



Installation Guide

Energy Meter with Cellular Connection

For North America

Version 1.1

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 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.
- 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.

Support and Contact Information

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

USA and Canada: 1 510 498 3200

Worldwide: +972 073 2403118

Fax: +1 (530) 273-2769

Email: ussupport@solaredge.com.

Support Center: <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 Inverter SetApp mobile application LCD screen 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 software version as appears in the ID status screen.

Version History

- Version 1.0 (May 2018) - Initial release
- Version 1.1 (December 2018)
 - Updated site creation procedure
 - Updated checks of meter configuration (including data plan)
 - Addition of Rogowski Coil current transformer use
 - Addition of inverters with SetApp configuration

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HANDLING AND SAFETY INSTRUCTIONS

During installation, testing and inspection, adherence to all the handling and safety instructions is mandatory. **Failure to do so may result in injury or loss of life and damage to the equipment.**

Safety Symbols Information

The following safety symbols are used in this document. Familiarize yourself with the symbols and their meaning before installing or operating the system.

WARNING!

Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in **injury or loss of life**. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.



AVERTISSEMENT!

Dénote un risque: il attire l'attention sur une opération qui, si elle n'est pas faite ou suivie correctement, pourrait causer des blessures ou un danger de mort. Ne pas dépasser une telle note avant que les conditions requises soient totalement comprises et accomplies.

CAUTION!

Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in **damage or destruction of the product**. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.



ATTENTION!

Dénote un risque: il attire l'attention sur une opération qui, si elle n'est pas faite ou suivie correctement, pourrait causer un dommage ou destruction de l'équipement. Ne pas dépasser une telle note avant que les conditions requises soient totalement comprises et accomplies.



NOTE

Denotes additional information about the current subject.



IMPORTANT SAFETY FEATURE

Denotes information about safety issues.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE



WARNING!

Opening the meter and repairing or testing under power must be performed only by qualified service personnel familiar with this device.

AVERTISSEMENT!

L'unité ne doit être meter que par un technicien qualifié dans le cadre de l'installation et de la maintenance.



WARNING!

The device should **not** be serviced when powered up. Make sure to power down the equipment before performing service activities.

AVERTISSEMENT!

La maintenance de cet équipement ne doit pas être faite quand il est en marche. Assurez-vous de l'éteindre avant toute maintenance.



CAUTION!

Communications cabling between the meter and external devices must not use wires that span more than one building, as per the UL 60950-2 standard.

ATTENTION!

Le câblage de la communication entre le Compteur d'énergie et les appareils ne doivent pas utiliser des câbles qui peuvent s'étendre d'un bâtiment à un autre, d'après le standard UL 600950-2.

Chapter 1: Introducing the Energy Meter with Cellular Connection

Overview

The Energy Meter with Cellular Connection (also referred to as “meter”) measures the energy exported to the grid or imported from the grid for the house loads (consumption). It can be installed prior to a PV system installation, and at that stage functions as an import-only meter.

The meter is fully integrated with the SolarEdge monitoring platform, which uses the meter data for displaying an overview of the energy consumption, expected PV power and projected savings from a PV system. This provides home owners with a better estimate of the expected impact of their future PV system.

The meter communicates with the monitoring platform over a cellular connection. The energy meter is equipped with a built-in cellular plug-in and is provided with a SolarEdge-provided, five-year prepaid, high-bandwidth data plan.

When a PV system is installed and the meter is connected to the inverter, the meter will be used for measuring both exported energy and imported energy.

To use the meter, the inverter communication board firmware (CPU) version must be 3.24xx or later.

The following figures illustrate the meter modes of operation:

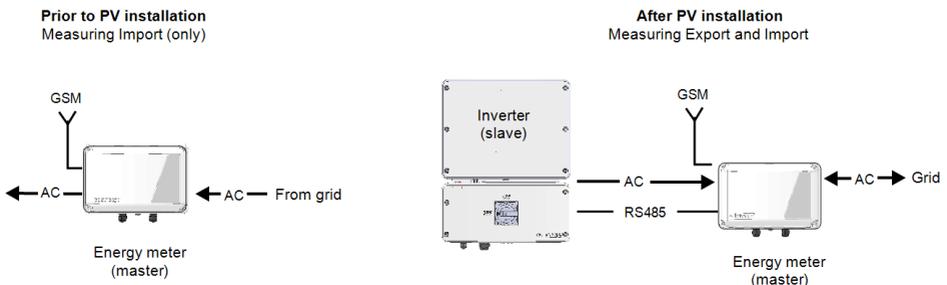


Figure 1: Energy Meter with Cellular Connection- modes of operation

Meter Components and Interfaces

This section describes the meter external interfaces and internal components.

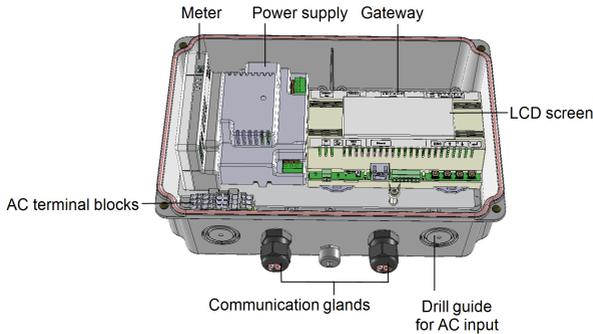


Figure 2: Energy Meter with Cellular Connection- external interfaces

External Interfaces

Refer to *Figure 2*.

- **Drill guide for AC:** used to feed the meter power supply as described in *Connecting the Meter to AC* on page 15. The AC power cable is threaded through the designated drill guide, as shown in *Figure 2*.
- **Communications glands:** Two PG13.5 (M20x1.5) communication glands are used for connection of the various communication options. Each gland has three 2.0-5.0 mm diameter openings.

Cable specifications:

Connection Type	Cable Type	Maximum Length
AC Wiring	Stranded wire, 600 V, type THHN, MTW, or THWN. Wire cross-section area: 22-16 AWG / 0.33-1.31 mm ²	N/A
RS485 communication bus (per RS485 port)	Three twisted wire cable or 4-wire twisted pair cable (two twisted pairs). Wire cross-section area: 24-18 AWG / 0.2- 1 mm ² (a CAT5 cable may be used) Recommended: 20 AWG / 0.52 mm ²	1,000 m / 3,330 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.us/files/pdfs/lightning_surge_protection.pdf.



Internal Components

Refer to *Figure 2*. The next sections describe the following internal components:

- Meter interfaces (see details below)
- Gateway with a built-in cellular plug-in (see details below)
- Power supply
- AC terminal blocks

Meter Interfaces

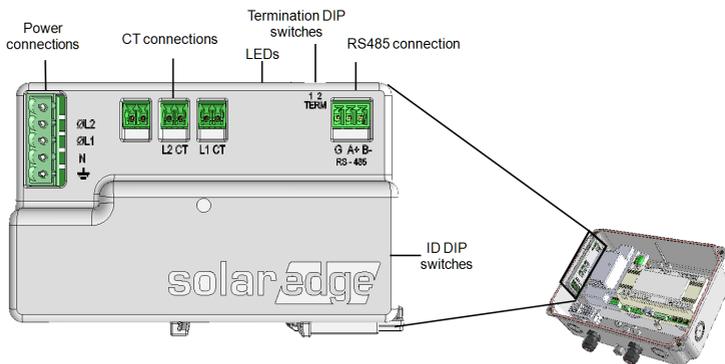


Figure 3: Meter interfaces

- **Power connections** (L1, L2, N, Ground): used for connection to split phase grid
- **Current Transformer (CT) connections** (L1 CT, L2 CT): used for connecting to current transformers
- **Termination DIP switches** (TERM 1, 2): used for setting up MODBUS address
- **RS485**: connected to the gateway
- **LEDs**: used for checking the status, communication and functionality of the meter (refer to *check the meter LED indications*: on page 22).

Gateway Interfaces

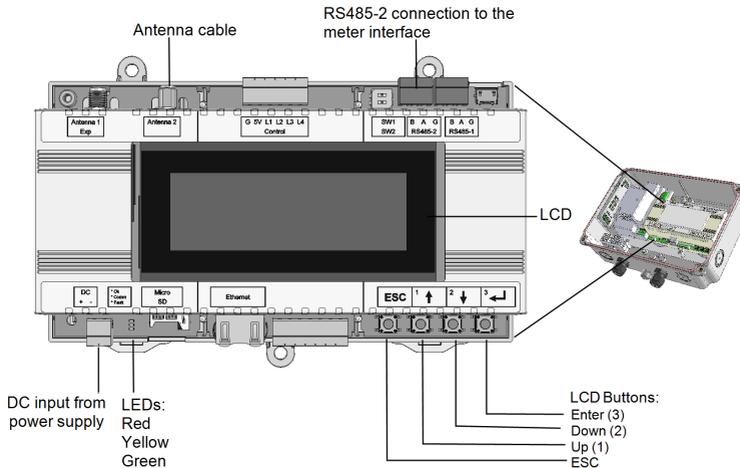


Figure 4: Gateway interfaces

LCD and LCD Buttons



NOTE

Do not change any of the device configurations unless explicitly instructed in this guide.

The LCD screen displays status information of the system and various menus for configuration options.

Use the four user buttons to control the LCD panel menus:

- **Esc:** Moves the cursor (>) to the beginning of the currently displayed parameter; goes to the previous menu, and cancels a value change with a long press (until **Aborted** is displayed).
- **Up (1) and Down (2):** Moves the cursor from one menu option to another, moves among the characters of a displayed parameter, and toggles between possible characters when setting a value.
- **Enter (3):** Selects a menu option and accepts a value change with a long press (until **Applied** is displayed).

Use the three rightmost buttons for entering the digits **123** when entering the Setup mode password **12312312**.

LEDs

The meter's gateway has three LED indicators, as follows:

- **OK (Green):** Indicates whether or not the meter is powered.
- **Comm (Communication, Yellow):** Blinks when monitoring information is received from another SolarEdge device in the installation.
- **Fault (Red):** Indicates that there is an error. For more information, contact SolarEdge support.

All LEDs are ON while the meter is being configured and during power up.

Chapter 2: Installing the Meter

Transport and Storage

Transport the Energy Meter with Cellular Connection in its original packaging, without exposing it to unnecessary shocks. If the original package is no longer available, use a similar box that can be closed fully.

Store the meter in a dry place where ambient temperatures are -40°C / -40°F to $+60^{\circ}\text{C}$ / 140°F .

Package Contents

- Meter (with attached cellular antenna)
- Mounting bracket
- Installation guide
- Accessories kit including terminal blocks

Installation Equipment

Standard tools can be used during the installation of the meter. The following is a recommendation of the equipment needed for installation:

- Drill and 5/32 inch diameter bits
- Three-wire twisted cable or four-wire twisted pair cable
- For optional Ethernet communications: CAT5/6 cable
- 2 CTs or Rogowski coil - purchased separately; available from SolarEdge

Installation Guidelines

- The meter is considered “permanently connected equipment” and requires a disconnect means (circuit breaker, switch, or disconnect) and overcurrent protection (fuse or circuit breaker).
- The meter draws 30 - 100 mA, therefore the rating of any switches, disconnects, fuses, and/ or circuit breakers is determined by the wire gauge, the mains voltage, and the current interrupting rating required.
- The switch, disconnect, or circuit breaker must be located near the meter and be easily operated .
- Use circuit breakers or fuses rated for 20A or less.

- Use grouped circuit breakers when monitoring more than one line.
- The circuit breakers or fuses must protect the mains terminals labeled L1, and L2. In the rare cases where neutral has overcurrent protection, the overcurrent protection device must interrupt both neutral and the ungrounded conductors simultaneously.
- The circuit protection / disconnect system must meet all national and local electrical codes.
- Protect the meter from dust, wet conditions, corrosive substances and vapors.

Installation Workflow

The following provides an overview of the workflow for installing and setting up the meter:

- Step 1: *Mounting the Energy Meter with Cellular Connection* on page 13
- Step 2: *Connecting the Meter to AC* on page 15
- Step 3: *Installing the Current Transformers* on page 17
- Step 4: *Verifying and Configuring Meter Connection* on page 19
- Step 5: *Creating a Monitoring Site* on page 23 and monitoring the house consumption
- Step 6: *Connecting a Meter to the Inverter* on page 29

Mounting the Energy Meter with Cellular Connection

Mount the meter on a wall or pole using the supplied bracket.

The meter should be mounted vertically, with the glands facing downward.

→ To mount the meter:

1. Loosen the 4 Allen screws of the enclosure and remove the cover.

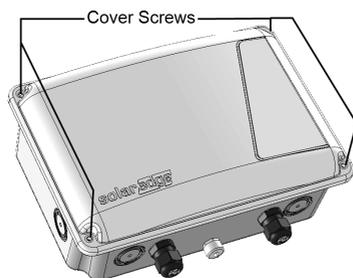


Figure 5: Meter cover screws

- Open the *bottom right* conduit drill guide for AC wiring (see *Figure 6*), taking care not to interfere with any of the internal components. A Unibit drill may be used. The rest of the drill guides (located at the bottom, back and sides of the enclosure, each with two sizes: $\frac{3}{4}$ " and 1") should remain sealed.



Figure 6: AC wiring drill guide

- Install the bracket on a wall or pole, with the semi-circles facing downward, as shown below. Verify that the bracket is firmly attached to the mounting surface.

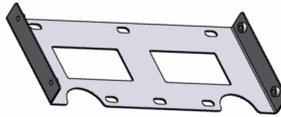


Figure 7: Mounting bracket

- Mount the meter: Attach the enclosure back brackets to the mounted bracket using the four supplied screws. Tighten the screws with a torque of $9 \text{ N}\cdot\text{m}$ / $6.6 \text{ lb}\cdot\text{ft}$.

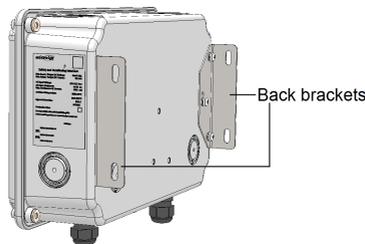


Figure 8: Back brackets

- Unwrap the antenna (pre-connected and attached to the meter enclosure) and mount it vertically on one of the bracket sides.

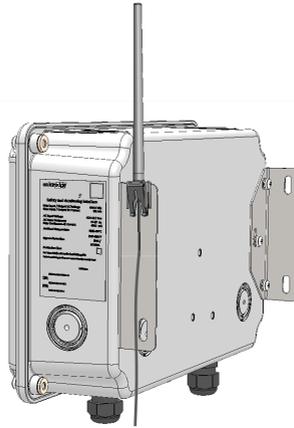
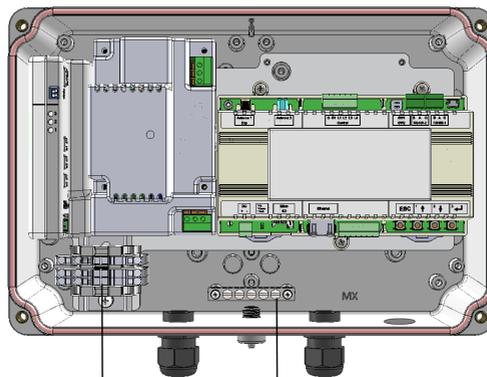


Figure 9: Mounting the antenna

Connecting the Meter to AC

NOTE

- The conduits, hubs and fittings must be suited for field wiring systems.
- The hubs and other fittings must comply with UL514B.
- Use only copper conductors rated for a minimum of 75°C.
- Use the conduit and wiring appropriate for the installation location per the NEC. Outdoor installations must use components that are rated NEMA 3R or higher.



AC terminal blocks Grounding bus-bar

Figure 10: AC and ground connections

The following figures illustrate the meter connection to supported grids:

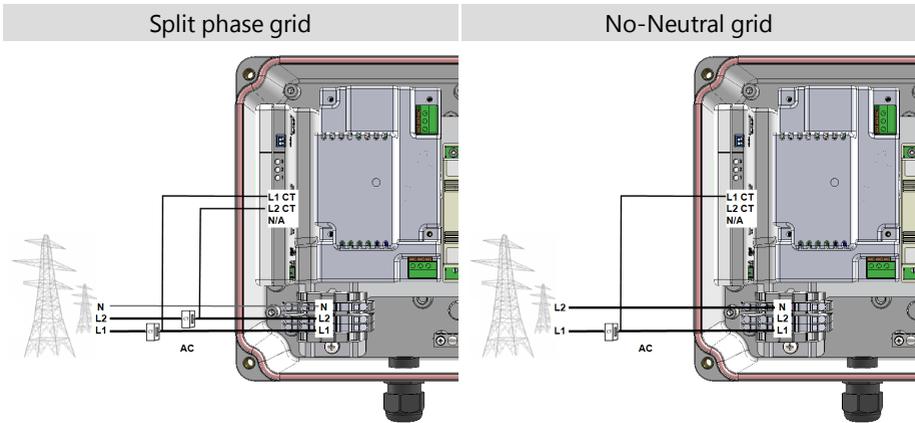


Figure 11: Connection diagrams

→ To connect to AC and ground:

1. Disconnect the AC power by turning OFF the circuit breakers on the distribution panel.
2. Insert the grounding cable through the AC drill guide that was opened.
3. Connect the cable to the equipment grounding bus-bar. Tighten using a torque of 4.0 N*M / 35 lb-in.
4. Strip off 5/16" (8mm) of the AC cable insulation and expose the L (red), N (blue) and G (green) wires.
5. Insert the AC conduit into the AC-side drill guide that was opened.
6. Connect the wires as follows:
 - a. Use a standard flat-blade screwdriver to connect the wires to the spring-clamp terminals (See *Figure 12*).
 - b. The screwdriver blade should fit freely in the terminal opening. Too large a blade can crack the plastic housing.
 - c. Insert the screwdriver, press the release mechanism and open the clamp.
 - d. Insert the wire into the round opening and remove the screwdriver – the wire is automatically clamped.

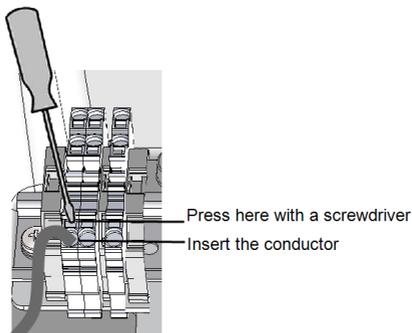


Figure 12: AC Spring-clamp terminal

Installing the Current Transformers

This section describes a solid core CT installation.

SolarEdge offers use of one or two Rogowski Coil CT as an optional alternative to the solid core CT when there is insufficient room in the connection panel for installation of the solid core CT. For the Rogowski Coil CT installation, refer to the installation guide supplied with it.

→ To install the CT:

1. Insert the CT wires through the drill guide that was opened.
2. Connect the black and white wires from each CT into their terminals, using a small blade screwdriver, according to the dots printed on the label .

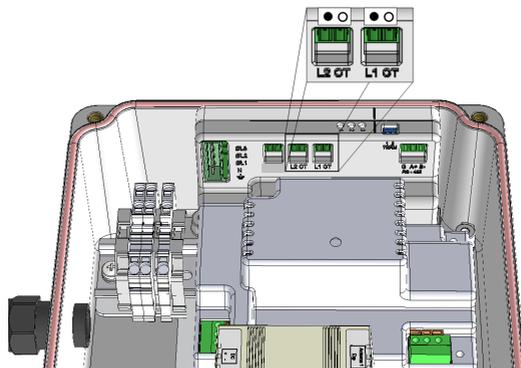


Figure 13: CT connections

3. Clamp CT1 around line 1 AC cable, and CT2 around line 2 AC cable.

When clamping the CT around the conductor to be measured, make sure the arrow is pointing towards the grid.



Figure 14: Current transformer arrow

4. Close the meter cover by tightening the four Allen screws.

Post-Installation Procedure

Your meter is successfully installed. The meter is pre-configured to all required settings for ease of installation. The default CT rating value is pre-configured to 250A. Therefore, if using 200A or 400A CTs, the CT rating should be configured to the correct rating.

Proceed with the following:

1. If required, configure the CT rating - refer to *set the CT rating*: on page 21.
2. Verify the meter configuration - refer to *Verifying and Configuring Meter Connection* on page 19.
3. Create a site in the monitoring platform - refer to *Creating a Monitoring Site* on page 23.

Chapter 3: Verifying and Configuring Meter Connection

As the meter is pre-configured to all required settings, no further configuration is required, unless using 200A or 400A CTs.

This section describes how to check meter configuration settings:

- Cellular (GSM) connection to the monitoring platform
- RS485 -1 and RS485-2 settings
- Full communication setup of the RS485 interfaces
- Modbus address DIP- switches
- CT rating
- LEDs

If any of the setting verifications is not as expected, refer to *Troubleshooting the Meter Connection* on page 35.

→ To verify meter connection:

1. Turn ON AC to the meter by turning ON the circuit breaker on the main distribution panel.

WARNING!

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



AVERTISSEMENT!

RISQUE D'ÉLECTROCUTION, ne touchez pas les fils non isolés lorsque le couvercle de l'onduleur est retiré.

2. Short-press the Enter button to turn the LCD backlight ON. Additional presses on the Enter button display the LCD status screens one after the other.

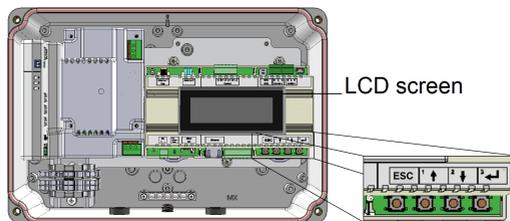


Figure 15: LCD buttons

- Short- press the Enter button until the Server status screen is displayed as shown below. Verify that S_OK is displayed, indicating a successful cellular connection to the monitoring platform.

```
Server: Cell      < S_OK >
Status:          < OK >
MNO: < XXXXXX >   Sig: 5
< Error message >
```

- Short- press the Enter button until the Communication status screen is displayed as shown below. This screen shows the number of external devices that communicate on each port, the device type, and the protocol to which each port was configured.

```
      Dev  Prot  ##
RS485 - 1 < SE > < M > < 01 >
RS485 - 2 < MLT > < 01 > < 00 >
```

- Verify that the setting of the relevant RS485 port is correct:

Dev: SE - SolarEdge device

Prot: M - the communication protocol (Master)

NOTE

RS485-1 pre-configured settings:

- Master
- SolarEdge Protocol



RS485-2 pre-configured settings:

- Master
- Device Type: E/I meter
- SolarEdge Protocol
- Device ID: 2

- Verify that the CT rating setting is correct (pre-configured CT rating = 250A). To modify, refer to *set the CT rating:* on page 21.

7. Check the DIP Switches located inside the meter(see *Figure 16*):
 - Verify that RS485 termination DIP-switches are in the ON (1) position.
 - Verify that the Modbus termination DIP- switches Down (OFF).

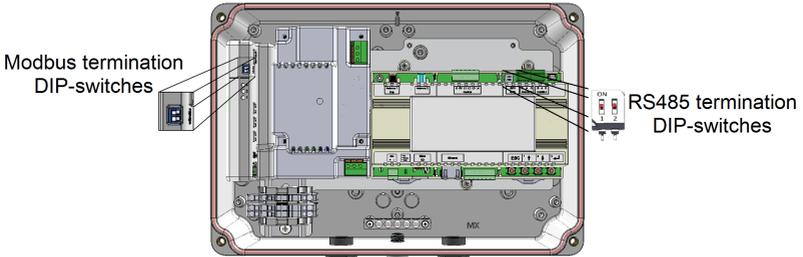


Figure 16: DIP switches

➔ **To set the CT rating:**

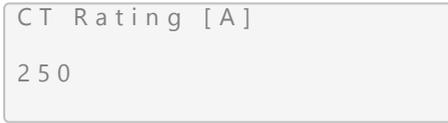
The meter is preconfigured to 250A CT rating (applicable to the Rogowski Coil CT). Perform this procedure only if you installed a CT with a different rating.

1. If the meter is connected to an AC breaker, verify it is turned ON (the meter LEDs are lit or blinking).
2. Enter *Setup* mode: Press the **Enter** button for at least five seconds. The following message is displayed:



3. Use the three right most buttons (Up-1, Down-2 and Enter-3) to type in the following default password: **12312312**.
4. Use the four user buttons to control the LCD panel menus (these buttons can also be used to type in a number):
 - **Esc**: Goes to the beginning of the currently entered parameter or to the previous menu
 - **Up** (1) and **Down** (2): Moves the cursor (>) to the relevant menu option
 - **Enter** (3): Used to select an option
5. Scroll to the **Communication** menu and select **Communication** ➔ **RS485-1 Conf**.
6. Select **Device Type** ➔ **Multi Devices** ➔ **Meter 1**.

7. Select **CT Rating** and set the rating to the value that appears on the CT.



8. Press the ESC button to exit the meter Setup mode.

→ To check the meter LED indications:

LED (label)	Function	Indication
Top green (3)	Flashing ON/OFF	Status- normal operation
Middle yellow (2)	Flashing ON/OFF	Communication OK (RS485 Modbus)
Bottom yellow (1)	ON/OFF	Energy measurement. Turns ON when the meter reads an energy change of ~1 kWh. Then turns OFF.

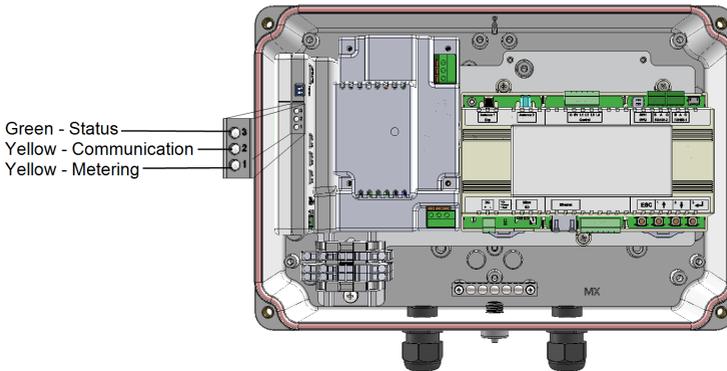


Figure 17: Meter LEDs

Chapter 4: Creating a Monitoring Site

Creating a monitoring site allows monitoring of the site consumption using the meter readings.

The meter can be added to the site either at site creation in monitoring, or as a later step in site administration.

It is recommended to create a monitoring site prior to installing the meter so you can check the meter connectivity and functionality immediately after installing the meter on site.

→ To create a site in the monitoring platform:

1. Access the monitoring platform (<https://monitoring.solaredge.com/solaredge-web/p/login>).
2. Enter your user name and password. If you do not have these credentials, select **New Installer? Click Here**.

For more information, refer to https://www.solaredge.com/sites/default/files/monitoring_portal_registering_and_managing_an_account.pdf



3. Click **Create new Site**. The following window is displayed:

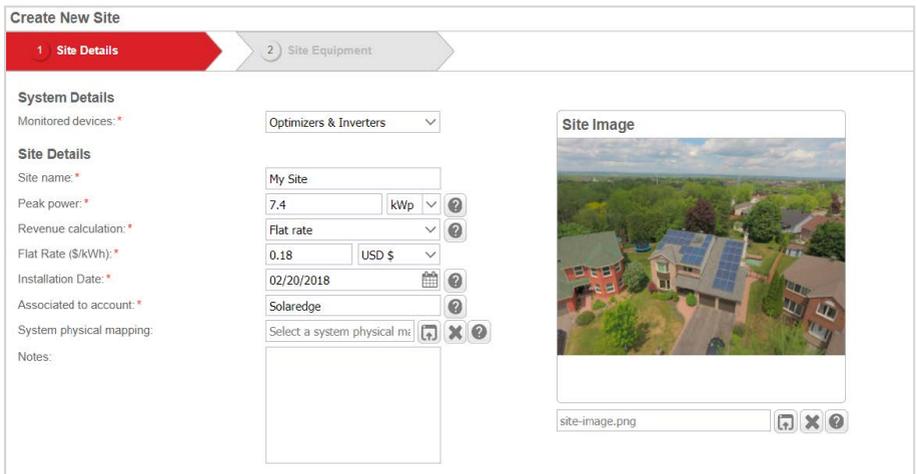


Figure 18: Create New Site - Site Details

4. In the **Site Details** tab, set the following:

Field	Setting	Comments
Monitored devices	Optimizers & Inverters	This is the default setting
Site name	Type a name	
Site Peak power	Enter a known or an estimated site peak power value. Otherwise, enter zero (0).	
Revenue calculation	Select a model for the site: <ul style="list-style-type: none"> • If the site has revenue calculation model rates, select Flat rate (even if the model is Time of Use based). • If there is no revenue calculation model for the site, or if it is unknown, select No revenue calculation 	This can be changed later after the site is created. If you do not set rates, the Estimated Effect of PV System Installed information will not include the estimated Electric Bill Reduction value.
Installation Date	Set the meter installation date	
Associated to account	Set the account to which the site is associated	
Notes	Enter notes (optional)	
Site Image	Upload an image (optional)	
Site Location	Use the map to set the location	

5. Click **Next**. The **Site Equipment** tab is displayed.

Create New Site

1 Site Details | **2 Site Equipment**

Please fill in module details and serial numbers of inverters and gateways. If you do not know those details yet, you will be able to fill them in later in the site administration under logical layout

Modules
Manufacturer: *
Module Model: *

Inverters

Gateways

Serial Number: * -

Figure 19: Create New Site - Site Equipment

6. If the manufacturer and model name for the PV modules to be used in the site are available, the **Modules** check-box is selected by default. If not available, this information can be later defined in site administration.
Do not set Inverters at this stage.
7. If the meter's serial number (SN) is available, it can be added to the inverter site in the site administration section, as follows:
- Click the **Admin** icon.
 - Select the **Logical layout** tab.
 - Click **Add**. A list of equipment is displayed in the right section of the window.
 - Select **Gateways**.
 - In the **Serial Number** field, enter the last 10 characters of the ID number, in the format XXXXXXXX-XX. If the serial number is not currently available, leave this field empty.
 - You can also add inverter details here.

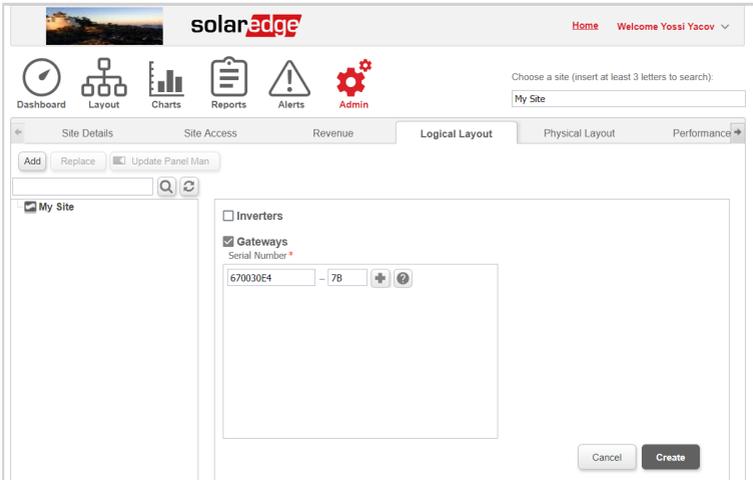


Figure 20: Logical Layout - Adding equipment

When the meter is connected (powered) and its details are available in the monitoring platform, its readings are transferred via cellular (GSM) to the monitoring server.

The Dashboard screen in the monitoring platform shows:

- The energy consumption / import
- Estimated information about the future PV system to be installed (if **Estimated Energy** values were set for the site under Admin → Performance → Estimated Energy).
- Exported/imported energy (only when a PV system is installed)

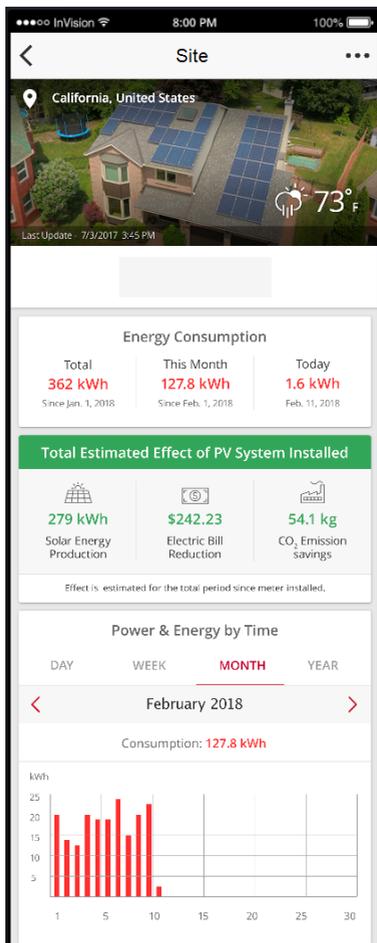


Figure 21: Monitoring platform dashboard (mobile view)

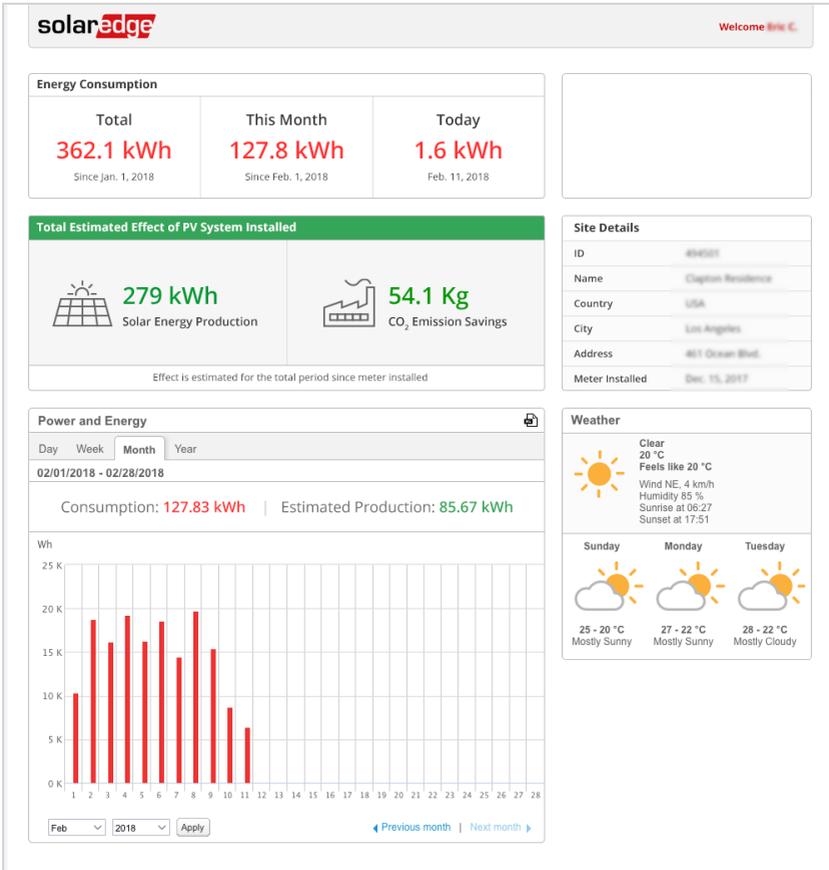


Figure 22: Monitoring platform dashboard (Web view)

Chapter 5: Connecting a Meter to the Inverter

Overview

When a SolarEdge inverter is installed, the Energy Meter with Cellular Connection connects to it using the RS485 communication option. This enables reading the PV system exported and imported energy.

The RS485 option enables creating a chain (bus) of slave devices connected to one master. Only one inverter is supported on the supplied data plan. For connecting more than one inverter, refer to *Connecting Additional Inverters to the Meter* on page 33.

This section describes how to connect the meter to the inverter. The inverter is pre-configured as a slave on the RS485 bus.

Creating an RS485 Bus Connection

The RS485 bus uses a three-wire cable connecting the RS485-1/2 terminal blocks on the meter to the RS485 terminal block of the inverter.

The following sections describe how to connect the meter to different models of SolarEdge inverters.

→ To connect the an RS485 cable to the meter:

1. Disconnect AC to the meter by turning OFF the circuit breaker at the main distribution panel.
2. Loosen the 4 Allen screws of the meter enclosure and remove the cover.
3. Thread the RS485 cable through one of the meter's communication glands.
4. Use one of the supplied 3-pin terminal blocks: Loosen the screws and insert the wire ends into the A, B and G pins. For connections longer than 10 meters, use twisted-pair A and B wires.

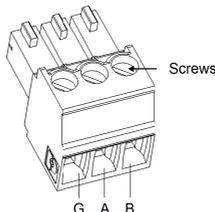


Figure 23: 3-pin terminal block

5. Connect the 3-pin terminal block to the RS485-1 port on the meter.

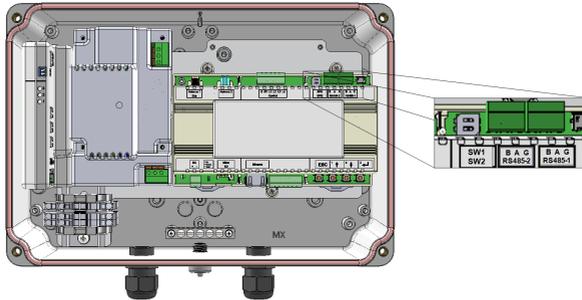


Figure 24: Meter RS485 connectors

→ To connect the meter to Single Phase inverter, Single phase inverter with HD-Wave technology, or Single phase inverter with SetApp configuration:

1. Open the inverter cover as described in its installation guide.
2. Remove the seal from one of the openings in communication glands of the inverter and insert the cable through the opening.
3. Pull out the RS485 terminal block connector (shown below for inverters with SetApp configuration):

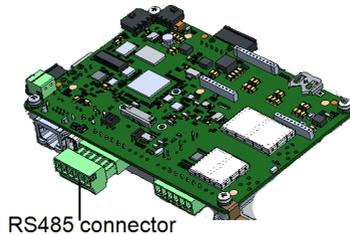


Figure 25: The RS485 connector in the inverter

4. Loosen the screws of pins B, A and G on the left of the RS485 terminal block.

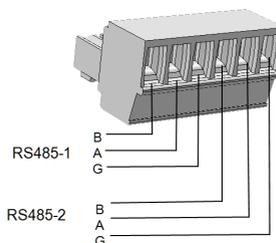


Figure 26: RS485 terminal block

5. Insert the wire ends into the **G**, **A** and **B** pins shown above. Use Four- or six-wire twisted pair cable for this connection.
You can use any color wire for each of the **A**, **B** and **G** connections, as long as:
 - The same color wire is used for all A pins the same color for all B pins and the same color for all G pins
 - The wire for G is not from the same twisted pair as A or B.
6. Tighten the terminal block screws.
7. Push the RS485 terminal block firmly all the way into the communication board.
8. Terminate the inverter installed at the end of the chain by setting the DIP switch block marked SW1 on the communication board. Set the switch to ON (up) as shown in the figure below.

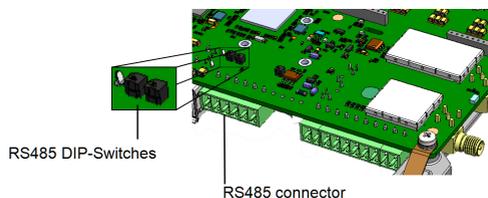


Figure 27: RS485 termination switch

9. Close the inverter cover.
→ To connect the meter to a StorEdge Single Phase Inverter:
 1. Open the inverter cover as described in its installation guide.
 2. Remove the seal from the communication gland labeled 1 and insert the cable from the meter through the gland.
 3. Connect the wires to the Ext.Devices 7-pin terminal block: Press the protrusion at the top of the terminal block to open the connection hole, insert the wire and release to spring back and clamp the wire.

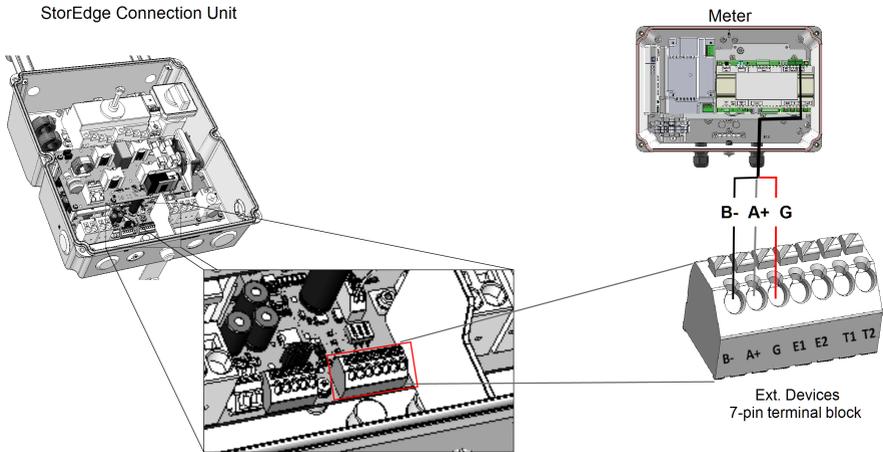


Figure 28: Connecting the meter to the StorEdge Single Phase inverter

4. Close the inverter cover.

Configuring the RS485 Communication

In the RS485 bus, the meter is designated as the connection point between the RS485 bus and the monitoring platform. That is, the meter serves as the master. The meter connects wirelessly (via cellular) to the monitoring platform. The inverter is pre-configured as slave by default.

This section describes how the meter detects its RS485 slave(s).

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

WARNING!

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



AVERTISSEMENT!

RISQUE D'ÉLECTROCUTION, ne touchez pas les fils non isolés lorsque le couvercle de l'onduleur est retiré.

2. Use the internal LCD buttons in the meter to configure the connection, as described in the next steps.

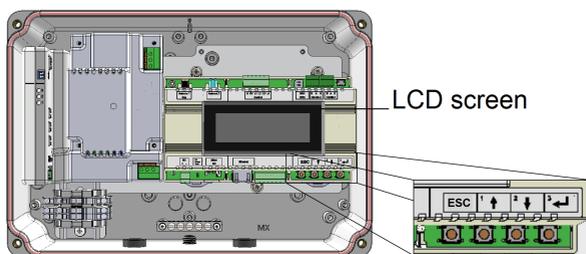


Figure 29: Internal LCD buttons

3. Enter Setup mode: Press the **Enter** button until the following message is displayed:

```
Please enter  
Password  
* * * * *
```

4. Use the three-right most LCD buttons to type in the following password: 12312312
5. Short-press the arrow buttons to scroll to the **Communication** menu. Press the Enter button to select it.
6. Select **Communication** → **RS485-1 Conf.** → **Slave Detect**.

The system starts automatic detection of the slave inverter connected to the meter (master). The meter should report the correct number of slaves (1 slave). If not, verify the connections and terminations.

Verifying the Connection

1. After connection, a message similar to the following appears in the main status screen:

```
RRCR: Enabled  
Server: Cell <S_OK>  
Total # of Slaves: 1
```

2. Verify that **S_OK** appears, to indicate that the connection to the monitoring platform is successful. If **S_OK** is not displayed, refer to *Troubleshooting the Meter Connection* on page 35.
3. Close the meter cover.

Connecting Additional Inverters to the Meter

You can connect additional SolarEdge inverters to the Energy Meter with Cellular Connection, as shown in the figure below.

- Each additional inverter communicates independently with the monitoring platform via Cellular, and therefore requires a dedicated cellular plug-in (of the same type as the first inverter) and antenna. For more information, contact SolarEdge support.
- The additional inverters communicate with the meter over an RS485 bus connection.

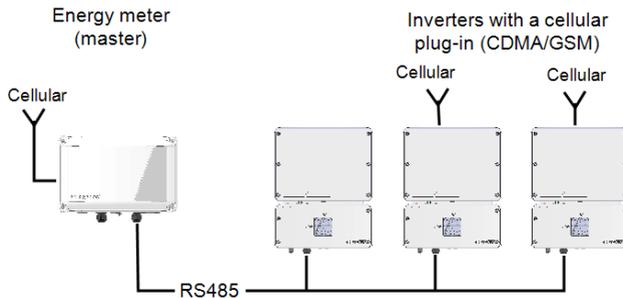


Figure 30: Connecting multiple inverters to the meter

Connect the antenna to the inverter as described in the instructions provided with the antenna.

To connect the inverter to the meter, see *Creating an RS485 Bus Connection* on page 29.

Appendix A: Troubleshooting the Meter Connection

This section describes how to troubleshoot installation and performance errors.

Meter Status Screen Troubleshooting

To view the LCD screen, the meter cover should be open.

WARNING!

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



AVERTISSEMENT!

RISQUE D'ÉLECTROCUTION, ne touchez pas les fils non isolés lorsque le couvercle de l'onduleur est retiré.

Short-press the meter Enter button to display the status screens. The meter status screen is similar to the following. The next sections describe how to troubleshoot issues displayed in the status screen.

```
Export Meter
Status:      <OK / Error#>
Power [ W ] :      xxxxxx.x
Energy [ Wh ] :    xxxxxx.x
```

<OK> is not displayed

If <OK> is not displayed in the Status line of the status screen shown above, there is a problem with the internal meter connections: the meter interface is not communicating with the gateway interface. Check the following:

- There are no loose internal connections between the gateway and the meter.
- The wiring between the RS485 terminal block on the meter interface and the RS485 terminal block on the gateway is correct.

An error message is displayed

- If **Comm. Error** is displayed in the meter status screen, verify proper connection of:
 - The RS485 wiring and connectors
 - The AC connection of the meter
 - The Device ID is correct
- If the message **Error code 3x6E** or **Error 185 Meter Comm. Error** is displayed, contact SolarEdge support.

Energy [Wh] value is not advancing

If the Energy [Wh] value displays a steady value although the inverter is producing and the site is exporting/ importing power, check the following:

- There are no loose connections at the inverter connectors and at the meter.
- The CTs are connected to the meter as illustrated in *Installing the Current Transformers* on page 17.

Troubleshooting Prior to Inverter Connection

The site dashboard displays a steady Energy [Wh] value

The meter readings appear in the site dashboard of the monitoring platform (refer to *Creating a Monitoring Site* on page 23).

If the Energy Consumption [Wh] values display a steady value although the site is consuming power, check the following:

- The cellular connection to the monitoring platform (server connectivity):

```
Server: Cell      <S_OK >
Status:          <OK >
MNO: <XXXXXX >   Sig: 5
<Error message >
```

If <OK> is not displayed or there is an error message, refer to *Cellular Connection Error Messages* on page 38.

- The CTs are connected to the meter as described in *Installing the Current Transformers* on page 17.
- There are no loose connections between the meter interfaces and the gateway.
- There are no loose connections at the meter AC terminal blocks.

The site dashboard displays Export instead of Import

The site dashboard charts in the monitoring platform should display Consumption and Import only.

If Export chart is displayed, check that the CTs are connected to the meter in the correct orientation, as described in *Installing the Current Transformers* on page 17.

Troubleshooting after Inverter Connection

Communication Status Screen Troubleshooting

After a successful slave detection (of a single inverter), the Communication status screen (of the meter LCD only) should display the following:

```

www www www Dev Prot # #
RS485-1 <SE> <M> <01>
RS485-2 <MLT> <01> <01>
    
```

- **RS485-1 <SE> <M> <01>** means that there is one master (the meter-gateway) and one slave (inverter) and they are communicating. If the display is different, the gateway and inverter are not communicating. .
- **RS485-2 <MLT> <01> <01>** means that the meter is configured as a SolarEdge protocol master and communicating.

In inverters with SetApp configuration: If **NC** (not connected) appears in the RS485-2 sub section, the meter is not communicating with the inverter.

Communication		
LAN Connected	RS485-1 Modbus 2 of 2	RS485-2 SE Slave NC
Cellular N/A		ZigBee NC

Check the following:

- Check that the wiring between the meter and the RS485 terminal block on the communication board is correct and well connected.
- Perform Slave Detect as described in *Configuring the RS485 Communication* on page 32.

Cellular Connection Error Messages

Error message	Description	Troubleshooting
Cellular Plug-in detected	The internal Plug-in is not communicating with the communication board.	Check that the Cellular Plug-in is installed properly: All the pins are inserted in the correct location and not shifted.
Not activated	The cellular Plug-in is not activated for use.	Contact SolarEdge support.
Not registered	The Cellular 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.
APN authentication failed	Invalid APN, username or password.	<ul style="list-style-type: none"> • Enter Setup mode • From Communication select Cellular Conf. 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 the carrier whether the SIM needs to be activated.
No signal	No cellular signal is received.	<ul style="list-style-type: none"> • Check that the cable is connected properly to both Plug-in and antenna. • Check for any damage to the cable or connectors. • Try relocating the antenna. • Check that there is cellular coverage in your area.
Activate Plan	Data plan was not selected.	Select a data plan as described in <i>Troubleshooting the Meter Connection</i> on page 35.
DNS Failure	The DNS request that was forwarded to the cellular	Contact SolarEdge support.

Error message	Description	Troubleshooting
	network provider has failed, or there is a problem in the DNS registration on the SolarEdge server.	
TCP Failure	Connection to the SolarEdge server has failed.	Contact SolarEdge support.
Unidentified #	The mobile number is blocked or incorrectly decoded.	Activate the Plug-in <i>manually</i> : Select Manual Activation . Enter "+", the country code, and the mobile number. For example, If your number is 732403100 and the country code is 972 - enter: +972732403100
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.

Appendix B: Energy Meter with Cellular Connection Technical Specifications

SPECIFICATION	VALUES	UNITS
Supported Inverters	Single Phase Inverters	
ELECTRICAL SERVICE		
AC Input Voltage (Nominal)	240	Vac
AC Frequency (Nominal)	60	Hz
Max AC Input Current	100	mA
Connector Type	Terminal block - 22 to 12	AWG
Grids Supported	L1 / L2 / N / PE L1 / L2 / PE	
Power Consumption (Nominal)	4	W
METER ACCURACY (@ 77° F / 25° C, PF: 0.7- 1)		
1% - 100% of Rated Current CT	±1.0	%
CURRENT TRANSFORMER INPUTS⁽¹⁾		
Supported CTs	200, 400	A
Nominal Input (at CT Rated Current)	CT1, CT2: 0.333	Vac RMS
ROGOWSKI COIL CURRENT TRANSFORMER INPUTS⁽²⁾		
Supported Rogowski coil CTs	250	A
One Rogowski coil	CT1: 0.333	Vac RMS
Two Rogowski coils	CT1, CT2: 0.333	Vac RMS
COMMUNICATION		
Supported Communication Interfaces	Cellular, RS485	
Cellular communication	2G	
Response time	≤ 2	sec
Number of Supported Inverters (RS485)	1-3 ⁽³⁾	
DATA PLAN		
Supported Systems - Single Phase Inverter	1 inverter, 70 optimizers, 1 export/ import meter	

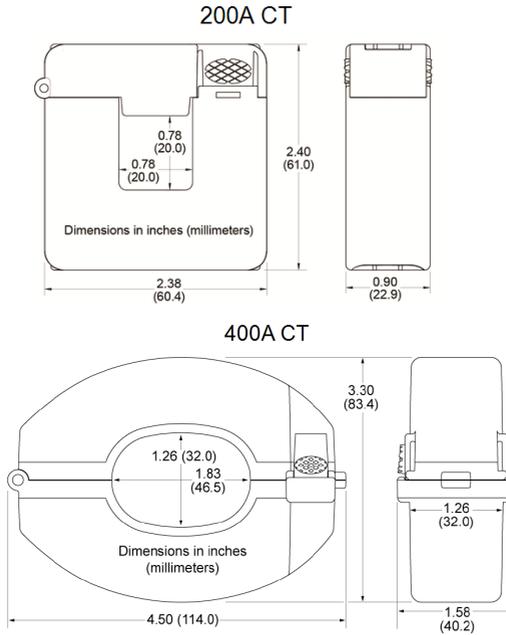
(1)Current Transformers (CTs) should be ordered separately: SEACT0750-200NA-20 (200A) or SEACT1250-400NA-20 (400A) 20 per box.

(2)Rogowski coil should be ordered separately: SECTRC-250A-05 (5 per box, including conditioning circuit)

(3)For installation of more than one inverter, refer to the Installation Guide

SPECIFICATION	VALUES	UNITS
Supported Systems - StorEdge Single Phase Inverter	1 inverter, 45 optimizers, 1 export/ import meter, 1 battery	
Monitoring	Data sampled every 5 minutes and sent to SolarEdge server	
Number of Monitored Inverters	1	
Plan Duration	5-year prepaid plan	
RF PERFORMANCE		
Operating Frequency Min.-Max. CDMA 800	Modem Transmit: 824-849 Modem Receive: 869-894	MHz
Operating Frequency Min.-Max. CDMA 1900	Modem Transmit - 1910 Modem Receive: 1930 -1990	MHz
Antenna Connector	RP-SMA	
Maximum transmit power	24	dBm
Receiver Input Sensitivity (Forward Link RF level @ FER < 0.5 %)	Typ. -107, Min. -106	dBm
STANDARD COMPLIANCE		
Safety	UL 1741:2010 Ed.2 (Supplement SA)+R: 07 Sept. 2016	
Emmission and Radio	FCC parts 15, 22, 24, class B, Industry Canada (IC): ICES-003, RSS-102	
ENVIRONMENTAL		
Operating Temperature	-4 to +140 / -25 to +60	°F / °C
Protection Rating	NEMA 3R	
INSTALLATION SPECIFICATIONS		
Dimensions (HxWxD)	8.1 x 12.4 x 4.6 / 206.6 x 316 x 117.5	in / mm
Weight	3.9 / 1.8	lb / gm
Conduit Entry Diameters	0.75, 1.00	in
Mounting Type	Wall /pole mount (brackets supplied)	

Split core CT dimensions:



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

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