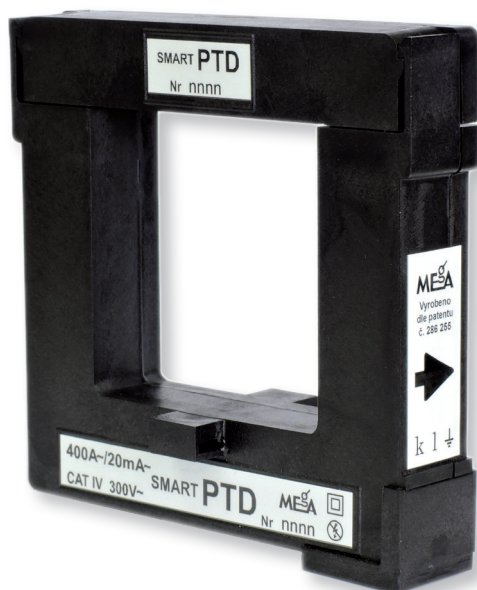




Smart PTD split core current transformer



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Smart PTD

split-core current transformer

1/ PURPOSE AND USE

The Smart PTD split-core current transformer is designed for installation on insulated conductors of LV grids. In MV grids it can only be installed on insulated cores of a MV cable whose insulation ensures the required insulation barrier, while it must be installed at points with sufficient surface and aerial distances from live parts.

The Smart PTD transformer is distinguished for its insulation, which meets the requirements of CAT IV/300V metering category in the operating state, and it is designed in safety class II. It can easily be installed in already operated LV switchboards without the need for their mechanical modifications. It is suitable as a sensor of alternating currents for modern low input power metering systems. The current output of the Smart PTD instrument current transformer can be disconnected even during operation.

2/ BASIC TECHNICAL PARAMETERS

Rated primary current I_{pr} :	200 A, 400 A, 600 A, 900 A ¹⁾
Rated secondary current I_{sr} :	20 mA
Rated frequency:	50 Hz
Ratio error ε :	0.5 % I_{rated} 0.2 % I_{rated} , conductor with current measured near clips
Phase displacement $\Delta\varphi$:	1.5° for $I \geq 0.1 I_{pr}$
Accuracy class:	0.5S (EN 61869-2:2012)
Rated resistance burden:	50 Ω
Max. resistance burden value:	100 Ω
Measuring range:	0 to 1.2 I_{pr}
Temperature category:	-25 / 40
Rated continues thermal current I_{cth} :	$2 \times I_{pr}$ for $I_{pr} \leq 600$ A, $1.5 \times I_{pr}$ for $I_{pr} = 900$ A
The transformer output can be disconnected even during operation.	
Measurement category:	CAT IV / 300 V_{ef}
Frequency range:	40 Hz to 60 Hz ²⁾
Rated short-term thermal current I_{th} :	15 kA, $t = 1$ sec
Outside dimensions of transformer:	118 / 110 \times 112 \times 23 mm
Dimensions of transformer window:	68 \times 68 mm
Minimum cross-section of measuring conductors:	0.75 mm ²
Max. diameter of measuring conductors with insulation:	2.5 mm

¹⁾ Smart PTD transformer can be supplied with I_{pr} 100 A, 300 A, 500 A

²⁾ Smart PTD is not designed for installations to distribution networks with higher nominal value of frequency.

Operating conditions

Temperature of environment: -25 °C to 40 °C

Altitude above sea level: up to 1000 m

Protection rating: IP20

Average value of relative humidity during 24 hours shall not exceed 95 %.

WARNING!

- 1. When installing on MV level, take care to follow the safe surface and aerial distances, refer to Tab. 1.**
- 2. The use of the Smart PTD transformer in another way than designed by the manufacturer may impact the protection provided by the transformer.**

3/ DESCRIPTION OF DESIGN

The Smart PTD current transformer features a split magnetic core of square form, with symmetrical reading of magnetic field of a measured conductor. Its output contains elements which limit the maximum output voltage even in a case of permanent disconnecting of output circuit.

The Smart PTD transformer comprises a basic part with clips and a removable part; both these parts are marked with the same serial numbers and their assembling is enabled by lugs with catches on each side of the basic part. The profiled shape of the removable part enables its inserting into the basic part in the defined way only, while the markings of the basic and removable parts are situated on the same side of Smart PTD. Attachment to an insulated conductor conducting the current to be measured is ensured by two clips through which draw bands are threaded. Contacts and other metal parts of the terminal board are covered by L-shape cover, which is secured to the basic part of the transformer by two screws. In addition to type designation and serial number, the basic part of the Smart PTD transformer is marked with the current transformation ratio, CATIV/300 V measuring category, the sign of doubled insulation. Marked on the side by an arrow is the positive direction of measured current and markings of secondary terminals, **k** – beginning, **l** – end of secondary winding and \perp for connecting of **l**-terminal to the ground. When triple Smart PTD transformers are ordered, the arrows of the individual transformers showing the positive direction of measured current are marked with numbers designating the first, second and third phase.

4/ SYMBOLS

Meaning of symbols used in guidebook of Smart PTD transformers:



Note in guidebook / Warning, risk of danger



Do not mount around bare dangerous live conductors that can cause injury by electric current, burns or arc discharge.

CAT IV

Overvoltage category, characterized the state of transient overvoltage. Generally this category is for LV distribution network from transformation station until electrometer or fuse by electrometer.



Security of equipment: Class II equipment, protection by double or reinforced insulation



Terminal selects to prospective grounding of secondary measuring circuit

IP kód

Protection rating of enclosure



The product is intended for recycling and collection points



Declaration of Conformity - European Economic Area

5/ INSTALLATION PROCEDURE



Installation of the Smart PTD transformer in LV and MV circuits must only be carried out in state without voltage. The Smart PTD transformer is always installed on insulated cores of MV cables and the proper surface and aerial distances from live parts must be observed.



Installation of the Smart PTD transformer must be carried out by skilled personnel only. These personnel must be equipped with personal protective equipment against electrical shock and must use other protection devices as well and must also be trained to administer first aid.

1. Insert a screwdriver between the lug catch and the removable part of the transformer on one side and on the other side and extract the removable part from the basic part, refer to Fig. 1.
2. Place the basic part of the Smart PTD transformer, in case of with the marked phase number, on a conductor with the current to be measured in such a way that the arrow on the transformer shows in the direction of current flow.

3. Attach the basic part of the Smart PTD transformer to the cable with the measured current by two draw bands, refer to Fig. 2.
4. Connect the current circuit of metering device in the correct direction to the **k** and **l** terminals of the Smart PTD transformer. The third terminal marked \perp is designed for additional grounding of the secondary winding of the Smart PTD current transformer, if it is allowed by wiring of the adjoining current circuit. For mechanical reasons, the recommended minimum cross-section of connected conductors is 0.75 mm^2 , the maximum diameter of a conductor, including insulation, is 2.5 mm, refer to Fig. 3.
5. Cover the conductors of the current circuit and grounding connected into the terminal board by the L-shape cover and fasten it by two screws.
6. Before inserting the removable part in to the basic part of the Smart PTD transformer, check whether the seating surfaces of both sections of the core are clean and clean them if necessary.
7. Insert the removable part into the basic part of the transformer. Proper inserting is necessary to achieve correct measurements.

Warning!

When installing the Smart PTD transformer on MV level, observe the safe surface and aerial distances of the voltage level on which the Smart PTD transformer is being installed, refer to Tab. 1.



Output conductors for measurement on the LV voltage level must have the minimum cross-section of 0.75 mm^2 and their insulation must correspond to doubled or reinforced insulation for the voltage of 300 V.

Tab. 1: Minimum surface and aerial distances for MV levels

U_{rated} (kV)	7.2	12	25	38.5
L_{min} (mm)	100	130	210	320

- The Smart PTD transformer can be installed on shielded conductors, too. In order to measure just the current flowing through the measured conductor, in this case it is necessary to thread the grounding conductor of the metal shielding back through the Smart PTD transformer window and then ground it. This will ensure zeroing of possible currents flowing through the shielding.

Fig. 1: Extraction of the removable part of the transformer

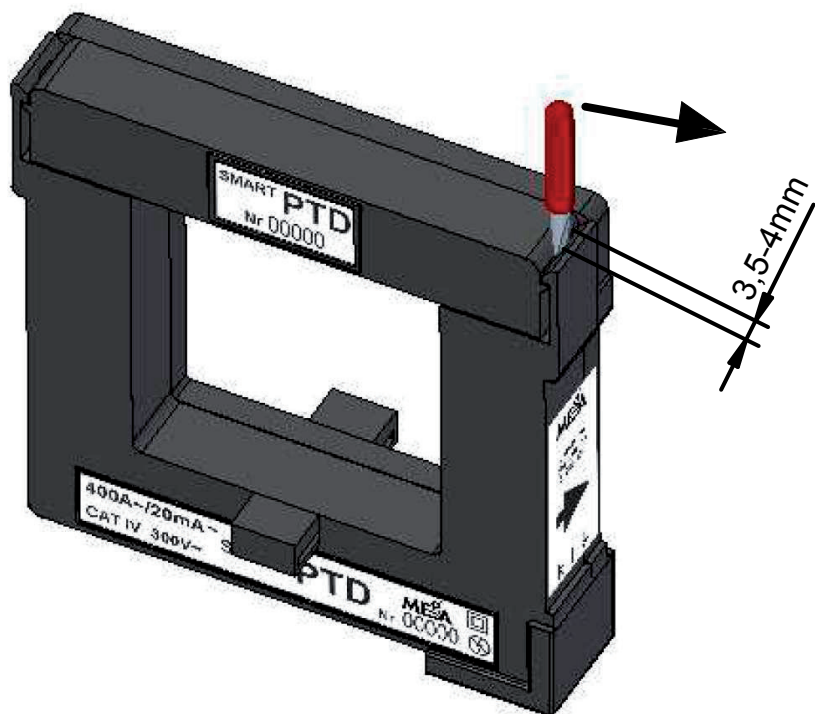
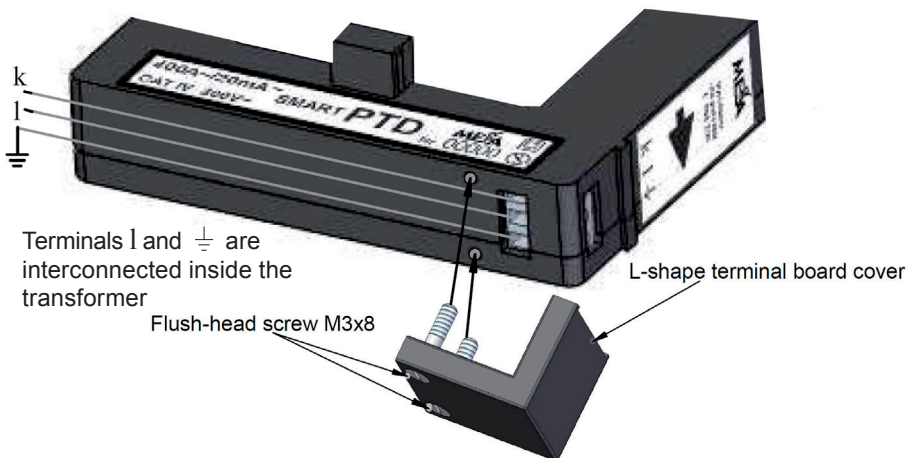


Fig. 2: Attachment of the transformer to a conductor with measured current.



Fig. 3: Connecting measuring circuit conductors to transformer terminals



6/ LIST OF COMPONENTS SMART PTD TRANSFORMER

- The assembled Smart PTD transformer, consisting of two parts marked with the same serial number, with the L-shape cover.
- 2 reversible fixing draw bands, 300 × 7.6 mm, HV300 type.

7/ ORDERING

An order must contain the following information:

- quantity of ordered pieces, or triples of pieces, of Smart PTD transformers with numeric designation,
- required primary current rated value.

8/ MANUFACTURER

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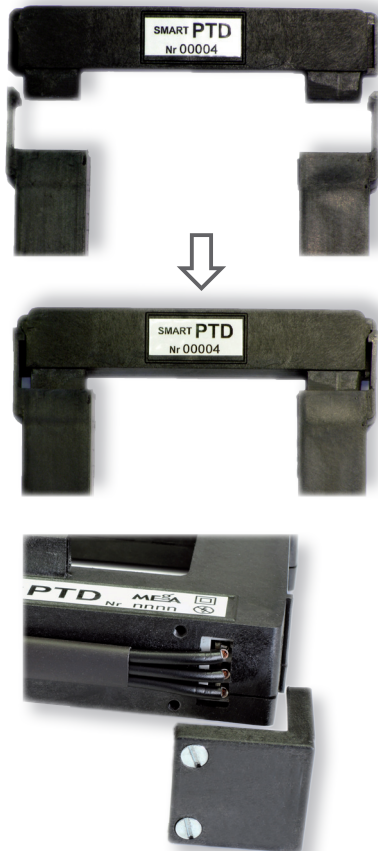
web: <http://www.e-mega.cz>



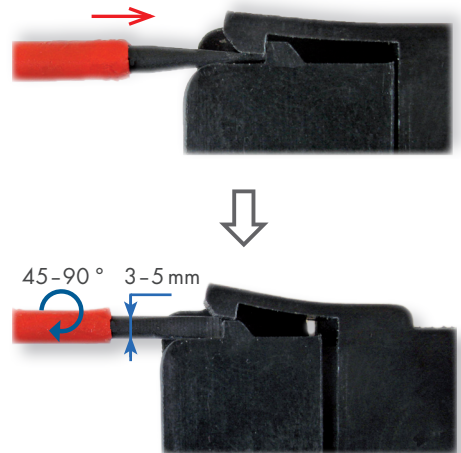
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Smart PTD core assembly and release instructions

Smart PTD core assembly



Smart PTD core release



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