User Manual

EnergySensor

Contents

Preliminary Information

Applicable Models

Unless specified otherwise, all information in this document is applicable to the following Racktivity EnergySensor models:

- **ESN100-10**
- **ESN100-11**

Usage

The Racktivity EnergySensors are intended to be used in conjunction with Racktivity EnergySwitches that are equipped with one or more Racktivity R-BUS connectors.

Specifications

Electrical Ratings

Input:

	EnergySensor
Voltage	5V DC

The EnergySensor receives input power through the R-BUS connection with another EnergySwitch. A standard Cat. 5e LAN cable (straight through) is used to establish this connection.

Linking multiple EnergySensors

Up to 8 EnergySensors can be connected to 1 EnergySwitch R-BUS connector.

Note: The double R-BUS connector on certain 0U EnergySwitches functions as 1 R-BUS connector. In this case 8 EnergySensors can be connected in total over the double R-BUS connector.

Operating Environment

Operating temperature	0°C to 50°C	32°F to 122°F
Storage temperature	-10°C to 60°C	14°F to 140°F
Humidity	5% to 85% RH	non-condensing

Dimensions

Dimensions cm (WxHxD)	5.77 x 7.00 x 2.38
Dimensions inch (WxHxD)	2.27 x 2.76 x 0.94

Compliance

- **WEEE**

Waste Electrical and Electronic Equipment

- **RoHS**

Restriction of Hazardous Substances

RoHS

Safety Information

Save these instructions!

This documentation contains important instructions that should be followed during installation and maintenance of the EnergySensor. It is intended for Racktivity customers who set up, install, relocate, or maintain Racktivity equipment. Changes and modifications to this unit not expressly approved by Racktivity could void the warranty.

Receiving Inspection

Inspect the package (see INVENTORY section) and contents for shipping damage and make sure that all parts were received. Report any damage immediately to the shipping agent and report missing contents, damage, or other problems immediately to your reseller.

Recycling

The materials used for shipping the EnergySensor are recyclable, please save them for later use or dispose of them appropriately.

Servicing & Repair

There are no user serviceable parts inside the EnergySensor. All repairs and service should be performed by authorized service personnel only.
Please refer to the Service Manual for RMA procedure.

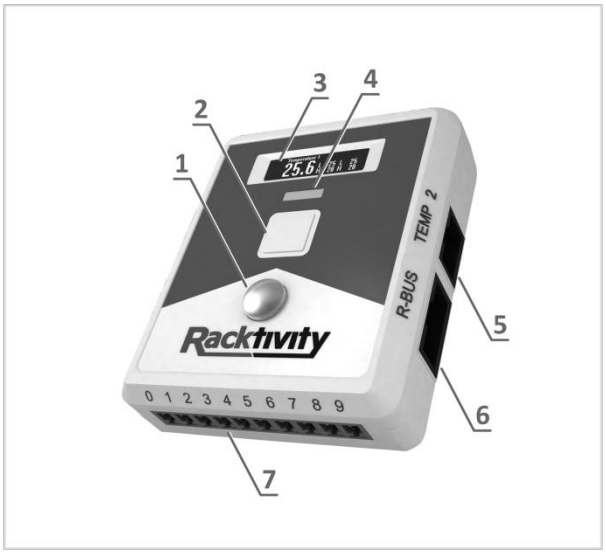
Inventory

Please verify the contents of the box:

Standard Package

Item	Quantity
EnergySensor	1
Cat. 5e LAN cable (straight)	1
User Manual	

Overview



1	**DOME**	Motion detection dome (if applicable)
2	**BUTTON**	Operation button
3	**DISPLAY**	OLED display
4	**LED**	RGB status LED (see Status LED chapter)
5	**TEMP (2x)**	Connector for external temperature probes (both sides)
6	**R-BUS (2x)**	R-BUS connector (both sides)
7	**I/O CONN**	Input & output connector (see I/O Connector chapter)

Status LED

BLUE	The sensor is powered on (no motion detected (if applicable))
RED	The sensor is powered on and has detected motion. Intensity is based on the amount of motion detected
GREEN	The button has been pressed

Internal Temperature Sensor

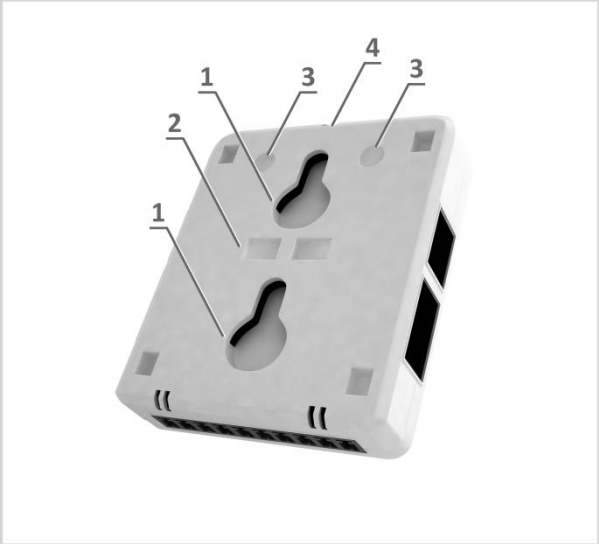
To ensure the most accurate readings from the EnergySensor' internal temperature sensor, please install the unit in a well-ventilated area. When this is not the case a slight deviation of the temperature sensor' readings is possible. Using external temperature probes - connected to the TEMP connectors - removes this issue.

In certain cases it is possible to calibrate the sensor, for more info contact Racktivity Support.

Installation

Mounting Options

The back panel features several mounting options to ensure proper installation in almost every situation.



1	**SCREW HEADS**	Lock to screw heads of a (vertical) rail in a rack
2	**CABLE TIE (H)**	Cable tie slot for horizontal mounting
3	**MAGNETS**	Circular notches for 5 x 3mm (0.2 x 0.12”) neodymium magnets
4	**CABLE TIE (V)**	Cable tie slot for vertical mounting

Note: The mounting options mentioned above are not included in the EnergySensor package.

Connecting the EnergySensor

1. Connect one end of the supplied Cat. 5e LAN cable (standard straight through) to the R-BUS connector on your EnergySwitch.

2. Connect the other end of this cable to one of the two R-BUS connectors on the EnergySensor. Either one of the R-BUS connectors can be used as connection to an EnergySwitch or as link to the following EnergySensor.

Managing the EnergySensor

When an EnergySensor is connected to the R-BUS of an EnergySwitch it receives input power and is fully functional on itself. At this point the EnergySensor is not yet “managed” by the EnergySwitch, meaning that there is no data link between the two.

Managing can be done in 2 ways, through the Command Line Interface and via the website. The following chapters only cover specific actions regarding the managing of an EnergySensor. For more general information about these topics please see the User Manual of your EnergySwitch.

Website

1. Connect the EnergySensor to an available R-BUS connector on your EnergySwitch.
2. Log in to the Web Portal as administrator.
3. Open the Management tab (available as of firmware version 1.2).
4. Press the Scan button below the table to scan for modules.
5. When successfully completed the EnergySensor module has been added to the table ("ESN100-10" by default).
6. Select "Manage" in the Action column of the module row and press the Save button.
7. If the managing is successful a new tab named "Modules" appears at the top of the Web Portal where the EnergySensor can be operated and monitored.

CLI

1. Log in to the Command Line Interface as administrator.
2. Enter command: **`get m1 modinfo 1-4`**
   to see the number of used slots (replace "1-4" with "5-8" if there are no free slots).
3. Enter command: **`set m1 modscan 1`**
   to initiate a new module scan.
4. Enter command **`get m1 modscan`**
   to get the result of the module scan (should return "2").
5. Enter command **`get m1 modinfo 1-4`** (or "5-8")
   to get the updated list of modules. Every not yet managed EnergySensor has now been added to the list as an A1 module (ref. step 1). The list number equals the number of the module (shown as [X] in the following commands).
6. Enter command **`set m1 modmgmt [X] 1`**
   to manage the module in slot [X] (as defined above). Do this for every EnergySensor you wish to manage.

7. Enter command **`get m1 modmgmt [X]`**
   to get the management status of the module in slot [X] (should return “1”).

8. Your EnergySensor is now managed by the EnergySwitch. For more information on how to get measurements from the EnergySensor please see the API documentation or use the “HELP” command in the Command Line Interface.

Connecting I/O

External temperature probe

Up to two external temperature probes can be connected to each EnergySensor. To connect an external temperature sensor plug it in an available TEMP connector. The read-outs will be available instantly.

I/O Connector

The EnergySensor features an Input/Output (I/O) connector to which external devices can be connected. The following is an overview of the I/O Connectors pins per model.

ESN100-10

PIN	FUNCTION	MAXIMUM VALUE
0	Ground	-
1	5V out - switched *	40mA
2	Analog IN 2 *	3.3V
3	-	-
4	-	-
5	Analog IN 1 *	3.3V
6	-	-
7	-	-
8	Relay 1 - contact B	2A - 60W - 48V DC
9	Relay 1 - contact A	

* An external dry door contact can be connected between both:

- 5V out (PIN 1) and Analog IN 1 (PIN 5)
- 5V out (PIN 1) and Analog IN 2 (PIN 2)

ESN100-11

PIN	FUNCTION	MAXIMUM VALUE
0	Ground	-
1	5V out - switched	40mA
2	Analog IN 2	3.3V
3	-	-
4	Isolated Input Common *	-
5	Analog IN 1	3.3V
6	Isolated Input B *	-
7	Isolated Input A *	-
8	Relay 1 - contact B	2A - 60W - 48V DC
9	Relay 1 - contact A	

* An external dry door contact can be connected between both:

- Isolated Input Common (PIN 4) and Isolated Input A (PIN 7)
- Isolated Input Common (PIN 4) and Isolated Input B (PIN 6)

Quick Configuration

Using the OLED Panel Display

Activating the display

When the Status LED is lit or blinking and the screen is black, push the button below the OLED display to activate it. On some models, the display is activated when motion is detected.

Controlling the display

The button on the EnergySensor has 2 main functions: switching display screens and resetting values.

- Switching screens: press the button once.
- Resetting values (on a value screen): keep the button pressed until the status LED changes color (1 sec).
- Other functions: follow the instructions on-screen.

Troubleshooting

Known Issues

- ***No communication between the EnergySensor and EnergySwitch.***
  When the EnergySensor and EnergySwitch are not booted at the same time, communication between the two may fail. This issue can be resolved by booting the 2 devices when they are connected. After connecting the EnergySensor give the EnergySwitch a Hot Reset through an API call or by pressing the MENU and DOWN button simultaneously for 3 seconds.

Support

Feel free to contact us if you need any support:

Online	www.racktivity.com/support
E-mail	support@racktivity.com
Phone	003293242095 (GMT+1)