solaredge

Three Phase Inverter with synergy technology Installation Guide

For North America
Version 1.4

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FCC Compliance

Emission Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. 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.

Contents

Support and Contact Information

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

- USA and Canada: 1 510 498 3200
- Worldwide: +972 073 2403118
- Fax: +1 (530) 273-2769
- Email: ussupport@solaredge.com.
- Support Center: https://www.solaredge.com/us/service/support

Before contact, make sure to have the following information at hand:

- Model and serial number of the product in question.
- The error indicated on the Inverter SetApp mobile application 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 inverter software version as appears in the status screen.

Version History

- Version 1.4 - December 2018
  - Updated communication options and menus.
  - Updated guidelines for use of extension cabels in power optimizer installation.
- Version 1.3 - November 2018
  - Deleted cable insulation stripping image and step from 'To connect AC from ground'
  - Added caution about lug types.
  - Modified maximum lug tongue thickness to 0.16"
  - Changed "shrinks" to "heat shrink".
  - Added option for mounting inverter without using a level
  - Modified supported AC grids to 480V and 208V (modified in 1.2) . Modified image.
  - Modified' the opposite polarity DC Conductors in the same conduit' note (for 480V inverters use 1000 rated cables and for 208V inverters use 600 VDC rated cables)
  - Added step 'Disconnect the AC to the inverter by turning OFF the circuit breakers on the distribution panel' in Replacing a Secondary Unit
  - Specifications
    - Updated 'Recommended OCPD size per grid'
    - Added SE43.2-US values to Fault current contribution table
    - Deleted DC Surge Protection and DC Fuses on Plus & Minus
- Version 1.2 - October 2018
  - Addition of possibility to use compatible connectors from third-party manufacturers
  - Update regarding use of extension cables in power optimiser installation guidelines
  - Recommendation to mount the power optimiser in a location protected from direct sunlight
  - Addition of caution - installation in saline environment
  - Addition of link to the Designer web page
  - Updated warning about sealing unused power optimiser input connectors
  - Output safe voltage is 1V (±0.1V)
  - Changed Connection Unit cover torque size to 10.3 N*m
  - Mounting and Connecting the Primary and Secondary Unit(s) section and procedure , step 10, modified sub step a to 'Position the cable so that the arrows are facing you' .
- Version 1.1 - Editorial updates (March 2018)
- Version 1 - (February 2018)

HANDLING AND SAFETY INSTRUCTIONS

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

Safety Symbols Information

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

WARNING!

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

AVERTISSEMENT!

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

CAUTION!

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

ATTENTION

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

NOTE

Denotes additional information about the current subject.

IMPORTANT SAFETY FEATURE

Denotes information about safety issues.

IMPORTANT INVERTER SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

WARNING!

The inverter cover must be opened only after shutting off the inverter ON/OFF switch located at the bottom of the Primary Unit, above the Connection Unit. This disables the DC voltage inside the inverter and opens the AC relays. Wait five minutes before opening the cover. Otherwise, there is a risk of electric shock from energy stored in the capacitors.

AVERTISSEMENT!

Ne pas ouvrir le couvercle de l'onduleur avant d'avoir coupé l'interrupteur situé en dessous de l'onduleur. Cela supprime les tensions CC et CA de l'onduleur. Attendre que le LCD affiche une tension sécurisée (50V). Si l'affichage LCD n'est pas visible, attendre cinq minutes avant d'ouvrir le couvercle. Sinon, il y a un risque de choc électrique provenant de l'énergie stockée dans le condensateur.

P = Program/Pair
1 = ON
0 = OFF

WARNING

Before operating the inverter, ensure that the inverter is grounded properly.

AVERTISSEMENT!

Avant d'utiliser l'onduleur monophasé, est correctement mis à la terre.

WARNING!

The inverter input and output circuits are isolated from the enclosure. This system does not include an isolation transformer and should be installed with an ungrounded PV array in accordance with the requirements of NEC Articles 690.35 and 690.43 National Electric Code, ANSI/NFPA 70, 2011 (and Canadian Electrical Code, Part I, for installations in Canada).

Equipment grounding is the responsibility of the installer and must be performed in accordance with all applicable Local and National Codes.

AVERTISSEMENT!

Les circuits d'entrée et de sortie de l'onduleur sont isolés de l'enveloppe. Ce système n'inclut pas d'isolation galvanique (transformateur) et devra être installé sans mise à la terre du champ PV et en accord avec les articles 690.35 et 690.43 du National Electric Code (NEC), ANSI/NFPA 70, 2011 (et du Code Electrique Canadien, Partie 1, pour les installations faites au Canada).
La mise à la terre des équipements est la responsabilité de l'installateur et doit être faite en accord avec les toutes les règles locales et nationales applicables.

WARNING!

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

AVERTISSEMENT!

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

WARNING!

The three phase SE66.6KUS and SE100KUS inverters must be connected only to a dedicated AC branch circuit with a maximum Overcurrent Protection Device (OCPD) of 120A or 180A respectively.

AVERTISSEMENT!

Les onduleurs triphasés SE66.6kUS et SE100kUS doivent être connectés à une ligne appareil AC dédiée avec un appareil de protection de sur-courant (OCPD-OverCurrent Protection Device) de maximum 120A ou 180A respectivement.

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: Voc,max+ (String Length-1)*1V,where:

- Voc,max = Maximum Voc (at lowest temperature) of the PV module in the string (for a string with multiple module models, use the max value)
- String Length = number of power optimisers in the string

CAUTION!

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

ATTENTION!

Cette unité doit être utilisée selon les spécifications de fonctionnement, comme décrit dans la dernière fiche technique des spécifications.

CAUTION!

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

ATTENTION

Objet lourd. Pour éviter la fatigue musculaire ou des blessures au dos, utilisez des techniques de levage appropriées et, si nécessaire - un auxiliaire de levage lors du retrait.

NOTE

If opposite polarity DC Conductors are routed in the same conduit for 480V inverters, use 1000 rated cables and for 208V inverters use 600VDC rated cables.

NOTE

This inverter is provided with an IMI (Isolation Monitor Interrupter) for ground fault protection.

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, however must not operate at the same time as the generator.

Operating an inverter and a generator simultaneously will void the warranty. SolarEdge requires installing a physical or electronic interlock, which will prevent the generator and inverter from operating simultaneously. 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.

IMPORTANT SAFETY INFORMATION

- Building or structures with both utility service and a PV system, complying with NEC 690.12, shall have a permanent plaque or directory including the following wording:**PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN**. The term “PHOTOVOLTAIC” may be replaced with “PV.” The plaque or directory shall be reflective, with all letters capitalized and having a minimum height of 9.5mm (3/8 in.) in white on red background.
- Attention -The system status indicator shall be installed in a location in close proximity to the system actuator, where the indication of safe shutdown can be clearly seen.
- This rapid shutdown system is required to be provided with an actuating device or a status indicator which shall be installed in a location accessible to first responders, or be connected to an automatic system which initiates rapid shutdown upon the activation of a system disconnect or activation of another type of emergency system.
- Additionally, in a prominent location near the actuator device the end use installation shall be provided with a permanent marking including the following wording:**PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN**. The term “PHOTOVOLTAIC” may be replaced with “PV”. The plaque or directory shall be reflective, with all letters capitalized and having a minimum height of 9.5mm (3/8 in.) in white on red background.

Chapter 1: Introducing the SolarEdge Power Harvesting System

The SolarEdge power harvesting solution is designed to maximize 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.

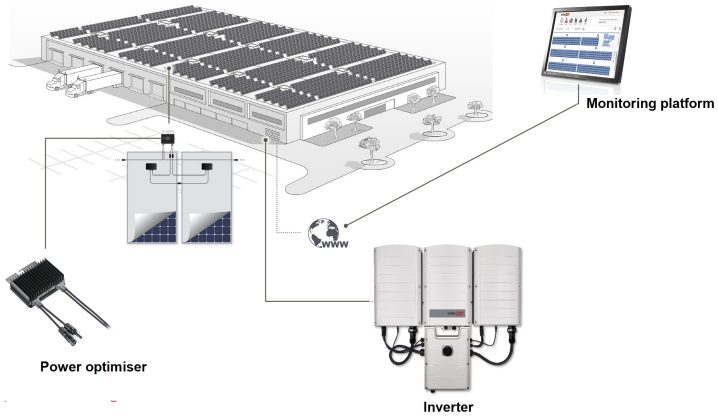


Figure 1: The SolarEdge power harvesting system components

Power Optimiser

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

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

- During fault conditions
- The power optimisers are disconnected from the inverter
- The inverter ON/OFF switch is turned OFF
- The safety switch on the Connection Unit is turned OFF
- The inverter AC breaker is turned OFF
- The Rapid Shutdown (PVRSS) is initiated by one of the following methods:
  - Inverter AC breaker is turned OFF, or AC to the inverter is disconnected by another method (intentionally or as result of a fault)
  - Inverter ON/OFF switch is turned OFF
  - The Connection Unit is turned OFF

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

Two types of power optimisers are available:

- Module Add-on power optimiser – connected to one or more modules
- Smart modules - the power optimiser is embedded into a module

Three Phase Inverter with Synergy Technology

The Three Phase Inverter with synergy technology inverter (referred to as 'inverter' in this manual) 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 optimiser and transmits it to the SolarEdge monitoring platform (requires Internet or Cellular connection).

The inverter is comprised of one Primary Unit with an integrated Connection Unit with a DC Safety Switch (referred to as 'Connection Unit ' in this manual) for disconnecting the DC power of a SolarEdge system, and of one or two Secondary Units, depending on the inverter's capacity. The Secondary Unit(s) are connected to the primary unit with AC, DC and communication cables.

Each unit operates independently and continues to work in case the others are not operating.

You can set up a master- slave configuration, connecting up to 31 additional inverters to one master inverter.

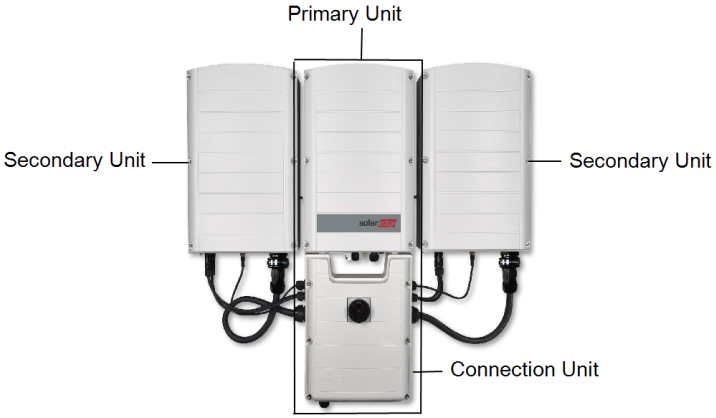


Figure 2: Primary Unit with two Secondary Units

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.

Supported AC Grids

The following section shows the AC grids supported by the inverters (model dependent).

Ground connection is required for all grids, as described in *Connecting the AC Grid and Grounding to the Connection Unit* on page 37.

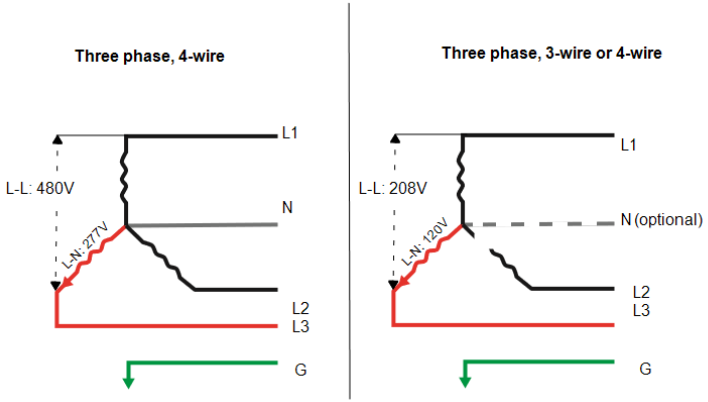


Figure 3: AC grids supported by SolarEdge three-phase inverters

NOTE

Some three phase inverters support the 208V Delta grid. Refer to *Setting the Inverter to Support 208V 3-wire Grid on page 41.*

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. Installing the Power optimisers, page 14
2. Mounting and Connecting the Primary and Secondary Unit(s), page 29

NOTE

It is recommended to connect communication connections (step 6 of this installation) before connecting the AC, for easier access to the communication board.

3. Connecting the AC and the Strings to the Connection Unit ,37
4. Activating and Commissioning the System Using SetApp, page 42
5. Configuring the System Using SetApp ,page 44
6. Setting Up Communication page 57

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 cover, Connection Unit cover, and inverter side screws
- 17/32 HEX Allen screwdriver for AC stud connector
- SolarEdge supplied level
- SolarEdge supplied DC / interlock conduit(s)
- 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 andoptimisers will be installed and for opening theConnection Unitdrill guides. Use of an impact driver is*not*allowed.
- Appropriate mounting hardware (for example: stainless bolts, nuts, and washers) for attaching:
  - the Primary and Secondary Unit(s) mounting brackets to the mounting surface
  - the power optimisers to the racking (not required for smart modules)
- 4xM8 ring terminals and suitable crimper
- Wire cutters
- Wire strippers
- Voltmeter

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:
  - Four- or six-wire shielded twisted pair cable.
  - Watchmaker precision screwdriver set

Chapter 2: Installing the Power Optimisers

Safety

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

WARNING!

The metallic enclosure of the power optimiser must be grounded in accordance with the product's listing and local and national codes.

L'enceinte métallique de l'optimiseur de puissance doit être mise à la terre en accord avec les régulations locales et nationales.

WARNING!

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

Avant de faire ces étapes, éteignez l'onduleur monophasé en mettant sur OFF l'interrupteur ON/OFF situé au bas de l'onduleur.

CAUTION!

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

Les optimiseurs de puissances sont compatibles à la norme IP68/NEMA6P. Choisissez le lieu de montage tel que l'optimiseur ne puisse pas être submergé par l'eau.

CAUTION!

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

Cette unité doit être opérée suivant les instructions trouvées dans le manuel fourni avec le produit.

CAUTION!

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

Sectionner les cables d'entrées ou de sortie de l'optimiseur est interdit et annule sa garantie.

CAUTION!

All PV modules must be connected to a power optimiser.

Tous les modules doivent être connectés à un optimiseur de puissance.

CAUTION!

If you intend to mount the optimisers 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.

Pour installation à même le module ou la monture du module, consultez d'abord le fabricant du module sur la position et son impact sur la garantie du module. Le perçage de trous dans le cadre du module devra se faire suivant les instructions du fabricant.

IMPORTANT SAFETY FEATURE

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

CAUTION!

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

- Use identical connectors from the same manufacturer and of the same type on both the power optimisers and on the modules; or
- Verify that the connectors are compatible in the following way:
  - The module connector manufacturer should explicitly verify compatibility with the SolarEdge optimiser 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.

ATTENTION!

Les connecteurs du module doivent être mécaniquement compatibles avec les optimiseurs de puissance. Sinon, le système SolarEdge installé peut être dangereux ou causer des problèmes fonctionnels, tels que les défauts de terre, qui peuvent provoquer un arrêt de l'onduleur. Afin d'assurer la compatibilité mécanique entre les optimiseurs de puissance SolarEdge et les modules auxquels ils sont connectés:.

- *Utiliser des connecteurs identiques du même fabricant et du même type aussi bien pour les optimiseurs de puissance que pour les modules.*
- *Vérifiez que les connecteurs sont compatibles de la manière suivante:*
  - *Le fabricant du connecteur doit explicitement vérifier la compatibilité avec le connecteur SolarEdge.*
  - *Un rapport de test de tierce partie doit être effectué par l'un des laboratoires externes indiqués ci-dessous:(TUV, VDE, Bureau Veritas UL, CSA,Intertek), qui vérifiera la compatibilité des connecteurs.*

Package Contents

- Power optimisers
- Stainless steel grounding lock washers

Installation Guidelines

- Frame-mounted power optimisers are mounted directly on the module frame , regardless of racking system (rail-less or with rails). For installation of frame-mounted power optimisers, refer to http://www.solaredge.com/sites/default/files/installing_frame_mounted_power_optimizers.pdf.
- The steps in this chapter refer to module add-on power optimisers. For smart modules, start from *Step 3: Connecting Power Optimisers in Strings* on page 19 . Also refer to the documentation supplied with the smart modules.
- The power optimiser can be placed in any orientation.
- If connecting more modules than optimiser inputs in parallel, use a branch cable. Some commercial power optimiser models have a dual input.
- Position the power optimiser close enough to its module so that their cables can be connected.
- Make sure to use power optimisers that have the required output conductor length:

- *Do not* use extension cables between a module and a power optimiser, between two modules connected to the same optimiser, or between two optimisers other than in the cases specified below.
- You can use extension cables between power optimisers only from row to row, around obstacles within a row, and from the end of the string to the inverter, as long as the maximum distance is not exceeded.

- The minimum and maximum string length guidelines are stated in the power optimiser datasheets. Refer to the Designer for string length verification. The Designer is available on the SolarEdge website at https://www.solaredge.com/us/products/installer-tools/designer#/.
- Completely shaded modules may cause their power optimisers to temporarily shut down. This will not affect the performance of the other power optimisers in the string, as long as the minimum number of unshaded power optimisers connected in a string of modules is met. If under typical conditions fewer than the minimum optimisers are connected to unshaded modules, add more optimisers to the string.
- Equipment grounding tightening torques: 4-6 AWG: 45 lb-in, 8 AWG: 40 lb-in, 10-14 AWG: 35 lb-in.
- To allow for heat dissipation, maintain a 2.5 cm / 1" clearance distance between the power optimiser and other surfaces, on all sides except the mounting bracket side.

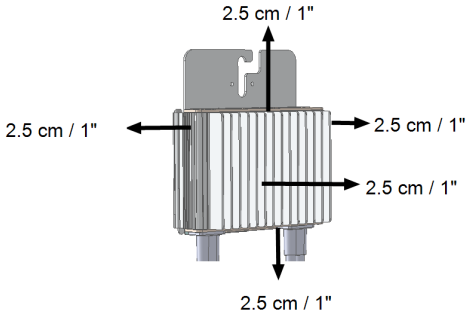


Figure 4: Power optimiser clearance

- 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 optimisers are not be exposed to temperatures outside their specifications.

NOTE

The images contained herein are for illustrative purposes only and may vary depending on product models.

Step 1: Mounting and Grounding the Power Optimizers

For each of the power optimisers[1]:

[1]Not applicable to smart modules.

1. Determine the power optimiser mounting location and use the power optimiser mounting brackets to attach the power optimiser to the support structure (See *Figure 5*). It is recommended to mount the power optimiser in a location protected from direct sunlight. For frame-mounted power optimisers follow the instructions supplied with the optimisers, 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 optimiser 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 optimiser.

Do not drill through the power optimiser or through the mounting holes.

ATTENTION!

Les vibrations résultant du perçage peuvent endommager l'optimiseur de puissance et annulera la garantie. Utilisez une clé dynamométrique ou une perceuse électrique avec embrayage adaptable compatible avec les moments indiqués. Ne pas utiliser des tournevis à percussion pour fixer l'optimiseur. Ne pas percer à travers l'optimiseur de puissance ou ses trous de fixation.

3. Attach each power optimiser 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.

   For 3NA series power optimizes, SolarEdge recommends mounting the power optimiser on a rail with the smooth side facing out, so that the power optimiser body will prevent its rotation.
4. Use the following methods[1] to ground the power optimizer:

WARNING!

The metallic enclosure of the power optimiser must be grounded in accordance with the requirements of the local and national codes.

AVERTISSEMENT!

L'enceinte métallique de l'optimiseur de puissance doit être mise à la terre en accord avec les régulations locales et nationales.

- **For mounting on a grounded metal rail**: Use the provided 5/16" stainless steel grounding star washer between the railing and the flat side of the mounting bracket. The grounding washer should break through the anodize coating of the railing to ensure low resistive connection. Apply torque of 9.5 N*m / 7 lb*ft. See *Figure 5*.

[1]These methods have been evaluated by a nationally recognized testing laboratory as part of the optimiser evaluation. The SolarEdge-supplied grounding lug kit has been evaluated only for use with SolarEdge power optimizers. It is not intended or listed to be used as a general purpose grounding lug with other electrical equipment.

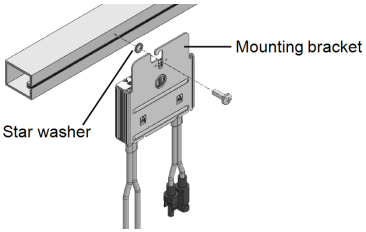


Figure 5: Power optimiser installation and grounding using a star washer

- **For mounting on rails with sliding nut fasteners**: If the star washer cannot be used, use the SolarEdge grounding plate (purchased separately) between the railing and the flat side of the mounting bracket. Use mounting specific hardware as needed. Apply torque of 9.5 N*m / 7 lb*ft. See *Figure 6*

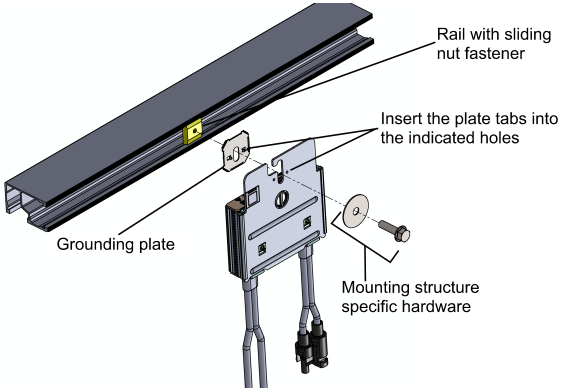


Figure 6: Power optimiser installation and grounding using a grounding plate

- **For mounting on un-grounded structures** (such as a wooden structure): If the star washer or the plate cannot be used, use the SolarEdge grounding lug (purchased separately) with an equipment-grounding conductor according to the supplied instructions. The grounding terminal accepts a wire size of 6-14 AWG, and must be sized for equipment grounding per NEC 250.122 requirements. Tighten the screws connecting the power optimiser to the frame and the grounding terminal screw. Apply torque of 9.5 N*m / 7 lb*ft. See *Figure 7*

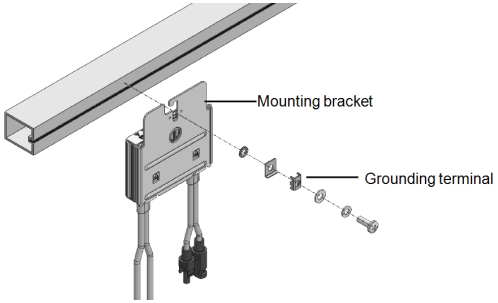


Figure 7: Power optimiser grounding terminal

5. Verify that each power optimiser is securely attached to the module support structure.

6. Record power optimiser serial numbers and locations, as described in *Reporting and Monitoring Installation Data* on page 54.

Step 2: Connecting a PV Module to a Power Optimiser

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 poweroptimisers:

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

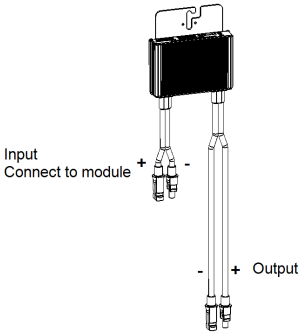


Figure 8: Power optimiser connectors

Step 3: Connecting Power Optimisers in Strings

You can construct parallel strings of unequal length, that is, the number of power optimisers in each string does not have to be the same. The minimum and maximum string lengths are specified in the power datasheets. Refer to the SolarEdge Site Designer for string length verification.

NOTE

- Use at least 11 AWG/ 4 mm² DC cables.
- The total conductor length of the string (excluding power optimisers' conductors; including home runs and necessary extensions between optimisers) should not exceed:

IMPORTANT SAFETY FEATURE

- For a compliant PV Rapid Shutdown (PVRSS) installation, use no more than 30 optimisers per string.
- Enabling PVRSS from the inverter menu is only required if the installed optimisers were manufactured before 2015, otherwise it is enabled by default.

NOTE

The DC bus of each unit is separate and not shared for all units. Therefore in addition to following the inverter design rules, each unit should follow the unit design rules as detailed in the Technical Specifications.

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

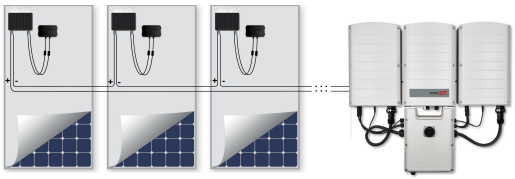


Figure 9: Power optimisers connected in series

3. If you intend to monitor the installation, using the SolarEdge monitoring platform, record the physical location of each power optimiser, as described in *Creating Logical and Physical Layout using Installation Information* on page 55.

Step 4: Verifying Proper Power Optimiser Connection

When a module is connected to a power optimiser, the power optimiser outputs a safe voltage of 1V (±0.1V). Therefore, the total string voltage should equal 1V times the number of power optimisers connected in series in the string. For example, if 10 power optimisers are connected in a string, then 10V should be produced.

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

In SolarEdge systems, due to the introduction of poweroptimisers 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_sytems_technical_note.pdf .

To verify proper power optimiser 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 optimiser operation problems, refer to *Power Optimizer Troubleshooting* on page 72.

Chapter 3: Installing the Primary and Secondary Unit(s)

Install the units either before or after the modules and power optimisers have been installed.

First install the Primary Unit, then the Secondary Unit(s) (in any order).

Primary Unit Package Contents

- Primary Unit (comprised of an inverter and Connection Unit) and pre- assembled cables that connect to the Secondary Unit(s)
- Mounting bracket kit
- Two Allen screws for fastening the unit to the mounting bracket
- Level, for marking the mounting brackets' positions
- Cable lock(s)
- For built-in wireless communication: antenna and mounting bracket
- Installation guide

Secondary Unit Package Contents

- Secondary Unit
- Mounting bracket kit
- Two Allen screws for fastening the unit to the mounting bracket
- Machine screws for connecting the interlocks
- Conduits

Identifying the Units

The stickers on the Primary Unit and on the Connection Unit specify the inverter's **Serial Number** and **Electrical Ratings**.

When opening a site in the SolarEdge monitoring platform and when contacting SolarEdge support, provide the inverter's serial number.

Primary Unit Interface

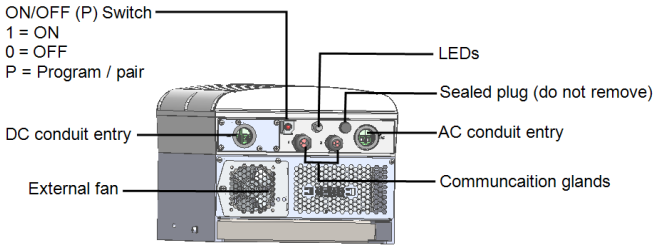


Figure 10: Primary Unit interface

- **AC and DC conduit entries**: Connection points of the Connection Unit.
- **Two communication glands**, for connection of communication options. Each gland has three openings. Refer to *Setting Up Communication* on page 57 for more information.
- **ON/OFF/P Switch**:

P = Program/Pair
1 = ON
0 = OFF

Figure 11: ON/OFF/P switch

  - **ON (1)** - Turning this switch ON (after optimiser pairing) starts the operation of the power optimisers, enables power production and allows the inverter to begin exporting power to the utility grid.
  - **OFF (0)** - Turning this switch OFF reduces the power optimiser voltage to a low safety voltage and inhibits exportation of power. When this switch is OFF, the Primary and Secondary Units' control circuitry remains powered up.
  - **P** - Moving and releasing the switch allows viewing system information via the LEDs and on the SolarEdgeSetApp mobile application screen and performing functions:

P Position duration	Function	Comments
Switch moved to P for **less than 5 seconds**, then released.	○ Displays production information for 5 seconds on the SetApp screen. ○ Displays error type indications (if exist) for 5 seconds. ○ Activates the Wi-Fi access point for connecting to the SolarEdge Inverter SetApp	While the switch is in P, all LEDs are ON
Switch moved to P for **more than 5 seconds**, then released.	Starts pairing	

WARNING!

Upon PVRSS, the internal circuitry remains up, therefore the inverter cover must be opened only after shutting off the inverter ON/OFF switch. This disables the DC voltage inside the Primary Unit. Wait five minutes before opening the cover. Otherwise, there is a risk of electric shock from energy stored in the capacitors.

A la Coupure Rapide (PVRSS) les circuits internes restent actifs, ilest donc impératif de n'ouvrir le couvercle qu'après avoir arrêté l'onduleur à l'aide de l'interrupteur ON/OFF. Ceci coupe la tension DC à l'intérieur de l'onduleur. Attendez cinq minutes avant d'ouvrir le couvercle. Sinon, il y a risque d'électrocution du à l'énergie stockée dans les condensateurs.

- **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.

  Generally, 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

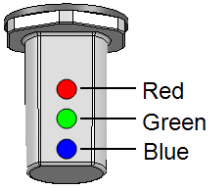


Figure 12: LEDs

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 optimisers not paired	ON (1)	OFF	Blinking	○ 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	○ S_OK: ON ○ No S_OK: OFF	
Night mode (no production)		OFF	Flickering	○ S_OK: ON ○ No S_OK: OFF	
Inverter is OFF (Safe DC)	OFF (0)	OFF	Blinking		
Inverter is OFF (DC not safe)		Blinking	Blinking	○ S_OK: ON ○ No S_OK: OFF	
Inverter configuration or reboot	ON / P	ON	ON	ON	

[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 LEDs flash

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 20 minutes
Error	Any	ON	ON/ OFF/ Blinking/ Flickering	ON/ OFF / Blinking/ Flickering	Refer to *Errors and Troubleshooting* on page 70

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 - 33 %*	ON (1)	OFF	ON	OFF	This indicates power production as percentage of rated peak AC output power
Percentage of AC Production: *33 - 66 %*		OFF	OFF	ON	
Percentage of AC Production: *66 - 100 %*		OFF	ON	ON	

Connection Unit Interface

The Connection Unit is part of the Primary Unit.

NOTE

In the following figure the connections to the Secondary Unit are shown only on the left side of the Connection Unit;for an inverter that has two Secondary Units, similar connections are located on the other side of the unit as well.

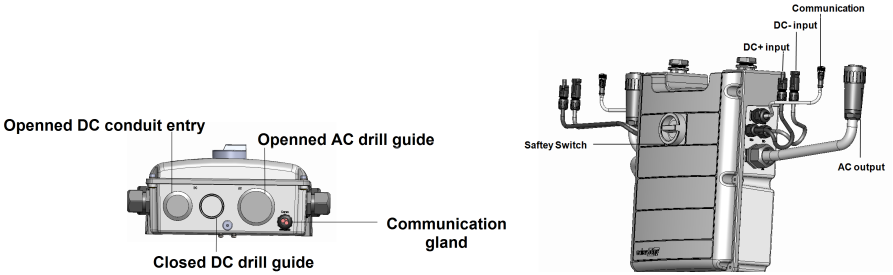


Figure 13: Connection Unit bottom and side interface

- **Safety switch**:a manually operated safety switch for disconnecting the DC power of the SolarEdge system.

NOTE

When the Connection Unit is OFF (for example during maintenance) it may be locked to prevent a safety hazard:

1. Move the switch to the Lock position.
2. Insert the lock through the knob opening and lock.

- Cables for connection to the Secondary Unit(s):
  - Communiation Cable
  - DC Cable
  - AC Cable
- **DC conduit entry:** DC conduit for connecting the PV
- **DC drill guide** :DC drill guide for connecting the PV
- **AC drill guide entry** : AC drill guide for grid connection
- **Communication gland:** for connection of communication options. Refer to *Setting Up Communication* on page 57.

Secondary Unit Interface

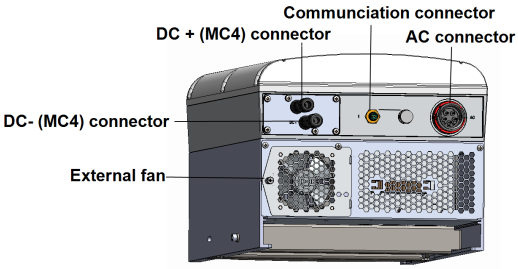


Figure 14: Secondary Unit interface

- The Secondary units connectors are for connection to the Primary Unit:
  - **DC (MC4) connectors**: for connection of the PV installation
  - **Communication connector**: for communication options
  - **AC connector**: for connection of the AC

Opening Conduit Drill Guides

This section describes how to open the AC and DC drill guides.

This step may be performed before or after mounting the inverter.

To open conduit drill guides:

1. Ensure that the Connection Unit and inverter ON/OFF switch are set to OFF.
2. Loosen the screws on the front cover of the Connection Unit.

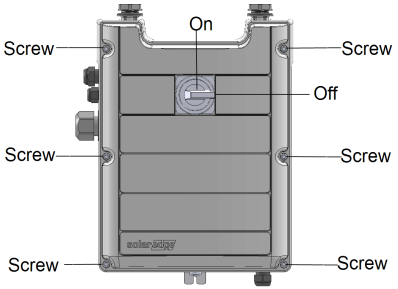


Figure 15: Opening the Connection Unit cover

3. Remove the Connection Unit cover.

4. Open the required AC and DC conduit openings according to the conduits used in the installation. The conduit entries (usually covered) and the drill guides are located at the bottom of the enclosure.

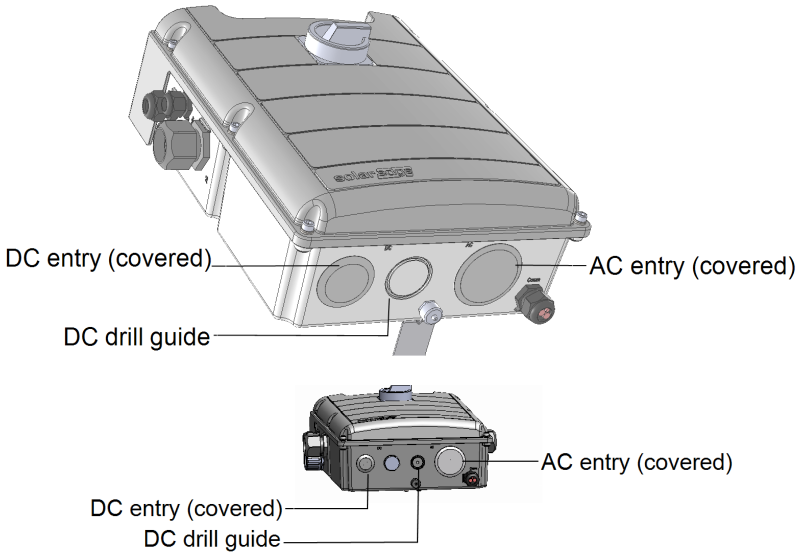


Figure 16: Connection Unit drill guides

- Open the DC entry cover. If needed, knockout the DC drill guide.

NOTE

The Connection Unit is provided with one open DC conduit opening and with one closed drill guide. If you require an additional conduit entry, open the drill guide.

- Open the AC conduit entry.
  If using one Secondary Unit, open the drill guide according to the smaller size marking. If using two Secondary Units you can open it to a larger diameter according to the cable size.

NOTE

Unused conduit openings and glands should be sealed with appropriate seals.

Mounting and Connecting the Primary and Secondary Unit(s)

The inverter is typically mounted vertically, and the instructions in this section are applicable for vertical installation. Some SolarEdge inverters model can be installed horizontally (above 10° tilt) as well as vertically. For information and instructions for horizontal mounting refer to http://www.solaredge.com/sites/default/files/application_note_horizontal_mounting_of_three_phase_inverters.pdf

First mount the Primary Unit then the Secondary Unit(s).

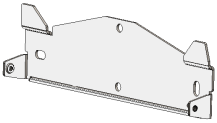


Figure 17: Mounting bracket

NOTE

Make sure the mounting surface or structure can support the weight of the inverter and brackets, and make sure that it spans the width of the mounting brackets.

CAUTION!

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

ATTENTION

Objet lourd. Pour éviter la fatigue musculaire ou des blessures au dos, utilisez des techniques de levage appropriées et, si nécessaire - un auxiliaire de levage lors du retrait.

CAUTION!

SolarEdge inverters 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.

AVERTISSEMENT!

Les onduleurs SolarEdge peuvent être installés à une distance minimum de 50m de la ligne d'eau de l'océan ou autre environnement salin, tant qu'il n'y a pas d'éclaboussements d'eau salée directs sur l'onduleur.

1. Determine the inverter mounting location, on a wall or stud framing . 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:

NOTE

The Primary unit is longer than the Secondary Unit, therefore make sure the mounting location is high enough to fit the Primary Unit and leaves sufficient space for cable entry.

- If installing a single inverter:
  - 8" (20 cm) from the top of the unit.
  - At least 4" (10 cm) from the bottom of the Connection Unit; if conduit entry to the Connection Unit will be from the bottom, leave sufficient clearance for the conduits as well.
  - 1.2" (3 cm) from the right and left of the unit.
- If installing multiple inverters:
  - When installing inverters one above of the other, leave at least 12" (30 cm) between inverter. When installing the Primary Unit , leave 20 cm (8") between the top of an Primary Unit and the bottom of the Connection Unit.
  - When installing inverters side by side:

Location	Clearance	
	Indoor Installation	Outdoor Installation
Locations where the annual average high temperature[1] is below 25˚C / 77˚F	20 cm / 8" between inverters	5 cm / 2" between inverters (if inverters are also installed one above the other, maintain the indoor installation clearance)
Locations where the annual average high temperature[1] is above 25˚C / 77˚F	40 cm / 16" between inverters	

[1] Annual average high temperature – the average of the 12 monthly average highs, for example:

Average High Temperature — Years on Record: 20

	ANNUAL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
C	21.5	11.8	12.6	15.4	21.5	25.3	27.6	29	29.4	28.2	24.7	18.8	14

Refer to http://www.weatherbase.com/ to find the value in your location.

3. If you are **not** using the level:

   Position the mounting brackets against the wall and mark the required drilling holes locations. The distance between neighboring holes from different brackets should be 9 cm / 3-5/8"*Figure 18* to ensure a distance of 1.2" (3 cm) between inverter units.

NOTE

Make sure to maintain the required distance between brackets and units, otherwise the cables connecting the Secondary Unit(s) to the Connection Unit may not reach the connectors.

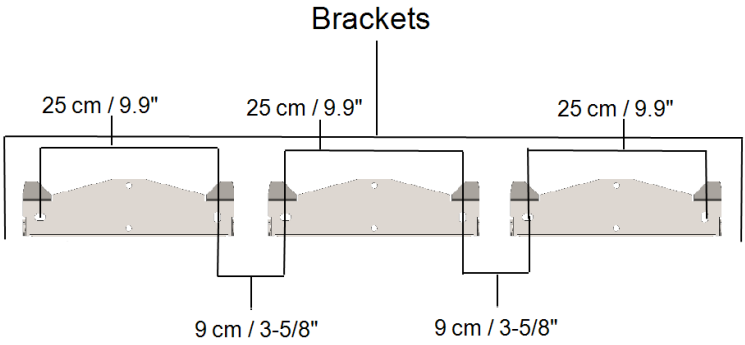


Figure 18: Brackets spacing

If you are using the level:

a. Position the mounting brackets against the wall and mark the required drilling holes locations with the supplied level. The level markings correspond to a distance of 3 cm between units.

b. Drill two holes for each bracket and mount the brackets.

c. Put in the screws without tightening in order to correct positioning.

d. Place the level beneath the brackets and align the brackets, tighten the screws all the way and verify that the brackets are firmly attached to the mounting surface.

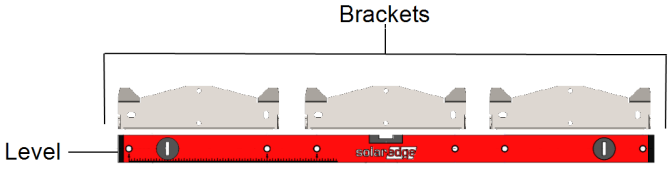


Figure 19: Aligning the brackets

4. Mount the Primary Unit bracket and put in the screws.

5. Tighten the Primary Unit screws all the way and verify that the bracket is firmly attached to the mounting surface.

6. Mount the Primary Unit:
   a. Lift the Primary Unit from its sides.
   b. Align the two indentations in the enclosure with the two triangular mounting tabs of the bracket, and lower the unit until it rests on the bracket evenly (see *Figure 20*).
   c. Insert the supplied screw through the right side of the heat sink and into the bracket.

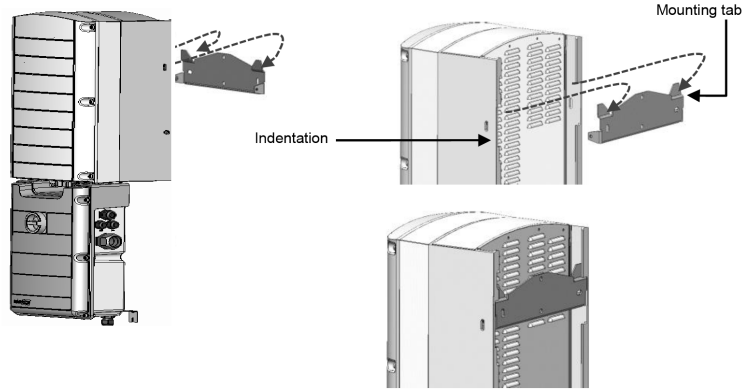


Figure 20: Hanging units

7. Mount the Secondary Unit(s):
   - There is no specific order for hanging the Secondary Units.
     When installing a 2 unit inverter, mount the Secondary Unit to the left of the Primary Unit.
   - Lift the Secondary Unit(s) from the sides, or hold it at the top and bottom of the unit to lift into place.
   - Align the two indentations in the enclosure with the two triangular mounting tabs of the bracket, and lower the unit until it rests on the bracket evenly (see *Figure 20*).
   - Insert one of the supplied screws through the outer side of the heat sink and into the bracket. Tighten the screws with a torque of 4.0N*m / 2.9 lb.*ft.
8. Secure the Connection Unit to the wall:
   - Mark the location of the bracket screw and drill the hole
   - Fasten the bracket using a standard bolt
   - Verify that the bracket is firmly attached to the mounting surface .

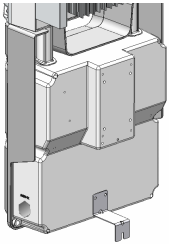


Figure 21: Connection Unit bracket

9. Connect the Connection Unit cables to the Secondary Unit(s) connectors:
   - Communication cable to communication connector
   - AC cable to AC connector:
     a. Position the cable so that the arrows are facing you.
     b. Plug the AC cable into the Secondary Unit.
     c. Rotate the cable connector clockwise to fasten it.

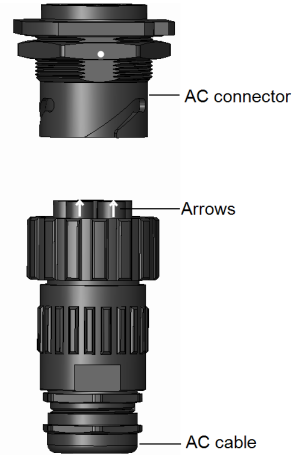


Figure 22: Connecting the AC connector to a Secondary Unit

NOTE

When connecting the AC cable to the left Secondary Unit, loop the cable (see the following figure) to prevent pressure on the gland.

Figure 23: Connecting the Connection Unit to the Secondary Unit

d. Assemble the two parts of the cable lock (supplied with the inverter) around the cable connector, making sure that the orientation of the printed text on the lock is correct. Push the parts together until they click to lock. To open the lock use a flat-bladed screwdriver.

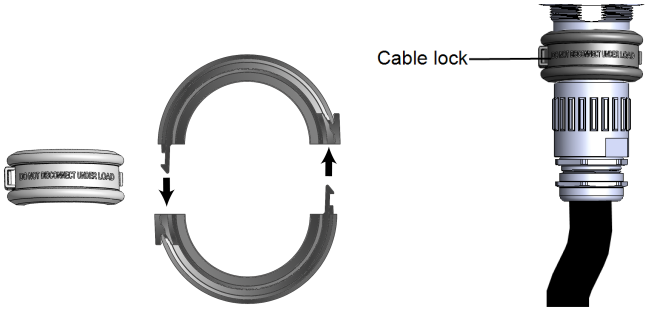


Figure 24: Cable lock

- DC cables to DC+ and DC- connectors:

  Connect the DC wires and the DC interlock trimmer lines from the Secondary Unit(s) to the Connection Unit, using the supplied conduits. The DC wires and the interlock lines are pre-connected to the Secondary Unit. The inverter interlock is used to mechanically interlock the inverter units to the Connection Unit. This allows removal of the units without risk of electrical hazards.

  a. Feed the two interlock trimmer lines together with the DC cables through the conduit supplied with the inverter.

  b. Attach the conduit connector to the conduit entry at the bottom of the Secondary Unit and push it in until it clicks into place.

Figure 25: Connecting the conduit to the Secondary Unit

c. Feed the two interlock cables together with the DC cables through the conduit entry at the side of the Connection Unit.

d. Attach the other end of the conduit connector to the conduit entry on the side of the Connection Unit and push it in until it clicks into place.

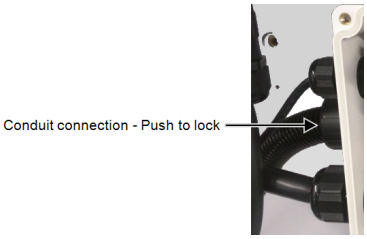
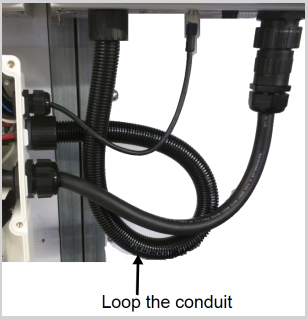


Figure 26: Connecting the conduit to the Connection Unit

NOTE

When connecting the right Secondary unit to the Connection Unit , loop the conduit before connecting it to the Connection Unit.



e. Connect the lugs with the supplied machine screw to one of the captive screws at the top corner of the Connection Unit .If you are using another Secondary Unit repeat this step to connect the lugs to the Connection Unit.

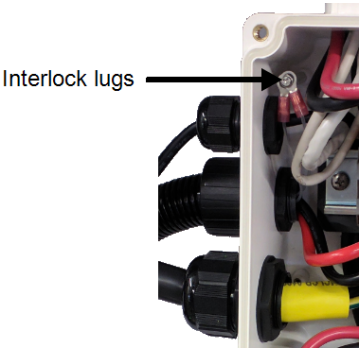


Figure 27: Connecting the interlock

f. Connect the DC wires (Plus and Minus) from the Secondary Unit(s) to the terminal blocks in the Connection Unit. If you are using another Secondary Unit repeat this step to connect the DC wires to the Connection Unit.

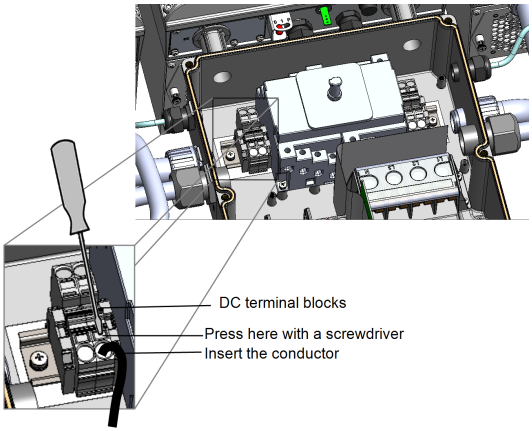


Figure 28: Connecting the DC wires

Chapter 4: Connecting the AC and DC Strings to the Connection Unit

The Safety Switch in the Connection Unit disconnects all ungrounded DC conductors in compliance with the National Electric Code (NEC; Specifically NEC690.35, which addresses ungrounded PV arrays). The Connection Unit is rated to the maximum operating conditions of the inverter.

Inverters of different models might be equipped with different sizes/ types of terminal blocks.

NOTE

If connecting to a Delta Grid perform the 'To set the inverter for 208V delta grid connection' procedure as described in *Setting the Inverter to Support 208V 3-wire Grid* on page 41, before connecting the AC and strings to the Connection Unit.

Connecting the AC Grid to the Connection Unit

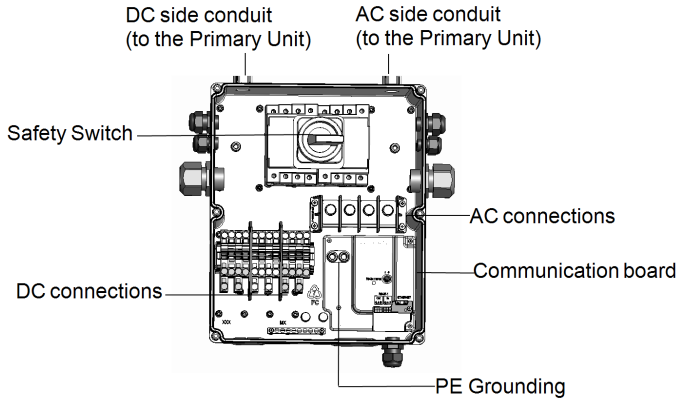


Figure 29: Inside the Connection Unit

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 optimisers, as long as the length of each string is within the permitted range.

NOTE

It is recommended to connect communication connections (*Setting Up Communication* on page 57) before connecting the AC, for easier access to the communication board.

Connecting the AC Grid and Grounding to the Connection Unit

This section describes how to connect the AC grid and grounding to the Connection Unit .

NOTE

If opposite polarity DC Conductors are routed in the same conduit for 480V inverters, use 1000 rated cables and for 208V inverters use 600VDC rated cables.

To connect AC and ground:

WARNING!

Turn OFF the AC before connecting the AC terminals.

1. Turn OFF the AC circuit breaker.
2. Open the Connection Unit cover: Release the six Allen screws 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. Remove the terminal block cover.
4. Insert the cable through the AC drill guide that was opened.

NOTE

Connect the equipment grounding before connecting the AC wires to the AC terminal block.

Veillez à relier le conducteur de PE (la terre) avant de connecter les fils CA au bornier CA.

5. Connect the grounding wire to the grounding terminal block and tighten with a torque of 15N*m / 12 lb*ft.
6. Remove the screws from the AC terminal blocks.

NOTE

Apply heat shrink insulation to the lug barrels.

7. Crimp the lugs on the AC wires.

CAUTION!

Only use compression lugs of the one -hole standard barrel 600v type . Do not use mechanical lugs (chair lugs) as they may pose a safety risk.

NOTE

The following are the requirements for the Lugs:

- Bolt hole size: M* (5/16").
- Compression lugs only (no mechanical lugs).
- Compression lugs of the one-hole, standard barrel, 600v type.
- 4/0 lugs shall be of the narrow tongue type
- Maximum wire size: 4/0 AWG
- Maximum lug tongue thickness: 0.16"
- Maximum lug tongue width: 0.9"

8. Apply heat shrink insulation to the lug barrels.
9. Connect the wires to the terminal blocks with a proper tool according to the labels on the terminals.
10. Tighten the screws of each terminal with a torque of 15.0 N*m

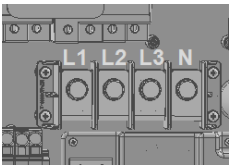
Wire type	Connect to terminal	
Line 1	L1	
Line 2	L2	
Line 3	L3	
Neutral	N	

Figure 30: Wire connections to terminal block

11. Place the cover on the terminal block and push until you hear a click.

Connecting the Strings to the Connection Unit

You can connect systems with multiple DC strings in parallel to the DC input terminals of the Connection Unit.

NOTE

The DC bus of each unit is separate and not shared for all units. Therefore in addition to following the inverter design rules, each unit should follow the unit design rules as detailed in Technical Specifications.

Inverters may have a different number of pairs of DC input terminals, depending on the inverter power rating. If more strings are required, they can be connected in parallel using an external combiner box before connecting to the Connection Unit; strings connected to different units cannot be combined. When connecting multiple strings, it is recommended to run separate circuits to the Connection Unit or to position the combiner box near the Connection Unit.This simplifies commissioning by allowing testing and servicing near the inverter.

To connect the strings to the Connection Unit with glands/Conduits:

1. Strip 5⁄16" (8 mm) of the DC wire insulation.
2. Insert the DC conduit into the DC-side opening on the Connection Unit (left side at the bottom of the Connection Unit).
3. Equipment grounding: Connect the DC equipment ground conductor to the equipment grounding terminal block (bus-bar) in the Connection Unit.

NOTE

Functional Electrical Earthing of DC-side negative or positive is prohibited because the inverter has no transformer. Equipment grounding of exposed conductive surfaces in the array is required per the NEC.

4. Connect the DC wires to the DC+ and DC- terminal blocks, according to the labels on the terminals. or; connect two wires (DC+ and DC-) per string:
   a. Use a standard flat-blade screwdriver to connect the wires to the spring-clamp terminals. The screwdriver blade should fit freely in the terminal opening. Too large a blade can crack the plastic housing.
   b. Insert the screwdriver and firmly tilt it to press the release mechanism and open the clamp.
   c. Insert the wire into the top opening (see *Figure 31*).
   d. Remove the screwdriver – the wire is automatically clamped.

CAUTION!

Ensure that the Plus (+) wire is connected to the + terminal and that the Minus (-) wire is connected to the Minus (-) terminal connector.

Veillez à ce que le câble Plus (+) soit connecté au terminal + et que le câble - soit connecté au connecteur terminal.

NOTE

For systems with four PV strings per unit or more, fuses may need to be installed in both the positive and negative conductors as required by NEC Article 690.9. For more information, refer to the Technical Note “String Fusing Requirements in SolarEdge Systems” at http://www.solaredge.com/files/pdfs/string_fusing_requirements.pdf.

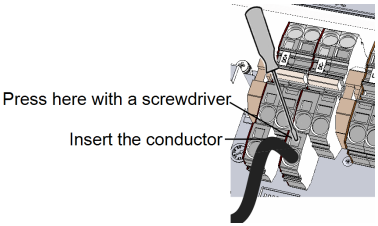


Figure 31: DC Spring-clamp terminals

5. Close the Connection Unit cover: Attach the switch cover and secure it by tightening the six screws with a torque of 1.2 N*m / 0.9 ft.*lb.
6. Ensure proper conduit sealing; inspect the entire conduit run and use standard conduit sealants to avoid water penetration.

Setting the Inverter to Support 208V 3-wire Grid

SolarEdge inverters that support the 208V 3-wire grid are equipped with two fuse holders and a fuse in each unit. The position of the fuse configures the AC grid connection: 4- wire or 3-wire grid connection. By default, the fuse is located in the 4-wire fuse holder of the inverter, and in the 3-wire fuse holder there is a plastic dummy fuse.

To set the inverter for 3-wire grid connection, you must move the fuse from the 4-wire fuse holder, marked as Y GRID, to the 3-wire fuse holder, marked as **Δ** GRID (see *Figure 32*).

To set the inverter for 208V 3-wire grid connection:

NOTE

Perform this procedure for all inverter units.

NOTE

Perform this procedure before connecting the inverter to the AC grid.

1. Identify the fuse locations and the markings as described in *Figure 32*.

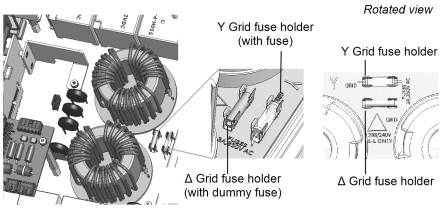


Figure 32: Fuse locations and markings

2. Remove the dummy fuse from the 3-wire grid fuse holder and set it aside.
3. Move the fuse from the 4-wire grid fuse holder to the 3-wire grid fuse holder.
4. Place the dummy fuse in the 4-wire grid fuse holder.
5. During system setup, set the country to the appropriate 3-wire grid option. Using the non-3-wire setting may result in incorrect system operation.

CAUTION!

If the fuse was moved to support one of the grid types, do not connect the inverter to the other grid type without switching the fuse back to the correct holder. Connecting the inverter to grids when the fuse is incorrectly located may damage the inverter and void the warranty.

Si le fusible a été déplacé pour supporter l'un des types de réseau, ne branchez pas l'onduleur sur l'autre type de réseau avant de remettre le fusible dans son bon support. Brancher l'onduleur au réseau quand le fusible est mal placé, peut endommager l'onduleur et annuler la garantie.

Chapter 5: Activating, Commissioning and Configuring the System Using the Inverter SetApp

If applicable, you can connect communication options at this stage, as described in *Setting Up Communication* on page 57.

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. Move the Connection Unit DC switch to the ON position.
3. 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.
4. 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:
  a. If not already ON - turn ON AC to the inverter by turning ON the circuit breaker on the main distribution panel.
  b. If not already ON - move the Connection Unit switch to the ON position.
  c. 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 43).

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.

AVERTISSEMENT!

L'onduleur doit être configuré pour le pays approprié afin d'assurer un fonctionnement convenable avec le réseau de ce pays.

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

Pairing

Once all connections are made, all the power optimisers must be logically paired to their inverter. The poweroptimisers do not start producing power until they are paired. This step describes how to assign each inverter to the poweroptimisers 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 optimiser 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 optimisers 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 optimisers no longer output a safe 1V output.

AVERTISSEMENT!

Après avoir mis l'interrupteur ON/OFF/P de l'onduleur monophasé sur ON, les câbles DC portent une haute tension et les optimiseurs de puissance ne génèrent plus la tension de sécurité de 1V.

   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* on page 57.

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.

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.pdfhttps://www.solaredge.com/sites/default/files/export_limitation_application_note_NA.pdf.

For P(Q) diagram refer to https://www.solaredge.com/sites/default/files/application_note_p_q_diagram_of_se_inverters_en_and_na.pdf.

NOTE

SolarEdge inverters with "Grid Support" functionality (as marked on the inverter certification label), are compliant with UL 1741 Supplement A. The functionality is built into the inverter and no additional external device is required.

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.
- **Arc Fault Circuit Interrupter (AFCI)**: Enables or disables production interruption in case of arc-fault, sets the reconnection mode, and enables or disables manual AFCI self-test.

  Refer to http://www.solaredge.com/sites/default/files/arc_fault_detection_application_note_na.pdf .
- **Firmware Upgrade**: Perform a software upgrade.
- **Load / Save Configuration**: Enables saving or loading system parameters from one inverter to another.
- **Diagnostics**: Displays the Isolation status and power optimiser status screens. Refer to https://www.solaredge.com/sites/default/files/application_note_isolation_fault_troubleshooting.pdf.
- **Activate Standby Mode**: Enables/disables Standby Mode - for remote commissioning.
- **Grid Protection**: Available in specific countries. Enables viewing and setting grid protection values.
- **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
- **Hardware IDs**: Displays the following HW serial numbers (if exist, and connected to the inverter):
  - **This inverter**: the inverter's ID
  - **Meter #** : Energy meter ID (up to 3 meters can be connected)
  - **ZB**: ZigBee Plug-in MAC address
  - **Cell**: MEID (CDMA) or IMEI (GSM)
- **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 47).
3. Verify that the number of paired optimisers is the same as the number of physically installed power optimisers.
4. Verify that additional configurations were properly set by viewing the relevant Status screens.
5. Verify that the green inverter LED is steadily lit.

Your SolarEdge power harvesting system is now operational.

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*LEDs* on page 23*LEDs* on page 1.

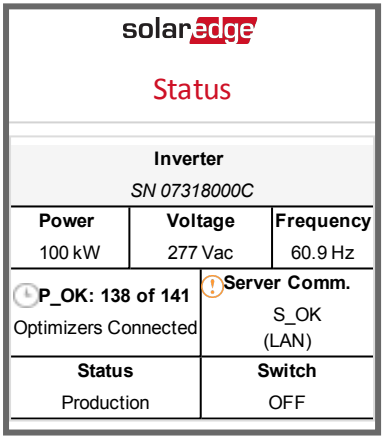
To access the Status screen:

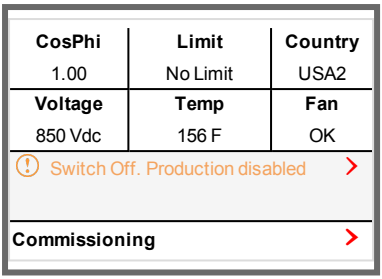
From the **Commissioning** menu select **Status**. The main inverter Status screen is displayed (see below).

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 70.

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





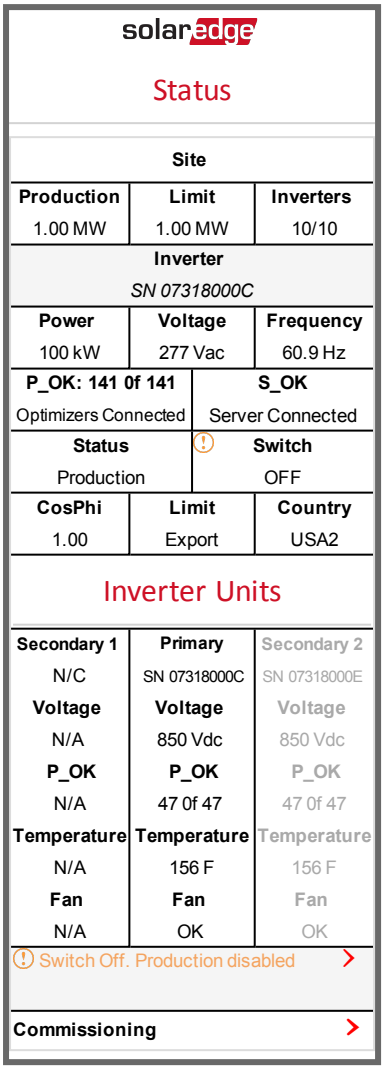
- **Inverter**: The inverter serial number
- **Power**: The AC output power
- **Voltage (Vac)**: The AC output voltage
- **Frequency**: The AC output frequency
- **P_OK: xxx of yyy:** There is a connection to the power optimisers and at least one power optimiser is sending monitoring data. XXX is the number of power optimisers for which telemetries have been received in the last two hours. YYY is the number of paired power optimisers identified during the most recent pairing process. If XXX and YYY are not equal, there may be a problem in one or more power optimisers.
- **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.
- **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
- **Fan**: Provides information about the fan status: OK, or Not working. For more information, refer to *External Fan Maintenance and Replacement* on page 76.

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.

For inverters with secondary units, the status of secondary units is displayed on the screen. If a secondary unit is not operating, its column is grayed-out.



Status

Site		
Production	**Limit**	**Inverters**
1.00 MW	1.00 MW	10/10
Inverter *SN 07318000C*		
Power	**Voltage**	**Frequency**
100 kW	277 Vac	60.9 Hz
P_OK: 141 0f 141	**S_OK**	
Optimizers Connected	Server Connected	
Status	**Switch**	
Production	OFF	
CosPhi	**Limit**	**Country**
1.00	Export	USA2

Inverter Units

Secondary 1	Primary	Secondary 2
N/C	SN 07318000C	SN 07318000E
Voltage	**Voltage**	**Voltage**
N/A	850 Vdc	850 Vdc
P_OK	**P_OK**	**P_OK**
N/A	47 0f 47	47 0f 47
Temperature	**Temperature**	**Temperature**
N/A	156 F	156 F
Fan	**Fan**	**Fan**
N/A	OK	OK

Switch Off. Production disabled >

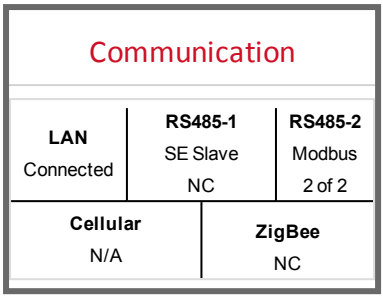
Commissioning >

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

- **Inverter** status: Displays status parameters of the primary unit of the *master* inverter. Refer to *Main Inverter Status* on page 47 for detailed information.
- **Inverter Units**: Displays the status parameters of the *master's* primary unit and secondary units. Refer to the values description in the Main Inverter Status section above.

Communication Status

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

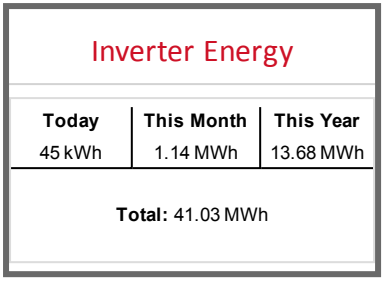


For each communication option, one of the following statuses is displayed:

- **Connected**: The inverter established a successful connection and communication with the specified server port
- **NC**: Not Connected. Refer to *Troubleshooting Communication* on page 73
- **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). Refer to *Troubleshooting Communication* on page 73.

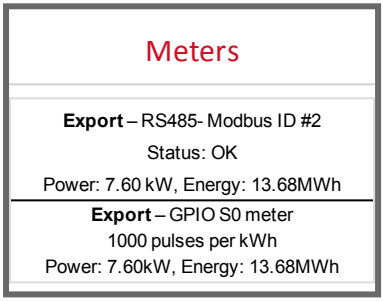
Inverter Energy Status

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



- **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



- **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* on page 57.

The Monitoring Platform

The monitoring platform provides enhanced PV performance monitoring and 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, 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 optimisers, the monitoring platform will show the logical layout indicating which power optimisers are connected to which inverter, but will not show strings or the physical location of power optimisers.

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 inverterserial 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 optimisers. 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 optimiser and inverter 2D bar-codes and create a virtual map of a PV site for enhanced monitoring and easier maintenance.

Th 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 optimiser 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 optimiser. 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

The inverter sends the following information to the monitoring platform:

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

This chapter describes setting up communication between:

- the inverter and the monitoring platform through the Internet (wired/ wireless), or through a cellular connection
- 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 on the Connection Unit is turned OFF, and the AC is turned OFF.

When configuring the communication parameters, make sure that the ON/OFF/P switch on the Connection Unit is OFF, and the AC is turned ON.

ATTENTION!

Lors de la connexion des câbles de communication, assurez-vous que l'interrupteur MARCHE/ARRÊT à la base de l'onduleur soit en position ARRÊT, et le CA est en position ARRÊT. Lors de la configuration des paramètres de communication, assurez-vous que l'interrupteur MARCHE/ARRÊT soit en position ARRÊT, et le CA est en position MARCHE.

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 61.

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.

- RS485-1: Enables the connection of multiple inverters over the same bus, such that connecting only one inverter to the Internet is sufficient to provide communication services for all the inverters on the bus. RS485-1 has built-in surge protection.
- RS485-2: Enables connection of non-SolarEdge devices.

For connection instructions refer to *Creating an RS485 Bus Connection* on page 65

GSM

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

The GSM Plug-in is provided with a user manual, which should be reviewed prior to connection. Refer to http://www.solaredge.com/sites/default/files/cellular_gsm_installation_guide.pdf

Communication Connectors

The Primary Unit has communication glands for connecting the various communication options to the inverter, as described in the following table. Unused openings should remain sealed.

	Gland#	Opening	Functionality
Primary Unit	1	two large openings 4.5-7 mm	Cellular
		one small opening 2-4 mm	external antenna cable
	2	three large openings 2.5-5 mm	power reduction and RS485-2
Connection Unit	1	three openings	Ethernet connection (CAT5/6) and RS485 -1

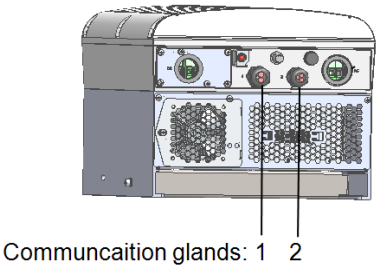


Figure 33: Primary Unit

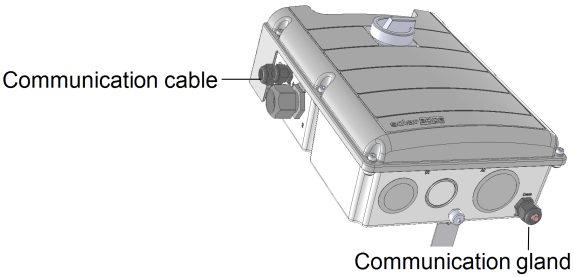


Figure 34: Connection Unit bottom

Communication Board

The communication board is in the Primary Unit with an extension in the Connection Unit.

Primary Unit Communication Board

Open the Primary Unit cover to access the communication board to:

- GSM- connect a GSM modem. See *Communication Options* on page 58.
- RS485-1 - connected to the Connection Unit communication board. For connecting multiple inverters over the same bus, connect RS485 wires to the terminal blocks on the Connection Unit Communication Board. For more information see, *Connection Unit Communication Board* on page 61
- RS485-2 - connect a non-SolarEdge device, such as a meter or a third party data logger, to the RS485-2 connector. Every pair of in and out wires are connected to the same pin.
- Power Reduction Interface (PRI) - connect a power reduction device. See application_note_power_control_configuration.pdf

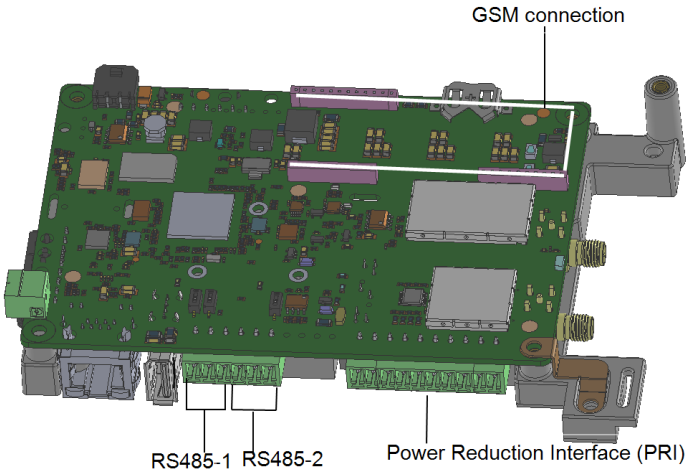


Figure 35: Primary Unit communication board

Connection Unit Communication Board

Open the Connection Unit cover to access the communication board to:

- connect a standard RJ45 connector for Ethernet.
- connect RS485 wires to the terminal blocks for RS485 connection. There are two 3-pin terminal blocks, one for connecting the preceding device in the bus and one for connecting the following device. Additionally, the RS485 port has a built-in surge protection.

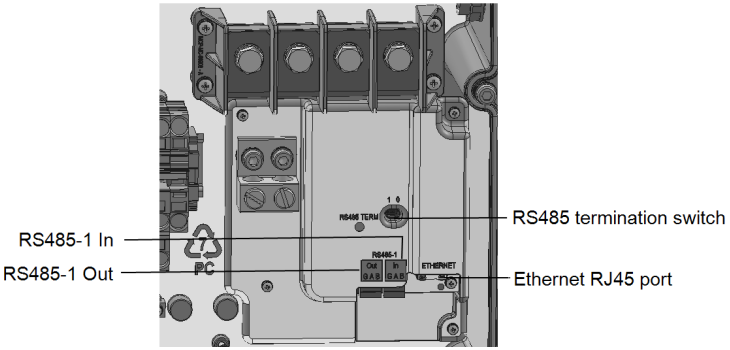


Figure 36: Connection Unit Communication board

Removing the Connection Unit Cover

If the Connection Unit is not already removed, remove it as described in the following section.

To remove the Connection Unit cover:

1. Turn OFF the inverter ON/OFF 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. Open the Connection Unit cover:
   a. Release the six Allen screws of the cover.
   b. Tilt the top of the cover towards you.
   c. Slide the cover down and remove 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.

Lors du retrait du couvercle, assurez-vous de ne pas endommager les composants internes. SolarEdge ne peut être tenue pour responsable des composants endommagés à la suite d'une imprudence dans le retrait du couvercle.

Creating an Ethernet (LAN) Connection

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

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.pdfhttp://www.solaredge.us/files/pdfs/lightning_surge_protection.pdf.

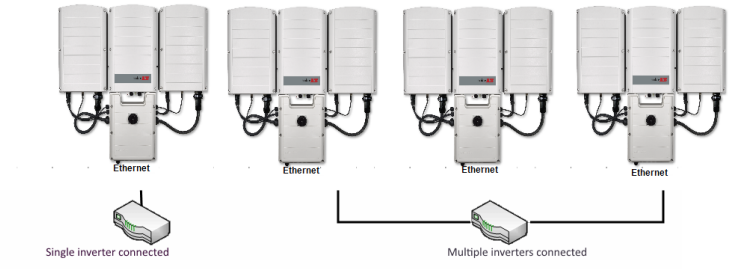


Figure 37: Example of Ethernet connection

To connect the Ethernet cable:

1. Open the communication gland.

CAUTION!

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

Le cote interne du gland contient une rondelle qui doit être utilisée pour une bonne étancheïté.

2. Remove the rubber fitting from the gland and insert the CAT5/6 cable through the gland and through the gland opening in the Connection Unit .
3. Remove the plastic seal from the large opening that has a cut in the rubber fitting.

4. Push the cable into the cut opening of the rubber fitting.

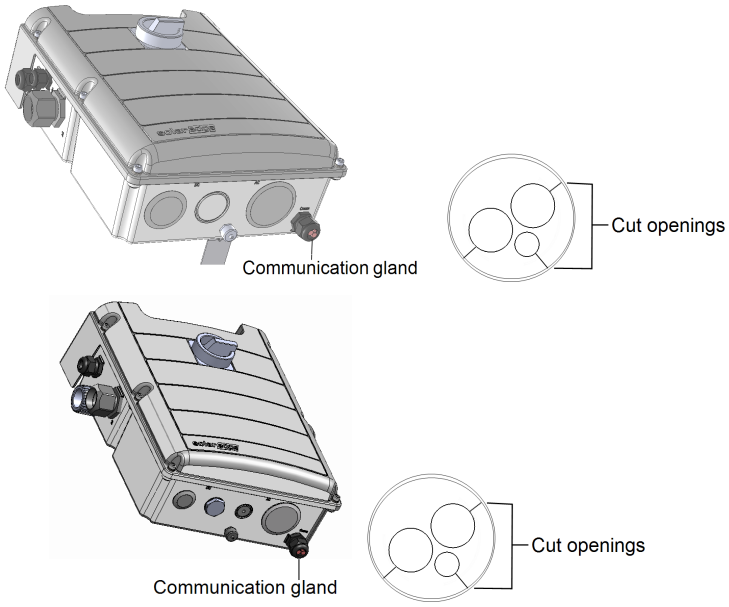


Figure 38: Communication gland and rubber fitting

CAT5/5E STP 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

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

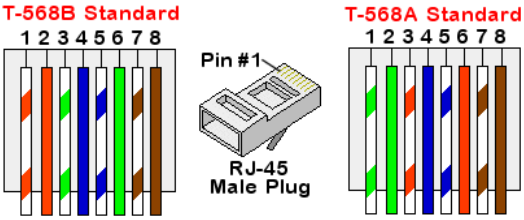


Figure 39: Standard cable wiring

5. Use a pre-crimped cable to connect via the gland to the RJ45 port on the inverter's communication board or, if using a spool of cable, connect as follows:
   a. Insert the cable through the gland.

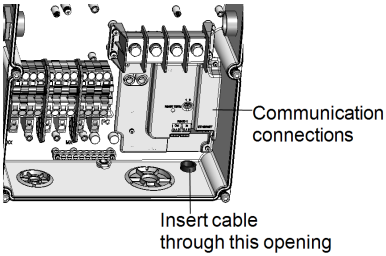


Figure 40: Inserting communication cables

   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, as described *Figure 39*.
   d. Use a crimping tool to crimp the connector.
   e. Connect the Ethernet connector to the RJ45 port on the communication board as shown in *Figure 39*.

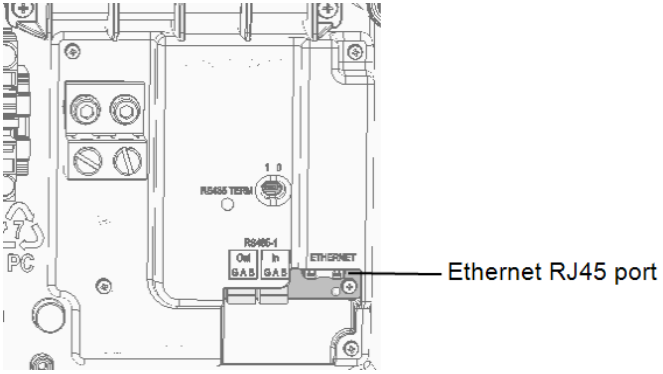


Figure 41: Connection Unit Communication board

6. For the switch/router side, use a pre-crimped cable or use a crimper to prepare an RJ45 communication connector.

7. 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.

NOTE

There are no LED indicators on the Ethernet connector, if the inverter is not communicating with the monitoring platform through a LAN refer to *Troubleshooting Communication* on page 73.

8. The inverter is configured by default to LAN. If reconfiguration is required:
   a. Verify the ON/OFF switch is OFF.
   b. Verify the AC is on.
   c. Close the cover and turn ON the Connection Unit.

WARNING!

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

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

   d. Use the SolarEdge SetApp to access the **Commissioning** main menu screen as described in *Communication* on page 44.
   e. From the main menu tap **Communication**. The Communication screen is displayed:
   f. Select the following to configure the connection:
      - Server ➔ **LAN**
      - LAN ➔ DHCP ➔ **Enable**
9. Verify the connection, as described in *Verifying the Connection* on page 68.

NOTE

The system automatically establishes communication with the monitoring platform as it is configured to LAN by default.

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
- Modbus TCP Port: 22222 (for incoming and outgoing data)

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, thus allowing to connect only the master inverter to the monitoring platform. The first and last inverters in the chain must be terminated as described in *RS485 Bus Configuration* on page 67

RS485 wiring specifications:

- Cable type: Min. 3-wire shielded twisted pair (a shielded Ethernet cable (Cat5/5E STP) may be used)
- Wire cross-section : 0.2- 1 mm^2/ 24-18 AWG
- Maximum distance between first and last devices: 1 km /3300 ft.

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

To connect the RS485 communication bus:

1. Open the communication gland.

CAUTION!

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

Le cote interne du gland contient une rondelle qui doit être utilisée pour une bonne étancheïté.

2. Remove the rubber fitting from the gland and insert the CAT5/6 cable through the gland and through the gland opening in the Connection Unit.

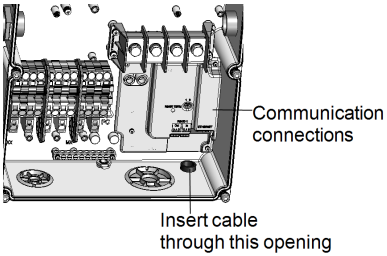


Figure 42: Inserting communication cables

3. Remove the seal from one of the openings in the communication glandand insert the wire through the opening.
4. Pull out both 3 -pin RS485 terminal blocks, as shown below:

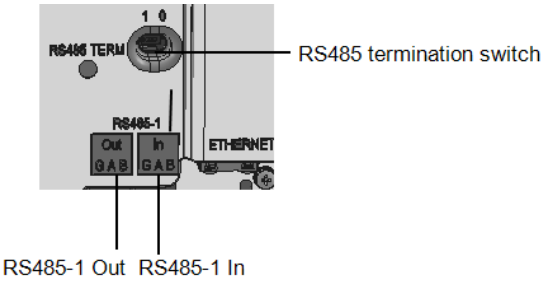


Figure 43: RS485 connectors and termination switch

5. Loosen the screws of pins A(+), B(-), and G in either the 'Out' or 'In' RS485 terminal block.

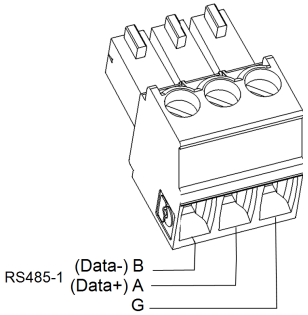


Figure 44: RS485 terminal block wire connections

6. Insert the wire ends into the **G**, **A** and **B** pins shown above. Use one terminal block for the previous inverter in the bus and the other terminal block for the next inverter in the bus, as shown in *Figure 45*.

   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.

7. Connect all B, A and G pins in all inverters. The following figure shows this connection schema:

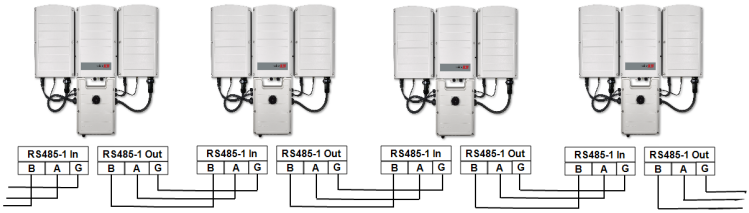


Figure 45: Connecting the inverters on a bus

8. Tighten the terminal blocks screws.
9. Check that the wires are fully inserted and cannot be pulled out easily.
10. Push the RS485 terminal blocks firmly all the way into the connectors on the communication board, see *Figure 43*.
11. Terminate the first and last inverters on the bus by moving the termination switch to ON (left position); See *Figure 43*. The other inverters on the bus should have the termination switch OFF (right position).

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 master inverter.
2. Connect the master to the monitoring platform via the LAN option (refer to *Creating an Ethernet (LAN) Connection* on page 61) 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. Turn ON the Connection Unit.
4. Use SetApp to access the **Commissioning** menu screen as described in *Communication* on page 44.
5. From the **Commissioning** menu tap **Communication**. The Communication screen is displayed.
6. Select the following to configure the connection:
   - Server ➔ **LAN**
   - RS485-1 ➔ Protocol ➔ **SolarEdge Master**
   - RS485-1 ➔ **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.
7. To check the slave IDs and last communication time, select **RS485-1 ➔ Slave List**.
8. Verify the connection of the master to the monitoring platform, as described in the next section.

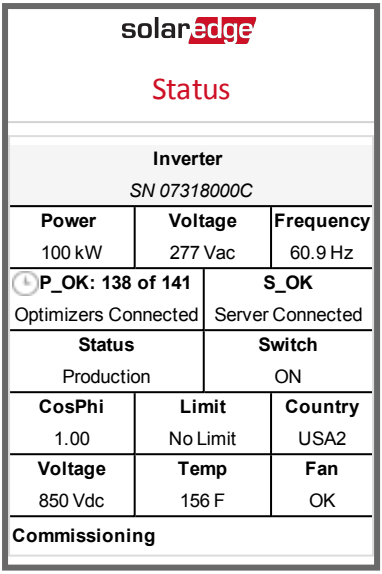
Verifying the Connection

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. Access the Status screen:
   a. If not already ON - turn ON AC to the inverter by turning ON the circuit breaker on the main distribution panel.
   b. If not already ON - move the Connection Unit switch to the ON position.
   c. 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.

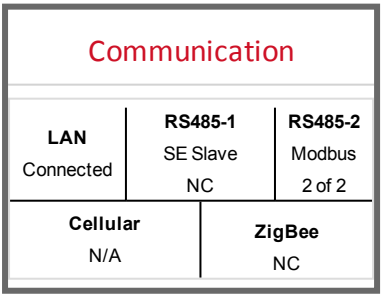
3. Check that **S_OK - Server Connected** status appears in the main inverter section:



Status

Inverter *SN 07318000C*		
Power 100 kW	**Voltage** 277 Vac	**Frequency** 60.9 Hz
P_OK: 138 of 141 Optimizers Connected		**S_OK** Server Connected
Status Production		**Switch** ON
CosPhi 1.00	**Limit** No Limit	**Country** USA2
Voltage 850 Vdc	**Temp** 156 F	**Fan** OK
Commissioning		

4. Scroll down to the **Communication** section and check that the communication options are as required. For more information refer to *Communication Status* on page 51.



Communication

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

Appendix A: 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 the SetApp, errors are displayed with codes.

For more information on the codes displayed for error and warning messages, refer to https://www.solaredge.com/sites/default/files/troubleshooting_for_se_inverter_insallation_guide_addendum_na.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 identity the error type. For more information, refer to https://www.solaredge.com/us/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 (*Figure 46*). The inverter details window is displayed (*Figure 47*).

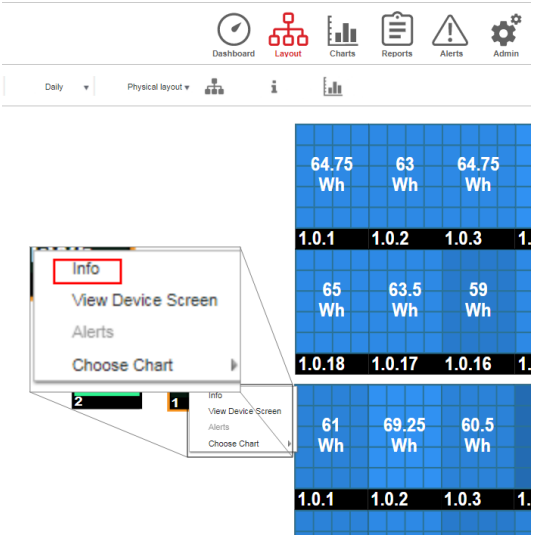


Figure 46: Inverter menu

3. Click the **Errors** tab. The list is displayed.

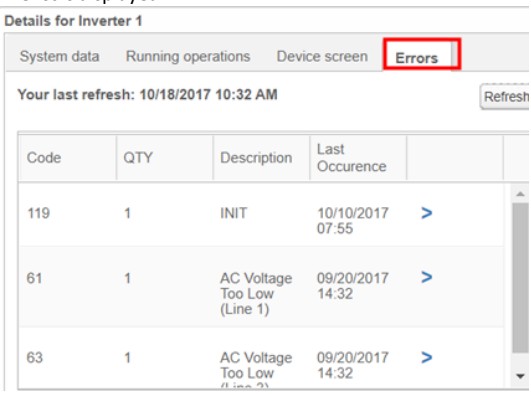


Figure 47: Inverter details - Error list

Power Optimizer Troubleshooting

Problem	Possible cause and troubleshooting
Pairing failed	Power optimisers are shaded. If you connected the inverter to the monitoring platform, retry pairing remotely (during sunlight). Make sure to leave the inverter ON/OFF switch ON and that S_OK appears in the status screen.
String voltage is 0V	Power optimiser (s) output is disconnected. Connect all power optimiser outputs.
String voltage not 0V but lower than number of optimisers	Power optimiser(s) not connected in the string. Connect all power optimisers
	Module(s) not connected properly to power optimiser inputs (not applicable to smart modules). Connect the modules to the optimiser inputs
	String reverse polarity. Check string polarity using a voltmeter and correct if needed.
String voltage is higher than number of optimisers **WARNING!** If the measured voltage is too high, the installation may not have a safe low voltage. PROCEED WITH CARE! A deviation of ±1% per string is reasonable. *Si la tension mesuree est trop haute, la tension basse de securite pourrait manquer dans l'installation. REDOUBLEZ DE PRECAUTION. Une deviation de ±1% par string est raisonnable.*	Extra power optimiser(s) connected in the string (not applicable to smart modules). Check if an extra power optimiser is connected in the string. If not – proceed to next solution.
	A module is connected directly to the string, without a power optimiser (not applicable to smart modules). Verify that only power optimisers are connected in the string and that no module outputs are connected without a power optimiser. If the problem persists, proceed to the next step.
	Power optimiser(s) malfunction. ○ Disconnect the wires connecting the power optimisers in the string. ○ Measure the output voltage of each power optimiser to locate the power optimiser that does not output 1V safety voltage. If a malfunctioning power optimiseris located, check its connections, polarity, module, and voltage. ○ Contact SolarEdge Support. Do not continue before finding the problem and replacing the malfunctioning power optimiser. If a malfunction cannot be bypassed or resolved, skip the malfunctioning power optimiser, thus connecting a shorter string.

Troubleshooting Communication

Troubleshooting Ethernet (LAN) Communication

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

Error Message	Cause and Troubleshooting
LAN cable disconnected	Physical connection fault. Check the cable pin-out assignment and cable connection. Refer to *Creating an Ethernet (LAN) Connection* on page 61.
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.
No connection to SolarEdge servers	Ping or connection to SolarEdge server failed. Check the SolarEdge server address, under **LAN Conf** 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-X 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

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.

Appendix B: Mechanical Specifications

The following figures provide dimensions of the Primary Unit, Connection Unit and Secondary Unit.

Primary Unit and Connection Unit

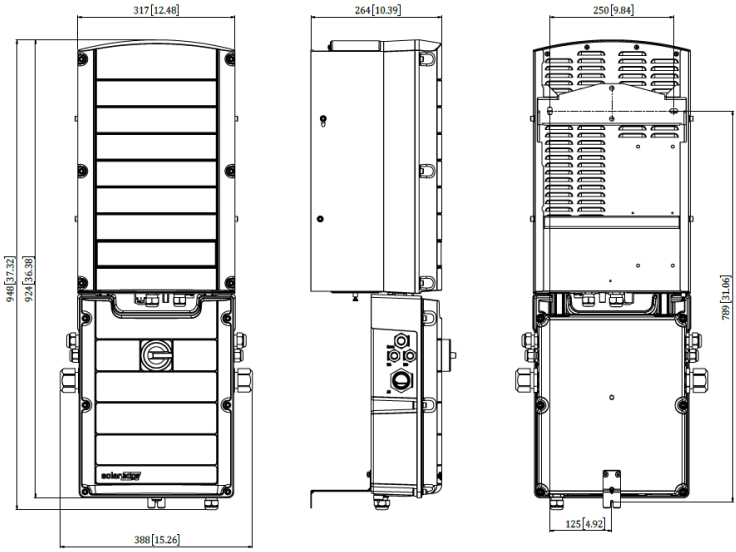


Figure 48: Primary Unit and Connection Unit - front, side and rear views

Secondary Unit

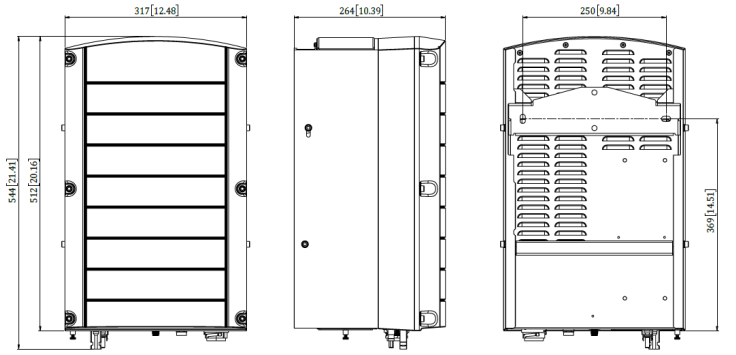


Figure 49: Secondary Unit - front, side and rear views

Appendix C: External Fan Maintenance and Replacement

The Primary and Secondary Units have two fans each: one is internal and the other is accessible from the outside of the unit. This appendix describes external fan replacement.

A fan replacement kit is available from SolarEdge.

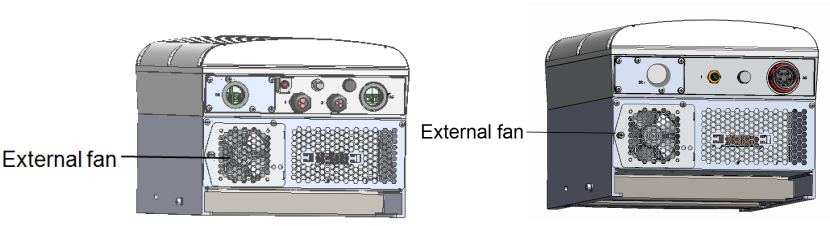


Figure 50: Primary Unit (left) and Secondary Unit (right) external fans

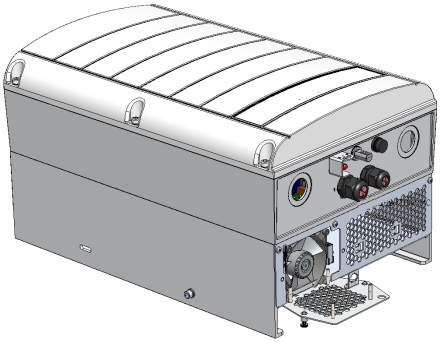
Fan Maintenance

At least once a year, open the fan screen and clean the accumulated dust using a brush.

If the SetApp Status screen displays the status **Not Working** for the fan (refer to *Main Inverter Status* on page 47), replace the fan as described in the next section.

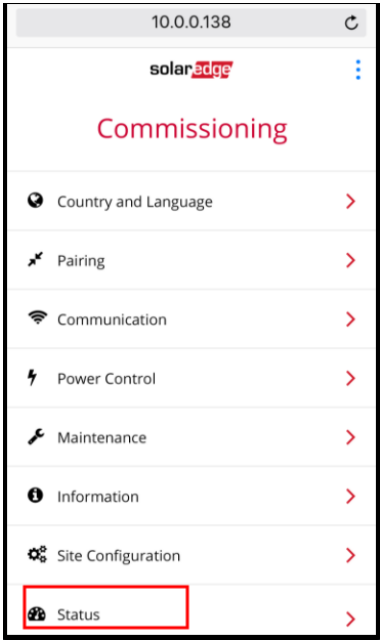
External Fan Replacement

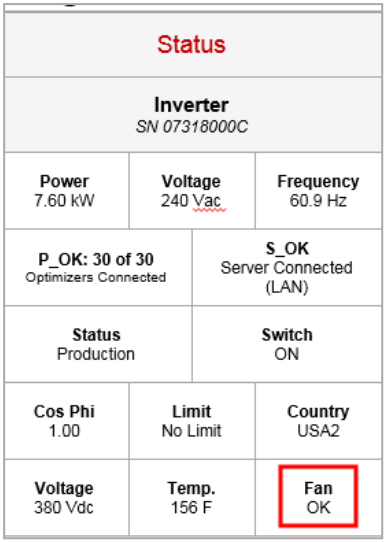
1. Turn OFF the inverter ON/OFF/P switch, and wait until the green LED is blinking , indicating that the DC voltage is safe (<50V), or wait five minutes before continuing to the next step.
2. Disconnect the AC to the inverter by turning OFF the circuit breakers on the distribution panel.
3. Use a standard screwdriver to unfasten the two screws of the fan cover and open the fan door.



4. Disconnect the fan connector and remove the fan.
5. Connect the fan connector to the new fan.
6. Close the fan door and fasten the cover screws.

7. After powering up the inverter, check the fan status on SetApp: Select **Commissioning ➔ Status**.





Appendix D: Replacing System Components

This appendix details 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 the Primary Unit

1. Turn OFF the Inverter ON/OFF 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.

WARNING!

If you cannot see Primary Unit LEDs or you cannot connect to the Primary Unit, or if the red LED light is on indicating a malfunction , wait five minutes for the input capacitors of the inverter to discharge.

Si vous ne pouvez pas voir les LED de l'unité principale ou si vous ne pouvez pas vous connecter à l'unité principale, ou si le voyant LED rouge s'allume, attendez cinq minutes que les condensateurs d'entrée de l'onduleur se déchargent.

2. Disconnect the AC to the inverter by turning OFF the circuit breakers on the distribution panel.
3. For a 3-unit inverter first disconnect and remove the Secondary Unit on the right.
4. Open the Primary Unit cover:
   a. Release the six Allen screws of the cover.
   b. Tilt the top of the cover towards you.
   c. Slide the cover down and remove 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.

Lors du retrait du couvercle, assurez-vous de ne pas endommager les composants internes. SolarEdge ne peut être tenue pour responsable des composants endommagés à la suite d'une imprudence dans le retrait du couvercle.

5. Disconnect all DC, AC wires and the communication connectors from the Primary Unit.

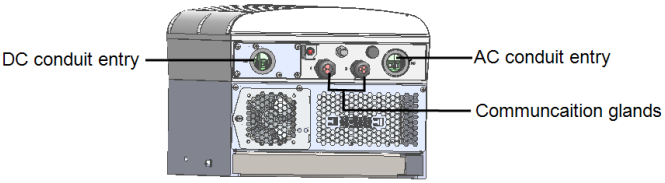


Figure 51: Primary Unit interface

6. Unscrew the two conduit nuts in the Primary Unit securing it to the Connection Unit.

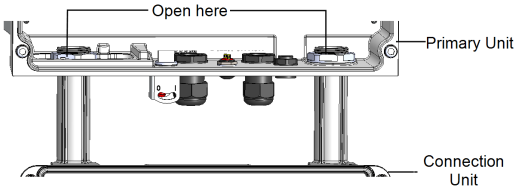


Figure 52: Conduit nuts

7. Remove the screw securing the Primary Unit to the mounting bracket and remove the Primary Unit from the mounting bracket.

NOTE

If you remove the Primary Unit and do not immediately install a new one, then:

- Lock the Connection Unit in the OFF position using a lock on the switch.
- Use insulation tape to isolate each of the AC and DC wires.
- Seal the open conduits using duct tape.

8. Place the new Primary Unit on the mounting bracket; insert the screw securing the Primary Unit through the right side of the heat sink and into the bracket.
9. Screw the two conduit nuts in the Primary Unit securing the Connection Unit to the Primary Unit.
10. Connect the DC, AC wires and the communication connectors to the Primary Unit.
11. For a 3 unit inverter reconnect the AC, DC and comm cables from the Connection Unit to the right Secondary Unit.
12. Close the Primary Unit cover.
13. Perform the commissioning steps as described in *Activating, Commissioning and Configuring the System Using the Inverter SetApp* on page 42.
14. In the monitoring platform, use the **Replace** button in the **logical layout** tab (in site Admin).

Replacing a Secondary Unit

1. Turn OFF the Inverter ON/OFF 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.

WARNING!

If you cannot see Primary Unit LEDs or you cannot connect to the Primary Unit, or if the red LED light is on indicating a malfunction , wait five minutes for the input capacitors of the inverter to discharge.

Si vous ne pouvez pas voir l'écran de l'onduleur ou si un dysfonctionnement est indiqué sur l'écran LCD, attendez cinq minutes pour que les condensateurs d'entrée de l'onduleur soient déchargés.

2. Disconnect the AC to the inverter by turning OFF the circuit breakers on the distribution panel.
3. Disconnect all the connectors on the bottom of the Secondary Unit.
4. Remove the screw securing the Secondary Unit to the mounting bracket and remove the Secondary Unit from the mounting bracket.
5. Place the new Secondary Unit on the mounting bracket.
6. Insert one of the supplied screws through the outer side of the heat sink and into the bracket.

7. Perform pairing as described in *Activating, Commissioning and Configuring the System Using the Inverter SetApp* on page 42.

Replacing the Connection Unit

Removing the Connection Unit

1. Turn OFF the Inverter ON/OFF 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.

WARNING!

If you cannot see Primary Unit LEDs or you cannot connect to the Primary Unit, or if the red LED light is on indicating a malfunction, wait five minutes for the input capacitors of the inverter to discharge.

Si vous ne pouvez pas voir les LED de l'unité principale ou si vous ne pouvez pas vous connecter à l'unité principale, ou si le voyant LED rouge s'allume, attendez cinq minutes que les condensateurs d'entrée de l'onduleur se déchargent.

2. Disconnect the AC to the inverter by turning OFF the circuit breakers on the distribution panel.
3. Open the Connection Unit cover:
   - Release the six Allen screws of the cover.
   - Tilt the top of the cover towards you.
   - Slide the cover down and remove 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.

Lors du retrait du couvercle, assurez-vous de ne pas endommager les composants internes. SolarEdge ne peut être tenue pour responsable des composants endommagés à la suite d'une imprudence dans le retrait du couvercle.

4. Disconnect the interlock and DC cables.
5. Disconnect the Secondary Unit(s) from the Connection Unit .
6. If you replace a Connection Unit with a built-in Energy Meter, disconnect the RS485 connector from the inverter communication board.
7. Unscrew the two conduit nuts in the Primary Unit securing the Connection Unit to it, see *Figure 52*.
8. Open the Connection Unit cover and disconnect the DC, AC and communication wires. Unscrew the two conduit nuts securing the Connection Unit to the external conduits.
9. Release the Connection Unit bracket from the wall.
10. Carefully remove the Connection Unit with its mounting bracket from the wall.

Installing a New Connection Unit

1. Position the new Connection Unit below the inverter and from the inside of the Primary Unit grab the AC and DC wires extending from the switch conduits.
2. Securely screw the two conduit nuts onto the conduit ends in the inverter.
3. Attach the Connection Unit with its bracket to the wall and tighten its screw.

Connecting the Connection Unit to the Primary Unit

1. Connect the DC, as follows, see *Figure 51*:
- Connect the red wire to any of the DC+ terminals in the inverter.
- Connect the black wire to any of the DC- terminals in the inverter.
2. Connect the communication wire to the communication board.
3. Connect the AC wires according to the labels on the AC terminal blocks, as follows:

Three Phase Inverter	
Wire type	**Connect to terminal**
Line 1	L1
Line 2	L2
Line 3	L3
PE (grounding)	⏚
Neutral	N

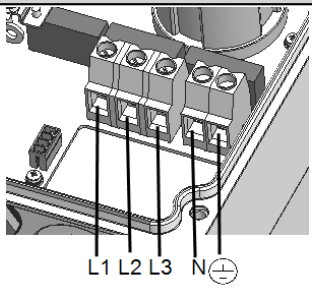


Figure 53: Primary Unit AC terminals

4. Tighten the screws of each terminal with a torque of 0.88-1.1 lb.*ft / 1.2-1.5 N*m.
5. Verify that there are no unconnected wires at the output of the Connection Unit and that any unused terminal screws are tightened.
6. Connect the DC and AC wires to the Connection Unit.Refer to*Connecting the AC and DC Strings to the Connection Unit* on page 37 .
7. If you replace a Connection Unit with a built-in Energy Meter, connect the RS485 connector to the inverter communication board.
8. Ensure proper conduit sealing; inspect the entire conduit run and use standard conduit sealants to avoid water penetration.

Replacing Power Optimisers

1. Turn OFF the inverter ON/OFF switch, and wait until the LCD green light is blinking, or wait five minutes before continuing to the next step.

WARNING!

If a malfunction is indicated by the LEDs, wait five minutes for the input capacitors of the inverter to discharge.

Si vous ne pouvez pas voir l'écran de l'onduleur ou si un dysfonctionnement est indiqué sur l'écran LCD, attendez cinq minutes pour que les condensateurs d'entrée de l'onduleur soient déchargés.

2. Turn OFF the AC breaker and distribution panel on the main distribution panel.
3. Disconnect and replace the necessary power optimisers.
4. Perform pairing

5. In the monitoring platform, use the **Replace** button in the **logical layout** tab (in site Admin). Replace the serial number of the removed power optimiser with the serial number of the newly installed power optimiser. Refer to https://www.solaredge.us/sites/default/files/se-monitoring-portal-site-admin.pdf

Three Phase Inverter with Synergy Technology - Technical Specifications (North America)

	Three Phase Inverters for the 277/480V Grid		Three Phase Inverters for the 208V Grid	
	SE66.6KUS	SE100KUS	SE43.2KUS	Units
OUTPUT				
Rated AC power output	66600	100000	43200	VA
Maximum AC power output	66600	100000	43200	VA
AC Output Line Connections	4-wire WYE (l1-L2-L3) plus PE		4-wire WYE (l1-L2-L3) plus PE or 3 wire Delta	
AC output voltage minimum-nominal-maximum (L-N)[1]	244-277-305		105-120-132.5	Vac
AC output voltage minimum-nominal-maximum (L-L)[1]	422.5-480-529		182-208-229	Vac
AC frequency min-nom-max[1]	59.3-60-60.5		59.3-60-60.5	Hz
Max. continuous output current (per Phase)@277V	80	120		A
GFDI threshold	1			A
Utility monitoring, islanding protection , Configurable Power Factor, country configurable Thresholds	Yes			
INPUT				
Maximum DC power (Module STC)	90000 /45000	135000/45000	58200/19400	W
Transformer-less, ungrounded	Yes			
Maximum input voltage DC to Gnd	500		300	Vdc
Maximum input voltage DC+ to DC-	1000		600	Vdc
Nominal input voltage DC to Gnd	425		200	Vdc
Nominal input voltage DC+ to DC-	850		400	Vdc
Maximum input current	80	120	114	Adc
Maximum input short circuit current	120		135	Adc
Reverse-polarity protection	Yes			

[1] For other regional settings please contact SoalrEdge support

	Three Phase Inverters for the 277/480V Grid		Three Phase Inverters for the 208V Grid	
	SE66.6KUS	**SE100KUS**	**SE43.2KUS**	**Units**
Ground-fault isolation detection	350 MΩ Sensitivity per Unit			
CEC weighted efficiency	98.5		97	%
Night-time power consumption	< 12			W
ADDITIONAL FEATURES				
Supported communication interfaces	RS485, Ethernet, Cellular GSM (optional)			
Rapid Shutdown	NEC2014 and NEC201 7 compliant/certified, upon AC Grid Disconnect			
RS485 Surge Protection	Built-in			
DC Safety Unit				
DC Disconnect	1000V /2 x 40A	1000V/3 x 40A		
[1]STANDARD COMPLIANCE				
Safety	UL1741, UL1741 SA, UL1699B, UL1998, CSA 2.22			
Grid connection standards	IEEE 1547, Rule 21, Rule 14 (HI)			
Emissions	FCC part 15 class A			
INSTALLATION SPECIFICATIONS				
Number of units	2	3		
AC output conduit size / AWG range / Max PE AWG	1.5"/2/0/6	2"/4/0/4		
[2]DC input conduit size /Terminal Block AWG Range'Number fo Strings	2 X 1.25" /6-14 /6 strings	2 X 1.25" /6-14 /9 strings		
Dimensions (HxWxD)	Primary Unit:37 x 12.5 x 10.5 / 940 x 315 x 260 Secondary Unit:21 x 12.5 x 10.5 / 540 x 315 x 260			in / mm
Weight	Primary Unit:105.8/48 Secondary Unit:99.2 /45			lb / kg
Operating temperature range	[3] -40ºF to+140/ 40ºC+60			ºF / ºC
Cooling	Fans (user replaceable)			
Noise	< 60			dBA
Protection rating	NEMA 3R			
Braket Mounted (Brackets Provided)				

[1]Pending

[2]Single input option per unit (up to 3AWG) available

[3]For power de -rating information refer to https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

Recommended OCPD size per grid:

Inverter	480 VAC	208 VAC
SE66.6KUS	184A	---
SE100KUS	277A	---
SE43.2KUS	---	277A

Inverter	Inom [A]	Peak [A]	1 cycle RMS[A]	3 cycle RMS[A]	Duration (ms)
SE43.2-US	120	210	75	49.5	54
SE66.6K-US	50	118	40	24	30
SE100K-US	120	210	75	49.5	54

Duration - time by which fault current reaches 0

1 cycle RMS - the integral on one cycle (60Hz) duration

3 cycle RMS - the integral on 3-cycle duration

Default Trip Limits and Times According to IEEE1547

NOTE

The inverters are equipped with adjustable utility protective function set-points, and can be aggregated above 30kW on a single Point of Common Connection. The default settings are in compliance with IEEE1547. Utility authorization is required to change these set-points.

Voltage Range (% of Base Voltage)	Max. Clearing Time (Sec)
V < 50%	0.16
50 % < V < 88%	2.00
110% < V < 120	1.00
V > 120 %	0.16
Frequency Range (Hz)	**Max. Clearing Time (Sec)**
> 60.5	0.16
< 59.3 (Hawaii – 57)	0.16

Connection Unit

Specifications	66.6kW and 100kW	Unit
Maximum DC voltage	500	DC to GND
Maximum DC current	66k: 2 x40A 100k: 3 x40A	Adc
Nominal AC voltage	480	Vac
Maximum AC current	66.6k: 80A 100k: 120A	Aac
Ambient temperature	-40 to 140 / -40 to +60	°F /°C
Weight	6.6/3.0	lb/kg

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

US & Canada (+1)	(0) 510 498 3200
Worldwide (+972)	(0) 073 240 311 8
Fax (+1)	(0) 530 273 276 9
Email to:	support@solaredge.us

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