



Panoramic Power System

PAN-14 User Guide

Copyright Notice

Copyright © 2014 Panoramic Power Ltd. All rights reserved.

FCC Compliance Statement

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio and television reception.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause such interference, which can be verified by turning the device off and on, the user is encouraged to eliminate the interference by one or more of the following measures:

- Re-orient or re-locate the receiving antenna.
- Increase the distance between the device and the receiver.
- Connect the device to an outlet on a circuit different from the one that supplies power to the receiver.
- Consult the dealer or an experienced radio/TV technician.

WARNING! Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may be received or that may cause undesired operation.

Contents

Overview	4
Workflow.....	4
Unpacking the Hardware.....	5
Safety Precautions	5
Mapping the Site	5
Installing the Sensor.....	6
Registering the Installed Sensor.....	7
Monitoring Sensor Activity	8
Uninstalling a Sensor	8
Sensor Specifications.....	8
Certified CTs	9
Troubleshooting	10
Support	10

Overview

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



PAN 14 Current Sensor



Current Transformer (CT)

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.

3. Monitors the proper functioning of the sensors. See Panoramic Power Deployment Tool User Guide.

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 not** 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.

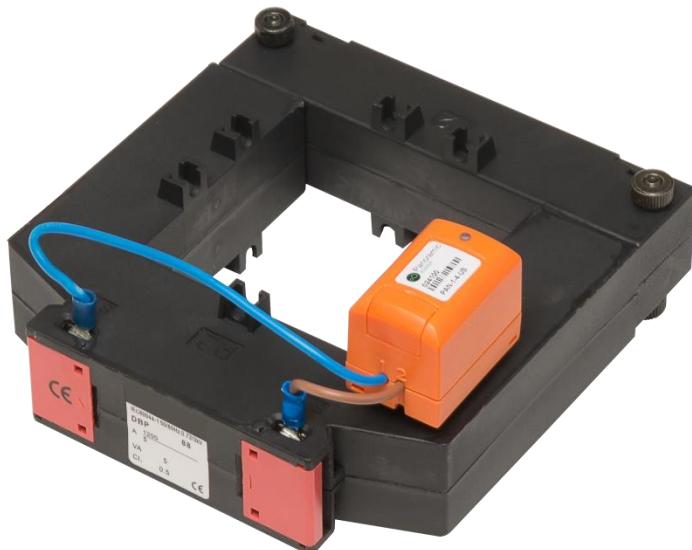
Mapping the Site

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 PAN-14 sensor using a 1.0-4.0mm² (12-17 AWG) wires as follows:
 - a. Connect the PAN-14 sensor's terminal marked as "1" to the CT's terminal marked as "S1" or "X1"
 - b. Connect the PAN-14 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 PAN-14 sensor and the CT's position on the panel:

- Maintain a reasonable distance between the CT and the sensor.
- Place the PAN-14 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 PAN-14 sensor with plastic ties.

IMPORTANT NOTES:

Do not mount the CT on the hot wire before you have already connected the PAN-14 sensor securely to the CT!

If a PAN-14 sensor needs to be replaced **short circuit the CT's outputs to each other** using a length of wire **before** PAN-14 is disconnected!

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

It is possible to have both the PAN-14 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

Specifications	PAN-14
Physical dimensions	33.8 × 29 × 42.5 mm 1.33 × 1.14 × 1.67 inch
Current input range (from external current transformer)	0-5 A _{RMS} (up to 10 A peak)
Current measurement range	Any applicable range based on CT ratio
Current measurement accuracy (typical, at 25°C)	<2% at I > 2% of full-scale current
Minimum operating current (at input from external current transformer)	0.03 – 0.05 A
AC frequency supported	50 Hz (EU version) 60 Hz (US version)
Transmission frequency	434 MHz (EU) 915 MHz (US)
Transmission power (ERP)*	0 dBm (Max)
Transmission interval	10 seconds
Safety and EMC certificates*	USA & Canada Safety: UL-61010-1, CSA-C22.2 (ETL listed) EMC/Radio: FCC Part 15 subpart B, C

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

Certified CTs

General notes

- Solid core or split core CTs can be used
- 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:

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

Support

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