SolarEdge Wi-Fi Kit Installation Guide

Version 1.1

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Emission Compliance

This equipment has been tested and found to comply with the limits applied by the local regulations. 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 AC circuit breaker 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 or 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.

Table of Contents

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 Wi-Fi communication in a SolarEdge device (inverter, Control and Communication Gateway - CCG or Safety and Monitoring Interface – SMI). The manual instructions and graphics refer to the inverter however apply to the CCG and 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: Introduction**, page 6, describes the SolarEdge Wi-Fi functionality and connection.
- **Chapter 2: Installing the Antenna and the Wi-Fi Module,** page 7, describes how to mount, connect and verify the connection of the Wi-Fi module and antenna.
- **Chapter 3: Configuring the Wi-Fi Communication**, page 11, describes how to set up the Wi-Fi communication type in the inverter.
- **Appendix A: Troubleshooting** page 18, describes communication failures, errors and status messages that appear on the LCD panel when an error occurs, and how to troubleshoot them.
- **Appendix B: Technical Specifications** page 18, provides specifications of the SolarEdge Wi-Fi module.

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*.

Support and Contact Information

If you have technical queries concerning our products, please contact us:

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

Chapter 1: Introduction

Overview

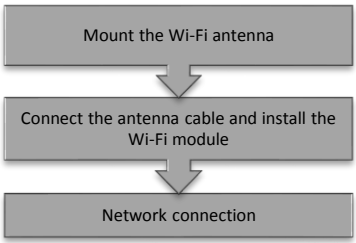
The Wi-Fi communication option enables connecting a SolarEdge device (inverter, CCG or SMI) to the SolarEdge monitoring portal. You can wirelessly connect multiple devices to the monitoring portal, or connect an RS485 chain (bus) of devices to the monitoring portal by using Wi-Fi connection between the master device and the portal.

Kit Contents

- Wi-Fi module
- Antenna
- RF cable with a mounting clip
- This installation guide

Installation Procedure

The following illustrates the steps required for the installation:



Chapter 2: Installing the Antenna and the Wi-Fi Module

Install a Wi-Fi antenna and module in all the devices that will communicate within the network.

To mount the antenna:

1 Connect the antenna to the mounting clip.

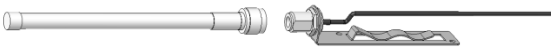


Figure 1: Connecting the antenna to the mounting clip

2 Attach the mounting clip with the antenna vertically to the top of the inverter. You may attach the clip to the heat sink fins or the inverter side.

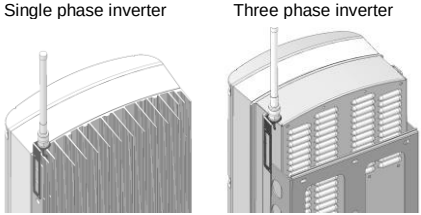


Figure 2: Antenna mounted on the inverter

For other SolarEdge devices, or if not mounting the antenna on the inverter, install the clip on the wall using two screws (not supplied). The antenna must be vertical and at least 6 cm/2.4" away from metal surfaces (including the inverter side).

3 Route the antenna cable along the inner fins or the inverter side, within the mounting bracket. Make sure the cable is tightened along the inverter enclosure.

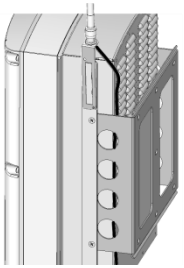


Figure 3: Routing the antenna cable (three phase inverter)

To connect the antenna cable:

1 Disconnect the AC power to the inverter and wait 5 minutes.

2 Remove the inverter cover as described in its manual.

3 Open the gland numbered 1 at the bottom of the SolarEdge inverter.

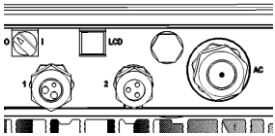


Figure 4: Inverter sealing glands

4 Remove the rubber seal from the gland and insert the RF cable through the gland cover and the opened connection of the inverter.

5 Push the cable into the cut opening of the rubber seal.

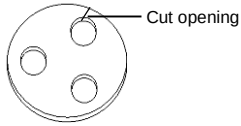


Figure 5: Rubber seal

6 Insert the rubber seal with the cable into to the gland body and reconnect the gland to the inverter. Tighten the sealing gland.

7 Insert the excess cable length into the inverter until the cable can be tightly attached to the inverter side.

To mount the Wi-Fi module in the inverter:

1 Connect the Wi-Fi module in its place on the communication board, as shown below. Follow these guidelines:
- Use the marking on the communication board to plug in the Wi-Fi module with the correct orientation.
- Insert the Wi-Fi module such that all pins are correctly positioned in the communication board socket, and no pins are left out of their socket.
- Make sure that the module is firmly in place.

2 Route the cable towards the Wi-Fi module along the communication board side.

3 Tighten the cable to the communication board using the two cable ties.

4 Connect the RF cable to the Wi-Fi module and tighten manually.

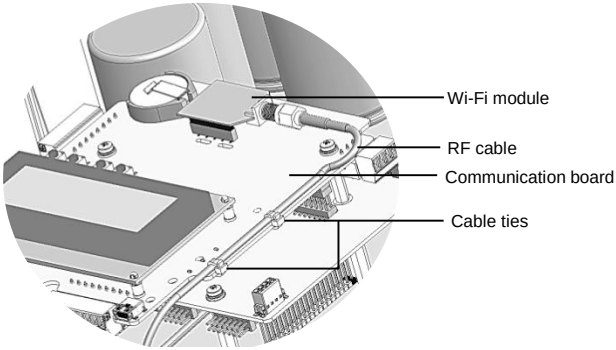


Figure 6: Wi-Fi and RF cable on the communication board

Chapter 3: Configuring the Wi-Fi Communication

- If your router supports WPS mode (Wi-Fi Protected Setup), you can connect to the router without keying in the Wi-Fi password. With WPS mode, you can configure the Wi-Fi connection using the LCD light button, thus without opening the inverter cover. Refer to Using the WPS Mode, below.
- To connect to a selected network from a list of scanned networks, refer to *Connecting to a Selected Network* on page 13.

Using the WPS Mode

The WPS mode is used to automatically allow a device with a wireless communication option (the inverter, CCG or SMI) to connect to the router without keying in the Wi-Fi password. The device only needs to detect the router's SSID (network name) and the password will be automatically assigned and saved on the wireless device.

The WPS is either a push button on the router or a clickable button on a wizard or utility screen. The procedure below describes using a WPS push button.

To connect using WPS:

1. Verify that the inverter ON/OFF switch is OFF.
2. Press and hold down the LCD light button for 5 seconds. When releasing, the main menu is displayed:

```
Optimizers pairing
Language<eng>
Communication
Maintenance
Information
Exit
```

3. Scroll down to the **Communication** submenu and select it. (Some of the menu items may vary depending on device and configuration).

```
Server<LAN>
LAN Conf
RS485-1 Conf<S>
Wi-Fi Conf
RS232 Conf
```

4. Select the **Server** submenu, scroll down to the **Wi-Fi** option and select it.

```
LAN
RS485
Zigbee
Wi-Fi
RS232
None
```

5. Scroll down to the **Wi-Fi Conf** submenu and select it.
   If **Wi-Fi Conf <N/A>** indication appears, the Wi-Fi module is not installed correctly.

6 Select **WPS mode**. The status message **Waiting** is displayed.

7 On your wireless router, locate the WPS button. Push and hold it down until a LED lights up (refer to your router manual).

8 On the inverter LCD, check that the message has changed to **Connected**.

9 Exit the Setup mode by pressing the **Esc** button in each submenu screen or wait for the device to exit Setup mode automatically, if no buttons are pressed for more than two minutes.

Connecting to a Selected Network

Use the internal user buttons to configure the connection.

▶ To configure the inverter:

1 Verify that the inverter ON/OFF switch is OFF.

2 If not already done, remove the inverter cover as described in its manual.

3 Turn ON the AC to the inverter by turning ON the circuit breaker on the main distribution panel.

WARNING!

ELECTRICAL SHOCK HAZARD. Do not touch uninsulated wires when the inverter cover is removed.

4 Press the **Enter** button for at least 5 seconds. The following message is displayed:

5 Use the three right-most buttons to type in the following password: **12312312**. The following message is displayed:

```
Country   <ITA>
Language<eng>
Communication
Display
Maintenance
Information
```

6 Scroll down to the **Communication** submenu and select it. (Some of the menu items may vary depending on device and configuration).

```
Server<LAN>
LAN  Conf
RS485-1  Conf<S>
Wi-Fi  Conf
RS232  Conf
```

7 Select the **Server** submenu, scroll down to the **Wi-Fi** option and select it.

```
LAN
RS485
Zigbee
Wi-Fi
RS232
None
```

8 Scroll down to the **Wi-Fi Conf** submenu and select it.
If **Wi-Fi Conf <N/A>** indication appears, the Wi-Fi module is not installed correctly.

```
Scan  Networks
Set  key
WPS  mode
Load  Defaults
```

9 Select **Scan Networks**. The status message **Scanning** is displayed during scanning, and a list of available networks is displayed, showing their SSID and signal strength (RSSI) (L=Low, M=Medium, H=High).

If no network is found, the message **No Networks Found** is displayed. Refer to *Appendix A: Troubleshooting* on page 18.

10 Select the required network from the list.

11 If the selected network requires a security key, enter the key (up to 20 characters). Long-press the **Enter** button.

12 If you entered an invalid key, select **Set Key** from the menu and enter a new security key (no need to reselect the network). The system starts the connection process. Connection time may take up to 30sec, after which the message **Connected** is displayed on the LCD for 5 seconds.

13 Exit the Setup mode by pressing the **Esc** button in each submenu screen or wait for the device to exit Setup mode automatically, if no buttons are pressed for more than two minutes.

Verifying the Connection

1 Use the LCD light button or the up/down LCD user buttons to scroll down to the Server Status screen, and check the Wi-Fi status.

```
Server: Wi-Fi     <S_OK>
Status:             <OK>
```

Status: Displays <OK> if the inverter established a successful connection and communication with the specified port (Wi-Fi module). If **OK** is not displayed, or there is an error/status message, refer to *Appendix A: Troubleshooting* on page 18.

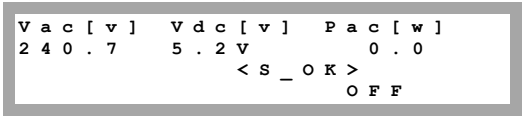
2 Use the LCD light button or the up/down LCD user buttons to scroll down to the Wi-Fi Status screen, and check the Wi-Fi settings.

```
IP:   192.168.2.119
GW:   192.168.2.1
SSID: xxxxxxxxx
RSSI: <L/M/H/->
```

- **IP**: The DHCP address
- **GW**: The gateway IP address
- **SSID**: Service Set Identifier - the name of a wireless local area network (WLAN). All wireless devices on a WLAN must employ the same SSID in order to communicate with each other.
- **RSSI**: The receive signal strength indication of the closest Wi-Fi in the SolarEdge system. L = low, M = medium, H = high and - = no signal.

If a Wi-Fi module is not assembled or the communication board cannot communicate with it, the message **No Wi-Fi** is displayed in the RSSI field.

3 Wait for the inverter to connect to the SolarEdge monitoring portal. This may take up to two minutes.
A message similar to the following appears on the LCD panel:



S_OK: Indicates that the connection to the SolarEdge monitoring portal is successful. If S_OK is not displayed, refer to *Appendix A: Troubleshooting* on page 18.

4 Close the inverter cover as described in its manual. Check for proper cover fastening to ensure sealing.

5 Turn the ON/OFF switch ON.

Appendix A: Troubleshooting

1 Network scanning troubleshooting:

- If no network is found during network scanning, the message **No Networks Found** is displayed for 5 seconds.
  - Retry scanning for networks.
  - Check if a laptop/tablet/smartphone can find a network from the SolarEdge device location.
  - Check the antenna connection and RF cable for defects and disconnections.
- If network scanning failed, the following message is displayed for 5 seconds before returning to the Wi-Fi Conf menu:

```
Scan  Failed
Try  Again
```

  Retry scanning for networks.

2 If **No Wi-Fi** is displayed in the RSSI field of the Wi-Fi Status screen, check that a Wi-Fi module is correctly assembled.

```
IP  192.168.2.119
GW  192.168.2.1
SSID:xxxxxxxx
RSSI:No  Wi-Fi
```

3 When using Wi-Fi communication, check the Server Communication Status screen for communication status or errors.

```
Server:Wi-Fi      <S_OK>
Status:             <OK>

<Error/status  Message>
```

An error/status message may be displayed indicating a communication connection failure.

The following are the possible status or error messages:

- Status messages:
  - **Authenticating** - Awaiting WPA or WPA2 authentication
  - **Waiting for IP** – The module joined a network and is waiting for the IP configuration to complete, that is, waiting for a DHCP provided address.
  - **Scanning** – The module is currently scanning for the configured SSID
- Error messages:
  - **No modem detected** – The internal Wi-Fi modem is not connected
  - **Key invalid** – A wrong password or invalid character length was inserted
  - **Association failed** – The network was found, but joining the network has failed

Appendix B: Technical Specifications

Performance		
Transmit power	16	dBm
Receiver sensitivity	-93 to -71	dBm
Antenna connector	RP-SMA	
EIRP with antenna	20	dBm
Outdoor (LOS) range*	250	m
Indoor range*	30	m
Max. power consumption @transmit	1	W
Networking and Security		
Security	WPA-PSK,WPA2-PSK and WEP	
Channels	13 channels	
Wireless LAN		
Standards	802.11b/g/n	
Data rates	1 to 72	Mbps
Modulation	802.11b: CCK, DSSS; 802.11g/n: OFDM with BPSK, QPSK, 16-QAM, 64-QAM	
Module dimension (L x W)	2.438 x 3.294 / 0.960 x 1.297	cm/in
Regulatory approvals	ETSI (Europe) C-Tick (Australia) Telec (Japan)	

* Approximate values, may differ depending on specific installation conditions

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United Kingdom	(Toll free) 0800 028 1183
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MAN-01-00161-1.1