MEDIUM VOLTAGE PRODUCT

BDG 072 Current Instrument Transformer
Instruction for Installation, use and maintenance
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Instructions for installation, use and maintenance for the BDG 072 current instrument transformers

These installations, use and maintenance instructions apply for current instrument transformers intended for indoor operation. The instructions refer to current instrument transformers for indoor use, of the following types: BDG072A0; BDG072A1; BDG 072A2; BDG 072A3; BDG 072B3

1. Service conditions

**Indoor transformers**

The transformers need to be installed in dry and indoor conditions where the ambient air is not significantly polluted by dust, smoke, corrosive gases, vapours or salts.

The transformers are designed for standard ambient temperatures between -40°C and +80°C and altitudes below 1000 m above sea level. The transformers can also be operated at higher or lower ambient air temperatures and higher installation altitudes if such are agreed with the manufacturer.

2. Technical details

Technical details and specifications of each of the transformers are shown on a rating plate fixed to the terminal box. It is not allowed to operate the transformer at values exceeding the nameplate data.

Dimensional drawings of transformers ELK-CN are shown in Appendix 2.

3. Instruction for installation

**General information**

Instrument transformer is an electrical equipment and the electrical installation of the instrument transformer can be done by skilled personnel, only. The level of experience, age and eligibility criteria for persons working with, on or near electric installations are governed by national legislation. If no such eligibility legislation is available the corresponding requirements can be found in EN 50110-1 standard.

**Safety instructions**

1. Always consider the transformer as a part of electric circuit which it is connected to.

Don’t touch incoming connectors and terminals, or any other parts of the transformer, except you know for sure these are earthed.
2. Ground always the metallic base of the instrument transformer.

3. Connect always one terminal of each secondary winding of the transformer to the earth. When the secondary of transformer is interconnected, there should be only one grounded point to prevent accidental paralleling with system grounding wire.

4. Always short-circuit the secondary of the current transformer, which is not currently in use, to prevent secondary voltages, which may be hazardous to personnel or damaging to the transformer’s secondary. The secondary like this must be additionally grounded.

Mounting
Transformers BDG are designed as low-voltage current transformers 0.72/3 kV, without built-in primary conductor. For use in higher voltages is therefore necessary combined them with the primary conductor with a self-isolation. Primary conductor is not included in supply. Mounting and placement of transformers BDG proposes customer depending on application and using of the primary conductor and its insulation. The transformer has a flange with four holes Φ18 mm in the corners used to attach the transformer screw.

Connection of transformer primary side
The BDG transformers don’t have their own primary conductor. If BDG transformers will be used in other applications than ABB HECS or HVR Generator Circuit Breaker please contact us for support.

Connection of transformer secondary side
The transformers BDG contains outlet cable with cross-sections 4-6 mm² are connected to the terminal on the DIN rail. The terminals are equipped with M4 screws for connect the secondary outlets. Maximum allowed torques for secondary screw connections:

<table>
<thead>
<tr>
<th>Screw</th>
<th>Highest torque (Nm)</th>
<th>Lowest torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4</td>
<td>1.8</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Max. diameter of the cable or wire connected on one secondary terminal: 10 mm²

4. Instruction for use
Current instrument transformers are used:
• to convert large currents in the primary circuit to an appropriate level for secondary circuit equipment (relays and meters);
• to insulate primary and secondary circuit from each other to protect the secondary equipment from the harmful effects of large current appearing during the operation (short circuits).

The use of current transformer for other purpose
then described above is forbidden if not agreed with the producer.

**Routine test report**
The routine test report of a current instrument transformer includes:

a) verification of terminal markings;
b) inter-turn overvoltage test;
c) determination of errors.

There are two rating plates available for the transformer (one glued on the transformer body, the other in the by-pack kit).

On customer request the following information can be provided free of charge:

- theoretical current/voltage error and phase displacement values;
- theoretical excitation (magnetization) curves.

Additional reports for supplementary charge, made available on request:

- test report on accuracy;
- excitation (magnetization) curves;
- additional nameplates (if more than 2 are required);
- verification tests for measuring cores (classes 0.2; 0.2 S; 0.5; 0.5 S).

5. Maintenance instructions

Excessive dust sediments or any other type of contamination is to be removed from the transformer using a soft brush, in a way not to damage the insulation or cables taken out from the transformer.

6. Transport & Storage

Permitted temperature for transport and storage ranges from -50°C to +80°C. During transport and storage the transformers have to be protected from direct impact of solar radiation. The transformers are delivered in wooden crates or fixed on transport pallets.

7. Disposal

Materials used in instrument transformers are considered as materials without environmental impact and materials are not toxic. Instrument transformers have to be disposed of in accordance with national legislation relevant to domestic waste disposal.

8. Handling

Most of transformers BDG exceeds 25 kg and is necessary to use hanging strips attached by inside hole of the transformer. Lifting capacity of the belts and the crane has to be 200 kg at least. Always make sure that the belts hold safely on the crane and on the transformer.
SAFETY WARNING:
During the manipulation with transformer is necessary to follow safety work instructions. Never stay under the freight. Always make sure that the freight is safely locked on the crane and make sure that there is no risk of unexpected release or turnover of the freight.

9. Reference to standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC61869-1</td>
<td>Current instrument transformers;</td>
</tr>
<tr>
<td>IEC60044-1</td>
<td>Current instrument transformers;</td>
</tr>
<tr>
<td>IEC60529</td>
<td>Degrees of protection provided by enclosures;</td>
</tr>
<tr>
<td>ISO12100</td>
<td>Machine safety – basic concepts, general principles of design;</td>
</tr>
<tr>
<td>EN 50110-1</td>
<td>Operation of electrical installations.</td>
</tr>
</tbody>
</table>

Current instrument transformers are designed, tested and manufactured in accordance with international or national standards, the customer requirements, based on an agreement between the customer and the manufacturer. The specific standard is always mentioned on the transformer nameplate.

As an example the following standards can be mentioned:

- IEC 61869-1; IEC 61869-2;
- IEC 60044-1; IEC 60044-6;
- AS 60044-1; AS 1243-1982;
- ČSN 351301; ČSN 351361;
- ČSN EN 60044-1; ČSN EN 60044-6;
- IEEE Std C57.13.6-2005;
- ANSI C57.13-1978;
- CSA Std CAN3-C13-M83;
- GOST 1516.3-96; GOST 7746-2001;
- BS 3939:1973; BS EN 60044-1.

When agreed transformers made in accordance with other standards can also be supplied, or in accordance with other release version of the above standards.

10. Dimensions

Dimensions of the current transformers are according to below to drawings:

- BDG072A0 - 1VL4600939;
- BDG072A1 - 1VL4600822;
- BDG072A2 - 1VL4600823;
- BDG072A3 - 1VL4600824;
- BDG072B3 - 1VL4601105.

11. Lifetime

End of the product life is more than 40 years.
Appendix 1
Examples of electrical wiring

Current instrument transformers:
Appendix 2
Dimensional Drawings BDG 072

weight of the transformer depend on number of cores and their parameters 20 - 50kg

**BDG 072A0**

<table>
<thead>
<tr>
<th>Drawing no.</th>
<th>Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1VL4600939R0101</td>
<td>P1-P2</td>
</tr>
<tr>
<td>1VL4600939R0102</td>
<td>P2-P1</td>
</tr>
</tbody>
</table>

weight of the transformer depend on number of cores and their parameters 20 - 60kg

**BDG 072A1**

<table>
<thead>
<tr>
<th>Drawing no.</th>
<th>Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1VL4600822R0101</td>
<td>P1-P2</td>
</tr>
<tr>
<td>1VL4600822R0102</td>
<td>P2-P1</td>
</tr>
</tbody>
</table>
weight of the transformer depend on number of cores and their parameters 30 - 70kg

<table>
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</tr>
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</tbody>
</table>

weight of the transformer depend on number of cores and their parameters 45 – 90 kg

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</thead>
<tbody>
<tr>
<td>1VL4601105A0101</td>
<td>P1-P2</td>
</tr>
<tr>
<td>1VL4601105A0102</td>
<td>P2-P1</td>
</tr>
</tbody>
</table>
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