



SolarEdge Cellular CDMA Kit Installation Guide

Version 1.3

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver 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.

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About This Guide

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

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

SolarEdge offers this 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 SolarEdge Installation Guide.

The guide includes the following chapters:

- **Chapter 1: Software Compatibility Check and Upgrade**, page 6, describes how to check the inverter SW version and upgrade if required.
- **Chapter 2: Installing the Cellular Modem and Antenna**, page 6, describes how to mount, connect and verify the connection of the cellular modem and antenna.
- **Chapter 3: Configuring Cellular Communication**, page 16, describes how to set up the cellular communication option in the inverter, and check the communication.
- **Appendix A: Technical Specifications**, page 18, provides the electrical and mechanical specifications of the SolarEdge cellular modem.

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:

US & Canada	1877 360 5292	support@solaredge.us
Worldwide	+972 73 240-3118	support@solaredge.com
Fax	+972 73 240-3117	

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

Chapter 1: Software Compatibility Check and Upgrade

To use the cellular communication option, the communication board firmware (CPU) version must be 3.1200 or higher. This chapter describes how to check the CPU version and upgrade if required.

▶ To check the inverter CPU version:

- 1 Verify that the inverter has been activated using the activation card supplied with the inverter.
- 2 Press the LCD light button short presses until the screen below is reached.

```
I D : # # # # # # # # # #
D S P 1 / 2 : x . x x x x / x . x x x x
C P U : 0 0 0 3 . 1 2 0 0
C o u n t r y : X X X X X
```


- 3 Check the CPU version number. If lower than 3.1200, upgrade the inverter software as described below; otherwise close the inverter cover and proceed to *Configuring the Inverter Using the LCD Light Button* on page 16.



NOTE

Only inverters with version 3.xxxx can be upgraded.

▶ To upgrade the inverter software:

- 1 Disconnect the AC power to the inverter and wait 5 minutes.
- 2 Open the inverter cover as described in its manual.
- 3 Insert the firmware upgrade card supplied with the kit into the card slot labeled  on the communication board.

- 4** Turn the AC ON.

**WARNING!**

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

- 5** If upgrade is required, it starts automatically. Wait for the message "Done" to be displayed on the LCD.
- 6** Verify the correct version as described above.
- 7** Remove the card from the inverter.

Chapter 2: Installing the Cellular Modem and Antenna

This chapter describes how to install a cellular modem and antenna in each of the inverters that will communicate with the SolarEdge monitoring portal.

When using multiple SolarEdge inverters in the same site, a cellular modem must be installed in each inverter.

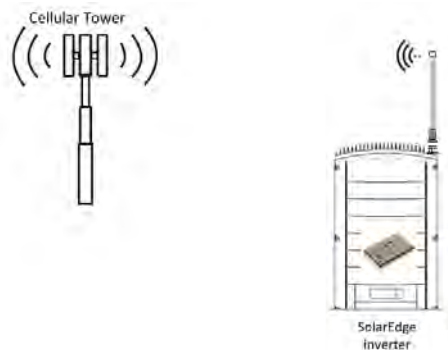


Figure 1: Cellular modem connection of an inverter

Package Contents

- Cellular modem



- Plastic holder



- Antenna

- Mounting clip with antenna cable



- Cable holder



- Firmware upgrade card



Installing the Antenna and Cable

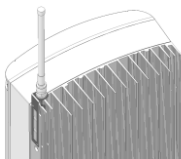
- 1 Connect the antenna to the mounting clip, and tighten by screwing the antenna to the clip.



Figure 2: 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.

Single phase inverter



Extended power single phase/
Three phase inverter



Figure 3: Antenna mounted on the inverter

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 have a radial clearance of at least 2.7"/7 cm from metal surfaces.

- 3 Route the antenna cable along the inner fins or the inverter side, in the bracket. Make sure the cable is not hanging loose outside the inverter enclosure.



Figure 4: Routing the antenna cable

- 4 Open the gland numbered 1 at the bottom of the inverter.

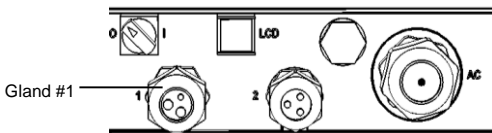


Figure 5: Inverter sealing glands

- 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.

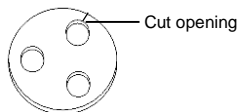


Figure 6: Rubber seal

- 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 10).

Mounting the Modem in the Inverter



NOTE

If you intend to use the RS485 communication and termination is required, adjust the termination DIP switches before installing the cellular modem, as the DIP switches are inaccessible when the cellular modem is installed.



NOTE

Make sure that the inverter version is 3.1200 or higher **before installing the modem**, otherwise the cellular communication may be inoperative and the inverter will not start up.

- 1 Loosen the upper-right screw attaching the communication board to the standoff.

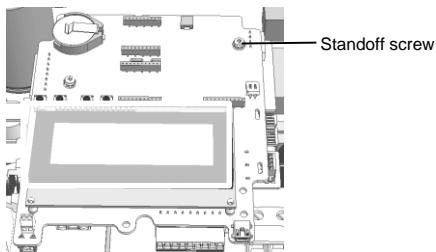


Figure 7: The communication board

- 2 Attach the supplied holder to the communication board and use the removed screw to fasten the holder to the board.

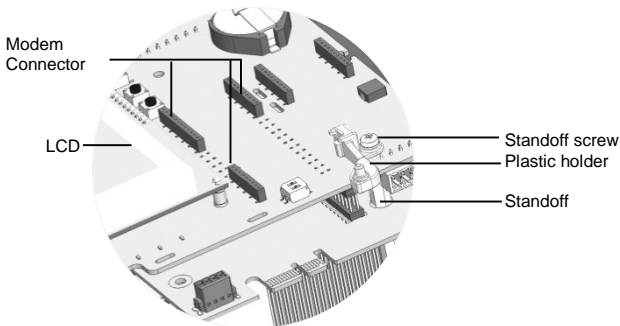


Figure 8: The holder installed on the communication board

- 3 Locate the cellular modem in its place on the communication board, as shown in Figure 9. Follow these guidelines:
 - Use the supplied holder to position the modem with the correct orientation and stabilize it.
 - Plug in the modem making sure that all pins are correctly positioned in the modem connector, and no pins are left out of the connector.

- Make sure that the modem is firmly in place.

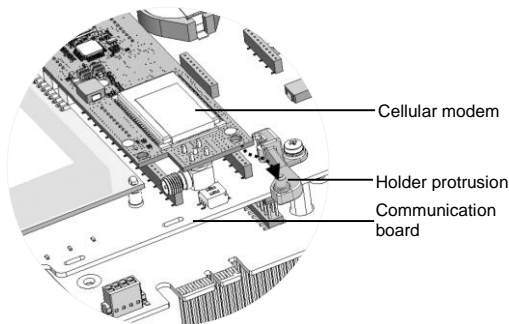


Figure 9: Installing the cellular modem on the holder

- 4** Connect the antenna cable to the cellular modem and tighten manually (see Figure 10).
- 5** Install the cable holder at the side of the communication board.

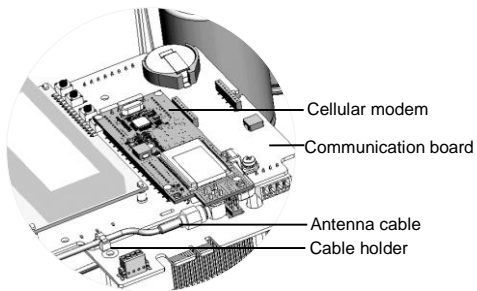


Figure 10: Installed cellular modem and antenna cable

- 6 Verify that the ON/OFF switch and Safety Switch are OFF.
- 7 Turn the AC ON.

**WARNING!**

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

- 8 Check that all the cellular modem LEDs are lit. If not, refer to *Troubleshooting* on page 19.

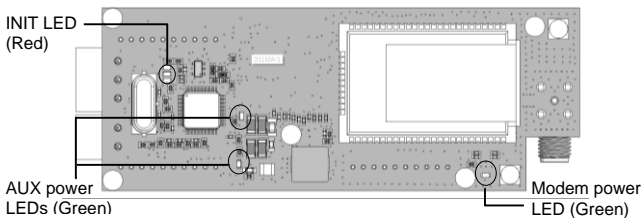


Figure 11: Cellular modem LEDs

Chapter 3: Configuring Cellular Communication

Communication

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

Configuring the Inverter Using the LCD Light Button

The following figures illustrate the inverter connector panel types:

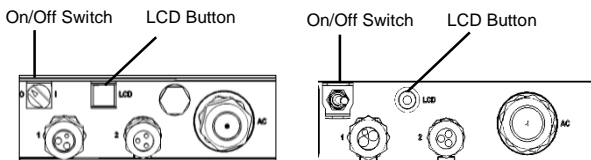


Figure 12: Inverter connector panel types

Use the LCD button to toggle through the informative status screens, and for communication setup.

- 1 Verify that the inverter ON/OFF switch is OFF.
- 2 Press the LCD light button once to turn ON the backlight. If the inverter was in production mode before this action, the following message is displayed:

```

D C   V O L T A G E   N O T   S A F E
D O   N O T   D I S C O N N E C T
V D C :           7 2 . 0
  
```

This message is displayed until the DC is below the safety voltage threshold. The default safety voltage is 50V.

- 3** Access the Setup mode: Press and hold down the LCD button until the following message is displayed:

```
Keep holding button
For pairing, release
To enter menu...
Remaining 3 sec
```

Release the button within three seconds to access Setup Mode. When using setup menus, short press to scroll down to the next menu option and long press to select the item. You can use the Exit option in these menus to move up one menu level.

```
Language
Communication
Information
Maintenance
Exit
```

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

```
Server < LAN >
LAN Conf
RS 485 - 1 Conf < S >
ZigBee Conf < N / A >
Wi-Fi Conf < N / A >
RS 232 Conf
```

- 5** Select the **Server** submenu, scroll down to the **Cellular** option and select it.

```
LAN
RS 232
RS 485
Zigbee
Cellular
None
```

- Exit the Setup mode by selecting the Exit option in each submenu screen, or wait for the inverter to automatically exit Setup mode if no buttons are pressed for more than two minutes.

Verifying the Connection

The modem communicates with the SolarEdge monitoring portal every several hours and sends all monitoring data accumulated since last communication.

- Check the server communication status screen:

```
S e r v e r : C e l l           < S _ O K >
S t a t u s :                   < O K >
                                S i g : 5
< E r r o r   m e s s a g e >
```

- Server:** The method of communication to the SolarEdge monitoring portal. Should display **Cell**.
 - Status:** Displays **OK** if the inverter established a successful physical connection to the Cellular modem.
 - S_OK:** The last communication to the SolarEdge monitoring portal was successful (appears if the inverter is connected to the portal). If S_OK is not displayed, refer to *Troubleshooting*, on page 19).
 - Sig:** The signal strength, received from the cellular modem. A value between 0-5, (0 = no signal, 5 = excellent signal).
 - Error message** per communication connection status failure (Refer to *Troubleshooting*, on page 19).
- Close the inverter cover as described in its manual. Verify proper cover fastening to ensure sealing.

Troubleshooting

The Inverter is not Starting Up

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

Check if the modem is installed, remove it and upgrade the inverter as described in *Chapter 1: Software Compatibility Check and Upgrade*. Install the modem.

Error Messages in the LCD

Error message	Description	Troubleshooting
No modem detected	The internal modem is not communicating with the communication board.	Check that the cellular modem is installed properly: All the pins are inserted in the correct location and not shifted.
Not activated	The cellular modem is not activated for use.	Contact SolarEdge support.
Not registered	The cellular modem 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 cellular signal is received.	<ul style="list-style-type: none">Check that the cable is connected properly to both modem and antenna.Check for any damage to the cable or connectors.Try relocating the antenna.Check that there is cellular coverage in your area.

Error message	Description	Troubleshooting
DNS Failed	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 Connect. Failed	Connection to the SolarEdge server has failed.	Contact SolarEdge support.
S_OK is not displayed	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.

LED Indications

LED functionality	Description	Troubleshooting
All LEDs are OFF	The modem is not connected properly	Check that the cellular modem is installed properly: All the pins are inserted in the correct location and not shifted.
	The modem is damaged	Contact SolarEdge support
The modem power LED is ON, but one or more of the other LEDs is OFF	The modem is damaged	Contact SolarEdge support

Appendix A: Technical Specifications

Electrical			Min.	Typ.	Max.	Units
Operating frequency range	CDMA 800	Modem transmit	824	-	849	MHz
		Modem receive	869	-	894	MHz
	CDMA 1900	Modem transmit	1850	-	1910	MHz
		Modem receive	1930	-	1990	MHz
Receiver input sensitivity (Forward link RF level @ FER < 0.5%)			-106	-107	-	dBm
Maximum transmit power			24			dBm
Antenna connector			RP-SMA			
Power consumption @transmit			2.5			W

Mechanical		Units
Modem dimensions (L x W)	Through-Hole: 3.55 x 1.35 / 90.5 x 34.5	in/mm
Operating temperature	-40 to +185 / -40 to +85	°F/°C
Compliance		
EMC and Radio	FCC class B, Parts 15, 22, 24; Industry Canada (IC): ICES-003, RSS-102	
Safety	cUL, UL60950	
RoHS	Yes	

If you have technical queries concerning our products,
please contact our support through SolarEdge service portal:
<http://www.solaredge.com/groups/support/services>

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