MEDIUM VOLTAGE PRODUCT

KOLA and IFW openable Cable Current Transformers
Instruction for installation, use and maintenance
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Instructions for installation, use and maintenance for openable cable current transformers

These installation, use and maintenance instructions apply for openable cable current transformers of the following types: KOLA and IFW

1. Service conditions

The cable current transformers KOLA 06 B2, KOLA 06 D2, KOLA 06 J2 and IFW are made for indoor installation. The primary conductor is a cable entered through the inner opening. At operating voltage over 0.72 kV the primary conductor must have an insulation corresponding to the voltage. The iron core and windings of cable current transformers are cast in a 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 ring core or rectangular core of cable current transformers can be opened in order to facilitate the installation of the cable acting as primary conductor. The cable current transformer has only one iron core. The secondary winding is distributed evenly over both halves of the core. The secondary coil of the two transformer halves are connected together with two busbars.

2. Technical details

### IFW

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage *, Um</td>
<td>0.72 kV</td>
</tr>
<tr>
<td>Insulation test voltage (50Hz, 1min), Up</td>
<td>33 kV</td>
</tr>
<tr>
<td>Rated frequency, fn</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Number of turns, T</td>
<td>120 or 100</td>
</tr>
<tr>
<td>Short time withstand current, Ith (5 s.)</td>
<td>10 kA</td>
</tr>
<tr>
<td>Peak withstand current, Idyn</td>
<td>2.5 x Ith (25 kA)</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-5 to +55°C</td>
</tr>
</tbody>
</table>

* The insulation level of the primary conductor determines the maximum operating voltage

### KOLA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage *, Um</td>
<td>0.72 kV</td>
</tr>
<tr>
<td>Insulation test voltage (50Hz, 1min), Up</td>
<td>3 kV (IEC 60044-1)</td>
</tr>
<tr>
<td>Rated frequency, fn</td>
<td>50 Hz (60 Hz)</td>
</tr>
<tr>
<td>Number of turns, T</td>
<td>100 (50 + 50)</td>
</tr>
<tr>
<td>Short time withstand current, Ith (3 s.)</td>
<td>10 kA</td>
</tr>
<tr>
<td>Peak withstand current, Idyn</td>
<td>2.5 x Ith (25 kA)</td>
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* The insulation level of the primary conductor determines the maximum operating voltage

The cable current transformers KOLA can at the rated current ratio 100/1 [A] feed a burden of 2 VA in accuracy class 10P10 (IEC 60044-1)

The dimensions of the cable current transformer and its accessories are given in the dimension drawings.

Accessories:

- Base plate: KOLMA-ZX 1 (for KOLA 06 B2) or KOLMA-ZX 2 (for KOLA 06 D2)
- Secondary terminal cover

These are standard accessories, delivered with current transformer without any additional cost.

3. Instructions for installation

Opening of the iron core of the cable current transformer

The two halves of the transformer are tightened together with four screws which also guide the halves to the correct position. In connection with opening the core it is advisable to treat the iron core joint surfaces with protective grease. The type of the grease recommended is given in point 6.
Opening of the ring core KOLA 06 D2 and B2 (Fig. 1)

1. Open the nuts (1) and remove the finger shield (2).
2. Open the nuts (3). Remove the spring washers (4) and washers (5).
3. Open and remove screws (6).
4. Open the screws (7) so that the connecting busbars (8) can move without hindrance.
5. Remove screws (9).
6. Pull the transformer halves evenly apart, until one of the halves becomes loose from the guiding sleeves (10). Try not to separate the halves by forcing with a tool.

Opening of the ring core KOLA 06 J2 (Fig. 2)

1. Push the transformer halves together. Try not to push the halves together by forcing by a tool.
2. Place the washers (5) and spring washers (4) on the screws (9).
3. Insert the screws (9, 4 pcs) to the transformer half from direction A.
4. Tighten the screws evenly in turns until the halves are tightly together. The tightening torque of the screws should be 8...10 Nm. Use a torque spanner, if necessary.
5. Fasten the connecting cables (8) with screws (6) and spring washers (12) and washers (11). Maximum tightening torque is 2.5 Nm.

Opening of the ring core KOLA 06 DB and B2 (Fig. 1)

1. Push the guiding sleeves (10, 4 pcs) to the transformer half from the direction B.
2. Push the transformer halves together by pressing evenly from direction B so that the guiding sleeves (10) enter to the holes (11) in the other transformer half. Try not to push the halves together by forcing by a tool.
3. Insert the screws (9, 4 pcs) to the transformer half from direction A.
4. Place the washers (5) and spring washers (4) on the screws (9).
5. Tighten the nuts (3) evenly in turns until the halves are tightly together. The tightening torque of the nuts should be 3...5 Nm, however 5 Nm at the highest. Use a torque spanner, if necessary.
6. Fasten the connecting busbars (8) with screws (6) and (7) from the lower to the upper half as shows in Fig. 3. Maximum tightening torque is 2.5 Nm.
Opening of the ring core IFW (fig. 3)

1. Spread out its halves by unscrewing 4 M6 screws [19] on both sides of the transformer.
2. Put the transformer around the current path at the destination.
3. Screw the transformer halves together with screws [19].
4. Fix the transformer to the ground with 4 M10x35 [13] bolts, placing them through four holes in the corners of the transformer.
5. In the case of an IFW transformer with the letter S equipped with a handle [5] enabling mounting with two screws in the transformer axis, the transformer should be screwed using M10x25 [17] bolts through the handle hole [5].
6. To the secondary terminals of the transformer, connect the secondary circuits in accordance with the markings on the transformer casting using M6 screws with washers [11, 10, 9]. 1S1-1S2 main winding; 2S1-2S2 test winding.

Attention: After opening and closing must be connection busbars connected as well as original from supplier.

Fastening of the cable current transformer to its base

The cable current transformer can be installed either in vertical or in horizontal position. Fastening to the fastening base shall be done either directly to the bottom inserts (2 pcs, part (12) in Fig. 2.) of the cable current transformer or by means of a separate fixing base fastened to the bottom inserts. The screws fastened to the bottom inserts must not be tightened with a larger tightening torque then the nominal strength of the screws (for KOLA 06 B2 M8 and for KOLA 06 D2 M10). Use a torque spanner, if necessary. The nominal tightening torque is for M8 screw 9 Nm and for M10 screw 20 Nm. There are four holes for M10 screws in the fixing base. When necessary the cable current transformer can be fastened to the cable which acts as primary conductor by means of a special fixing part. In such cases it must be ensured that the cable endures the strain caused by the weight of the transformer, especially in circumstances where vibration is involved.

Installation of primary cable

The cable acting as primary winding shall be entered through the opening in the cable current transformer (Fig. 3.). Due to its openable construction the cable current transformer can be installed even after the cable acting as primary conductor and its cable terminator are already connected. If the metal armour of the cable or the protective conductor is drawn through the trans-
former, the effect of the current in them to the sum of the phase currents must be eliminated when installing the transformer. In such cases an earthing conductor from the cable terminator, metal armour or protective conductor must be drawn back through the transformer to the earthing point of the substation. The earthing conductor must not be connected to conductive structures between the cable terminator box and the transformer. And the metallic cable terminator box must be insulated from the supporting structures. Installation of the primary cable has been further illustrated in Fig. 5.

4. 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. Cable current transformers can be used as single-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. On request excitation curves for relay protection setting can be delivered. The secondary terminals of the cable current transformer are not to be left open-circuited when the primary cable is installed. Water must not get to the joint in the iron core. If water gets to the joint, it must be dried before continuing operation. In addition, the joint surfaces of the iron core in such cases must be greased following the instructions given in point 6. The surface material of the current transformer withstands can be also effected by chemicals. The secondary terminals, secondary terminal cover, the base and the joint in the iron core must, however, be protected against such effects.

5. Instructions for maintenance

Cable current transformers do not need to be maintained. When opening the iron core it is recommended to treat the iron core surface at the joint with grease. A suitable grease is for example the antirust compound Tectyl 506 (Supplier Valvoline). In addition, excessive dust and the like must be brushed off the transformer. Dirty transformers can be cleaned with 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 by applying a thin layer of silicone paste on it. Instructions for repairing greater surface damages (such as cracks) must be requested from the manufacturer.

6. Transport and storage

The permissible transport and storage temperature for cable current transformers is \(-40^\circ\text{C} \ldots +55^\circ\text{C}\). During transport and storage the transformers must not become wet with water. In addition the cable current transformer must be protected against direct sunshine.
7. Dimensional Drawings

**Note:** Unless explicitly stated, all dimensions and tolerances are valid with generally defined tolerance 0.6%. Tolerance applies to all geometric characteristics including form variation of the products. All dimensional references representing a diameter or radius of circles are defined as the minimal value of a real dimension.

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**KOLA 06 B2**

Weight: 8 kg
KOLA 06 D2

Weight: 12.5 kg

Drawing n.

1VL4900382R0101
KOLA 06 J2

Weight: 32 kg

Drawing n.
1VL4900383R0101