

CABLE CURRENT TRANSFORMERS KOLMA_

Instructions, instalation, use and maintenance 34 KOLMA_



***This instruction for installation use and maintenance applies
to cable current transformers***

**KOLMA 06 A1,
KOLMA 06 D1,
KOLMA 06 A2,
KOLMA 06 B2,
KOLMA 06 D2.**

1. CONSTRUCTION OF THE CABLE CURRENT TRANSFORMERS

Cable current transformers are made for indoor installation. The primary conductor is a cable entered through the opening. At operating voltages over 0,72 kV the primary conductor must have an insulation corresponding to the voltage.

The iron core and windings of a cable current transformer are cast in a bisphenol A type epoxy resin which has good insulating properties. In addition the epoxy resin has good impact strength and toughness which protect the windings and iron core against humidity and mechanical damage as well as effects of an electric arc.

The cable current transformer has only one iron core. The secondary winding is distributed evenly over the ring core. For types KOLMA 06 A1 and KOLMA 06 D1 windings for the secondary taps are distributed as segments over the ring core.

Dimensions of the cable current transformers

Dimensions for transformers and accessories are shown in enclosed dimensions drawings.

TYPE	WEIGHT/kg
KOLMA 06 A1	7,0
KOLMA 06 A2	2,9
KOLMA 06 B2	5,4
KOLMA 06 D1	11,5
KOLMA 06 D2	11,4

Accessories:

Fixing base:

TYPE	SUITABLE FOR USE WITH TRANSFORMER
KOLMA-ZK 1	KOLMA 06 A1 KOLMA 06 A2 KOLMA 06 B2
KOLMA-ZK 2	KOLMA 06 D1 KOLMA 06 D2

Secondary terminal cover:

TYPE	SUITABLE FOR USE WITH TRANSFORMER
KOK-ZAX 14	KOLMA 06 A2 KOLMA 06 B2

2. TECHNICAL DATA FOR THE CABLE CURRENT TRANSFORMERS

Rated voltage 1)	0,72 kV
Insulation test voltage (50 Hz, 1 min).....	3 kV (IEC 185)
Rated frequency	50 Hz (60 Hz)
Short time withstand current I_{th} (1 s).	$60 \times I_{pn}$
Peak withstand current I_{dyn}	$2,5 \times I_{th}$
Operating temperature range	-5°C + 55 °C
Secondary terminals	for 6 mm ² wires

¹⁾ The insulation level of the primary conductor determines the maximum operating voltage.

The cable current transformers can feed the rated burdens given in the following tables 2.1. and 2.2. in the accuracy class 10P10 (IEC 185,

1987). Markings for secondary terminals used in the tables are presented in point 4.3. For types KOLMA 06 A1 and KOLMA 06 D1 the rated current ratio is 750/5 A.

TABLE 2.1.

Ratios and burdens for accuracy class 10P10. Values mentioned here are approximate.

Types: KOLMA 06 A1 and KOLMA 06 D1

RATIO I _{pn} /I _{sn} (A)	SECONDARY- TERMINALS	BURDEN (VA) TYPE	
		KOLMA 06 A1	KOLMA 06 D1
50/1	S4-S5	1,0	0,5
70/1	S3-S4	2,0	1,0
100/1	S1-S4	2,5	2,0
150/1	S1-S5	5,0	4,0
50/5	S1-S2	1,0	0,5
100/5	S2-S3	2,5	1,5
150/5	S1-S3	4,0	3,0
250/5	S4-S5	7,5	5,0
350/5	S3-S4	10	7,5
500/5	S1-S4	15	10
600/5	S3-S5	20	15
750/5	S1-S5	20	15

TABLE 2.2.

Ratios and the rated burdens for accuracy class 10P10.

Types: KOLMA 06 A2, KOLMA 06 B2 and KOLMA 06 D2

TYPE	RATIO I _{pn} /I _{sn} (A)	SECONDARY TERMINALS	BURDEN (VA)
KOLMA 06 A2	100/1	S1-S2	2,0
KOLMA 06 B2	100/1	S1-S2	2,5
KOLMA 06 D2	100/1	S1-S2	2,0

3. PACKING

Cable current transformers are packed in cardboard boxes the dimensions of which are:

KOLMA 06 A1 25 x 18,5 x 8 cm, one transformer per package

KOLMA 06 A2 21,5 x 11,5 x 16,5 cm, two transformers per package

KOLMA 06 B2 29 x 11,5 x 22,5 cm, two transformers per package

KOLMA 06 D1 and KOLMA 06 D2 is delivered fastened on a transport pallet.

The accessories are delivered in plastic bags which are attached to the cable current transformer package.

4. INSTRUCTIONS FOR INSTALLATION

4.1. Mounting of the cable current transformer

The cable current transformer may be installed either in vertical or in horizontal position. It can be mounted either by using two bottom inserts or by using a separate fixing base, which in turns is fixed to the bottom inserts.

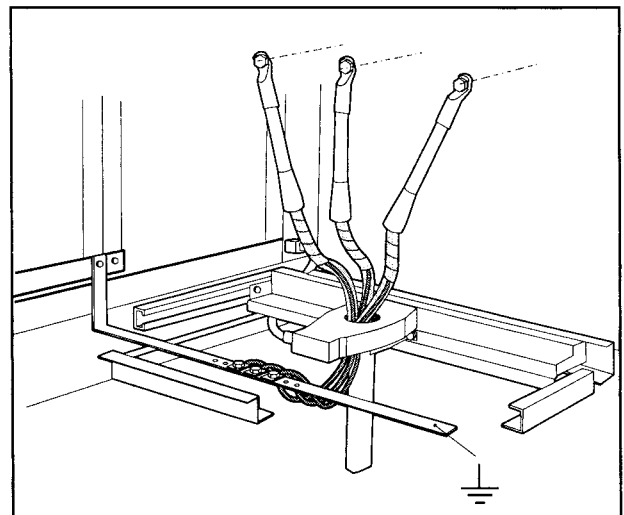
When using the bottom inserts for mounting, the screws (M8) shall not be tightened in excess of the nominal torque; 9 Nm, otherwise damage may occur. Use a torque spanner if necessary.

When necessary the cable current transformer can be fixed to the cable which acts as primary conductor by means of a special fixing piece. In such cases it must be insured that the cable endures the strain caused by the weight of the transformer, especially in circumstances where vibration is involved.

4.2. Fastening of the primary cable

The cable acting as primary winding shall be entered through the opening in the cable current transformer. This must be done before the cable box belonging to the cable inserted through the primary opening is installed. If the cable box can be entered through the primary opening even when it is installed on the cable, the installation of the cable box can also be done before.

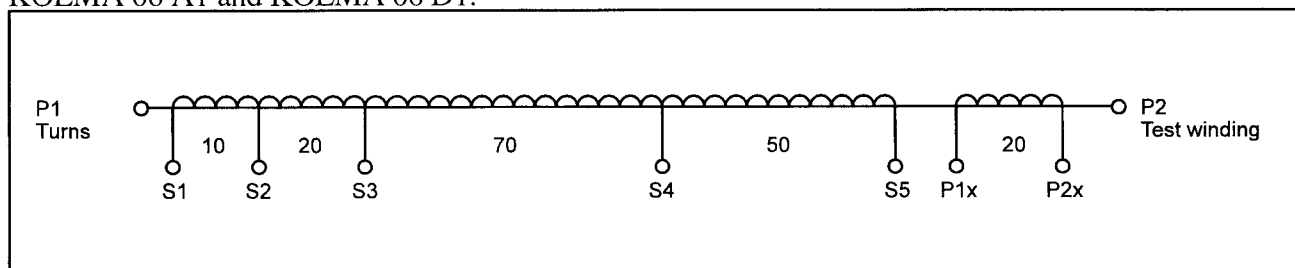
If the metal armour of the cable or the protective conductor is drawn through the transformer, the effect of their current on the sum of the phase currents must be eliminated when installing the transformer. In such cases an earthing conductor from the cable box, metal armour or protective conductor must be drawn back through the transformer to the earthing of the substation. The earthing conductor must not between the cable box and the transformer be connected to conductive structures, and the metal cable terminator box must be insulated from the supporting structures. Installation of the primary cable has been further illustrated in picture 1.



Picture 1.

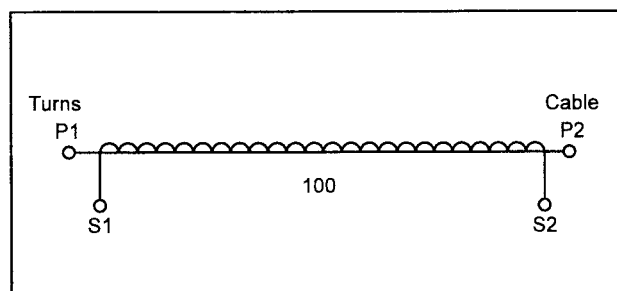
4.3. Secondary circuit connection

Number of turns and terminal markings for types
KOLMA 06 A1 and KOLMA 06 D1:



Secondary terminals are made for 6 mm² conductors. Conductors connected to the secondary terminal block are to be tightened with screws (M4) in the terminal block.

Number of turns and terminal markings for types
KOLMA 06 A2, KOLMA 06 B2 and KOLMA 06 D2:



Secondary terminals are made for 6 mm² conductors. Secondary terminal screws (M5) are not to be tightened with a tightening torque exceeding the nominal strength of the screws. Use a torque spanner, if necessary. The nominal tightening torque is 2,5 Nm.

5. INSTRUCTIONS FOR USE

Cable current transformers are used together with static earth-fault relays or they can be generally used when measuring the neutral current e.g. to prewarn of, or locate an earth-fault. Instructions for selecting correct cable current transformers and earth-fault relays for earth-fault protection are given in instruction 34 KOL 1.

Cable current transformers can be used as one-phase current transformers i.e. to measure the phase current e.g. in connection with additional protection.

The use of cable current transformers for other purposes than those described above is forbidden.

The excitation curves needed for setting the relay protection are given for the different cable current transformer types in type test report X88-151.

The functioning of the earth-fault protection circuit formed by the cable current transformer and the relay is easy to test by means of the test

winding available for types KOLMA 06 A1 and KOLMA 06 D1. If the relay starts at the test winding current I_x , it starts at the sum current $20 \times I_x$ in the cable going through the primary opening. The test winding is rated for 6 A max. current.

If there is no burden connected to the secondary terminals of the cable current transformer, the secondary terminals must not be left open circuited when the primary conductor is connected. If in types KOLMA 06 A1 and KOLMA 06 D1 the burden is connected between two terminals, the rest of the terminals must be left open circuited (applies also to the test winding terminals).

The surface material of the cable current transformers withstands well also effects of chemicals.

The secondary terminals, secondary terminal covers and the base must, however, be protected against such effects.

6. INSTRUCTIONS FOR MAINTENANCE

Cable current transformers do not need to be maintained.

However, excessive dust or other kind of dirt can be brushed off the transformer. Dirty transformers can be cleaned with water, spirit, petrol or toluene.

Traces of arcs and minor surface damages can be easily removed with sandpaper after which the surface is to be treated with silicone paste.

Instructions for repairing greater surface damages (such as cracks) must be requested from the manufacturer.

7. TRANSPORT AND STORAGE

The permissible transport and storage temperature for cable current transformers is -40°C...+55 °C. Current transformers must be protected against direct sunshine.



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