



Installation Guide

Single Phase Inverter with HD-Wave Technology

For Europe and APAC

Version 1.2

Disclaimers

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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:

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- 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.

Simplified EU Declaration of Conformity

SolarEdge Technologies Ltd. hereby declares that its Wireless Communication, Wi-Fi/ZigBee radio equipment is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at:

<https://www.solaredge.com/sites/default/files/se-single-phase-inverter-certificate-ce-conformity.pdf>.

Revision History

Version 1.2 (November 2020)

- Updated the Optimizer Installation Guidelines in *Installation Guidelines* on page 14.
- Added a requirement to minimize the distance between the positive and negative DC optimizer cables in *Step 3: Connecting Power Optimizers in Strings* on page 17.
- Added the requirement for a special bracket, when installing close to the shoreline in *Mounting the Inverter* on page 23
- Updated the communication board TCP details in *Creating an Ethernet (LAN) Connection* on page 41.
- Changed the cable type required for the RS485 and Ethernet connection to CAT6.

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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.



ON/OFF/P Switch:
0 = OFF
1 = ON
P = Pairing

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 modules in the string (for a string with multiple modules, 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 modules 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 inverters can be installed in sites with an alternative power source such as 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 on connecting an alternative power source to SolarEdge inverter, 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



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.

Chapter 1: Introducing the SolarEdge Power Harvesting System

The SolarEdge power harvesting solution maximizes the power output from any type of solar photovoltaic (PV) installation while reducing the average cost per watt. The following sections describe each of the system's components.

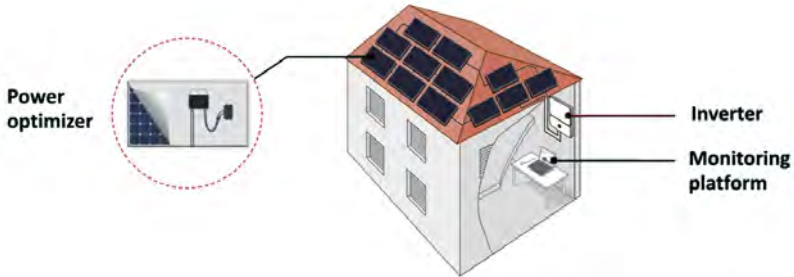


Figure 1: The SolarEdge power harvesting system components

Power Optimizer

The power optimizers are DC-DC converters connected to PV modules in order to maximize power harvesting by performing independent Maximum Power Point Tracking (MPPT) at the module level.

The power optimizers regulate the string voltage at a constant level, regardless of string length and environmental conditions.

The power optimizers include a safety voltage function that automatically reduces the output of each power optimizer to 1 Vdc in the following cases:

- During fault conditions
- The power optimizers are disconnected from the inverter
- The inverter ON/OFF/P switch is turned OFF
- The inverter AC breaker is turned OFF

Each power optimizer also transmits module performance data over the DC power line to the inverter.

Two types of power optimizers are available:

- module add-on power optimizer – connected to one or more modules
- smart modules - the power optimizer is embedded into a module

SolarEdge Inverter

The SolarEdge inverter efficiently converts DC power from the modules into AC power that can be fed into the main AC service of the site and from there to the grid. The inverter also receives the monitoring data from each power optimizer and transmits it to a central server (the SolarEdge monitoring platform; requires Internet connection).

Monitoring Platform

The monitoring platform enables monitoring the technical and financial performance of one or more SolarEdge sites. It provides past and present information on the system performance both at the system and module levels.

Installation Procedure

The following is the procedure for installing and setting up a new SolarEdge site. Many of these also apply to modification of an existing site.

1. [Connecting Power Optimizers in Strings](#), page 17
2. [Recording power optimizer serial numbers \(optional\)](#), page 35
3. [Mounting the inverter](#), Page 23
4. [Connecting the AC and the Strings to the Inverter](#), page 27
5. [Commissioning and activating the installation](#), page 31
6. [Connecting the inverter to the monitoring platform](#), page 36

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 4 mm screw type for the inverter cover, side screws, and Safety Switch cover (if applicable)
- 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 inverter mounting bracket to the mounting surface
 - the power optimizer to the racking (not required for smart modules)

- MC4 crimper (if applicable)
- Wire cutters
- Wire strippers
- Voltmeter
- Mobile phone with latest SetApp version

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

- For Ethernet:
 - CAT6 twisted pair Ethernet cable with RJ45 connector
 - If using a CAT6 cable spool: RJ45 plug and RJ45 crimper
- For RS485:
 - 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 Optimizers

Safety

The following notes and warnings apply when installing the power optimizers. Some of the following may not be applicable to smart modules:

WARNING!



When modifying an existing installation, turn OFF the inverter ON/OFF/P switch 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!



The power optimizer must be operated according to the technical specifications provided with the power optimizer.

CAUTION!



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

CAUTION!



All PV modules must be connected to a power optimizer.

CAUTION!



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

CAUTION!

Installing a SolarEdge system without ensuring compatibility of the module 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 and electrical compatibility of the power optimizer connectors with the PV module connectors to which they are connected:

- Use identical connectors from the same manufacturer and of the same type on the poweroptimizers, modules and the inverter DC input; or
- Verify that the connectors are compatible in the following way:
 - The module connector manufacturer should explicitly verify compatibility with the SolarEdge optimizerconnectors and the Inverter DC input connectors.
 - 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>

**IMPORTANT SAFETY FEATURE**

Modules with SolarEdge power optimizers are safe. They carry only a low safety voltage before the inverter is turned ON. As long as the power optimizers are not connected to the inverter or the inverter is turned OFF, each power optimizer will output a safe voltage of 1V.

Installation Guidelines

- For the minimum and maximum number of power optimizers in a string (string length), see 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#/>.
- Do not use extension cables between a module and a power optimizer, between two modules connected to the same power optimizer, or between two power optimizers other than in the following cases:

Between a power optimizer and a module:

- Power optimizers with the 4-type suffix in their part number (Pxxx-4xxxxxx) - extension cables of up to 16 m can be installed per power optimizer (8 m for DC+ and 8 m for DC-).
- Power optimizers manufactured starting from working week 42, 2019, as indicated in the serial number (Example: S/N SJ5019A-xxxxxxx - working week 50, 2019) - extension cables of up to 16 m can be installed per power optimizer (8 m for DC+ and 8 m for DC-).

Between two power optimizers or between a power optimizer and the inverter:

- Extension cables can be installed 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. The total length of the extension cables must not exceed the following values:

| Single Phase Inverters | Three Phase Inverters |
|------------------------|--|
| All - 300 m / 1000 ft | SE17K and below - 300 m / 1000 ft SE20K and above - 700 m / 2300 ft |

- For connecting homerun DC cables from power optimizers to the inverter, use cables with the following cross-sections:
 - For MC4 connectors - 8-14 AWG / 2.5-10 mm²
 - For DC terminal blocks inside the inverter or Safety Switch - 6-14 AWG / 2.5-16 mm²

- 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.
- The power optimizer can be placed in any orientation.
- If connecting more modules than power 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 and input conductor length.
- 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 power optimizers are connected to unshaded modules, add more power optimizers to the string.
- To allow for heat dissipation, maintain clearance as specified below.

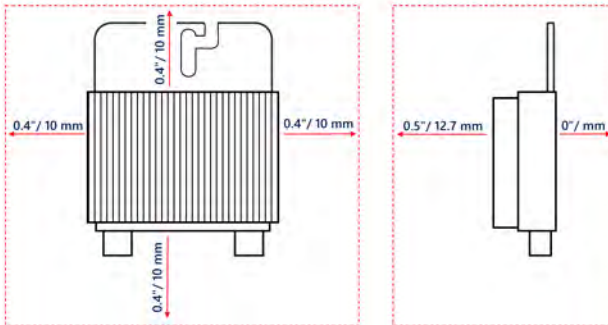


Figure 2: Power optimizer clearance

- When installing PV modules in a confined space such as Building-integrated photovoltaic (BIPV) modules, ventilation measures may be required to ensure that the power optimizers are not exceeding the maximum temperatures stated in their specifications.

Step 1: Mounting the Power Optimizers

For each of the power optimizers⁽¹⁾:

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.
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 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 module support structure.
5. Record power optimizer serial numbers and locations, as described in *Reporting and Monitoring Installation Data* on page 34.

Step 2: Connecting a PV module to a Power Optimizer

NOTE



Improper wiring may cause electrical faults in a PV system. To avoid electrical faults, verify proper locking of connectors and avoid cable tension and friction. Proper planning, materials and installation reduce the risk of electric arcs, short-circuits and ground faults in the PV system.

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:

⁽¹⁾Not applicable to smart modules.

- 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.

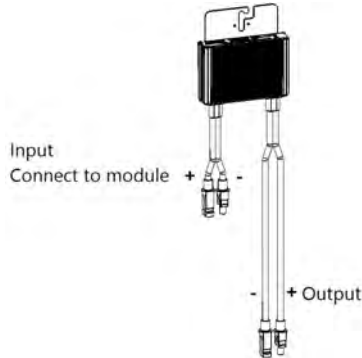


Figure 3: Power optimizer connectors

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. To minimize electromagnetic interference (EMI), make sure to minimize the distance between the positive and negative DC cables.

For detailed instructions, see:

<https://www.solaredge.com/sites/default/files/se-emi-performance-application-note.pdf>.

3. 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.

4. 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 35.

Step 4: Verifying Proper Power Optimizer Connection

When a module 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 modules are exposed to sunlight during this process. The power optimizer will only turn ON if the PV module provides at least 2W.

In SolarEdge systems, due to the introduction of power optimizers between the PV modules 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_systems_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 .

For troubleshooting power optimizer operation problems, refer to *Power Optimizer Troubleshooting* on page 51.

Proper power optimizer connection can also be verified in the Designer application.

For more information, refer to

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



Chapter 3: Installing the Inverter

Install the inverter either before or after the modules 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
- Mounting bracket kit
- Warranty card
- Technical Specifications page

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.

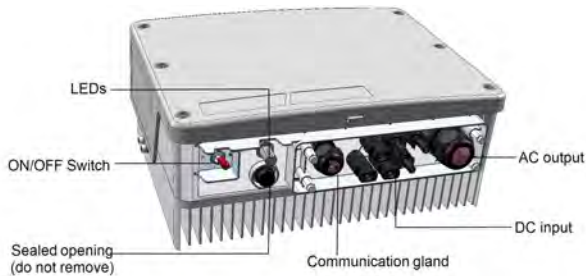


Figure 4: Inverter Interfaces

- **DC input:** MC4 connector, for connection of the PV installation.
- **Communication gland:** For connection of inverter communication options. Refer to *Setting Up Communication with the Monitoring Platform* on page 37 for more information.
- **Drain valve:** Drains any moisture that may be accumulated in the unit.
- **ON/OFF/P switch:**
 - **ON (1)** - Turning this switch ON (after power 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 2 seconds , then released. | <ul style="list-style-type: none"> • Displays (via LEDs) production information for 5 seconds, or error type indications (if exist) for 5 seconds. • Activates the Wi-Fi access point for connecting to the SetApp | <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 more than 5 seconds , then released. | Starts pairing | Pairing is indicated by all 3 LEDs blinking simultaneously. |

- **LEDs:** three LEDs indicate, by color and state (on/ off/ blinking⁽¹⁾/ flickering⁽²⁾/alternating⁽³⁾), 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

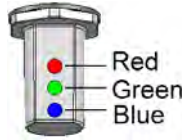


Figure 5: LEDs

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"> ▪ S_OK: ON ▪ No S_OK: OFF | 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"> ▪ S_OK: ON ▪ No S_OK: OFF | |
| Night mode (no production) | | OFF | Flickering | <ul style="list-style-type: none"> ▪ S_OK: ON ▪ No S_OK: OFF | |
| Inverter is OFF (Safe DC) | OFF (0) | OFF | Blinking | <ul style="list-style-type: none"> ▪ S_OK: ON ▪ No S_OK: OFF | |
| Inverter is OFF (DC not safe) | | Blinking | Blinking | <ul style="list-style-type: none"> ▪ S_OK: ON ▪ No S_OK: OFF | |
| 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 48 |

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:

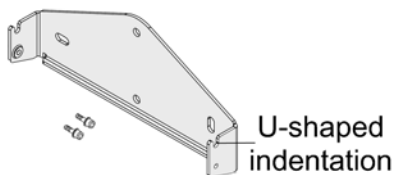


Figure 6: Mounting bracket

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.

For SolarEdge inverters installed at a distance of 200 m / 655 ft or closer to the shoreline, special brackets purchased separately from SolarEdge and SS304 stainless screws are required.

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

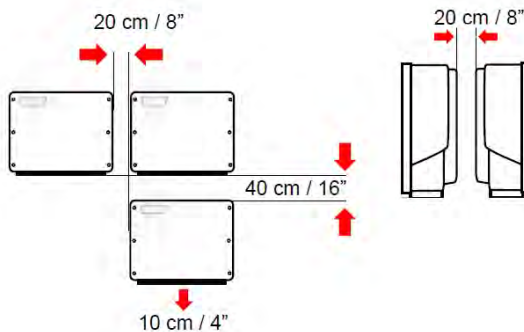


Figure 7: Clearance areas

- 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.

3. Position the mounting bracket against the wall/ pole and mark the drilling hole locations (refer to the *Mechanical Specifications* appendix below 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.

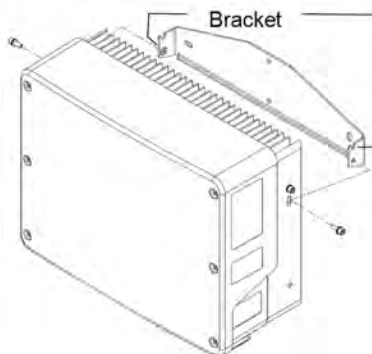


Figure 8: Hanging the inverter on the brackets

6. Optionally, secure the Safety Switch bracket to the wall/pole, using 3 screws:



NOTE

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

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

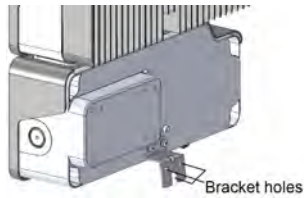


Figure 9: Safety Switch bracket

- b. Remove the inverter from the wall/ pole.
 - c. Drill the hole for the Safety Switch bracket.
 - d. Hang the inverter on the mounted brackets.
 - e. Fasten the Safety Switch 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: Connecting AC and PV Strings to the Inverter

This chapter describes how to connect the inverter to the AC grid, and to the strings of modules with power optimizers.

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 mm².

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.

CAUTION!



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

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



Figure 10: Insulation stripping – AC (3-wire cable)

4. Open the AC cable gland and insert the cable through the gland (see).

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.

5. Connect the AC wires according to the labels on the terminal block.

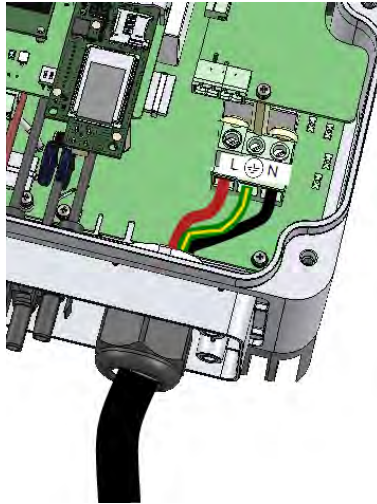


Figure 11: AC connection

6. Tighten the screws of each AC terminal with a torque of 1.2-1.5 N*m / 0.88-1.1 lb*ft.
7. Check that the wires are fully inserted and cannot be pulled out easily.
8. Tighten the AC cable gland with a torque of 2.8-3.3 N*m / 2.0-2.4 lb*ft.
9. 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 strings of power optimizers to the inverter's DC input connectors.

If required, connect the strings to an external combiner box. Then, connect the DC cables from the combiner box to the inverter's DC input connectors.

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 4*.

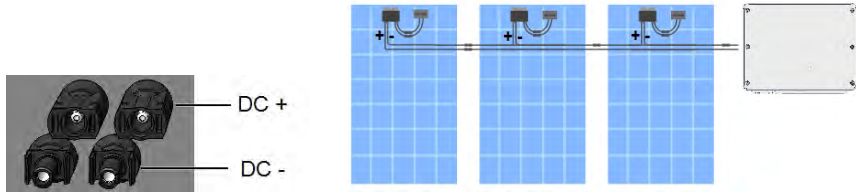


Figure 12: Inverter DC Connections

Selecting a Residual Current Device (RCD)

IMPORTANT SAFETY FEATURE



All SolarEdge inverters incorporate a certified internal Residual Current Device (RCD) in order to protect against possible electrocution and fire hazard in case of a malfunction in the PV array, cables or inverter. There are two trip thresholds for the RCD as required for certification (DIN VDE 0126-1-1). The default value for electrocution protection is 30 mA, and for slow rising current is 300 mA.

If an external RCD is required by local regulations, check which type of RCD is required for the relevant electric code. Install the residual-current device (RCD) in accordance with the applicable local standards and directives. SolarEdge recommends using a type-A RCD. The recommended RCD value is 100 mA or 300 mA unless a lower value is required by the specific local electric codes. When required by local regulations, the use of an RCD type B is permitted.



NOTE

For multiple inverters, an RCD per inverter is required.

In installations where the local electric code requires an RCD with a lower leakage setting, the discharge current might result in nuisance tripping of the external RCD. The following steps are recommended to avoid nuisance tripping of the external RCD:

- Select the appropriate RCD for correct operation of the installation: An RCD with a rating of 30 mA may actually trip at a leakage as low as 15 mA (according to IEC 61008). High quality RCDs will typically trip at a value closer to their rating.
- Configure the trip voltage of the inverter's internal RCD to a lower value than the trip current of the external RCD. The internal RCD will trip if the current is higher than the allowed current, but because the internal inverter RCD automatically resets when the residual currents are low it saves the manual reset.

For detailed information, refer to the *RCD Selection for SolarEdge Inverters Application Note*, available on the SolarEdge website at http://www.solaredge.com/sites/default/files/application_note_ground_fault_rcd.pdf.



Chapter 5: Activating, Commissioning and Configuring the System

You can connect communication options at this stage, as described in *Setting Up Communication with the Monitoring Platform* on page 37.

After completing all connections, activate and commission the system using the inverter SetApp mobile application. You can download the SetApp from the Apple App Store and Google Play before arriving at the site.



Internet connection is required for the download, one-time registration, and logging in, but 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. Verify that the application is updated with the latest version.
- If applicable, turn on all devices (battery, Energy Meter) connected to the inverter, so that the devices may be auto-detected.

→ To activate the inverter:

1. Turn ON the AC circuit breaker on the main distribution panel.
2. Open SetApp and follow the on-screen instructions (scan the inverter bar-code; move the ON/OFF/P switch to P position for 2 seconds and release).

SetApp creates a Wi-Fi connection, upgrades the inverter firmware and activates the inverter.

3. When the activation is complete, do one of the following:
 - Select **Connect to Another Device** to continue activating additional inverters.
 - Select **Start Commissioning** for pairing and other system configuration.

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**.
- 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 on-screen instructions (scan the inverter QR code, move the ON/OFF/P switch to P position for 2 seconds and release).
The mobile device creates a Wi-Fi connection with the inverter and displays the main Commissioning screen.

Setting Country, Grid and Language

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

1. From the **Commissioning** screen select **Country & Grid**.
2. From the **Country & Grid** drop-down list, select the required option and tap **Set Country & Grid**.
3. From the **Language** drop-down list, select your language and tap **Set Language**.

Pairing

1. From the **Commissioning** 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 Wake up 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 **Commissioning** menu.

Communication

Communication settings can be configured only after communication connections are complete. Refer to *Setting Up Communication with the Monitoring Platform* on page 37.

- Select **Monitoring Communication** to configure communication with the monitoring platform.
- Select **Site Communication** to configure communication between multiple SolarEdge devices or external non-SolarEdge devices, such as batteries or loggers.

Power Control

Power control options are detailed in the *Power Control Application Note*, available on the SolarEdge website at https://www.solaredge.com/sites/default/files/application_note_power_control_configuration.pdf.



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.



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.
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.

Reporting and Monitoring Installation Data

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 with the Monitoring Platform* on page 37.

The Monitoring Platform

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

Using the platform, you can:

- View the latest performance of specific components.
- Find under-performing components, such as modules, 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, optimizers, strings, modules, meters and sensors, as well as their electrical connectivity. This view enables you to see which modules 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 modules in the site, and allows pinpoint issues to the exact location of each module 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#/>.



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 application is integrated with the monitoring platform and enables:

- 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 module 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 6: Setting Up Communication with 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 leader-follower configuration

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

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.

RS485

RS485 is used for the connection of multiple SolarEdge devices on the same bus in a leader-follower 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 RS485 Bus Connection* on page 44.

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.

Wireless Gateway, Wireless Repeater(s)

The Wireless Gateway collects inverter data using a dedicated Wi-Fi connection and connects to the monitoring platform with the help of a home router. Wireless Repeater(s) extend the Wi-Fi signal range between the Wireless Gateway and inverter. Wireless Gateway and Wireless Repeaters can be purchased separately from SolarEdge. For more information, refer to <https://www.solaredge.com/sites/default/files/se-wireless-gateway-wireless-repeater-installation-guide.pdf>.



Cellular

This wireless communication option 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/se-cellular-plug-in-for-inverters-with-setapp-installation-guide.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

A communication gland with multiple openings is used for connection of the various communication options. The table below describes the functionality of each gland opening. Unused openings should remain sealed.

| Opening for cable size (diameter) | Connection type |
|-----------------------------------|--|
| 2.5 - 5 mm | RS485 |
| 4.5 - 7 mm, with cut | Ethernet (CAT6) |
| 2 - 4 mm, with cut | Antenna cable for wireless communication |



Figure 13: Communication Gland

The communication board has the following connectors:

- Standard RJ45 terminal block for Ethernet connection
- USB
- RS485 connector
- 8-pin connector for power control devices

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



Figure 14: Communication board connectors

Removing the Inverter Cover

→ To remove the inverter cover

1. Switch off the AC circuit breaker on the main distribution panel.
2. Switch off the inverter ON/OFF/P switch and wait 5 minutes for the internal capacitors to discharge.
3. 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.

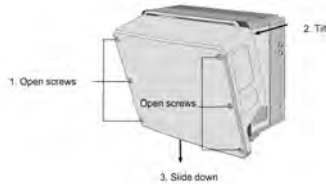


Figure 15: Removing the inverter cover

Removing the DC Safety Unit Cover (if applicable)

1. Switch off the AC circuit breaker on the main distribution panel and the safety switch (if applicable).
2. Open the DC Safety Unit cover: Release the four Allen screws and remove the cover.

CAUTION!



When removing the DC Safety 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.

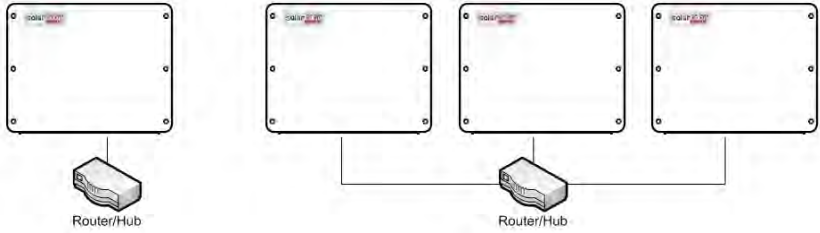


Figure 16: Example of Ethernet connection

Ethernet cable specifications:

- Cable type – a shielded Ethernet cable (Cat6) 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.



➔ **To connect the Ethernet cable:**

1. Remove the invertercover as described above.
2. Open the communication gland.

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 CAT6 cable through the gland and through the gland opening in the inverter.
5. Push the cable into the cut opening of the rubber fitting.

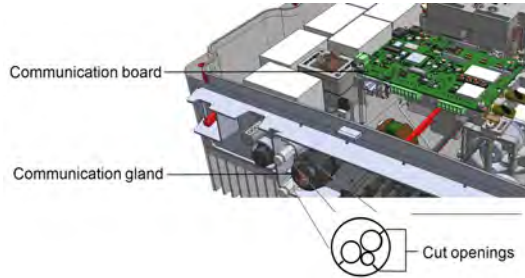


Figure 17: Communication gland and rubber fitting

CAT6 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 ⁽¹⁾ | | 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 |
| 5 | White/Blue | White/Blue | Reserved |
| 6 | Green | Orange | Received- |
| 7 | White/Brown | White/Brown | Reserved |
| 8 | Brown | Brown | Reserved |

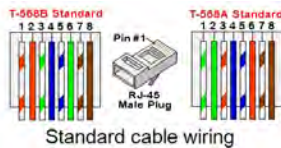


Figure 18: Standard cable wiring

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

6. 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 18*).
 - d. Use a crimping tool to crimp the connector.
 - e. Connect the Ethernet connector to the RJ45 port on the communication board (see *Figure 14*).

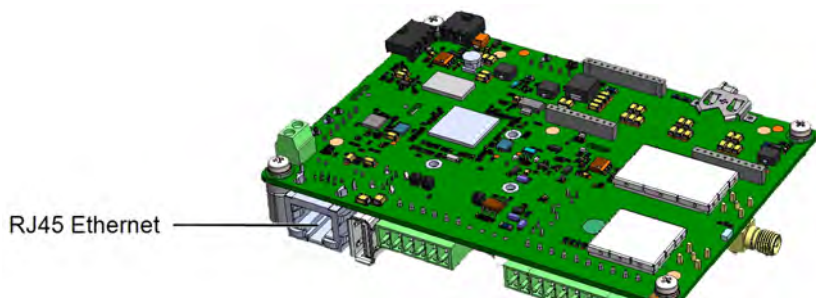


Figure 19: The RJ45 Ethernet connection

7. 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 (see *Figure 18*).
8. 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.
9. The inverter is configured by default to LAN. If reconfiguration is required:
 - 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 33.

NOTE



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

- Destination Address: prodssl.solaredge.com
- TCP Port: **443** (for incoming and outgoing data)

10. Verify the connection, as described in *Verifying the Connection* on page 47.

Creating RS485 Bus Connection

The RS485 option enables creating a bus of connected inverters, consisting of up to 31 follower inverters and 1 leader 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 46.

RS485 wiring specifications:

- Cable type: CAT6 and higher with shielding protection of the twisted pairs of wires and an outer foil or braided shielding
- Wire cross-section area: 0.2- 1 mm²/ 24-18 AWG
- 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.



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 Safety Switch, connect the grounding wire to the grounding bus-bar in the Safety Switch.

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 above.
2. Open Communication Gland and insert the cable through one of the openings.
3. Remove the connector, as shown below.

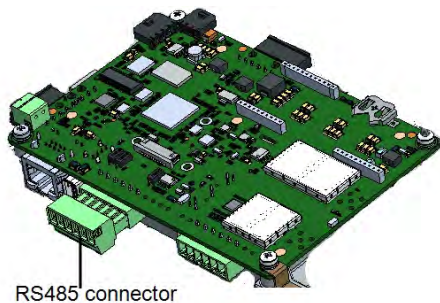


Figure 20: RS485 connector on the communication board

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

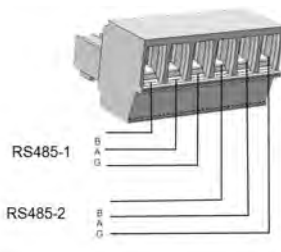


Figure 21: RS485 connector

5. Insert the wire ends into the **B**, **A** and **G** opening on the connector.
You can use any color wire for each of the **B**, **A** 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, as shown below.

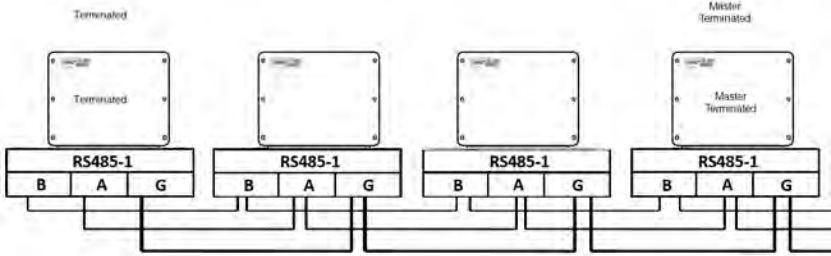


Figure 22: Connecting the inverters in a chain



NOTE

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

7. Tighten the connector screws.
8. Check that the wires are fully inserted and cannot be pulled out easily.
9. Connect the RS485 connector to the RS485 port on the communication board.
10. Terminate the first and last SolarEdge inverter in the chain. The inverter can be terminated by switching on (up) the left DIP switch on the communication board.

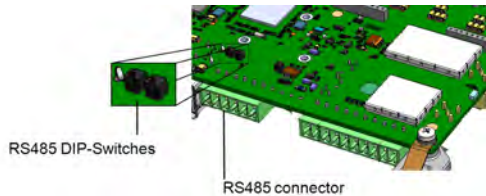


Figure 23: RS485 termination switch

NOTE



Only the first and last SolarEdge inverter in the chain must be terminated. In the other inverters in the chain, the DIP switch must be in the off (down) position.

11. If no surge protection is used, 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 Safety Switch, connect the grounding wire to the grounding bus-bar in the Safety Switch.

RS485 Bus Configuration

→ 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 leader inverter.
2. Connect the leader to the monitoring platform using Ethernet (refer to *Creating an Ethernet (LAN) Connection* above).

→ To configure the RS485 bus:

All inverters are configured by default as followers. To configure the leader:

1. Make sure the inverter's ON/OFF/P switch is off.
2. Make sure that the AC circuit breaker on the main distribution panel is on.
3. Access SetApp, as described in *Communication* on page 33.
4. From the **Commissioning** screen, select **Site Communication** > **RS485-** > **Protocol** > **SolarEdge** > **SolarEdge Leader**.
5. Return to the **RS485-** screen and select **Follower Detect**.

The system starts automatic detection of the follower inverters connected to the leader inverter. The inverter should report the correct number of followers. If it does not, verify the connections and terminations in all inverters in the chain.

6. To check the follower IDs and last communication time, select **RS485-** > **Follower List**.
7. Verify the connection of the leader to the monitoring platform, as described below.

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. Access SetApp and select **Commissioning** > **Status**.
2. In the **Summary** section, under **Server Comm.**, make sure **S_OK** is displayed together with the selected communication option.
3. Scroll down to the **Communication** section and check that the communication options are as required.

Appendix A: Errors and Troubleshooting

This chapter 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 **2 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 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. |

Troubleshooting RS485 Communication


- If the message **RS485 Leader Not Found** appears in the Status screen, check the connections to the leader device and fix if required.
- If after follower detection the number of followers displayed for the leader under **RS485- > Follower Detect** is lower than the actual number of followers, refer to the following application note to identify missing followers and troubleshoot connectivity problems:
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 Optimizer Troubleshooting

| Malfunction | Possible Cause and Corrective Action |
|---|---|
| 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 modules).</p> <p>Connect the modules to the optimizer inputs.</p> |
| | <p>String reverse polarity.</p> <p>Check string polarity using a voltmeter and correct if needed.</p> |

| Malfunction | Possible Cause and Corrective Action |
|---|---|
| <p>String voltage is higher than number of optimizers</p> <p>WARNING! If the measured voltage is too high, the installation may not have a safe low voltage. PROCEED WITH CARE! A deviation of $\pm 1\%$ per string is reasonable.</p>  | <p>Extra power optimizer(s) connected in the string (not applicable to smart modules). Check if an extra power optimizer is connected in the string. If not – proceed to next solution.</p> <p>A module is connected directly to the string, without a power optimizer (not applicable to smart modules). Verify that only power optimizers are connected in the string and that no module 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"> 1. Disconnect the wires connecting the power optimizers in the string. 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, module, and voltage. 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. |

Appendix B: Mechanical Specifications

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

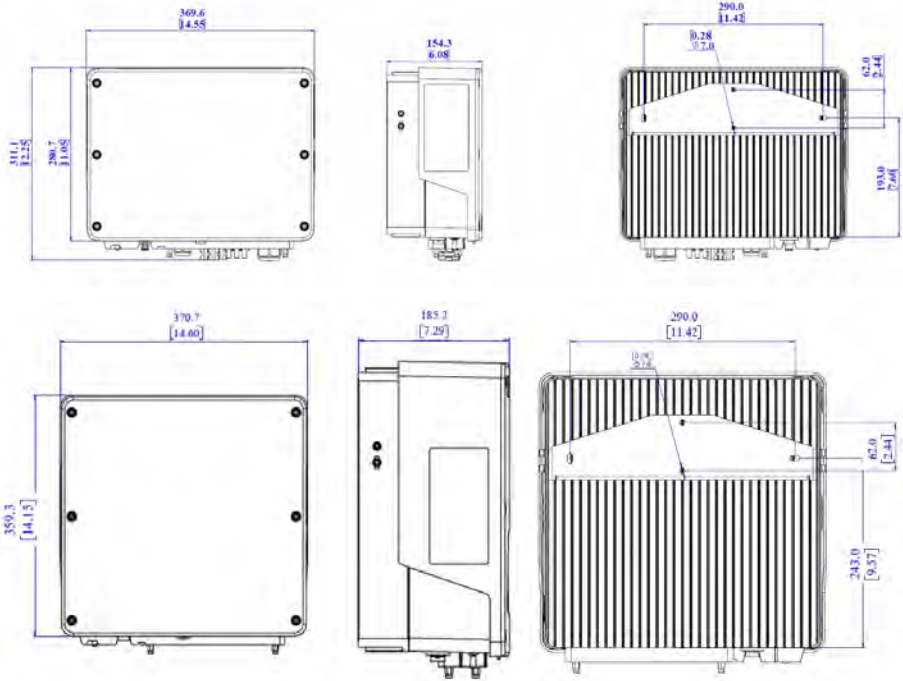


Figure 24: SE10000H-SE11400H inverter dimensions

Appendix C: 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. For inverters with a Safety Switch, turn OFF the Safety Switch.
4. Open the Safety Switch cover (if applicable): Release the four Allen screws and remove the cover.
5. Open the inverter cover as described in *Removing the Inverter Cover* on page 40.
6. Disconnect the DC plugs from the inverter.
7. Disconnect the AC wires from the AC terminal block and remove the ferrite bead.

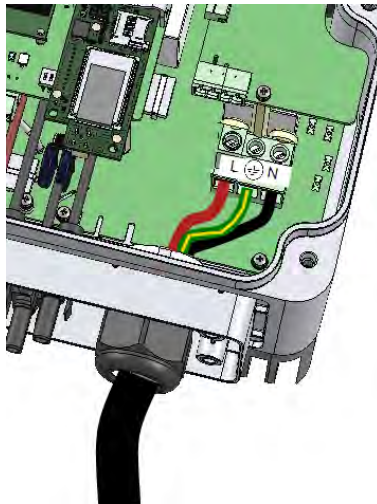


Figure 25: AC connections

8. Disconnect the DC and AC cables from the Safety Switch (if applicable).
9. Disconnect the wires connected to the inverter or between the inverter and the Safety Switch:
 - Antenna cable from the communication board
 - DC and AC wires in the Safety Switch
 - Grounding cable
10. Disconnect the Safety Switch from the inverter by opening the two clips securing the Safety Switch to the inverter: Carefully place a screwdriver between the clip and the enclosure and pull the clip.

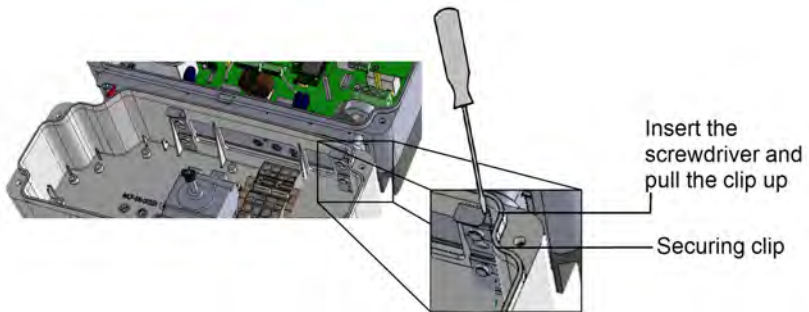


Figure 26: Disconnecting the Safety Switch from the inverter

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

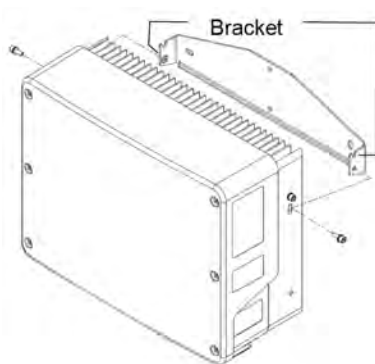


Figure 27: Mounting brackets

**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

12. Place the new inverter on the mounting brackets and secure it using the screws.
13. Insert the wires from the Safety Switch into the openings in the inverter and the ferrite bead.
14. Fasten the two clips securing the Safety Switch to the inverter.
15. Reconnect the cables: Follow the instructions of .
16. Close the inverter and Safety Switch covers.
17. Perform the commissioning steps as described in *Activating, Commissioning and Configuring the System* on page 31.

Replacing the Safety Switch

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. Turn OFF the AC breaker of the distribution panel and the Safety Switch.
3. Open the Safety Switch cover: Release the four Allen screws and remove the cover.
4. Open the inverter cover as described in *Removing the Inverter Cover* on page 40.

5. Disconnect the DC wires from the inverter and the AC wires from the Safety Switch.
6. Disconnect the wires between the inverter and the Safety Switch.
 - Antenna cable from the communication board
 - RS485 and/or Ethernet connection from the communication board
 - Grounding cable
7. Open the Safety Switch bracket screws.

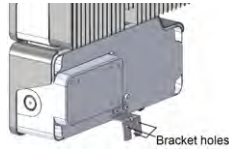


Figure 28: Safety Switch bracket

8. Disconnect the Safety Switch from the inverter by opening the two clips securing the Safety Switch to the inverter: Carefully place a screwdriver between the clip and the enclosure and pull the clip.

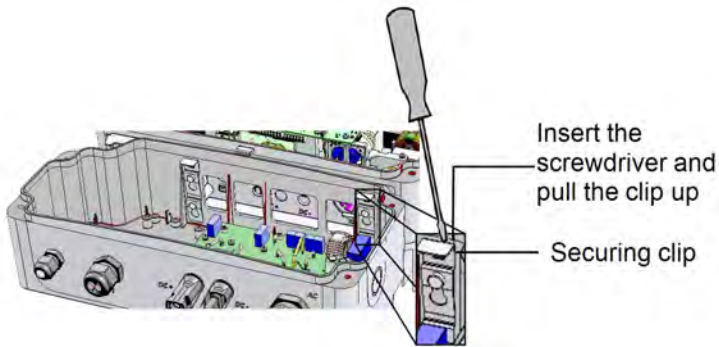


Figure 29: Disconnecting the Safety Switch from the inverter

9. Detach the Safety Switch from the inverter.
10. Place the new Safety Switch and secure it to the inverter using the clips.
11. Insert the wires from the inverter into the openings in the Safety Switch and the ferrite bead.
12. Reconnect the cables: Follow the instructions of *Installing the Inverter* on page 19.
13. Close the inverter cover.
14. Fasten the Safety Switch bracket using a standard bolt.

15. Perform the commissioning steps as described in *Activating, Commissioning and Configuring the System* on page 31.

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 Safety Switch (if applicable).
4. Disconnect and connect the necessary power optimizers.
5. Perform pairing and other procedures described in *Activating, Commissioning and Configuring the System* on page 31 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 D: SafeDC™

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, follow the instructions below to disconnect DC power:

1. Move the inverter P/ON/OFF switch to OFF (0) and wait 5 minutes for the capacitors to discharge.
2. Disconnect the AC to the inverter by turning OFF the circuit breakers on the distribution panel.

Technical Specifications - Single Phase Inverters with HD-Wave Technology (Europe & APAC)

| | SE2200H | SE3000H | SE3500H | SE3680H | SE4000H | SE5000H | SE6000H | Units |
|--|----------------------------------|---------|---------|---------|---------|---------------------|---------|----------------|
| OUTPUT | | | | | | | | |
| Rated AC Power Output | 2200 | 3000 | 3500 | 3680 | 4000 | 5000 ⁽¹⁾ | 6000 | VA |
| Maximum AC Power Output | 2200 | 3000 | 3500 | 4000 | 4000 | 5000 ⁽¹⁾ | 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 |
| Maximum Continuous Overcurrent Protection | 10 | 14 | 16 | 16 | 18.5 | 23 | 27.5 | A |
| Residual Current Detector / Residual Current Step Detector | 300 / 30 | | | | | | | mA |
| Inrush current AC (Peak/Duration) | 2.8 / 20 | | | | | | | Aac (rms) / ms |
| Maximum Output Fault Current | 38 | | | | | | | A |
| Power Factor Range | 1 (adjustable from -0.9 to +0.9) | | | | | | | |
| Total Harmonic Distortion | < 3 | | | | | | | % |
| Protective class | Class I | | | | | | | |

(1)SE5000H is limited to 4600VA in Germany

| | SE2200H | SE3000H | SE3500H | SE3680H | SE4000H | SE5000H | SE6000H | Units | |
|---|--|---------|---------|---------|---------|---------------------|---------|-------|-----|
| Utility Monitoring, Islanding Protection, Country Configurable Thresholds | Yes | | | | | | | | |
| Overvoltage Category | III | | | | | | | | |
| INPUT | | | | | | | | | |
| Maximum DC Power | 3400 | 4650 | 5425 | 5700 | 6200 | 7750 ⁽¹⁾ | 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 | |
| Maximum Back-feed Current | 0 | | | | | | | | |
| Reverse-Polarity Protection | Yes | | | | | | | | |
| Ground-Fault Isolation Detection | 600kΩ Sensitivity | | | | | | | | |
| Overvoltage Category | II | | | | | | | | |
| Maximum Inverter Efficiency | 99.2 | | | | | | | | % |
| European Weighted Efficiency | 98.3 | 98.8 | | | | 99 | | % | |
| Nighttime Power Consumption | < 2.5 | | | | | | | | W |
| ADDITIONAL FEATURES | | | | | | | | | |
| Supported Communication Interfaces | RS485, Ethernet, ZigBee (optional), Wi-Fi (optional), Cellular (optional) | | | | | | | | |
| Inverter Commissioning | With the SetApp mobile application using built-in Wi-Fi station for local connection | | | | | | | | |
| Smart Energy Management | Export Limitation | | | | | | | | |
| Arc Fault Protection | Integrated, User Configurable (According to UL1699B) | | | | | | | | |

(1)7130VA in Germany

| | SE2200H | SE3000H | SE3500H | SE3680H | SE4000H | SE5000H | SE6000H | Units | |
|--|---|---------|---------|---------|---------------|---------|---------|-----------------|--|
| STANDARD COMPLIANCE | | | | | | | | | |
| Safety | IEC-62109-1/2, NZ3100 | | | | | | | | |
| 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 part15 class B | | | | | | | | |
| RoHS | Yes | | | | | | | | |
| INSTALLATION SPECIFICATIONS | | | | | | | | | |
| AC Output - Cable Gland Diameter | 9 - 16 | | | | | | | mm | |
| AC Supported Wire Cross Section | 1 - 13 | | | | | | | mm ² | |
| DC Input ⁽¹⁾ | 1 x MC4 pair | | | | 2 x MC4 pairs | | | | |
| Dimensions (HxWxD) | 280 x 370 x 142 | | | | | | | mm | |
| Noise | < 25 | | | | | | | dB(A) | |
| Weight | 9.5 | | | 10.5 | | 11 | | kg | |
| Cooling | Natural Convection | | | | | | | | |
| Operating Temperature Range ⁽²⁾ | -40 to +60 | | | | | | | °C | |
| Protection Rating | IP65 - Outdoor and Indoor | | | | | | | | |

(1) Connection of additional strings in parallel to a single input is allowed as long as the cumulative current does not exceed 45A.

(2) Full power up to at least 50°C / 122°F. For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note.pdf>

Recommended circuit breaker/ fuse size to use at the connection point of the SolarEdge inverter to the grid:

| Inverter | Maximum Output Current (A) | Minimum Fuse Rating (A) | Maximum fuse rating (A) |
|----------|----------------------------|-------------------------|-------------------------|
| SE2200H | 10 | 16 | 50 |
| SE3000H | 14 | 20 | 50 |
| SE3500H | 16 | 20 | 50 |
| SE3680H | 16 | 20 | 50 |
| SE4000H | 18.5 | 25 | 50 |
| SE5000H | 23 | 32 | 50 |
| SE6000H | 27.5 | 40 | 50 |

Technical Specifications - Single Phase Inverters with HD-Wave Technology (Europe & APAC)

| | SE8000H | SE10000H | Units |
|---|----------------------------------|----------|---------------|
| OUTPUT | | | |
| Rated AC Power Output | 8000 | 10000 | VA |
| Maximum AC Power Output | 8000 | 10000 | 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 | 36.5 | 45.5 | A |
| Max. continuous overcurrent protection | 36.5 | 45.5 | A |
| Residual Current Detector / Residual Current Step Detector | 300 / 30 | | mA |
| Inrush current AC (Peak/Duration) | 3.45 / 20 | | Aac(rms) / ms |
| Max. output fault current | 80 | | A |
| Power factor range | 1 (adjustable from -0.8 to +0.8) | | |
| Total harmonic distortion | < 3 | | % |
| Protective class | Class I | | |
| Utility Monitoring, Islanding Protection, Country Configurable Thresholds | Yes | | |
| Overvoltage category | III | | |

| | SE8000H | SE10000H | Units |
|------------------------------------|--|---------------------------|-------|
| INPUT | | | |
| Maximum DC Power | 12400 | 15500 | W |
| Transformer-less, Ungrounded | | Yes | |
| Maximum Input Voltage | | 480 | Vdc |
| Nominal DC Input Voltage | | 400 | Vdc |
| Maximum Input Current | 20.5 | 25.5 | Adc |
| Maximum back-feed current | | 0 | |
| Reverse-Polarity Protection | | Yes | |
| Ground-Fault Isolation Detection | | 600k Ω Sensitivity | |
| Overvoltage category | | II | |
| Maximum Inverter Efficiency | | 99.2 | % |
| European Weighted Efficiency | | 99 | % |
| Nighttime Power Consumption | | < 2.5 | W |
| ADDITIONAL FEATURES | | | |
| Supported communication interfaces | RS485, Ethernet, ZigBee (optional), Built-in GSM (Optional) | | |
| Inverter commissioning | With the SetApp mobile application using built-in Wi-Fi station for local connection | | |
| Smart Energy Management | Export Limitation | | |
| STANDARD COMPLIANCE | | | |
| Safety | IEC-62109-1/2, | | |
| Grid Connection Standards | G83/1, G83/2, G59/3, RD661, RD1699, UTE C15-712 | | |
| Emissions | IEC61000-6-2, IEC61000-6-3, IEC61000-3-11, IEC61000-3-12, FCC Part 15 Class B | | |
| RoHS | Yes | | |

| | SE8000H | SE10000H | Units |
|--|---------------------------|----------|-----------------|
| INSTALLATION SPECIFICATIONS | | | |
| AC Output - Cable Gland diameter | 9 - 16 | | mm |
| AC Supported Wire Cross Section | 1 - 13 | | mm ² |
| DC Input ⁽¹⁾ | 3 x MC4 pair | | |
| Dimensions (HxWxD) | 360 x 370 x 185 | | mm |
| Noise | < 50 | | dBA |
| Weight | 16.5 | | kg |
| Cooling | Natural Convection | | |
| Operating Temperature Range ⁽²⁾ | -40 to +60 | | °C |
| Protection Rating | IP65 - Outdoor and Indoor | | |

Recommended circuit breaker/ fuse size to use at the connection point of the SolarEdge inverter to the grid:

| Inverter | Maximum Output Current (A) | Minimum Fuse Rating (A) | Maximum fuse rating (A) |
|----------|----------------------------|-------------------------|-------------------------|
| SE8000H | 36.5 | 50 | 80 |
| SE10000H | 45.5 | 63 | 80 |

⁽¹⁾Connection of additional strings in parallel to a single input is allowed as long as the cumulative current does not exceed 45A.

⁽²⁾For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note.pdf>

Technical Specifications - Single Phase Inverters with HD-Wave Technology (Australia)

Applicable to inverters with part number SEXXXXH-AUXXXBXX4

| | SE2500H | SE3000 | SE4000H | SE5000H | SE6000H | SE8000H | SE8250H | SE10000H | Units |
|---|----------------------------------|--------|---------|---------|---------|-----------|---------|----------|----------------|
| OUTPUT | | | | | | | | | |
| Rated AC Power Output | 2500 | 3000 | 4000 | 5000 | 6000 | 8000 | 8250 | 10000 | VA |
| Maximum AC Power Output | 2500 | 3000 | 4000 | 5000 | 6000 | 8000 | 8250 | 10000 | 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 | 11.5 | 14 | 18.5 | 21.7 | 27.5 | 36.5 | 37.5 | 45.5 | A |
| Max. continuous overcurrent protection | 11.5 | 14 | 18.5 | 21.7 | 27.5 | 36.5 | 37.5 | 45.5 | A |
| Residual Current Detector / Residual Current Step Detector | 300 / 30 | | | | | | | | mA |
| Inrush current AC (Peak / Duration) | 2.8 / 20 | | | | | 3.45 / 20 | | | Aac (rms) / ms |
| Max. output fault current | 35 | | | 48 | | 80 | | | A |
| Power factor range | 1 (adjustable from -0.8 to +0.8) | | | | | | | | |
| Total harmonic distortion | < 3 | | | | | | | | % |
| Protective class | Class I | | | | | | | | |
| Utility Monitoring, Islanding Protection, Country Configurable Thresholds | Yes | | | | | | | | |
| Overvoltage category | III | | | | | | | | |

| | SE2500H | SE3000 | SE4000H | SE5000H | SE6000H | SE8000H | SE8250H | SE10000H | Units |
|------------------------------------|---|--------|---------|---------|---------|---------|---------|----------|-------|
| INPUT | | | | | | | | | |
| Maximum DC Power | 3875 | 4650 | 6200 | 7750 | 9300 | 12400 | 12785 | 15500 | W |
| Transformer-less, Ungrounded | Yes | | | | | | | | |
| Maximum Input Voltage | 480 | | | | | | | | |
| Nominal DC Input Voltage | 380 | | | | | 400 | | | |
| Maximum Input Current | 7.5 | 9 | 11.5 | 13.5 | 16.5 | 20.5 | 22 | 26 | Adc |
| Maximum back-feed current | 0 | | | | | | | | |
| Reverse-Polarity Protection | Yes | | | | | | | | |
| Ground-Fault Isolation Detection | 600kΩ Sensitivity | | | | | | | | |
| Overvoltage category | II | | | | | | | | |
| Maximum Inverter Efficiency | 99.2 | | | | | | | | |
| European Weighted Efficiency | 98.3 | 98.8 | | | | | 99 | | |
| Nighttime Power Consumption | < 2.5 | | | | | | | | |
| ADDITIONAL FEATURES | | | | | | | | | |
| Supported Communication Interfaces | RS485, Ethernet, ZigBee (optional), Wi-Fi (Built-in; antenna included), Cellular (Optional) | | | | | | | | |
| Smart Energy Management | Export Limitation | | | | | | | | |
| Arc Fault Protection | Integrated, User Configurable (According to UL1699B) | | | | | | | | |
| Inverter Commissioning | with the SetApp mobile application using built-in Wi-Fi Access-Point for local connection | | | | | | | | |
| STANDARD COMPLIANCE | | | | | | | | | |
| Safety | IEC-62109, AS/NZ3100 | | | | | | | | |
| Grid Connection Standards | AS/NZ4777:2015 | | | | | | | | |
| Emissions | IEC61000-6-2, IEC61000-6-3, IEC61000-3-11, IEC61000-3-12, FCC part15 class B | | | | | | | | |
| RoHS | Yes | | | | | | | | |

| | SE2500H | SE3000 | SE4000H | SE5000H | SE6000H | SE8000H | SE8250H | SE10000H | Units | |
|---|---|--------|---------|---------|---|---------|---------|----------|-------|-----------------|
| INSTALLATION SPECIFICATIONS | | | | | | | | | | |
| AC output conduit size / Wire cross section | 19-25 mm / 1-13 mm ² | | | | | | | | | |
| DC input conduit size / # of strings / Wire cross section | 19-25 mm / 1-2 strings / 1-13 mm ² | | | | 19-25 mm / 1-3 strings / 1-13 mm ² | | | | | |
| AC Terminal Block Cross Section | 1-13 | | | | | | | | | mm ² |
| Dimensions with Safety Switch (HxWxD) | 450 x 370 x 174 | | | | 540 x 370 x 185 | | | | | mm |
| Weight with Safety Switch | 10 | | 11.4 | | 11.9 | | 17.6 | | kg | |
| Cooling | Natural Convection | | | | | | | | | |
| Operating Temperature Range ⁽¹⁾ | -40 to +60 | | | | | | | | | °C |
| Noise | < 25 | | | | | < 50 | | | | dBa |
| Protection Rating | IP65 - Outdoor and Indoor | | | | | | | | | |

Recommended circuit breaker/ fuse size to use at the connection point of the SolarEdge inverter to the grid:

| Inverter | Maximum output current (A) | Minimum fuse rating (A) | Maximum fuse rating (A) |
|----------|----------------------------|-------------------------|-------------------------|
| SE2500H | 12.5 | 16 | 50 |
| SE3000H | 16 | 20 | 50 |
| SE4000H | 18.5 | 25 | 50 |
| SE5000H | 23 | 32 | 50 |
| SE6000H | 27 | 40 | 50 |
| SE8000H | 48 | 63 | 80 |

⁽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>

| Inverter | Maximum output current (A) | Minimum fuse rating (A) | Maximum fuse rating (A) |
|----------|----------------------------|-------------------------|-------------------------|
| SE8250H | 48 | 63 | 80 |
| SE10000H | 48 | 63 | 80 |

Communication Board - Technical Specifications

| Power | | |
|---------------------------------|-------------------------|-----|
| Input voltage | 5 | Vdc |
| Connector type | Micro-fit | |
| Power consumption | <3 | W |
| Operating temperature | -40°C – 105 | °C |
| Communication interfaces | | |
| RS485 interfaces | 2 ports | |
| Ethernet interface | 10/100-BaseT | |
| Wi-Fi interface | 802.11b/802.11g/802.11n | |
| ZigBee interface | O-QSPK | |
| Power reducer | 4/6 pin control, 5V | |
| ZigBee | | |
| Operating frequencies | 2412 – 2462 | MHz |
| Bandwidth | 2.25 | MHz |
| Clock frequency | 38.4 | MHz |
| Maximum RF power | 18.85 | dBm |
| Antenna gain | 5 | dBi |
| Wi-Fi | | |
| Operating frequencies | 2405 – 2480 | MHz |
| Bandwidth | 20 | MHz |
| Clock frequency | 26 | MHz |
| Maximum RF power | 11.32 | dBm |
| Antenna gain | 5 | dBi |
| Ethernet | | |
| Clock frequency | 50 | MHz |
| Mode operating | 100BASE-TX | |

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.

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