



Support Contact

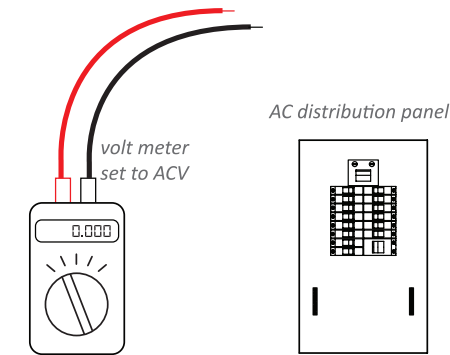
PHONO SOLAR TECHNOLOGY CO., LTD.
2319 Timberloch Place, Suite D
The Woodlands, Texas 77380
Email: support@phonosolar.com
Website: <http://www.phonosolar.com>



Phono Solar AC module Quick Install Guide

1 Measure the AC Voltage of the Service Entrance Conductors

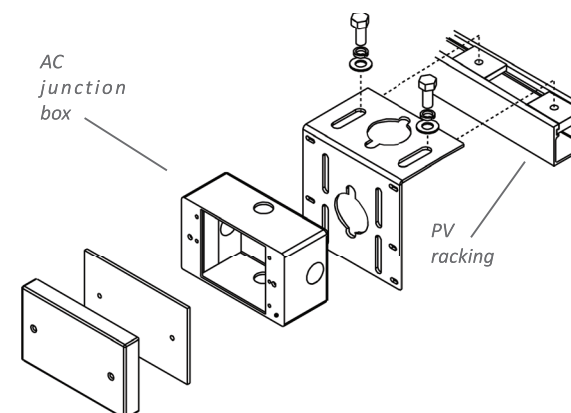
Check all phase conductors: line to neutral and line to line.



Acceptable ranges are shown in Step Details on back.

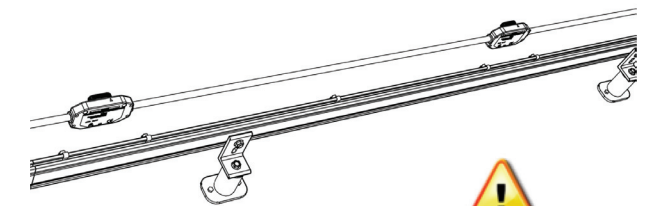
2 Install the AC Branch Circuit Junction Box

See notes in Step Details on back.



3 Position and Install the Engage Cable

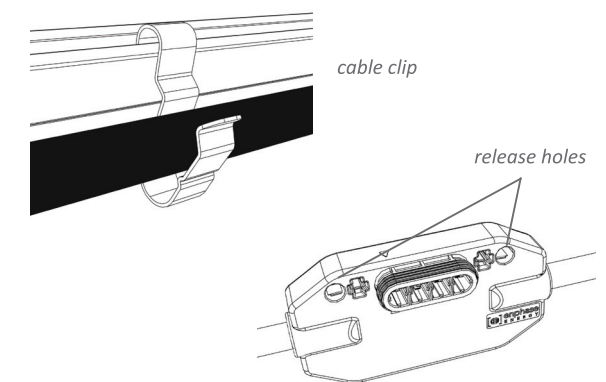
a. Lay out the cable along the installed racking.



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.

b. Attach the cabling to the rack using the cable clips, or you may use tie wraps.

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



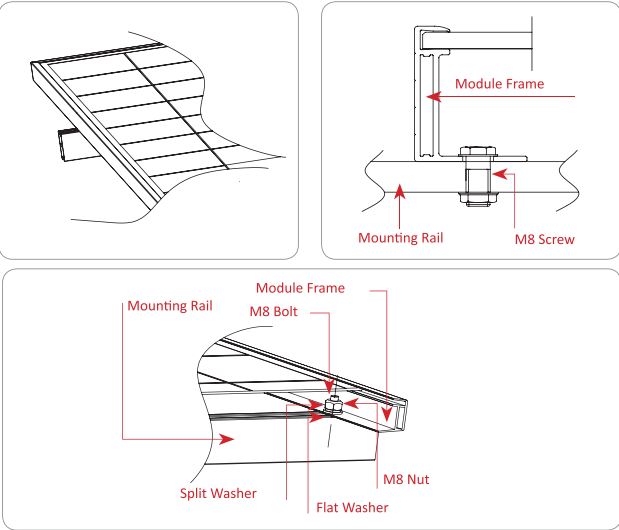
Keep the drop connector release holes clear and accessible.

Phono Solar AC module Quick Install Guide

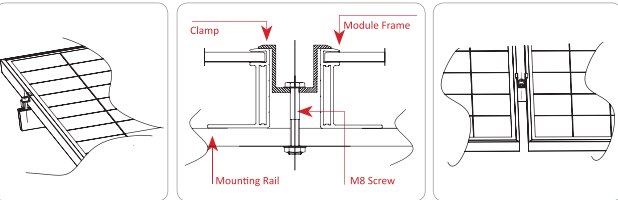
4 Attach the AC module to the PV Racking

PHONO SOLAR modules can be mounted using two methods:

Screw Fitting: Use corrosion-proof screws in the existing installing holes in the module frame. Each module has 8 mounting holes for securing the module on the mounting rail. The module frame must be attached to a mounting rail using M8 corrosion-proof screws together with spring washers and flat washers in symmetrical locations on the module. The applied torque should be approximately 8Nm.



Clamp fitting: Using suitable module clamps on the LONG side of the module frame to mount the modules is “portrait orientation” mode, while on the SHORT side of the module frame is “landscape orientation” mode. The module clamps should not come into contact with the front glass and must not deform the module frame. Avoid any shadowing effects from the module clamps. The module frame can not be modified under any circumstances. Regardless of the orientation chosen, at least 4 clamps must be used on each module. For portrait orientation, 2 clamps should be attached to the long sides of the module and for landscape orientation 2 clamps should be attached to the short sides of the module. Depending on the local wind and snow loads, additional clamps may be required. The applied torque should be about 8Nm.



5 AC Module Mounting

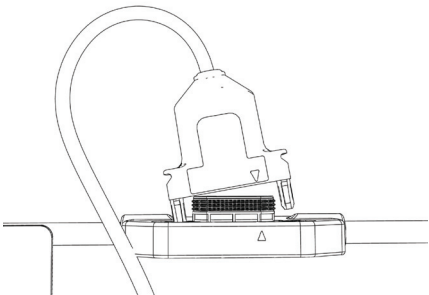
Select the appropriate installation method depending on the load (see below for more detailed information).

	2400 Pa Load	3800 Pa Load	5400 Pa Load
Mounting system		 Use four mounting holes	 Use eight mounting holes
Clamping system Attachment to the long frame	 Use four clamps	 Use four clamps	

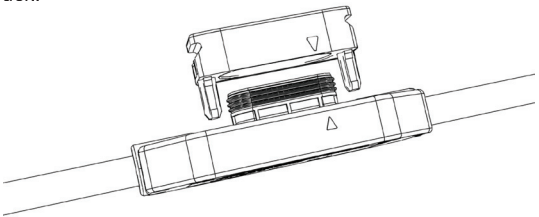
	2400 Pa Load	3800 Pa Load	5400 Pa Load
Insertion System	 Use insertion system on short frame		 Use insertion system on a short frame and two clamps at the center of each long frame

6 Connect the Microinverters to the Cable

a. Remove 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 on back.



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

7 Ground the PV modules

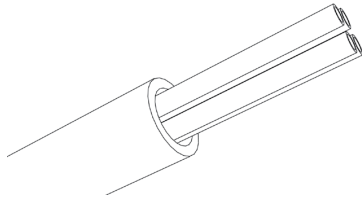
Note that the M215 Microinverters on the Phone Solar AC module do not require an additional, separate GEC. This is because the Phono Solar AC module is UL 1741 certified.

Ground the PV modules using either the grounding cleat with a continuous ground wire or WEEB grounding washers.

Phono Solar AC module Quick Install Guide

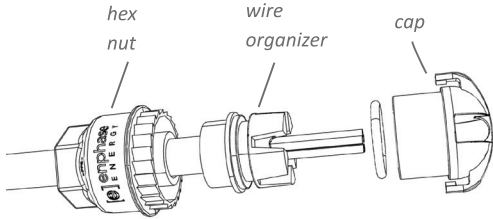
8 Terminate the End of the Engage Cable

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

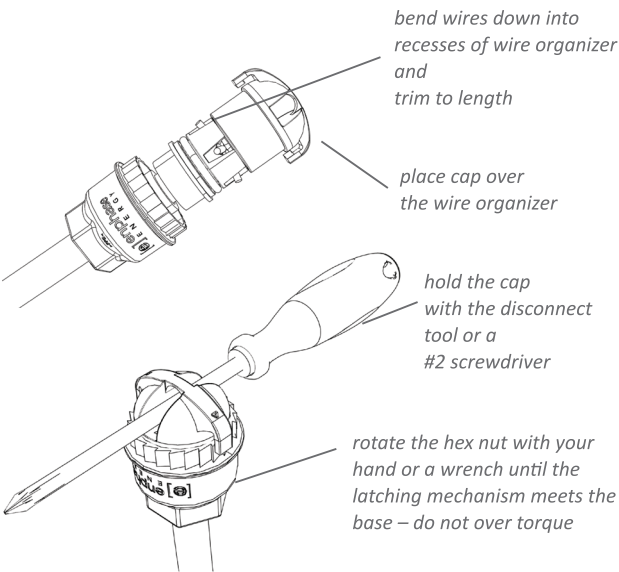


b. Slide the hex nut onto the cable.

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



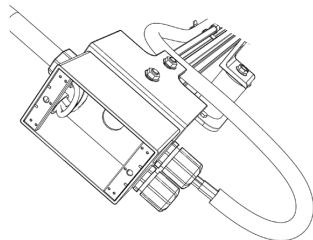
d. Attach the cap.



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

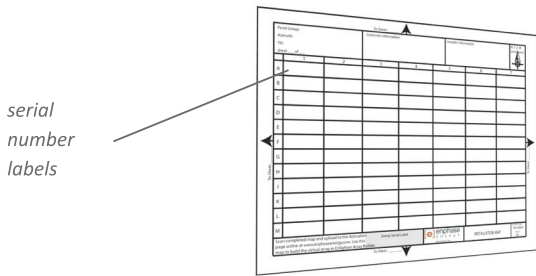
9 Connect the Cable to the AC Junction Box

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



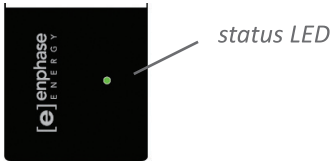
10 Complete the Installation Map

You can build the system map manually, or you can use the ArrayGun feature from the Enphase Installer Toolkit to easily build and configure a system. For more information, go to <http://enphase.com/products/arraygun/>. To manually build the map, peel the removable serial number label from each M215 and affix it to the respective location on the paper copy of the installation map.



11 Energize 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.



The status LED on the underside of each M215 will blink green six times to indicate normal operation one minute after DC power is applied.

12 Build the Virtual Array

When the system is energized and the Envoy detects the microinverters, you can create the virtual array in Enlighten from the installation map you created. Once the virtual array is built, Enlighten displays a graphic representation of the array.

a. Scan the installation map and upload it to the Activation form online.
b. Use Array Builder to create the virtual array in Enlighten.
c. If you do not already have an account, go to <http://www.enphase.com> and click “Enlighten Login” to register.

See <http://enphase.com/support-north-america/videos/> to view the Array Builder demo.

Step Details

1

240 Volt AC Split 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

2

WARNING: Only use electrical system components approved for wet locations.
WARNING: Do NOT exceed the maximum number of M215 microinverters in an AC branch circuit as listed in the table below. Each branch circuit must be protected by a dedicated circuit breaker of 20 A or less.

Service type	Max M215s per branch
240 VAC split phase	17
208 VAC three phase	25

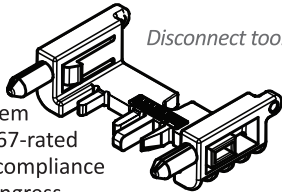
WARNING: Size the AC wire gauge to account for voltage drop for both the branch circuit and all upstream conductors leading back to the PCC. See *Voltage Drop Calculations* at <http://www.enphase.com/support>.

4

WARNING: Allow a minimum of 1.9 cm (0.75”) between the roof and the bottom of the microinverter.

5

WARNING: Install sealing caps on all unused AC connectors as these become live when the system is energized by the utility. The IP67-rated sealing caps are required for UL compliance and to protect against moisture ingress.



NOTE: To remove a sealing cap, you must use the Enphase disconnect tool or a #2 screwdriver.

9

NOTE: The Engage Cable uses the following wiring scheme.

240 Volt AC, Split Phase Wiring	208 Volt AC, Three Phase Wiring
Black – L1 Red – L2 White – Neutral Green – Ground	Black – L1 Red – L2 Blue – L3 White – Neutral Green – Ground

Equipment Symbols

	Warning: hot surface.
	DANGER: Risk of electrical shock.
	Refer to product instructions.

Safety Information

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 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.
WARNING: The maximum open circuit voltage of the PV module must not exceed the specified maximum input voltage of the Enphase Microinverter.
WARNING: The M215 may be paired only with a 60-cell PV module.
WARNING: Utility service requirements: The M215-60-2LL works only with split phase 240 VAC service and three phase 208 VAC service.
WARNING: The M215 has field adjustable voltage and frequency trip points that you must set before the system can produce power. Only an authorized installer with the permission and following requirements of the local electrical authorities should make adjustments.
WARNING: The body of the Enphase Microinverter is the heat sink. Under normal operating conditions, the temperature is 15°C above ambient, but under extreme conditions the microinverter can reach a temperature of 80°C. To reduce risk of burns, use caution when working with microinverters.
WARNING: Only qualified personnel should install or replace Enphase Microinverters.
WARNING: Never disconnect the DC wire connectors under load. Ensure that no current is flowing in the DC wires prior to disconnecting.
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 electricity network. Sealing caps may not be reused.
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: Ensure that all AC and DC wiring is correct. Ensure that none of the AC and DC wires are pinched or damaged. Ensure that all AC junction boxes are properly closed.
WARNING: DO NOT connect Enphase Microinverters to the electricity network or energize the AC circuit(s) until you have completed all of the installation procedures.
WARNING: Do not attempt to repair the Enphase Microinverter; it contains no user-serviceable parts. If it fails, please 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.
WARNING: Be aware that only qualified personnel must connect the Enphase Microinverter to the electricity network.
WARNING: Be aware that installation of this equipment includes risk of electric shock. Normally earthed conductors may be unearthed and energized when an earth fault is indicated.
WARNING: Always disconnect AC power before disconnecting the PV module wires from the Enphase Microinverter. The AC connector of the microinverter is suitable as a disconnecting means.
WARNING: Perform all electrical installations in accordance with all applicable local electrical codes and the National Electrical Code (NEC), ANSI/NFPA 70.
NOTE: The AC output neutral is not bonded to ground inside the microinverter.
NOTE: Protection against lightning and resulting voltage surge must be in accordance with local standards.
NOTE: Obtain proper approval for the installation from the authorities having jurisdiction.
NOTE: Product information is subject to change without notice. All trademarks are recognized as the property of their respective owners.

Refer to the *Envoy Communications Gateway Quick Install Guide* at <http://www.enphase.com/support> for information on Envoy installation and Enlighten set up.