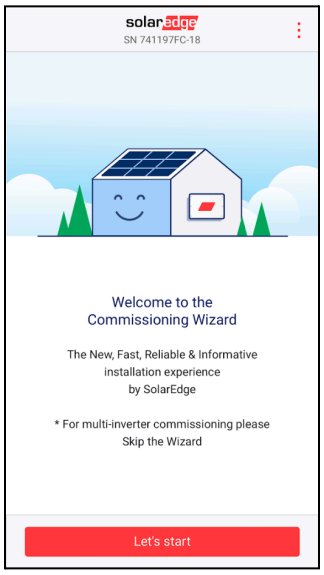
SolarEdge Battery Backup with Home Battery: Commissioning (INS-SOP-0254-03)

Overview

Link to CURRENT version of this SOP

This SOP describes the SolarEdge Home Hub Inverter and SolarEdge Backup Interface (BUI) with Home Battery Commissioning. The steps for commissioning multiple inverters are included.

This product requires certification from the equipment manufacturer.



Legend

General	
	Ensure all Arc Flash PPE is worn during the shown portion of the Installation SOP.
	This symbol indicates a safety-specific call out
	Photo or screenshot required for the Foreperson Installation Checklist (FIC).

General	
	Pro Tip to help the installation procedure.
	Indicates to Tap on a screen or device within an application or website.

Safety Hazards		
 Health Hazard	 Explosive Hazard	 Environmental Hazard
 Acutely Toxic	 Oxidizing Hazard	 Flammable
 Pressurized Gas Hazard	 Corrosive Hazard	 Eye irritant, skin irritant, or both

See the Safety Data Sheet in the Related Documents list for additional information relating to OSHA Hazard Pictograms.

Tools & Materials Required

Estimated Time:	45-90 minutes
Tools	• Smart-phone equipped with the most up to date SolarEdge SetApp
Resources	VIP Hotline 510-255-8503

Step 1: Verify CTs and Phases

IMPORTANT: Prior to commissioning, technicians shall verify the following information and correct any issues that are identified.

- Verify that phases are correct throughout the entire electrical wiring system (from the grid power entrance point to the last device (Inverter, backup load panel, etc.)
    - Phase Identification - Work Instruction - INS-WRK-0017

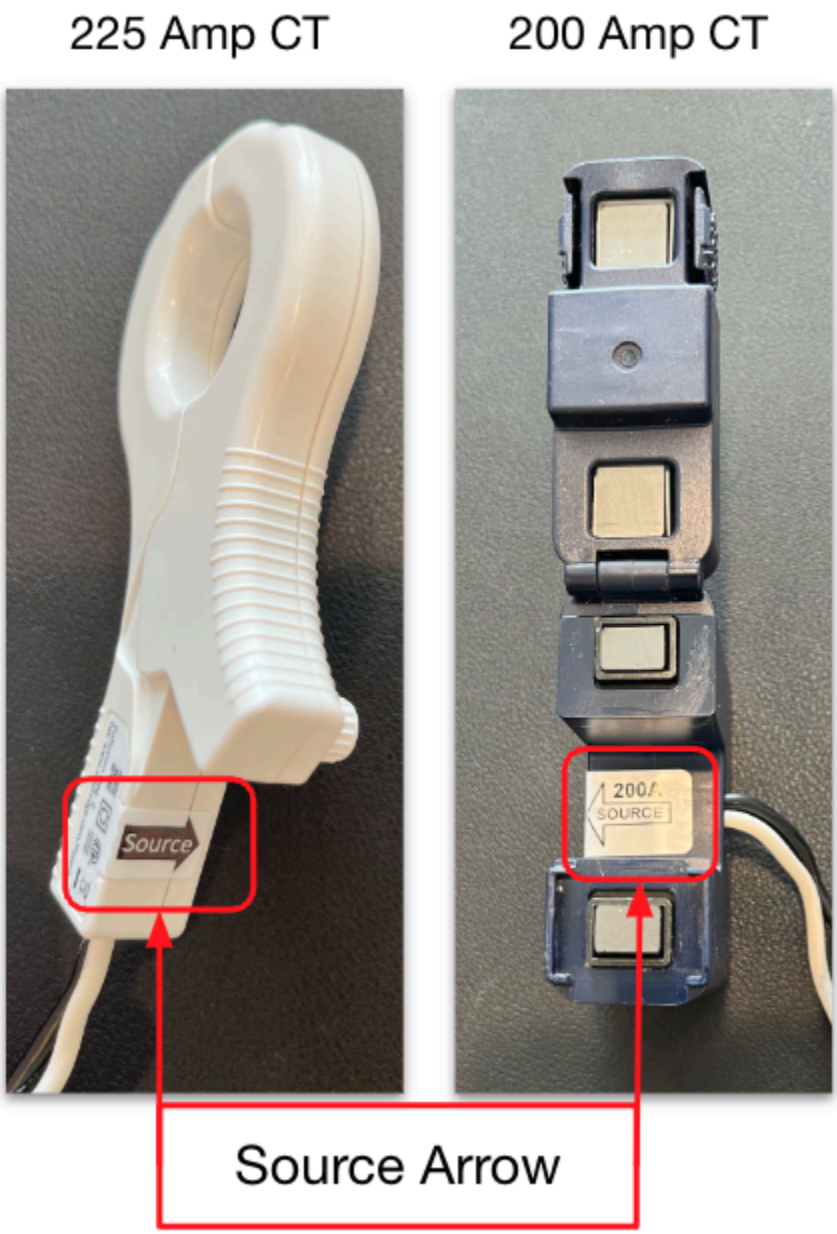
- Verify Amperage of CT's installed (200 Amps or 225 Amps)

- Verify CT's have been placed in the correct location to capture all loads (including solar) in the electrical system

- Verify CT's are installed on their corresponding phase

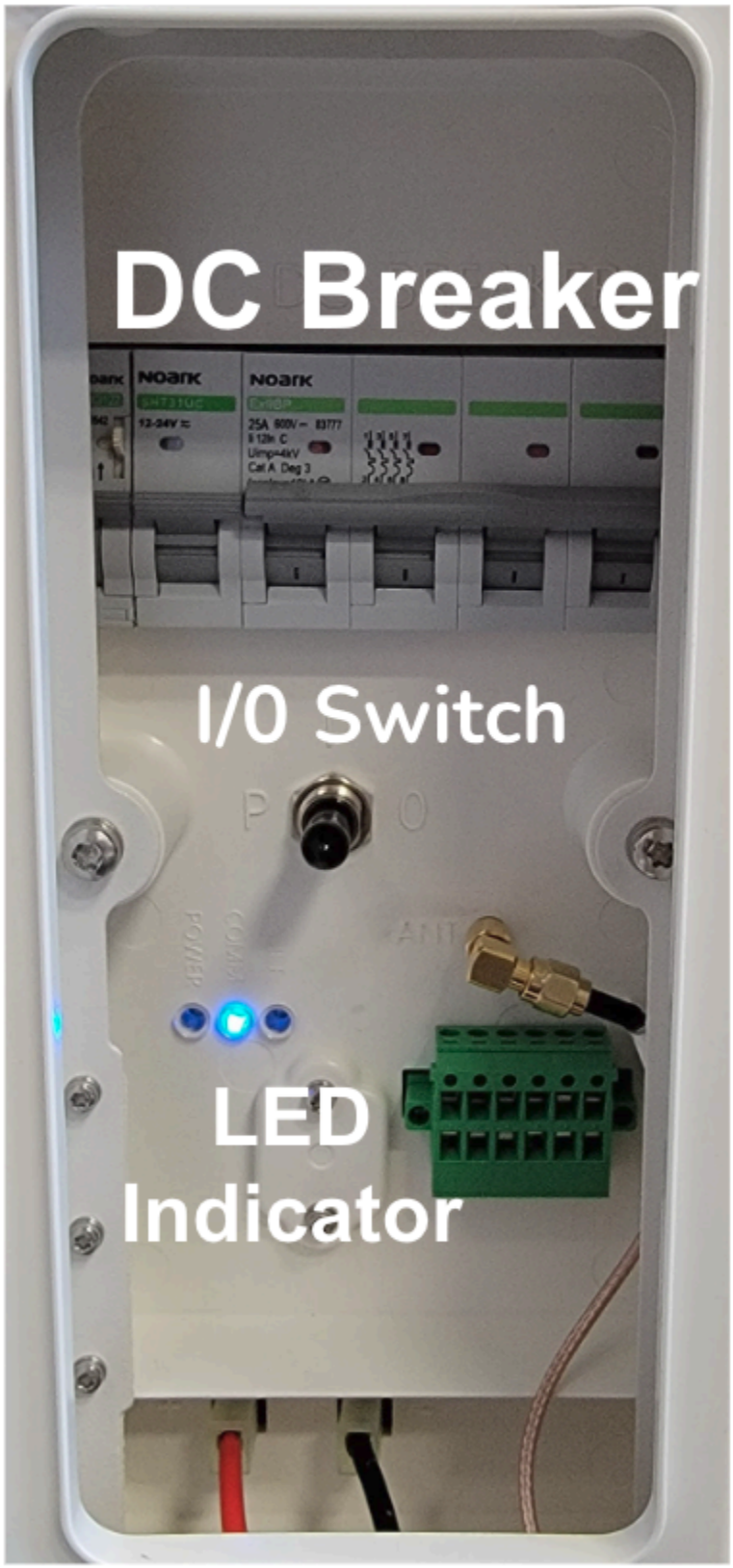
- Verify CT's are installed with the arrow pointing toward the source

- Refer to the CTs Current Transformers - Work Instruction - INS-WRK-0010 for additional Current Transformer information.



Step 2: Activation and Firmware Update

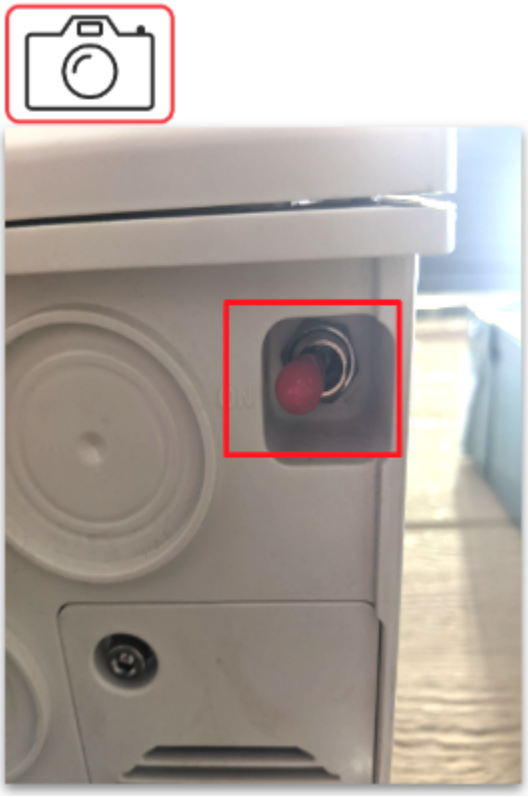
1. Power on the battery prior to commissioning.


DC Breaker
I/0 Switch
LED
Indicator

	Pro Tip: Home Battery might display fault light on during initial start up. Hold I/0 Switch to the left for 3 seconds and release to clear fault.

2. Power **ON** all devices prior to starting activation and firmware updates

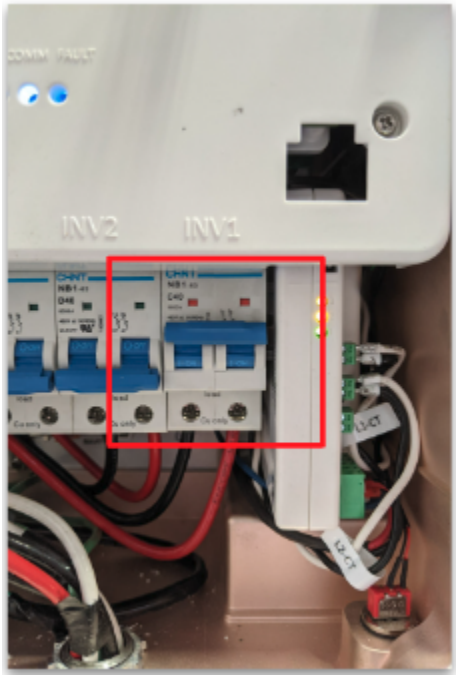
3. Turn the BUI **ON** using the toggle switch located on the bottom of the unit.



4. Turn the Manual Control Switch to the **OFF** position.

5. If applicable, switch the Main Breaker to the **ON** Position.

6. Switch **ON** the inverter breaker(s) located In the BUI.

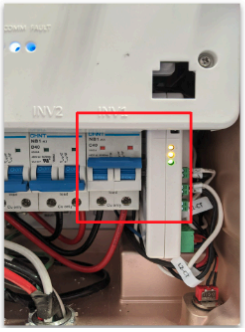


NOTE: Technicians shall be required to install the most recent Inverter and battery firmware updates at the time of installation. The activation of the Inverter and the latest firmware is automatically pushed through SolarEdge SetAPP upon connecting to the Home Hub Inverter for the first time.

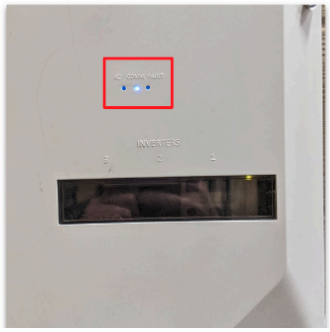
7. Verify the battery, BUI, energy meter inside the BUI, and Inverter are all powered ON.

Home Battery Battery ON

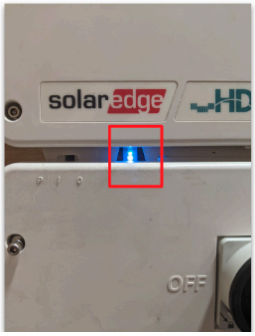
Backup Interface PV breaker ON



Backup Interface ON



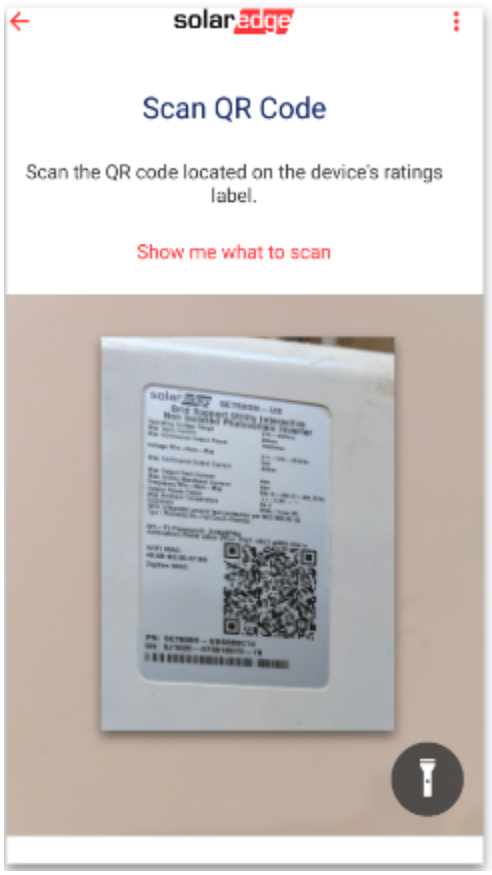
Inverter ON



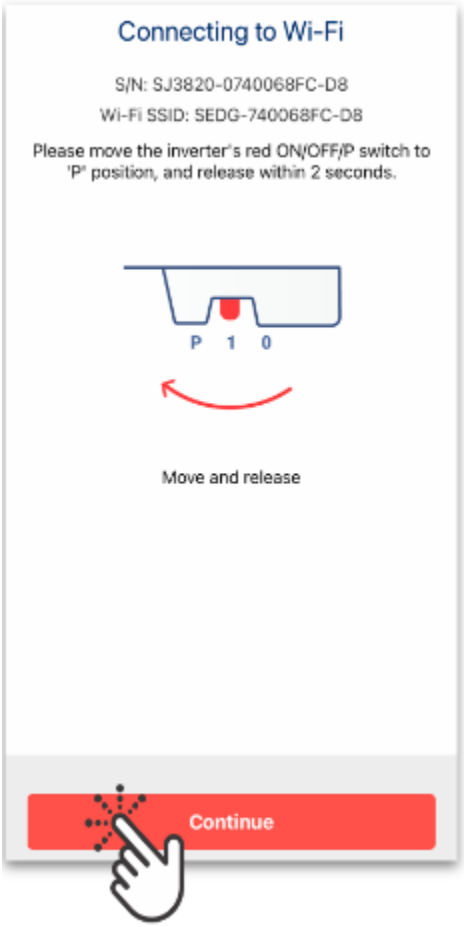
8. Open the SolarEdge SetApp on your mobile device.

SetApp

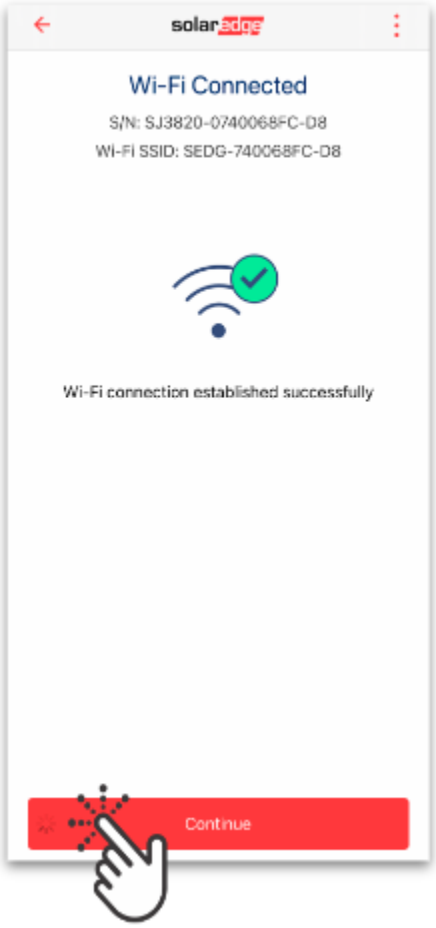
9. Scan the inverters QR located on the side of the unit.



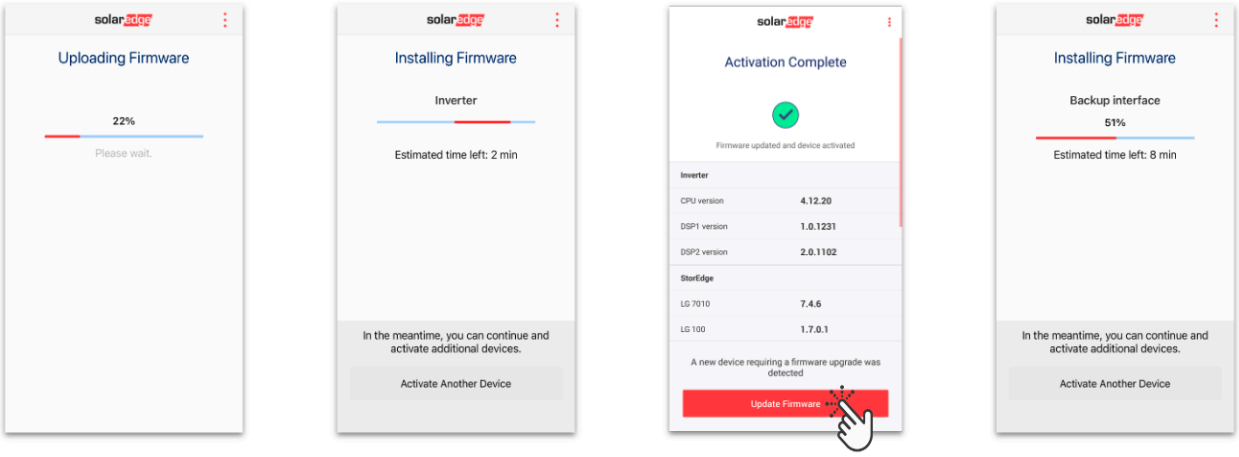
10. Move the inverters P-1-0 switch to P for two seconds and release. Tap **Continue**.



11. Once connected to the inverters WiFi. Tap **Continue**.



12. The following screens will display as the equipment receives the firmware updates. This process may take 20-30 minutes. Tap **Update Firmware** when prompted.



NOTE: The inverter LEDs will cascade from blue to green to red as the equipment is taking an update.

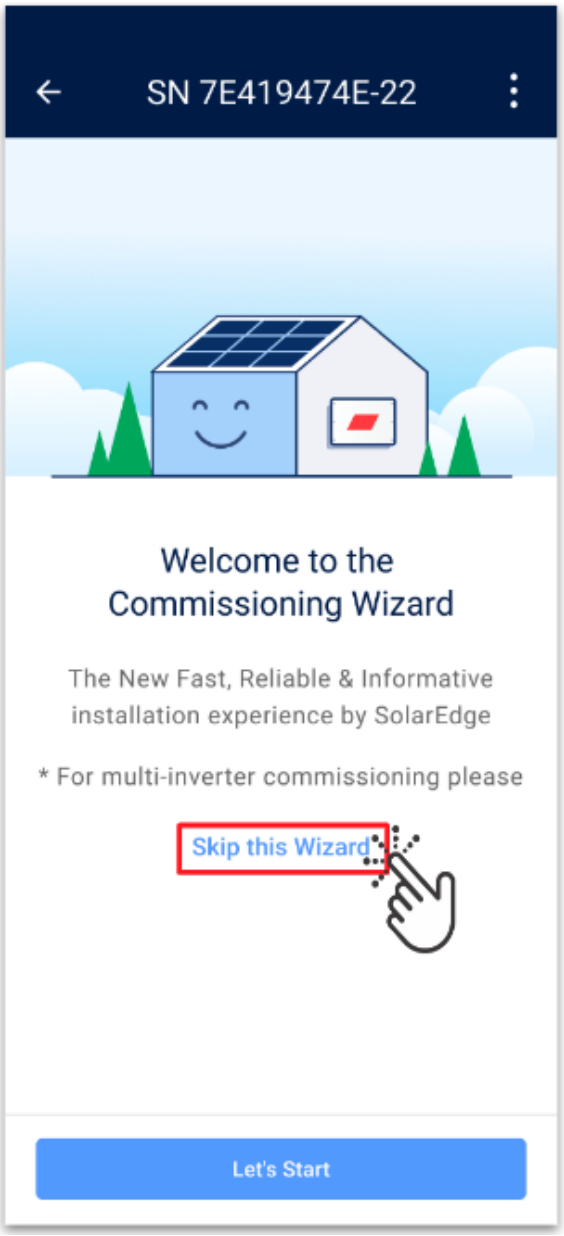
IMPORTANT: All equipment firmware versions shall be updated to the latest available.

13. Confirm all firmware versions are updated.
14. Tap **Start Commissioning**

Skip Setup Wizard

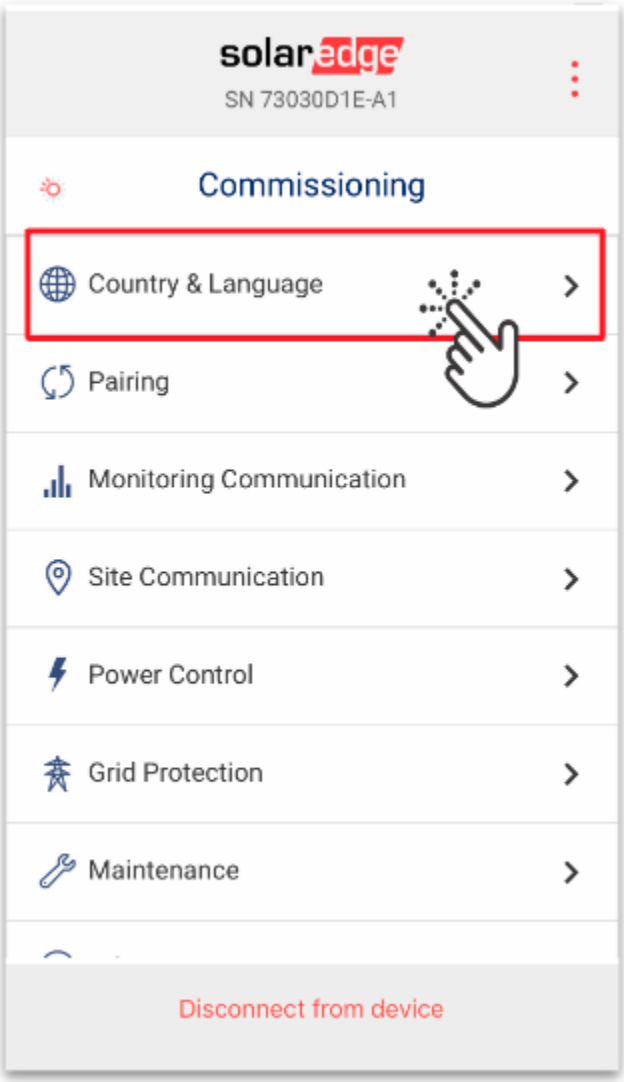
NOTE: This setup wizard has known issues and is not ready for use with multiple inverters. This should be skipped for all SolarEdge inverters.

- Tap **Skip this Wizard** when prompted

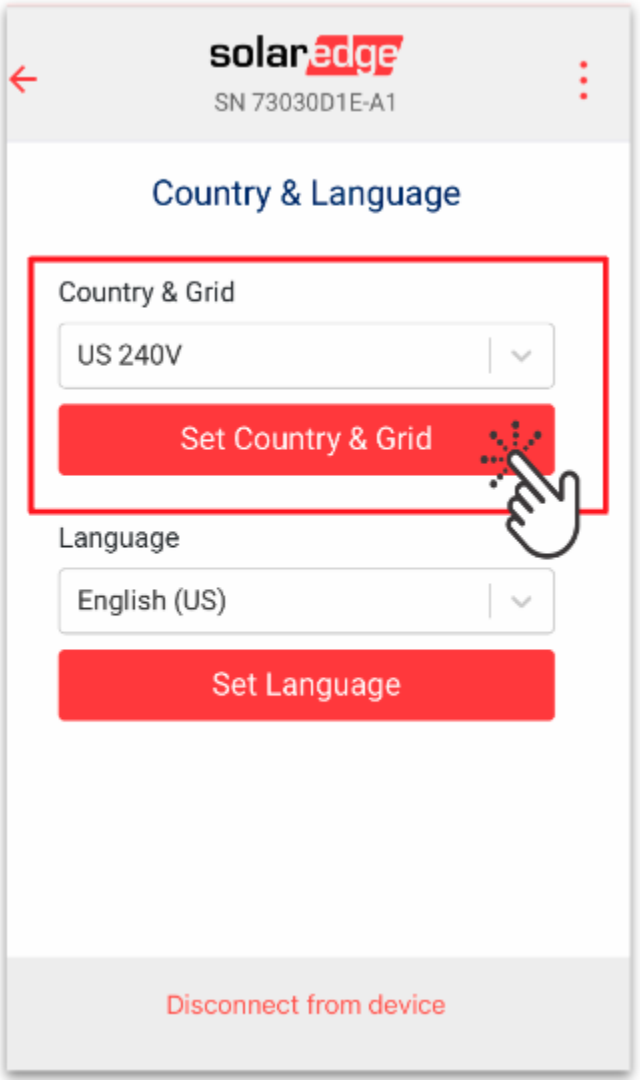


Step 3: Country and Grid Code Setup

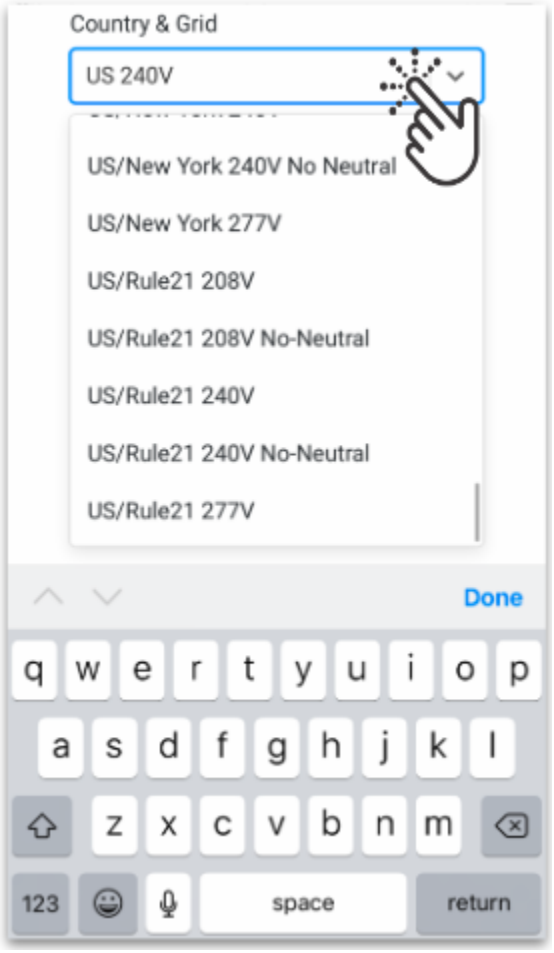
15. From the Commissioning Menu tap **Country & Language**.



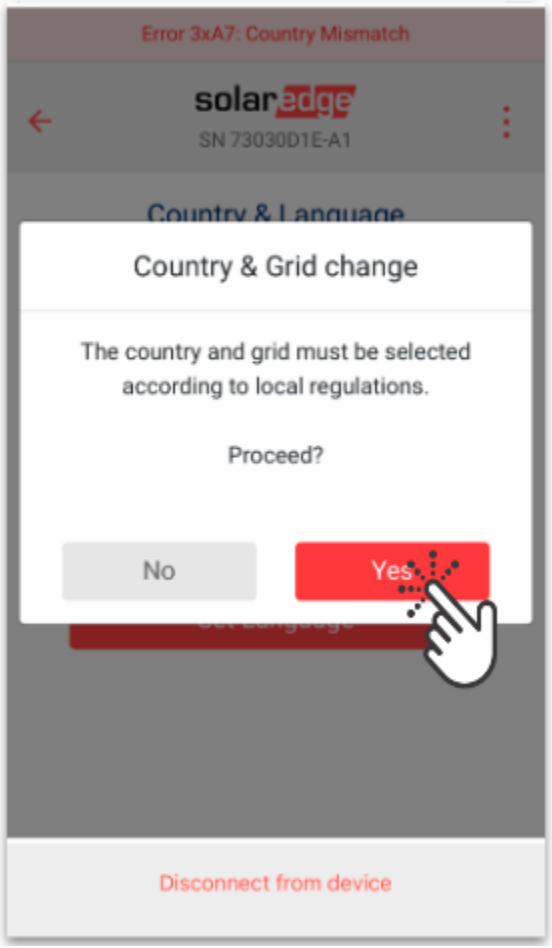
16. Next, tap **Set Country & Grid**



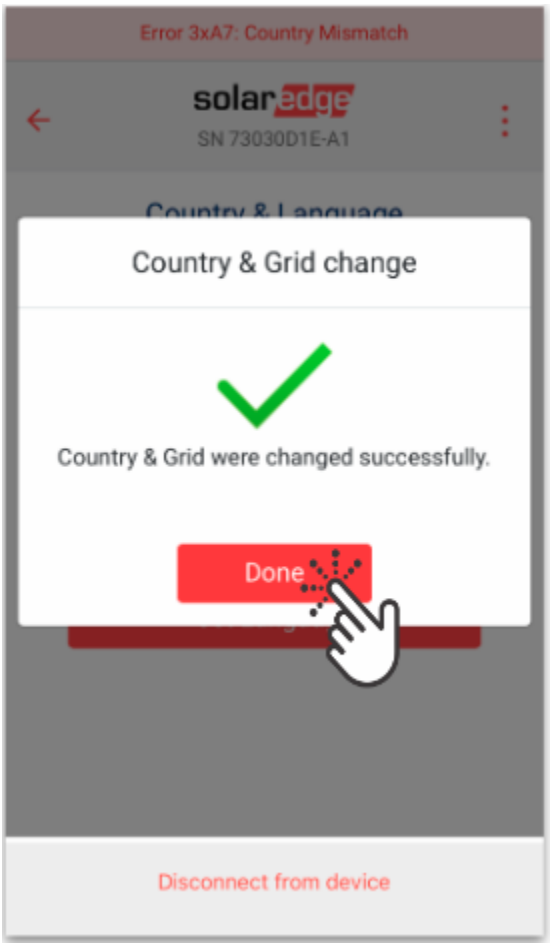
17. Set the country code according to the location of the install.



18. Once selected, tap **Yes**.



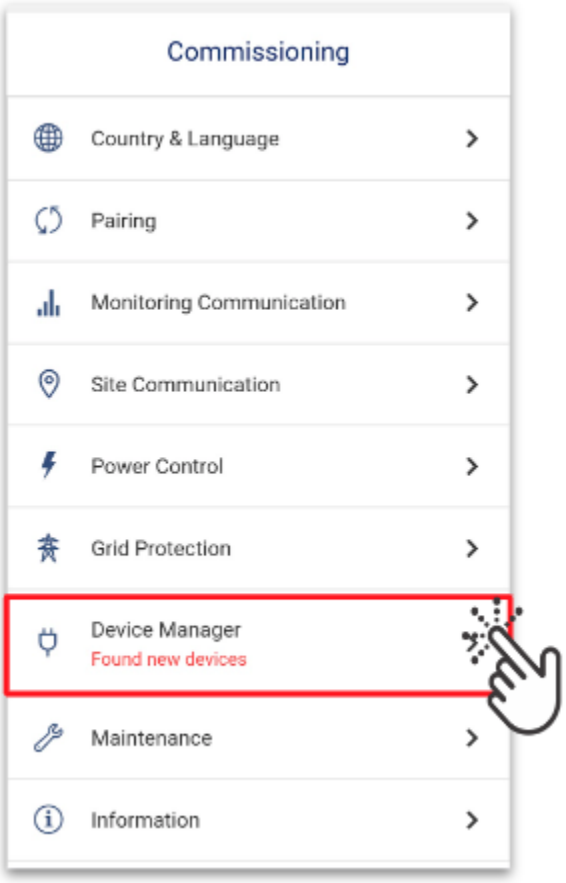
19. Tap **Done** to confirm.



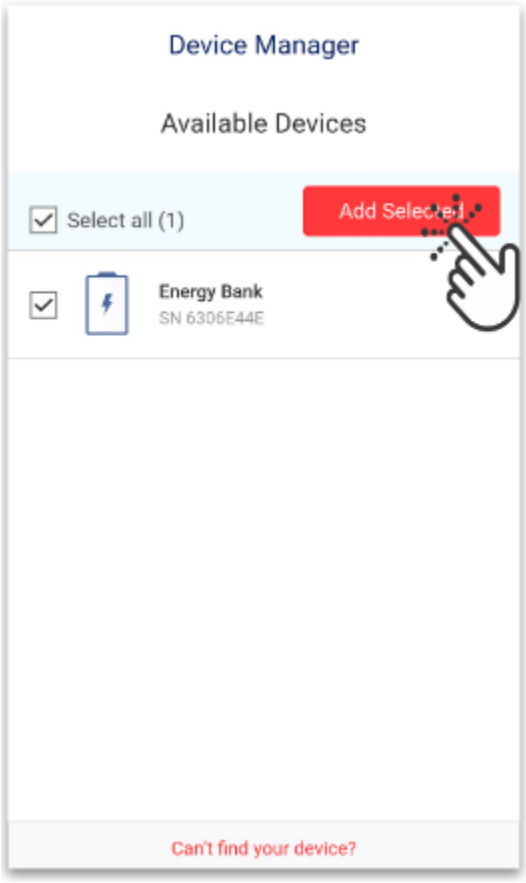
Step 4: Device Manager

NOTE: The leader inverter will update and associate all batteries on site.

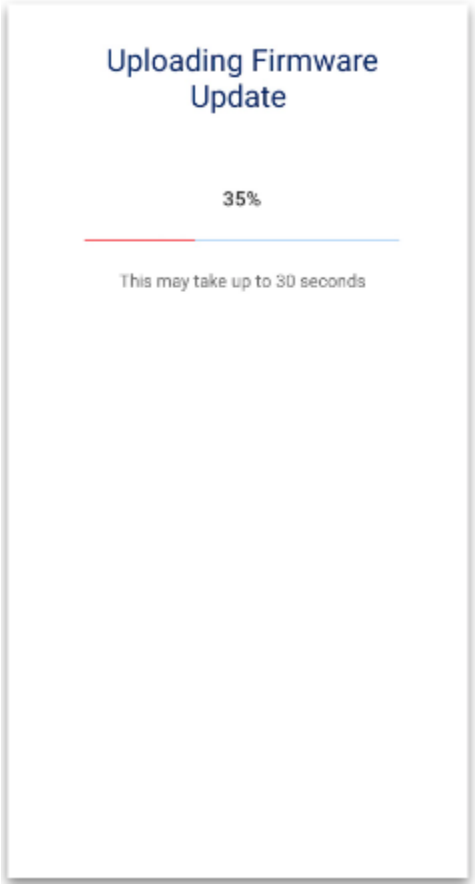
1. From Commissioning Screen, Tap **Device Manager**



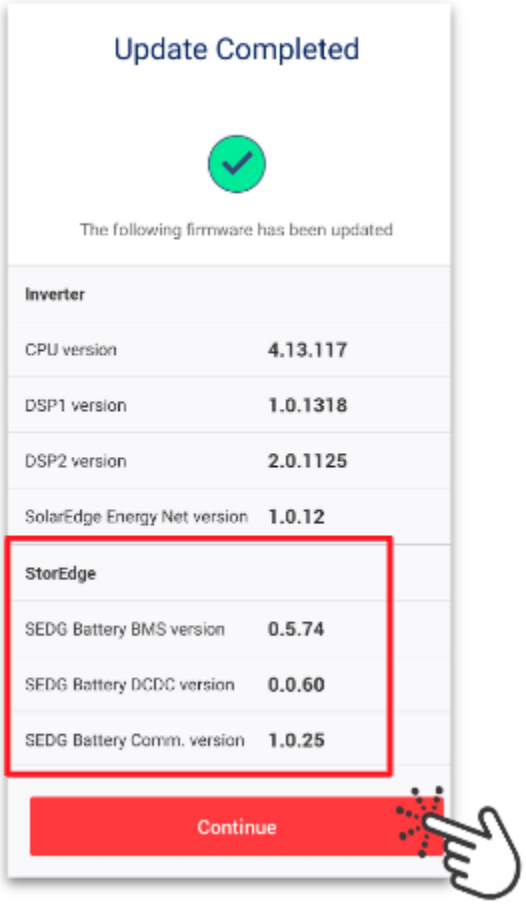
2. Verify all Home Batteries are displayed and selected, Tap **Add Devices**



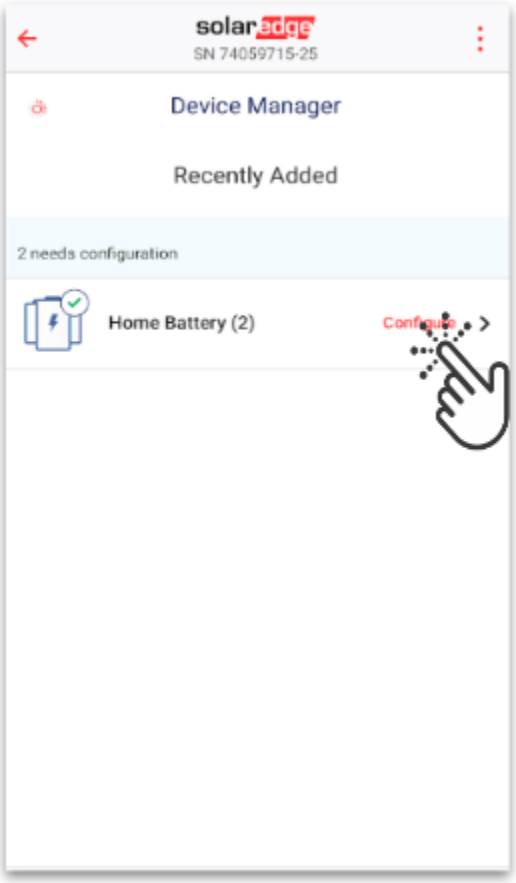
3. Firmware updates will begin automatically.



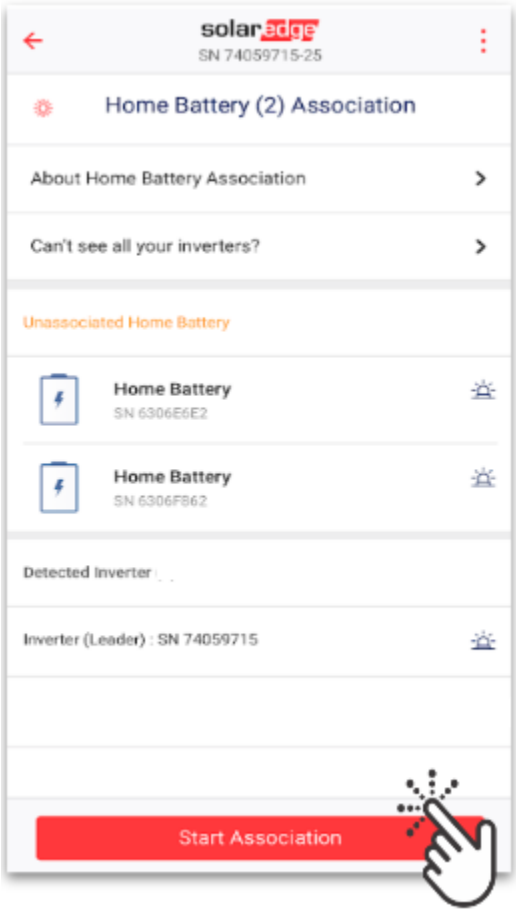
4. Once updating is complete, verify the firmware versions are equal to or higher than the versions displayed below. Tap **Continue**



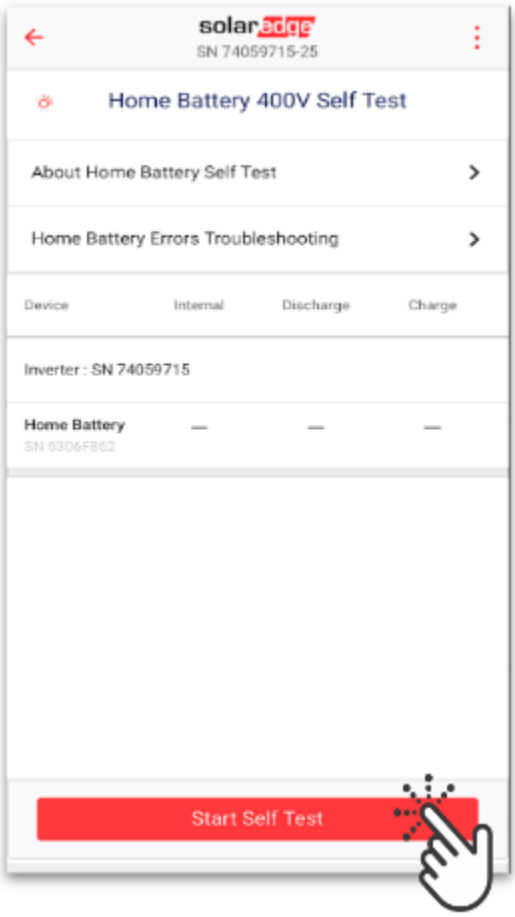
5. Verify DC power is ON for both batteries and inverters. Tap **Configure**



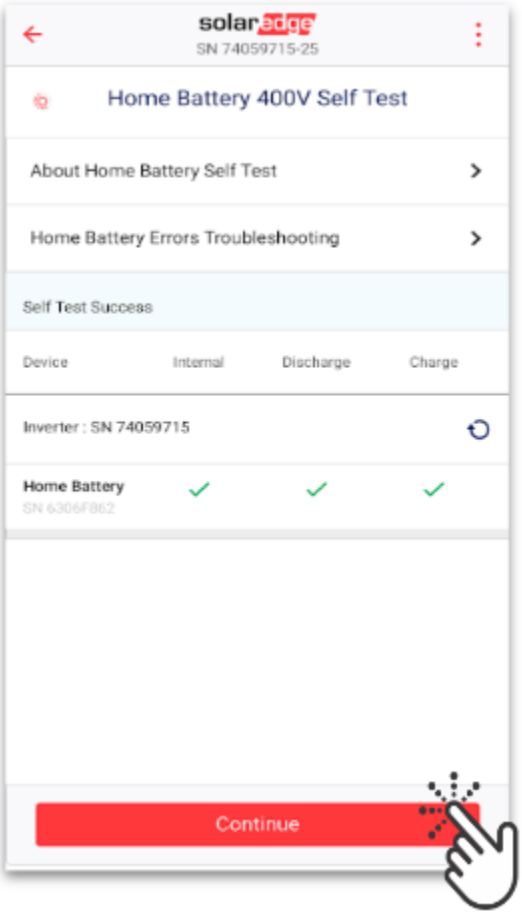
6. Allow batteries to associate with the inverter, this can take several minutes. Tap **Done**



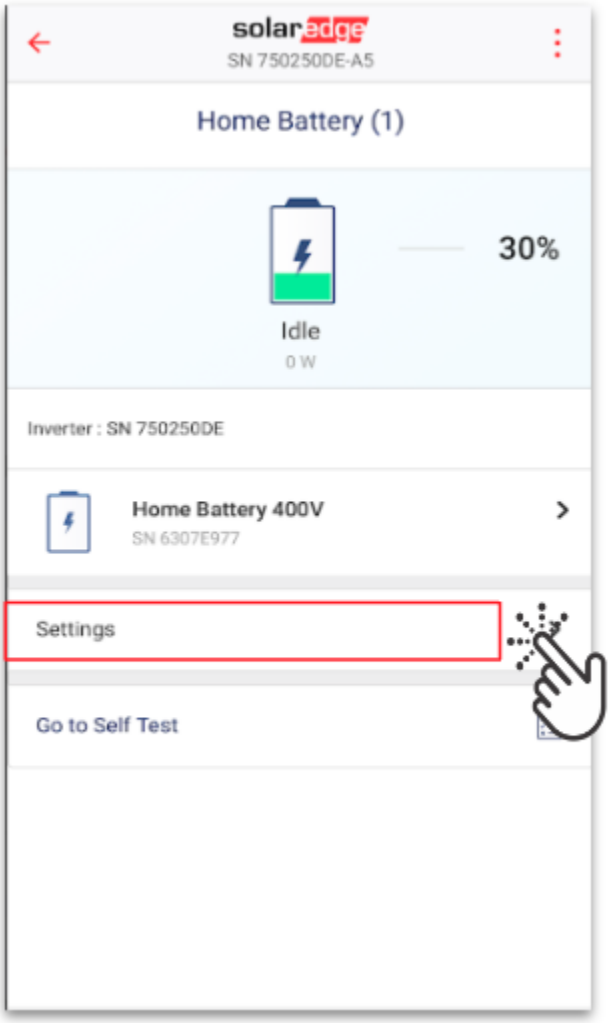
7. Once association is complete, the self test will automatically prompt. Tap **Start Self Test**



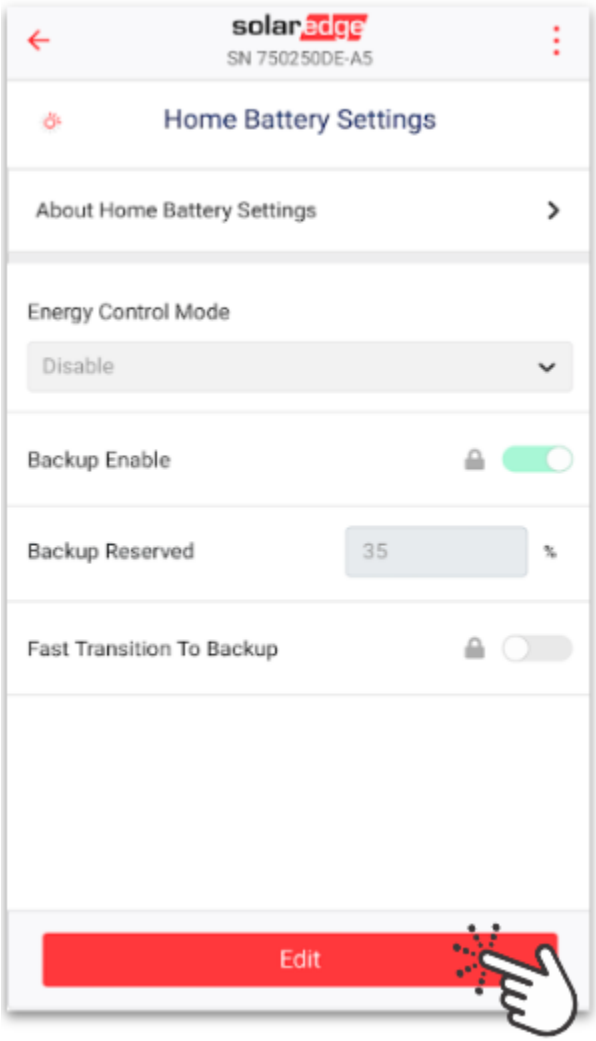
8. Allow the test to run successfully, Tap **Continue.**



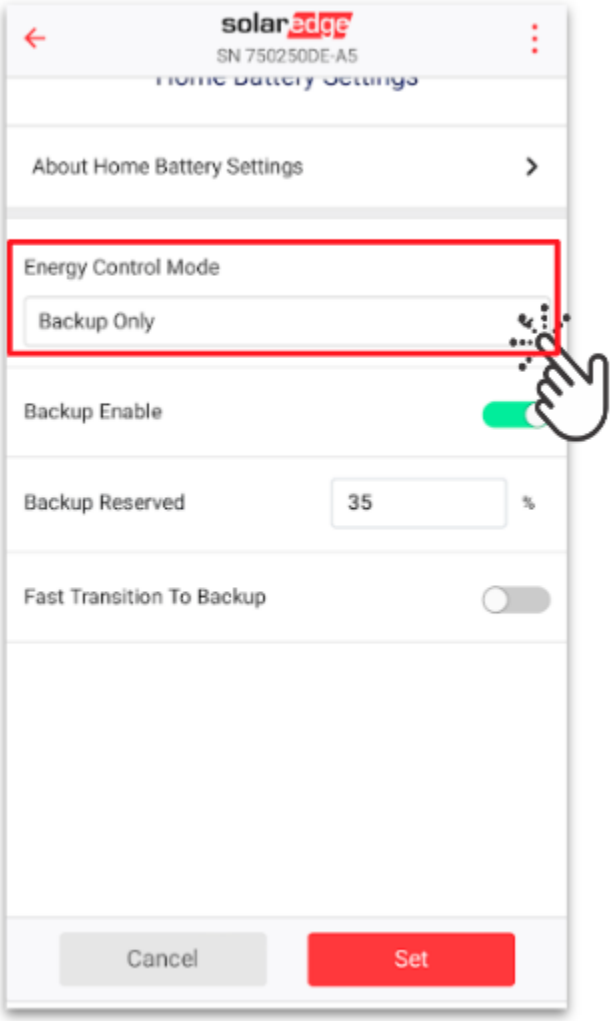
9. Tap **Settings**


solaredge
SN 750250DE-A5
Home Battery (1)
30%
Idle
0 W
Inverter : SN 750250DE
Home Battery 400V
SN 6307E977
Settings
Go to Self Test

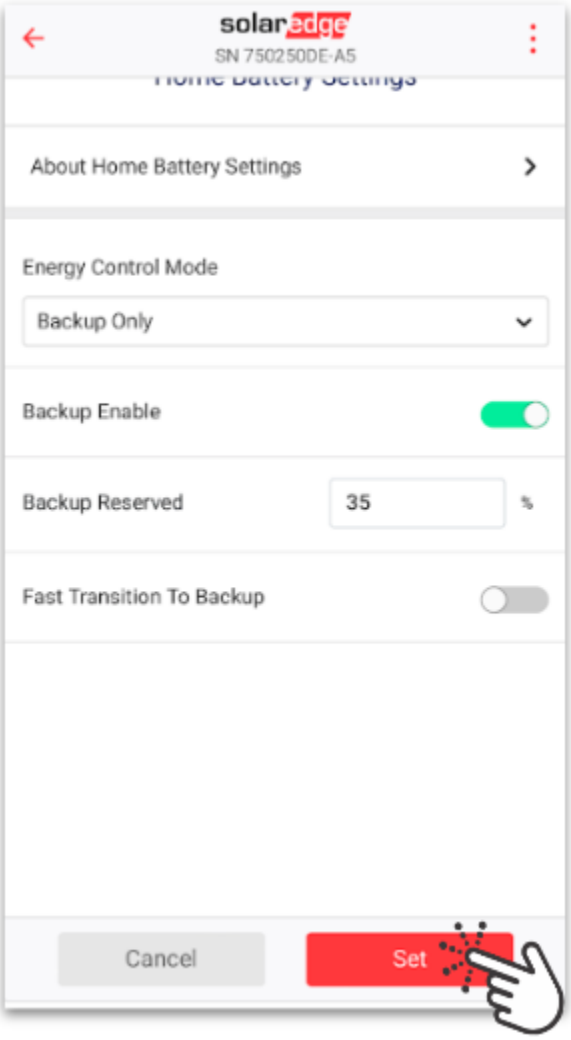
10. Tap **Edit**



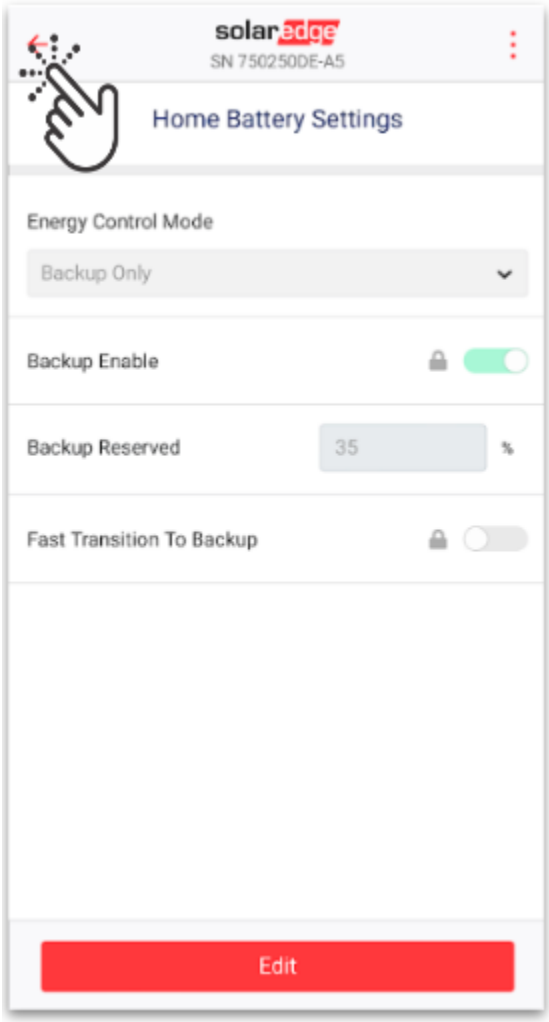
11. Select **Backup Only** Energy Control Mode



12. Verify Backup Reserved is set to **35%,** tap **Set**



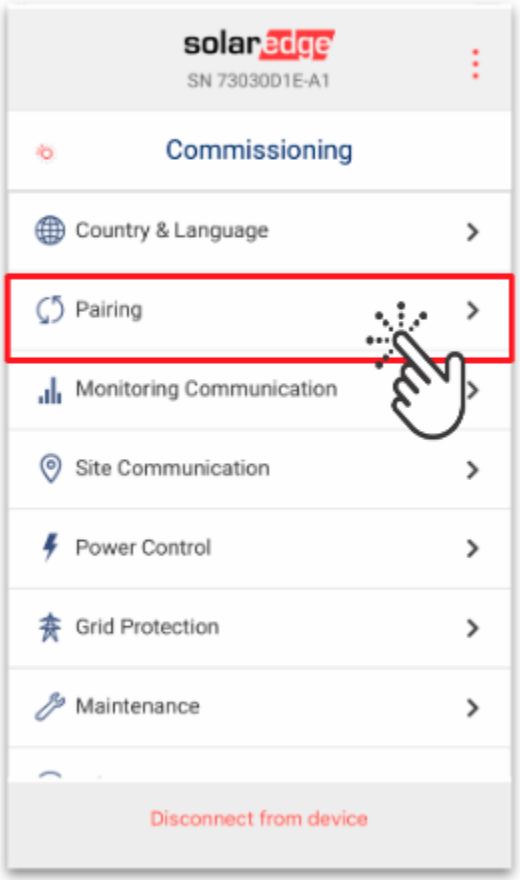
13. Verify the settings are locked and tap **Back**



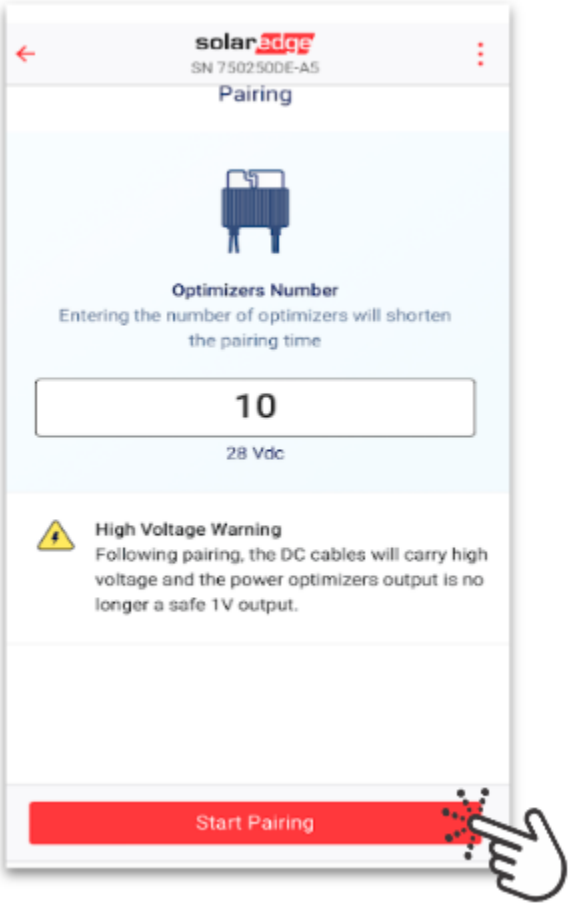
IMPORTANT: Fast Transition To Backup is **NOT ALLOWED** by mainland USA utilities. It is for Installers in **Puerto Rico ONLY.** This mode shall only be activated by technicians installing in Puerto Rico.

Step 5: Pairing

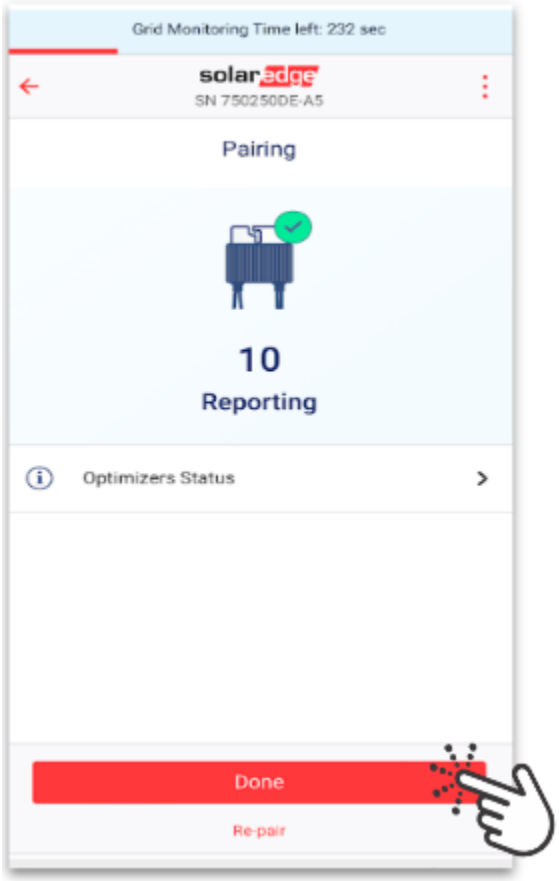
1. From the Commissioning Screen, Tap **Pairing**



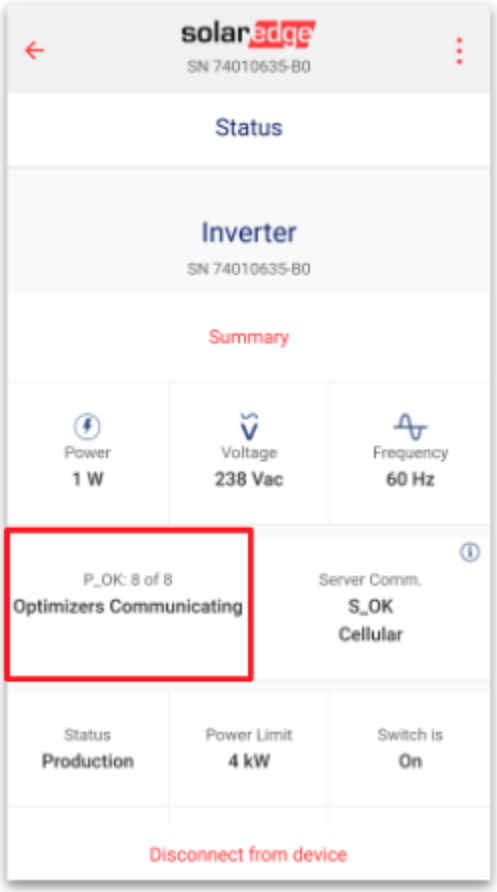
2. Enter the number of optimizers installed**,** Tap **Start Pairing**



3. Allow pairing process to complete and Tap **Done**



4. Return to Status Screen and verify P_OK: X of X Should match the amount of modules installed. This number will slowly count up until all optimizers are recognized.

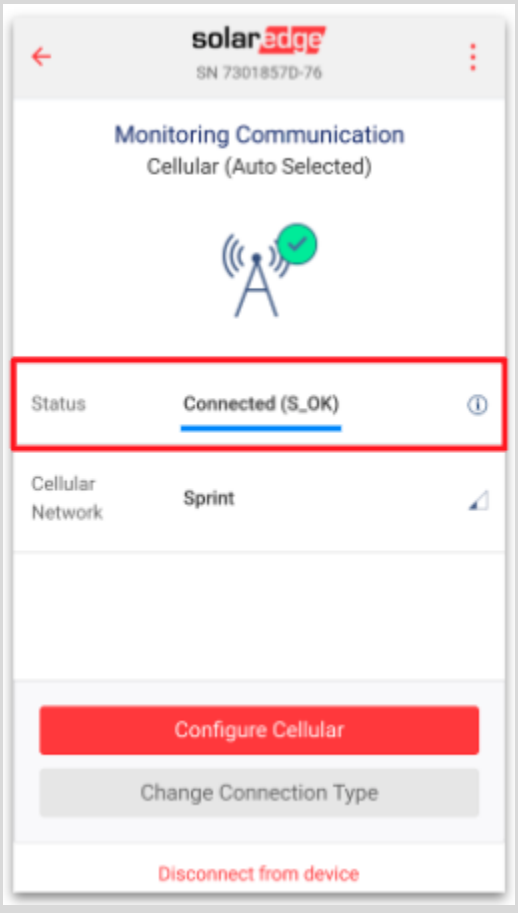


Step 6: Monitoring Communications

IMPORTANT: When setting up inverter communication both Cellular and WiFi connection shall be configured

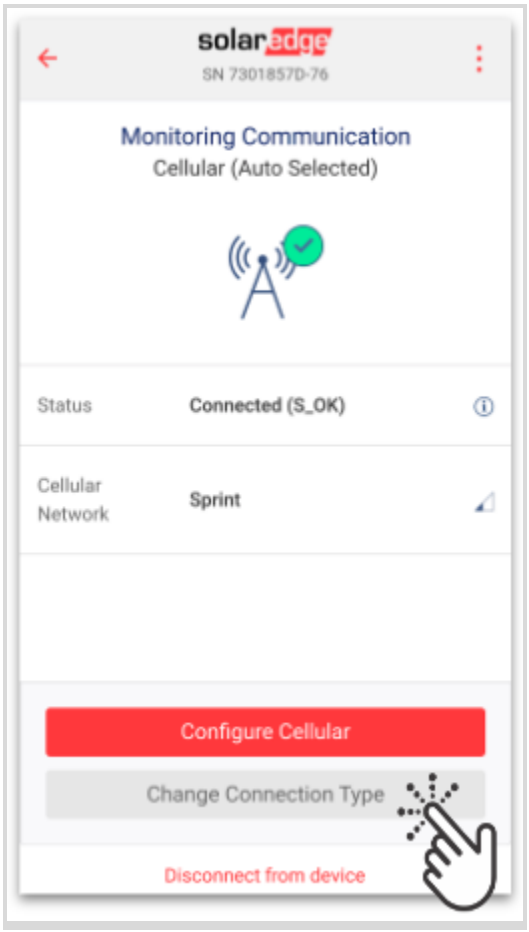
1. From the main screen tap **Monitoring Communication** > **Cellular**

2. Verify cellular status is displaying **Connected (Status S_OK)**



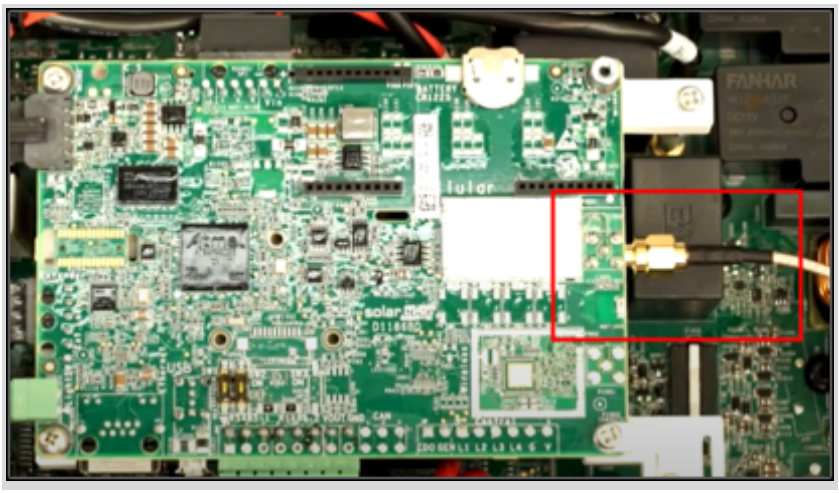
NOTE: Inverter will automatically detect the cell connection and may take a few minutes before displaying **Connected (S_OK)**

3. Next tap **Change Connection Type**



4. Tap **WiFi** under connection type

NOTE: If WiFi antenna has not yet been installed the inverter shall be shut down prior to connecting the antenna. Once the inverter A/C breaker is in the off/open position, remove inverter cover and connect WiFi antenna directly to the communication board.



5. Tap **Configure WiFi**

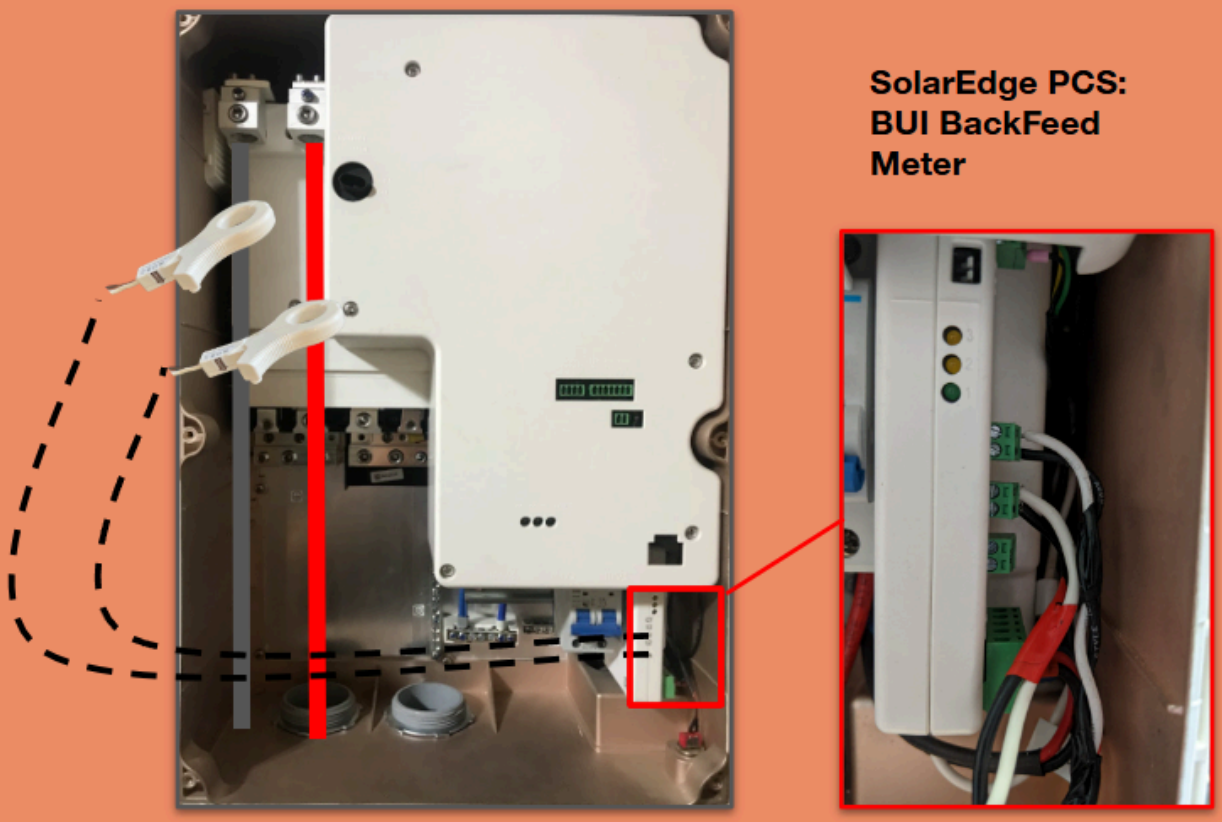
6. Select the homeowner’s WiFi network name from the available network list
7. Type in password and tap **Join**

The Wi-Fi setup is established when the Connected (S OK) status is displayed.

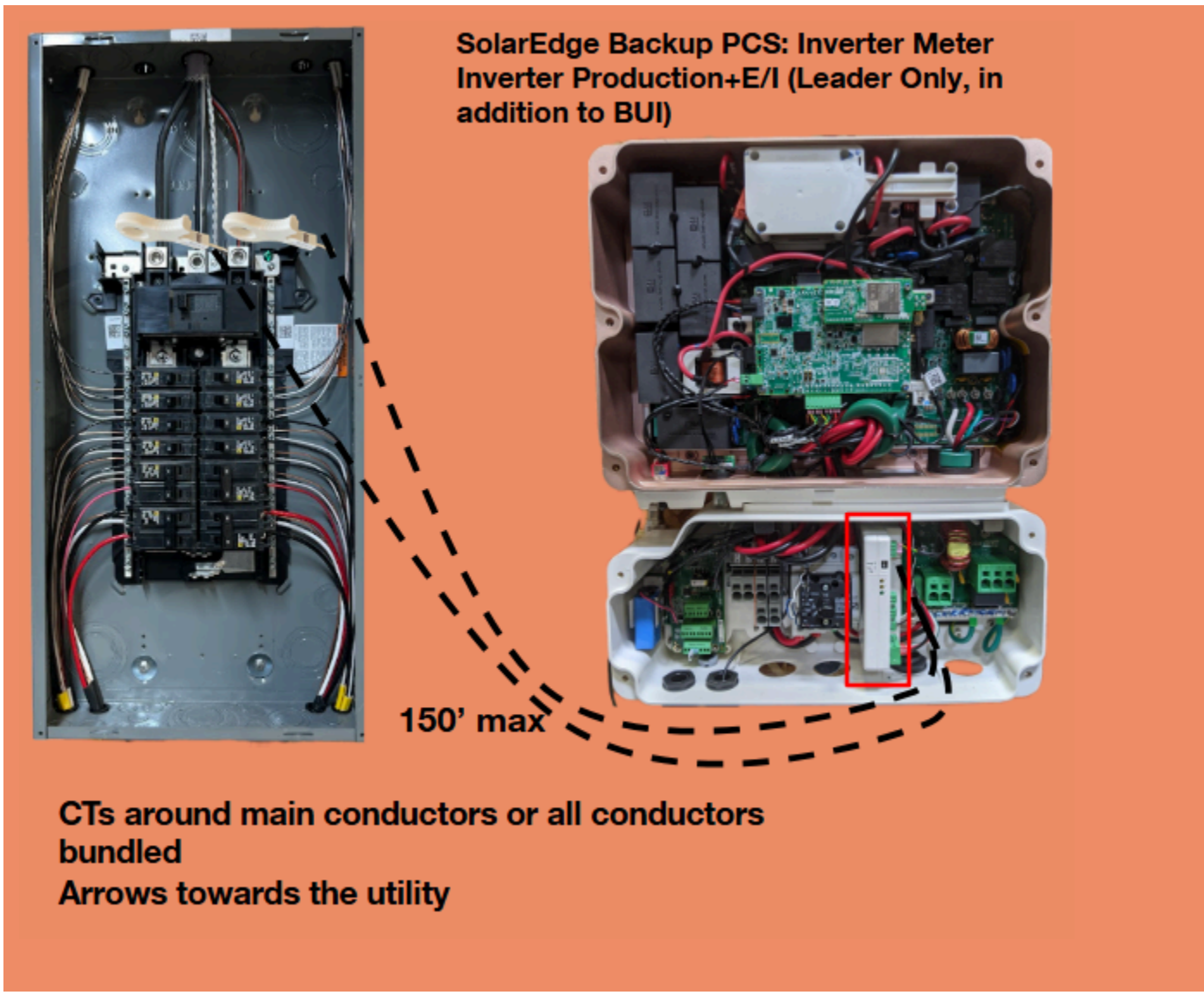
Step 7: Set PCS (if applicable)

IMPORTANT: SolarEdge Backup Systems with PCS will have a different meter configuration than non-PCS systems. Ensure that CTs are installed from the Leader inverter to the Main Service Panel feeder conductors **AND** from the BUI meter to the BUI feeder conductors. See the diagram below.

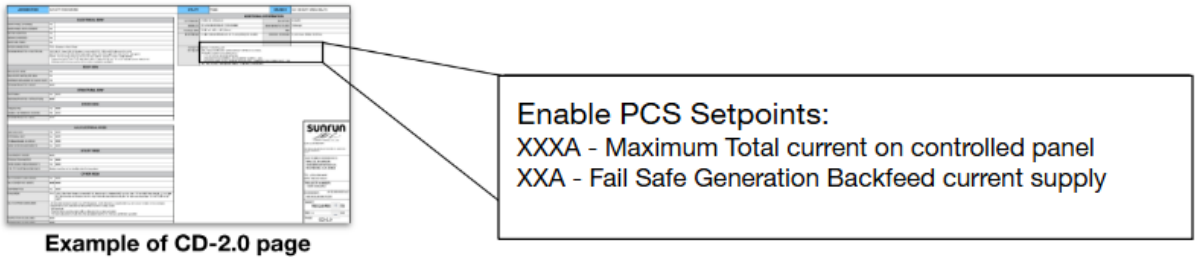
Meters 1&2:



CTs around BUI feeder conductors
Arrows pointed back towards feeder breaker



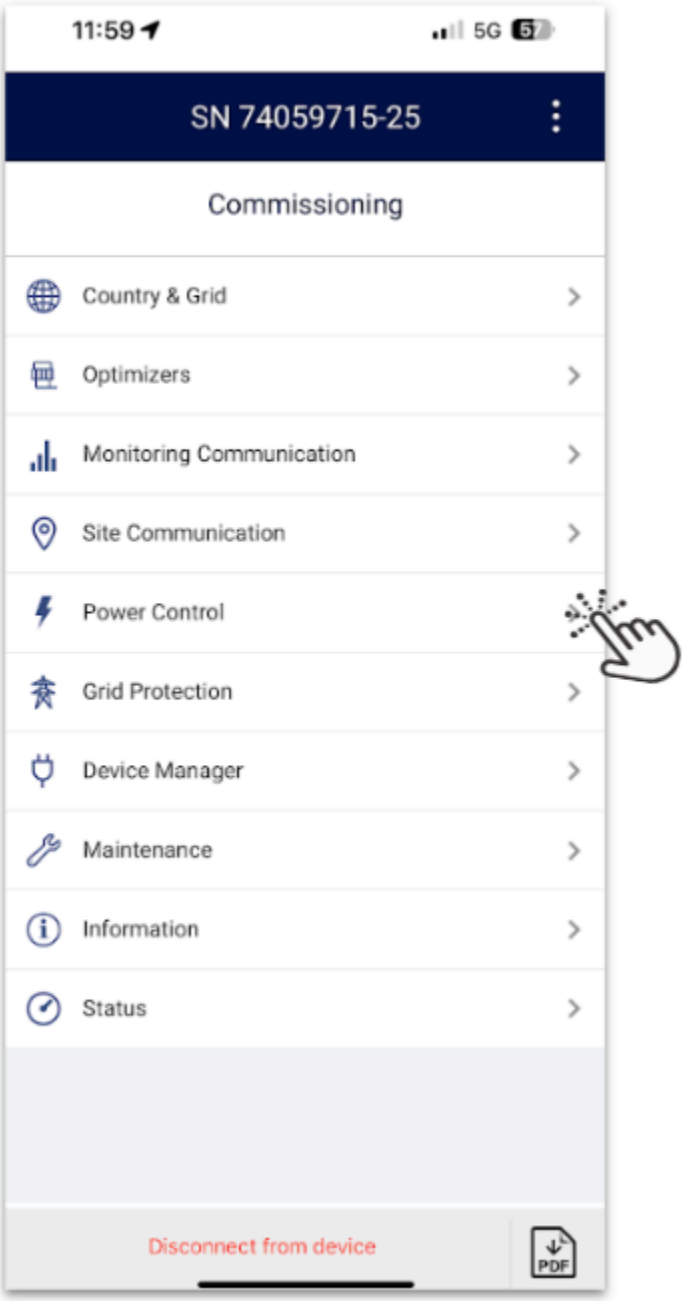
- PCS settings will be called out on the planset single line diagram (SLD) and/or on the CD2.0.
- Special metering instructions shall be followed depending on the equipment installed.
- Skip this step if PCS is not called out and install as normal



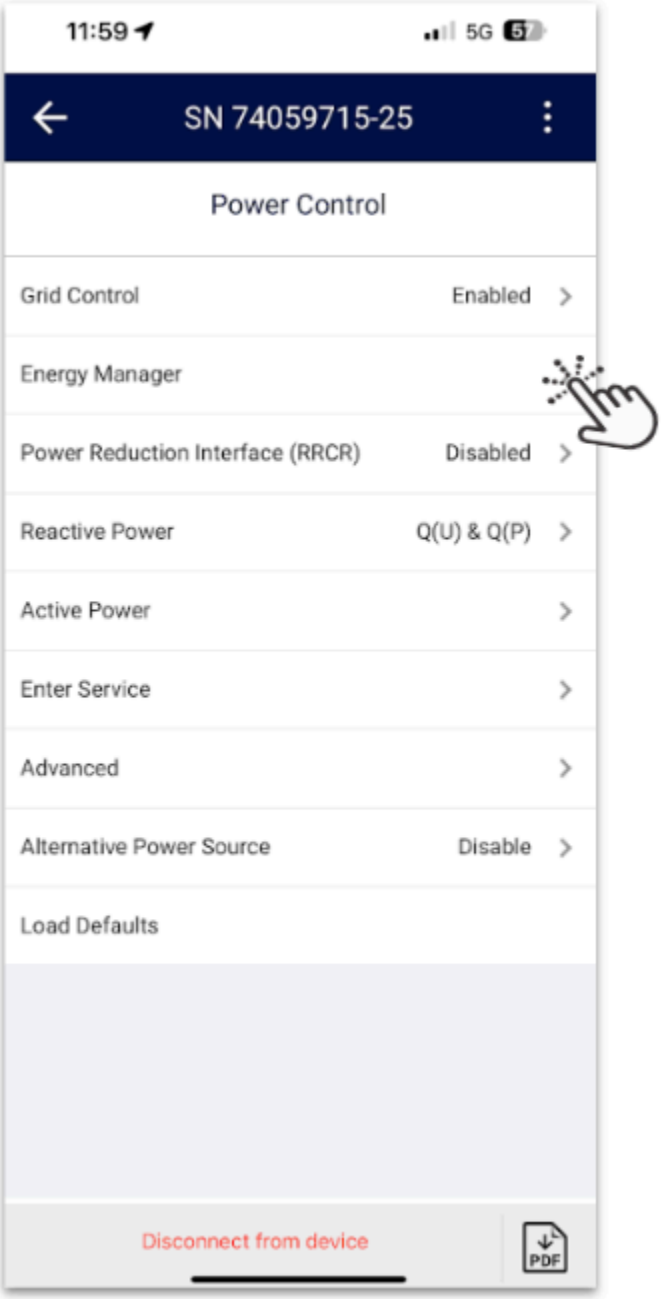
Example of CD-2.0 page

NOTE: The Error 3x6D: Revenue grade Meter CT Error may be present until PCS meters are calibrated.

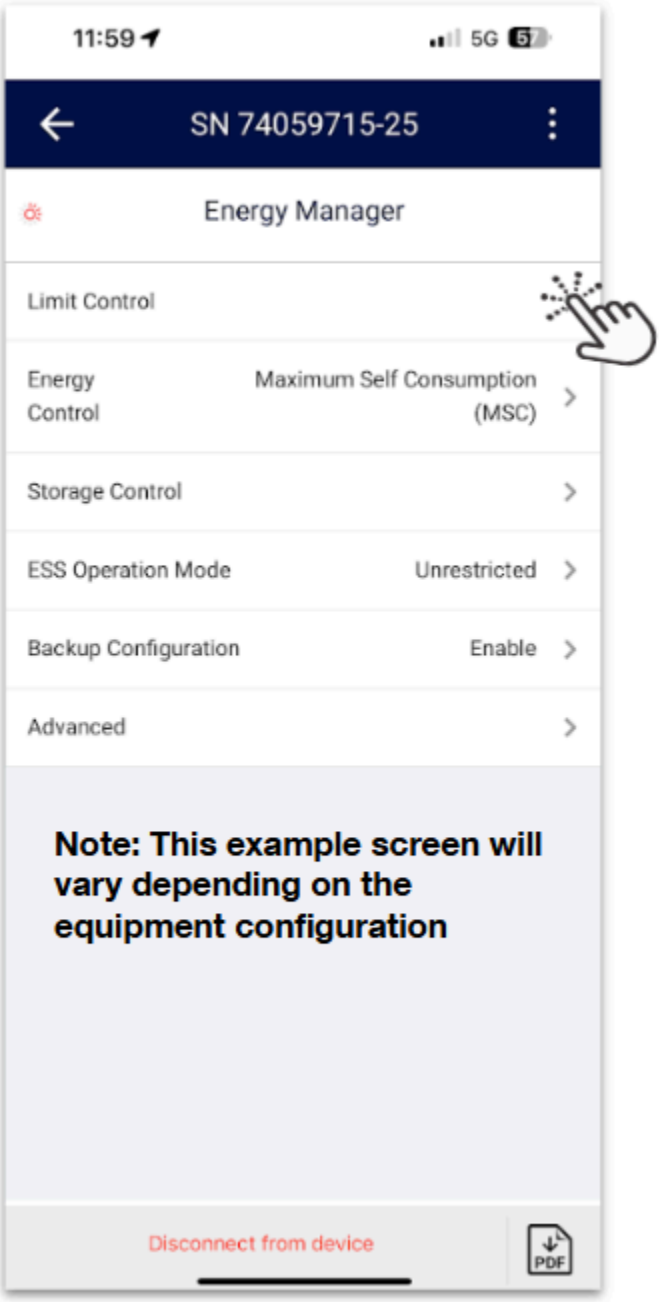
1. From the main Commissioning screen, Tap **Power Control**



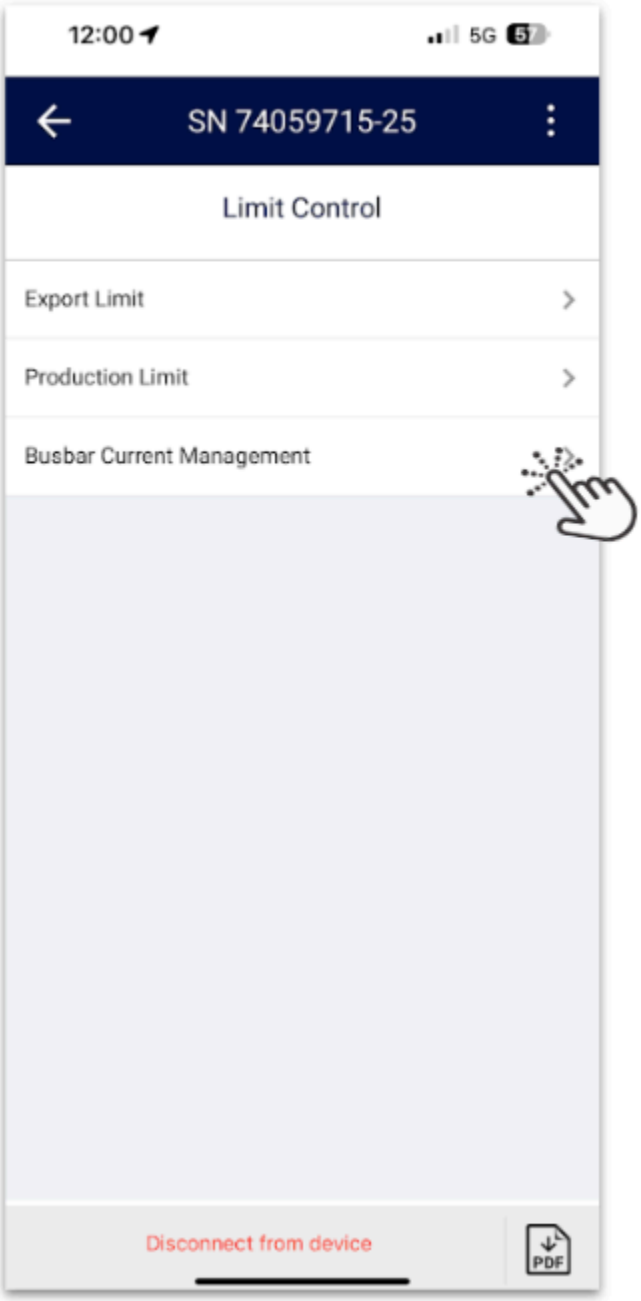
2. Tap **Energy Manager**



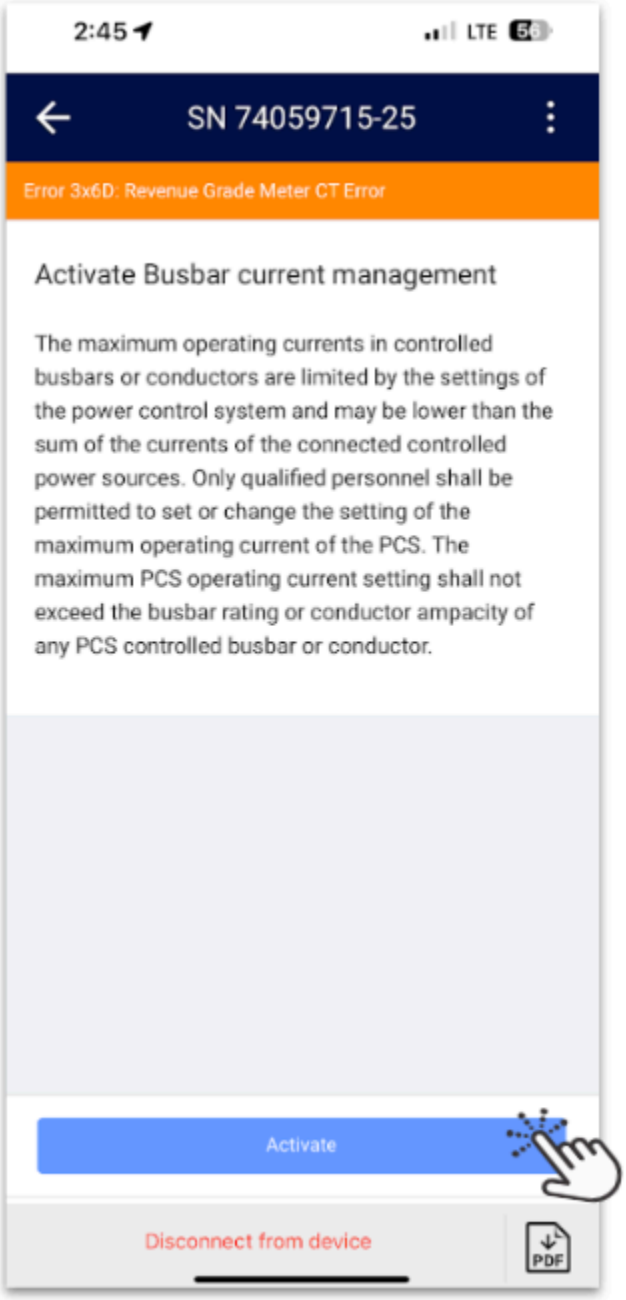
3. Tap **Limit Control**



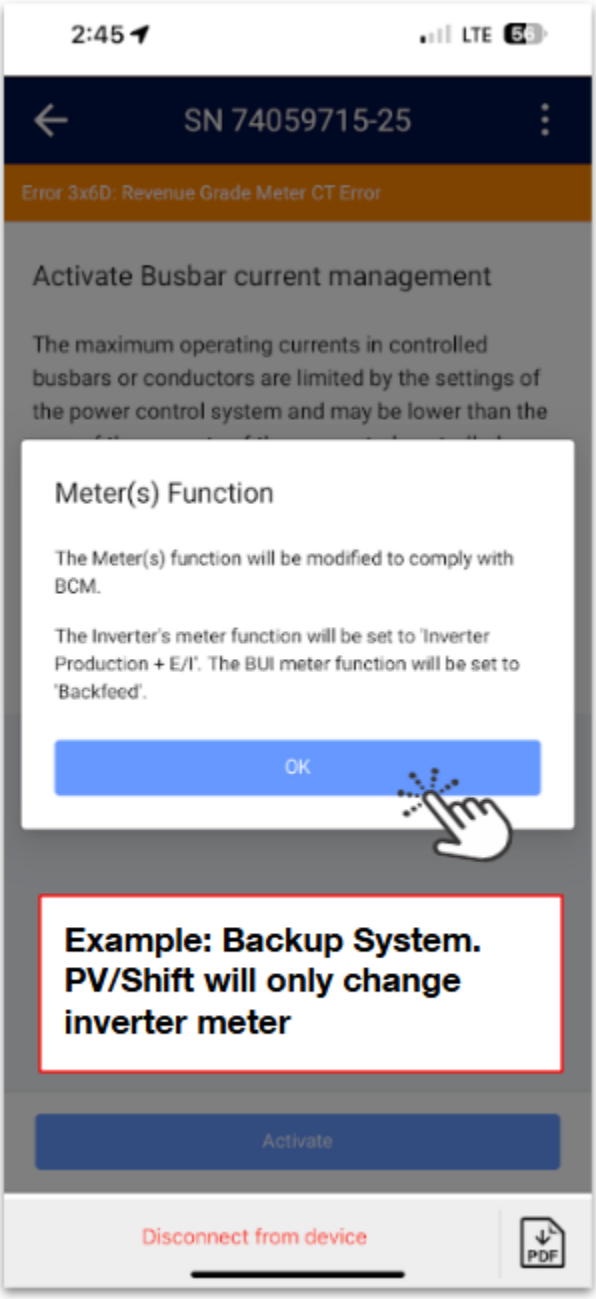
4. Tap **Busbar Current Management**



5. Tap **Activate**

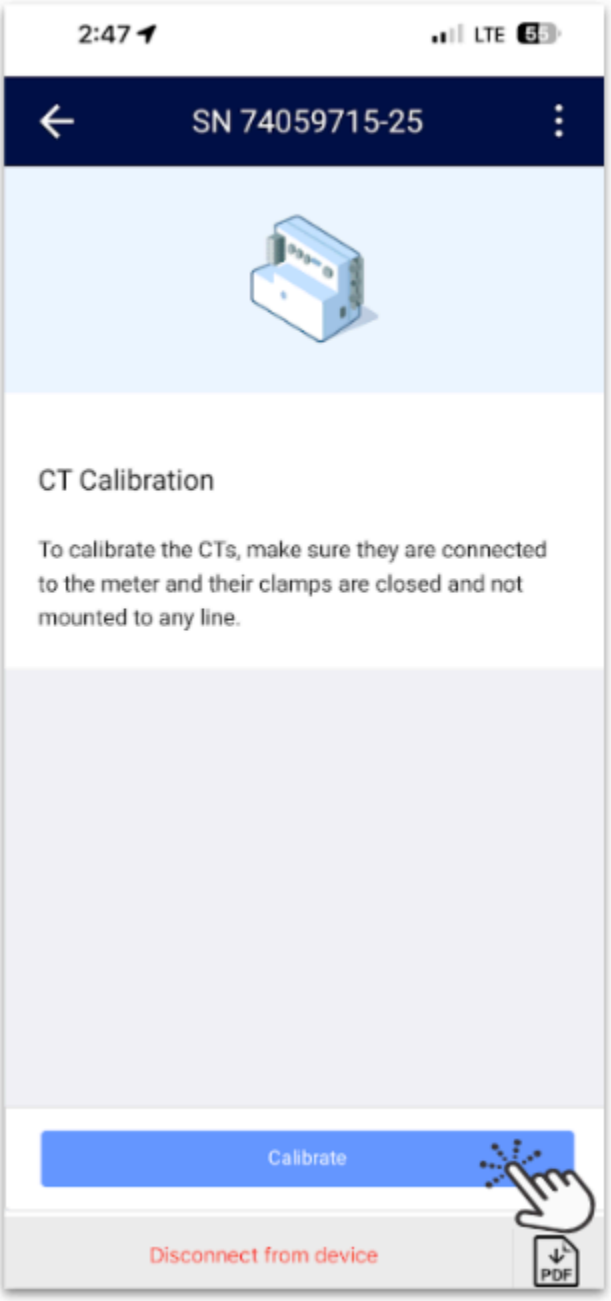


6. The Meter(s) function will automatically be set to comply with Busbar protection, tap **OK**



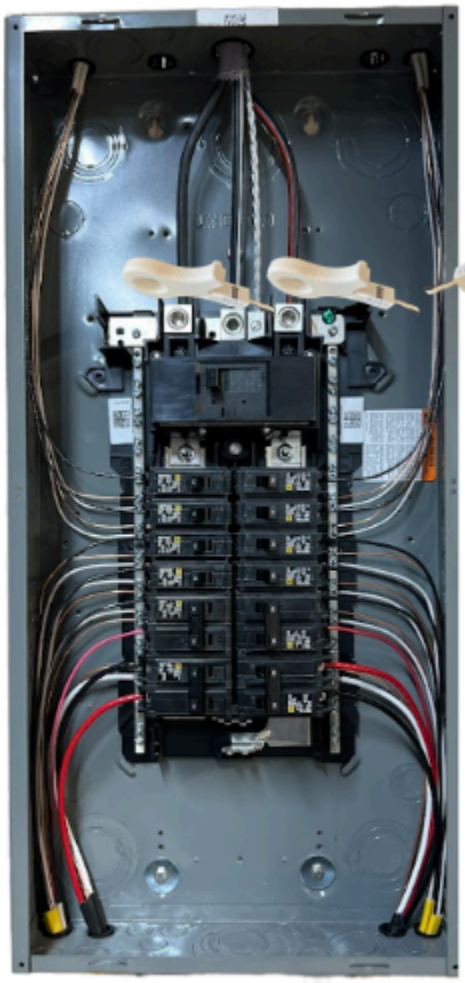
7. To calibrate the CTs for PCS, ensure they are wired to the meter and **not connected to any conductors or bussing.** Ensure that the clamp is closed. Tap **Calibrate.**

First Calibration: CTs not clamped on any conductors



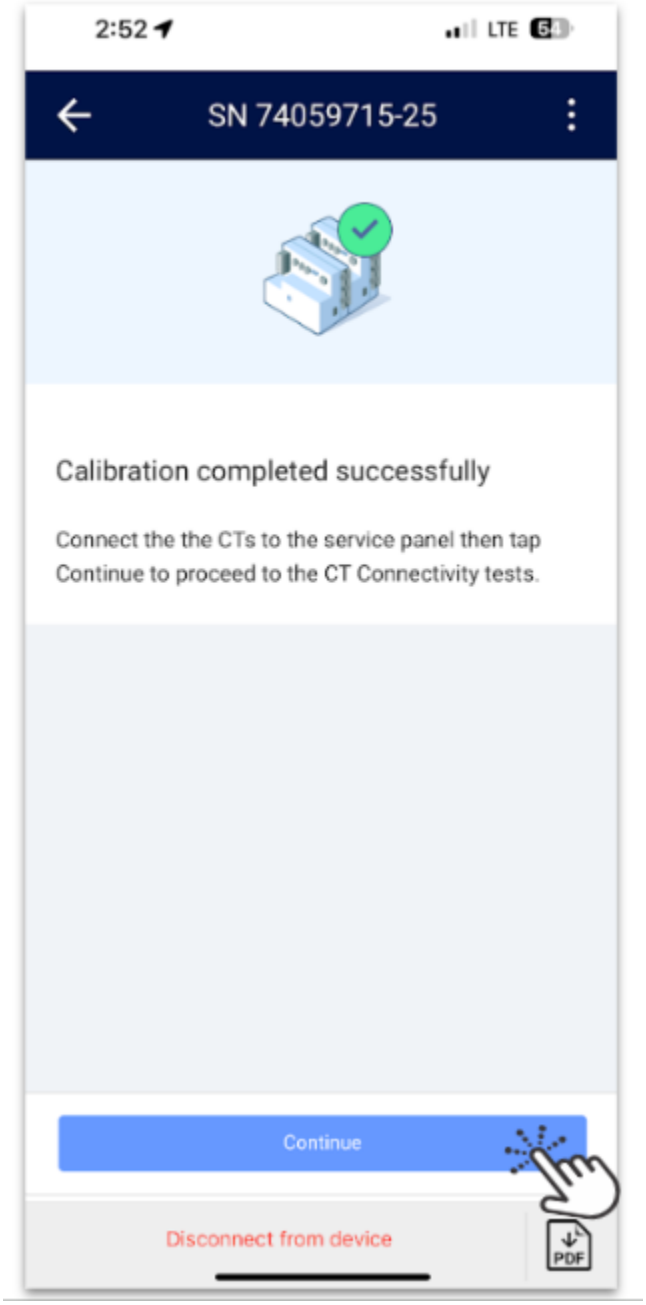
NOTE: For Backup systems, both the Inverter and BUI meter shall have the CTs calibrated and connectivity tests passed. These tests will be automatically performed at the same time

8. After the CTs have successfully calibrated, clamp all the CTs on to their measurement points to begin the connectivity test. Tap **Continue**



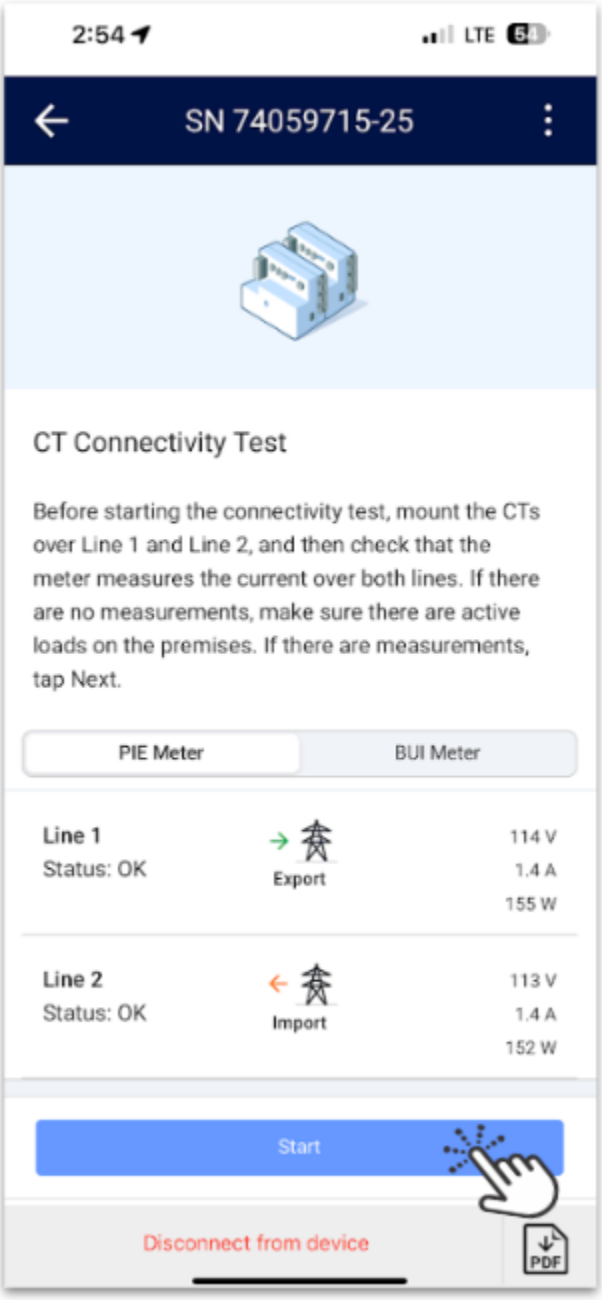
PV only/Shift/Backup PCS: Inverter Production+E/I (PIE) meter measures main panel

Backup PCS: BUI meter measures BUI feeder

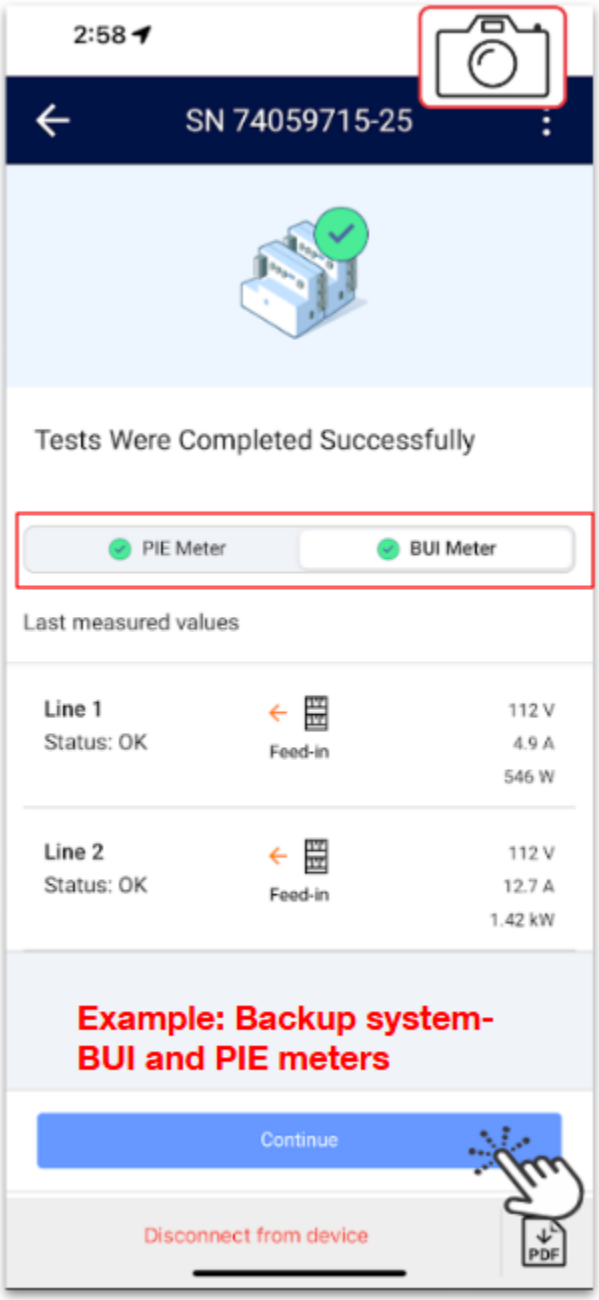


9. Ensure that L1 and L2 displays current. Tap **Start**

NOTE: Depending on the status of the solar production and home loads, it may measure Import, Export, or a combination of both. During the Connectivity test, the meters will halt solar production to check if the CTs are installed correctly.

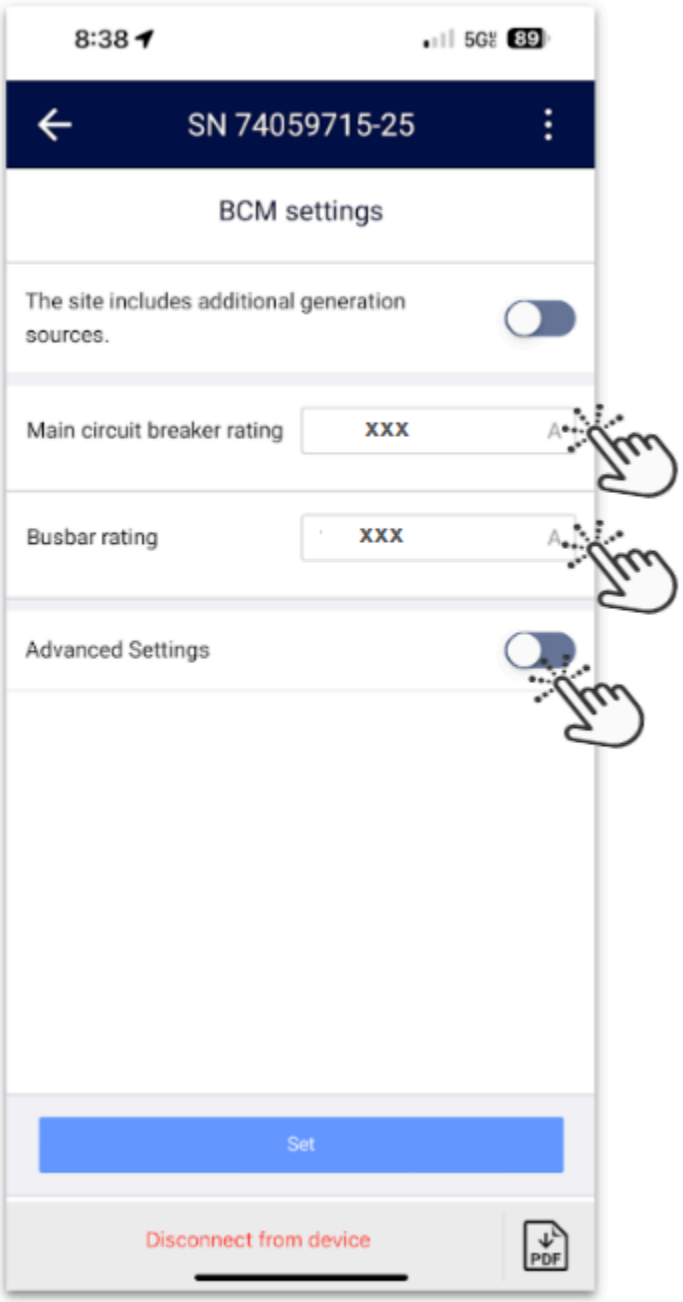


10. A successful test is required to continue to set PCS, ensure that all steps are followed when prompted for adjusting CT direction and phasing. Tap **Continue**



NOTE: Only Backup Systems will display the BUI meter

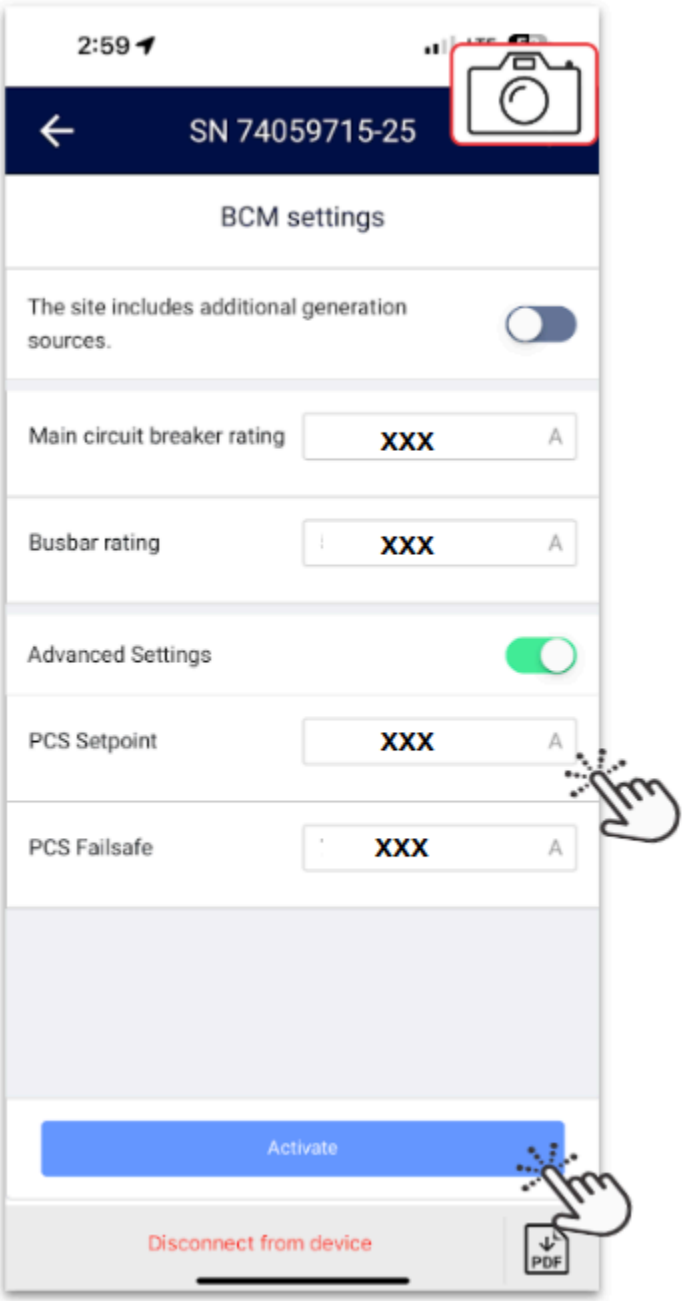
11. Enter the **Main Service Breaker and Busbar amperage rating** of the home, then turn the Advanced slider **ON.**



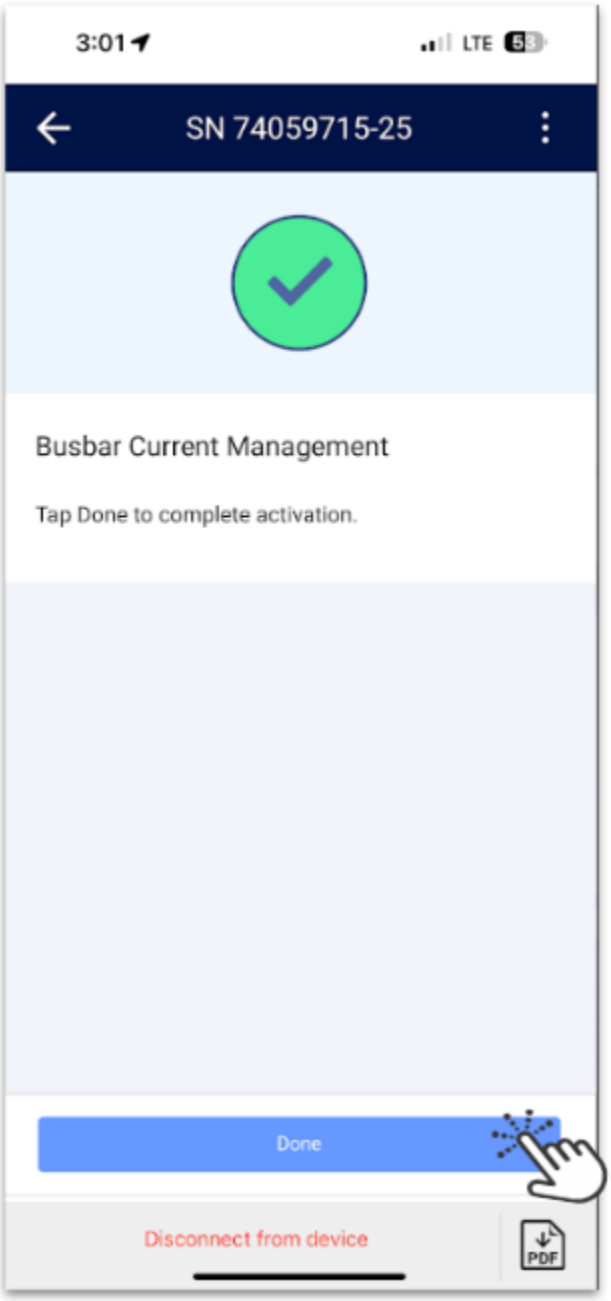
12. Enter the PCS set point values found on the Planset single line diagram/CD2.0. Verify the setting is correct and tap **Activate.**

Example of CD-2.0 page

Enable PCS Setpoints:
XXXA - Maximum Total current on controlled panel
XXA - Fail Safe Generation Backfeed current supply



13. Allow the system to save the settings, tap **Done** to complete the activation.



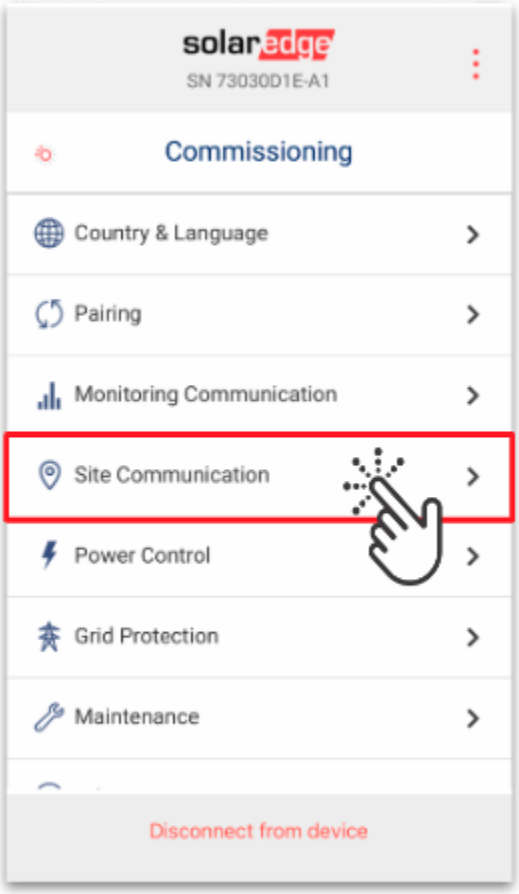
Step 8: Site Communications

NOTE: PCS installs will have a different meter configuration; follow the procedure in the PCS section of the SOP

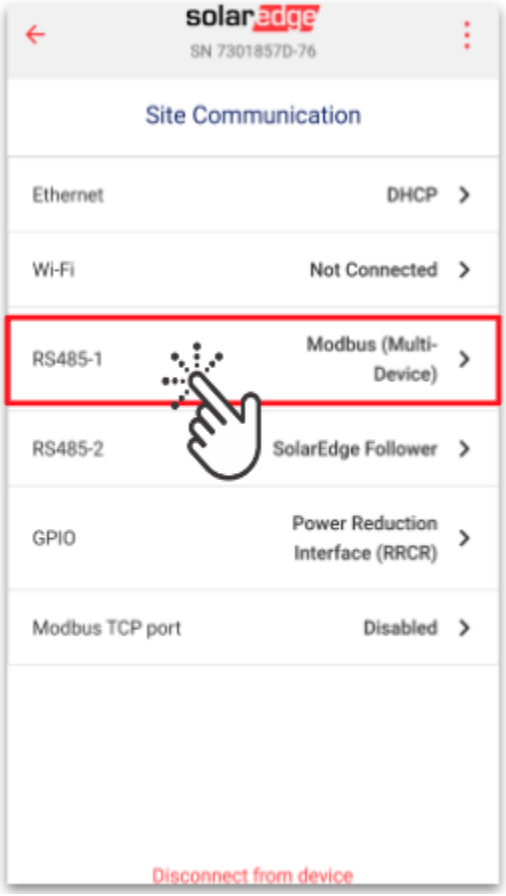
From the Site Communication menu, the devices on site connected to the Home Hub Inverter will be configured.

- All devices , BUI, Battery(s), and Energy Meter(s) will be automatically detected upon activation if they were turned on and wired correctly prior to entering SetApp.

1. Tap **Site Communication**.

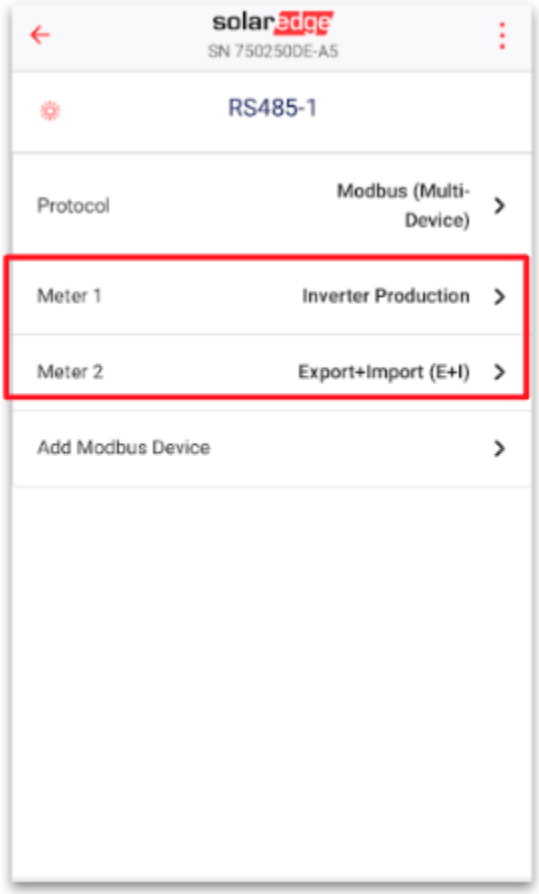

solaredge
SN 73030D1E-A1
Commissioning
Country & Language
Pairing
Monitoring Communication
Site Communication
Power Control
Grid Protection
Maintenance
Disconnect from device

2. Tap **RS485-1**.



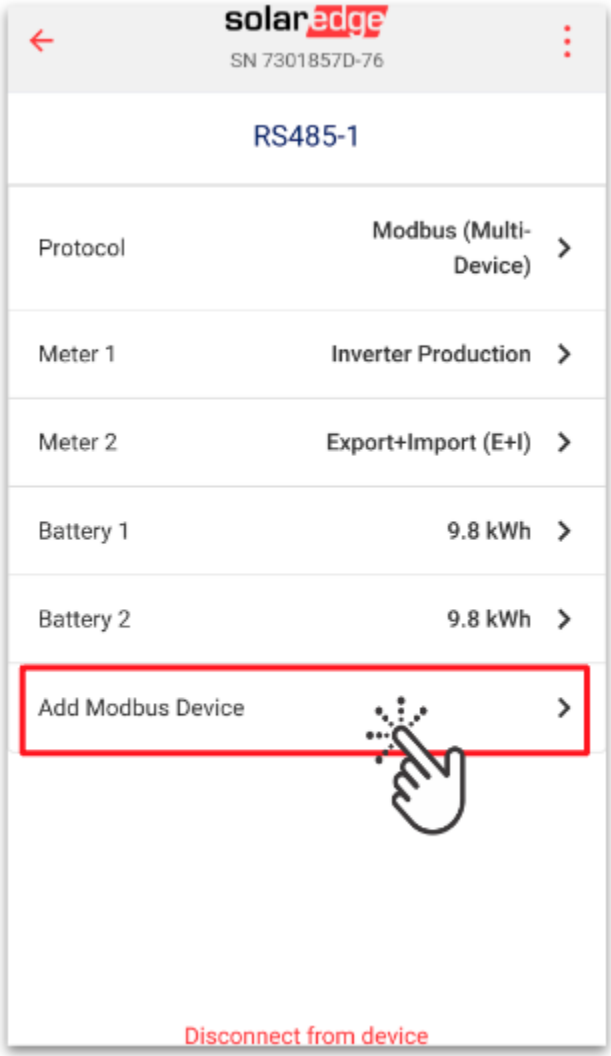
3. Verify all devices that were installed on site are present.

    - **Meter 1** : Inverter Production (This meter located inside the Home Hub Inverter. It will measure the PV production of the site.)
    - **Meter 2**: Export+Import (This meter located inside the BUI. It will measure all power imported from the grid and exported to the grid.)



- If any extra devices are shown here select the device and remove it. These extra devices will cause a communication error in the system. Example: If Meter 3 is shown on this screen and no meter 3 was installed on site, it will need to be removed.

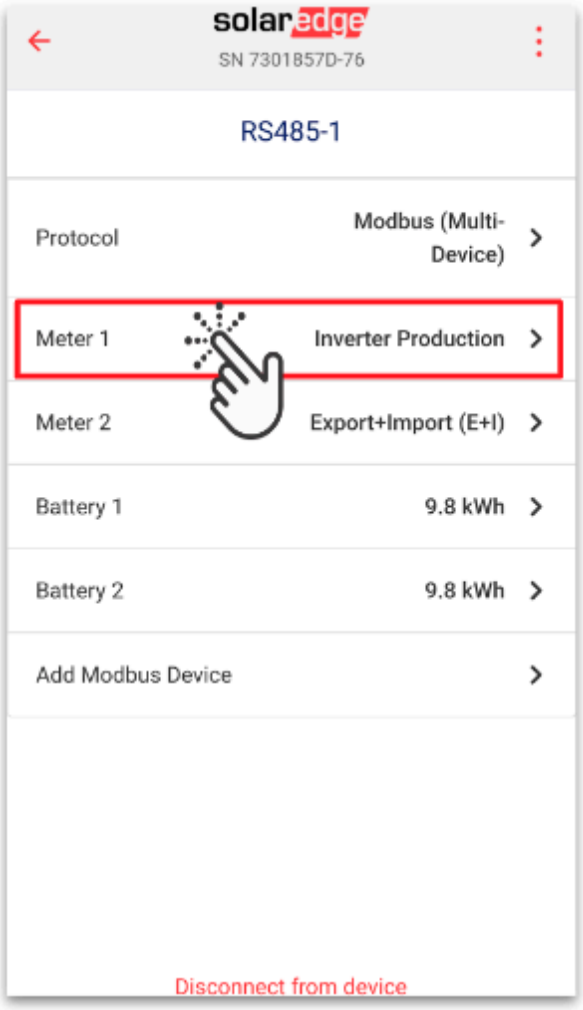
- If a device is missing that was installed, tap **Add Modbus Device,** and select the device type to add it.
    - Example: A second battery was installed but does not show on this screen.
    - This is to be done **only** if devices are installed onsite and missing in the app.

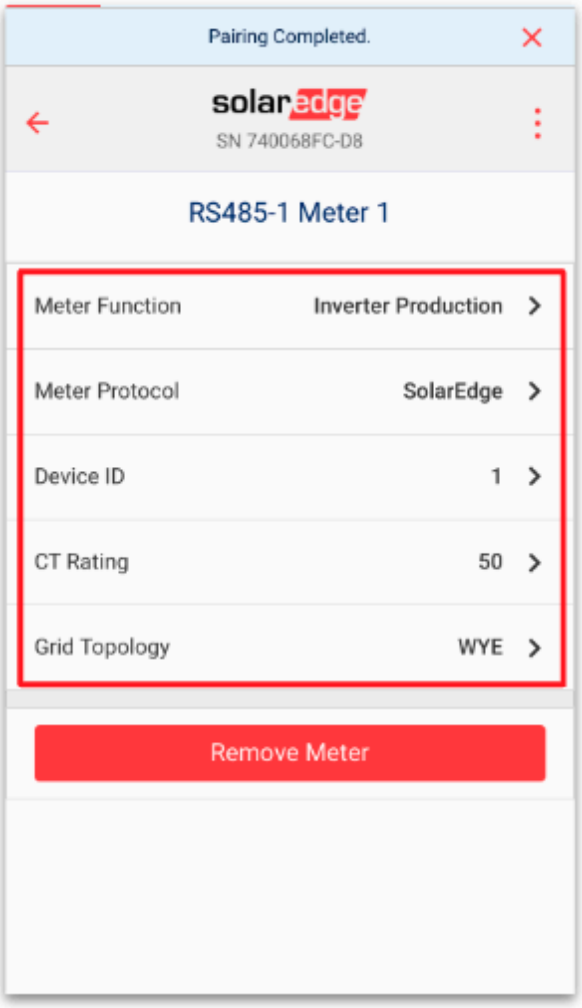


Verify Meter 1

1. Tap **Meter 1**

2. Verify the following parameters, configure any of the parameters that are not correctly set.
    - Meter Function: Inverter Production
    - Meter Protocol: SolarEdge
    - Device ID: 1
    - CT Rating: 50
    - Grid Topology: Wye

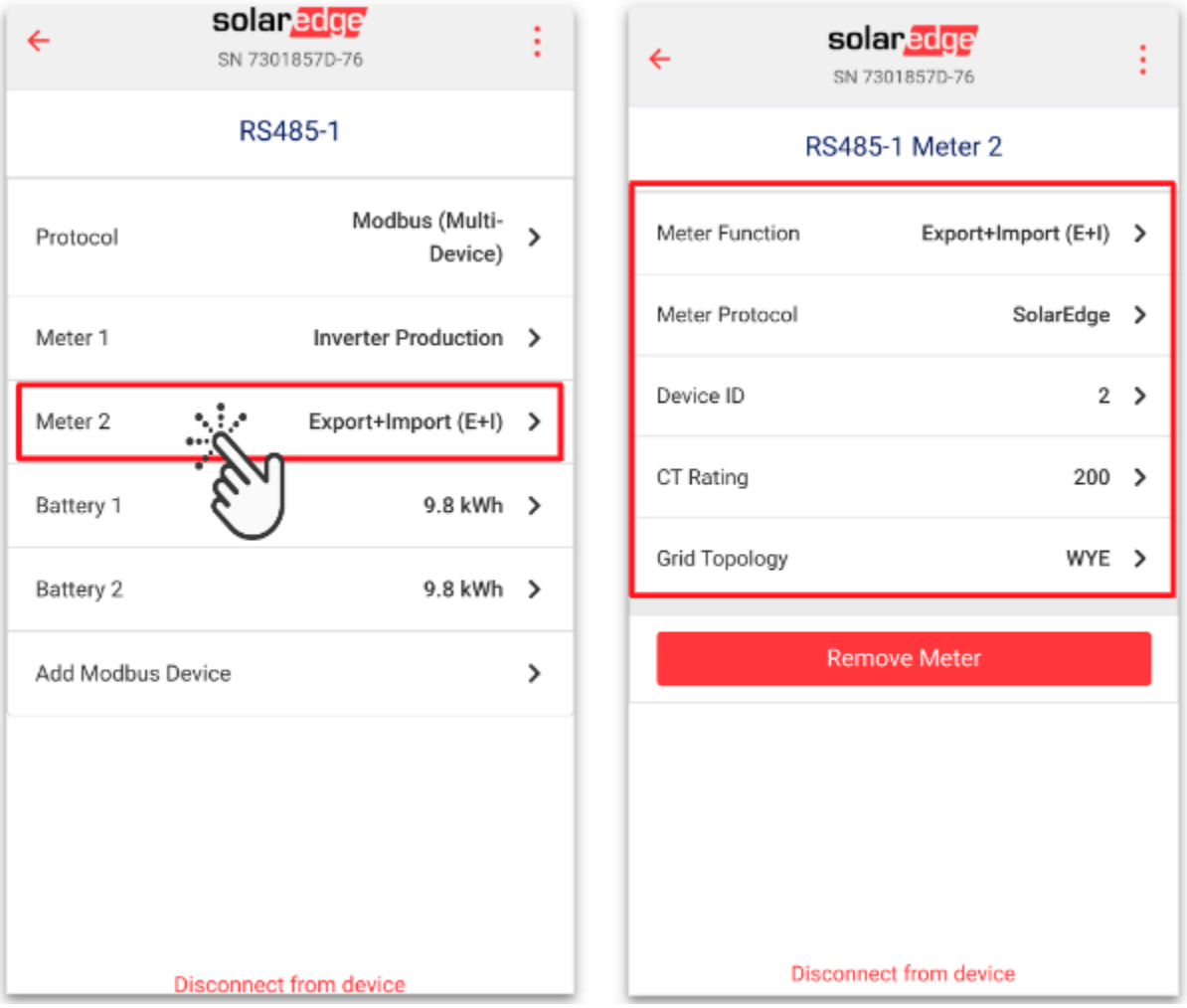




Verify Meter 2

1. Tap **Meter 2**

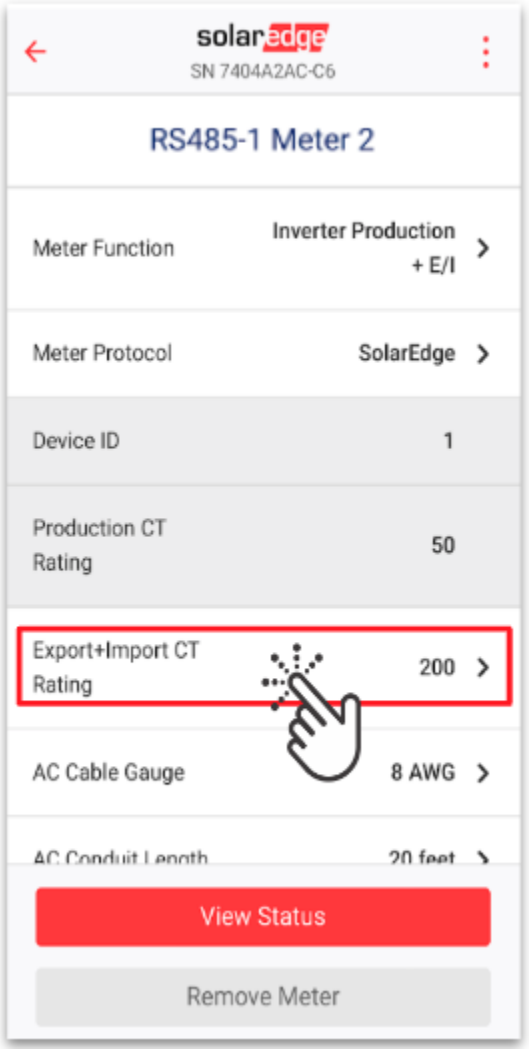
2. Verify the following parameters, configure any of the parameters that are not correctly set.
    - Meter Function: Export+Import (E+I)
    - Meter Protocol: SolarEdge
    - Device ID: 2
    - CT Rating:
        - 200 for standard SolarEdge CT's
        - 225 for SolarEdge Slim CT's
    - Grid Topology: Wye



3. Tap **Export + Import CT Rating**

- If Other CT's are installed, set the CT Rating to reflect the amperage rating of the CT's installed.

- If multiple CT's are used and connected in parallel, set the CT Rating to the total amperage of the combined CT's per phase.
    - Example: 2 Sets of 225 Amp slim CT's = 450 Amp total rating.



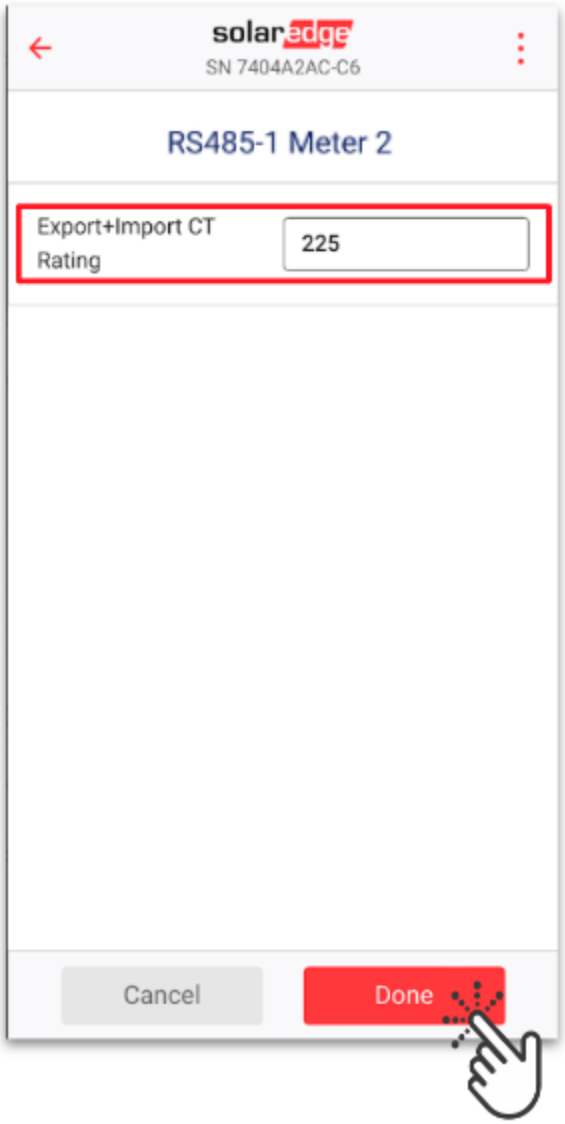
IMPORTANT: The CT Rating shall match the total rating of all sets of CT's.

- 200 Amp for single square style SolarEdge CT's (+200 for each additional set installed for a total value of 400)

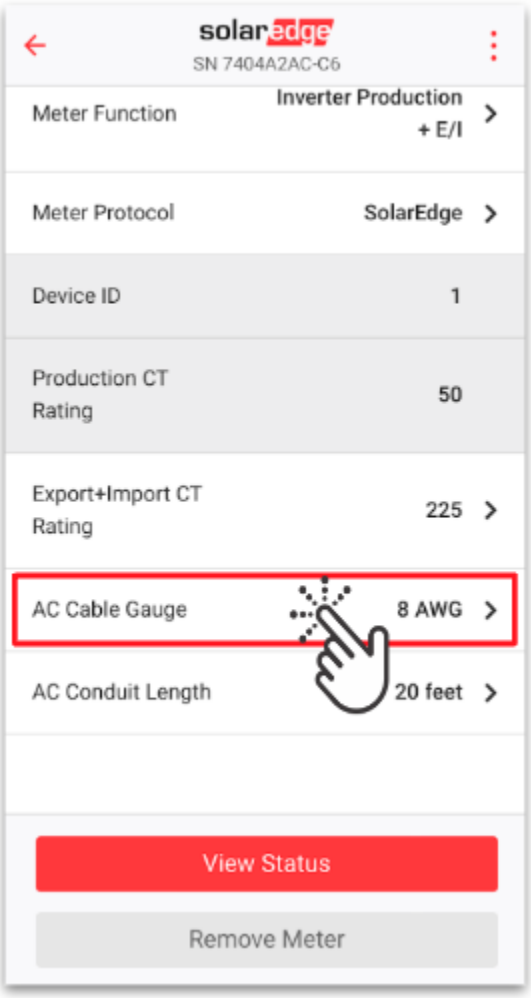
- 225 Amp for single slim clamp style SolarEdge CT's (+225 for each additional set installed for a total value of 450)

- In the example photo to the right, the CT rating has been set to 225A for SolarEdge Slim CTs.

4. Once the correct CT value has been entered, tap **Done** to continue.



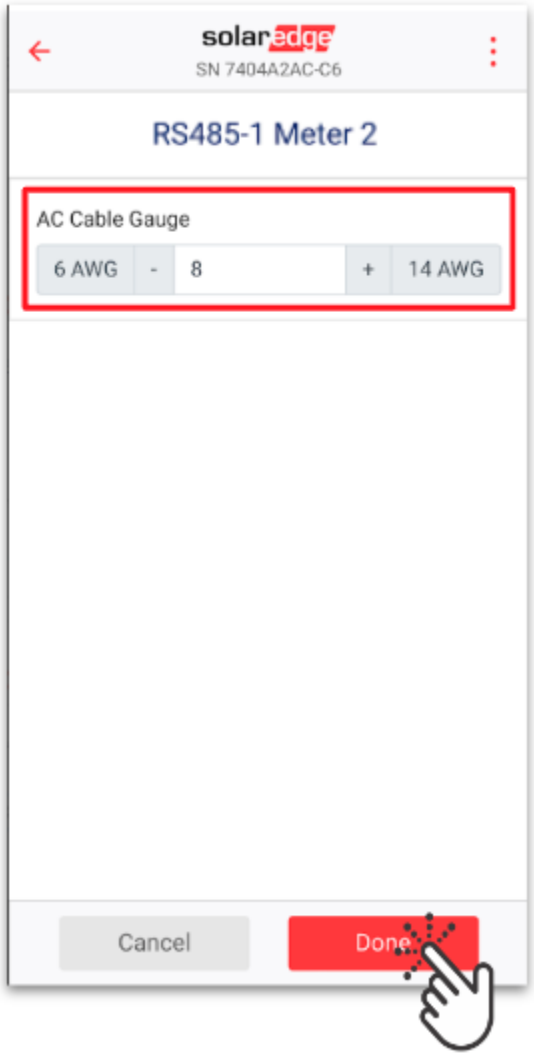
5. Next, tap **AC Cable Gauge**



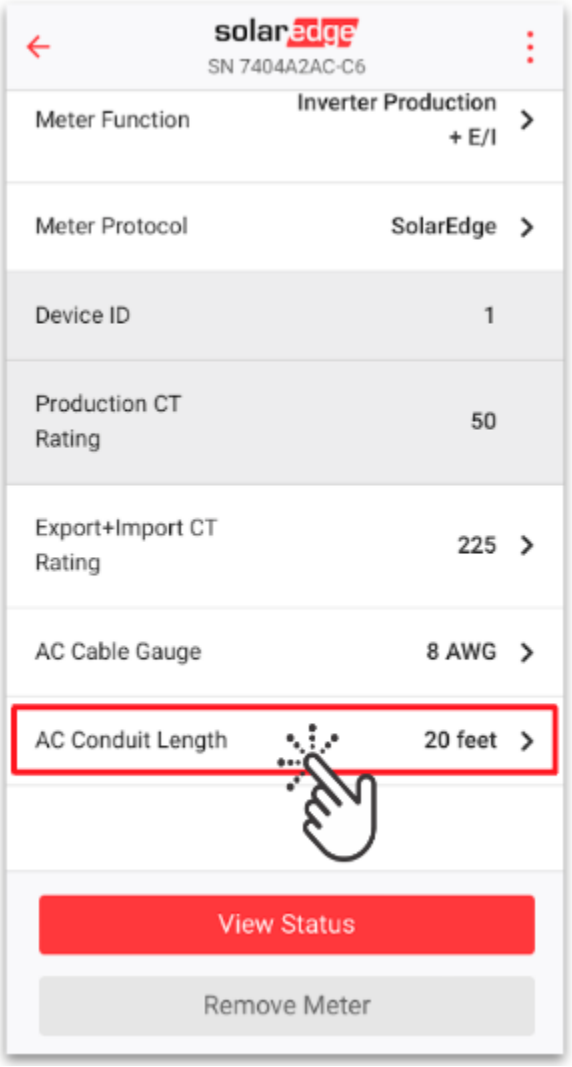
6. Select the wire gauge size of the conductors installed from the inverter AC terminals to backfeed breaker.

7. Conductors larger than 6 gauge are not to be used in Home Hub inverters.

8. After selecting the correct AC Cable Gauge, tap **Done** to continue.

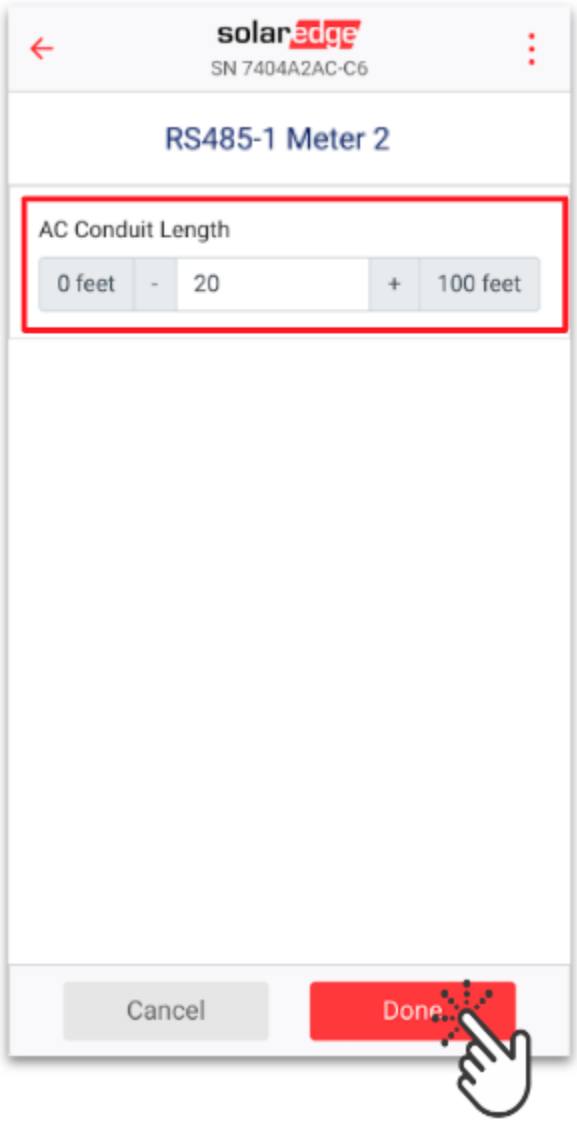


9. Next, tap **AC Conduit Length.**

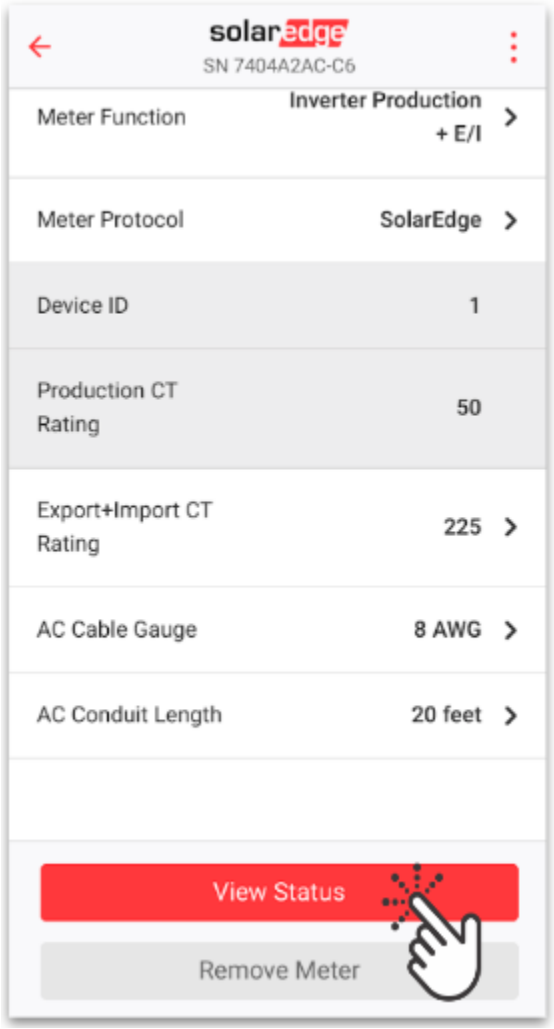


10. Enter the length of the AC conduit run from inverter to CT placement.

11. Tap **Done** to continue.

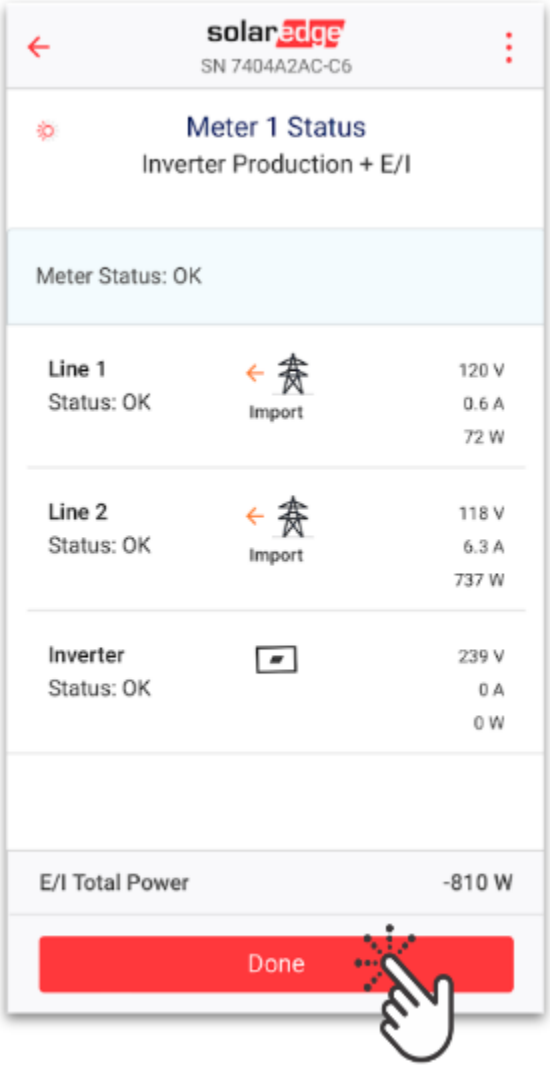


12. Tap **View Status** and verify all settings are correct.



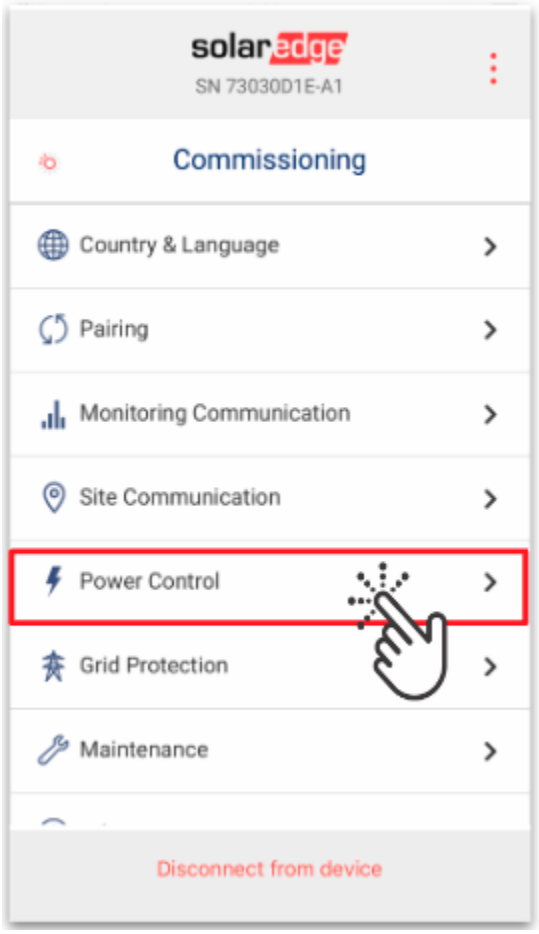
IMPORTANT: If the CTs are installed correctly, Line 1 and Line 2 should show **Import** when the inverter is **not producing** wattage.

13. After verifying the settings, tap **Done** to continue.

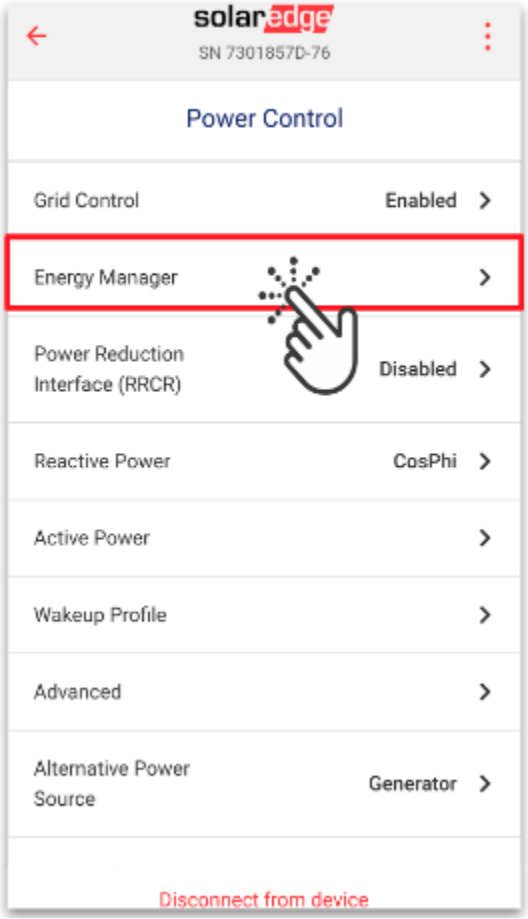


Step 9: Configuring Backup

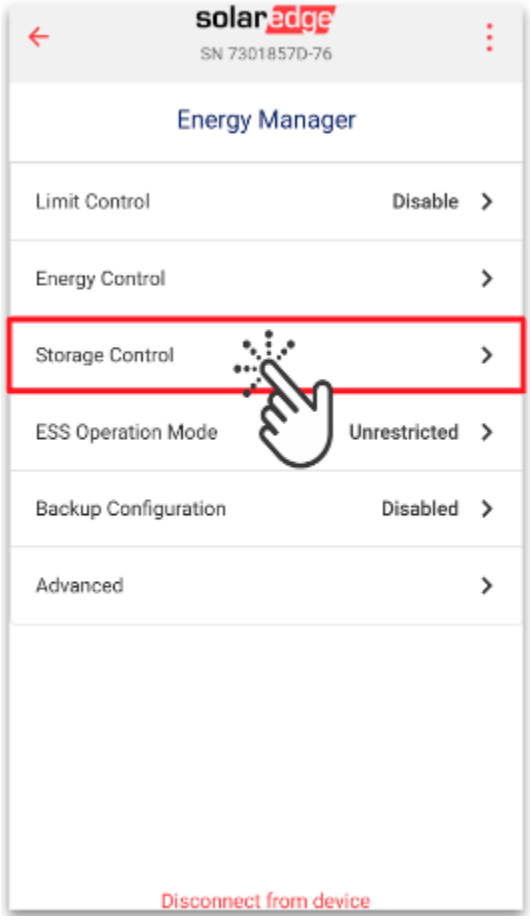
1. Tap **Power Control**



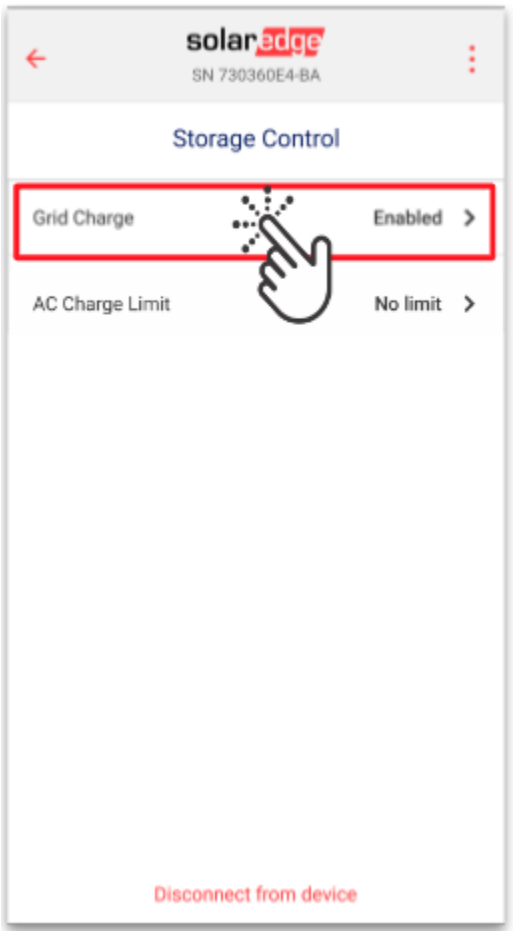
2. Tap **Energy Manager**



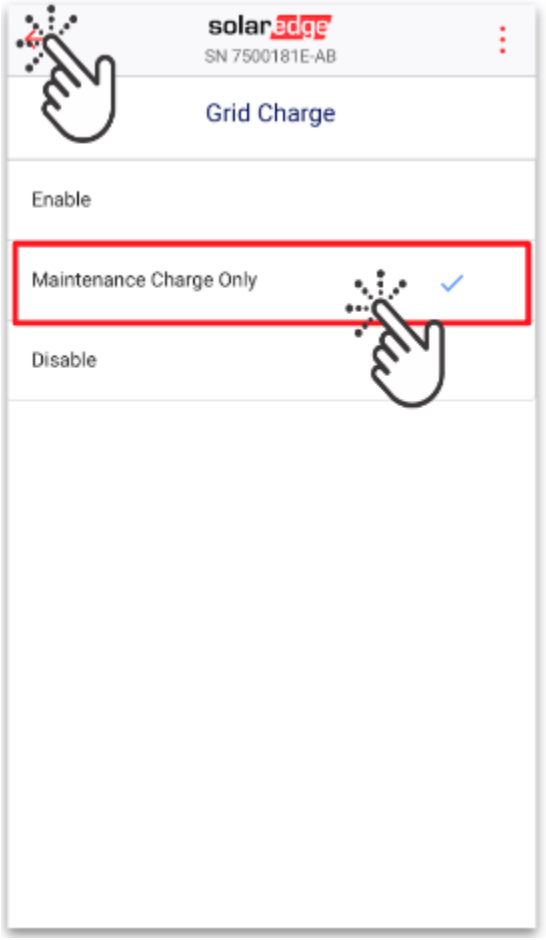
3. Tap **Storage Control**



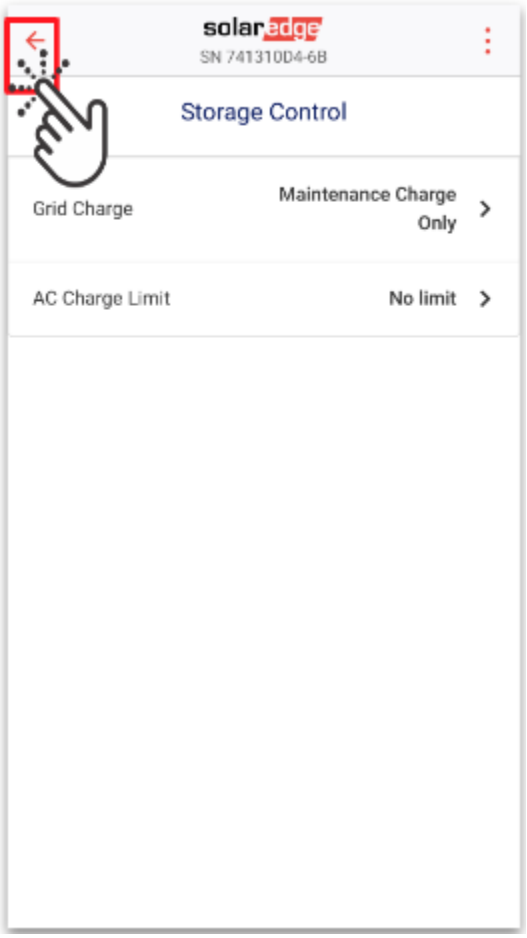
4. Tap **Grid Charge**



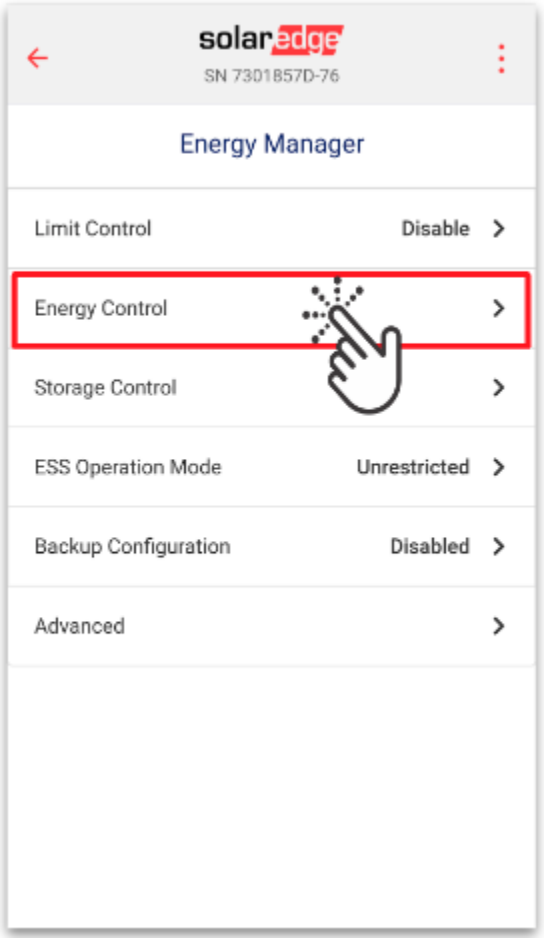
5. Tap **Maintenance Charge Only,** Tap **Back**


solaredge
SN 7500181E-AB
Grid Charge
Enable
Maintenance Charge Only
Disable

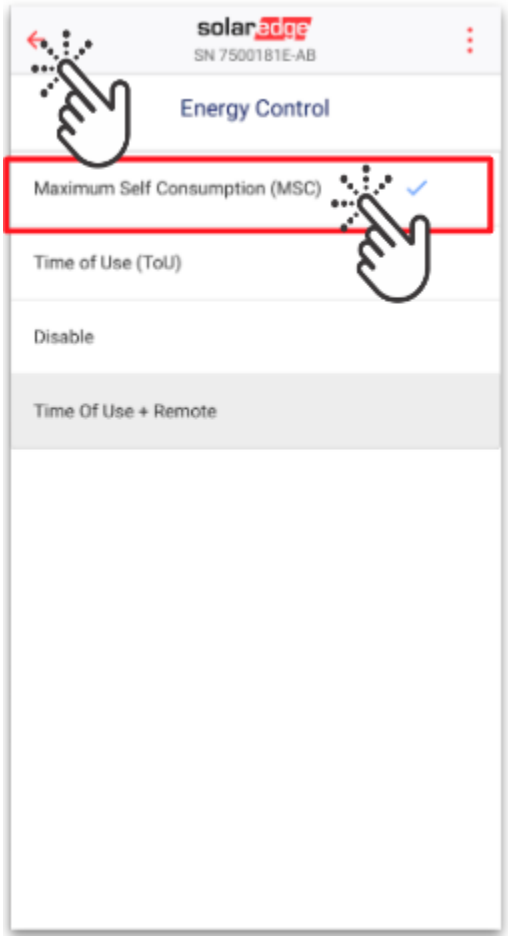
6. Tap **Back**



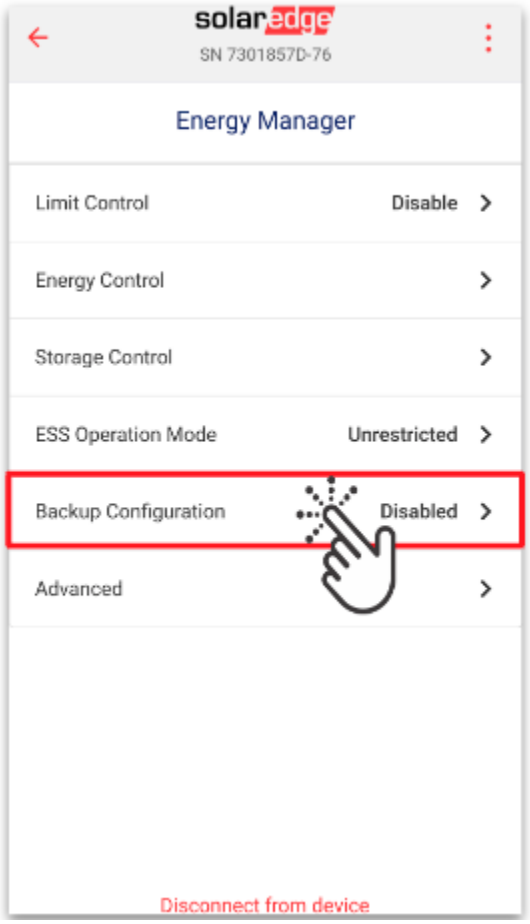
7. Tap **Energy Control**



8. Tap **Maximum Self Consumption (MSC),** Tap **Back**



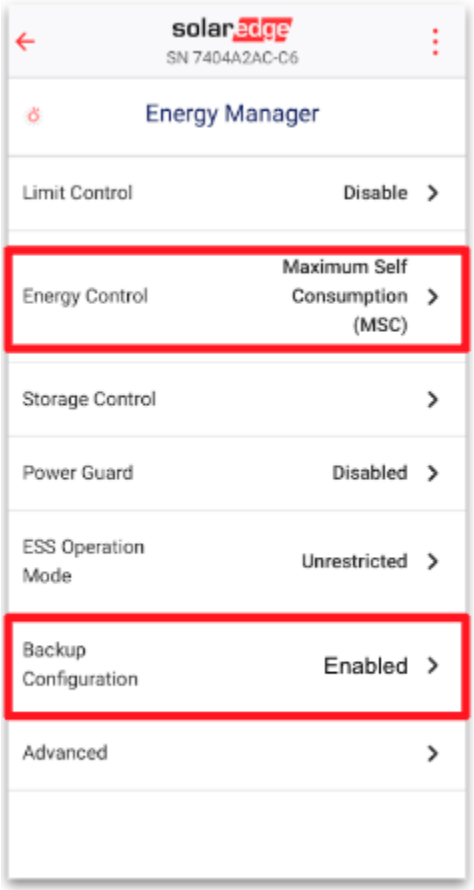
9. Tap **Backup Configuration**



10. Tap **Backup Reserved**

11. Set **Backup Reserve to 35%,** Tap **Done**

12. Verify Energy Manager Configuration



Step 10: CT Configuration Test

A CT configuration test is required to verify the correct installation and direction of the CTs. This includes on any leaders/follower inverters.

1. Turn the inverter red toggle switch to the **O** (**OFF**) positon.

2. Verify that **Safe DC Voltage** is displayed on the meter screen

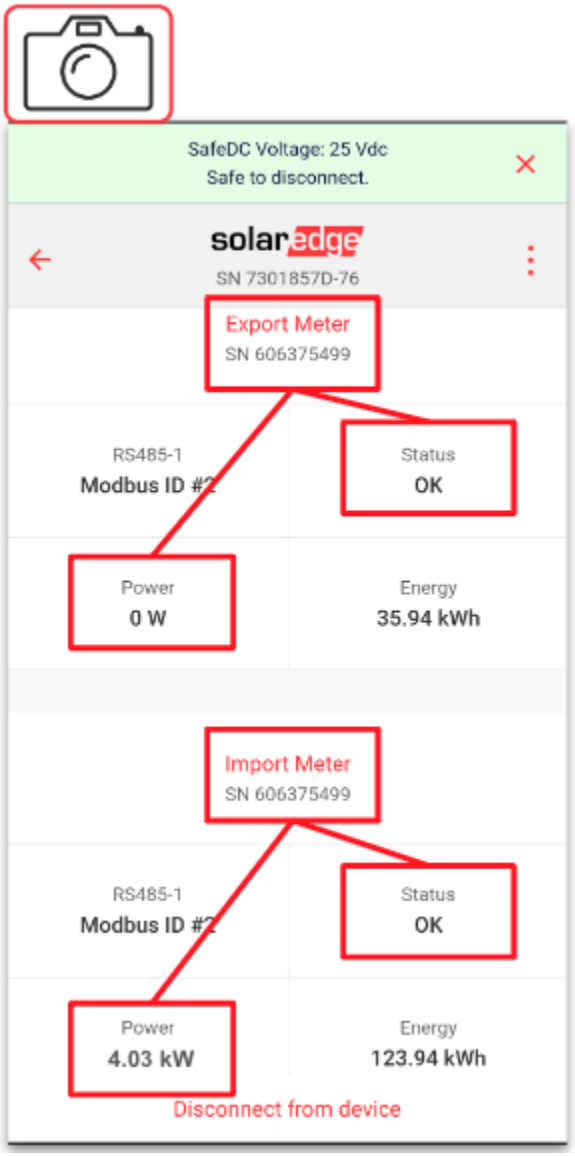
3. With the inverter toggle switch OFF and the DC voltage at a safe level, verify the following:

- Export Meter shall read:
  - **Status: OK, Power: 0 kW**

- Import Meter shall read:
  - **Status: OK, Power: Value greater than 0kW** (indicating import from the grid)

- If the meters are showing any other values, a CT is most likely installed facing the wrong direction and must be physically flipped.

- A single screenshot showing both meters is required.



	Pro Tip: Verify power reading in SetApp is within 100W of the reading on the utility meter.

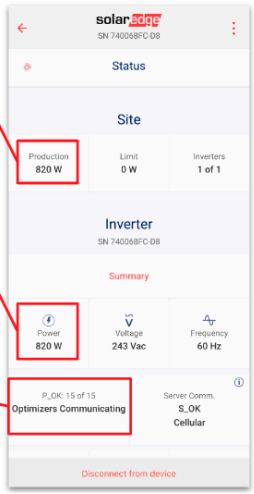
IMPORTANT: Turn the Inverter I/O switch back to the I (**ON**) Position After the test is complete.

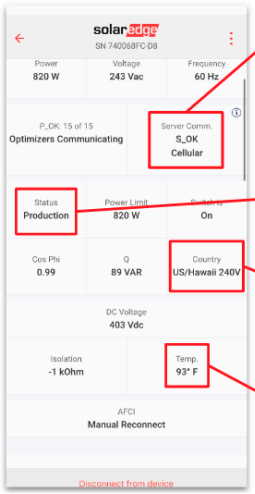
Step 11: System Status Checklist

System Production displays a value of the solar wattage

Power displays a value, this can be import or export power

Optimizers are communicating and equal the amount of modules installed. Example P_OK 15 of 15





Server Communications display S_OK

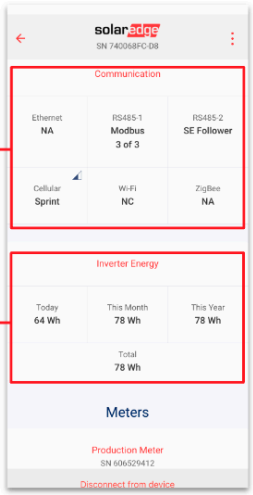
Status displays the current operating mode of the system, example shown here Production

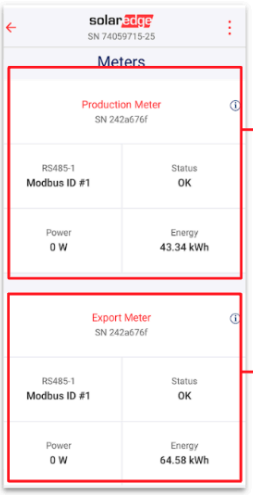
Country shall match the geographical location of the installation.

Temp shall show a value greater than 0.

Monitoring Communication displays the current connection to the SolarEdge Monitoring Portal, and the devices connected to the inverter

Inverter Energy displays inverter output over time





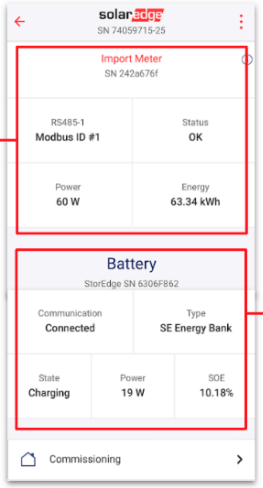
Production Meter located in the Home Hub (Meter 1) used to measure PV production.
RS485-1 = Modbus ID # 1
Status = OK
Power = Current power flow through the system.

Export Meter located in the inverter used to measure Export+Import Power. Example shown indicates 0 W Power being exported to the Grid.
RS485-1 = Modbus ID # 1
Status = OK

Import Meter located in the inverter used to measure Export+Import Power.

Example shown indicates:

- 60 W Power being imported from the Grid.
- RS485-1 = Modbus ID # 1
- Status = OK



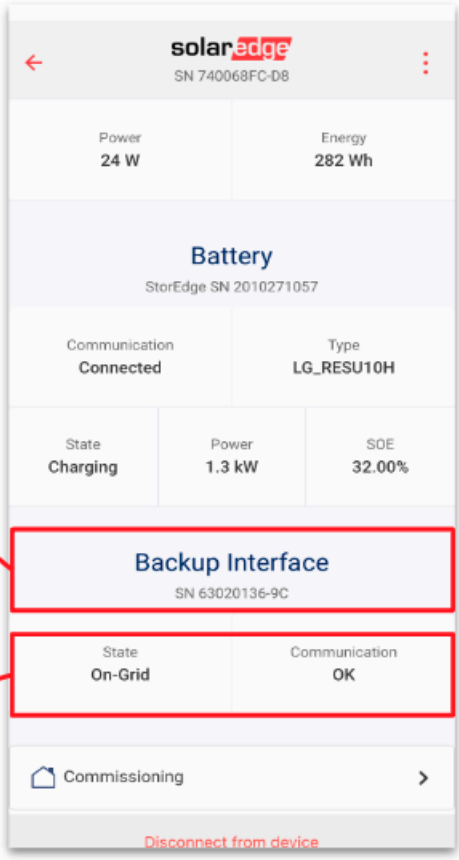
Battery Information is correctly populated.

- Communication = Connected
- Type = LG_RESU10H or SE Energy Bank
- State = Charging, Discharging depending If dual batteries installed the second battery will show standby.
- Power = Current charge/discharge power
- SOE = Current battery %.

Backup Interface:
Serial Number shall match BUI installed on site.

Backup Interface:

- State may = On-Grid or Backup
- Communication = OK



Step 12: Battery Backup Test

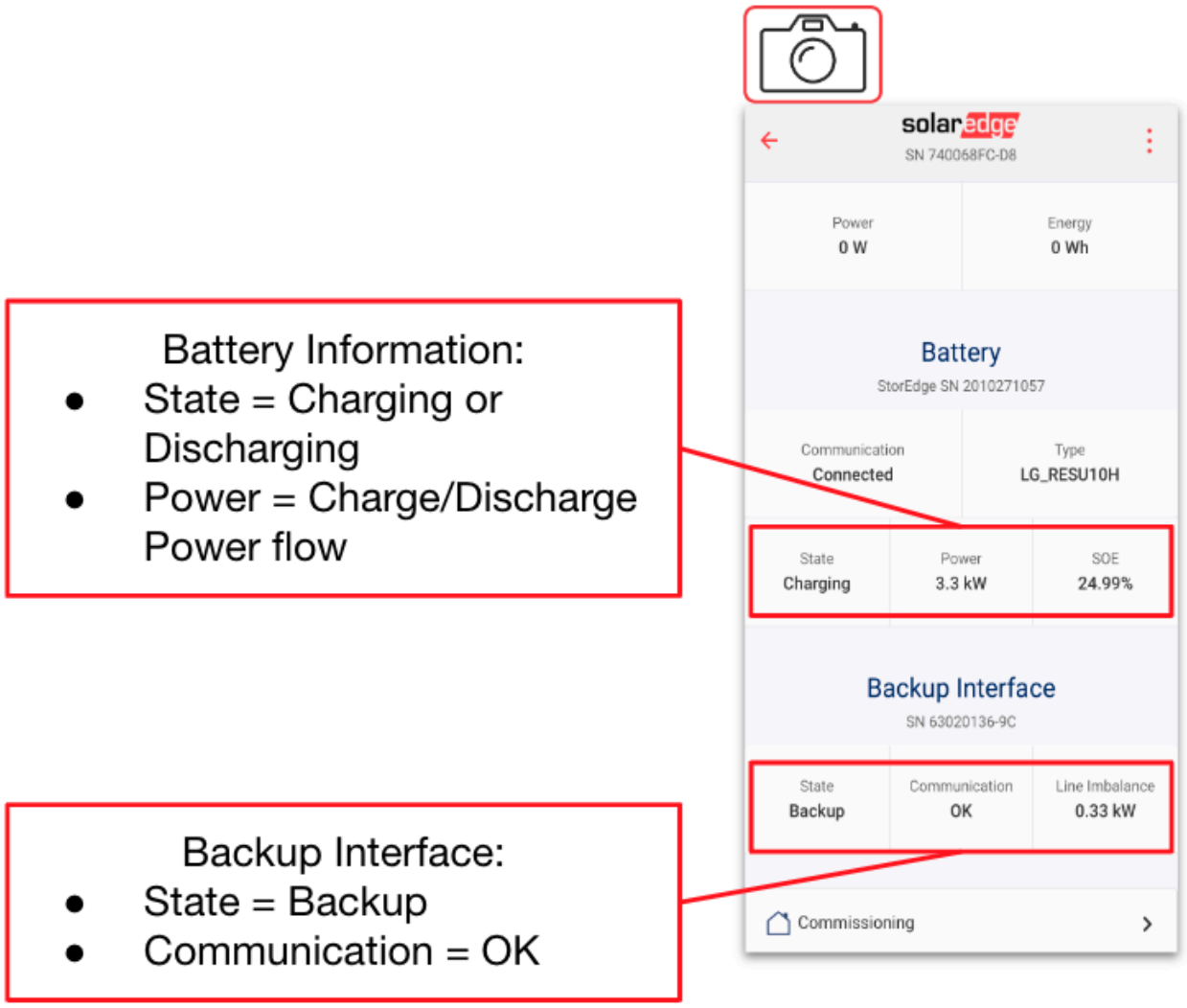
A backup test is required. To complete the backup test, disconnect the

grid power from the BUI by turning off the home's main breaker.

- Power shall be turned off for a minimum of 15 minutes.

- Backup Interface Status shall show **State = Backup**

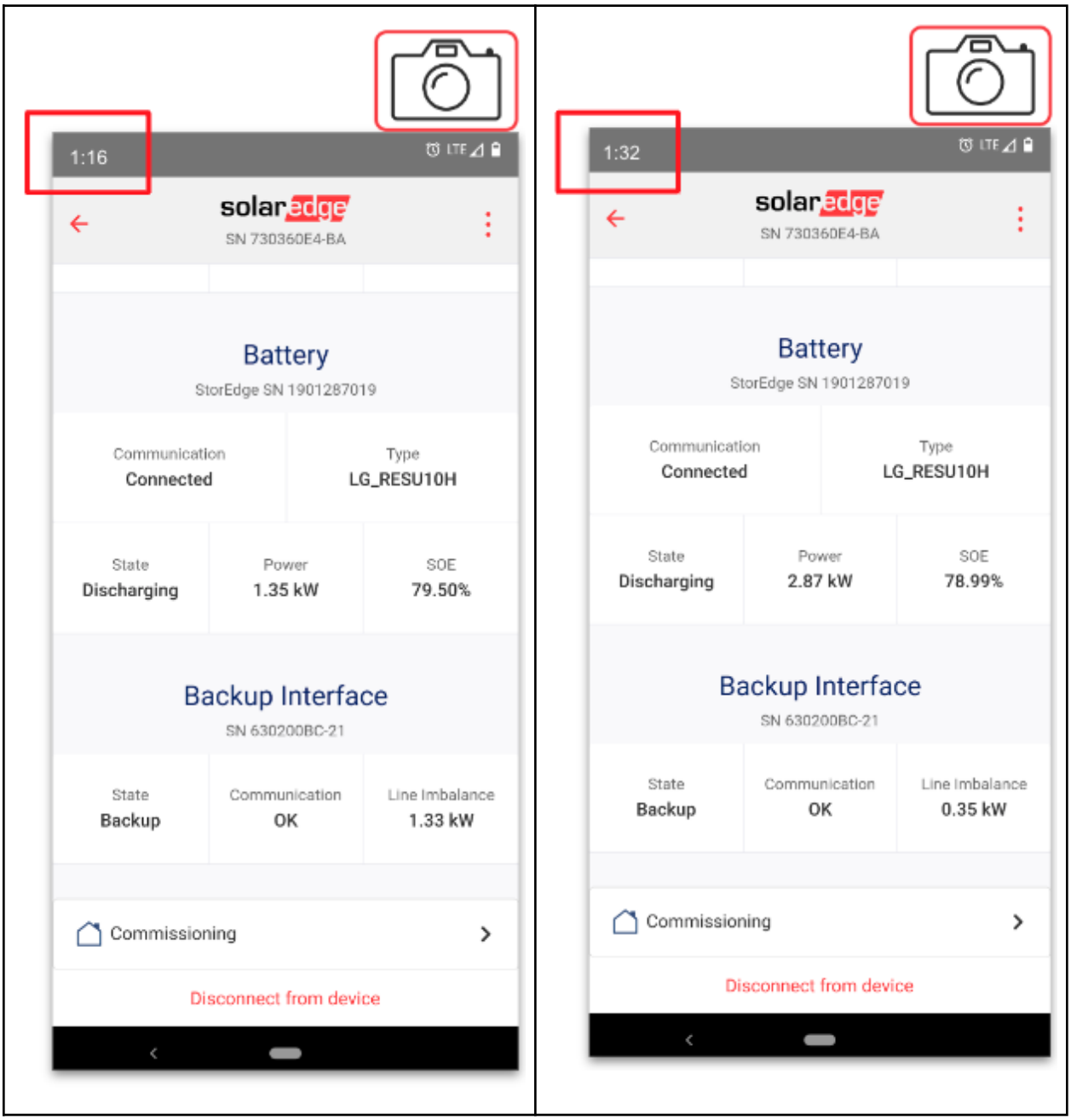
- Battery status shall show:
  - **State = Charging/Discharging**
  - **Power = Battery power importing or exporting in kW**
  - **SOE = Remaining battery %**



During the required backup test, two screenshots are needed, a minimum of 15 minutes apart.

- Screenshot when the system first enters backup for a timestamp.

- Allow a minimum of 15 minutes to elapse and take another screenshot for a backup timestamp.

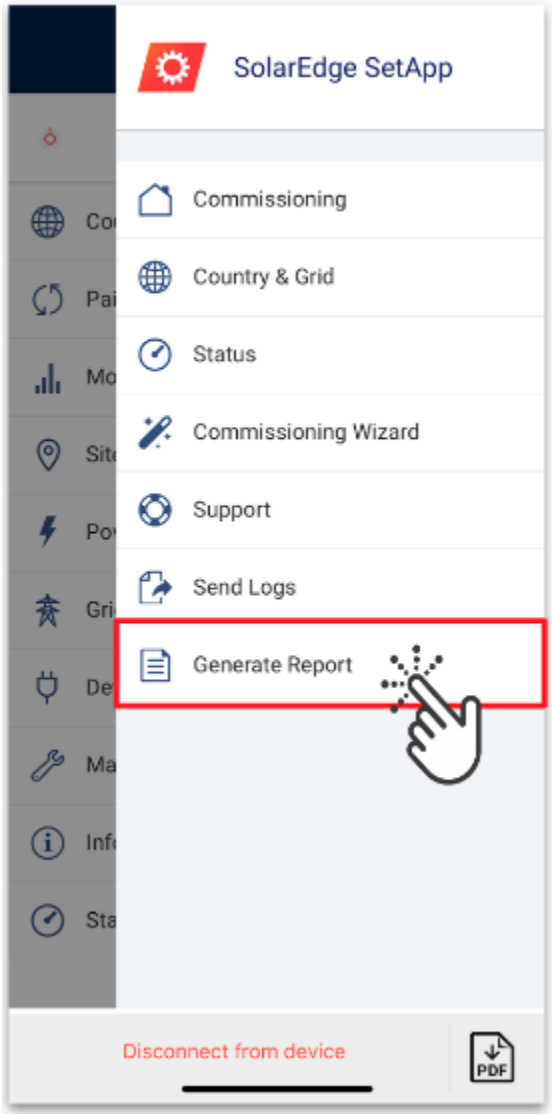


- Return the system to normal, on-grid, operation.

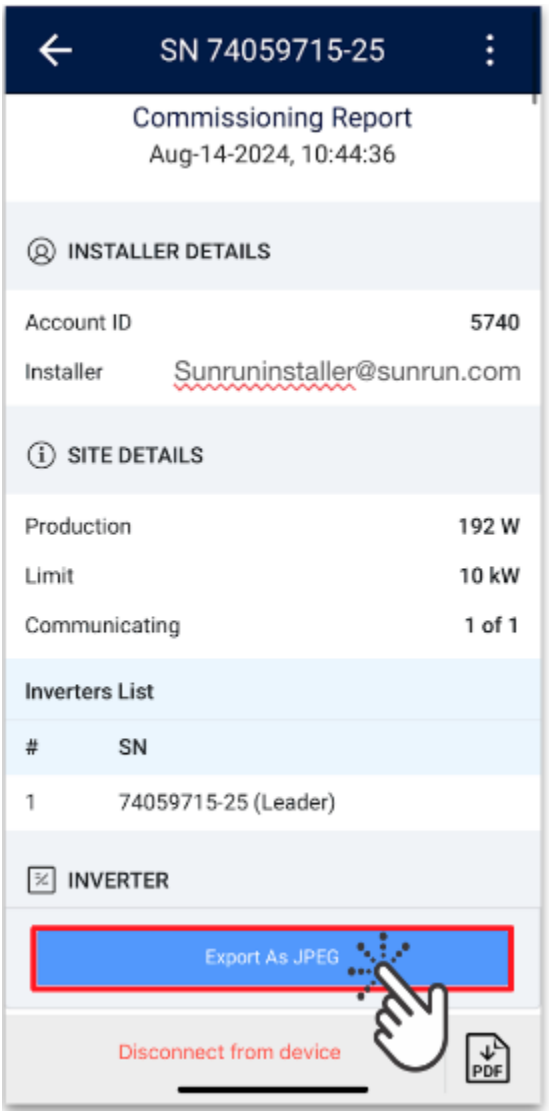
NOTE: Verify all expected backup circuits are functioning.

Step 13: Summary Report

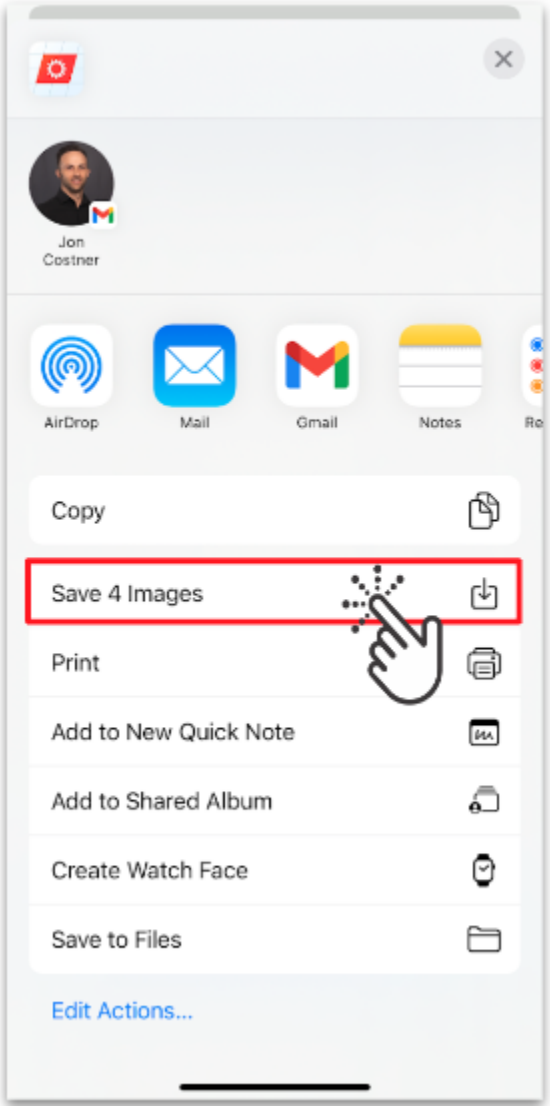
1. From the main screen tap the **Menu** > **Generate Report**



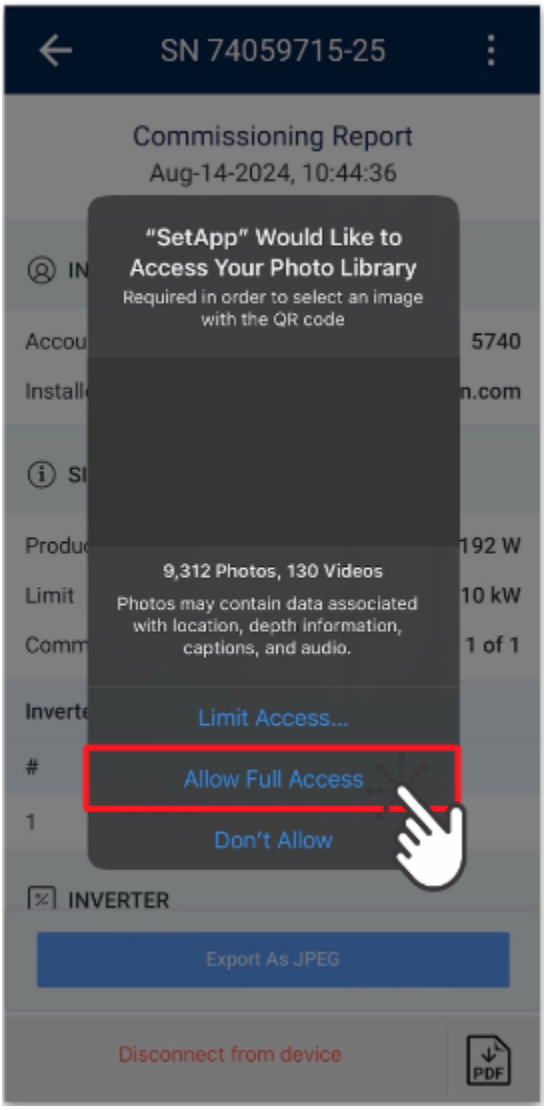
2. Tap **Export As JPEG**



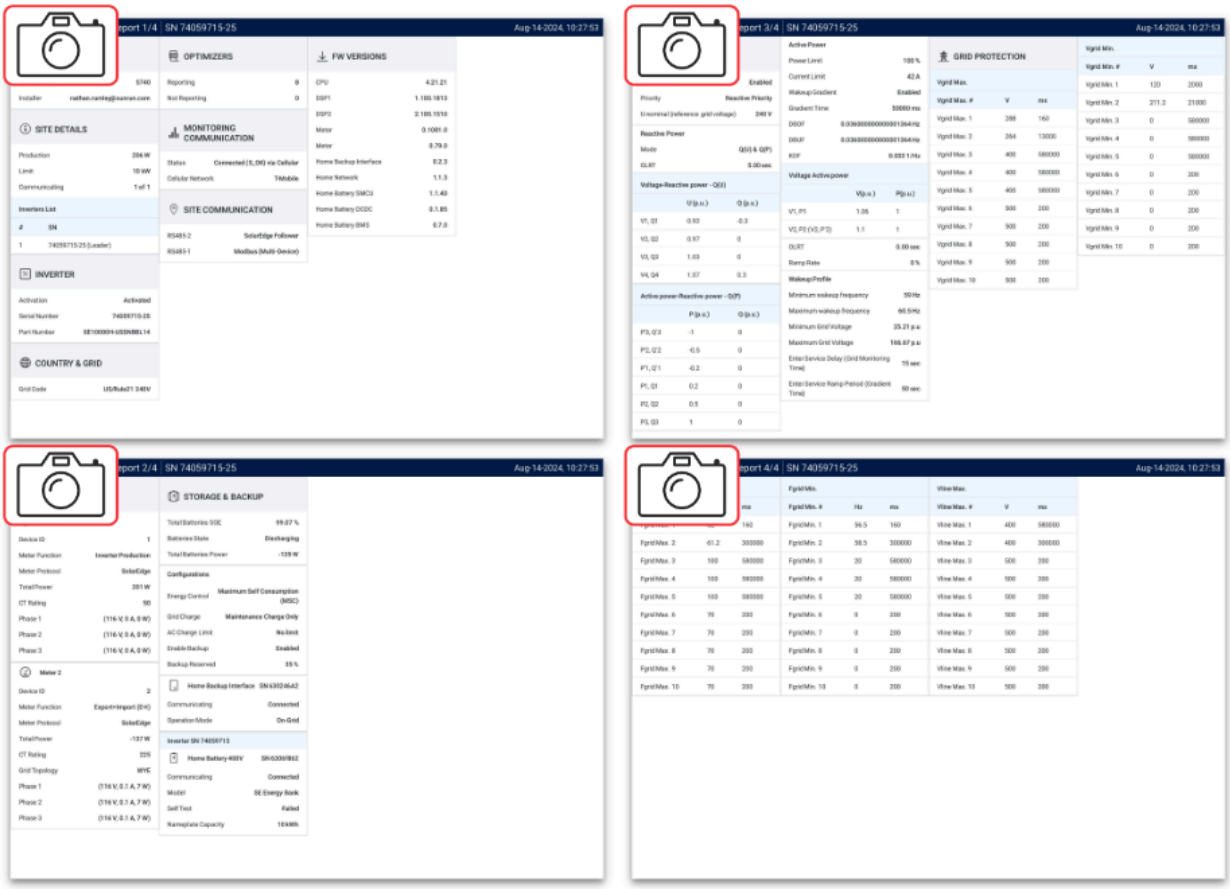
3. Tap **Save 4 Images** to save to the phone’s camera roll



4. If prompted, tap **Allow Full Access** to save the images



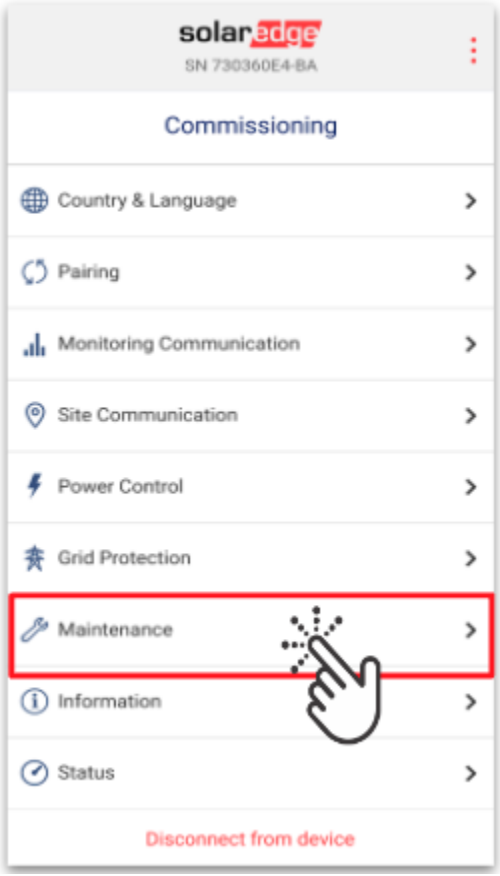
5. Upload the four summary images to the FIC.



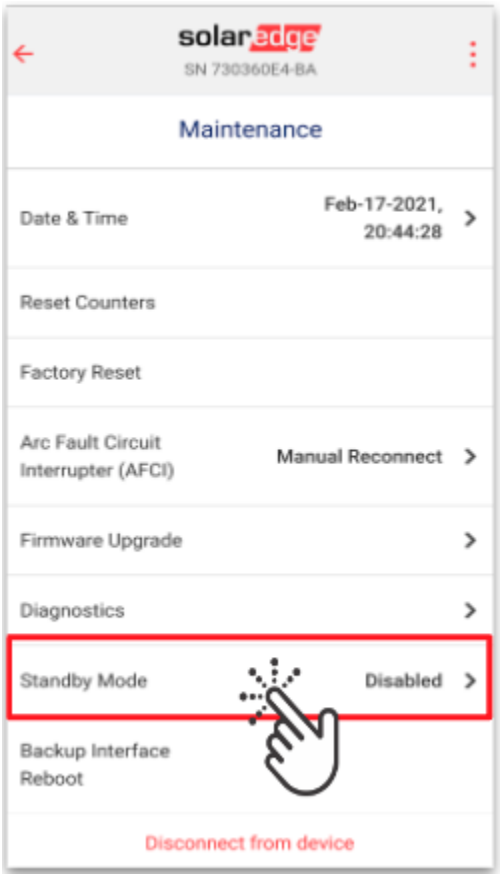
Step 14: Leave State: Remote Activation

- If the local AHJ/utility allows for remote activation of PV systems, the system shall be left in standby mode.
- The system shall be producing power and battery charging or discharging before setting the system to standby mode.

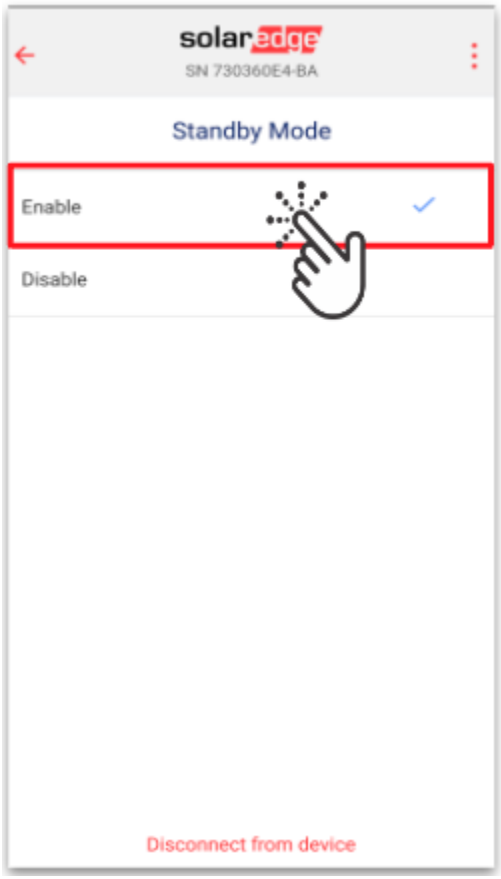
1. Tap **Maintenance**



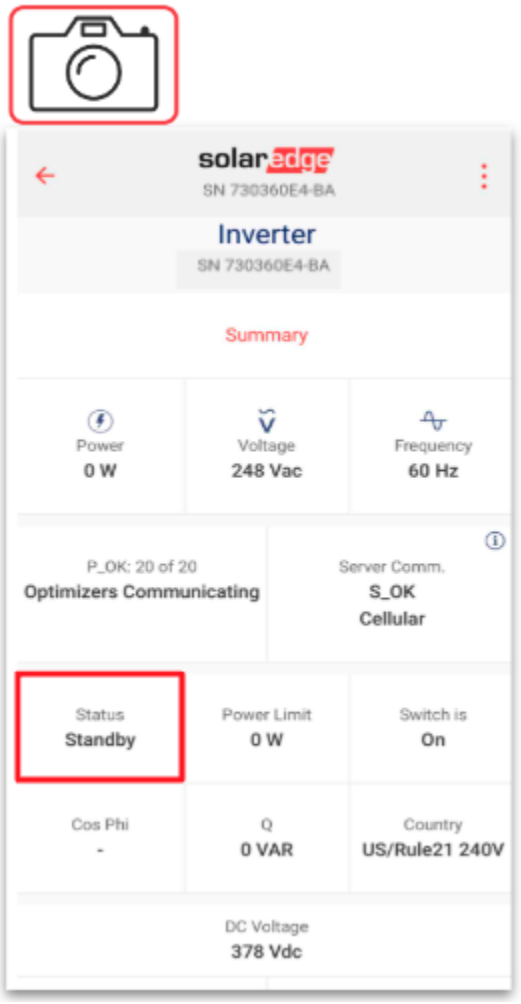
2. Tap **Standby Mode**


solaredge
SN 730360E4-BA
Maintenance
Date & Time
Feb-17-2021, 20:44:28
Reset Counters
Factory Reset
Arc Fault Circuit Interrupter (AFCI)
Manual Reconnect
Firmware Upgrade
Diagnostics
Standby Mode
Disabled
Backup Interface Reboot
Disconnect from device

3. Tap **Enable**



4. Return to Status Screen and verify Status



No Remote Activation

- If the local AHJ/utility does not allow for remote activation of PV systems, the following equipment **shall** be left in the **OFF** position:

- Battery On/Off switch in the **OFF** position.

- Battery DC Main Breaker in the **OFF** position.

- All AC and DC disconnects in the **OFF** position.

- All PV breakers in the **OFF** position.

- Inverter DC disconnect in the **OFF** position.

- Sunrun will contact the customer to walk them through activating the system, once PTO is granted.

Verification

- ❏ All the latest versions of firmware were uploaded to the Inverter and BUI
- ❏ Monitoring was set properly to Cellular (S_OK is present)
- ❏ Pairing was completed and all optimizers are reporting
- ❏ All batteries are communicating with the inverter
- ❏ BUI is communicating with the inverter
- ❏ Meter 1 is configured to Inverter Production only in site communications
- ❏ Meter 2 is configured to Export/ Import E+I in site communications
- ❏ Correct CT value was set in Meter 2

- ❏ Backup Configuration set correctly through Energy Manager Menu
- ❏ Backup Test successfully completed - 15 minutes in backup with all loads functioning
- ❏ Meter test completed successfully - CT's are properly placed
- ❏ All required screenshots submitted with the correct information

Multiple SolarEdge Inverters

Step 1: Verify CTs and Phases

IMPORTANT: Prior to commissioning, technicians shall verify the following information and correct any issues that are identified.

- Verify that phases are correct throughout the entire electrical wiring system (from the grid power entrance point to the last device (Inverter, backup load panel, etc.)
  - Phase Identification - Work Instruction - INS-WRK-0017

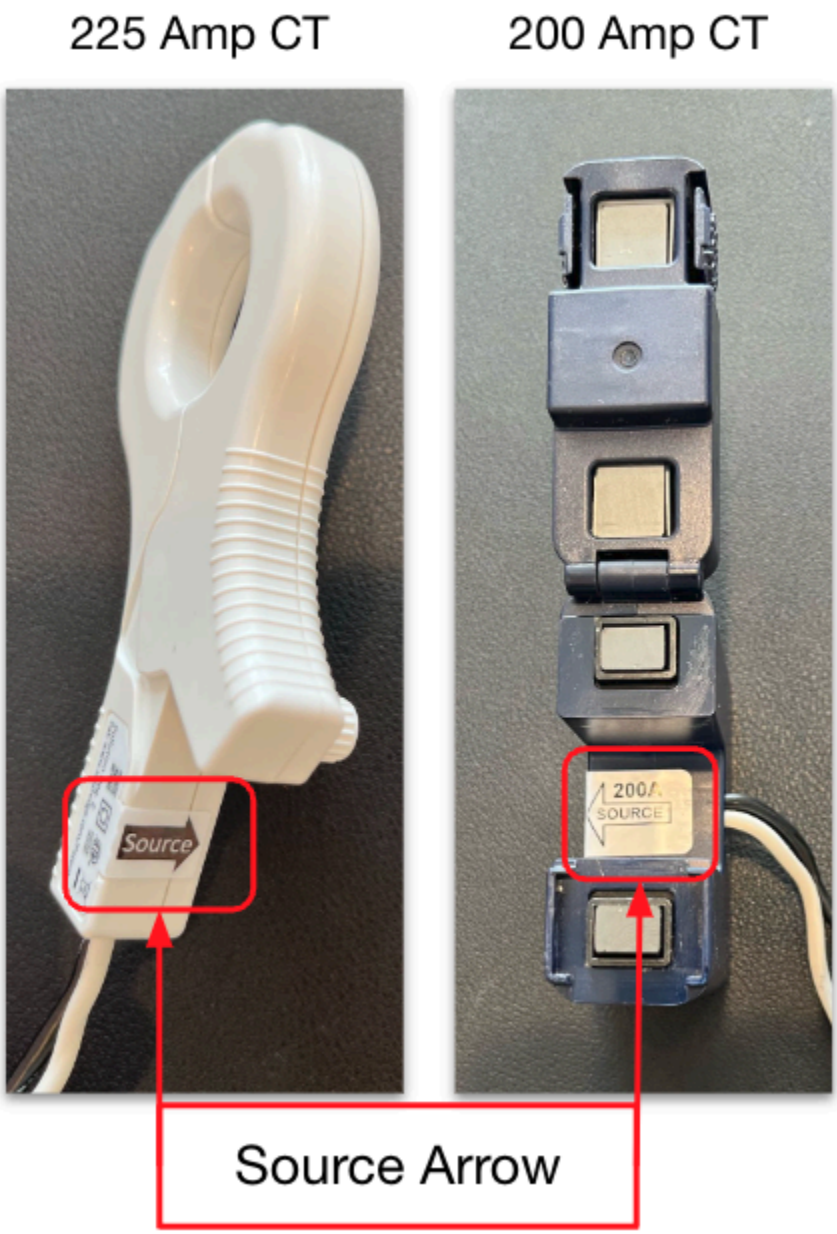
- Verify Amperage of CT’s installed (200 Amps or 225 Amps)

- Verify CT’s have been placed in the correct location to capture all loads (including solar) in the electrical system

- Verify CT’s are installed on their corresponding phase

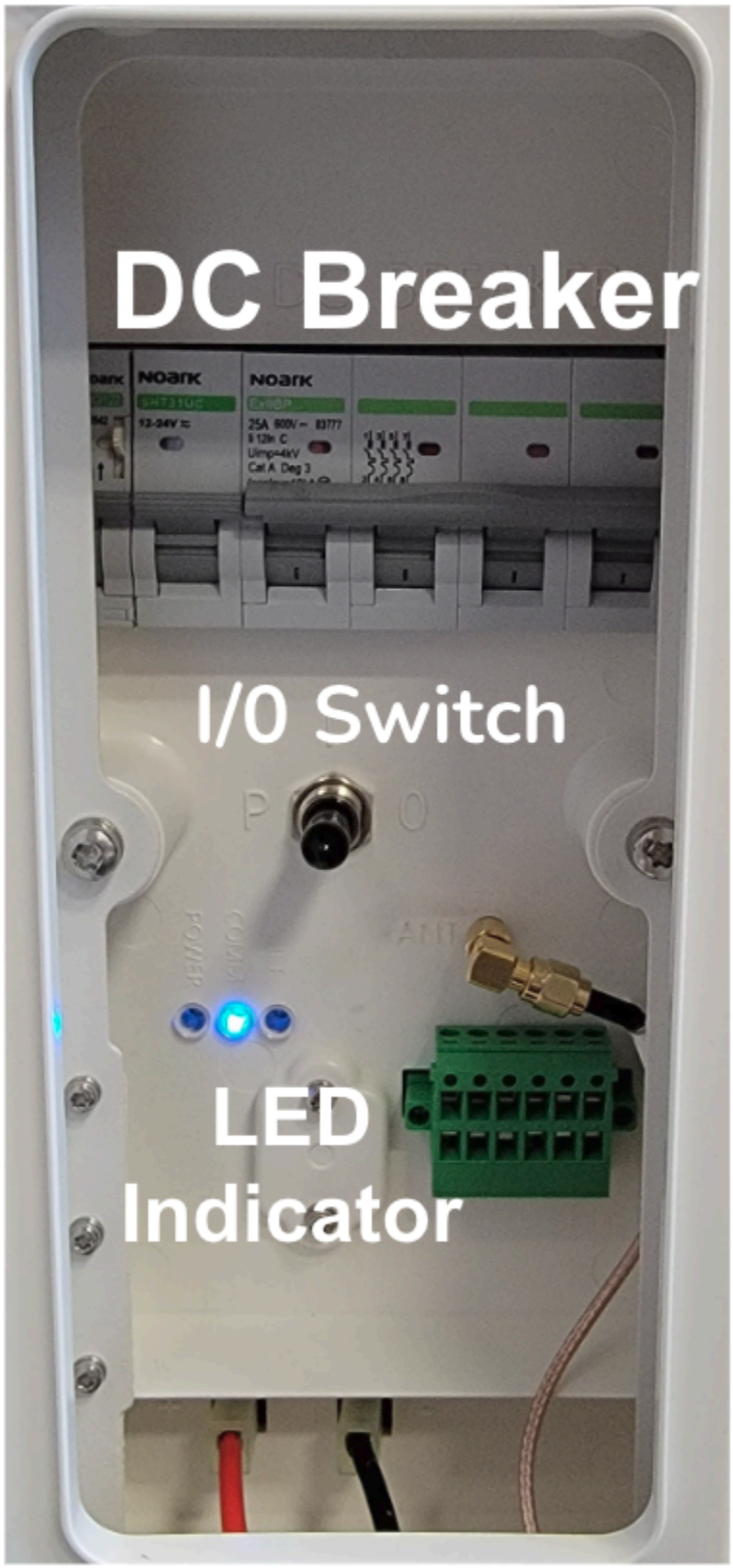
- Verify CT’s are installed with the arrow pointing toward the source

- Refer to the CTs Current Transformers - Work Instruction - INS-WRK-0010 for additional Current Transformer information.



Step 2: Activation and Firmware Update (Leader/Follower Inverters)

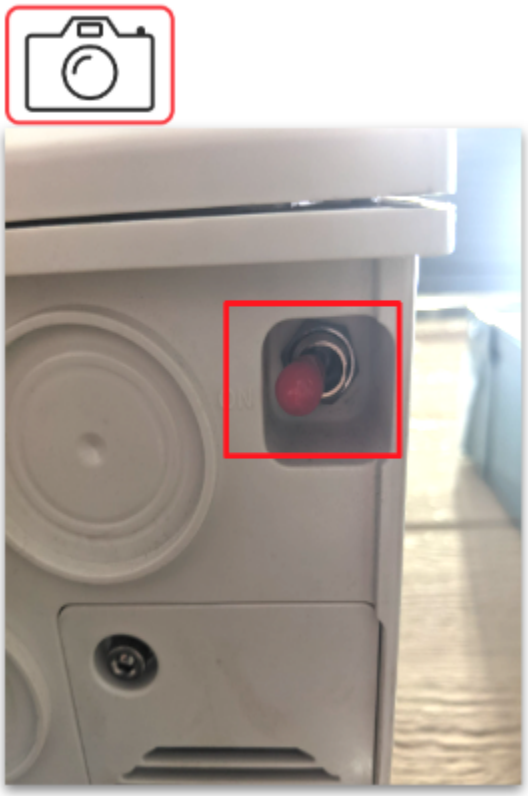
1. Power on the battery prior to commissioning.


DC Breaker
I/0 Switch
LED
Indicator

	Pro Tip: Home Battery might display fault light on during initial start up. Hold I/0 Switch to the left for 3 seconds and release to clear fault.

2. Power **ON** all devices prior to starting activation and firmware updates

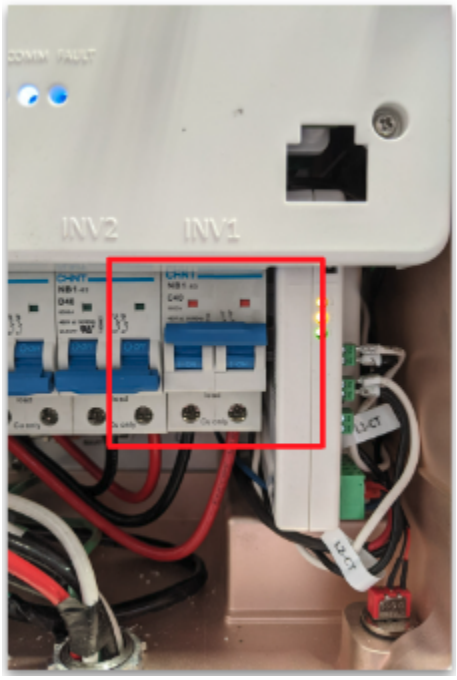
3. Turn the BUI **ON** using the toggle switch located on the bottom of the unit.



4. Turn the Manual Control Switch to the **OFF** position.

5. If applicable, switch the Main Breaker to the **ON** Position.

6. Switch **ON** the inverter breaker(s) located In the BUI.

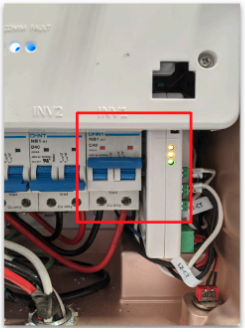


NOTE: Technicians shall be required to install the most recent Inverter and battery firmware updates at the time of installation. The activation of the Inverter and the latest firmware is automatically pushed through SolarEdge SetAPP upon connecting to the Home Hub Inverter for the first time.

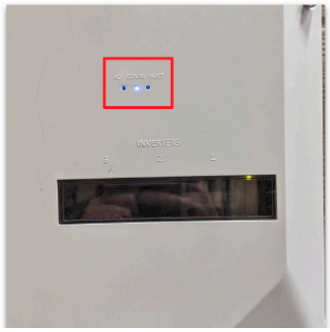
7. Verify the battery, BUI, energy meter inside the BUI, and Inverter are all powered ON.

Home Battery Battery ON

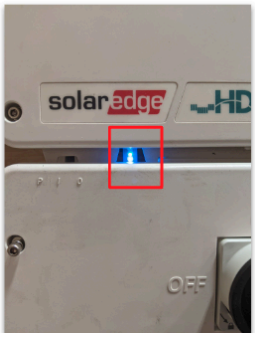
Backup Interface PV breaker ON



Backup Interface ON



Inverter ON



8. Open the SolarEdge SetApp on your mobile device.

SetApp

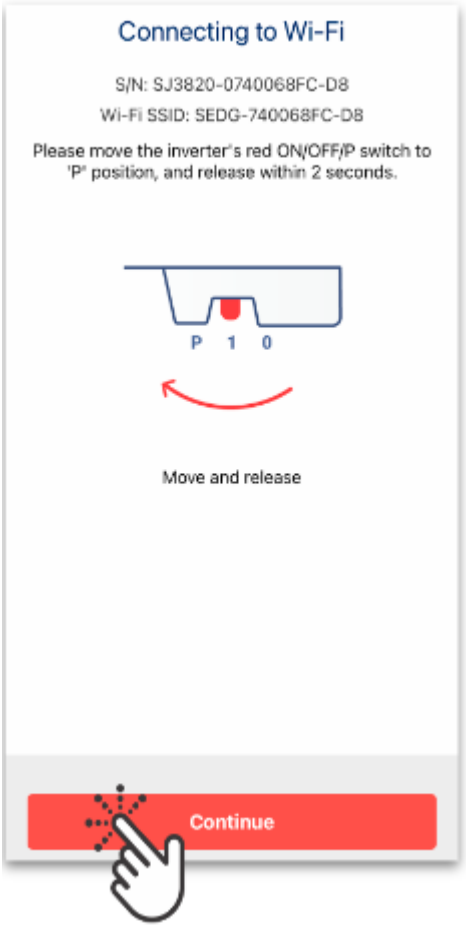
NOTE: This step will begin the firmware and activation for each inverter on-site.

- Once the updates have begun on the Leader inverter, Follower inverter updates can be initiated.
- By following this step, it is possible to update all Leader and Follower inverters simultaneously.
- The leader and follower inverters will be assigned on site by the installer. The leader and follower locations are not called out on the plan set.
- Look for the **(Leader Inverter)** and **(Follower Inverter)** indications for steps performed on each inverter.

(Leader Inverter)

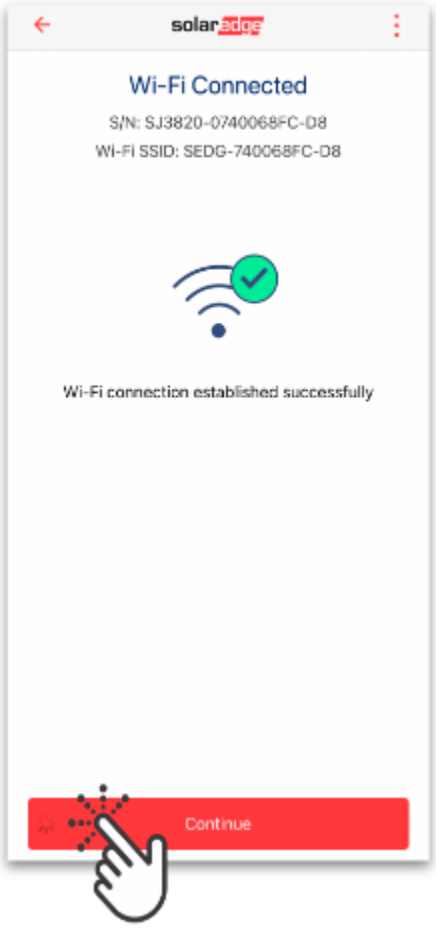
9. Scan the inverters QR located on the side of the unit.

10. Move the inverters P-1-0 switch to P for two seconds and release.

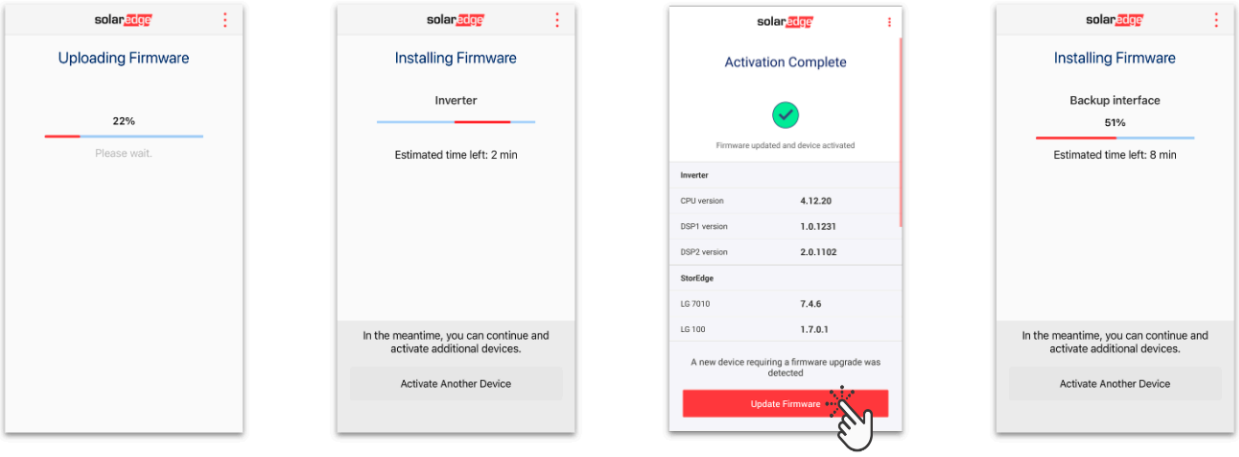


Tap **Continue**.

11. Once connected to the inverters WiFi. Tap **Continue**.



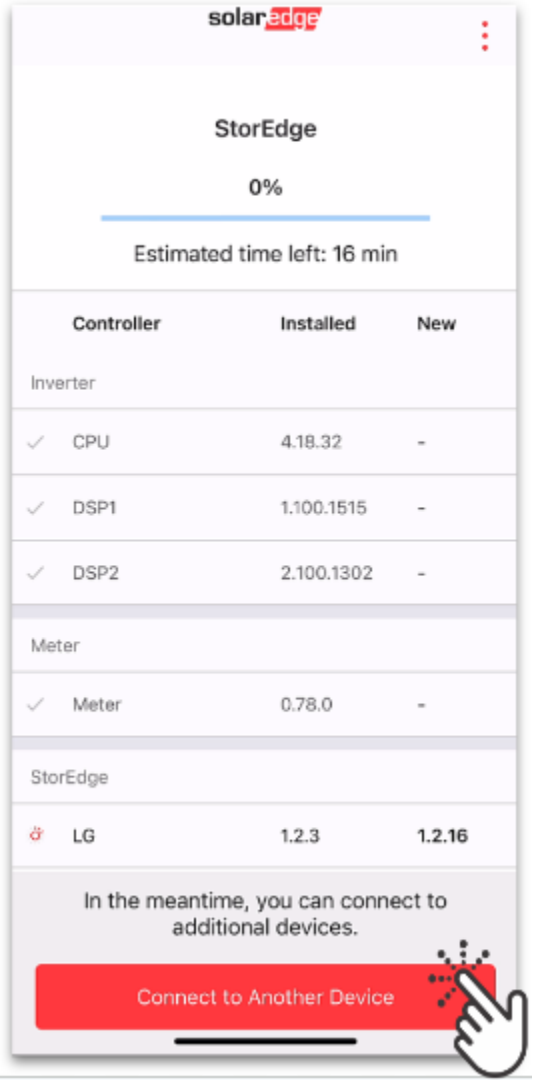
12. The following screens will display as the equipment receives the firmware updates. This process may take 20-30 minutes. Tap **Update Firmware** when prompted.



NOTE: The inverter LEDs will cascade from blue to green to red as the equipment is taking an update.

IMPORTANT: All equipment firmware versions shall be updated to the latest available.

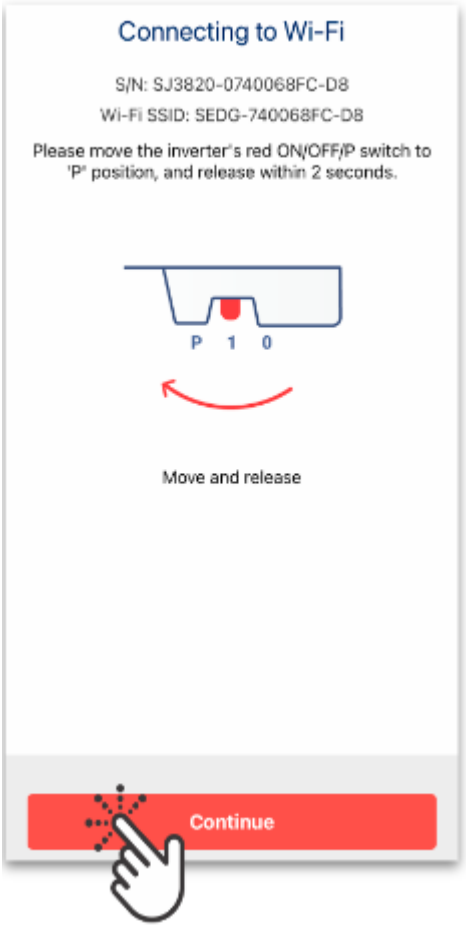
13. Tap **Connect to Another Device**



(Follower Inverter)

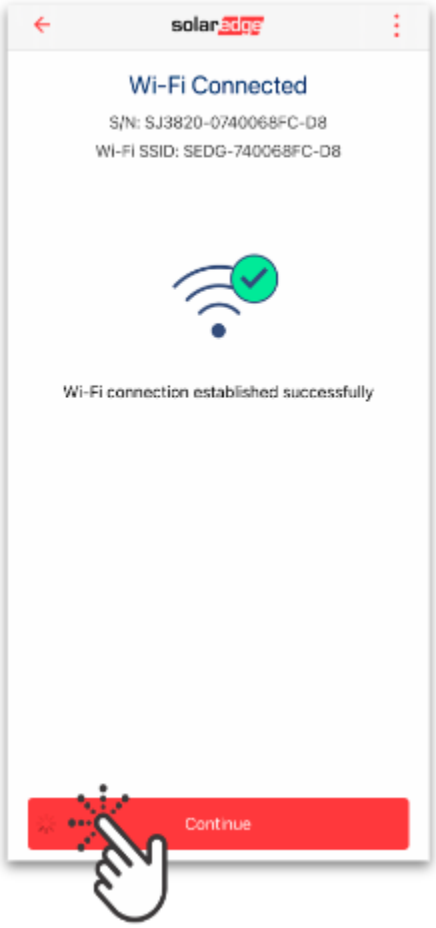
14. Scan the inverters QR located on the side of the unit.

15. Move the inverters P-1-0 switch to P two seconds and release.

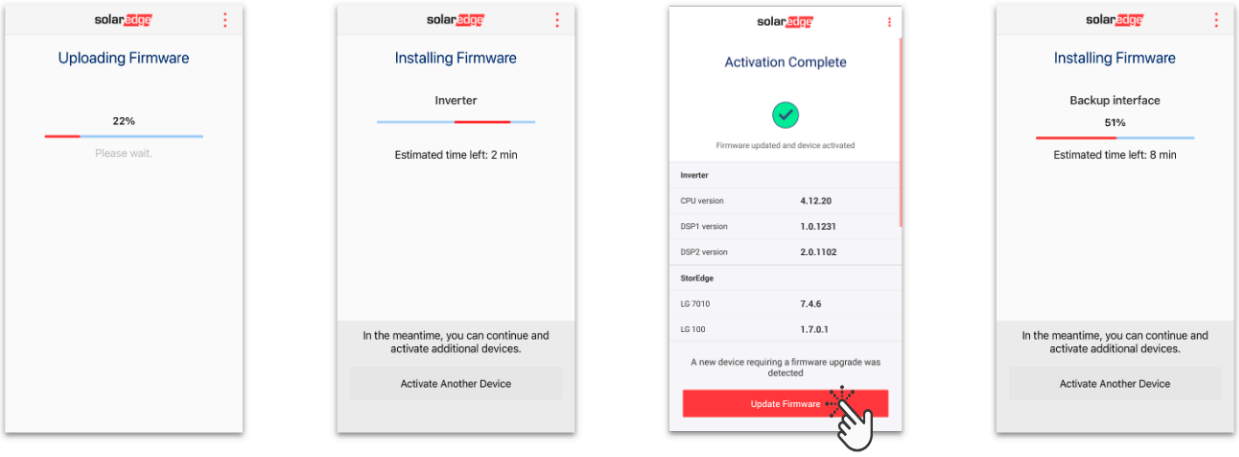


Tap **Continue**.

16. Once connected to the inverters WiFi. Tap **Continue**.



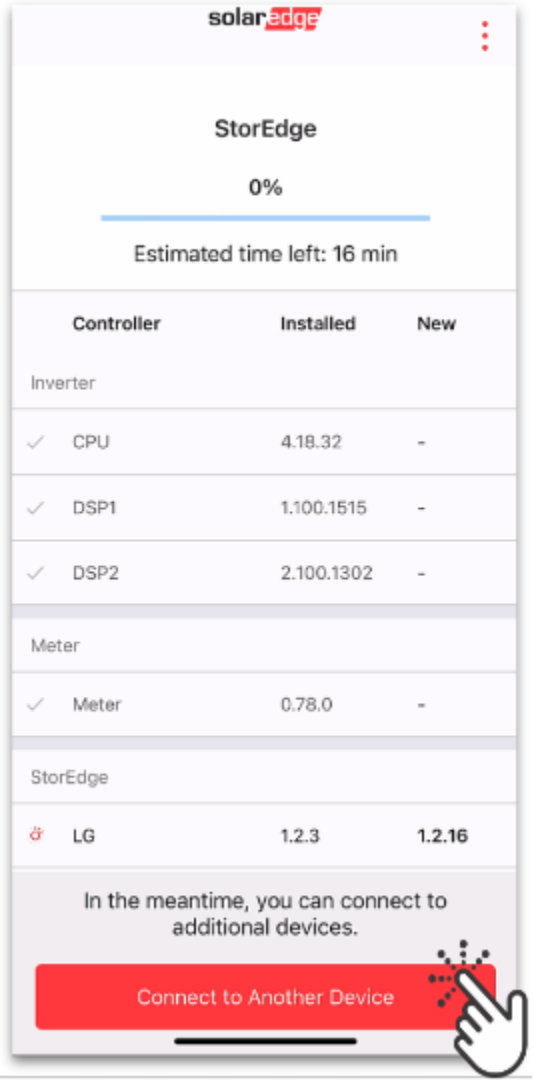
17. The following screens will display as the equipment receives the firmware updates. This process may take 20-30 minutes. Tap **Update Firmware** when prompted.



NOTE: The inverter LEDs will cascade from blue to green to red as the equipment is taking an update.

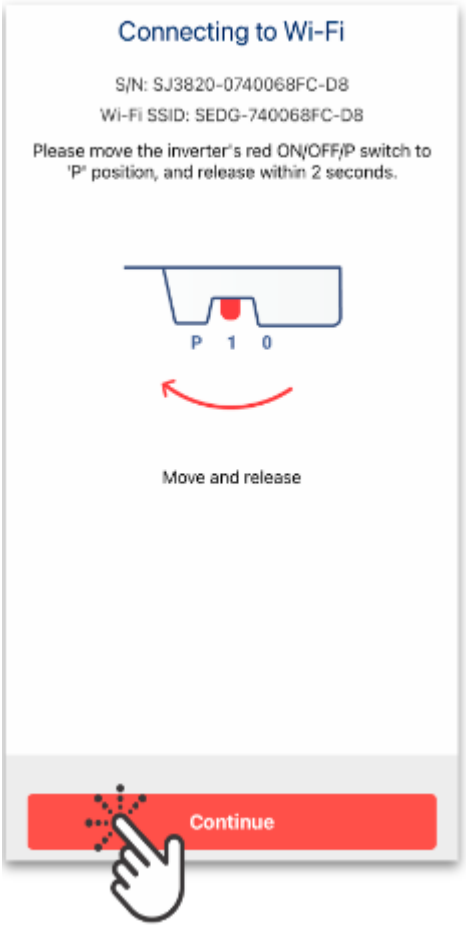
IMPORTANT: All equipment firmware versions shall be updated to the latest available.

18. Tap **Connect to Another Device**



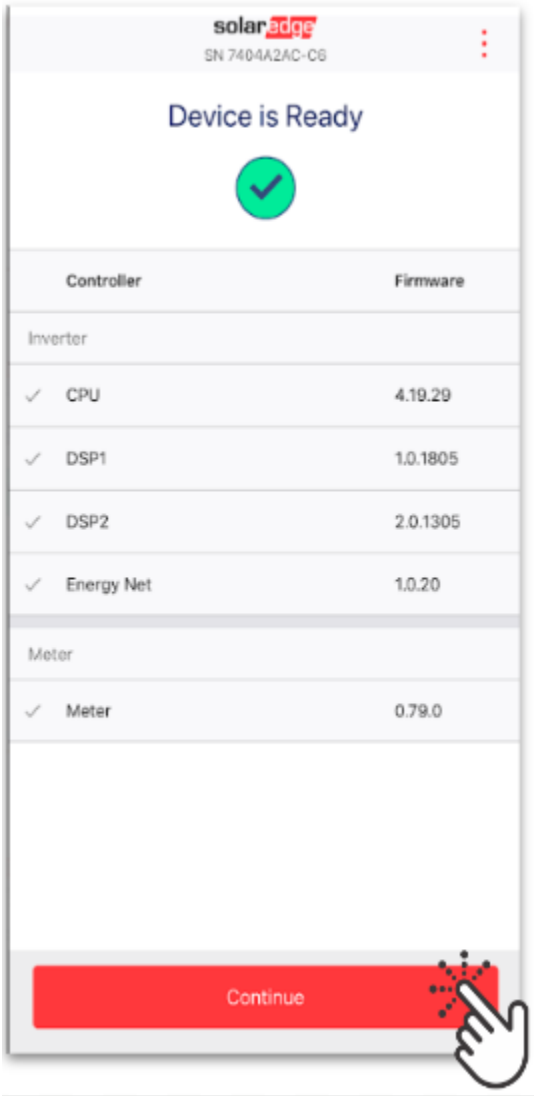
(Leader Inverter)

19. Scan the QR Code located on the side of the **Leader** Inverter
20. Move the inverters P-1-0 switch to P two seconds and release.



Tap **Continue**.

21. With updates complete, Tap **Continue**.

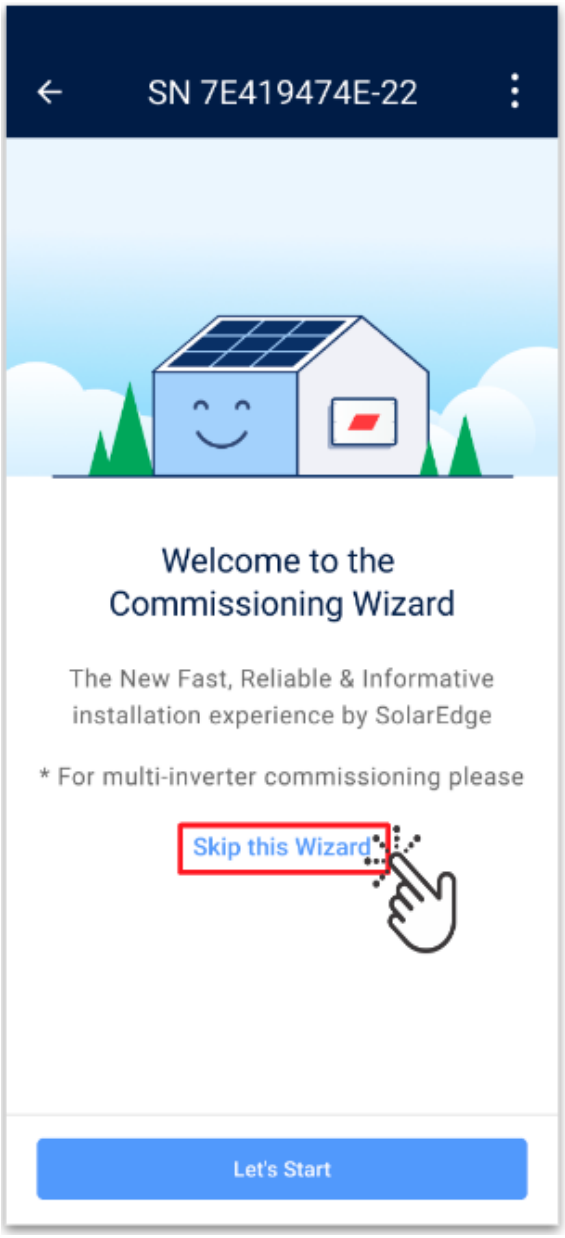


Skip Setup Wizard

NOTE: This setup wizard has known issues and is not ready for use with

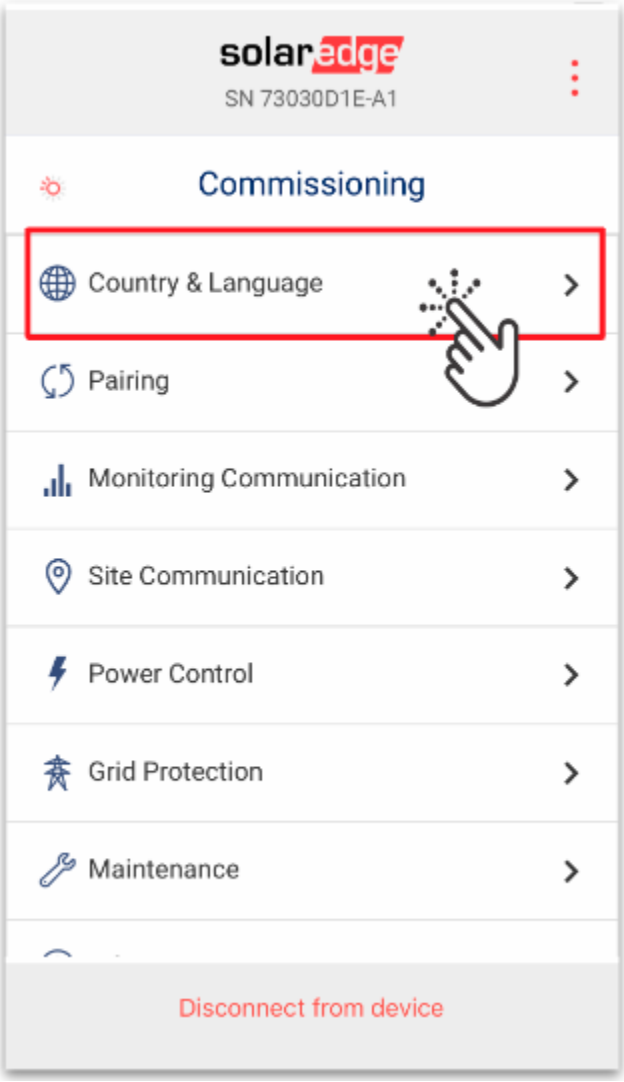
multiple inverters. This should be skipped for all SolarEdge inverters.

- Tap **Skip this Wizard** when prompted

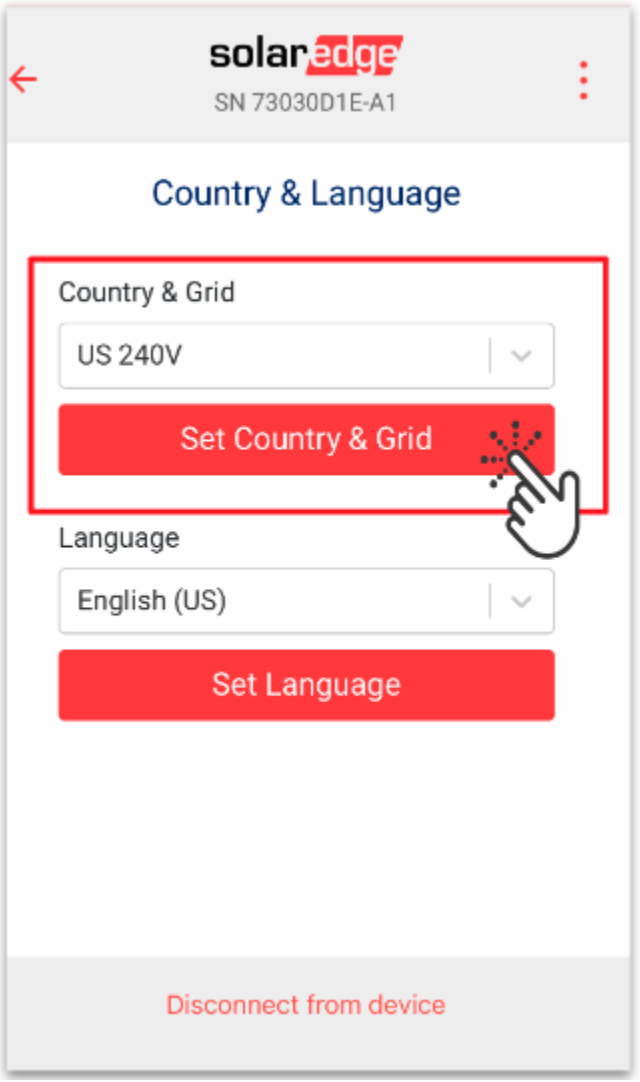


Step 3: Country and Grid Code Setup **(Leader Inverter)**

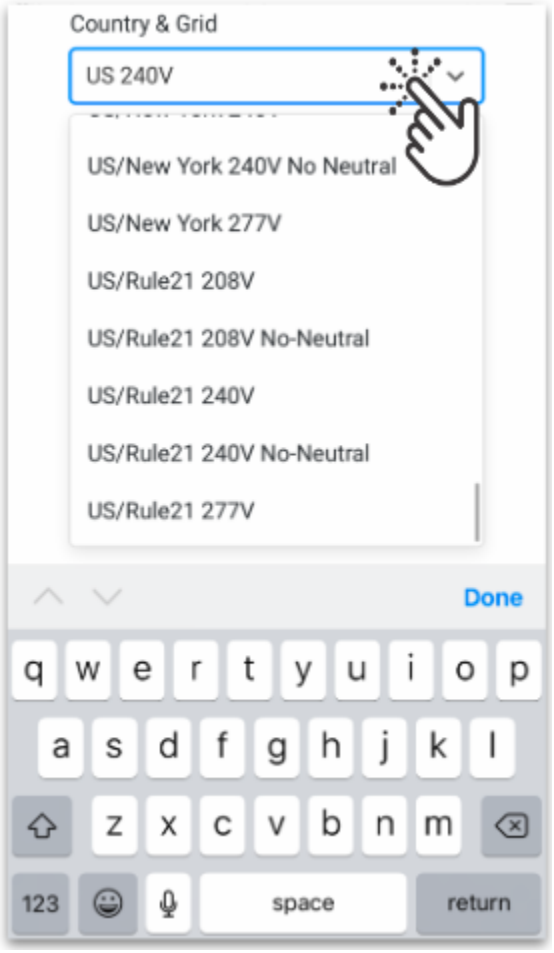
1. From the Commissioning Menu tap **Country & Language**.



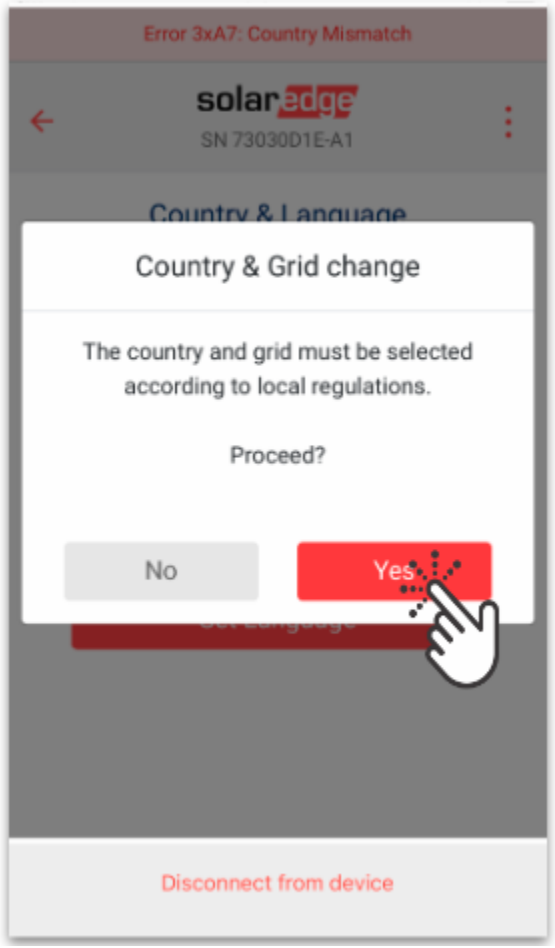
2. Next, tap **Set Country & Grid**



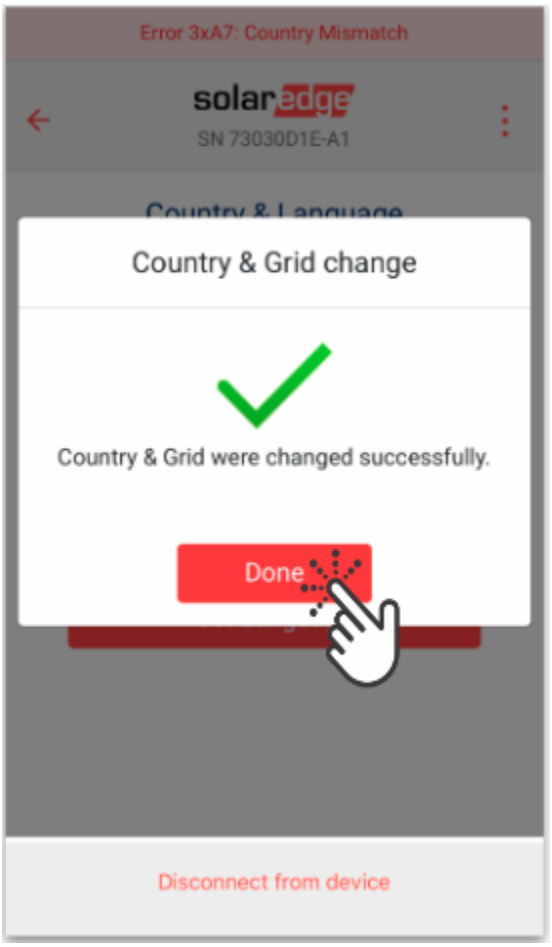
3. Set the country code according to the location of the install.



4. Once selected, tap **Yes**.

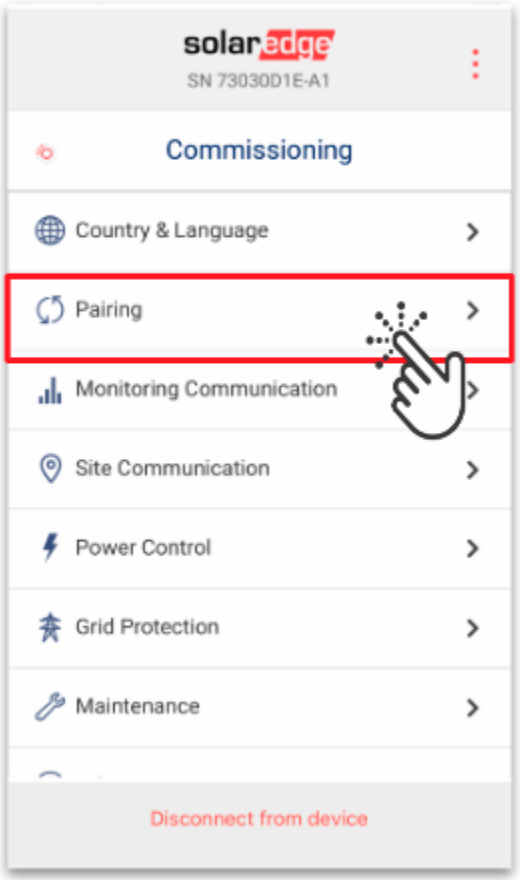


5. Tap **Done** to confirm.

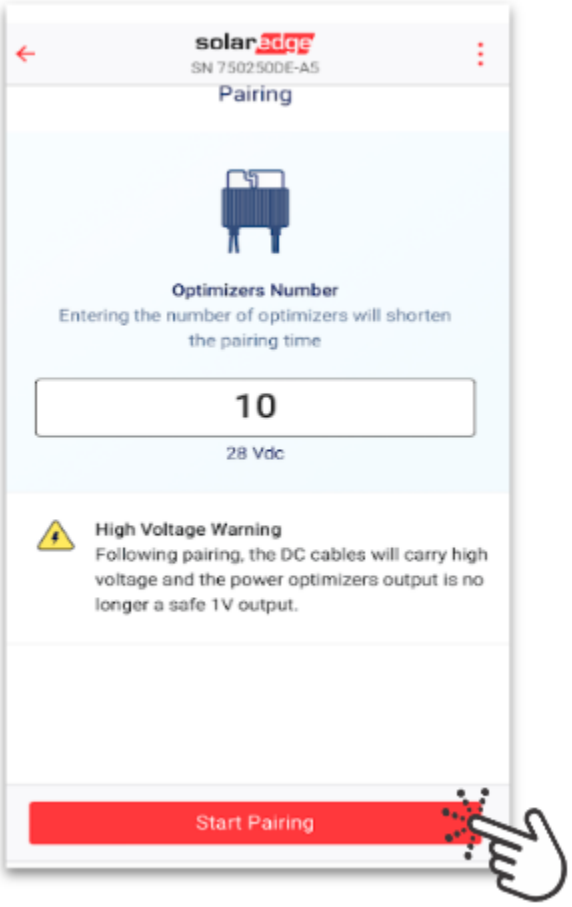


Step 4: Pairing and Monitoring **(Leader Inverter)**

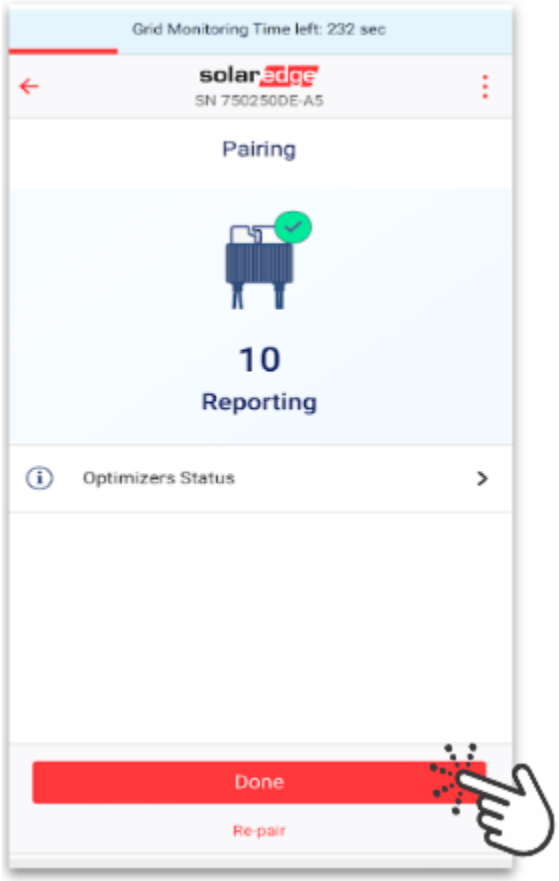
1. From the Commissioning Screen, Tap **Pairing**



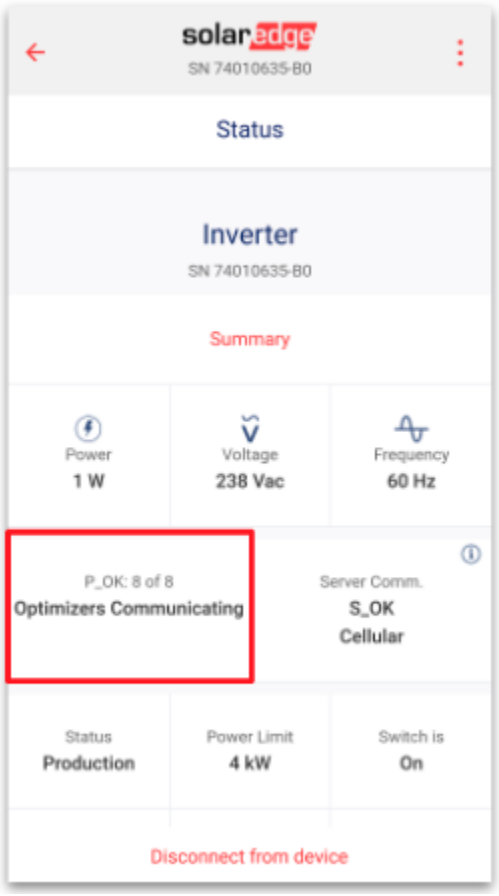
2. Enter the number of optimizers installed**,** Tap **Start Pairing**



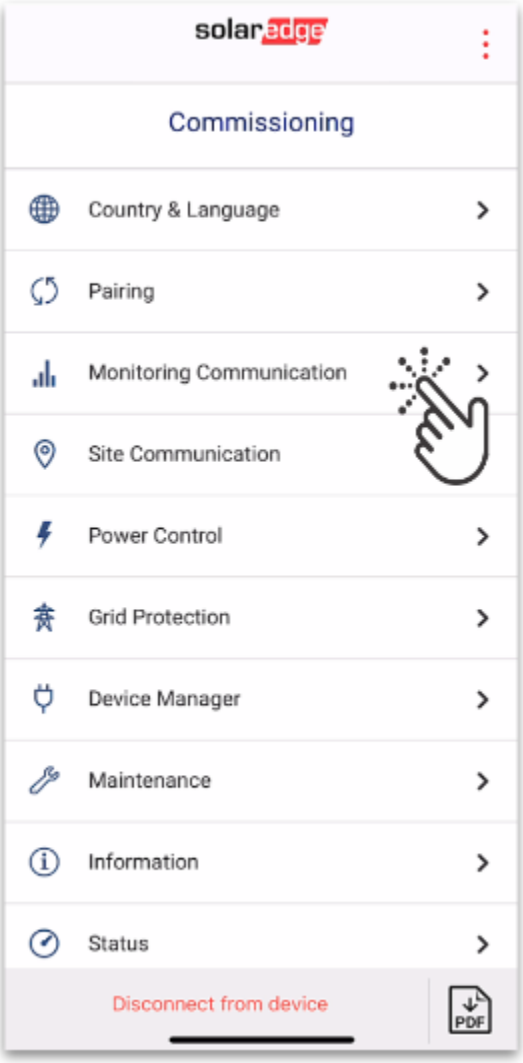
3. Allow pairing process to complete and Tap **Done**



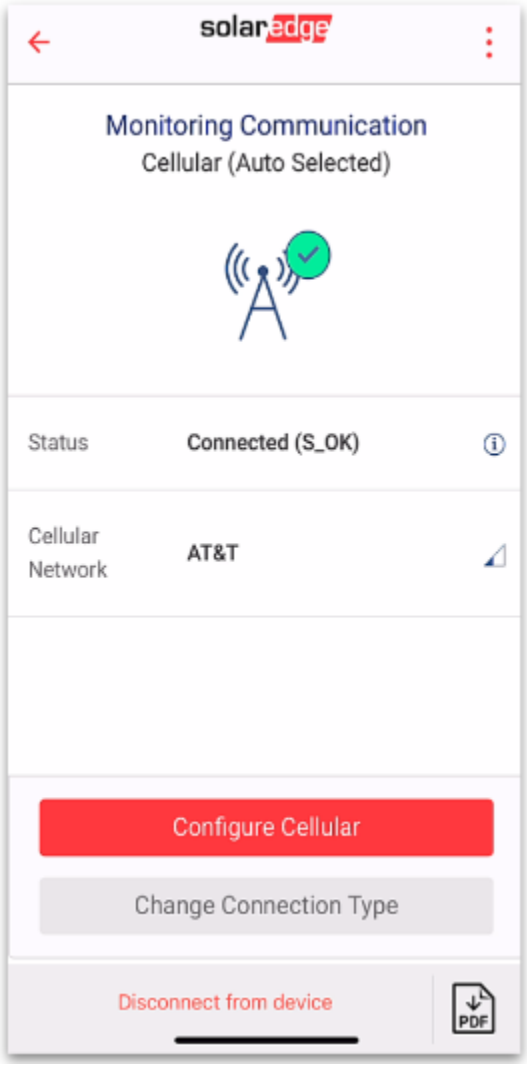
4. Return to Status Screen and verify P_OK: X of X Should match the amount of modules installed. This number will slowly count up until all optimizers are recognized.



5. Return to the main menu and Tap **Monitoring Communications**

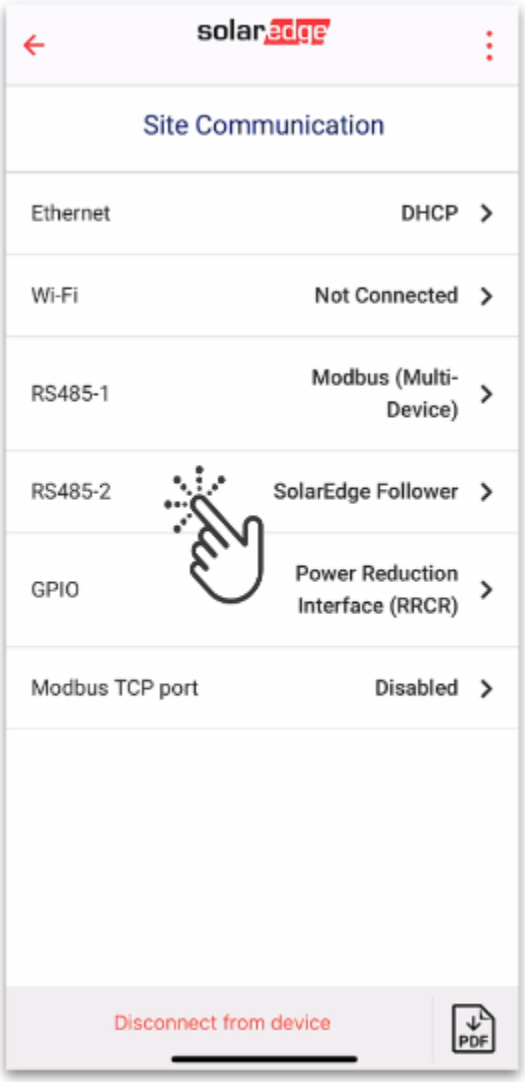


6. Verify cellular status is **Connected (S_OK)** and return to the main menu.



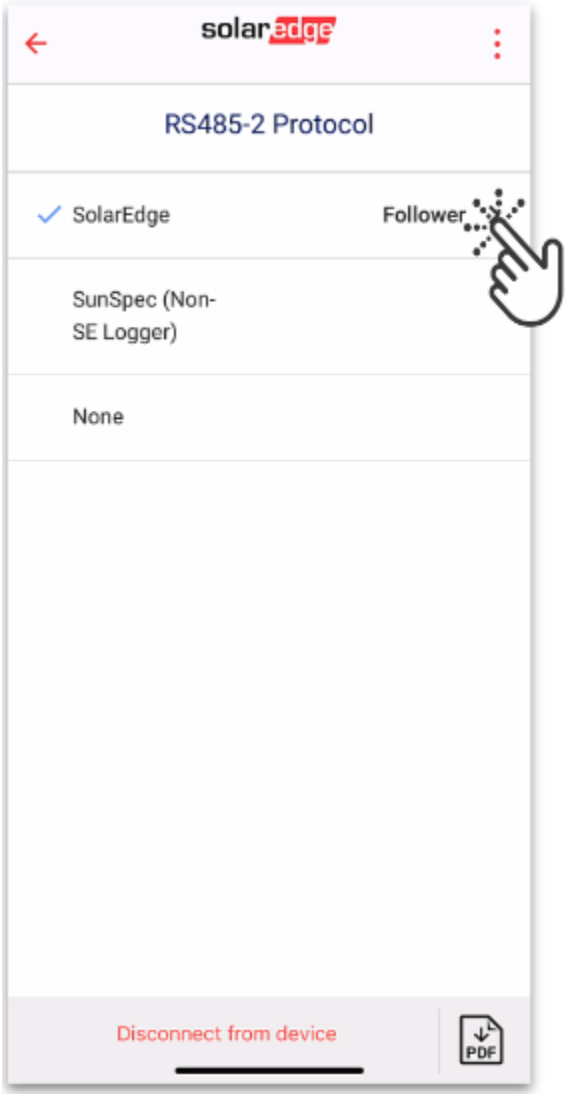
Step 5: Set Leader/Follower **(Leader Inverter)**

1. From the **Site Communication** menu, tap **RS485-2**



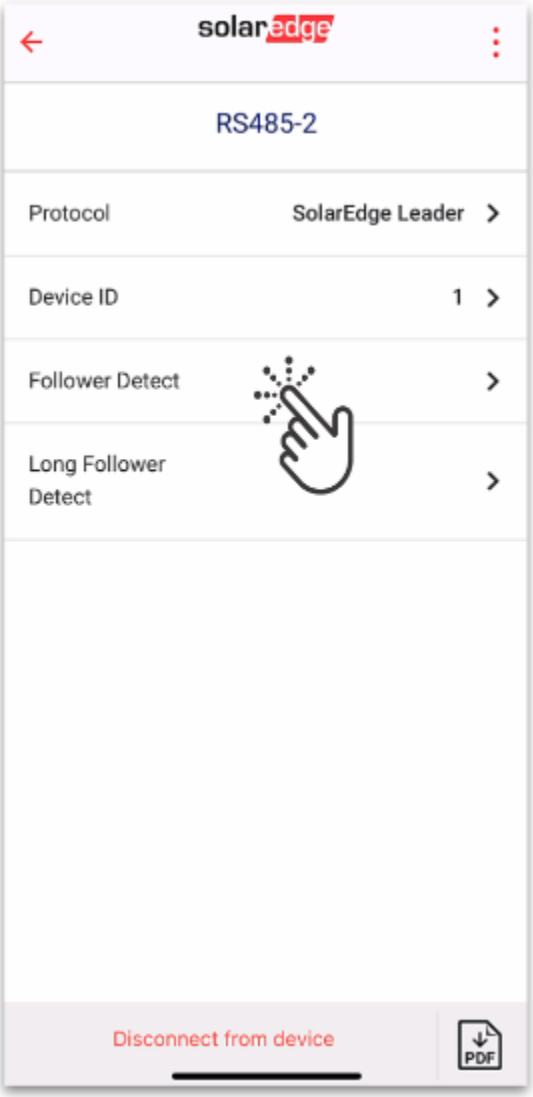
2. Tap **Protocol**

3. Tap **Follower**

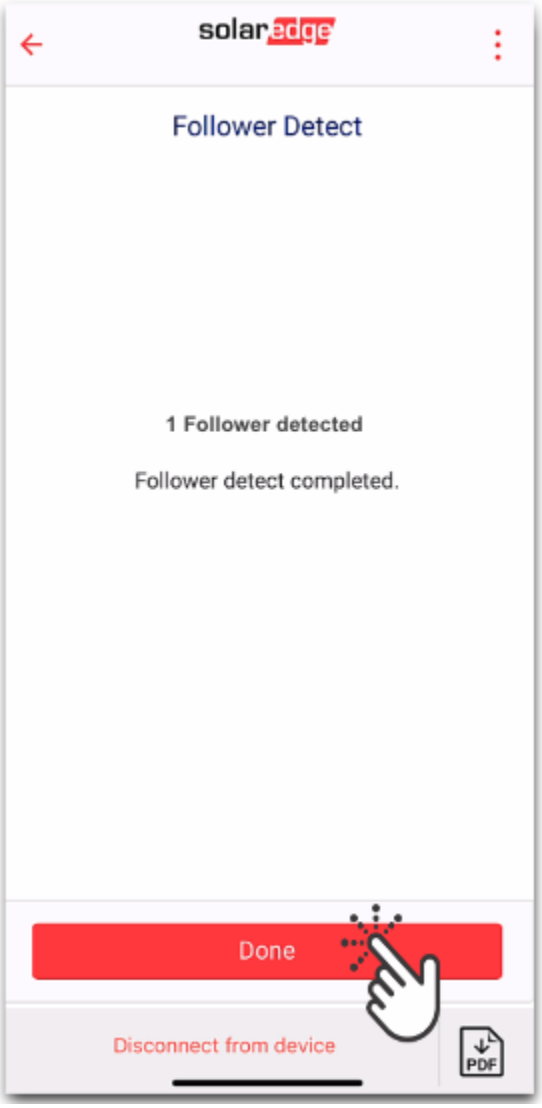

RS485-2 Protocol
SolarEdge
Follower
SunSpec (Non-
SE Logger)
None
Disconnect from device
PDF

4. Tap **Leader**

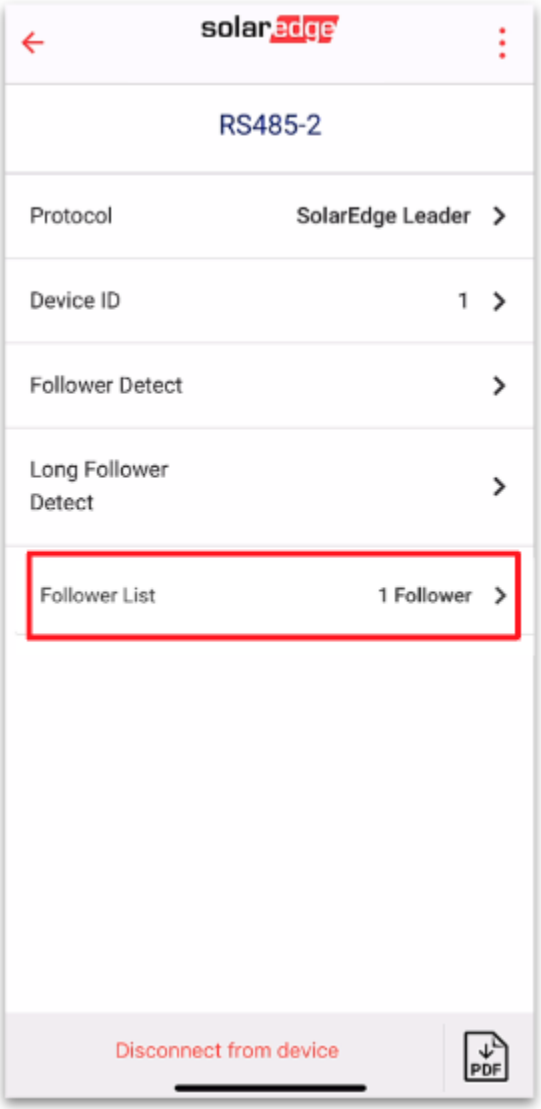
5. From the **RS485-2** menu, tap **Follower Detect**



6. Tap **Done** once all followers have been detected

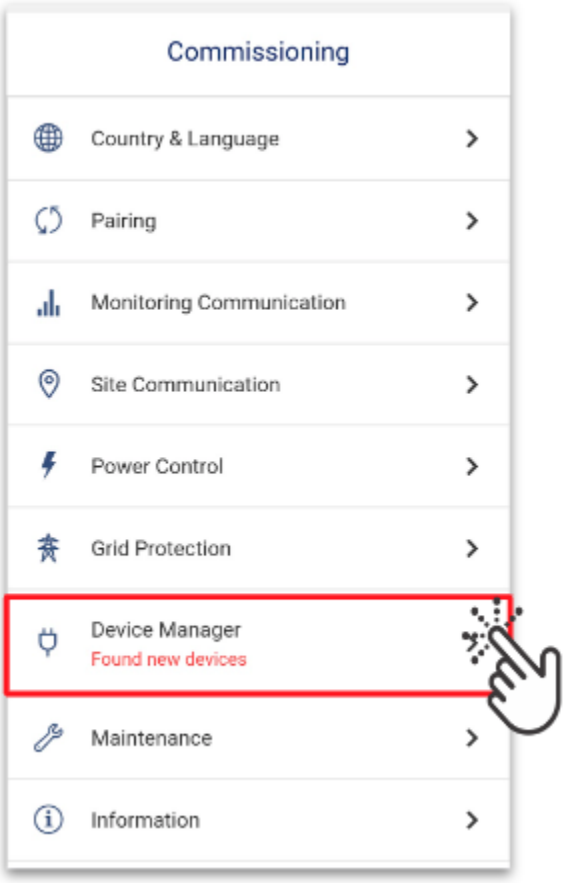


7. Verify Follower List number matches number of Followers on-site

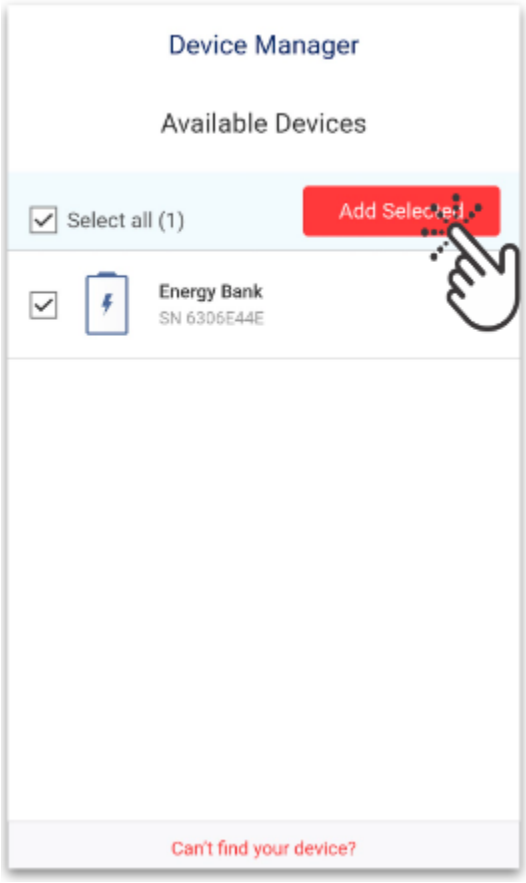


Step 6: Device Manager **(Leader Inverter)**

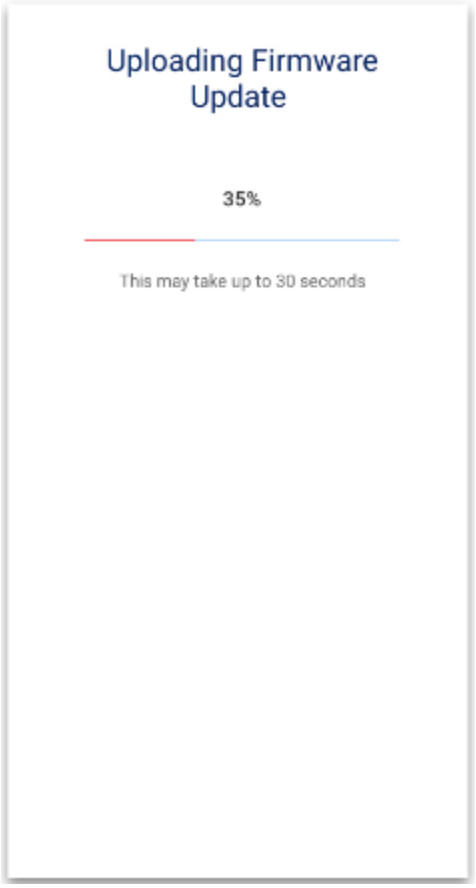
1. From Commissioning Screen, Tap **Device Manager**



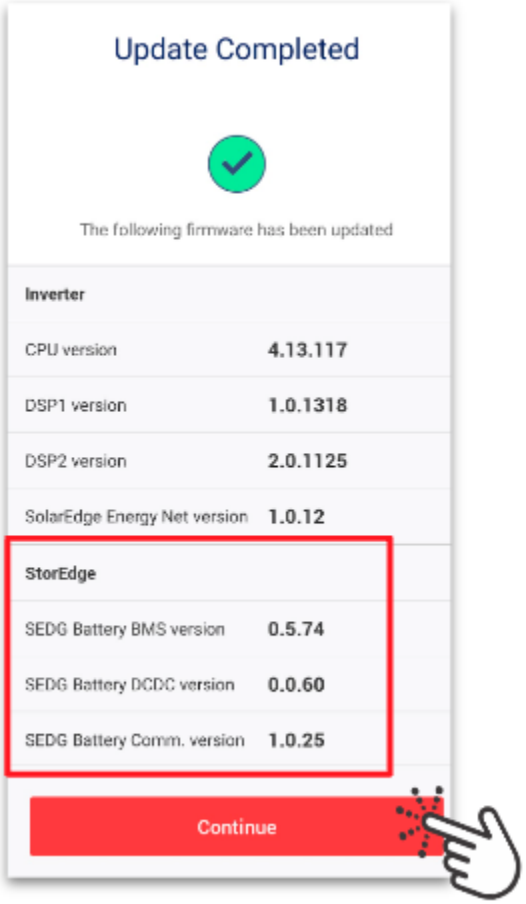
2. Verify all Home Batteries are displayed and selected, Tap **Add Devices**



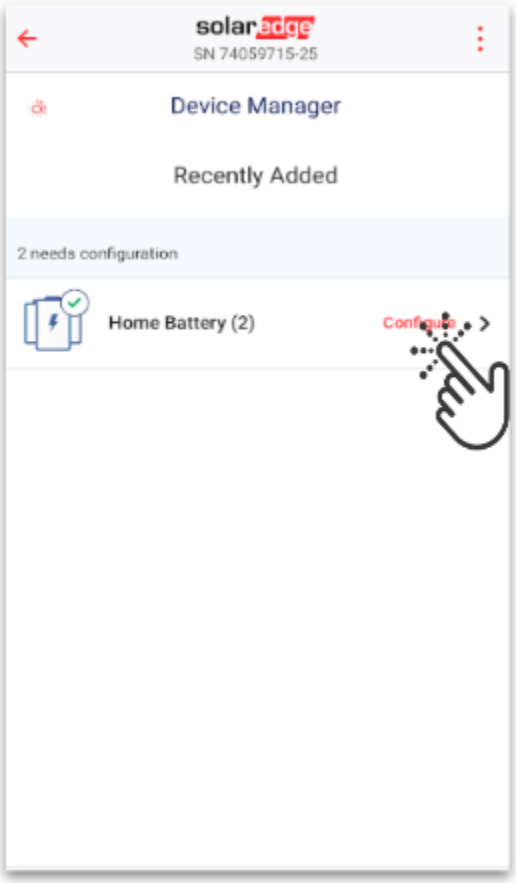
3. Firmware updates will begin automatically.



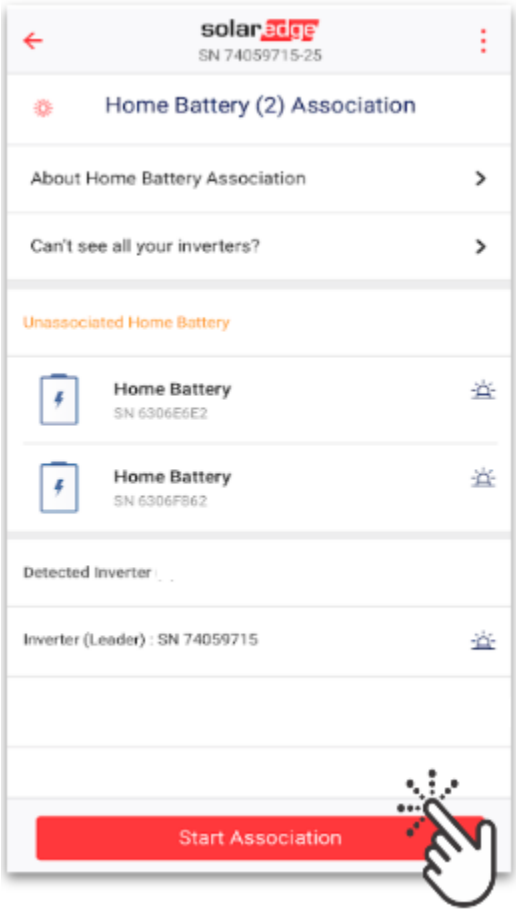
4. Once updating is complete, verify the firmware versions are equal to or higher than the versions displayed below. Tap **Continue**



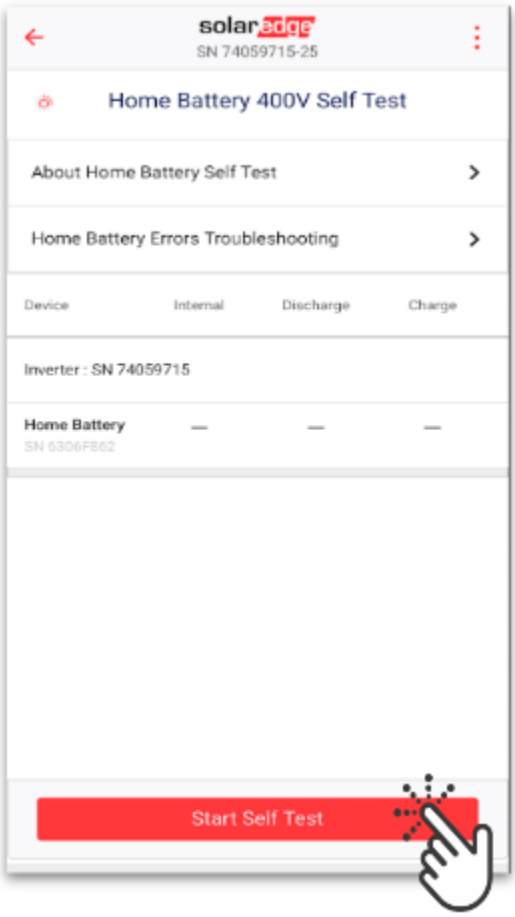
5. Verify DC power is ON for both batteries and inverters. Tap **Configure**



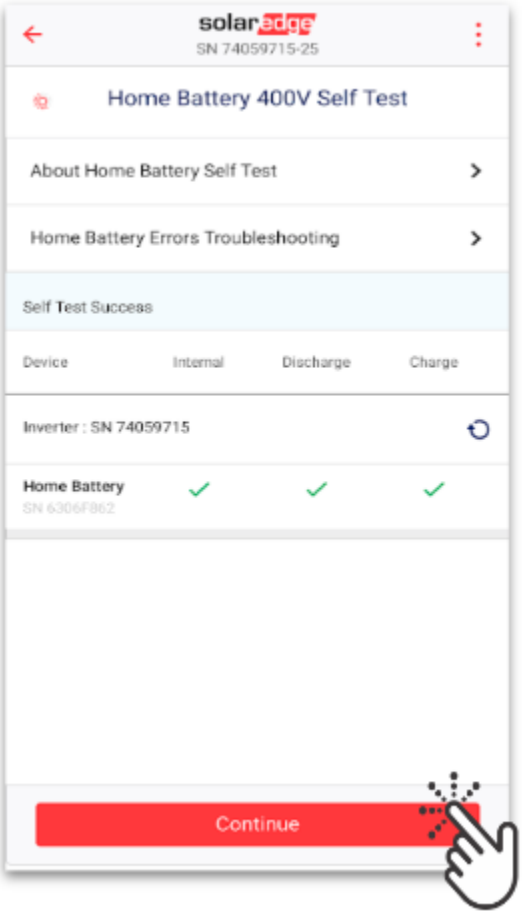
6. Allow batteries to associate with the inverter, this can take several minutes. Tap **Done**



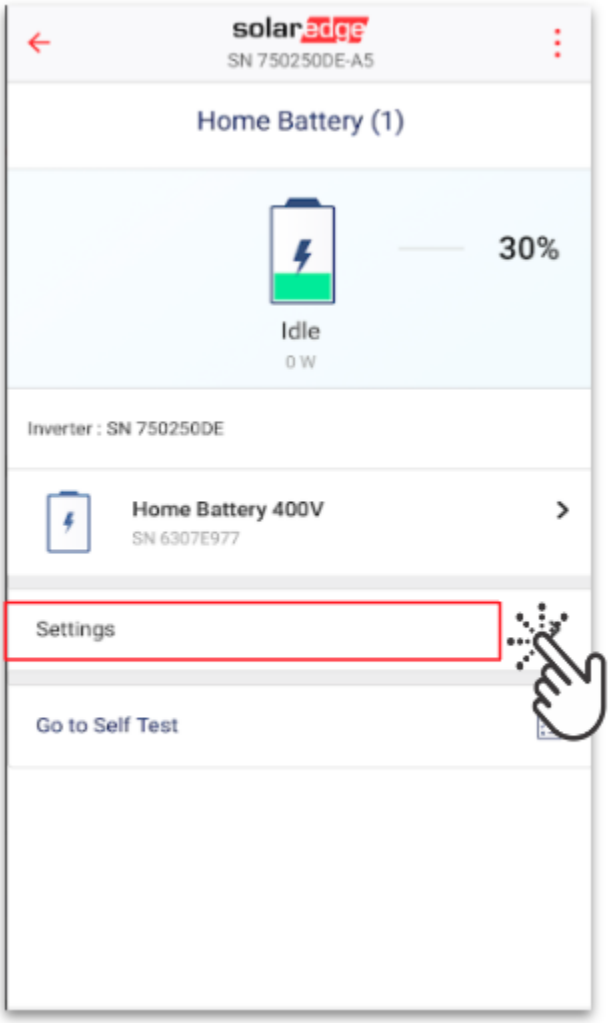
7. Once association is complete, the self test will automatically prompt. Tap **Start Self Test**



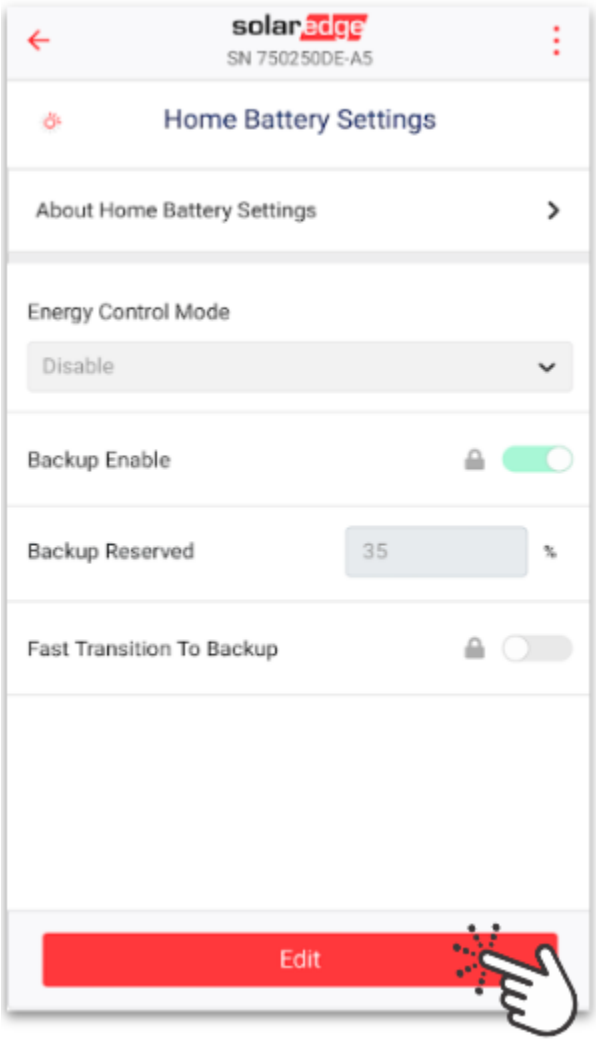
8. Allow the test to run successfully, Tap **Continue.**



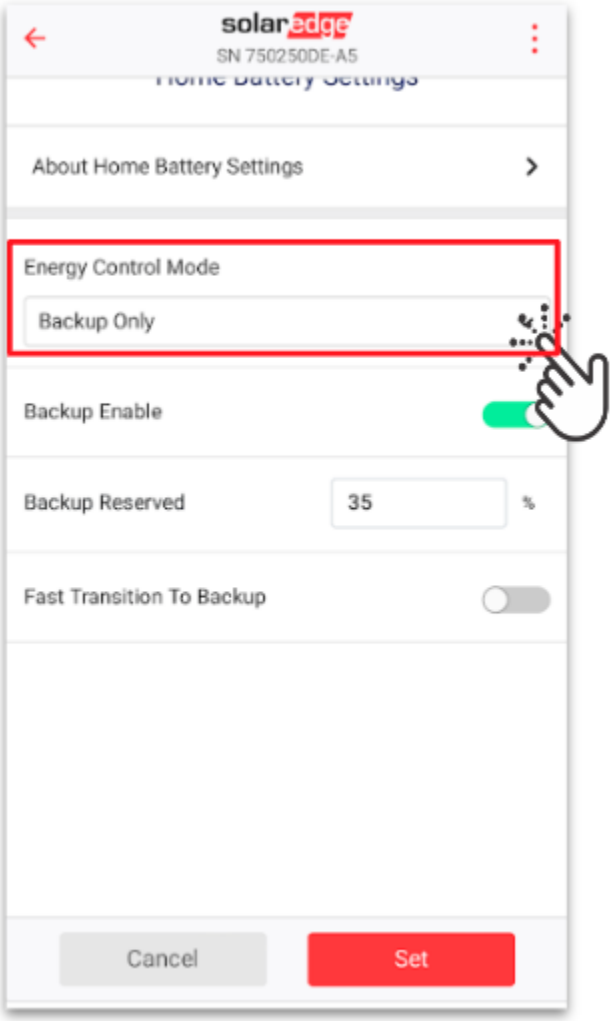
9. Tap **Settings**


solaredge
SN 750250DE-A5
Home Battery (1)
30%
Idle
0 W
Inverter : SN 750250DE
Home Battery 400V
SN 6307E977
Settings
Go to Self Test

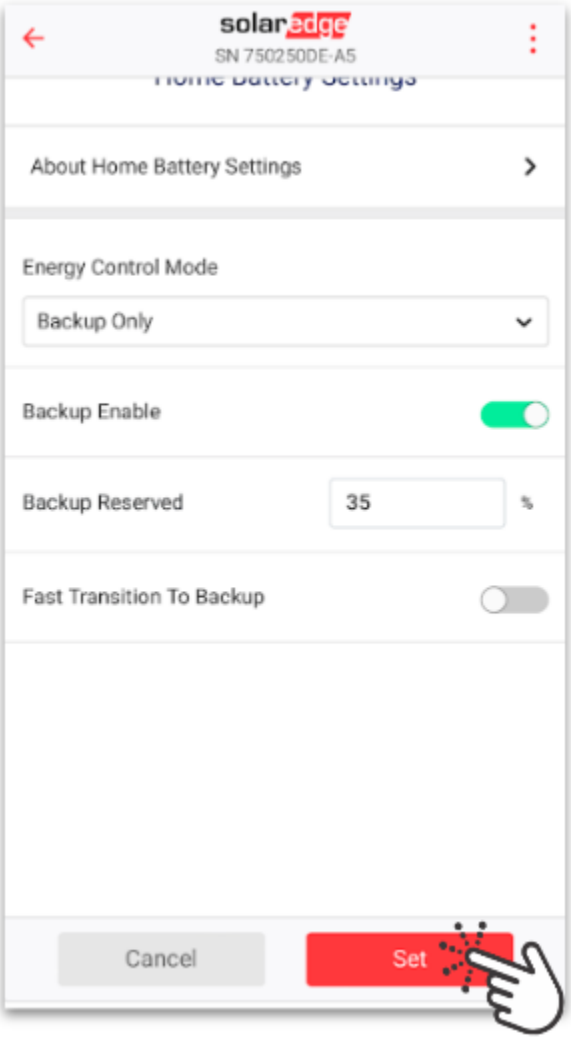
10. Tap **Edit**



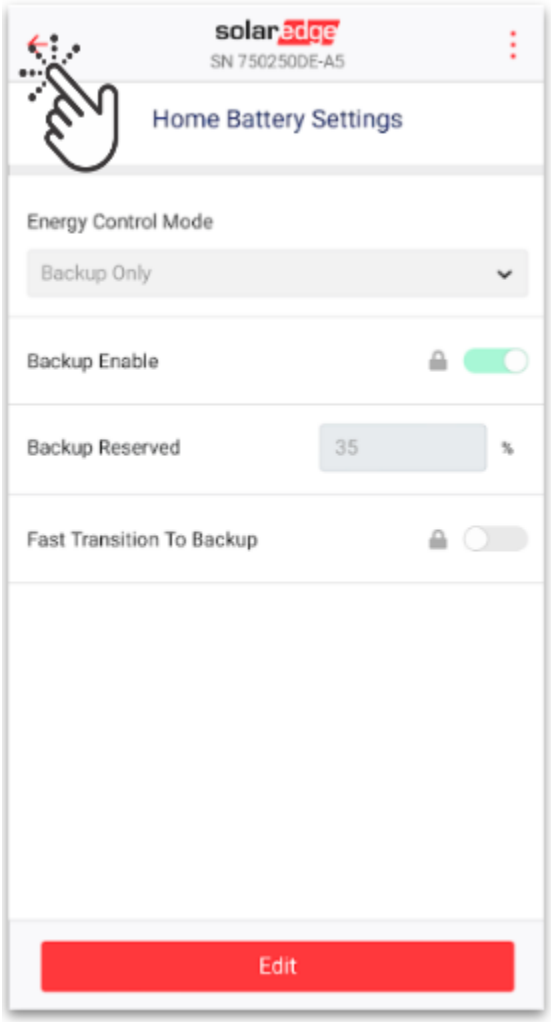
11. Select **Backup Only** Energy Control Mode



12. Verify Backup Reserved is set to **35%,** tap **Set**



13. Verify the settings are locked and tap **Back**

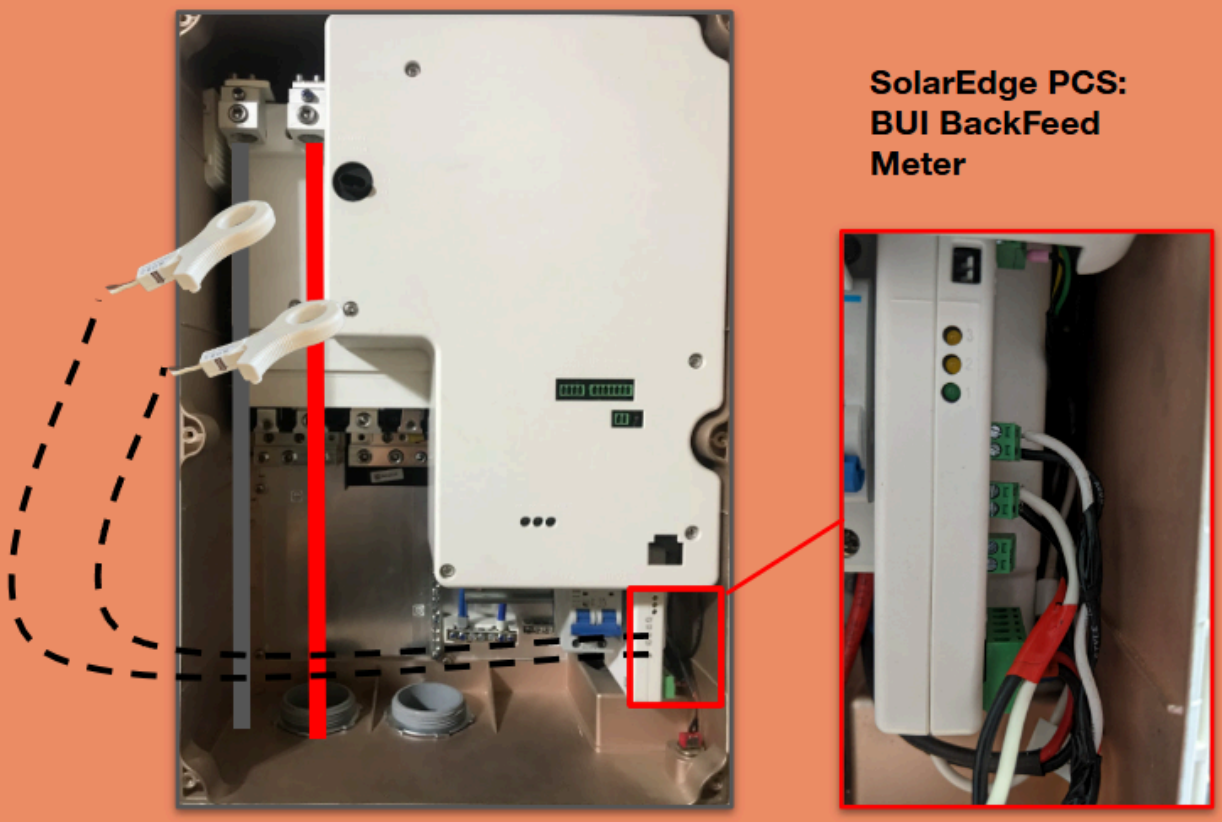


IMPORTANT: Fast Transition To Backup is **NOT ALLOWED** by mainland USA utilities. It is for Installers in **Puerto Rico ONLY.** This mode shall only be activated by technicians installing in Puerto Rico.

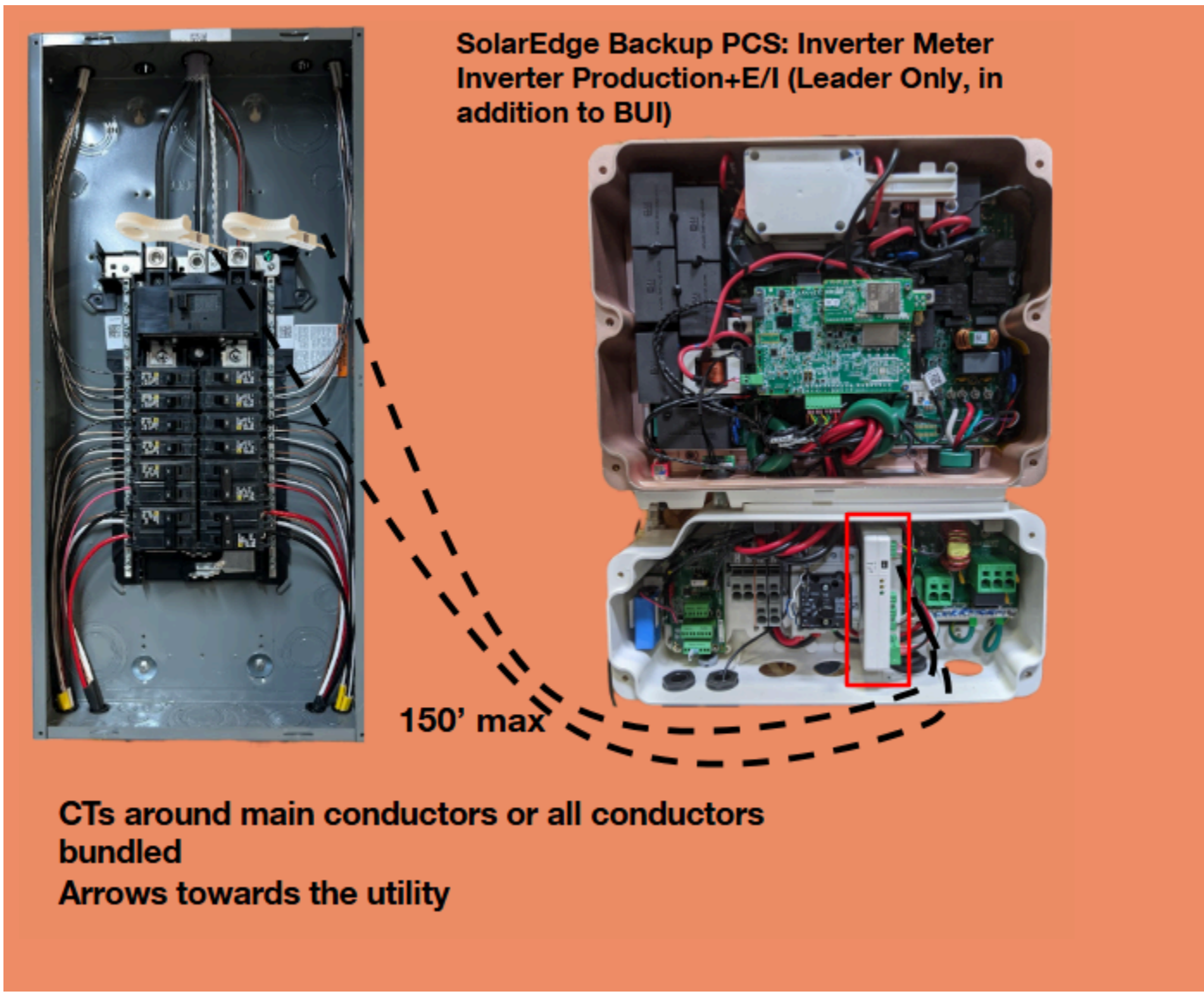
Step 7: Set PCS (if applicable)

IMPORTANT: SolarEdge Backup Systems with PCS will have a different meter configuration than non-PCS systems. Ensure that CTs are installed from the Leader inverter to the Main Service Panel feeder conductors **AND** from the BUI meter to the BUI feeder conductors. See the diagram below.

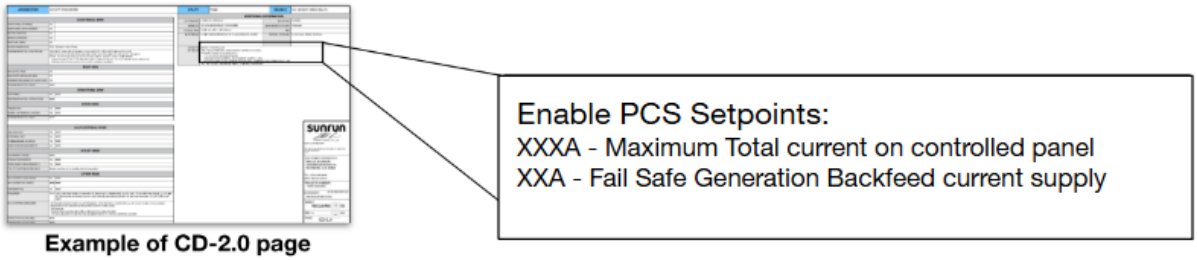
Meters 1&2:



CTs around BUI feeder conductors
Arrows pointed back towards feeder breaker



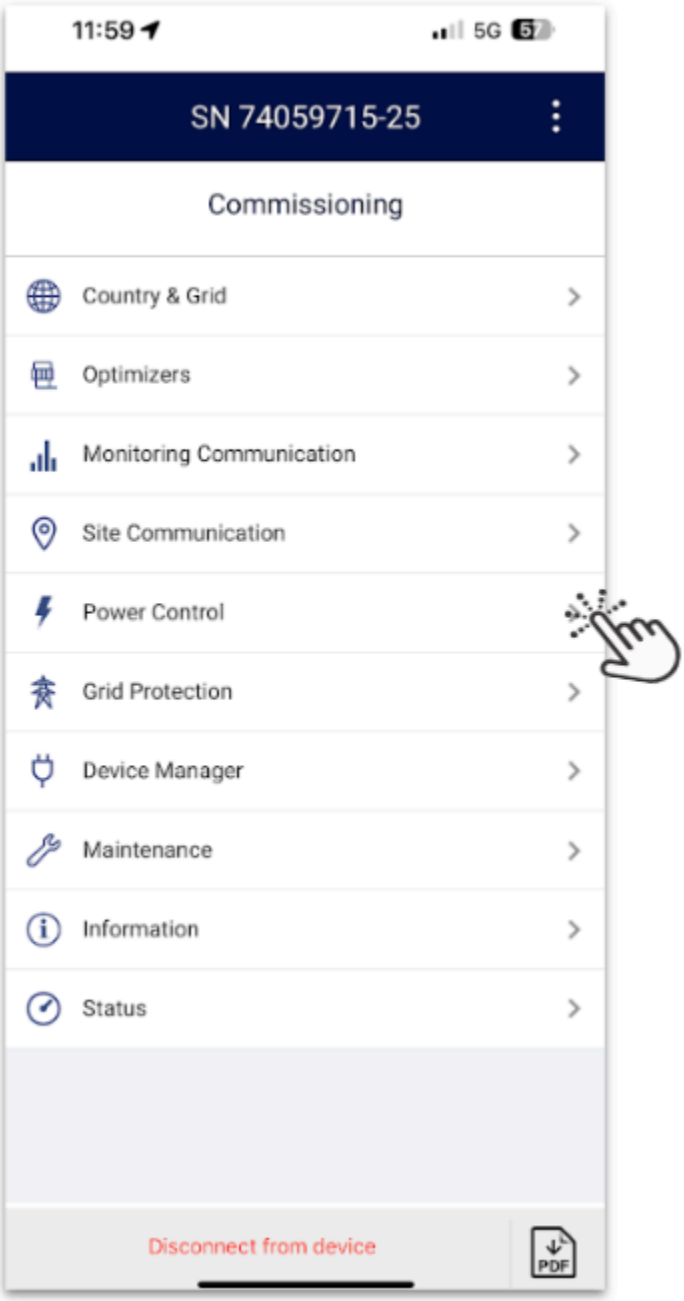
- PCS settings will be called out on the planset single line diagram (SLD) and/or on the CD2.0.
- Special metering instructions shall be followed depending on the equipment installed.
- Skip this step if PCS is not called out and install as normal



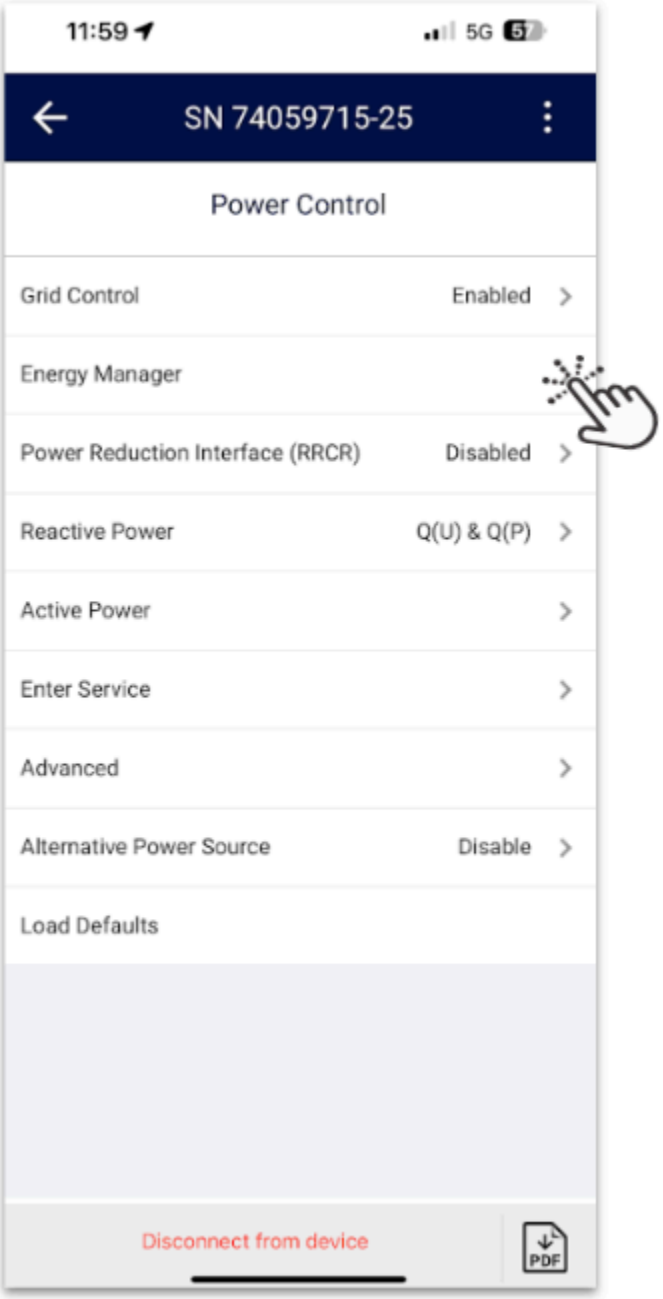
Example of CD-2.0 page

NOTE: The Error 3x6D: Revenue grade Meter CT Error may be present until PCS meters are calibrated.

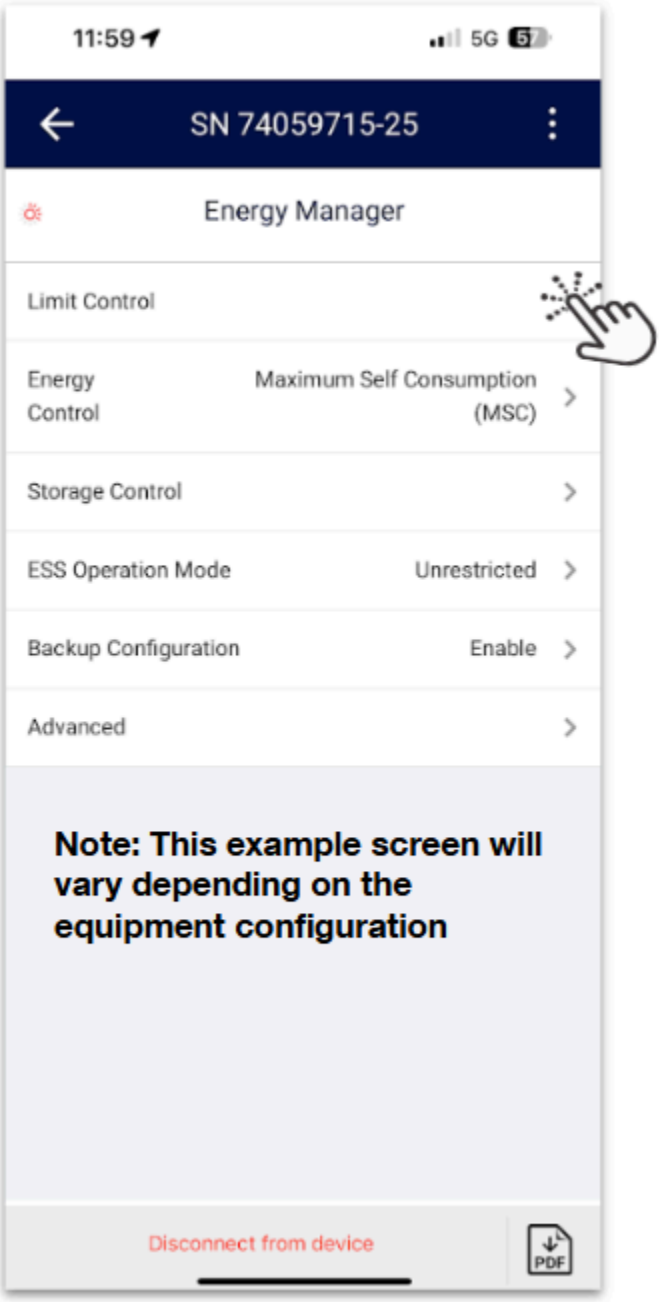
7. From the main Commissioning screen, Tap **Power Control**



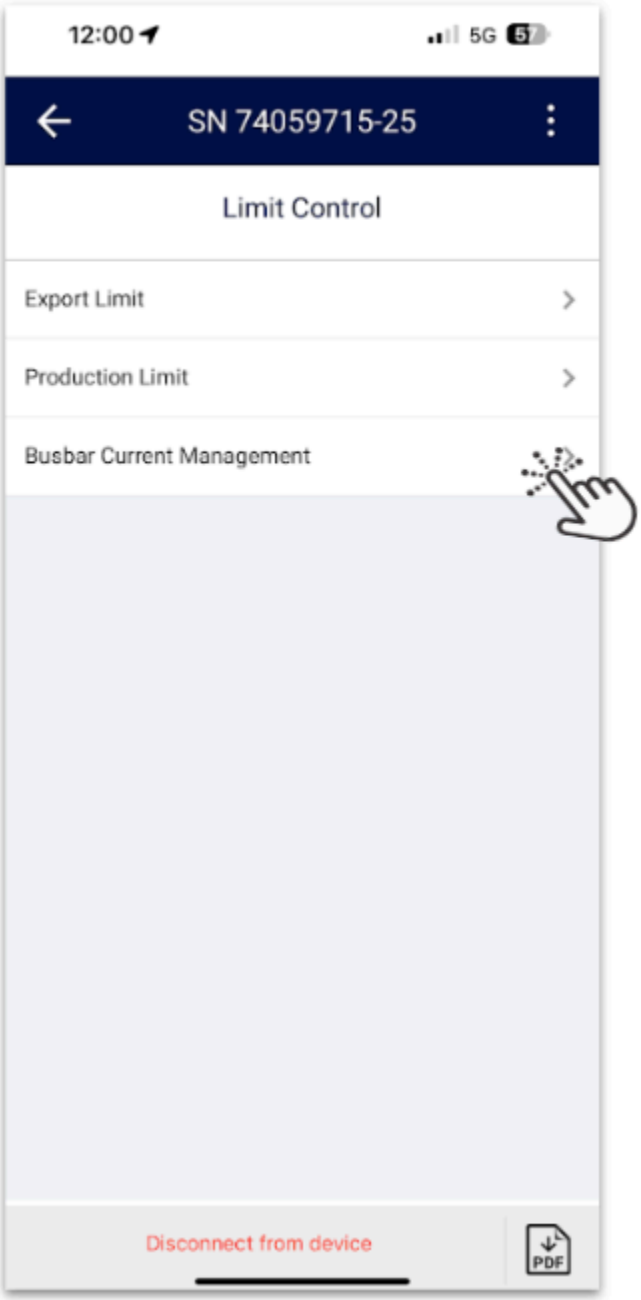
8. Tap **Energy Manager**



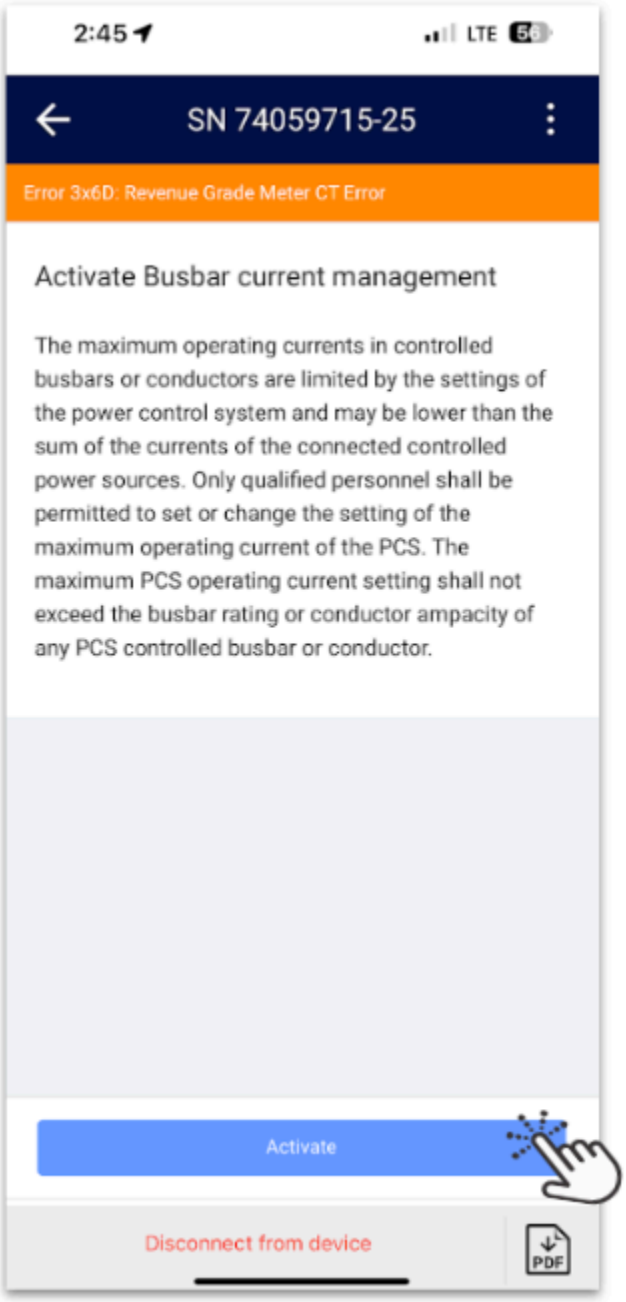
9. Tap **Limit Control**



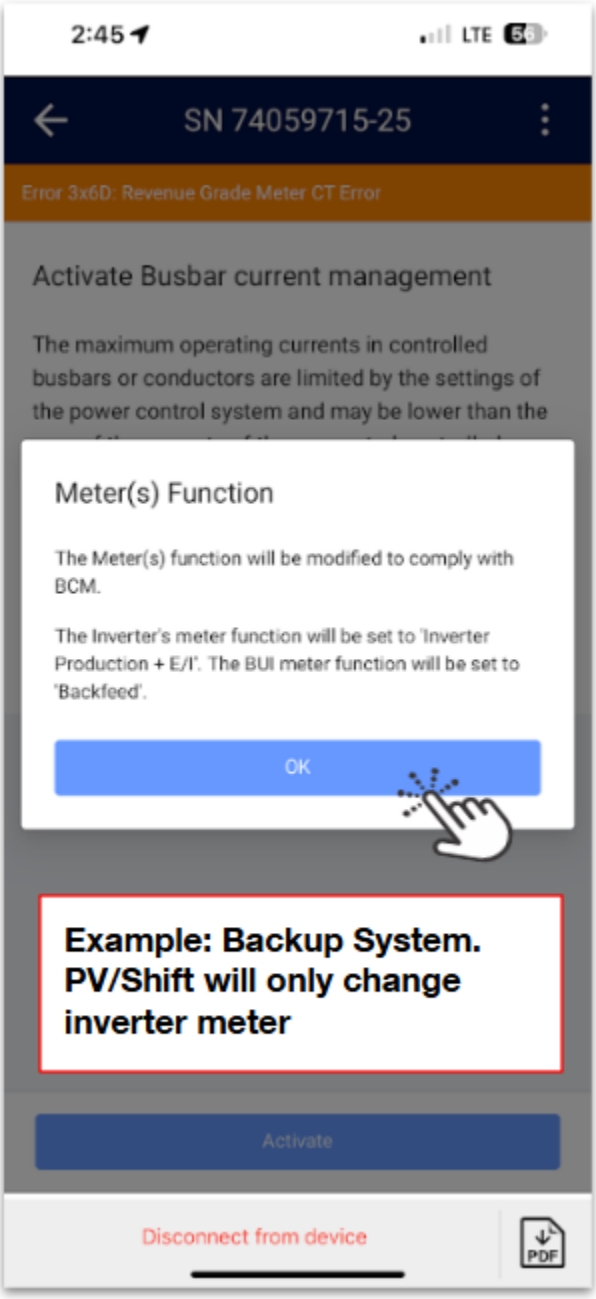
10. Tap **Busbar Current Management**



11. Tap **Activate**

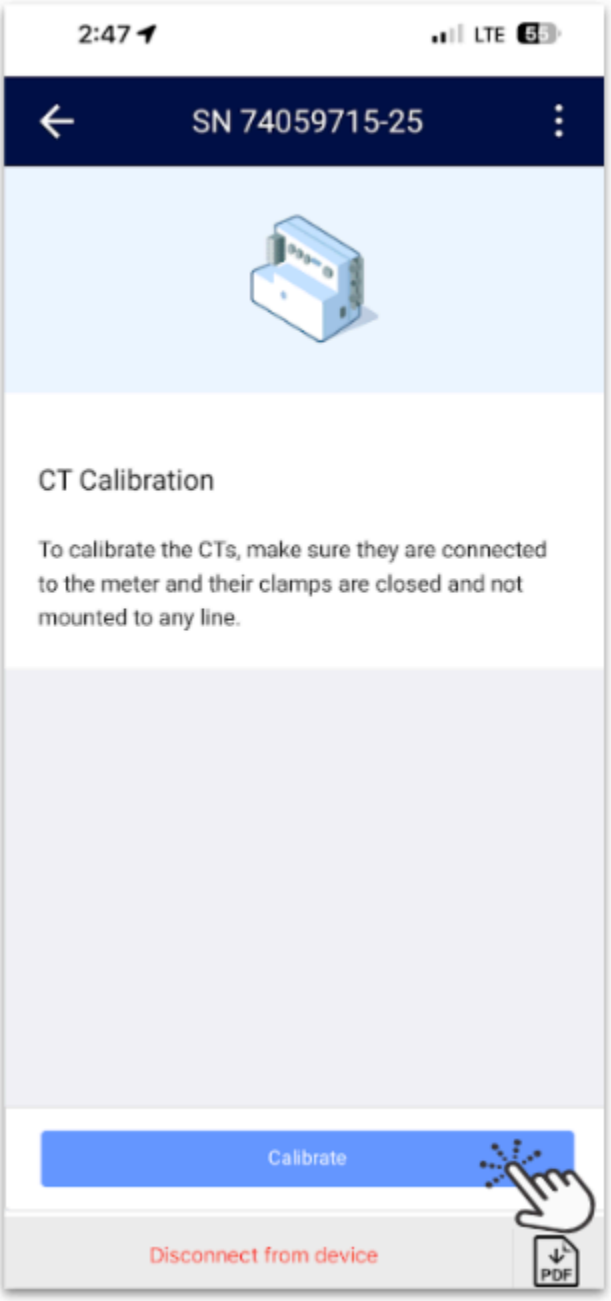


12. The Meter(s) function will automatically be set to comply with Busbar protection, tap **OK**



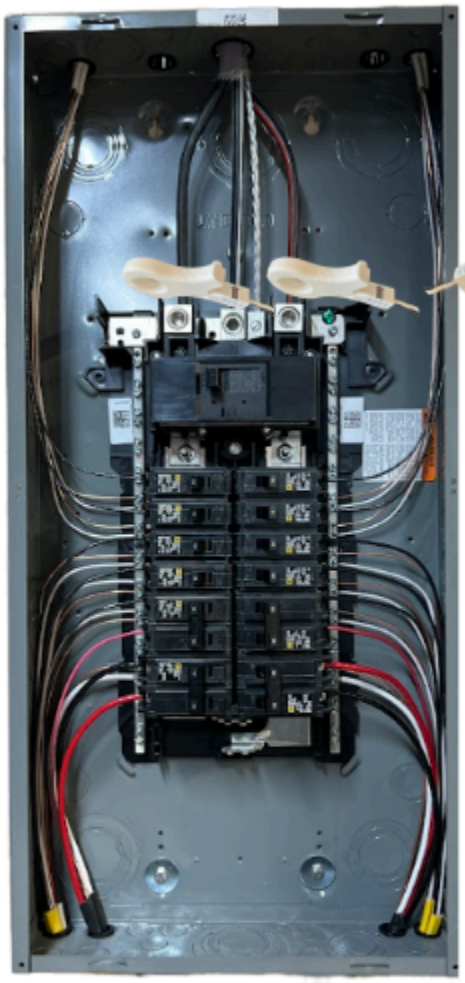
14. To calibrate the CTs for PCS, ensure they are wired to the meter and **not connected to any conductors or bussing.** Ensure that the clamp is closed. Tap **Calibrate.**

First Calibration: CTs not clamped on any conductors



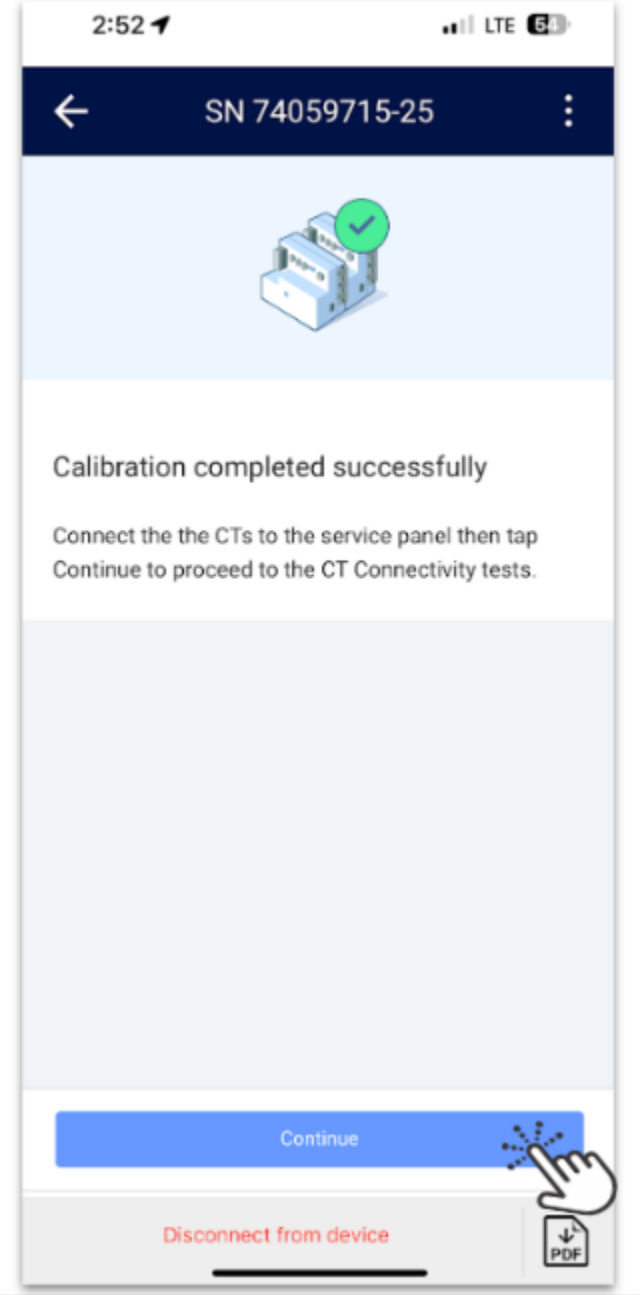
NOTE: For Backup systems, both the Inverter and BUI meter shall have the CTs calibrated and connectivity tests passed. These tests will be automatically performed at the same time

15. After the CTs have successfully calibrated, clamp all the CTs on to their measurement points to begin the connectivity test. Tap **Continue**



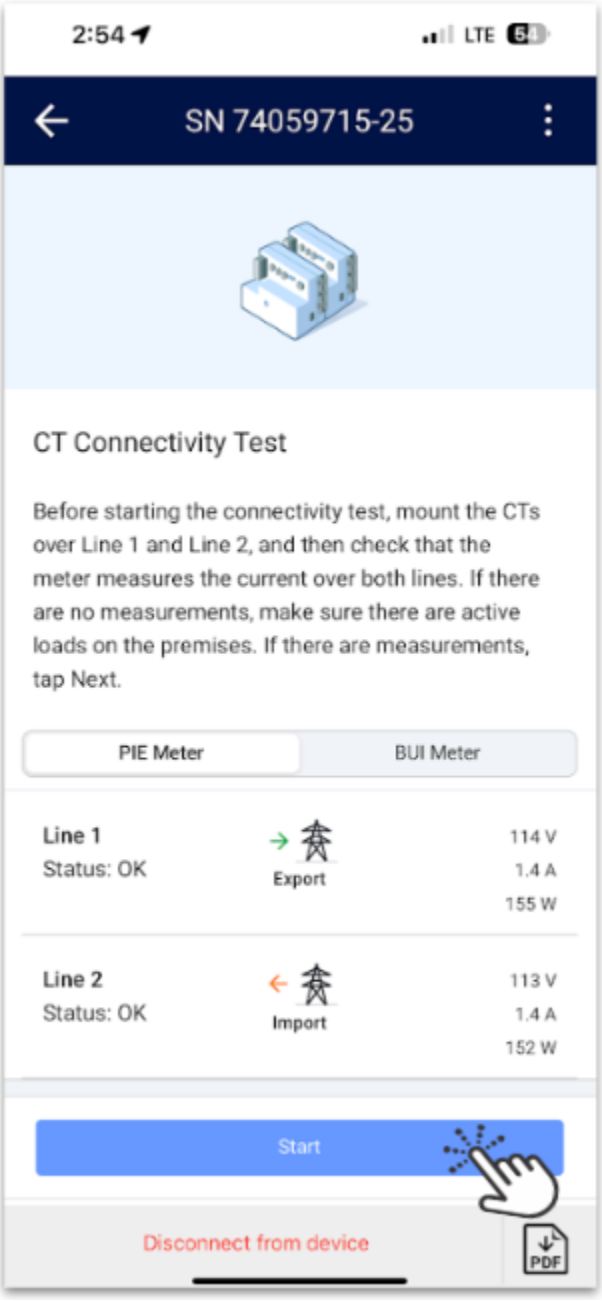
PV only/Shift/Backup PCS: Inverter Production+E/I (PIE) meter measures main panel

Backup PCS: BUI meter measures BUI feeder

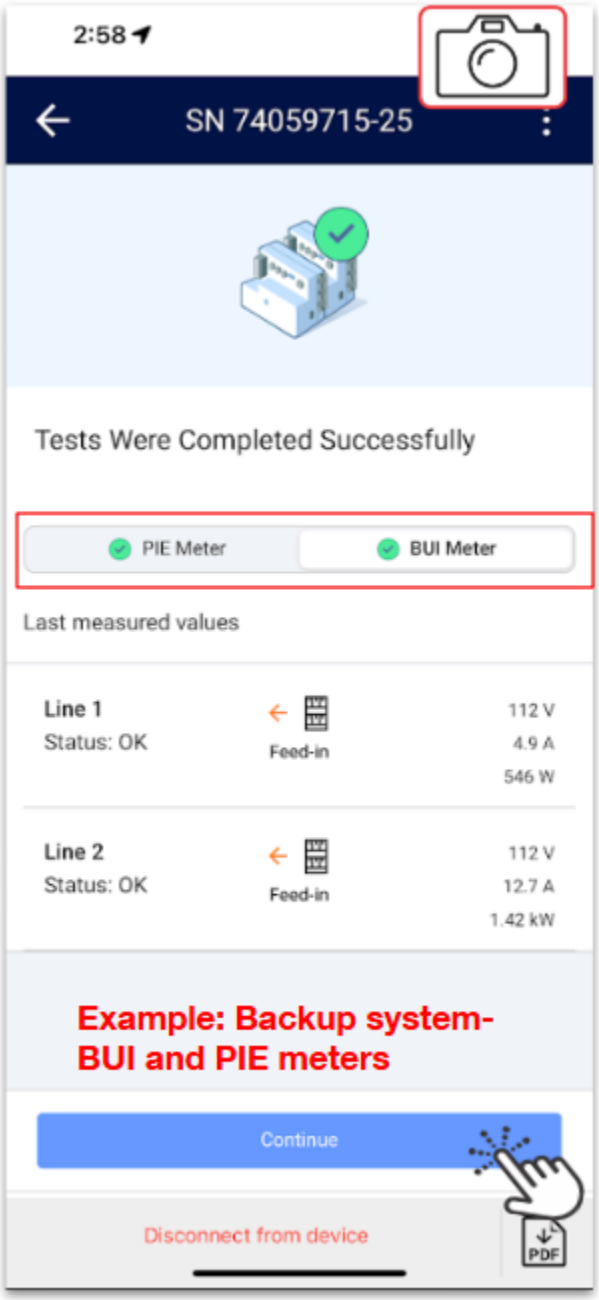


16. Ensure that L1 and L2 displays current. Tap **Start**

NOTE: Depending on the status of the solar production and home loads, it may measure Import, Export, or a combination of both. During the Connectivity test, the meters will halt solar production to check if the CTs are installed correctly.

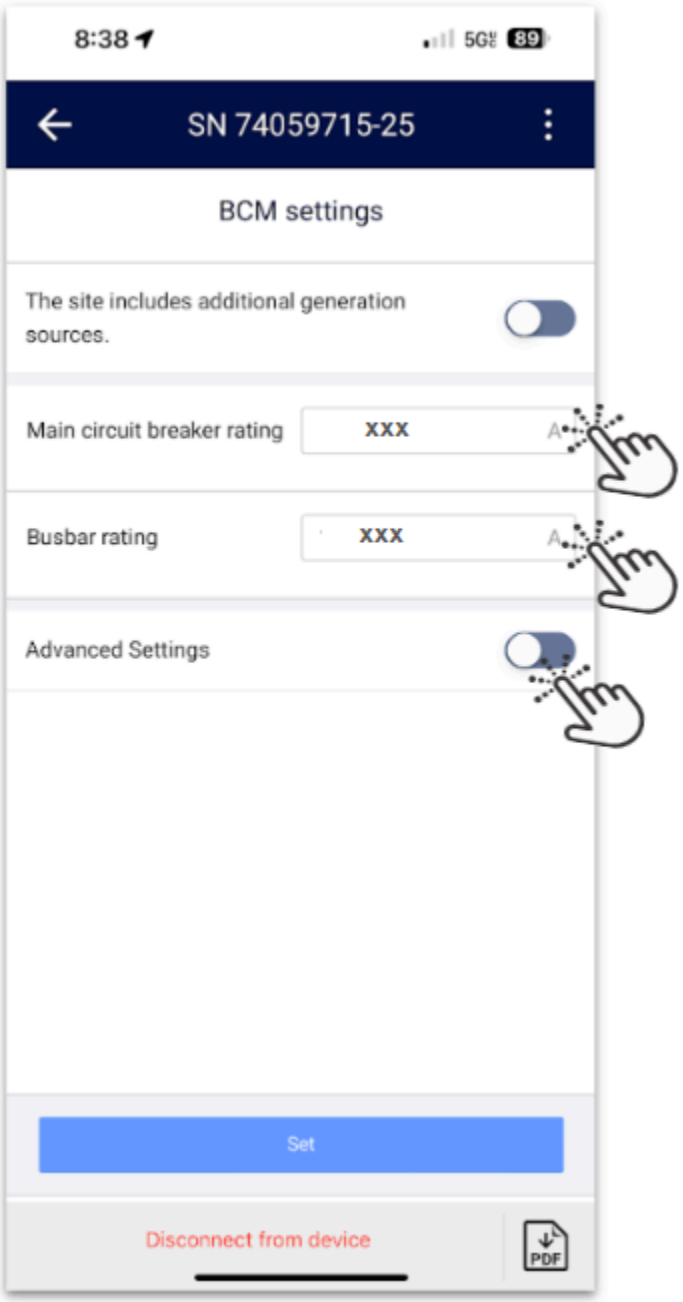


17. A successful test is required to continue to set PCS, ensure that all steps are followed when prompted for adjusting CT direction and phasing. Tap **Continue**



NOTE: Only Backup Systems will display the BUI meter

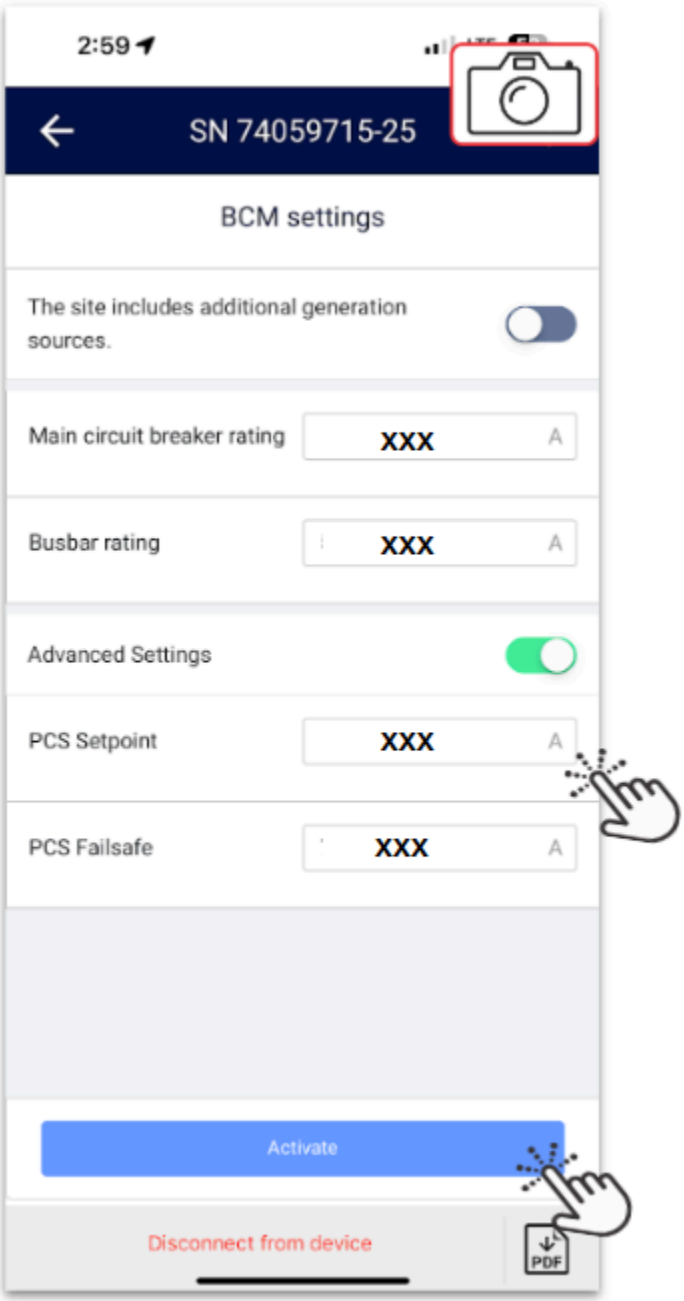
18. Enter the **Main Service Breaker and Busbar amperage rating** of the home, then turn the Advanced slider **ON.**



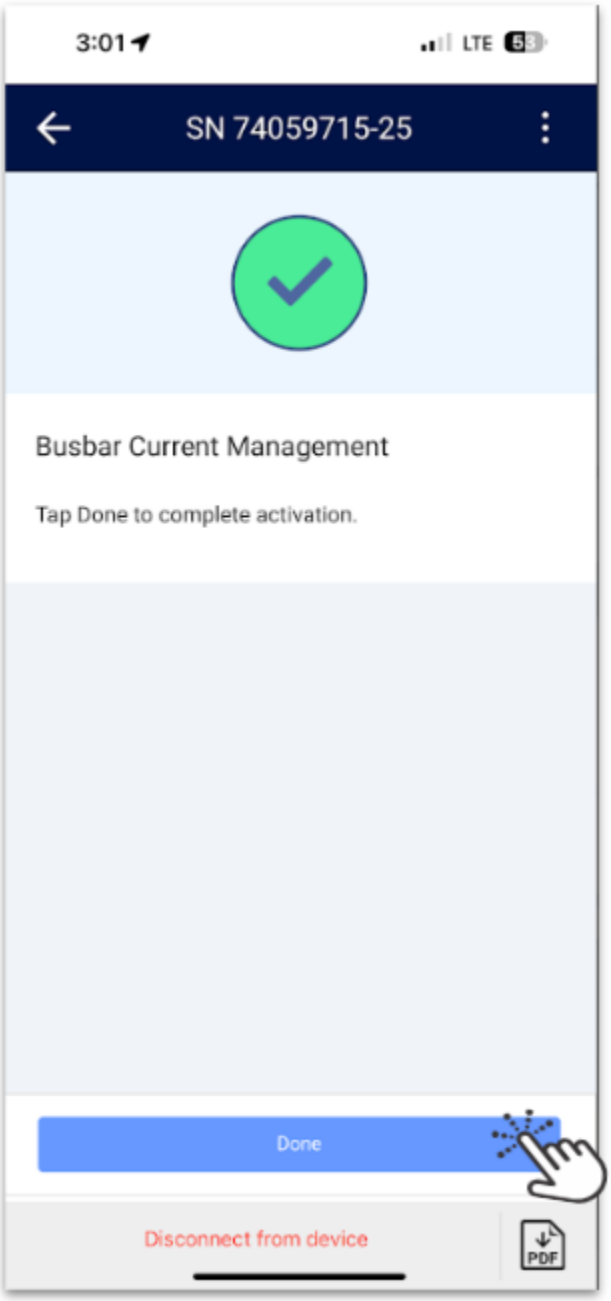
19. Enter the PCS set point values found on the Planset single line diagram/CD2.0. Verify the setting is correct and tap **Activate.**

Example of CD-2.0 page

Enable PCS Setpoints:
XXXA - Maximum Total current on controlled panel
XXA - Fail Safe Generation Backfeed current supply



20. Allow the system to save the settings, tap **Done** to complete the activation.



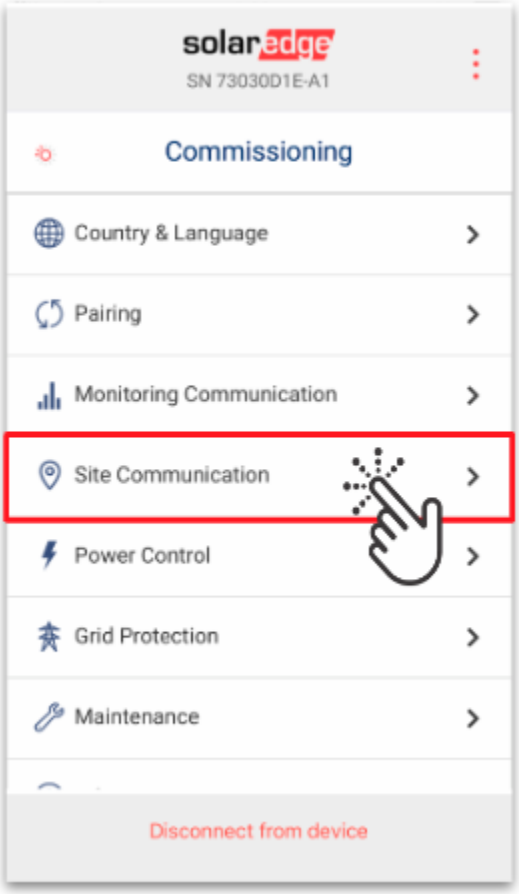
Step 8: Site Communications (Leader Inverter)

NOTE: PCS installs will have a different meter configuration; follow the procedure in the PCS section of the SOP

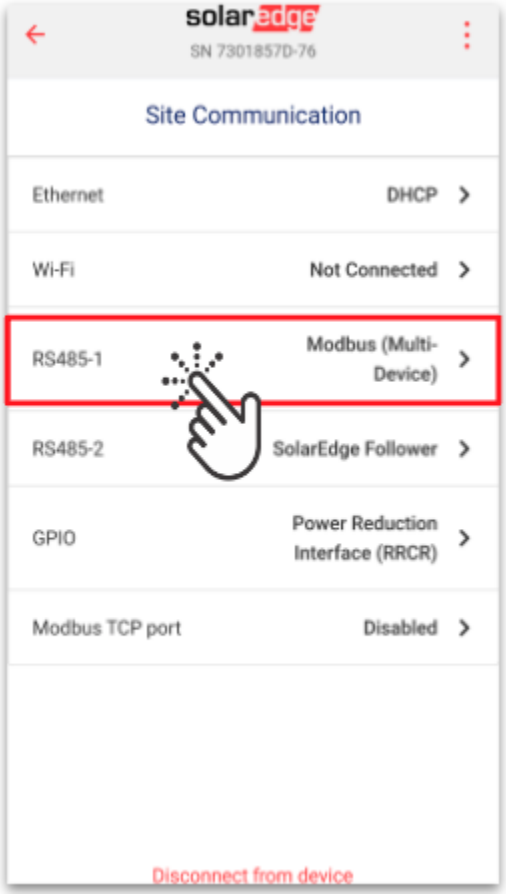
- From the Site Communication menu, the devices on site connected to the Home Hub Inverter will be configured.

- All devices , BUI, Battery(s), and Energy Meter(s) will be automatically detected upon activation if they were turned on and wired correctly prior to entering SetApp.

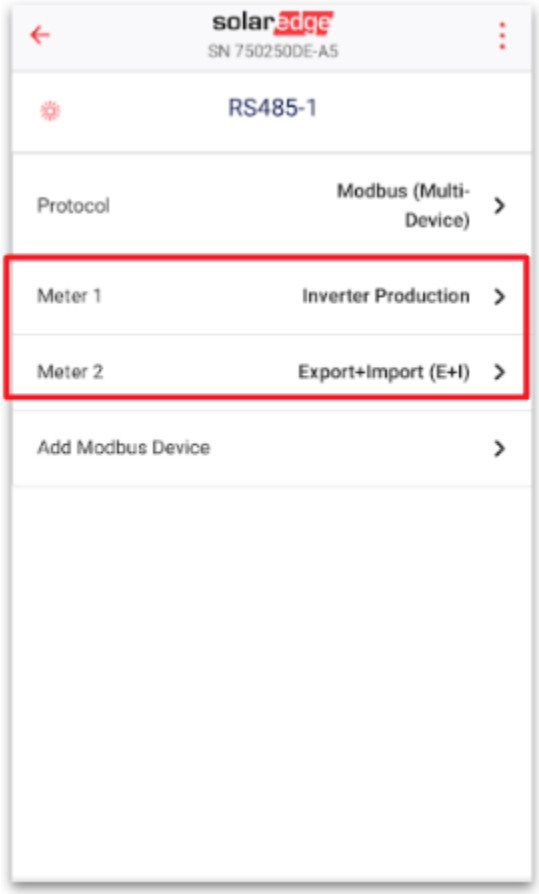
1. Tap **Site Communication**.


solaredge
SN 73030D1E-A1
Commissioning
Country & Language
Pairing
Monitoring Communication
Site Communication
Power Control
Grid Protection
Maintenance
Disconnect from device

2. Tap **RS485-1**.

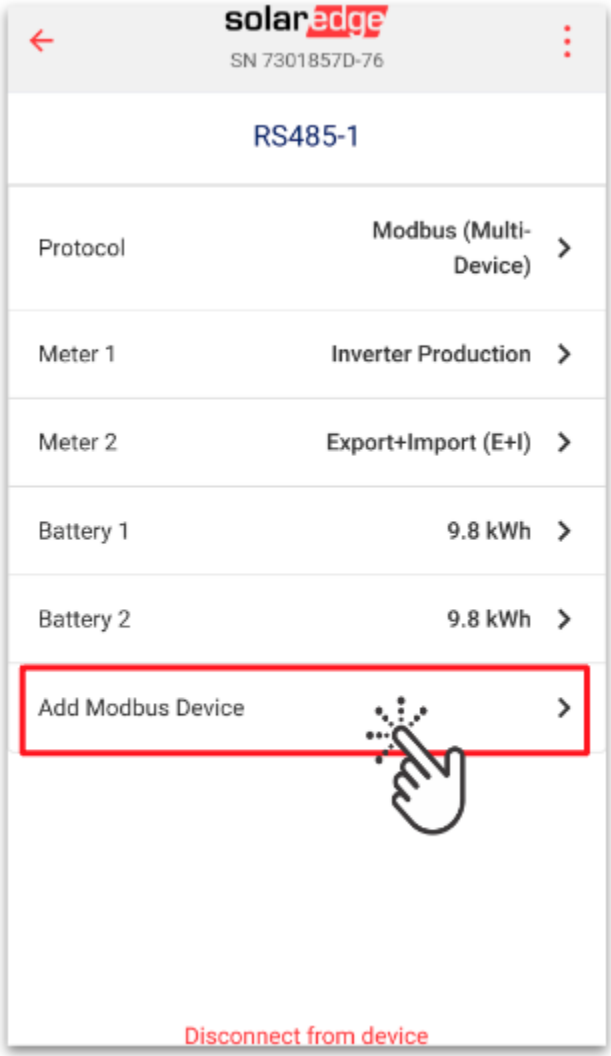


3. Verify all devices that were installed on site are present.
    - **Meter 1** : Inverter Production (This meter located inside the Home Hub Inverter. It will measure the PV production of the site.)
    - **Meter 2**: Export+Import (This meter located inside the BUI. It will measure all power imported from the grid and exported to the grid.)



- If any extra devices are shown here select the device and remove it. These extra devices will cause a communication error in the system. Example: If Meter 3 is shown on this screen and no meter 3 was installed on site, it will need to be removed.

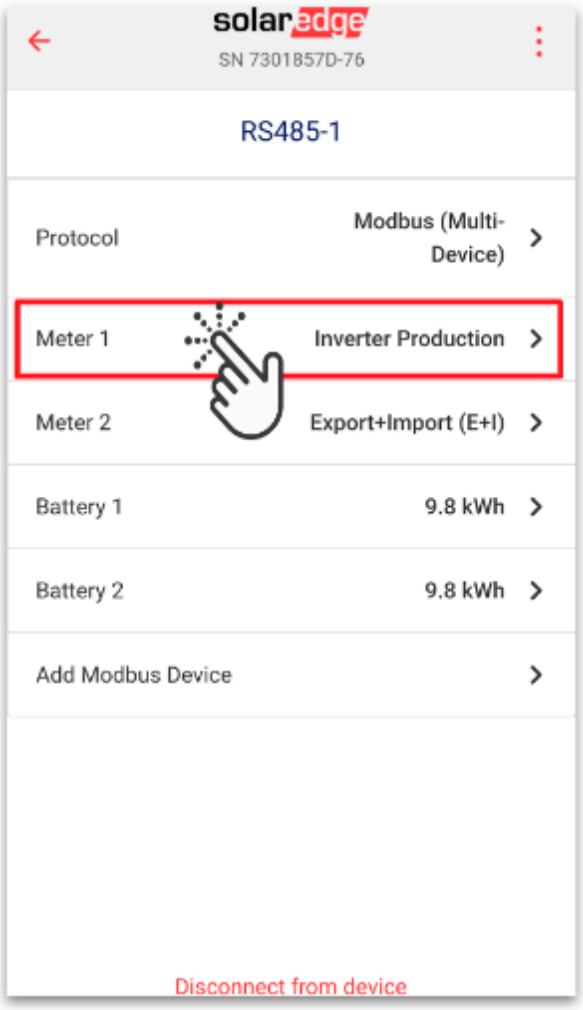
- If a device is missing that was installed, tap **Add Modbus Device,** and select the device type to add it.
    - Example: A second battery was installed but does not show on this screen.
    - This is to be done **only** if devices are installed onsite and missing in the app.

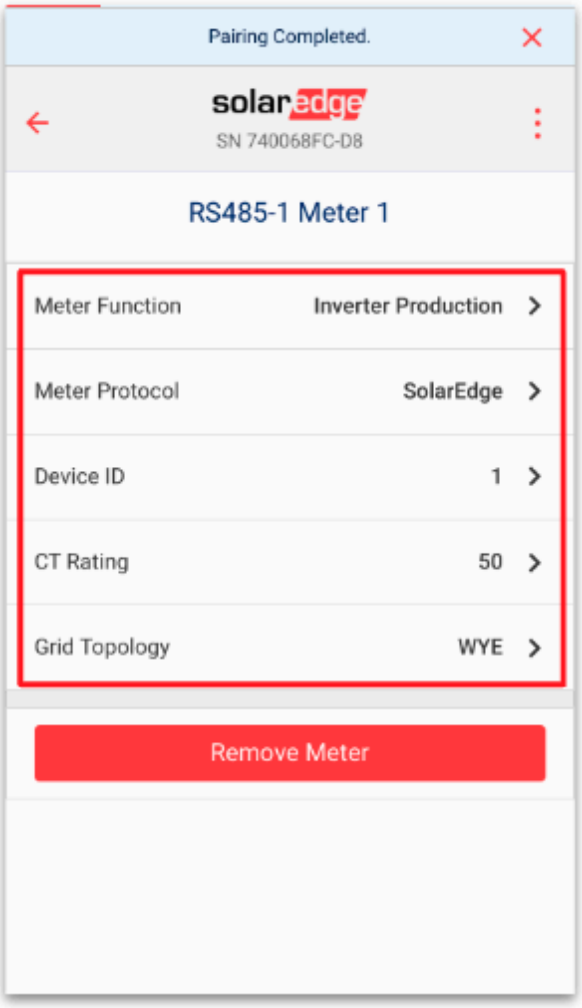


Verify Meter 1

1. Tap **Meter 1**

2. Verify the following parameters, configure any of the parameters that are not correctly set.
    - Meter Function: Inverter Production
    - Meter Protocol: SolarEdge
    - Device ID: 1
    - CT Rating: 50
    - Grid Topology: Wye

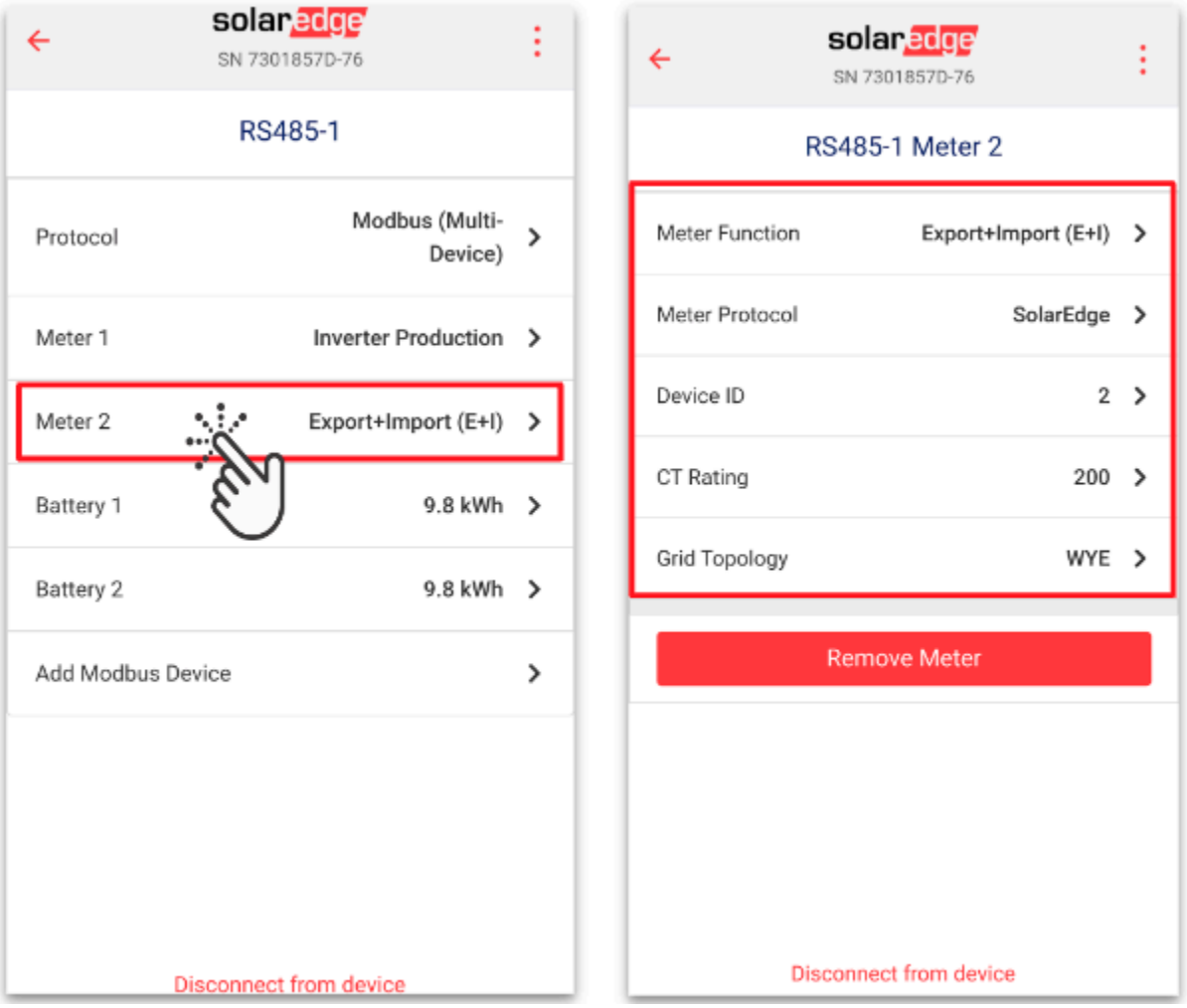




Verify Meter 2

1. Tap **Meter 2**

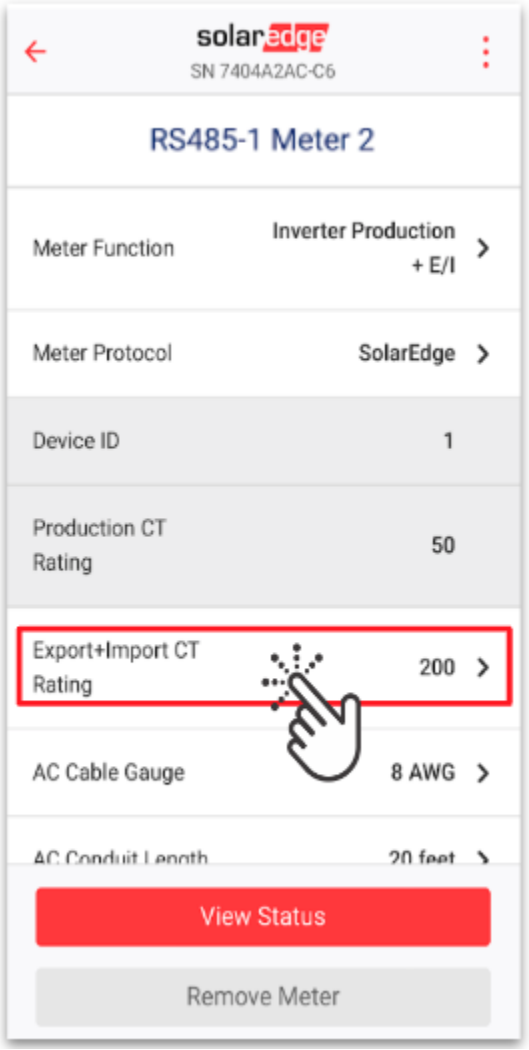
2. Verify the following parameters, configure any of the parameters that are not correctly set.
    - Meter Function: Export+Import (E+I)
    - Meter Protocol: SolarEdge
    - Device ID: 2
    - CT Rating:
        - 200 for standard SolarEdge CT's
        - 225 for SolarEdge Slim CT's
    - Grid Topology: Wye



3. Tap **Export + Import CT Rating**

- If Other CT's are installed, set the CT Rating to reflect the amperage rating of the CT's installed.

- If multiple CT's are used and connected in parallel, set the CT Rating to the total amperage of the combined CT's per phase.
    - Example: 2 Sets of 225 Amp slim CT's = 450 Amp total rating.



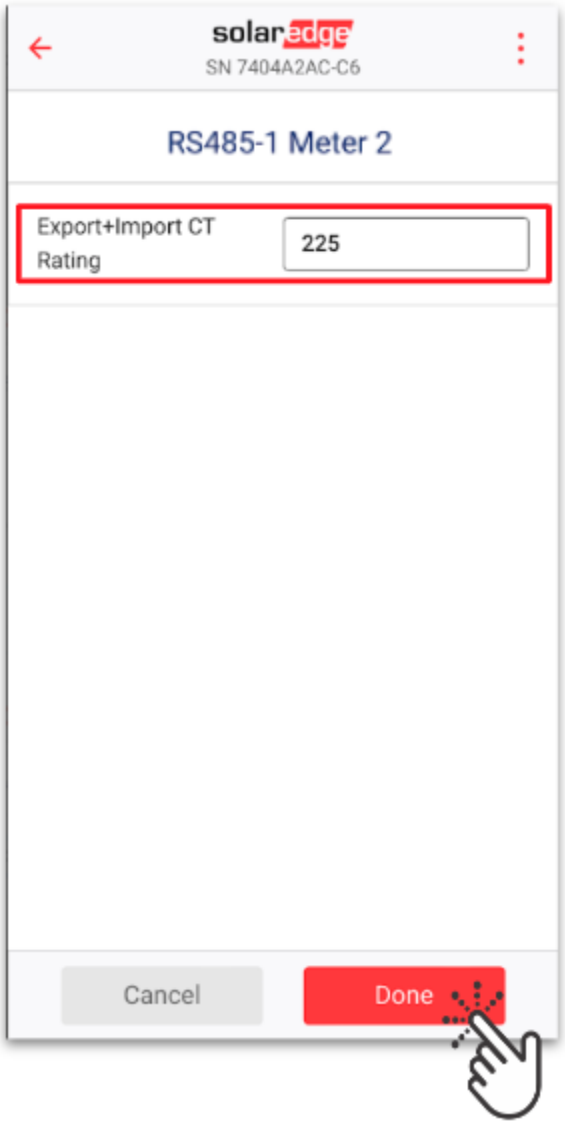
IMPORTANT: The CT Rating shall match the total rating of all sets of CT's.

- 200 Amp for single square style SolarEdge CT's (+200 for each additional set installed for a total value of 400)

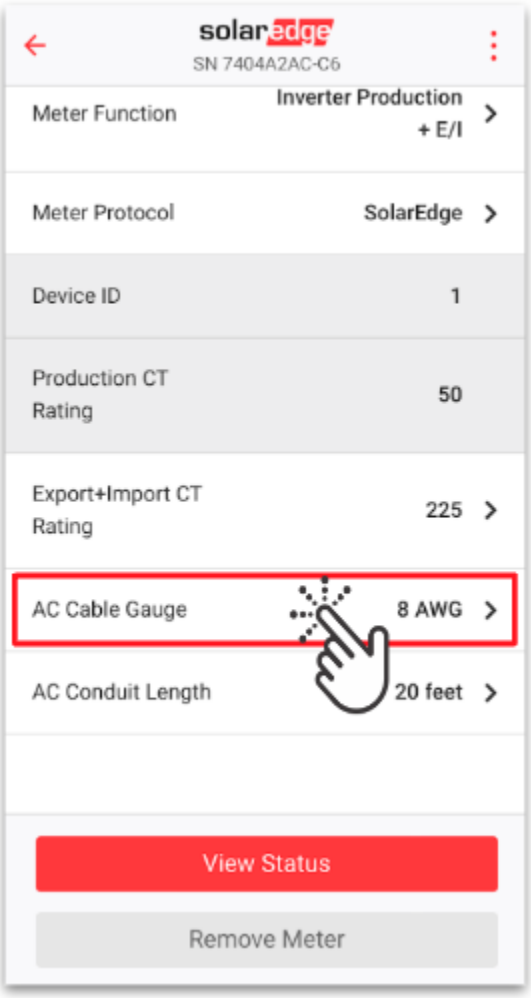
- 225 Amp for single slim clamp style SolarEdge CT's (+225 for each additional set installed for a total value of 450)

- In the example photo to the right, the CT rating has been set to 225A for SolarEdge Slim CTs.

4. Once the correct CT value has been entered, tap **Done** to continue.



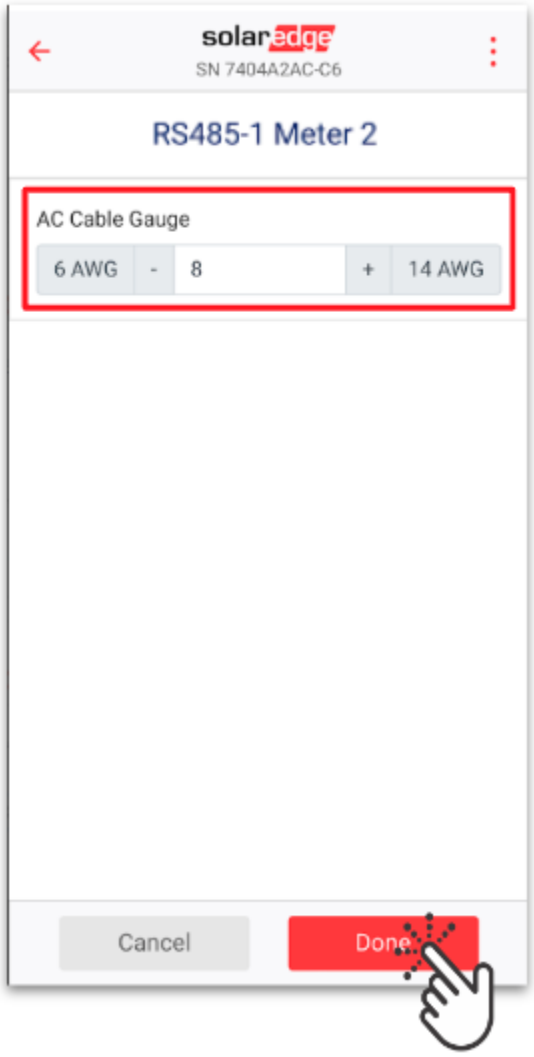
5. Next, tap **AC Cable Gauge**



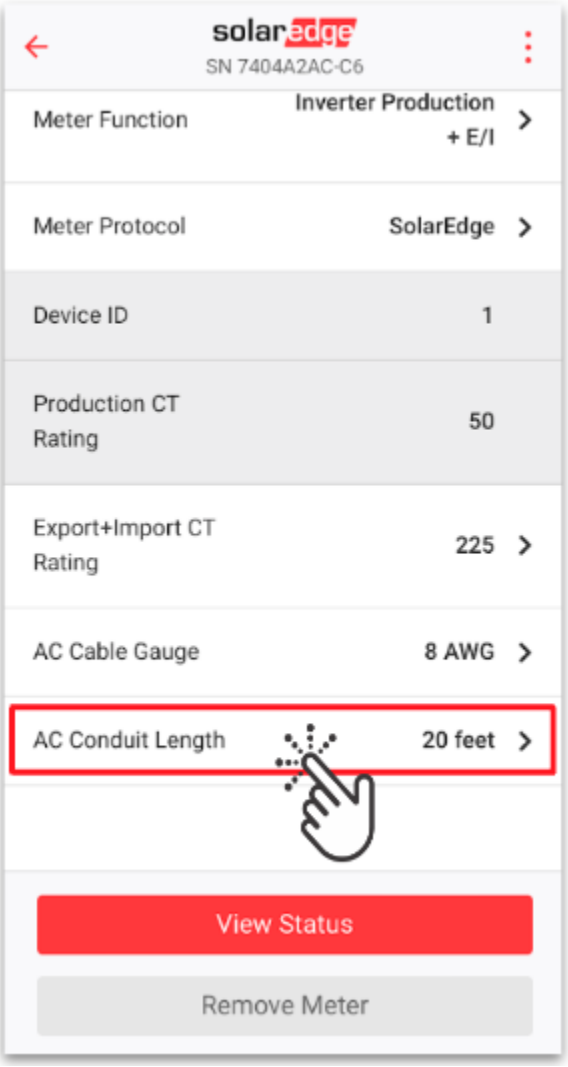
6. Select the wire gauge size of the conductors installed from the inverter AC terminals to backfeed breaker.

7. Conductors larger than 6 gauge are not to be used in Home Hub inverters.

8. After selecting the correct AC Cable Gauge, tap **Done** to continue.

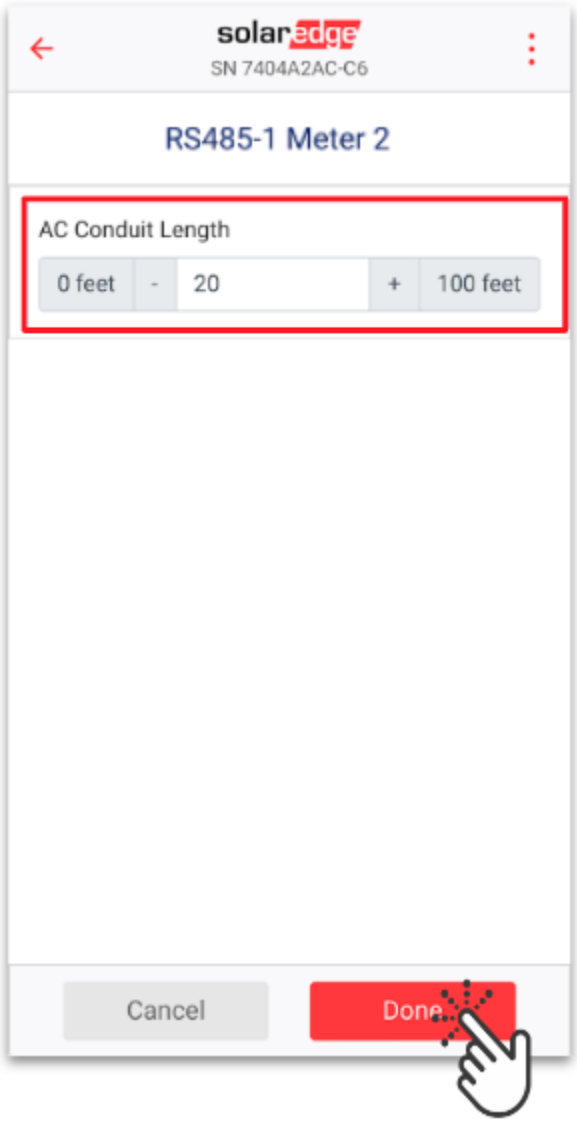


9. Next, tap **AC Conduit Length.**

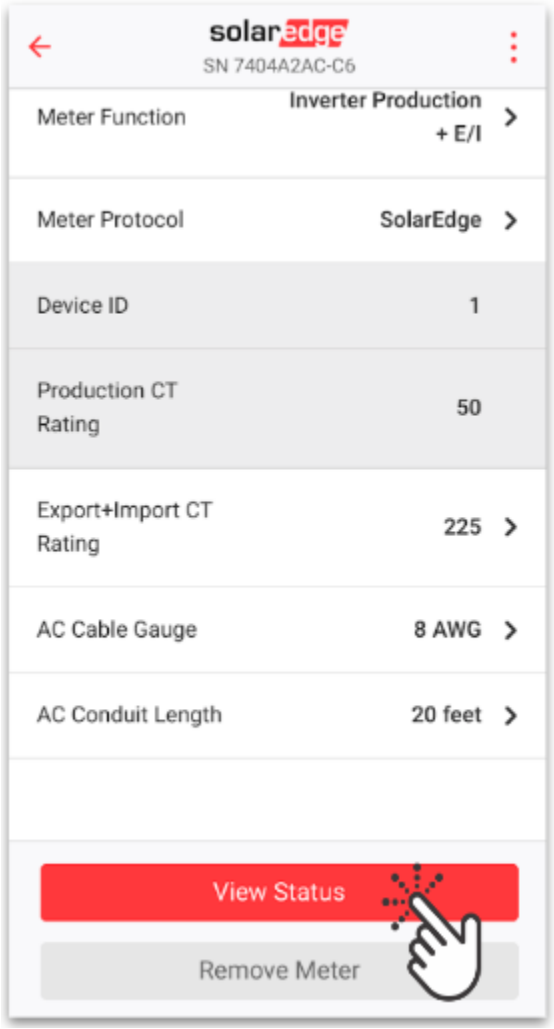


10. Enter the length of the AC conduit run from inverter to CT placement.

11. Tap **Done** to continue.

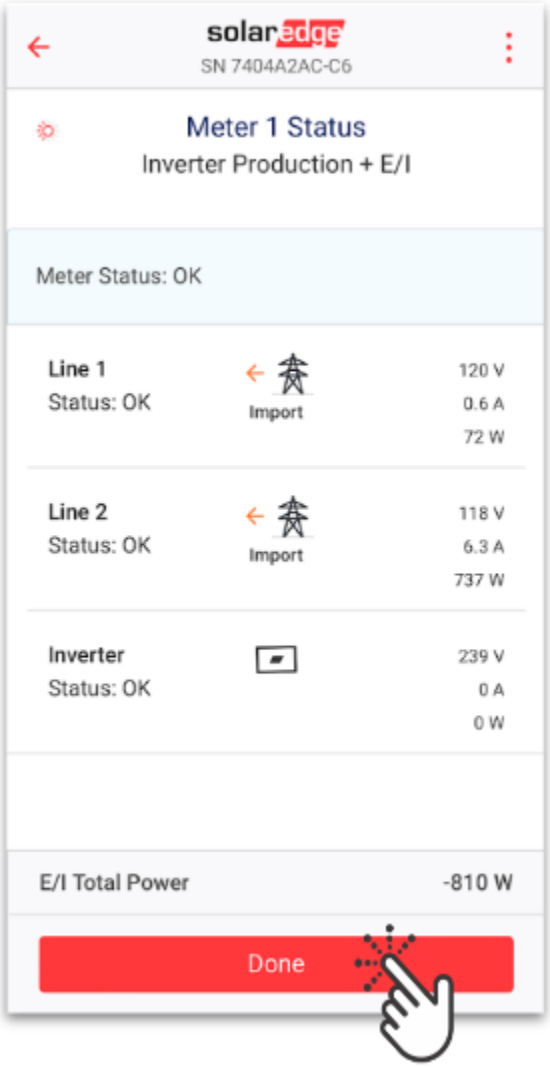


12. Tap **View Status** and verify all settings are correct.



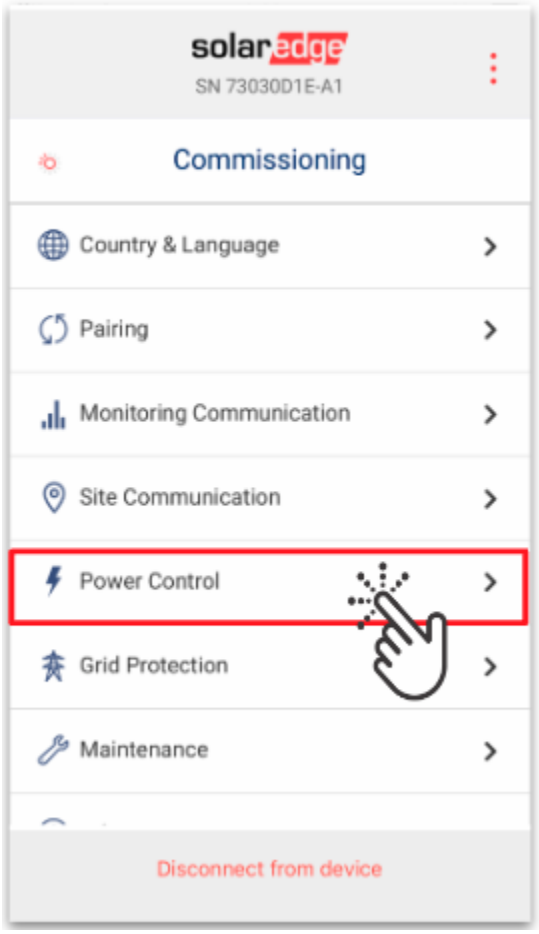
IMPORTANT: If the CTs are installed correctly, Line 1 and Line 2 should show **Import** when the inverter is **not producing** wattage.

13. After verifying the settings, tap **Done** to continue.

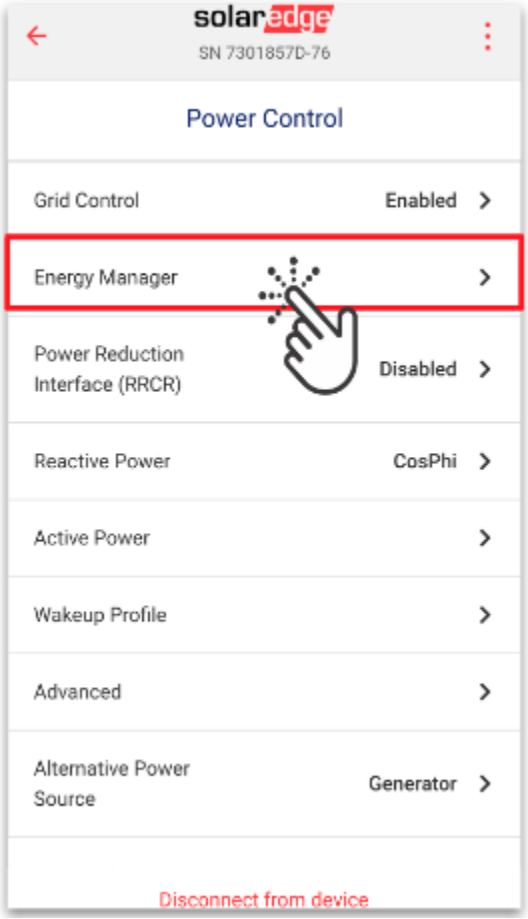


Step 9: Configuring Backup **(Leader Inverter)**

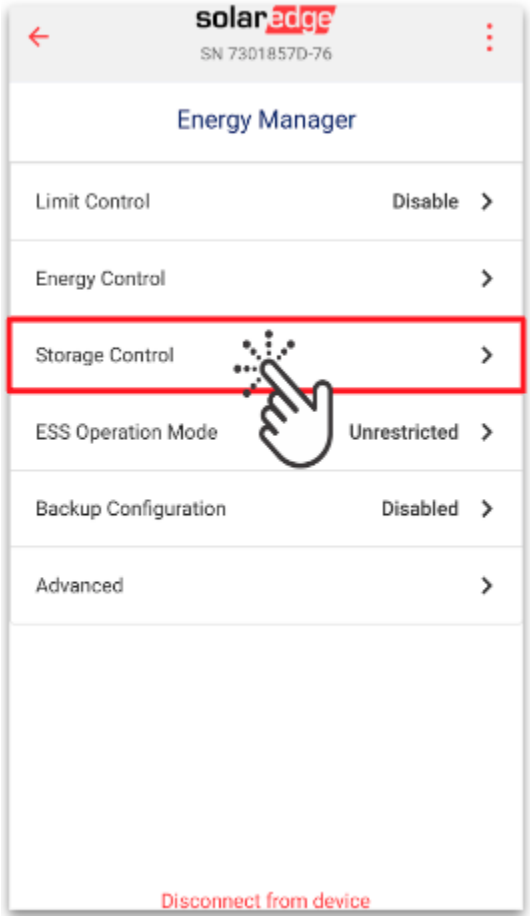
1. Tap **Power Control**



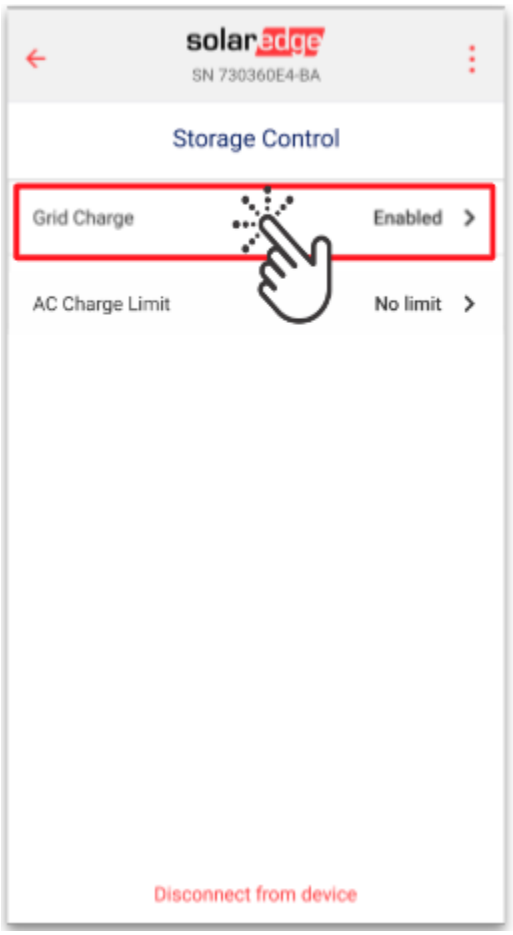
2. Tap **Energy Manager**



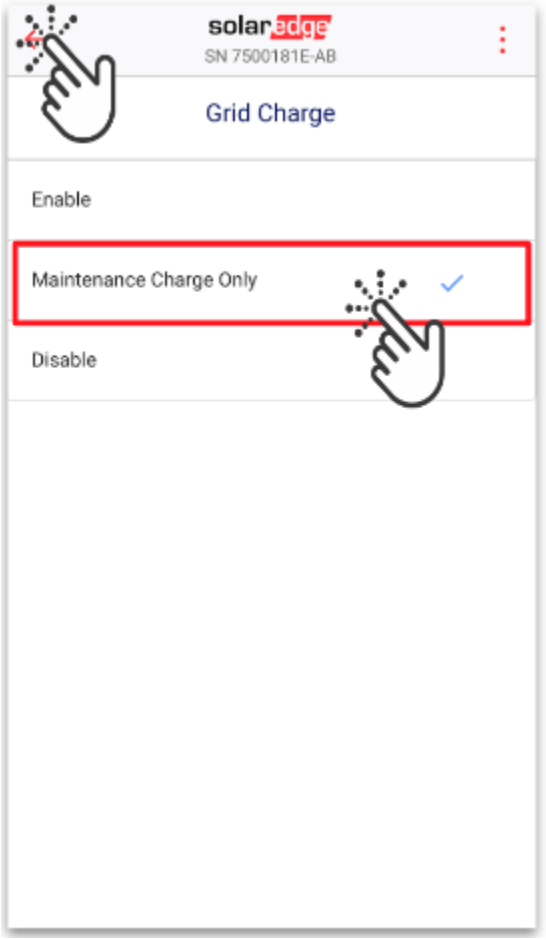
3. Tap **Storage Control**



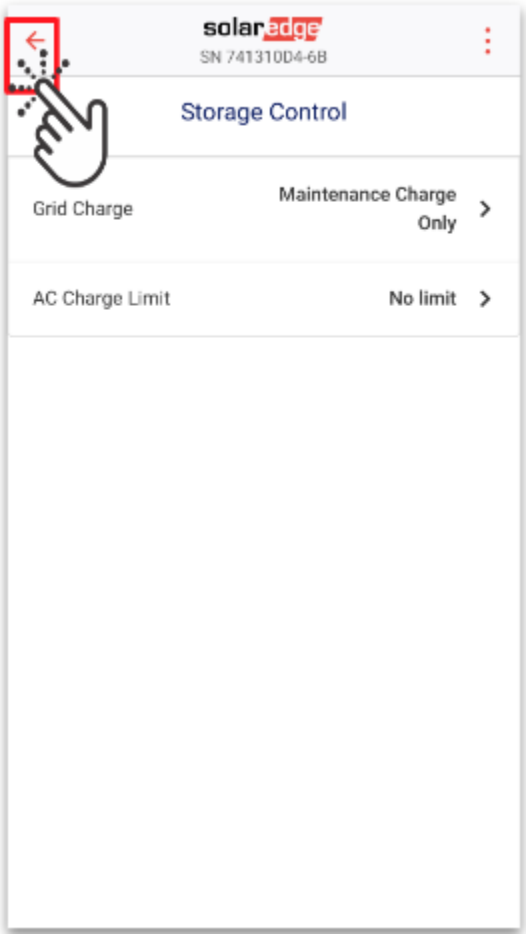
4. Tap **Grid Charge**



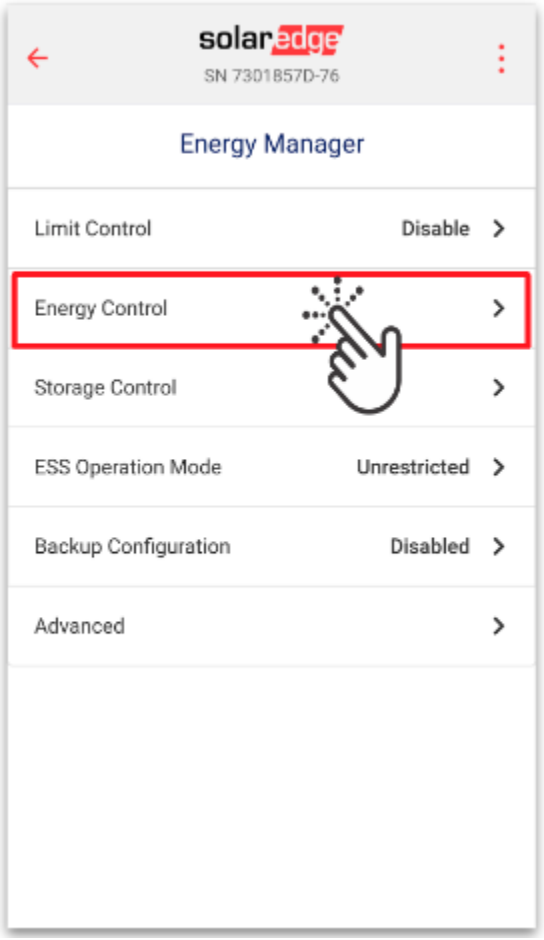
5. Tap **Maintenance Charge Only,** Tap **Back**


solaredge
SN 7500181E-AB
Grid Charge
Enable
Maintenance Charge Only
Disable

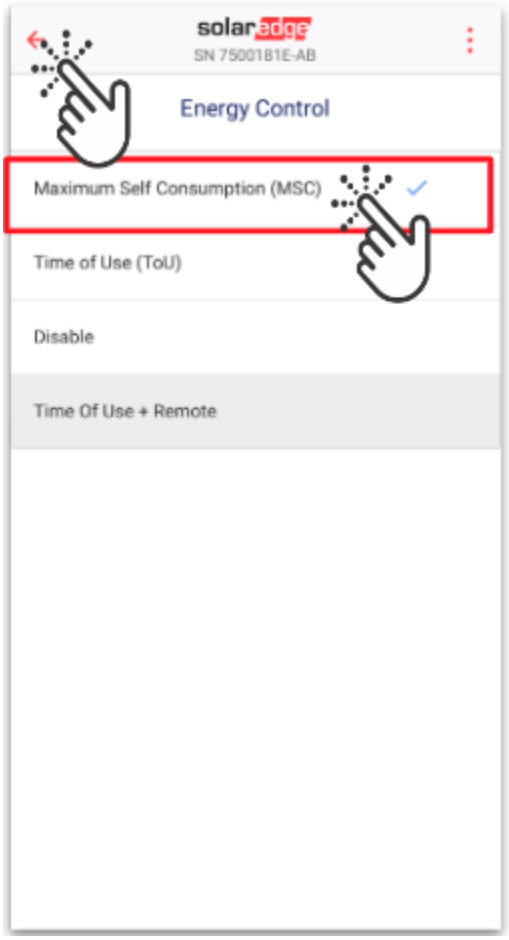
6. Tap **Back**



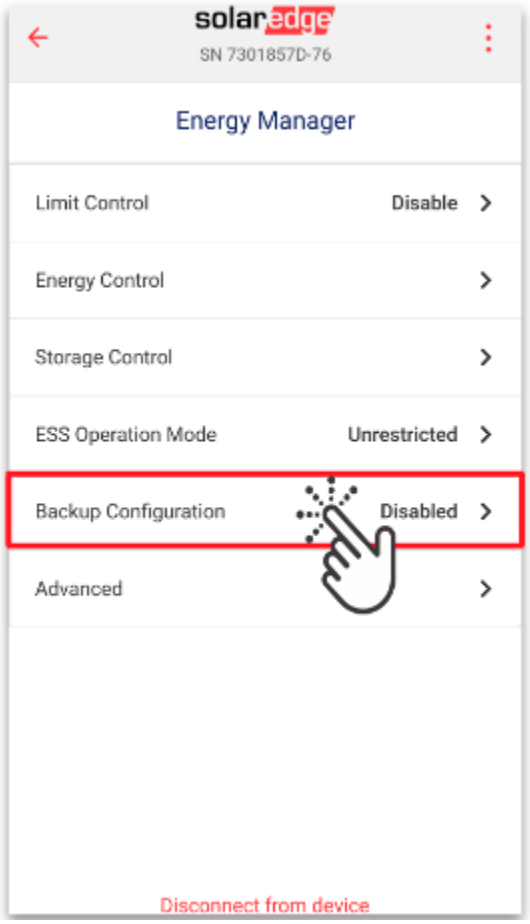
7. Tap **Energy Control**



8. Tap **Maximum Self Consumption (MSC),** Tap **Back**



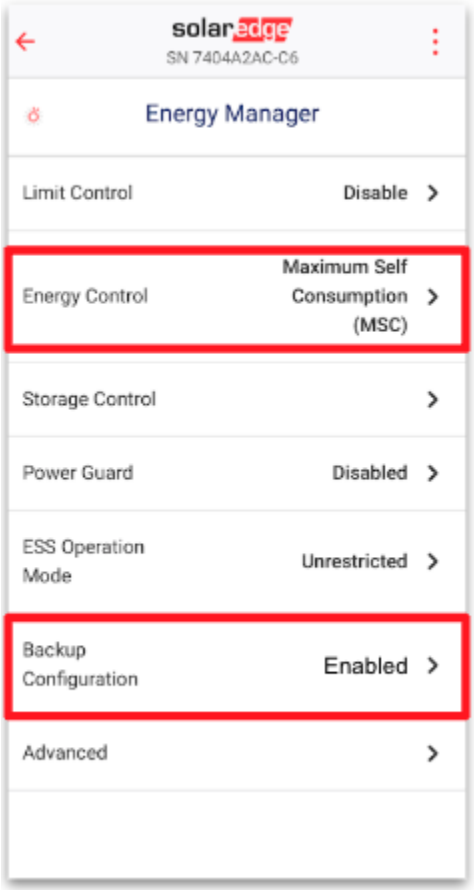
9. Tap **Backup Configuration**



10. Tap **Backup Reserved**

11. Set **Backup Reserve to 35%,** Tap **Done**

12. Verify Energy Manager Configuration

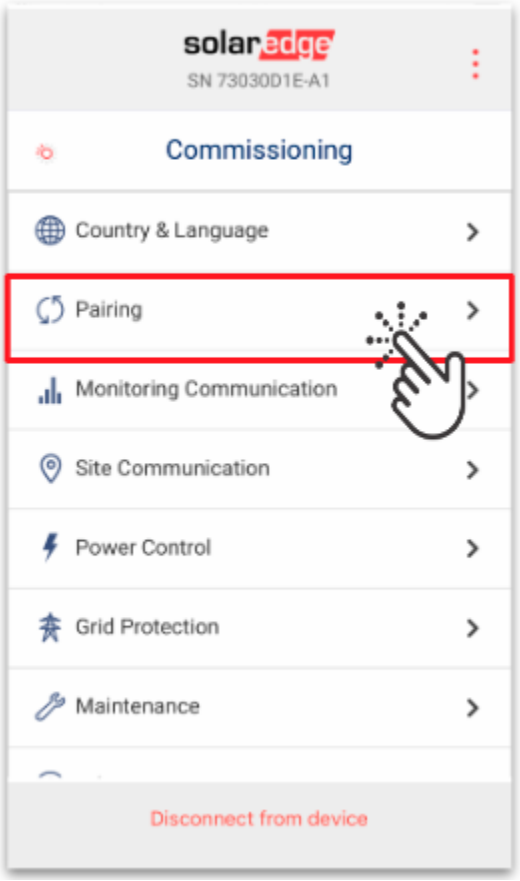


Step 10: Pairing and Site Communications (Follower Inverter)

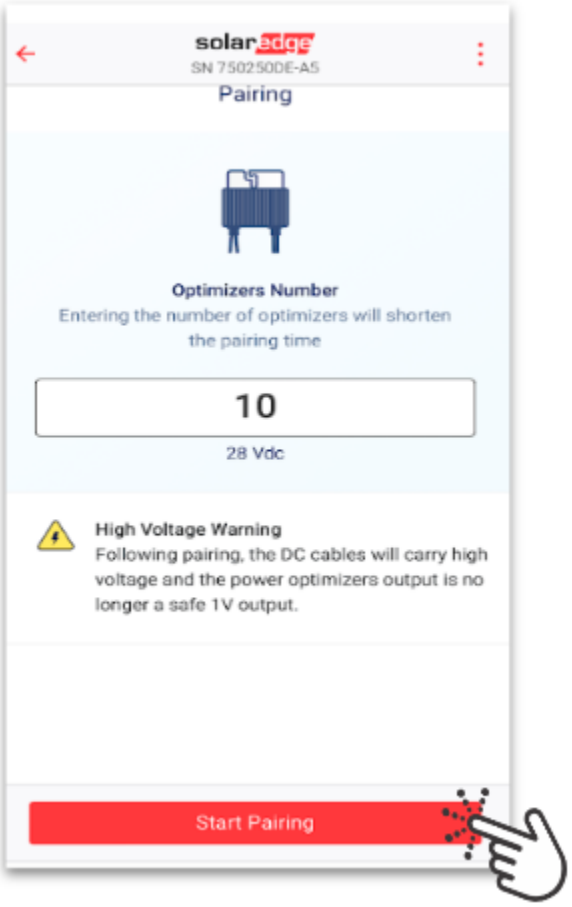
1. Scan the QR Code located on the side of the **Follower** inverter

2. Follow instructions to connect to inverter WiFi, tap **Continue**

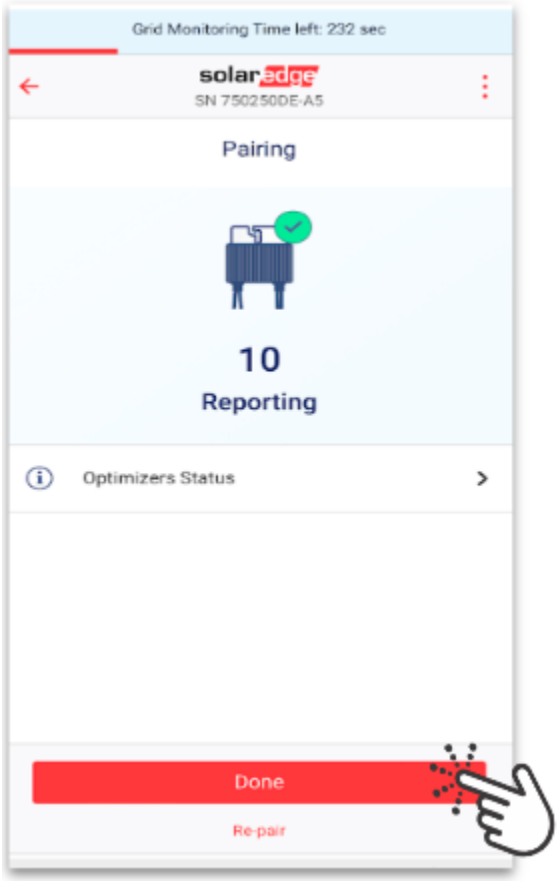
3. From the Commissioning Screen, Tap **Pairing** (FW updates will be complete)



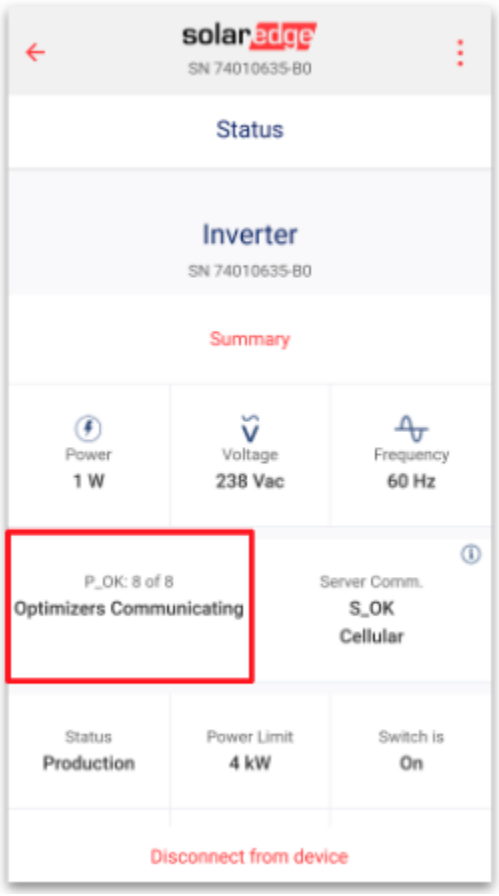
4. Enter the number of optimizers installed**,** Tap **Start Pairing**



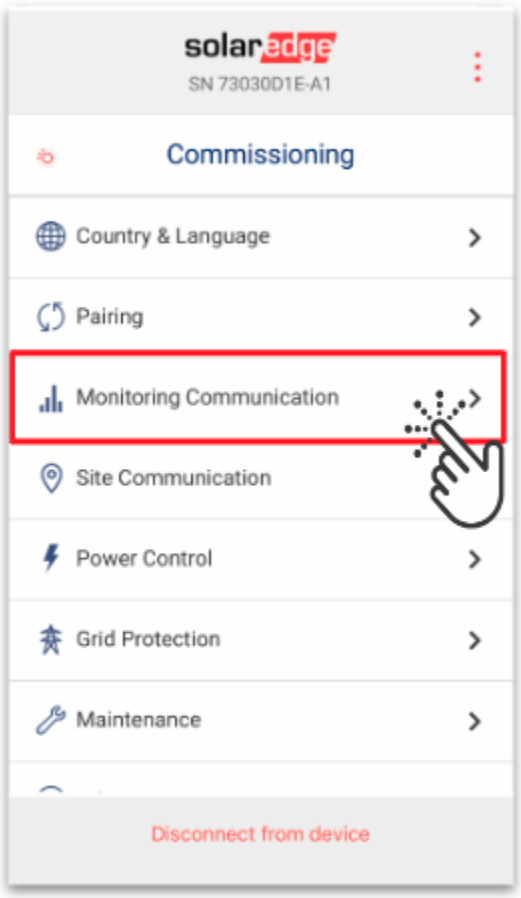
5. Allow pairing process to complete and Tap **Done**



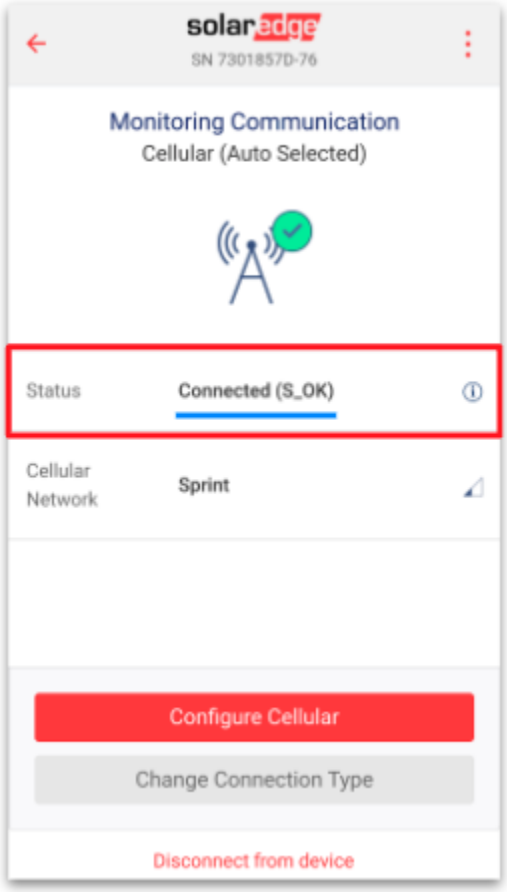
6. Return to Status Screen and verify P_OK: X of X Should match the amount of modules installed. This number will slowly count up until all optimizers are recognized.



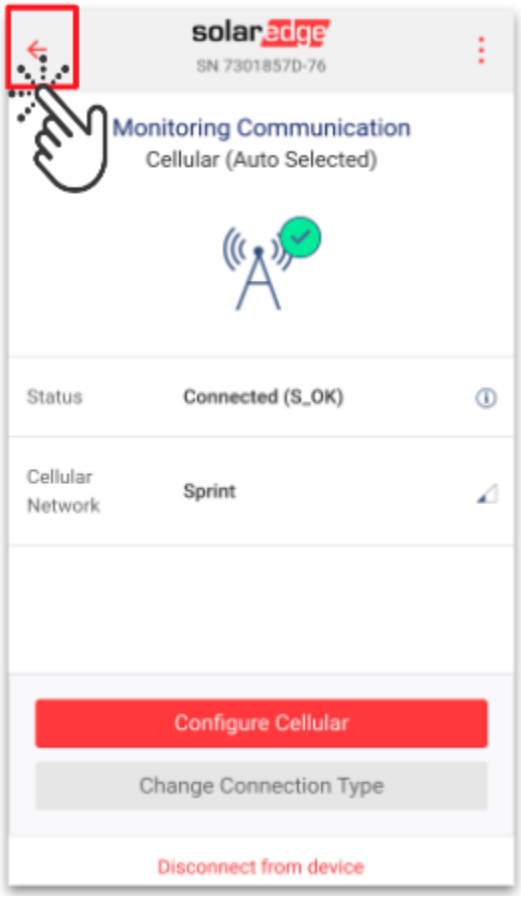
7. Tap **Monitoring Communication**



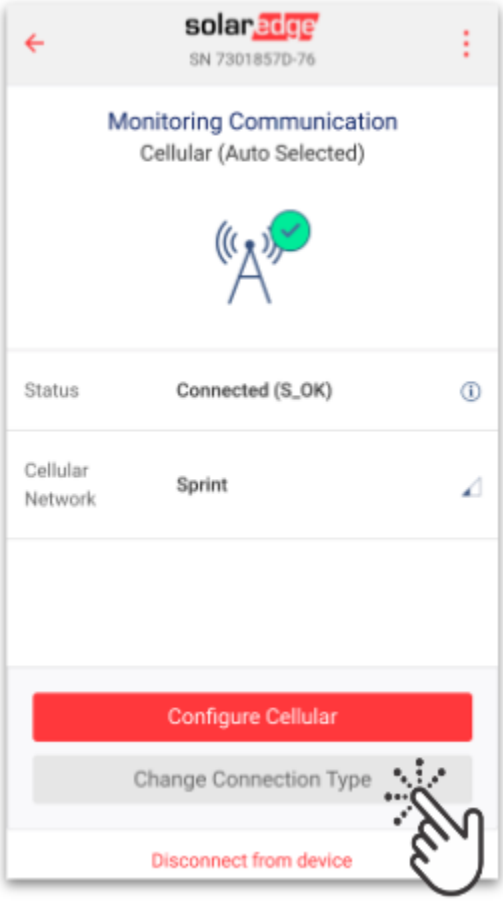
8. Verify connection is **Status S_OK**



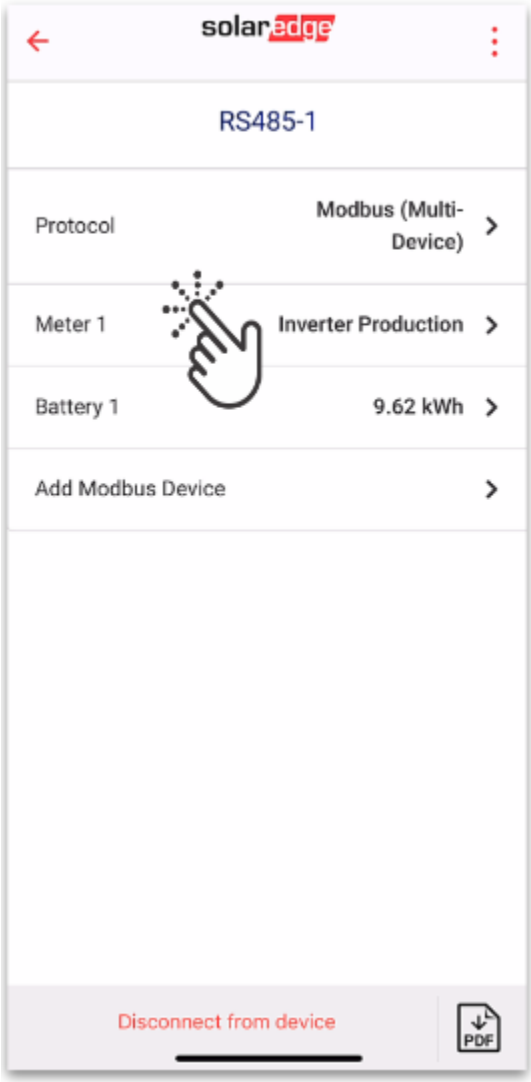
9. Confirm connection and tap the **Back Arrow**



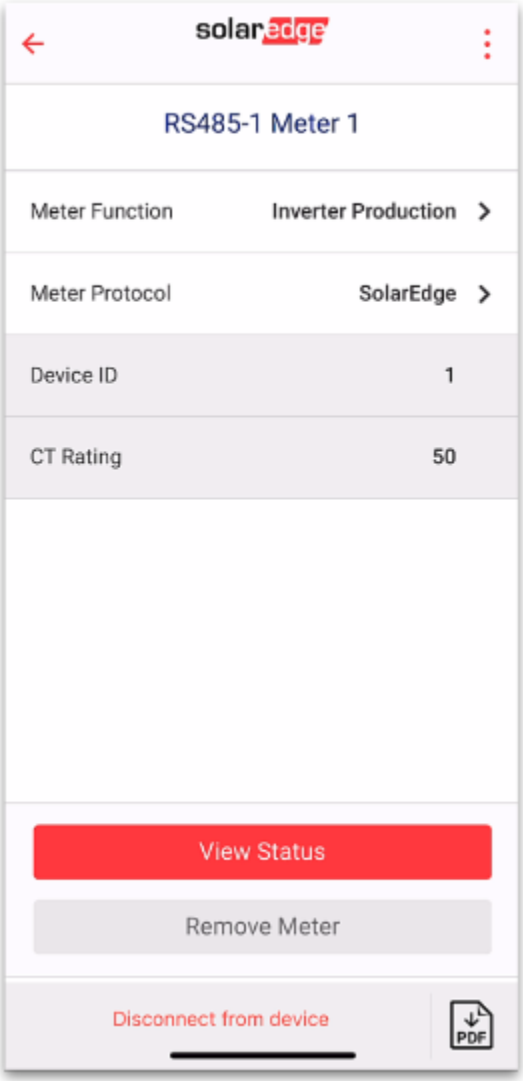
NOTE: If another communication device was installed configure the connection to get S_OK



10. From the main menu, tap **Site Communication,** then tap **Meter 1**



11. Verify **Meter 1** settings



Step 11: CT Configuration Test **(Leader Inverter)**

A CT configuration test is required to verify the correct installation and direction of the CTs. This includes on any leaders/follower inverters.

1. Turn the inverter red toggle switch to the **O** (**OFF**) positon.

2. Verify that **Safe DC Voltage** is displayed on the meter screen

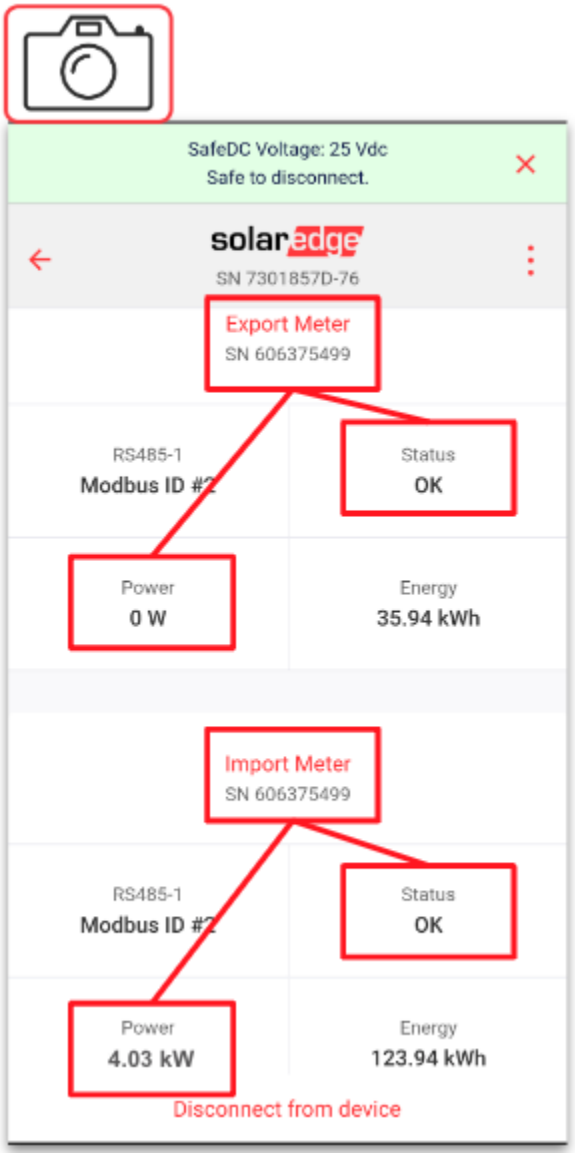
3. With the inverter toggle switch OFF and the DC voltage at a safe level, verify the following:

- Export Meter shall read:
  - **Status: OK, Power: 0 kW**

- Import Meter shall read:
  - **Status: OK, Power: Value greater than 0kW** (indicating import from the grid)

- If the meters are showing any other values, a CT is most likely installed facing the wrong direction and must be physically flipped.

- A single screenshot showing both meters is required.



	Pro Tip: Verify power reading in SetApp is within 100W of the reading on the utility meter.

IMPORTANT: Turn the Inverter I/O switch back to the I (**ON**) Position After the test is complete.

Step 12: System Status Checklist (Leader and Follower Inverters)

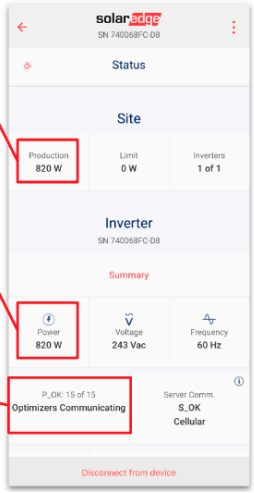
IMPORTANT: The following system status checks shall be performed on both **Leader** and **Follower** inverters.

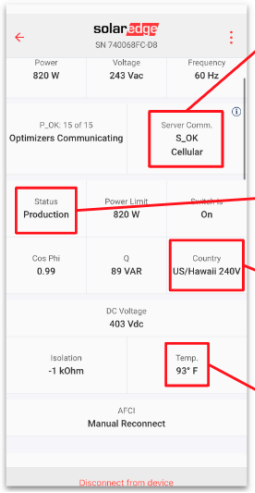
- Verify Leader/Follower serial numbers
- Required screenshots shall be taken for each inverter

System Production displays a value of the solar wattage

Power displays a value, this can be import or export power

Optimizers are communicating and equal the amount of modules installed. Example P_OK 15 of 15





Server Communications display S_OK

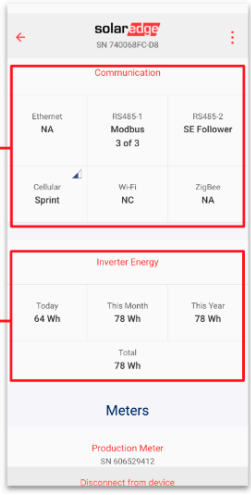
Status displays the current operating mode of the system, example shown here Production

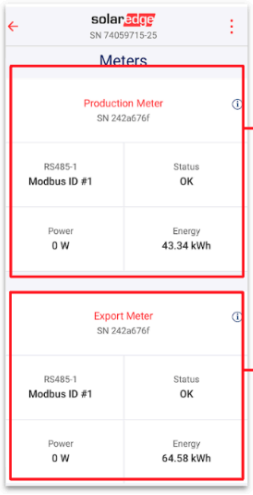
Country shall match the geographical location of the installation.

Temp shall show a value greater than 0.

Monitoring Communication displays the current connection to the SolarEdge Monitoring Portal, and the devices connected to the inverter

Inverter Energy displays inverter output over time





Production Meter located in the Home Hub (Meter 1) used to measure PV production.
RS485-1 = Modbus ID # 1
Status = OK
Power = Current power flow through the system.

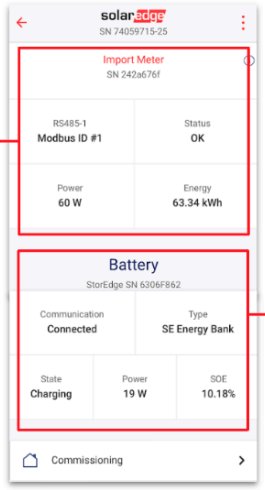
Export Meter located in the inverter used to measure Export+Import Power. Example shown indicates 0 W Power being exported to the Grid.
RS485-1 = Modbus ID # 1
Status = OK

NOTE: Follower inverters will only show inverter production metering.

Import Meter located in the inverter used to measure Export+Import Power.

Example shown indicates:

- 60 W Power being imported from the Grid.
- RS485-1 = Modbus ID # 1
- Status = OK



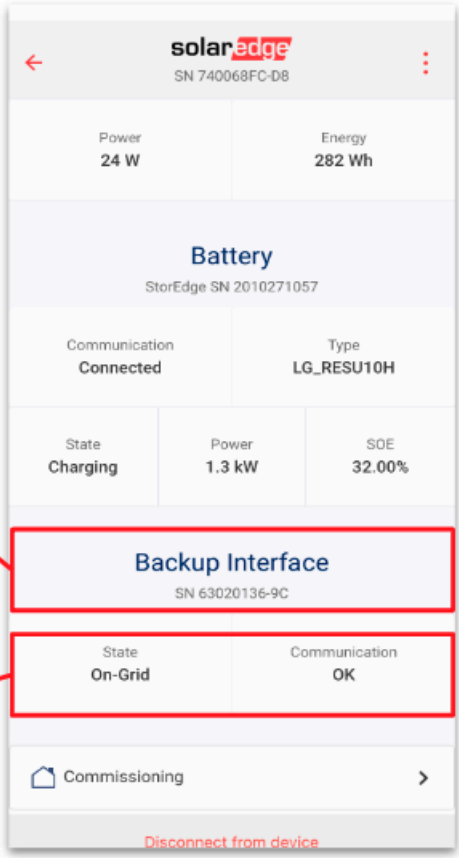
Battery Information is correctly populated.

- Communication = Connected
- Type = LG_RESU10H or SE Energy Bank
- State = Charging, Discharging depending If dual batteries installed the second battery will show standby.
- Power = Current charge/discharge power
- SOE = Current battery %.

Backup Interface:
Serial Number shall match BUI installed on site.

Backup Interface:

- State may = On-Grid or Backup
- Communication = OK



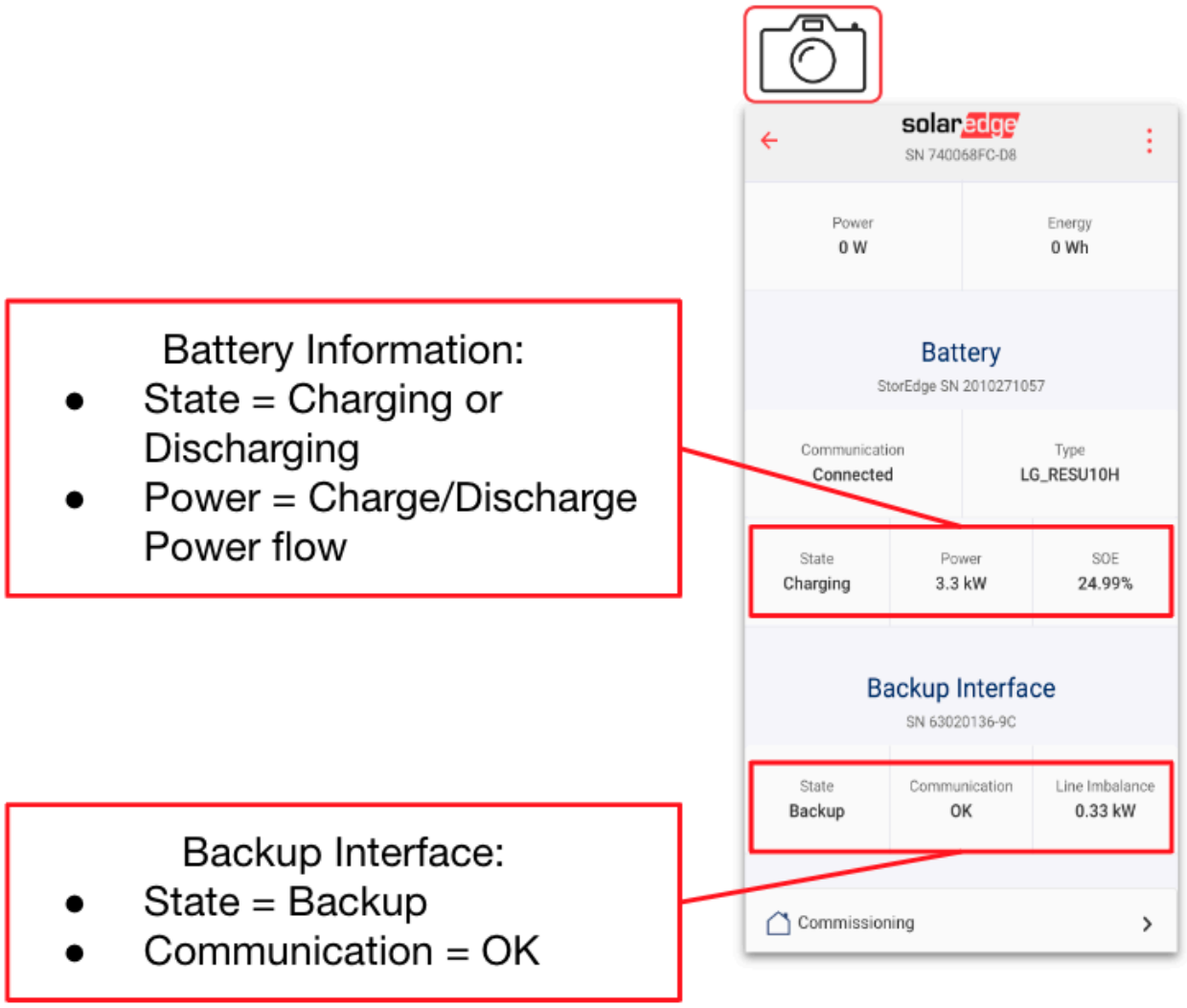
Step 13: Battery Backup Test

A backup test is required. To complete the backup test, disconnect the grid power from the BUI by turning off the home's main breaker.

- Power shall be turned off for a minimum of 15 minutes.

- Backup Interface Status shall show **State = Backup**

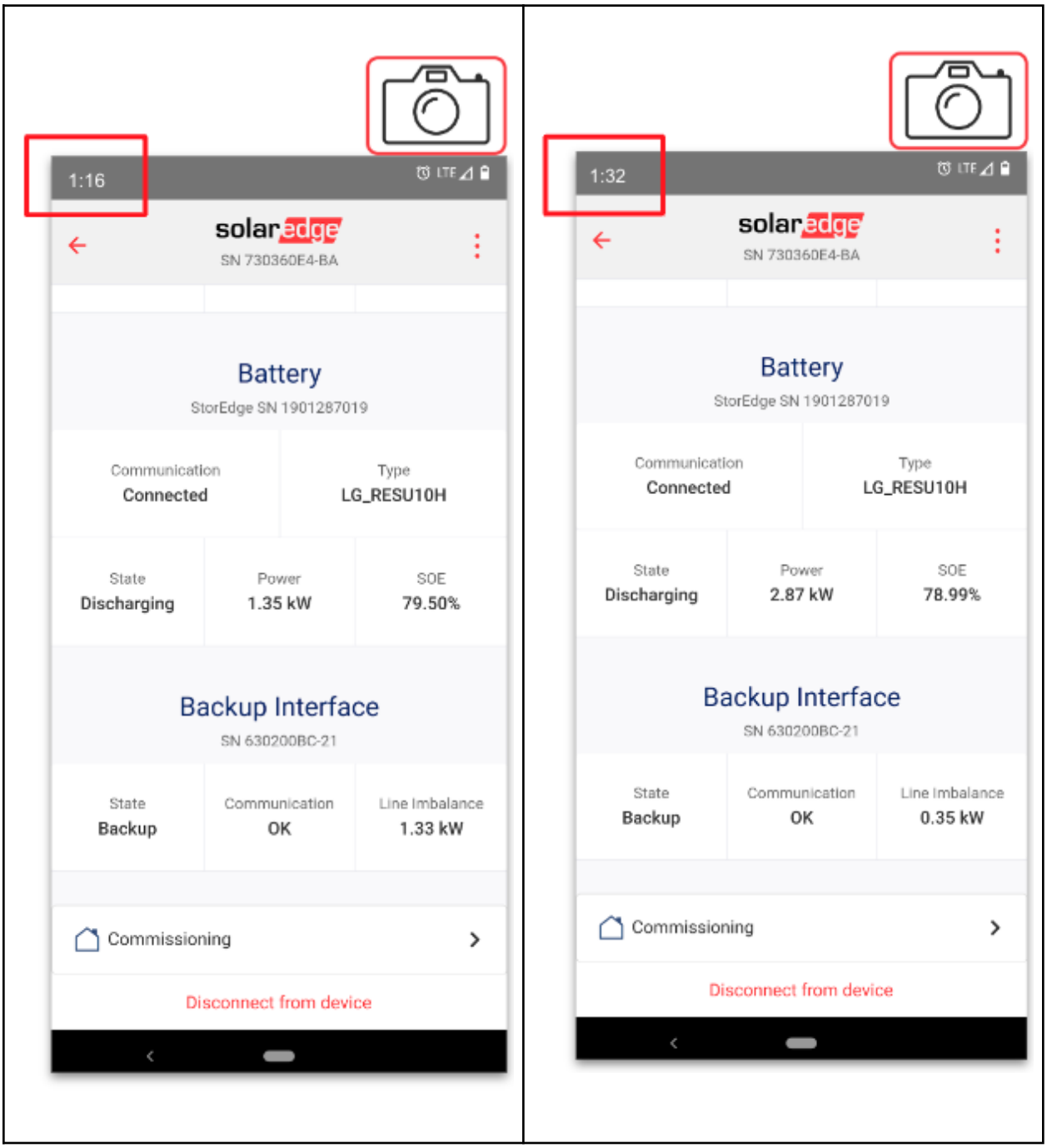
- Battery status shall show:
  - **State = Charging/Discharging**
  - **Power = Battery power importing or exporting in kW**
  - **SOE = Remaining battery %**



During the required backup test, two screenshots are needed, a minimum of 15 minutes apart.

- Screenshot when the system first enters backup for a timestamp.

- Allow a minimum of 15 minutes to elapse and take another screenshot for a backup timestamp.

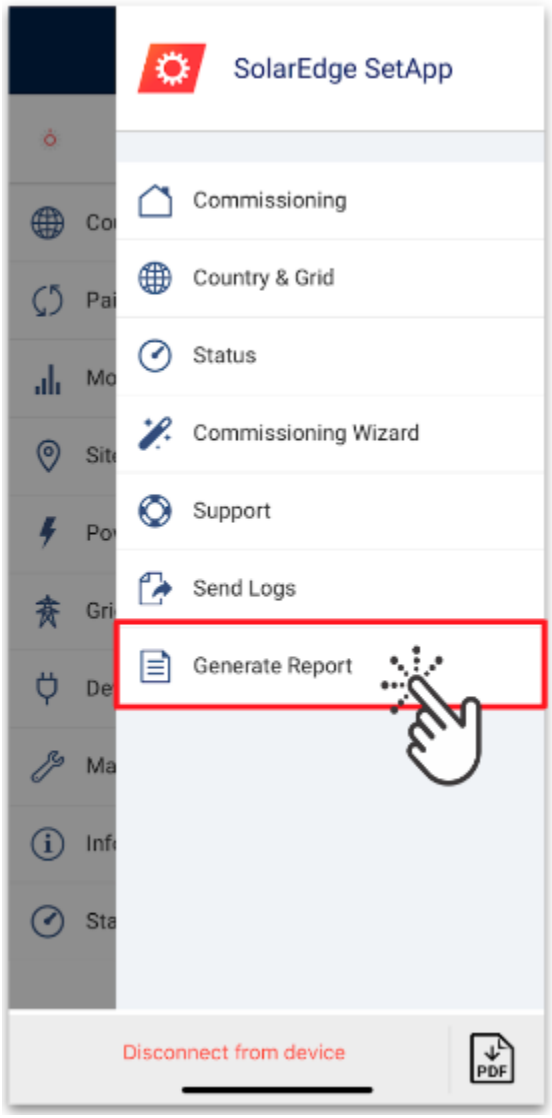


- Return the system to normal, on-grid, operation.

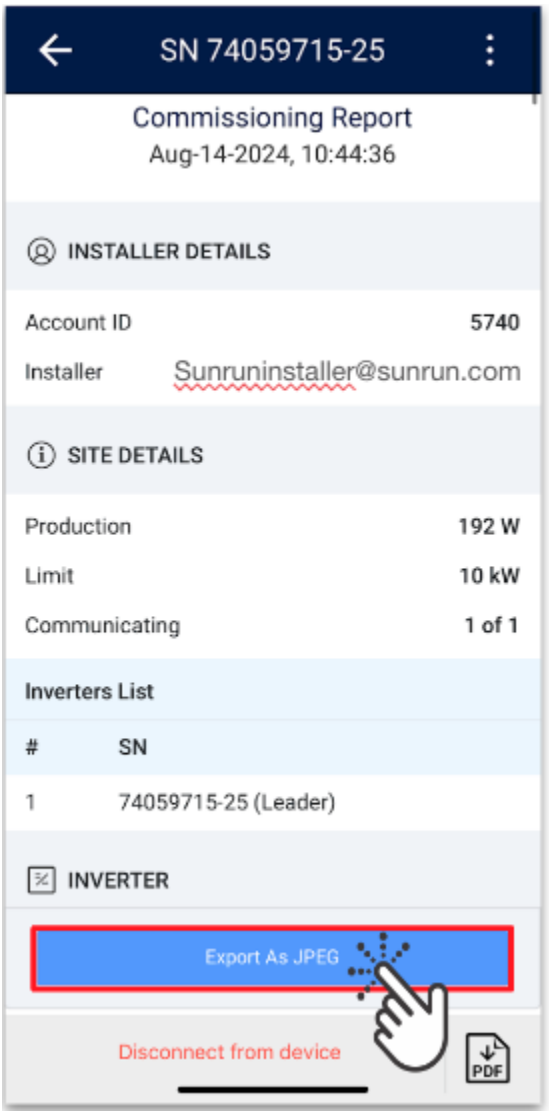
NOTE: Verify all expected backup circuits are functioning.

Step 14: Summary Report

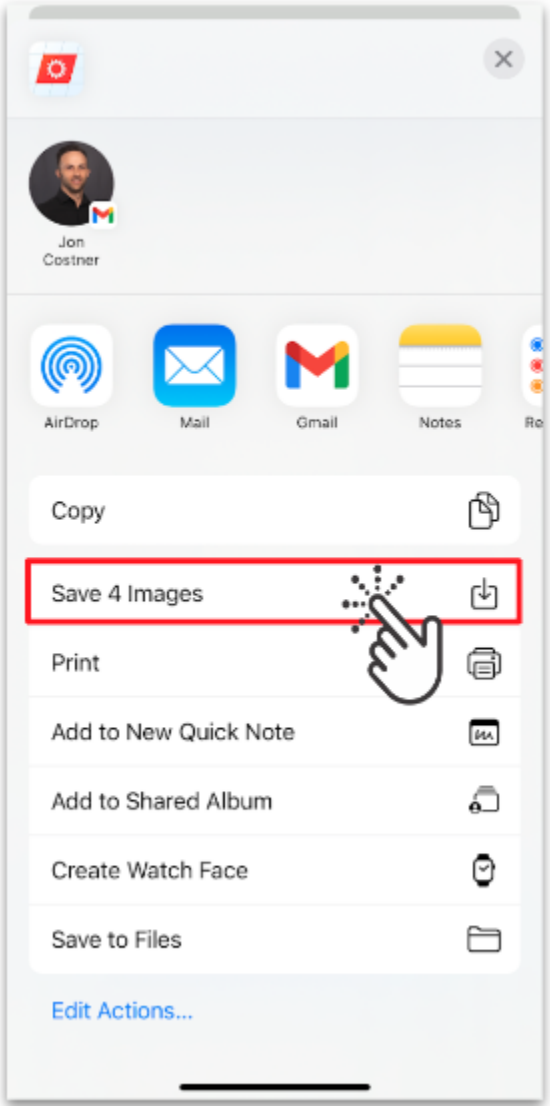
1. From the main screen tap the **Menu** > **Generate Report**



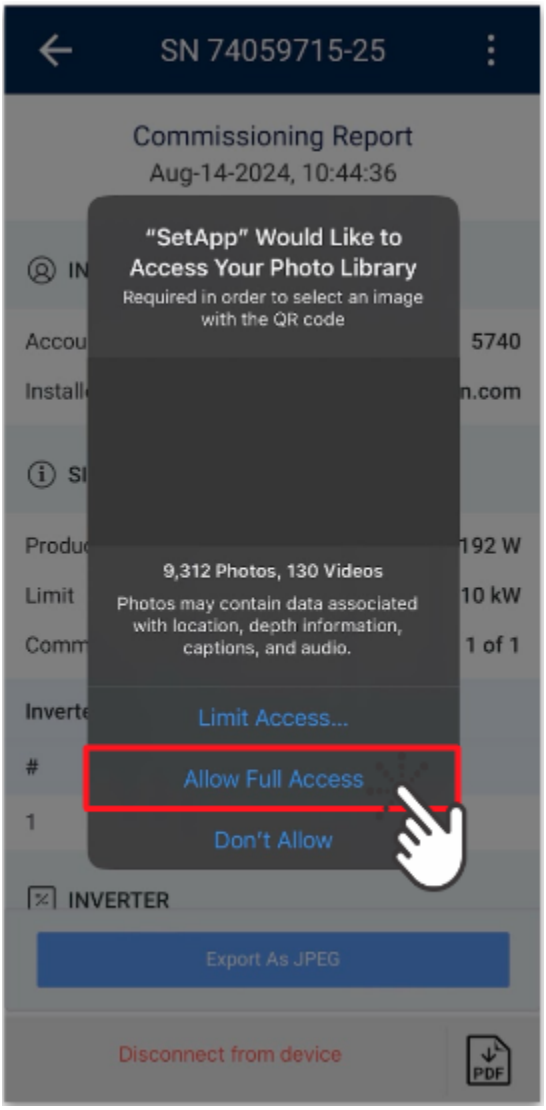
2. Tap **Export As JPEG**



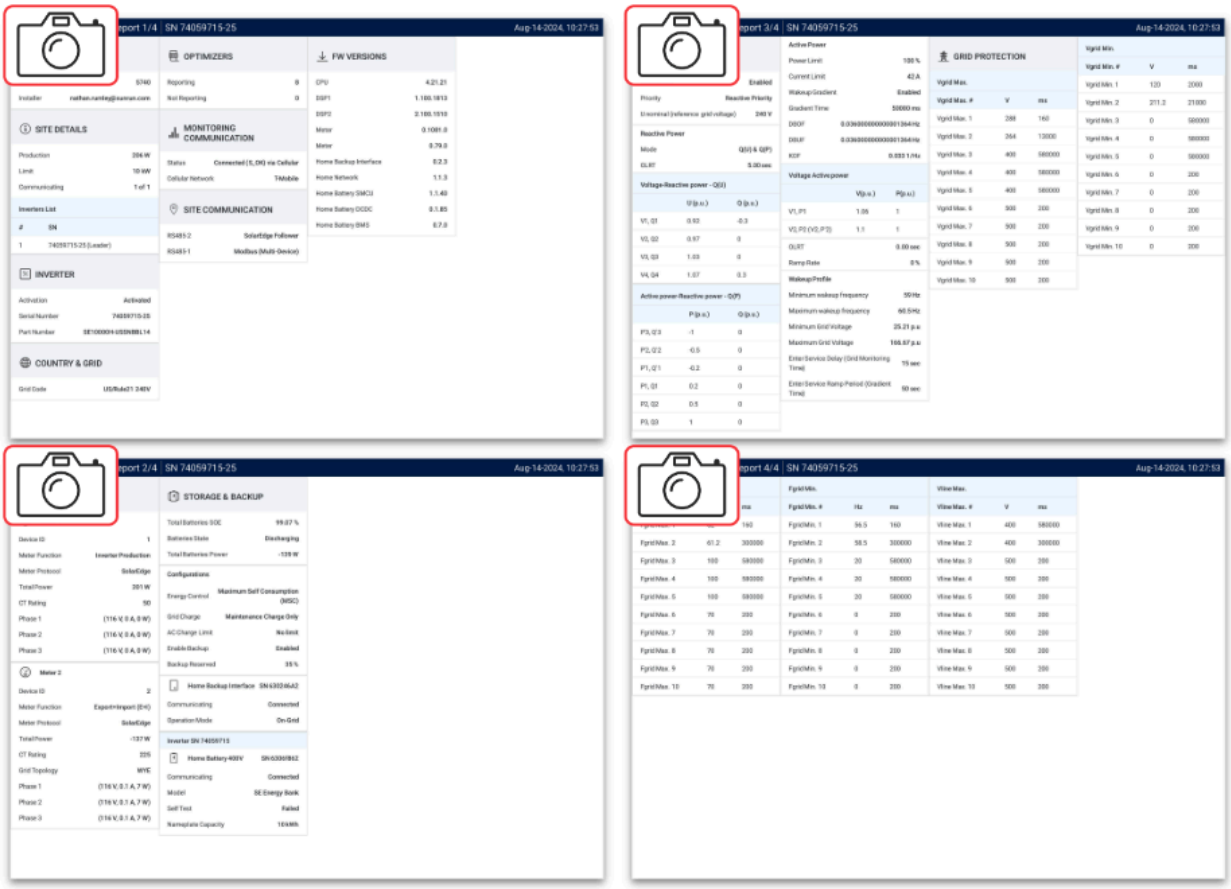
3. Tap **Save 4 Images** to save to the phone’s camera roll



4. If prompted, tap **Allow Full Access** to save the images



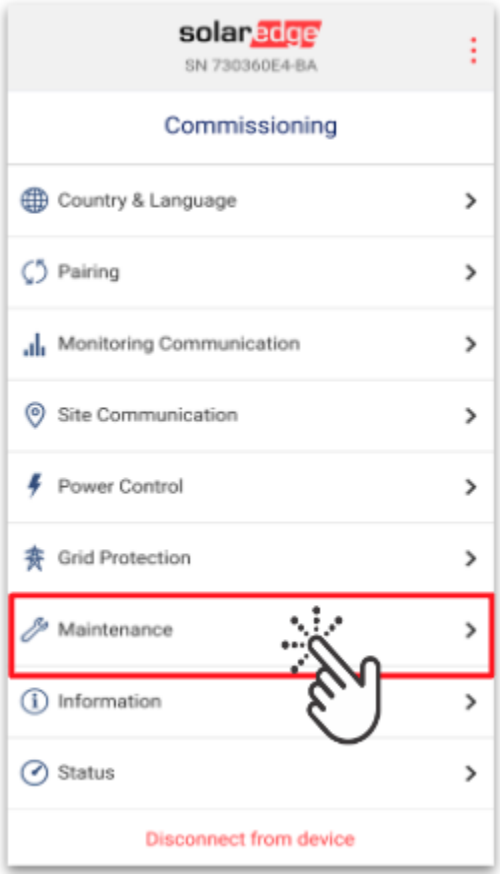
5. Upload the four summary images to the FIC.



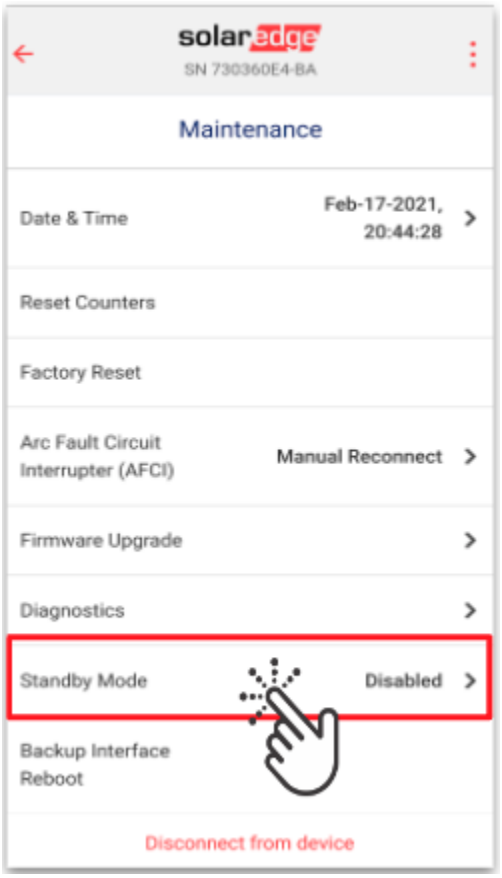
Step 15: Leave State: Remote Activation

- If the local AHJ/utility allows for remote activation of PV systems, the system shall be left in standby mode.
- The system shall be producing power and battery charging or discharging before setting the system to standby mode.

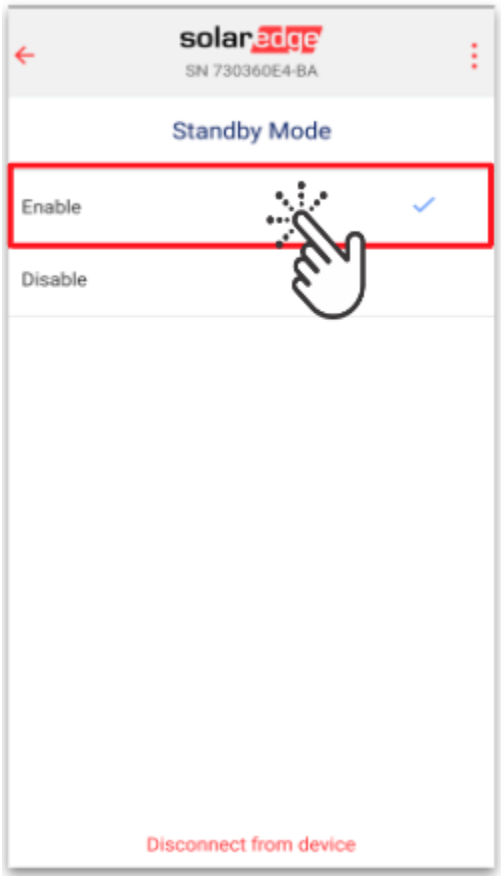
5. Tap **Maintenance**



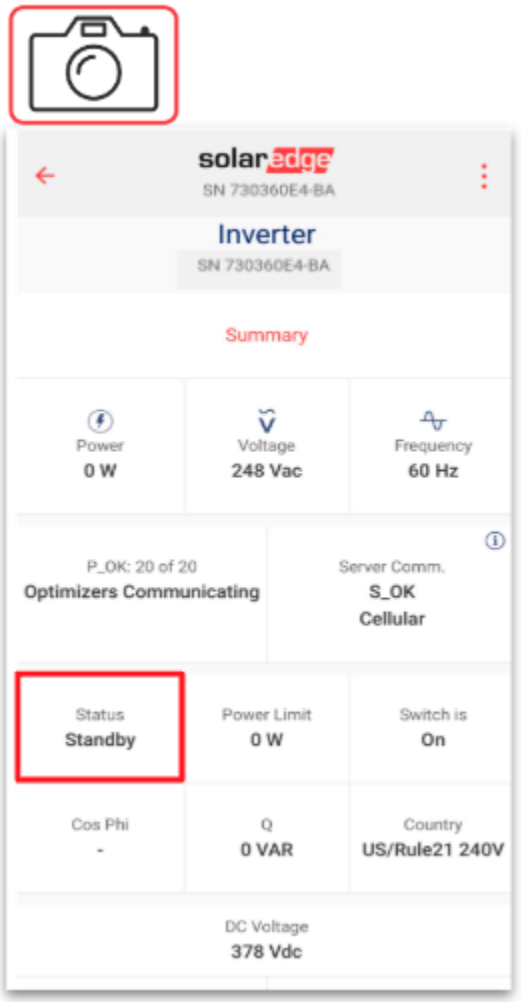
6. Tap **Standby Mode**


solaredge
SN 730360E4-BA
Maintenance
Date & Time
Feb-17-2021, 20:44:28
Reset Counters
Factory Reset
Arc Fault Circuit Interrupter (AFCI)
Manual Reconnect
Firmware Upgrade
Diagnostics
Standby Mode
Disabled
Backup Interface Reboot
Disconnect from device

7. Tap **Enable**



8. Return to Status Screen and verify Status



No Remote Activation

- If the local AHJ/utility does not allow for remote activation of PV systems, the following equipment **shall** be left in the **OFF** position:

- Battery On/Off switch in the **OFF** position.

- Battery DC Main Breaker in the **OFF** position.

- All AC and DC disconnects in the **OFF** position.

- All PV breakers in the **OFF** position.

- Inverter DC disconnect in the **OFF** position.

- Sunrun will contact the customer to walk them through activating the system, once PTO is granted.

Verification

- ❏ All the latest versions of firmware were uploaded to the Inverter and BUI
- ❏ Monitoring was set properly to Cellular (S_OK is present)
- ❏ Pairing was completed and all optimizers are reporting
- ❏ All batteries are communicating with the inverter
- ❏ BUI is communicating with the leader inverter
- ❏ Leader inverter Meter 1 is inverter production only, Meter 2 in Export + Import

- ❏ Follower inverter Meter 1 is inverter production only
- ❏ Leader inverter set and follower inverters detected and communicating
- ❏ Backup Configuration set correctly through Energy Manager Menu on leader inverter
- ❏ Backup Test successfully completed (15 minutes in backup with all loads functioning
- ❏ Meter test completed successfully (CT's are properly placed)
- ❏ All required screenshots submitted with the correct information
- ❏ Rapid shutdown test (RSD) completed successfully.

Product Feedback

Use the links below to provide feedback on SOPs and/or products:

- SOP/Work Instruction Feedback
- Product Feedback

Approvals

Approvals			
Prepared by: J. Costner	9/4/2024	Training: F. Alvarado	9/10/2024
Reviewed by: A. Cruz	9/17/2024	Safety:	
Electrical:		Structural:	
Design:		CRT: Z.Thibert	9/10/2024
Product: J. Ferreira	9/5/2024	Other:	
Quality: P. Babiak	9/4/2024	Other:	

Revision History

Revision	Date	Description	Approval
1	9/17/2024	Initial Release	J. Costner

2	2/19/2025	Revised per CO-0129	J. Costner
3	5/05/2025	Revised per CO-136	N.Rumley

*This document is a compilation of INS-SOP-0032-05 and INS-SOP-0140-03. It supersedes both previous documents.

Document Control Change Order		SUNRUN **Field Operations** INS-FRM-0001-03
Change Order Number: CO-0129	**New Revision:** 02	**Submitted By & Date:** A. Cruz 2/19/2025
Document Title and Number: SolarEdge Battery Backup with Home Battery: Commissioning INS-SOP-0254		
Reason for Change (in detail): Sunrun new requirement		
Description of Change (in detail): Step 6: “Monitoring Communication” has been updated to include both Wifi and Cellular configurations. Prior to this change, only cell communication was required.		
References: N/A		
Effectivity: (Installations in field, New installations, Work in Progress) All new Solaredge Installations		
Other documents affected: (Spanish version, other SOPs, Work Instructions) Spanish?		
Approvals	**Training:**	**Quality:**
Product: J. Costner 2/19/2025	**Electrical:**	**Structural:**
Other:	**Other:**	**Other:**

Document Control Change Order		SUNRUN **Field Operations** INS-FRM-0001-03
Change Order number: CO-0136	**New Revision:** 03	**Submitted By & Date:** N.Rumley 5/5/2025
Document Title and Number: SolarEdge Battery Backup with Home Battery: Commissioning INS-SOP-0254		
Reason for Change (in detail): Update to reflect PCS installation procedures.		
Description of Change (in detail): Added Important notes about meter configuration and CT placement. New steps for commissioning and BUI meter swaps. Notes in PV only SOPs about CT placement and best practices. All commissioning guides updated to reflect CT error checking and setting of busbar protection.		
References: SEDG application release notes and test lab verification		
Effectivity: (Installations in field, New installations, Work in Progress) Installations		
Other documents affected: (Spanish version, other SOPs, Work Instructions) SolarEdge Battery Backup: Installation and Wiring INS-SOP-0252 SolarEdge Home Hub Inverter: SHIFT Installation & Wiring INS-SOP-0222 SolarEdge SHIFT Commissioning INS-SOP-0249 SolarEdge Home Hub Inverter: PV-Only Commissioning - INS-SOP-0121 SolarEdge Home Hub Inverter: Installation & Wiring - INS-SOP-0125		
Approvals	**Training:**	**Quality:**
Product: N. Rumley	**Electrical:**	**Structural:**
Other: J. Costner	**Other:**	**Other:**