

solaredge

Installation Guide

ZigBee

Repeater

Version 1.1

Disclaimers

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FCC Compliance

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, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and the receiver and its antenna.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

SIMPLIFIED EU DECLARATION OF CONFORMITY

Hereby, SolarEdge Technologies Ltd., declares that the radio equipment type Wireless Communication ZigBee Kit is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:

https://www.solaredge.com/sites/default/files/se_wireless_communication_zigbee_kit_certificate_ce_conformity.pdf

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About This Guide

This user guide is intended for Photovoltaic (PV) system owners, installers, technicians, maintainers and integrators who use the SolarEdge power harvesting system.

This manual describes how to install and set up the ZigBee™ communication between a SolarEdge device (inverters or Safety and Monitoring Interface) and the SolarEdge home ZigBee repeater). The manual instructions and graphics refer to the inverter; however apply to SMI as well.

This guide assumes that the SolarEdge power harvesting system is already installed and commissioned. For additional information about how to install and commission the SolarEdge power harvesting system, refer to the relevant installation guide.

The guide includes the following chapters:

- **Chapter 1: Introducing the SolarEdge ZigBee Repeater**, page 10, describes the SolarEdge ZigBee repeater functionality and connection.
- **Chapter 2: SolarEdge Repeater User Interfaces**, page 13, describes the repeater connectors and LEDs.
- **Chapter 3: Installing the Repeater**, page 16, describes how to mount, connect, and verify the connection of the SolarEdge repeater.
- **Appendix A: Technical Specifications** page 21, provides the electrical and mechanical specifications of the SolarEdge ZigBee repeater.

For further information, datasheets and the most up-to-date certifications for various products in different countries, please visit the SolarEdge website:

www.solaredge.com

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Before contacting SolarEdge, ensure you have the product serial number as appears on its label.

Chapter 1: Introducing the SolarEdge ZigBee Repeater

Overview

The SolarEdge ZigBee repeater (range extender) is used for extending the wireless connectivity range between SolarEdge devices that are equipped with ZigBee transmitters.

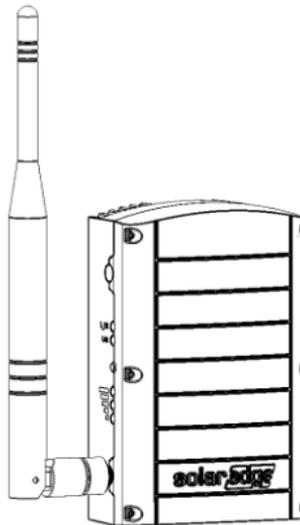


Figure 1: The SolarEdge ZigBee Repeater

For example, use the SolarEdge ZigBee repeater to improve communication between the SolarEdge home gateway and a SolarEdge inverter by placing the

repeater between them (see Figure 2).

The repeater is pre-configured as slave and will be discovered by the device configured as master during device discovery.



Figure 2: The SolarEdge ZigBee Repeater between the Home Gateway and Inverter

Package Contents

- ZigBee repeater with antenna
- Power supply
- This installation guide

Safety



Warning!

- Do not use the AC power supply if it is broken.
- Do not use the AC power supply if the cable is damaged.
- The home gateway/ repeater kit and the AC power supply are for indoor use only and cannot be used in wet locations.

Chapter 2: SolarEdge Repeater User Interfaces

The following interfaces are used in this product:

- **μUSB Connector** - Connection to the power supply
- **LEDs** - The repeater has four LED indicators, as follows:

Label and Color	Indication	Functionality
S_OK (green)	Communication passing through this device is received by the SolarEdge monitoring portal	ON - connection with SolarEdge master device is OK, and the master device is connected to the server. OFF - Communication with the SolarEdge master device has failed

Label and Color	Indication	Functionality
Link (yellow)	ZigBee RF communication with associated master	ON - Connection with SolarEdge master device is OK. OFF - Communication with the SolarEdge master device has failed
3x Signal strength (green)	Signal strength to nearest ZigBee device (Low/Medium/High)	All 3 LEDs ON - High Two LEDs ON - Medium One LED ON - Low
Power (green)	Power	Power supply connected to the repeater

The other interfaces are *not used* in this product.

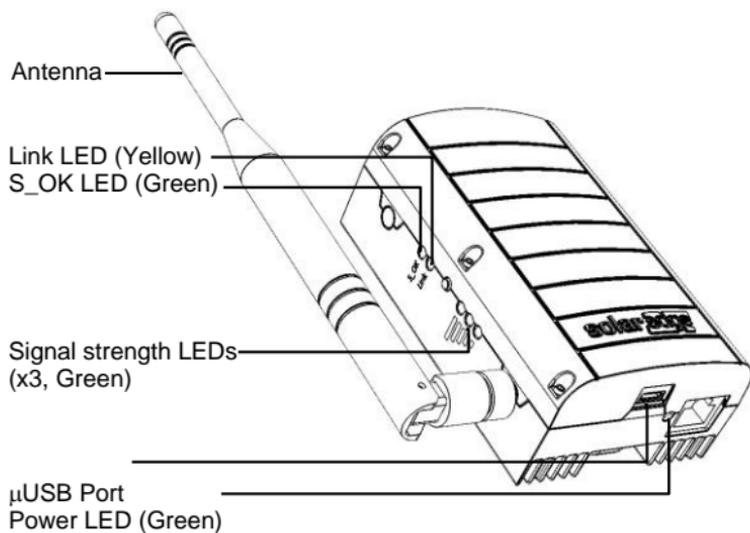


Figure 3: User Interfaces

Chapter 3: Installing the Repeater

Installation Guidelines

The following requirements apply when locating and mounting the SolarEdge repeater:

- The SolarEdge repeater is suitable for mounting indoors only. For outdoor installation, use an external plastic outdoor enclosure (not provided by SolarEdge)
- The SolarEdge repeater must always remain in an ambient temperature of -20°C (-4°F) to $+60^{\circ}\text{C}$ (140°F).
- Protect the SolarEdge repeater from dust, wet conditions, corrosive substances, and vapors.
- The SolarEdge repeater can be placed on the desk or installed on a wall.

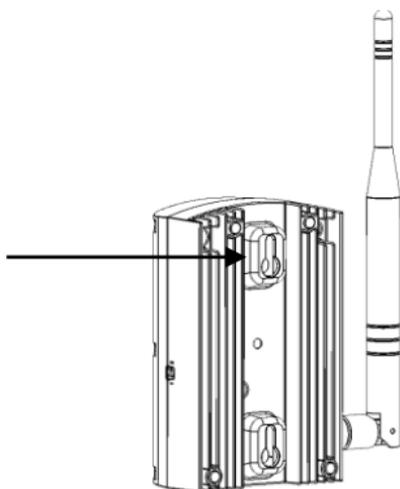


Figure 4: Wall Mount Option

- Ensure that the antenna is always vertically oriented.

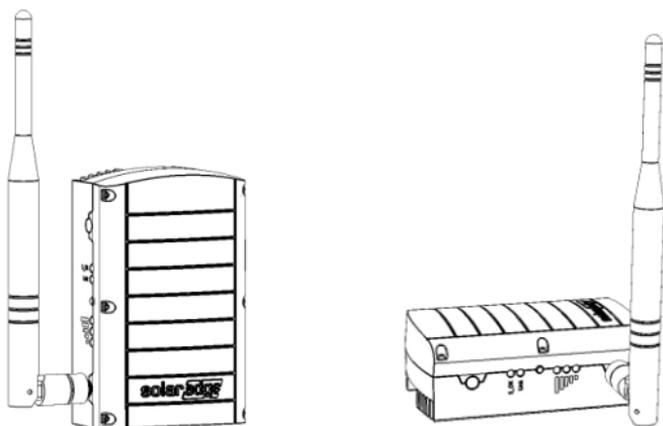


Figure 5: Antenna Orientation

Connecting the Repeater

1. Check that ZigBee transmitters are installed in all SolarEdge devices (all slaves and master).
2. Place the repeater between the two devices that are not communicating and need range extension.
3. Connect the power supply to the μ USB connector and connect to an AC source. The power LED is lit to indicate power connection.
4. Perform device discovery/slave detection using the master device, as described in the relevant manual.
5. Check that the **Link** yellow LED and the **S_OK** green LED on the repeater are ON, to indicate communication with the master device.

Verifying the Connection

- If you use the repeater to improve communication between the home gateway and the inverter(s), check that the Link yellow LED of the home gateway blinks after device discovery. The home gateway should blink the total number of detected devices, including repeaters.
- Check that all slave devices have ZigBee status OK, as follows:

- a. Short-press the device's (inverter or any other slave device) LCD light button until reaching the *Server* status screen:

```
Server: Zigbee <S OK>  
Status           <OK>
```

- b. Check that S_OK appears in the Server field to indicate a functioning connection to the SolarEdge monitoring portal. Check that the <OK> appears in the Status field.

Troubleshooting

Yellow LED (Link) is OFF

If the yellow LED (Link) is OFF after device discovery, a ZigBee RF connection error may have occurred, or the ZigBee connection was not established. Try the following troubleshooting actions:

- Relocate the repeater closer to the master ZigBee device to improve signal strength.
- Check the ZigBee configuration of the master device and repeat the device discovery/slave detection.

- Make sure the home gateway yellow LED (Link) blinks the total number of slaves including the repeater(s).
- Repeat the device discovery/slave detection.

Green LED (S_OK) is OFF

If the green LED (S_OK) is OFF after device discovery, a connection error may have occurred: Connection with the master device has failed, or the master device is not connected to the server. Try the following troubleshooting actions:

- Verify that the S_OK LED on the master device is ON, which indicates the communication with the SolarEdge portal is established.
- Repeat the device discovery/slave detection.

Appendix A: Technical Specifications

	North America	Worldwide	Unit
Performance			
Transmit power	22.8	11.8	dBm
Receiver Sensitivity	-102		dBm
EIRP with Antenna	27.8	16.8	dBm
Outdoor (LOS) range*	250		m
Indoor range*	15		m
Frequency Band	2400 - 2483		MHz
Maximum Emitted Power	≤ 30	≤ 20	dBm

* Approximate values, may differ depending on specific installation conditions

Antenna Gain	5	dBi
Environmental		
Operating temperature	-20 ÷ +60	°C
Storage temperature	-40 ÷ +85	°C
Relative humidity (non condensing)	0 ÷ 80	%
Ingress protection	IP20	
Power Supply Requirements		
Voltage	5	V
Current	1	A

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