

# Install IQ8 Commercial Series Microinverters

To install the IQ8 Commercial Series Microinverters, read and follow all warnings and instructions in this guide and the *IQ8 Commercial Microinverter grid-tied PV System Design Guide* at: <https://enphase.com/installers/resources/documentation>. Each IQ8 Commercial Series Microinverter connects to a single PV module in your array and is a small commercial solution for grid-tied, three-phase, 208 V PV applications. Safety warnings are listed on the back page of this guide.

The IQ8 Commercial Series Microinverters do not require grounding electrode conductors (GEC) and equipment grounding conductors (EGC). The IQ8 Commercial Series Microinverters have 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'.

**IMPORTANT:** The IQ8 Commercial Series Microinverters include AC and DC connectors integrated into the microinverter bulkhead. The AC port of the IQ8 Commercial Series Microinverter connects to a QD Cable. IQ8 Commercial Series Microinverter bulkhead and adapter cable male/female DC connectors must only be mated with the identical type and manufacturer brand of male/female connector. IQ8 Commercial Series Microinverter has an Enphase EN4 bulkhead that allows for direct connection to PV modules with TE PV4S SOLARLOK connectors. The EN4 to MC4 bulkhead adapter cable allows for connection to PV modules with Stäubli MC4 connectors. The UL has evaluated the EN4 Bulkhead for intermatibility with TE PV4S SOLARLOK connectors. The UL has evaluated the adapter cable MC4 connector for intermatibility with Stäubli MC4 connectors, whose cable coupler models are "PV-KST4/...-UR, PV-KBT4/...-UR, PV-KBT4-EVO2/...-UR, and PV-KST4-EVO2/...-UR".

**Note:** 1) After you log in to your Enphase Installer Platform account from the Enphase Installer App, scan the microinverter serial numbers (1D bar code) and connect to the IQ Gateway Commercial 2 to track the system installation progress.

2) The installer must check the manufacturing date of the products to ensure that the installation date is within one year of the manufactured date of the products. Contact your local distributor to validate the date code.

## PREPARATION

A) Log in to your Enphase Installer App account. Ensure you are using the latest version of the Enphase Installer App 3.27.1 and above. With this app, you can scan microinverter serial numbers and connect to the IQ Gateway Commercial 2 to track system installation progress. To download, go to <https://enphase.com/installers/apps> or scan the QR code at right.



B) Refer to the following table and check PV module electrical compatibility at: [enphase.com/en-us/support/module-compatibility](https://enphase.com/en-us/support/module-compatibility).

Model	DC connector	PV module cell count
IQ8H-3P-72-E-US IQ8P-3P-72-E-US	EN4 Locking (TE PV4S-SOLARLOK)	Pair with 54-cell/108 half-cell, 60-cell/120 half-cell, 66-cell/132 half-cell, and 72-cell/144 half-cell.

C) In addition to the microinverters, PV modules, and racking, you will need the following **Enphase items**:

- IQ Gateway Commercial 2 (model ENV2-I C2-AM3-3P): Required to monitor solar production.
- Enphase Mobile Connect (model CELLMODEM-M1-06-SP-05 or CELLMODEM-M1-06-AT-05) 4G-based LTE-M modem. Contact Enphase for data plan options.
- If your PV modules have TE PV4S SOLARLOK connectors, you may plug them directly into the IQ8 Commercial Series Microinverter with EN4 bulkhead. An Enphase bulkhead adapter (ECA-EN4-S22-12 (TE PV4S SOLARLOK) 150 mm/5.9" to Stäubli MC4 adapter cable pair) is provided by default with the IQ8 Commercial Series for PV modules with Stäubli MC4 connectors. Following are the available Enphase DC adapter options:

DC adapter cable	Part number	Model SKU
EN4 (TE PV4S SOLARLOK) 150 mm/5.9" to Stäubli MC4 (Default Supply)	860-00776	ECA-EN4-S22-12
EN4 (TE PV4S SOLARLOK) to 1000 mm /39.4" non-terminated cable (pack of 12 pairs - optional)	860-01831	ECA-EN4-FW-10-12
EN4 (TE PV4S SOLARLOK) 1000 mm/39.4" to Stäubli MC4 (Pack of 12 pairs - Optional)	860-00792	ECA-EN4-S22-10-12



**WARNING:** Do not reverse the adapter connections. When using adapter cable, ensure that EN4 (TE PV4S SOLARLOK) connectors are used for connection with microinverter. Refer to label on the adapter cables for identifying EN4 microinverter connection.

- Tie wraps or QD Cable clips (ET-CLIP-100)
- QD Sealing Caps (QD-SEAL-10): For any unused connectors on the QD Cable
- QD Terminator (QD-TERM-10): Typically one terminator (end-feeding branch circuit) or two terminators (center-feeding branch circuit) are required per branch circuit
- Field Wireable QD Connectors: Male QD-CONN-10M and Female QD-CONN-10F
- QD Disconnect Tool (QD-DISC-10)
- Enphase Center tap adapter cable QD-LINKFW-10 (for all QD Cable SKUs)

\*QD Cable (as listed in the following table):

Cable model SKU	Connector spacing	PV module orientation	Max. spacing between microinverters	Connectors per box
QD-12-13-120	1.7 m (5.6 ft)	Portrait	1.3 m (4.3 ft)	120
QD-12-20-120	2.4 m (7.9 ft)	Landscape	2.0 m (6.6 ft)	120
QD-12-25-108	2.9 m (9.5 ft)	Landscape	2.5 m (8.2 ft)	108

D) Field Wireable QD Connectors are pre-installed at the ends of the QD Cables to increase the cable length beyond the connector limit mentioned in the above table. The Field Wireable QD Connectors are protected with sealing caps. The sealing caps must be removed only when increasing cable length using the Field Wireable QD Connectors at the cable end.



**WARNING:** Do not remove sealing caps from the cable end field wireable connectors if they are not used to increase cable length.

E) Check that you have these other items:

- AC junction box
- Tools: Screwdrivers, wire cutter, voltmeter, torque wrench, sockets, screwdriver with blade width 3.2 mm (1/8") to 4 mm (1/6"), and wrenches for mounting hardware

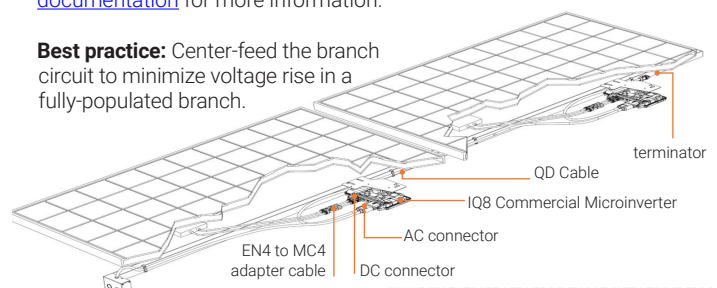
F) Protect your system with lightning/surge suppression devices. It is also important to have insurance that protects against lightning/electrical surges.

G) Plan your AC branch circuits to meet the following limits for a maximum number of microinverters per three-phase branch, with each branch protected by a three-pole 20 A over-current protection device (OCPD).

Maximum microinverters per 20 A branch circuit	
IQ8P-3P (three-phase 208 VAC)	IQ8H-3P (three-phase 208 VAC)
12 microinverters	15 microinverters

H) Size the AC wire gauge to account for voltage rise. Select the correct wire size based on the distance from the beginning of the QD Cable to the breaker in the load center. Design for a voltage rise total of less than 2% for these sections. Refer to the *IQ8 Commercial Series Voltage Rise Technical Brief* at <https://enphase.com/installers/resources/documentation> for more information.

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



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# INSTALLATION

## 1 Position the QD Cable

- Plan each cable segment to allow connectors on the QD Cable to align with each IQ8 Commercial Microinverter connected to the PV module. Allow extra length for slack, cable turns, and any obstructions.
- Mark the approximate location of the microinverter on each PV module or the PV racking.
- Lay out the cabling along the installed racking for the AC branch circuit.
- Cut each segment of cable to meet your planned needs.



**WARNING:** When transitioning between rows, secure the cable to the rail or PV module to prevent cable or connector damage. Do not count on the connector to withstand tension.

## 2 Manage the cabling

- You must install supports (clips, etc.) for the QD Cable and Raw QD Cable, at 1.8 m (6 ft) intervals or less.
- Installation requirements for wet-rated cable allow QD Cable and Raw QD Cable to be installed in conduits, cable trays, and other raceways.
- Dress any excess cabling in loops to avoid touching the roof. Do not form loops smaller than 12 cm (4.7") in diameter.



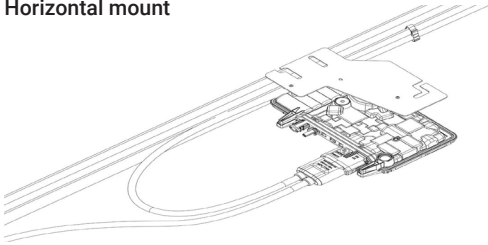
## 3 Mount the microinverters

- Mount the microinverter horizontally (bracket side up) or vertically. Always place it under the PV module, protected from direct exposure to rain, sun, and other harmful weather events. Allow a minimum of 1.9 cm (3/4") between the roof and the microinverter. Also, allow 1.3 cm (1/2") between the back of the PV module and the top of the microinverter.



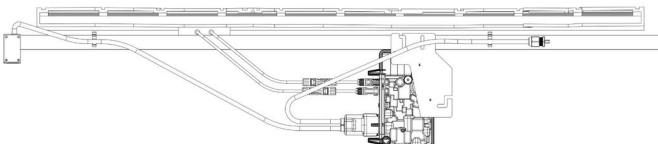
**WARNING:** Install the microinverter under the PV module to avoid direct exposure to rain, UV, and other harmful weather events. Do not mount the microinverter upside down.

### Horizontal mount

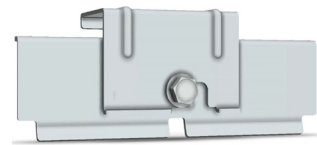


- For the vertical mount with bifacial PV modules, maintain > 30 cm (12") clearance from the edges of the PV module to protect the microinverter from direct exposure to rain, UV, and other harmful weather events.

### Vertical mount



- Torque the mounting fasteners (1/4" or 5/16") as follows. Do not over-torque.
  - 6 mm (1/4") mounting hardware: 5 N m (45 to 50 in-lbs)
  - 8 mm (5/16") mounting hardware: 9 N m (80 to 85 in-lbs)
  - When using UL 2703 mounting hardware, use the manufacturer's recommended torque value.
- Ensure microinverters are mounted with the bracket side up, facing the solar PV module.
- The frame mount bracket allows the microinverter to attach easily and rapidly to the PV module frame. Use the frame mount bracket in railless or ballasted solar installations. The frame mount bracket comes in two sizes, 35 mm (EFM-35MM) and 40 mm (EFM-40MM), depending upon the thickness (depth) of the PV module frame.
  - Place the bracket clamp over the edge of the module frame as shown in the following image:
  - Thread the cap bolt into the threaded insert on the bracket, then slide the microinverter slot onto the bolt.



- Slide the microinverter unit onto the bracket clamp. The bolt now holds the frame mount to the bracket clamp. The microinverter mounting flange should be on the outside of the module frame as shown in the following images:
- With a 13 mm or 1/2" socket wrench, tighten the cap screw until you reach a torque of 18 N m (13 ft).



- When using any racking manufacturer's MLPE frame mount bracket, follow the manufacturer's recommended torque value and installation guidelines for frame mounting the microinverters.

## 4 Connect the microinverters

- Connect the microinverter to the QD Cable connector. Listen for a click as the connectors engage.
- Ensure that the QD Cable connector is fully seated and locked on the microinverter AC connector. You can verify the connection using the green and red indicators on the QD Cable connector as shown in the following images:

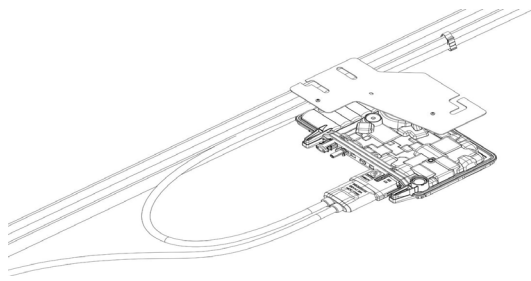


Improper connection



Fully seated and locked connector

- Cover any unused connectors on the AC cable with QD Sealing Caps (QD-SEAL-10). Listen for a click as the sealing caps engage.



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

To remove a sealing cap or AC connector, you must use an QD Disconnect Tool.

## 5 Provide an AC connection to the branch circuit

### Center-feeding the branch circuit

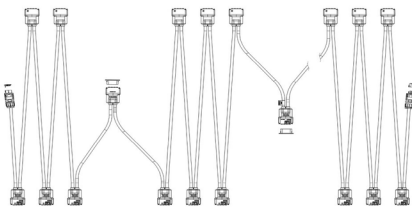
Enphase recommends that the total percentage of voltage rise in the AC wiring be a maximum of 2%, with (an inclusive) less than 1% voltage rise in the QD Cable.

Although the QD Cable is optimized for minimal VRise, it is still important to calculate the total VRise for the entire system for the farthest microinverter in the branch circuits from the point of common coupling.

As voltage rise is exponential, reducing the number of microinverters in the branch circuit significantly reduces the voltage measured at the farthest microinverter in the branch. One way to minimize this voltage rise is to center-feed the branch, that is, divide the circuit into two sub-branch circuits protected by a single OCPD. Hence, for all installations with IQ8 Commercial Microinverters, center-feeding of a three-phase AC supply is recommended.

Follow these installation steps for center-feeding the microinverter branch circuits.

- A) All three QD Cable SKUs include center-tapping connectors after every six AC male QD Cable connectors in the QD Cable spool. The center-tap connectors are sealed with sealing caps and the sealing cap should be removed only when the connector is used for feeding the AC supply to the branch.

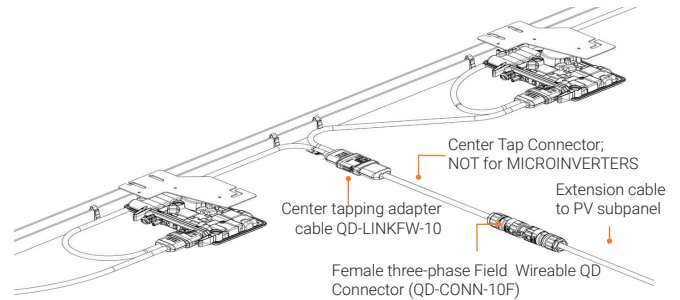


**WARNING:** The center-tapping AC male connector is marked "Center tap; Not for microinverter connection". Do not use the center tap connectors for connecting to the microinverter.

- B) When installing the IQ8 Commercial Microinverter system using QD Cable, you may have multiple center-tap connectors in the branch circuit. Select the center-tap connector such that a maximum of nine IQ8 Commercial Microinverters are installed on either side of the center-tap connector to limit voltage rise <1% in the QD Cable. Do not exceed branch circuit sizing mentioned on page 1 in this guide.
- C) Use an Enphase center-tap adapter cable (QD-LINKFW-10) to connect the center-tapping connector to the extension cable to the PV sub-panel using a male three-phase Field Wireable QD Connector (QD-CONN-10M).
- D) Use a female three-phase Field Wireable QD Connector (QD-CONN-10F) to connect the extension cable to the three-pole 20 A over-current protection device (OCPD) in the PV sub-panel.



**WARNING:** Do not remove pre-installed sealing caps on the center-tap connector, if the connector is not used for center-feeding AC supply.



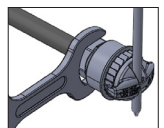
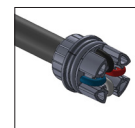
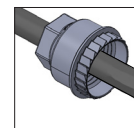
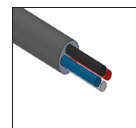
- E) Complete the AC connection.

Verify that AC voltage at the site is within range:

Service type and voltage: L1-L2, L2-L3 and L3-L1	
208 VAC three-phase	183 to 229 VAC

## 6 Terminate the unused end of the cable

- A) Remove 20 mm (0.8") of the cable sheath from the conductors.
- B) Slide the hex nut onto the cable. The grommet inside the terminator body must remain in place.
- C) Insert the cable into the terminator body so that the four wires land on separate sides of the internal separator.
- D) To attach the cap:
- Bend the wires down into the recesses of the terminator body and trim as needed. Place the cap over the terminator body.
  - Insert a screwdriver into the slot on the terminator cap to hold it in place.
  - Rotate the hex nut with your hand or a wrench until the latching mechanism meets the base.
  - Do not over-torque.



A

B

C

D

- E) Attach the terminated cable end to the PV racking with a cable clip or tie wrap so that the cable and terminator do not touch the roof.

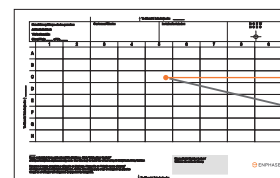


**WARNING:** The terminator cannot be re-used. If you unscrew the nut, you must discard the terminator.

## 7 Create an installation map

Create a paper installation map to record microinverter serial numbers and positions in the array.

- A) Peel the removable serial number label from each microinverter and affix it to the respective location on the paper installation map.
- B) Peel the label from the IQ Gateway Commercial 2 and affix it to the installation map.
- C) Always keep a copy of the installation map for your records.



Affix serial number labels

## 8 Connect the PV modules to the microinverter

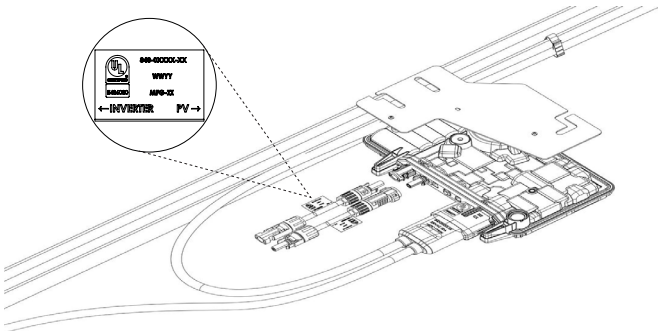


**DANGER!** Electric shock hazard. The DC conductors of this PV system are ungrounded and may be energized.

- A) IQ8 Commercial Microinverter has an EN4 bulkhead for DC connection and bulkhead adapter cable for EN4 to MC4 connection. If your PV modules have TE PV4S SOLARLOK connectors, you may plug them directly into the IQ8 Commercial Microinverter with EN4 bulkhead. Or use the adapter cable for PV modules with MC4 connectors. If your PV module has any other connector, use the EN4 to non-terminated adapter cable.

When using adapters, make sure they are fully seated. Do not reverse the adapter connections. When using an adapter cable, ensure that EN4 (TE PV4S SOLARLOK) connectors are used for connection with the microinverter. Refer to the label on the adapter cables. IQ8 Commercial Series Microinverter bulkhead and adapter male and female DC connectors must only be mated with the identical type and manufacturer brand of male/female connector.

- B) Check the LED on the connector side of the microinverter. The LED flashes six times when DC power is applied.



**WARNING:** If adapters are used, ensure they are installed in the correct orientation. Refer to label on the adapter cables for correct connection.

## PV rapid shutdown equipment (PVRSE)

This product is UL Listed as PV rapid shutdown equipment and conforms with NEC-2014, NEC-2017, NEC-2020, section 690.12 and C22.1-2015 Rule 64-218 rapid shutdown of PV Systems for AC and DC conductors when installed according to the following requirements:

- Microinverters and all DC connections must be installed inside the array boundary. **Enphase further requires that the microinverters and DC connections be installed under the PV module to avoid direct exposure to rain, UV, and other harmful weather events.**
- The array boundary is defined as 305 mm (1 ft) from the array in all directions, or 1m (3 ft) from the point of entry inside a building.

This rapid shutdown system must be provided with an initiating device and (or with) a status indicator, which must be installed in a location accessible to first responders or be connected to an automatic system that initiates rapid shutdown upon the activation of a system disconnect or activation of another type of emergency system. The initiator shall be listed and identified as a disconnecting means that plainly indicates whether it is in the "off" or "on" position. Examples are:

- Service disconnecting means
- PV system disconnecting means
- Readily accessible switch that indicates whether it is in the "off" or "on" position

The handle position of an AC disconnect switch or circuit breaker can be used as an indicator based on regulations defined by the Authority Having Jurisdiction (AHJ) in

the region. Refer to NEC or CSA C22.1-2018 for more information. Additionally, in a prominent location near the initiator device, a placard or label must 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 placard, label, or directory shall be reflective, with all letters capitalized and having a minimum height of 9.5 mm (3/8") in white on a red background.

## SAFETY IMPORTANT SAFETY INSTRUCTIONS SAVE THIS INFORMATION.

This guide contains important instructions to follow during the installation of the IQ8P-3P and IQ8H-3P Microinverters.



**WARNING:** Hot surface.



**WARNING:** Refer to safety instructions.



**DANGER:** Risk of electric shock.



**Refer to manual**



**Double-Insulated**

## 9 Energize 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 five-minute 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 Commercial 2.
Flashing orange	The AC grid is normal, but there is no communication with the IQ Gateway Commercial 2.
Flashing red	The AC grid is either not present or not within specification.
Solid red	There is an active "DC Resistance Low, Power Off" condition. To reset, refer to the Commercial PV Design Guide IQ8 Commercial Microinverter System Section DC Resistance Low – Power Off Condition at: <a href="https://enphase.com/installers/resources/documentation">https://enphase.com/installers/resources/documentation</a> .
Rapid red/Flashing orange	IQ8 Commercial Microinverter has detected a PV panel that is operating outside the the arc-safe region.

## ACTIVATE MONITORING AND CONTROLS

After you have installed the microinverters, follow the procedures in the *IQ Gateway Commercial 2 Quick Install Guide* to activate system monitoring, set up grid management functions, and complete the installation.

- Connecting the IQ Gateway Commercial 2 and detecting devices.
- Connecting to the Enphase Installer App, registering the system, and building the virtual array.

**NOTE:** Installers may see numerous ACVOR (AC voltage out of range) events during the commissioning of IQ8 Commercial systems if the grid has higher impedance or operating in a region with wide voltage/frequency regulation.

**Enphase connector rating:** Enphase connectors on the assemblies in the following table have a maximum current of 20 A, a maximum OCPD of 20 A, and maximum ambient temperature of -40° to 79°C (-40° to 174.2°F). Never disconnect any connectors under load.

Part number	Model	Maximum voltage
840-01922	QD-12-13-120	250 VAC
840-01923	QD-12-20-120	250 VAC
840-01924	QD-12-25-108	250 VAC
860-00776	ECA-EN4-S22-12	119 VDC
860-00792	ECA-EN4-S22-10-12	119 VDC
860-01831	ECA-EN4-S22-10-12	119 VDC

### Safety symbols

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

### General safety

	<b>DANGER:</b> 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.
	<b>DANGER:</b> Risk of electric shock. Be aware that installation of this equipment includes risk of electric shock.
	<b>DANGER:</b> Risk of electric shock. The DC conductors of this photovoltaic system are ungrounded and may be energized.

General safety, continued	
	<b>DANGER:</b> Risk of electric shock. Always de-energize the AC branch circuit before servicing. Never disconnect the any AC or DC connectors under load.
	<b>DANGER:</b> Risk of electric shock. Risk of fire. Only use electrical system components approved for wet locations.
	<b>DANGER:</b> Risk of electric shock. Risk of fire. Only qualified personnel should troubleshoot, install, or replace Enphase Microinverters or the QD Cable and Accessories.
	<b>DANGER:</b> 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.
	<b>DANGER:</b> 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.
	<b>DANGER:</b> Risk of electric shock. Risk of fire. Only qualified personnel may connect the Enphase Microinverter to the utility grid.
	<b>WARNING:</b> Risk of equipment damage. Enphase male and female connectors must only be mated with the identical type and brand of male/female connector. IQ8 Commercial microinverter has Enphase EN4 bulkhead for DC connection and bulkhead adapter cable for EN4 to MC4 connection.
	<b>WARNING:</b> 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.
	<b>WARNING:</b> Do not connect Enphase microinverters to the grid or energize the AC circuit(s) until you have completed all of the installation procedures and have received prior approval from the electrical utility company.
	<b>WARNING:</b> PV rapid shutdown must be installed and operational including activation device and required markings. See complete details in installation manual.
	<b>WARNING:</b> To enable installed system to comply as a Photovoltaic Hazard Control System (PVHCS) installers shall at a minimum perform the tasks mentioned in Appendix Section "Photovoltaic Hazard Control System" in "Commercial PV Design Guide IQ8 Commercial microinverter System" at <a href="http://enphase.com/support">enphase.com/support</a>
	<b>DANGER:</b> Risk of electric shock. Always de-energize the AC branch circuit before servicing. Never disconnect the DC connectors under load.
	<b>WARNING:</b> When the PV array is exposed to light, DC voltage is supplied to the PCE.
✓	<b>NOTE:</b> To ensure optimal reliability and to meet warranty requirements, install the Enphase microinverters and QD Cable according to the instructions in this guide.
✓	<b>NOTE:</b> Provide support for the QD Cable at least every 1.8 m (6 feet).
✓	<b>NOTE:</b> Perform all electrical installations in accordance with all applicable local electrical codes, such as the Canadian Electrical Code, Part 1 and NFPA 70 (NEC).
✓	<b>NOTE:</b> Protection against lightning and resulting voltage surge must be in accordance with local standards.


Microinverter safety	
	<b>DANGER:</b> 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.
	<b>DANGER:</b> Risk of fire. The DC conductors of the PV module must be labeled "PV Wire" or "PV Cable" when paired with the Enphase microinverter.
	<b>WARNING:</b> You must match the DC operating voltage range of the PV module with the allowable input voltage range of the Enphase microinverter.
	<b>WARNING:</b> The maximum open circuit voltage of the PV module must not exceed the specified maximum input DC voltage of the Enphase microinverter.
	<b>WARNING:</b> The maximum DC input voltage that is allowed to each inverter under any circumstance is 119 V DC.
	<b>WARNING:</b> 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 QD Cable connection, PV module, or the microinverter) to rain or condensation before mating the connectors.
	<b>WARNING:</b> 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.
	<b>WARNING:</b> 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.
	<b>WARNING:</b> 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.
✓	<b>NOTE:</b> The Enphase microinverter has field-adjustable voltage and frequency trip points that may need to be set, depending upon local requirements. Only an authorized installer with the permission and following requirements of the local electrical authorities should make adjustments.

QD Cable safety	
	<b>DANGER:</b> Risk of electric shock. Do not install the QD Cable terminator while power is connected.
	<b>DANGER:</b> Risk of electric shock. Risk of fire. When stripping the sheath from the QD Cable, make sure the conductors are not damaged. If the exposed wires are damaged, the system may not function properly.
	<b>DANGER:</b> Risk of electric shock. Risk of fire. Do not leave AC connectors on the QD Cable uncovered for an extended period. You must cover any unused connector with a sealing cap.
	<b>DANGER:</b> 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 energized.
	<b>WARNING:</b> 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.
	<b>WARNING:</b> When installing the QD Cable, secure any loose cable to minimize tripping hazard.
✓	<b>NOTE:</b> When looping the QD Cable, do not form loops smaller than 12 cm (4.75") in diameter.
✓	<b>NOTE:</b> If you need to remove a sealing cap, you must use the Enphase disconnect tool.
✓	<b>NOTE:</b> When installing the QD Cable and accessories, adhere to the following: <ul style="list-style-type: none"> <li>Do not expose the terminator or cable connections to directed, pressurized liquid (water jets, etc.).</li> <li>Do not expose the terminator or cable connections to continuous immersion.</li> <li>Do not expose the terminator or cable connections to continuous tension (e.g., tension due to pulling or bending the cable near the connection).</li> <li>Use only the connectors and cables provided.</li> <li>Do not allow contamination or debris in the connectors.</li> <li>Use the terminator and cable connections only when all parts are present and intact.</li> <li>Do not install or use in potentially explosive environments.</li> <li>Do not allow the terminator to come into contact with open flame.</li> <li>Fit the terminator using only the prescribed tools and in the prescribed manner.</li> <li>Use the terminator to seal the conductor end of the QD Cable; no other method is allowed.</li> </ul>

Enphase DC Cable safety	
✓	<b>NOTE:</b> Ensure proper routing of PV module DC cable using the clips to prevent the leads from resting on the roof. Do not wrap extra DC Cable around microinverter.
✓	<b>NOTE:</b> Avoid direct exposure to sunlight.
✓	<b>NOTE:</b> Avoid sharp edges on racking.
✓	<b>NOTE:</b> Avoid cable touching rough surfaces or moving parts within racking system.
✓	<b>NOTE:</b> Avoid overly tight bending radii. Minimum bend radii for the DC Cable is 8xOD or R55mm.
✓	<b>NOTE:</b> Avoid overly tight sized cable clips for routing.

## Revision history

REVISION	DATE	DESCRIPTION
140-00281-03	October 2023	Editorial updates
Previous releases		

Panel Group/Grupo de los paneles: Azimuth/Azimut: Tilt/Inclinación: Sheet/Hoja _____ of/de _____		Customer/Cliente:			Installer/Instalador:			N S E W N S E O 	
1	2	3	4	5	6	7	8	9	
A									
B									
C									
D									
E									
F									
G									
H									

To Sheet / A la hoja de: 

To Sheet / A la hoja de: 

Scan completed map and upload it to Enphase. Click "Add a New System" at <https://enlighten.enphaseenergy.com>. Use this map to build the virtual array in Enlighten's Array Builder.

Escanee el mapa completo y cárguelo en Enphase. Haga clic en "Añadir nuevo sistema" en <https://enlighten.enphaseenergy.com>. Utilice este mapa para crear el conjunto de paneles virtual en el Creador de conjuntos de paneles de Enlighten.

Gateway Serial Number Label/  
Número de serie de Gateway

To Sheet / A la hoja de: \_\_\_\_\_

