Installation Guide

Cellular Plug-In

with SetApp Configuration

For North America

Version 1.2

Disclaimers

Important Notice

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The content of these documents is continually reviewed and amended, where necessary. However, discrepancies cannot be excluded. No guarantee is made for the completeness of these documents.

The images contained in this document are for illustrative purposes only and may vary depending on product models.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference. 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.
- 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.

Safety Warnings

Please review the following safety guidelines, and observe them when handling the equipment.

- Always power down the inverter before opening the unit. Perform the following steps:
  - Switch the inverter's ON/OFF switch to OFF, and wait five minutes for the capacitors to discharge
  - Cut off AC power to the inverter by turning off the circuit breakers on the distribution panel.
  - Turn the DC Safety Unit's switch (if applicable) to OFF.

Revision History

- Version 1.2, September 2021 - antenna cabling instructions for Synergy and three phase commercial inverters
- Version 1.1, April 2021 - technical specifications moved to product datasheet
- Version 1.0, July 2020 - initial release

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About This Guide

This manual describes how to install and set up a Cellular Plug-in in a SolarEdge inverter.

SolarEdge offers the Cellular Plug-in in order to connect the SolarEdge inverter to the SolarEdge monitoring server.

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.

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.

Chapter 1: Introduction to the Cellular Plug-In

The Cellular Plug-In and antenna attach to SolarEdge devices that will communicate with the SolarEdge monitoring platform. The plug-in attaches to the communications board, as shown in the figure below.

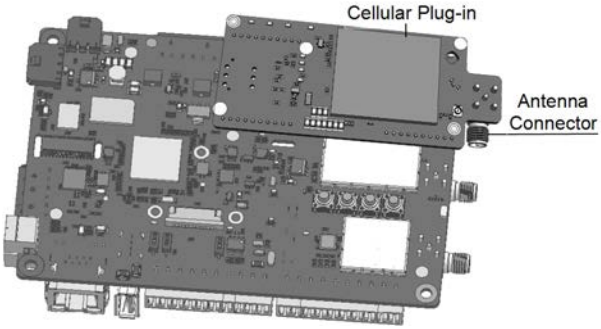


Figure 1: Communications Board with Cellular Plug-in

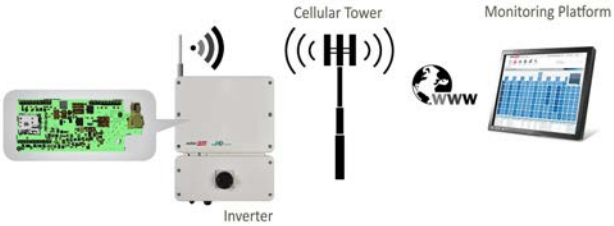


Figure 2: Connecting the Inverter to the Monitoring Platform

Package Contents

- Cellular Plug-in
- Nano SIM card (in kits that include a SolarEdge data plan)
- One-page quick guide with links to the product datasheet and to this installation guide
- Cable tie
- Antenna with mounting clip and antenna cable. The antenna and mounting clip are supplied as either separate units, or joined, as shown in the figures below.

Figure 3: Separate Antenna and Mounting Clip with Cable

Figure 4: Joined Antenna and Mounting Clip with Cable

Chapter 2: System Compatibility

Software Requirements

To use the cellular plug-in, the inverter firmware must be upgraded to the latest version.

→ To ensure that the inverter is running the required firmware version:

1. Before arriving at the site, verify that your mobile device is connected to the internet, and open SetApp. SetApp automatically downloads firmware upgrades.
2. At the site, open SetApp and follow the on-screen instructions. SetApp creates a Wi-Fi connection with the inverter and upgrades the inverter firmware.

→ To check the inverter CPU version using the SetApp:

1. Access SetApp and select **Commissioning** ➔**Information**. The CPU version number must be 4.7.xx or higher.

Chapter 3: Guidelines for Installing a SIM Card

Activating and using the Cellular Plug-in requires a Nano SIM card, which is inserted into a designated slot on the Cellular Plug-in. A SIM card is required in each Cellular Plug-in.

If you are using a non-SolarEdge data plan, insert the non-SolarEdge SIM card into the slot on the Cellular Plug-in, as shown in the figure below.

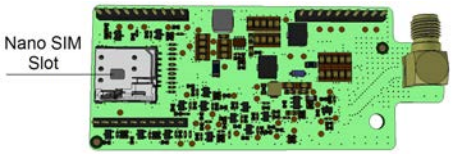


Figure 5: Nano SIM card slot on Cellular Plug-in

When using multiple SolarEdge inverters in the same site, a Cellular Plug-in must be installed as follows:

- Residential installations - in each inverter
- Commercial installations - in one device (one leader inverter for up to 31 follower inverters)

NOTE

In commercial installations, make sure to choose a data plan that is suitable for the AC system size.

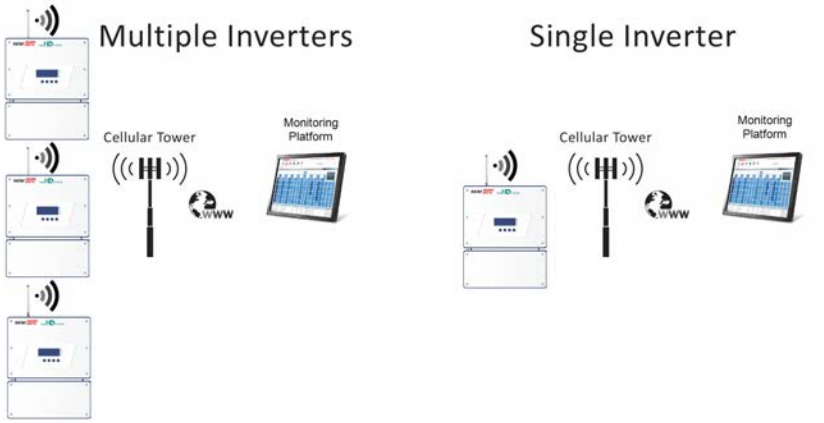


Figure 6: Cellular Plug-in Connection Diagram - Residential Installation

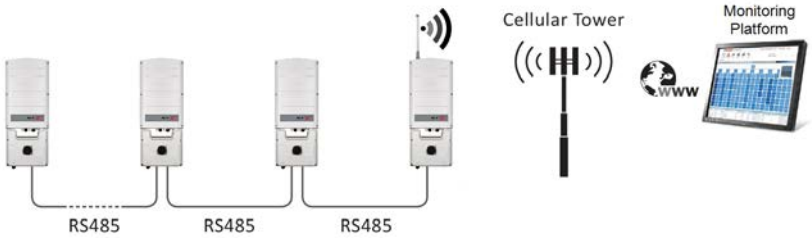


Figure 7: Cellular Plug-in Connection Diagram - Commercial Installation

Chapter 4: Cellular Plug-in and Antenna Installation

This chapter describes how to install a Cellular Plug-in and antenna in SolarEdge devices that will communicate with the SolarEdge monitoring platform.

Clipping the Antenna to the Inverter

1. Power down the inverter:
   a. Switch the inverter ON/OFF/P switch to OFF. Wait 5 minutes for the capacitors to discharge.
   b. Turn the DC Safety Unit to OFF.
   c. Cut off AC power to the inverter by turning off the circuit breakers on the distribution panel.
2. Clip the antenna vertically to the heatsink fins or the inverter side.

   NOTE

   The antenna should point upward for maximum range.

   To maximize the received signal strength, avoid sharp bends in the antenna RF cable.

3. Route the antenna cable downwards along the inner fins or the inverter side, by threading the RF cable from the top of the inverter between the bracket and the inverter's rear side.

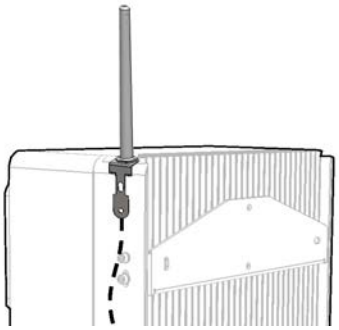


Figure 8: Routing the antenna cable

4. Open the communication gland at the bottom of the inverter.

Figure 9: Inverter communication glands

5. Remove the rubber seal from the gland and insert the cable through the gland body.
6. Insert the rubber seal with the cable into the gland body and reconnect the gland to the inverter. Tighten the sealing gland.
7. Pull the excess cable into the inverter so that the cable can be connected to the Cellular Plug-in (see *Installing the Plug-In in the Inverter* on page 15).
8. If the antenna is being installed in a Synergy manager unit, thread the antenna cable through a communication gland at the bottom of the unit (see the figure below) .

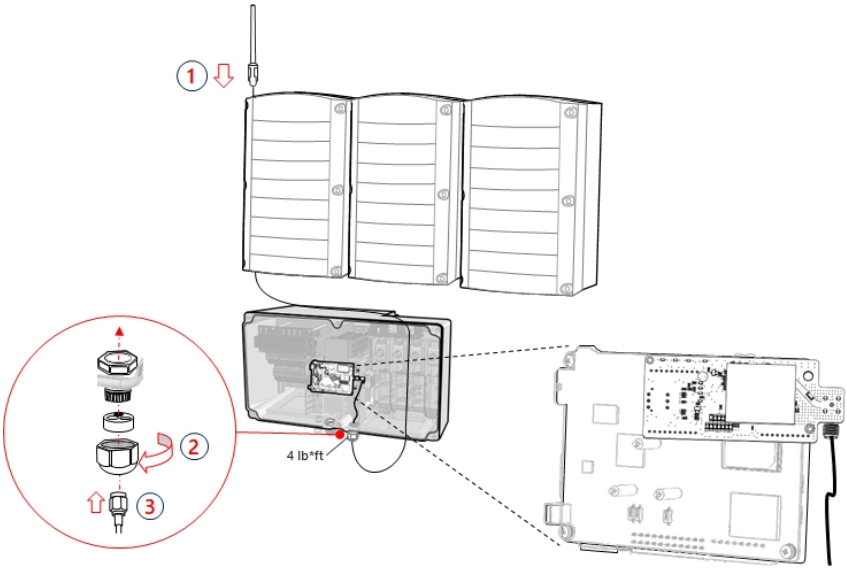


Figure 10: Antenna cable routing in Synergy manager unit

9. If the antenna is being installed in a three-phase commercial inverter, or in a three-phase inverter with Synergy technology, pull the excess of the 180 cm antenna cable between the back of the inverter and the mounting bracket.

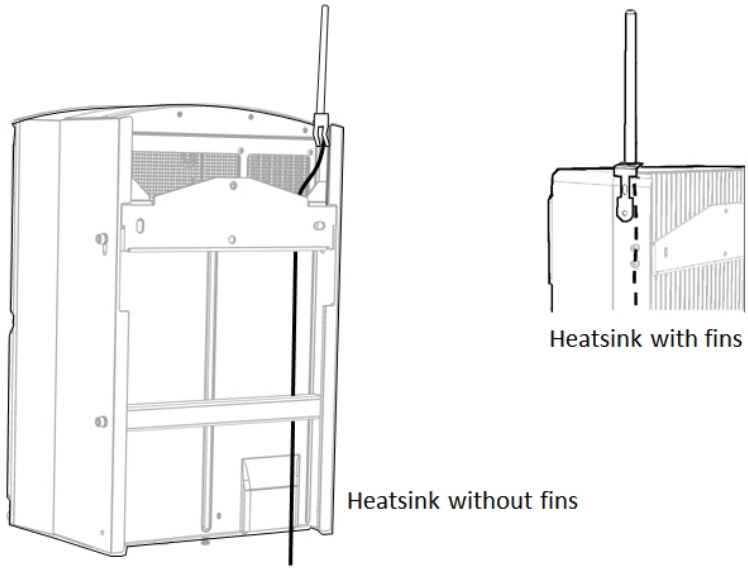


Figure 11: Antenna cable routing in commerical and Synergy three phase inverters

Connecting the Antenna to a Vertical Surface using a Bracket

For connecting the antenna to a vertical surface (such as a wall), use an "L" shapted bracket with the following recommended dimensions (not supplied by SolarEdge):

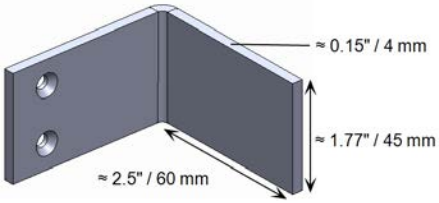


Figure 12: Example of an antenna bracket

NOTE

Use the "L" shaped bracket for to connect the antenna to Residential Three Phase StorEdge inverters.

→ To connect the antenna to a vertical surface:

1. Drill two holes in the surface and attach the bracket to it with two screws.
2. Clip the antenna onto the bracket. Make sure the antenna is vertical.

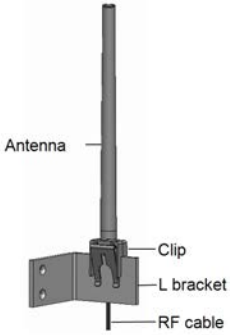


Figure 13: Antenna mounted on clip

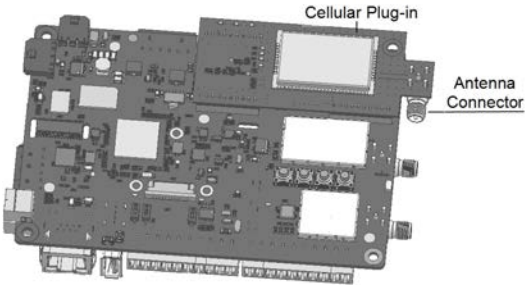
Installing the Plug-In in the Inverter

WARNING!

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

→ To Install the Plug-in in the inverter:

1. Remove the inverter cover as described in its manual.
2. Locate the Plug-in in its place on the communication board, as shown in the figure below. Follow these guidelines:
   - Plug in the Plug-in making sure that all pins are correctly positioned in the Plug-in connector, and no pins are left out of the connector.
   - Make sure that the Plug-in is secured firmly in place.



3. Route the antenna cable via the safety switch, securing the cable on the communications board using the cable tie supplied with the plug-in, as shown in the figure below.
4. Connect the antenna cable to the cellular Plug-in and tighten manually.
5. Turn the AC ON.
6. Check that all the cellular Plug-in LEDs are lit. If not, refer to "Viewing Error Messages and Troubleshooting" on page 17

Chapter 5: Configuring Cellular Communication

This chapter describes how to configure the inverter to use cellular communication, verify the connection and troubleshoot problems.

Configuring the Inverter

→ To configure the inverter using SetApp:

1. After installing the Cellular Plug-in and antenna, you should activate, commission, and configure the inverter (except for monitoring communications) according to the inverter's installation guide.
2. Access SetApp and select **Monitoring Communication→Cellular**. The Monitoring Communication / Cellular page should indicate that connectivity has been established with the monitoring platform.

NOTE

The Cellular Plug-in maintains a continuous connection with the server, and the data is sampled every 5 minutes. After optimizer pairing, communication is established with the server for the first hour to simplify commissioning.

Verifying and Viewing Communication Status

You can view error messages on the SetApp Status page.

→ To access the SetApp Status screen:

1. Perform one of the following steps:
   - During first time commissioning and configuration: From the **Commissioning** menu select **Status**. The main inverter Status screen is displayed.
   - If the inverter has already been activated and commissioned - open SetApp and follow the instructions on the screen (scan the inverter bar-code; move the ON/OFF/P switch to P position (for less than 5 sec) and release. Your smart phone creates a Wi-Fi connection with the inverter and displays the inverter main Status screen.
2. Scroll down to the **Server Comm.** section, and verify that **S_OK** (inverter successfully established a connection with the monitoring platform) and **Cell** (the method of communication with the SolarEdge monitoring platform) appear on the Status screen.
3. If required, you can view the:
   - Mobile Network Operator name (MNO) on the Communication menu.
   - The Signal strength received from the Cellular Plug-in is displayed on the Status screen, in the form of bars, rising from left to right. The more bars that appear, the stronger the signal.

Viewing Error Messages and Troubleshooting

The Inverter is not Starting Up

If the inverter is not starting up, the Plug-in may have been installed in an inverter with an incompatible CPU software version.

If the Plug-in is installed, remove it and upgrade the inverter as described in the section *Software Requirements* on page 8.

Error Messages

You can view error messages on the SetApp Status page. To access the SetApp Status page, select **Commissioning ➔ Information ➔ Error Log**.

Error message	Description	Troubleshooting
Cellular Plug-in not detected	The Cellular Plug-in is not communicating with the communication board.	Check that the Cellular Plug-in is installed properly, that all the pins are inserted in the correct location.
Not Activated - Switch Server to Cellular	The GSM Plug-in is not configured to connect to the monitoring platform via the cellular network.	Select **Monitoring Communication ➔ Cellular**.
Not Activated - Choose Data Plan	A data plan has not been specified.	Select **Monitoring Communication ➔ Cellular ➔ Data Plan ➔ High Bandwidth ➔ Auto Activation**.
SIM not detected	The SIM card is not inserted or not recognized.	Insert a valid SIM card and check that it is inserted correctly.
Enter PIN	Personal Identification Name (PIN) code is pending.	Select **Monitoring Communication ➔ Cellular ➔Configurations➔ Edit** and set the PIN code according to the MNO (Mobile Network Operator).
Enter APN	The Access Point Name (APN) parameter is empty.	Select **Monitoring Communication ➔ Cellular ➔Configurations➔ Edit** and set the APN according to the MNO (Mobile Network Operator).
APN authentication failed	Invalid APN, username or password.	• Select **Monitoring Communication ➔ Cellular➔Configurations➔Edit** and set the APN/username/ password according to the MNO. • If setting the APN/username/password according to the MNO generates a "Configuration Error", check with SolarEdge Support whether the SIM needs to be activated.
Not registered	The Cellular Plug-in is not registered to a network provider.	• Check antenna connection or change antenna location. • Contact SolarEdge support.
No signal	No cellular signal is received.	• Check that the antenna cable is connected properly to the Plug-in.

Error message	Description	Troubleshooting
		• Check for any damage to the cable or connectors. • Try relocating the antenna.
DNS Failure	The DNS request that was forwarded to the cellular network provider has failed, or there is a problem in the DNS registration on the SolarEdge server.	Contact SolarEdge support.
TCP Failure	Connection to the SolarEdge server has failed.	Contact SolarEdge support.
SMS Blocked	The SIM card does not support SMS capability	Replace the SIM card. Note: Replacing a SIM card requires system reconfiguration and activation. If the replaced SIM card was configured to Low Bandwidth, the new SIM *must* be set to Low Bandwidth.
S_OK is not displayed on the SetApp status screen	Communication with the SolarEdge monitoring server is not established.	Verify that none of the above errors appear. To force communication with the server, scroll to the Communication menu and re-select Cellular.

Plug-in LED Indications

Function	LED functionality	Description	Troubleshooting
Green AUX Power LEDs	All LEDs are OFF	The Plug-in is not connected properly	Check that the Plug-in is installed properly. Check that all pins are inserted in the correct location and have not shifted.
	1 or more LEDs are OFF	The Plug-in is damaged	Contact SolarEdge support
Init LEDS	Green LED is ON	The Plug-in is connected to the SolarEdge monitoring server.	Indication only
	Orange LED is blinking	The Plug-in is registered to a cellular network, or performing a network search, or transmitting data.	Indication only
	Blue LED is ON	The Plug-in is powered on.	Indication only

Appendix A: Additional Materials

For complete technical specifications, see the product datasheet:

Cellular Plug-in for North America https://www.solaredge.com/sites/default/files/se_cellular_plug_in_setapp_resi_and_commercial_datasheet_us.pdf	

Support Contact Information

If you have technical problems concerning SolarEdge products, please contact us:

https://www.solaredge.com/us/service/support

Before contact, make sure to have the following information at hand:

- Model and serial number of the product in question.
- The error indicated on the SetApp mobile application, on the monitoring platform, or by the LEDs, if there is such an indication.
- System configuration information, including the type and number of modules connected and the number and length of strings.
- The communication method to the SolarEdge server, if the site is connected.
- The product's software version as it appears in the status screen.

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