

Replacing Enphase IQ Series ACM Microinverter

Read and follow all warnings and instructions in this guide. Safety warnings are listed at the end of this guide. Use this procedure to replace an Enphase IQ Series ACM Microinverter using the parts provided in the replacement kit. Read and understand the safety information 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 grounding requirements of PV array and racking.

PREPARATION

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



- B) Your kit includes a single Enphase microinverter:

Kit model	Microinverter
IQ7-60-ACM-INT-RMA	IQ7-60-ACM-INT-NM
IQ7PLUS-72-ACM-INT-RMA	IQ7PLUS-72-ACM-INT-NM
IQ7A-72-E-ACM-INT-RMA	IQ7A-72-E-ACM-INT-NM
IQ7A-72-M-ACM-INT-RMA	IQ7A-72-M-ACM-INT-NM

- IQ7 Microinverters are compatible only with 60-cell PV modules.
- IQ7+ and IQ7A Microinverters are compatible with 60-cell or 72-cell PV modules.

- C) Check that you have the following equipment:

- Replacement IQ Series Microinverter, included in the kit
- IQ Disconnect Tool (Q-DISC-10)
- Voltmeter

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

Maximum* IQ Microinverters per AC branch circuit		
IQ7	IQ7+	IQ7A (Ph+N)
15	12	10

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

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

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

- G) Size the AC wire gauge to account for voltage rise. Select the correct wire size based on the distance from the beginning of the IQ Cable to the breaker in the load center.

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

INSTALLATION

1 Remove the AC module

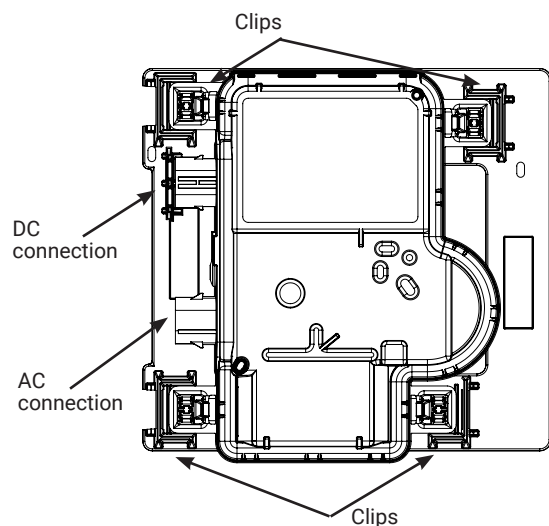
- A) De-energise AC by opening the branch circuit breaker.
- B) Disconnect the DC and AC connectors on the microinverter using the IQ Disconnect tool. If a DC adapter is present, insert the disconnect tool and remove the adapter. Save the adapter to use on the replacement microinverter.
- C) Lift the entire AC module (panel) from the roof per manufacturer instructions for handling and safety. Then, place it on the ground or a suitable work surface.



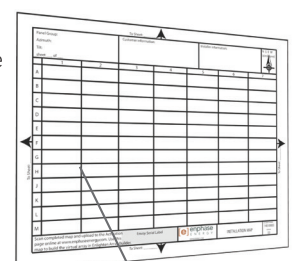
IQ Disconnect Tool

2 Install the replacement microinverter

- A) Once on the ground, place the AC module in a position that allows you to access the microinverter.
- B) Press each of the four clips to free the microinverter from its frame.
- C) Press and snap the new replacement microinverter into place. The Enphase label should face up when the AC module (panel) is face down. The replacement microinverter will engage with all four clips. Make sure the microinverter is **fully seated in all four clips**.
- D) Connect the AC module's AC lead to the AC connector on the replacement microinverter.



- F) Attach the removable serial number label from the new replacement IQ Series Microinverter to your copy of the installation map or note the location for later entry into the array map in the Enphase Installer App. You must scan the label afterward and assign their positions in the array using the Enphase Array Builder.



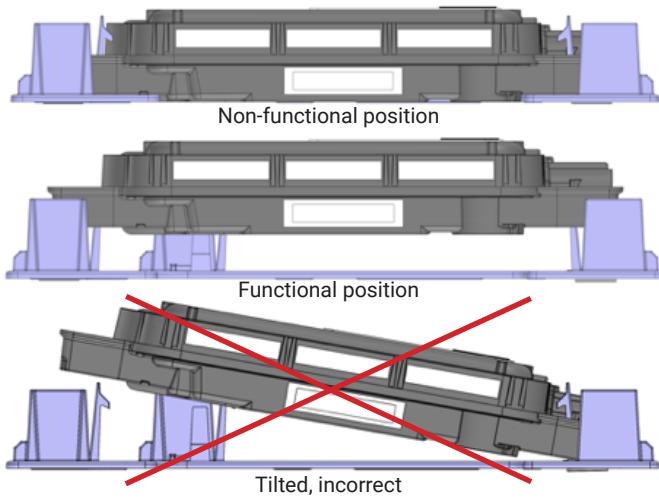
Affix serial number labels



148-00157-04

3 Check the Microinverter position

- A) Check the replacement microinverter against the images in the step.
- B) If the microinverter is not in the functional position, use both hands to lift the microinverter up. You will hear four clicks as the microinverter locks into the installation position.
- C) Ensure the microinverter is aligned correctly and all four latches are locked.

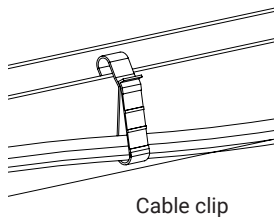


4 Reinstall the AC module

- A) Reinstall the AC Module (panel) on the roof or other mounting location per manufacturer instructions.
- B) If needed, retrieve the DC adapter that you saved when removing the failed microinverter, and connect the adapter to the replacement microinverter.
- C) Attach the IQ Cable connector to the DC connector on the replacement microinverter. **Make sure the connection is fully seated.**
- D) Listen for clicks as the connectors engage.

5 Manage the cabling

- A) Attach the cables to the racking with cable clips or tie wraps. Add at least one every 1.8 m (6 feet).
- B) Dress any excess cabling in loops so that it does not contact the roof. Do not form loops smaller than 12 cm (4.75 inches) in diameter.



6 Energise the system

- A) Turn ON the AC disconnect or circuit breaker for the branch circuit.
- B) Turn ON the main utility-grid AC circuit breaker. Your system will start producing power **after a five-minute wait time.**
- C) 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 either not present or not within specification.
Solid red	There is an active "DC Resistance Low, Power Off" (GFI Tripped) condition. Use the Enphase Installer Portal to reset it, or refer to the <i>Enphase IQ Gateway Installation and Operation Manual</i> at: https://enphase.com/en-gb/installers/resources/documentation for more information.

7 Retire the unit and update the array


Option 1: Retire and Replace

- A) In the Enphase Installer Portal, look for the "Retire and Replace" feature on the "Settings" page by clicking the gear icon.
- C) Scroll to the self-help section and click "Install Replacement".
- D) 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 Enphase Installer App the panel will remain grey.

Option 2: Retire the unit and update the array

- A) 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 the Enphase Installer App.)

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

- B) 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.
- C) Place the new microinverter in the virtual array by returning to the array overview screen and clicking the gear icon in the upper right. Scroll down to the Array Details pane, and open Array Builder. Locate and click on the unit that has been replaced and click "Unassign" on the top toolbar. Drag the newly installed unit in to the empty module position in the array and click "Save".

Revision history

REVISION	DATE	DESCRIPTION
140-00157-04	June 2023	Updated the document for product names and editorial changes.

SAFETY

IMPORTANT SAFETY INSTRUCTIONS SAVE THIS INFORMATION.

This guide contains important instructions to follow during the installation of the IQ Series ACM 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 photovoltaic system includes risk of electric shock. Do not install the AC junction box/isolator without 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 IQ 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 20 A 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 IQ 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 IQ 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 IQ Cable Terminator while power is connected.



DANGER: Risk of electric shock. Risk of fire. When stripping the sheath from the IQ Cable, make sure the conductors are not damaged. If the exposed wires are damaged, the system may not function properly.

Enphase Cable Safety, continued



DANGER: Risk of electric shock. Risk of fire. Do not leave AC connectors on the IQ Cable uncovered for an extended period. You must cover any unused connector with a IQ 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 IQ Cable, secure any loose cable to minimise tripping hazard



NOTE: When looping the IQ Cable, do not form loops smaller than 12 cm in diameter.



NOTE: If you need to remove a IQ Sealing Cap, you must use the IQ Disconnect Tool.



NOTE: When installing the IQ Cable and accessories, adhere to the following:

- 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 IQ 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-gb/installers/resources/documentation>.

Manufacturer:

Enphase Energy Inc.,

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PH: +1 707-763-4784

Importer:

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The Netherlands,
PH: +31 73 3035859

INSTALLATION MAP

To sheet: _____

Panel Group:
Azimuth:
Tilt:
Sheet ____ / _____

Client:

Installer:

N S E W

1

2

3

4

5

6

7

A

B

C

D

E

F

G

H

I

J

To sheet: _____

↑

To sheet: _____

↓

To sheet: _____

←

To sheet: _____

→

IQ Gateway serial label number:

INSTALLATION MAP