



Installation Guide

# **StorEdge Single Phase Inverter** with HD-Wave Technology and SetApp Configuration

Version 1.1

# Disclaimers

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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.

# Revision History

## Version 1.1 (September 2019)

- Added *Running a Battery Self-test* on page 41.

## Version 1.0 (July 2019)

- First version of this guide

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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.

### 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.

### NOTE



Denotes additional information about the current subject.

### IMPORTANT SAFETY FEATURE



Denotes information about safety issues.

Disposal requirements under the Waste Electrical and Electronic Equipment (WEEE) regulations:

### NOTE



Discard this product according to local regulations or send it back to SolarEdge.

## IMPORTANT SAFETY INSTRUCTIONS

### SAVE THESE INSTRUCTIONS

#### WARNING!



The inverter cover must be opened only after switching the inverter ON/OFF/P switch located at the bottom of the inverter to OFF. This disables the DC voltage inside the inverter. Wait five minutes before opening the cover. Otherwise, there is a risk of electric shock from energy stored in the capacitors.

#### WARNING!



Before operating the inverter, ensure that the inverter AC power cable and wall outlet are grounded properly. This product must be connected to a grounded, metal, permanent wiring system, or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the product.

#### WARNING!



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

#### WARNING!



Do not touch the PV panels or any rail system connected when the inverter switch is ON, unless grounded.

#### WARNING!



SafeDC complies with IEC60947-3 when installing the system with a worst case SafeDC voltage (under fault conditions)  $< 120V$ .

The worst case voltage is defined as:  $V_{oc,max} + (\text{String Length} - 1) * 1V$ , where:

- $V_{oc,max}$  = Maximum  $V_{oc}$  (at lowest temperature) of the PV models in the string (for a string with multiple models, use the max value)
- String Length = number of power optimizers in the string

#### CAUTION!



This unit must be operated according to the technical specification datasheet provided with the unit.

#### CAUTION!



**HEAVY OBJECT.** To avoid muscle strain or back injury, use proper lifting techniques, and if required - a lifting aid.

#### NOTE




Use PV models rated according to IEC 61730 class A.



## NOTE



The symbol  appears at grounding points on the SolarEdge equipment. This symbol is also used in this manual.

## NOTE

A SolarEdge inverter may be installed in a site with a generator. SolarEdge requires installing a physical or electronic interlock, which will signal to the inverter when the grid has been disconnected. Interlock procurement, installation, maintenance and support are the responsibility of the installer.



Damage to the inverter due to incorrect interlock installation or use of an interlock that is incompatible with the SolarEdge system will render the SolarEdge warranty invalid.

For more information, refer to

<https://www.solaredge.com/sites/default/files/se-inverter-support-of-voltage-sources.pdf>.



## NOTE

The following warning symbols appear on the inverter warning label:



Risk of electric shock



5 Minutes

Risk of electric shock from energy stored in the capacitor. Do not remove cover until 5 minutes after disconnecting all sources of supply.



Hot surface – To reduce the risk of burns, do not touch.

**WARNING!**

Before operating the system, ensure that the been grounded properly.

**WARNING!**

When handling the battery, adhere to all manufacturer safety instructions.

**WARNING!**

The battery must be powered off before and during wiring.

To power off the battery:

1. Turn off the circuit breaker.
2. Turn off the disconnect/auxiliary power switch.



To power the battery back on:

1. Turn on the disconnect/auxiliary power switch.
2. Turn on the circuit breaker.

For details, see *Powering the LG Chem Battery Off and On* on page 73.

**CAUTION!**

This unit must be operated under the specified operating conditions as described in the technical specifications supplied with the unit.

**NOTE**

The battery used must be NRTL certified.

**NOTE**

For battery decommissioning and disposal, follow the manufacturer requirements and instructions.



# Chapter 1: Overview

Power is stored in the battery and can be used for various applications such as maximized self-consumption and time of use profile programming. For backup power, an inverter specifically designed for backup applications is required; this inverter is not in the scope of this document.

## The StorEdge Solution Components

- **The Inverter** - manages the battery and system energy, in addition to its traditional functionality as a DC-optimized PV inverter.
- **The Energy Meter** - is used by the inverter for export, import, production and consumption readings, and for Smart Energy Management applications, such as: export limitation and maximizing self-consumption.
- **One battery** - a DC-coupled battery designed to work with the SolarEdge system.

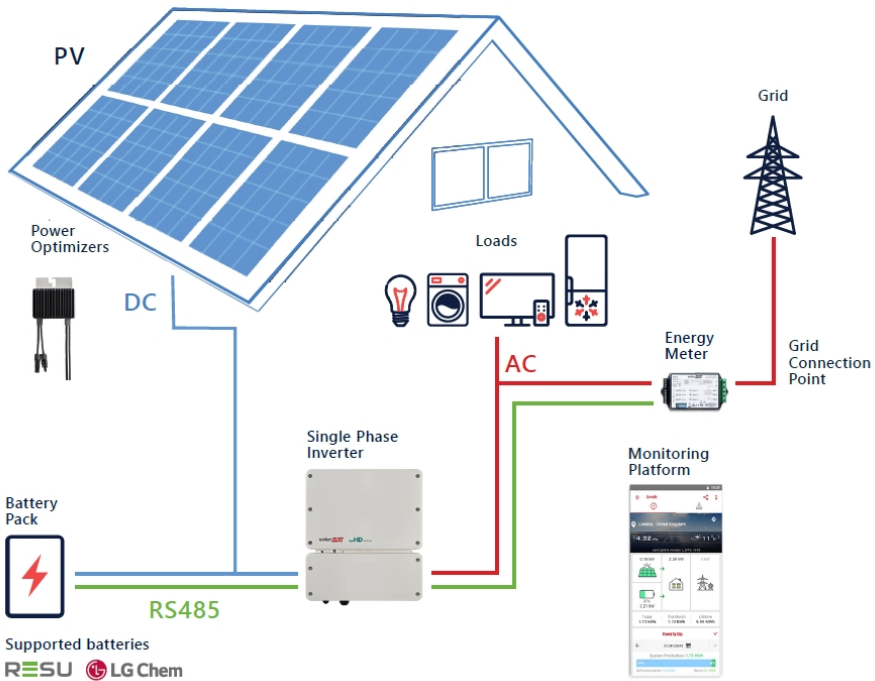


Figure 1: StorEdge system components

## NOTE



- Additional SolarEdge inverters (without batteries) can be connected over RS485. The inverters will participate in export limitation and Smart Energy Management.
- PV modules connected to power optimizers are not mandatory for charge/discharge profile programming.

## Additional References

This document describes basic system connection and configuration - PV system (power optimizer strings), one inverter, one battery, and one meter.

For additional configuration options refer to the StorEdge Solution Applications - Connection and Configuration Guide, available at:

[https://www.solaredge.com/sites/default/files/storedge\\_applications\\_connection\\_and\\_configuration\\_guide.pdf](https://www.solaredge.com/sites/default/files/storedge_applications_connection_and_configuration_guide.pdf)



## Installation Equipment List

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

- Allen screwdriver for 5mm screw type for the inverter enclosure screws.
- Allen screwdriver for M5/M6/M8 screw types
- Standard flat-head screwdrivers set
- Non-contact voltage detector
- Cordless drill (with a torque clutch) or screwdriver and bits suitable for the surface on which the inverter and optimizers will be installed. Use of an impact driver is *not* allowed.
- Appropriate mounting hardware (for example: stainless bolts, nuts, and washers) for attaching:
  - the mounting brackets to the mounting surface
  - the power optimizer to the racking (not required for smart modules)
- MC4 crimper
- Wire cutters
- Wire strippers

- Voltmeter
- Mobile phone with latest SetApp version

For installing the communication options, you may also need the following:

- For Ethernet:
  - CAT5/6 twisted pair Ethernet cable with RJ45 connector
  - If using a CAT5/6 cable spool: RJ45 plug and RJ45 crimper
- For RS485 and battery:
  - Four- or six-wire shielded twisted pair cable
  - Watchmaker precision screwdriver set

## Inverter Transport and Storage

Transport the inverter in its original packaging, facing up and without exposing it to unnecessary shocks. If the original package is no longer available, use a similar box that can withstand the weight of the inverter (refer to the inverter weight in the specification datasheet provided with the unit), has a handle system and can be closed fully.

Store the inverter in a dry place where ambient temperatures are -25°C to +65°C / -13°F to 149°F.

## Chapter 2: Installing the Power Optimisers

### Safety

**WARNING!**

When modifying an existing installation, turn OFF the inverter ON/OFF/P switch, the Connection Unit (if applicable) and the AC circuit breaker on the main AC distribution panel.

**CAUTION!**

Power optimizers are IP68/NEMA6P rated. Choose a mounting location where optimizers will not be submerged in water.

**CAUTION!**

This unit must be operated according to the operating specifications provided with the unit.

**CAUTION!**

Cutting the power optimizer input or output cable connector is prohibited and will void the warranty.

**CAUTION!**

All PV models must be connected to a power optimizer.

**CAUTION!**

If you intend to mount the optimizers directly to the model or model frame, first consult the model manufacturer for guidance regarding the mounting location and the impact, if any, on model warranty. Drilling holes in the model frame should be done according to the model manufacturer instructions.

**CAUTION!**

Installing a SolarEdge system without ensuring compatibility of the model connectors with the optimizer connectors may be unsafe and could cause functionality problems such as ground faults, resulting in inverter shut down. To ensure mechanical compatibility of the power optimizers' connectors with the PV model' connectors to which they are connected:

- Use identical connectors from the same manufacturer and of the same type on both the power optimizers and on the models; or
- Verify that the connectors are compatible in the following way:
  - The model connector manufacturer should explicitly verify compatibility with the SolarEdge optimizer connector; and
  - A third-party test report by one of the listed external labs (TUV, VDE, Bureau Veritas UL, CSA, InterTek) should be obtained, verifying the compatibility of the connectors.



For more information, refer to

<https://www.solaredge.com/sites/default/files/optimizer-input-connector-compatibility.pdf>



## Installation Guidelines

- The minimum and maximum string length guidelines are stated in the power optimizer datasheets. Refer to the Designer for string length verification. The Designer is available on the SolarEdge website at [https://www.solaredge.com/products/installer-tools/designer#/.](https://www.solaredge.com/products/installer-tools/designer#/)
- Frame-mounted power optimizers are mounted directly on the module frame, regardless of racking system (rail-less or with rails). For installation of frame-mounted power optimizers, refer to [http://www.solaredge.com/sites/default/files/installing\\_frame\\_mounted\\_power\\_optimizers.pdf](http://www.solaredge.com/sites/default/files/installing_frame_mounted_power_optimizers.pdf).
- The power optimizer can be placed in any orientation.
- If connecting more modules than optimizer inputs in parallel, use a branch cable. Some commercial power optimizer models have a dual input.



- Position the power optimizer close enough to its module so that their cables can be connected.
- Make sure to use power optimizers that have the required output conductor length:
  - *Do not* use extension cables between a module and a power optimizer, between two modules connected to the same optimizer, or between two optimizers other than in the cases specified below.
  - You can use extension cables between power optimizers only from row to row, around obstacles or pathways within a row, and from the end of the string to the inverter, as long as the maximum distance is not exceeded.

**NOTE**

- Use at least 11 AWG/ 4 mm<sup>2</sup> DC cables.
- The total cable length of the string (excluding power optimizers' cables) should not exceed 1000ft./300 m from DC+ to DC- of the inverter.

- Completely shaded modules may cause their power optimizers to temporarily shut down. This will not affect the performance of the other power optimizers in the string, as long as the minimum number of unshaded power optimizers connected in a string of modules is met. If under typical conditions fewer than the minimum optimizers are connected to unshaded modules, add more optimizers to the string.
- To allow for heat dissipation, maintain a minimum of 2.5 cm / 1" clearance between the power optimizer and other surfaces, on all sides except the mounting bracket side.

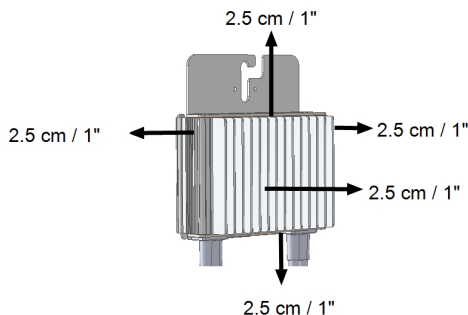


Figure 2: Power optimizer clearance

- When installing modules in a confined space, for example, if installing Building-integrated photovoltaic (BIPV) modules, ventilation measures may be needed to



ensure the power optimizers are not be exposed to temperatures outside their specifications.

## Step 1: Mounting the Power Optimisers

For each of the power optimizers<sup>(1)</sup>:

1. Determine the power optimizer mounting location and use the power optimizer mounting brackets to attach the power optimizer to the support structure . It is recommended to mount the power optimizer in a location protected from direct sunlight. For frame-mounted power optimizers follow the instructions supplied with the optimizers, or refer to [https://www.solaredge.com/sites/default/files/installing\\_frame\\_mounted\\_power\\_optimizers.pdf](https://www.solaredge.com/sites/default/files/installing_frame_mounted_power_optimizers.pdf).
2. If required, mark the mounting hole locations and drill the hole.



### CAUTION!



Drilling vibrations may damage the power optimizer and will void the warranty. Use a torque wrench or an electric drill with adjustable clutch that meets the mounting torque requirements. *Do not* use impact drivers for mounting the power optimizer.

*Do not* drill through the power optimizer or through the mounting holes.

3. Attach each power optimizer to the rack using M6 (1/4") stainless steel bolts, nuts and washers or other appropriate mounting hardware. Apply torque of 9-10 N\*m / 6.5-7 lb\*ft.
4. Verify that each power optimizer is securely attached to the model support structure.
5. Record power optimizer serial numbers and locations, as described in *Reporting and Monitoring Installation Data* on page 49.

## Step 2: Connecting a PV Module to a Power Optimizer

### NOTE



Images are for illustration purposes only. Refer to the label on the product to identify the plus and minus input and output connectors.

For each of the power optimizers:

<sup>(1)</sup>Not applicable to smart models.

- Connect the Plus (+) output connector of the module to the Plus (+) input connector of the power optimizer.
- Connect the Minus (-) output connector of the module to the Minus (-) input connector of the power optimizer.

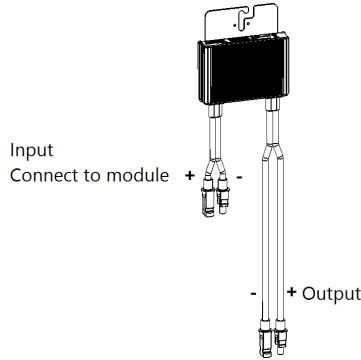


Figure 3: Power optimizer connectors

### Step 3: Connecting Power Optimizers in Strings

You can construct parallel strings of unequal length, that is, the number of power optimizers in each string does not have to be the same. The minimum and maximum string lengths are specified in the power optimizer datasheets. Refer to the [Designer](#) for string length verification.



1. Connect the Minus (-) output connector of the string's first power optimizer to the Plus (+) output connector of the string's second power optimizer.
2. Connect the rest of the power optimizers in the string in the same manner.

**WARNING!**



If using a dual-input power optimizer and some inputs are not used, seal the unused input connectors with the supplied pair of seals.

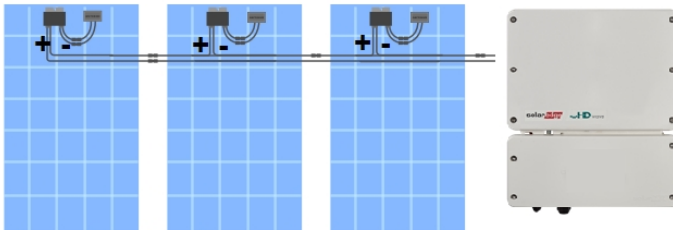


Figure 4: Power optimizers connected in series

- If you intend to monitor the installation, using the monitoring platform, record the physical location of each power optimizer, as described in *Creating Logical and Physical Layout using Installation Information* on page 50.

## Step 4: Verifying Proper Power Optimiser Connection

When a model is connected to a power optimizer, the power optimizer outputs a safe voltage of 1V ( $\pm 0.1V$ ). Therefore, the total string voltage should equal 1V times the number of power optimizers connected in series in the string. For example, if 10 power optimizers are connected in a string, then 10V should be produced.

Make sure the PV models are exposed to sunlight during this process. The power optimizer will only turn ON if the PV model provides at least 2W.

In SolarEdge systems, due to the introduction of power optimizers between the PV models and the inverter, the short circuit current  $I_{SC}$  and the open circuit voltage  $V_{OC}$  hold different meanings from those in traditional systems.

For more information about the SolarEdge system's string voltage and current, refer to the  $V_{OC}$  and  $I_{SC}$  in *SolarEdge Systems Technical Note*, available on the SolarEdge website at:

[https://www.solaredge.com/sites/default/files/isc\\_and\\_voc\\_in\\_solaredge\\_sytems\\_technical\\_note.pdf](https://www.solaredge.com/sites/default/files/isc_and_voc_in_solaredge_sytems_technical_note.pdf)



→ To verify proper power optimizer connection:

Measure the voltage of each string individually before connecting it to the other strings or to the inverter. Verify correct polarity by measuring the string polarity with a voltmeter. Use a voltmeter with at least 0.1V measurement accuracy.



### NOTE

Since the inverter is not yet operating, you may measure the string voltage and verify correct polarity on the DC wires inside the Connection Unit.

For troubleshooting power optimizer operation problems, refer to *Power Optimiser Troubleshooting* on page 67.

## Chapter 3: Installing the Inverter

Install the inverter either before or after the models and power optimizers have been installed.



### CAUTION!

Do not rest the connectors at the bottom of the inverter on the ground, as it may damage them. To rest the inverter on the ground, lay it on its back.

## Inverter Package Contents

- One inverter with Connection Unit
- Mounting bracket kit
- Connection Unit sealing cover (if applicable, for use in case of inverter replacement)
- Installation guide

## Identifying the Inverter

Refer to the sticker on the inverter that specifies its **Serial Number** and its **Electrical Ratings**. Provide the serial number when contacting SolarEdge support. The serial number is also required when opening a new site in the monitoring platform.

## Inverter Interfaces

The following figure shows the inverter connectors and components, located at the bottom of the inverter.

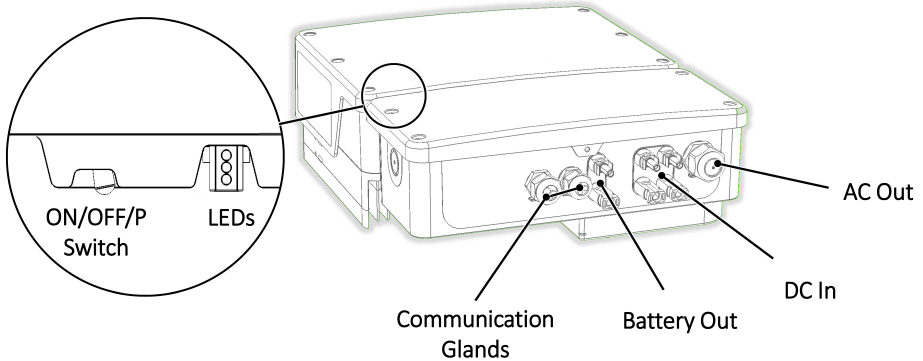


Figure 5: Inverter Interfaces

- **DC input:** MC4 connector, for connection of the PV installation.
- **Two communication glands:** for connection of inverter communication options. Each gland has three openings. Refer to *Setting Up Communication to the Monitoring Platform* on page 53 for more information.
- **ON/OFF/P switch:**

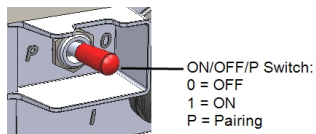


Figure 6: ON/OFF/P switch

- **ON (1)** - Turning this switch ON (after optimizer pairing) starts the operation of the power optimizers, enables power production and allows the inverter to begin exporting power to the utility grid.
- **OFF (0)** - Turning this switch OFF reduces the power optimizer voltage to a low safety voltage and inhibits exportation of power. When this switch is OFF, the control circuitry remains powered up.

- **P** - Moving and releasing the switch allows viewing system information via the LEDs, and performing the following functions:

P Position Duration	Function	Comments
Switch moved to P for <b>less than 5 seconds</b> , then released.	<ul style="list-style-type: none"> <li>• Displays (via LEDs) production information for 5 seconds, or error type indications (if exist) for 5 seconds.</li> <li>• Activates the Wi-Fi access point for connecting to the SetApp</li> </ul>	<p>While the switch is in P, all LEDs are ON.</p> <p>When the switch is released all LEDs turn OFF for 0.5 sec and then display the production or error indication.</p>
Switch moved to P for <b>more than 5 seconds</b> , then released.	Starts pairing	Pairing is indicated by all 3 LEDs blinking simultaneously.

- **LEDs:** three LEDs indicate, by color and state (on/ off/ blinking<sup>(1)</sup>/ flickering<sup>(2)</sup>/alternating<sup>(3)</sup>), different system information, such as errors or performance indications. For more information, refer to <https://www.solaredge.com/leds>.

The main LED indications are:

- Blue ON - the inverter is communicating with the monitoring platform
- Green ON - the system is producing
- Green blinking - AC is connected but the system is not producing
- Red ON - system error



(1)Blinking = Turns ON and OFF for the same duration

(2)Flickering = Turns ON for 100 mS and turns OFF for 5 seconds

(3)Alternating = alternate LED flashes

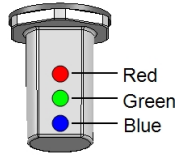


Figure 7: LEDs

The following table describes system performance information by LED color and ON/OFF/P switch position.

Indication	ON/ OFF/ P Switch Position	LED Color			Comment
		Red	Green	Blue	
Power optimizers not paired	ON (1)	OFF	Blinking	<ul style="list-style-type: none"> <li>• S_OK: ON</li> <li>• No S_OK: OFF</li> </ul>	S_OK: ON communication with the monitoring platform is established.
Pairing		Blinking	Blinking	Blinking	
Wake-up/ Grid Monitoring		OFF	Blinking	Blinking	
System Producing		OFF	ON	<ul style="list-style-type: none"> <li>• S_OK: ON</li> <li>• No S_OK: OFF</li> </ul>	
Night mode (no production)		OFF	Flickering	<ul style="list-style-type: none"> <li>• S_OK: ON</li> <li>• No S_OK: OFF</li> </ul>	
Inverter is OFF (Safe DC)	OFF (0)	OFF	Blinking	<ul style="list-style-type: none"> <li>• S_OK: ON</li> <li>• No S_OK: OFF</li> </ul>	
Inverter is OFF (DC not safe)		Blinking	Blinking	<ul style="list-style-type: none"> <li>• S_OK: ON</li> <li>• No S_OK: OFF</li> </ul>	
Inverter configuration or reboot	ON / P	ON	ON	ON	

Indication	ON/ OFF/ P Switch Position	LED Color			Comment
		Red	Green	Blue	
Inverter firmware upgrade	ON / P	Alternating	Alternating	Alternating	The upgrade process can take up to 5 minutes
Error	Any	ON	ON/ OFF/ Blinking/ Flickering	ON/ OFF / Blinking	Refer to <i>Errors and Troubleshooting</i> on page 64 <i>Errors and Troubleshooting</i> on page 64

The following table describes production percentage of AC information by LED color and ON/OFF/P switch position.

Indication	ON/ OFF/ P Switch Position	LED Color			Comment
		Red	Green	Blue	
Percentage of AC Production: 0 %	ON (1)	OFF	OFF	OFF	This indicates power production as percentage of rated peak AC output power
Percentage of AC Production: 0 - 33 %		OFF	ON	OFF	
Percentage of AC Production: 33 - 66 %		OFF	OFF	ON	
Percentage of AC Production: 66 - 100 %		OFF	ON	ON	



## Mounting the Inverter

The inverter is supplied with a mounting bracket kit:

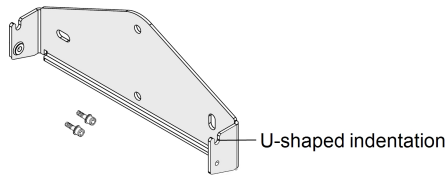


Figure 8: Mounting bracket



### NOTE

Make sure the mounting surface or structure can support the weight of the inverter.



### CAUTION!

SolarEdge inverters and power optimizers can be installed at a minimum distance of 50 m/ 164 ft from the shoreline of an ocean or other saline environment, as long as there are no direct salt water splashes on the inverter or power optimizer.

1. Determine the inverter mounting location, on a wall, stud framing or pole. It is recommended to mount the inverter in a location protected from direct sunlight.

- To allow proper heat dissipation, maintain the following minimum clearance areas between the inverter and other objects:

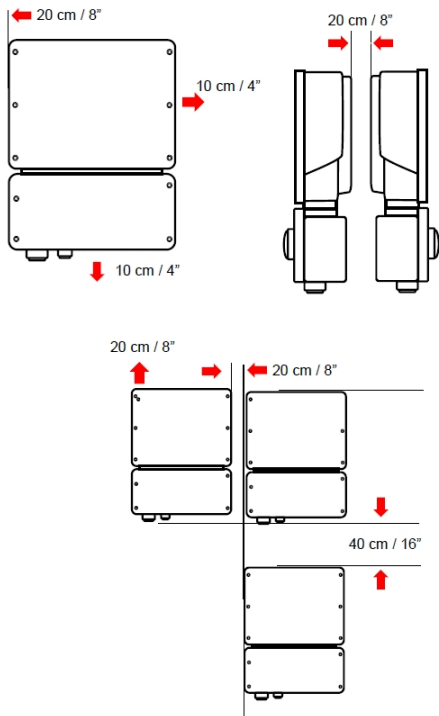


Figure 9: Clearance areas

- If installing a single inverter:
    - 20 cm (8") from the top of the inverter.
    - At least 10 cm (4") from the bottom of the inverter.
    - 10 cm (4") from the right and left of the inverter.
  - If installing multiple inverters:
    - When installing inverters side by side, leave at least 20 cm (8") between inverters.
    - When installing inverters one above of the other, leave at least 40 cm (16") between inverters.
- Position the mounting bracket against the wall/ pole and mark the drilling hole locations (refer to for inverter and mounting bracket dimensions).

4. Drill the holes and mount the bracket. Verify that the bracket is firmly attached to the mounting surface.
5. Hang the inverter on the bracket:
  - a. Lift the inverter from the sides, or hold it at the top and bottom of the inverter to lift the unit into place.
  - b. Lower the inverter onto the U-shaped indentations, as shown below. Let the inverter lay flat against the wall or pole.
  - c. Insert the two supplied screws through the outer heat sink fin on both sides of the inverter and into the bracket. Tighten the screws with a torque of 4.0 N\*m / 2.9 lb.\*ft.

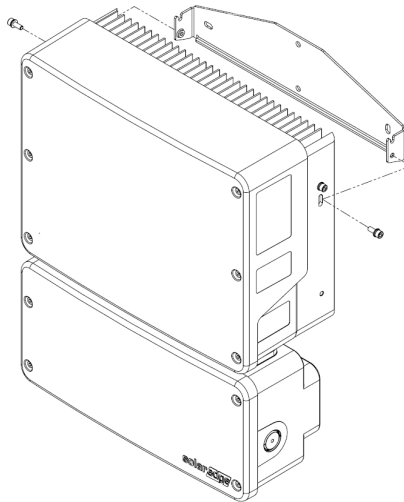


Figure 10: Hanging the inverter on the brackets

6. Optionally, secure the Connection Unit bracket to the wall/pole, using 3 screws:



**NOTE**

In case of inverter replacement with the Connection Unit still mounted, it is recommended to use all 3 holes.

- a. Mark the location of the bracket screw for the Connection Unit, and optionally the two additional bracket holes.

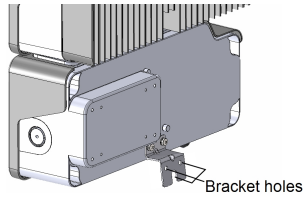


Figure 11: Connection Unit bracket

- b. Remove the inverter from the wall/ pole.
  - c. Drill the hole for the Connection Unit bracket.
  - d. Hang the inverter on the mounted brackets.
  - e. Fasten the Connection Unit bracket using a standard bolt.
7. Insert the screws at the top of the inverter brackets and fasten the brackets together.
  8. Verify that all the brackets are firmly attached to the mounting surface.

## Chapter 4: Installing the Battery

Install the battery in accordance with the manufacturer instructions.

In addition, follow these guidelines:

- Make sure the battery's circuit breaker switch is OFF.
- For easy access to battery connectors, it is recommended to connect the cables to the battery and to set all battery DIP switches to their correct positions *before* mounting the battery.
- Measure the necessary length between the Connection Unit and the battery for all cables. The maximum distance between the battery and the inverter is 70 ft/ 20 m, when using 24 AWG/ 0.2 mm<sup>2</sup> cables for battery control.
- Mark polarity on DC cables.
- Mount the battery.
- Connect all the wires to the battery connection panel.
- Tie and wrap the cables to avoid pulling them out during mounting.

# Chapter 5: Connecting the Inverter

This chapter explains how to connect the inverter to:

- AC grid
- DC strings of modules with power optimizers
- Energy Meter
- Battery

## Connecting the AC Grid to the Inverter

The AC output gland can fit an AC cable external gauge of PG21 (9-16 mm diameter) .  
The maximum wire size for the input terminal blocks is 16 mm<sup>2</sup>.

For more wiring information refer to the *SolarEdge Recommended AC Wiring Application Note*, available on the SolarEdge website at <http://www.solaredge.com/files/pdfs/application-note-recommended-wiring.pdf>.



1. Turn OFF the AC circuit breaker.
2. Release the Allen screws of the inverter cover and carefully move the cover horizontally before lowering it.
3. Release the Allen screws of the Connection Unit cover and carefully move the cover horizontally before lowering it.

### CAUTION!



When removing the covers, make sure not to damage internal components. SolarEdge will not be held responsible for any components damaged as a result of incautious cover removal.

4. Strip 58 mm / 2.32" of the external cable insulation and strip 8 mm / 0.32" of the internal wire insulation.

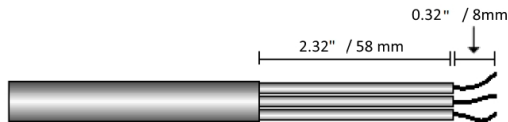


Figure 12: Insulation stripping – AC (3-wire cable)

5. Open the AC cable gland of the Connection Unit and insert the cable through the gland (see *Figure 5*).

**WARNING!**

Turn OFF the AC before connecting wires to the AC terminals. If connecting equipment grounding wire, connect it before connecting the AC Line and Neutral wires.

- Pass the AC Line and Neutral wires through the AC gland of the inverter and connect them to the AC terminal block of the inverter.

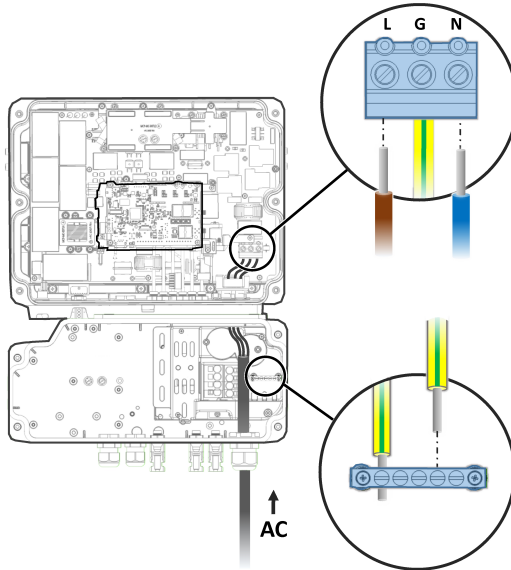


Figure 13: AC cable connection

- Connect the AC grounding wire to the grounding bar in the Connection Unit.

**NOTE**

The inverter's AC terminal block and Connection Unit's grounding bar are connected with a grounding wire. Do not disconnect the wire on either side!

- Tighten the screws of each AC terminal and the grounding bar with a torque of 1.2-1.5 N\*m / 0.88-1.1 lb\*ft.
- Check that the wires are fully inserted and cannot be pulled out easily.
- Tighten the AC cable gland with a torque of 2.8-3.3 N\*m / 2.0-2.4 lb\*ft.

11. Verify that there are no unconnected wires to the inverter and that the unused terminal screws are tightened.

## Connecting the Strings to the Inverter

Connect the string to the DC input pairs. If required, connect additional strings in parallel using an external combiner box/branch cables before connecting to the inverter.

### NOTE



Functional electrical earthing of DC-side negative or positive poles is prohibited because the inverter has no transformer. Grounding (earth ground) of module frames and mounting equipment of the PV array modules is acceptable.

### NOTE



SolarEdge's fixed input voltage architecture enables the parallel strings to be of different lengths. Therefore, they do not need to have the same number of power optimizers, as long as the length of each string is within the permitted range.

Connect the DC connectors of each string to the DC+ and DC- connectors. See *Figure 5*.

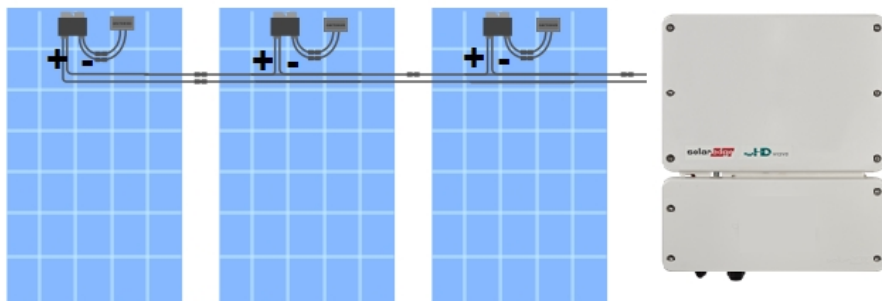


Figure 14: Inverter DC Connections

## Connecting the Energy Meter

For Smart Energy Management applications, such as maximizing self-consumption, the StorEdge solution requires an Energy Meter.

To install the Energy Meter, refer to the installation guide supplied with it:

<http://www.solaredge.com/files/pdfs/solaredge-meter-installation-guide.pdf>.



For communication, the Energy Meter and battery use the same port - RS485-2. Use a 3-wire shielded twisted pair cable, 0.2 (0.2-1) mm<sup>2</sup> 600V or CAT5.



→ To connect the Energy Meter to the inverter

1. Connect one end of the communication cable to the Energy Meter, as explained in the Energy Meter's installation guide.
2. Open one of the inverter's communication glands and insert the other end of the communication cable through the gland.

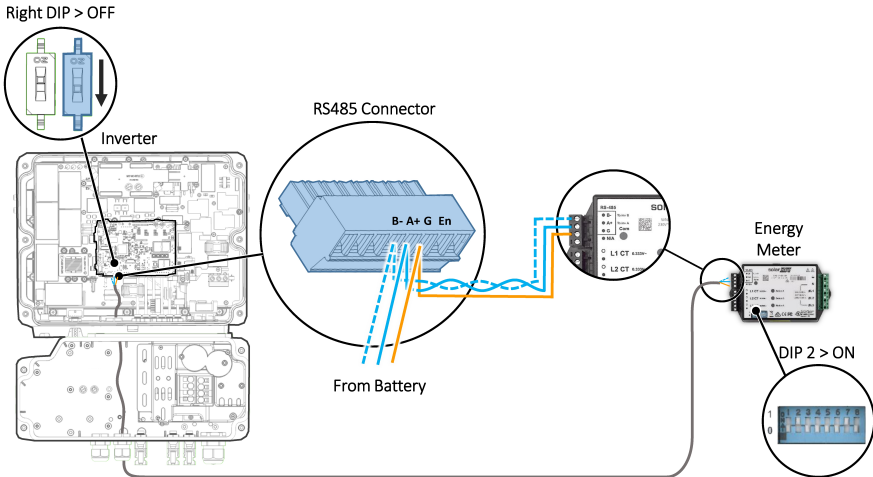


Figure 15: Meter Connection

3. Make sure the RS485-2 DIP switch (the right switch) is OFF.
4. Make sure the Energy Meter's DIP switch 2 is ON.
5. Proceed with connection only after installing the battery, as explained in *Connecting the Battery* on page 33.

## Connecting the Battery

### WARNING!

The battery must be powered off before and during wiring.

To power off the battery:

1. Turn off the circuit breaker.
2. Turn off the disconnect/auxiliary power switch.



To power the battery back on:

1. Turn on the disconnect/auxiliary power switch.
2. Turn on the circuit breaker.

For details, see *Powering the LG Chem Battery Off and On* on page 73.

Use the following cable types:

- For communication - a 5-wire shielded twisted pair cable, 0.2 (0.2-1) mm<sup>2</sup>, 600V insulated or CAT5
- For DC power - a pair of PV DC cables, 6 (4-6) mm<sup>2</sup>, 600V insulated, with MC4 connectors at one end

→ **To connect the battery and the StorEdge Interface:**

1. Connect one end of the communication cable to the battery, as explained in the manual that comes with the battery.
2. Pass the other end of the communication cable through the inverter's open communication gland.
3. Twist the communication cable wires of the battery and Energy Meter together (B with B, A with A, G with G).
4. Disconnect the RS485 connector from the communication board and release the screws of pin holes 4-7 (RS485-2).

5. Insert the twisted B, A G wires and the battery's Enable wire into pin holes 4-7, as shown below.

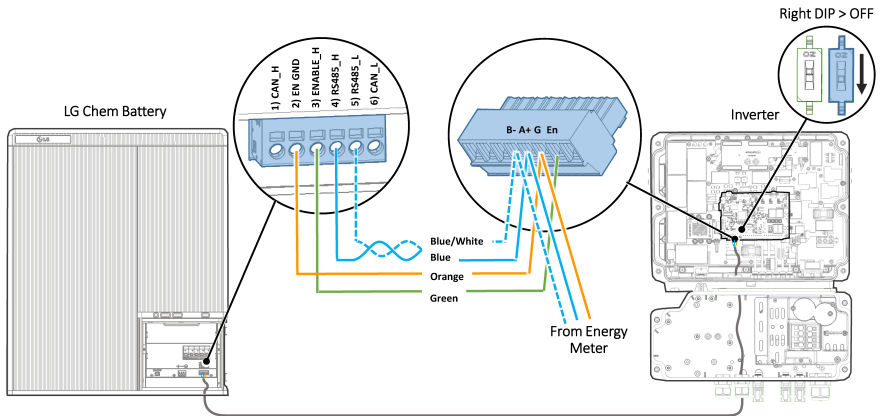


Figure 16: Communication cable connection - LG Chem battery to inverter

6. Tighten the screws and make sure the wires cannot be pulled out easily.
7. Make sure the RS485-2 DIP switch (the right switch) is OFF.
8. Connect DC cables between the inverter and battery.

**WARNING!**



Make sure to connect the power cables at correct polarity. Connecting the power cables at reverse polarity may result in damage to the inverter or battery.

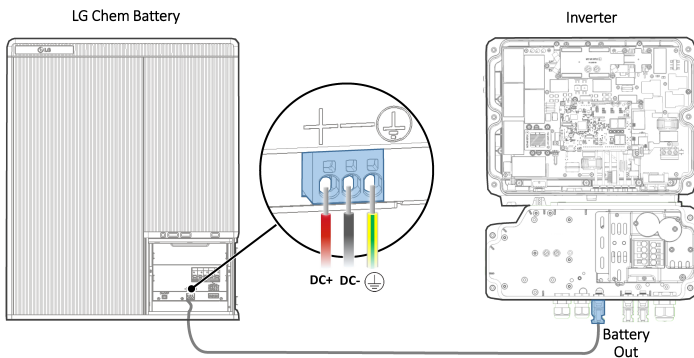


Figure 17: DC cable connection - LG Chem battery to inverter

9. Close the inverter and Connection Unit covers with the Allen screws.

## Chapter 6: Activating, Commissioning and Configuring the System

You can connect communication options at this stage, as described in *Setting Up Communication to the Monitoring Platform* on page 53.

Once all connections are made, the system should be activated and commissioned using the Inverter SetApp mobile application. You can download the app from the Apple App Store and Google Play prior to reaching the site.



Internet connection is required for the download and for the one-time registration, however not required for using the SetApp.

### Step 1: Activating the Installation

During system activation, a Wi-Fi connection is created between the mobile device and the inverter and the system firmware is upgraded.

**Before activation** - download, register (first time only) and log-in to SetApp on your mobile device. Internet connection is required for the download and for the one-time registration. Verify that the application is updated with the latest version.

→ **To activate the inverter:**

1. Turn ON the AC circuit breaker on the main distribution panel.
2. Open SetApp and follow the instructions on the screen (scan the inverter bar-code; move the ON/OFF/P switch to P position and release within 5 sec. back to ON (1) position). SetApp creates a Wi-Fi connection, upgrades the inverter CPU firmware and activates the inverter.

3. When the activation is complete, do one of the following:

- Select **Activate Another Inverter** to continue activating additional inverters.
- Select **Start Commissioning** for pairing and other system configuration. The Commissioning screen is displayed. Refer to the next section for more information.

## Step 2: Commissioning and Configuring the Installation

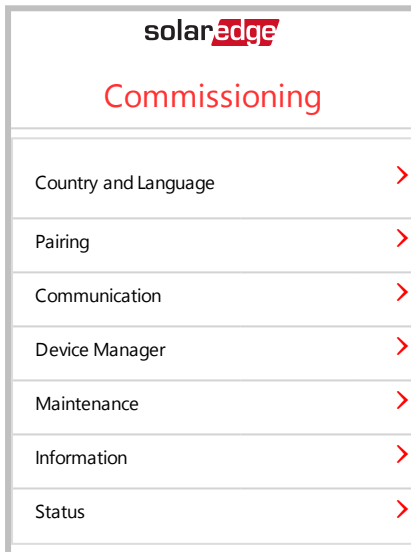
This section describes how to use the SetApp menus for commissioning and configuring the inverter settings.

Menus may vary in your application depending on your system type.

→ To access the Commissioning screen:

Do one of the following:

- During first time installation: Upon Activation completion, in the SetApp, tap **Start Commissioning**. The main Commissioning menu screen is displayed.



- If the inverter has already been activated and commissioned:

- If not already ON - turn ON AC to the inverter by turning ON the circuit breaker on the main distribution panel.
- 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).

The mobile device creates a Wi-Fi connection with the inverter and displays the main Commissioning screen.

In the main menus, tap the menu red arrows (>) to perform the system commissioning or configuration task. Tap the **Back** arrow (<) to return to the previous menu.

The next sections provide more information about configuration options (in addition to **Country and Language** and **Pairing**, described in *Step 2: Commissioning and Configuring the Installation* on page 36).

## Setting Country and Language

1. From the Commissioning screen select **Country and Language** .
2. From the **Country** drop-down list, select the required country setting.

### WARNING!



The inverter must be configured to the proper setting in order to ensure that it complies with the country grid code and functions properly with the country grids.

3. From the **Language** drop-down list, select the language.
4. Tap **Set Language**.

## Pairing

Once all connections are made, all the power optimizers must be logically paired to their inverter. The poweroptimizers do not start producing power until they are paired. This step describes how to assign each inverter to the poweroptimizers from which it will produce power.

Perform this step when the modules are exposed to sunlight. If the string length is changed or a power optimizer is replaced, repeat the pairing process.

1. From the main menu, select **Pairing**.
2. Tap **Start Pairing**.
3. When **Pairing Complete** is displayed, the system startup process begins:

Since the inverter is ON, the power optimizers start producing power and the inverter starts converting AC.

**WARNING!**

When you turn ON the inverter ON/OFF/P switch, the DC cables carry a high voltage and the power optimizers no longer output a safe output.

When the inverter starts converting power after the initial connection to the AC, the inverter enters Wakeup mode until its working voltage is reached. This mode is indicated by the flickering green inverter LED.

When working voltage is reached, the inverter enters Production mode and produces power. The steadily lit green inverter LED indicates this mode.

4. Tap **OK** to return to the main menu.

## Communication

Communication settings can be configured only after communication connections are complete. Refer to *Setting Up Communication to the Monitoring Platform* on page 53.

1. Select the **Communication** menu to define and configure the following:
  - The communication option used by the inverter to communicate with the monitoring platform.
  - The communication option used to communicate between multiple SolarEdge devices or other external non-SolarEdge devices, such as electricity meters or loggers.
2. Tap the **Server** red arrow to set the communication method to be used for communication between devices and the SolarEdge monitoring platform. The default is LAN.

**NOTE**

The Server menu shows only the communication options installed in the inverter.

For detailed information about all the configuration options, refer to the *Communication Options Application Note*, available on the SolarEdge website at [https://www.solaredge.com/sites/default/files/solaredge-communication\\_options\\_application\\_note\\_v2\\_250\\_and\\_above.pdf](https://www.solaredge.com/sites/default/files/solaredge-communication_options_application_note_v2_250_and_above.pdf).



## Power Control

The Grid Control option may be disabled. Enabling it opens additional options in the menu.

The Energy Manager option is used for setting power export limitation, as described in the *Export Limitation Application Note*, available on the SolarEdge website at [https://www.solaredge.com/sites/default/files/feed-in\\_limitation\\_application\\_note.pdf](https://www.solaredge.com/sites/default/files/feed-in_limitation_application_note.pdf).



## Device Manager

From the **Commissioning** menu, select **Device Manager** to configure various system Smart Energy Management devices.

For more information refer to

<https://www.solaredge.com/products/device-control#/>.



## Maintenance

From the **Commissioning** menu, select **Maintenance** to configure various system settings, as described below.

- **Date and Time:** Set the internal real-time clock. If connected to the monitoring platform, the date and time are set automatically and only time zone should be set.
- **Reset Counters:** Resets the accumulated energy counters that are sent to the monitoring platform.
- **Factory Reset:** Performs a general reset to the default device settings.
- **Firmware Upgrade:** Perform a software upgrade.
- **Diagnostics:** Displays the Isolation status and power optimizer status screens. Refer to [https://www.solaredge.com/sites/default/files/application\\_note\\_isolation\\_fault\\_troubleshooting.pdf](https://www.solaredge.com/sites/default/files/application_note_isolation_fault_troubleshooting.pdf).
- **Activate Standby Mode:** Enables/disables Standby Mode - for remote commissioning.
- **Board Replacement:** Backs up and restores the system parameters, including energy counters; Used during board replacement according to the instructions supplied with replacement kits.





## Information

From the **Commissioning** menu, select **Information** to view and set various system settings, as described below.

- **CPU Version:** The communication board firmware version
- **DSP 1/2 Version:** The digital board firmware version



### NOTE

Please have these numbers ready when you contact SolarEdge Support.

- **Serial Number:** The inverter serial number as appears on the enclosure sticker
- **Error Log:** Displays the last five errors, and enables resetting (clearing) the log
- **Warning Log:** Displays the last five warnings, and enables resetting (clearing) the log

## Step 3: Verifying Proper Activation and Commissioning

1. Select **Information** and verify that the correct firmware versions are installed on each inverter.
2. Select **Status** and verify that inverter is operating and producing power (see also *Viewing System Status* on page 43).
3. Verify that additional configurations were properly set by viewing the relevant Status screens.
4. Verify that the green inverter LED is steadily lit.

Your SolarEdge power harvesting system is now operational.

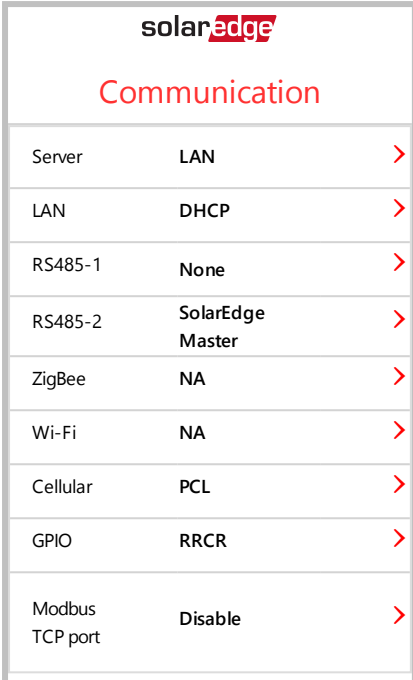
## Configuring Communication with the Battery and Energy Meter

This section describes how to set up communication between the inverter, Energy Meter, and one battery over the RS485 bus.

→ **To set up communication with the battery:**

1. Power on the system, as explained in "Connecting and Powering Systems with a DC Disconnect Switch" on page 74.

2. Access SetApp and select **Commissioning** → **Communication**.



solar <b>edge</b>		
Communication		
Server	LAN	>
LAN	DHCP	>
RS485-1	None	>
RS485-2	SolarEdge Master	>
ZigBee	NA	>
Wi-Fi	NA	>
Cellular	PCL	>
GPIO	RRCR	>
Modbus TCP port	Disable	>

3. From the **Communication** screen, select **RS485-2** → **Protocol** → **Modbus (Multi-Device)**.
4. Return to the previous screen and select **Add Modbus Device** → **Battery**.
5. Verify the battery information by selecting **Battery 1** → **Battery Information**.

→ To set up communication with the Energy Meter:

If you are setting up communication with the meter before the battery, first perform Steps 1-3 on page 40. After that, proceed with the steps below.

1. In the **RS485-2** screen, select **Add Modbus Device** → **Meter**.
2. Set the Energy Meter's **CT Rating** according to the CT specifications. If the CT rating value returns to 0, check communication with the CT.
3. Select **Meter 1** → **Meter Function** → **Export+Import (E+I)**.

## Running a Battery Self-test

Run a battery self-test to check the battery's charge and discharge functionality.

→ To run a battery self-test:

1. Make sure the battery's circuit breaker switch is ON.
2. Switch the inverter ON/OFF/P switch to ON.
3. In SetApp, select **Commissioning** → **Maintenance** → **Diagnostics** → **Self-Test** → **Battery Self-Test** → **Run Test**.
4. Wait for all tests to complete and check the results in the summary table.

If any of the tests have failed, see the table below for possible solutions:

Test Results	Solution
Charge failed	Check that the power and communication cables between the battery and inverter are properly connected.
Discharge failed	Check that the power and communication cables between the battery and inverter are properly connected.
Communication	Check that the communication cables between the battery and inverter are properly connected.
Inverter switch is off	Switch the inverter ON/OFF/P switch to ON.

→ To show the last test results:

- Select **Commissioning** → **Maintenance** → **Diagnostics** → **Self-Test** → **Battery Self-Test** → **Show Last Results**.

## Configuring StorEdge Applications

### Maximize Self-consumption (MSC)

In this mode, the battery is automatically charged and discharged to meet consumption needs.

The battery has two states:

- OFF – the battery is in standby
- ON – the battery is controlled for maximized self-consumption

Battery OFF periods can be configured to extend battery lifetime by minimizing the number of shallow discharges (for example at nighttime or during the winter).

→ To set up maximize self-consumption:

1. Access SetApp and select **Commissioning** → **Power Control**.
2. Select **Energy Manager** → **Energy Control** → **Maximum Self Consumption**.


## Viewing System Status


During normal operation, the **Status** screen displays all the inverter settings and operation status. Scroll up or down to display various status parameters as described in the following sections.

The LED indication provides more information about system performance; Refer to

→ To access the Status screen:

From the **Commissioning** menu select **Status**. The main inverter Status screen is displayed (see below).

A red or orange icon (for example: ) may appear at the top left corner of a status cell, indicating an error. The color indicates error severity (red is top severity). The error description or information appears on the screen. Tap the error line for more information and troubleshooting instructions, and refer to *Errors and Troubleshooting* on page 64.

A gray clock icon () may appear at the top left corner of a status cell, indicating a temporary status, such as a connection process. When the process is complete, the icon disappears and a constant status message is displayed.

## Main Inverter Status

solar <b>edge</b>		
Status		
Inverter		
SN 07318000C		
Power	Voltage	Frequency
Optimisers Connected	Server Comm. S_OK (LAN)	
Status Production	⚠ Switch OFF	
CosPhi	Limit	Country
1.00	No Limit	Netherlands
Voltage	Temp	Fan
	20 C	OK
⚠ Switch Off. Production disabled >		
Commissioning >		

- **Inverter:** The inverter serial number
- **Power:** The AC output power
- **Voltage (Vac):** The AC output voltage
- **Frequency:** The AC output frequency
- **P\_OK: xxx of yyy:** There is a connection to the power optimizers and at least one power optimizer is sending monitoring data. XXX is the number of power optimizers for which telemetries have been received in the last two hours. YYY is the number of paired power optimizers identified during the most recent pairing process. If XXX and YYY are not equal, there may be a problem in one or more power optimizers.
- **S\_OK:** The connection to the monitoring platform. (**Server Connected** appears only if the inverter is connected to the monitoring platform).

- **Status:** The inverter operation status: Off, Not Paired, Night Mode, Error, Pairing, or Production.
- **Switch:** Indicates the position of the inverter ON/OFF/P switch: On, Off, or P position.
- **CosPhi:** Indicates the ratio between active and reactive power. A negative value indicates a lagging CosPhi.
- For more information, refer to the *Power Control Application Note*, available on the SolarEdge website at [https://www.solaredge.com/sites/default/files/application\\_note\\_power\\_control\\_configuration.pdf](https://www.solaredge.com/sites/default/files/application_note_power_control_configuration.pdf).
- **Limit:** The inverter maximum output power
- **Country:** The selected country and grid setting
- **Voltage (Vdc):** The DC input voltage
- **Temp** (°C or °F): The inverter heat sink temperature



## Site Status

The Site status screen shows the accumulated status of all inverters connected to a master inverter in a chain (bus) and the master inverter status.

solar <b>edge</b>		
Status		
Site		
<b>Production</b>	<b>Limit</b>	<b>Inverters</b>
	1.00 MW	10/10
Inverter		
SN 07318000C		
<b>Power</b>	<b>Voltage</b>	<b>Frequency</b>
100 kW	277 Vac	60.9 Hz
Optimisers Connected	<b>S_OK</b>	
	Server Connected	
<b>Status</b>	⚠	<b>Switch</b>
Production		OFF
<b>CosPhi</b>	<b>Limit</b>	<b>Country</b>
1.00	Export	ITA
⚠ Switch Off. Production disabled >		
<b>Commissioning</b>		>

- Site status:
  - **Production:** The AC output power
  - **Limit:** Limitation setting (Export or Production)
  - **Inverters:** Number of connected inverters in the cluster, including the master

## Communication Status

This screen displays the status of connection option(s): LAN, RS485, Wi-Fi, cellular or ZigBee Plug-in.

Communication		
LAN Connected	RS485-1 Modbus 2 of 2	RS485-2 SE Slave None
Cellular N/A	Wi-Fi NC	ZigBee NC

For each communication option, one of the following statuses is displayed:

- **Connected:** The inverter established a successful connection and communication with the specified server port
- **NC:** Not Connected
- **S\_OK:** The connection to the monitoring platform is successful (should appear only if the inverter is connected to the server)
- **N/A :** Not Applicable
- **x of y:** Number of devices connected out of all devices
- Temporarily displayed (with a ⌚ clock sign):
  - **Initializing communication**
  - **Connecting to a network**
  - **Connecting to SolarEdge servers**
- **Error message** (with the ⚠ sign)



## Inverter Energy Status

Displays the total energy produced during the last day, month, year and since inverter installation.

Inverter Energy		
Today	This Month	This Year
45 kWh	1.14 MWh	13.68 MWh
<b>Total: 41.03 MWh</b>		

- **Today:** Since midnight
- **This Month:** Since 1st of the current month
- **This Year:** Since January 1st
- **Total (Wh):** The inverter total energy. If an external meter is installed, the value displayed in this line depends on the meter type connected to the inverter and its location:
  - If a bidirectional meter is connected at the consumption point, this value is the consumed energy.
  - If the meter is installed at the production point, this value is the energy produced by the site.
  - If the meter is installed at the grid connection point, this value is the energy exported to the grid.

## Meter Status

Meters	
<b>Production Meter</b>	
SN: XXXXXXXX	
<b>RS485-2</b>	<b>Status</b>
Modbus ID #2	OK
<b>Power</b>	<b>Energy</b>
7.60 kW	13.68MWh

- **Type and function:** Displays the meter functionality (Production, Export, Import, Export+Import).
- **Status:** Displays OK if the meter is communicating with the inverter.
- **<Error message>:** If there is a meter error, it is displayed in this line.
- **Power:** Depending on the meter type connected to the inverter, this line displays the exported or imported power.
- **Energy:** The total energy read by the meter. The value displayed in this line depends on the meter type connected to the inverter and its location:
  - If a bidirectional meter is connected at the consumption point, this value is the consumed energy.
  - If the meter is installed at the production connection point, this value is the energy produced by the site.
  - If the meter is installed at the grid connection point, this value is the energy exported to the grid.



### NOTE

This data is accumulated according to an internal real-time clock.

## Reporting and Monitoring Installation Data

### NOTE



Monitoring the site requires connecting the inverter to the monitoring platform, using any of the wired or wireless options available from SolarEdge. Refer to *Setting Up Communication to the Monitoring Platform* on page 53.

## The Monitoring Platform

The monitoring platform provides enhanced PV performance monitoring and yield assurance through immediate fault detection and alerts at the model, string and system level.

Using the platform, you can:

- View the latest performance of specific components.
- Find under-performing components, such as models, by comparing their performance to that of other components of the same type.
- Pinpoint the location of alerted components using the physical layout.

The monitoring platform enables accessing site information, including up-to-date information viewed in a physical or logical view:

- **Logical Layout:** Shows a schematic tree-layout of the components in the system, such as: inverters, strings, models, meters and sensors, as well as their electrical connectivity. This view enables you to see which models are connected in each string, which strings are connected to each inverter, and so on.
- **Physical Layout:** Provides a bird's eye view of the actual placement of models in the site, and allows pinpoint issues to the exact location of each model on a virtual site map.

If you do not report the mapping of the installed power optimizers, the monitoring platform will show the logical layout indicating which power optimizers are connected to which inverter, but will not show strings or the physical location of power optimizers.

The monitoring platform includes a built-in help system, that guides you through the monitoring functionality.

For more information, refer to [https://www.solaredge.com/products/pv-monitoring#/.](https://www.solaredge.com/products/pv-monitoring#/)



## Creating Logical and Physical Layout using Installation Information

To display a logical layout, insert the inverter serial number in the new site created in the monitoring platform. When the communication between the inverter and the monitoring server is established, the logical layout is displayed.

To display a physical layout, you need to map the locations of the installed power optimizers. To map the locations, use one of the methods described in the next sections.

## Designer

Designer recommends inverter and power optimizer selection per site size and enables report generation. You can create a project in Designer and export the site design with the string layout to the monitoring platform.

For more information, refer to

<https://www.solaredge.com/products/installer-tools/designer#/>.



## Mapper Application

Use the Mapper smart phone application to scan the power optimizer and inverter 2D bar-codes and create a virtual map of a PV site for enhanced monitoring and easier maintenance.

The Mapper

- Simple on-site registration of new systems.
- Creating, editing and verifying system physical layout.
- Scanning and assigning the power optimizer serial number to the correct model in the system physical layout.

For detailed information, refer to the *Mapper* demo movies:

- [Creating new sites using the Mapper mobile application](#)
- [Mapping existing sites using the Mapper mobile application](#)



## Physical Layout Editor

1. If you are a registered installer, access the monitoring platform site creation page at <https://monitoring.solaredge.com/solaredge-web/p/home#createSites>. If you have not yet signed up, go to <https://monitoring.solaredge.com/solaredge-web/p/createSelfNewInstaller>.
2. Fill out all required information in the screen, which includes information about your installation, as well as details about its logical and physical mapping.



## Using a Paper Template

Fill out the Physical Layout Template (downloadable from the SolarEdge website <http://www.solaredge.com/files/pdfs/physical-layout-template.pdf>) using the detachable 2D barcode stickers on each power optimizer. Once the form is completed, use the Mapper to scan the 2D codes and create the map in the monitoring platform. Optionally, you can send the sticker sheet to SolarEdge Support for physical layout creation.



# Chapter 7: Setting Up Communication to the Monitoring Platform

The inverter sends the following information to the monitoring platform:

- Power optimizer information received via the DC power lines (the PV output circuit)
- Inverter information
- Information of any other connected devices

This chapter describes how to set up communication between:

- The inverter and the monitoring platform through the Internet (wired/ wireless)
- Multiple inverters for a master/slave configuration

Communication setup is not required for power harvesting, however it is needed for using the monitoring platform .



## NOTE

It is recommended to connect communication connections before connecting the AC, for easier access to the communication board.

## CAUTION!



When connecting the communication cables, make sure that the ON/OFF/P switch at the bottom of the inverter is turned OFF, and the AC is turned OFF.

When configuring the communication parameters, make sure that the ON/OFF/P switch (and the switch of the Connection Unit if applicable) is OFF, and the AC is turned ON.

## Communication Options

The following types of communication can be used to transfer the monitored information from the inverter to the monitoring platform.

Only communication products offered by SolarEdge are supported.

### Ethernet

Ethernet is used for a LAN connection. For connection instructions refer to *Creating an Ethernet (LAN) Connection* on page 56.

## RS485

RS485 is used for the connection of multiple SolarEdge devices on the same bus in a master-slave configuration. RS485 can also be used as an interface to external devices, such as meters and third party data loggers.

For connection instructions refer to *Creating an RS485 Bus Connection* on page 59.

## Wi-Fi

This communication option enables using a Wi-Fi connection for connecting to the monitoring platform.

The Wi-Fi access point is built into the inverter. An antenna is required and available from SolarEdge for connection to the monitoring platform.

## Cellular

This wireless communication option (purchased separately) enables using a cellular connection to connect one or several devices (depending on the data plan used) to the monitoring platform.

The Cellular Plug-in is provided with a user manual, which should be reviewed prior to connection. Refer to

[https://www.solaredge.com/sites/default/files/cellular\\_gsm\\_installation\\_guide\\_for\\_inverters\\_with\\_setapp.pdf](https://www.solaredge.com/sites/default/files/cellular_gsm_installation_guide_for_inverters_with_setapp.pdf)



## ZigBee

This option enables wireless connection to one or several Smart Energy products, which automatically divert PV energy to home appliances.

The Smart Energy ZigBee connections require a ZigBee plug-in and an external antenna, available from SolarEdge.

The ZigBee Plug-in for Smart Energy is provided with an installation guide, which should be reviewed prior to connection. Refer to

<https://www.solaredge.com/sites/default/files/se-zigbee-plug-in-for-setapp-installation-guide.pdf>

The Smart Energy products are provided with an installation guide, which should be reviewed prior to connection. Refer to

[https://www.solaredge.com/products/device-control#./](https://www.solaredge.com/products/device-control#/)



## Communication Connectors

The communication glands with multiple openings are used for connection of the various communication options. The table below describes the functionality of each gland opening. Unused openings must remain sealed.

Opening for cable size (diameter)	Connection type
2.5 - 5 mm	RS485
4.5 - 7 mm, with cut	Ethernet (CAT5/6)
2 - 4 mm, with cut	Antenna cable for wireless communication

The communication board has the following connectors:

- Standard RJ45 terminal block for Ethernet connection
- USB
- RS485 connector

The SolarEdge Wi-Fi antenna, ZigBee or Cellular Plug-ins can be connected to the communication board for optional wireless connection.

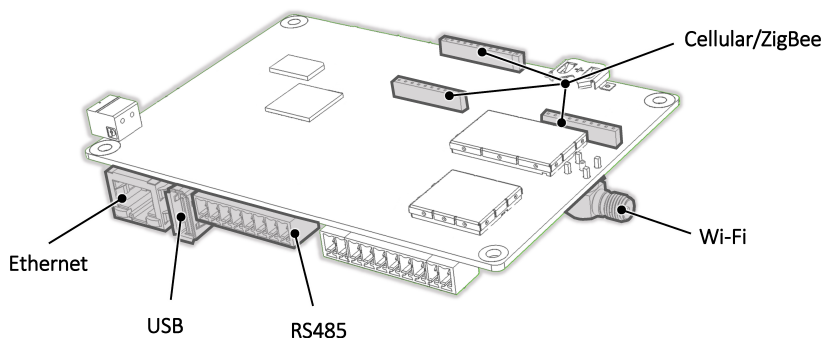


Figure 18: Communication board connectors

## Removing the Inverter Cover

1. Switch the inverter ON/OFF/P switch to OFF. Wait 5 minutes for the capacitors to discharge.
2. Turn the Connection Unit (if applicable) to OFF.
3. Disconnect the AC to the inverter by turning OFF the circuit breakers on the distribution panel.



4. Open the Allen screws of the inverter cover and carefully pull the cover horizontally before lowering it.

**CAUTION!**



When removing the inverter cover, make sure not to damage the internal components. SolarEdge will not be held responsible for any components damaged as a result of incautious cover removal.

## Removing the Connection Unit Cover

1. Turn OFF the AC breaker of the distribution panel and the safety switch (if applicable).
2. Open the Connection Unit cover: Release the four Allen screws and remove the cover.

**CAUTION!**



When removing the Connection Unit cover, make sure not to damage the internal components. SolarEdge will not be held responsible for any components damaged as a result of incautious cover removal.

## Creating an Ethernet (LAN) Connection

This communication option enables using an Ethernet connection to connect the inverter to the monitoring platform through a LAN.

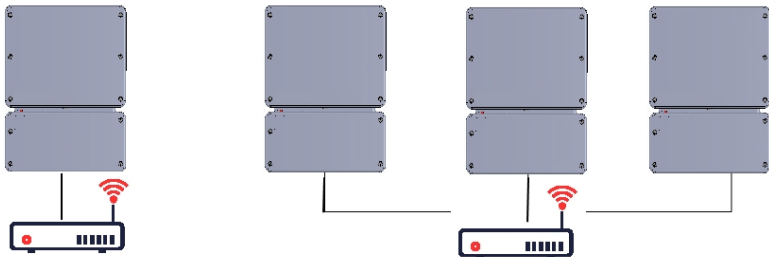


Figure 19: Example of Ethernet connection

Ethernet cable specifications:

- Cable type – a shielded Ethernet cable (Cat5/5E STP) may be used
- Maximum distance between the inverter and the router – 100 m/ 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 recommend to use external surge protection devices.



For details refer to:

[http://www.solaredge.com/files/pdfs/lightning\\_surge\\_protection.pdf](http://www.solaredge.com/files/pdfs/lightning_surge_protection.pdf).

→ To connect the Ethernet cable:

1. Remove the inverter covers as described in *Removing the Inverter Cover* on page 55.
2. Open the communication gland #1.



**CAUTION!**

The gland includes a rubber waterproof fitting, which should be used to ensure proper sealing.

3. Remove the plastic seal from one of the large openings.
4. Remove the rubber fitting from the gland and insert the CAT5/6 cable through the gland and through the gland opening in the inverter.
5. Insert the cable through the opening in the Connection Unit towards the communication board.
6. Push the cable into the cut opening of the rubber fitting.

CAT5/6 standard cables have eight wires (four twisted pairs), as shown in the diagram below. Wire colors may differ from one cable to another. You can use either wiring standard, as long as both sides of the cable have the same pin-out and color-coding.

RJ45 Pin #	Wire Color <sup>(1)</sup>		10Base-T Signal 100Base-TX Signal
	T568B	T568A	
1	White/Orange	White/Green	Transmit+
2	Orange	Green	Transmit-
3	White/Green	White/Orange	Receive+
4	Blue	Blue	Reserved

<sup>(1)</sup>The inverter connection does not support RX/TX polarity change. Supporting crossover Ethernet cables depends on the switch capabilities.

RJ45 Pin #	Wire Color <sup>(1)</sup>		10Base-T Signal 100Base-TX Signal
	T568B	T568A	
5	White/Blue	White/Blue	Reserved
6	Green	Orange	Received-
7	White/Brown	White/Brown	Reserved
8	Brown	Brown	Reserved

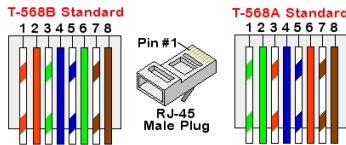


Figure 20: Standard cable wiring

7. Use a pre-terminated cable to connect via gland #1 to the RJ45 plug on the inverter's communication board or, if using a spool of cable, connect as follows:
  - a. Insert the cable through the gland.
  - b. Remove the cable's external insulation using a crimping tool or cable cutter and expose eight wires.
  - c. Insert the eight wires into an RJ45 connector (see *Figure 20*).
  - d. Use a crimping tool to crimp the connector.
  - e. Connect the Ethernet connector to the RJ45 port on the communication board (see *Figure 18*).
8. For the switch/router side, use a pre-terminated cable or use a crimper to prepare an RJ45 communication connector: Insert the eight wires into the RJ45 connector in the same order as above.
9. Connect the cable RJ45 connector to the RJ45 port of the Ethernet switch or router. You can connect more than one inverter to the same switch/router or to different switches/routers, as needed. Each inverter sends its monitored data independently to the SolarEdge monitoring platform.
10. The inverter is configured by default to LAN.

<sup>(1)</sup>The inverter connection does not support RX/TX polarity change. Supporting crossover Ethernet cables depends on the switch capabilities.

- a. Make sure the ON/OFF/P switch is OFF.
- b. Turn ON the AC to the inverter by turning ON the circuit breaker on the main distribution panel.
- c. Configure the connection as described in *Communication* on page 38.

**NOTE**

If your network has a firewall, you may need to configure it to enable the connection to the following address:

- Destination Address: prod.solaredge.com
- TCP Port: 22222 (for incoming and outgoing data)

11. Verify the connection, as described in *Verifying the Connection* on page 62.

## Creating an RS485 Bus Connection

The RS485 option enables creating a bus of connected inverters, consisting of up to 31 slave inverters and 1 master inverter. Using this option, inverters are connected to each other in a bus (chain), via their RS485 connectors. The first and last inverters in the chain must be terminated as described on page 61.

RS485 wiring specifications:

- Cable type: Min. 3-wire shielded twisted pair (a shielded Ethernet cable (Cat5/5E STP) may be used)
- Wire cross-section area: 0.2- 1 mm<sup>2</sup>/ 24-18 AWG (a CAT5 cable may be used)
- Maximum nodes: 32
- Maximum distance between first and last devices: 1 km /3300 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: [https://www.solaredge.com/sites/default/files/lightning\\_surge\\_protection.pdf](https://www.solaredge.com/sites/default/files/lightning_surge_protection.pdf).



If grounded metal conduits are used for routing the communication wires, a lightning protection device is not required.

If not using surge protection, connect the grounding wire to the first inverter in the RS485 chain; make sure the grounding wire is not in contact with other wires. For inverters with a Connection Unit, connect the grounding wire to the grounding bus-bar in the Connection Unit.

The following sections describe how to physically connect the RS485 bus and how to configure the bus.

→ **To connect the RS485 communication bus:**

1. Remove the inverter cover as described in *Removing the Inverter Cover* on page 55.
2. Remove the seal from one of the openings in communication gland and insert the wire through the opening.
3. Pull out the RS485 terminal block connector, as shown below.

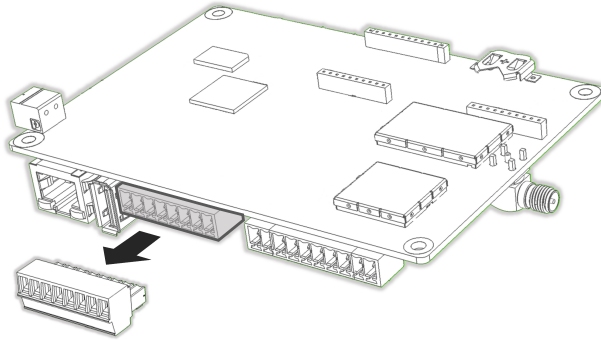


Figure 21: RS485 terminal block on the communication board

4. Loosen the screws of pins **A(+)**, **B(-)**, and **G** on the left of the RS485 terminal block (RS485-1).

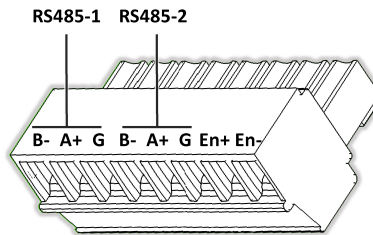


Figure 22: RS485 terminal block

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. For creating an RS485 bus - connect all B, A and G pins in all inverters.

**NOTE**

Do not cross-connect B, A and G wires.

7. Tighten the terminal block screws.
8. Check that the wires are fully inserted and cannot be pulled out easily.
9. Push the RS485 terminal block firmly all the way into the connector on the right side of the communication board.
10. Terminate the first and last SolarEdge device in the chain by switching a termination DIP-switch inside the inverter to ON (move the left switch up). The switch is located on the communication board and is marked SW1.

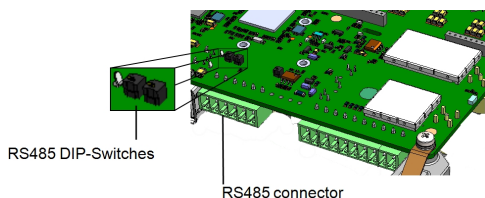


Figure 23: RS485 termination switch

**NOTE**

Only the first and last SolarEdge devices in the chain should be terminated. The other inverters in the chain should have the termination switch OFF (down position).

11. If not using surge protection, connect the grounding wire to the first inverter in the RS485 chain; make sure the grounding wire is not in contact with other wires. For inverters with a Connection Unit, connect the grounding wire to the grounding busbar in the Connection Unit.

→ **To connect to the monitoring platform:**

1. Designate a single inverter as the connection point between the RS485 bus and the monitoring platform. This inverter will serve as the master inverter.
2. Connect the master to the monitoring platform via the LAN option (refer to ) or any of the other options.

→ **To configure the RS485 bus:**

All inverters are configured by default as slaves. To configure the master:

1. Verify the ON/OFF/P switch is OFF.
2. Verify that AC is on.
3. Use SetApp to access the **Commissioning** menu screen as described in *Communication* on page 38.
4. From the **Commissioning** menu tap **Communication**. The Communication screen is displayed.
5. Select the following to configure the connection:
  - Server → LAN, Cellular or Wi-Fi
  - RS485- → Protocol → SolarEdge → **SolarEdge Master**
  - RS485- → **Slave Detect**

The system starts automatic detection of the slave inverters connected to the master inverter. The inverter should report the correct number of slaves. If it does not, verify the connections and terminations.
6. To check the slave IDs and last communication time, select **RS485 → Slave List**.
7. Verify the connection of the master to the monitoring platform, as described in the next section.

## Verifying the Connection

After connecting and configuring a communication option, perform the following steps to check that the connection to the monitoring server has been successfully established.

1. If the Connection Unit cover is not closed, close it: Attach the Connection Unit cover and secure it by tightening the screws with a torque of 10.3 N\*m/ 7.5 lb.\*ft. For proper sealing, first tighten the corner screws and then the two central screws.
2. Check that **S\_OK - Server Connected** status appears in the main inverter section.
3. Scroll down to the Communication section and check that the communication options are as required. For more information refer to *Communication Status* on

page 47.

<b>Communication</b>		
<b>LAN</b> Connected	<b>RS485-1</b> Modbus 2 of 2	<b>RS485-2</b> SE Slave None
<b>Cellular</b> N/A	<b>Wi-Fi</b> NC	<b>ZigBee</b> NC



# Chapter 8: Errors and Troubleshooting

This appendix describes general system problems, and how to troubleshoot them. For further assistance, contact SolarEdge Support.

## Identifying Errors

Errors may be indicated in various system interfaces: On the inverter bottom panel, a red LED indicates an error. In the monitoring platform and SetApp, errors are displayed with codes. For more information on the codes displayed for error and warning messages, refer to <http://www.solaredge.com/sites/default/files/se-inverter-installation-guide-error-codes.pdf>. This document describes errors that appear in SetApp, monitoring platform, and LCD (for inverters with LCD). To identify the error types, use the methods described below.



→ To identify the error type using the inverter LEDs:

1. Move the ON/OFF/P switch to **P** position for **less** than 5 seconds and release it.
2. Observe the LED lights and use the following table to identify the error type. For more information, refer to <https://www.solaredge.com/leds>.



Error type	LED color and state		
	Red	Green	Blue
Arc detected	ON	OFF	OFF
Isolation or RCD problem	Blinking	OFF	OFF
Grid error	OFF	ON	OFF
High temperature	OFF	Blinking	OFF
Pairing failed	OFF	OFF	ON
Other issue	OFF	OFF	Blinking

→ To identify the error type using the monitoring platform:

1. Open the site dashboard and click the **Layout** icon.
2. Right-click the inverter and select **Info** from the menu. The inverter details window is displayed.
3. Click the **Errors** tab. The list is displayed.

## Troubleshooting Communication

### Troubleshooting Ethernet (LAN) Communication

The possible errors and their troubleshooting are detailed in the following table:

Error Message	Possible Cause and Troubleshooting
LAN cable disconnected	Physical connection fault. Check the cable pin-out assignment and cable connection
No DHCP	IP settings issue. Check the router and inverter configuration. Consult your network IT.
Configure Static IP or set to DHCP	
Gateway not responding	Ping to router failed. Check the physical connection to the switch/ router. Check that the link LED at the router /switch is lit (indicating phy-link). If OK - contact your network IT, otherwise replace the cable or change it from cross to straight connection.
No Internet connection	Ping to google.com failed. Connect a laptop and check for internet connection. If internet access is unavailable, contact your IT admin or your internet provider. For Wi-Fi networks, ensure that user-name and password are as defined in the internet provider AP/ router.
No connection to SolarEdge servers	Ping or connection to SolarEdge server failed. Check the SolarEdge server address, under <b>LAN Conf</b> sub-menu: Address: prod.solaredge.com Port: 22222 Check with your network administrator whether a firewall or another device is blocking transmission.

### Troubleshooting RS485 Communication

- If the message **RS485 Master Not Found** appears in the Status screen, check the connections to the master device and fix if required.

- If after slave detection the number of slaves displayed for the master under **RS485-2 Conf** → **Slave Detect** is lower than the actual number of slaves, refer to the following application note to identify missing slaves and troubleshoot connectivity problems: [https://www.solaredge.com/sites/default/files/troubleshooting\\_undetected\\_RS485\\_devices.pdf](https://www.solaredge.com/sites/default/files/troubleshooting_undetected_RS485_devices.pdf)

## Additional Troubleshooting

1. Check that the modem or hub/router is functioning properly.
2. Check that the connection to the internal connector on the communication board is properly done.
3. Check that the selected communication option is properly configured.
4. Use a method independent of the SolarEdge device to check whether the network and modem are operating properly. For example, connect a laptop to the Ethernet router and connect to the Internet.
5. Check whether a firewall or another type of network filter is blocking communication.

## Power Optimiser Troubleshooting

Problem	Possible Cause and Troubleshooting
Pairing failed	<p>Power optimizers are shaded.</p> <p>If you connected the inverter to the monitoring platform, retry pairing remotely (during sunlight). Make sure to leave the inverter ON/OFF/P switch ON and that S_OK appears in the status screen.</p>
String voltage is 0V	<p>Power optimizer (s) output is disconnected.</p> <p>Connect all power optimizer outputs.</p>
String voltage not 0V but lower than number of optimizers	<p>Power optimizer(s) not connected in the string.</p> <p>Connect all power optimizers.</p>
	<p>Panel(s) not connected properly to power optimizer inputs (not applicable to smart models).</p> <p>Connect the models to the optimizer inputs.</p>
	<p>String reverse polarity.</p> <p>Check string polarity using a voltmeter and correct if needed.</p>

Problem	Possible Cause and Troubleshooting
<p>String voltage is higher than number of optimizers</p> <div style="background-color: #f0f0f0; padding: 5px; margin-top: 10px;"> <p><b>WARNING!</b></p> <p>If the measured voltage is too high, the installation may not have a safe low voltage. <b>PROCEED WITH CARE!</b> A deviation of <math>\pm 1\%</math> per string is reasonable.</p> </div>	<p>Extra power optimizer(s) connected in the string (not applicable to smart models).</p> <p>Check if an extra power optimizer is connected in the string. If not – proceed to next solution.</p> <p>A model is connected directly to the string, without a power optimizer (not applicable to smart models).</p> <p>Verify that only power optimizers are connected in the string and that no model outputs are connected without a power optimizer. If the problem persists, proceed to the next step.</p> <p>Power optimizer(s) malfunction.</p> <ol style="list-style-type: none"> <li>1. Disconnect the wires connecting the power optimizers in the string.</li> <li>2. Measure the output voltage of each power optimizer to locate the power optimizer that does not output 1V safety voltage. If a malfunctioning power optimizer is located, check its connections, polarity, model, and voltage.</li> <li>3. Contact SolarEdge Support. Do not continue before finding the problem and replacing the malfunctioning power optimizer. If a malfunction cannot be bypassed or resolved, skip the malfunctioning power optimizer, thus connecting a shorter string.</li> </ol>

# Appendix A: Mechanical Specifications

The following figure provides inverter dimensions in mm [in].

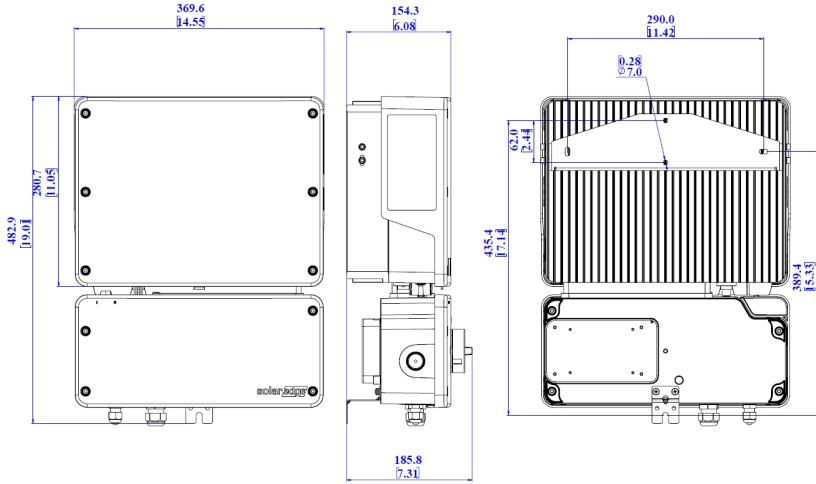


Figure 24: SE2200H-SE6000H inverter dimensions

## Appendix B: Replacing and Adding System Components

This appendix includes replacement procedures for the SolarEdge system components.



### NOTE

If you are permanently disassembling the installation or part of it, make sure to use the disposal methods dictated by local regulations.

### Replacing an Inverter

1. Turn OFF the inverter ON/OFF/P switch, and wait until the green LED is blinking , indicating that the DC voltage is safe (<50V), or wait five minutes before continuing to the next step.
2. Disconnect the AC to the inverter by turning OFF the AC circuit breaker of the distribution panel.
3. Turn OFF the Connection Unit.
4. Open the Connection Unit cover : Release the four Allen screws and remove the cover.
5. Open the inverter cover as described in *Removing the Inverter Cover* on page 55.
6. Disconnect the DC and AC cables from the Connection Unit .
7. Disconnect the wires connected to the inverter or between the inverter and the Connection Unit:
  - Antenna cable from the communication board
  - DC and AC wires in the Connection Unit
  - Grounding cable
8. Disconnect the Connection Unit from the inverter by opening the two clips securing the Connection Unit to the inverter: Carefully place a screwdriver between the clip and the enclosure and pull the clip.

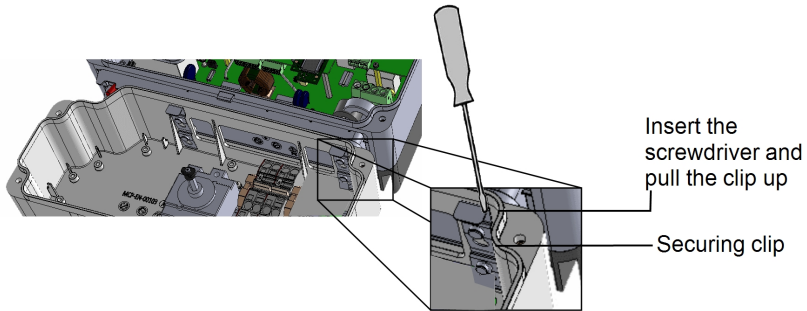


Figure 25: Disconnecting the Connection Unit from the inverter

9. Remove the screws securing the inverter to the mounting brackets and lift the inverter from the mounting bracket.

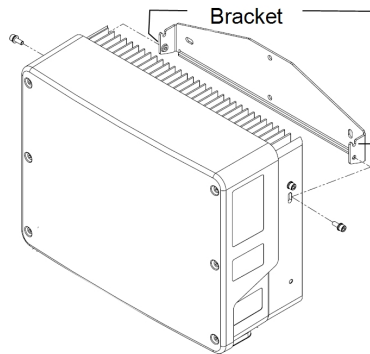


Figure 26: Mounting brackets



#### NOTE

If you remove the old inverter and do not immediately install a new one, use insulation tape to isolate each of the AC and DC wires

10. Place the new inverter on the mounting brackets and secure it using the screws.
11. Insert the wires from the Connection Unit into the openings in the inverter and the ferrite bead.
12. Fasten the two clips securing the Connection Unit to the inverter.
13. Reconnect the cables: Follow the instructions of *Installing the Inverter* on page 19.



14. Close the inverter and Connection Unit covers.
15. Perform the commissioning steps as described in *Activating, Commissioning and Configuring the System* on page 35.

## Adding, Removing, or Replacing Power Optimizers

1. Turn OFF the inverter ON/OFF/P switch, and wait until the green LED is blinking , indicating that the DC voltage is safe (<50V), or wait five minutes before continuing to the next step.
2. Disconnect the AC to the inverter by turning OFF the circuit breakers on the distribution panel.
3. Turn OFF the Connection Unit .
4. Disconnect and connect the necessary power optimizers.
5. Perform pairing and other procedures described in *Activating, Commissioning and Configuring the System* on page 35 on all inverters to which power optimizers were added or from which power optimizers were removed.
6. In the monitoring platform, use the **Replace** button in the **logical layout** tab (in site Admin). Replace the serial number of the removed power optimizer with the serial number of the newly installed power optimizer. Refer to <https://www.solaredge.com/sites/default/files/se-monitoring-portal-site-admin.pdf>



## Appendix C: Powering the LG Chem Battery Off and On

The LG Chem battery must be powered off and on at different stages of the inverter installation.

LG Chem batteries are available with either of the following two types of powering mechanism design:

- With the **disconnect switch** (requires Firmware version 3.24xx or later):

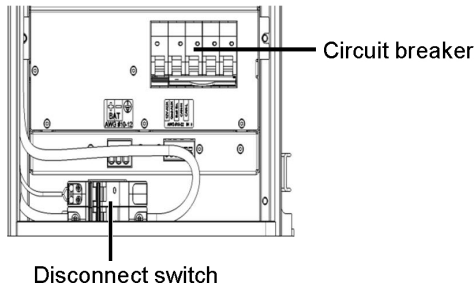


Figure 27: LG Chem battery - disconnect switch

- With the **auxiliary power switch**:

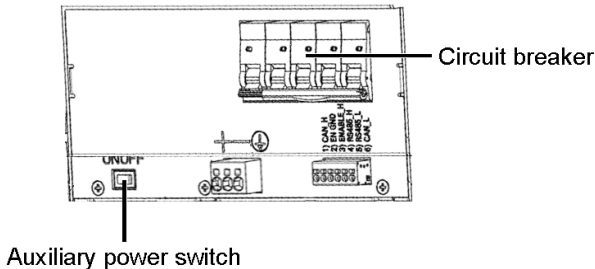


Figure 28: LG Chem battery - auxiliary switch

### → To power off the battery:

1. Turn off the circuit breaker.
2. Turn off the disconnect/auxiliary power switch.

### → To power the battery back on:

1. Turn on the disconnect/auxiliary power switch.
2. Turn on the circuit breaker.

## Appendix D: Connecting and Powering Systems with a DC Disconnect Switch

To power off/on a StorEdge system that includes a Single Phase Inverter with HD-Wave Technology and a DC disconnect switch (external or integrated), do the following:

→ **To power off:**

1. Switch the inverter's ON/OFF/P switch to OFF.
2. Wait for the red LED to turn off.
3. Switch off the battery's circuit breaker and then the disconnect/auxiliary switch.
4. Switch off the DC disconnect switch.
5. Turn off AC to the inverter.

→ **To power on:**

1. Turn on AC to the inverter.
2. Switch on the DC disconnect switch.
3. Switch on the battery's disconnect/auxiliary switch and then the circuit breaker.
4. Switch the inverter's ON/OFF/P switch to ON.

## Guidelines for Installing an External DC Disconnect Switch

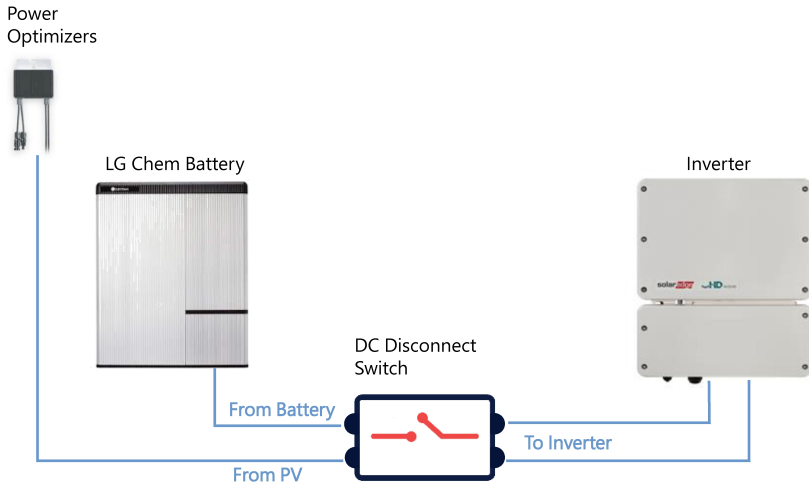


Figure 29: External DC Disconnect Switch

When installing an external DC disconnect switch, follow these guidelines:

- The switch must have separate DC+ and DC- connectors for the battery and optimizer cables.
- The switch must be able to handle the maximum currents specified in the inverter and StorEdge Interface specifications.
- Maintain the maximum distance between the StorEdge Interface and inverter prescribed by the local regulations or the SolarEdge specifications - the shortest distance of the two.

## Appendix E: SafeDC™

When AC supply to the inverter is shut off (by shutting off the AC breaker at the site), or when the inverter ON/OFF/P switch is turned to OFF, the DC voltage drops to a safe voltage of per optimizer.

The SolarEdge inverters are certified for compliance with the following standards as disconnection devices for PV generators, meaning that they can replace a DC disconnect:

- IEC 60947-3:1999 + Corrigendum: 1999 + A1:2001 + Corrigendum 1:2001 + A2:2005;
- DIN EN 60947-3
- VDE 0660-107:2006-03
- IEC 60364-7-712:2002-05
- DIN VDE 0100-712:2006-06.

In compliance with these standards, the disconnection mechanism operates as follows:

1. Turn the inverter ON/OFF/P switch, located at the bottom of the inverter, to OFF, or disconnect the AC by shutting off the AC breaker at the site. The DC voltage displayed on the SetApp screen begins to decrease.
2. When the DC voltage reaches a safe voltage, the PV connectors at the input to the inverter can be disconnected. A galvanic separation then exists between the PV array and the inverter.

## 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.



# StorEdge Single Phase Inverter with HD-Wave Technology and SetApp Configuration Technical Specifications

	SE2200H- RWS	SE3000H- RWS	SE3500H- RWS	SE3680H- RWS	SE4000H- RWS	SE5000H- RWS	SE6000H- RWS	
Applicable to inverters with PN	SEXXXXH-RWSXXBXX4							Unit
<b>OUTPUT</b>								
Rated AC Power Output	2200	3000	3500	3680	4000	5000	6000	VA
Maximum AC Power Output	2200	3000	3500	3680	4000	5000	6000	VA
AC Output Voltage (Nominal)	220/230							Vac
AC Output Voltage Range	184 - 264.5							Vac
AC Frequency (Nominal)	50/60 ± 5							Hz
Maximum Continuous Output Current	10	14	16	16	18.5	23	27.5	A
Total Harmonic Distortion (THD)	<3							%
Power Factor	1, adjustable -0.9 to 0.9							
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes							
Charge Battery from AC	Yes							
<b>INPUT (PV)</b>								
Maximum DC Power	3400	4650	5425	5700	6200	7750	9300	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380							Vdc
Maximum Input Current	6.5	9	10	10.5	11.5	13.5	16.5	Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600							kΩ
Maximum Inverter Efficiency	99.2							%
European Weighted Efficiency	98.3	98.8				99		%
<b>INPUT (BATTERY)</b>								
Compatible Batteries	LG Chem RESU7H or LG Chem RESU10H							
Number of Batteries per Inverter	1							
Maximum Continuous Battery Charge and Discharge	5000							W
Maximum Peak Battery Charge and Discharge (10 sec)	7000							
Max Input Voltage	480							Vdc
Max Continuous Current	14							Adc
<b>ADDITIONAL FEATURES</b>								
Supported Communication Interfaces	RS485, Ethernet, Wi-Fi <sup>(1)</sup> , Cellular (optional), ZigBee for Smart Energy (optional) <sup>(2)</sup>							
Smart Energy Management	Export Limitation <sup>(3)</sup> , Smart Energy							
Inverter Commissioning	With the SetApp mobile application using built in Wi-Fi access point for local connection							
Arc Fault Protection	Integrated, User Configurable (According to UL1699B)							

(1)Wi-Fi connectivity requires an external antenna. For more information refer to:  
<https://www.solaredge.com/sites/default/files/se-wifi-zigbee-antenna-datasheet.pdf>

(2)For more information refer to: <https://www.solaredge.com/sites/default/files/se-zigbee-plug-in-wireless-communication-for-setapp-datasheet.pdf>

(3)Import/Export meter is required for Export Limitation and for controlled Excess Solar charging

	SE2200H- RWS	SE3000H- RWS	SE3500H- RWS	SE3680H- RWS	SE4000H- RWS	SE5000H- RWS	SE6000H- RWS	
<b>STANDARD COMPLIANCE</b>								
Safety	IEC-62109-1/2, AS-3100							
Grid Connection Standards	IEC61727, IEC62116, EN 50438, VDE-AR-N-4105, VDE 0126-1-1, UTE_C_15-712, G83/2, G59/3, CEI-021, ÖNORM, TF3.2.1, C10-11, NRS 097-2-1							
Emissions	IEC61000-6-2, IEC61000-6-3, IEC61000-3-11, IEC61000-3-12, FCC Part 15 Class B							
<b>INSTALLATION SPECIFICATIONS</b>								
AC Output - Supported Cable Diameter	9-16						mm	
AC - Supported Wire Cross Section	1-13						mm <sup>2</sup>	
DC Input (PV)	1 x MC4			2 x MC4 pair				
Battery Input	1 x MC4							
Dimensions (H x W x D) with StorEdge Interface	450 x 370 x 174						mm	
Noise	< 25						dBA	
Weight	10			11.4		11.9		kg
Cooling	Natural Convection							
Operating Temperature Range	-40 to +60 <sup>(1)</sup>						°C	
Protection Rating	IP65 — Outdoor and Indoor							

(1) Full power up to at least 50°C. For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note.pdf>



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