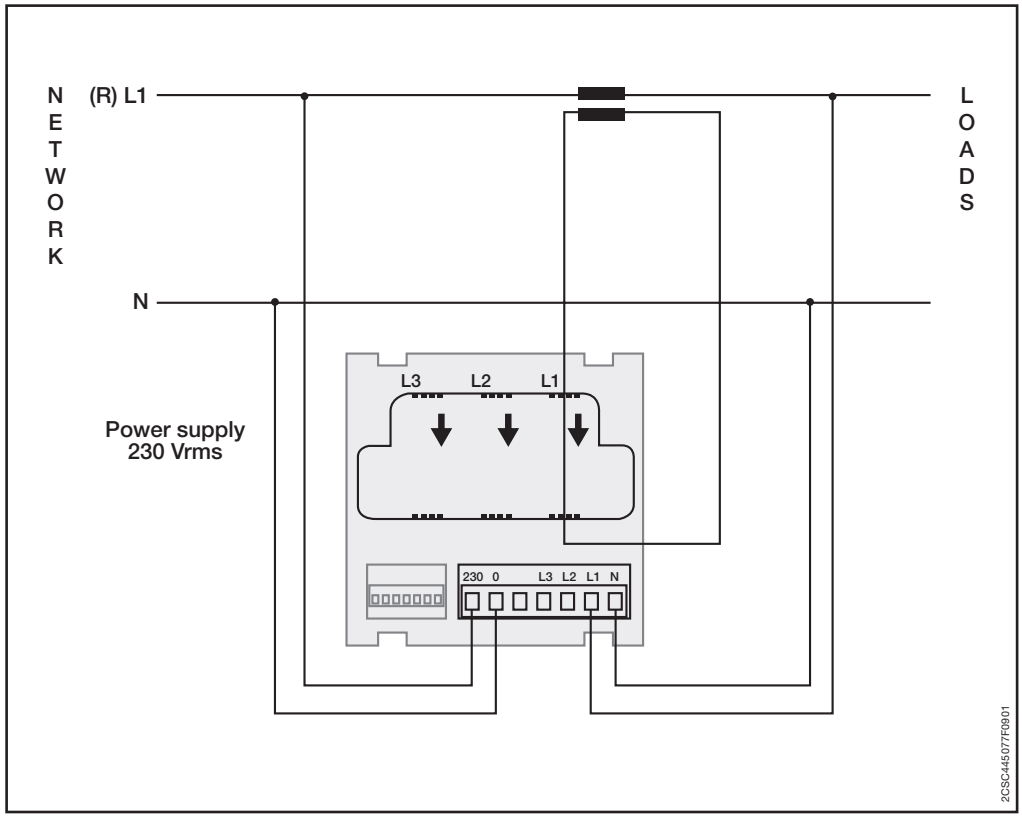
Product description and codes ..... page 5/1

Connection in single phase lines

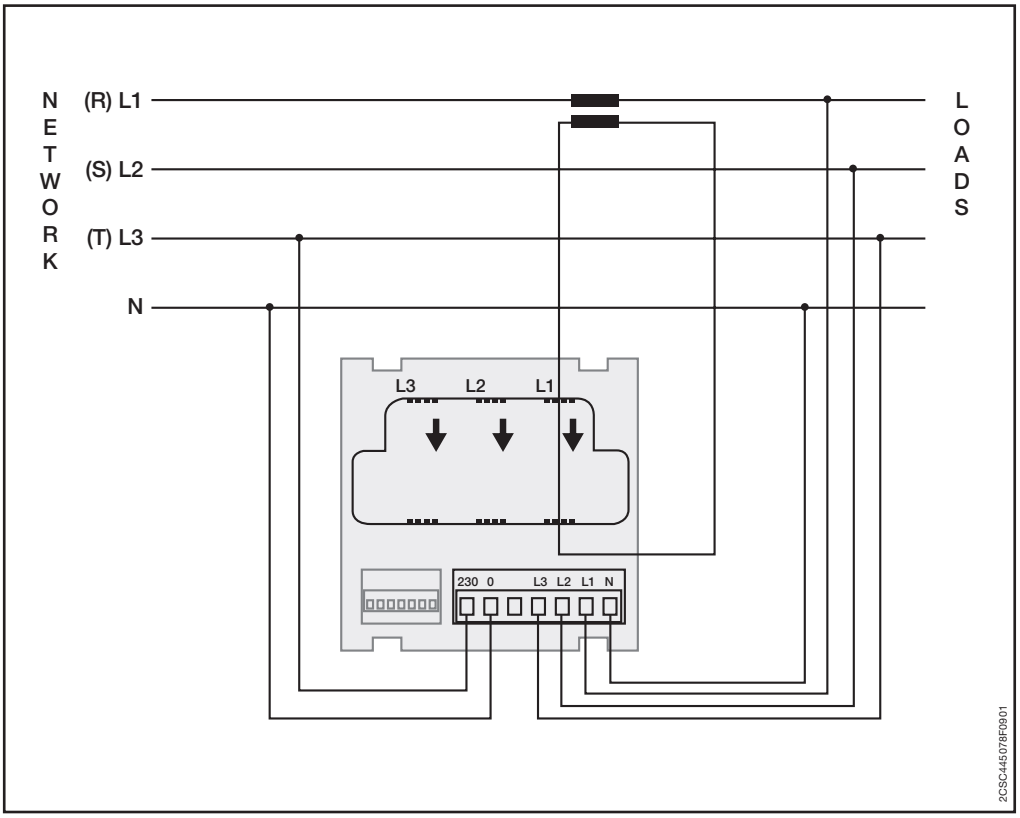


Caution!
During assembly, be careful to wire the ammeter cable in the bushing on the far right, associated with phase L1, and to connect the voltmeter cables to terminals L1 and N.
You must also set CFG = 13 on the page in the setup menu for preparing the instrument in order to operate in single-phase mode: the values of the quantities relating to phase L1 are shown on the display.

Important!
Using CT/VT, you need to set the right value for the transformation ratio on the relevant page on the setup menu, e.g. with a CT 250/5, you need to input the value of 50 for the transformation ratio or KA.

Product description and codes ..... page 5/1

Connection in balanced three-phase lines



Having made sure that all the three-phase loads are balanced, you can install a single CT on L1 avoiding the need to install any others on L2 and L3.
In the relevant page in the setup menu, you need to set CFG = 13 to prepare the instrument to operate in three-phase balanced mode so that the device works on the assumption that the currents of the phases without a CT are the same as those of phase L1 with the CT.

Important!
Using CT/VT, you need to set the right value for the transformation ratio on the relevant page on the setup menu, e.g. with a CT 250/5, you need to input the value of 50 for the transformation ratio or KA.

Product description and codes ..... page 5/1

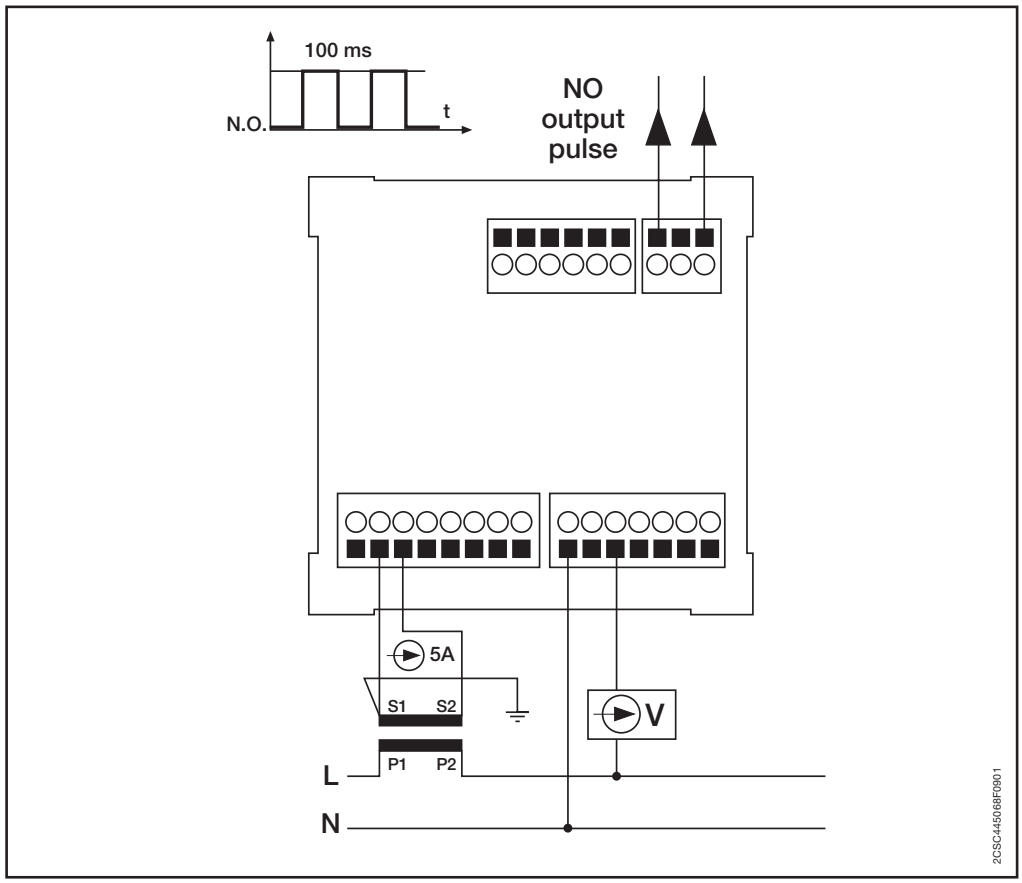
Energy meters

Technical features

Supply voltage	V	230/400 ± 10%
Rated current	A	5
Current transformer primaries		5-10-15-20-25-30-40-50-60-80 (x 10 and x 100) selectable (max 1500 A)
Maximum allowable current		5 times In x 0.5 sec.
Minimum start-up current		0.5% In
Frequency	Hz	40/60
Precision		Class 2 (from 5% In to In)
Numerator	kVARh	9999999 (7 whole numbers and decimals in segments)
Indicator light		Flashing red LED = consumption enabled
		(The flashing rate is proportional to consumption)[1]
		Red LED pushbutton = connection error, you need to check the measuring circuit connections
Energy reading		for all values of cosφ from 0.5 to 1
Programmable output pulses		x 1 = 1 flashing every 0.1 kWh, resolution 0.1 kWh
		x 10 = 1 flashing every 1 kWh, resolution 1 kWh
		x 100 = 1 flashing every 10 kWh, resolution 10 kWh
		normally open relay 0.5 A/100 V, pulse duration 100 ms
Working temperature	°C	0…+50
Storage temperature	°C	-25…+70
Degree of protection		IP20
Self-consumption	W	0.5
Standards		EN61036-1, edition 1992

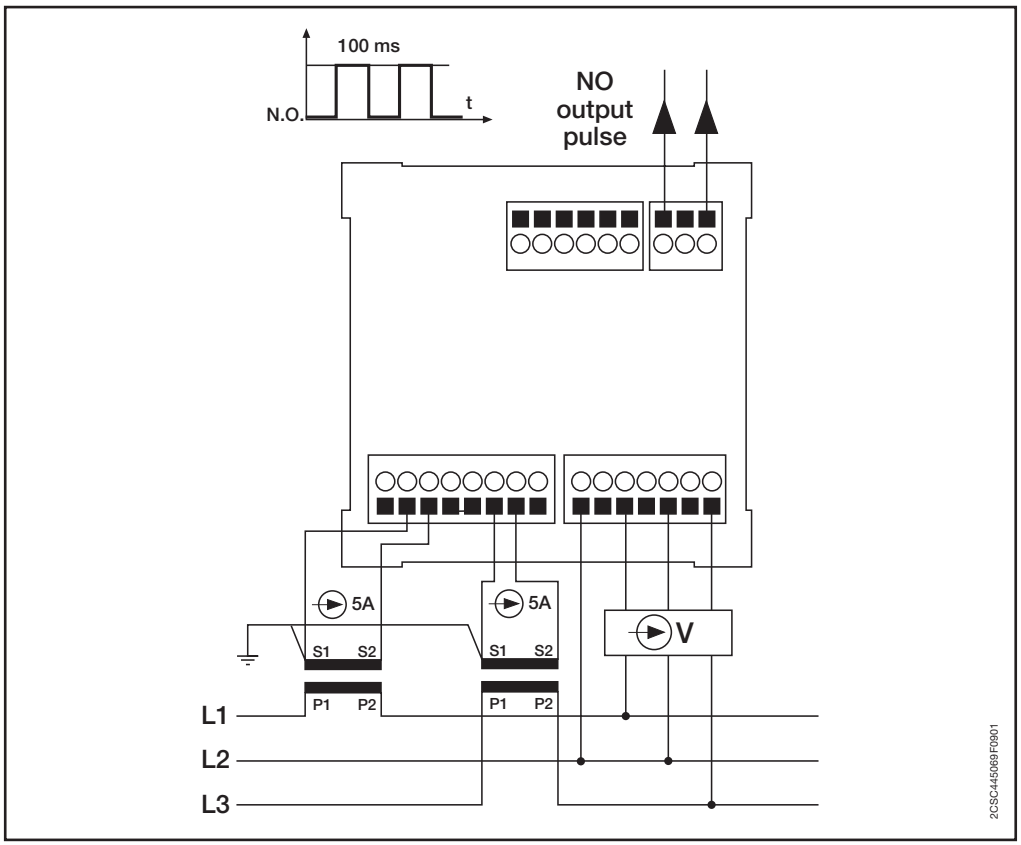
[1] Every pulse corresponds to 1 W so 100 pulses = 100 Watt, which corresponds to one step in the decimal figure.

Connection in single-phase lines

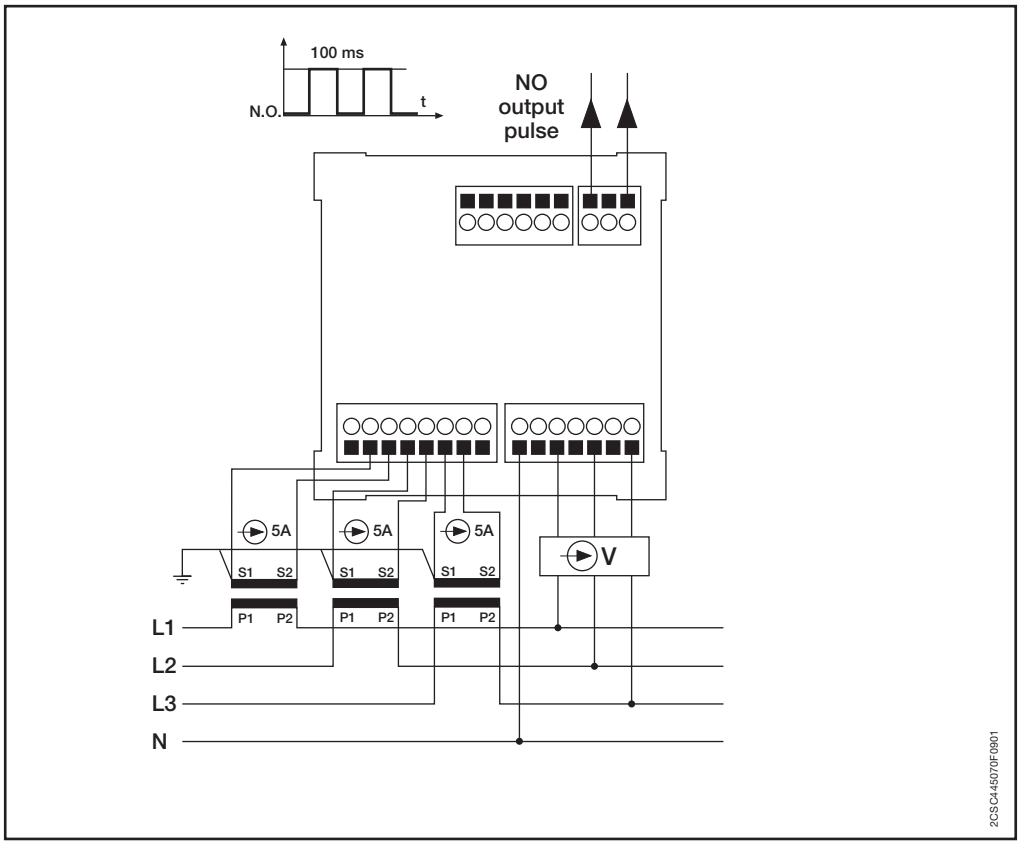


Product description and codes ..... page 5/1

Connectioni in three-phase lines, unbalanced, 3 wires without neutral (ARON)

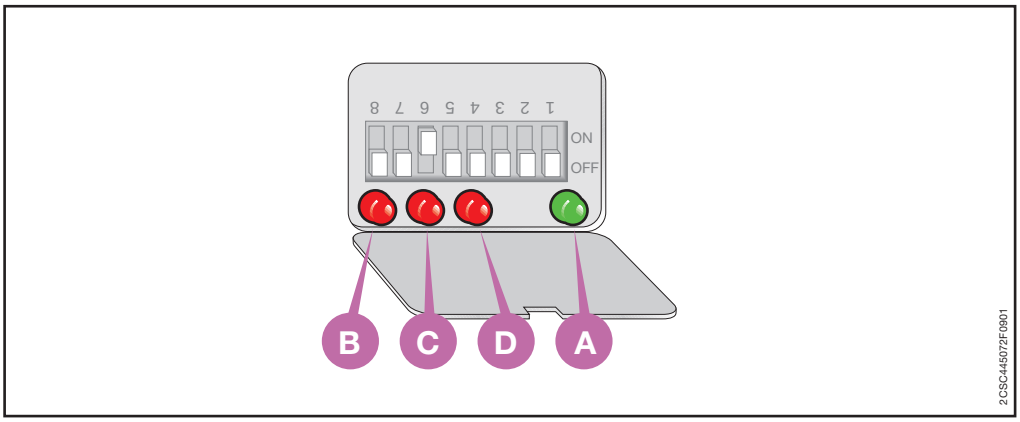


Connection in three-phase lines, unbalanced, 4 wires with neutral



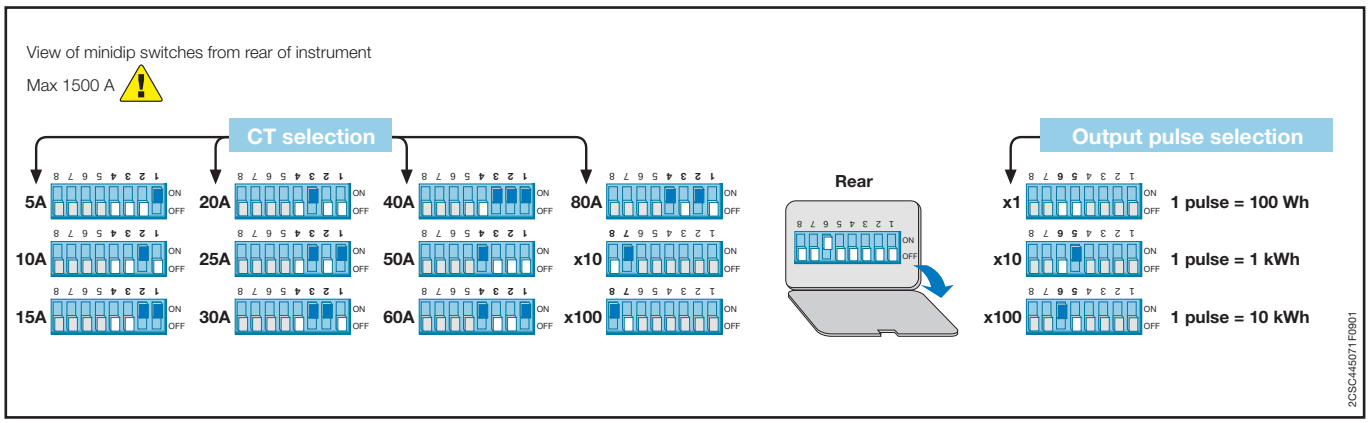
Product description and codes ..... page 5/1

Wiring control



To make the connections and run the autotest, choose the ratio for the CT and the output pulse by selecting the minidip switches provided, then connect the current and voltage circuits as illustrated in the diagram.

Output pulse and current transformer selection



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After restoring the power supply, wait approximately 3 seconds so that a current corresponding to the rated value is passing through the circuit; If the available current is too low (e.g. 1/10 of the rated current) you need to multiply the waiting time (3 sec. x 10 = 30 sec.) in order to perform the complete test.
Then make sure that the red LED on the front is flashing to confirm that the connection is right, that the green LED (A) comes on and that the red LED (B, C, D) corresponding to phases L1, L2 and L3 remain off.
When the red LED on the front pulses, alternately increasing and decreasing in brightness, this means you need to check the connection; if this is the case, moreover, the green LED (A) will be off and 1, 2 or all 3 red LEDs (B, C and D) will come on.
Among the anomalies that can occur:

- the current in a current measuring circuit circulates in the reverse direction due to a faulty connection of the CTs (the current must arrive through P1 and depart through P2);
- the connection between the three CTs and the corresponding phases has been inverted (e.g. CT on L1 instead of L3 etc.);
- there is no connection in the voltage measuring circuit for the phase corresponding to the red LED that has come on;
- the connection of the voltage measuring circuit has been inverted (e.g. L1 in lieu of L3 etc.).

Important!
To power the meter, the neutral and at least one of the three phases must be present.

Product description and codes ..... page 5/1

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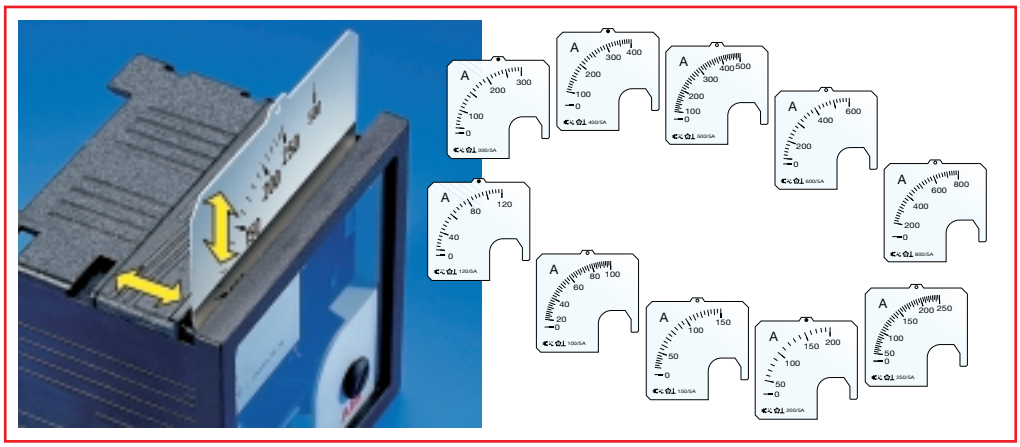
Interchangeable graduated scales

To replace the scales:

1. slide the top cover off the instrument;
2. access the slot provided;
3. insert or remove the scale, taking care to avoid scratching it and making sure that you push it completely inside the instrument;
4. put the cover back in place to close the slot.

This operation can be performed with ease even by unqualified staff.



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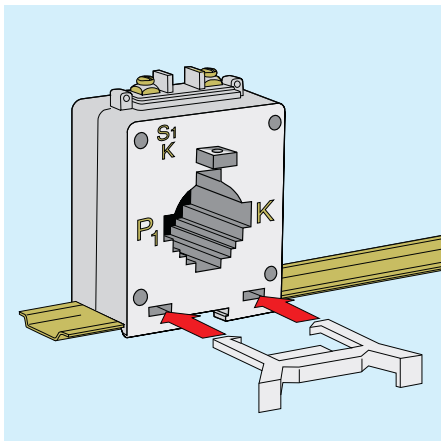
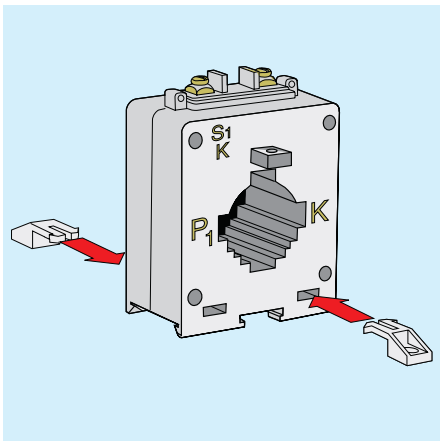
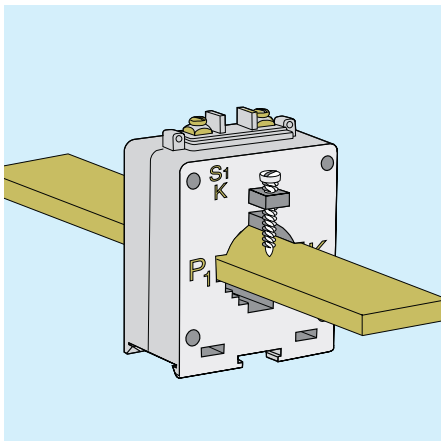
Current transformers

Assembly and connection methods







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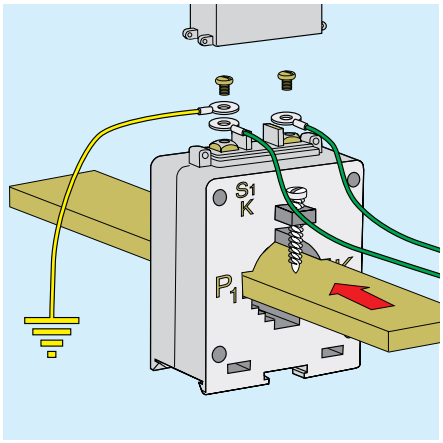

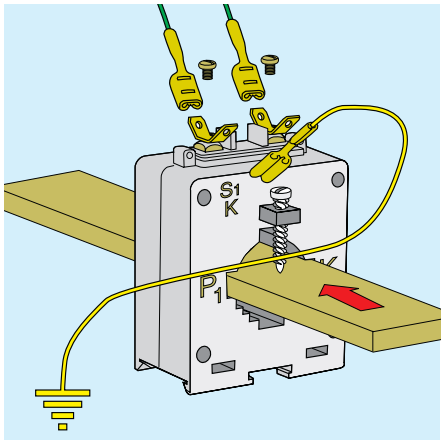

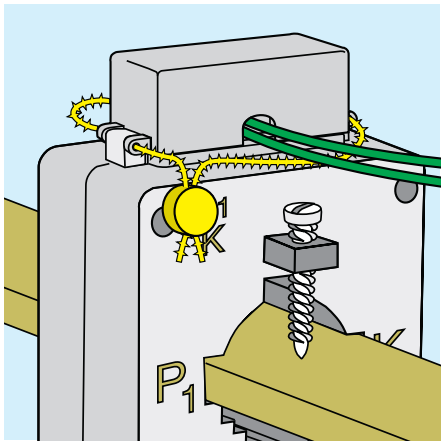

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Product description and codes ..... page 6/1

Charts for a rapid selection of the current transformers

Standard type

TYPE		CT-3			CT-4			CT-5			CT-6		CT-8		CT-12	CT-8V	CT-12V
VERSION		Through primary															
CENTRAL SECTION	HORIZ. BAR	20 x 10 30 x 10			25 x 20 30 x 25 - 40 x 10			30 x 30 40 x 25 - 50 x 20			50 x 20 60 x 20		60 x 30 80 x 30		80x50 100x50 125x50		
	CABLE	21			32			30			50		2 x 30		2 x 50	2 x 35	3 x 35
	VERT. BAR	20 x 10			20 x 25 30 x 20 40 x 10			30 x 10								min 80x30 ÷ max 3x80x5	min 100x10 ÷ max 4x125x5
Primary current (A)		Power (VA)			Power (VA)			Power (VA)			Power (VA)		Power (VA)		Power (VA)	Power (VA)	Power (VA)
		Class			Class			Class			Class		Class		Class	Class	Class
		0.5	1	3	0.5	1	0.2S	0.5	1	0.2S	0.2	0.5	0.5	0.2S	0.5	0.5	0.5
1 5 10 15 20 25 30																	
40				2													
50				2													
60				2													
80				3													
100			3			3											
150		3				3											
200		3			4				4								
250		5			6			3				5					
300		5			6			4				5	5				
400		6			10			6			5	6	6			6	
500		6			10			10		5	5	6	10		10	10	
600		6			10			10		5	5	10	10		10	10	
800					10			10			5	10	10	7,5	15	10	10
1000					10			10			5	20	10	10	20	10	10
1200								10				20	15	10	20	10	10
1500								20				30	20	10	20	10	10
2000												30	20	10	30	20	12
2500												30	20		40	20	15
3000													20		40		20
4000															50		20
DIMENSIONS	height	75			87			100			110		120		175	119	165
	width	58			75			85			105		125		180	109	109
	depth	44			44			45			61		61.5		68.5	41	41

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Product description and codes ..... page 6/1

Compact type

TYPE		CT-M1			CT-M3		CT-M4		CT-M5		CT-M6
VERSION		Through primary									
CENTRAL SECTION	HORIZ. BAR				20 x 12 25 x 15 30 x 10		25 x 25 30 x 20 40 x 10		50 x 12		50x23 63x20
	CAVO	21			23		30				2 x 22
	VERT. BAR						25 x 25 30 x 20 40 x 10				
Primary current (A)		Power (VA)			Power (VA)		Power (VA)		Power (VA)		Power (VA)
		Class 0.5	1	3	Class 0.5	1	Class 0.5	1	Class 0.5	1	Class 0.5
40				2							
50				2							
60				2							
75											
80				3							
100			3			2		3			
120											
125											
150			4			3		3			
200		3				3	4				
250		3			2		6			3	
300					2		6		4		5
400					3		10		4		6
500							10		6		6
600							10		6		6
800									10		10
1000									10		10
1200											15
1250											
1500											20
2000											
2500											
3000											
4000											
DIMENSIONS	height	65			65		81.5		81.5		106
	width	52			52		70		70		101
	depth	27			27		44		44		44
min distance between centers											

Miniaturized type

TYPE		CT-SM1			CT-SM2		CT-SM3			CT-SM4	CT-SM5		CT-SM6	CT-SM7		CT-SM8		CT-SM9
VERSION		Through primary																
CENTRAL SECTION	HORIZ. BAR				15 x 5						min 25x5 max 25x6.5			min 29x5 max 2x32x5		min 30x5 max 2x63x5		
	CAVO	13			11		18			25			32					
	VERT. BAR										15 x 5 20 x 5			32 x 5		50 x 5 2 x 50 x 5 2 x 50 x 10 3 x 50 x 5		2x63x 5 3x63x 5
Primary current (A)		Power (VA)			Power (VA)		Power (VA)			Power (VA)	Power (VA)		Power (VA)	Power (VA)		Power (VA)		Power (VA)
		Class 1		3	Class 1	3	Class 0.5	1	3	Class 0.5	Class 0.5	1	Class 0.5	Class 0.5	1	Class 0.5	1	Class 0.5
40				2					3									
50				2					4									
60				3		3			5									
75				3		3			5									
80				3		3			5									
100		3			3			5				4						
120		5			5			5				5						
125		5			5			5				5						
150		5			5		5					5						
200							5			5		5			5		5	
250							10			6		5			5		5	
300							10			6	5		5	5		5		
400										10			6	6		5		5
500													10	10		10		10
600													10	10		10		10
800																10		10
1000																15		15
1200																		
1250																15		15
1500																15		
2000																		
2500																		
3000																		
4000																		
DIMENSIONS	height	58			58		90.5			90.5	72		90.5	90.5		116		119
	width	34.5			34.5		56			56	44		56	56		87		70
	depth	53.3			53.3		53.3			53.3	53.3		53.3	53.3		53.3		53.3
min distance between centers		27			27		45			45	35		45	45 - 35		70 - 50		45

Product description and codes ..... page 6/1

Technical features

Standard secondary current	A	5 (other secondaries available on request)
Max service voltage for the insulation [1]	kV	1.2 (0.72 for compact type)
Test voltage [2]	kV	6 at 50 Hz/1 min (3 for compact type)
Rated short-circuit thermal current I_{ter} [3]	IpN	40 for 1 sec.
Rated short-circuit dynamic current I_{din} [4]	I_{ter}	2.5 for 1 sec.
Permanent overload	IpN	1.2
Saturation [5]	Fs	≤ 2 to ≤ 10 depending on type and capacity
Frequency	Hz	50/60
Insulation in air		Class E
Terminals [6]		- primary = P1, P2 (K-L)
		- secondary = s1, s2 (k-l)
		- P1 (K) = primary winding input
		- P2 (L) = primary winding output
		- s1 (k) = secondary winding input
		- s2 (l) = secondary winding output
		- with double ratio on secondary s1-s2 = lower ratio, s1-s3 = higher ratio
Housing		resin ABS – V0
Degree of protection		IP30
Working temperature	°C	-20…+50
Max temperature on bars	°C	+70
Storage temperature	°C	-40…+80
Relative humidity		80%

1 Max voltage (rms value) that the transformer can withstand.
2 Voltage at industrial frequency for insulation purposes that the transformer can withstand for 1 minute between the primary and secondary.
3 Max primary current (rms value) that the transformer can withstand for 1 sec. with the secondary short-circuited without causing overload damage.
4 Max primary current (peak value) that the transformer can withstand for 1 sec. with the secondary short-circuited withoutcausing damage due to electromagnetic strain.
5 Ratio between the primary current value that saturates the nucleus and the rated primary current value: the protection of the transformer is higher the lower the Fs.
6 Brass terminals CuZn37. Screws M4x6 with twisting strength 1.9 Nm, tensile strength 440 N/mm^2 and elasticity limit 340 N/mm^2.
During installation, make sure of the right input (P1-K) and output (P2-L) direction of the primary cable.
In the versions with the primary and secondary on the terminals, pay attention to avoid inverting the connection of the primary with the secondary.
In the event of disconnecting the measuring devices from the transformer while the system is connected, short-circuit the two transformer terminals.
It is advisable to earth the transformers.

Product description and codes ..... page 6/1

Self-consumption of the copper cables between the instrument and the transformer

For 5A secondary

Cable cross-section mm²	Power (2-pole cable) VA					
	Distance					
	1 m	2 m	4 m	6 m	8 m	10 m
1,5	0,58	1,15	2,31	3,46	4,62	5,77
2,5	0,36	0,71	1,43	2,14	2,86	3,57
4	0,22	0,45	0,89	1,34	1,79	2,24
6	0,15	0,30	0,60	1,89	1,19	1,49
10	0,09	0,18	0,36	0,54	0,71	0,89

For 1A secondary

Cable cross-section mm²	Power (2-pole cable) VA					
	Distance					
	10 m	20 m	40 m	60 m	80 m	100 m
1	0,36	0,71	1,43	2,14	2,85	3,57
1,5	0,23	0,46	0,92	1,39	1,85	2,31
2,5	0,14	0,29	0,57	0,86	1,14	1,43
4	0,09	0,18	0,36	0,54	0,71	0,89
6	0,06	0,12	0,24	0,36	0,48	0,60
10	0,04	0,07	0,14	0,21	0,29	0,36

Max allowable load (A) on copper bars in accordance with DIN 43670 and 43671

Bar size mm	Rated current (In) A		
	1 bar	2 bars	3 bars
20x5	325	560	
20x10	427	925	1180
30x5	379	672	896
30x10	573	1060	1480
40x5	482	836	1090
40x10	715	1290	1770
50x10	852	1510	2040
60x10	985	1720	2300
80x10	1240	2110	2790
100x10	1490	2480	3260

Class	% ratio error limit			
	0.05 In	0.2 In	In	1.2 In
0.5	± 1	± 0.75	± 0.5	± 0.5
1	± 2	± 1.5	± 1	± 1
3	from 0.5 In to 1.2 In = ± 3			

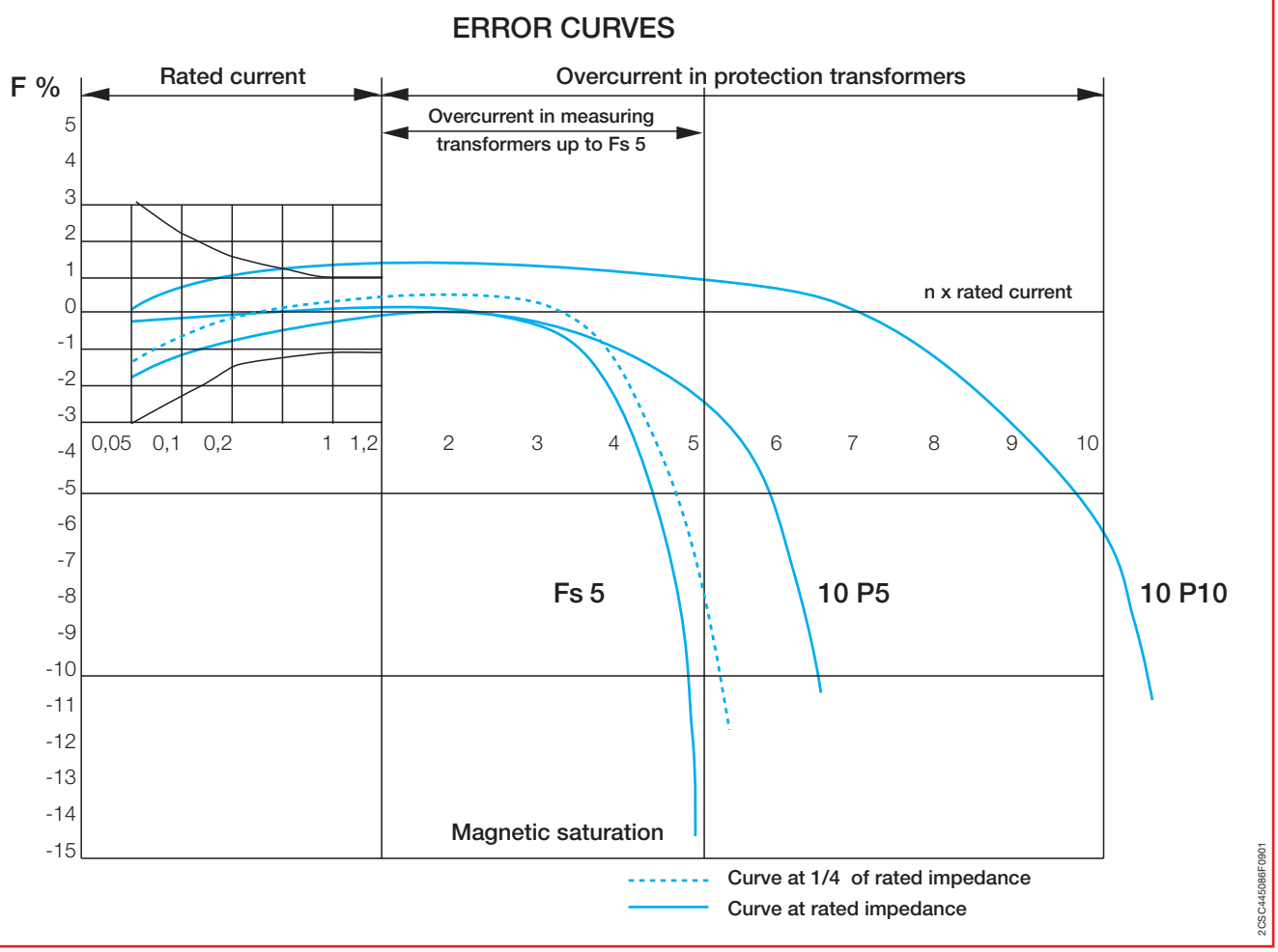
Class	% ratio error limit			
	0.05 In	0.2 In	In	1.2 In
0.5	± 1.8	± 1.35	± 0.9	± 0.9
1	± 3.6	± 2.7	± 1.8	± 1.8
3	no special requirements			

Precision class

- Class 0.5 is required for energy meters.
- Class 1 is required for measurements and for unofficial energy metering (in-house measurements).
- Class 3 is required for relays and protection devices.

In accordance with the IEC 185, VDE-0414 and UNIE 21028 standards, the current and angle error limits must be as given in the table.

Product description and codes ..... page 6/1



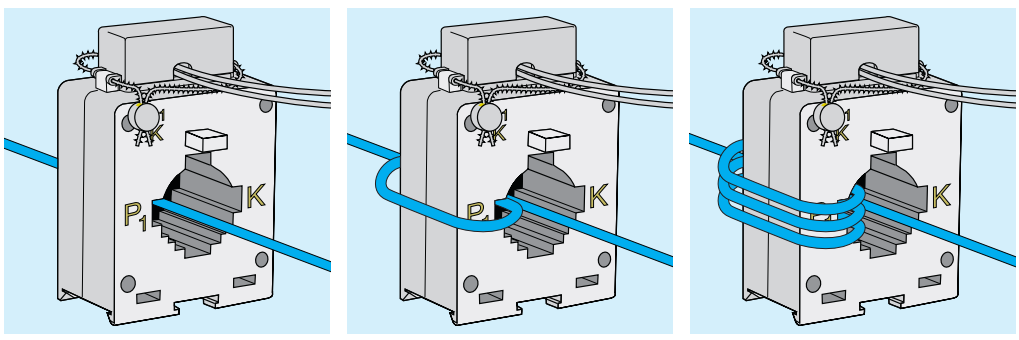
Calculating the cable diameter

To determine the diameter of the cable, e.g. 95 mm^2, you need to apply the following formula:

- cross-section = r x r x 3.14 i.e. r^2 x 3.14 so r = $\sqrt{}$ cross-section / 3.14 r = $\sqrt{}$ 95 / 3.14 = 30.25 = 5.5 mm, so the radius is 5.5 mm
- diameter = r + r, so the diameter is 5.5 + 5.5 mm = 11 mm (diameter of the copper, to which you must add the thickness of the insulation, total ø approximately 20 mm).

By passing the cable inside the current transformer several times, you obtain with each passage a halving of the primary current, while the performance and class remain the same.

Example

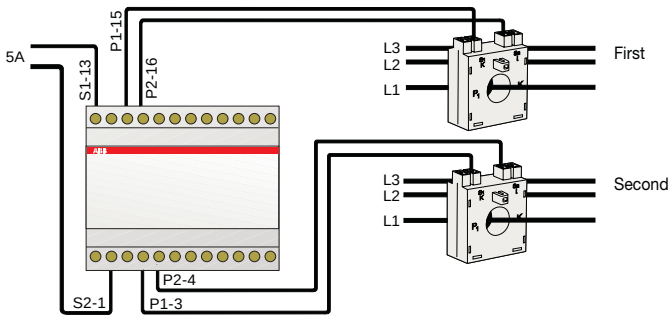


Product description and codes ..... page 6/1

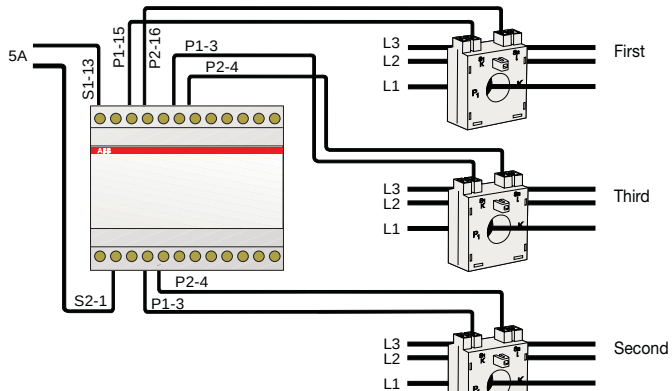
Summing current transformers

The examples shown in the drawings refer to a connection to an ammeter phase.
To make the connection to two systems (ARON) you need to use two summing transformers and two current transformers (for phases L1 and L3, respectively).
To make the connection to three systems, you need to use three summing transformers and three current transformers (for phases L1, L2 and L3, respectively).

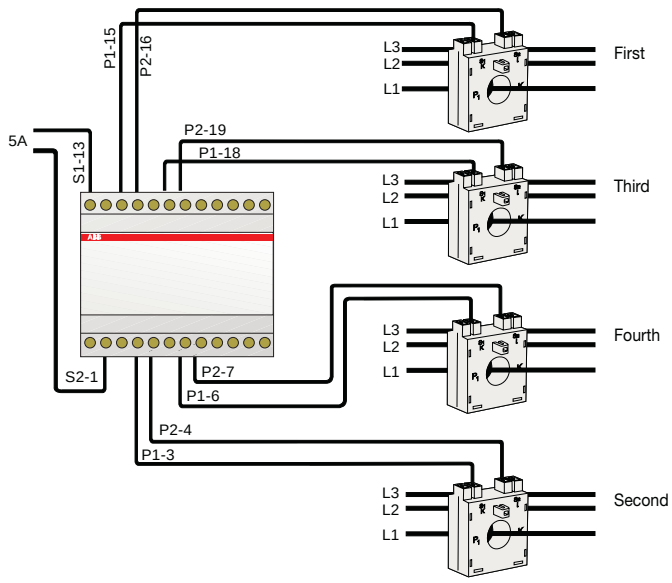
Connection diagram CTS-5-5



Connection diagram CTS-5-5-5



Connection diagram CTS-5-5-5-5



Product description and codes ..... page 6/1

Voltage transformers

Technical features

Max reference voltage for the insulation	kV	0.72
Test voltage	KV	3/50 Hz for 1 minute
Permanent overload		1.2 Vn
Material		housing made of resin insulated ABS
		standard sealable terminal covers

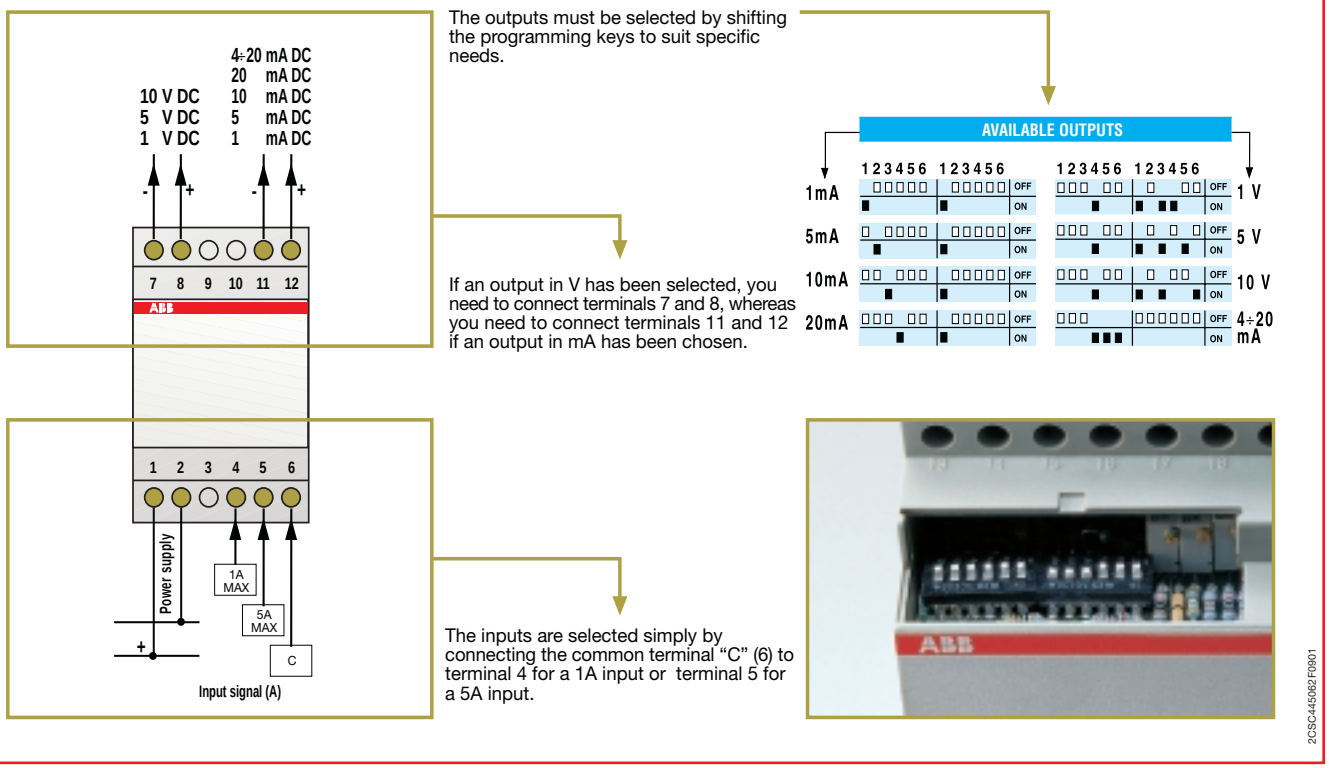
Product description and codes ..... page 6/1

Current and voltage converters

Technical features

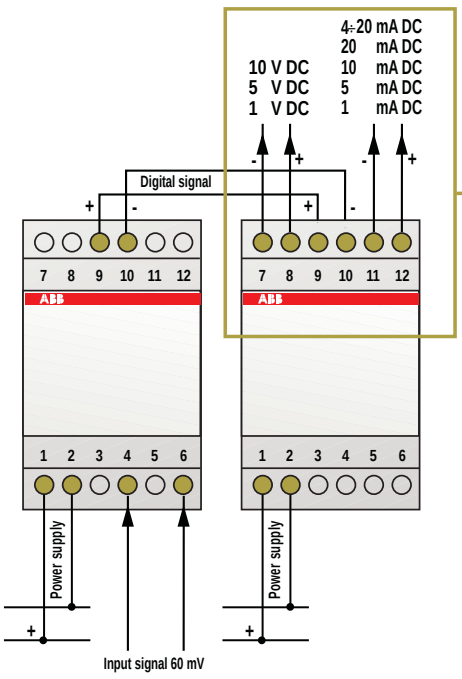
		Current converters in a.c./d.c.	Voltage converters in a.c./d.c.
Aux supply (separate)	V	230 a.c.	230 a.c.
Rated input values		1-5 A	120-300-500 V
Rated output values	V d.c.	1-5-10	1-5-10
	mA d.c.	1-5-10-4…20	1-5-10-4…20
Resistive load	mΩ	700	700
Measuring range		0±In	0±Un
Precision class		0.5	0.5
Overload			
Permanent		2 In	2 Un
Instantaneous		10 In/1 s	10 Un/1 s
Frequency	Hz	50/60	50/60
Reaction time	ms	≤ 300	≤ 300
Residual alternating current		≤ 1%	≤ 1%
Self-consumption		current ≤ 0,8 VA	voltage ≤ 1 VA
		aux supply ≤ 4 VA	aux supply ≤ 4 VA
Galvanic separation between inputs/outputs			
Insulation inputs/outputs, aux supply		2 kV/50 Hz -1 min	2 kV/50 Hz -1 min
Insulation circuits/earth		4 kV/50 Hz -1 min	4 kV/50 Hz -1 min
Working temperature	°C	0 … +55	0 … +55
Dimensions		3-6 modules DIN	3-6 modules DIN
Weight	kg	0.30	0.30

Current converters in a.c.



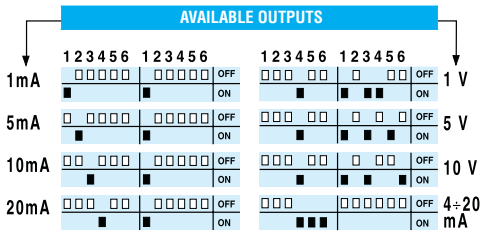
Product description and codes ..... page 6/1

Current converters in d.c.



The outputs must be selected by shifting the programming keys to suit specific needs.

If an output in V has been selected, you need to connect terminals 7 and 8, whereas you need to connect terminals 11 and 12 if an output in mA has been chosen.



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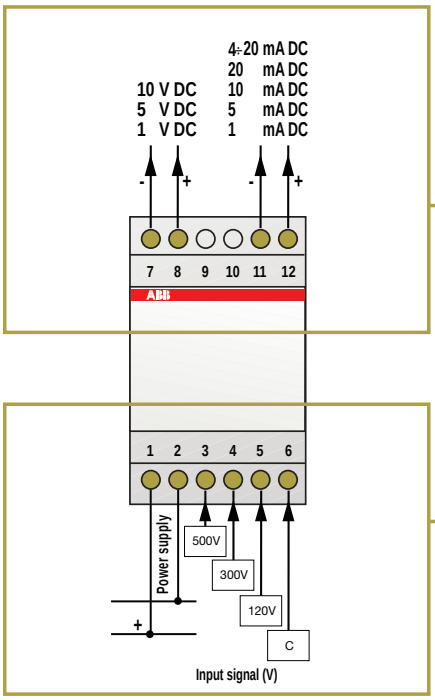
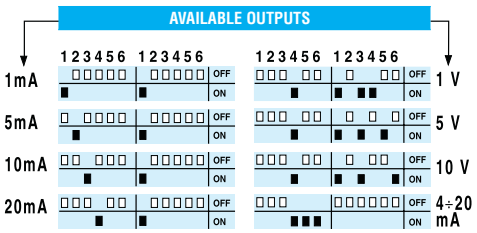
Voltage converters in a.c.



The outputs must be selected by shifting the programming keys to suit specific needs.

If an output in V has been selected, you need to connect terminals 7 and 8, whereas you need to connect terminals 11 and 12 if an output in mA has been chosen.



The inputs are selected simply by connecting the common terminal "C" (6) to terminal 5 if you have a 120V input, or terminal 4 if you have a 300V input, or terminal 3 if you have a 500V input.

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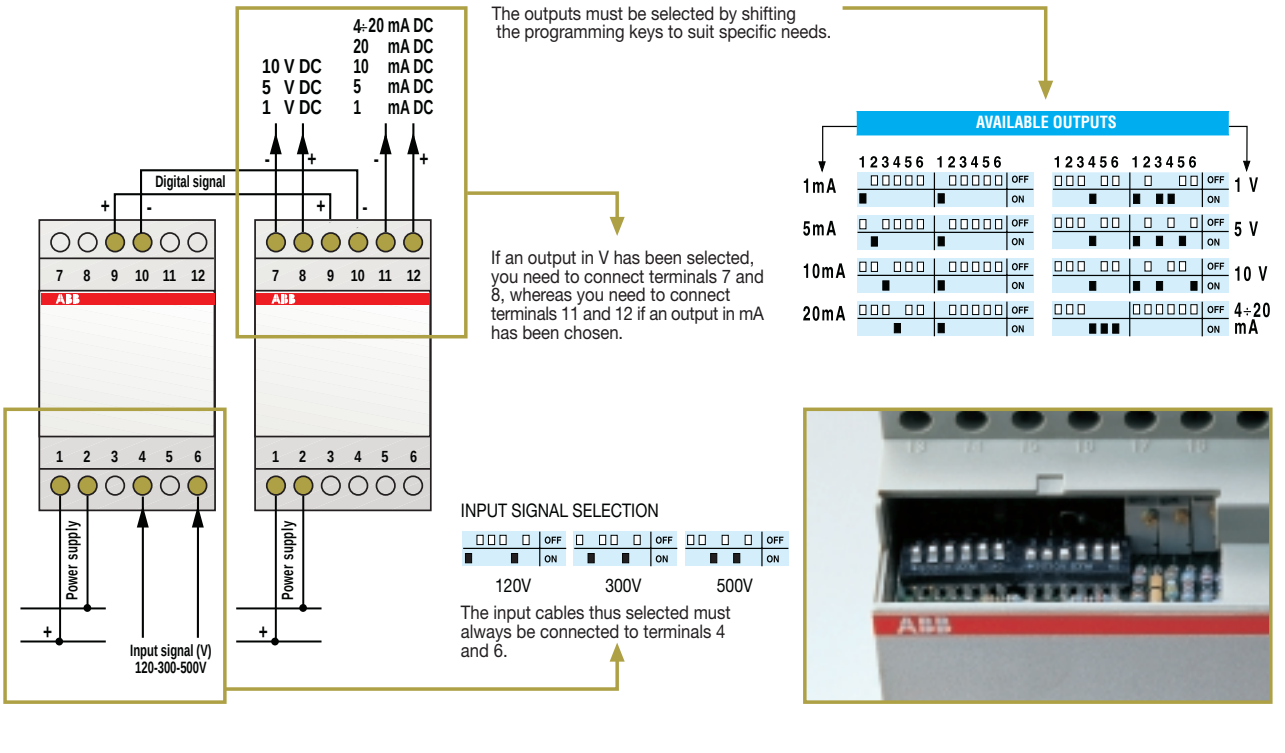
Product description and codes ..... page 6/1

Voltage converters in d.c.



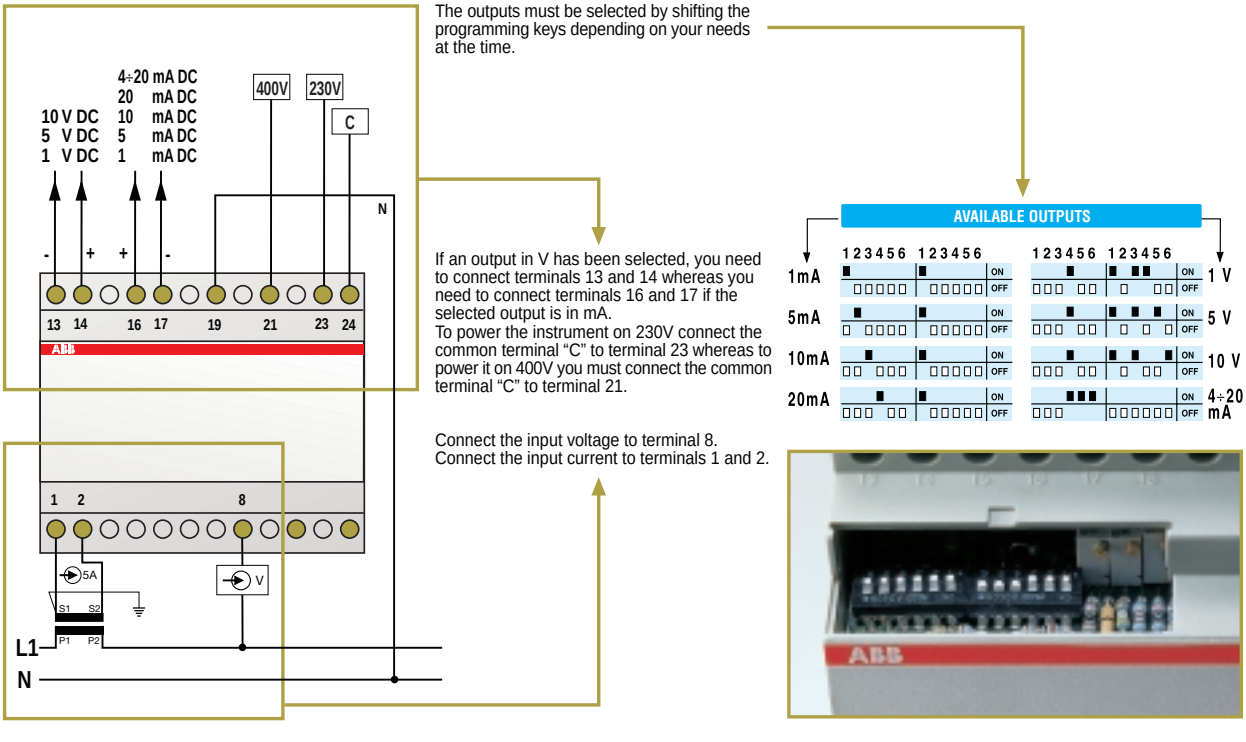
Product description and codes ..... page 6/1

Transducers for wattmeters and varmeters

Technical features

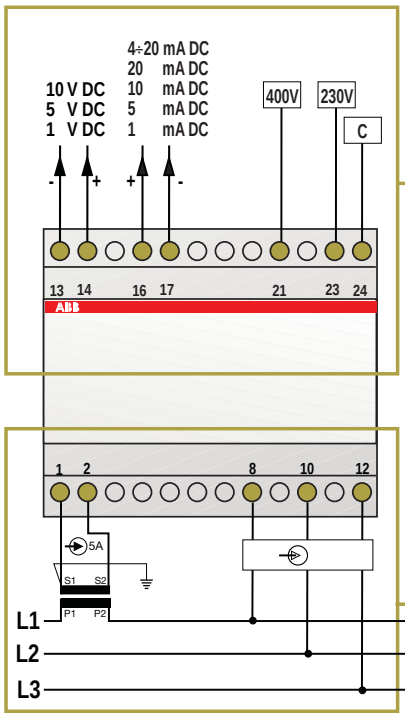
		Transducers for single-phase line	Transducers for three-phase line
Separate aux supply	V	230/400 a.c.	230/400 a.c.
Rated input voltage values	V	230 a.c. (5 A)	400 a.c. (5 A)
Rated output values (selectable)		1, 5, 10 V d.c.	1, 5, 10 V d.c.
		1, 5, 10, 20, 4/20 mA d.c.	1, 5, 10, 20, 4/20 mA d.c.
Resistive load	Ω	700	700
Measuring range		0 ÷ Pn (0 ÷Qn)	0 ÷ Pn (0 ÷Qn)
Standard calibration		100 V, 5 A = 500 W (Var)	100 V, 5 A = 1000 W (Var)
		230 V, 5 A = 1000 W (Var)	230 V, 5 A = 2000 W (Var)
		400 V, 5 A = 2000 W (Var)	400 V, 5 A = 4000 W (Var)
Precision class		0.5	0.5
Permanent overload		2 In/1.2 Un	2 In/1.2 Un
Instantaneous overload		10 In/2 Un for 1 sec.	10 In/2 Un for 1 sec.
Operating frequency	Hz	50/60	50/60
Reaction time	ms	300	300
Residual alternating current		1%	1%
Self-consumption		voltage = 1 VA	voltage = 1 VA
		curr. = 0.8 VA	curr. = 0.8 VA
		aux supply = 4 VA	aux supply = 4 VA
Galvanic separation between inputs and outputs		insulation between inputs and outputs,	insulation between inputs and outputs,
		aux supply 2 kV	aux supply 2 kV
		for 1 min/50 Hz	for 1 min/50 Hz
		insulation between all circuits	insulation between all circuits
		and earth 4 kV	and earth 4 kV
		for 1 min/50 Hz	for 1 min/50 Hz
Working temperature	°C	0...55	0...55
Input wave forms		OS – OSD	OS – OSD
Dimensions	DIN modules	6	6
Weight	kg	0.49	0.49

Single-phase line



Product description and codes ..... page 6/1

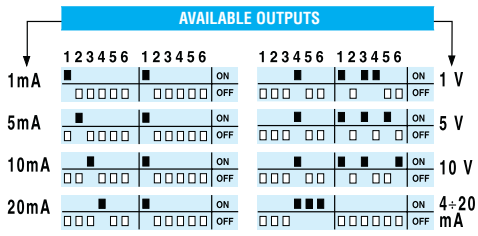
Three-phase line balanced without neutral (3 wires)



The outputs must be selected by shifting the programming keys depending on your needs at the time.

If an output in V has been selected, you need to connect terminals 13 and 14 whereas you need to connect terminals 16 and 17 if the selected output is in mA.
To power the instrument on 230V connect the common terminal "C" to terminal 23 whereas to power it on 400V you must connect the common terminal "C" to terminal 21.

Connect the input voltage to terminals 8, 10 and 12.
Connect the input current to terminals 1 and 2.



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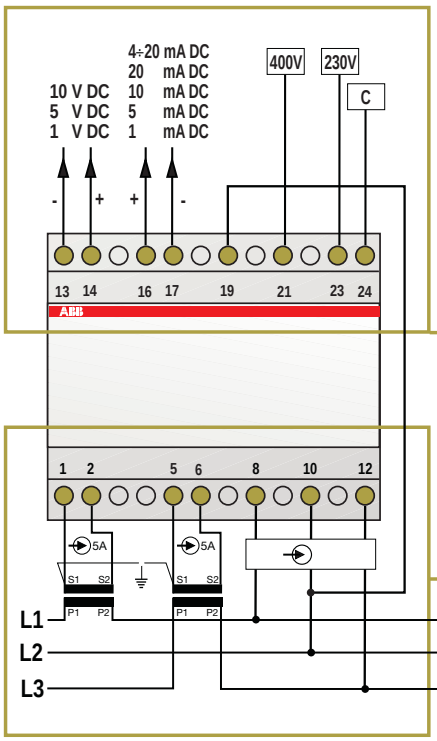
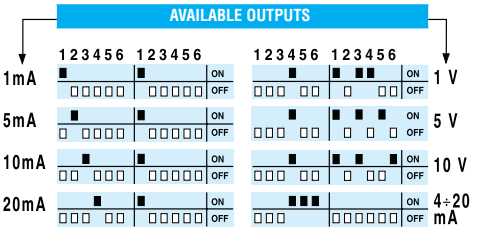
Three-phase line unbalanced without neutral (3 wires)



The outputs must be selected by shifting the programming keys depending on your needs at the time.

If an output in V has been selected, you need to connect terminals 13 and 14 whereas you need to connect terminals 16 and 17 if the selected output is in mA.
To power the instrument on 230V connect the common terminal "C" to terminal 23 whereas to power it on 400V you must connect the common terminal "C" to terminal 21.

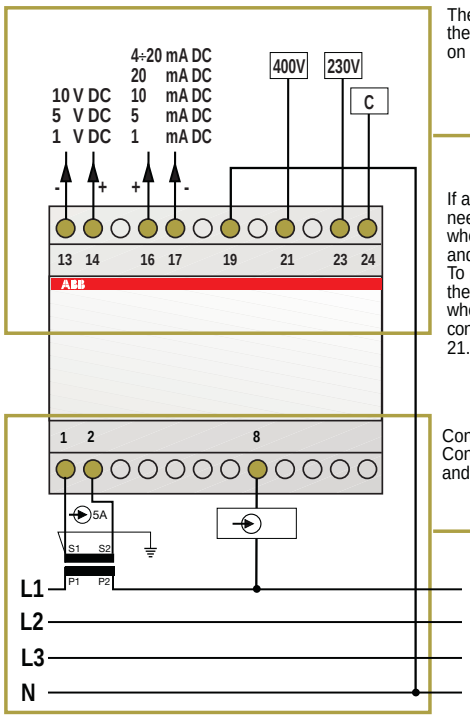
Connect the input voltage to terminals 8, 10 and 12
Connect the phase L1 input current to terminals 1 and 2.
Connect the phase L3 input current to terminals 5 and 6.



2CSC445033F0901

Product description and codes ..... page 6/1

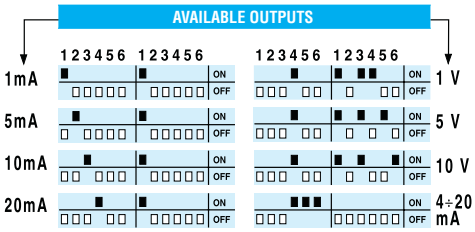
Three-phase line balanced with neutral (4 wires)



The outputs must be selected by shifting the programming keys depending on your needs at the time.

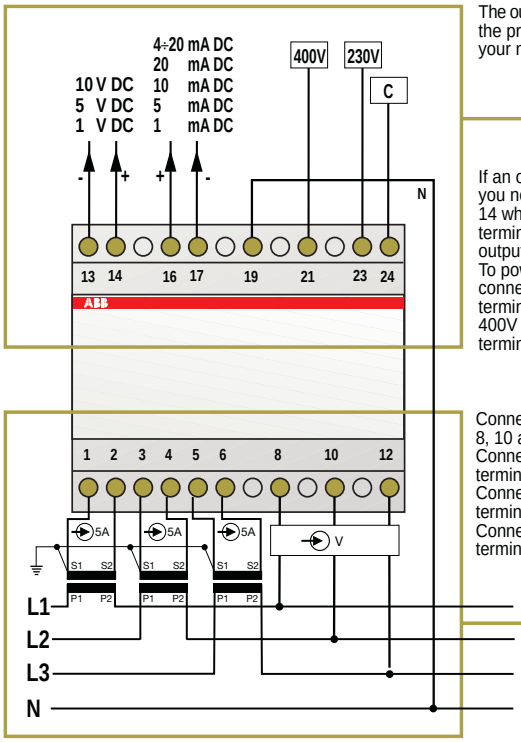
If an output in V has been selected, you need to connect terminals 13 and 14 whereas you need to connect terminals 16 and 17 if the selected output is in mA.
To power the instrument on 230V connect the common terminal "C" to terminal 23 whereas to power it on 400V you must connect the common terminal "C" to terminal 21.

Connect the input voltage to terminal 8.
Connect the input current to terminals 1 and 2.



2CSC445034F0901

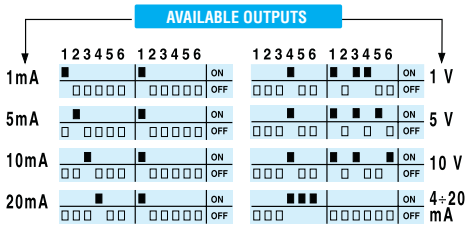
Three-phase line unbalanced with neutral (4 wires)



The outputs must be selected by shifting the programming keys depending on your needs at the time.

If an output in V has been selected, you need to connect terminals 13 and 14 whereas you need to connect terminals 16 and 17 if the selected output is in mA.
To power the instrument on 230V connect the common terminal "C" to terminal 23; whereas to power it on 400V you must connect the common terminal "C" to terminal 21.

Connect the input voltage to terminals 8, 10 and 12.
Connect the phase L1 input current to terminals 1 and 2.
Connect the phase L2 input current to terminals 3 and 4.
Connect the phase L3 input current to terminals 5 and 6.



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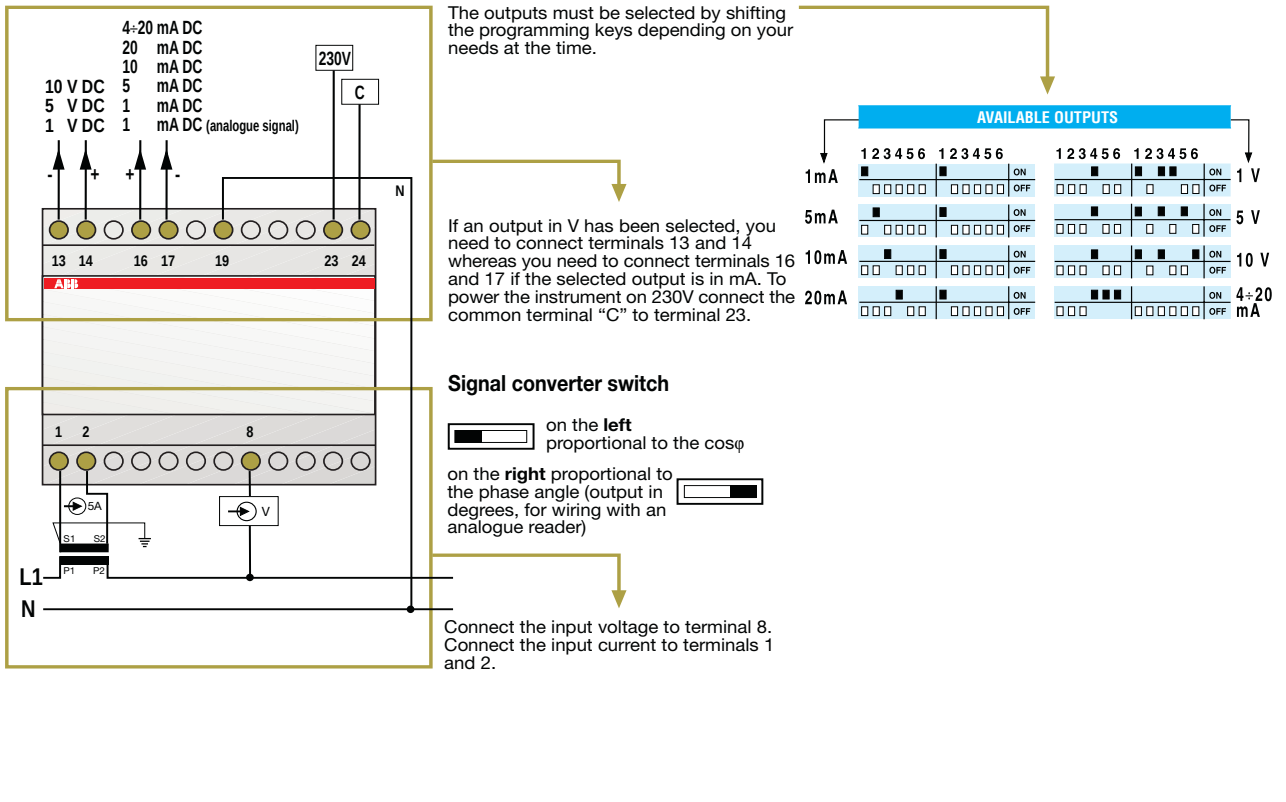
Product description and codes ..... page 6/1

Transducers for power factor meters

Technical features

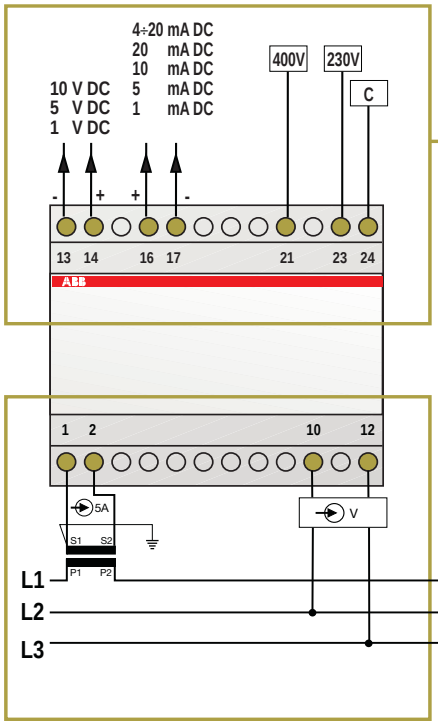
Separate aux supply	V	230/400 a.c.
Rated input voltage values	V	230/400 a.c. (5 A)
Rated output values (selectable)		1, 5, 10 V d.c.
		1, 5, 10, 20, 4/20 mA d.c.
Resistive load	Ω	700
Measuring range		0 ÷ Pn (0 ÷Qn)
Type of conversion		proportional to the phase angle or cosφ
Precision class		0.5
Permanent overload		2 In/1.2 Un
Instantaneous overload		10 In/2 Un for 1 sec.
Operating frequency	Hz	50/60
Reaction time	ms	300
Residual alternating current		1%
Self-consumption		voltage = 1 VA/curr. = 0.8 VA/aux supply = 4 VA
Galvanic separation between inputs and outputs		insulation between inputs and outputs, aux supply 2 kV for 1 min/50 Hz
		insulation between all circuits and earth 4 kV for 1 min/50 Hz
Working temperature	°C	0...55
Dimensions	DIN modules	6
Weight	kg	0.49

Single-phase line and input and output selection

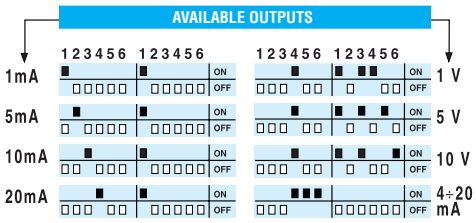


Product description and codes ..... page 6/1

Three-phase line balanced without neutral (3 wires)



The outputs must be selected by shifting the programming keys depending on your needs at the time.



If an output in V has been selected, you need to connect terminals 13 and 14 whereas you need to connect terminals 16 and 17 if the selected output is in mA.
To power the instrument on 230V connect the common terminal “C” to terminal 23.
To power the instrument on 400V connect the common terminal “C” to terminal 21

Signal converter switch


on the **left** proportional to the cosφ

on the **right** proportional to the phase angle (output in degrees, for wiring with an analogue reader)


Connect the input voltage to terminals 10 and 12
Connect the phase L1 input current to terminals 1 and 2.

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Product description and codes ..... page 6/1

Shunts

Shunts are small resistances comprising conductors with one or more busbars in parallel of limited length and large rectangular cross-section, that terminate with two terminals providing a large contact surface. They enable the passage of any excess current with respect to the carrying capacity of the instrument they are connected to, thereby preventing the latter from being damaged. They come complete with screws, nuts, washers and other materials needed for their installation.

Technical features

Voltage	mV	60
Capacities	A	5-2500 (5000 on request)
Precision class		0.5 (+10 °C ... +30 °C)
Working temperature	°C	-25...+60
Storage temperature	°C	-40...+80
Max load	Ω	≤0.25 for shunts 60 mV, ≥0.25 for the others
Overload		1.2 In permanent
		10 In/5 sec. up to 250 A
		5 In/5 sec. from 300 to 2000 A
		2 In/5 sec. from 2500 to 6000 A
Weight	kg	from 0.11 to 5.60
Standards		CENELEC HD 233, CEI 13-6, IEC 51, VDE 0410, BS 89, C 42-100 CENELEC HD 215, CEI 13-10, IEC 414, DIN 57410, BS 5458, C 42-010 DIN 43703

To connect the shunts to the measuring devices:

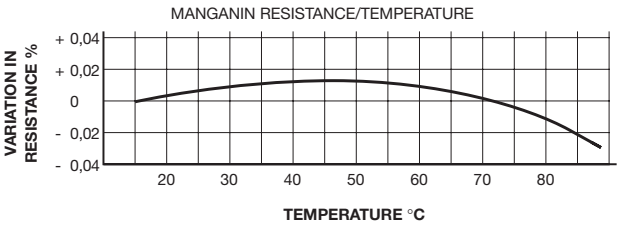
1. before making the connection, clean the contact surface, which must be used entirely;

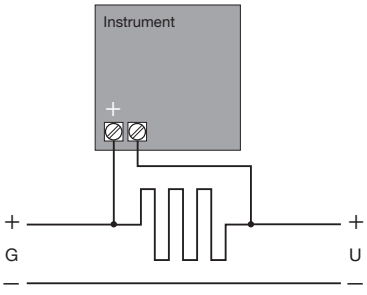
2. tighten the nuts and bolts with care;

3. complete the procedure by coating the contact surfaces with grease.

The assembly can be in the horizontal or vertical position, so long as a sufficient air circulation is assured. Since they are not isolated, the shunts must be protected against accidental contact.

The instrument is connected to the shunt terminals and uses their voltage drop by taking a portion of the circuit current proportional to the total current.
The wiring terminals are side by side and are connected to the current terminals; they have a smaller cross section because the current required by the measuring instrument is much lower than that of the shunt.





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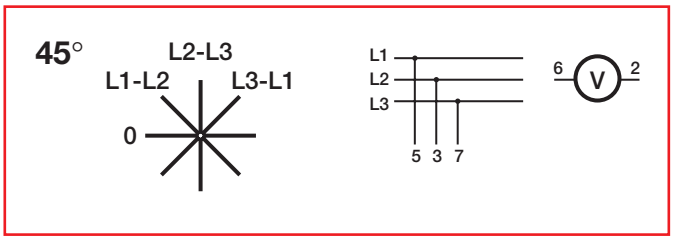
The shunts are made of OT58 brass in accordance with UNI 4892, the shunt strips are made of manganin 43 and the accessories are made of 8.8 zinc-plated steel.

Product description and codes ..... page 6/1

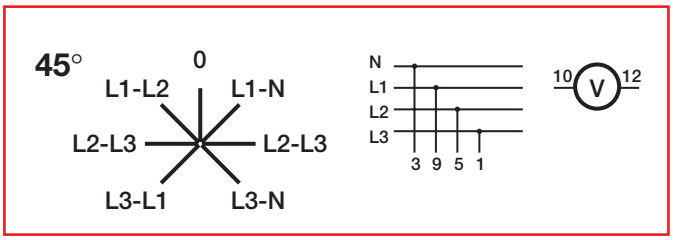
Current and voltage switches

Wiring diagrams

Voltage switch (QCV - 4)



Voltage switch (QCV - 7)



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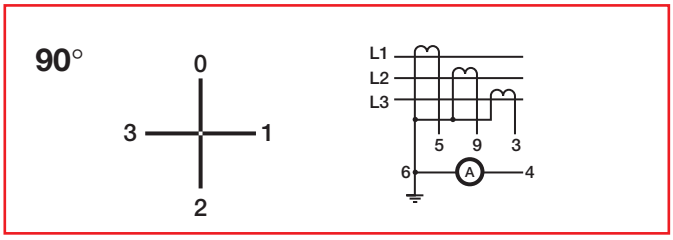
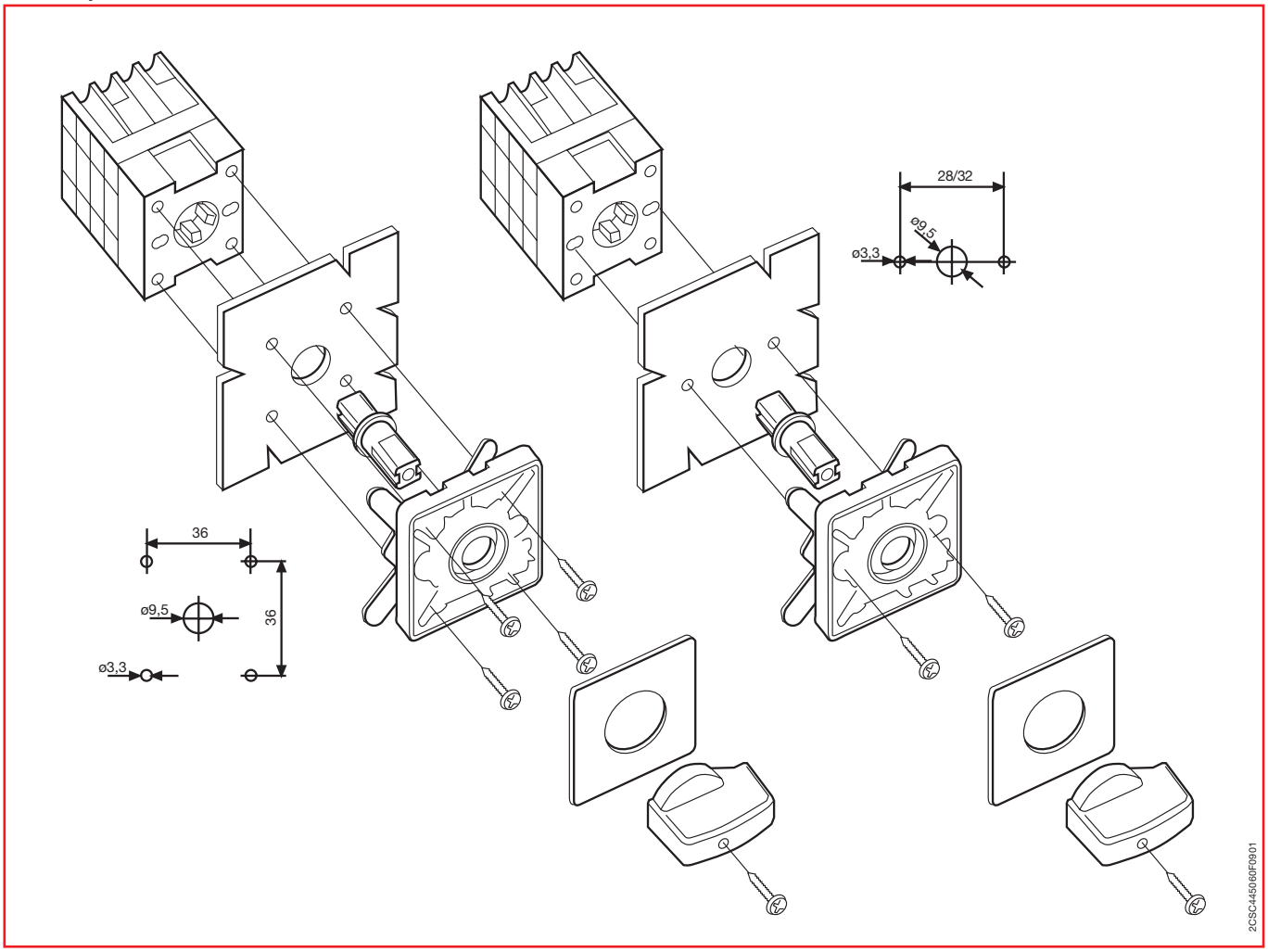
Current switch (QCA - 4)



Assembly instructions



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Product description and codes ..... page 6/1

Overall dimensions

Contents

Protection devices

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Control devices

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Flag relays **8**/4

Indicators

Luminous indicators **8**/5

Measuring devices

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Analogue wattmeters, varmeters, power factor meters and frequency meters **8**/6
Digital voltmeters and ammeters **8**/7
Multimeters **8**/7
Energy meters **8**/8

Accessories for measuring devices

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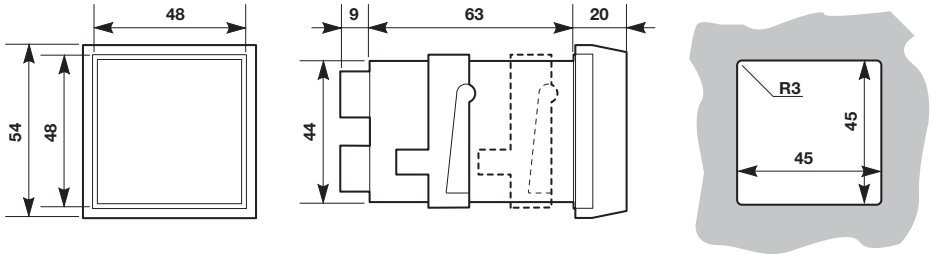
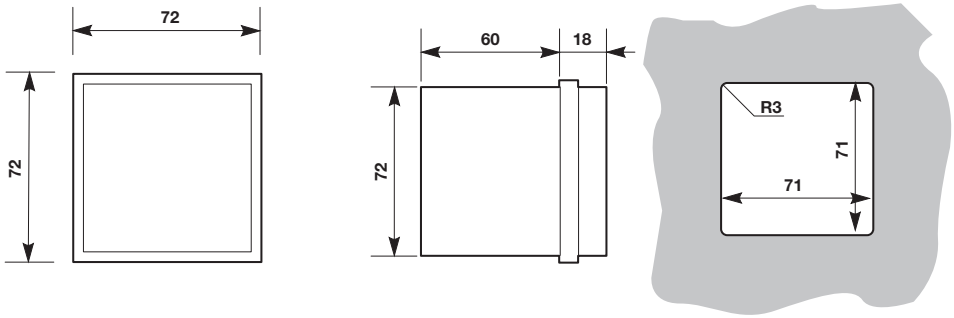
Voltage transformers **8**/19
Current and voltage converters **8**/21
Transducers for wattmeters, varmeters and power factor meters **8**/21
Shunts **8**/22
Current and voltage switches **8**/23

Residual-current relays

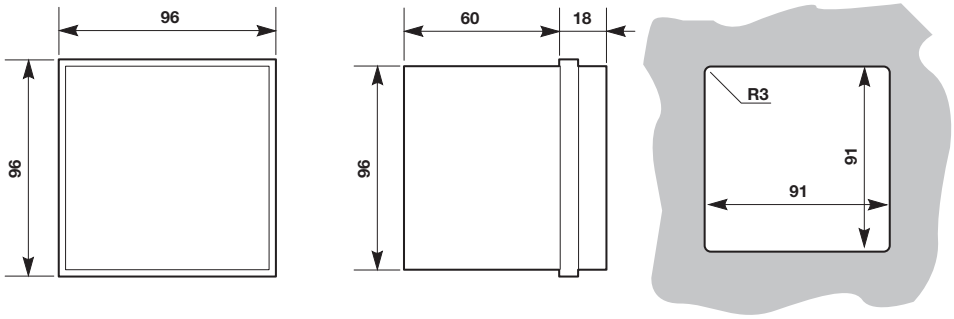
RD148



RD172, RD272, RD272-DIG

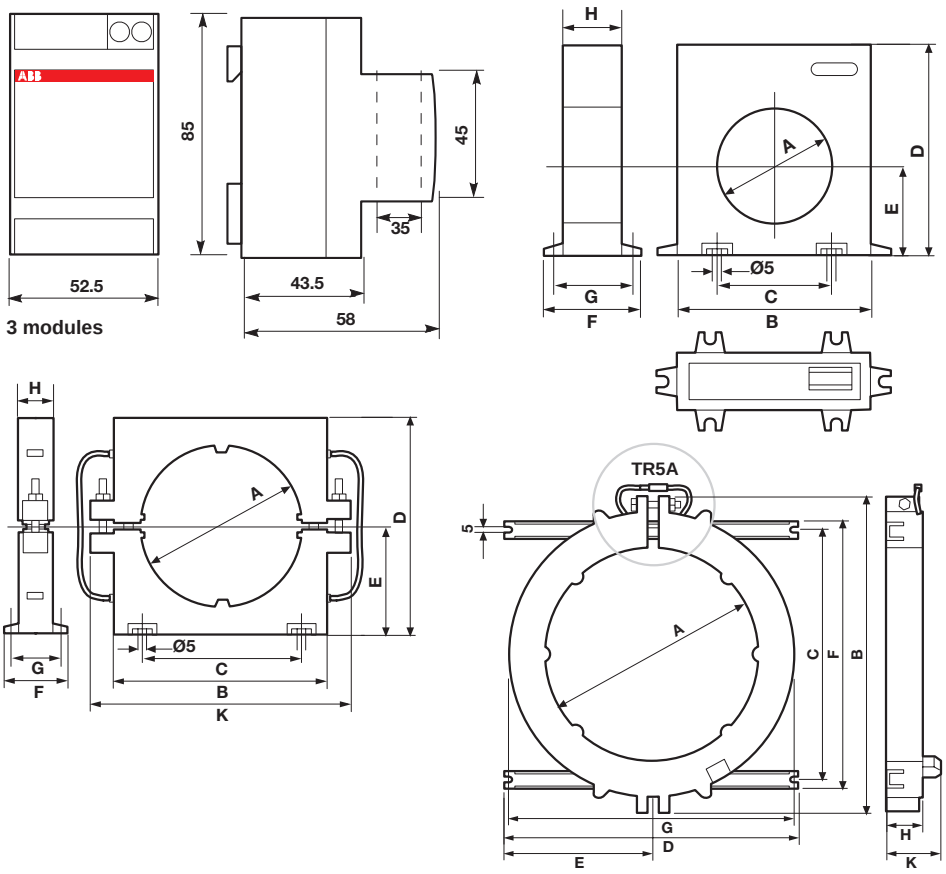


RD196, RD296, RD296-S



Product description and codes ..... page 2/1

Toroidal transformers



Type	dimensions (mm)								
	A	B	C	D	E	F	G	H	K
TR1	35	100	60	110	47	50	43	30	–
TR2	60	100	60	110	47	50	43	30	–
TR3	80	150	110	160	70	50	43	30	–
TR4	110	150	110	160	70	50	43	30	–
TR4A	110	145	110	150	75	45	38	25	180
TR160	160	220	156	236	110	64	50	34	–
TR160A	160	220	156	236	110	64	50	34	–
TR5	210	310	240	290	145	260	280	36	55
TR5A	210	310	240	290	145	260	280	36	55

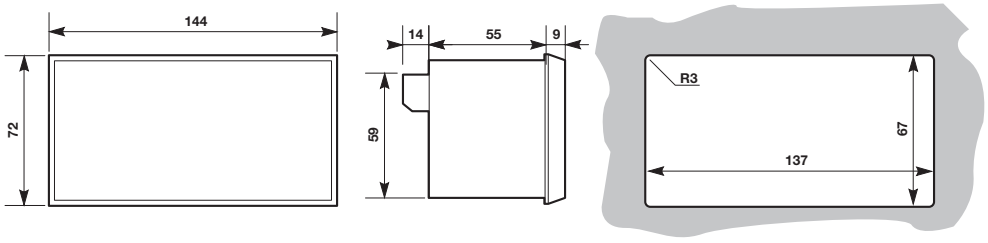
Fixing holes available only for TR160A versions.

Product description and codes ..... page 2/1

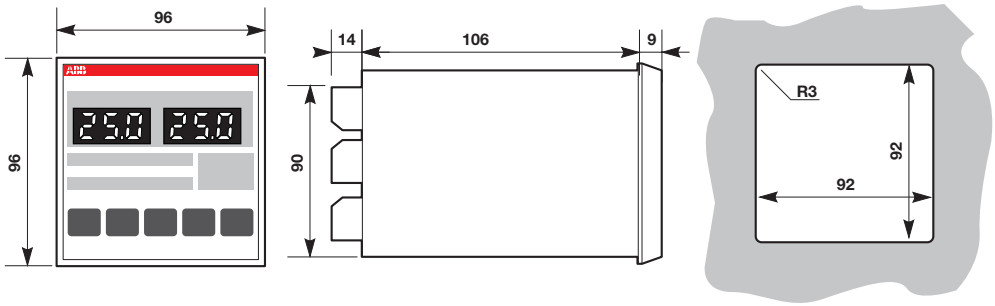
Overall dimensions

Control devices

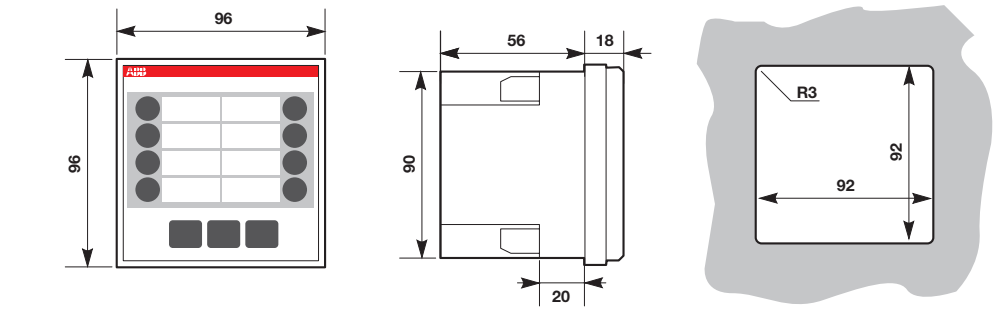
Alarm concentrators



Temperature control units



Flag relays

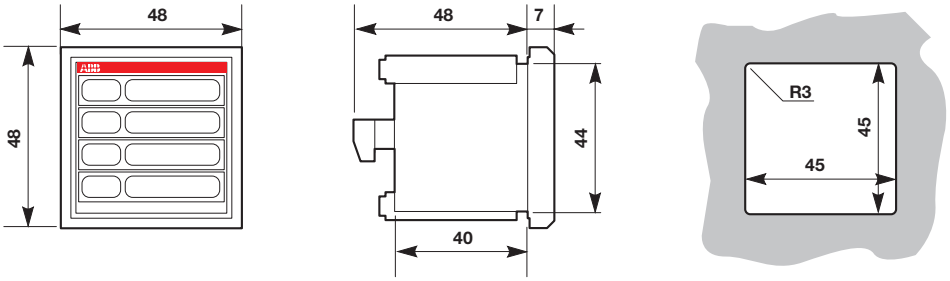


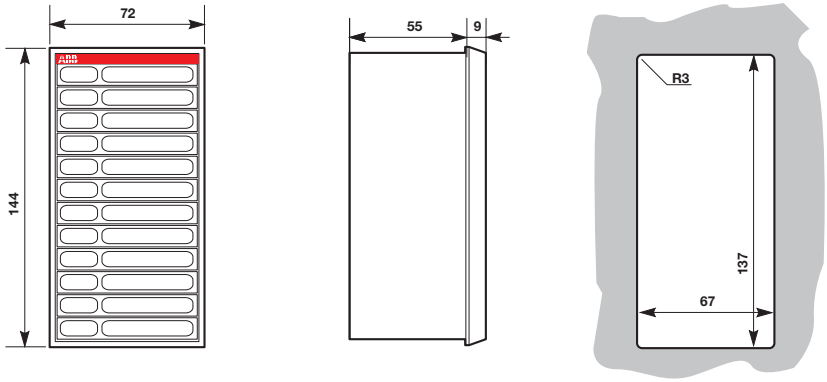
Product description and codes ..... page 3/1

Overall dimensions

Indicators

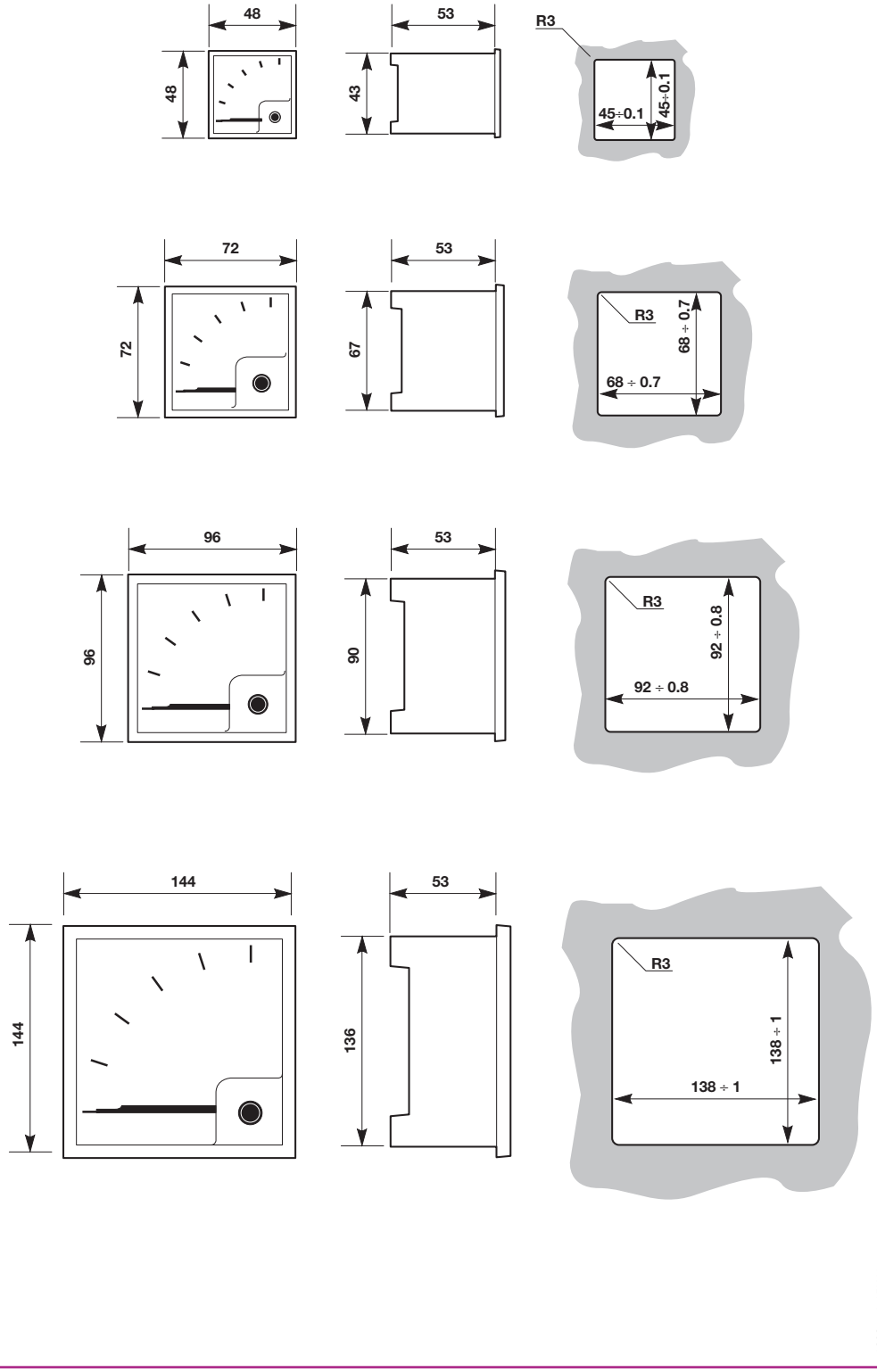
Luminous indicators





Product description and codes ..... page 4/1

Analogue voltmeters, ammeters, wattmeters, varmeters, power factor meters and frequency meters



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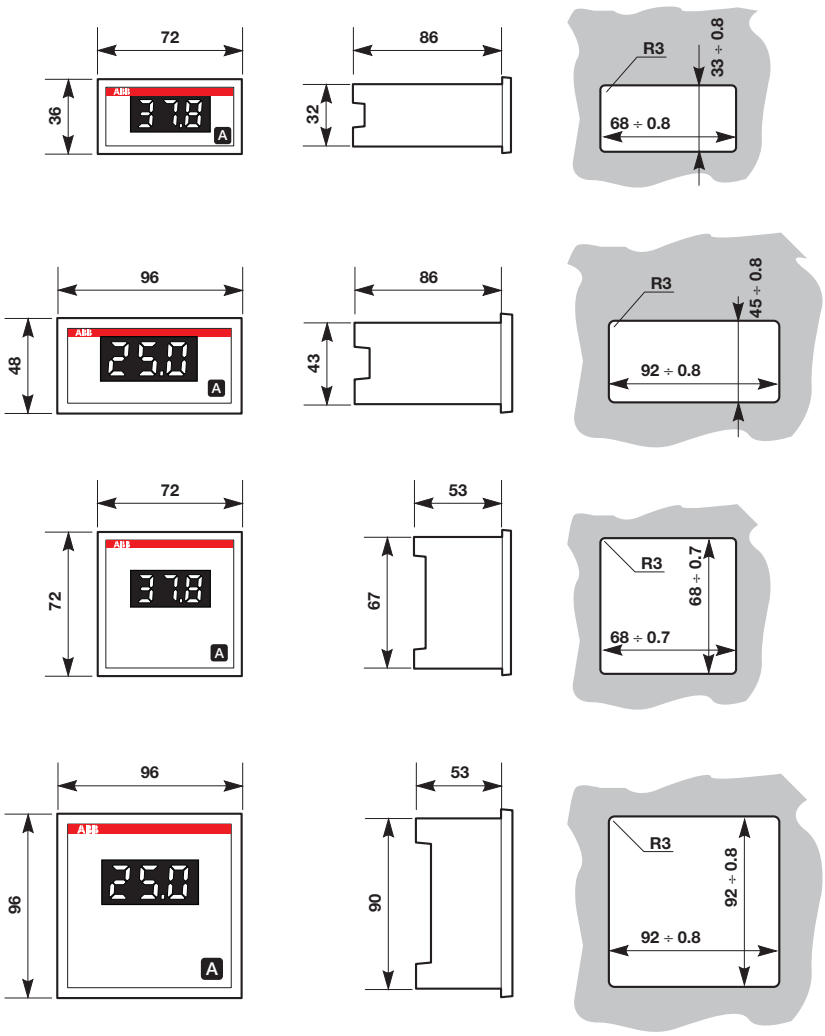
Product description and codes ..... page 5/1

Overall dimensions

Measuring devices

Digital voltmeters and ammeters



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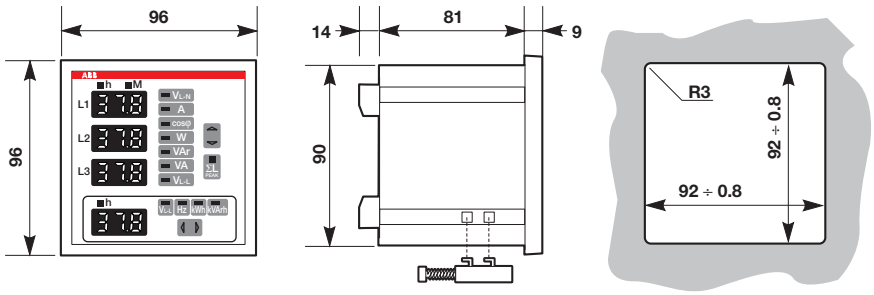
LED multimeters



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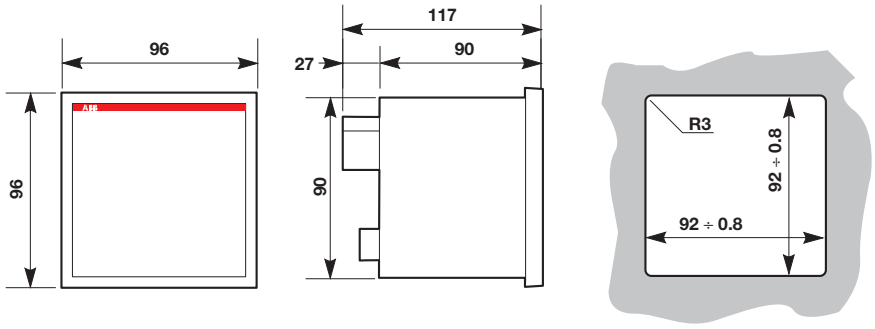
Product description and codes ..... page 5/1

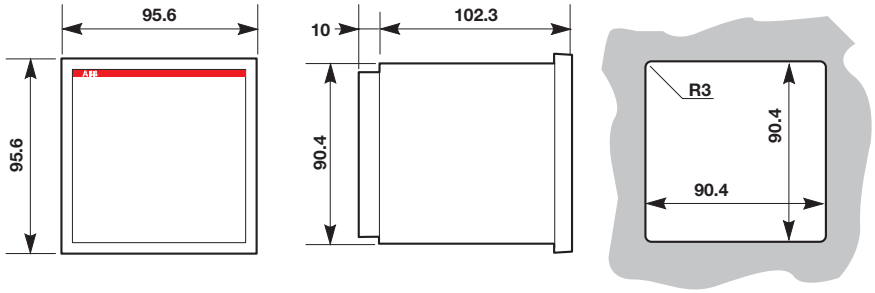
Overall dimensions

Measuring devices

LCD multimeters



Energy meters



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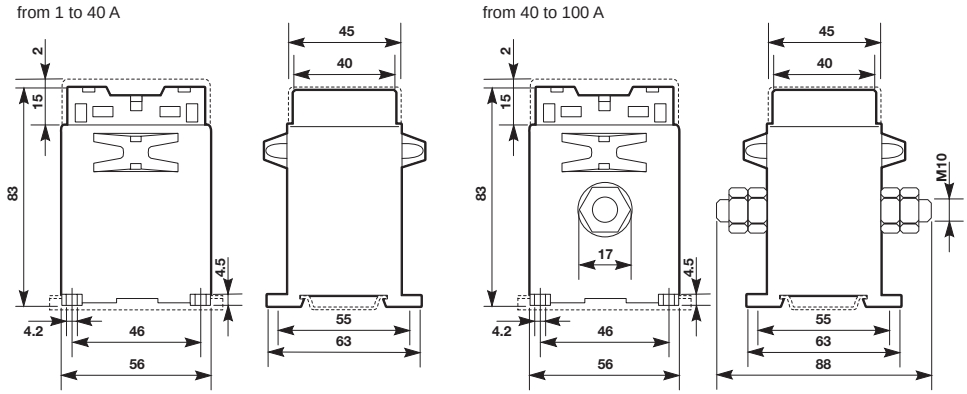
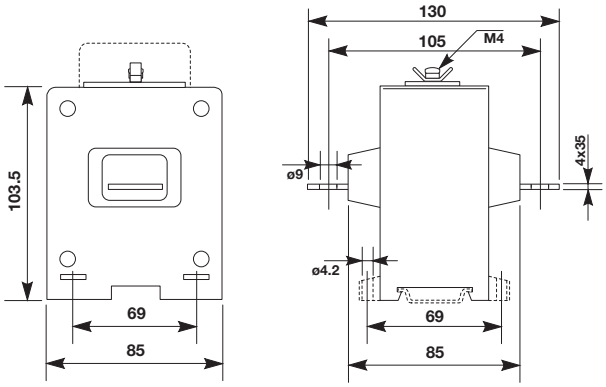
Product description and codes ..... page 5/1

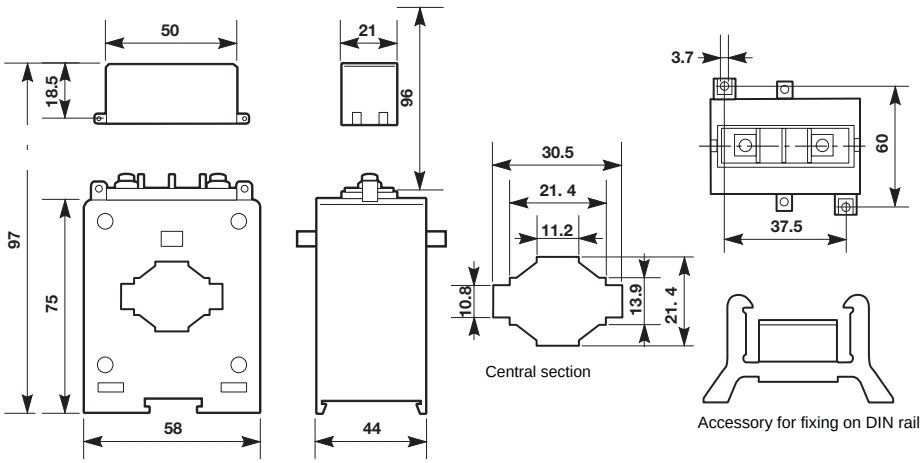
Standard type current transformers CTA



Standard type current transformers CTA1 and CTA2



Standard type current transformers CT3



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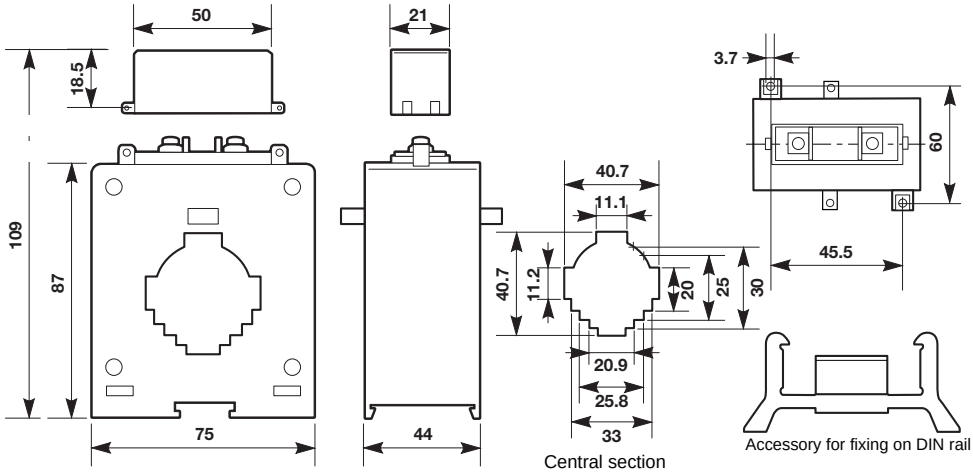
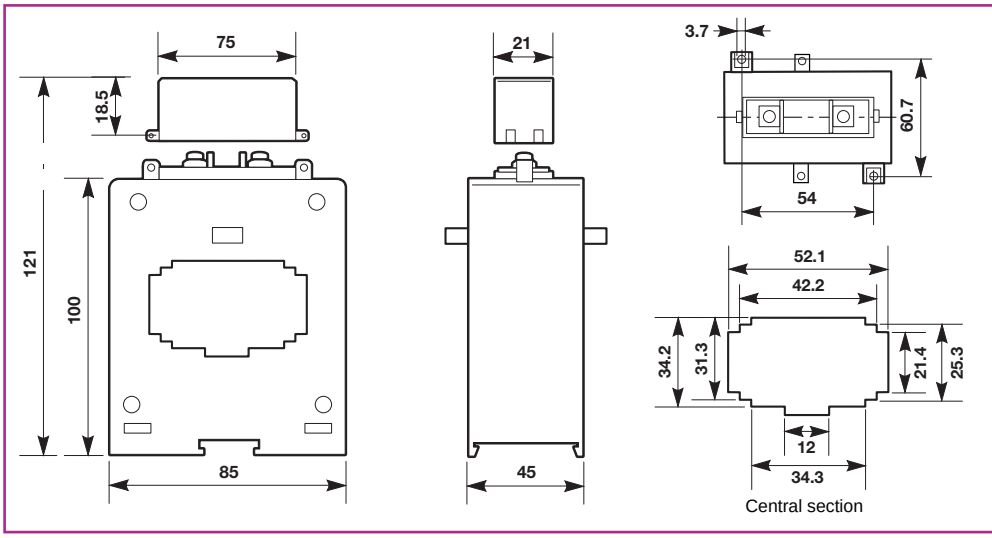
Product description and codes ..... page 6/1

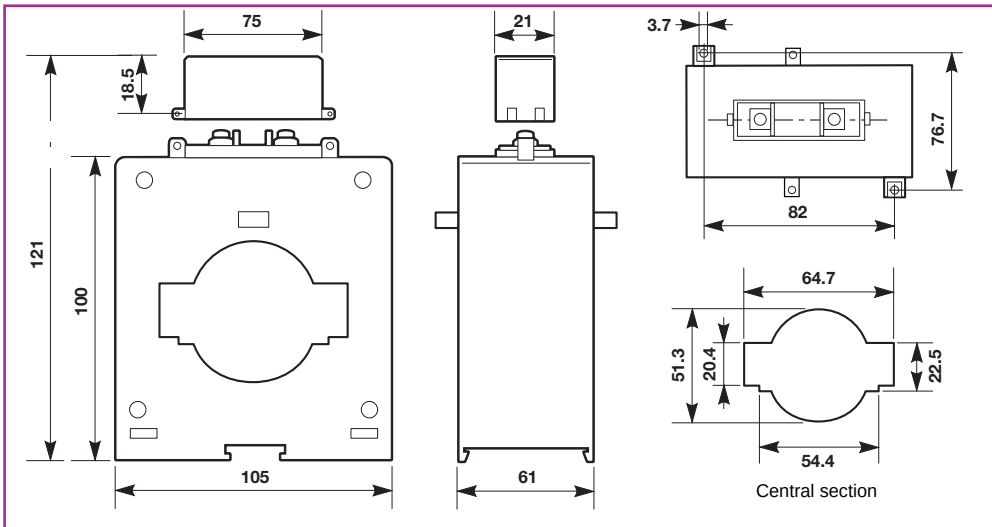
Standard type current transformers CT4



Standard type current transformers CT5

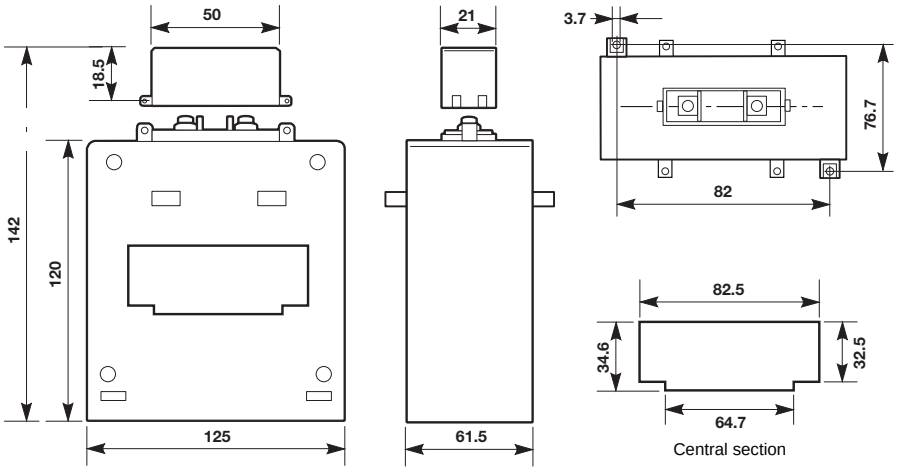


Standard type current transformers CT6

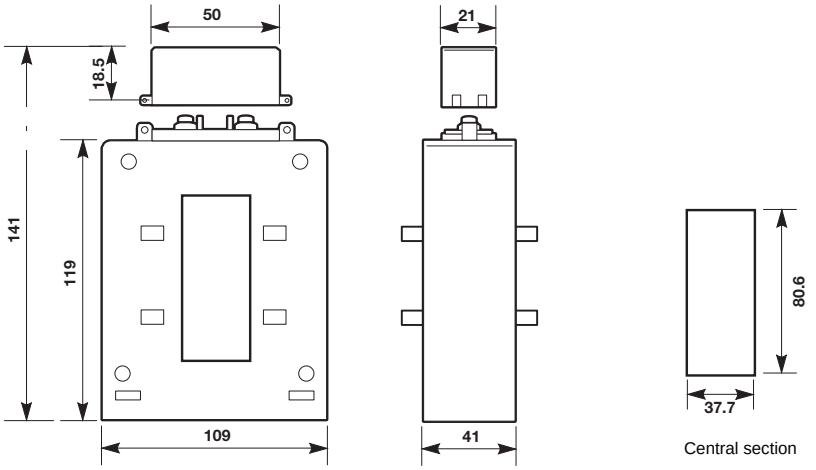


Product description and codes ..... page 6/1

Standard type current transformers CT8

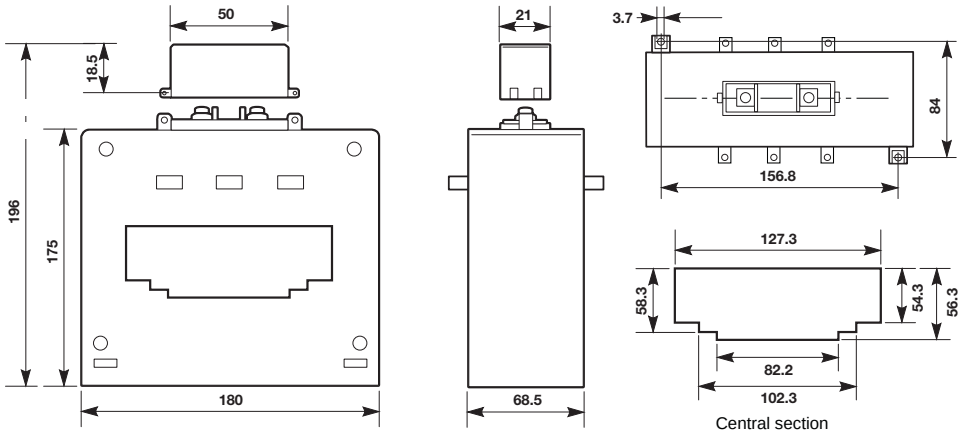


Standard type current transformers CT8-V

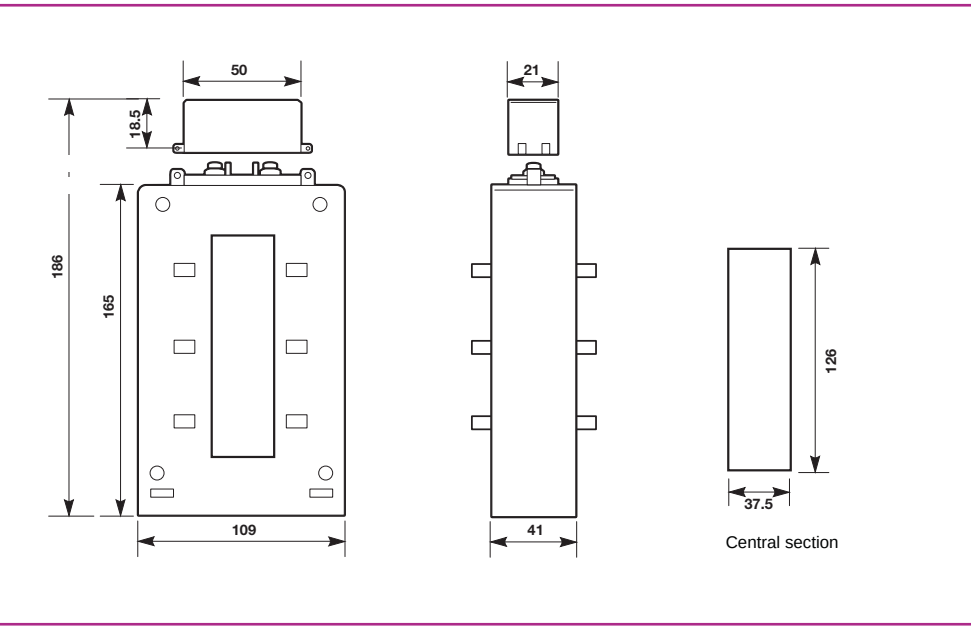


Product description and codes ..... page 6/1

Standard type current transformers CT12



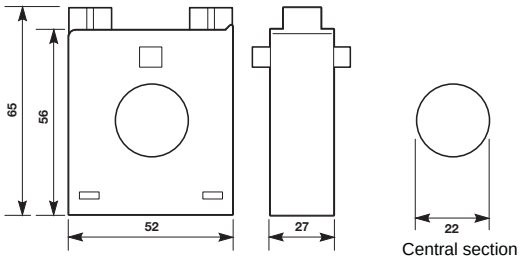
Standard type current transformers CT12-V



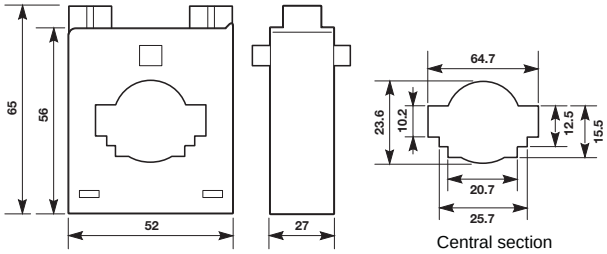
Product description and codes ..... page 6/1

Compact type current transformers

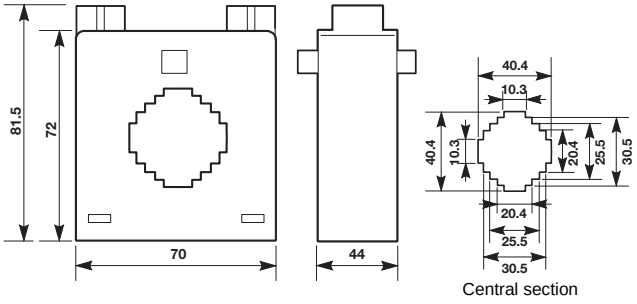
CT-M1



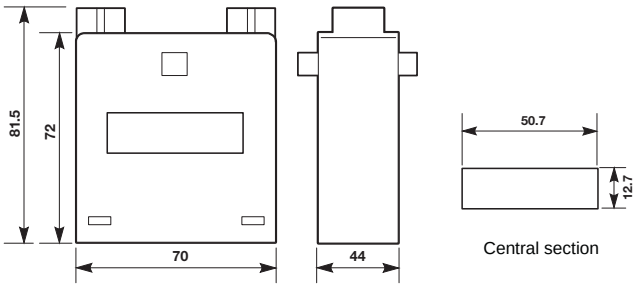
CT-M3



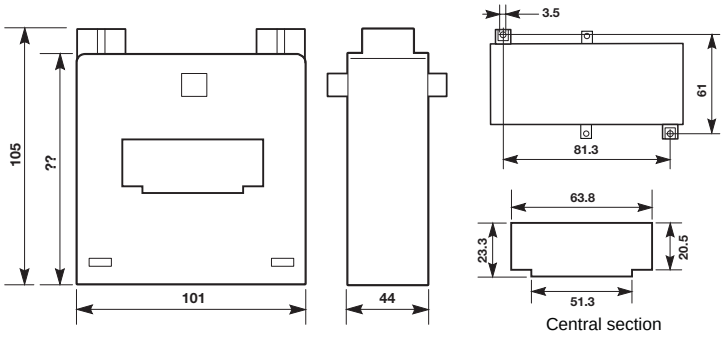
CT-M4



CT-M5



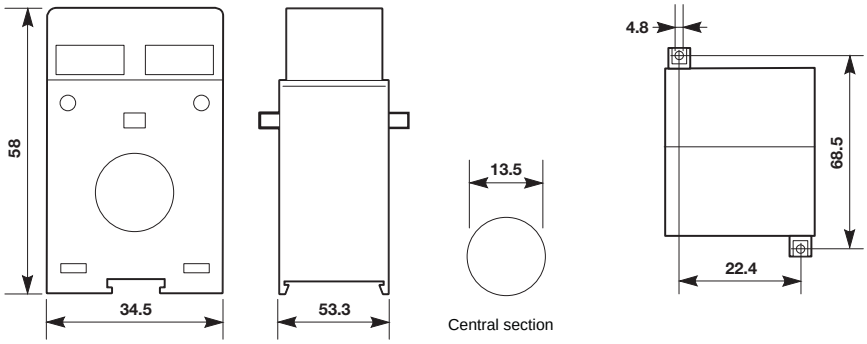
CT-M6



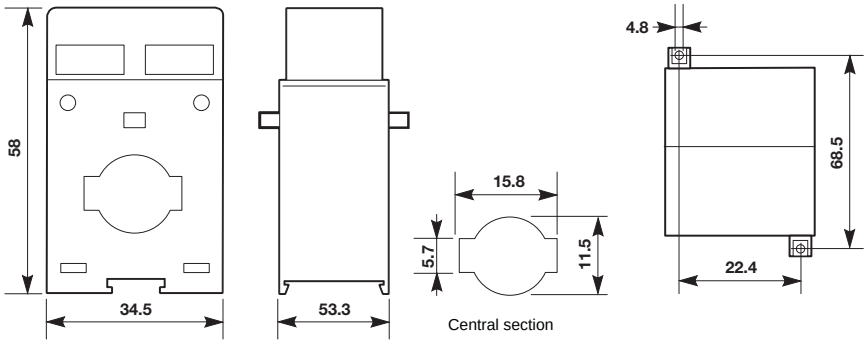
Product description and codes ..... page 6/1

Miniaturized type current transformers CT-SM1/CT-SM4

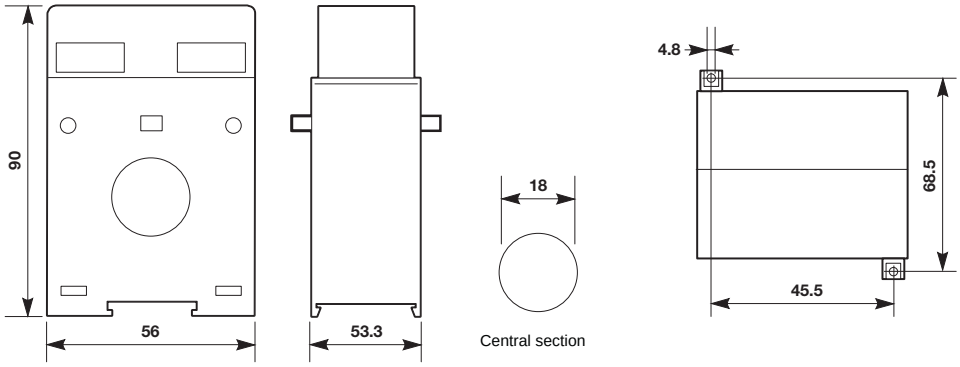
CT-SM1



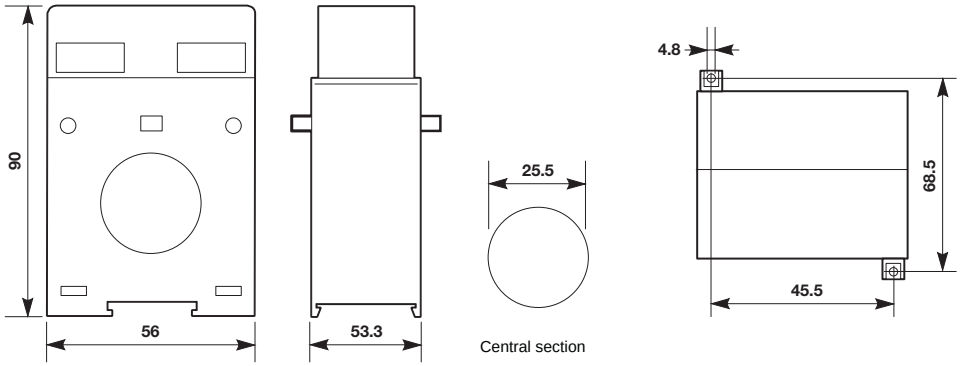
CT-SM2



CT-SM3



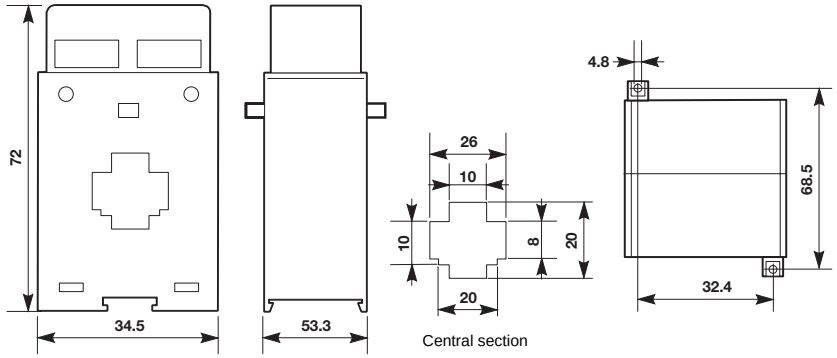
CT-SM4



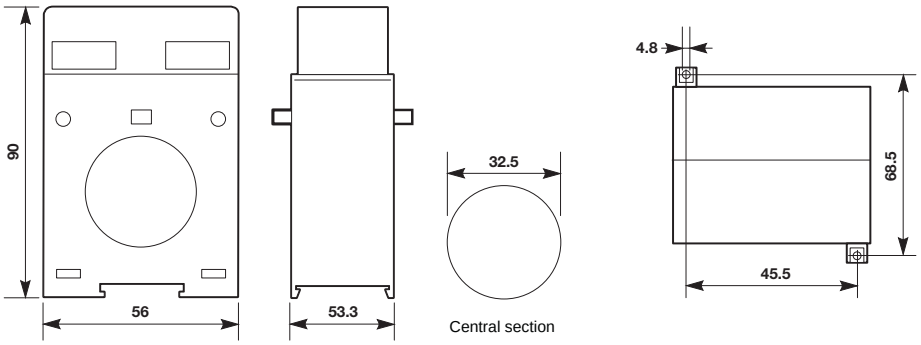
Product description and codes ..... page 6/1

Miniaturized type current transformers CT-SM5/CT-SM7

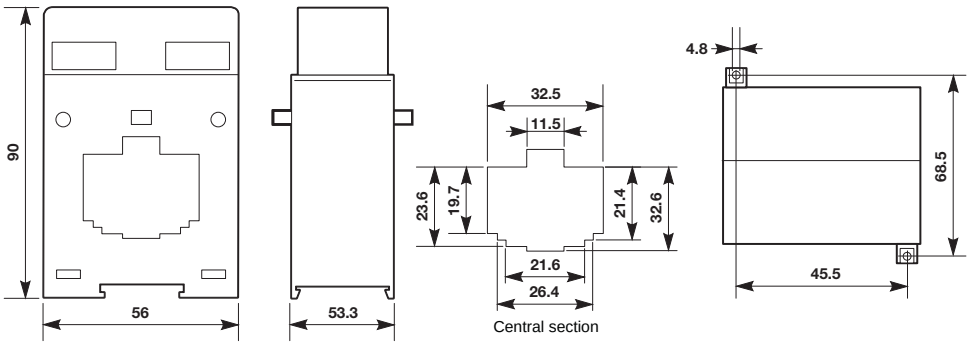
CT-SM5



CT-SM6



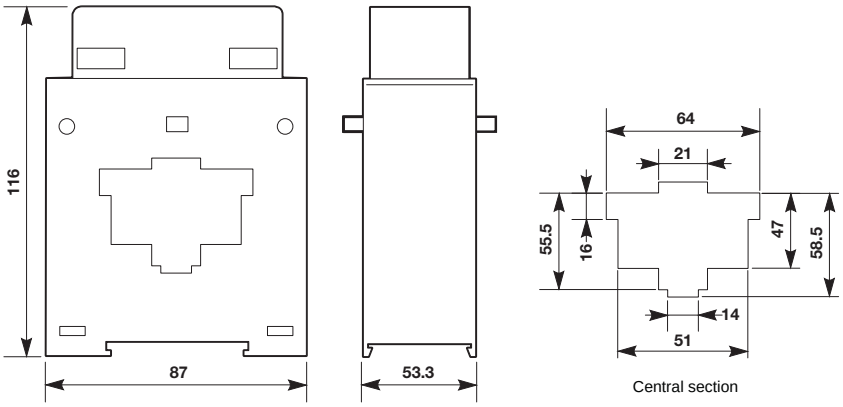
CT-SM7



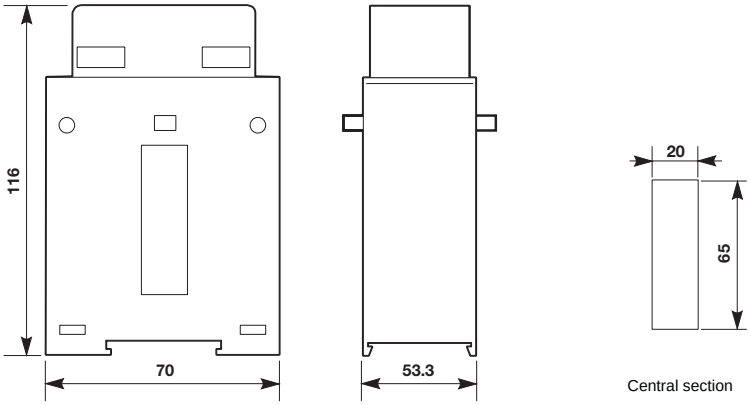
Product description and codes ..... page 6/1

Miniaturized type current transformers CT-SM8/CT-SM9

CT-SM8



CT-SM9



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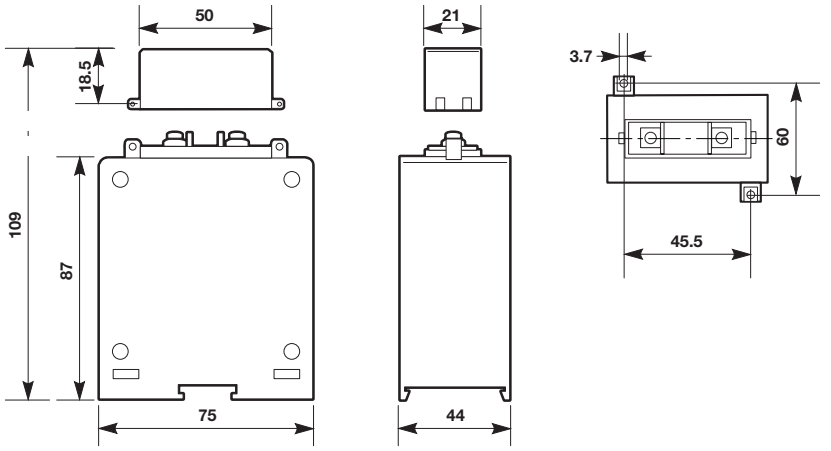
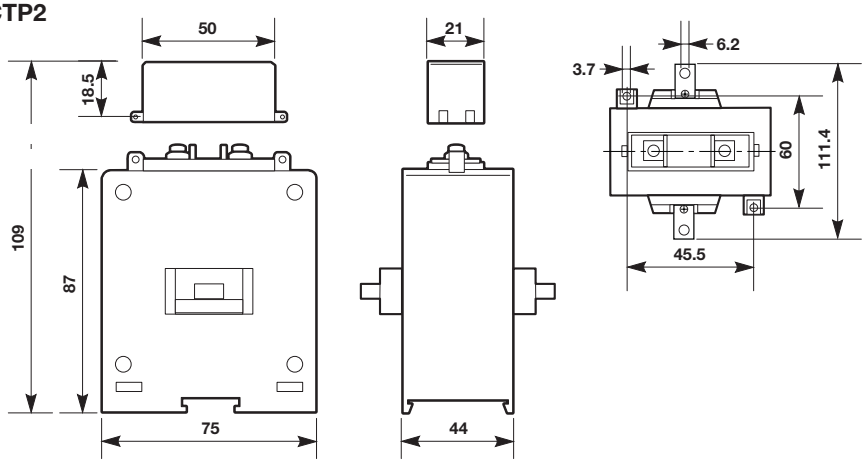
Product description and codes ..... page 6/1

Protection type current transformers CTP1, CTP2, CTP5

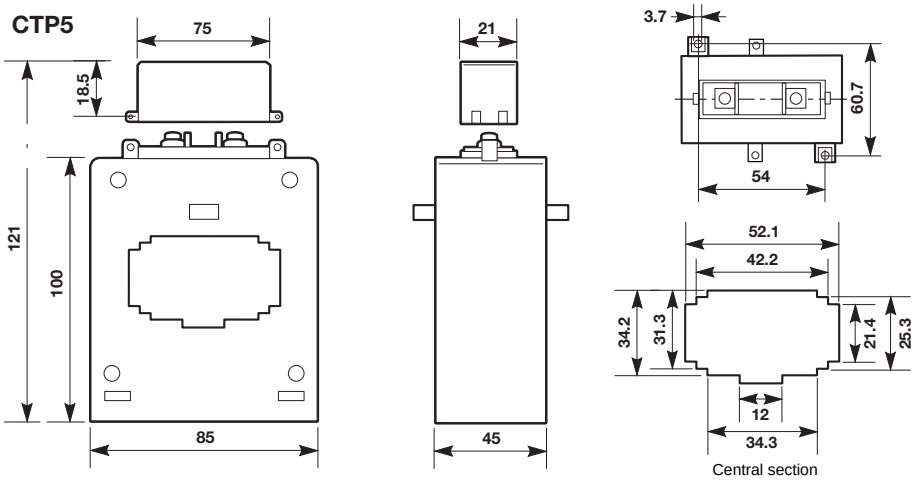
CTP1



CTP2



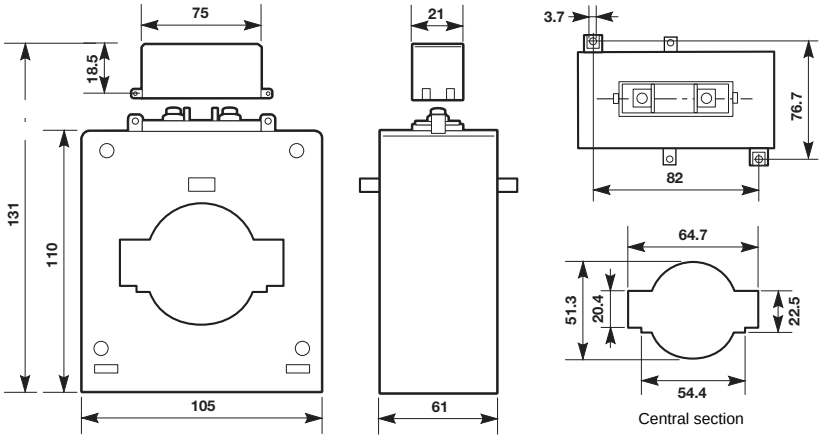
CTP5



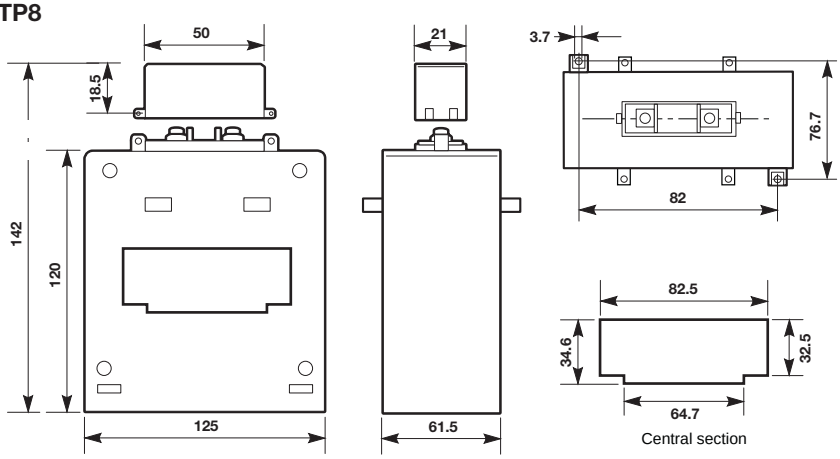
Product description and codes ..... page 6/1

Protection type current transformers CTP6, CTP8, CTP12

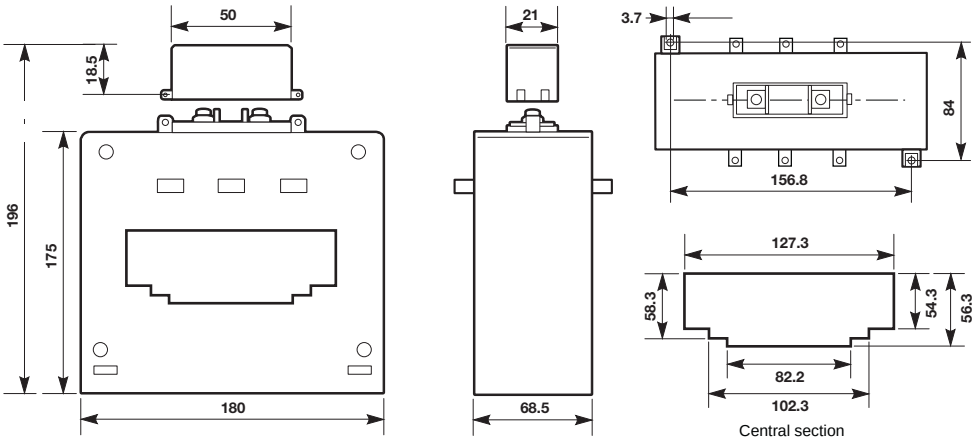
CTP6



CTP8



CTP12

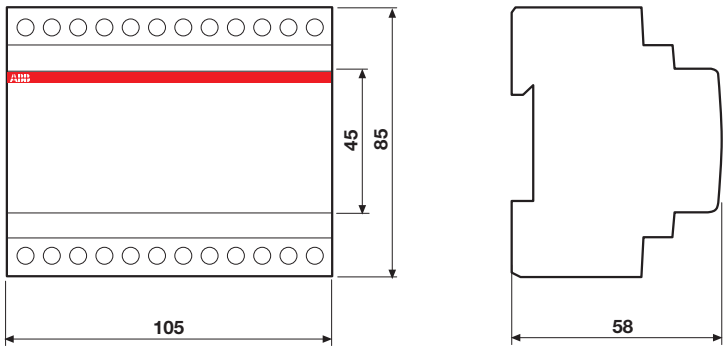


Product description and codes ..... page 6/1

Overall dimensions

Accessories for measuring devices

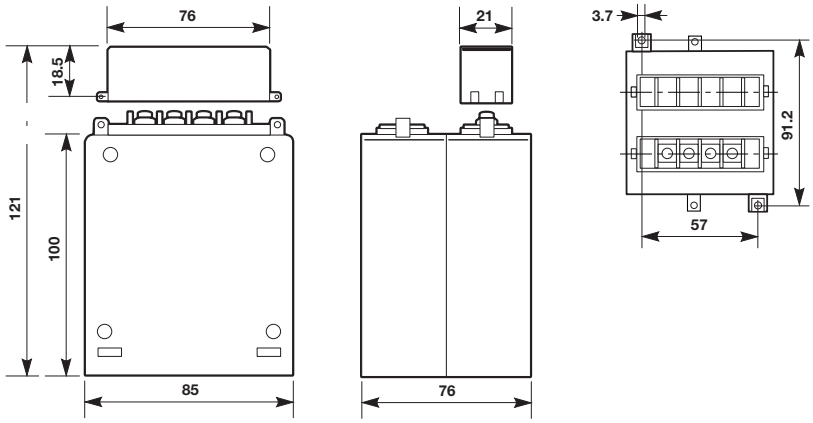
Summing current transformers



6 modules

2CSC445049F0901

Voltage transformers with self-extinguishing housing



2CSC445048F0901

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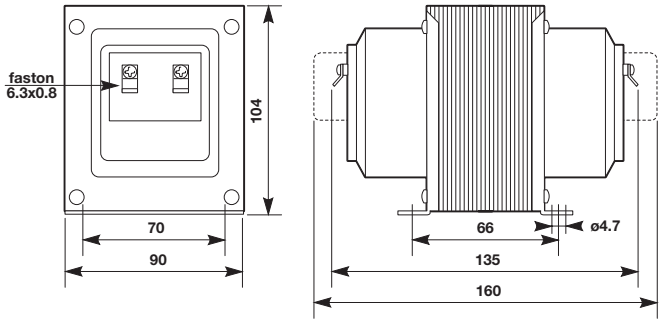
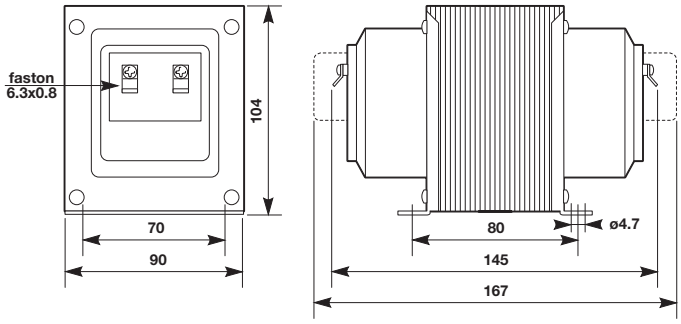
Product description and codes ..... page 6/1

Voltage transformers with metallic housing

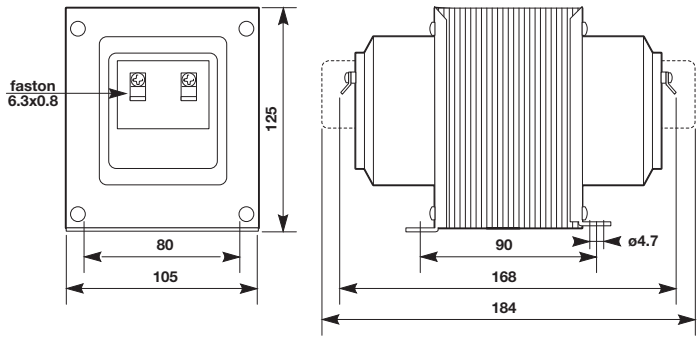
TV2



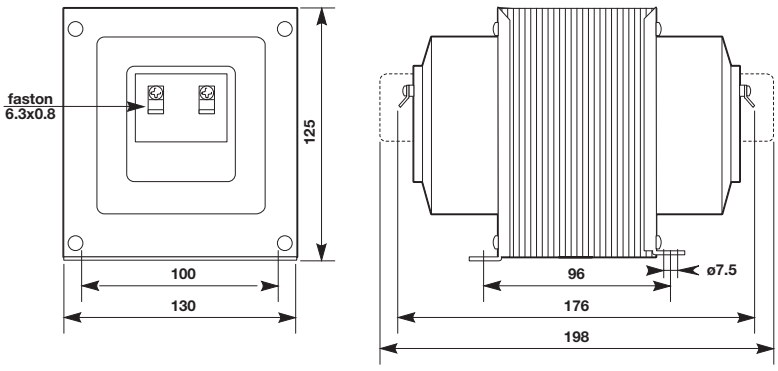
TV3



TV4



TV5

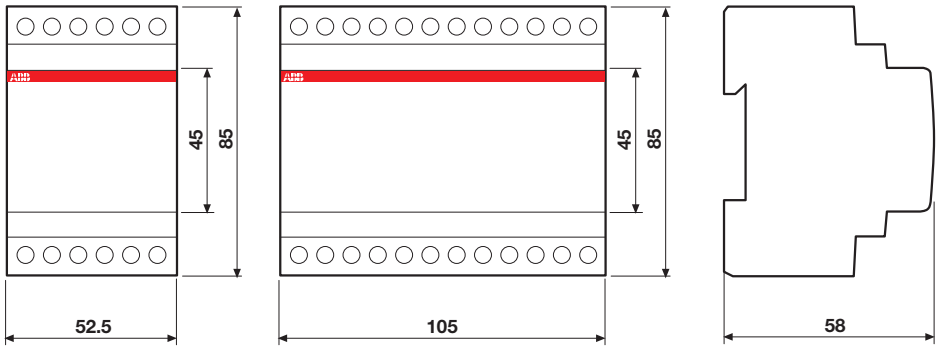


Product description and codes ..... page 6/1

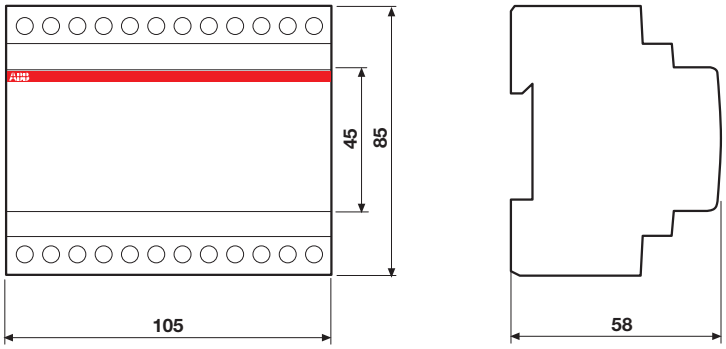
Overall dimensions

Accessories for measuring devices

Current and voltage converters



Transducers for wattmeters, varmeters, power factor meters



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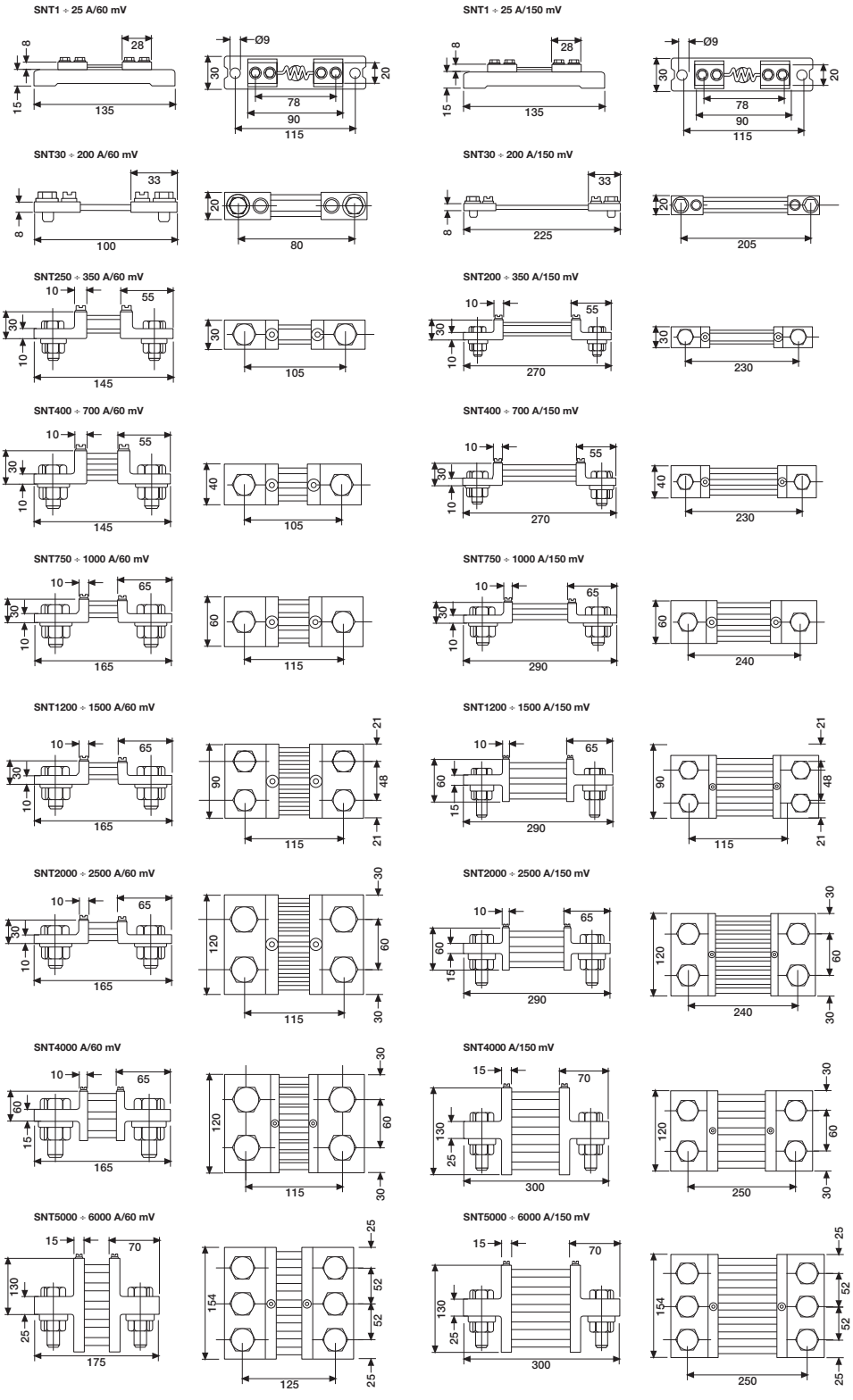
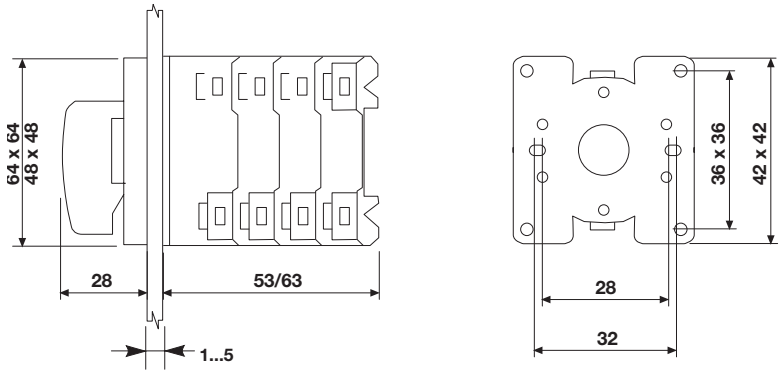
Product description and codes ..... page 6/1

Shunts



Product description and codes ..... page 6/1

Current and voltage switches



Product description and codes ..... page 6/1

In consideration of modifications to Standards and materials, the characteristics and overall dimensions indicated in this catalogue may be considered binding only following confirmation by ABB SACE

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