Commissioning of grid-tied Enphase Energy System using Enphase Installer App 3.33.0

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Applicable countries

- Germany
- Austria
- Belgium
- France
- Netherlands
- Switzerland
- United Kingdom

NOTE: Some functionalities and devices, such as the IQ Energy Router, might be available only in limited countries. Refer to the respective sections for the applicable countries list.

Overview

This document is intended for Enphase Certified Storage installers who commission the Enphase Energy System, including IQ Batteries, IQ Energy Router, heat pumps, and EV chargers for grid-tied applications. Follow the steps below to establish successful communication between the IQ Battery and IQ Gateway Metered and validate that the system operates as designed.

It also covers the steps to decommission an IQ Battery for replacement and how to perform a range test when planning the installation to confirm robust communication between the devices onsite.

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Preparing for Enphase Installer App (previously Installer Toolkit) communications

The following process assumes that all IQ Batteries are installed according to the local standards and best practices, tested for appropriate voltages, and are ready to be energized.

- For all products, always follow the safety warnings and instructions in the Enphase Quick Install Guides and Installation Manuals.
- IQ Battery installations are commissioned using the Enphase Installer App. Update the app to the latest version (currently 3.X).

- You can install the application using the following links:
  - iOS
  - Android

iOS Android

- Enable Bluetooth communication on the smartphone or tablet that you use for commissioning.
- Turn OFF the automatic sleep mode on the mobile device. This mode prevents your mobile device from falling asleep and interrupting the IQ Gateway Metered software upgrade.
  - In iOS, this setting is called “Auto-Lock” and can be changed to “Never” under “Display & Brightness”.
  - In Android, this setting is called “Screen saver” or “Screen timeout” and can be changed to “Never” under “Display settings”.
  - After completing commissioning, you can turn the automatic sleep mode back on.

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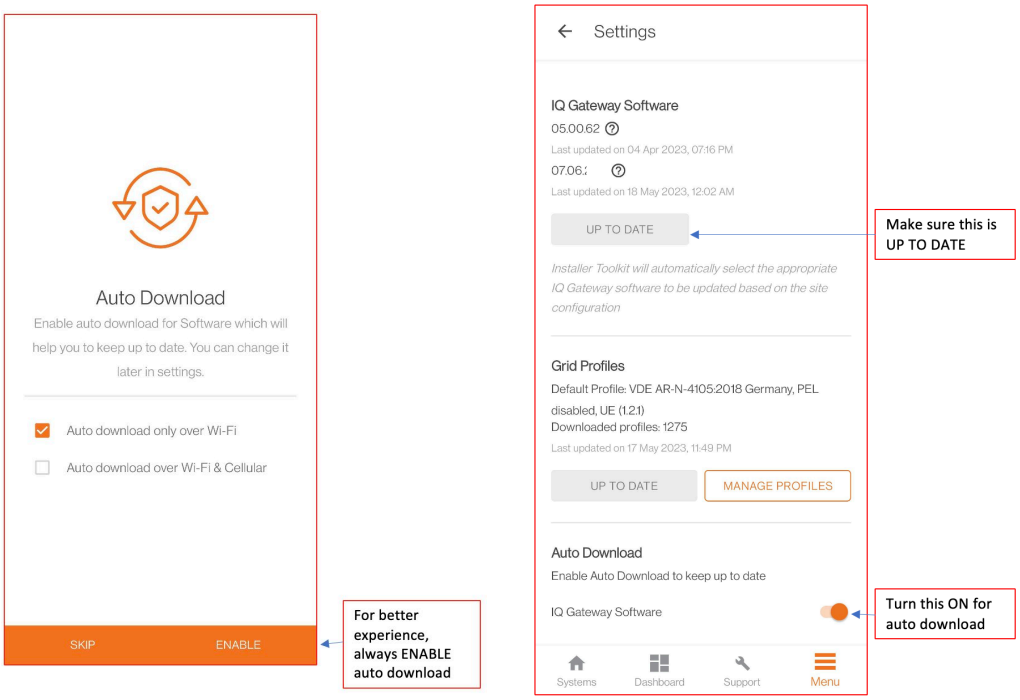

- If you must create a site, you can do this before going to the site using the Enphase Installer Portal or onsite using the Enphase Installer App.
  - Create an activation beforehand to save time in the field. Refer to this article to know more about activation in the Enphase Installer Platform.
- Before going to a site, ensure the latest IQ Gateway software has been downloaded to the mobile device, and the button shows **UP TO DATE**.
  - The **Settings** tab in the Enphase Installer App has an **IQ Gateway Software** section with an **Update Now** button to download the IQ Gateway Metered software.
  - Users see different versions of the software. The Enphase Installer App auto-selects the correct version for IQ Battery and Enphase microinverter-only sites.
- Ensure you have all serial numbers and barcodes handy, preferably on a piece of paper to scan from.

Informative notes:

- IQ Battery units ship with approximately 30% state of charge.
- IQ Battery units ship with “Self-Consumption” as their default mode.
- If an IQ Battery has a very low state of charge (typically 5%) when it arrives at a site, provided it is connected to the AC side with its DC switch on, it can be commissioned. IQ Battery housekeeping supply receives power from the AC supply during commissioning, and the IQ Battery can then communicate with the IQ Gateway Metered.

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Commissioning instructions

Date and time of commissioning: _____

Address: _____

The system being commissioned: _____

Installer company: _____

Individual (name and email) overseeing commissioning: _____

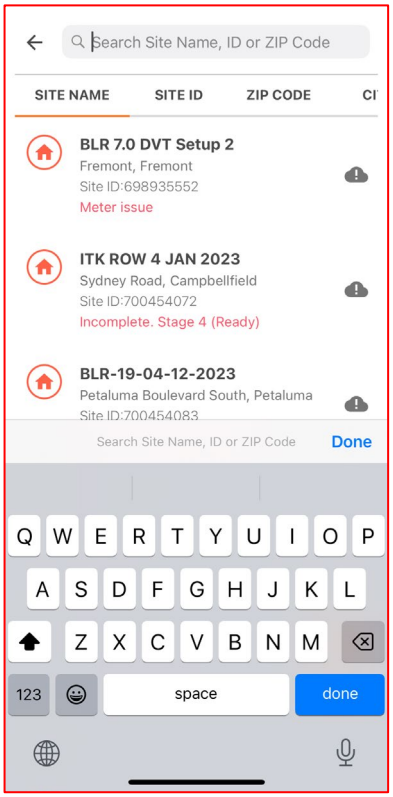
Activation/Site ID _____

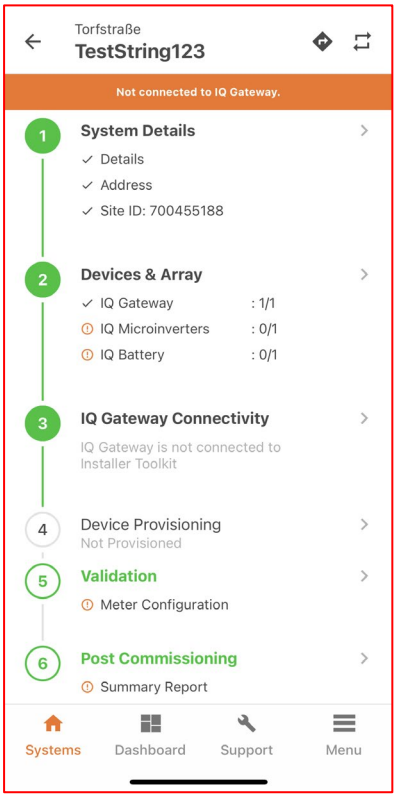
- Perform the following steps, and mark completed steps in the checkboxes provided on the page's left side.
- Initial the bottom of each page showing all steps on that page are complete.

Commissioning process

A. Enphase Installer App Step 1: System Details.

1. Open the Enphase Installer App. Tap the **Systems** tab on the lower left of the screen.
2. If an activation has been completed using the Enphase Installer Portal, search the site in the Enphase Installer App using the Site Name, Site ID, Postcode, City, Installer reference, or the IQ Gateway Serial number.
3. To install the IQ Batteries, under **SITE NAME**, select the appropriate site.





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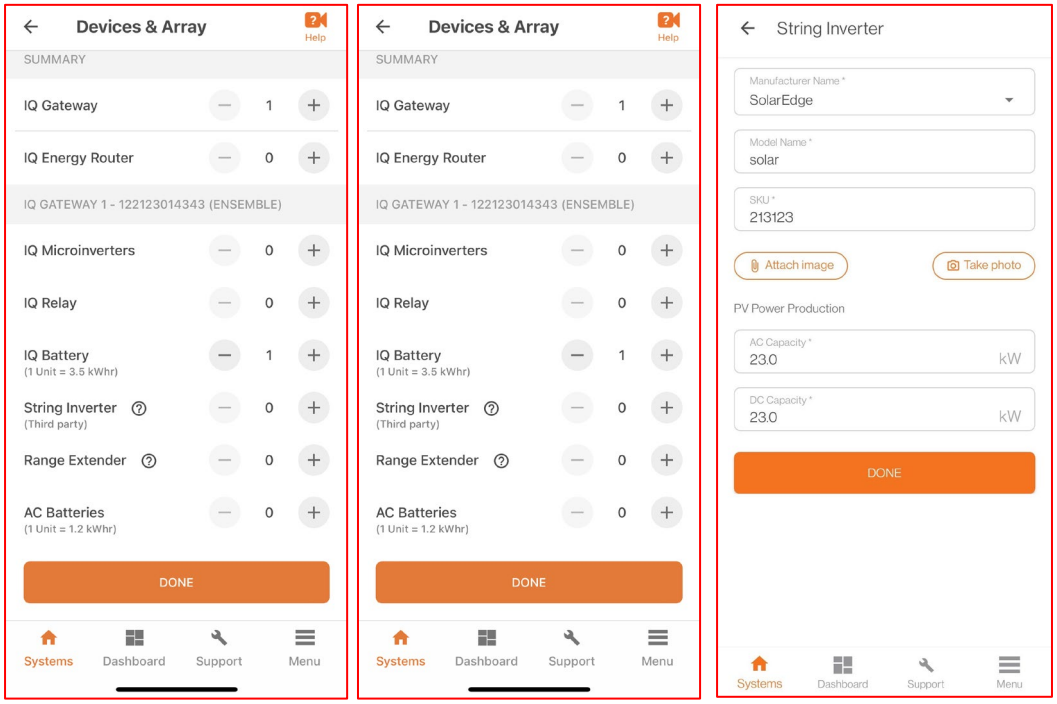
B. Enphase Installer App Step 2, Devices & Array.

1. Enter the total count of each device type to be added to the system.
2. Enter the IQ Gateway serial number manually or by using a camera scanner.
3. The Enphase Installer App can scan the serial numbers using your mobile device camera. Also, select the appropriate phase for each IQ Battery.

   A power line scan can be used to detect the microinverters. However, using the barcode scanning feature in the Enphase Installer App is recommended to add the microinverters to the system. In locations with other nearby Enphase installations, the line scan can "poach" an incorrect serial number from a nearby site.

WARNING: Avoid physical PLC scans using the button provided in IQ Gateway.

4. If retrofitting the IQ Battery to an existing site, microinverters appear in the activation.
5. If you intend to install a string inverter with IQ Battery rather than microinverters, string inverter details can be added, including the manufacturer, DC, and AC capacity.



NOTE: The LED status indicator on the IQ Battery and state of charge in the Enphase Installer App will be inaccurate until IQ Gateway software is updated at the end of Enphase Installer App Step 4, **Provisioning devices**.

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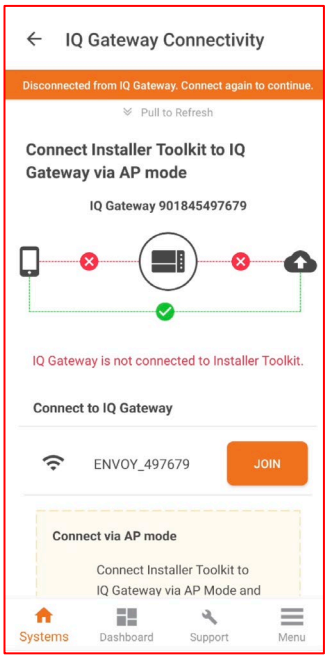
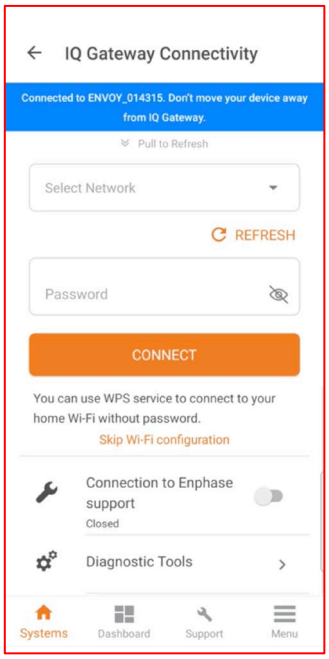
C. Enphase Installer App Step 3, IQ Gateway Connectivity.

The screen shows your mobile device's connectivity to the web and the IQ Gateway Metered.

Your mobile device should be shown as connected to the web but not to the IQ Gateway Metered.

1. To continue with the commissioning steps, connect to the IQ Gateway Metered using AP mode.
2. On the IQ Gateway Metered, press the AP (Access Point) mode button at the top for about one second. The LED glows solid green.
3. To continue with the following commissioning steps, tap the **Join** button and follow the instructions on the screen to connect your mobile device to the IQ Gateway AP.

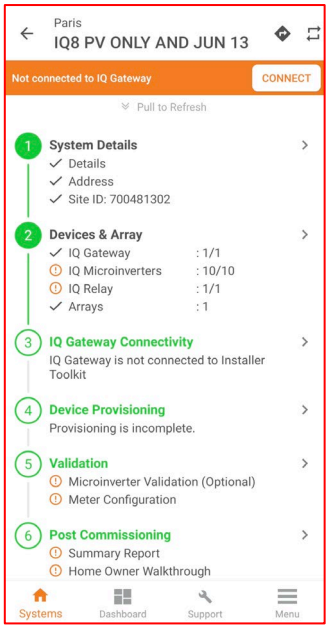




4. You can connect to IQ Gateway using the **Connect** button on the Site status screen.

   Alternatively, you can check the Wi-Fi network with the name ENVOY_XXXXXX, where the last six characters are the last six digits of the IQ Gateway serial number in the Wi-Fi network screen of the phone. Connect to this network.

5. After connecting, the Enphase Installer App shows your mobile device connected to the IQ Gateway Metered but not to the web if the IQ Gateway is not connected to the Internet through a LAN cable. It is recommended to use a LAN cable to connect the IQ Gateway to the Internet.



6. If there are issues connecting to this network, turn AP mode OFF and ON again by repeating steps 4 through 6 of this section. If this fails several times, a hard reboot of the IQ Gateway Metered is advised.
7. Configure the IQ Gateway Metered with Wi-Fi or Ethernet connectivity. You must enter network and password information in the Wi-Fi section. If connecting using Ethernet, select **Skip Wi-Fi configuration** and plug the cable into the IQ Gateway. The user is blocked from provisioning if Ethernet/Wi-Fi is not connected.
8. Before device provisioning starts, ensure the IQ Gateway Metered has the appropriate software: 7.6.X (or later) installed for IQ Battery to be commissioned.

   a. Tap **Update Software** to complete this process (takes approximately 30 minutes).

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b. Place the mobile device close to the IQ Gateway Metered, and do not move the mobile device away during the updating process. Moving the mobile device away could cause problems.

c. Your mobile device screen must stay active while this update occurs. Allowing your mobile device to go to sleep will interrupt the update. Do not switch to different apps on your mobile device during the update process.

   After the software update, IQ Gateway Metered restarts multiple times.
   While the IQ Gateway Metered restarts, all four LEDs flash red together or sequentially flash green (top to bottom).
   After the restart is complete, the network communications LED flashes solid green.

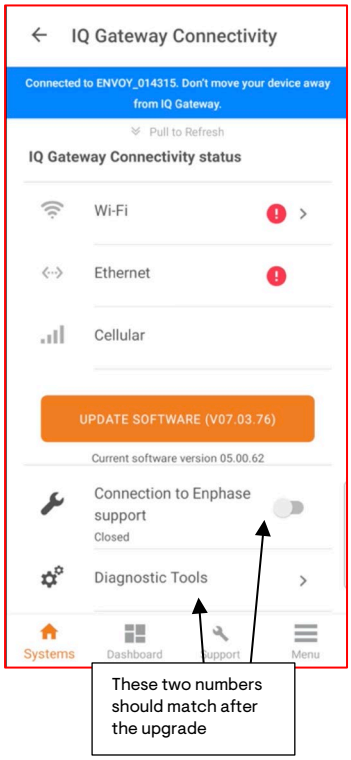
d. After the IQ Gateway Metered reboots, you will lose AP mode connectivity on your mobile device. After the IQ Gateway Metered has rebooted successfully, reconnect to AP mode.

   - If you have issues connecting to AP mode, turn OFF AP mode on the IQ Gateway Metered by pressing the **AP mode** button for one second, and then “forget” the AP mode network in your mobile device's Wi-Fi settings.
   - Repeat steps 2 through 4 of this section to reconnect to the IQ Gateway Metered.

e. Set up Wi-Fi or Ethernet on the mobile device.

   The IQ Gateway Metered requires communication to the web to display Internet connectivity. Ensure the IQ Gateway Metered Wi-Fi access has been configured or the Ethernet connection is established.

f. Tap **START PROVISIONING DEVICES** at the bottom of the IQ Gateway Metered Connectivity screen.



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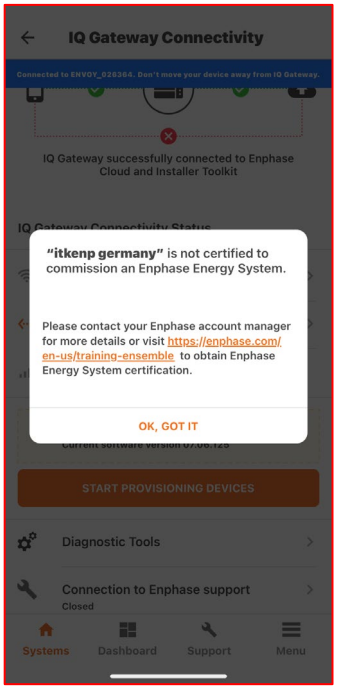
D. Enphase Installer App Step 4, **Provisioning devices.**

1. You must be Enphase Energy System Storage training certified to provision IQ Battery. Refer to the Certification support page to know more.



2. Plug the Communications Kit (COMMS-KIT-EU-01) into one of the IQ Gateway Metered USB ports. It takes up to five minutes after the software update before the USB port on the IQ Gateway Metered is powered on.
3. Device provisioning can only be completed when the following prerequisites are met:
    - COMMS-KIT-EU-01/Communication Kit 2 INT is plugged in.
    - IQ Gateway Metered is connected to Wi-Fi or Ethernet.
    - The installer is Enphase Energy System certified.
    - IQ Battery AC circuits are powered on.
4. The Enphase Installer App begins provisioning all devices, and the following steps occur (this takes three to six minutes):
    - The grid profile is updated.
    - The Enphase microinverters or string inverters are provisioned.
    - The Range Extender is provisioned.
    - The IQ Battery is provisioned.
5. During provisioning, the status flows as follows:
    - For 2nd-generation Enphase Energy System:
        - Discovered/not discovered: The Enphase Installer App can find the device using Bluetooth (BLE) on your mobile device. Stay close to the IQ Battery while provisioning.

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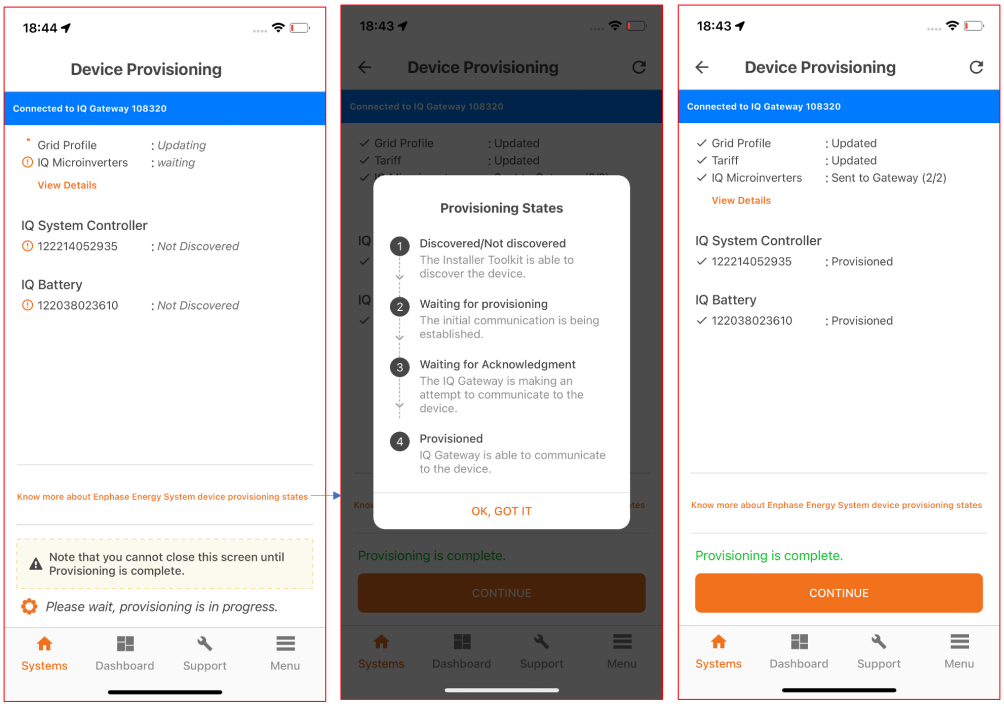

- Waiting for provisioning**:** The initial communication is being established. The Enphase Installer App is sending network information to the IQ Batteries and Range Extender using BLE (Bluetooth Low Energy). Continue to remain close to the IQ Batteries.
- Waiting for acknowledgment: The IQ Gateway Metered is trying to communicate with the IQ Battery and Range Extender using the wireless 2.4 GHz radio.
- Provisioned: IQ Gateway Metered can communicate with the IQ Battery and Range Extender.

- For 3rd-generation Enphase Energy System:
  - The communication happens through the CTRL cable.
  - If the device fails to provision, troubleshooting steps are shown to ensure CTRL cable wiring is done correctly.

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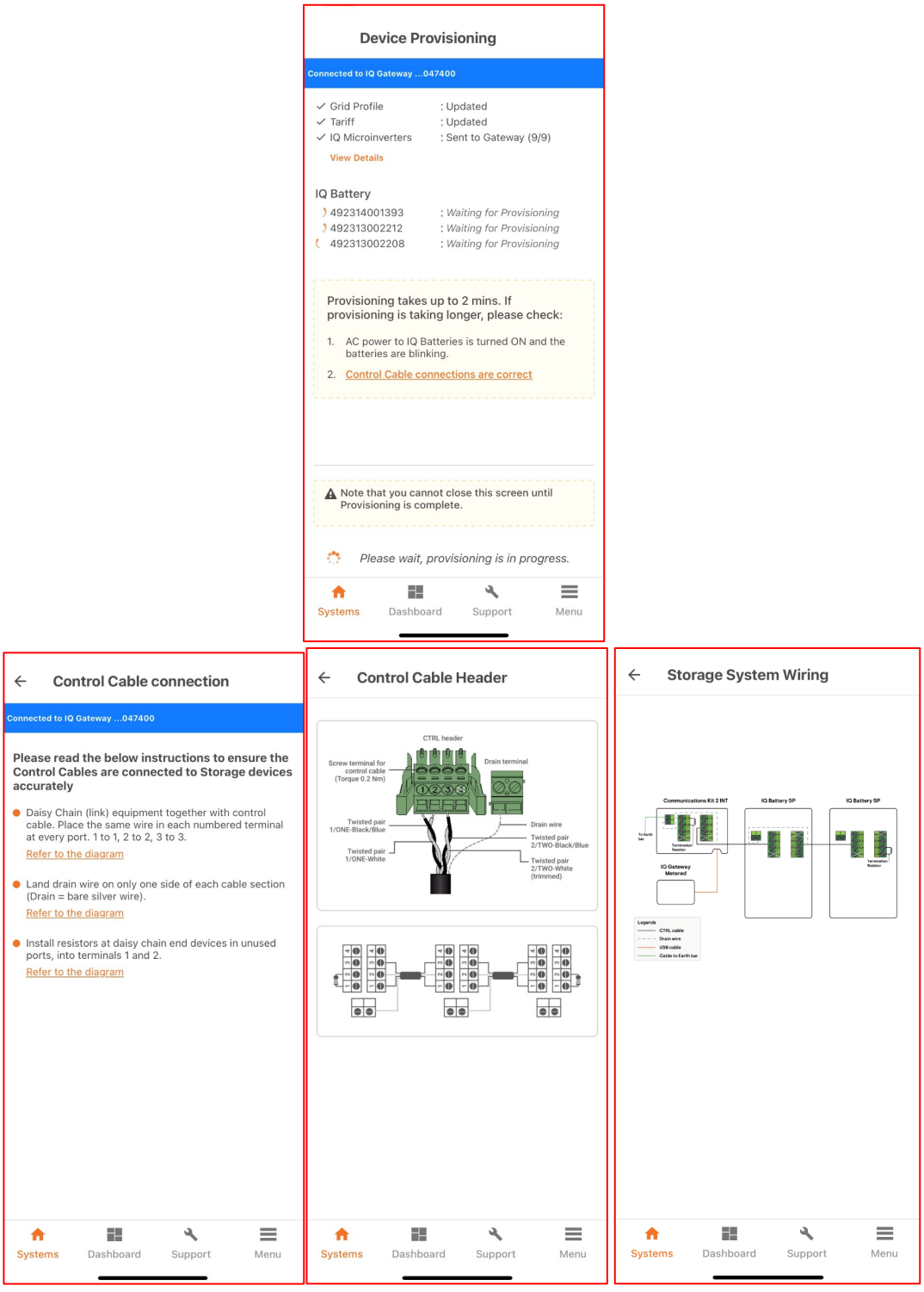

6. After provisioning is complete, click **Done**.
7. Confirm that the IQ Batteries are communicating with the IQ Gateway Metered by checking Enphase Installer App Step 2: Device & Array. The IQ Batteries should display “Communicating” as follows.

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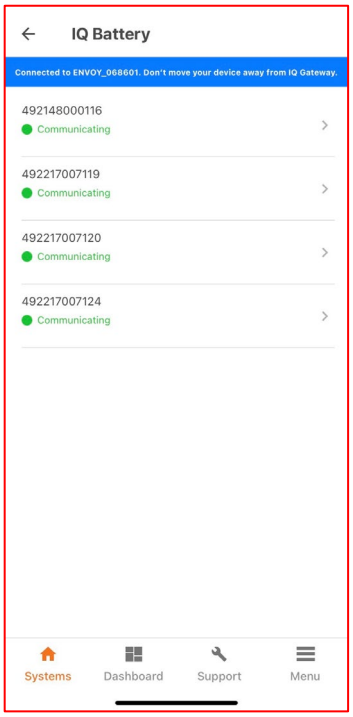
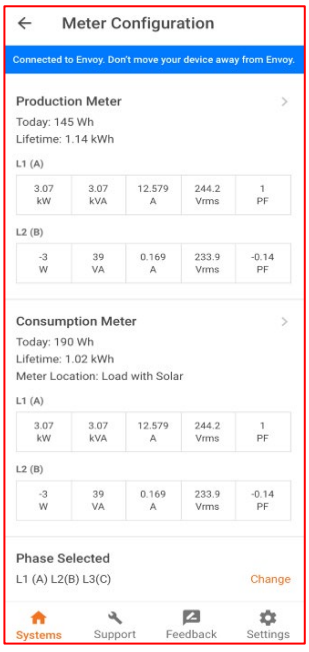


8. In the Enphase Installer App, LED status and state of charge display accurately.
9. If the IQ Batteries are not communicating with IQ Gateway Metered, follow these steps to power cycle the batteries:
    a. Turn OFF the DC disconnect switches for all IQ Batteries.
    b. Turn OFF the AC breakers (branch circuit protection) connecting all the IQ Batteries.
    c. Wait for at least two minutes. The IQ Battery LEDs should be OFF at this point.
    d. Turn ON the AC breaker.
    e. Wait for one minute. Allow the IQ Battery LEDs to flash red.
    f. Turn ON the IQ Battery DC switches. The IQ Battery LEDs should stop flashing red after the DC switches are turned ON.



E. Enphase Installer App step 5, Validation.

The meters are disabled by default after installing the IQ Battery and IQ System Controller—Configure Production and Consumption CTs using the meter wizard.

1. To configure the Production CT:
    a. Select the number of the phase where the PVs are installed.
    b. Configure the production CT as follows.

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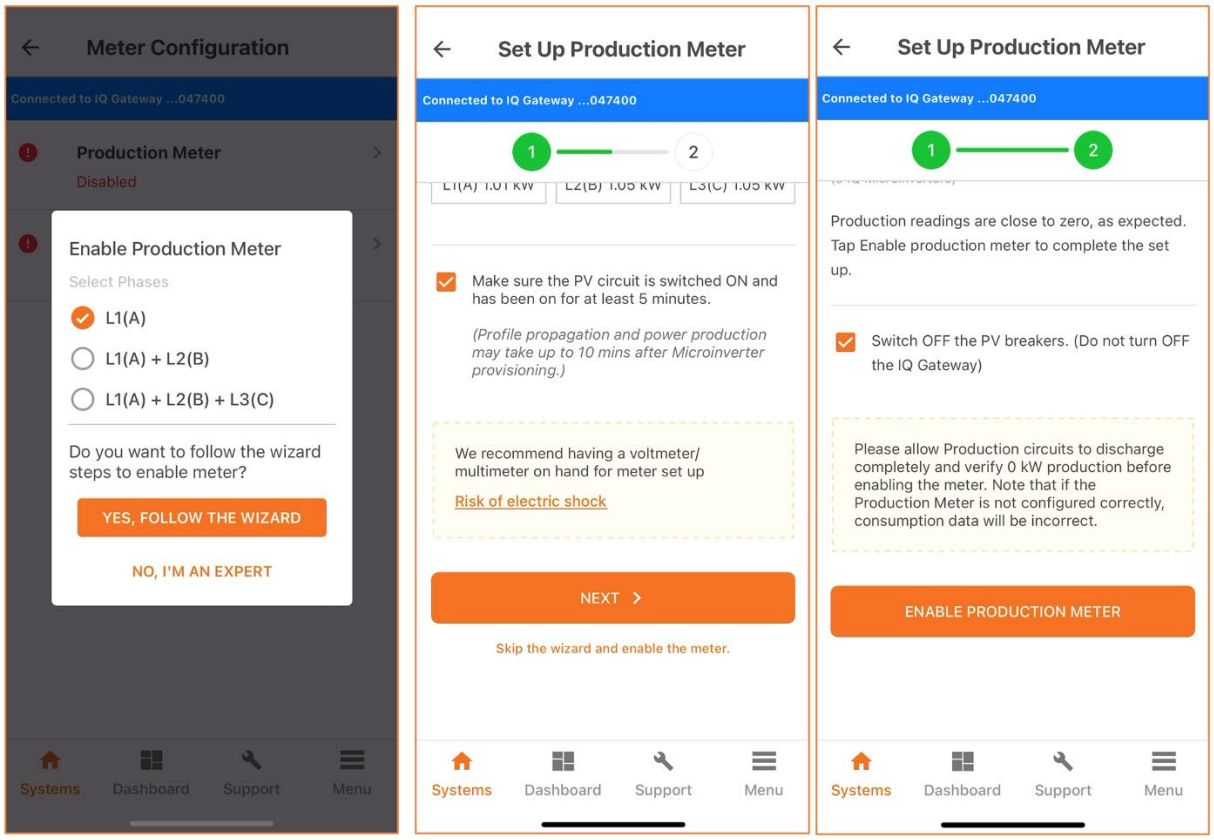

2. To configure the Consumption CT:
    a. Verify that the configuration matches the installation (partial vs. whole home backup and the location of CT) and the number of phases connected to the system.
    b. Enable the meters by verifying the readings by going through the meter wizard.
    c. While in the production meter wizard, switch OFF all PV breakers as instructed to ensure the readings go to zero before enabling.
    d. While in the consumption meter wizard, switch ON the PV and a known load in the home to confirm consumption rises as expected and select the meter location.

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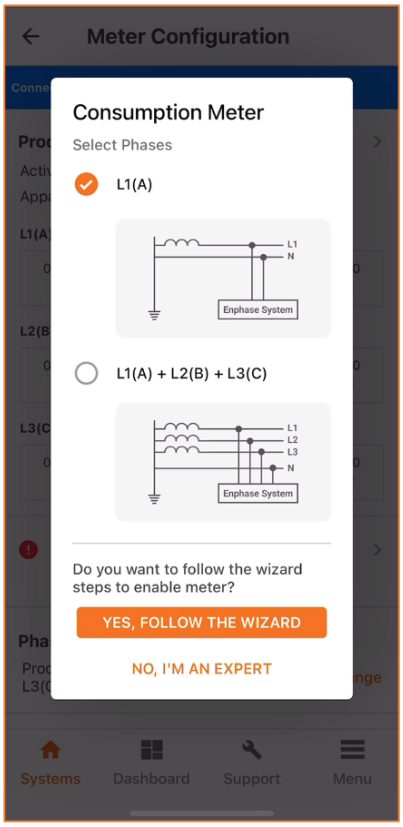

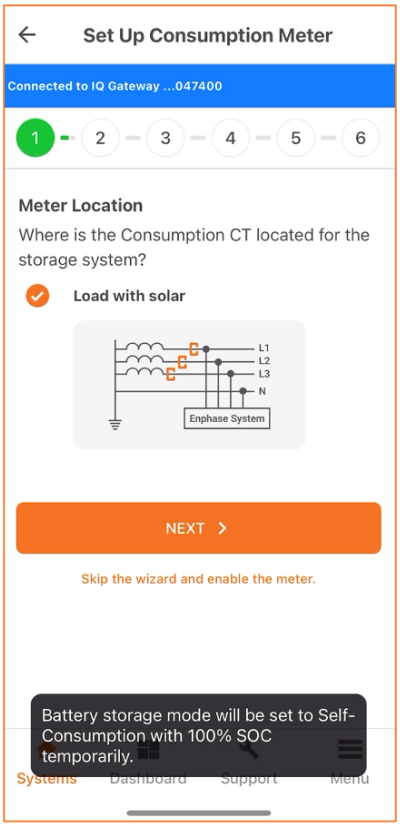

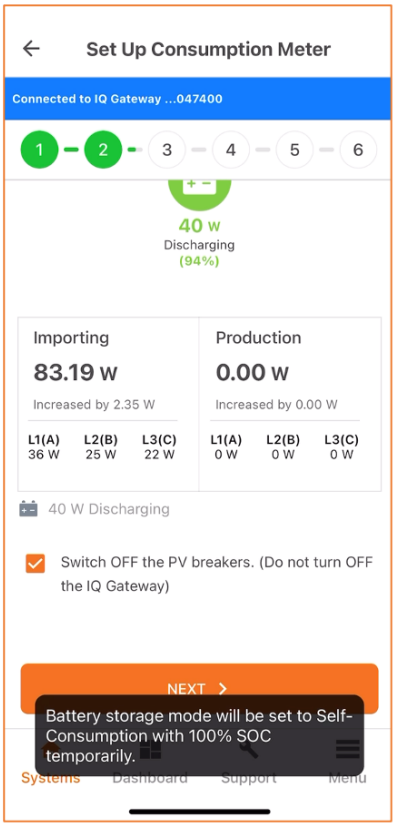

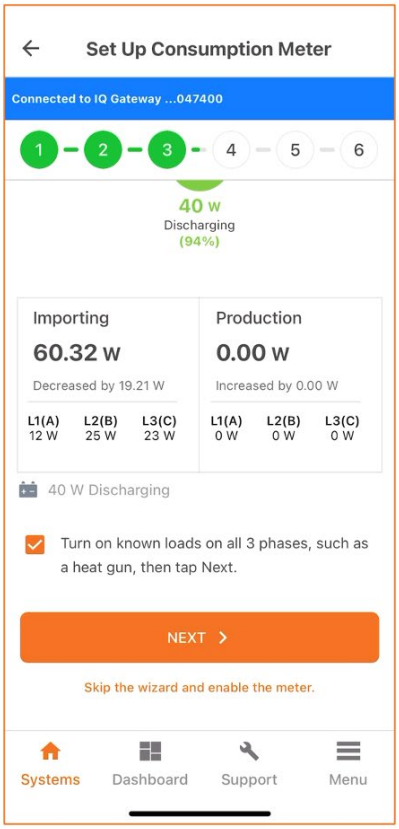

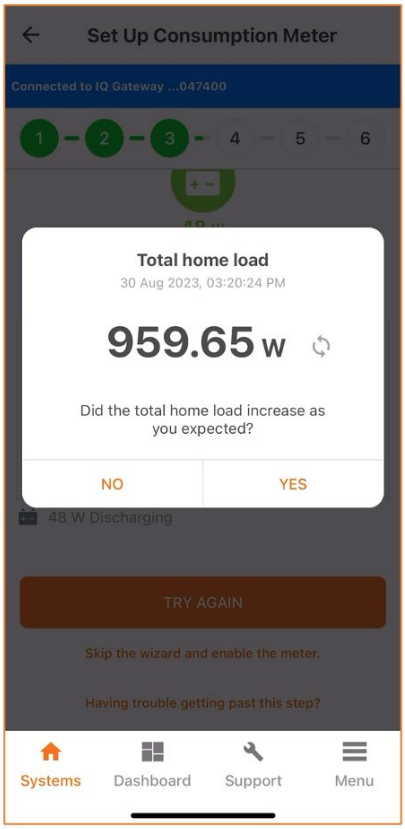

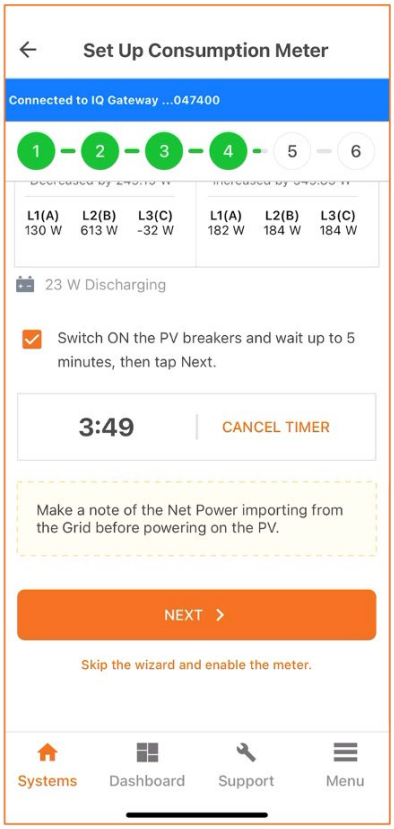

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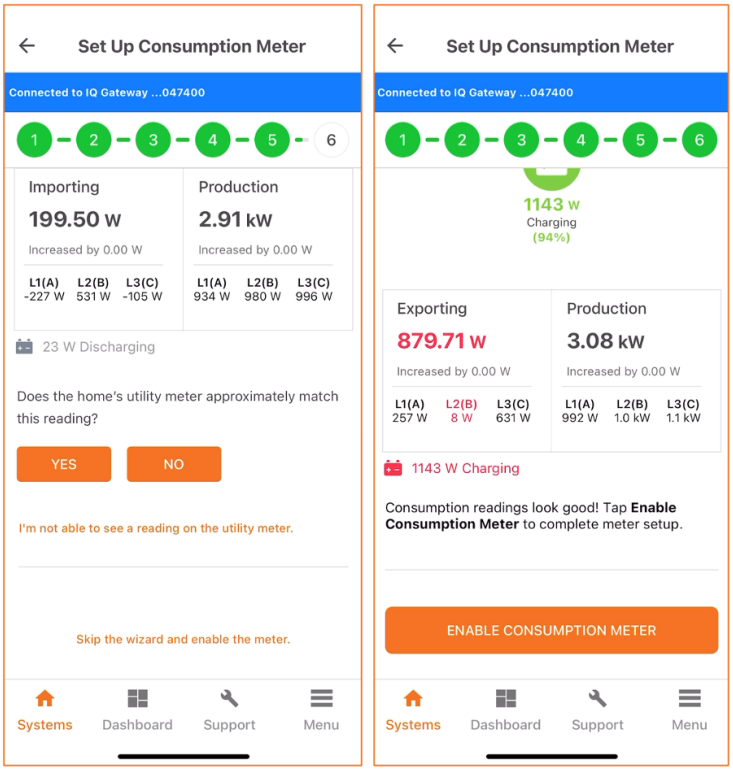
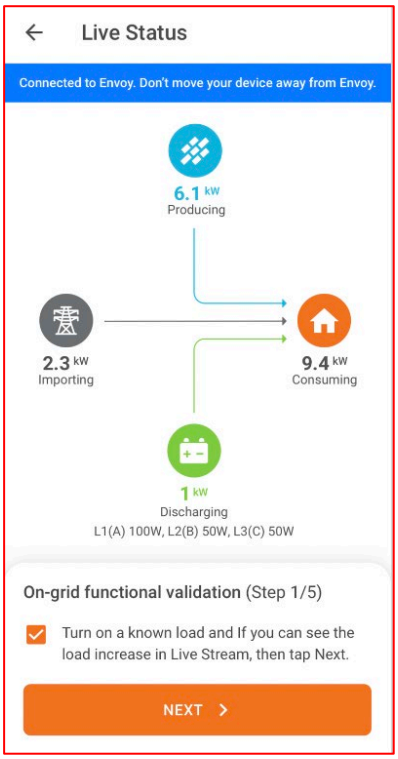


3. Functional validation.
   a. After completing each step, mark them completed in the **Document Results** section.
   b. If any step cannot be completed, record what occurred in the **Observations** section. To do a Consumption (load monitoring) test, turn ON a known load and confirm that you can see the load increase in the **Live Status** interface of the Enphase Installer App.
   c. To do a battery discharge test:
      - Switch ON a known load.
      - Turn OFF the PV circuit breakers.
      - Use the Enphase Installer App **Live Status** and LED indicators on each battery to check and confirm that the batteries are discharging. Discharge is indicated by a pulsing blue LED. For a complete list of LED states, see the table at the end of this document).



NOTE: Consumption reading in the Enphase Installer App may be higher than the known load if the homeowner is using other loads in the home.

- Turn OFF the load by switching OFF the circuit breaker and tap the **CONFIRM** button. The Enphase Installer App checks if the batteries have stopped discharging. You should be able to see both load and battery discharging to zero.

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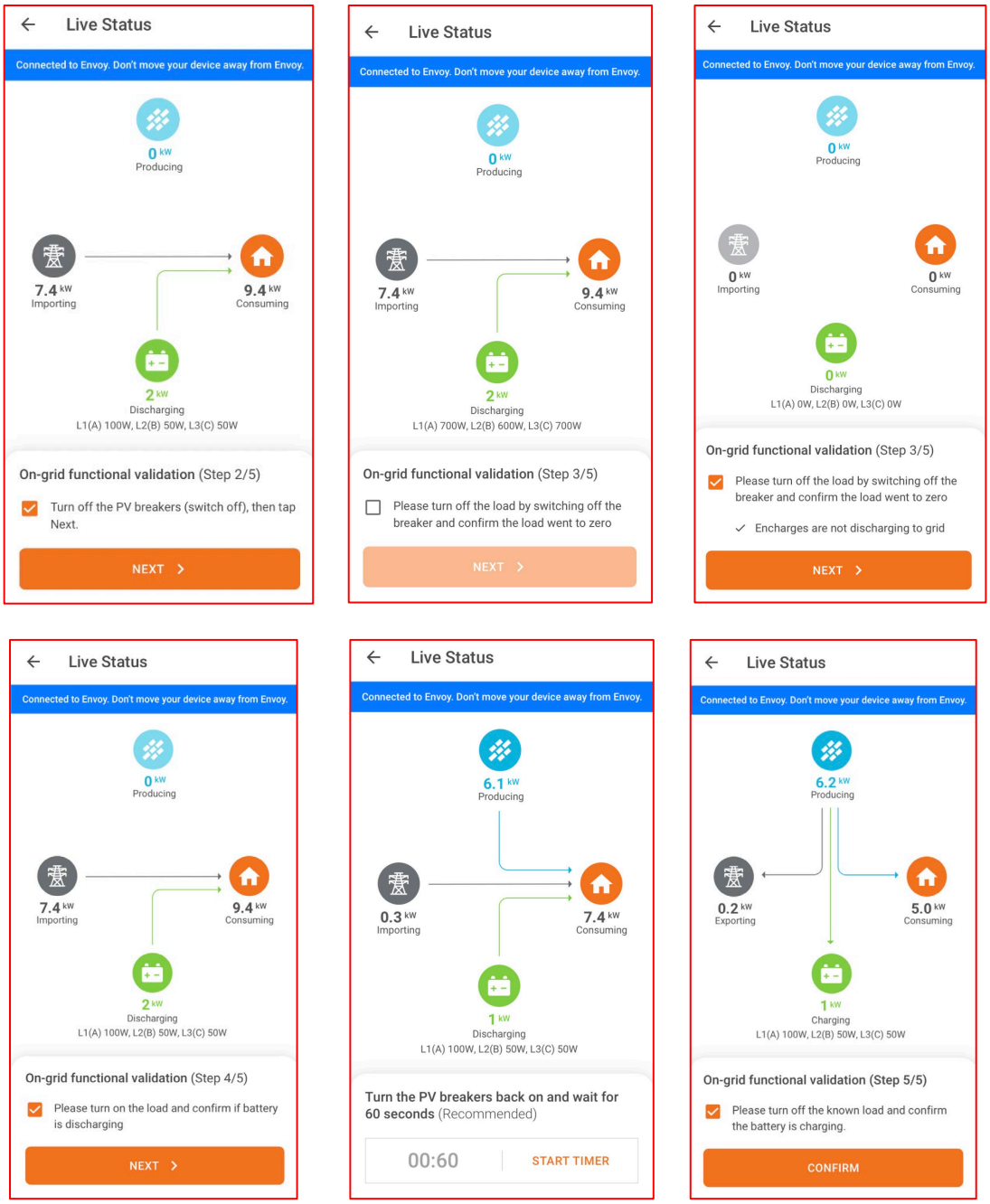

- Turn ON the load and confirm that the battery is discharging.
- Turn ON the PV circuit breakers.
- Turn OFF loads to ensure that production exceeds consumption.
- Wait for the microinverters to reconnect (30 seconds to 5 minutes, depending on the grid profile).
- Turn OFF the known load and confirm that the batteries are charging using the **Live Status** interface and LED indicators on each battery.

NOTE: This step requires sufficient sunlight to enable the PV to produce more power than the onsite load. If this is not possible, note it in the "Observations" section.

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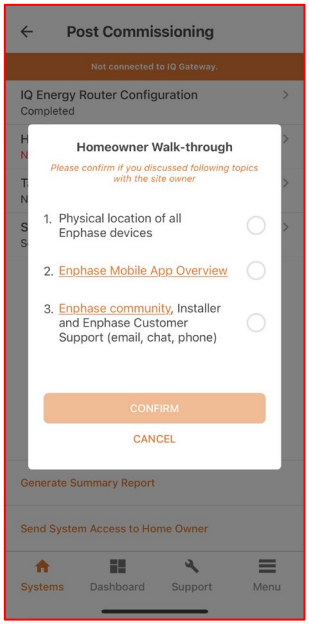
F. Enphase Installer App Step 6: Post Commissioning.

1. Generate a Summary Report

   - Summary reports can be generated both in AP mode and non-AP mode. Generate the report in AP mode to get the latest details. The summary report in non-AP mode is delayed by 5-10 minutes.
   - Disconnect from AP mode to share this report using email, text, or AirDrop. It contains details of each provisioned device and the commissioned status of the system.

2. Homeowner Walk-through

   Complete the homeowner walk-through by covering all the points shown in the following figure. You need an Internet connection to complete this step.



3. Send System Access to Home Owner

   You can send system access to the homeowner by following the below steps in the Post Commissioning screen.

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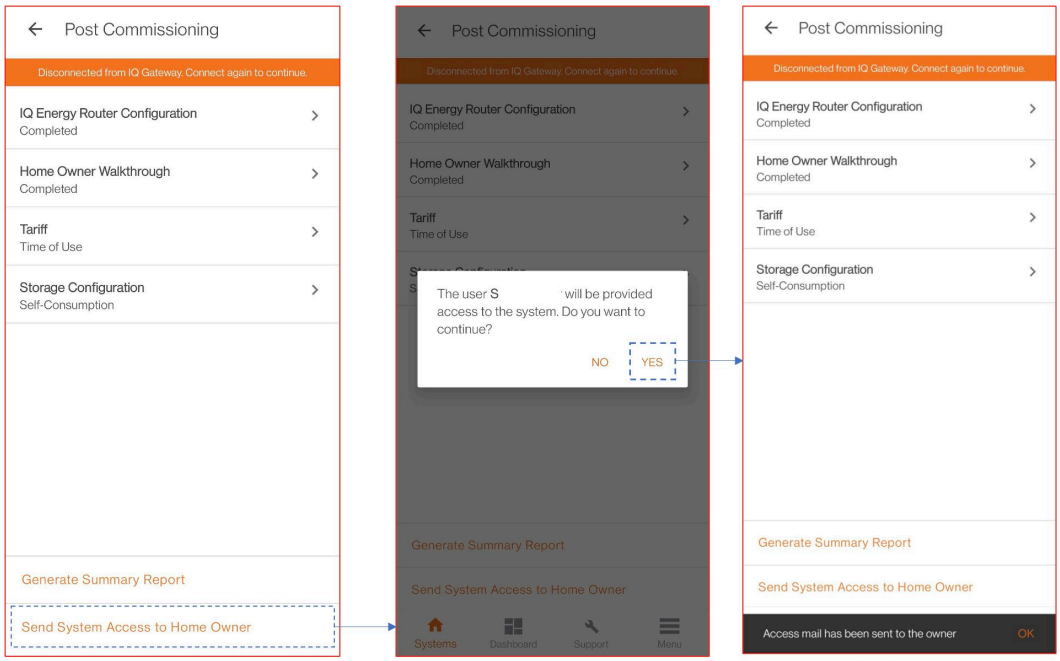
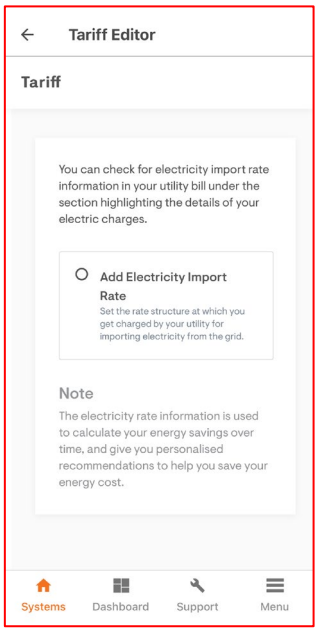


4. Tariff (optional)

   Tap **Tariff Editor** and then **Add Electricity Import Rate.** Ensure you are connected to the Internet to complete this step.



NOTE: Before leaving the site, switch ON all circuit breakers feeding the IQ Battery and PV system (if the grid operator permits grid connection).

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Different states of IQ Battery

2nd-generation IQ Battery

STATE	DESCRIPTION
UNCOMMISSIONED	
Flashing blue	After booting up, IQ Battery 5P has paired with an IQ Gateway but has not passed the commissioning three-way handshake to confirm that it is an Enphase device
Flashing green	After passing the three-way handshake with the IQ Gateway
AFTER COMMISSIONING (NORMAL OPERATION)	
Rapidly flashing yellow	Starting up/establishing communications
Red double flash	Error. See "Troubleshooting"
Solid yellow	Not operating due to high temperature. See "Troubleshooting"
Solid blue or green	Idle. Color transitions from blue to green as state of charge increases. Check Enphase Installer Platform for charge status
Soft pulse blue	Discharging
Soft pulse green	Charging
Soft pulse yellow	Sleep mode
Red triple flashes	DC switch OFF
Red one-second flash	Rapid Shutdown mode
Off	Not operating. See "Troubleshooting"

3rd-generation IQ Battery

STATE	DESCRIPTION
UNCOMMISSIONED	
Flashing blue	After booting up, IQ Battery 5P has paired with an IQ Gateway but has not passed the commissioning three-way handshake to confirm that it is an Enphase device
Flashing green	After passing the three-way handshake with the IQ Gateway
AFTER COMMISSIONING (NORMAL OPERATION)	
Rapidly flashing yellow	Starting up/establishing communications
Red double flash	Error. See "Troubleshooting"
Solid yellow	Not operating due to high temperature. See "Troubleshooting"
Solid blue or green	Idle. Color transitions from blue to green as the state of charge increases. Check Enphase Installer Platform for charge status
Soft pulse blue	Discharging
Soft pulse green	Charging
Soft pulse yellow	Sleep mode
Red triple flashes	DC switch OFF
Off	Not operating. See "Troubleshooting"

Replacing an IQ Gateway onsite

Refer to the "Replace IQ Gateway" section in the *Self-service return and replacement technical brief*.

Replacing an IQ Battery onsite

Refer to the "Replace IQ System Controller and IQ Batteries" section in the *Self-service return and replacement technical brief*.

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Commissioning IQ Energy Router

This section is intended for Enphase-certified installers who commission the Enphase Energy System with IQ Energy Router to monitor and control heat pumps and EV chargers using IQ Microinverters and IQ Battery in grid-tied applications. Follow the steps below to establish successful communication between the IQ Energy Router, EV charger, heat pumps, and IQ Gateway.

Applicable countries

- Germany
- Netherlands

Pre-commissioning process

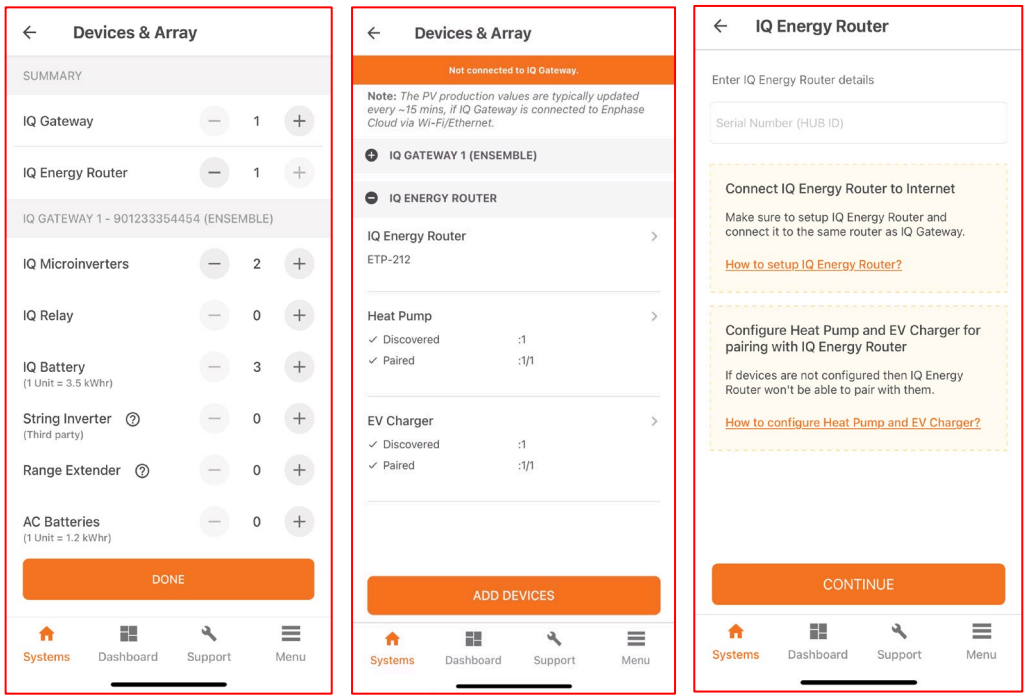
EV chargers, heat pumps, and the Home Energy Management hardware components must be installed and configured before pairing and commissioning the IQ Energy Router.

To learn more about installing and configuring the supported EV chargers and heat pump models, see the Enphase Documentation center. The IQ Energy Router can only pair with a third-party EV charger and heat pump after these devices are configured.

Commissioning process

A. Device and Array

1. Add the IQ Energy Router count in the **Device & Array** screen. A maximum of one IQ Energy Router can be added for each site.



   a. Set up the IQ Energy Router and connect it to the Internet using the Ethernet cable.

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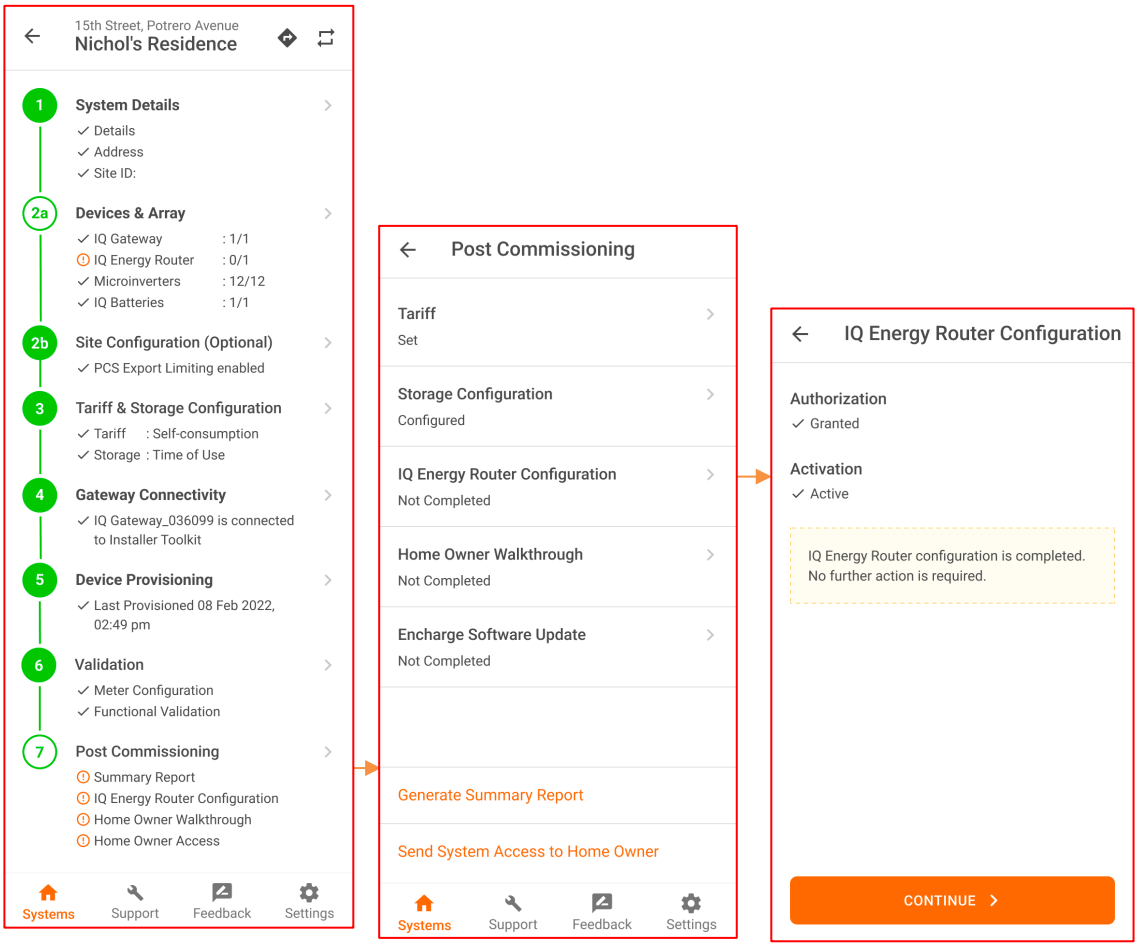
b. Configure the heat pump and EV charger at the site. To learn how to connect the IQ Energy Router to the Internet and configure the heat pump and EV charger, see the Enphase Documentation center.
c. Scan/Enter the IQ Energy Router serial number manually (mentioned as Hub ID at the bottom). Ensure you are connected to the Internet to complete this step.

2. IQ Energy Router configuration

IQ Energy Router configuration is part of the post-commissioning step if a valid serial number is added in step **2a**, **Devices & Array**, as described in step 1a.



a. Tap **IQ Gateway Router Configuration** to view the Authorization and Activation states of the IQ Energy Router.
b. If the system is commissioned as expected, you should see the Authorization state as **Granted** and the Activation state as **Active** or **In Progress**. If you see these states, move to the next step.
c. If authorization status is pending, it may mean one of the following states:

- The site is not in stage 3 or above. If this is the case, wait for the site to transition to stage 3.
- IQ Gateway firmware is incompatible with the IQ Energy Router and needs to be updated. Update the IQ Gateway to the suggested version.

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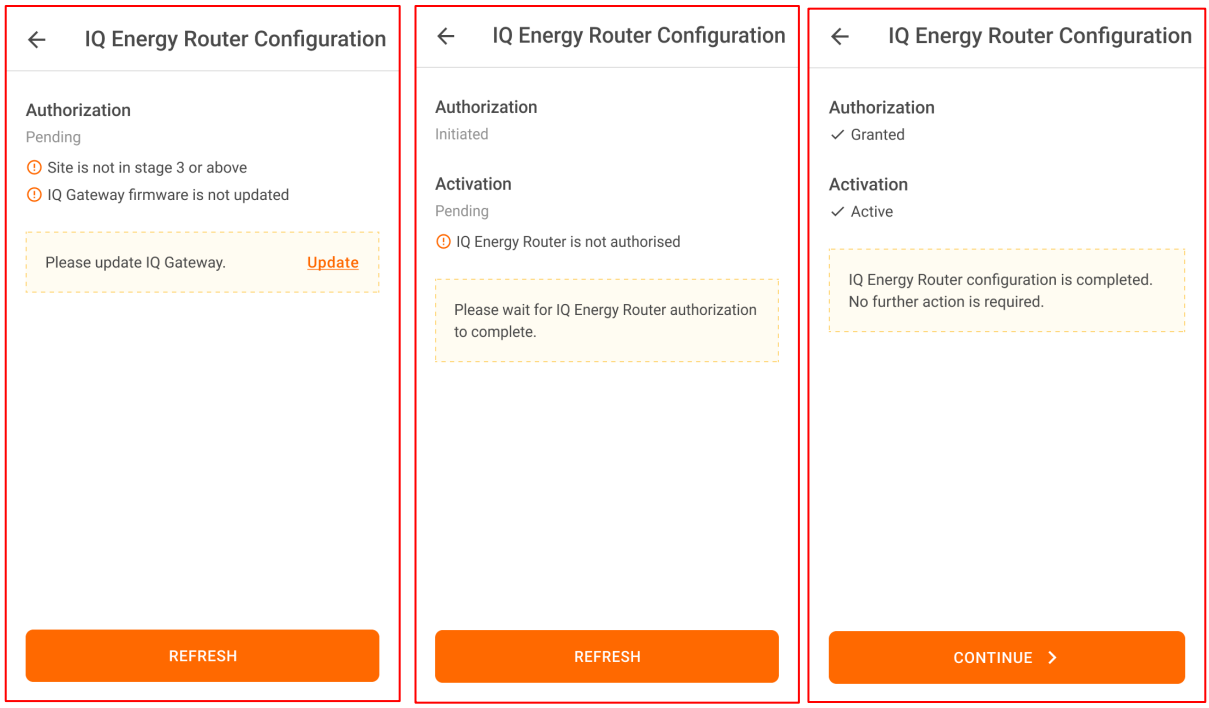

d. If activation is pending, it may mean one of the following states:

- Authorization is still pending. Follow the steps for authorization.
- The site array is not built, and the microinverters are not assigned to the array. Build an array and assign all the microinverters to the array.

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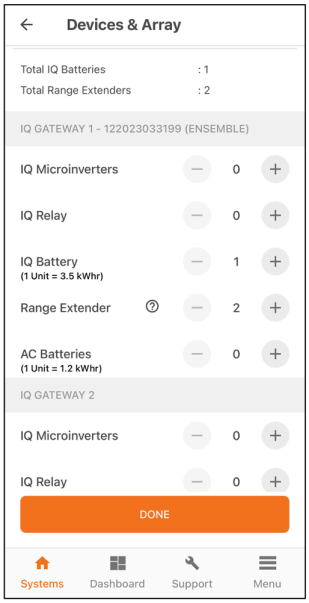
Provisioning Enphase Storage System with multiple IQ Gateways

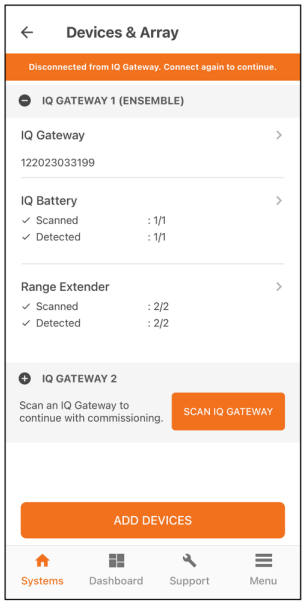
You can add multiple IQ Gateways, but the system can have only one Enphase Storage System IQ Gateway (that is, IQ Gateway inside the microgrid on the load side of the IQ System Controller). All Enphase Storage System devices (IQ Battery and microinverters) must be connected to the Enphase Storage System IQ Gateway.

A. Scan the serial numbers of all IQ Gateways (two or more).

B. Add only storage devices such as IQ Battery, Range Extender, and string inverters in the Enphase Storage System IQ Gateway. Adding IQ Relay and AC batteries to this IQ Gateway is optional.

   All non-storage devices, such as IQ Microinverters, AC batteries, and IQ Relays, can be added to the Non-Enphase Energy System IQ Gateway. Enphase energy devices such as IQ Battery and Range Extenders cannot be added to this IQ Gateway.





C. You can move non-energy devices such as IQ Microinverters, AC batteries, and IQ Relays from one IQ Gateway to another using the **MOVE DEVICES** button.

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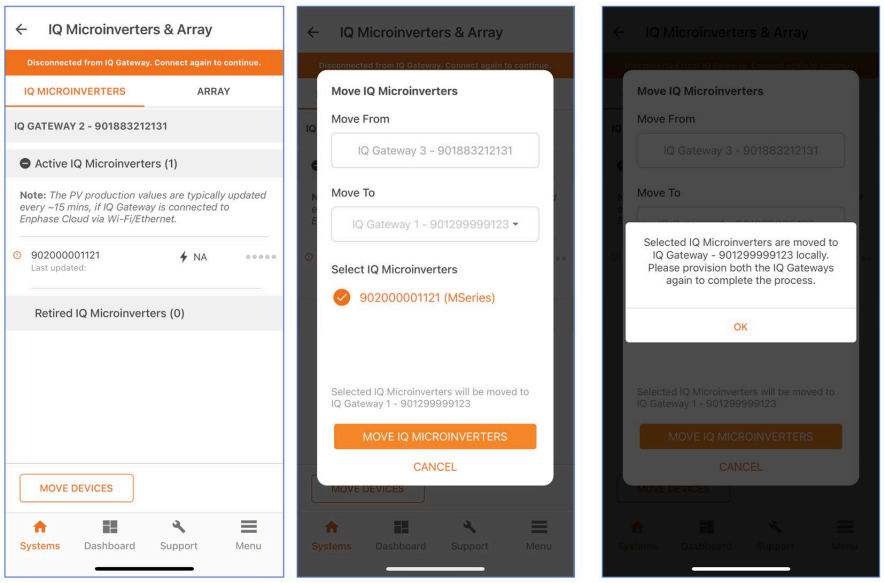
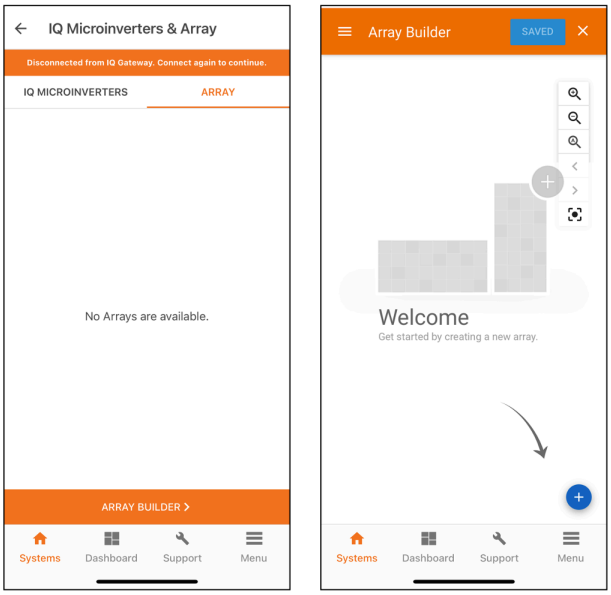


D. To assign your microinverters to the IQ Gateway, follow these steps:

1. It is strongly recommended to photograph/scan the PV microinverter barcodes because a power line scan can “poach” an incorrect serial number from a nearby site.
2. When scanning the barcodes of the microinverters, ensure you are connected to the Internet.
3. Go to **Devices & Array** > **Microinverters and Array** > **ARRAY** tab.
   a. Tap **ARRAY BUILDER**.
   b. Create a separate array and assign microinverters that must be included in the microgrid.
   c. Save and exit the ARRAY BUILDER and assign an IQ Gateway to the array.



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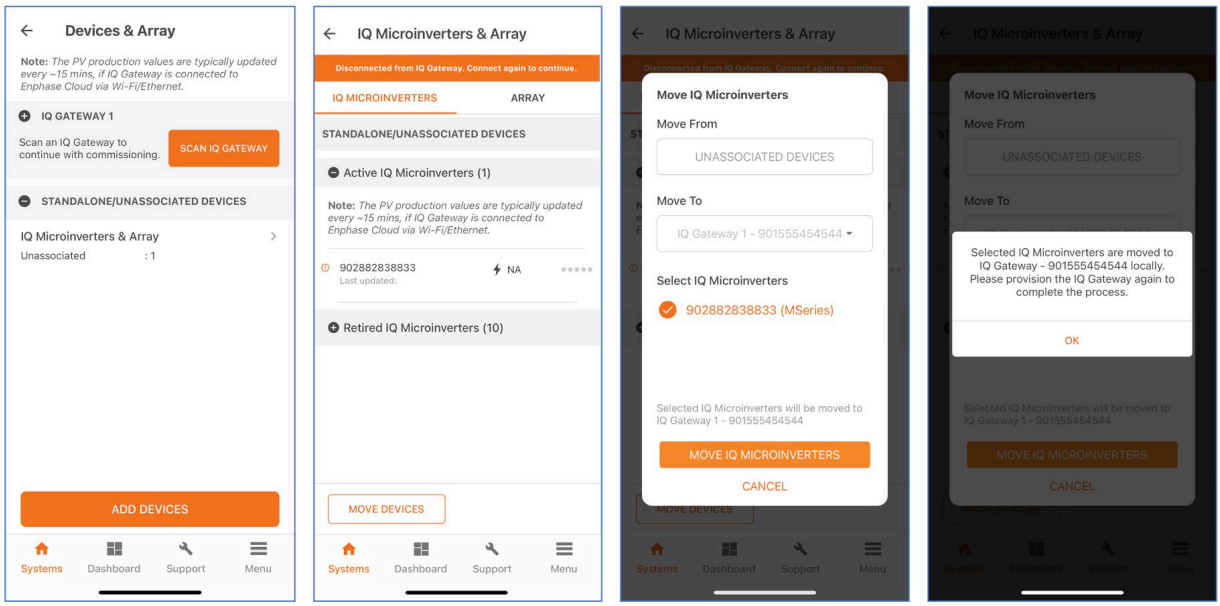
d. If a new IQ Microinverter is added to the ARRAY BUILDER, it is saved in the "Unassociated" section and can be moved to the respective IQ Gateway using **MOVE DEVICES**.



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IQ Relay Validation (Optional)

IQ Relay validation is used for a site where a single-phase IQ Relay/Q relay is installed and provisioned.

The different status of IQ Relay validation:

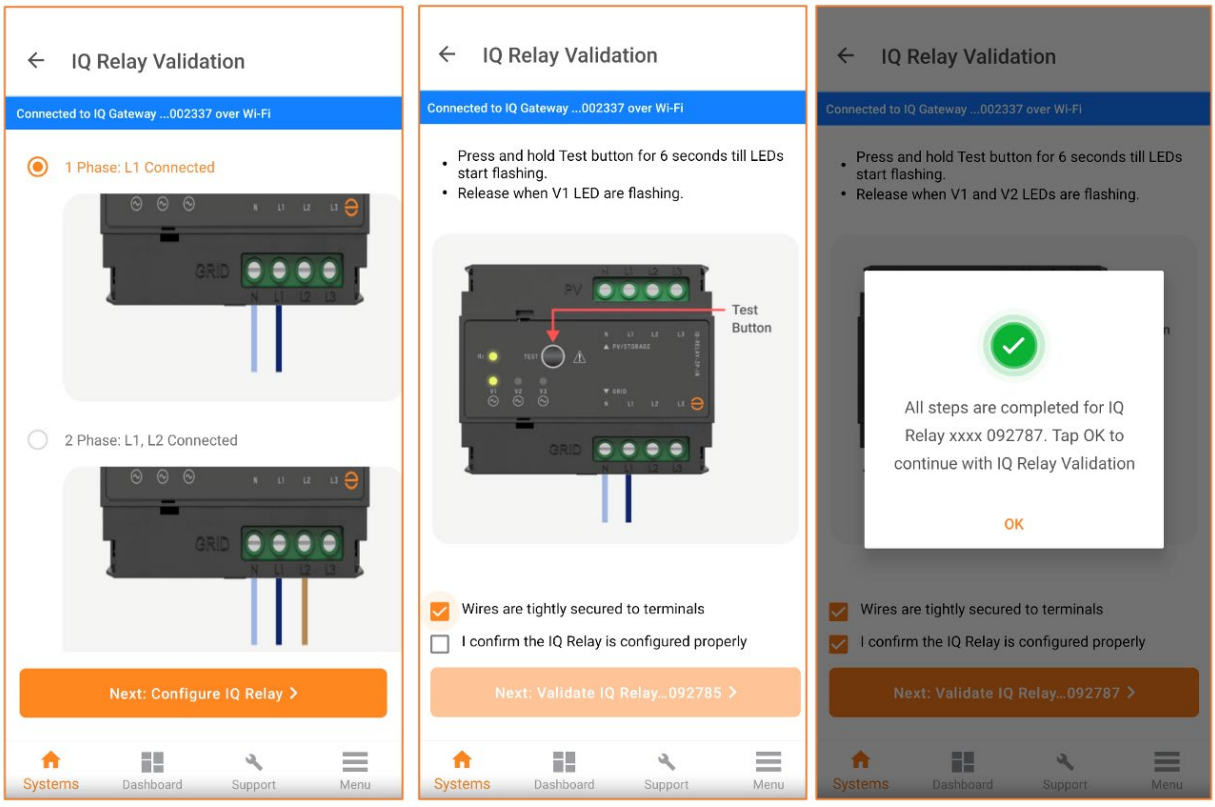
- Validated: The IQ relay is operating; the relay is closed.
- If the status of the IQ Relay is “Open” in the Enphase Installer App, the app will guide you to configure the IQ Relay.

Configuring the IQ Relay

In the Enphase Installer App, select the phase of the grid connection.

- 1 Phase
- 2 Phase
- 3 Phase

You will be guided to configure the IQ Relay based on the selection.



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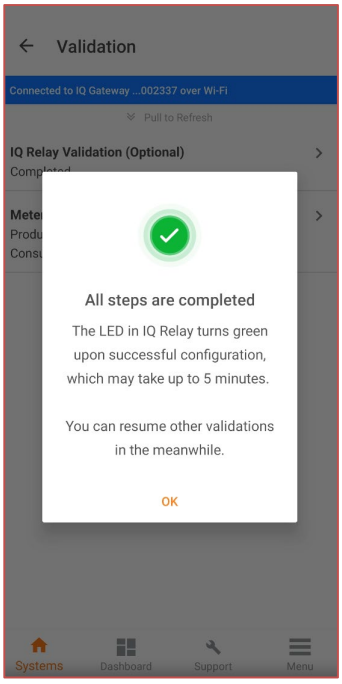
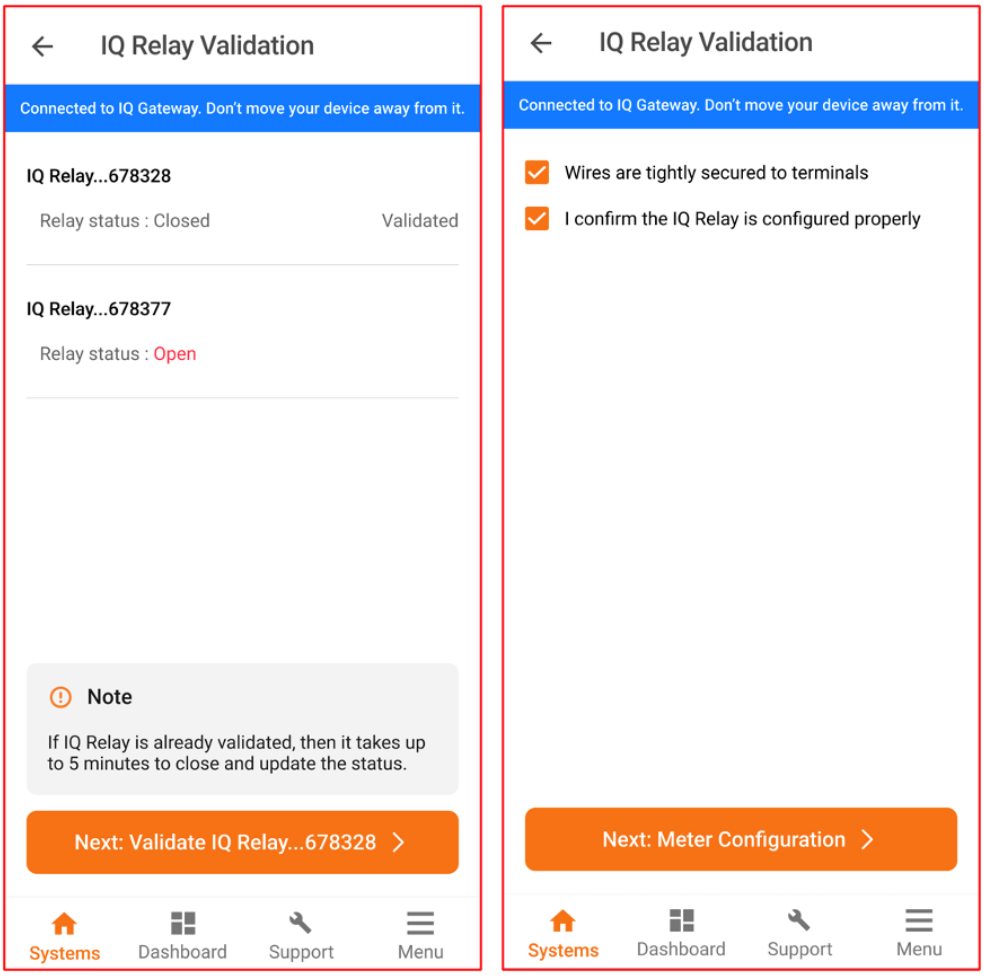


If you select 1 Phase Q Relay, you will be guided to check and rectify the wiring of the Q Relay.



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Site Maximum Import Limit

The G100 requirement for the United Kingdom mandates the feature to add the Site Maximum Import Limit. It is now supported by the 3rd-generation Enphase Energy System installed in the United Kingdom.

Applicable Countries

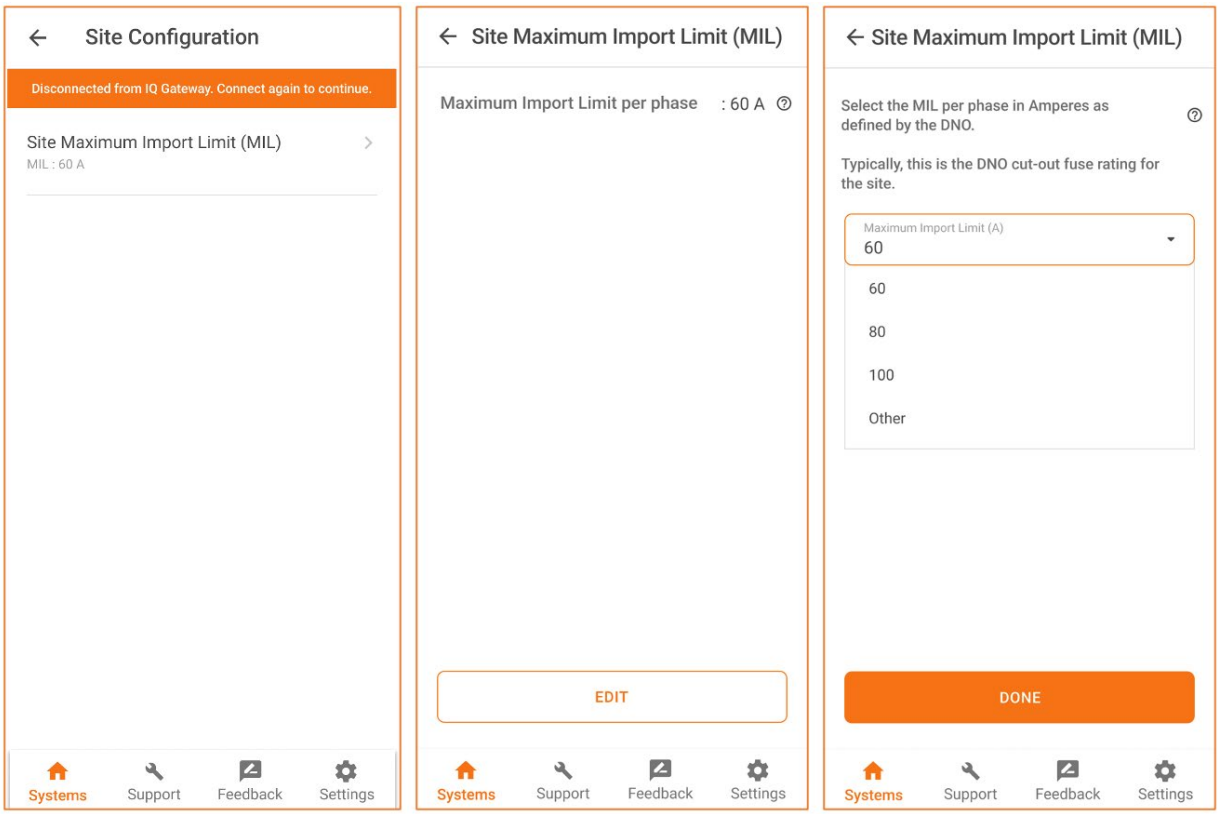
United Kingdom

Adding the Maximum Import Limit

1. Create a site by entering all the required details.
2. Add the device count and scan the devices: IQ Gateway, IQ Microinverters, IQ Battery, and so on.
3. The Site Maximum Limit option is shown in the Enphase Installer App Step 2b.
4. The default value set for a residential site is 60 A.
   You can set the Site MIL value as 60 A, 80 A, or 100 A. To choose any other value between 60 A and 100 A, use the “Other” option.

For a commercial site, you can set the value up to 200 A.

The Site MIL value is sent to the IQ Gateway while provisioning the devices to IQ Gateway.



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Revision history

Revision	Date	Description
TEB-00015-2.0	November 2023	Enphase Installer App 3.33.0 release updates
TEB-00015-1.0	May 2023	Initial release

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