Copyright Notice

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FCC Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference and
2. This device must accept any interference received, including interference that may cause undesired operation."
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Overview

This user guide explains how to install the PAN-14 sensors.

Workflow

Sensor installation consists of the following steps:

1. Map the circuits.
   
   See Panoramic Power Deployment Tool User Guide.

2. Physically attach the sensors and the CTs to the wires.

**Unpacking the Hardware**

Sensors are shipped in 3-unit packs.

- CTs are not included and can be bought separately.

**Safety Precautions**

- The sensor must be installed only on an insulated conductor.
- CTs output/secondary current must exceed 5A.
- The sensor and CT should be installed and removed only by a qualified electrician.
- Installation must not be performed on a live wire for reasons of safety and random shock hazard. Power supply to the panel must be shut off before and during installation.
- The sensor and CT must not be installed lying or touching bus bars or any other non-insulated, exposed conductors.
- Installation is possible both on external entry/exit conductors before the terminal strip, as well as both ends of the circuit breaker. The least cramped, most accessible location should be chosen for installation. The sensor should be installed such that the arrow points in the direction of the load.

**Mapping the Site**

See Panoramic Power Deployment Guide.
Installing the Sensor

This procedure must be carried out by a certified electrician.

1. Connect the PAN 14 sensor to the CT:

2. Connect the two CT's outputs to the PAN14 sensor using a 1.0-4.0mm² (12-17 AWG) wires as follows:
   a. Connect the PAN14 sensor's terminal marked as "1" to the CT's terminal marked as "S1" or "X1"
   b. Connect the PAN14 sensor's terminal marked as "2" to the CT's terminal marked as "S2" or "X2"

3. Mount the CT on the hot wire:
   a. If the CT is split-core:
      Close the CT on the hot wire by disconnecting its two parts, and closing them around the hot wire.
   b. If the CT is solid-core:
      Disconnect one of the ends of the hot wire from the panel, insert it through the CT, and then reconnect it to the panel.
   c. In both cases, make sure the CT is placed on the wire so that the direction of current flow on the wire is from the side marked "P1" or "H1" on the CT, to the side marked "P2" or "H2" on the CT.
Other used CT polarity markings are K for entry and L for exit or Load side (respectively P1 and P2).

4. Make sure the sensor’s LED is blinking.

5. Finalize the PAN14 sensor and the CT’s position on the panel:
   - Maintain a reasonable distance between the CT and the sensor.
   - Place the PAN14 sensor on the side that is closer to the bridge (To avoid RF blocking, make sure the CT is not positioned between the sensor and the bridge).
   - If possible, attach the PAN14 sensor with plastic ties.

IMPORTANT NOTES:

**Do not** mount the CT on the hot wire before you have already connected the PAN14 sensor securely to the CT!

If a PAN14 sensor needs to be replaced after the short circuited to each other using a length of wire **before** PAN14 is disconnected!

**Do not** leave the CT mounted/installed on a hot wire without being short circuited.

It is possible to have both the PAN14 sensor and the short circuiting wire connected to the CT at the same time

### Registering the Installed Sensor

See Panoramic Power Deployment Guide.
Monitoring Sensor Activity

See Panoramic Power Deployment Guide.

Uninstalling a Sensor

Open the sensor in the way you first opened it and remove it from the cable.

Sensor Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>PAN-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical dimensions</td>
<td>33.8 × 29 × 42.5 mm 1.33 × 1.14 × 1.67 inch</td>
</tr>
<tr>
<td>Current input range (from external current transformer)</td>
<td>0-5 A_{RMS} (up to 10 A peak)</td>
</tr>
<tr>
<td>Current measurement range</td>
<td>Any applicable range based on CT ratio</td>
</tr>
<tr>
<td>Current measurement accuracy (typical, at 25°C)</td>
<td>&lt;2% at I &gt; 2% of full-scale current</td>
</tr>
<tr>
<td>Minimum operating current (at input from external current transformer)</td>
<td>0.03 – 0.05 A</td>
</tr>
<tr>
<td>AC frequency supported</td>
<td>50 Hz (EU version) 60 Hz (US version)</td>
</tr>
<tr>
<td>Transmission frequency</td>
<td>434 MHz (EU) 915 MHz (US)</td>
</tr>
<tr>
<td>Transmission power (ERP)*</td>
<td>0 dBm (Max)</td>
</tr>
<tr>
<td>Transmission interval</td>
<td>10 seconds</td>
</tr>
</tbody>
</table>
## Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>PAN-14</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Europe</td>
</tr>
<tr>
<td>Safety:</td>
<td>EN-61010-1 (CE)</td>
</tr>
<tr>
<td>EMC:</td>
<td>EN-ETSI 301489-3</td>
</tr>
<tr>
<td>Radio:</td>
<td>EN-ETSI 300220-1</td>
</tr>
<tr>
<td>Israel</td>
<td>Safety: IS-61010-1 (IEC 61010-1 modified)</td>
</tr>
<tr>
<td></td>
<td>Radio: MoC Approval</td>
</tr>
<tr>
<td>Flammability rating of external enclosure</td>
<td>UL94 V-0</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0 – 50° C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20 – 65° C</td>
</tr>
<tr>
<td></td>
<td>*Pending certification testing</td>
</tr>
</tbody>
</table>

## Certified CTs

### General notes
- Solid core or split core CTs can be use
- CT’s accuracy class should be 0.5% or better
- Relay CTs or CTs which includes burden resistors cannot be used

The following list includes the CTs that were already tested and approved by PanoramicPower

**Dixsen CTs:**
- 600A split (model DBP-58, P/N 765751)
- 600A non-split rectangular (model MES-62, P/N 764812)
- 1000A split (model DBP-58)
- 1000A non-split rectangular (model MES-60, P/N 764761)

**Veris CTs:**
- 600A non-split round (BL601)
- 1000A non-split round (BL102)

Magnelab CTs:
- 600A split (ICT-2000-600)
- 600A non-split rectangular (CCT-1200-600)
- 1000A split (ICT-2000-1000)

**Troubleshooting**

If you encounter a problem, first try the following solutions:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The sensor is not sending measurements</td>
<td>Make sure the circuit has current.</td>
</tr>
<tr>
<td></td>
<td>Make sure that the sensor arrow points in the direction of the load.</td>
</tr>
<tr>
<td></td>
<td>Make sure that the sensor LED is blinking.</td>
</tr>
<tr>
<td></td>
<td>Make sure the sensors are near enough to the bridge for the bridge to receives its signals.</td>
</tr>
<tr>
<td></td>
<td>Check the reception LED of the bridge. If it is not blinking it means that it is not receiving signals.</td>
</tr>
</tbody>
</table>

**Support**

More support can be obtained at support@panpwr.com.