

Replacing the Envoy PCB in the Enphase IQ Combiner 3

To install a replacement IQ Envoy printed circuit board (PCB) in the Enphase IQ Combiner 3™, read and follow all warnings and instructions in this Guide. If you do not fully understand any of the concepts, terminology, or hazards outlined in these instructions, refer installation to a qualified electrician or installer. These instructions are not meant to be a complete explanation of a renewable energy system. All installations must comply with national and local electrical codes. Professional installation is recommended.

SAFETY

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This guide contains important instructions that you must follow during installation of additional breakers in the IQ Combiner+.

Safety Instructions

	DANGER: Risk of electric shock. Risk of fire. Do not attempt to repair the Enphase IQ Envoy™ PCB; it contains no user-serviceable parts. If the IQ Envoy fails, contact Enphase Customer Support for assistance (enphase.com/en-us/support/contact).
	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 IQ Combiner without first removing AC power from the Enphase System. Ensure the power coming from the microinverters is de-energized before servicing or installing.
	DANGER: Risk of electric shock. Risk of fire. Only qualified personnel should troubleshoot, install, or add parts to the Combiner.
	DANGER: Risk of electric shock. Install and use the IQ Envoy PCB (printed circuit board) only inside the Enphase Combiner.
	DANGER: Risk of electric shock. Improper servicing of the combiner box or its components may result in a risk of shock, fire or explosion. To reduce these risks, disconnect all wiring before attempting any maintenance or cleaning.
	DANGER: Risk of electric shock. Always de-energize the AC branch circuit before servicing. While connectors are rated for disconnect under load, it is a best practice to de-energize before disconnecting.
	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. Ensure that all wiring is correct and that none of the wires are pinched or damaged.
	DANGER: Risk of electric shock. Risk of fire. Do not work alone. Someone should be in the range of your voice or close enough to come to your aid when you work with or near electrical equipment. Remove rings, bracelets, necklaces, watches etc. when working with batteries, photovoltaic modules or other electrical equipment.
	DANGER: Risk of electric shock. Risk of fire. Before making any connections verify that the circuit breakers are in the off position. Double check all wiring before applying power.

Safety and Advisory Symbols

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

	WARNING: Before installing or using the Combiner, read all instructions and cautionary markings in the technical description and on the equipment.
	WARNING: Use the circuit breakers in the Enphase Combiner only for serving Enphase equipment. No other loads are allowed.
	WARNING: This unit is not provided with a GFDI device.
	WARNING: This product is intended for operation in an environment having a maximum ambient temperature of 46°C (115°F).
	NOTE: Perform all wiring in accordance with all applicable local electrical codes, with the Canadian Electrical Code, Part I, and with the National Electrical Code (NEC), ANSI/NFPA 70.
	NOTE: Protection against lightning and resulting voltage surge must be in accordance with local standards.
	NOTE: Using unapproved attachments or accessories could result in damage or injury.
	NOTE: Always use anti-static protection when replacing the IQ Envoy PCB.



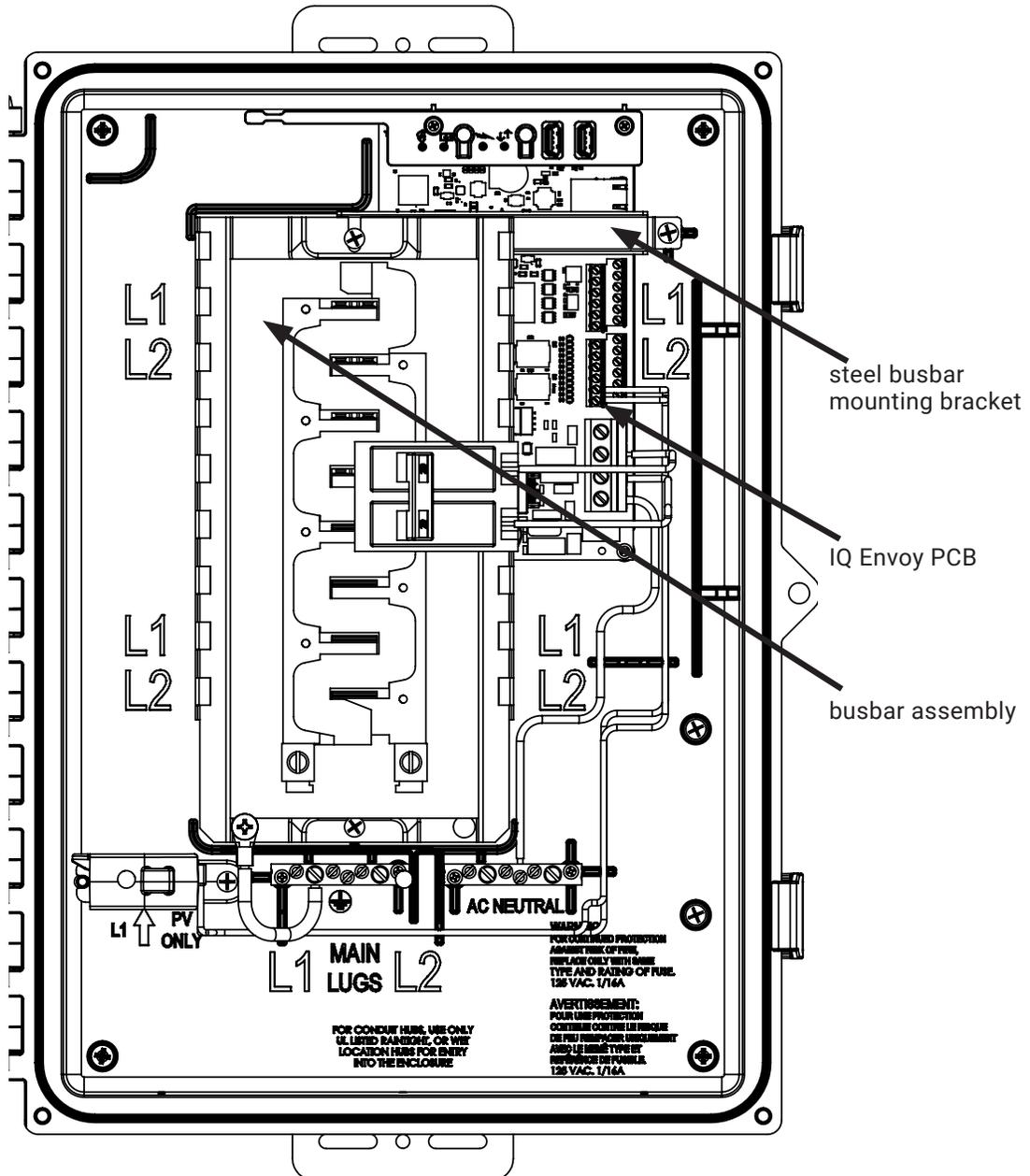
INSTALLING A REPLACEMENT IQ ENVOY PCB



DANGER! Risk of electric shock. Always de-energize the Combiner before beginning any of the following procedures.

1 Preparation

- A) De-energize the circuit feeding the IQ Combiner 3.
- B) Check that the IQ Combiner 3 is de-energized.
- C) Be sure to wear anti-static protection, such as a properly grounded anti-static wrist strap.
- D) Reference the following diagram while removing and replacing the IQ Envoy PCB (Printed Circuit Board).
- E) You must follow all NEC and local electrical codes when removing and replacing the IQ Envoy PCB.



2 Remove the Old IQ Envoy PCB

Perform the following steps to remove the old IQ Envoy PCB. Note that the combiner includes one two-pole 10A circuit breaker that feeds the IQ Envoy and the AC outlet (if present).

- A) Open the enclosure door.
- B) If needed, remove the door: Pinch the top of the hinge rod using a needle-nosed pliers. Slide the door up and away to remove it. Set the door aside for later reattachment.
- C) If an Enphase Mobile Connect cell modem is installed, unplug the cell modem from the IQ Envoy USB port.
- D) Loosen the four screws on the deadfront and remove the deadfront.
- E) Note the location of the CT wiring. If needed, label the consumption CTs so that they can be reinstalled in their original positions.
- F) Disconnect all conductors feeding the old IQ Envoy PCB at the power terminals and at the CT wiring terminals. If an Ethernet cable is plugged into the IQ Envoy PCB, unplug the Ethernet cable.
- G) If all power wiring enters the combiner box from the lower half of the combiner box, it may be possible to replace the IQ Envoy PCB without disconnecting the power wiring at the distributed generation circuit breakers and at the combined output terminals. Otherwise, disconnect all power conductors from the distributed generation circuit breakers and the combined output lugs. Also, disconnect the ground wire attaching the busbar assembly to the ground lug at the ground lug.
- H) Remove the screw from the bottom of the busbar assembly.
- I) Remove the screw from the top of the busbar assembly. If the power wiring is still connected, fold the busbar down out of the way, being careful to not damage the conductors. Otherwise, remove the busbar assembly and circuit breakers.
- J) Remove the screw holding the steel busbar mounting bracket and remove the busbar mounting bracket.
- K) Remove the four screws and button/LED cover plate holding the IQ Envoy PCB in place.
- L) Lift out the IQ Envoy PCB and set it aside to return to Enphase.

3 Install the New IQ Envoy PCB

The new replacement Envoy PCB package includes the Envoy PCB, a removable label with the Envoy serial number on it, and the installation guide.

- A) Remove the replacement Envoy PCB from shipping bag.
- B) Remove the Envoy serial number label from the new unit and place it on the inside of the IQ Combiner 3 door. Do not obscure or remove the older serial number label.
- C) Insert the replacement IQ Envoy PCB and place into position with the terminals on the right.
- D) Insert the four mounting screws and button/LED cover plate to secure the IQ Envoy PCB in place. Use a hand-held screwdriver to place all four screws **loosely** in place. Then, go back and apply the minimum force needed to secure the Envoy PCB into place. Tighten to 23.5 in-lbs. **DO NOT USE A POWER TOOL.**
- E) Connect the production and consumption CT wires at the IQ Envoy CT terminals. Tighten the connections to 5 in-lbs.
- F) If applicable, reconnect the Ethernet cable to the Envoy PCB.
- G) Place the steel busbar mounting bracket back into position over the IQ Envoy PCB with both mounting holes aligned. Insert the screw that holds the right side of the steel mounting bracket in place. Apply the minimum amount of force needed to secure the bracket into place. **DO NOT USE A POWER TOOL.** Ensure that the steel mounting bracket is held so that the left mounting hole is properly aligned with the enclosure mounting hole.

3 Install the New IQ Envoy PCB (continued)

- H) Place the busbar assembly back into position. Check all four corners of the busbar assembly to ensure it is sitting within the alignment slots and so both mounting holes are visible.
- I) Loosely install the top mounting screw in the top center mounting hole of the busbar assembly. Next, loosely install the bottom mounting screw in the bottom center mounting hole of the busbar assembly. Then, go back and apply the minimum amount of force needed to secure the busbar assembly into place. Tighten to 23.5 in-lbs. **DO NOT USE A POWER TOOL.**
- J) Connect the power wiring at the IQ Envoy PCB power wiring terminals. Tighten to 10.5 in-lbs.
- K) If applicable, connect the power wiring at the distributed generation circuit breakers and at the combined output lugs.
- L) Reconnect the ground wire that attaches the busbar assembly to the ground lug at the ground lug.
- M) Verify that all power wiring is properly connected and properly torqued to the torque ratings listed on the combiner box label. Verify that the circuit breakers are fully seated on the busbar.
- N) Reinstall the deadfront cover and align the deadfront screws with the mounting holes in the combiner enclosure. Start each screw, then go back and fully tighten each of the screws. Apply the minimum force needed to secure the deadfront securely into place. **DO NOT USE A POWER TOOL.**
- O) If applicable, reconnect the cell modem to the Envoy PCB USB ports.
- P) Reinstall the Combiner door (if removed). Set the door back on the pins. Apply downward pressure until door snaps into place.

4 Energize the Combiner

- A) Turn on the circuit feeding the combiner box.
- B) Check that all circuit breakers are in the on position. All four IQ Envoy LEDs flash amber during boot up (approximately two minutes). When boot up is complete, begin a device scan by pushing the  button at the top right of the combiner box. Note that if the micro-inverters have communicated with another Envoy that day, they will not be discoverable by a device scan. In that case, provision the IQ Envoy using the Installer Toolkit App. Refer to the *IQ Envoy Quick Installation Guide* for more details.
- C) Make sure that the production and consumption CTs are enabled and properly configured.
- D) Ensure that the IQ Envoy is connected to Enlighten before leaving the site. The Network Communications LED  on the right side of the IQ Envoy must be solid green. Refer to the *IQ Envoy Quick Installation Guide* for complete instructions.
- E) Once the Envoy is reporting, contact Enphase customer support to ensure that the old IQ Envoy is retired and the new IQ Envoy is associated with the system.