Safety Instructions

⚠	**DANGER**: Before installing or using the Enphase Microinverter, read all instructions and cautionary markings in the technical description and on the Enphase Microinverter System and the photovoltaic (PV) equipment.
⚠	**DANGER**: 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 Electrical Shock. Be aware that installation of this equipment includes risk of electric shock. Do not install the AC junction box without first removing AC power from the Enphase System.
⚠	**DANGER**: The Engage Cable terminator cap must not be installed while power is connected.
⚠	**WARNING**: Normally grounded conductors may be ungrounded and energized when a ground fault is indicated.
⚠	**WARNING**: Always de-energize the AC branch circuit before servicing. Never disconnect the DC connectors under load. Disconnect DC connections first, then disconnect AC connections.
⚠	**WARNING**: Only use electrical system components approved for wet locations.
⚠	**WARNING**: Only qualified personnel should troubleshoot, install, or replace Enphase Microinverters or the Engage Cable and Accessories.
⚠	**WARNING**: Make sure protective sealing caps have been installed on all unused AC connectors. Unused AC connectors are live when the system is energized by the grid. Sealing caps may not be reused.
⚠	**WARNING**: Ensure that all AC and DC wiring is correct and that none of the AC or DC wires is pinched or damaged. Ensure that all AC junction boxes are properly closed.
⚠	**WARNING**: Do not leave AC connectors on the Engage Cable uncovered for an extended period. If you do not plan to replace the microinverter immediately, you must cover any unused connector with a sealing cap. Sealing caps may not be reused.
⚠	**WARNING**: 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.
⚠	**WARNING**: Be aware that only qualified personnel must connect the Enphase Microinverter to the utility grid.
⚠	**WARNING**: The Engage Cable terminator cap is intended for one-time use only. If you open the terminator after initial installation, the latching mechanism is destroyed and the terminator cap cannot be used again. If the latching mechanism is defective, the terminator must not be used. The latching mechanism must not be circumvented or manipulated.
⚠	**WARNING**: When stripping the sheath from the Engage Cable, make sure that the conductors are not damaged. If the exposed wires are damaged, the system may not function properly.
⚠	**WARNING**: Perform all electrical installations in accordance with all applicable local electrical codes and the National Electrical Code (NEC), ANSI/NFPA 70.
✓	**NOTE**: Check the labeling on the Engage Cable drop connectors to be sure that the cable matches the electrical utility service at the site. Use 208 VAC (208 VAC three-phase) Engage Cable at sites with three-phase 208 VAC service, or use 240 VAC Engage Cable at sites with 240 VAC single-phase service.
✓	**NOTE**: When installing the Engage Cable, secure any loose cable to minimize tripping hazard.
✓	**NOTE**: There are two release-holes in the drop connector on the Engage Cable. These are not for mounting but are used to disconnect the connector. Keep these release holes clear and accessible.
✓	**NOTE**: When installing the Engage Cable and accessories, adhere to the following: • Do not expose the connection to directed, pressurized liquid (water jets, etc.). • Do not expose the connection to continuous immersion. • Do not expose the AC connector 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 cable and connectors only when all parts are present and intact. • Fit the connections using only the prescribed tools. • Use the terminator to seal the conductor end of the Engage Cable; no other method is allowed.
✓	**NOTE**: Protection against lightning and resulting voltage surge must be in accordance with local standards.
✓	**NOTE**: If you need to remove a sealing cap, you must use the Enphase disconnect tool or a #3 Phillips screwdriver. Sealing caps may not be reused.

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ENGAGE QUICK INSTALL GUIDE

enphase® ENERGY

Installing the Engage Cable

The Engage™ Cable is a continuous length of outdoor-rated cable with integrated connectors for microinverters preinstalled at intervals to accommodate various PV module orientations. Enphase Microinverters plug directly into the cable connectors. Read and follow all warnings and instructions in the ***Engage Cable Installation Manual*** at http://www.enphase.com/support before installing the Engage Cable.

1

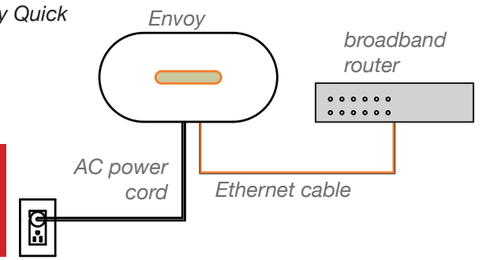
Connect the Envoy® Communications Gateway™

a. Connect the Envoy to power and Internet according to the ***Envoy Quick Install Guide***.

b. Look for the + Web indication on the LCD screen.

c. Leave the Envoy running while you install the microinverters so that any required Envoy software upgrade completes.

Warning: Do not remove power from the Envoy if the LCD displays: "Upgrading. . . Do Not Unplug."



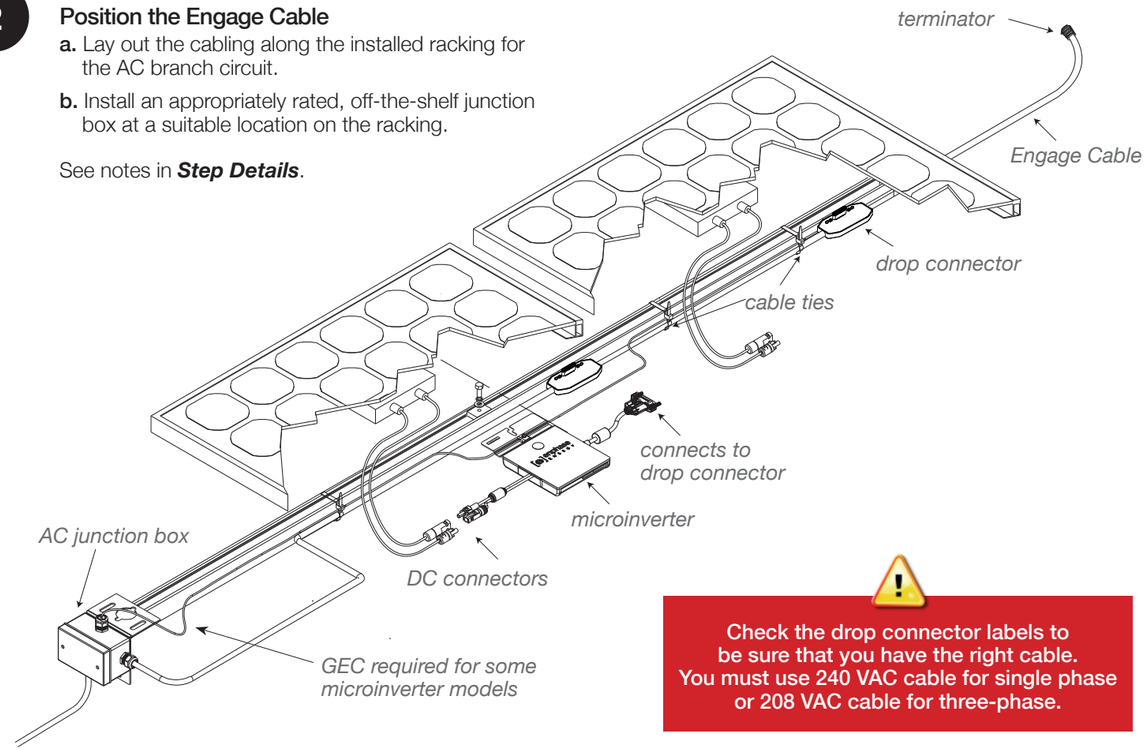
2

Position the Engage Cable

a. Lay out the cabling along the installed racking for the AC branch circuit.

b. Install an appropriately rated, off-the-shelf junction box at a suitable location on the racking.

See notes in ***Step Details***.

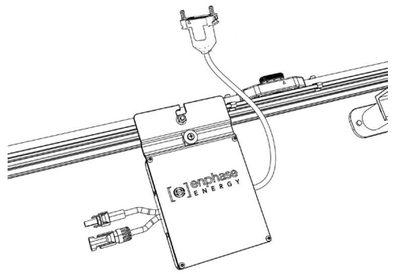


Check the drop connector labels to be sure that you have the right cable. You must use 240 VAC cable for single phase or 208 VAC cable for three-phase.

Engage Cable Quick Install Guide

3 Attach the Microinverters to the PV Racking

a. Mark the approximate centers of each PV module on the PV racking. See notes in ***Step Details***.



b. Mount the microinverters under the PV module, away from rain and sun. Do not mount the microinverter in a position that allows long-term exposure to direct sunlight or in a vertical orientation that allows water to collect in the DC connector recess.

c. Torque the microinverter fasteners as follows. Do not over torque.

- 5 N m (45-50 in-lbs) for 6 mm (1/4") hardware
- 9 N m (80-85 in-lbs) for 8 mm (5/16") hardware

4 Ground the Microinverters (if required)

Route a continuous GEC (grounding electrode conductor) on each branch if a GEC is required for the microinverter type. Torque the grounding cleat to 2 N m (20-25 in-lbs)

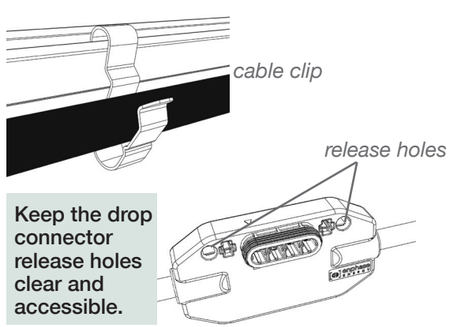
GEC Required?

- M250 Microinverter: No GEC required
- M215 Microinverter: GEC is required

5 Dress the Cable

a. Attach the cabling to the rack using cable clips or tie wraps.

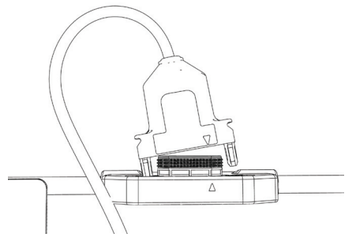
b. Dress any excess cabling in loops so that it does not contact the roof.



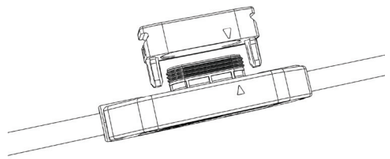
Keep the drop connector release holes clear and accessible.

6 Connect the Microinverters

a. Remove and discard the temporary shipping cap from the cable connector and connect the microinverter. Listen for two clicks as the connectors engage.



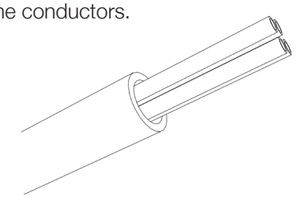
b. Cover any unused connectors with sealing caps. Listen for two clicks as the connectors engage. See notes in ***Step Details***.



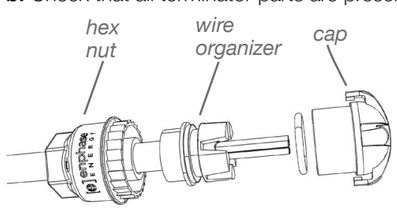
Do not use shipping caps to cover unused connectors. The shipping cap does not provide an adequate environmental seal.

7 Terminate the Unused End of the Cable

a. Remove 60 mm (2.5") of the cable sheath from the conductors.



b. Check that all terminator parts are present.

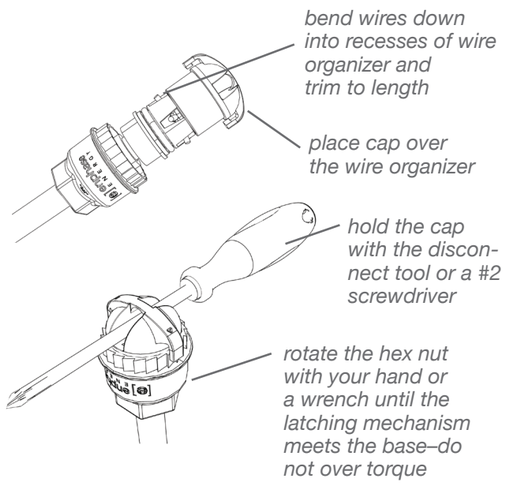


7 Terminate the Unused End of the Cable, Cont.

c. Slide the hex nut onto the cable.

d. Insert the cable end all the way into the wire organizer (up to the stop).

e. Attach the cap.

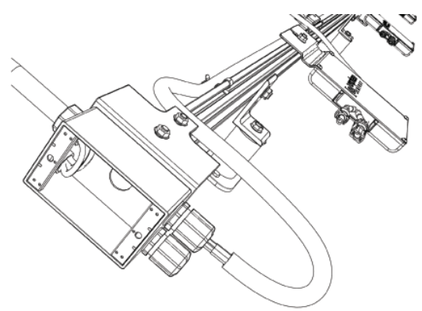


f. Attach the terminated cable end to the PV racking with a cable clip or tie wrap.

Never unscrew the hex nut. This action can twist and damage the cable.

8 Connect the Cable to the AC Junction Box

Connect the cable into the AC branch circuit junction box. See notes in ***Step Details***.

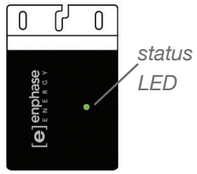


9 Connect the PV Modules

a. Mount the 60-cell PV modules above the microinverters.

b. Connect the DC leads of each 60-cell PV module to the DC input connectors of their corresponding microinverter.

The status LED on the underside of each microinverter lights green six seconds after DC power is applied. It remains lit solid for two minutes, followed by six green blinks. After that, red blinks indicate that no grid is present. This is because the system is not yet energized.



10 Energize the System

a. If applicable, 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**.

Step Details

2 NOTE: Verify that AC voltage at the site is within range:

240 Volt AC Single-Phase		208 Volt AC Three-Phase	
L1 to L2	211 to 264 VAC	L1 to L2 to L3	183 to 229 VAC
L1, L2, to N	106 to 132 VAC	L1, L2, L3 to N	106 to 132 VAC

WARNING: Do not exceed the maximum number of microinverters in an AC branch circuit as listed in the microinverter manual. Each branch circuit must be protected by a dedicated circuit breaker of 20 A or less.
WARNING: Size the AC wire gauge to account for voltage drop for both the branch circuit and all upstream conductors leading back to the PCC. See the ***Circuit Calculations*** documents at http://www.enphase.com/support.

3 WARNING: Allow a minimum of 1.9 cm (0.75") between the roof and the microinverter. Also allow 1.3 cm (0.50") between the back of the PV module and the top of the microinverter.
NOTE: Torque the microinverter fasteners to the values shown. Do not over torque:

- 1/4" mounting hardware – 5 N m (45-50 in-lbs)
- 5/16" mounting hardware – 9 N m (80-85 in-lbs)
- If present, torque grounding cleat to 2 N m (20-25 in-lbs)

Using a power screwdriver is not recommended due to the risk of thread galling.

6 WARNING: Install sealing caps on all unused AC connectors as they become live when the system is energized by the utility. The IP67-rated sealing caps are required for protection against moisture ingress.

8 NOTE: The Engage Cable uses the following wiring scheme.

240 Volt AC Single-Phase Wires	208 Volt AC Three-Phase Wires
Black – L1 Red – L2 White – Neutral Green – Ground	Black – L1 Red – L2 Blue – L3 White – Neutral Green – Ground

NOTES: 1) The green wire acts as equipment ground (EGC).
2) The Engage Cable is stranded with Class K wire. Use appropriate connectors when transitioning to field cable.