Commissioning of Grid-tied Enphase Energy System using Enphase Installer App 3.30.0

Contents

Applicable countries

- Germany
- Austria
- Belgium
- France
- Netherlands
- Switzerland

NOTE: Some functionalities and devices, like the IQ Energy Router etc., may be available in limited countries. Refer to the respective sections for the applicable country list.

Overview

This document is intended for Enphase Certified Storage installers who commission Enphase Energy System, including IQ Batteries, IQ Energy Router, heat pump, and EV charger in 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 decommissioning an IQ Battery for replacement and how to perform a range test when planning the installation to confirm robust communication between the devices on-site.

Preparing for Enphase Installer App (previously Installer Toolkit) communications

The following process assumes that all IQ Batteries have been installed in accordance with local standards and best practices, tested for appropriate voltages, and are ready to be energized.

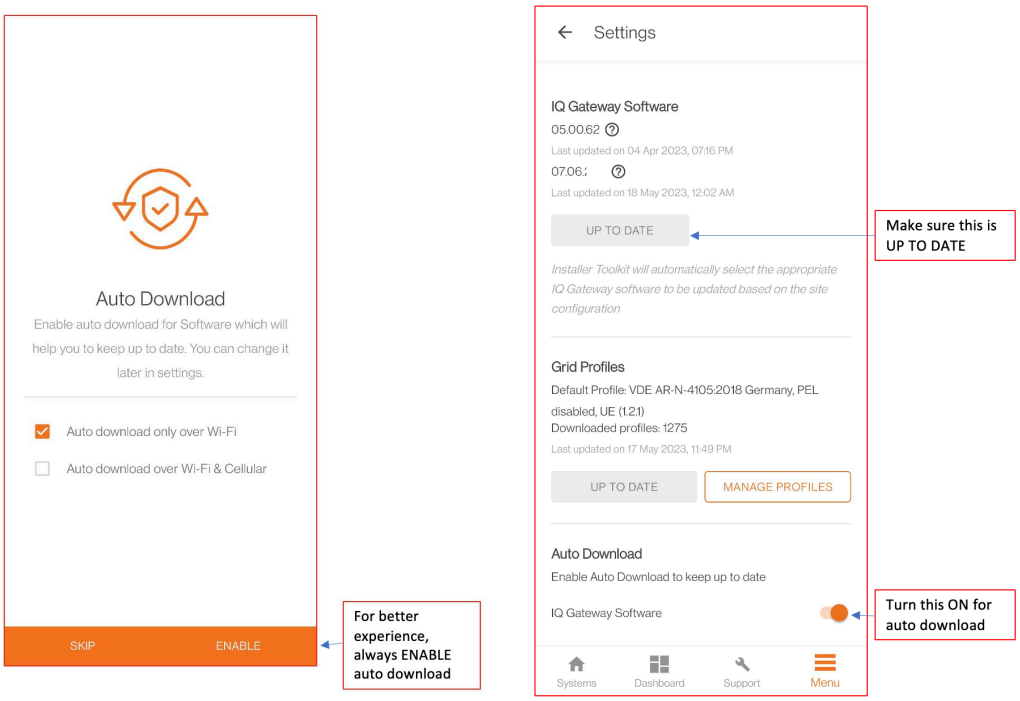
- For all products, always follow the safety warnings and instructions in the Enphase Quick Install Guides and Installation Manuals.
- IQ Battery installations are commissioned using the Enphase Installer App. Ensure the app is updated to the latest version (currently 3.X).

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

iOS Android

_____Installer initials: All steps complete on this page.

- Enable Bluetooth communication on the smartphone or tablet you will use for commissioning.
- Turn OFF the automatic sleep mode on the mobile device. This prevents your mobile device from going to sleep 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.



- Ensure that the Enphase IQ Gateway Metered has software version 7.6.X for commissioning and operation of IQ Battery by ensuring the button displays “UP TO DATE.”
    - You can update the IQ Gateway software using the Enphase Installer App.
    - You must create a system activation before commissioning if the activation does not already exist.
- If you must create a site, you can do this before going to the site using the Enphase Installer Portal or, on-site, 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 that 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 for downloading IQ Gateway Metered software.
    - Users will see different versions of the software. The Enphase Installer App will auto-select the correct version for IQ Battery and Enphase microinverter-only sites.
- Ensure you have all serial numbers and barcodes handy, preferably on paper to scan from.

_____Installer initials: All steps complete on this page.

- **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 will receive power from AC supply during commissioning and the IQ Battery can then communicate with the IQ Gateway Metered.

_____Installer initials: All steps complete on this page.

Commissioning instructions

Date and time at the start of commissioning: _____

Address: _____

The system being commissioned: _____

Installer company: _____

Individual (name and email) overseeing commissioning: _____

Activation/Site ID _____

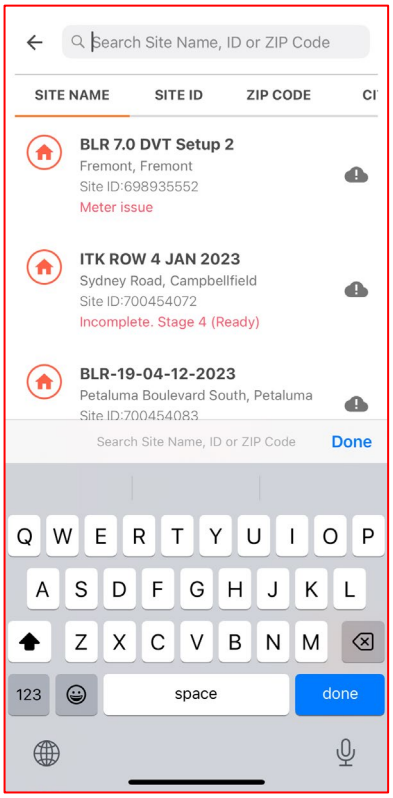
- Perform the following steps, and mark completed steps in the checkboxes on the page's left side.
- Initial the bottom of each page, showing all steps on that page are complete.

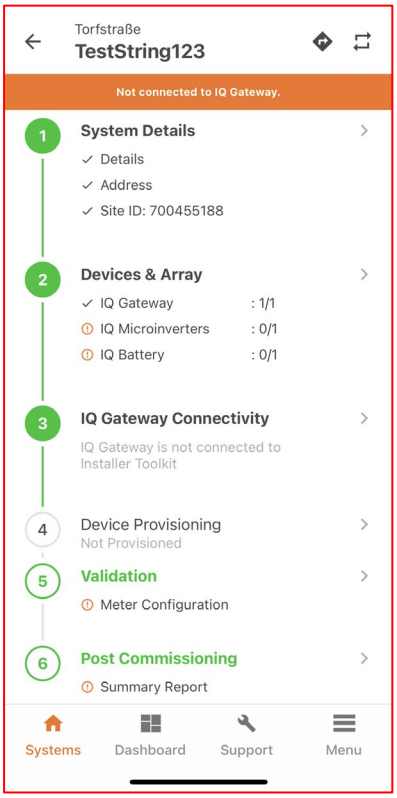
Commissioning process

A. Open Enphase Installer App. Tap the "Systems" tab on the lower left side of the screen.

B. If an activation has been completed previously using the Enphase Installer Portal, the installer can search the site in the Enphase Installer App using Site Name, Site ID, Postcode, City, Installer reference, or the IQ Gateway Serial number.

B.1. When installing IQ Batteries on a previously completed system activation, tap on the right system.





_____Installer initials: All steps complete on this page.

C. Enphase Installer App Step 2, **Devices & Array**:

C.1. Enter the total count of each device type to be added to the system.

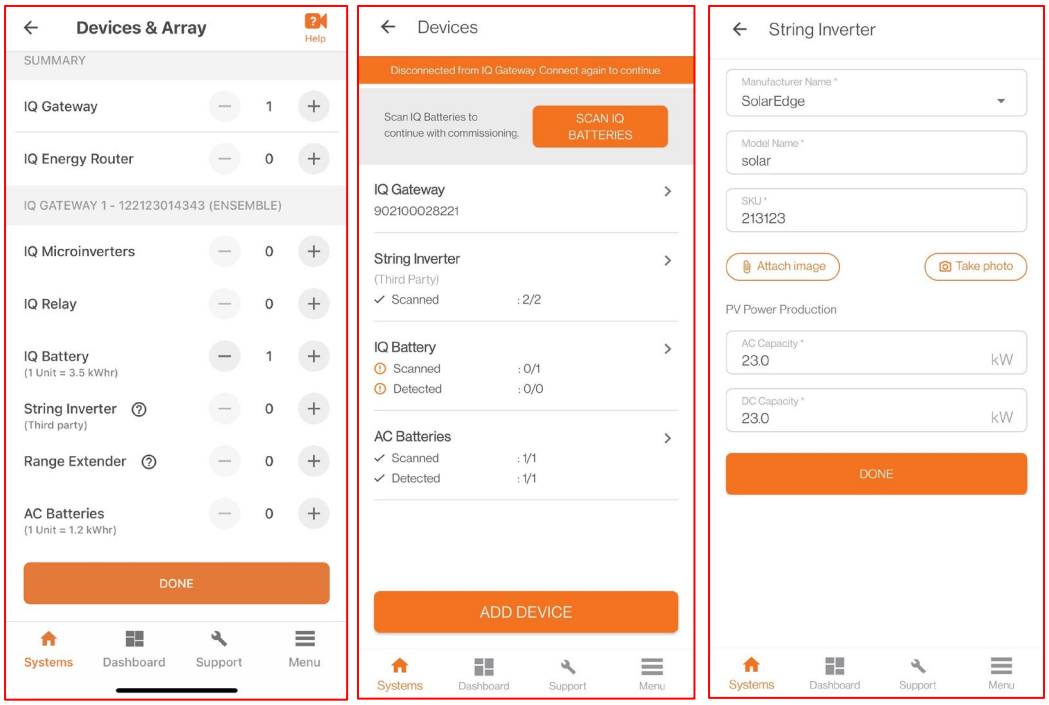
C.1.1. Enter the IQ Gateway serial number manually or using a camera scanner.

C.1.2. The Enphase Installer App can scan the serial numbers using your mobile device camera. Also, select the appropriate phase for each IQ Battery.

C.1.3. A power line scan can be used to detect the microinverters. However, we strongly recommend that you use the barcode scanning feature in the Enphase Installer App 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.

C.1.4. If retrofitting IQ Battery to an existing site, microinverters will appear in the activation.

C.1.5. If you intend to install using a string inverter with IQ Battery rather than microinverters, string inverter details can be added, including the manufacturer, DC, and AC capacity of the inverters.



NOTE: The LED status indicator on the IQ Battery and state of charge in the Enphase Installer App will be accurate once IQ Gateway software is updated at the end of Step E.

D. Enphase Installer App Step 3, **IQ Gateway Connectivity:**

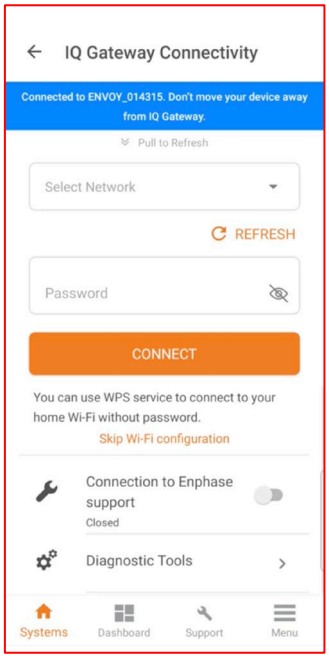
_____Installer initials: All steps complete on this page.

D.1. This brings up the screen showing your mobile device's connectivity to the web and the IQ Gateway Metered.

D.2. Your mobile device should be shown as connected to the web but not to the IQ Gateway Metered.

D.3. To continue with the commissioning steps, connect to the IQ Gateway Metered using AP mode.

D.4. On the IQ Gateway Metered, press the AP (Access Point) mode button (top button) for about one second. The LED will turn solid green.



D.5. To continue with the following commissioning steps, tap the "Join" button and follow the screen's instructions to connect your mobile device to the IQ Gateway AP.

D.6. 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.

D.7. Once connected, the Enphase Installer App will show your mobile device is connected to the IQ Gateway Metered but not to the web if the IQ Gateway is not connected to the internet via LAN cable. Strongly recommend using a LAN cable to connect the IQ Gateway to the internet.

D.7.1. If there are issues connecting to this network, turn AP mode OFF and ON again by repeating Steps E.4 through E.7. If this fails several times, a hard reboot of the IQ Gateway Metered is advised.

D.8. Configure the IQ Gateway Metered with Wi-Fi or Ethernet connectivity. You must input network and password information in the Wi-Fi section. If connecting using Ethernet, select "Skip Wi-Fi configuration" and simply plug the cable into the IQ Gateway. If Ethernet/Wi-Fi is not connected, the user will be blocked from provisioning.

D.9. Before device provisioning can occur, ensure that the IQ Gateway Metered has appropriate software.

D.9.1. 7.6.X (or later) installed for IQ Battery to be commissioned. Tap "Update Software" to complete this process (it takes approximately 30 minutes).

D.9.2. Ensure that the mobile device is 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.

D.9.3. Your mobile device screen must stay active during this update. 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.

D.9.4. IQ Gateway Metered will restart multiple times after the software update.

_____Installer initials: All steps complete on this page.

D.9.4.1 While the IQ Gateway Metered is restarting, all four LEDs will flash red in unison, or the LEDs will sequentially flash green (top to bottom).

D.9.4.2 Once the restart is complete, the network communications LED will turn solid green.

D.9.5. After the IQ Gateway Metered reboots, you will lose AP mode connectivity on your mobile device. Once the IQ Gateway Metered has rebooted successfully, reconnect to AP mode.

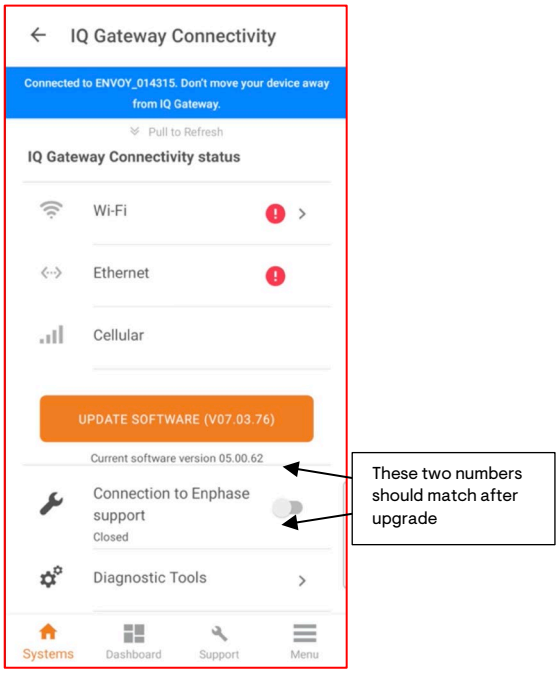
D.9.5.1 If you have issues connecting to AP mode, turn OFF AP mode on the IQ Gateway Metered by pressing the "AP mode" button for one second, then "forget" the AP mode network in your mobile device Wi-Fi settings.

D.9.5.2 Repeat Steps E.4 to E.6 to reconnect to the IQ Gateway Metered.

D.9.6. Configure Wi-Fi or Ethernet in the options.

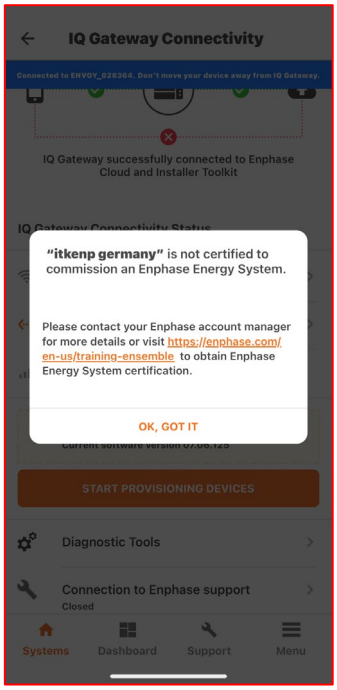
D.9.6.1 The IQ Gateway Metered requires a means of communicating to the web to display internet connectivity. Ensure that the IQ Gateway Metered Wi-Fi access has been configured or that the Ethernet connection is established.

D.9.7. Tap "START PROVISIONING DEVICES" at the bottom of the "IQ Gateway Metered Connectivity" screen.



E. Enphase Installer App Step 4, **Provisioning devices:**

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



_____Installer initials: All steps complete on this page.

E.2. Ensure that the Communications Kit (COMMS-KIT-EU-01) is plugged into one of the IQ Gateway Metered USB ports. It takes up to five minutes after the eSW update before the USB port on the IQ Gateway Metered is powered on.

E.3. Device provisioning can only be completed when the following prerequisites are met.

E.3.1.1 COMMS-KIT-EU-01 is plugged in.

E.3.1.2 IQ Gateway Metered is connected to Wi-Fi or Ethernet.

E.3.1.3 Installer is Enphase Energy System Certified.

E.3.1.4 IQ Battery AC circuits are powered on.

E.4. Enphase Installer App will begin provisioning all devices, and several steps will occur (this takes three to six minutes):

E.4.1.1 The grid profile will be updated.

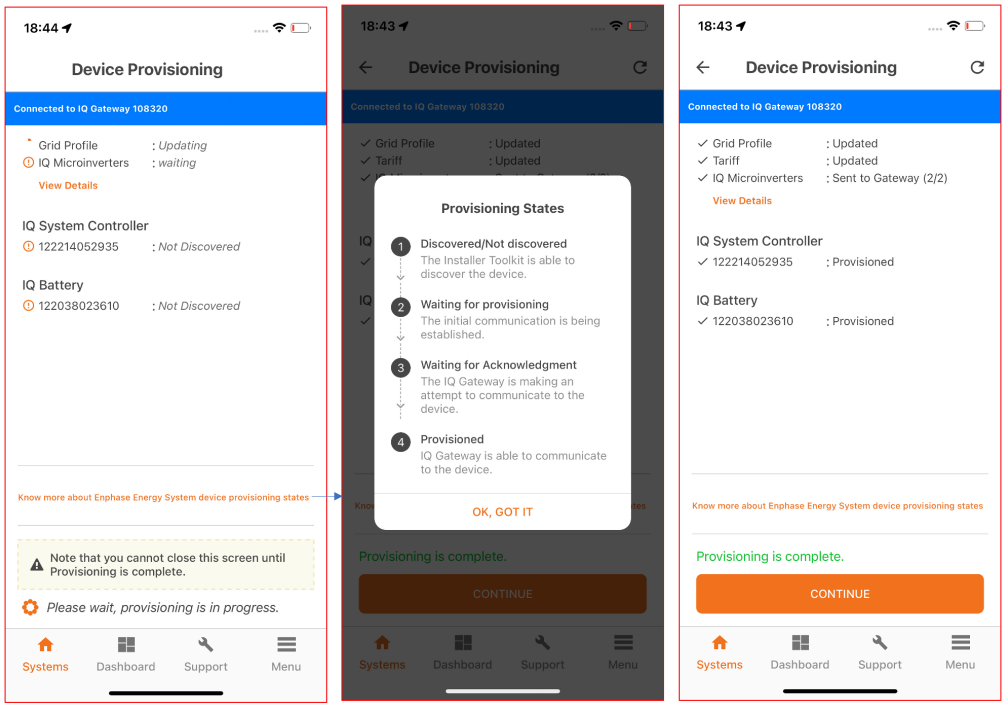
E.4.1.2 The Enphase microinverters or string inverters will be provisioned.

E.4.1.3 The Range Extender will be provisioned.

E.4.1.4 The IQ Battery will be provisioned.

E.4.1.5 During provisioning, the status flows as follows:

E.4.1.5.1 **Discovered/not discovered** – The Enphase Installer App can find the device using Bluetooth (BLE) on your mobile device. Please stay close to the IQ Battery while provisioning.



E.4.1.5.2 **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). Please continue to remain close to the IQ Batteries.

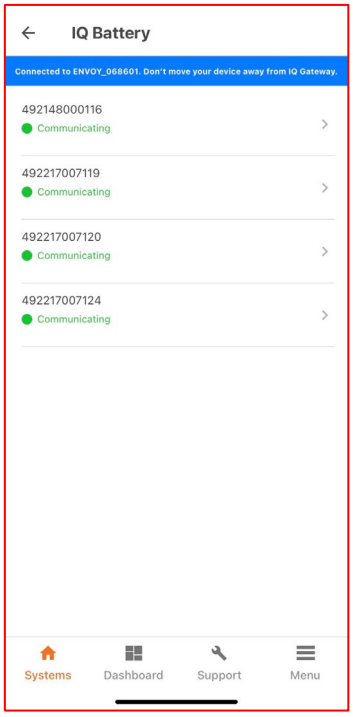
E.4.1.5.3 **Waiting for acknowledgment** – The IQ Gateway Metered is trying to communicate with the IQ Battery and Range Extender using the wireless 2.4 GHz radio.

_____Installer initials: All steps complete on this page.

E.4.1.5.4 **Provisioned** – IQ Gateway Metered can communicate with the IQ Battery and Range Extender.

E.4.1.6 Once provisioning is complete, click “Done”.

F. 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:



F.1. In the Enphase Installer App, LED status and state of charge will now display accurately.

F.2. If the IQ Batteries are not communicating with IQ Gateway Metered, follow these steps to power cycle the batteries:

F.2.1.1 Turn OFF the DC disconnect switches for all IQ Batteries.

F.2.1.2 Turn OFF the AC breakers (branch circuit protection) connecting all the IQ Batteries.

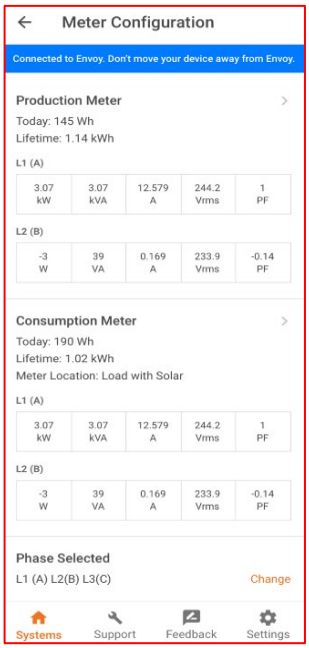
_____Installer initials: All steps complete on this page.

F.2.1.3 Wait for at least two minutes. The IQ Battery LEDs should be OFF at this point.

F.2.1.4 Turn ON the AC breaker.

F.2.1.5 Wait for one minute. Allow the IQ Battery LEDs to flash red.

F.2.1.6 Turn ON the IQ Battery DC switches. The IQ Battery LEDs should stop flashing red after the DC switches are turned ON.



G. In the Enphase Installer App Step 5**, Validation**

G.1. **Meter Configuration**

G.1.1. the meters will be disabled by default after provisioning IQ Battery and Range Extender. Configure Production and Consumption CTs using the meter wizard:

G.1.2. Enable the meters by verifying the readings by going through the meter wizard (required).

G.1.3. In the production meter wizard, switch OFF all PV circuit breakers as instructed to ensure the Production CT readings go to zero before enabling.

G.1.4. In the consumption meter wizard, turn ON the PV and a known load in the home to confirm consumption rises or falls as expected, and select the meter location.

G.1.5. Once the meters are configured correctly, you will be able to see if the IQ Batteries are charging or discharging in the “Devices” section of the Enphase Installer App.

G.2. Functional Validation:

G.2.1. Complete all steps in the order listed.

G.2.2. Mark steps completed in the “Document Results” section of each step.

G.2.3. If any steps cannot be completed, record what occurred in the “Observations” section.

Date and time at the start of Functional Validation: _____

_____Installer initials: All steps complete on this page.

G.2.4. Consumption (load monitoring) test:

G.2.5. Turn ON a known load and confirm that you can see the load increase in the “Live Status” interface of the Enphase Installer App.

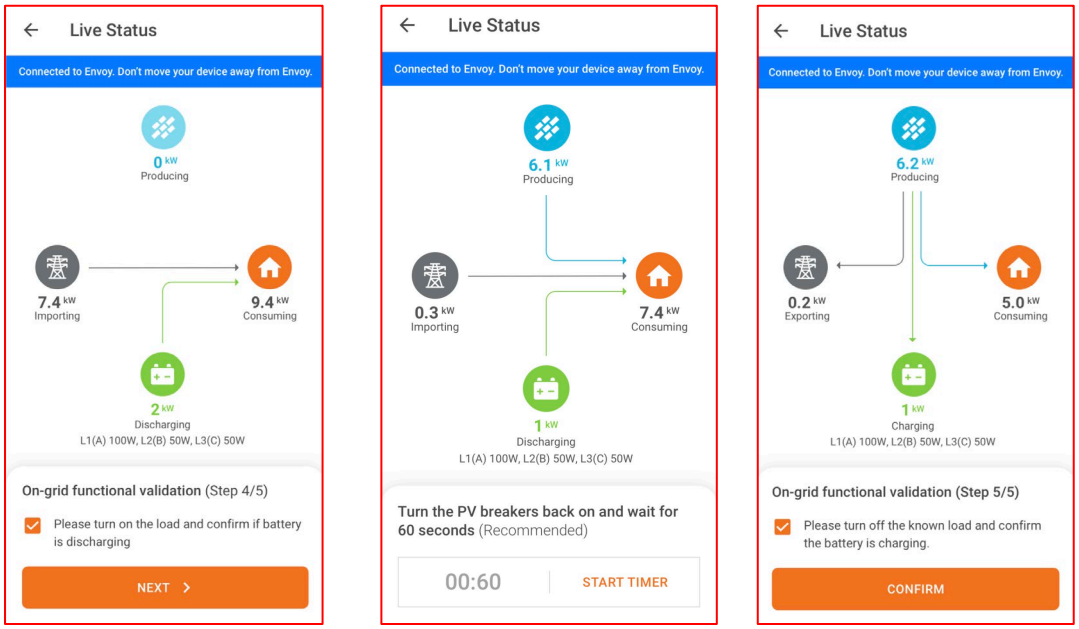
G.2.6. Battery discharge test:

- Ensure that the known load is still switched ON.
- Turn OFF the PV circuit breaker(s).
- Use 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 full list of LED states, see the table at the end of this document).

NOTE: Consumption reading in 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 will check if the batteries have stopped discharging. You should be able to see both load and battery discharging go to zero.

_____Installer initials: All steps complete on this page.



- Turn ON the load and confirm that the battery is discharging.
- Turn ON the PV circuit breaker(s).
- 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 on-site load. If this is not possible, note it in the “Observations” section.

N. Enphase Installer App Step 6: **Post Commissioning**

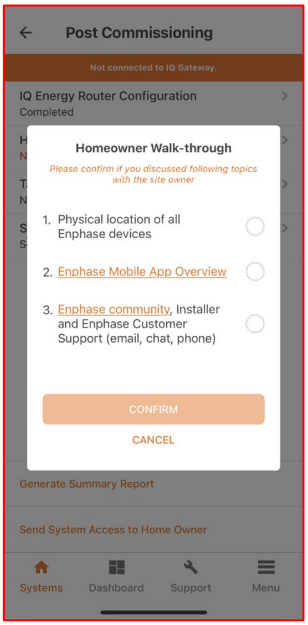
N.1. **Generate a Summary Report**

- 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.

N.2. **Homeowner Walk-through**

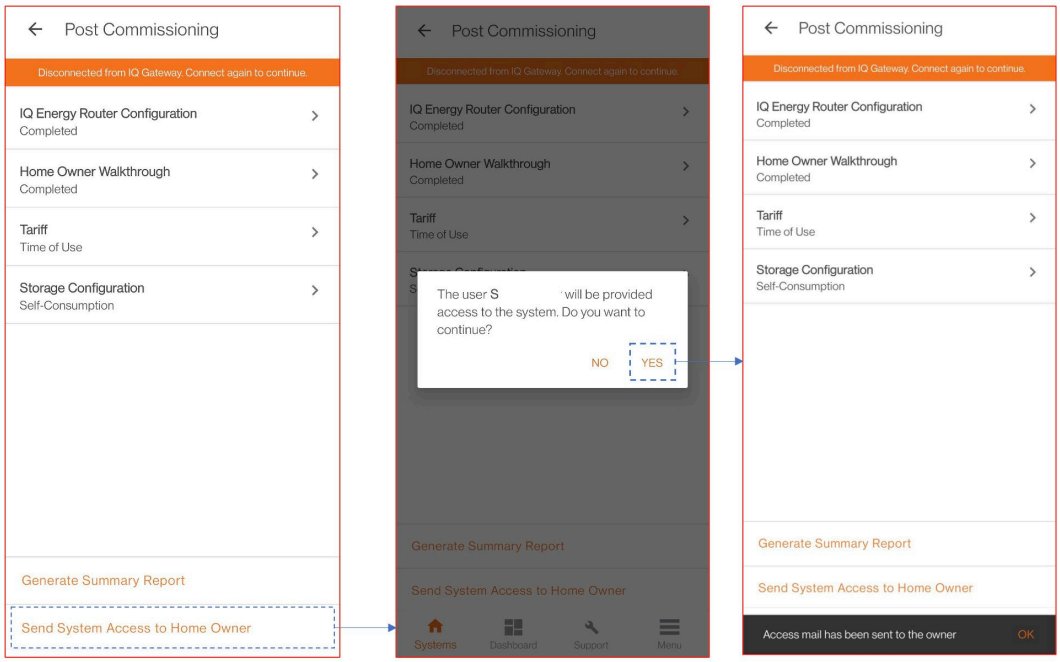
_____Installer initials: All steps complete on this page.

Complete the homeowner walk-through by covering all the points as shown below. You need an internet connection to complete this step. Completing homeowner walkthrough sends system access to Home Owner.



N.3. Send System Access to Home Owner

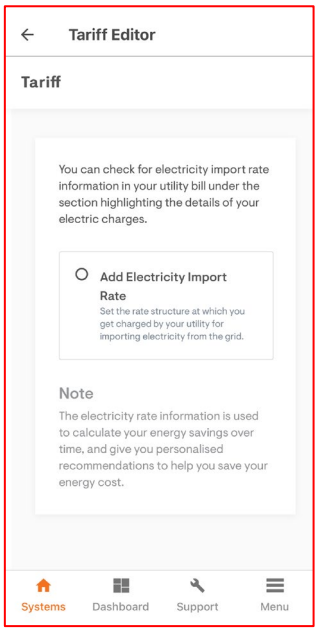
Installers can send system access to Home Owner by following the below steps in the Post Commissioning screen.



N.4. **Tariff** (optional)

_____Installer initials: All steps complete on this page.

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, ensure all circuit breakers feeding the IQ Battery and PV system are switched ON (if grid connection has been permitted by the Grid Operator).

Different states of IQ Battery

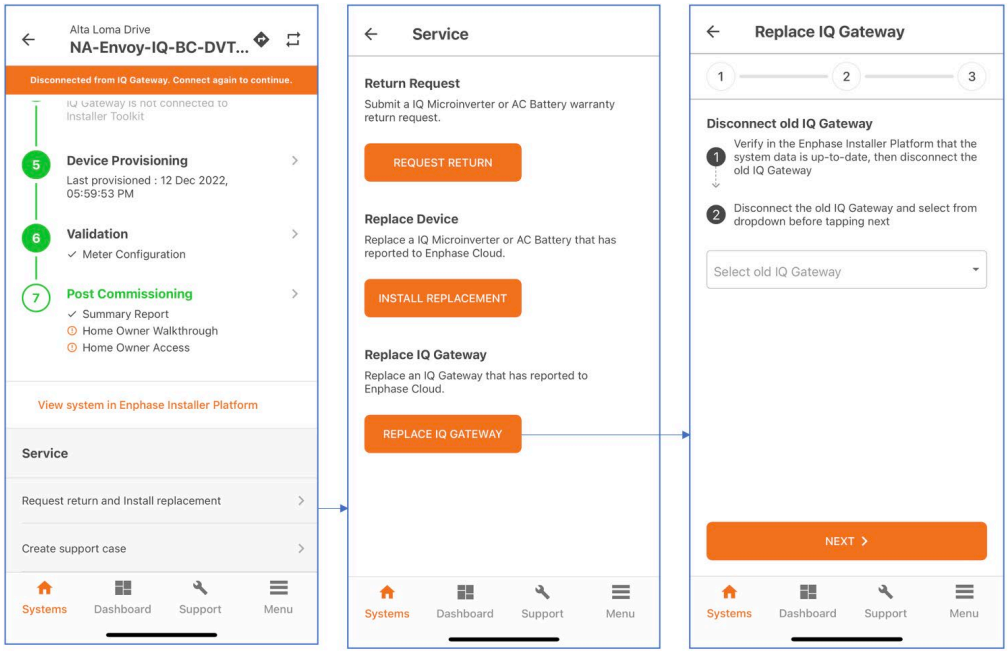
STATE	DESCRIPTION
UNCOMMISSIONED	
Flashing blue	After booting up, IQ Battery 5P has paired with an IQ Gateway but has not passed the commissioning three-way handshake to confirm that it is an Enphase device
Flashing green	After passing the three-way handshake with the IQ Gateway
AFTER COMMISSIONING (NORMAL 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”

_____Installer initials: All steps complete on this page.

Replacing an IQ Gateway on site

You can replace your old IQ Gateway using the Enphase Installer App. This will ensure that all your devices are communicating with the new IQ Gateway.

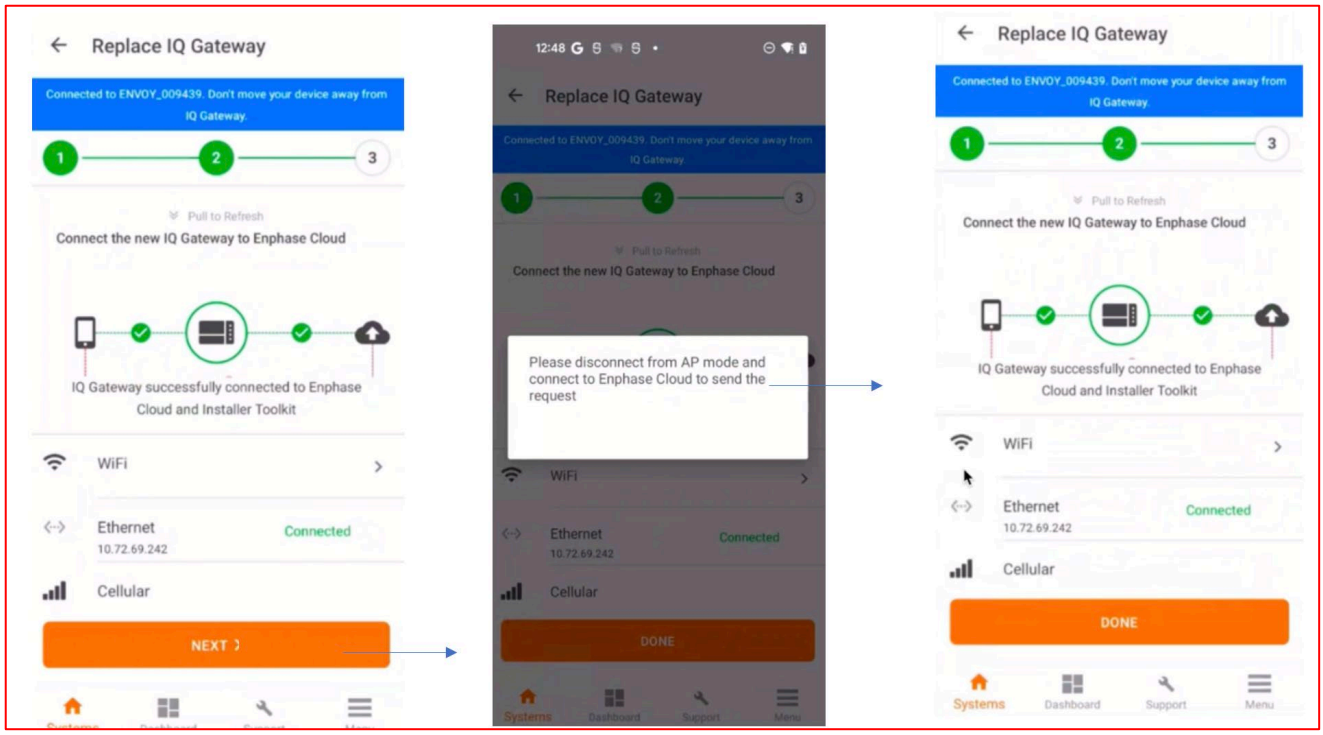
A. Search and select the system (site) under the “Systems” tab.
B. Ensure that the site stage is three or above (The “Request return and install replacement” button is hidden if the site stage is less than 3).
C. Go to “Request return and Install replacement”.
D. Select “REPLACE IQ GATEWAY”.



E. Make sure to select the existing IQ Gateway and follow the instructions in step 1 before tapping “Next”.
F. Scan/enter the newly installed IQ Gateway in step 2 and tap “Next”.
G. In step 3, connect to the new IQ Gateway in AP mode:

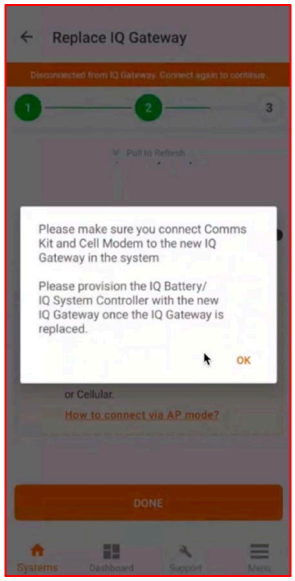
   i. Connect the new IQ Gateway to the Enphase Installer Platform either by configuring the Wi-Fi or by using Ethernet. After confirming the IQ Gateway is connected to the Enphase Installer Platform, disconnect from the AP mode.
   ii. Tap the “DONE” button to send the replacement request to the Enphase Installer Platform.

_____Installer initials: All steps complete on this page.



Things to note:

- On successful submission, the request to replace the IQ Gateway is sent to Enphase Cloud. The Enphase Cloud will ensure that all the devices previously reporting to the old IQ Gateway are not communicating with the new IQ Gateway. However, this process may take 5 to 30 minutes. You can check the status of the IQ Gateway in the Enphase Installer Portal.
- After the IQ Gateway replacement, if your System Controller or IQ Batteries are not reporting to the new IQ Gateway, retry provisioning (step 5) to ensure the devices communicate to the new IQ Gateway.

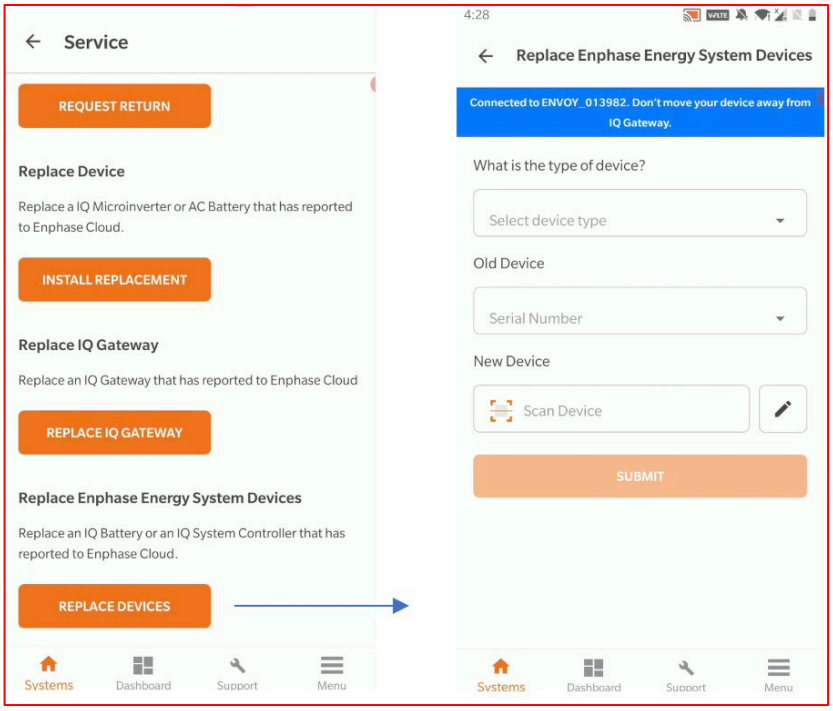


_____Installer initials: All steps complete on this page.

Replacing an IQ Battery on site

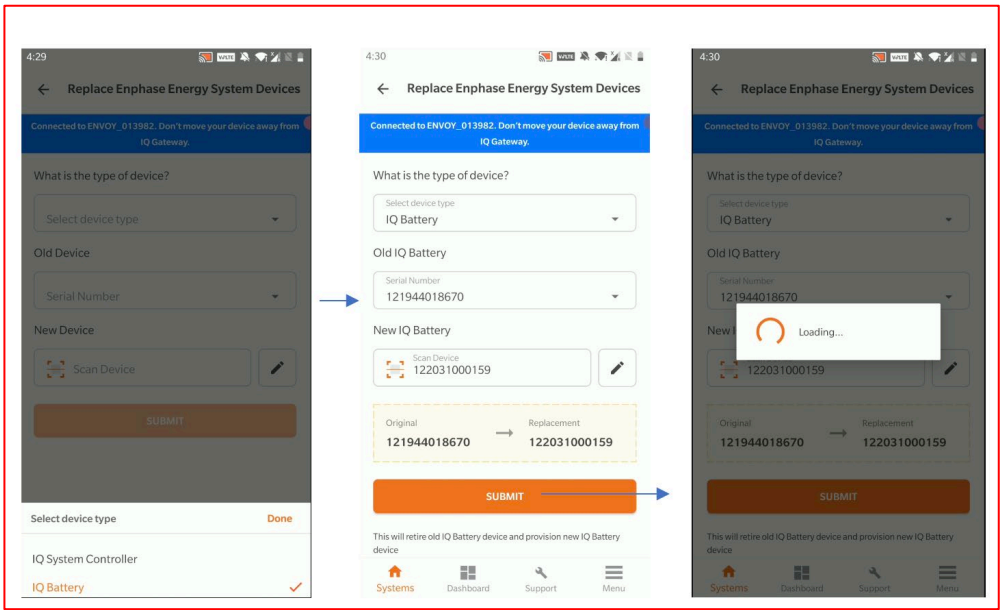
How to replace IQ Battery for an Enphase Storage System?

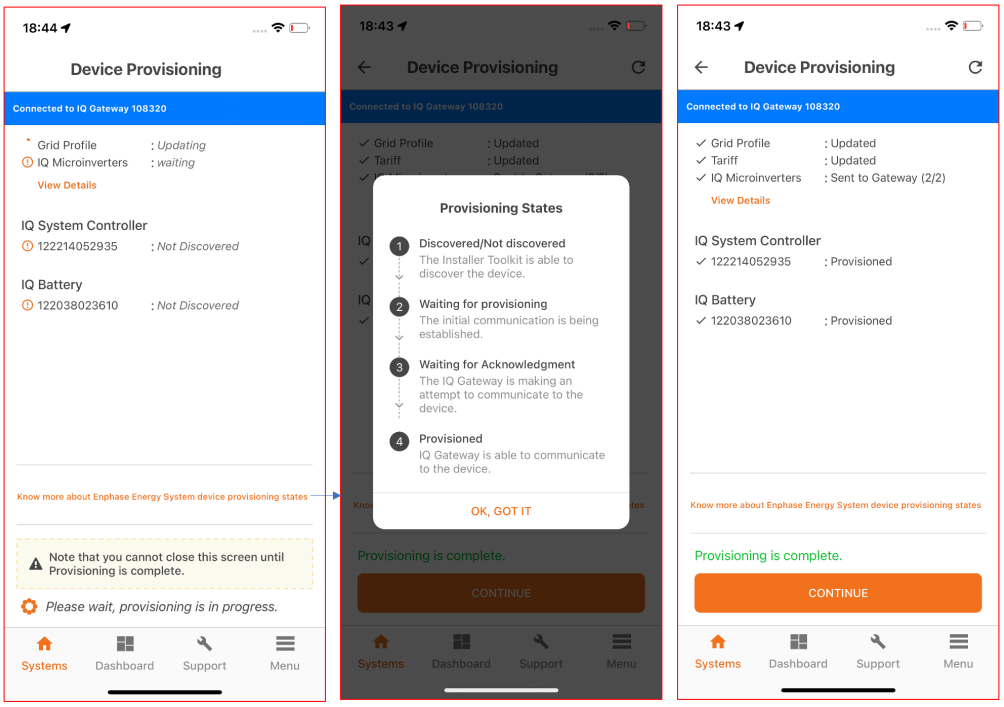
A. Search and select the system under the “Systems” tab.
B. Go to “Service”.
C. Ensure that the site stage is three or above (the “Request return and install replacement” button is hidden if the site stage is less than 3).
D. Go to “Request return and install replacement”.



E. Select IQ Battery from the drop-down menu.
F. Select the old IQ Battery serial number from the drop-down list.
G. Enter the new IQ Battery serial number manually or using a camera scanner.
H. Press “SUBMIT” and ensure the provisioning of the new device is successful.

_____Installer initials: All steps complete on this page.





_____Installer initials: All steps complete on this page.

Commissioning IQ Energy Router

Applicable Countries

1. Germany

Overview

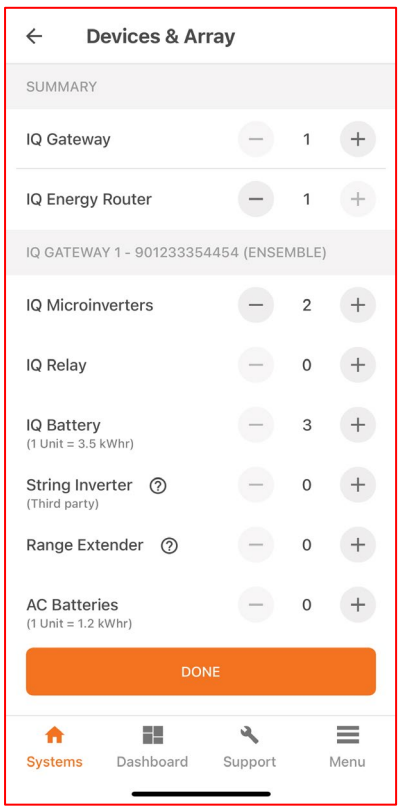
This section is intended for Enphase certified installers commissioning Enphase Energy System along with IQ Energy Router to monitor and control heat pumps and EV chargers along with IQ Microinverters and IQ Battery in grid-tied applications. Follow the steps below to establish successful communication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

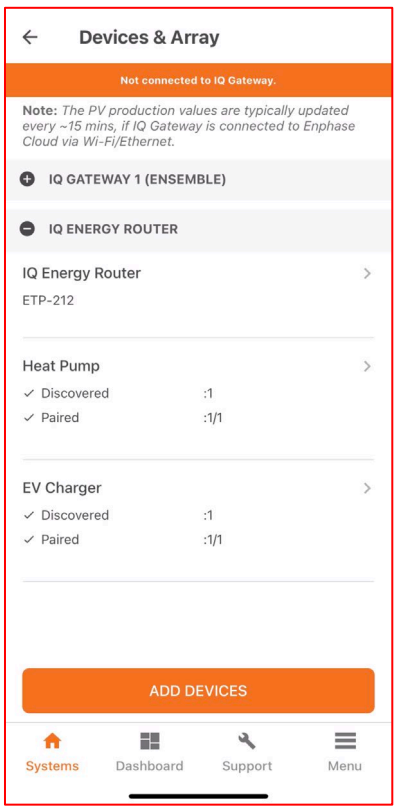
Pre-commissioning steps

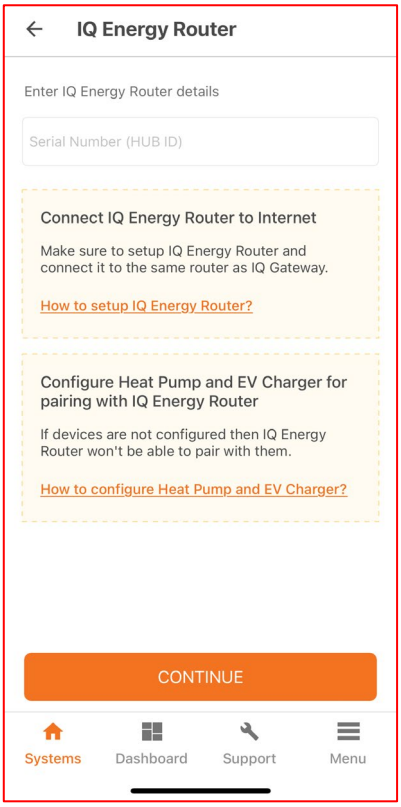
- EV charger and heat pump, the Home Energy Management hardware components must be installed and configurated first before pairing and commissioning the IQ Energy Router
- Refer to this webpage to learn more about installing and configuring the supported EV charger and heat pump models. The IQ Energy Router can only pair with a third-party EV charger and heat pump after these devices are configured.

Commissioning steps

1. Device and Array
    a. Add IQ Energy Router count in the “Device and Array” screen. A user can add a maximum of one IQ Energy Router for each site.







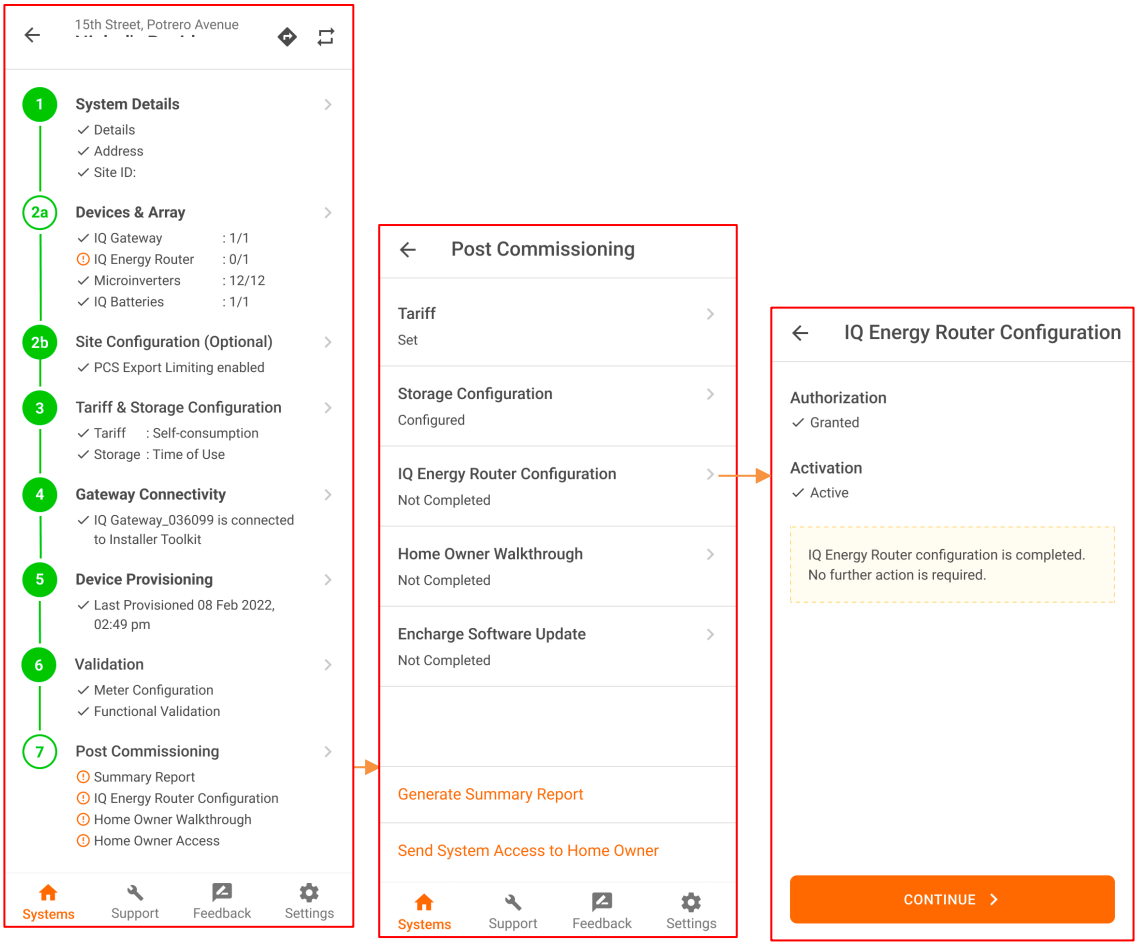
_____Installer initials: All steps complete on this page.

b. Set up IQ Energy Router and connect it to the internet using the Ethernet cable. Configure heat pump and EV charger at the site. Refer to this document to learn how to connect the IQ Energy Router to the internet and configure the heat pump and EV charger.

c. Scan/Enter IQ Energy Router serial number manually (mentioned as Hub ID at the bottom). Make sure 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 and Array, as described in step 1a.



b. Tap on “IQ Gateway Router Configuration” brings up the screen showing the authorization and activation state of the IQ Energy Router.

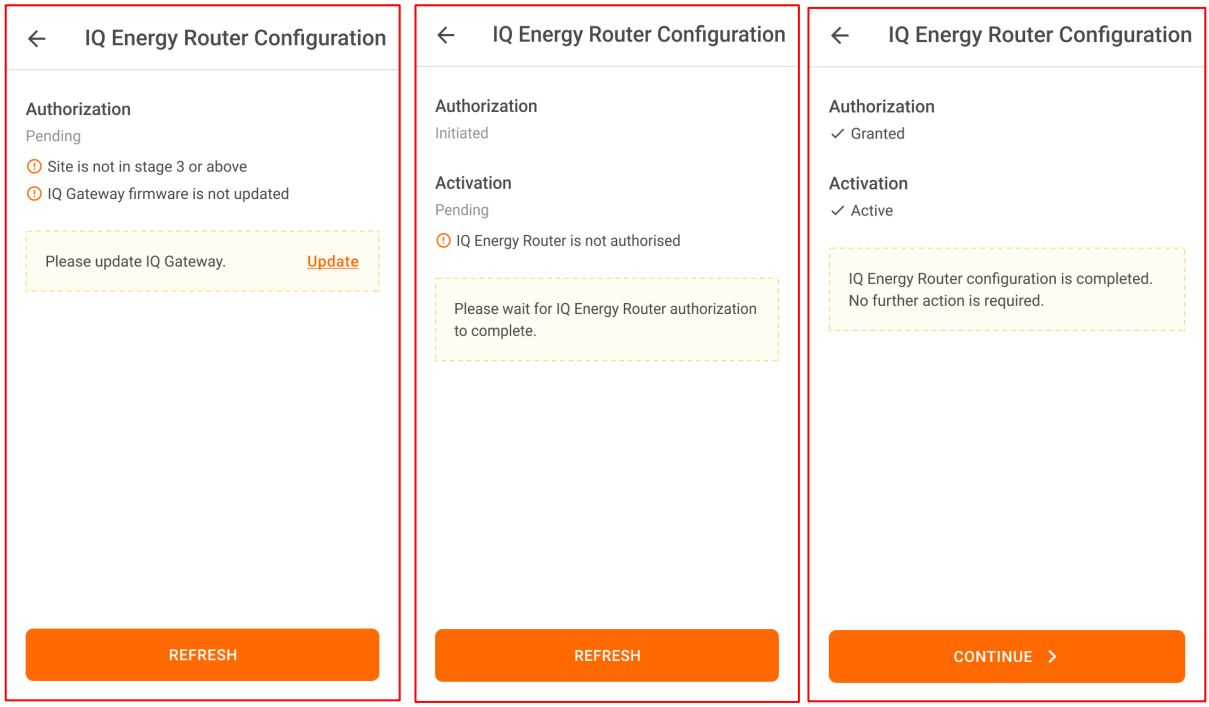
c. If the system is commissioned as expected, you should see the Authorization state as “Granted” and the Activation state as either “Active” or “In Progress”. If you see these states, then you can move to the next step in the commissioning flow.

d. If authorization status is pending, it may mean one of the following:

i. The site is not in stage 3 or above. If this is the case, wait for the site to transition to stage 3.

_____Installer initials: All steps complete on this page.

ii. IQ Gateway firmware is not compatible with IQ Energy Router and needs to be updated. Update the IQ Gateway to the suggested version.



e. If activation is pending, it may mean:

iii. Authorization is still pending. Follow the steps for authorization.

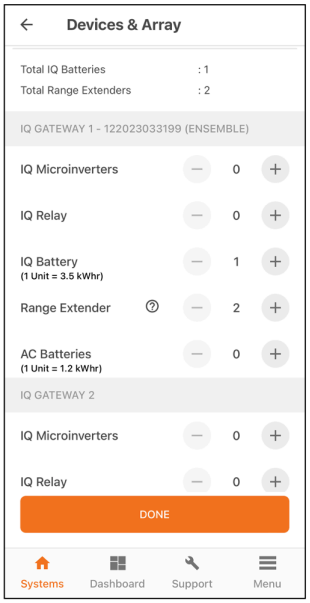
iv. The site array is either not built, or all the microinverters are not assigned to the array. Make sure to build an array and assign all the microinverters to arrays.

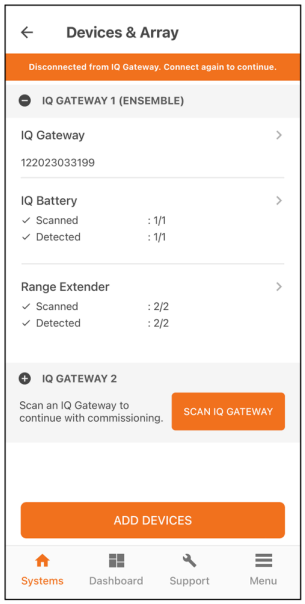
_____Installer initials: All steps complete on this page.

Provisioning Enphase Storage System with multiple IQ Gateways

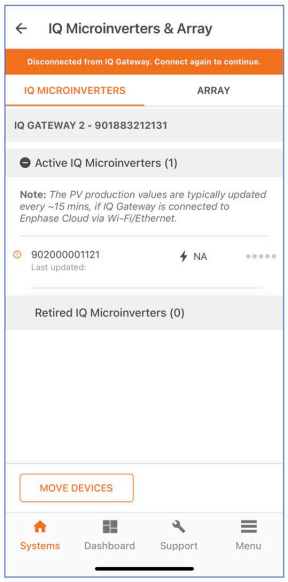
You can add multiple IQ Gateways, but the system can have only one Enphase Storage System IQ Gateway (i.e., IQ Gateway inside the microgrid on the load side of the IQ System Controller). All the Enphase Storage System devices (IQ Battery and microinverters) must be connected to the Enphase Storage System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

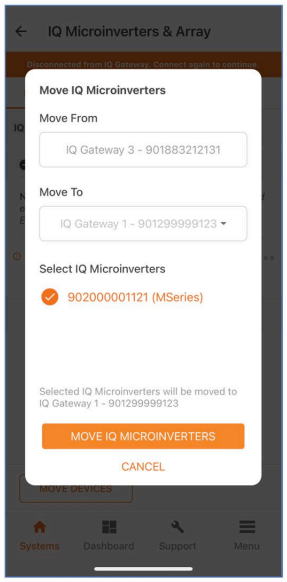
A. Make sure you have scanned the serial numbers of all IQ Gateways (two or more).
B. Add storage devices like IQ Battery, Range Extender, and string inverters only in Enphase Storage System IQ Gateway. Adding IQ Relay and AC batteries to this IQ Gateway is optional.
C. All the non-storage devices like IQ Microinverters, AC batteries, and IQ Relay can be added to the Non-Enphase Energy System IQ Gateway. Enphase energy devices like IQ Battery and Range Extenders cannot be added to this IQ Gateway.

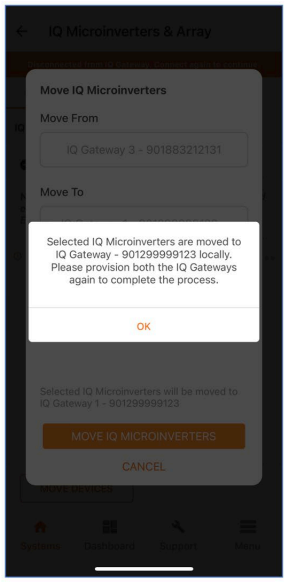




D. Installer will be able to move non-energy devices like IQ Microinverter, AC batteries, and IQ Relay from one IQ Gateway to another using the “MOVE DEVICES” button.







_____Installer initials: All steps complete on this page.

E. Steps to assign your microinverters to the IQ Gateway:

a. It is strongly recommended to photograph/scan the PV microinverter barcodes as a power line scan can “poach” an incorrect serial number from a nearby site.

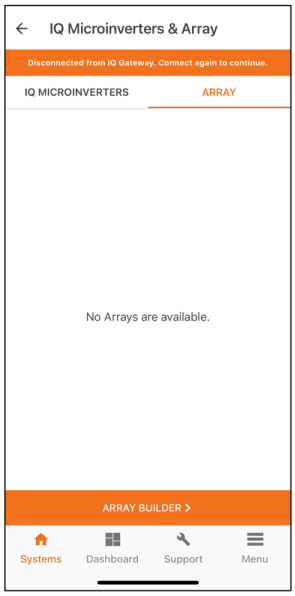
b. After successfully barcode photographing all the microinverters, make sure you are connected to the internet.

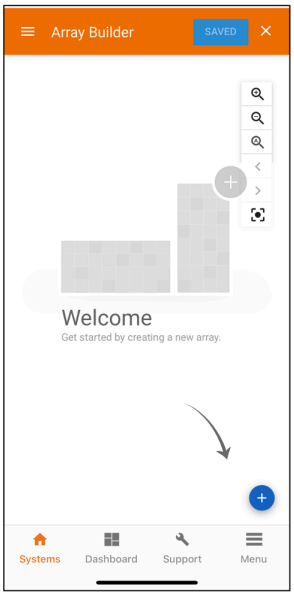
c. Under “Devices and Array”, tap “Microinverters and Array” and go to the “ARRAY” tab.

i. Tap “ARRAY BUILDER”.

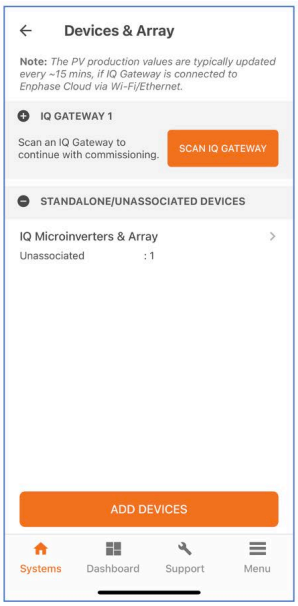
ii. Make sure you create a separate array and assign microinverters that must be included in the microgrid.

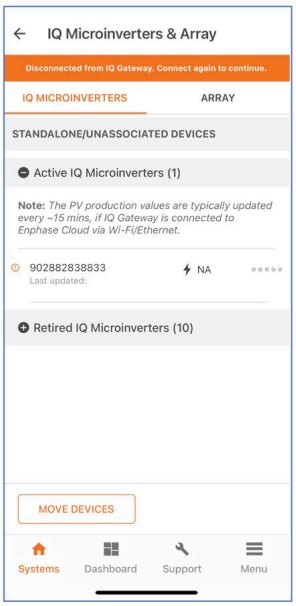
iii. Save and exit the Array Builder and assign an IQ Gateway to the array.

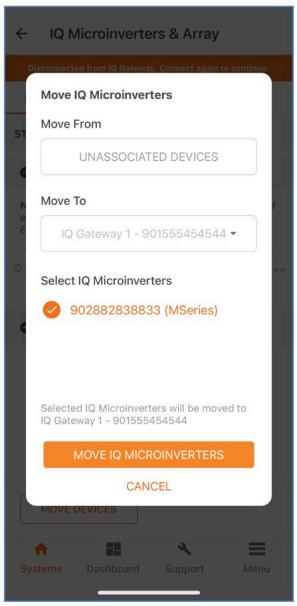


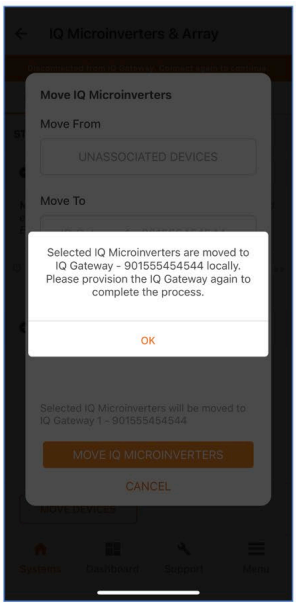


iv. If a new IQ Microinverter is added in Array Builder, it is saved in the “Unassociated” section and can be moved to the respective IQ Gateway using “MOVE DEVICES”.









_____Installer initials: All steps complete on this page.

Revision history

Revision	Date	Description
TEB-00015-1.0	May 2023	Initial release