

Replacing Enphase S230 and S270 Microinverters

Read and follow all warnings and instructions in this guide. Safety warnings are listed on the back of this guide. Use this procedure to replace a failed S230 Microinverter or S270 Microinverter using the parts provided in the replacement kit. Read and understand the safety information at the back of this guide before installing the replacement microinverters.

The microinverter has a Class II double-insulated rating, which includes ground fault protection (GFP). To support GFP, use only PV modules equipped with DC cables labeled "PV wire" or "PV cable". Refer to local electrical codes and standards for PV array and racking grounding requirements.

PREPARATION

A) Download the Enphase Installer App and open it to log in to your Enphase Installer Portal account. With this app, you can scan microinverter serial numbers and connect to the Enphase IQ Gateway to track system installation progress. To download, go to <https://enphase.com/en-au/installers/apps> or scan the QR code.



B) Refer to the following table to check the module pairing for your kit.

Kit model	DC adapter (dongle)	Microinverter
S230LN-IQ7-2-RMA	Q-DCC-2	S230IQ7-AU
S230LN-IQ7-2-AU-RMA	Q-DCC-2	S230IQ7-AU
S270LN-IQ7-2-RMA	Q-DCC-2	S270IQ7-AU
S270LN-IQ7-2-AU-RMA	Q-DCC-2	S270IQ7-AU

- S230 Microinverters are compatible only with 60-cell PV modules.
- S270 Microinverters are compatible with 60-cell and 72-cell PV modules.

C) In addition to the Enphase microinverters, PV modules and racking, check that you have the following items:

- Connectors: either Q-DCC-2 (MC-4 dongle) or Q-DCC-5 (UTX dongle) - included in the kit
- AC adapter (Q-ET-2LN) - included in the kit
- Cable ties or cable clips (Q-CLIP-100)
- Sealing caps (ET-SEAL) for any unused Engage connectors.
- Enphase Disconnect Tool (Q-DISC-10)
- Tools: screwdrivers, voltmeter, torque wrench, sockets, and wrenches for mounting hardware

D) Protect your system with lightning and/or surge suppression devices. It is also important to have insurance that protects against lightning and electrical surges.

E) Check that your AC branch circuits meet the following limits for maximum number of microinverters per branch when protected with a 20 A over current protection device (OCPD).

Maximum* Enphase microinverters per AC branch circuit	S230 (230 V single-phase)	S270 (230 V single-phase)
	17	14
	S230 (400 V three-phase)	S270 (400 V three-phase)
	48	42

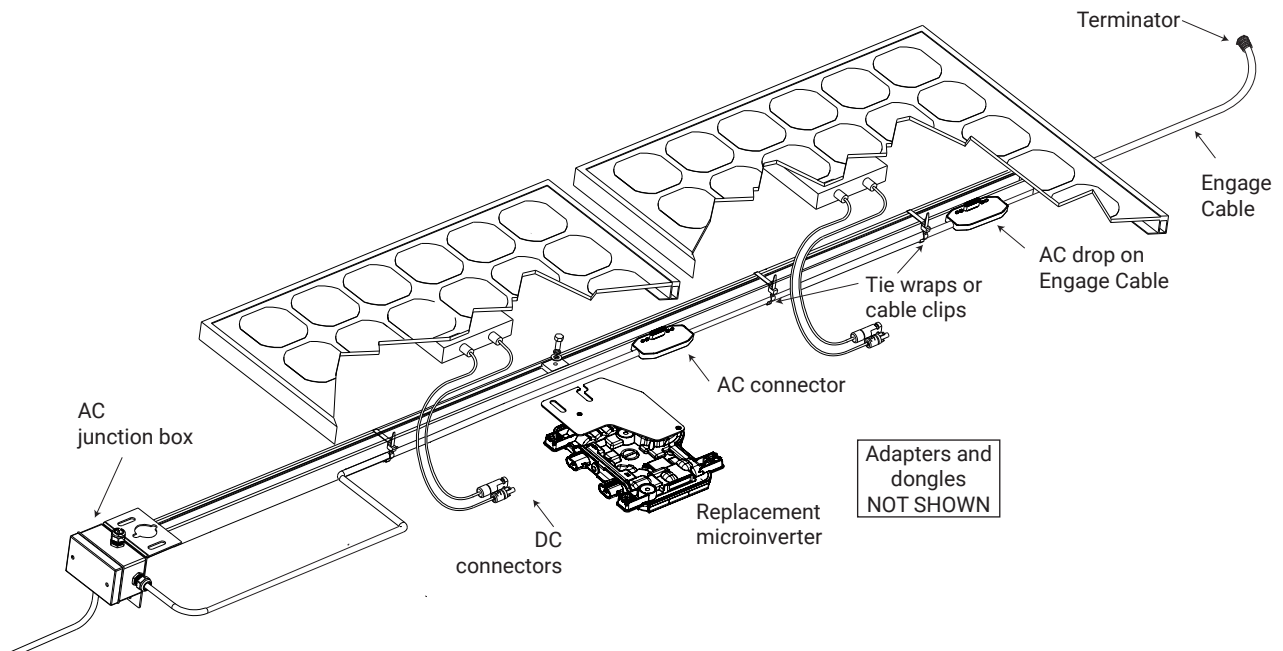
* Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

F) Use your paper installation map to record device serial numbers and positions in the array. You will scan this map later using Enphase Installer App and your mobile device. The map is essential for any future system troubleshooting.

- Peel the removable label from each replacement microinverter and affix it to the paper installation map.
- Always keep a copy of the installation map for your records.

G) Choose the appropriate wire size based on the distance between the start of the Engage Cable and the breaker in the load centre.

Best practice: Centre-feed the branch circuit to minimise voltage rise in a fully-populated branch.



INSTALLATION

1 Remove the failed S230 or S270

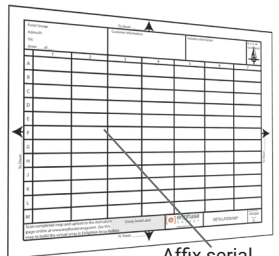
- De-energise AC by opening the branch circuit breaker.
- Disconnect the failed microinverter AC cables from the Engage Cable.
- Cover PV modules with opaque covers if necessary.
- Using a current probe, verify that no current is flowing in DC wires.
- Disconnect the DC connectors and the grounding electrode conductor (GEC), if necessary. The new microinverter will not require a GEC.
- Remove the failed microinverter from the racking.

2 Mount the replacement microinverter

- Connect the Enphase DC dongle/adapter to the replacement microinverter. Make sure it is fully seated.
- Attach the S230 or S270 replacement microinverter to the racking, bracket side up (as shown) and under the PV module, away from rain and sun. Allow a minimum of 1.9 cm between the roof and the microinverter. Also, allow 1.3 cm between the back of the PV module and the top of the microinverter.

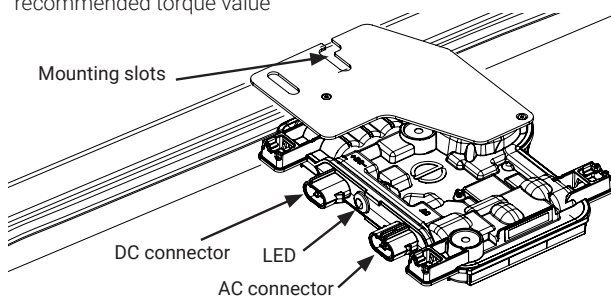
WARNING: Install the microinverter under the PV module to avoid direct exposure to rain, UV, and other harmful weather events. Do not mount the microinverter upside down.

- Take the removable serial number label from the replacement S230 or S270 and attach it to your copy of the installation map in its location or note the location for entry into the array map in Enphase Installer Portal. You must scan the label later and use the Enphase Array Builder to assign their positions in the array.



NOTE: There is no need to use a GEC with the replacement S230 or S270.

- Tighten the mounting fasteners as follows. Do not over-tighten.
 - 6 mm mounting hardware: 5 N m minimum.
 - 8 mm mounting hardware: 9 N m minimum.
 - When using UL 2703 mounting hardware, use the manufacturer's recommended torque value



3 Connect replacement microinverters to cabling

- Connect the AC adapter cable to the AC connector of the replacement S230 or S270.
- Attach the AC cable adapter to the Engage Cable.
- Listen for clicks as the connectors engage.

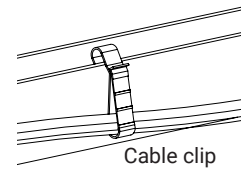


AC adapter cable Q-ET-2LN (840-00394)

4 Manage the cabling

WARNING: Install sealing caps on all unused AC connectors as these connectors become live when the system is energised. Sealing caps are required for protection against moisture ingress.

- Use cable clips or tie wraps to attach the cable to the racking. Add one at least every 1.8 m.
- Dress any excess cabling in loops so that it does not contact the roof. Do not form loops smaller than 12 cm in diameter.



5 Connect the PV modules

DANGER! Electric shock hazard. The DC conductors of this PV system are ungrounded and may be energised.

- Connect the DC leads of each PV module to the DC connector of the replacement microinverter.
- Check the LED on the connector side of the microinverter. The LED flashes green six times when DC power is applied.


6 Energise the system

- Turn ON the AC disconnect or circuit breaker for the branch circuit.
- Turn ON the main utility-grid AC circuit breaker. Your system will start producing power **after a 60-second wait time**.
- Check the LED on the connector side of the microinverter:

LED	Indicates
Flashing green	Normal operation. AC grid function is normal and there is communication with the IQ Gateway.
Flashing orange	The AC grid is normal but there is no communication with the IQ Gateway. This is normal until you complete Step 7.
Flashing red	The AC grid is neither present nor within specification.
Solid red	There is an active "DC Resistance Low, Power Off" (GFDI fault) condition. Use Enphase Installer Portal to reset it or refer to the <i>Enphase IQ Gateway Installation and Operation Manual</i> at: https://enphase.com/en-au/installers/communication for more information.

7 Retire the unit and update the array


Option 1: Retire and Replace

- In Enphase Installer Portal App, look for the Retire and Replace feature on the Settings page by clicking the gear icon .
- Scroll down to the self-help section and click "Install Replacement".
- Enter the old microinverter serial number and then the replacement serial number and click "Submit".

All the administrative steps are taken care of for you.

NOTE: Until the microinverter reports to the Enphase Installer Platform, the panel will remain grey.

Option 2: Retire the unit and update the array

- While still at the site, start a device scan at the IQ Gateway to detect the new unit:
 - For older IQ Gateways, press and hold the IQ Gateway Menu button on the right edge of the IQ Gateway. After two seconds the IQ Gateway menu appears. Continue holding the Menu button. When the LCD screen displays "Enable Device Scan", release the Menu button.
 - For IQ Gateway, press the Device Scan button (lower button). The Device Communications LED  flashes green during the scan. (Alternatively, you can initiate a scan using Enphase Installer App.)






NOTE: Complete the following steps when you are back in the office.

- Retire the replaced microinverter, by logging into Enphase Installer Portal and locating the array in your Installer Dashboard. Access the array and click on the unit that has been replaced. Click the device serial number and then click the "Retire" button at the top of the screen.
- Place the new microinverter in the virtual array by returning to the array overview screen and clicking on the gear icon in the upper right. Scroll down to the "Array Details" pane, and open "Array Builder". Locate and click the unit that has been replaced and click "Unassign" on the top toolbar. Drag the newly installed unit in the empty module position in the array, and click "Save".





SAFETY

IMPORTANT SAFETY INSTRUCTIONS SAVE THIS INFORMATION.













This guide contains important instructions to follow during installation of the Enphase S230 and S270 Microinverters.

	WARNING: Hot surface.
	WARNING: Refer to safety instructions.
	DANGER: Risk of electric shock.
	Refer to manual
	Double-Insulated






Safety Symbols

	DANGER: Indicates a hazardous situation, which if not avoided, will result in death or serious injury.
	WARNING: Indicates a situation where failure to follow instructions may be a safety hazard or cause equipment malfunction. Use extreme caution and follow instructions carefully.
	WARNING: Indicates a situation where failure to follow instructions may result in burn injury.
	NOTE: Indicates information particularly important for optimal system operation.










General Safety

	DANGER: Risk of electric shock. Do not use Enphase equipment in a manner not specified by the manufacturer. Doing so may cause death or injury to persons, or damage to equipment.
	DANGER: Risk of electric shock. Be aware that installation of this equipment includes risk of electric shock. Do not install the AC junction box/isolator without first removing AC power from the Enphase System.
	DANGER: Risk of electric shock. The DC conductors of this photovoltaic system are ungrounded and may be energised.
	DANGER: Risk of electric shock. Always de-energise the AC branch circuit before servicing. Never disconnect the DC connectors under load.
	DANGER: Risk of electric shock. Risk of fire. Only use electrical system components approved for wet locations.
	DANGER: Risk of electric shock. Risk of fire. Only qualified personnel should troubleshoot, install, or replace Enphase Microinverters or the Enphase Cable and Accessories.
	DANGER: Risk of electric shock. Risk of fire. Ensure that all AC and DC wiring is correct and that none of the AC or DC wires are pinched or damaged. Ensure that all AC junction boxes are properly closed.
	DANGER: Risk of electric shock. Risk of fire. Do not exceed the maximum number of microinverters in an AC branch circuit as listed in this guide. You must protect each microinverter AC branch circuit with a 20A maximum breaker or fuse, as appropriate.
	DANGER: Risk of electric shock. Risk of fire. Only qualified personnel may connect the Enphase Microinverter to the utility grid.
	WARNING: Risk of equipment damage. Enphase male and female connectors must only be mated with the matching male/female connector.
	WARNING: Before installing or using the Enphase Microinverter, read all instructions and cautionary markings in the technical description, on the Enphase Microinverter System, and on the photovoltaic (PV) equipment.
	WARNING: Do not connect Enphase Microinverters to the grid or energise the AC circuit(s) until you have completed all of the installation procedures and have received prior approval from the electrical utility company.










General Safety, continued

	WARNING: When the PV array is exposed to light, DC voltage is supplied to the PCE.
	NOTE: To ensure optimal reliability and to meet warranty requirements, install the Enphase Microinverters and Enphase Cable according to the instructions in this guide.
	NOTE: Perform all electrical installations in accordance with all applicable local electrical codes.
	NOTE: The AC and DC connectors on the cabling are rated as a disconnect only when used with an Enphase Microinverter.
	NOTE: Protection against lightning and resulting voltage surge must be in accordance with local standards.

Microinverter Safety

	DANGER: Risk of electric shock. Risk of fire. Do not attempt to repair the Enphase Microinverter; it contains no user-serviceable parts. If it fails, contact Enphase customer service to obtain an RMA (return merchandise authorization) number and start the replacement process. Tampering with or opening the Enphase Microinverter will void the warranty.
	DANGER: Risk of fire. The DC conductors of the PV module must be labeled "PV Wire" or "PV Cable" when paired with the Enphase Microinverter.
	WARNING: You must match the DC operating voltage range of the PV module with the allowable input voltage range of the Enphase Microinverter.
	WARNING: The maximum open circuit voltage of the PV module must not exceed the specified maximum input DC voltage of the Enphase Microinverter.
	WARNING: Risk of equipment damage. Install the microinverter under the PV module to avoid direct exposure to rain, UV, and other harmful weather events. Always install the microinverter bracket side up. Do not mount the microinverter upside down. Do not expose the AC or DC connectors (on the Enphase Cable connection, PV module, or the microinverter) to rain or condensation before mating the connectors.
	WARNING: Risk of equipment damage. The Enphase Microinverter is not protected from damage due to moisture trapped in cabling systems. Never mate microinverters to cables that have been left disconnected and exposed to wet conditions. This voids the Enphase warranty.
	WARNING: Risk of equipment damage. The Enphase Microinverter functions only with a standard, compatible PV module with appropriate fill-factor, voltage, and current ratings. Unsupported devices include smart PV modules, fuel cells, wind or water turbines, DC generators, and non-Enphase batteries, etc. These devices do not behave like standard PV modules, so operation and compliance is not guaranteed. These devices may also damage the Enphase Microinverter by exceeding its electrical rating, making the system potentially unsafe.
	WARNING: Risk of skin burn. The chassis of the Enphase Microinverter is the heat sink. Under normal operating conditions, the temperature could be 20°C above ambient, but under extreme conditions the microinverter can reach a temperature of 90°C. To reduce risk of burns, use caution when working with microinverters.
	NOTE: Many Enphase Microinverter models have field-adjustable voltage and frequency trip points that may need to be set, depending upon local requirements. Only an authorised installer with the permission and following requirements of the local electrical authorities should make adjustments.

Enphase Cable Safety

	DANGER: Risk of electric shock. Do not install the Enphase Cable terminator while power is connected.
	DANGER: Risk of electric shock. Risk of fire. When stripping the sheath from the Enphase Cable, make sure the conductors are not damaged. If the exposed wires are damaged, the system may not function properly.
	DANGER: Risk of electric shock. Risk of fire. Do not leave AC connectors on the Enphase Cable uncovered for an extended period. You must cover any unused connector with a sealing cap.
	DANGER: Risk of electric shock. Risk of fire. Make sure protective sealing caps have been installed on all unused AC connectors. Unused AC connectors are live when the system is energised.
	WARNING: Use the terminator only once. If you open the terminator following installation, the latching mechanism is destroyed. Do not reuse the terminator. If the latching mechanism is defective, do not use the terminator. Do not circumvent or manipulate the latching mechanism.
	WARNING: When installing the Enphase Cable, secure any loose cable to minimise tripping hazard.
	NOTE: When looping the Enphase Cable, do not form loops smaller than 12 cm in diameter.
	NOTE: If you need to remove a sealing cap, you must use the Enphase Disconnect Tool.
	NOTE: When installing the Enphase Cable and accessories, adhere to the following: <ul style="list-style-type: none"> Do not expose the terminator or cable connections to directed, pressurised liquid (water jets, etc.). Do not expose the terminator or cable connections to continuous immersion. Do not expose the terminator or cable connections to continuous tension (e.g., tension due to pulling or bending the cable near the connection). Use only the connectors and cables provided. Do not allow contamination or debris in the connectors. Use the terminator and cable connections only when all parts are present and intact. Do not install or use in potentially explosive environments. Do not allow the terminator to come into contact with open flame. Fit the terminator using only the prescribed tools and in the prescribed manner. Use the terminator to seal the conductor end of the Enphase Cable; no other method is allowed.

Note for third-party products

Any third-party manufacturer or importer product(s) used to install or commission Enphase product(s) shall comply with the applicable EU Directive(s) and requirements in the EEA (European Economic Area). It is the responsibility of the installer to confirm that all such products are labelled correctly and have the required compliant supporting documentation.

Compliance with EU Directives

This product complies with the following EU Directives and can be used in the European Union without any restrictions.

- Electro Magnetic Compatibility (EMC) directive 2014/30/EU
- Low Voltage Directive (LVD) 2014/35/EU
- Restriction of Hazardous Substances (RoHS) 2011/65/EU

The full text of the EU declaration of conformity (DoC) is available at the following internet address <https://enphase.com/en-au/installers/resources/documentation>.

Manufacturer:

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UNITED STATES of AMERICA, PH: +1 707-763-4784

Importer:

Enphase Energy NL B.V.,
Het Zuiderkruis 65, 5215MV, 's-HERTOGENBOSCH,
THE NETHERLANDS, PH: +31 73 3035859

INSTALLATION MAP

To sheet / Vers la page / Al foglio / Zu Blatt / Naar pagina: _____

Panel Group / Groupe de modules / Gruppo di moduli / Modulgruppe / Modulegroep: Azimuth / Azimut: Tilt / Inclinaison / Inclinazione / Neigungswinkel / Helling: sheet / page / foglio / Blatt / pagina _____ / _____		Client / Cliente / Kunde / Cliënt:			Installer / Installateur / Installatore:		N S E W / N S E O N S O W / N Z O W
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IQ Gateway serial label /
étiquette de numéro de série /
etichette di serie IQ Gateway /
Serien Nummer / Label seriennummer:



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INSTALLATION MAP / PLAN D'INSTALLATION
MAPPA INSTALLAZIONE / INSTALLATIONSPLAN
INSTALLATIE KAART

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