



Installation Guide

GSM Plug-in Installation Guide

For Europe and APAC

Version 1.2

Disclaimers

Important Notice

Copyright © SolarEdge Inc. All rights reserved.

No part of this document may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photographic, magnetic or otherwise, without the prior written permission of SolarEdge Inc.

The material furnished in this document is believed to be accurate and reliable. However, SolarEdge assumes no responsibility for the use of this material. SolarEdge reserves the right to make changes to the material at any time and without notice. You may refer to the SolarEdge web site (www.solaredge.com) for the most updated version.

All company and brand products and service names are trademarks or registered trademarks of their respective holders.

Patent marking notice: see <http://www.solaredge.com/patent>

The general terms and conditions of delivery of SolarEdge shall apply.

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.

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 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.
- **WARNING! ELECTRICAL SHOCK HAZARD.** When the inverter and DC Safety Unit are powered on, do not touch uninsulated wires when the inverter cover is removed.
- When closing the inverter cover, make sure the cover is correctly fastened (as described in the installation guide) to ensure proper sealing.

Version History

- Version 1.2 - January 2021 - high/low bandwidth mode configuration
- Version 1.1 - July 2019 - added definition for SIM phone number
- Version 1.0 - October 2018 - initial release

Contents

Disclaimers	1
Important Notice	1
Emission Compliance	2
Safety Warnings	2
About This Guide	5
Chapter 1: Installation Guidelines	6
Guidelines for Installing a SIM Card	7
Chapter 2: System Compatibility Check and Upgrade	10
Software Requirements	10
Chapter 3: GSM Plug-in and Antenna Installation	11
Package Contents	11
Clipping the Antenna to the Inverter	11
Connecting the Antenna to a Vertical Surface using a Bracket	13
Installing the Plug-In in the Inverter	14
Chapter 4: Configuring GSM Communication	16
Configuring the Inverter	16
Verifying and Viewing Communication Status	19
Viewing Error Messages and Troubleshooting	19
Appendix A: Additional Materials	23
Support Contact Information	24

About This Guide

This manual describes how to install and set up GSM communication in a SolarEdge inverter.

SolarEdge offers the communication option for connection of 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.

This guide includes the following chapters:

- Chapter 1: *Installation Guidelines* on page 6, provides guidelines for installing the with or without data plan according to your system configuration.
- Chapter 2: *System Compatibility Check and Upgrade* on page 10, describes the hardware and firmware requirements for using the.
- Chapter 3: *GSM Plug-in and Antenna Installation* on page 11, describes how to mount and verify the connection of the and antenna.
- Chapter 4: *Configuring GSM Communication* on page 16, describes how to set up the GSM communication option in the inverter, and check the communication.

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: Installation Guidelines

Inverters may be supplied with or without a GSM Plug-in, and with or without a SIM card. To use the GSM Plug-in, the inverter communication board firmware (CPU) version must be 4.2.xxx or later. Check your inverter configuration and follow the guidelines in the following table:

If your inverter includes:	Do this:
No GSM Plug-in	<p>Do one of the following:</p> <ul style="list-style-type: none"> ■ If you purchased a GSM Plug-in with a SolarEdge data plan: Mount the antenna, install the GSM Plug-in and SIM card, and configure GSM communications, as described herein. ■ If you purchased a GSM Plug-in without a data plan: A data plan with SIM card is available from SolarEdge, or you may use your own card (refer to the requirements in <i>If Using a Non-SolarEdge SIM Card</i> on page 8). Mount the antenna, install the GSM Plug-in and SIM card, and configure GSM communications, as described herein.
A built-in GSM Plug-in <i>without</i> a SIM card	<p>Mount the supplied antenna as described herein. Insert a SIM card and configure the data plan as described herein. A data plan with SIM card is available from SolarEdge, or you may use your own plan (refer to the requirements in <i>If Using a Non-SolarEdge SIM Card</i> on page 8).</p>
A built-in GSM Plug-in <i>with</i> a SIM card (data plan)	<p>Mount the supplied antenna as described herein. No configuration is required. Data plan is pre-configured.</p>

Guidelines for Installing a SIM Card

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

1. If there is no SIM card installed in the Plug-in, insert one into the slot on the GSM Plug-in.

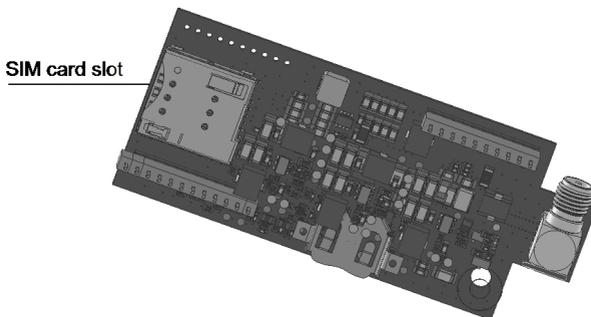


Figure 1: SIM card slot on GSM Plug-in

2. Remove the inverter cover as described in its manual.

If Using a Non-SolarEdge SIM Card

If using a non-SolarEdge SIM card:

- Calculate the data required (see *Additional Materials* on page 23 for a link to the product datasheet, which contains calculation guidelines). For example, if the installation is comprised of one inverter, 16 power optimizers, and one production meter - the data plan required for Low Bandwidth configuration is: $2.6 \text{ MB} + 16 \times 0.05 \text{ MB} + 0.1 \text{ MB} = 3.5 \text{ MB}$ per month.
- Select a SIM card with the following specifications:
 - μ SIM
 - Supports SMS
 - Works with the 3G GSM network
- Obtain the following details from your operator:
 - SIM phone number - If you are not able to enter "+" before the country code enter "00", then the country code and the mobile number.
For example, If your number is 732403100 and the country code is 972, enter: 00972732403100/
 - PIN (Personal Identification Number)
 - MNO (Mobile Network Operator)
 - APN (Access Point Name)
 - User name

When using multiple SolarEdge inverters in the same site, the GSM Plug-in installation model to be used depends on the band plan selected, as shown below:

- Low bandwidth - in each inverter

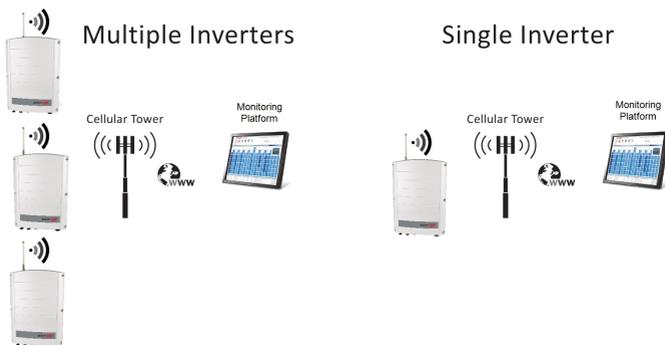


Figure 2: GSM Plug-in low bandwidth mode connection diagram

- High bandwidth - in one device (master inverter for up to 31 slave inverters)

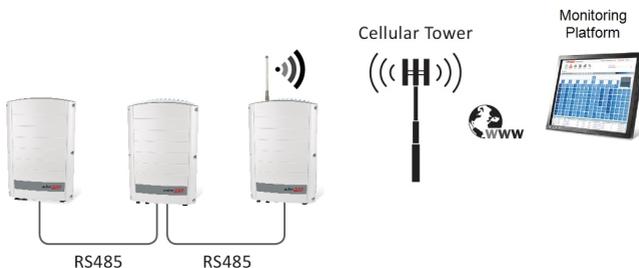


Figure 3: GSM Plug-in high bandwidth mode connection diagram

Chapter 2: System Compatibility Check and Upgrade

Software Requirements

To use the GSM Plug-in communication option, the communication board firmware (CPU) version must be 4.7.xx or higher.

→ To check the inverter CPU version and upgrade firmware using SetApp:

1. Access SetApp and select **Commissioning** → **Information**
2. If required, upgrade to the latest available firmware version. Select **Maintenance** → **Firmware Upgrade**, and follow the instructions on the screen.

Chapter 3: GSM Plug-in and Antenna Installation

This chapter describes how to install a GSM Plug-in and antenna in a SolarEdge inverter.

Package Contents

- GSM Plug-in (optionally including a SolarEdge SIM card)
- A one-page quick guide, "Installing and Activating the GSM Plug-in for Inverters with SetApp"
- Antenna and mounting clip with antenna cable



NOTE

The type of antenna supplied may differ from the type in the drawing below.



Clipping the Antenna to the Inverter

1. Power OFF the inverter:
 - a. Switch the inverter ON/OFF/P switch to OFF. Wait 5 minutes for the capacitors to discharge.
 - b. Turn the Safety Switch(if applicable) to OFF.
 - c. Disconnect the AC 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.

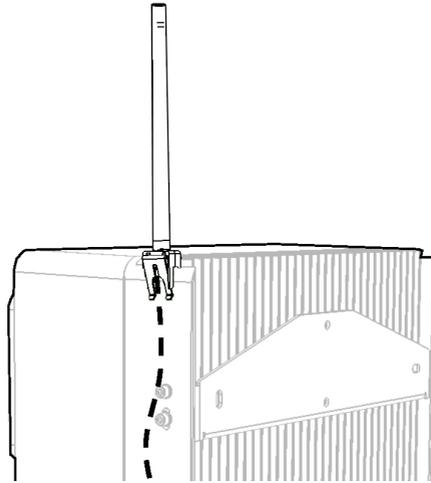


Figure 4: Antenna mounted on the inverter

3. Pass the antenna cable between the mounting bracket and the rear side of the inverter or along the heatsink fins.
4. Open the communication gland at the bottom of the inverter.
5. Remove the rubber seal from the gland and insert the cable through the gland body and the opened connection of the inverter.
6. Push the cable into the cut opening of the rubber seal.
7. Insert the rubber seal with the cable into the gland body and reconnect the gland to the inverter. Tighten the sealing gland.
8. Pull the excess cable into the inverter so that the cable can be attached to the inverter communication board (see *Figure 7*). The cable connects to the GSM Plug-in as described in the next section.

Connecting the Antenna to a Vertical Surface using a Bracket

For connecting the antenna to a vertical surface, use a bracket with the following recommended dimensions (not supplied by SolarEdge):

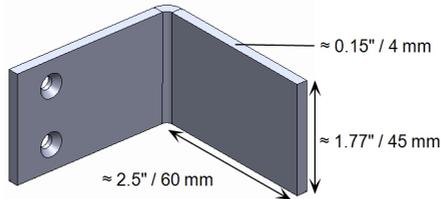


Figure 5: Example of an antenna bracket

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 positioned vertically.

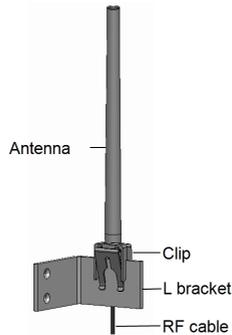


Figure 6: Antenna mounted on clip

Installing the Plug-In in the Inverter

NOTE



If the GSM Plug-in is pre-installed in the inverter (with a SIM card), this step is not required.

→ 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 *Figure 7*. 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 firmly in place.
3. Connect the antenna cable to the GSM Plug-in and tighten manually (as shown in *Figure 7*).

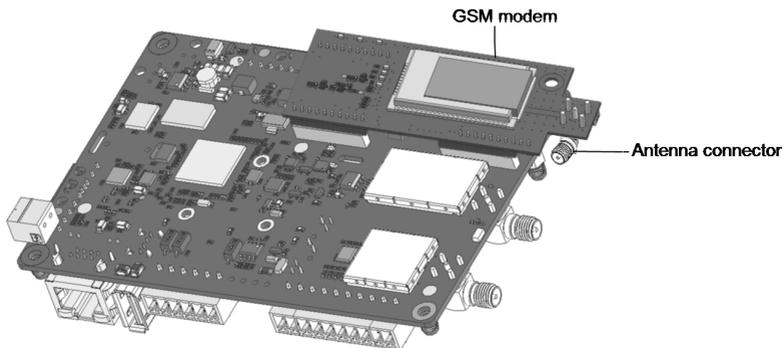


Figure 7: Installed Plug-in and antenna connector

3. Turn the AC ON.

WARNING!



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

4. Check that all the GSM Plug-in LEDs are lit. If not, refer to "Viewing Error Messages and Troubleshooting" on page 19

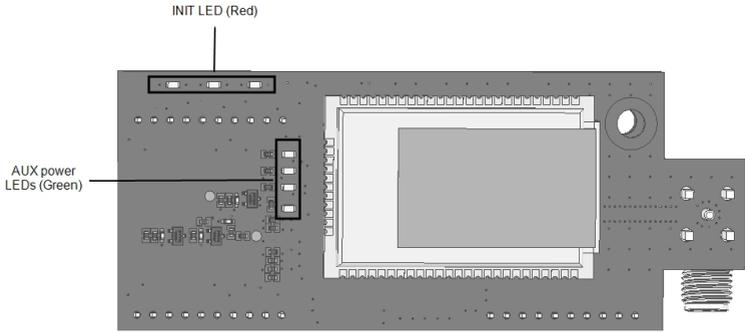


Figure 8: GSM Plug-in LEDs

Chapter 4: Configuring GSM Communication

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

Configuring the Inverter

After installing the GSM Plug-in and antenna, you should activate, commission, and configure the inverter (except for monitoring communications) according to the inverter's installation guide.

The GSM Plug-in supports two types of data plans:

- **Low Bandwidth** - This is the default mode that uses a data plan for low-cost monitoring. In this mode, the data is sampled every 15 minutes and the server connection is established every 4 hours. In a multiple inverter system, a GSM Plug-in and a SIM card are required in every inverter. A low-bandwidth configuration is required in every inverter.
- **High Bandwidth** - This mode uses a data plan for high resolution monitoring. In this mode the Plug-in maintains a continuous connection with the server, and the data is sampled every 5 minutes. After optimizer pairing there is constant communication with the server for the first hour to simplify commissioning. In a multiple inverter system (up to 32 inverters), a GSM Plug-in and a SIM card are required in only one inverter. A high-bandwidth configuration is required only in that inverter.

Activate the GSM Plug-in according to the relevant procedure below:

- [Activating the plug-in with a *non-SolarEdge* SIM card](#)
- [Activating the plug-in with a SolarEdge SIM card](#)

Activating the GSM Plug-in with a *non-SolarEdge* SIM card

→ To activate the plug-in with a non-SolarEdge SIM card:

1. Access SetApp and select **Monitoring Communication** → **Cellular**.
2. In the Cellular screen select **Configurations**
3. In the Cellular Configurations screen click Edit then enter the required information.
 - **Access Point Name (APN)** - the mobile network operator (MNO) name
 - **User Name** - the mobile network operator name
 - **Password** - the mobile network operator user password
 - **PIN** - Personal Identification Name (PIN) code
4. After entering the information, tap **Done**, then tap on the return symbol at the top of the screen to return to the Cellular screen.
5. Either Low Bandwidth (default) or High Bandwidth can be selected during the initial configuration.
 - If the active mode is High Bandwidth, and you wish to change to Low Bandwidth, select **Data Plan Options** → **Low Bandwidth**.
 - If the active mode is Low Bandwidth, and you wish to change to High Bandwidth, contact SolarEdge (support@solaredge.com).
6. Perform one of the following steps:
 - If you choose to remain in Low Bandwidth, the following scenario is enacted:
Using Auto Activation, the Plug-in connects to the MONITORING server.
If auto activation fails, select Manual Activation and in the screen that appears, enter "+", the country code, and the mobile number. For example, If your number is 732403100 and the country code is 972 - enter: +972732403100
 - If you choose to move to High Bandwidth mode, the procedure is managed by SolarEdge support.
7. From the Commissioning page, select **Monitoring Communication** → **Configure Cellular**. The Configure Cellular page should display the status "Connected", indicating that connectivity has been established with the monitoring platform.

Activating the GSM Plug-in with a SolarEdge SIM card

→ To activate the plug-in with a SolarEdge SIM card:

1. Access SetApp and select **Monitoring Communication** → **Cellular**.
2. By default, the GSM modem starts automatically in **Low Bandwidth** mode.
 - SIM cards with model number SE-SIM-R05-EU-S5 SIM require **High Bandwidth**. Contact SolarEdge Support (support@solaredge.com) to activate High Bandwidth mode.
3. From the Commissioning page, select **Monitoring Communication** → **Configure Cellular**. The Configure Cellular page should display the status "Connected", indicating that connectivity has been established with the monitoring platform.

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 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 *System Compatibility Check and Upgrade* on page 10.

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
GSM Plug-in not detected	The GSM Plug-in is not communicating with the communication board.	Check that the GSM 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 GSM network.	Select Monitoring Communication → Cellular .
Not activated	The GSM Plug-in is not activated for use.	Contact SolarEdge support.
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).
Not registered	The GSM Plug-in is not registered to a network provider.	<ul style="list-style-type: none"> • Check antenna connection or change antenna location. • Contact SolarEdge support.
No signal	No GSM signal is received.	<ul style="list-style-type: none"> • Check that the antenna cable is connected properly to the Plug-in. • Check for any damage to the cable or connectors. • Try relocating the antenna.
Activate Plan	Data plan was not selected.	Select a data plan as described in <i>Configuring the Inverter</i> on page 16.
DNS Failure	The DNS request that was forwarded to the cellular network provider has failed, or there is a problem in the DNS registration	Contact SolarEdge support.

Error message	Description	Troubleshooting
	on the SolarEdge server.	
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 <i>must</i> 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.

Plug-in LED Indications

Function	LED functionality	Description	Troubleshooting
AUX Power LEDs	All LEDs are OFF	The Plug-in is not connected properly	Check that the Plug-in is installed properly: All the pins are inserted in the correct location and not shifted.
		The Plug-in is damaged	Contact SolarEdge support
	The green Plug-in power LED is ON, but one or more of the other LEDs is OFF	The Plug-in is damaged	Contact SolarEdge support
Init LEDs	Red LED is blinking slowly	Communication between Plug-in and main board is established	Indication only
	Orange ON	The Plug is registered to a GSM network	Indication only
	Green ON	The Plug-in is connected to the Internet	Indication only

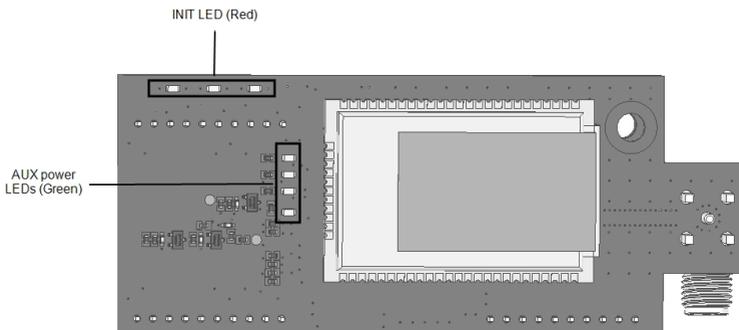


Figure 9: GSM Plug-in LEDs

Appendix A: Additional Materials

For complete technical specifications, see the following datasheet:

GSM Plug-in for Inverters with SetApp

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



Support Contact Information

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



<https://www.solaredge.com/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 product SetApp mobile application or 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.

solaredge