

Enphase Storage System Commissioning using Enphase Installer App 3.0

Overview

This document is intended for Enphase Storage System certified installation professionals who are commissioning Enphase Storage System systems in the field. Follow the steps below to establish successful communication between Enphase Storage System components and validate that the system is operating as designed.

Contents

| | |
|--|----|
| Overview | 1 |
| Preparing for Enphase Installer App Communications | 1 |
| Commissioning Instructions..... | 5 |
| Functional Validation Instructions | 23 |
| Decommissioning an IQ Battery/ IQ System Controller While Replacing it On Site | 30 |
| Provisioning Enphase Storage System with Multiple IQ Gateways..... | 31 |
| Known Issues and Limitations | 34 |
| Features for troubleshooting the system..... | 34 |

Preparing for Enphase Installer App Communications

The following process assumes that all Enphase Storage System has been installed in a code-compliant manner, tested for appropriate voltages, and are ready to be energized.

- For all products, always follow the safety instructions and instructions in the Enphase quick install guides and installation manuals.
- Enphase Storage System is commissioned using Enphase Installer App. Ensure that Enphase Installer App is updated to version 3.X or later:

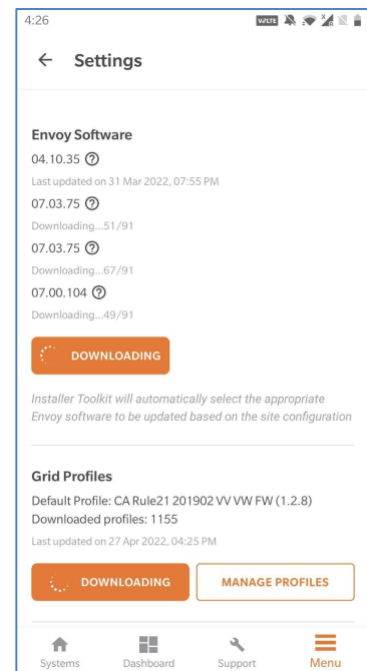


- You can install the application using the following links
 - [iOS](#)
 - [Android](#)
- Enable Bluetooth communication on the smart phone or tablet you will use for commissioning.

- Turn OFF automatic sleep mode on your smart phone or tablet. This prevents your phone from going to sleep and interrupting the IQ Gateway firmware upgrade.
 - In iOS, this setting is called “Auto Lock” and can be changed to “never” under “display and brightness”
 - In Android, this setting is called “screen saver” and can be changed to “never” under settings, display, advanced display.
 - After commissioning is complete, you can reset the phone to automatic sleep.
- Ensure that the Enphase IQ Gateway has software version
 - 7.3.75 for commissioning and operation of IQ series Enphase Storage System
 - 7.0.107 for commissioning grid forming IQ8 microinverters

You can update the IQ Gateway software using Enphase Installer App.

 - You must create a system activation before commissioning if the activation does not exist. However, an activation should already exist if you are commissioning an M series site.
- If you must create a site, do this beforehand using Enphase Installer Portal or, on site, using Enphase Installer App.
 - Creating an activation beforehand to save time in the field.
 - If completing the activation on site, ensure that Enphase Installer App has Internet access (cell signal or Wi-Fi).
- Before visiting the site, ensure that the IQ Gateway software 7.3.75 and 7.0.107 has been downloaded to the phone.
 - The **Settings** tab in Enphase Installer App has an Envoy (IQ Gateway) Software section with an **Update Now** button for downloading IQ Gateway software.
 - Users will see three versions of IQ Gateway software. Enphase Installer App will automatically select the right version for Enphase Storage System for M Series and PV only sites.
 - A stable Wi-Fi connection is required to successfully download the software. Do not move the phone around or step out of Wi-Fi range while downloading the software.
 - If an activation does not exist, create an activation using Enphase Installer App 3.0, or Enphase Installer Portal.
 - If your existing IQ Gateway is not connected to the internet, you can either get it connected to the internet, or provision all microinverters on site to the new IQ Gateway.
 - If your existing IQ Gateway is connected to the internet, you must associate the IQ Gateway to the new activation.
- Access the site via Enphase Installer Portal and confirm hardware requirements:
 - Only IQ6, IQ7, or M250, M215 microinverters are compatible with Enphase Storage System.
 - M250 and M215 Microinverters cannot be installed within the same microgrid as IQ series Microinverters.
 - M series Microinverters require an Envoy-S metered
 - IQ series microinverters require an IQ Gateway.



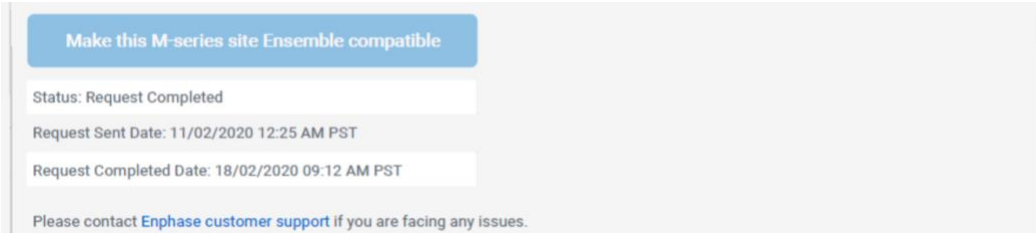
- Only For an M-series site
 - Ensure the expected quantity of microinverters can be seen. This can be done via Enphase Installer Portal or Installer app in step 2, devices and array within the activation.
 - Prior to on site commissioning, download the M series microinverter firmware to the devices on site by visiting the activation page in Enphase Installer Portal, and tapping on the below icon:

The screenshot displays the 'System Active' page in the Enphase Installer Portal. The page is divided into several sections:

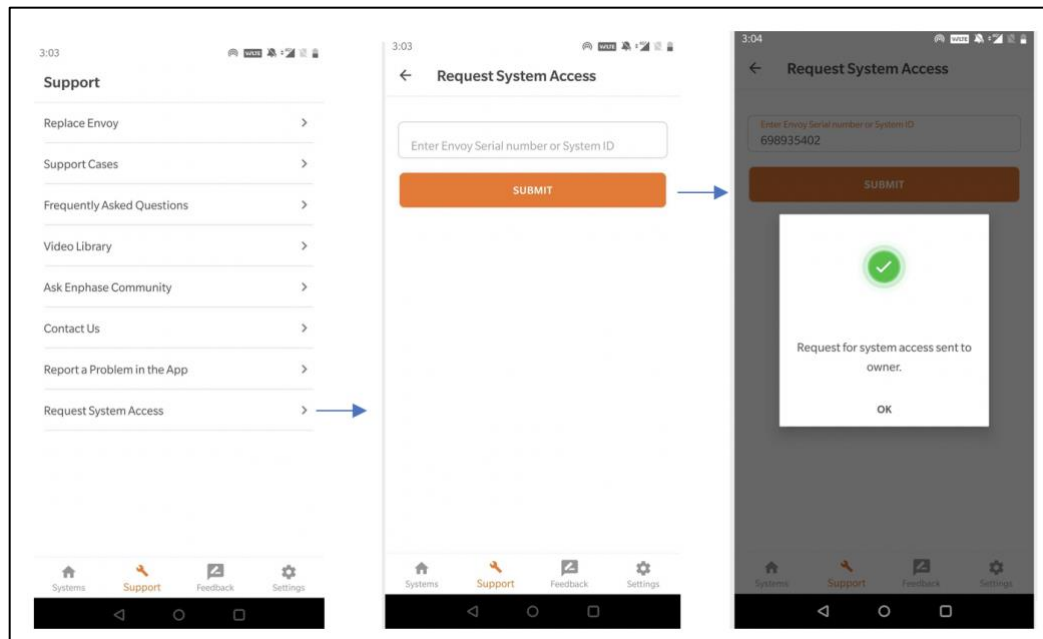
- System Information:** Name (Enphase System Five), Type (Residential), and Third Party Owned status.
- System Host:** Information about the user logged in and their access to the system.
- Location:** Street address (25th Street North), City (Fargo), State (North Dakota), and ZIP code (58001).
- Owner:** Email address (prarora@enphaseenergy.com).
- Envoy:** Serial number (12182004230) and status (Reporting Status: Device Online).
- Activation Checklist:** A progress bar showing 100% completion. Steps include: 1. Started, 2. Downloading, 3. Verifying, and 4. Ready. Each step has associated tasks like 'Owner Entered', 'Location Entered', 'Envoy(s) Entered', 'Envoy(s) Reported', 'Good Communication Established', 'System Operation Verified', 'Arrays Built', 'System Operational', and 'Access Granted to Owner'.
- System Metadata:** System created on 12/09/2019 08:18 AM PST, activation entered by user@enphaseenergy.com, and last updated by a@home@enphaseenergy.com on 08/11/2019 08:18 AM PST.

A red arrow points from a yellow callout box containing the text 'Click here to pre-download M series Ensemble Microinverter Firmware' to a blue button labeled 'Make this M-series site Ensemble compatible'.

- Prior to visiting the site, view the activation page to confirm that the firmware has been downloaded. If the activation page shows: “Status: Request Completed” the download was successful.1

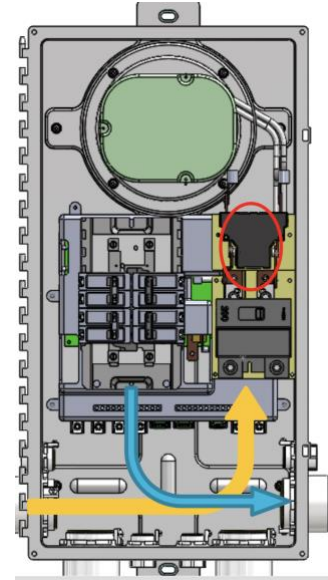


- If you were not the original installer of the system, you must be granted access to the activation as a system maintainer. For an M-series site, It is best to get this access prior to the installation so that the new firmware can be pre-downloaded to the site, saving time during commissioning. To request for a system access:
 - Go to support -> Request system access
 - Enter the Envoy serial number and submit the request
 - An email will be sent to the homeowner to provide accesses to the site
 - If you do not receive the access, please contact customer support for more help. Contact Enphase customer support at [\(877\) 797-4743](tel:8777974743) or at <https://enphase.com/en-us/support/contact-support>



- **[Not required if you are installing IQ System Controller R2]** Best practice is to disable manual override before IQ System Controller has been wired or energized. To do this, remove the IQ System Controller deadfront to access the grey MID toggle switch at middle right side of IQ System Controller.

- Press MID toggle switch to the right approximately 5 degrees
- Manual override on IQ System Controller has been disabled
- If you IQ System Controller is already energized, manual override can be cleared with software before going to Step M



- Informative notes:

- IQ Batteries ship with approximately 30% state of charge.
- IQ Batteries ship with “self-consumption” as their default mode.
- Always supply the AC power to IQ Batteries and wait for message on Enphase Installer App to turn on the DC switch. (Do not turn on the DC switch until the Enphase Installer app instructs)
- If an IQ Battery is in very low state of charge when it arrives to a site, as long as it is connected to the AC side, it can be commissioned, and it will start charging by setting it to Full backup mode after it is commissioned. IQ Battery housekeeping supply will get power from AC supply during commissioning time and IQ Battery can communicate with IQ Gateway. Charging in Full backup profile will start only after IQ Battery is commissioned.

Commissioning Instructions

Date and time of commissioning start: _____

Address: _____

System being commissioned: _____

Installer: _____

Individual (name and email) overseeing commissioning: _____

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

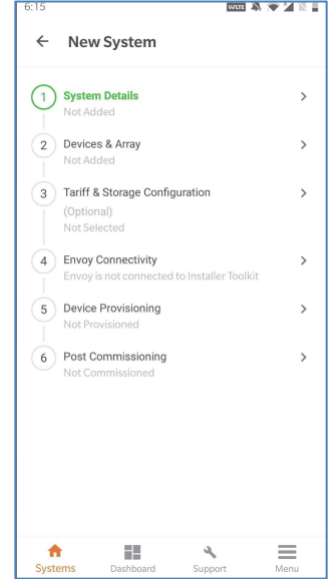
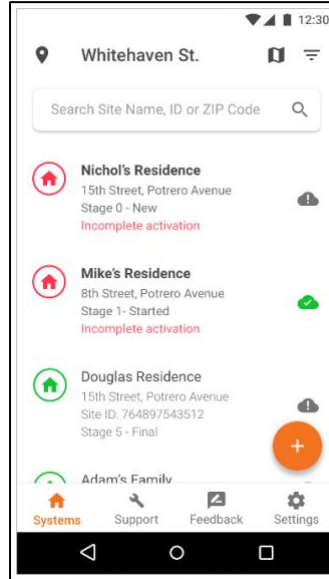
Commissioning Process

A. Open Enphase Installer App. Tap the **Systems** tab in the lower left side of the screen.

- B. If an activation has not previously been completed using Enphase Installer Portal, complete Step 1 in Enphase Installer App (input system details including address etc.).

B.1. When installing Enphase Storage System on an existing M series or IQ series site, tap on the previously completed system activation

- B.2. Only for a M-series site with legacy Envoy, select the appropriate grid profile for your region by going to IQ Gateway under 'Devices and Array' (step 2). An existing M series activation with legacy Envoy will not have a grid profile selected.



C. Go to Enphase Installer App step 1 and tap on 'Edit'

C.1. Go to 'Installation Details' and enter these below fields if available.

- C.2. Contract Signed Date
- C.3. Permit AHJ
- C.4. Permit Application Date
- C.5. Permit Approval Date
- C.6. Hardware Installation (Begin) Date

These dates will be shown to the Home Owner on the Enphase application.

D. **(Only for M-series Enphase Storage System)** Replacing Legacy Envoy with Envoy-S metered for M series Enphase Storage System Installations.

- D.1. Replace the Legacy Envoy or IQ Envoy-S standard on site with the Envoy-S metered.

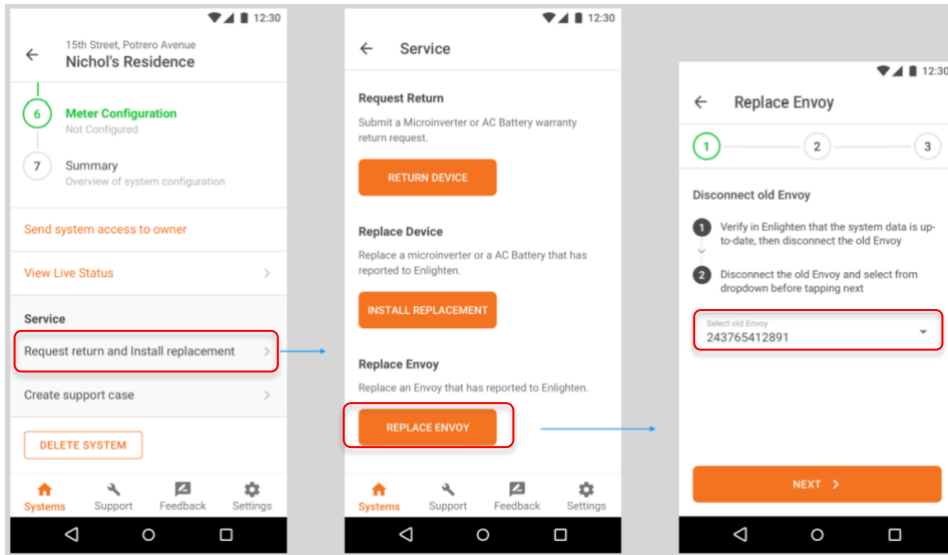
D.1.1. Follow all instructions included in the Envoy-S metered, and the Wireless Communications Kit Quick Install guides.

D.1.2. In Enphase Installer App, navigate to "request return and install replacement" button at the bottom of the activation screen in Installer app.

D.1.3. Tap "replace Envoy"

D.1.4. Input old Envoy serial number.

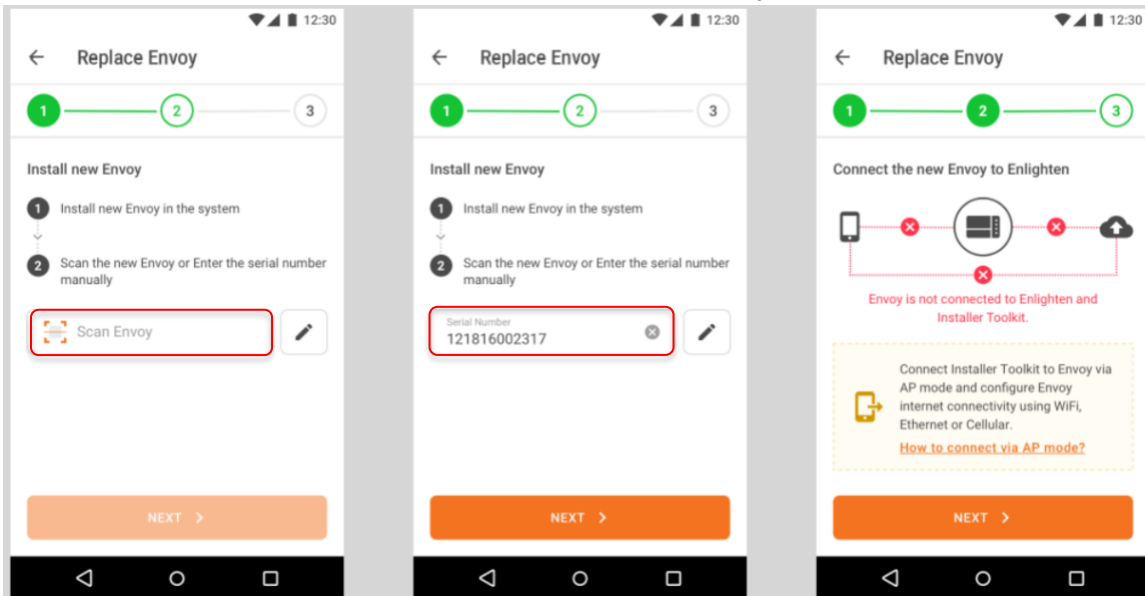




D.1.4.1 Install IQ Envoy-S Metered into the system

D.1.4.2 In Enphase Installer App, Scan the new Envoy-S Serial number

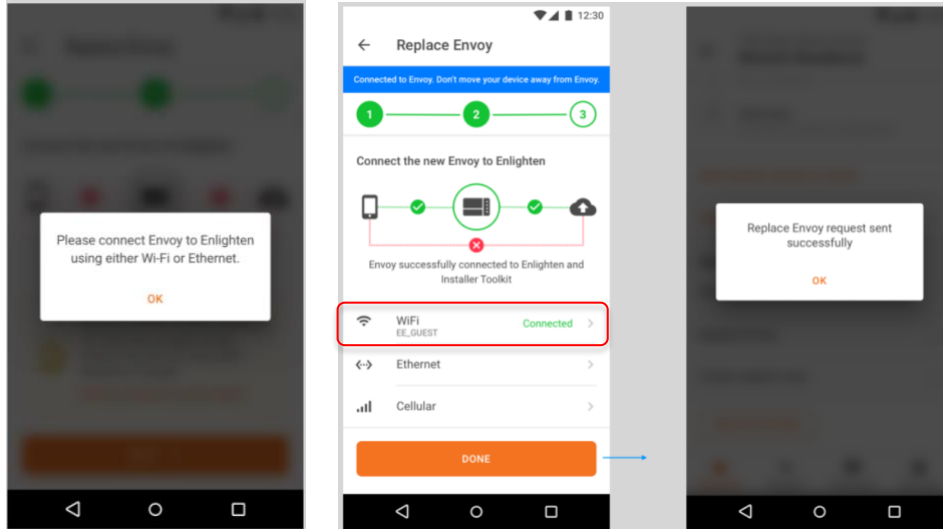
D.1.4.3 Tap next to connect the new Envoy-S to Enphase cloud



- D.1.4.4 If using Ethernet, plug into Envoy-S metered.
- D.1.4.5 If using Wi-Fi, Tap AP mode button, and connect to the Envoy-S network in your phone settings.

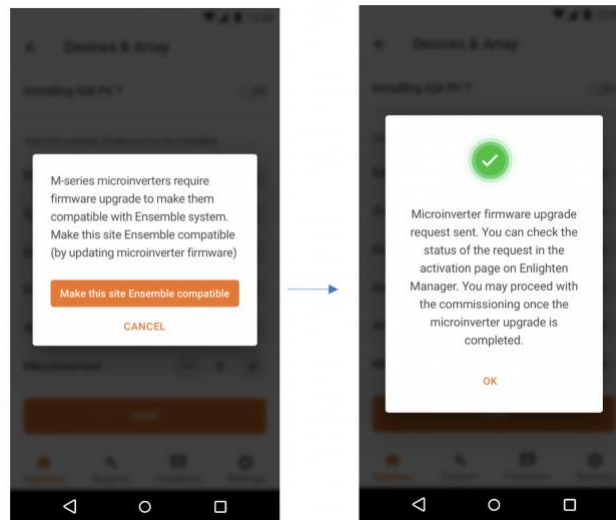
D.1.4.5.1 Input Client's network SSID and password into Wi-Fi section.

D.1.4.5.2 After the Envoy replace request has been successfully sent, exit AP mode.



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

- E.1. Enter the total count of each device type to be added in the system.
 - E.1.1. If M series microinverter firmware pre-download was not successful, the user will be blocked from moving forward at this step. Select 'Make this site Ensemble Compatible'. Track the status of the firmware upgrade in activation page of Enphase Installer Portal using the steps outlined in the "Preparing for Commissioning" section of this document to download M series microinverter firmware.



If your activation has or will have multiple IQ Gateways, go to [IQ Gateways](#) (p. 28) for instructions to assign devices to the Enphase Storage System IQ Gateway. Some situations require splitting the system with more than one IQ Gateway per site/system ID. Examples include: System where the PV exceeds the allowed PV to storage ratio, Microinverters incompatible with Enphase Storage System, etc. You can refer the ([Enphase Storage System Planning Guide](#) for details on PV to storage ratios, compatible microinverters and other aspects of system design)

- E.1.2. You must scan IQ Gateway and select the appropriate grid profile for the system.
- E.1.3. You must manually scan IQ System Controller and IQ Battery serial numbers using a barcode photograph (i.e., use your phone with the Installer app to scan barcodes on the IQ Battery and IQ System Controller units), while PV microinverters can use power line scan (Powerline scan option can be found under IQ Gateway detailed page in the Installer app).

Note: Please ensure you have selected right grid profile for the Enphase Storage System. If not, go to IQ Gateway detailed screen to modify the grid profile selected.

E.1.3.1 If retrofitting an existing site, microinverters will appear in the activation.

- E.1.4. When adding IQ System Controller, select the backup type for the system. Select either:

E.1.4.1 Partial-Home backup (consumption CT placed between IQ System Controller and the main panel)

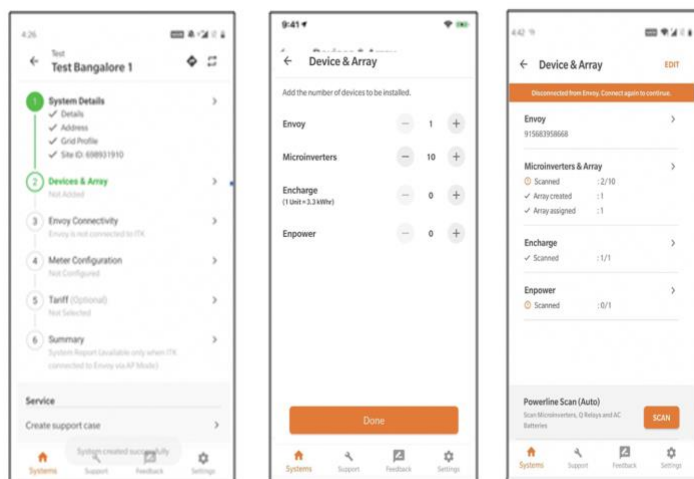
E.1.4.2 Partial-Home backup (consumption CT placed between the utility service and the main breaker)

E.1.4.3 Whole-Home backup

E.1.5. If you are backing up any large /heavy motor loads, it is recommended to use a soft starter.

E.1.6. We strongly recommend that you barcode photograph (i.e., use your phone with the Enphase Installer App to scan barcodes on the PV microinverters) the PV microinverters because a power line scan can “poach” an incorrect serial number from a nearby site.

E.1.7. Note: The LED status indicator, and state of charge in Enphase Installer App will be inaccurate until IQ Gateway software is updated at the end of step I.



- F. Energize Enphase Storage System equipment in the following order:
- F.1. Ensure that the IQ Gateway and PV branch circuit breakers are turned ON in the IQ Combiner or AC combiner panel.
 - F.2. Ensure that the AC combiner, auto transformer and IQ Battery breakers are turned ON in IQ System Controller.
 - F.2.1. First, turn ON the AC combiner, then the auto transformer, then the IQ Battery breaker.
 - F.3. For all IQ Battery units, ensure that the DC disconnect switch is turned OFF, then power ON the IQ System Controller by turning ON the utility breaker and/or any breakers on the line side of IQ System Controller.
 - F.3.1. Battery AC disconnects may be required by local jurisdiction. If one is present, turn the switch to the on position.
 - F.3.2. Wait 60-330 seconds for the microgrid interconnect device relay to close.

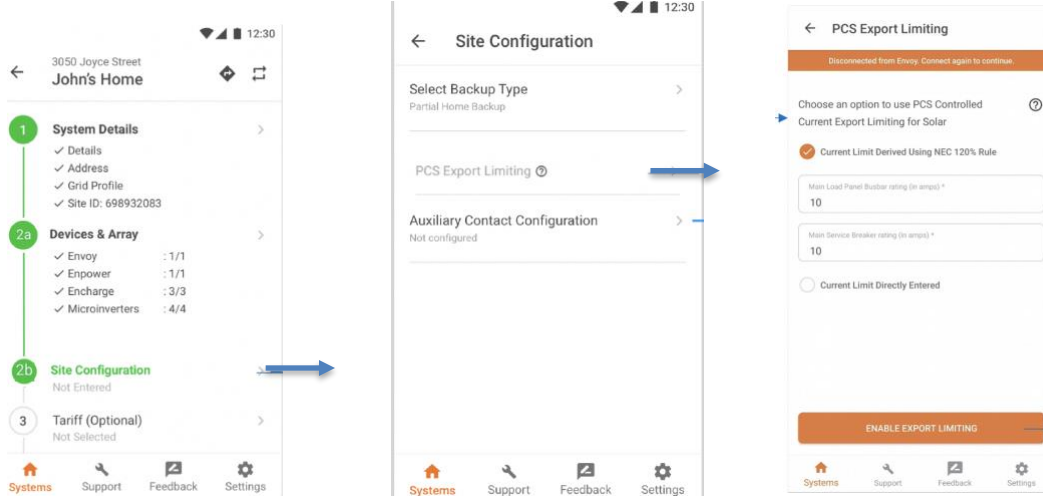
DANGER! Risk of electric shock. When energizing equipment, check that IQ Battery units are properly wired as prompted. Miswiring can result in a safety hazard. Ensure IQ Battery ground connection does not have a L1 or L2 connection, as this introduces a safety hazard. To check correct wiring, follow these steps:

- F.3.3. Ensure that AC power is supplied to the IQ Battery. Check that the breaker inside IQ System Controller is closed, as well as any AC breakers between IQ System Controller and IQ Battery (if there is a battery combiner panel).
- F.3.4. Using a voltmeter, measure the IQ Battery chassis metal to ground, (e.g., grounded conduit) and ensure there is no AC voltage source present. If there is incorrect wiring, a ground fault may exist, and the AC voltage may read ~120Vac. If voltage is present, DO NOT touch the chassis, immediately remove AC power from the IQ Battery circuits, and turn OFF the DC switch on the IQ Battery.
- F.3.5. Correct the wiring before proceeding, making sure all AC sources are removed and that the DC switches on ALL IQ Battery units are turned OFF.
- F.4. Make sure DC switches are turned OFF on all IQ Battery units.

Important Note: Please skip the optional Step 2b, if you are not interested in configuring load control or enabling export limit for your solar

G. (Only for configuring Load control and PCS) Go to Step 2b to configure load control and PCS configuration

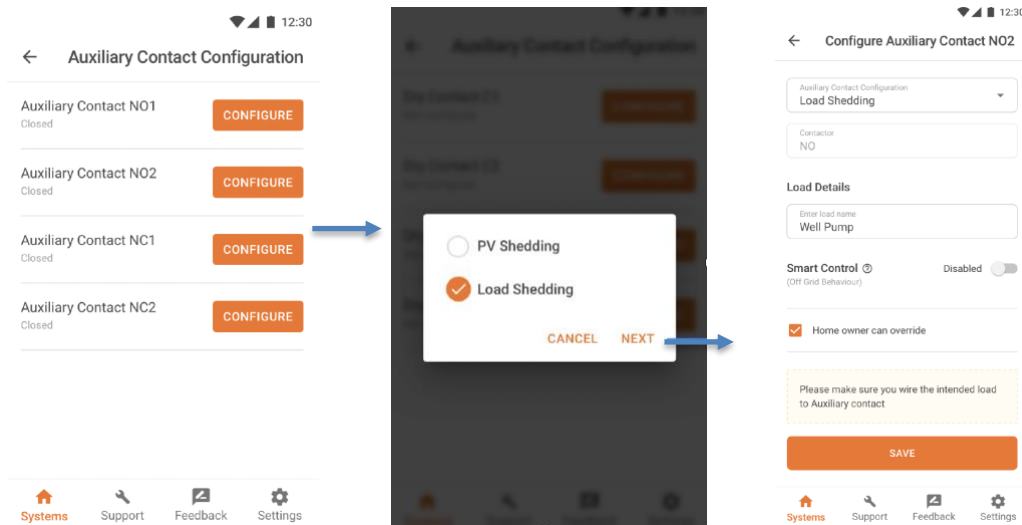
- G.1. PCS Export limiting under 'Site Configuration' will be available only for a system with Partial-Home backup (consumption CT placed between IQ System Controller and the main panel)
- G.2. To enable PCS either
 - G.2.1. Select Current Limit Derived Using NEC 120% Rule and enter breaker details or
 - G.2.2. Select Current Limit Directly and enter the Export limit



G.3. To configure load control or PV shedding, select Auxiliary contact configuration and enter the details

G.3.1. For PV shedding, select the microinverters that are part of the branch circuit connected to the auxiliary contact

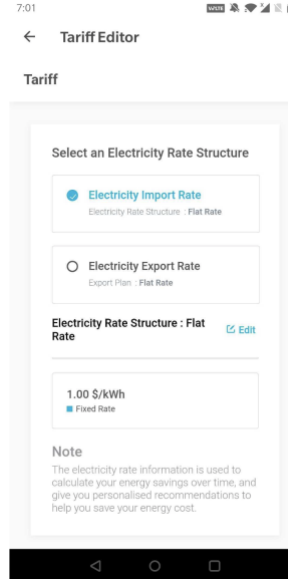
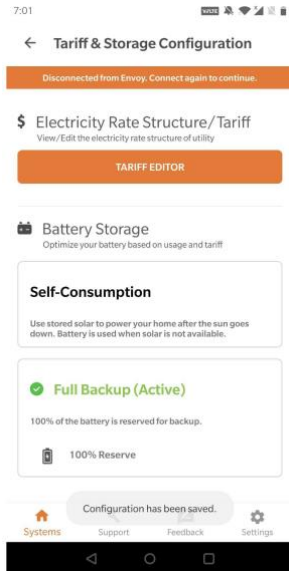
G.3.2. For Load shedding, enter the load name and the smart control to configure off-grid behavior



H. Enphase Installer App Step 3, **Set Utility Tariff:**

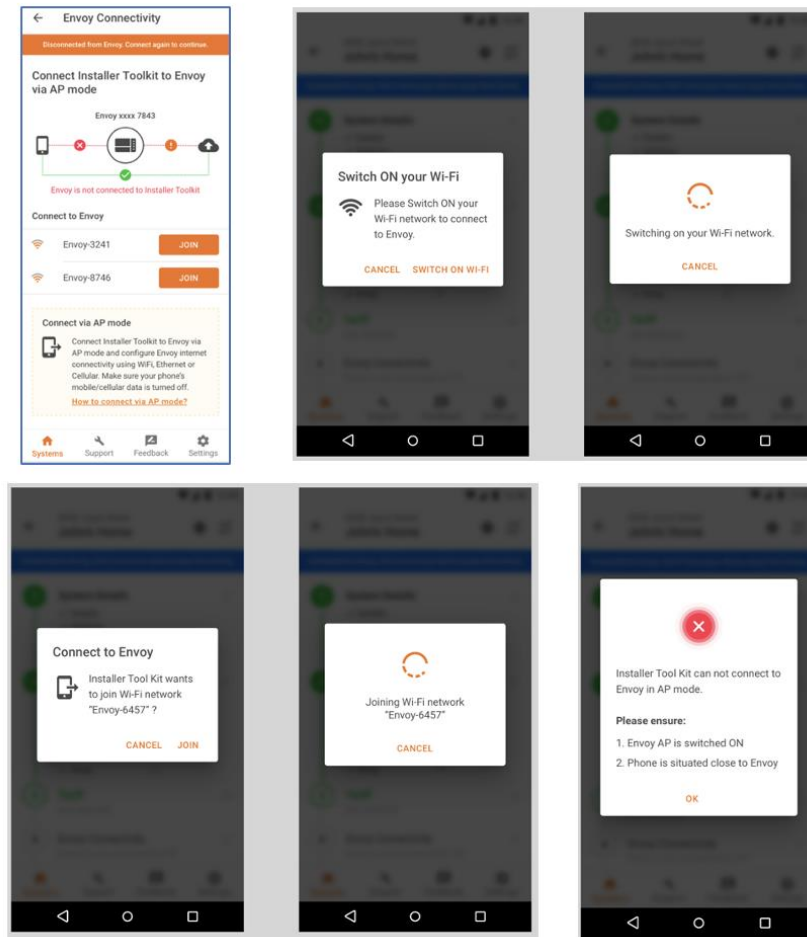
□ H.1. (Optional) Go to Tariff Editor to select the import rate schedules. If you are offline and not connected to internet, select the 'Tariff Editor' Lite' option

H.2. Select full backup battery storage during commissioning



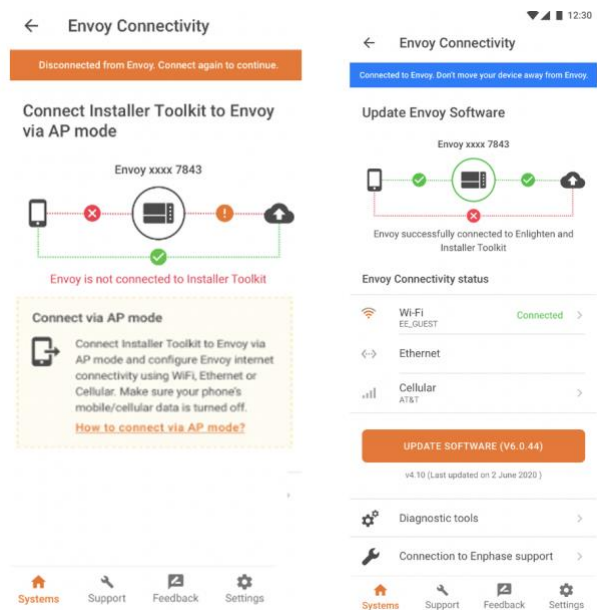
I. Enphase Installer App step 4, **IQ Gateway Connectivity:**

- I.1. This brings up the screen indicating your phone's connectivity to the web and to the IQ Gateway.
- I.2. Your phone should be shown as connected to the web, but not to the IQ Gateway.
- I.3. To provision devices, connect to the IQ Gateway using AP Mode:
- I.4. On the IQ Gateway, press the AP mode button (first button from left) for about one second. The LED will light solid green.
- I.5. Go to your phone's settings and connect to the IQ Gateway's locally broadcasted network.
- I.6. It will show up on the available Wi-Fi networks as IQ GATEWAY_____ with the appended digits being the final numbers of the IQ Gateway serial number. Tap this network to connect.
- I.7. Once connected, Enphase Installer App will show your phone connected to the IQ Gateway, but not to the web.
- I.8. You can connect directly to the IQ Gateway AP network mode directly from Enphase Installer App without going to phone settings by below method
 - I.8.1. Tap on "Join" adjacent to respective IQ Gateway in IQ Gateway connect page
 - I.8.2. Tap on "Switch on Wi-Fi" in the pop up



Screenshots of Connecting to IQ Gateway directly from the Enphase Installer App

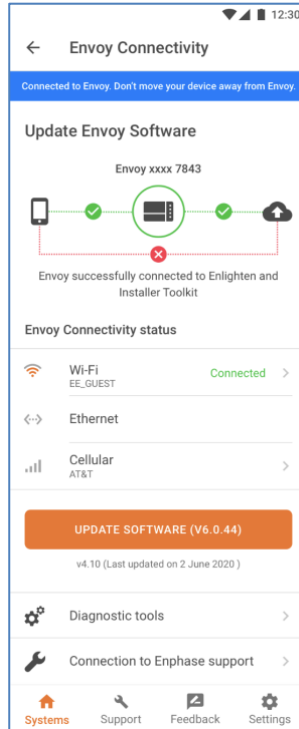
- I.9. If there are issues connecting to this network, turn AP Mode off and on by repeating steps I.4 through I.7.
- I.10. Configure the IQ Gateway with Wi-Fi or Ethernet connectivity. You must input network and password information in the Wi-Fi section. If connecting using Ethernet, simply plug the cable into the IQ Gateway. If Ethernet/Wi-Fi is not connected, the user will be blocked from provisioning.
- I.11. Before device provisioning can occur, ensure that the IQ Gateway has software version



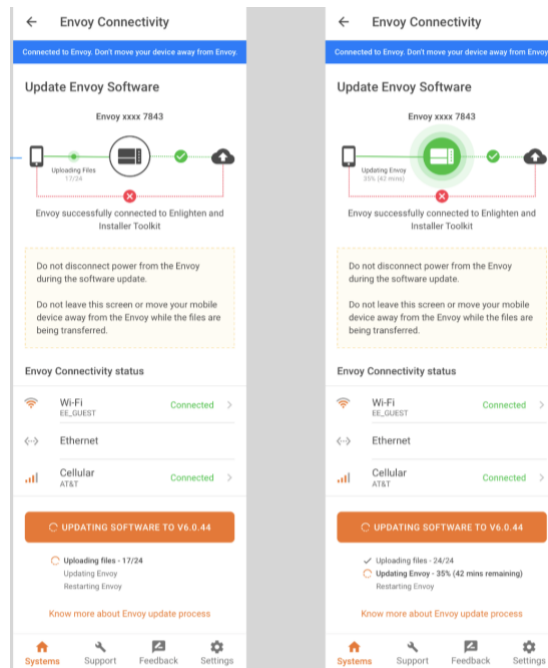
- I.11.1. 7.3.63 (or later) installed for IQ Enphase Storage System and
- I.11.2. 7.0.101 (or later) installed for installing grid forming IQ8 microinverters

Tap **update software** to complete this process (takes approximately 30 minutes).

- I.11.3. Ensure that the phone is close to the IQ Gateway, and do not move the phone away while upgrading the IQ Gateway. Moving the phone away from the IQ Gateway could result in problems during IQ Gateway upgrade.
- I.11.4. Your phone screen must stay active while this update occurs. Allowing your phone to go to sleep will interrupt the update.
- I.11.5. Ensure that you are not connected to the IQ Gateway in AP mode with more than one android/iOS device
- I.11.6. After the IQ Gateway firmware update, IQ Gateway will restart.
 - I.11.6.1 While the IQ Gateway is restarting, all four LEDs will flash red in unison.
 - I.11.6.2 Once the restart is complete, the network communications LED will light solid green.
- I.11.7. When the IQ Gateway reboots, you will lose AP mode connectivity on your phone. Once the IQ Gateway has rebooted successfully, reconnect to IQ Gateway AP mode in the Wi-Fi settings menu of your smartphone or tablet.
 - I.11.7.1 If you have issues connecting to AP mode, turn OFF AP mode on the IQ Gateway by pressing the AP mode button for one second, and then “forget” the AP mode network in your smartphone or tablet Wi-Fi settings.
 - I.11.7.2 Repeat steps I.4 to I.6 to reconnect to the IQ Gateway.
- I.11.8. Configure Wi-Fi or Ethernet in the options. Enphase Storage System installations must have a cellular modem set to remain always connected. Ensure the Enphase Mobile Connect modem (LTE-M cell modem) is plugged into the USB terminals of the IQ Gateway.
- I.11.9. Enphase Installer App will take approximately 10 minutes to correctly display system metrics (including web connectivity) after reboot.
 - I.11.9.1 The IQ Gateway requires a means of communicating to the web to display Internet connectivity. Ensure that the IQ Gateway Wi-Fi access has been configured, or that the Ethernet connection and cell modem connection is established.
- I.11.10. If, after completing the previous step, the IQ Gateway software version shown on the **Update Software** button does not match the IQ Gateway software version shown below the button, then the upgrade has failed and you must tap **Upgrade Software** again.



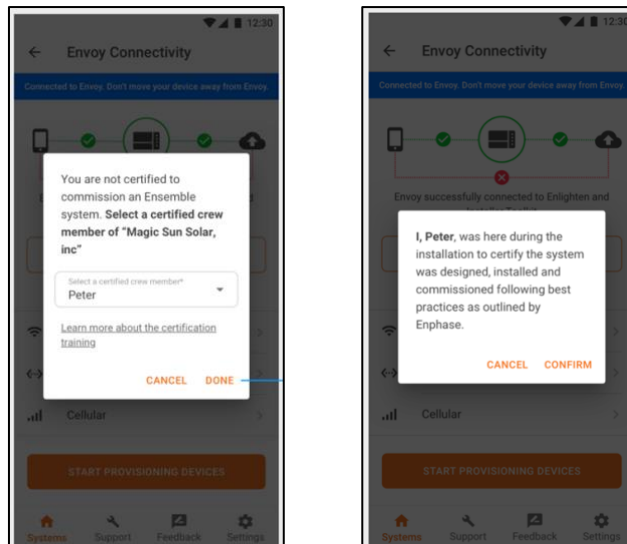
Note: Enphase Installer App will show the IQ Gateway update progress in the main screen without the need for scrolling



- I.12. Tap **Start Provisioning Devices** at the bottom of the **IQ Gateway Connectivity** screen.

J. Enphase Installer App step 5, **Provisioning Devices**:

- J.1. You must be Enphase Storage System training certified to provision Enphase Storage System devices. If you are not, you will be asked to select a certified user from your company.
- J.2. Note that if an IQ Gateway previously existed on site, the old IQ Gateway must be retired before provisioning can proceed. Call Enphase Customer Support to retire the old IQ Gateway.
- J.3. Ensure that the Enphase Storage System communications kit or COMMS-KIT-01 is plugged into the left side IQ Gateway USB ports.
- J.4. Ensure that the Enphase Mobile Connect cell modem is plugged into the right side IQ Gateway USB port.
 - J.4.1. Device provisioning will not be successful if the following are not complete
 - J.4.1.1 COMMS-KIT-01 not plugged in.
 - J.4.1.2 Cell modem not plugged in or
 - J.4.1.3 IQ Gateway not connected to Wi-Fi or Ethernet



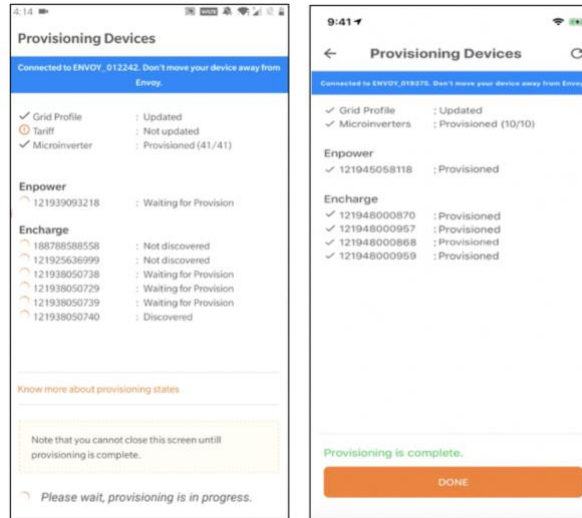
- J.5. Enphase Installer App will begin provisioning all devices, and several steps will occur (taking approximately three to six minutes):
 - J.5.1. The grid profile will be updated.
 - J.5.2. The tariff will be updated only if the single rate was set in step H.
 - J.5.3. The PV microinverters will be provisioned.
 - J.5.4. The IQ System Controller will be provisioned.
 - J.5.5. The IQ Battery microinverters will be provisioned.
 - J.5.5.1 During provisioning, the status flows as follows:
 - J.5.5.1.1 Discovered / not discovered (Enphase Installer App is able to discover the device using Bluetooth Low Energy (BLE)).
 - J.5.5.1.2 Waiting for provisioning. (The initial communication is being established. Enphase Installer App is sending network information to the IQ Batteries and IQ System Controller using BLE).

J.5.5.1.3 Waiting for acknowledgement. (The IQ Gateway is trying to communicate with the IQ Batteries and IQ System Controller using the wireless 2.4 GHz radio).

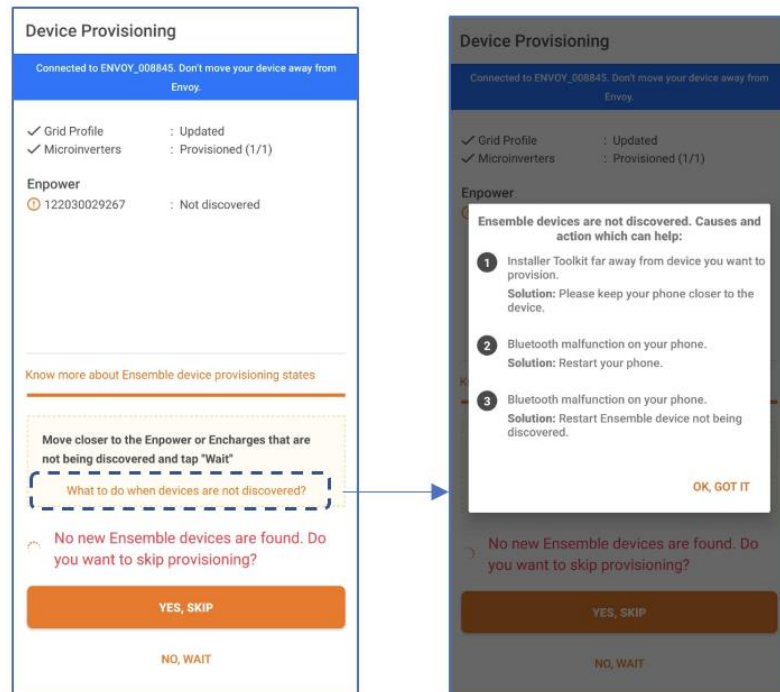
J.5.5.1.4 Provisioned. (The IQ Gateway can communicate with the IQ Batteries and IQ System Controller).

J.5.5.2 Once provisioning is complete, click **Done**.

J.5.5.3 Turn ON the DC switch for all provisioned IQ Batteries now.

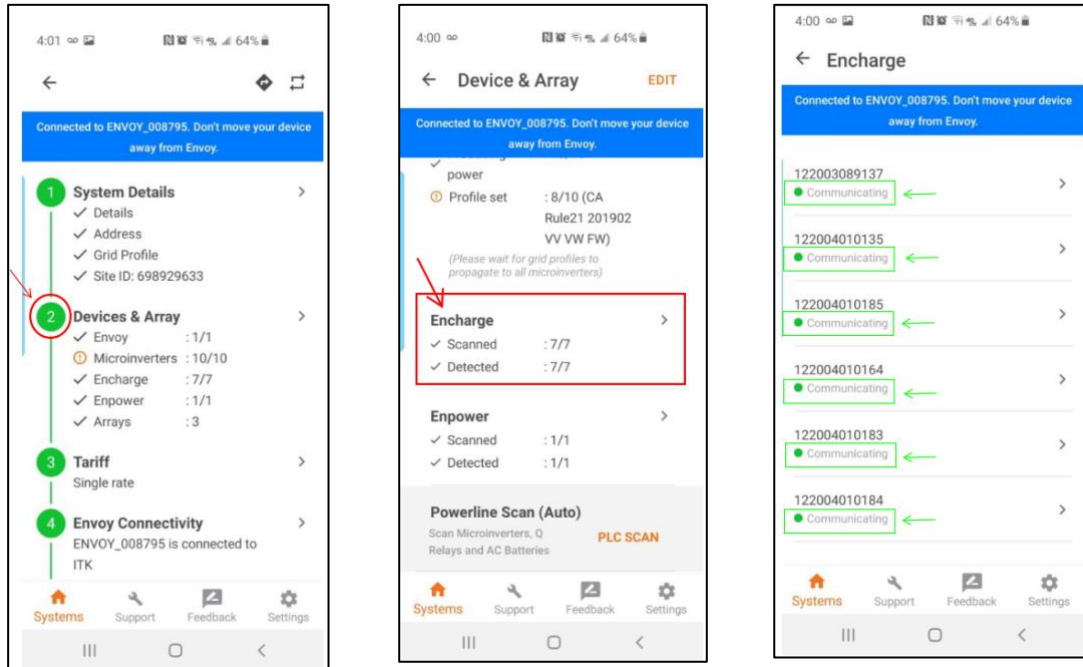


J.5.5.4 Follow the on-screen instruction to debug when one or more storage devices are not discovered over BLE during provisioning.



J.5.5.5 While commissioning Enphase Storage System with IQ System Controller 2, The Installers would be notified to switch ON the rapid shutdown initiation switch if the switch was OFF during provisioning.

K. Confirm that the IQ Batteries are communicating with the IQ Gateway by checking Enphase Installer App step 2: **Device & Array**. The IQ Batteries should display “communicating” as follows:



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

K.1.1. For very early installations, a known issue may interfere with LED status and may cause the state of discharge to display inaccurately. Firmware versions later than 20.25 do not have this issue.

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

K.2.1. Ensure that the system is on-grid.

K.2.2. Turn OFF the DC disconnect switches for all batteries.

K.2.3. Turn OFF the IQ Battery breaker in the IQ System Controller.

K.2.4. Wait for at least two minutes. The IQ Battery LEDs should be OFF at this point.

K.2.5. Turn ON the IQ Battery breaker in the IQ System Controller.

K.2.6. Allow the IQ Battery LEDs to flash red.

K.2.7. Turn ON DC switches on all IQ Batteries. The IQ Battery LEDs should stop flashing red after DC switches are turned ON.

K.3. If IQ System Controller is not communicating with the IQ Gateway, follow these steps to power cycle the system:

- K.3.1. Ensure that the system is on-grid.
- K.3.2. Turn OFF the DC disconnect switches for all batteries.
- K.3.3. Turn OFF the utility-side breaker in IQ System Controller or the supply breaker to IQ System Controller in the main panel.
- K.3.4. Wait for at least two minutes. The IQ Battery LEDs should be OFF at this point.
- K.3.5. Power ON IQ System Controller, that is, turn ON the utility-side breaker in IQ System Controller or the supply breaker to IQ System Controller in the main panel.
- K.3.6. Wait 60-330 seconds for the microgrid interconnect device relay to close.
- K.3.7. Allow the IQ Battery LEDs to flash red.
- K.3.8. Turn ON DC switches on all the IQ Batteries. The IQ Battery LEDs should stop flashing red after DC switches are turned ON.

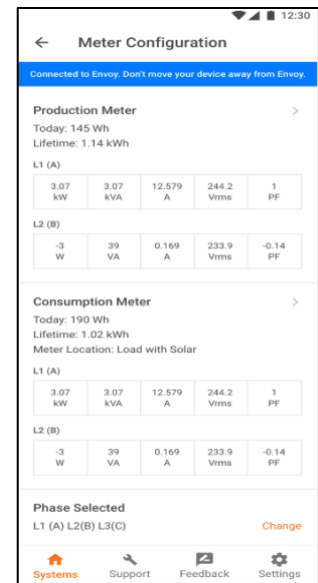
L. Enphase Installer App step 6, the meters will be disabled by default after installing IQ Battery and IQ System Controller. **Configure Production and Consumption CTs** using the meter wizard:

- L.1. Verify that the configuration matches what is installed (**Partial vs Whole home backup and the location of CT**).
- L.2. Enable the meters by verifying the readings by going through the meter wizard (required).
- L.3. While in the production meter wizard, switch OFF all PV breakers (microgrid and non-microgrid) as instructed to make sure the readings go to zero before enabling.
- L.4. While in the consumption meter wizard, turn ON the PV and a known load in the home to confirm consumption rises as expected, and select the meter location. Select one of the 3 options
 - L.4.1. Partial backup – Consumption CT between IQ System Controller and Main Load Panel
 - L.4.2. Partial backup – Consumption CT between Main Load panel and Utility meter
 - L.4.3. Whole home backup

Warning: Do not place the consumption CT on the load side of IQ System Controller. It should always be on grid side.

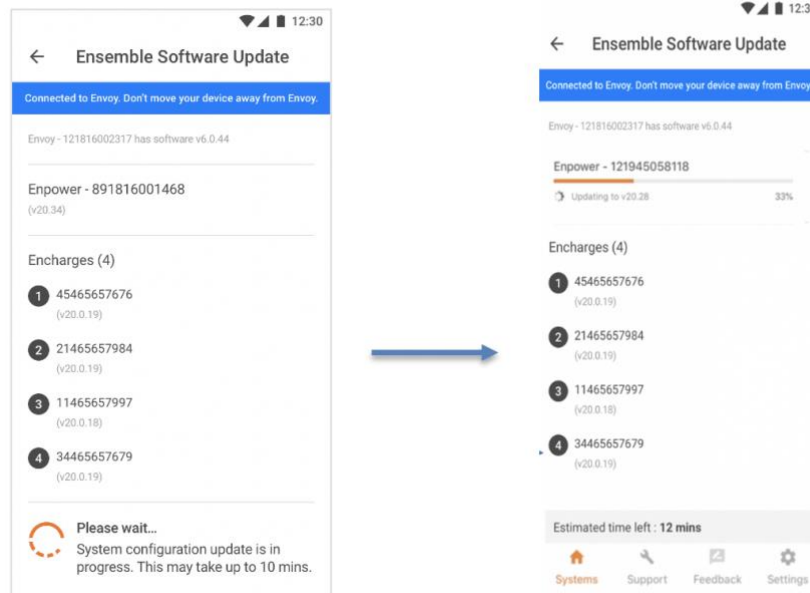
- L.5. Once the meters are configured correctly, you will be able to see if the IQ Batteries are charging or discharging in the **Devices** section of Enphase Installer App.

Note: If you have added generator, you need to ensure you enable generator meter using the wizard by going off-grid and ensuring the meter readings are accurate.



M. Upon successful completion of provisioning, important software updates will be completed in the system:

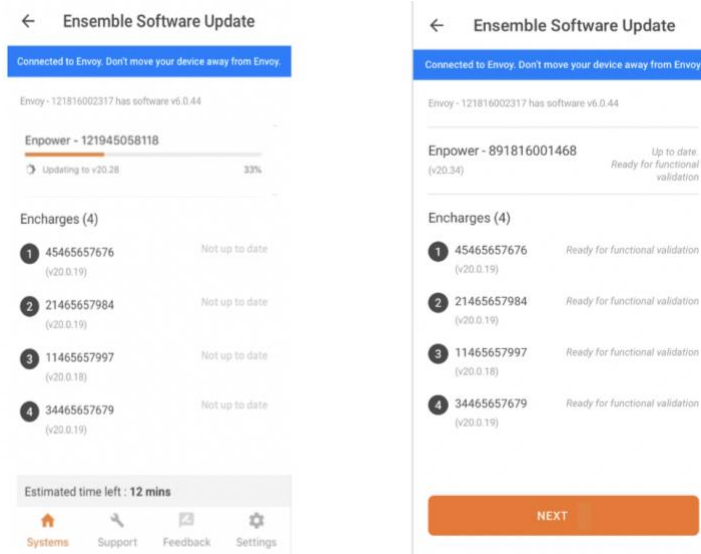
- M.1. System configuration update will be automatically started by the IQ Gateway.
- M.2. IQ System Controller software will be automatically updated by IQ Gateway if the IQ System Controller software version is less than 20.34. This update will complete in less than an hour.
- M.3. If you have PV/load shedding configured or generator, the IQ System Controller software will be updated to 21.19.
- M.4. You can go to Step 6 to configure production and consumption meters when IQ System Controller software update is in progress.



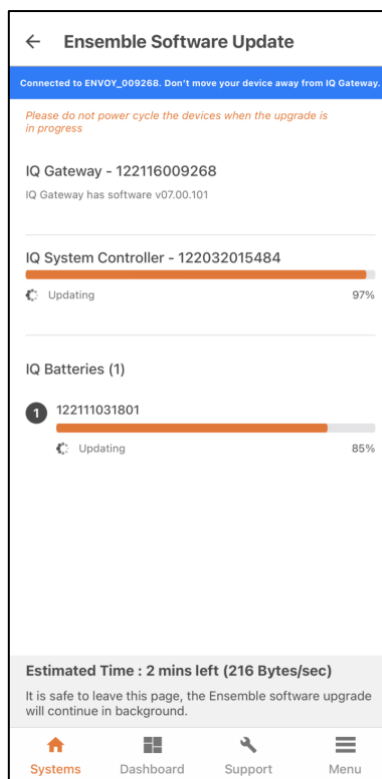
Important Note: If you had forgotten to disable the manual override on IQ System Controller before commissioning, Installer App will show a pop-up to disable the manual override before moving forward.

N. You will note that the IQ System Controller software update will be in progress only if the update is required for the system (See Figure 2). If the update is in progress, wait for it to complete.

- N.1. Once the IQ System Controller software update is complete, an “NEXT” button will appear at the bottom of the Ensemble Software Update screen (Figure 3) Since the IQ Battery units have not been fully updated. We recommend this step be skipped for update will take 6-12 hours. **The IQ Battery software update will commence after functional testing has completed and the commissioning process is finished.**

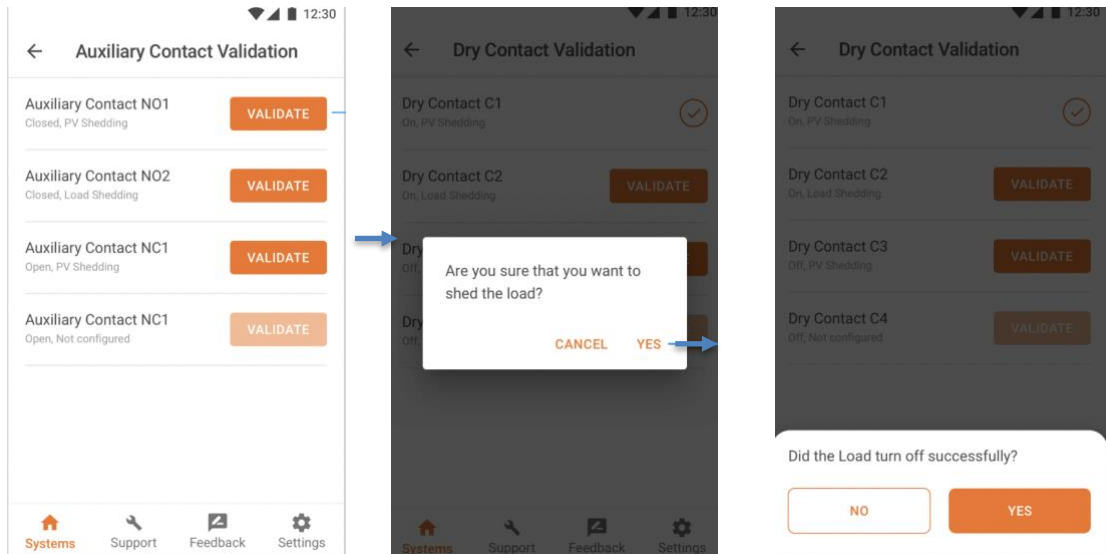


Note: 4. You can now get real-time status of storage device software update. The Enphase Installer app will display the speed of update and accurate intermittent device status



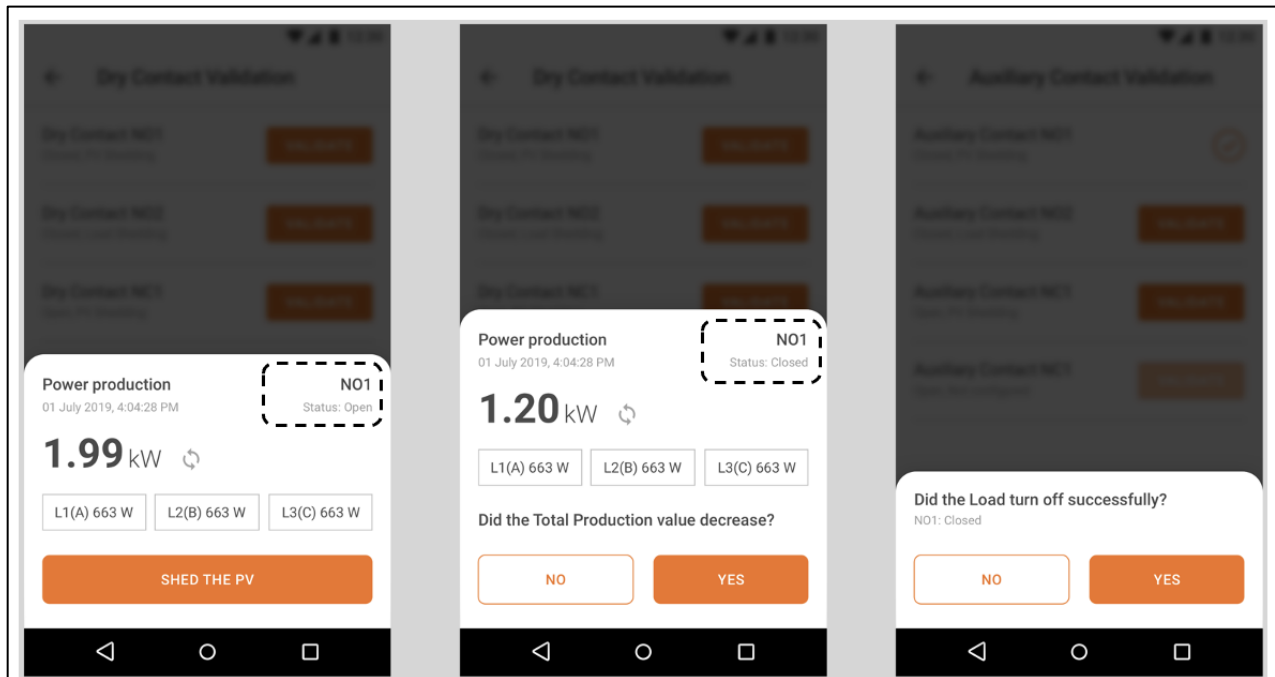
O. Aux contact and functional validation

O.1. **(Only if you have configured Load control)** You can validate the Auxiliary contact configured earlier using the 'Auxiliary Contact Validate' option under Validation step. Select 'Validate' for each of the auxiliary contact and confirm that the load or the PV was shed by the IQ Gateway.



O.2. You can start functional validation under Validation step (step 6). This will guide you through testing of your client's IQ Battery system to make sure it behaves as expected during grid transition events.

Note: You can see auxiliary contact state during auxiliary contact validation to provide better assistance during commissioning



Functional Validation Instructions

- Complete all steps in the order listed.
- Mark steps completed in the Document Results section of each step.
- If any of the steps cannot be completed, record what occurred in the Observations section. See the ***Enphase Storage System Troubleshooting Guide*** for further information.
- At the bottom of each page, initial that all steps have been completed.

Date & Time Functional Validation began: _____

Battery Mode in Self-Consumption:

N. After functional testing, battery mode will be changed to full backup automatically by the Installer App to bring the state of charge to 100%

On-grid functional testing:

O. Consumption (load monitoring) test:

O.1. Ensure Enphase Storage System is operating in an on-grid state. Confirm this by measuring voltage between the line and load sides of IQ System Controller smart switch microgrid interconnect device. If on grid, voltage will be 0V from L1 to L1. If off-grid, voltage will be 120V from L1 to L1.



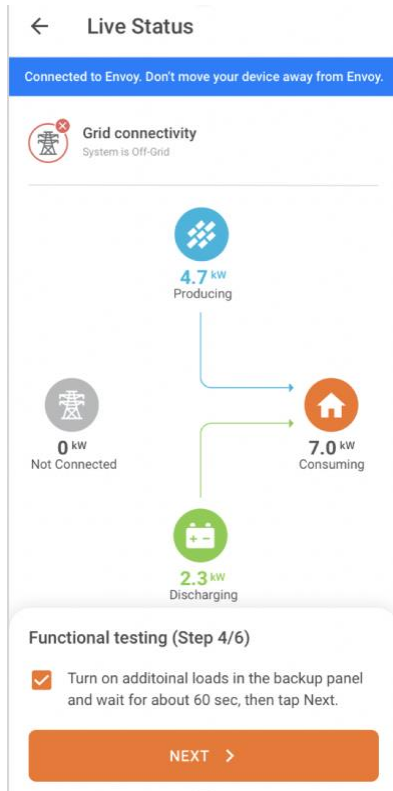
- O.2. Enphase Installer App and Enphase Installer Portal **Live Status** feature a button that allows the Enphase Storage System to transition between on-grid and off-grid modes.
- O.3. With backup loads operating, turn off power from the grid using this button in Enphase Installer App or Enphase cloud.
- O.4. Wait approximately 45 seconds for the microgrid interconnect device (MID) to open. You will hear a click when this occurs.



- O.5. Confirm that the microgrid is operational and that loads did not drop. Do this by observing loads and testing for voltage at the backup panel.
 - Check that the **Live Status** interface in Enphase Installer App shows off-grid.
 - Ensure the loads stays powered on for two minutes or more.



O.6. Turn ON additional loads in the backup panel and wait for 60 seconds.



O.7. Document the results. After grid turn off, did loads remain powered up for five minutes, and did Enphase Installer App display off-grid in the **Live Status** interface?

- Yes
- No

minutes

Observations:

P. Off-grid to on-grid transition using Enphase Installer App or Enphase Installer Portal:

P.1. With the system still operating in off-grid mode and loads still operating, restore power to the grid using the button in Enphase Installer App or Enphase app **Live Status**.



- P.2. Wait for 60 to 330 seconds for the microinverters to restart (depending on grid profile).
- P.3. You should hear a click of the microgrid interconnect device relay closing inside IQ System Controller.
- P.4. Check and confirm that the system is now operating on-grid. Observe this in the Enphase Installer App **Live Status** interface.
- P.5. Document the results. Did the microgrid interconnect device close, and was on-grid status observed in Enphase Installer App? Did any loads drop? (If so, record in Observations)
 - Yes
 - No

minutes

Observations:

P.6.

P.7. Check and confirm that the system is now operating on-grid. Observe this in the Enphase Installer App **Live Status** interface.



P.8. Once the functional validation is complete, if the IQ Batteries and IQ System Controller require a firmware update, the IQ Gateway will update them automatically.

P.9. The battery mode of the system will also be set to Full Back-up by the Enphase Installer App.

P.10. Document the results. Did the microgrid Interconnect device close, and was on-grid status observed in Enphase Installer App?

- Yes
- No

minutes

Observations:

Q. After batteries charge to 100% and remain there for one hour, the installer, or homeowner can set the full-time operating battery mode (Self-Consumption, Savings, or Full-Backup). This can be changed in the settings of Enphase Installer Portal, or Enphase app.

R. Enphase Installer App step 8 (Post commissioning step), **Generate a Summary Report:**

- R.1. You can share this report using email, text or airdrop. It contains details of each provisioned device and the commissioned status of the system.

- R.2.A 'Homeowner Walk-through' pop-up will be shown after summary report is complete. Ensure all the topics mentioned in the pop-up are discussed with homeowner before leaving the site.

NOTE! Before leaving the site, ensure all breakers feeding the IQ Battery and PV system are closed (if permitted by utility Permission to Operate).

- S. With the previous steps complete, it is important to set expectations about how many loads a homeowner should use during an outage. Some installation companies ask their homeowners to live in backup mode for the first couple days after the system is installed so they understand how to modify their behavior during an outage. If they drain or overpower the batteries, they can turn the main breaker back on.

Different states of IQ Batteries

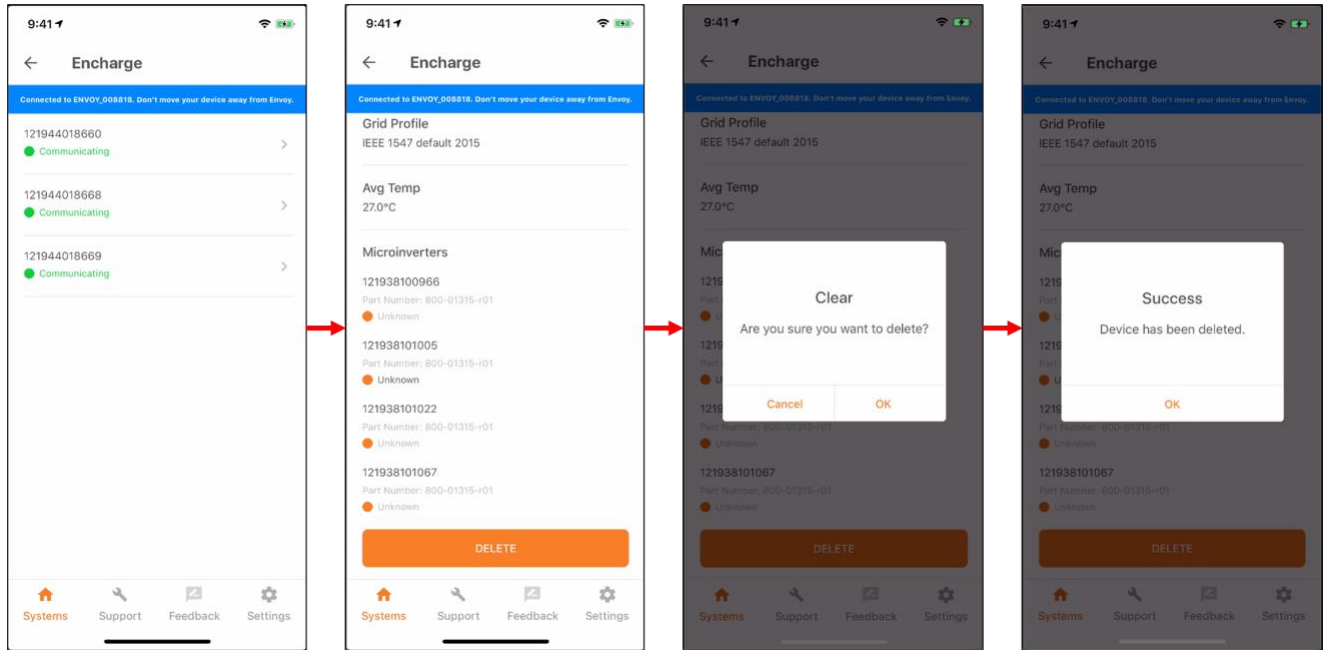
| State | Description |
|---|--|
| Uncommissioned | |
| Flashing blue | After booting up, when IQ Battery has paired with an IQ IQ Gateway but has not passed the commissioning three-way handshake to confirm that it is an Enphase device. |
| Flashing green | After passing the three-way handshake with the IQ IQ Gateway. |
| After commissioning (normal operation)* | |
| Rapidly flashing yellow | Starting up / Establishing communications |
| Red flashes in sequences of 2 | Error. |
| Solid yellow | Not operating due to high temperature. |
| Solid blue or green | Idle. Color transitions from blue to green as state of charge increases. You can check Enphase cloud for charge status. |
| Slowly flashing blue | Discharging |
| Slowly flashing green | Charging |
| Slowly flashing yellow | Sleep mode activated |
| Off | Not operating. |

* IQ Batteries have a one-hour orphan timer. If the IQ IQ Gateway stops communicating with them, after one hour the IQ Batteries return to an "uncommissioned" state.

Decommissioning an IQ Battery/ IQ System Controller While Replacing it On Site

When replacing an IQ Battery/ IQ System Controller on site, the old IQ Battery must be deleted using Enphase Installer App.

1. Connect to the IQ Gateway using AP mode.
2. Go to Step 2: **Devices and Array** and select and delete the devices as shown in the following images. The device will be removed from Enphase cloud and will be synced to Enphase Installer app after IQ Gateway reports the deletion.

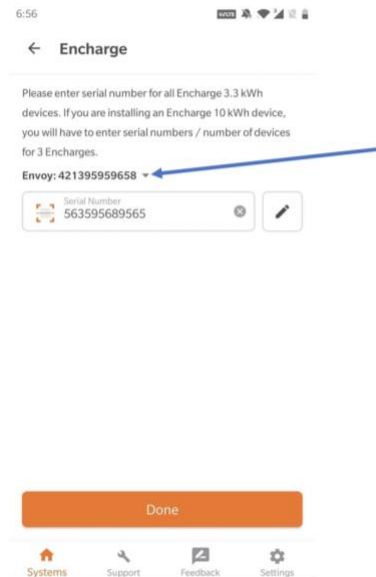


3. After IQ Battery has been retired, Turn DC switch OFF
4. Add and provision the new devices as documented steps E and J

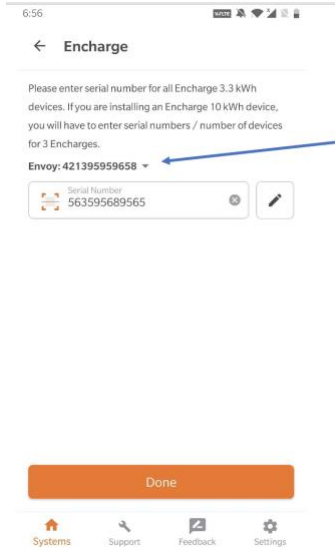
Provisioning Enphase Storage System with Multiple IQ Gateways

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 IQ System Controller). All the Enphase Storage System devices (IQ Battery, IQ System Controller and microinverters) must be connected to the microgrid IQ Gateway.

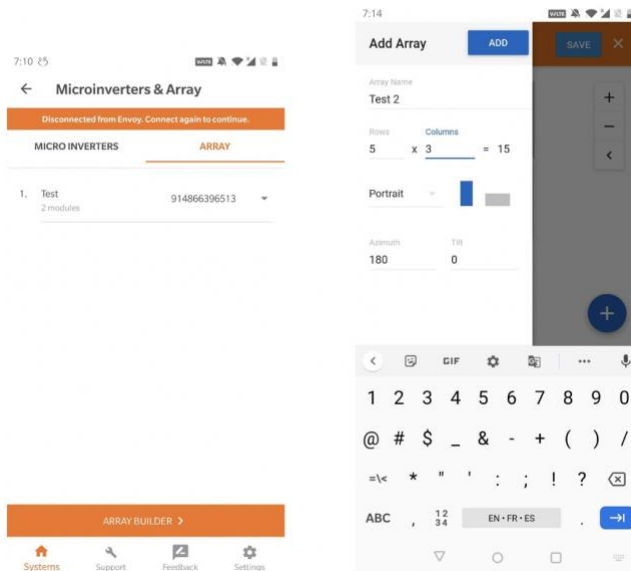
1. Make sure you have scanned the serial numbers of all IQ Gateways (two or more)
2. Assign the IQ Battery(s) and IQ System Controller to the microgrid IQ Gateway as follows:
 - a. Manually scan the serial numbers of Enphase Storage System components into Enphase Installer App.
 - b. After scanning the IQ Battery serial number, tap on IQ Gateway drop down and select the microgrid IQ Gateway



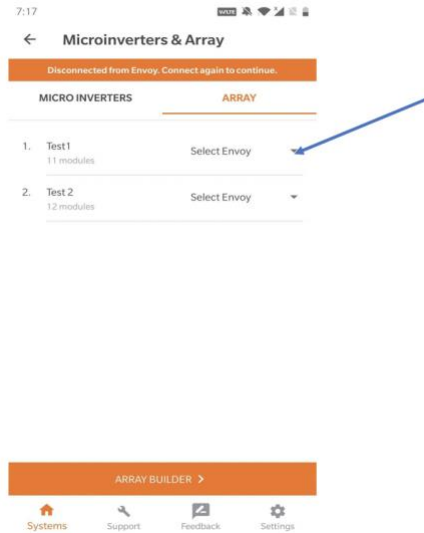
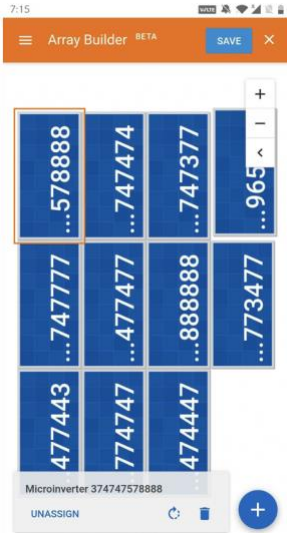
3. While adding IQ System Controller, select the backup type for the system. Select either:
 - a. Partial-home backup (Consumption CT placed between IQ System Controller and the main panel)
 - b. Partial-home backup (Consumption CT placed between the utility service and the main breaker)
 - c. Whole-home backup
4. After scanning the IQ System Controller serial number, tap on the IQ Gateway drop down and select the microgrid IQ Gateway.



5. Steps to assign your Microinverters to the microgrid 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 on **Microinverters and Array** and go to the **Array** tab.
 - i. Tap on **Array Builder**.
 - ii. Make sure you create a separate array and assign microinverters that need to be included in the microgrid.
 - iii. Save and exit the array builder and assign an IQ Gateway to the array.



Enphase Storage System Commissioning: Installer App



Known Issues and Limitations

Note: These are temporary limitations. Enphase is taking action to fix these with software upgrades.

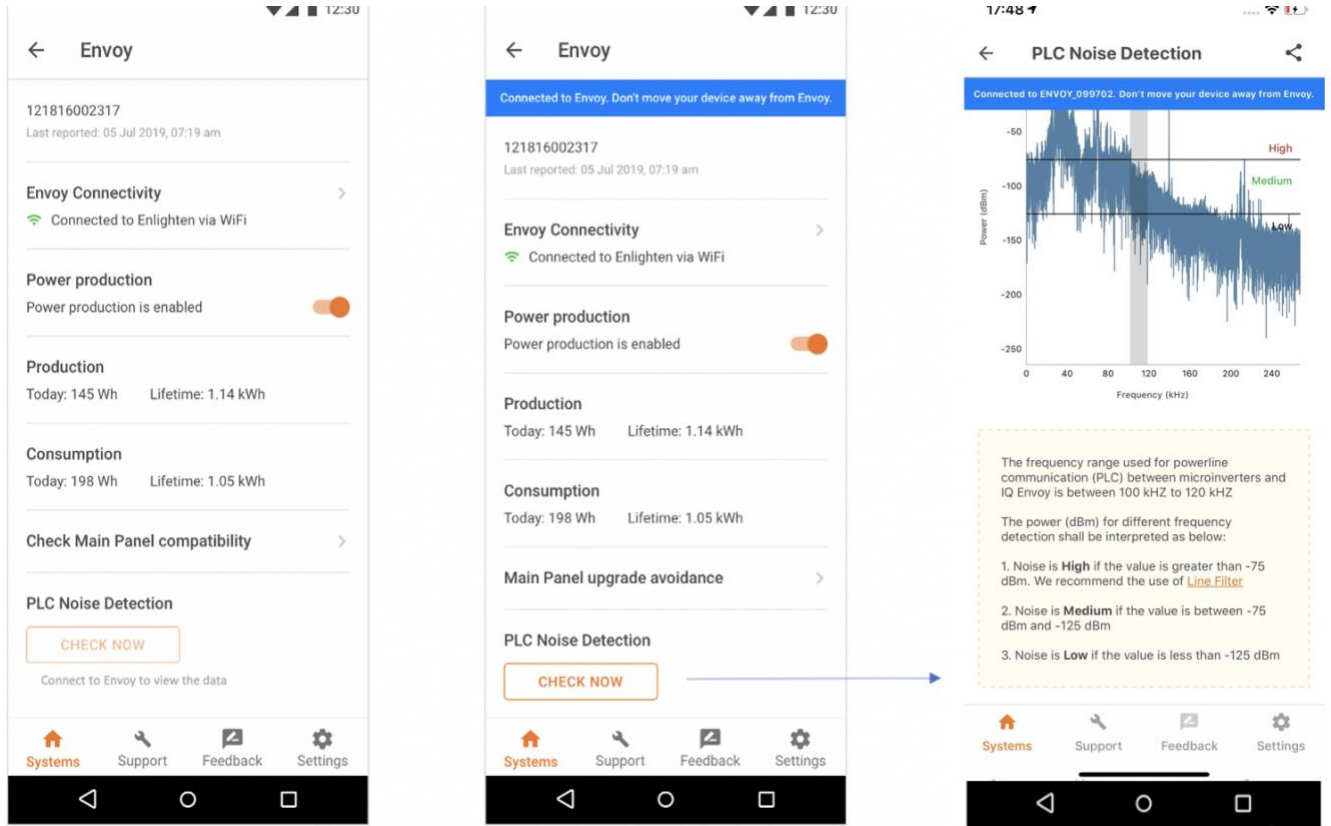
| # | Issue | Workaround/Fix |
|---|---|--|
| 1 | On sites with M-series microinverters transition from on grid to off grid may take a long time. This issue is only seen when the IQ Batteries are at a very high SoC and there is very little or no load on the system. | If the system not going on-grid simply ask the homeowner to turn on a few loads. The system will go back to the grid once it discharges to serve loads and reduces the battery SoC. Enphase is working to fix this limitation in the next software release. |
| 2 | M-series microinverter firmware upgrade for cellular only sites cannot be triggered by installer | Call Enphase customer support to trigger the M series microinverter firmware upgrade for these sites |
| 3 | M-series microinverter firmware upgrade for multiple IQ Gateway s on the same site cannot be triggered by installer | Call Enphase customer support to trigger the M series microinverter firmware upgrade for these sites |

Note : Please refer to Section-1 of latest [Enphase Storage Best Practices document](#) to know more about known field issues and Enphase recommended solutions

Features for troubleshooting the system

1. **Noise detection over PLC** -You can now monitor the quality of Power-line communication between IQ Gateway and the microinverters. The PLC Noise detection provides real time data of the noise detected when communicating with IQ Gateway.

Enphase Storage System Commissioning: Installer App



Note : Please refer to Section-3 of latest [Enphase Storage Best Practices document](#) to know more about Troubleshooting steps in Enphase Storage Systems