



SolarEdge Communication Options

Version 1.0

Contents

Chapter 1: Introduction	3
Communication Types and Functionality.....	3
Communication Connectors	3
Communication Lightning Protection	4
Chapter 2: Ethernet (LAN)	5
Single/Multiple Devices, Wired Ethernet (LAN) Connection.....	5
Multiple Devices, RS485 Bus, Wired Ethernet (LAN) Connection	6
Chapter 3: ZigBee Wireless Connection Options	7
Single Device, ZigBee Connection	7
Multiple Devices, ZigBee Connection	8
Multiple Devices, RS485 Bus, ZigBee Connection	9
Chapter 4: Wi-Fi Connection (EU & APAC)	11
Single or Multiple Device, Wi-Fi Connection.....	11
Multiple Devices, RS485 Bus, Wi-Fi Server Connection	12
Chapter 5: Non-SolarEdge Monitoring Connection Options	14
Multiple Inverters, RS485 Bus, Non-SolarEdge Logger	14
Multiple Inverters, RS485 Bus, Wired Ethernet (LAN), Non-SolarEdge Logger.....	14
Multiple Inverters, RS485 Bus, Wired Ethernet (LAN), CCG, Non-SolarEdge Logger	15
Multiple Inverters, RS485 Bus, CCGs, Meter, Non-SolarEdge Logger	17

Chapter 1: Introduction

This document provides an overview of the communication options supported by SolarEdge devices. SolarEdge devices are categorized as follows: Inverter, Safety and Monitoring Interface (SMI) or Control and Communication Gateway (CCG). For a detailed description of how to install and set up communications between the SolarEdge devices and the SolarEdge monitoring server, refer to the specific SolarEdge device installation manual.

This document describes each communication scenario, lists the required equipment and provides the configuration sequence required for each scenario after the physical connection is done. This document refers to devices with CPU firmware version 2.0250 and above. For CPU versions below 2.0250 refer to <http://www.solaredge.com/files/pdfs/se-communication-options-application-note.pdf>.

Communication Types and Functionality

The following describes the various types of communication options supported by SolarEdge devices and their functionality.

- **Ethernet** (Built-in): Used for a LAN connection. Enables communication to the SolarEdge monitoring server.
- **RS485-X** (Built-in; X can be 1 or 2): The RS485-X port supports the following functionalities:
 - Connecting multiple SolarEdge devices through the same bus in a master/slave configuration.
 - Connecting to a third-party logger using the SunSpec protocol.
 - Connecting to an electricity meter.
- **ZigBee (Optional)**: Enables wireless connection of one or several devices to a ZigBee gateway, for wireless communication to the SolarEdge monitoring server.
- **Wi-Fi (Optional)**: Enables wireless connection of one or several devices for wireless communication to the SolarEdge monitoring server.

Communication Connectors

The inverter and SMI have two communication glands which are used for connection of the various communication options. Connection to the CCG is done directly, without the use of glands.

Each gland has three openings. The table below describes the functionality of each opening. Unused openings should remain sealed.

Gland#	Opening	Functionality	Cable Size (diameter)
1 (PG16)	One small	External antenna cable (ZigBee, Wi-Fi)	2-4 mm
	Two large	Ethernet connection (CAT5/6)	4.5-7 mm
2 (PG13.5)	All three	RS485, power reduction, electricity meters	2.5-5 mm

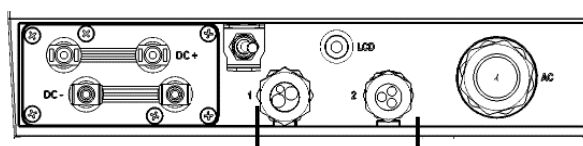


Figure 1: Communication glands

The SolarEdge devices have a standard RJ45 terminal block for Ethernet connection, a 9-pin terminal block for RS485 connection and a connector for a ZigBee or Wi-Fi module. The positions of these connectors on the inverter communication board are shown below.

**NOTE**

All the illustrations in the following scenarios show the inverter as an example. The settings apply to all SolarEdge devices unless otherwise explicitly stated.

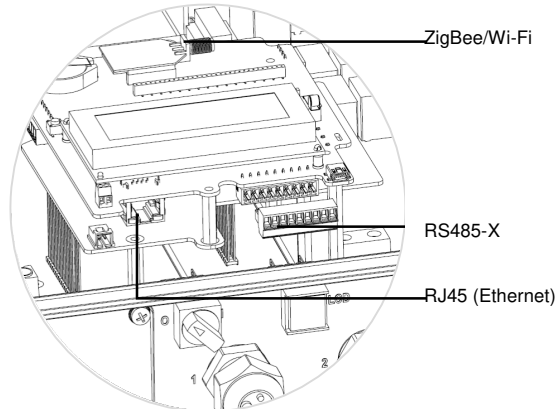


Figure 2: Inverter internal connectors

Communication Lightning Protection

**NOTE**

If using a cable longer than 10 m/33 ft in areas where there is a risk of induced voltage surges by lightning, it is recommend to use external surge protection devices. For details refer to http://www.solaredge.com/files/pdfs/lightning_surge_protection.pdf. If grounded metal conduits are used for routing the communication wires, there is no need for a lightning protection device.

Chapter 2: Ethernet (LAN)

Single/Multiple Devices, Wired Ethernet (LAN) Connection

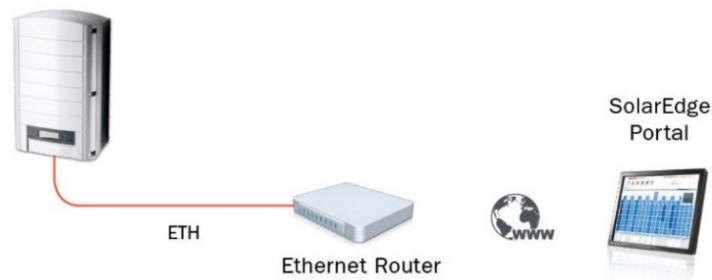


Figure 3: Single device Ethernet connection

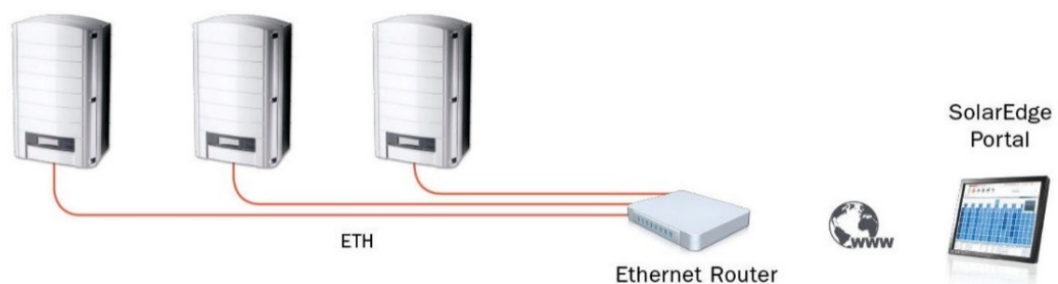


Figure 4: Multiple devices Ethernet connection

Description

In this configuration, Ethernet cables are used to connect devices to the SolarEdge monitoring server through an Ethernet router.

Required Equipment

- CAT5 or CAT6 Ethernet cable with RJ45 connectors. Max distance: 100 meters / 300 ft. (per device connection)
- Ethernet router



NOTE

If using a cable longer than 10 m/33 ft in areas where there is a risk of induced voltage surges by lightning, it is recommend to use external surge protection devices. For details refer to http://www.solaredge.com/files/pdfs/lightning_surge_protection.pdf. If grounded metal conduits are used for routing the communication wires, there is no need for a lightning protection device.

SolarEdge Device LAN Configuration

The SolarEdge devices are preconfigured to use the LAN port by default, thus obtaining the IP settings automatically from a DHCP server. If a static IP is required, select the following in the LCD menu:

- Communication → Server → LAN
- Communication → LAN Conf → Set DHCP → [Select **Disable**]
- Communication → LAN Conf → Set IP → [Set device IP]
- Communication → LAN Conf → Set Mask → [Set device subnet mask]
- Communication → LAN Conf → Set Gateway → [Set device gateway]
- Communication → LAN Conf → Set DNS → [Set device DNS]
- Verify that the LCD panel displays <S_OK>

Multiple Devices, RS485 Bus, Wired Ethernet (LAN) Connection

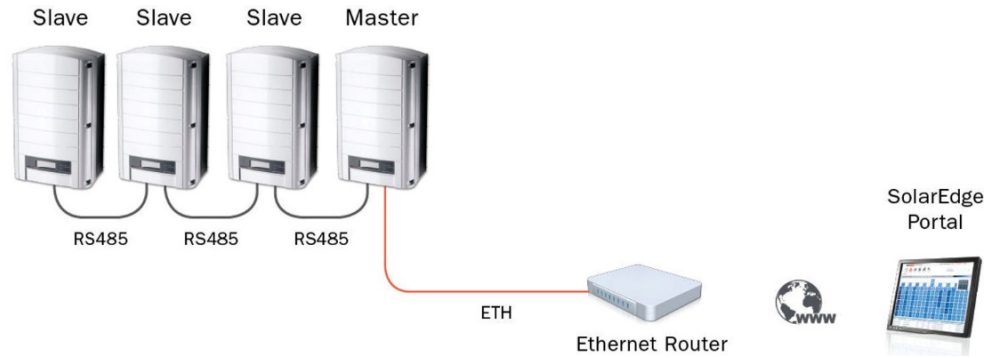


Figure 5: Multiple devices, RS485 bus, wired Ethernet connection

Description

In this configuration multiple devices connect through the same RS485 bus in a master/slave configuration. Only the master is physically connected to the internet through the Ethernet port.

Required Equipment

- CAT5 or CAT6 Ethernet cable with RJ45 connectors. Max distance: 100 meters / 300 ft. (from master device to router)
- Ethernet router
- RS485: 4-conductor cable. Max Distance: 1000 m / 3000 ft. (from the first to last device. The master does not have to be the first or the last one)



NOTE

If using a cable longer than 10 m/33 ft in areas where there is a risk of induced voltage surges by lightning, it is recommended to use external surge protection devices. For details refer to http://www.solaredge.com/files/pdfs/lightning_surge_protection.pdf. If grounded metal conduits are used for routing the communication wires, there is no need for a lightning protection device.

SolarEdge Device RS485 and LAN Configuration

In the LCD menu, select the following:

- 1 For the *slave* devices: The SolarEdge devices are preconfigured to use the RS485-1 port by default. If using RS485-2 (in devices where supported), select the following in the LCD menu:
 - Communication → RS485-2 Conf → Device Type → SolarEdge
 - Communication → RS485-2 Conf → Protocol → Slave
 - Communication → Server → RS485
- 2 For the *master* device:
 - LAN - The SolarEdge devices are preconfigured to use the LAN port by default, thus obtaining the IP settings automatically from a DHCP server. If a static IP is required, select the following in the LCD menu:
 - Communication → Server → LAN
 - Communication → LAN Conf → Set DHCP → [Select **Disable**]
 - Communication → LAN Conf → Set IP → [Set device IP]
 - Communication → LAN Conf → Set Mask → [Set device subnet mask]
 - Communication → LAN Conf → Set Gateway → [Set device gateway]
 - Communication → LAN Conf → Set DNS → [Set device DNS]
 - RS485 – select the following in the LCD menu:
 - Communication → RS485-X Conf → Device Type → SolarEdge
 - Communication → RS485-X Conf → Protocol → Master
 - Communication → RS485-X Conf → Slave Detect
- 3 The Master should report the correct number of slaves. If it does not, verify the connections and terminations.
- 4 Verify that the LCD panel displays <S_OK>.

Chapter 3: ZigBee Wireless Connection Options

ZigBee is a protocol for data transfer in wireless networks. Wireless connectivity allows simplifying the installation as no cabling is required.

ZigBee modules connected inside the SolarEdge devices communicate wirelessly with a SolarEdge Home Gateway for wireless connectivity between one or more devices and an internet router.

To use ZigBee, the SolarEdge device CPU version should be 2.0496 and above. If it isn't, contact SolarEdge support for upgrade file and instructions.

Single Device, ZigBee Connection

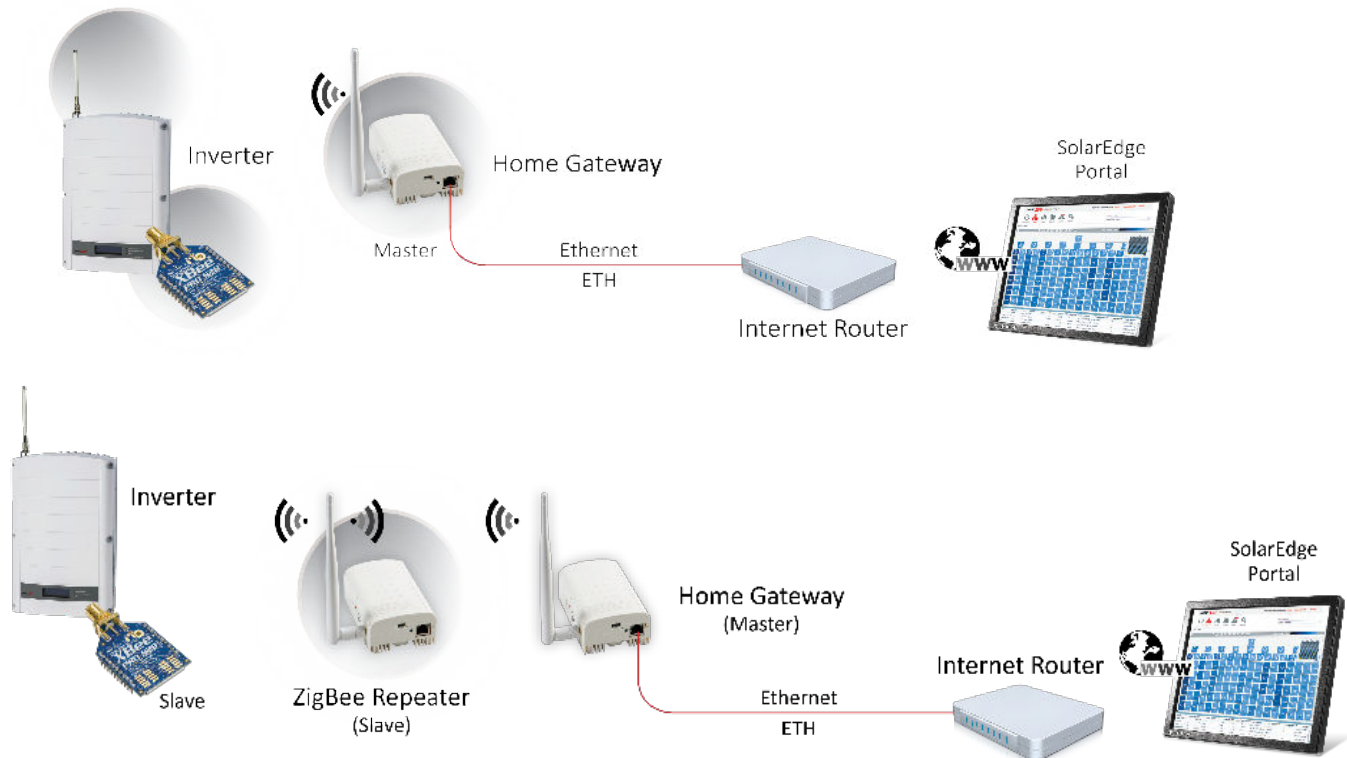


Figure 6: Single device, ZigBee server connection (and extending the ZigBee range using a repeater)

Description

This configuration enables connecting a single device in a master/slave configuration. In this configuration, the SolarEdge Home Gateway is the master device. The home gateway is provided with one slave module that is installed inside the SolarEdge device.

Required Equipment

- SE1000-ZBGW-K5 / SE1000-ZBGW-K5-NA - SolarEdge Home Gateway Kit including:
 - One home gateway
 - One slave module
 - Power supply for the gateway
 - Ethernet cable for connection of the gateway to the internet router

ZigBee max distance:

- Outdoors (line-of-sight): 400 m / 1300 ft
- Indoors: 50 m / 160 ft
- Ethernet router
- Optional: SE1000-ZBRPT05 / SE1000-ZBRPT05-NA - SolarEdge ZigBee Repeater for extending the ZigBee range

SolarEdge ZigBee Slave Device Configuration

The SolarEdge device is preconfigured as a slave by default.

In the ZigBee status screen check that the message **ZigBee Ready** is displayed.

If not, select the following in the LCD menu:

- Communication ➔ Server ➔ ZigBee
- Communication ➔ ZigBee Conf ➔ Protocol ➔ Multi-Point Slave

Home Gateway Configuration

- 1 Press the configuration button on the home gateway for 5-10 seconds and release after all LEDs have turned on. The gateway starts discovering the slave device(s). The device discovery may take 2-3 minutes, during which all the LEDs blink. The signal strength LEDs also light up.
- 2 Verify that the S_OK LED is ON, which indicates the communication with the SolarEdge server is established. This may take up to five minutes.
- 3 Verify that the yellow (Link) LED blinks and indicates that the slave was detected, (if a repeater is used, verify that the correct number of slaves was detected).
- 4 Verify signal strength: Check that at least two RSSI LEDs are ON, which indicates medium signal strength.

Multiple Devices, ZigBee Connection

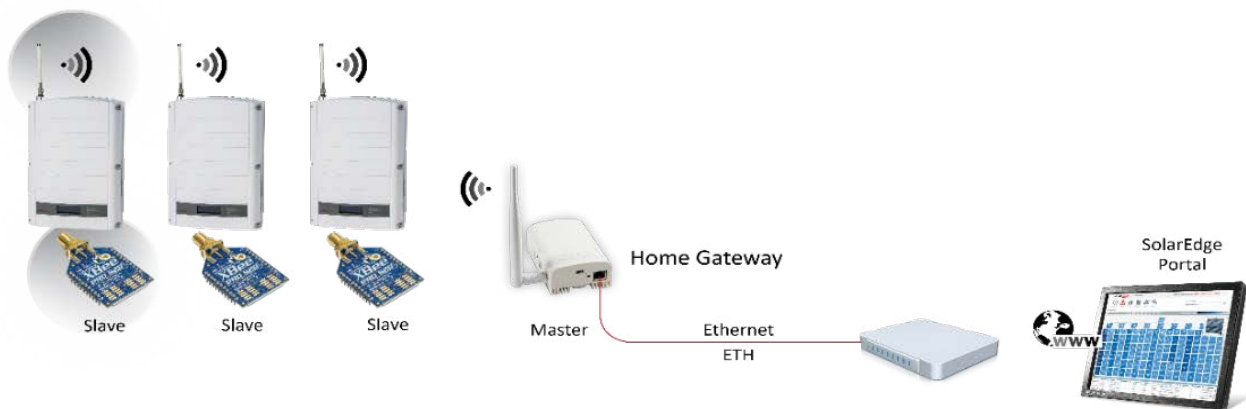


Figure 7: Multiple devices, ZigBee bus, Ethernet server connection

Description

This configuration enables connecting multiple devices in a master/slave configuration. In this configuration, the SolarEdge Home Gateway is the master device. To enable more than one device, additional slave kits are required. ZigBee operates as a mesh network so that each ZigBee module operates as a repeater for its neighboring ZigBee module. Therefore, the position of each ZigBee slave does not have to be within range of the home gateway (master), but must be within range of its neighboring ZigBee module. Up to 15 devices (including repeaters) can be connected to a single home gateway.

Required Equipment

- SE1000-ZBGW-K5 / SE1000-ZBGW-K5-NA - SolarEdge Home Gateway Kit including:
 - One home gateway
 - One slave module
 - Power supply for the gateway
 - Ethernet cable for connection of the gateway to the internet router

ZigBee max distance:

- Outdoors (line-of-sight): 400 m / 1300 ft,
- Indoors: 50 m / 160 ft

- SE1000-ZB05-SLV / SE1000-ZB05-SLV-NA - SolarEdge ZigBee Slave Kit for connecting an additional device to the same home gateway; one kit per additional slave after the first one
- Ethernet router
- Optional: SE1000-ZBRPT05 / SE1000-ZBRPT05-NA - SolarEdge ZigBee Repeater for extending the ZigBee range

SolarEdge Device ZigBee Slave Configuration

The SolarEdge device is preconfigured as a slave by default.

In the ZigBee status screen check that the message **ZigBee Ready** is displayed.

If not, select the following in the LCD menu:

- Communication → Server → ZigBee
- Communication → ZigBee Conf → Protocol → Multi-Point Slave

Home Gateway Configuration

- 1 Press the configuration button on the home gateway for 5-10 seconds and release after all LEDs have turned on. The gateway starts discovering the slave devices. The device discovery may take 2-3 minutes, during which all the LEDs blink. The signal strength LEDs also light up.
- 2 Verify that the S_OK LED is ON, which indicates the communication with the SolarEdge server is established. This may take up to five minutes.
- 3 Verify that the yellow (Link) LED blinks and indicates that the correct number of slaves was detected.
- 4 Verify signal strength: Check that at least two RSSI LEDs are ON, which indicates medium signal strength.

Multiple Devices, RS485 Bus, ZigBee Connection

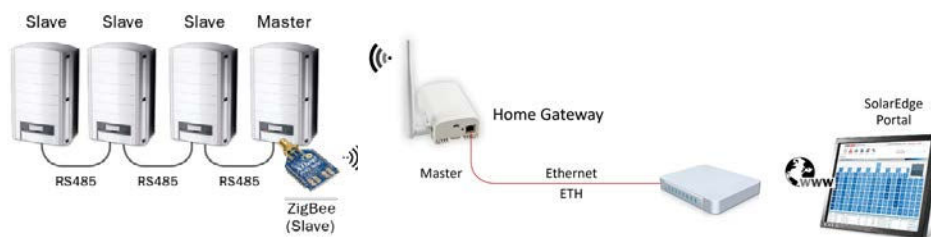


Figure 8: Multiple devices, RS485 bus , ZigBee server connection

Description

This configuration enables connecting multiple devices through an RS485 bus in a master/slave configuration. In this configuration, only the RS485 master device is connected wirelessly to a SolarEdge ZigBee Home Gateway, which is the ZigBee master device. Up to 15 devices can be connected as slaves to the Home Gateway. Any repeaters used should be connected as additional ZigBee slaves and not through the RS485 bus.

Required Equipment

- SE1000-ZBGW-K5 / SE1000-ZBGW-K5-NA - SolarEdge Home Gateway Kit including:
 - One home gateway
 - One slave module
 - Power supply for the gateway
 - Ethernet cable for connection of the gateway to the internet router

ZigBee max distance:

- Outdoors (line-of-sight): 400 m / 1300 ft,
- Indoors: 50 m / 160 ft
- Optional: SE1000-ZBRPT05 / SE1000-ZBRPT05-NA - SolarEdge ZigBee repeater for extending the ZigBee range

- RS485: 4 conductor cable. Max Distance: 1000 m / 3000 ft. (from the master device)
- Ethernet router

SolarEdge Device RS485 Configuration:

- 1 For the *slave* devices: The SolarEdge devices are preconfigured to use the RS485-1 port by default. If using RS485-2 (in devices where supported), select the following in the LCD menu:
 - Communication ➔ RS485-2 Conf ➔ Device Type ➔ SolarEdge
 - Communication ➔ RS485-2 Conf ➔ Protocol ➔ Slave
 - Communication ➔ Server ➔ RS485
- 2 For the RS485 *master* device, select the following:
 - Communication ➔ RS485-X Conf ➔ Device Type ➔ SolarEdge
 - Communication ➔ RS485-X Conf ➔ Protocol ➔ Master
 - Communication ➔ RS485-X Conf ➔ Slave DetectThe master should report the correct number of slaves. If it does not, verify the connections and terminations.
- 3 Verify that the LCD panel displays <S_OK>.

SolarEdge Device ZigBee Slave Configuration

The SolarEdge device is preconfigured as a slave by default.

In the ZigBee status screen check that the message **ZigBee Ready** is displayed.

If not, select the following in the LCD menu:

- Communication ➔ Server ➔ ZigBee
- Communication ➔ ZigBee Conf ➔ Protocol ➔ Multi-Point Slave

Home Gateway Configuration

- 1 Press the configuration button on the home gateway for 5-10 seconds and release after all LEDs have turned on. The gateway starts discovering the slave device(s). The device discovery may take 2-3 minutes, during which all the LEDs blink. The signal strength LEDs also light up.
- 2 Verify that the S_OK LED is ON, which indicates the communication with the SolarEdge portal is established. This may take up to five minutes.
- 3 Verify that the yellow (Link) LED blinks and indicates that the slave was detected, (if a repeater is used, verify that the correct number of slaves was detected).
- 4 Verify signal strength: Check that at least two RSSI LEDs are ON, which indicates medium signal strength.

Chapter 4: Wi-Fi Connection (EU & APAC)

The Wi-Fi communication option enables to wirelessly connect a SolarEdge device to the SolarEdge monitoring server. You can wirelessly connect multiple devices with Wi-Fi, or connect an RS485 bus of devices and connect only the master with Wi-Fi to the server.

To use Wi-Fi, the SolarEdge device CPU version should be 2.0637/3.0637 and above. If it isn't, contact SolarEdge support for upgrade file and instructions.

Single or Multiple Device, Wi-Fi Connection

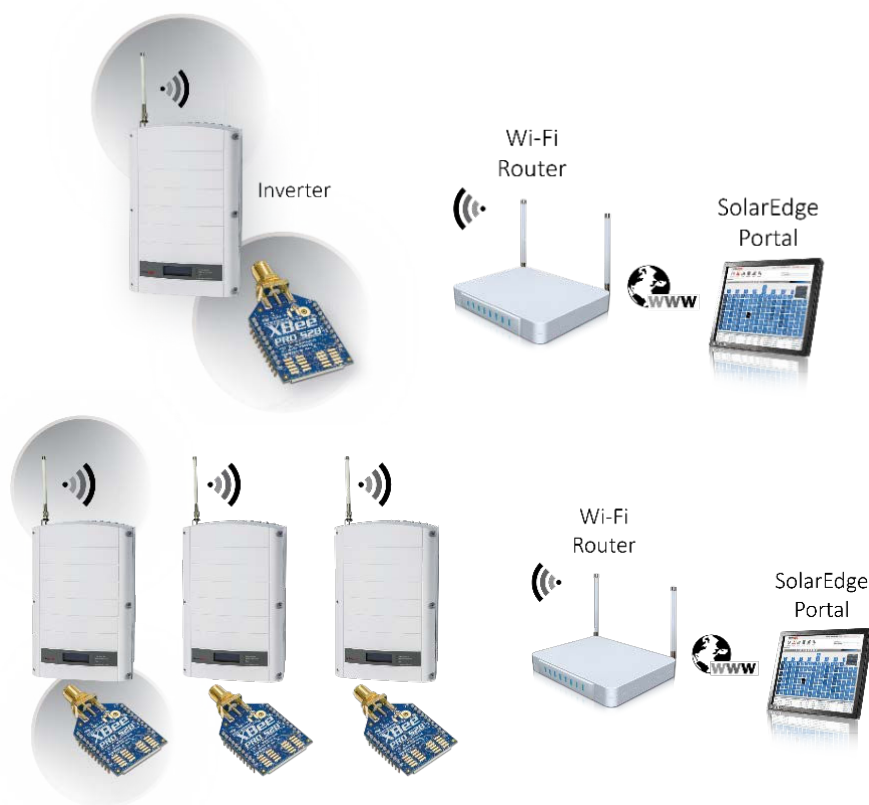


Figure 9: Single and multiple devices, Wi-Fi server connection

Description

This configuration enables to wirelessly connect one or several devices. A Wi-Fi kit is required for each of the devices being connected wirelessly. The position of each Wi-Fi device must be within range of the Wi-Fi router

Required Equipment

- SE1000-WIFI01 – SolarEdge Wi-Fi Kit (one kit per device) including:

- Wi-Fi module
- Antenna with a mounting clip
- RF cable.

Wi-Fi max distance:

- Indoors (line-of-sight): 400 m / 1300 ft. (
- Outdoors: 50 m / 160 ft..

- Wi-Fi router

SolarEdge Device Wi-Fi Configuration

In each of the devices perform the following:

- 1 In the LCD menu, select the following:
 - Communication ➔ Server ➔ Wi-Fi
 - Communication ➔ Wi-Fi Conf
- 2 Select one of the following:
 - If your router supports WPS mode, you can automatically connect without entering a password (use either the LCD light button or the internal user buttons):
 - Select Wi-Fi Conf ➔ WPS mode
 - Push the WPS button on your router and hold until a LED lights up (refer to your router manual).
 - Check that the message **Connected** is displayed on the inverter LCD screen.
 - Otherwise, to connect to a specific network from a list:
 - Select Wi-Fi Conf ➔ Scan Networks
 - Select the required network from the list of networks.
 - If required, enter the security key (up to 20 characters) and long-press the Enter button. 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.
- 3 Verify that the LCD panel displays <S_OK>.

Multiple Devices, RS485 Bus, Wi-Fi Server Connection



Figure 10: Multiple devices, RS485 bus , Wi-Fi server connection

Description

This configuration enables connecting multiple devices on the same RS485 bus in a master/slave configuration. In this configuration, only the master device is connected wirelessly to a Wi-Fi router. Up to 31 devices can be connected as RS485 slaves.

Required Equipment

- SE1000-WIFI01 – SolarEdge Wi-Fi Kit (one kit per device) including:
 - Wi-Fi module
 - Antenna with a mounting clip
 - RF cable.

Wi-Fi max distance:

- Indoors (line-of-sight): 400 m / 1300 ft. (
- Outdoors: 50 m / 160 ft.
- Wi- Fi router
- RS485: 4 conductor cable. Max Distance: 1000 m / 3000 ft (from the first to last device. The master does not have to be the first or the last one)

SolarEdge Device RS485 Configuration

- 1 For the *slave* devices: The SolarEdge devices are preconfigured to use the RS485-1 port by default. If using RS485-2 (in devices where supported), select the following in the LCD menu:
 - Communication ➔ RS485-2 Conf ➔ Device Type ➔ SolarEdge
 - Communication ➔ RS485-2 Conf ➔ Protocol ➔ Slave
 - Communication ➔ Server ➔ RS485
- 2 For the RS485 *master* device, select the following:
 - Communication ➔ RS485-X Conf ➔ Device Type ➔ SolarEdge
 - Communication ➔ RS485-X Conf ➔ Protocol ➔ Master
 - Communication ➔ RS485-X Conf ➔ Slave Detect
- 3 Verify that the LCD panel displays <S_OK>.

Wi-Fi Configuration

- 1 Configure the master device to communicate via Wi-Fi:
 - Communication ➔ Server ➔ Wi-Fi
 - Communication ➔ Wi-Fi Conf
- 2 Select one of the following:
 - If your router supports WPS mode, you can automatically connect without entering a password (use either the LCD light button or the internal user buttons):
 - Select Wi-Fi Conf ➔ WPS mode.
 - Push the WPS button on your router and hold until a LED lights up (refer to your router manual).
 - Check that the message **Connected** is displayed on the inverter LCD screen.
 - Otherwise, to connect to a specific network from a list (use the internal user buttons):
 - Select Wi-Fi Conf ➔ Scan Networks.
 - Select the required network from the list of networks.
 - If required, enter the security key (up to 20 characters) and long-press the Enter button. 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.

Chapter 5: Non-SolarEdge Monitoring Connection Options

These communication options are used for monitoring SolarEdge inverters using a non-SolarEdge logger. The configurations enable connecting to a non-SolarEdge logger using the SunSpec protocol.

These scenarios describe multiple inverter configurations, which are common for non-SolarEdge monitoring. However they can be implemented in single inverter systems as well, with only one SolarEdge inverter on the RS485 bus.

Multiple Inverters, RS485 Bus, Non-SolarEdge Logger

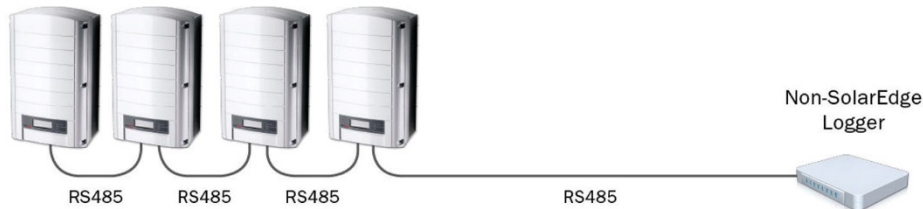


Figure 11: Multiple inverters, RS485 bus, non-SolarEdge logger

Description

This configuration enables connecting multiple inverters on the same RS485 bus in a master/slave configuration directly to a non-SolarEdge logger.

Inverter monitoring data is sent to the non-SolarEdge logger using the SunSpec protocol.

Required Equipment

- Non-SolarEdge SunSpec logger
 - 4 conductor cable (logger end of the cable should have a connector to match the logger).
- Max distance: 1000 m / 3000 ft.



NOTE

If using a cable longer than 10 m/33 ft in areas where there is a risk of induced voltage surges by lightning, it is recommended to use external surge protection devices. For details refer to http://www.solaredge.com/files/pdfs/lightning_surge_protection.pdf. If grounded metal conduits are used for routing the communication wires, there is no need for a lightning protection device.

SolarEdge Device Configuration

For all the inverters, select the following in the LCD menu:

- Communication → Server → None
- Communication → RS485-1 Conf → Device Type → Non-SE Logger
- Communication → RS485-1 Conf → Protocol → SunSpec
- Communication → RS485-1 Conf → Device ID → [unique value 1...247]

Multiple Inverters, RS485 Bus, Wired Ethernet (LAN), Non-SolarEdge Logger

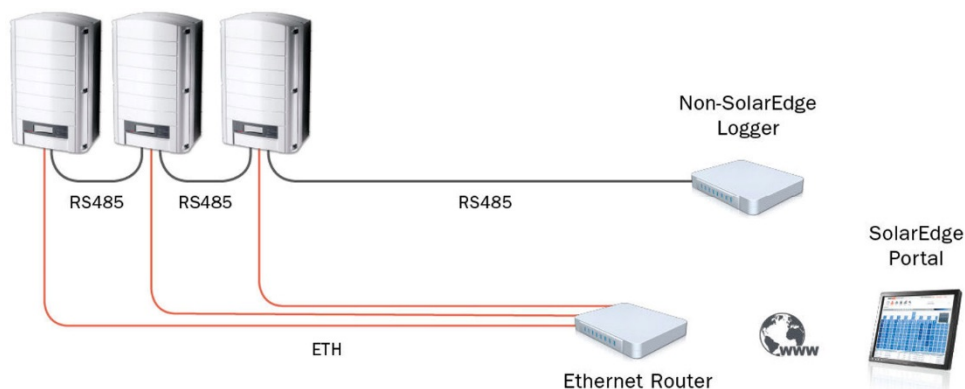


Figure 12: Multiple inverters, RS485 bus, wired Ethernet, non-SolarEdge logger

Description

This configuration enables connecting multiple inverters on the same RS485 bus in a master/slave configuration directly to a Non-SolarEdge logger.

Ethernet cables are used to connect the inverters to the SolarEdge monitoring portal through an Ethernet router.

Inverter and optimizer monitoring data is sent to the SolarEdge monitoring server via the LAN port using the SolarEdge protocol, and inverter monitoring data is sent to the non-SolarEdge logger via the RS485 port using the SunSpec protocol.

Required Equipment

- CAT5 or CAT6 Ethernet cable with RJ45 connectors. Max Distance: 100 meters / 300 ft. (per inverter connection).
 - Ethernet router
 - Non-SolarEdge SunSpec logger
 - 4 conductor cable (logger end of the cable should have a connector to match the logger).
- Max Distance: 1000 m / 3000 ft.



NOTE

If using a cable longer than 10 m/33 ft in areas where there is a risk of induced voltage surges by lightning, it is recommend to use external surge protection devices. For details refer to http://www.solaredge.com/files/pdfs/lightning_surge_protection.pdf. If grounded metal conduits are used for routing the communication wires, there is no need for a lightning protection device.

Inverter RS485 Configuration

For all the inverters, select the following in the LCD menu:

- Communication → Server → None
- Communication → RS485-1 Conf → Device Type → Non-SE Logger
- Communication → RS485-1 Conf → Protocol → SunSpec
- Communication → RS485-1 Conf → Device ID → [unique value 1...247]

Inverter LAN Configuration

The SolarEdge devices are preconfigured to use the LAN port by default, thus obtaining the IP settings automatically from a DHCP server. If a static IP is required, select the following in the LCD menu:

- Communication → Server → LAN
- Communication → LAN Conf → Set DHCP → [select **Disable** for static IP config.]
- Communication → LAN Conf → Set IP → [Set device IP]
- Communication → LAN Conf → Set Mask → [Set device subnet mask]
- Communication → LAN Conf → Set Gateway → [Set device gateway]
- Communication → LAN Conf → Set DNS → [Set device DNS]
- Verify that the LCD panel displays <S_OK>.

Multiple Inverters, RS485 Bus, Wired Ethernet (LAN), CCG, Non-SolarEdge Logger

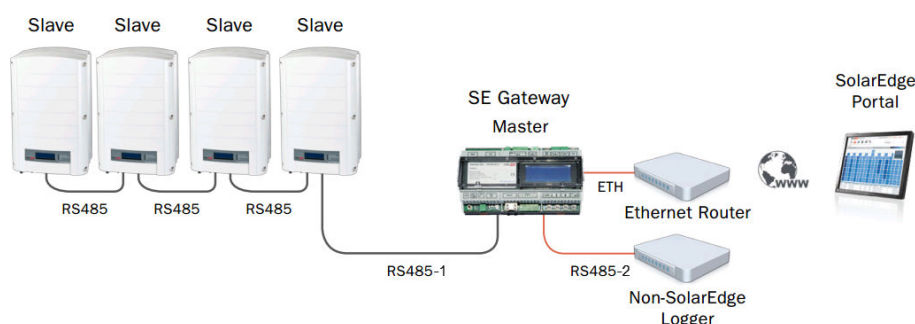


Figure 13: Multiple inverters, RS485 bus, wired Ethernet, CCG, non-SolarEdge logger

Description

This configuration enables connecting multiple inverters and a SolarEdge CCG on the same RS485 bus in a master/slave configuration with the CCG as the master. An Ethernet cable is used to connect the CCG to the SolarEdge monitoring server through an Ethernet router. The non-SolarEdge logger is connected to the second RS485 port of the CCG.

Inverter and optimizer monitoring data is sent to the SolarEdge monitoring server via the LAN port using the SolarEdge protocol, and inverter monitoring data is sent to the non-SolarEdge logger via the second RS485 port using the SunSpec protocol.

Required Equipment

- CAT5 or CAT6 Ethernet cable with RJ45 connectors.
Max distance: 100 meters / 300 ft. (per inverter connection)
- Non-SolarEdge SunSpec logger
- Ethernet router
- 4 conductor cable (logger end of the cable should have a connector to match the logger).
Max distance: 1000 m / 3000 ft.
- SE1000-CCG-G: SolarEdge Control and Communication Gateway



NOTE

If using a cable longer than 10 m/33 ft in areas where there is a risk of induced voltage surges by lightning, it is recommend to use external surge protection devices. For details refer to http://www.solaredge.com/files/pdfs/lightning_surge_protection.pdf. If grounded metal conduits are used for routing the communication wires, there is no need for a lightning protection device.

Inverter RS485 Configuration

For all inverters, configure the RS485 settings for the logger in the LCD menu:

- Communication → Server → None
- Communication → RS485-1 Conf → Device Type → Non-SE Logger
- Communication → RS485-1 Conf → Protocol → SunSpec
- Communication → RS485-1 Conf → Device ID → [unique value 1...247]

CCG RS485 Configuration

- 1 Use RS485-1 to set the CCG as the master of the inverter bus:
 - Communication → RS485-1 Conf → Device Type → SolarEdge
 - Communication → RS485-1 Conf → Protocol → Master
 - Communication → RS485-1 Conf → Slave Detect
- 2 The CCG should report the correct number of slaves. If it does not, verify the connections and terminations.
- 3 Use RS485-2 to connect the CCG to the logger:
 - Communication → RS485-2 Conf → Device Type → Non-SE Logger
 - Communication → RS485-2 Conf → Protocol → SunSpec
- 4 Make sure the device ID of the logger is different from all other device IDs configured in the inverters.

CCG LAN Configuration

- 1 Connect the CCG to the Ethernet and configure as follows:
 - Communication → Server → LAN
 - Communication → LAN Conf → Set DHCP → [Select *Enable* for DHCP or *Disable* for static IP config.]
 - If DHCP setting Disabled was chosen:
 - Communication → LAN Conf → Set IP → [Set inverters' IP]
 - Communication → LAN Conf → Set Mask → [Set inverters' subnet mask]
 - Communication → LAN Conf → Set Gateway → [Set inverters' gateway]
 - Communication → LAN Conf → Set DNS → [Set inverters' DNS]
 - Verify that the LCD panel of the CCG displays <S_OK>.
- 2 Verify that the LCD panel of all inverters displays <S_OK>.

Multiple Inverters, RS485 Bus, CCGs, Meter, Non-SolarEdge Logger

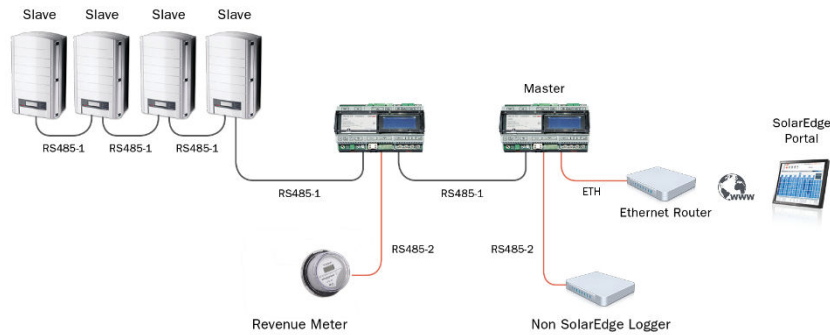


Figure 14: Multiple inverters, RS485 bus, wired Ethernet, CCGs, electricity meter, non-SolarEdge logger

Description

This configuration connects multiple inverters on an RS485 bus together with two SolarEdge CCGs.

One CCG is connected to an inverter and to the second CCG using its RS485-1 port, and to a meter using its RS485-2 port, for reading production, consumption or feed-in measurements (depending on the meter location).

A second CCG which serves as the RS485 master is connected to the first CCG using its RS485-1 port, and to a non-SolarEdge SunSpec logger using its RS485-2 port.

An Ethernet cable is used to connect the master CCG to the SolarEdge monitoring server.

Inverter, optimizer and meter monitoring data is sent to the SolarEdge monitoring server via the LAN port using the SolarEdge protocol, and inverter monitoring data is sent to the non-SolarEdge logger via the second RS485 port using the SunSpec protocol.

Required Equipment

- CAT5 or CAT6 Ethernet cable with RJ45 connectors. Max distance: 100 m / 300 ft.
- Ethernet router
- Non-SolarEdge SunSpec logger
- Two 4-conductor cables: The end of one cable should match the meter, the end of the second should match the logger. Max distance: 1000 m / 3000 ft.
- SE1000-CCG-G: SolarEdge Control and Communication Gateway; 2 gateways
- SolarEdge approved Modbus electricity meter



NOTE

If using a cable longer than 10 m/33 ft in areas where there is a risk of induced voltage surges by lightning, it is recommended to use external surge protection devices. For details refer to http://www.solaredge.com/files/pdfs/lightning_surge_protection.pdf. If grounded metal conduits are used for routing the communication wires, there is no need for a lightning protection device.

Inverter RS485 Configuration

For all inverters, configure the RS485 settings for the logger in the LCD menu:

- Communication → Server → None
- Communication → RS485-1 Conf → Device Type → Non-SE Logger
- Communication → RS485-1 Conf → Protocol → SunSpec
- Communication → RS485-1 Conf → Device ID → [unique value 1...247]

Slave CCG Configuration

1 Use RS485-1 to set the *slave* CCG in the bus:

- Communication → RS485-1 Conf → Device Type → SolarEdge
- Communication → RS485-1 Conf → Protocol → Slave
- Communication → RS485-1 Conf → Device ID → [unique value 1...247].
Make sure the device ID of the CCG is different from all other device IDs configured in the inverters.

- 2 Use RS485-2 to connect to the meter. Configure the RS485-2 bus as follows:
 - Communication ➔ RS485-2 Conf ➔ Device Type ➔ Revenue Meter
 - Communication ➔ RS485-2 Conf ➔ Protocol ➔ [Select the relevant meter protocol]
 - Communication ➔ RS485-2 Conf ➔ Device ID ➔ 1
- 3 Depending on the meter protocol selection, if the meter is supplied with separate current transformers(CT), set the CT value:
 - Communication ➔ RS485-2 Conf ➔ CT Rating ➔ [insert the CT current rating printed on the CT]

Master CCG Configuration

- 1 Use RS485-1 to set the second CCG as the *master* of the inverter bus:
 - Communication ➔ RS485-1 Conf ➔ Device Type ➔ SolarEdge
 - Communication ➔ RS485-1 Conf ➔ Protocol ➔ Master
 - Communication ➔ RS485-1 Conf ➔ Slave Detect

The CCG should report the correct number of slaves. If it does not, verify the connections and terminations.
- 2 Use RS485-2 to connect to the logger. Configure the RS485-2 bus as follows:
 - Communication ➔ RS485-2 Conf ➔ Device Type ➔ Non-SE Logger
 - Communication ➔ RS485-2 Conf ➔ Protocol ➔ SunSpec
 - Communication ➔ RS485-2 Conf ➔ Device ID ➔ [unique value 1...247]

Make sure the device ID of the CCG is different from all other device IDs configured in the inverters.
- 3 Connect the master CCG to the Ethernet router and configure:
 - Communication ➔ Server ➔ LAN
 - Communication ➔ LAN Conf ➔ Set DHCP ➔ [Select Enable for DHCP or Disable for static IP config.]
 - If DHCP setting Disabled was chosen:
 - Communication ➔ LAN Conf ➔ Set IP ➔ [Set inverters' IP]
 - Communication ➔ LAN Conf ➔ Set Mask ➔ [Set inverters' subnet mask]
 - Communication ➔ LAN Conf ➔ Set Gateway ➔ [Set inverters' gateway]
 - Communication ➔ LAN Conf ➔ Set DNS ➔ [Set inverters' DNS]
 - Verify that the LCD panel of the CCG displays <S_OK>.
- 4 Verify that the LCD panel of all inverters displays <S_OK>.

If you have technical queries concerning our products, please contact our support through SolarEdge service portal:

<http://www.solaredge.com/groups/support/services>

North America	(Toll free) 1877 360 529 2
Australia	(Toll free) 1800 46 55 67
Germany	089 454 597 30
France	(Toll free) 0800 917 410
Italy	(Toll free) 800 784 824
Japan	+81.3.5530.9360
United Kingdom	(Toll free) 0800 028 1183
Belgium	(Toll free) 0800 730 41
Israel	073 240 311 8
Rest of world	+ 1 (0) 650 319 884 3
Fax	+ 972 (0) 73 240 311 7
Email to:	support@solaredge.com

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