

Enphase Energy Systems with IQ Battery 5P Troubleshooting Guide

North America



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Introduction



Introduction

This guide is intended to help installers and maintainers with post-installation troubleshooting for 3rd Generation Enphase storage products only.

This includes the IQ Battery 5P, IQ Combiner 5 and 5C, IQ System Controller 3 and 3G, and associated meters.

Some Enphase storage products have limitations on system integration:

- Installers should never combine 1st and 2nd Generation products with 3rd Generation products.
- Installers should never combine non-Enphase storage with Enphase storage products.

For additional storage troubleshooting help, visit the [Service and Diagnostics Training & Troubleshooting YouTube series](#).

Installer certification

Installers must be certified to commission and service systems with an IQ Battery 5P or Sunlight Backup systems.

This includes the following qualifications:

- Individual IQ Battery Installer certification
- Individual IQ Battery Design certification

A separate certification is required for IQ8 Microinverters with both Sunlight Backup and IQ Battery Backup systems (not applicable for PV only systems). For more information, see the [IQ8 training overview](#).

To learn about the certification process, view FAQs, and start working toward certification, see the [storage installer authorization overview](#).

Troubleshooting tools

To perform on-site troubleshooting instructions provided in this guide, installers are required to use specific tools.

Before troubleshooting, confirm that you have the proper tools required. Depending on the issue, you may need one or more of the following:

- Multimeter
- Phillips screwdriver
- T20 Torx driver or multi-bit screwdriver with required bits
- Enphase Installer App

Product identification and anatomy

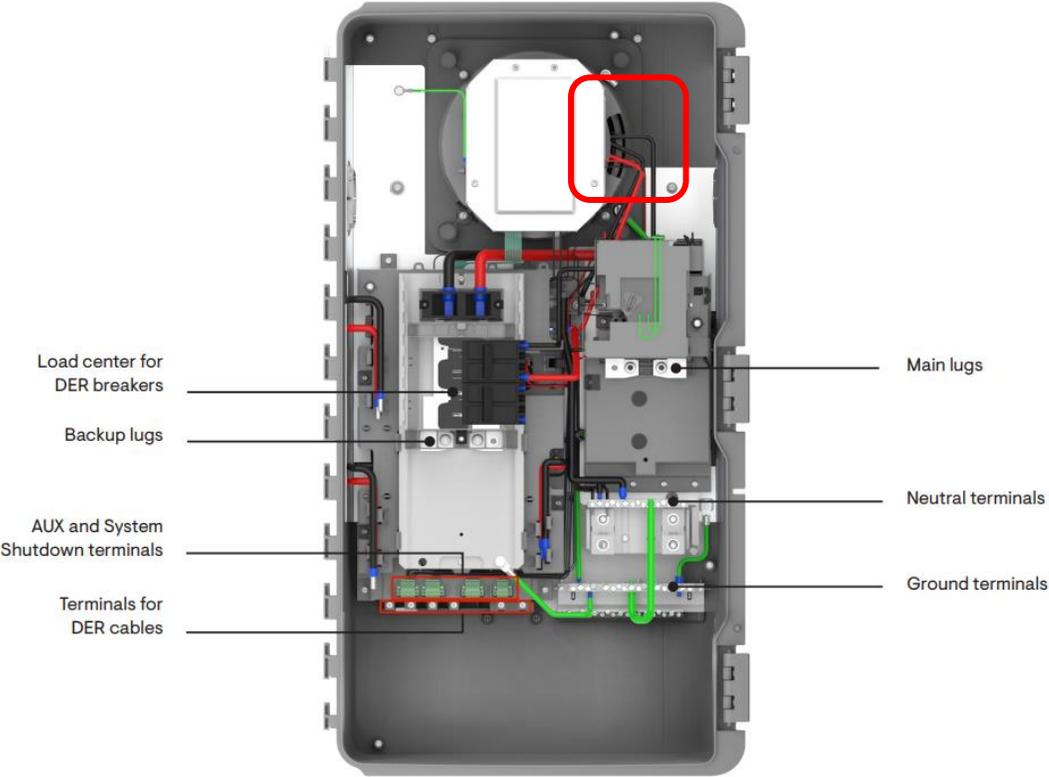


Identify IQ System Controller type

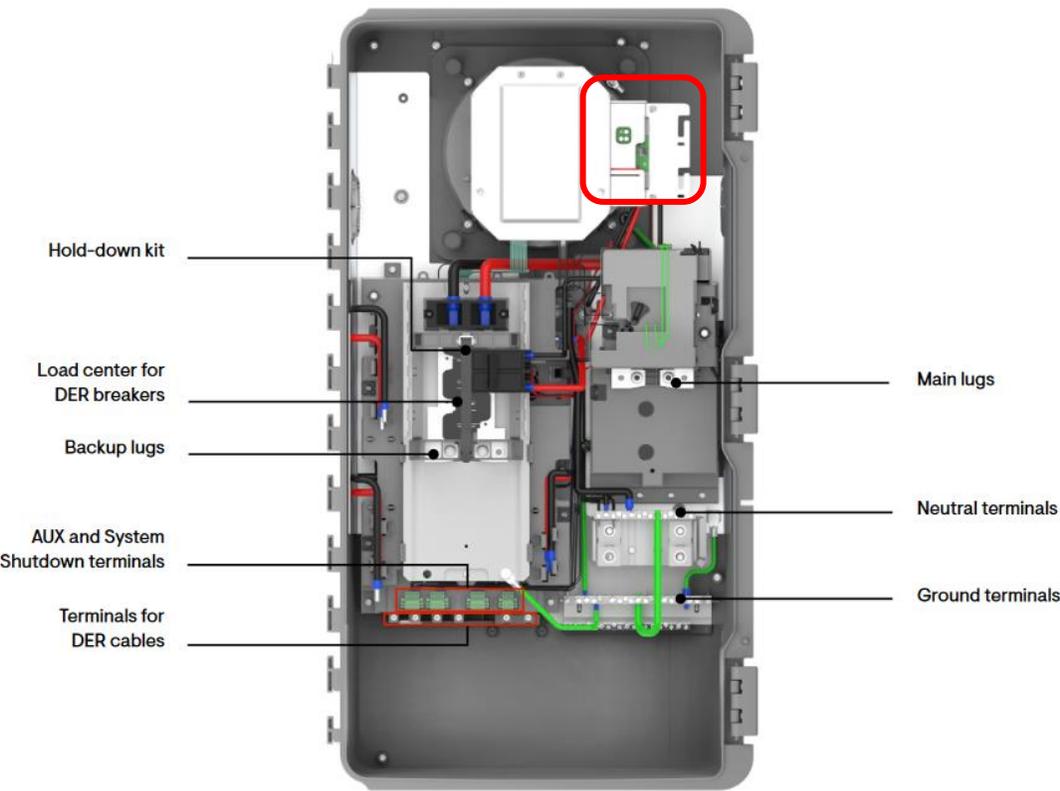
You can identify between the IQ System Controller 1, 2, and 3/3G by checking for a Communications Kit 2 terminal.

The IQ System Controller 3 and 3G have a Communications Kit 2 terminal located in the upper right corner.

IQ System Controller 1 and 2



IQ System Controller 3/3G



IQ System Controller 3 versus 3G

The IQ System Controller 3 offers IQ Battery 5P oversubscription, while the IQ System Controller 3G offers different Distributed Energy Resource (DER) 3 port functionality to support generator integration.

The IQ System Controller 3G DER port supports generator integration, while the IQ System Controller 3 DER port supports additional PV and IQ Battery 5P integration.

Multiple IQ System Controllers can be installed on the same site, but only in parallel. In addition, multiple IQ System Controllers cannot be installed in series.

If you have multiple IQ System Controllers, each one must be commissioned on separate Enlighten site IDs.

To learn more about the IQ System Controller 3 and the IQ System Controller 3G, see the [IQ System Controller introductory tech brief](#).



IQ System Controller 3 versus 3G

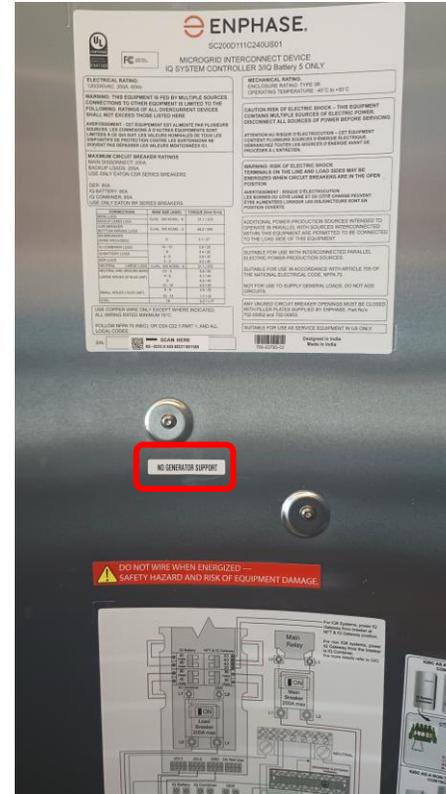
There are two ways to verify which type of 3rd Generation IQ System Controller you are troubleshooting.

To begin, open the IQ System Controller.

Option 1: Check the inside of the door. Only the IQ System Controller 3 has a **No generator support** sticker.



The IQ System Controller 3G does NOT have a **No generator support** sticker located on the inside of the door.



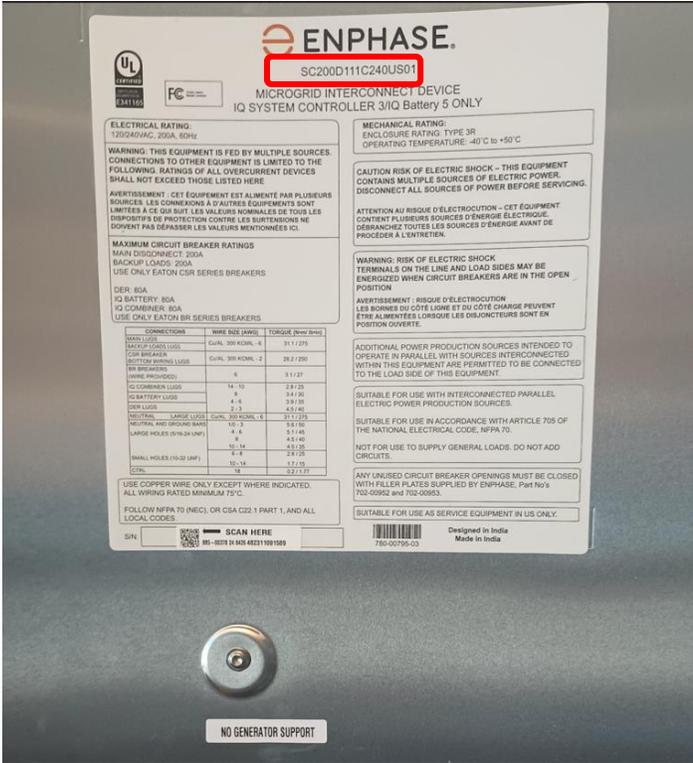
IQ System Controller 3 versus 3G

Option 2: Look for the SKU number starting with **SC200** labeled on the inside of the door.

Then, use the table below to identify the IQ System Controller type.

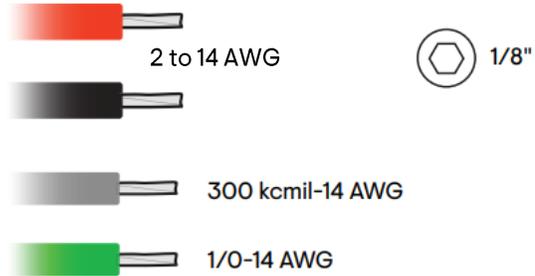
Product name	SKU	3rd DER port configuration
IQ System Controller	EP200G101-M240US00	N/A
IQ System Controller 2	EP200G101-M240US01	N/A
IQ System Controller 3	SC200D111C240US01	80A (64A continuous) IQ Battery/PV
IQ System Controller 3G	SC200G111C240US01	80A (64A continuous) Generator

SC200D111C240US01
MICROGRID INTERCONNECT DEVICE



Anatomy of the IQ System Controller 3 and 3G

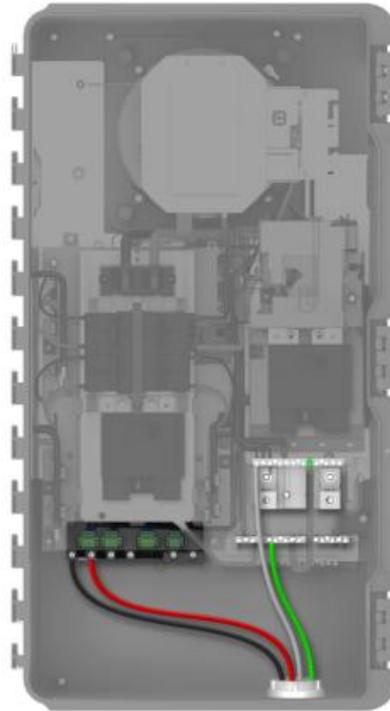
When installing an IQ System Controller 3 or 3G, connect the DER wires to the lugs at the bottom.



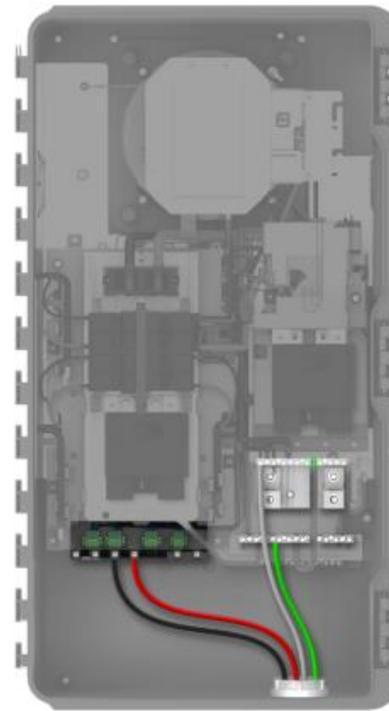
Refer to the wiring table and torque recommendation on the following page before connecting the wires.

Refer to local codes for any specific local requirements.

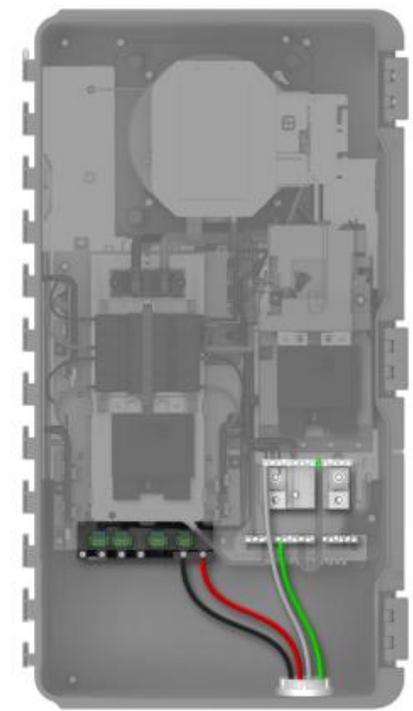
IQ Battery wiring



IQ Combiner wiring



IQ System Controller 3G:
Generator wiring



DER wiring:

IQ System Controller 3:
Additional IQ Battery / PV wiring

Anatomy of the IQ System Controller 3 and 3G

To learn more about the anatomy of the IQ System Controller 3, see the [quick install guide](#).

PV/IQ Battery 5P/Generator connections

AWG	TORQUE (LB.IN)
14 -10	25
8	30
4 - 6	35
2 - 3	40

NEUTRAL AND GROUND CONNECTIONS	AWG	TORQUE (LB.IN)	
Neutral and ground bar – large holes	1/0 - 3	50	
	4 - 6	45	
	8	40	5/16"-24 UNF
	10 - 14	35	
Neutral and ground bar – small holes	6 - 8	25	
	10 - 14	15	#10-32 UNF
Neutral lugs	300 kcmil - 6	275	 3/8"

Anatomy of the IQ Battery 5P

Functionality of the IQ Battery 5P
DC Disconnect switch and LED
indicator are combined into a single
button.

You can access the DC Disconnect switch
without removing the cover.

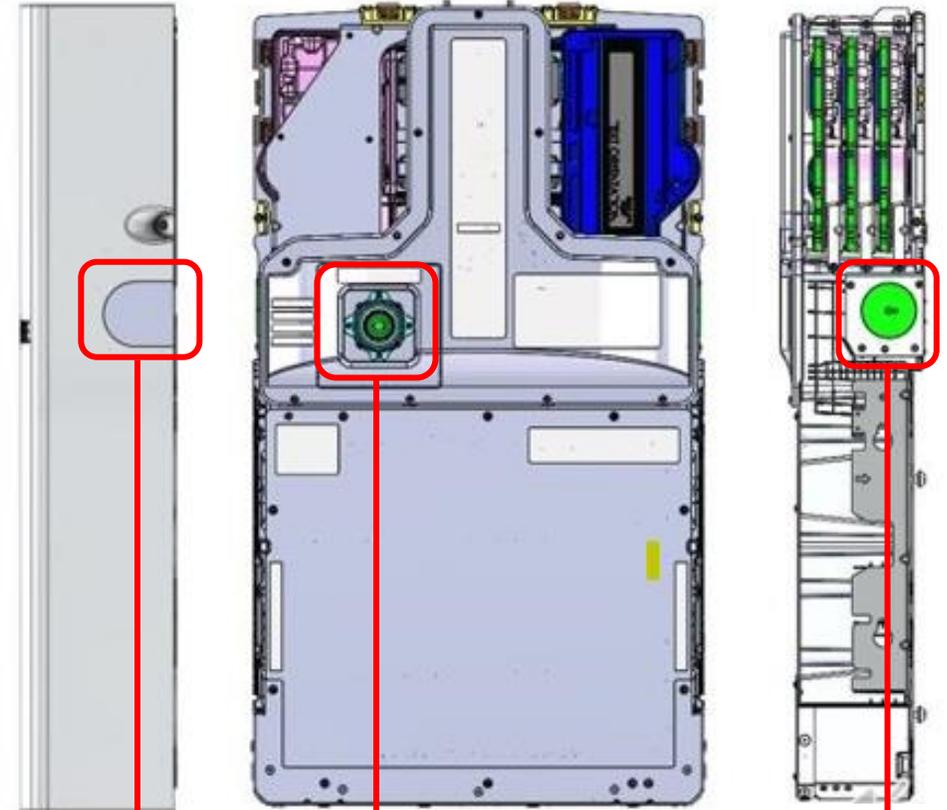
To learn more about IQ Battery 5P wiring, see
the [quick install guide](#).

External View (ID Cover)



DC Disconnect switch
and LED

Internal View



Conduit cover

DC Disconnect
switch

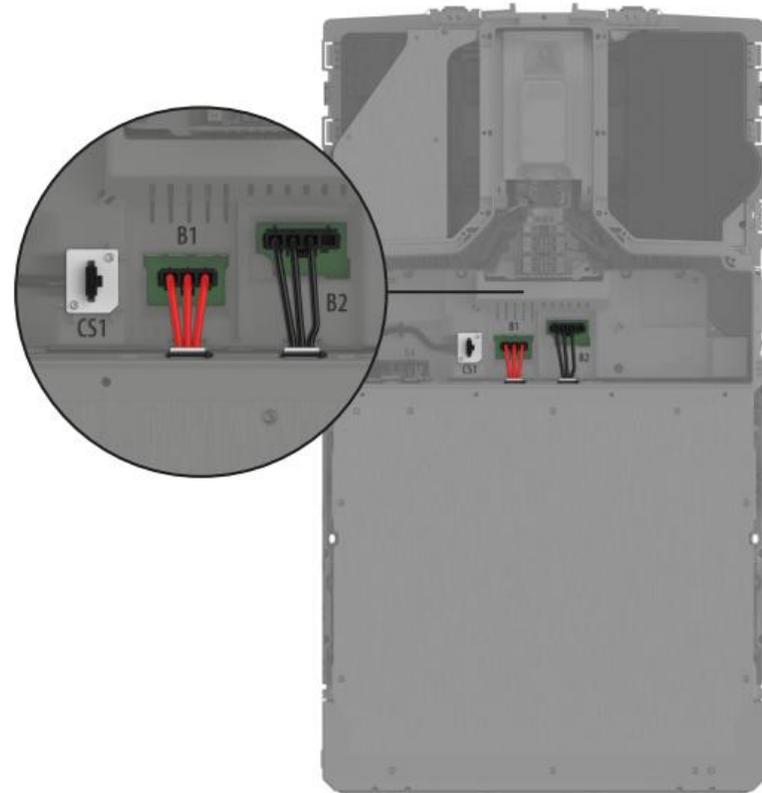
AC wiring entry

Anatomy of the IQ Battery 5P

During installation and some troubleshooting practices, installers must remove the DC Disconnect switch.

You can access the DC Disconnect switch by removing the front wiring cover. Do not allow the wiring cover to dangle during this process.

When removing the wiring cover, move it gently away from the unit to find the Control switch CS1 intermediate connection. Unplug it from the panel mount connector before removing the wiring cover completely.



Anatomy of the IQ Combiner 5 and 5C

The IQ Combiner 5 and 5C look identical from the exterior view.

However, there are internal differences:

- The Communications Kit 2 comes preinstalled in the IQ Combiner 5 and 5C.
- A Mobile Connect comes preinstalled in the IQ Combiner 5C.
- An additional CT must be wired into the C3 terminals for IQ Battery 5P sites.
- A jumper must be in place for the IQ Battery CT to function.

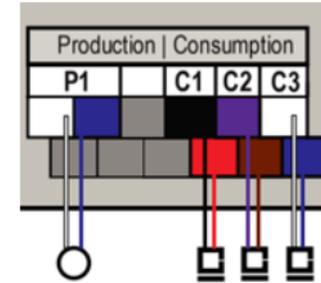
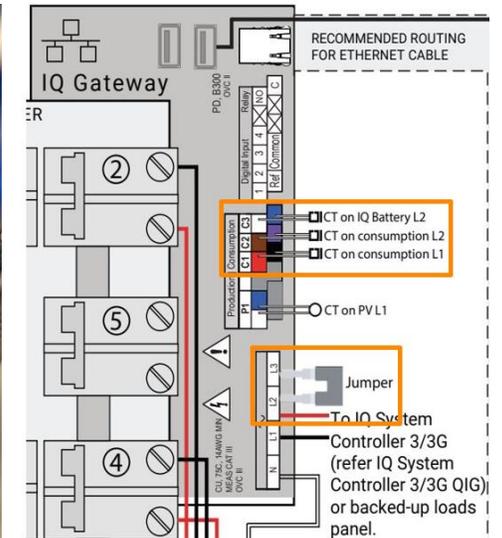


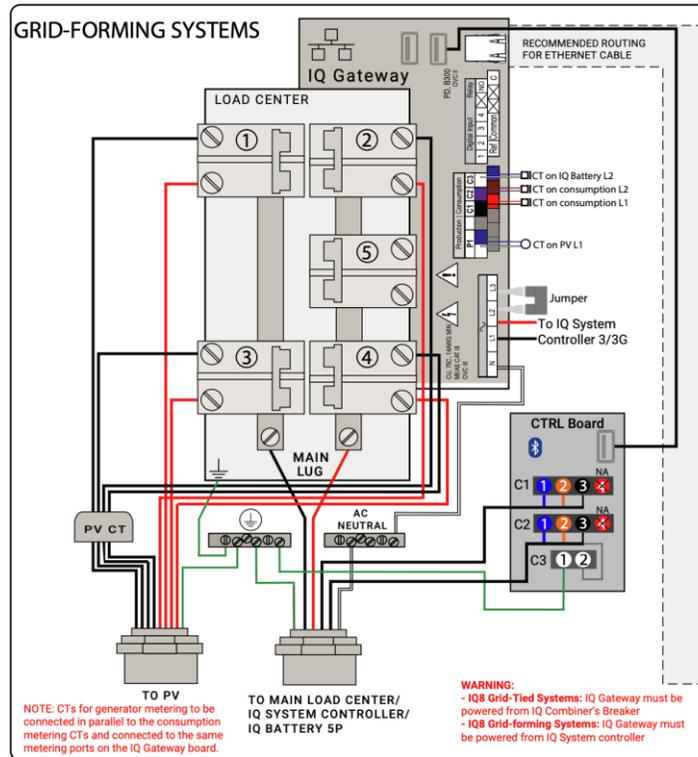
Figure D: Correct wiring label (Combiner 5/5C)



Anatomy of the IQ Combiner 5 and 5C

Both the IQ Combiner 5 and 5C have identical wiring.

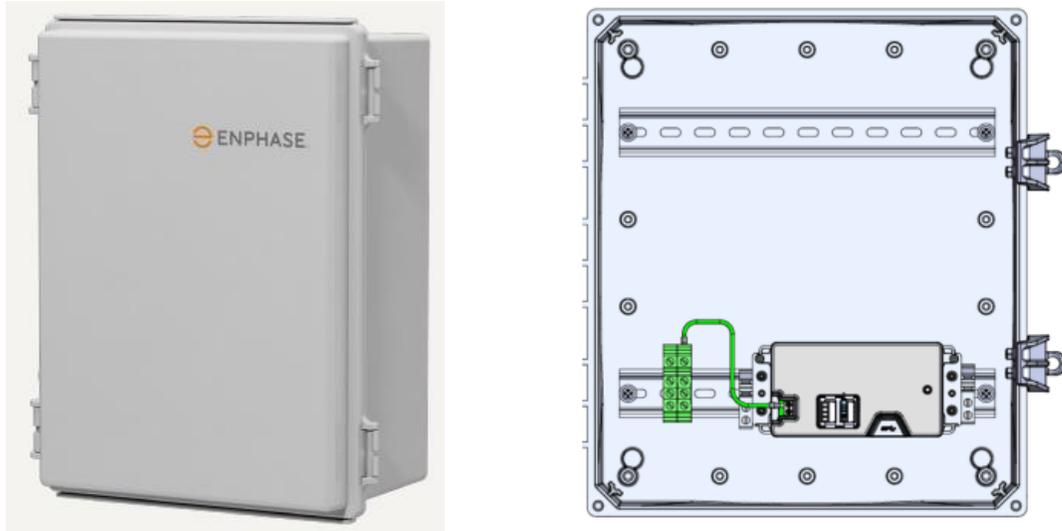
For more information about the IQ Combiner 5 and 5C, see the [quick install guide](#) or refer to the diagram inside the IQ Combiner door.



Anatomy of the Communications Kit 2

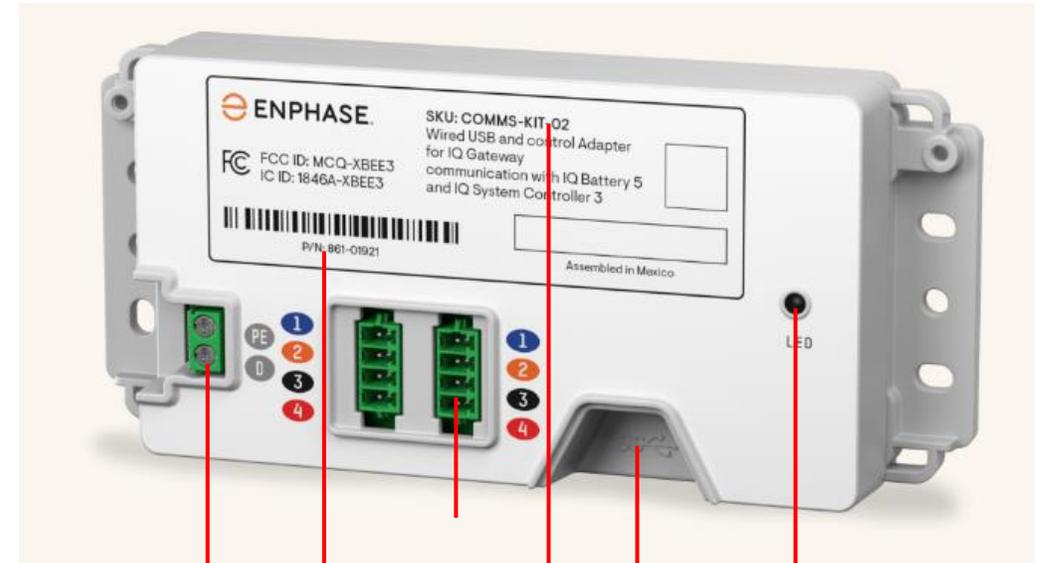
The Communications Kit 2 comes preconnected to a DIN rail inside a mountable NEMA enclosure. To learn more, see the [quick install guide](#).

The standalone Communications Kit 2 is designed to mount to the upper DIN rail with a standalone IQ Gateway.



The Communications Kit 2 is powered by the IQ Gateway via USB cable.

Sites cannot use both a Communications Kit 2 and a Communications Kit to combine IQ Battery 5P and IQ Battery 3T or 10T.



Grounding terminal (PE)
Drain wire terminal (D)

Control wire terminals

Parts number

SKU

USB port

LED

LEDs and buttons



IQ Battery 5P LEDs

During installation and commissioning

LED state	LED color	IQ Battery status
Flashing blue		Booting up after installation, paired with an IQ Gateway, and awaiting verification from the Enphase Cloud
Flashing green		Verification complete

Post commissioning

LED state	LED color	IQ Battery status
Flashing red in a sequence of two		In an error state (may require on-site inspection)
Solid yellow		Not operating due to high temperature
Slowly flashing yellow		Sleep mode
Off		Not operating

Post commissioning

LED state	LED color	IQ Battery status
Solid blue or green		Idle (not charging or discharging); the color transitions from blue to green as the charge level of the IQ Battery increases
Slowly flashing blue		Discharging
Slowly flashing green		Charging
Rapidly flashing yellow		Starting up or trying to establish communication with the IQ Gateway

Communications Kit 2 LEDs

LED state	Event
Red	ERROR (Control or BUS error)
Blinking green	Communications Kit firm-ware update
Green	Communications Kit is oper-ational
Blue	No USB communication

Troubleshooting an IQ Gateway in an IQ System Controller 3

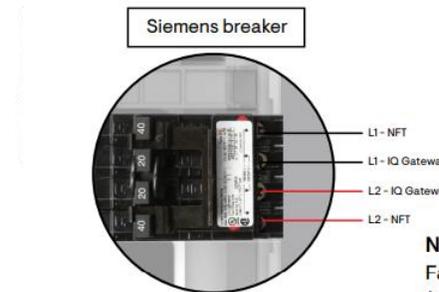
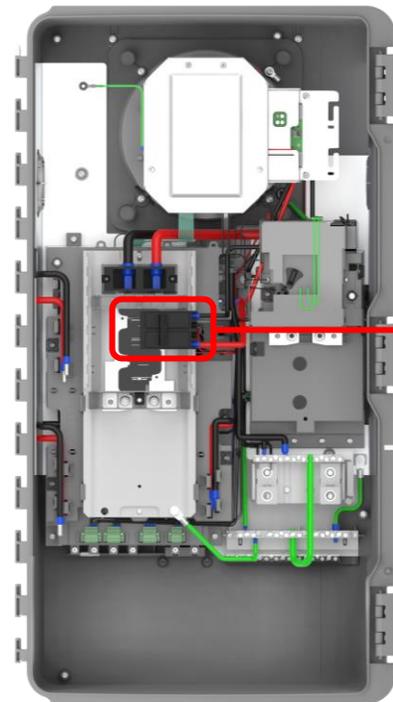


IQ Gateway circuit breakers in an IQ System Controller 3

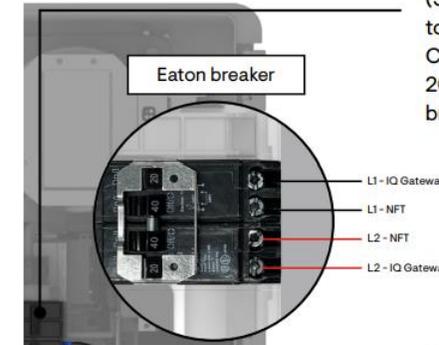
The IQ Gateway must be wired to the IQ Gateway circuit breakers at the IQ System Controller.

You should verify that the IQ Gateway wiring is correct before any troubleshooting.

The IQ Gateway must receive power from the IQ System Controller, not from the IQ Combiner busbar.



NFT and IQ Gateway breaker
Factory installed quad breaker (Siemens or Eaton). NFT pre-wired to 40 A terminal of the quad breaker. Connect IQ Gateway L1 and L2 to 20 A L1, L2 terminals of the quad breaker respectively



NOTE:
The cable used to connect IQ Gateway power terminals to the quad breaker must adhere to local electrical codes.

Power cycle

To power cycle an IQ Gateway in an IQ System Controller 3/3G, refer to the following steps.

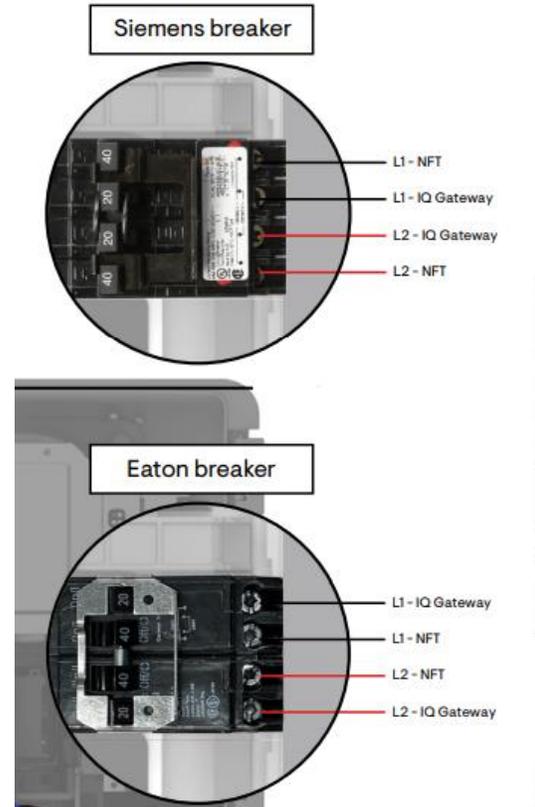
Step 1

Turn **OFF** the IQ Gateway circuit breaker and confirm that the LEDs have stopped illuminating. The Communications Kit 2 LED will stop illuminating as well.

! Take care to avoid tripping the NFT circuit breaker when power cycling the IQ Gateway.

Step 2

Wait for five minutes, then turn the IQ Gateway circuit breaker **ON**. This ensures that all capacitors are discharged before reapplying power.



Troubleshooting the Communications Kit 2 and control cable



LED not illuminating

If the Communications Kit 2 LED does not illuminate when plugged into the IQ Gateway, refer to the following instructions.

Step 1

Verify that the IQ Gateway LEDs are lit. If a USB extension is used, unplug it and connect the IQ Gateway and Communications Kit 2 with the provided USB cable. If the Communications Kit 2 LED illuminates, the USB extension is fault and must be replaced.

Step 2

Verify that one end of the cable is fully inserted into one of the IQ Gateway USB ports. Then, verify that the other end is fully inserted into the Communications Kit 2 USB port. If the Communications Kit 2 LED illuminates after fully inserting the USB cables, the issue is resolved.

Step 3

If the USB cable is firmly connected to the appropriate USB ports, but the Communications Kit 2 LED does not illuminate, unplug the USB cable from the IQ Gateway USB port. Then, insert it into the other IQ Gateway USB port.

If the Communications Kit 2 LED illuminates after plugging the USB cable into the other IQ Gateway USB port, contact Enphase Support for further instruction.

 The Communications Kit 2 PE port should always be connected to a ground wire.



LED state	Event
Red	ERROR (Control or BUS error)
Blinking green	Communications Kit firmware update
Green	Communications Kit is operational
Blue	No USB communication

Troubleshooting the control cable

Wiring should not exceed 250 feet in total length between resistors.

Individual wires should always be terminated as follows:

Terminal 1: **Blue**

Terminal 2: **Orange**

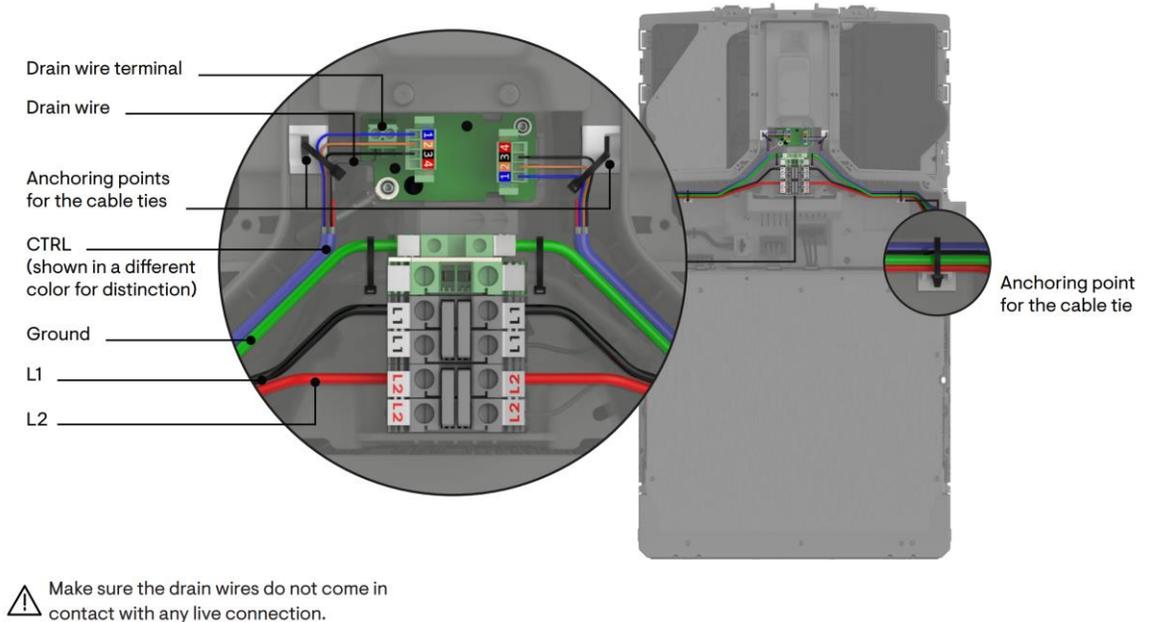
Terminal 3: **Black**

Terminal 4: **Red** (currently unused)

Do not torque the screw terminals over 1.7 in/lb.

Do not over-strip or under-strip the control cable wires.

⚠ Verify that the drain wire is terminated on only one side of the wire segment.



Testing the control cable terminal

If all devices stop reporting, but the Communications Kit 2 control cable terminals are receiving power, refer to the following instructions.

Step 1

Confirm that the Enphase Energy System is powered **ON** and all connectors are in place.

Step 2

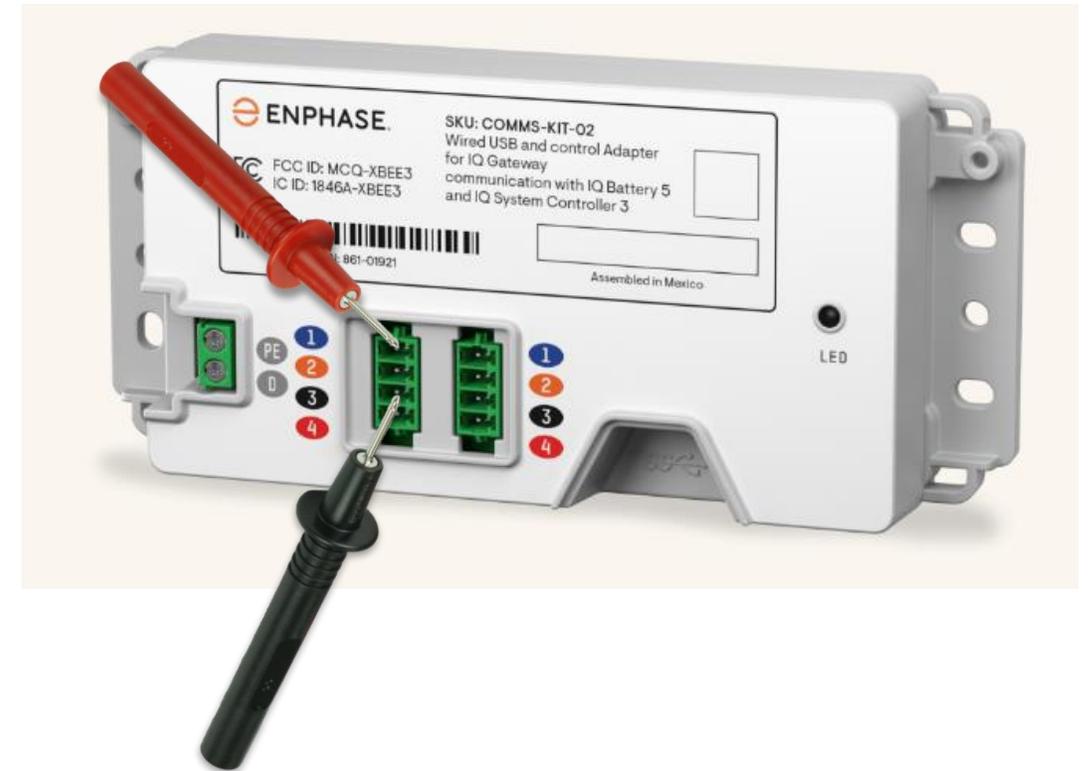
Use a multimeter to test the blue 1 and black 3 terminals. It should read between 2.4-2.5 V.

Step 3

If no DC voltage is present, there is a loss of continuity on Control Low. Inspect other control terminals for wiring issues on Control Low.

If the multimeter reads between 2.5-2.6 V, Control Low and Control High are phased incorrectly. Inspect other control terminals for wiring issues.

⚠ Verify that the drain wire is terminated on only one side of the wire segment.



Testing the control cable terminal

Step 4

With connectors in place, test the black 3 terminal and a ground point. The multimeter should display 0 V. If not, inspect other control terminals for wiring issues.

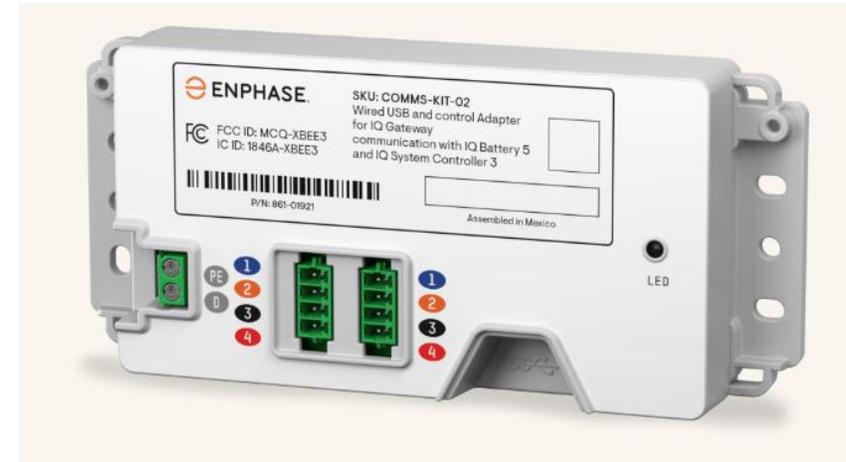
Step 5

To check for control cable continuity, first disconnect both sides of the control cable. Then, use a lever nut or wire nut to connect any two wires to the same device.

Step 6

On another device, check the DC voltage to verify control cable continuity. Repeat for other wire pairs to ensure all three wires in the control cable are intact.

⚠ Verify that the drain wire is terminated on only one side of the wire segment.



Testing the terminating resistor

A terminating resistor is required for each end node of the control cable run.

A missing or incorrect resistor will affect the communications capability of the control cable network.

Step 1

Remove the terminating resistor.

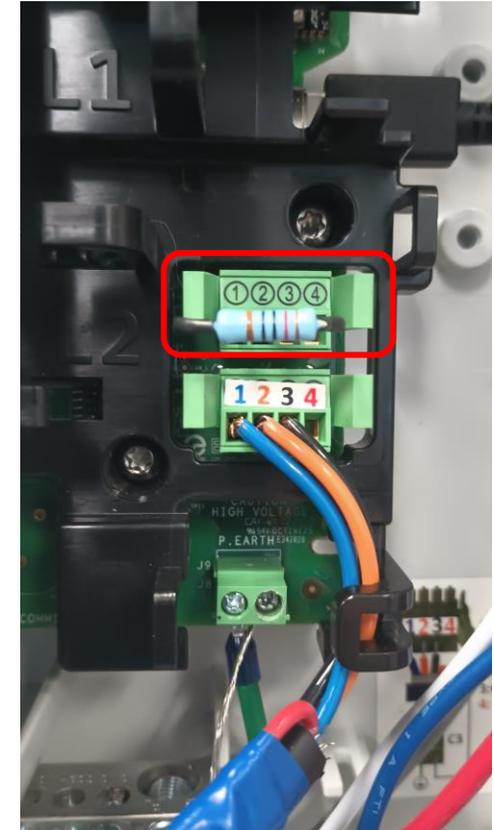
Step 2

Using a multimeter, place the probes on each leg of the resistor.

Step 3

Measure the resistance to confirm that it is between 114 and 126 Ohms. If resistance is too high or too low, replace the terminating resistor and measure again.

⚠️ Verify that the drain wire is terminated on only one side of the wire segment.



Troubleshooting the IQ System Controller 3 and 3G



Power cycle the IQ System Controller 3/3G

Before performing an IQ System Controller 3 or 3G power cycle, notify the system owner of an upcoming brief power outage. Advise them to alert their utility provider.

Do not turn off the IQ combiner or PV circuit breaker in the IQ System Controller.

Step 1: Power down the Enphase Energy System

- A. Turn **OFF** the Rapid Shutdown switch.
- B. Turn **OFF** the DC Disconnect switches on all IQ Batteries.
- C. Turn **OFF** the switch or circuit breaker inside the generator, if any.
- D. Turn **OFF** the circuit breakers in the following sequence:
 - a. IQ Battery circuit breaker
 - b. DER circuit breaker
 - c. IQ System Controller supply side circuit breaker, if present
 - d. PV branch circuit breakers in IQ Combiner
 - e. NFT circuit breaker

 Failure to correctly follow IQ System Controller 3/3G power cycling steps may cause errors that require additional support.

Power cycle the IQ System Controller 3/3G

- F. Wait for at least five minutes while the IQ System Controller opens the relays controlling the IQ Battery, PV modules, generator, and NFT.

If the IQ System Controller is used as the main service equipment, turning **OFF** the Mains circuit breaker will cut off power to the home.

Step 2: Restore power to the Enphase Energy System

- A. Turn **ON** the circuit breakers in sequence:
 - a. NFT circuit breaker
 - b. PV branch circuit breakers in IQ combiner
 - c. IQ System Controller supply side circuit breaker
 - d. DER circuit breaker
 - e. IQ Battery circuit breaker
 - f. Turn **ON** the DC Disconnect switches on IQ Batteries

Power cycle the IQ System Controller 3/3G

- B. When the IQ System Controller LEDs flash red, turn **ON** the DC Disconnect switch on all IQ Batteries.
- C. Turn **ON** the switch or circuit breaker inside the generator, if any.
- D. Turn **ON** the Rapid Shutdown switch. The IQ System Controller closes the relays controlling the IQ Battery, PV, generator, and NFT. The system exits System Shutdown only when power from PV modules or the grid is available.

Not reporting during commissioning

If the IQ System Controller 3 or 3G fails to report during commissioning, refer to the following instructions.

Step 1

Verify that the IQ System Controller is receiving 240 VA from the grid side terminals to the load side terminals.

Step 2

Remove the E3 board cover using a T20 bit.

Step 3

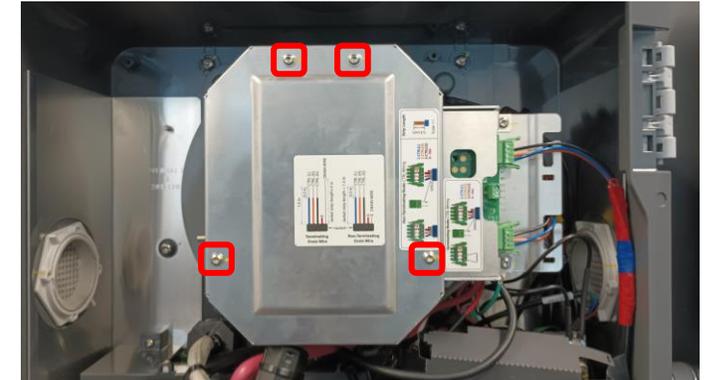
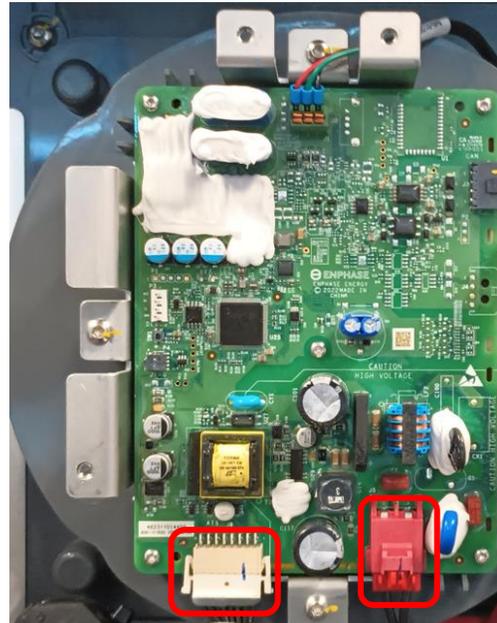
Verify that the IQ System Controller LED is illuminated to confirm that the E3 board is receiving power.

Step 4

If LED is lit, move to troubleshooting the communication section

If the LED is not illuminated, verify that the indicated cables are seated correctly.

If the cabling is fully seated, but the LED still fails to illuminate, contact Enphase Support.



Not reporting during commissioning

If the Enphase Installer Portal displays **System Controller Not Reporting**, check to verify whether there are additional devices not reporting as well.

Step 1

Check the LED on the E3 board to verify if the IQ System Controller is powered on.

Step 2

Open the relevant site in the Enphase Installer Portal and compare the **Last Report** date of the **IQ System Controller** and **IQ Batteries**. This can be found in the **Devices** tab.

If the IQ System Controller is not reporting, the **Status** will display **System controller not reporting**.

Cellular Modem

Gateway	Part Number	Id	Modem IMEI Number	Status	Firmware	Created	Signal Strength
	861-00779-r18	848351	862255066385912	Normal	BG96MAR04A04M1G_01.005.01.005	2023-10-02 14:19:09 -0700	4

IQ Batteries

Serial Number	Part Number	Phase	ID	Created	Last Report	DMIR	Processor Load	Status	Gateway
	836-00750-r18	L1(A)	84579744	2023-10-02 15:32:33 -0700	2023/12/12 08:33:11 -0800 (PST)	546-00002-01-v01	2.0.5552_rel/22.10	✓ Normal	
	836-00750-r18	L1(A)	84579750	2023-10-02 15:32:35 -0700	2023/12/12 08:27:56 -0800 (PST)	546-00002-01-v01	2.0.5552_rel/22.10	✓ Normal	
	836-00750-r18	L1(A)	84579756	2023-10-02 15:32:36 -0700	2023/12/12 08:30:07 -0800 (PST)	546-00002-01-v01	2.0.5552_rel/22.10	✓ Normal	

IQ System Controller

Serial Number	Part Number	ID	Created	Last Report	DMIR	Processor Load	Status	Gateway
	865-00376-r31	84579741	2023-10-02 15:32:33 -0700	2023/12/03 23:05:10 -0800 (PST)	546-00003-01-v01	2.0.4780_rel/22.10	System controller Not Reporting	

Not reporting during commissioning

Step 3

Verify whether the communications and control cable looks damaged. This includes signs of critter damage, such as chewed wires or critters that may be bridging connectors.

Step 4

To verify that the control cable is properly connected to the IQ System Controller, refer to the following steps:

- a. Verify that the Communications Kit 2 is receiving power, if present.
- b. Verify that there is 0 V from the control cable pin 3 to the ground wire.
- c. Verify that the control cable terminals are wired correctly.
- d. If the IQ System Controller is an end node, verify that the terminating resistor is present with correct resistance.
- e. Check that the drain wire is terminated at only one end of the cable segment.

Step 5

Power cycle the IQ System Controller.

Step 6

After power cycling, retire and reprovision the IQ System Controller using the Enphase Installer App.

Identify System Shutdown error using the Enphase Installer Portal

In some cases, the IQ System Controller 3 or 3G may show an error in the Enphase Installer Portal, indicating a possible issue with the Rapid Shutdown (RSD) switch.

This can occur whether or not the RSD switch is engaged. If this error occurs, the IQ System Controller will display **Manual Override** in the Enphase Installer Portal system Dashboard. Always check the MID switch on-site to verify that it is in the **Manual Override** position.

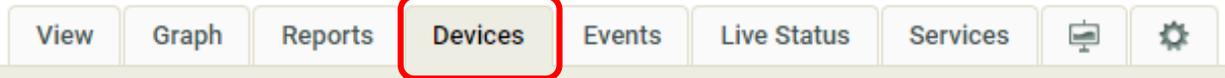
IQ System Controller

Serial No	Status	RSSI 2.4GHz	Operation Mode	App FW	Last Report
	System controller Not Reporting	(-23 dBm)	Manual Override	2.0.4780_rel/22.10	2023/06/26 21:38:37 -07:00 MST

To verify that the IQ System Controller is experiencing as SSD error using the Enphase Installer Portal, refer to the following instructions.

Step 1

Click the **Devices** tab.



Identify System Shutdown error using the Enphase Installer Portal

Step 2

Scroll to the **IQ System Controller** section and click the serial number.

IQ System Controller

Serial Number	Part Number	ID
77878804	77878804	77878804

Step 3

Scroll to the events section and click **System controller Rapid Shutdown** event to for details and recommended action.

Showing 1 to 1 of 1 events

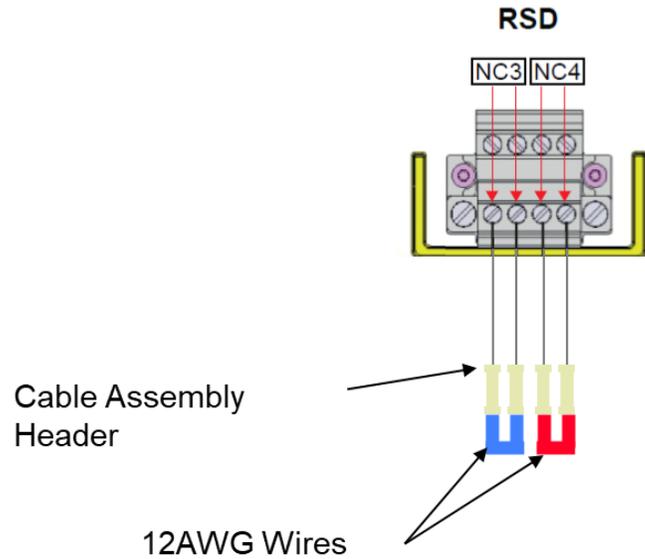
Navigation icons: back, left, 1, right, forward

Status	Impact	Device	Event Name	Started
Current			All	
Current		IQ System Controller 4	System controller Rapid Shutdown	Thu June 08, 2023 11:00 AM MST

System Shutdown wiring

Systems without IQ8 microinverters do not require RSD wiring.

To wire the NC3 terminals together and the NC4 terminals together, jumpers must be installed.

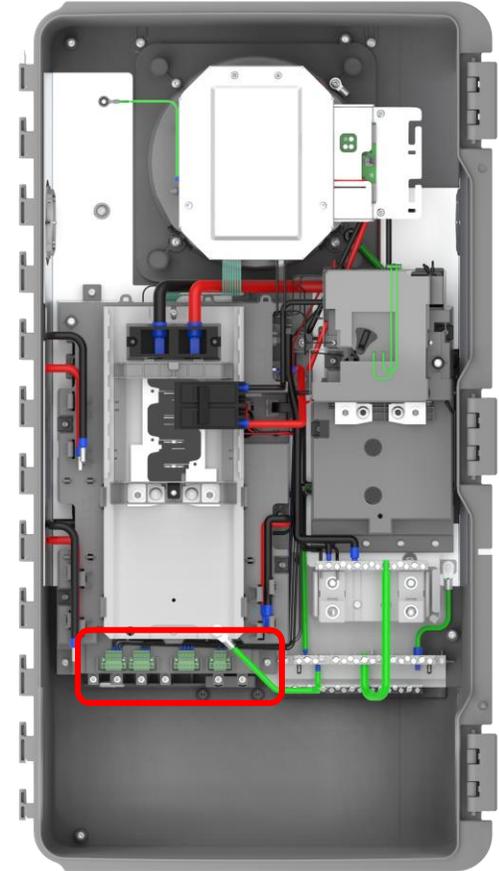
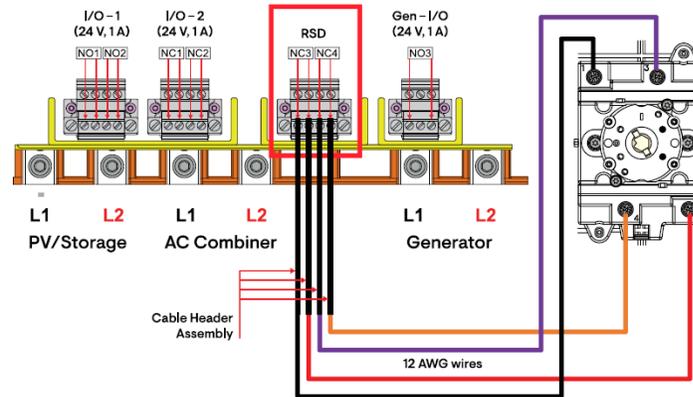


System Shutdown wiring

The RSD switch is the only SSD initiator required for systems with IQ8 Microinverters only. It is used in all Enphase Energy Systems, however.

Before wiring the RSD switch, take the following precautions:

- Do not handle wires in the RSD circuit when the Enphase Energy System is on.
- Test IQ System Controller terminals for five minutes to confirm it is not receiving voltage.
- Confirm that all power sources are disconnected from the IQ System Controller. This includes turning **OFF** the utility side circuit breaker, IQ Battery DC Disconnect switch, generator circuit breaker, and PV circuit breakers.



Test System Shutdown

To test System Shutdown equipment on an IQ System Controller 3 or 3G, refer to the following instructions.

Step 1

Scenario A: If a system RSD switch is installed, confirm that the IQ System Controller is **ON**. Then, turn **OFF** the RSD switch.

Scenario B: If a jumper is installed on a non IQ8 system, turn **OFF** the IQ System Controller and remove the jumpers. Then, turn the IQ System Controller back **ON**. Follow the power cycling method for this. Do not try to rewire while the system is powered on.

Step 2

Verify if the 240 VA from the utility is present on the grid side of the IQ System Controller.

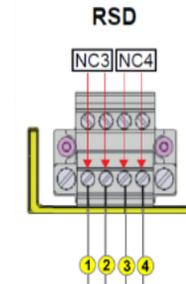
Step 3

Set the multimeter to measure DC voltage.

Step 4

Measure the RSD terminal test points 1 and 2. Take a picture showing the meter reading and the probes on the test points. The multimeter should read 3.3 V.

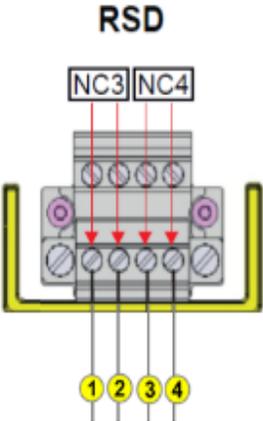
RSD Terminals	Voltage - RSD
pin 1-pin 2	3.3 VA
pin 3-pin 4	3.3 VA
pin 1-pin 3	3.3 VA
pin 1-pin 4	0 VA
pin 2-pin 3	0 VA
pin 2-pin 4	3.3 VA



Test System Shutdown

Step 5

Measure the RSD terminal test points 3 and 4. Take a picture showing the meter reading and the probes on the test points. The multimeter should read 3.3 V.



RSD Terminals	Voltage - RSD
pin 1-pin 2	3.3 VA
pin 3-pin 4	3.3 VA
pin 1-pin 3	3.3 VA
pin 1-pin 4	0 VA
pin 2-pin 3	0 VA
pin 2-pin 4	3.3 VA



Stuck in System Shutdown state after testing

If an IQ System Controller 3 or 3G does not come out of the System Shutdown state, the installer should test the SSD switch wiring.

To test the RSD switch wiring, refer to the following instructions:

Step 1

Turn **OFF** the Enphase Energy System.

Step 2

Confirm that the RSD switch is **ON**.

Step 3

Set the multimeter to test for continuity.

Step 4

Measure the RSD terminal test points 1 and 2, which should return continuity.

Step 5

Measure the RSD terminal test points 3 and 4, which should return continuity.

If either or both tests fail, check the wiring between the RSD terminal and switch.

Stuck in System Shutdown state after testing

Step 6

Turn **ON** the Enphase Energy System.

Step 7

Keep the RSD switch in the **OFF** position. Remove the four screws holding the E3 board cover using a T20 bit.

Step 8

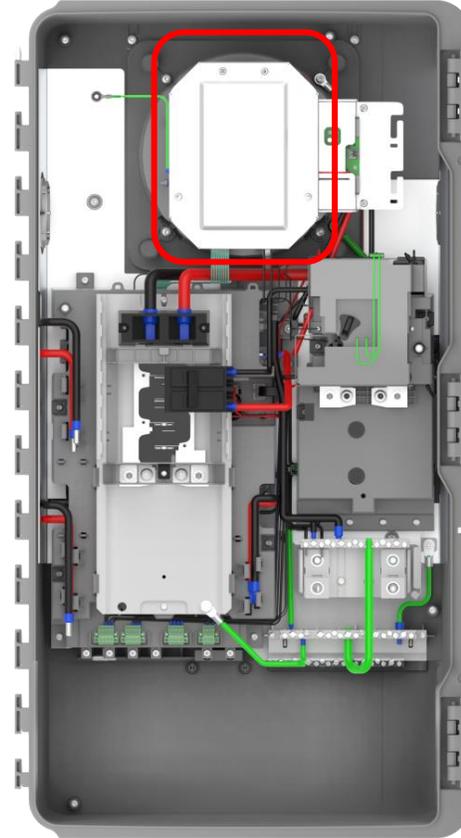
Set the multimeter to measure DC voltage.

Step 9

Measure between the black and red wires. Take a picture showing the meter reading and the probes on the test points. The multimeter should read 0 V.

Step 10

Measure between the green and red wires. Take a picture showing the meter reading and the probes on the test points. The multimeter should read 3.3 V.



Stuck in System Shutdown state after testing

Step 11

Verify if the white and red connectors are fully seated.

Take a picture of the entire E3 board, as shown. Then, contact Enphase Support.



PV Breaker Open error

If **System controller PV Breaker Open** is displayed in the Enphase Installer Portal, installers should check the following items on-site:

- **The PV output must be connected through the relay.**
PV must be wired to the IQ Combiner lugs at the bottom of the IQ System Controller, not directly to the PV circuit breaker. Terminals can be identified on the back panel of the IQ System Controller. If the wiring is correct, but the issue persists, call Enphase support.
- **Confirm that the L1 and L2 wires are not swapped.**
L1 and L2 wires should be consistent among all components.

Showing 1 to 1 of 1 events

Status	Impact	Device	Event Name
Current			All
Current			System controller PV Breaker Open

Diagnose a faulty circuit breaker

If an Enphase device is not receiving power, installers should first perform a circuit breaker health check.

Step 1

Turn **OFF** upstream and downstream circuit breakers.

Step 2

Turn **OFF** and remove relevant circuit breaker.

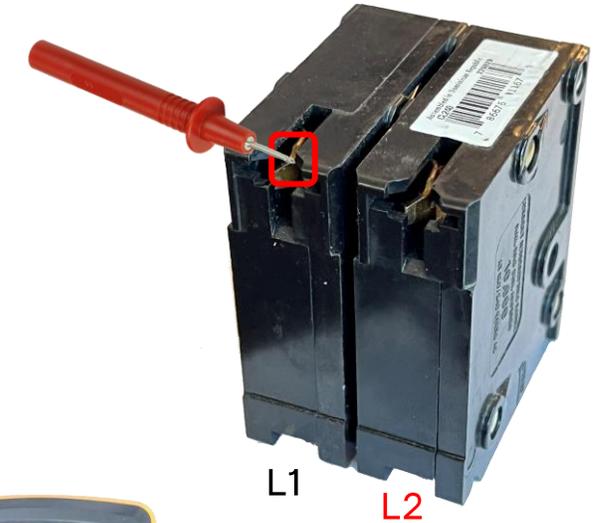
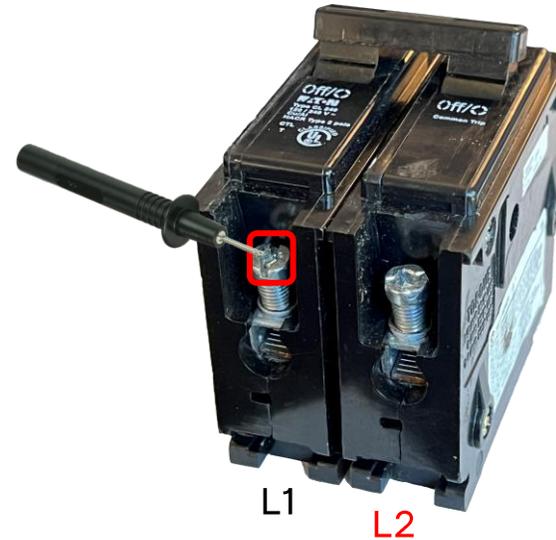
Step 3

Check the continuity between the circuit breaker L1 screw terminal and L1 BUS contacts.

Step 4

Check the continuity between the circuit breaker L2 screw terminals and L2 BUS contacts.

If either checks show continuity, the circuit breaker is faulty and needs a replacement.



Diagnose a faulty circuit breaker

Step 5

Turn **ON** the relevant circuit breaker.

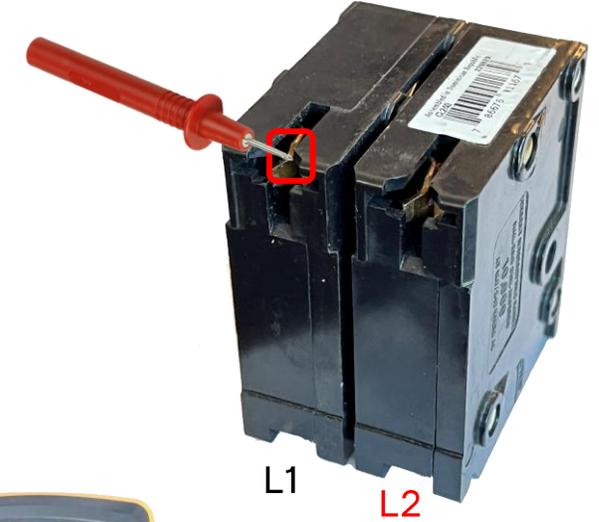
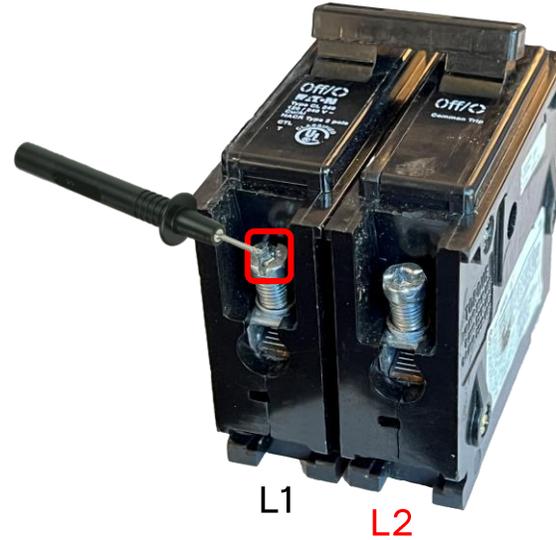
Step 6

Check the continuity between the circuit breaker L1 screw terminal and L1 BUS contacts.

Step 7

Check the continuity between the circuit breaker L2 screw terminal and L2 BUS contacts.

If either checks fail to show continuity, the circuit breaker is faulty and needs a replacement.



Troubleshooting the IQ Battery 5P



Power cycle

To power cycle an IQ Battery 5P, refer to the following instructions.

Step 1

Turn **OFF** the DC Disconnect switches on all IQ Batteries. The LEDs will flash red when still receiving AC power.

Step 2

Turn **OFF** the IQ Battery circuit breaker. Verify that the IQ Battery LEDs stop illuminating.

Step 3

Wait for five minutes, then turn **ON** the IQ Battery circuit breaker and wait for the red IQ Battery LED to flash. It will flash for 90 seconds.

Step 4

Turn **ON** the DC Disconnect switches on all IQ Batteries.

 Do not operate the DC Disconnect switch when the IQ Battery circuit breaker is off.



Oversubscription

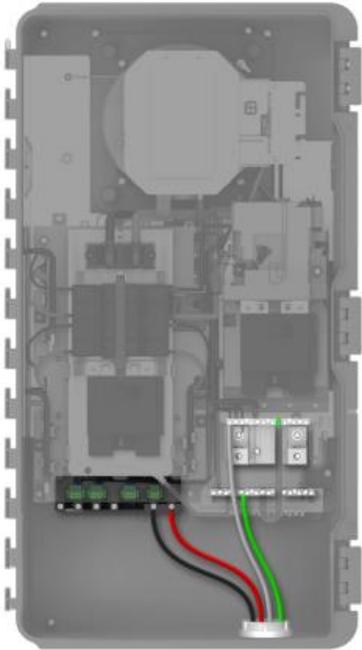
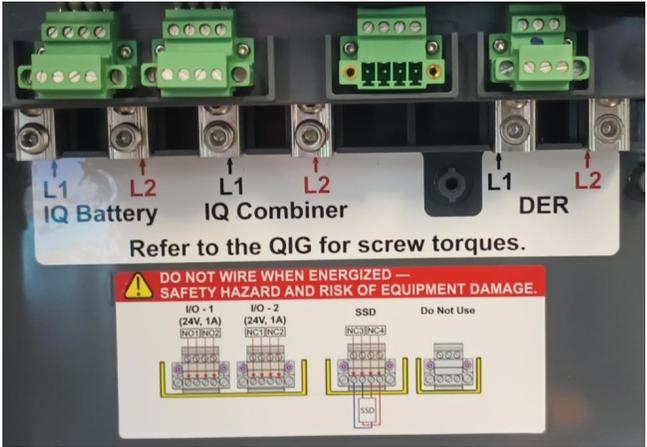
IQ Battery 5P oversubscription can be enabled in an Enphase Energy system using an IQ System Controller 3.

IQ Battery 5P wiring requirements:

- If using four or less IQ Batteries, they all must be wired to the IQ Battery terminal. **No oversubscription settings are needed.**
- If using five to eight IQ Batteries, four must be wired to the IQ Battery terminal. The rest of the IQ Batteries must be wired to the DER terminal. **No oversubscription settings are needed.**
- If using nine to 12 IQ Batteries, four must be wired to the DER terminal. The rest of the IQ Batteries are wired to the IQ Battery terminal. **Oversubscription settings are needed.**
- If using 13 to 16 IQ Batteries, eight must be wired to the IQ Battery terminal. The rest of the IQ Batteries must be wired to the DER terminal. **Oversubscription settings are needed.**

DER Wiring

IQ System Controller 3:
Additional IQ Battery / PV wiring



Not reporting during commissioning

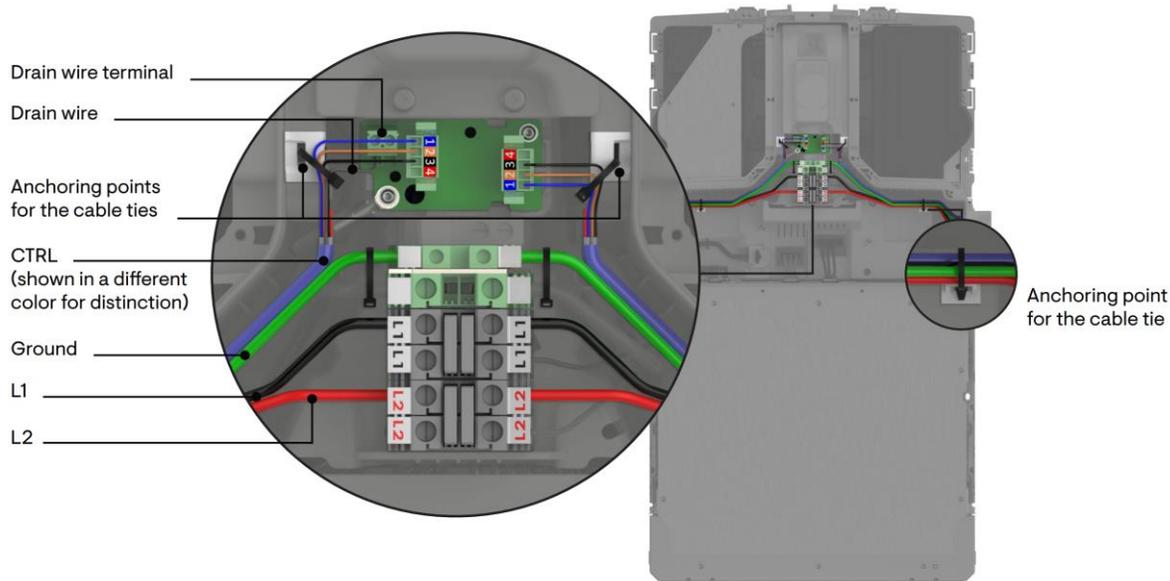
If the IQ Battery 5P fails to report during commissioning, refer to the following instructions.

Step 1

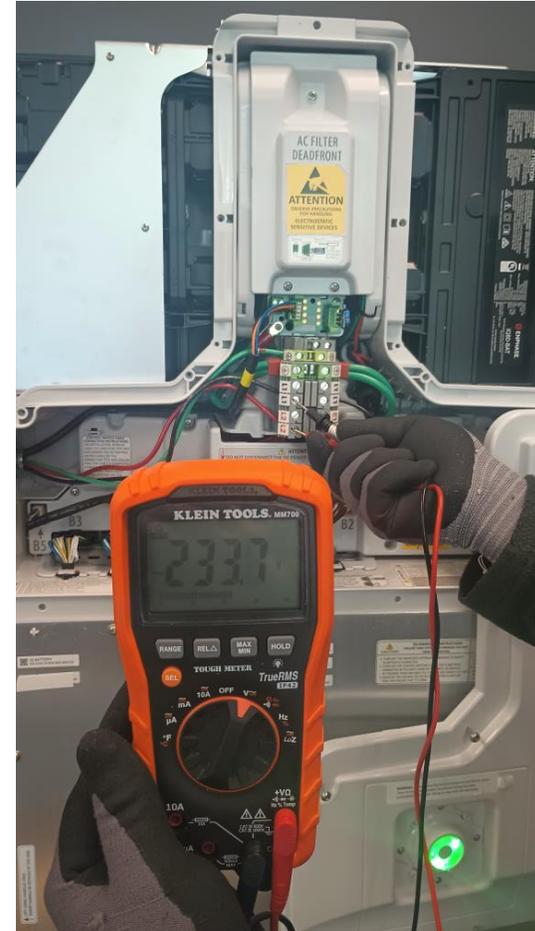
Remove the plastic covering over the terminals.

Step 2

Verify that the IQ Battery is receiving 240 VA from the IQ System Controller.



⚠ Make sure the drain wires do not come in contact with any live connection.

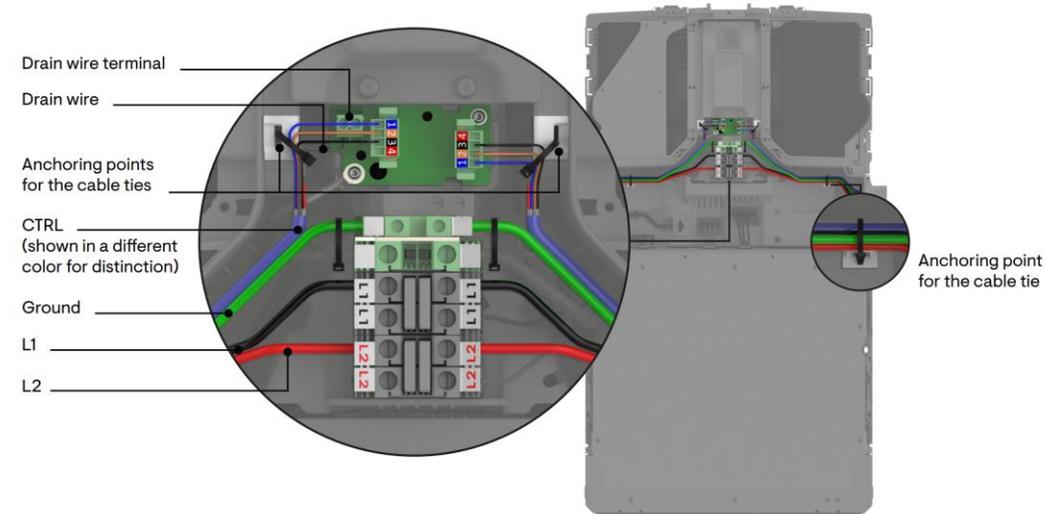


Not reporting during commissioning

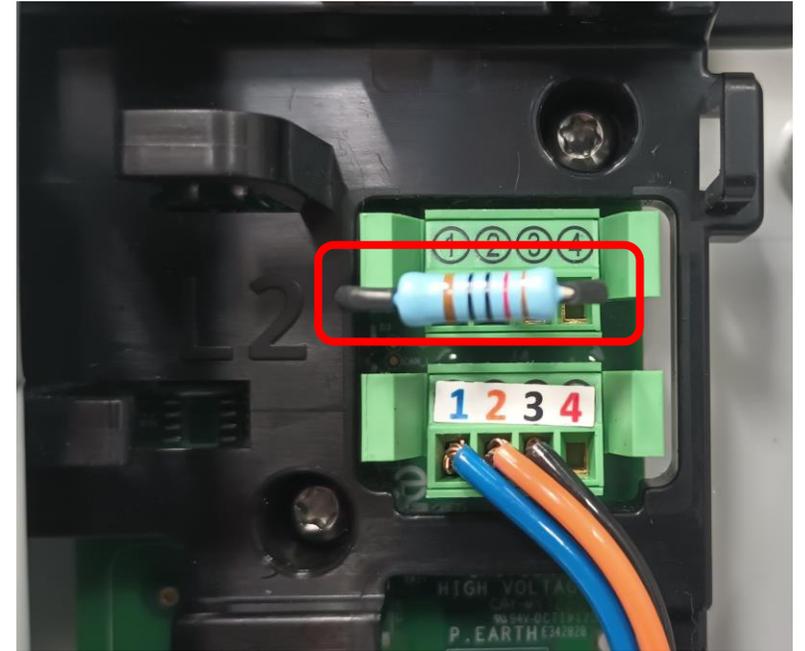
Step 3

Unseat and reseat all wiring in their terminals to verify that they are seated correctly. If present, verify that the terminating resistor is connected correctly.

If the wiring is correct, but the issue persists, contact Enphase Support.



⚠ Make sure the drain wires do not come in contact with any live connection.



Not reporting after commissioning

If the IQ Battery 5P stops reporting after operating normally, you will need to perform a visual inspection of the system.

Step 1

Verify whether any system parts are missing or look damaged. This includes signs of critter damage, such as chewed wires or critters that may be bridging connectors.

Step 2

To verify that the control cable is properly connected to the IQ Battery 5P, refer to the following steps:

- a. Verify that the Communications Kit 2 is receiving DC voltage, if present.
- b. Verify that there is 0 V from the control cable pin 3 to the ground wire.
- c. Verify that the control cable terminals are wired correctly.
- d. If the IQ Battery 5P is an end node, verify that the terminating resistor is present with correct resistance.
- e. Check that the drain wire is terminated at one end of the cable segment.

Step 3

Power cycle the IQ Battery 5P, then retire and reprovision it using the Enphase Installer App. For reprovisioning instructions, watch the [training video](#).

No AC voltage

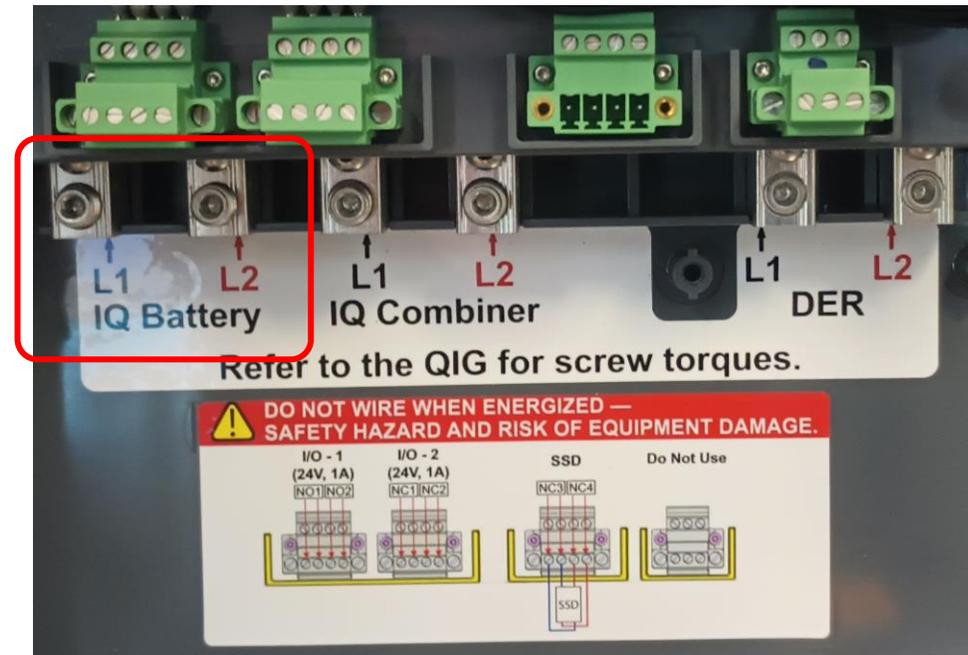
Access the [IQ Battery Quick Install Guide](#) for more information on the following instructions.

Step 1

Confirm that the IQ Battery circuit breaker is turned **ON** and AC voltage is present at the circuit breaker using a voltage meter.

Step 2

Check for AC voltage at the lugs at the bottom of the IQ System Controller, where the IQ Battery is wired.



No AC voltage

Step 3

If AC voltage is present at the circuit breaker, but not at the lugs, the relay is open. Verify that both production and consumption meters are enabled. The consumption meter must be set to **Load with Solar**.

If the relay is still open after verifying that both meters are enabled, contact Enphase Support.

Step 4

If the site has an AC disconnect for the IQ Battery, test the AC voltage before and after the disconnect to determine if the fuse is blown.

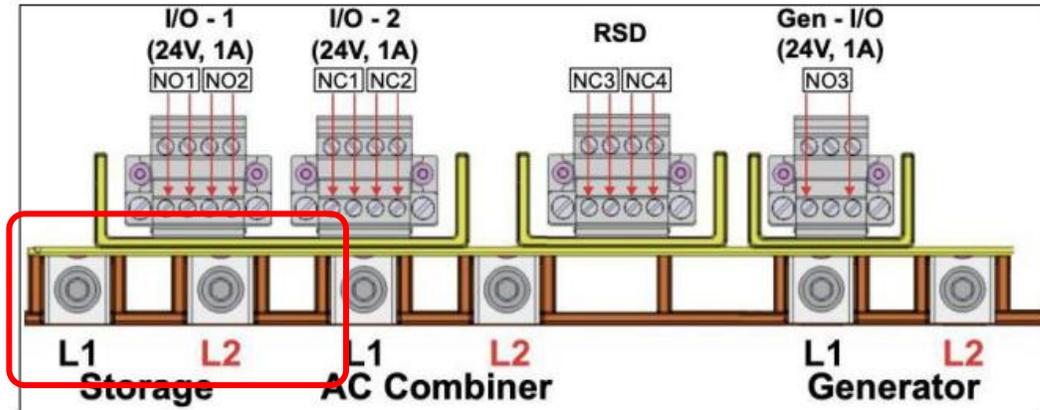


Figure 1: Auxiliary contact labeling and usage

No AC voltage

Step 5

If the site has an IQ Battery combiner panel, test AC voltages going in and out of the unit.

Step 6

Test AC voltages at the entrance and exit of each IQ Battery to confirm that all units are receiving power.



LED not illuminated when AC voltage is present

If AC voltage is present at the IQ Battery but the LED fails to illuminate, refer to the instructions below.

Step 1

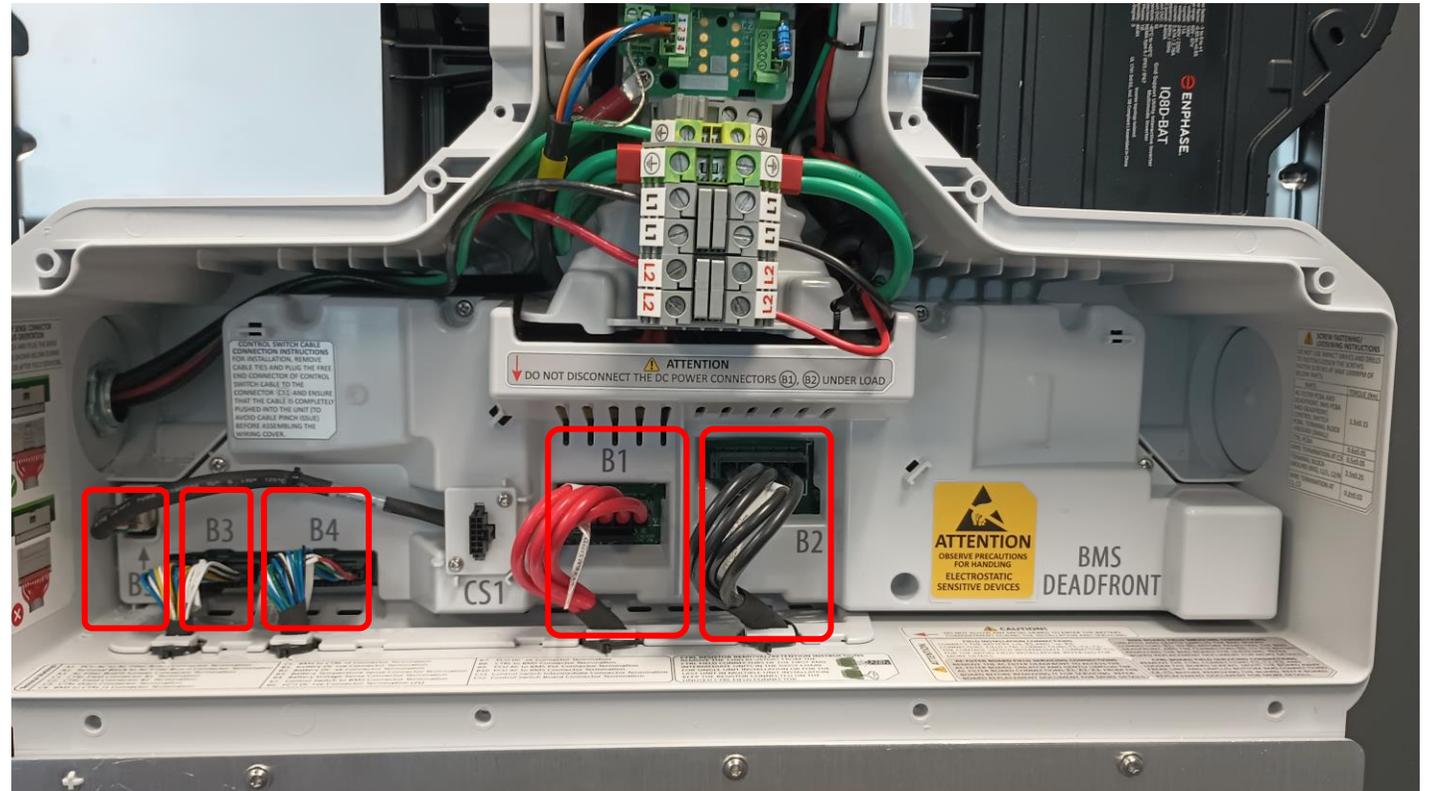
Turn **OFF** AC power to the IQ Battery.

Step 2

Verify that all AC terminals are properly torqued.

Step 3

To confirm that the B1, B2, B3, B4, and B5 connectors are fully seated, unseat and reseat each of the connectors. They will click when fully seated.



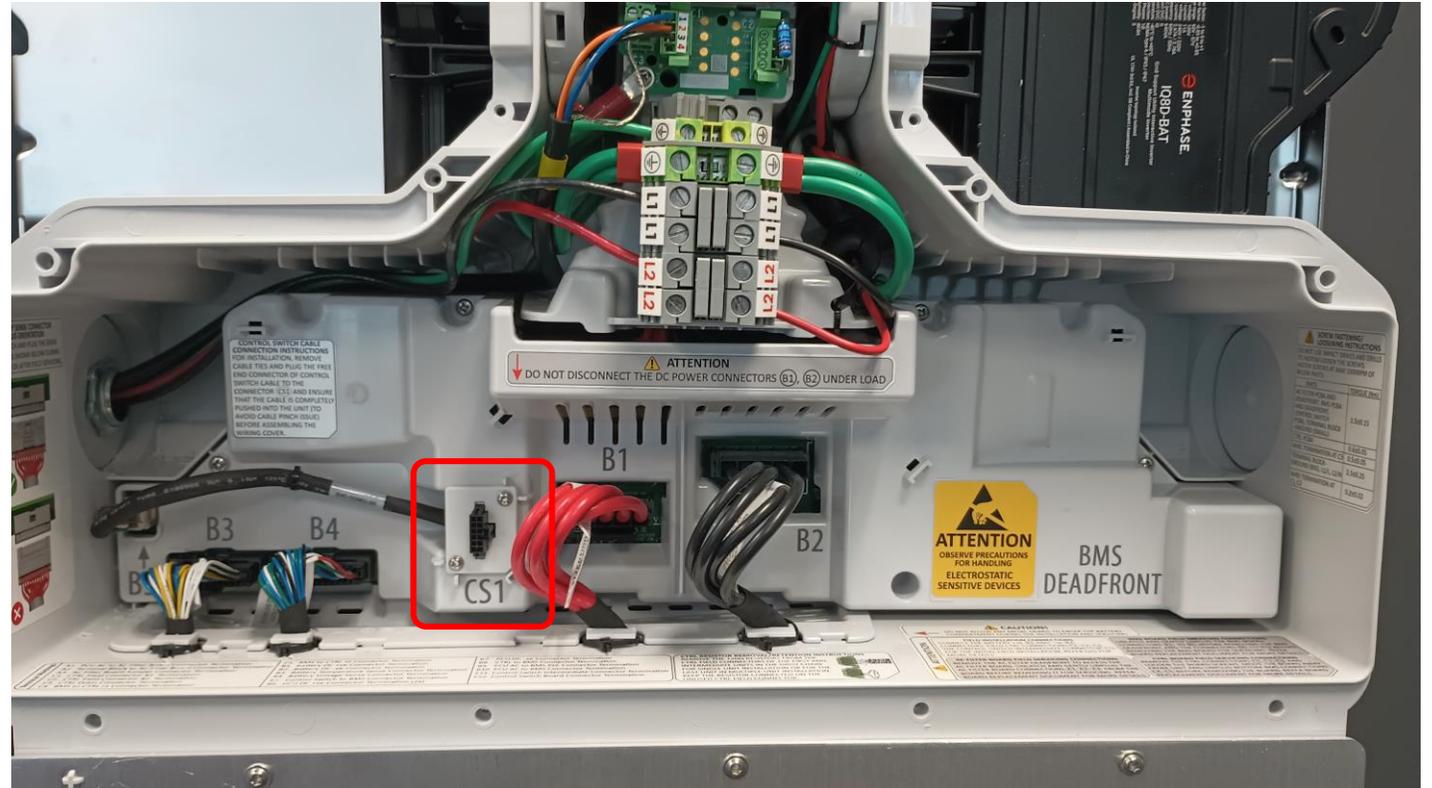
LED not illuminated when AC voltage is present

Step 3

Verify that the CS1 connector is fully seated on the IQ Battery side.

Step 4

Verify that the DC Disconnect switch and CS1 wires connected to the back of the wiring cover are not damaged. Then, contact Enphase Support.



PCU not reporting

Enphase automatically identifies and attempts recovery when one or more microinverters stop reporting in the IQ Battery.

Enphase attempts an automatic remote recovery and determines the troubleshooting actions needed. Installers do not need to contact Enphase Support for this issue.

This process results in either a BMU board replacement or a PCU replacement. Currently, board replacements are only handled by the Enphase Field Service Team (FST). Installers can handle PCU replacements.

If a site experiences this error, Enphase attempts to remotely recover it before notifying Enphase Support, if needed.

Status	No of Microinverters	Not Reporting
Normal	6	0
Warning	6	1

Not charging or discharging

There are many reasons why the IQ Battery may fail to charge or discharge:

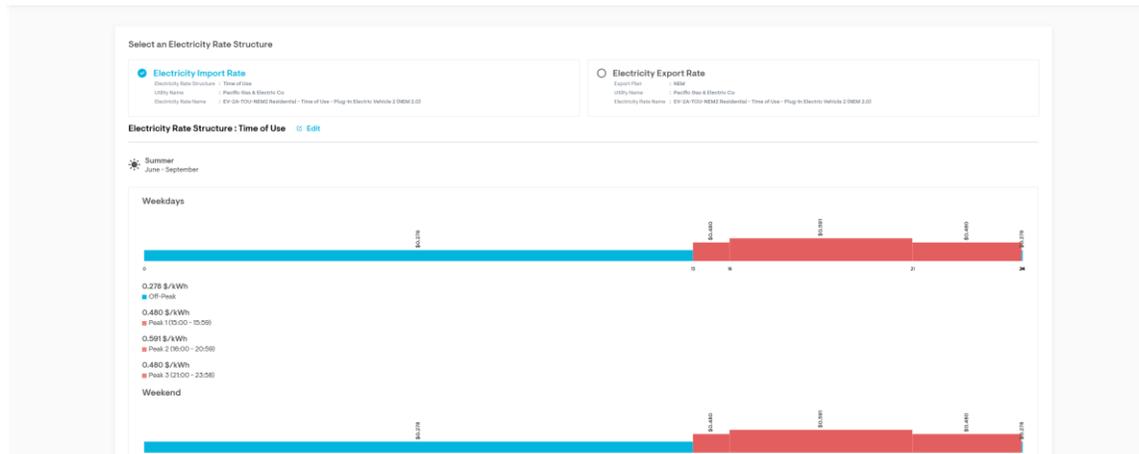
- **Tariff settings may be incorrect.**
Ensure the rate schedules that the homeowner selected with their utility matches the setting in the tariff editor in the Enphase Installer Portal.

✓ Electricity Import Rate

Electricity Rate Structure : Time of Use

Electricity Rate Name : EV-2A-TOU-NEM2 Residential - Time of Use - Plug-In Electric Vehicle 2 (NEM 2.0)

Tariff



Not charging or discharging

There are many reasons why the IQ Battery may fail to charge or discharge:

- **Tariff settings may be mismatched between the IQ Gateway and Enphase Installer Portal.**
This occurs when the Enphase Installer App connects to the IQ Gateway with a different tariff setting. The IQ Gateway is updated, but the update is not reported. If this occurs, toggle the IQ Battery settings between **Self-Consumption** and **Full Backup**. This realigns the settings.
- **Production, consumption, or IQ Battery meters may be incorrectly installed.**
If the meters are incorrectly installed, it affects the system's ability to perform correctly. If they are disabled, or if the consumption meter settings are not set to **Load with Solar**, the IQ Battery will not charge or discharge.
- **Storm Guard may be activated.**
This can change the system's behavior during extreme weather alerts. Refer to the [Storm Guard support article](#) for more information.
- **The DC Disconnect switch may be off.**
The DC Disconnect switch must be **ON** for the IQ Battery to charge or discharge.

Not charging or discharging

There are many reasons why the IQ Battery may fail to charge or discharge:

- **A loss of communication between devices may have occurred.**
If the IQ Gateway loses communication with the IQ System Controller or IQ Battery for more than one hour, the unit becomes grid-tied and does not operate as expected.
- **A loss of AC voltage to the IQ Battery may have occurred.**
- **There may be insufficient sunlight for PV to supply home and charge the IQ Battery.**

For any other concerns about charge and discharge behaviors, contact Enphase Support.

DC Disconnect switch not operating

If the DC Disconnect switch with LED or IQ Battery fails to respond after pressing the DC Disconnect switch, refer to the following instructions.

Step 1

Turn **OFF** AC power to the IQ Battery.

Step 2

Verify that all AC terminals are properly torqued.

Step 3

Verify that the CS1 connector and the DC Disconnect switch are fully seated. Then, unseat and reseat the B5 terminal.

Step 4

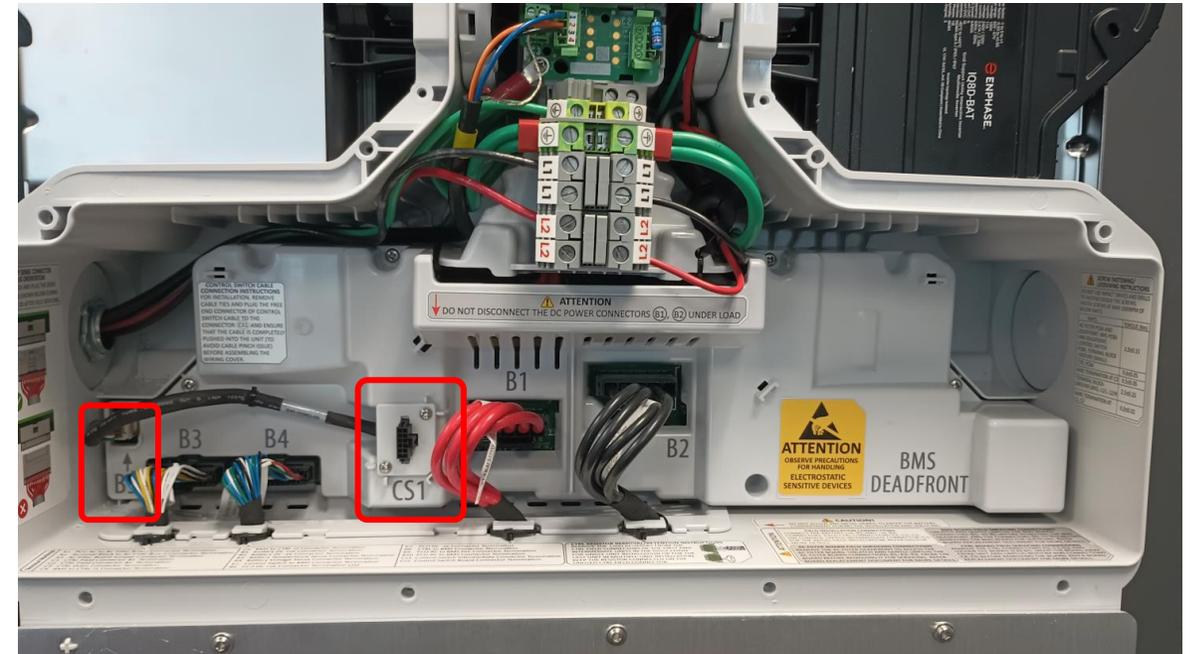
Verify that the CS1 connector is fully seated on the IQ Battery side.

Step 5

Verify that the CS1 wires connected to the back of the wiring cover are not damaged.

Step 6

Verify that the DC Disconnect switch is not damaged, then call Enphase Support.

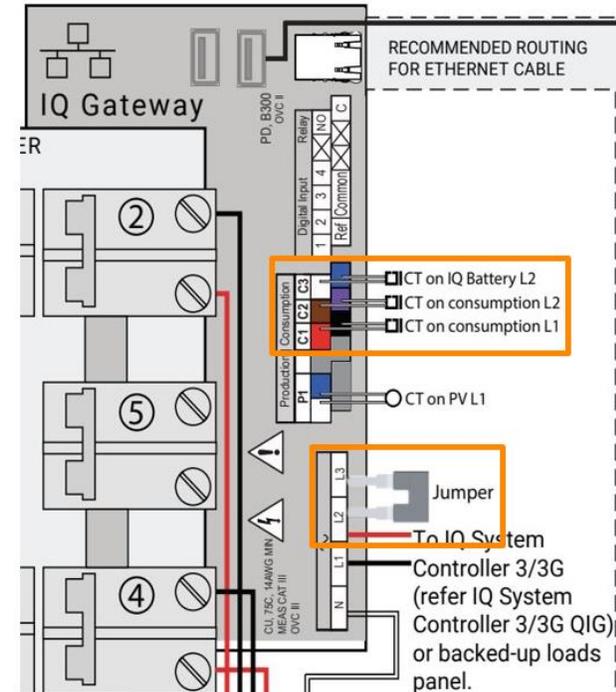


IQ Battery 5P CT installation best practices

For IQ Batter 5P CT installation tips, visit the [quick install guide](#) and [tech brief](#).

Additional tips:

- The IQ Battery CT is installed only on the IQ Battery L2.
- The jumper between the L2 and L3 on the IQ Gateway terminals must be secured. If the factory jumper is missing, use 12 AWG to create a jumper.
- The embossed arrow on the CT must face toward the IQ System Controller lugs.
- If using two DERs for more than four IQ Batteries on systems with an IQ System Controller 3, both IQ Battery circuit L2s must run through the IQ Battery CT.



Thank you

To access troubleshooting videos, visit the [Enphase Energy YouTube series](#).

Revision history

REVISION	DATE	DESCRIPTION
ING-00033	February 2024	Initial version



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