

Critical updates and best practices for installing and commissioning Enphase Energy Systems

Overview

This document provides Enphase authorized installers with a summary of all critical information needed to properly install and commission Enphase Energy Systems. Be sure to check for a new version of this document on a regular basis as it is updated frequently:

Applicable countries

- Australia

Most recent revision

Revision 1.0 - May 2023

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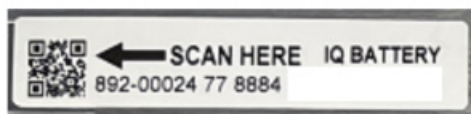
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Known field issues

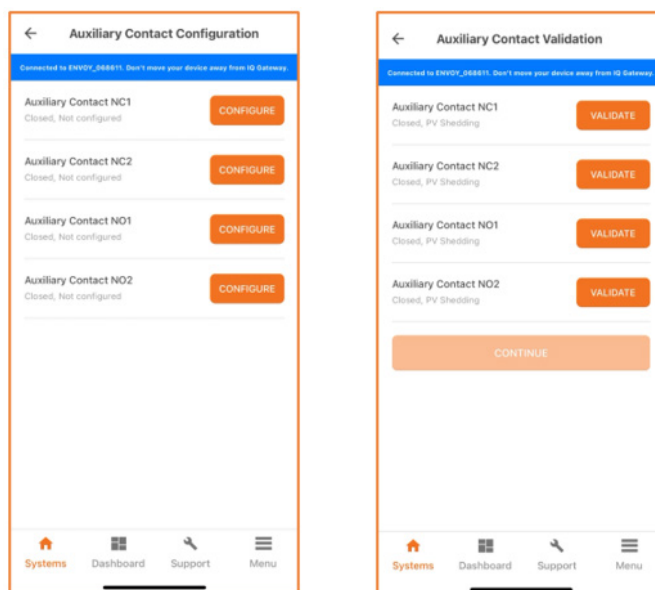
1. BMS QR code is confused with the IQ Battery QR code

On some IQ Batteries, the QR code is near the battery management system (BMS) QR code. Make sure you scan the IQ Battery's QR code while adding the IQ Batteries in the Enphase Installer App (formerly known as Installer Toolkit). Cover the BMS code by hand if needed. The new sticker for IQ Battery is shown below.

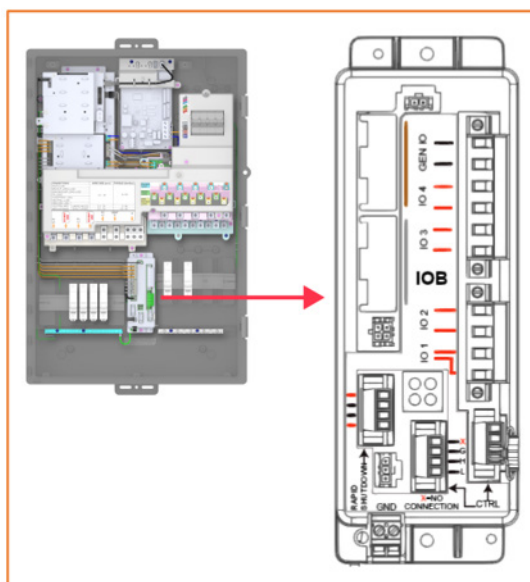


2. The Enphase Installer App shows auxiliary contacts as NC1, NC2, NO1, NO2 instead of IO1, IO2, IO3, IO4

- Ignore the below screens where in Installer App IO is shown as NC and NO.



- IO Board in IQ System Controller



3. **Incorrect Control Communications cable wiring** - Refer to the [Control \(CTRL\) cable wiring best practices](#) section.
4. **Unnecessary PV to IQ Battery ratio warning shown in the app before provisioning of three-phase systems** - Ignore this pop-up message for all three-phase storage installations.

Important reference documents

Ensure you have read the following important documents:

- IQ Battery 5P QIG
- IQ System Controller 3 INT QIG

Best practices

1. Before going to the job site, complete these steps from the office.

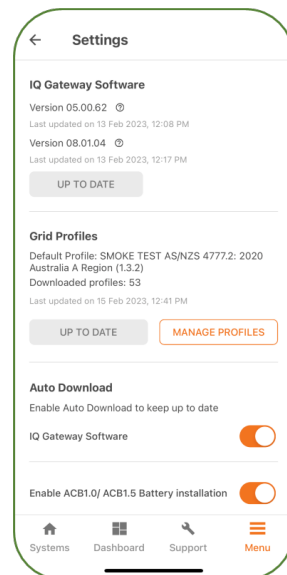
- Make sure the Enphase Installer App installed on your phone is in its latest version (3.30.0). Log in to the Enphase Installer App using your Enphase credentials and go to “Menu” > “Settings” to verify you have the latest version of the Enphase Installer App.

You can download the latest Enphase Installer App release from the [Apple App Store](#) and the [Google Play Store](#).

- After logging in to the Enphase Installer App, go to “Menu” > “Settings”, and tap “Download” under “IQ Gateway Software” to download all applicable IQ Gateway software.

NOTE: When commissioning your system, the Enphase Installer App will automatically select the appropriate software release version based on the devices and configuration of the site.

- To save time, you can create the site in the Enphase Installer Portal (formerly known as Enlighten Manager). Additionally, you can update the tariff, permitting information, and grid profile in the Enphase Activation in the Enphase Installer Portal so that you do not need to complete it on-site.
- If you face difficulty connecting a mobile device to the IQ Gateway in AP mode, refer to the [Device permission related troubleshooting section](#).
- Always carry the array map of the site containing the microinverter positions on the roof. This will save time in device scanning and array map generation for the site.
- If you are planning to configure PV shedding, identify the branch circuit that will be shed as well as the list of microinverters so that the functional operation of the shedding operation can be verified.
- Ensure that anyone commissioning an Enphase Energy System has completed the required training and is certified.



2. On-site, physical installation process

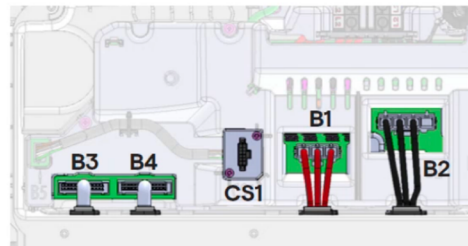
a) IQ System Controller installation best practices

- Ensure that the manual override switch is turned OFF on the IQ System Controller before starting provisioning.
- Ensure the IQ Battery and PV input connections at lugs in the bottom wiring enclosure of the IQ System Controller are torqued as specified on page 14 of the Quick Install Guide.
- Visually inspect the wiring of the PV and IQ Gateway breaker.
- Ensure screw terminals for PV and IQ Battery breakers installed on the IQ System Controller common bus conform to the torque specification listed on page 14 of the IQ System Controller Quick Install Guide.
- Before provisioning the device, ensure the AC breaker for the IQ Batteries is turned ON but the DC Switch is in the OFF position. The LED on IQ Battery should be flashing red.
- Ensure that PV and IQ Batteries are connected to the correct breakers.
- Visually inspect the PV and IQ Battery breakers contact points that will connect to the IQ System Controller common bus for imperfections that could result in a poor connection.

b) IQ Battery installation best practices

- Follow the instructions below to install the connectors in the IQ Battery.

- Connect the following connectors to the BMS board in following sequence:
 - B3: Temperature sense connector termination (black)
 - B4: Battery Voltage sense connector termination (multicolored)
 - B1: Battery DC +ve connector termination
 - B2: Battery DC -ve connector termination
 - CS1: Control switch intermediate connector termination



Note: Ensure that all the connectors are latched properly and clicking sound is heard.

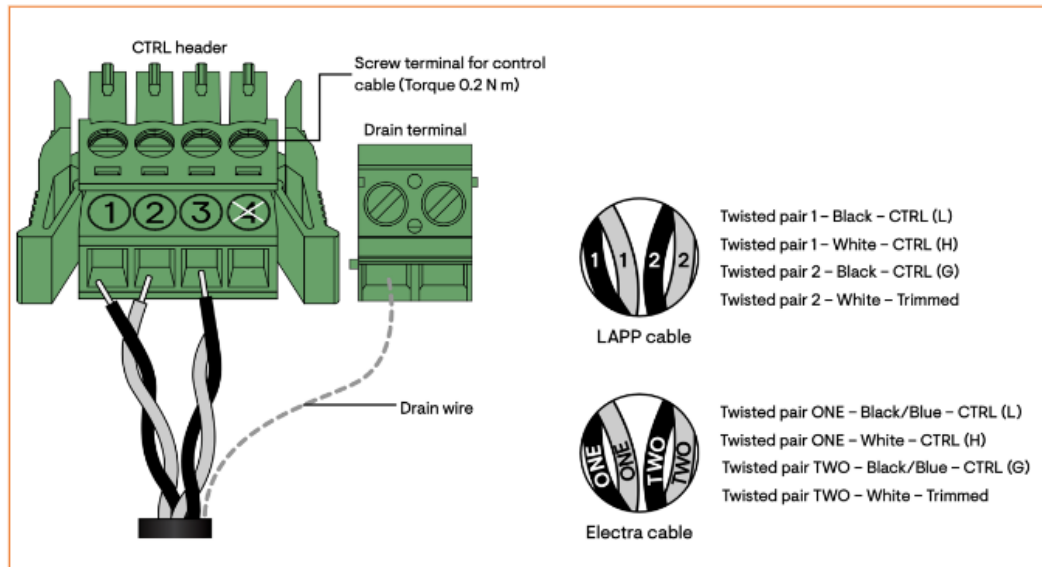
- Ensure the cable for the DC switch is securely plugged in.

c) Control (CTRL) cable wiring best practices

- Ensure the CTRL cable is the Enphase recommended cable:
 - Electra EAS7302PHV/EAS7502PHV
 - LAPP 1270802
- Ensure the CTRL cable length for each section is cut according to the distance between system components.

NOTE: Total length of CTRL wiring across the system cannot exceed 75 meters to ensure system operates as per specifications.

- Ensure that the control cable is stripped to the recommended dimensions as per guidance provided in respective product QIGs, and then connected to the header.

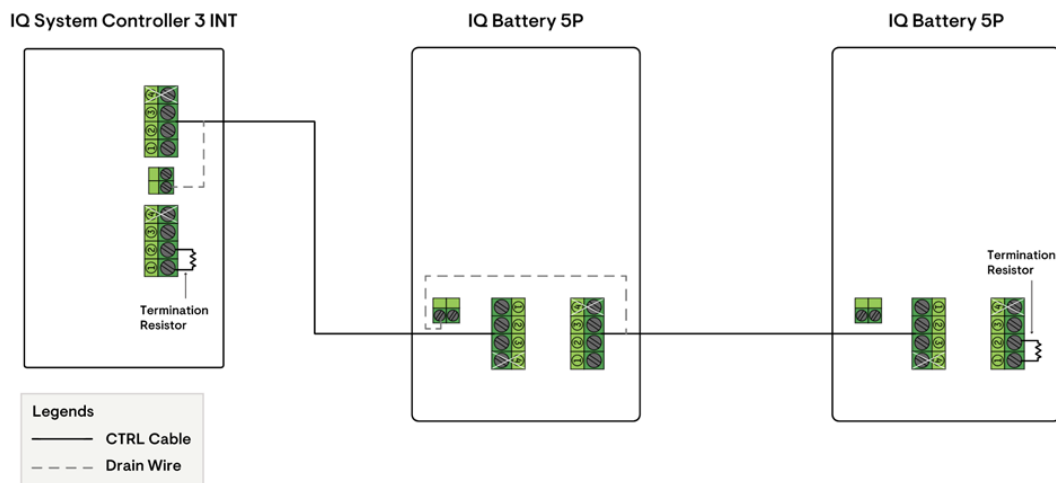


- Ensure that both ends of the CTRL cable twisted pair wires are inserted into the header as shown above. Confirm this by performing a continuity check between CTRL header screw terminals on both ends of the CTRL cable section.

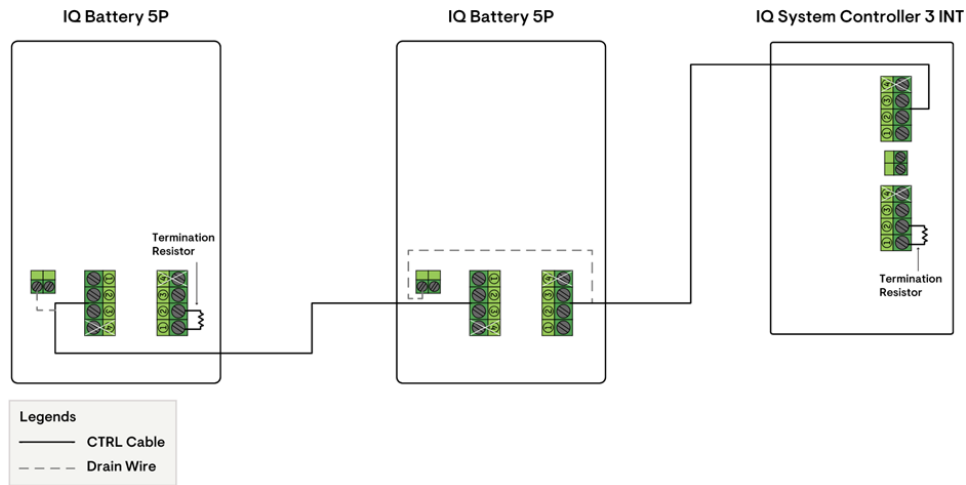
TIP: Before pulling the cable through the conduit perform continuity checks and label each end of all the wires with small colored clips or stickers (with the same numerals as on the headers). This will enable easy identification of wires and avoid mis-wiring.

- IQ System Controller 3 INT and IQ Battery 5P are shipped with a 120 Ω termination resistor pre-installed in the CTRL cable header. During commissioning, ensure one header with termination resistor should be installed on each component that is at the extreme end of the control network (refer to the below images for different scenarios).

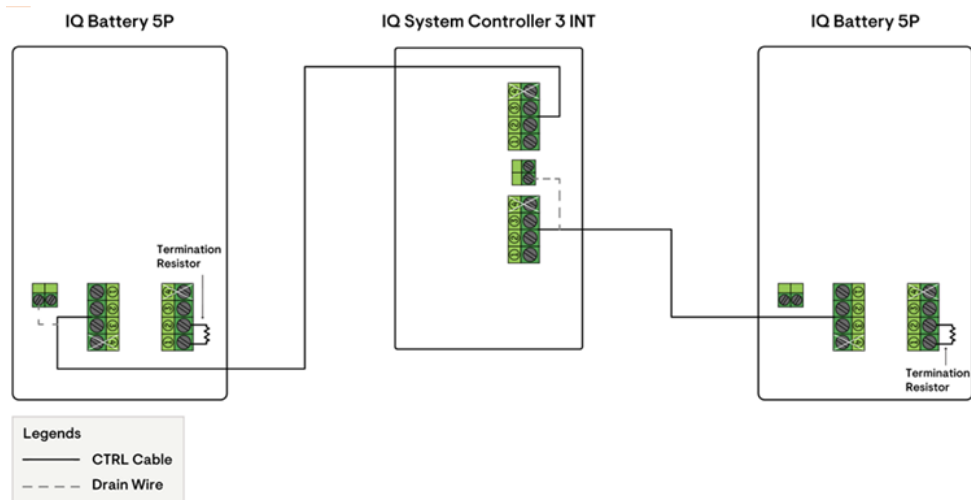
Scenario 1: IQ System Controller 3 INT → IQ Battery(s) 5P



Scenario 2: IQ Battery(s) 5P → IQ System Controller 3 INT



Scenario 3: IQ Battery(s) 5P → IQ System Controller 3/3G → IQ Battery(s) 5P

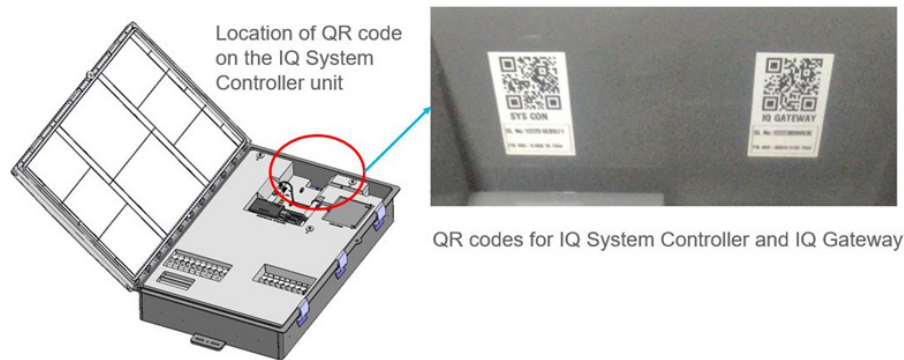


NOTE: The drain wire should only be terminated on one end of control wiring between system components. It is recommended to terminate drain wire at the component from which the control wiring for the section is initiated. Terminating at both ends of the section may cause provisioning to fail.

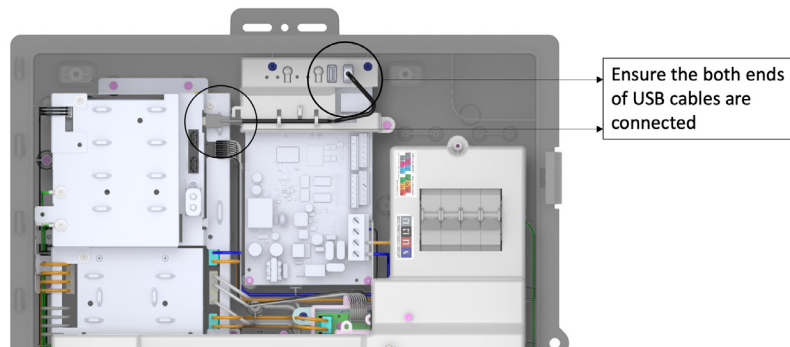
- To verify that the CTRL cable twisted pair wires are correctly inserted in the header at both ends of the CTRL cable section, perform a connectivity check with a multimeter between the screw terminals on the CTRL header on both ends of the CTRL cable section.
- Once every section of the cable is ready, ensure that each section is added between each of the system components as per the system scenarios shown above.
- Once all sections of CTRL cable have been installed between each of the products in the system, you are now ready to initiate the commissioning flow.

3. On-site commissioning using the Enphase Installer App

- Use the camera scan feature to add all IQ Microinverters, IQ Batteries, and IQ System Controllers.
- The serial numbers of the IQ Gateway and IQ System Controller are placed in the IQ System Controller box, as shown in the below image.



- If the Enphase Installer App is not able to complete Step 4 (provisioning step), check the [Control \(CTRL\) cable wiring best practices section](#).
- Ensure that both ends of the IQ Gateway-Embedded controller cable are connected.



- Ensure there is sufficient sunlight and production by the microinverters. This is required to enable meters.
- Ensure the DC switches of all IQ Batteries are turned ON before functional validation (Step 4).
- Functional validation troubleshooting steps:
 - Ensure batteries are sufficiently charged (above 15%) but not completely charged (100%) before starting the test.
 - Follow the instructions in the functional test and wait for loads and IQ Batteries to stabilize in each step before moving forward.
 - The off-grid and on-grid toggle buttons are placed on the top right of the functional validation screen.
 - When going off-grid or on-grid, wait until you hear the relay (inside the IQ System Controller) open or close audibly to confirm the grid transition.

4. Post-commissioning

- Post-commissioning, follow the homeowner walkthrough instructions on the Enphase Installer App to ensure you have informed the homeowner about the features of the Enphase Energy System before leaving the site.
- After functional testing, the battery mode will be changed to Full Backup automatically by the Enphase Installer App to bring the state of charge to 100%.

Frequently asked questions

1. What happens with the system in the first 24 hours?

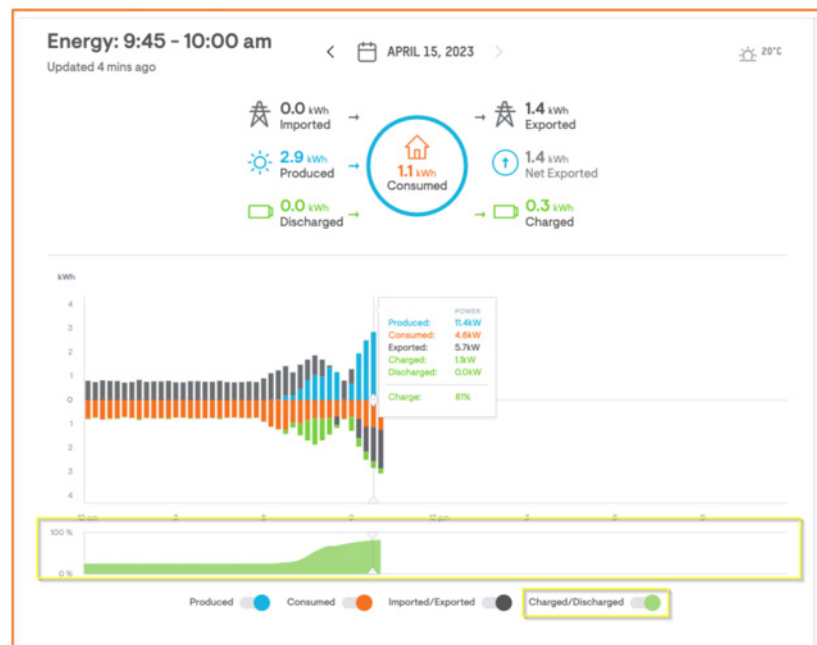
The battery will be operating on Full Backup mode for calibration. The charging power will only come from PV aiming to fully charge the battery SoC to 100%.

2. What happens when the battery SoC is below the reserved SoC set point?

The system will trigger to trickle charge from the grid to maintain the reserved SoC.

3. I cannot see charge levels from the Enphase Installer Portal. To view the charge level, I must go to the customer's view in Enphase Installer Portal. Is this something that is going to change?

SoC is available on the Enphase App and Enphase Installer Portal (for homeowners). See the following image; you might need to turn on the toggles at the bottom.



4. I feel the traditional ACB display of information was much better for a quick, simple diagnosis. I could see how many charges there are compared to batteries nearby and could rapidly see charge level. How can I access this view?

The new system has an IQ Battery dashboard, which can be accessed by clicking “System Dashboard” on the Enphase Installer Portal.

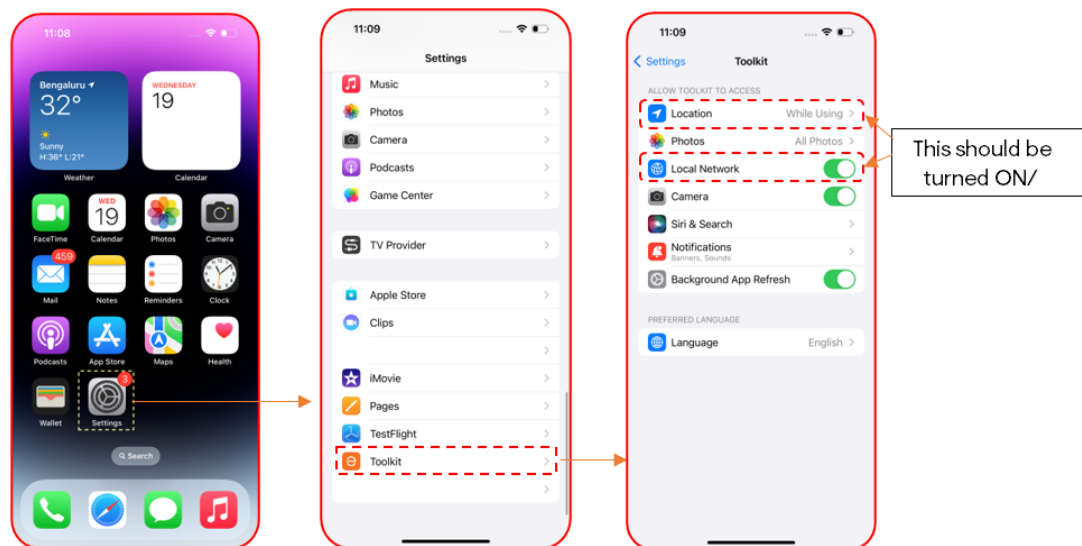
Other troubleshooting

- If your Enphase Installer App screen is stuck or frozen, please close and restart the application.
- If you are unable to connect to the IQ Gateway in AP mode, use the AP mode button on the IQ Gateway to turn OFF and turn ON AP mode, and try connecting again.
- Always test voltages before and after relays as there will be no voltage on the battery and PV lugs at the lower region of the IQ System Controller if the relays are open (possibly due to Manual Override not being exited properly).
- For any assistance, either reach out to customer support or create a support case for the site. You can also go through the Enphase FAQs and video library under support for assistance.

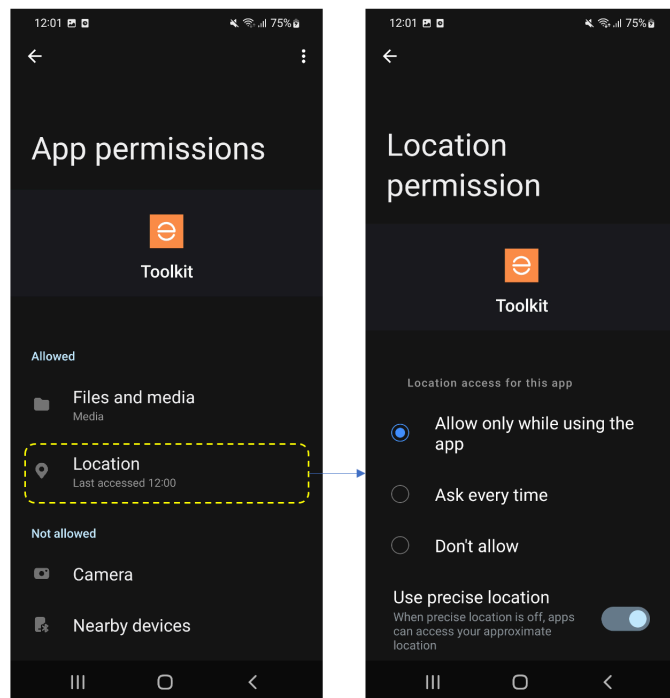
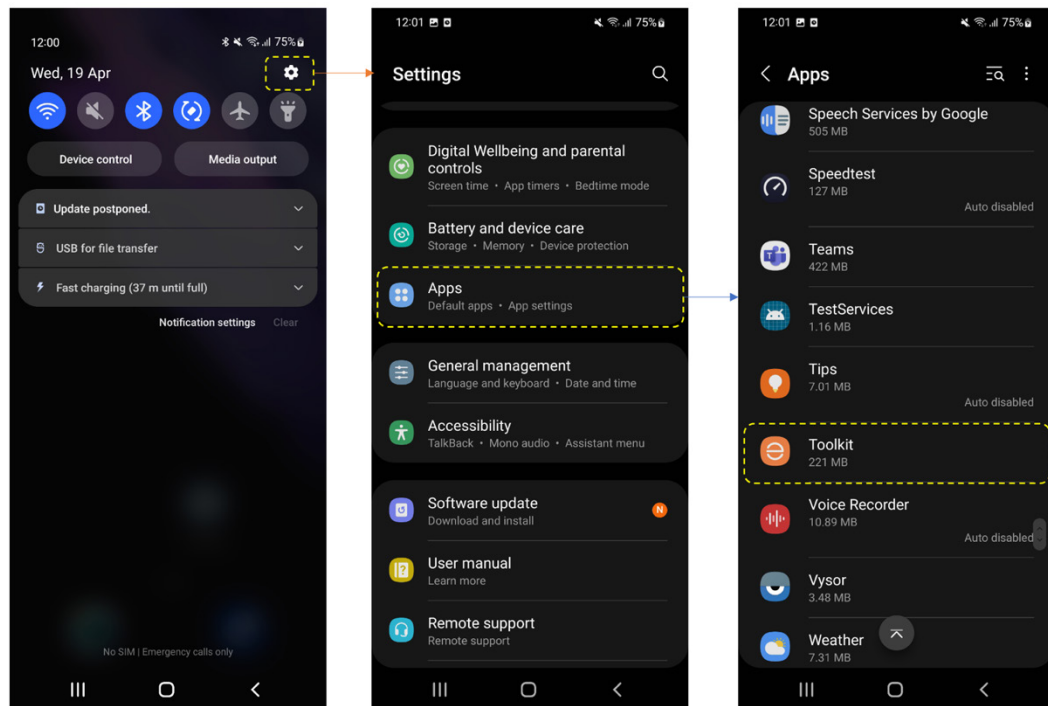
Device permission related troubleshooting

- Ensure your device permissions for Location and Network are provided/granted to the Enphase Installer App. This is requested by the app when it is opened on the mobile device. Allow these permissions when requested by the Enphase Installer App. Refer to the screenshots below to verify.

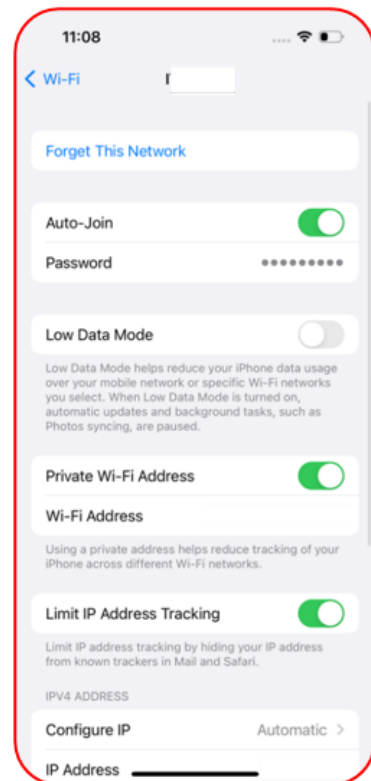
iOS



Android



- [iOS] Disable the “Auto-Join” toggle button. When your device is connected to IQ Gateway’s AP mode, connecting to a Wi-Fi network may cause issues. If you are facing frequent IQ Gateway disconnections, make sure the “Auto-Join” is disabled.



Disable Auto-Join if you are connected to another Wi-Fi network other than IQ Gateway AP mode

- Ensure the mobile device is not connected to a VPN. Connecting to a VPN can disrupt the IQ Gateway AP mode connectivity.
- Ensure that your phone's cellular data is turned OFF. Turning on cellular data might disrupt the IQ Gateway AP mode connectivity.

Product name reference

A number of installers and homeowners asked us to clarify our product and service names, so we conducted an audit of all our names and came to the same conclusion: We needed to simplify our product names to make it easier to navigate and remember our system, product, and service offerings. We believe that our new names more accurately describe product function, are easier to remember, and will benefit homeowners and installers alike.

Previous name	New name
Ensemble	Enphase Energy System
Encharge	IQ Battery
IQ Envoy	IQ Gateway
Enpower	IQ System Controller
Q Cabling	IQ Cabling and IQD Cabling
Q Relay	IQ Relay
Load Control	IQ Load Controller
Enlighten App	Enphase App
Enlighten Manager	Enphase Installer Portal
Enlighten Installer Toolkit (ITK)	Enphase Installer App

Revision history

REVISION	DATE	DESCRIPTION
TEB-00009-1.0	May 2023	Initial release