Panoramic Power System

PAN-1-0 Sensor Installation Guide

Copyright Notice

Documented Releases

Revision Number	Revision Description	Revision Date
1.0	New version	October 2011

Contents

Overview

Panoramic Power System (PPS) monitors electrical energy consumption at individual circuit level and detects excess usage allowing organizations to identify and reduce energy and maintenance expenses.

PPS consists of wireless, self-powered sensors engineered to allow for rapid, non-invasive installation, with almost no disturbance to operations. Sensors are easily attached to circuit breakers by just snapping them on to the outgoing electrical wire. They monitor the flow of electricity through the resulting magnetic field and also use the field as a power source. The sensors do not require any maintenance.

Data collected by the sensors is sent to a bridge, which, in turn, transfers the information to the PPS server through the Internet, using Cloud technology.

The sensors report the energy consumption to the bridge at sub-minute intervals. Consumption reports can be retrieved through the system.

This user guide explains how to install the sensors.

Unpacking the Hardware

Sensors are shipped in 30-unit packs.

The package includes the following items:

- 30 sensors.

- 1 sensor opener

Safety Precautions

- The sensor must be installed only on an insulated conductor.

- The conductor's diameter and maximum current must match the specification printed on the sensor.

- The sensor 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 must not be installed lying or touching busbars 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.

Hardware Description

This procedure must be carried out only by a certified electrician.

The sensors are shipped closed, in order to protect the core from dust and other pollutants. Open a sensor only when preparing to install it.
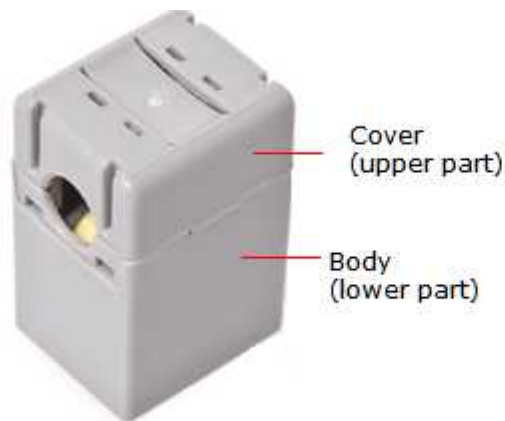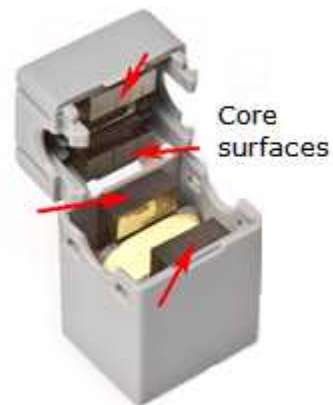
Figure 1. Closed sensor   Figure 2. Open sensor: Core

The sensor comes with a label fixed on it, containing a unique ID.

Figure 3. Open sensor: Label

Sensors are mapped to building circuits according to their ID, so that circuit consumption data is associated with the correct sensor.

Installing a Sensor

To install a sensor, follow these steps:

1. Make sure the 4 core surfaces are free of dust or any other particles. If necessary, wipe it with a dry cloth (the core is clean when it is first opened and this measure may be redundant).

2. Open the cover of the electrical panel board.

3. Make sure you have a plan that indicates the circuits to be monitored and the sensor IDs associates with each such circuit. Identify the circuit breaker on which you would like to install the sensor.

    The ID appears on the label fixed to the sensor.

4. Pick a sensor and slide it into the Opener from the labeled side towards the cover.

Figure 4. Slide opener into position

5. Snap the Opener's pins into the four holes.

Figure 5. Snap the opener into the sensor holes.

6. Press the two sides of the opener to release the sensor cover.

Figure 6. Press the opener to release the cover.

7. If necessary, wipe clean the electrical cable section with a dry cloth.

8. Place the opening of the sensor on a clean section of the electrical cable with the arrow on the label pointing towards the load, so that the sensor ID and barcode are visible and easily readable. See Figure 7.

9. Close the sensor cover, snapping it into its place and making sure that all four pins are properly inserted and the sensor is tightly closed.
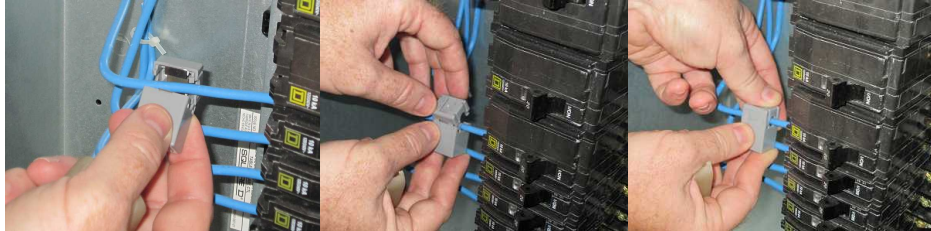

Figure 7. Installing a sensor.

Note the following:

*   If the sensor vibrates after installation (you can hear the vibration noise or feel it when touching the sensor), it means that the sensor is not properly closed. Try to press the two parts of the sensor to close it tightly. If the vibration persists, open the sensor and reinstall it or try using another sensor.

*   Whenever possible, avoid installing the sensor behind wires and position it towards the front of the panel board with label facing towards you.

Uninstalling a Sensor

Using the Sensor Opener, slide it on the sensor from the labeled side towards the cover. Snap the pins into the 4 holes and press until sensor snaps open. Remove Sensor from the cable.

Sensor Specifications

Physical dimensions	17x20x32mm 0.67x079x1.26 inch
Max hot-wire diameter	7mm 0.28 inch
Current measurement range	0-32A (low current version) 0-63A (high current version)
Current measurement accuracy	<1% at I>1A for 32A version <1% at I>2A for 63A version
Minimum operating current	0.3-0.45A
AC frequency supported	50Hz (European version) 60Hz (US version)
Transmission frequency	433MHz (European version) 902-928Mhz (US version)
Transmission power	10dbm (Max)
Transmission interval	10 seconds
Safety and EMC certificates	**USA** Safety: UL-61010-1 (ETL) EMC/Radio: FCC Part 15 sub part B,C **Europe** Safety: EN-61010-1 (CE) EMC: EN-ETSI 301489-3 Radio: EN-ETSI 300220-1
Flammability rating of external enclosure	V0
Operating temperature	0-60° C 32-140°F
Storage temperature	-20°C to 70°C

Part Number	PAN-1-0-AMP-RE
	AMP = current range (032 / 063)
	RE = region (EU / US)

Troubleshooting

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

Problem	Solution
The sensor is shaking (relevant only during installation)	Make sure that the sensor is completely closed (all four pins are in place). If they are, try pressing the sensor again like you did when closing it.
The sensor is not sending measurements	Make sure the circuit has current. Make sure that the sensor arrow points in the direction of the load.

Support

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

FCC Compliance Statement

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.

The FCC Wants You to Know

This equipment 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 a residential installation. 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 communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

a) Reorient or relocate the receiving antenna.

b) Increase the separation between the equipment and receiver.

c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

d) Consult the dealer or an experienced radio/TV technician.

FCC Warning

Modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules.

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.