Solplanet App
Manual

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1 About this Document

1.1 Overview

This document describes the common operations of the Solplanet app.

This manual is subject to update without notice. For more product details and latest documents, please visit www.solplanet.net.

1.2 Intended audience

This manual is intended for trained and knowledgeable technical professionals who are familiar with the product, local standards, and electrical systems.

2 Download and install

The corresponding, free Solplanet app can be downloaded from the relevant app store and installed on a mobile device (smartphone or tablet) with an Android operating system (version 9.0 or newer) or iOS operating system (version 11.0 or newer).
Alternatively, scan the QR code below to download and install the app, following the on-screen instructions.

Android iOS

Fig. 1. QR code for download the Solplanet App application

2.1 Revision history

The revision log provides a description of each document update. The latest version includes all updates from previous versions.

Version	Change Description	APP software version	Date
V01	/	4.5.0	2025.01

3 Account administration

3.1 Register a new account

Before using the Solplanet app, you must create an account.

Step 1: Open Solplanet App to enter the login screen, and click <Register> to enter the next screen.

Step 2: The user groups <Business user> and <End user> need be selected according to your identity, and click <Next step>.

The end user and the business user have the different permissions for setting parameters. The end user only can set the parameter during commissioning. The business user has more permissions, along with greater responsibilities.

Step 3: Select your desired registration method (mobile phone/email), enter the correct email or mobile, perform image verification.

Note

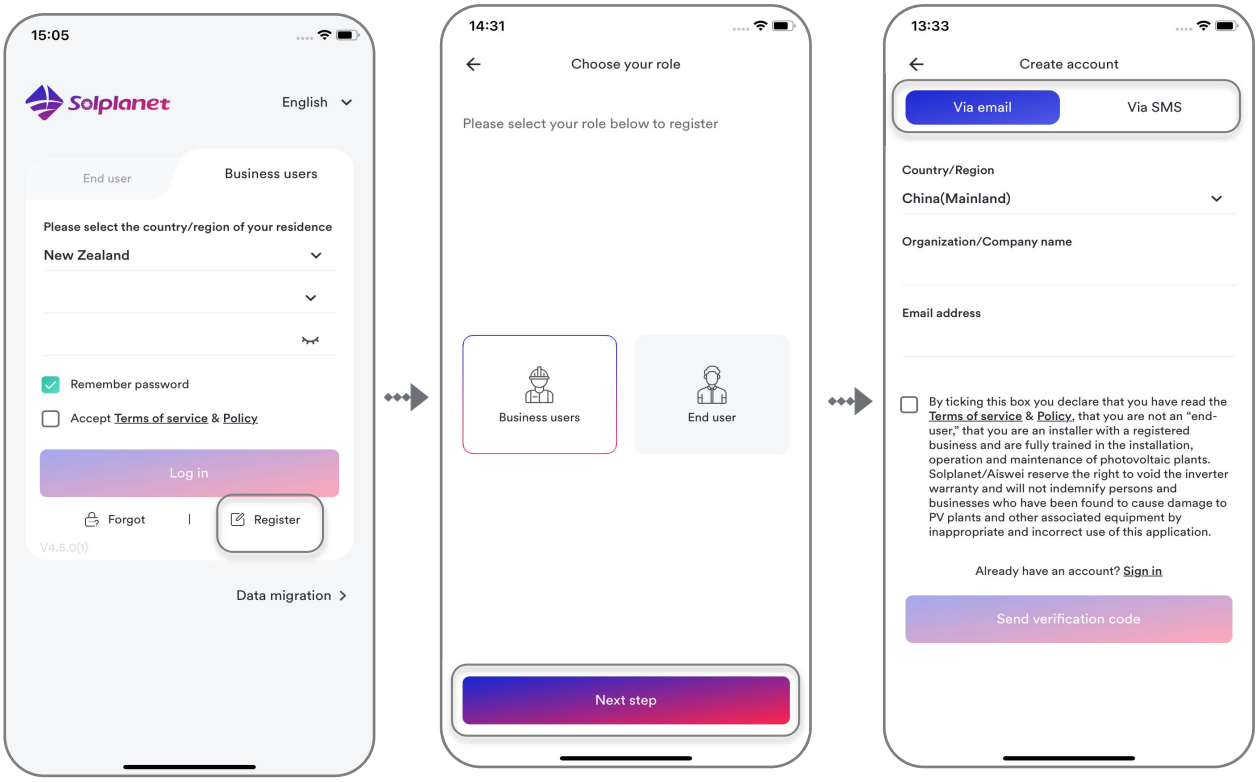
By ticking this box you declare that you have read the terms of service & pravicy policy, that you are not an “end-user,” that you are an installer with a registered business and are fully trained in the installation, operation and maintenance of photovoltaic plants. Solplanet/Aiswei reserve the right to void the inverter warranty and will not indemnify persons and businesses who have been found to cause damage to PV plants and other associated equipment by inappropriate and incorrect use of this application.

Step 4: Correctly enter the verification code received via SMS/email on your mobile phone to be automatically taken to the next page.

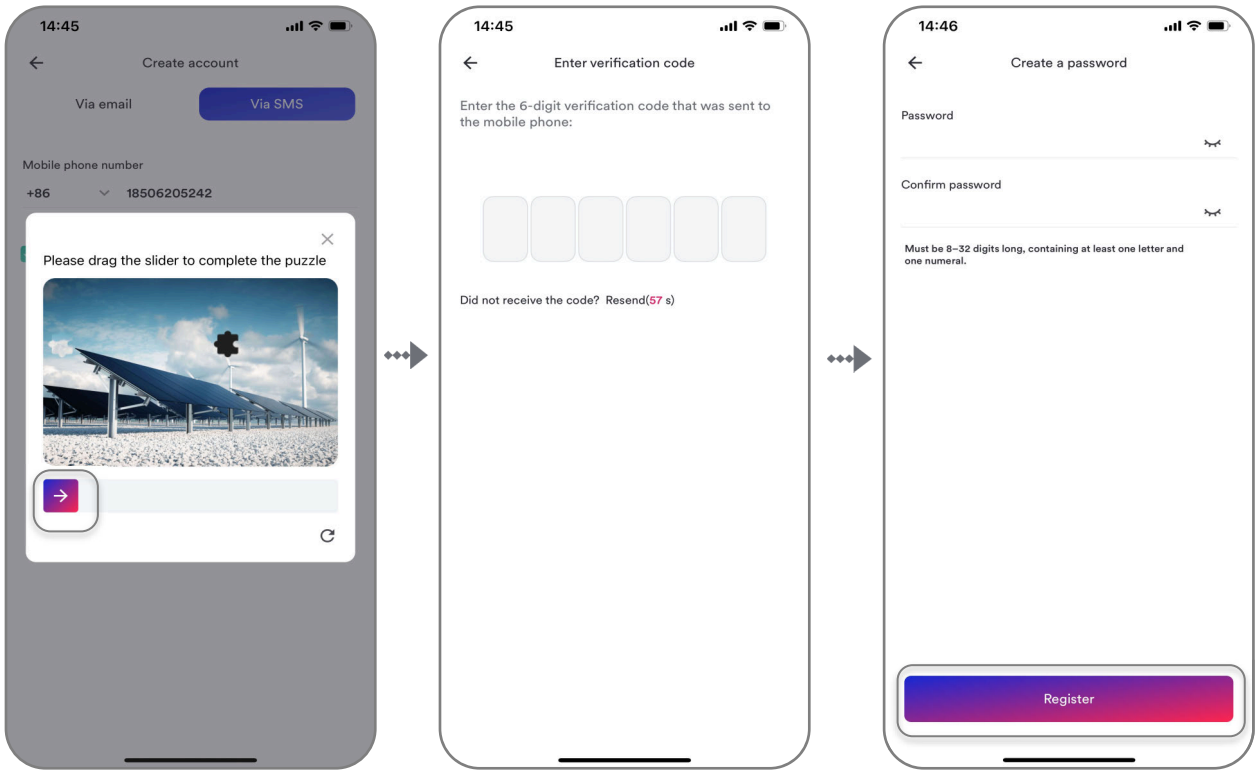
Step 5: Set the login password you wish to enter for this login account and click<Register>. At this point, account registration is complete.

The password must be 8-32 digits long and contain at least one letter and one number

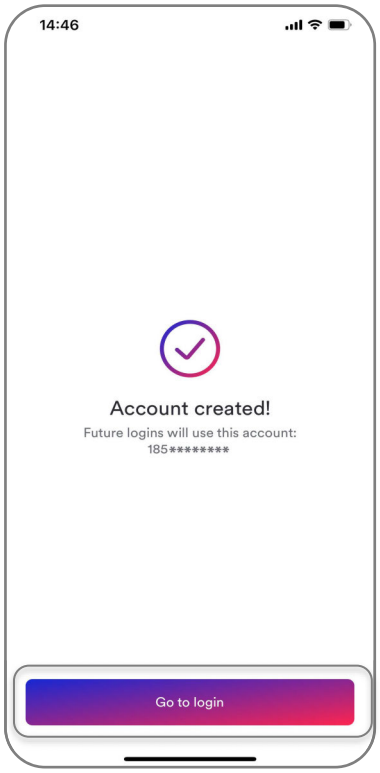
Step 6: After registration is completed, prompt for registration completion. You can click <Go to login>, then jump to the login page and enter the registered account password to successfully log in.



Step 1 Step 2 Step 3



Step 3 Step 4 Step 5



Step 6

Fig. 2. Register for a new account

3.2 Forgot password

If you already have an account but have forgotten your password, you can reset it.

Step 1: Open Solplanet App to enter the login screen, and click <Forgot> to enter the next screen.

Step 2: The user groups <Business user> and <End user> need be selected according to your identity, and click<Next step>.

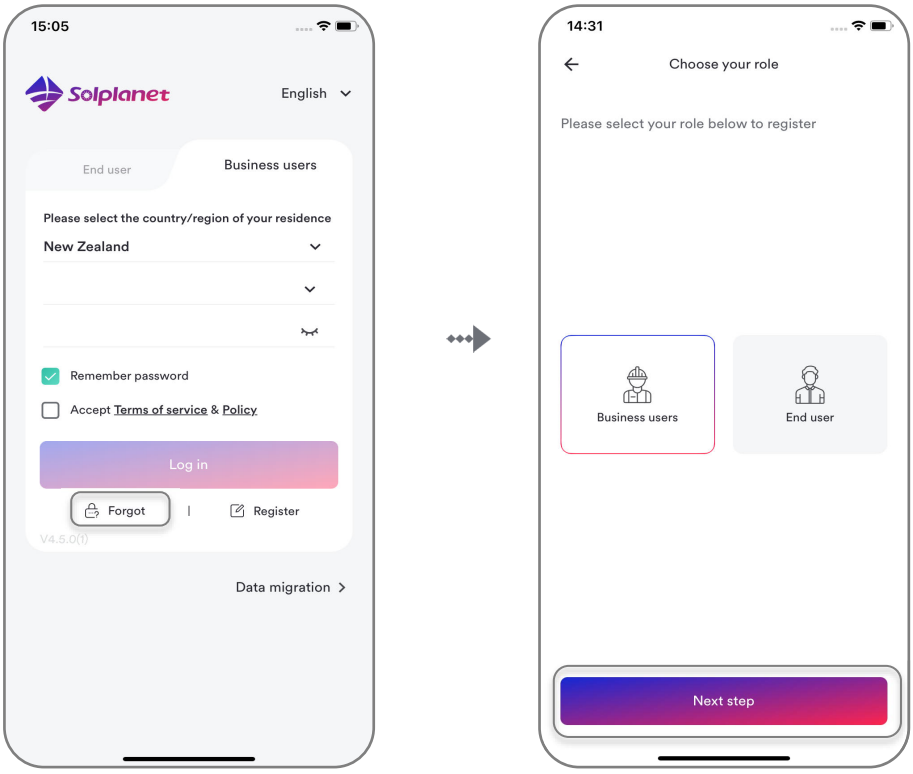
Step 3: The system allows you to retrieve your password from your cell phone or via email by switching the method.

a) Enter registered mobile phone number or email.

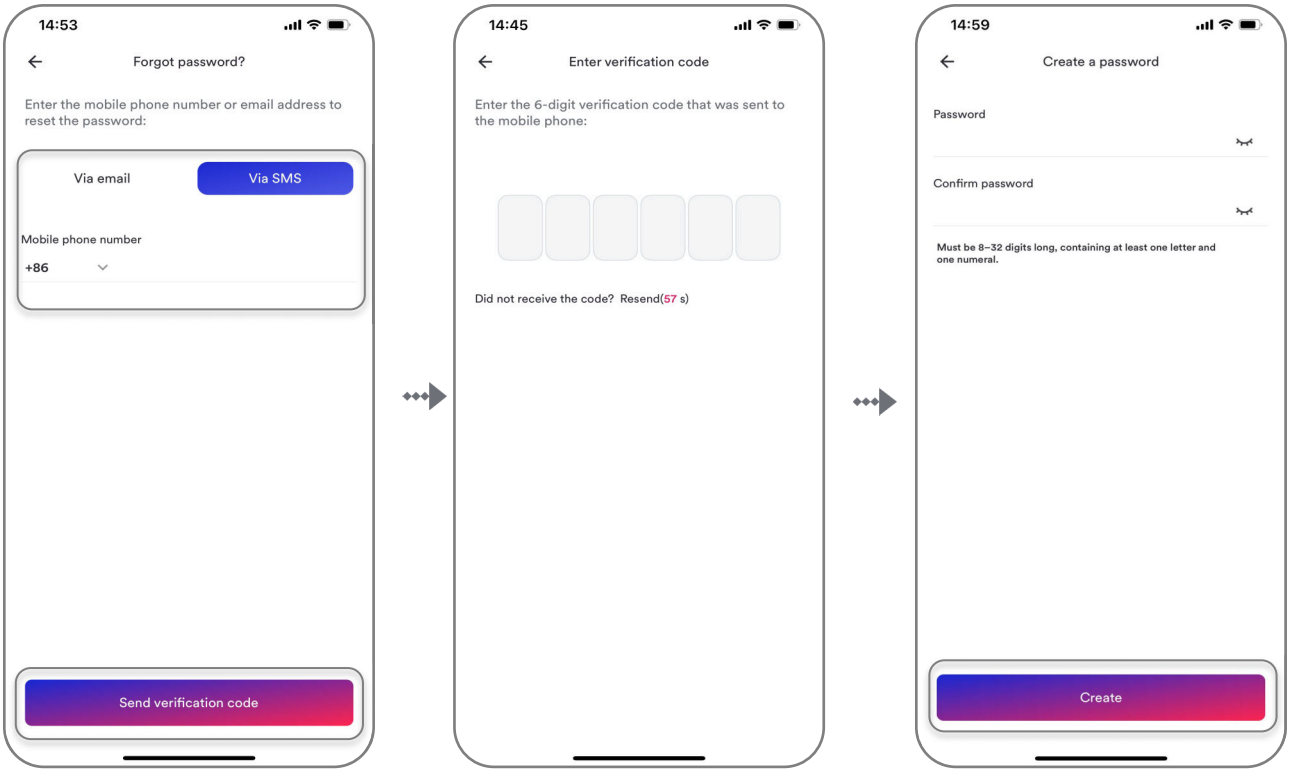
b) Your mobile phone or email will receive a 6-digit pure digital verification code, and please enter it.

c) After the verification code is successful, please enter your desired new password (8-32 bits, supports mixed letters and numbers), attention verification code countdown reminder.

d) After the reset is successful, you can log in to the app with the new password.



Step 1 Step 2



Step 3

Fig. 3. Forgot password

4 Create a new plant & commissioning

4.1 Create a new plant

Before creating a new plant, you must log into the Solplanet app

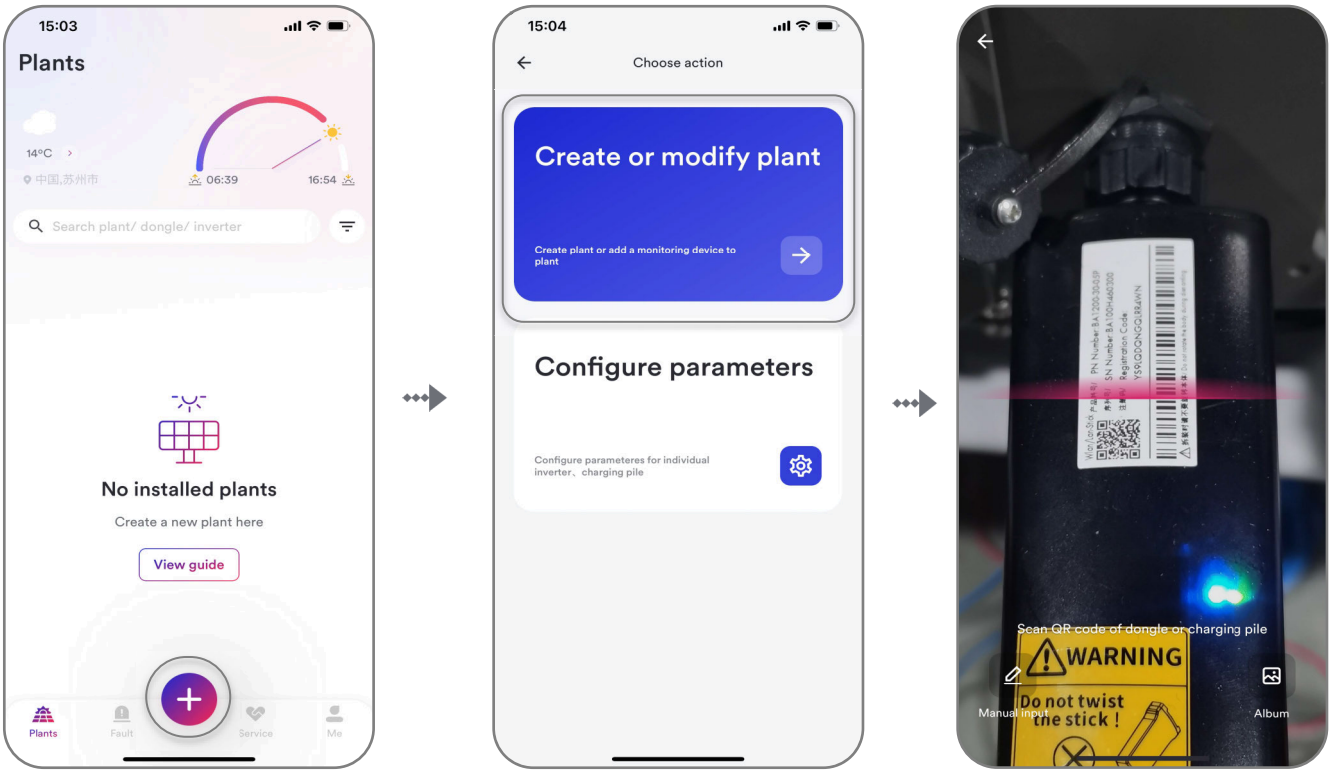
Step 1: Click the symbol <+> to enter the next screen, and click <Create or modify plant>, and scan the QR code of the Ai-dongle/Wi-Fi Stick or similar device to enter the next screen.

Step 2: Please click <Create new plant > to go to the next screen.

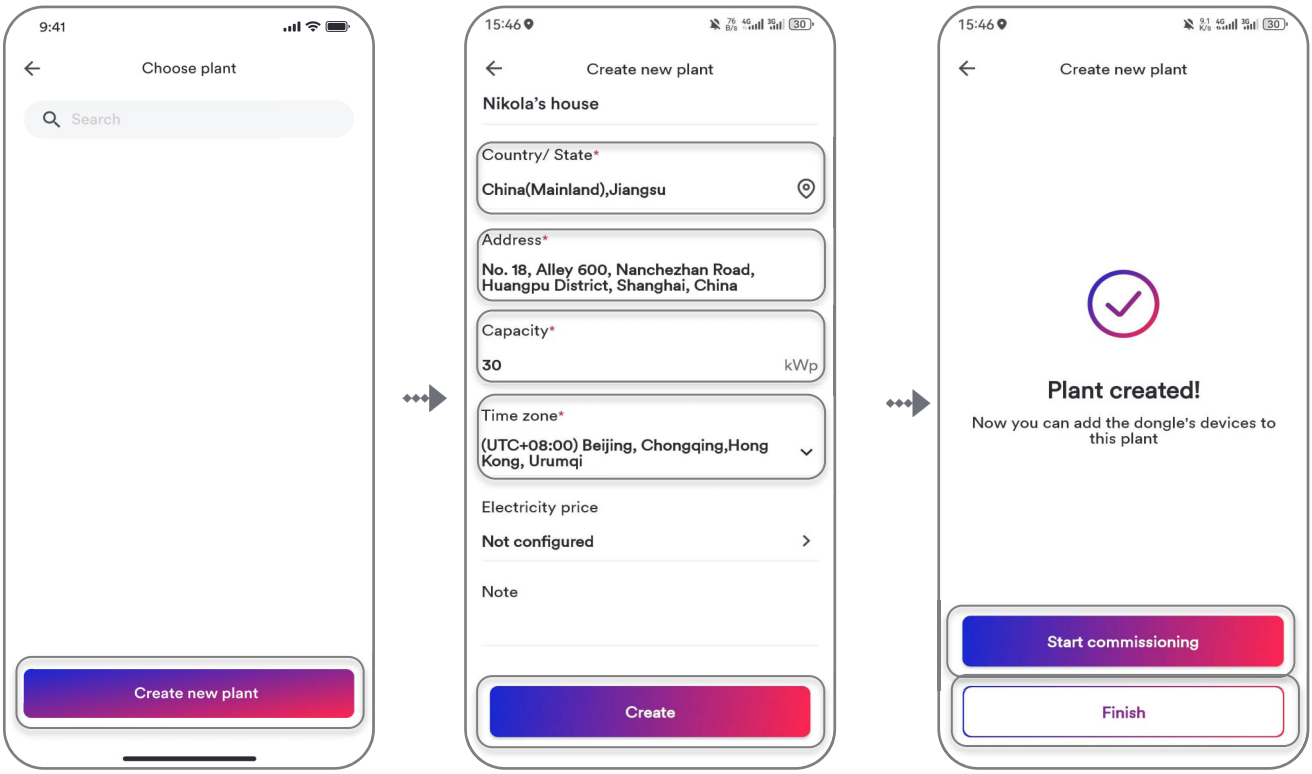
Step 3: Enter the plant information in all fields marked with a red asterisk <*>, and tap <Create> to enter the next screen.

Step 4: Plant created! Click <Start commissioning> to commission as described in Section 4.2, Step 3, or click <Finish > to complete.

Clicking <Finish> will complete the plant, but no devices will be added to the plant. Commissioning can then be carried out according to Section 4.2 or 4.3.



Step 1



Step 2 Step 3 Step 4

Fig. 4. Create a new plant

4.2 Add the inverter monitoring devices to the plant

If you have already created a plant, you can select it to add device to the plant. If you have not created a plant, or if you wish to create a new one, click <Create new plant> as described in Section 4.1.

Step 1: Click the symbol <+> to enter the next screen, and click <Create or modify plant>, and scan the QR code of the Ai-dongle/Wi-Fi Stick to enter the next screen.

Step 2: Please select an existing plant to go to the next screen.

If you have already created a plant, you can select it to add device to the plant. If you have not created a plant, or if you wish to create a new one, click <Create new plant> as described in Section 4.1.

Step 3: Click <Add to plant> to the next screen.

Step 4: Click <Hotspot> to connect to the dongle and click <Next > to enter the next screen.

Before making the connection, you can refer to 5.1.1 , 5.1.2 to determine the connection mode.

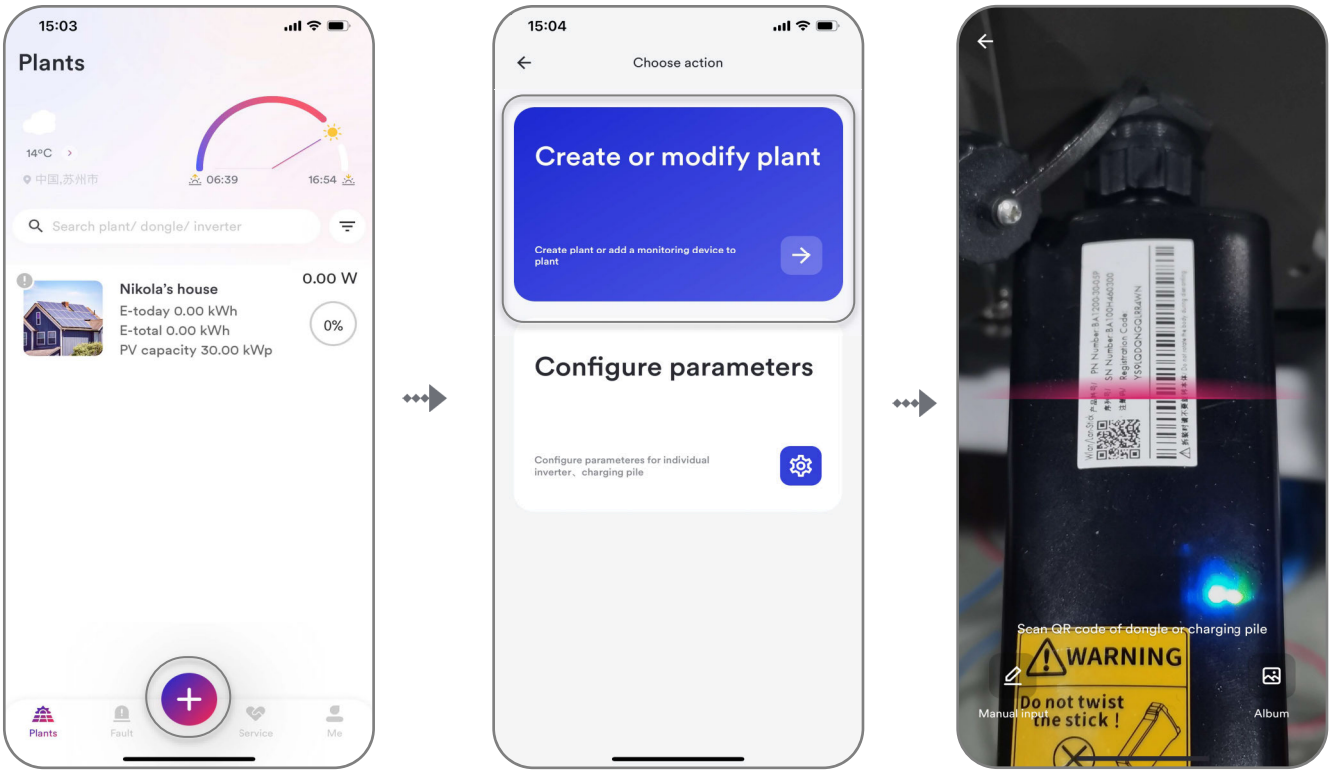
Step 5： The smart device will connect to dongle hotspot automatically. The inverter list can be found after the connection successful. If the connection fails, you can open your phone's Wi-Fi settings page and manually connect to the dongle access point. Then return to the application to continue the process.

Step 6: Keep the mobile phone close to the dongle. Pay attention to the information field in the window that appears, then click the <Join> button..

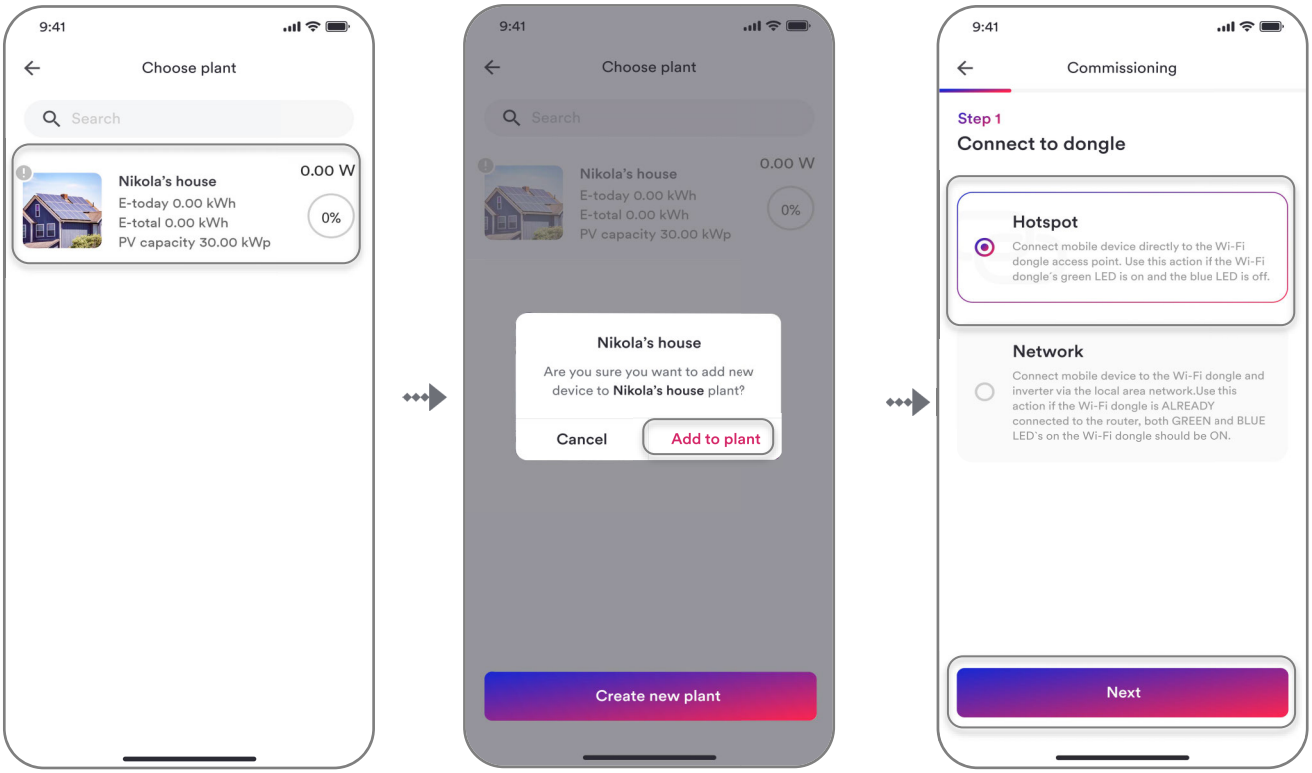
Please confirm the name of the hotspot. The hotspot name of the dongle is AISWEI-XXXX, where XXXX represents the last four digits of the dongle's serial number.

Step 7: Confirm that the inverter serial number displayed in the app matches the serial number of the actually installed inverter.

If your device is not found in the list, you can click <Device is incorrect? Scan again> to scan again.

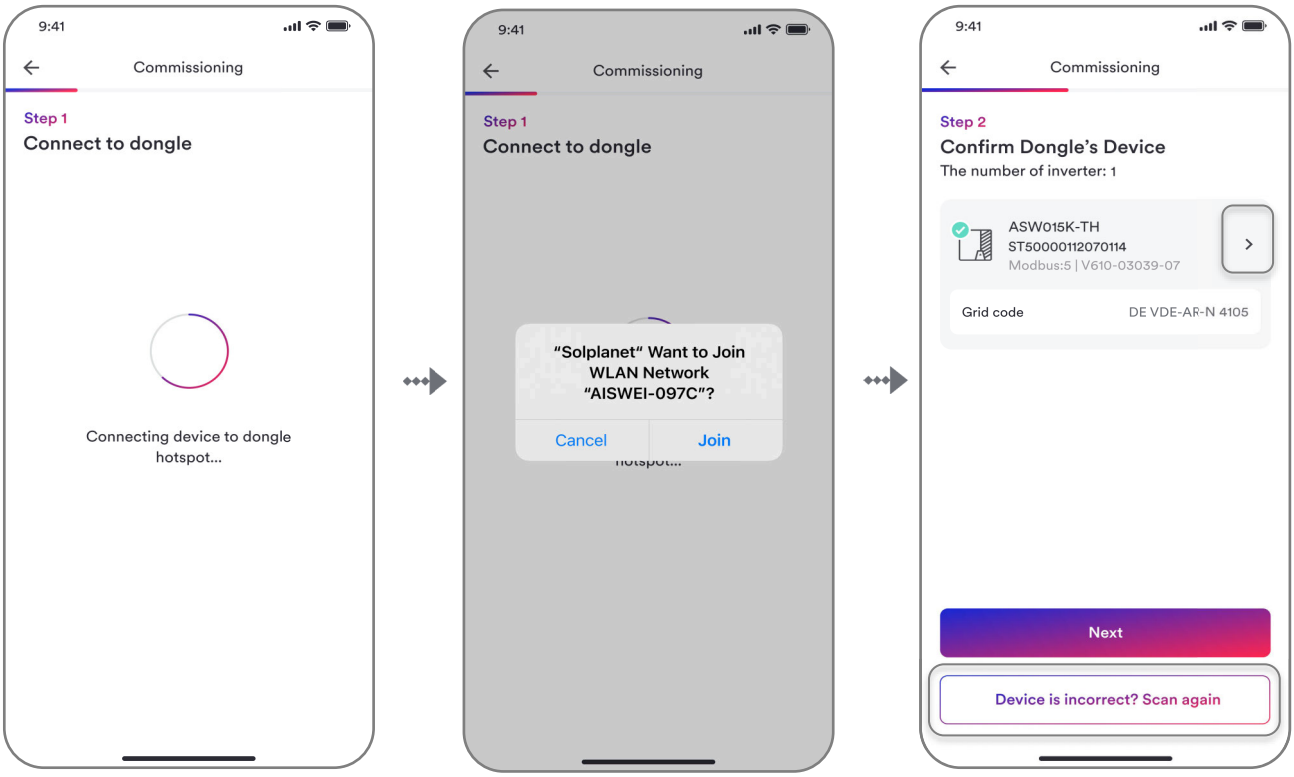


Step 1



Step 2 Step 3 Step 4

Fig. 5. Create a new plant



Step 5 Step 6 Step 7

Fig. 6. Add dongle's device to plant

Before click <Next> button, choose the inverter to set the grid code as described in Section 5.2.3.

Step 8: Click <Next> to enter the next page.

Step 9: Choose the battery model, battery number and the energy management model, then click <Next step> to enter the next page.

Battery settings are only applicable to hybrid inverters; PV inverters will automatically skip this step.

Step 10: Set the parameters of the "Export Power Control", and click "Next "to go to the next page.

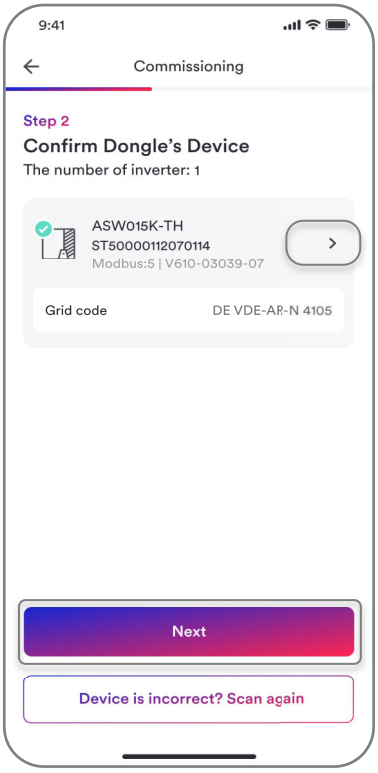
Before click <Next> button, choose the inverter to set Set the parameters of the "Export Power Control" as described in Section 5.4.

Step 11: If the dongle is connected to the router via an Ethernet cable, check the blue indicator light. When the light is on, click <Continue with LAN> to complete the configuration. If you want the dongle to connect to the router via WLAN, click <Next> to enter the next page.

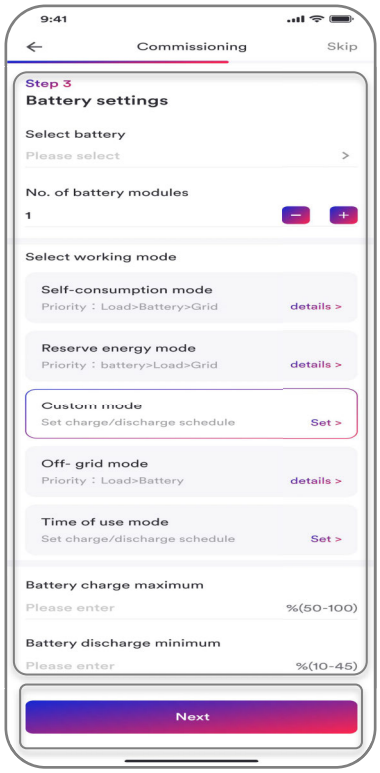
Wi-Fi Stick will automatically skip this step.

Step 12: Select the Wi-Fi network from the list and enter the Wi-Fi network password. Then click <Next>, the system will prompt that the configuration is successful.

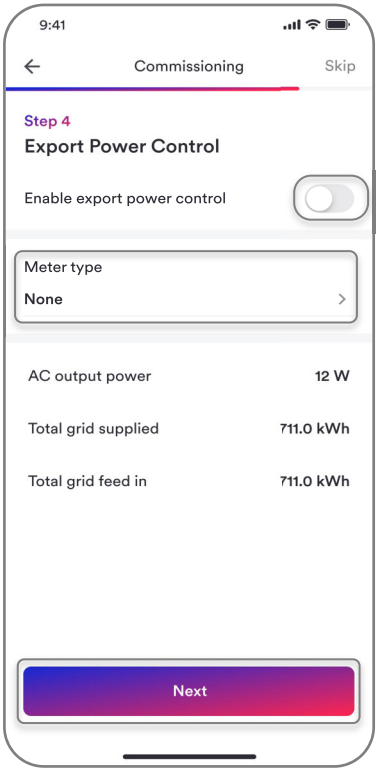
At this point, your dongle is connected to your network, which refers to either your home network or a specified network. If your network is connected to the Internet, the inverter will automatically connect to the Solplanet Cloud server.



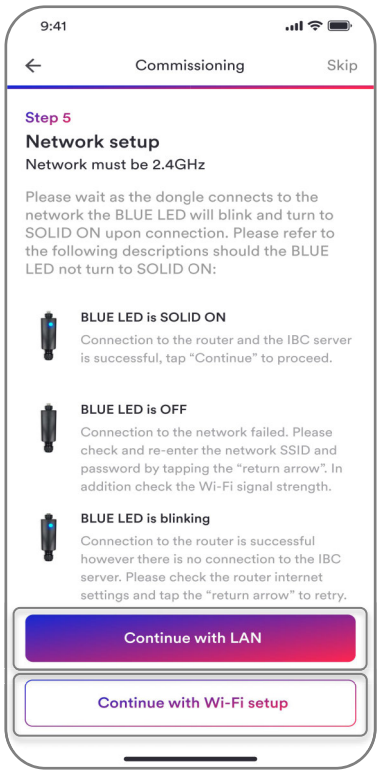
Step 8

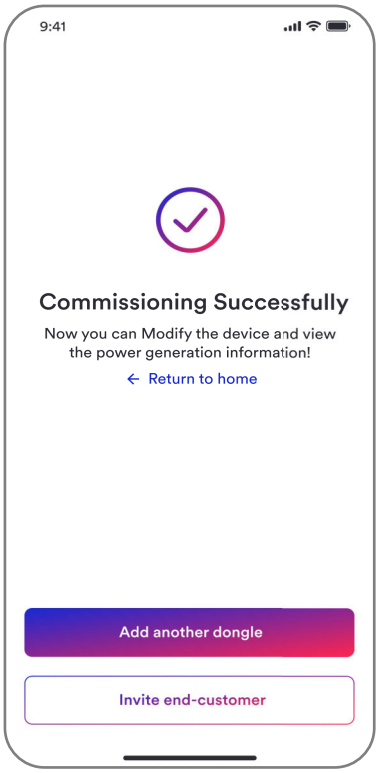


Step 9

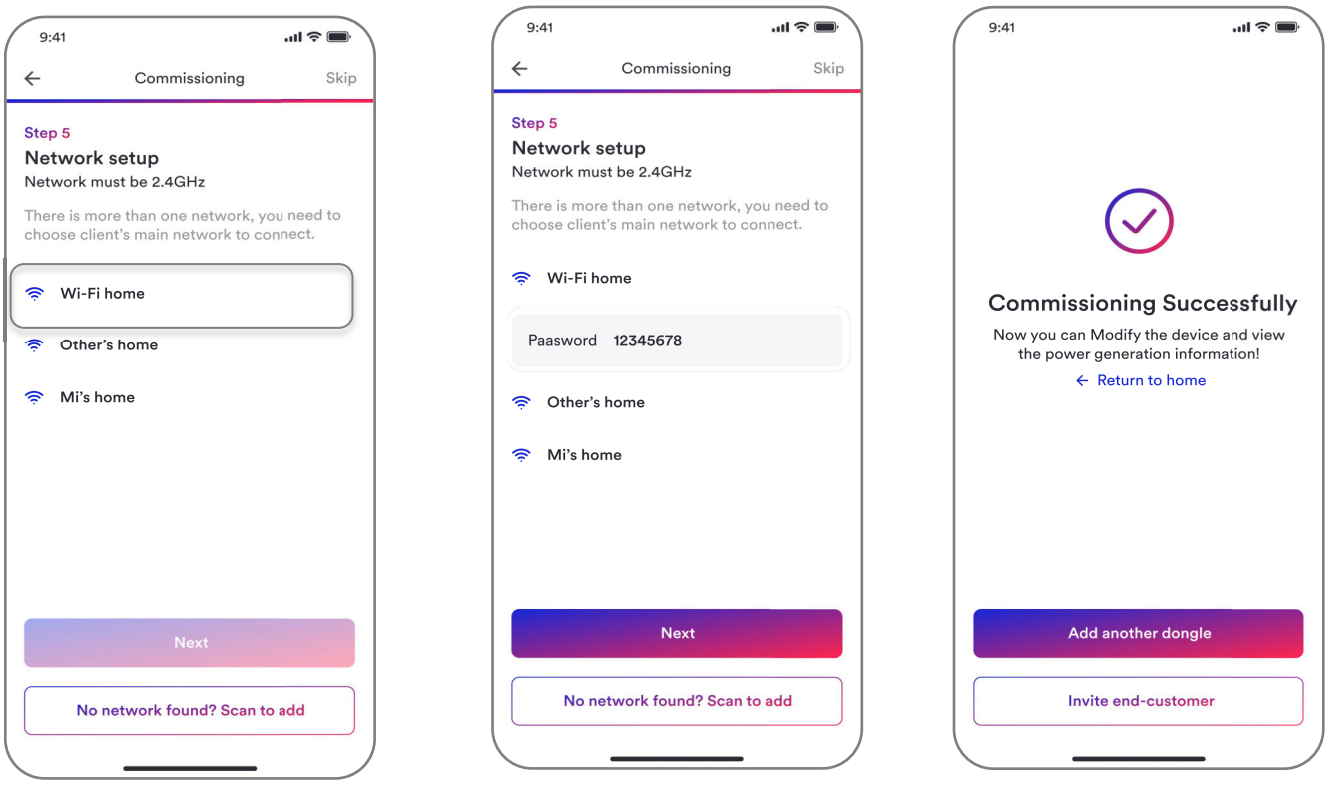


Step 10





Step 11 Successfully configured via Ethernet



Step 12 Successfully configured via hotspot

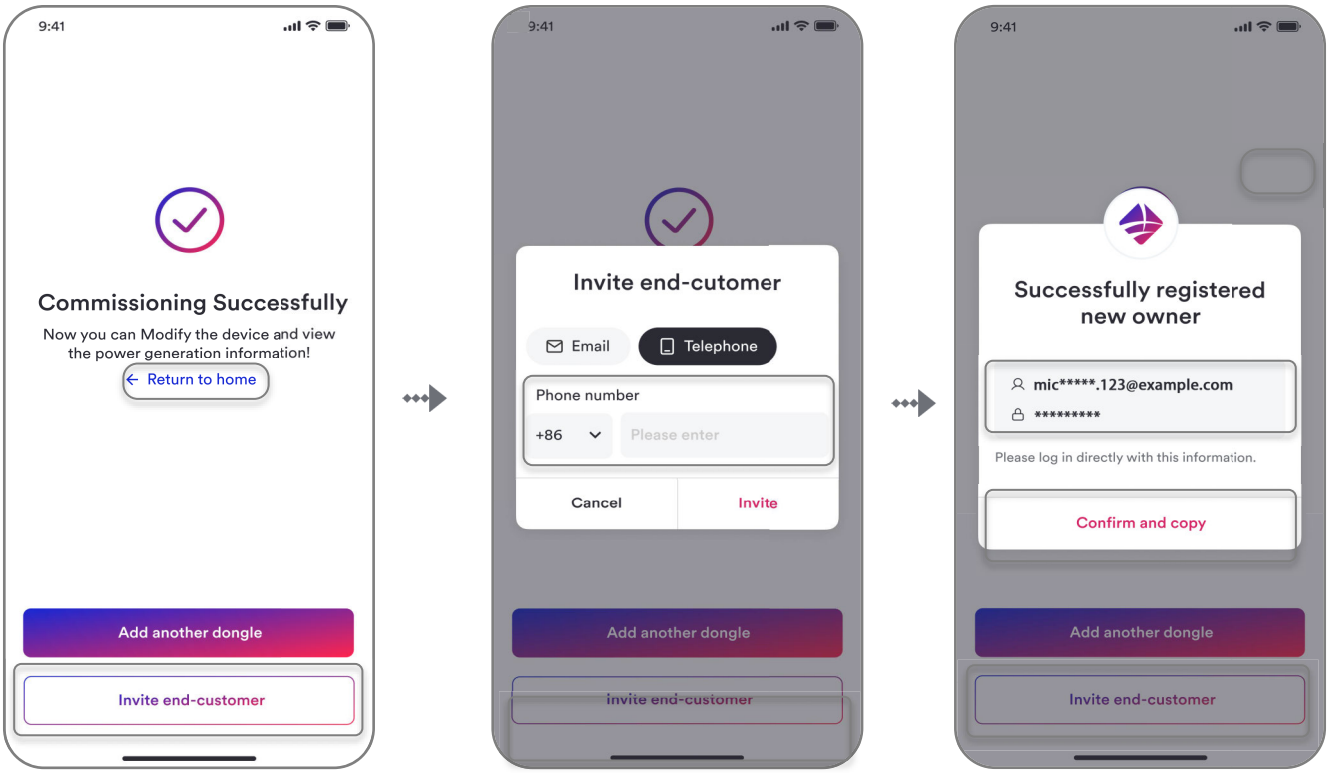
Fig. 7. Commissioning Successfully

Step 13: Once the configuration is complete, you can return to the home page by clicking <Retry to home>. If you want to add an owner account, click < Invite end-customer > and enter the mail address or phone number to add it.

If you are a Business User, you can invite an End User and assign them as the owner of the plant.

If you are an End User, you can invite a Business User and assign them to manage the operation and maintenance of the plant.

Step 14: The end customer has been successfully added, and the page will display r the newly registered account information. You can click <Confirm and copy> to save the information.



Step 13 Step 14

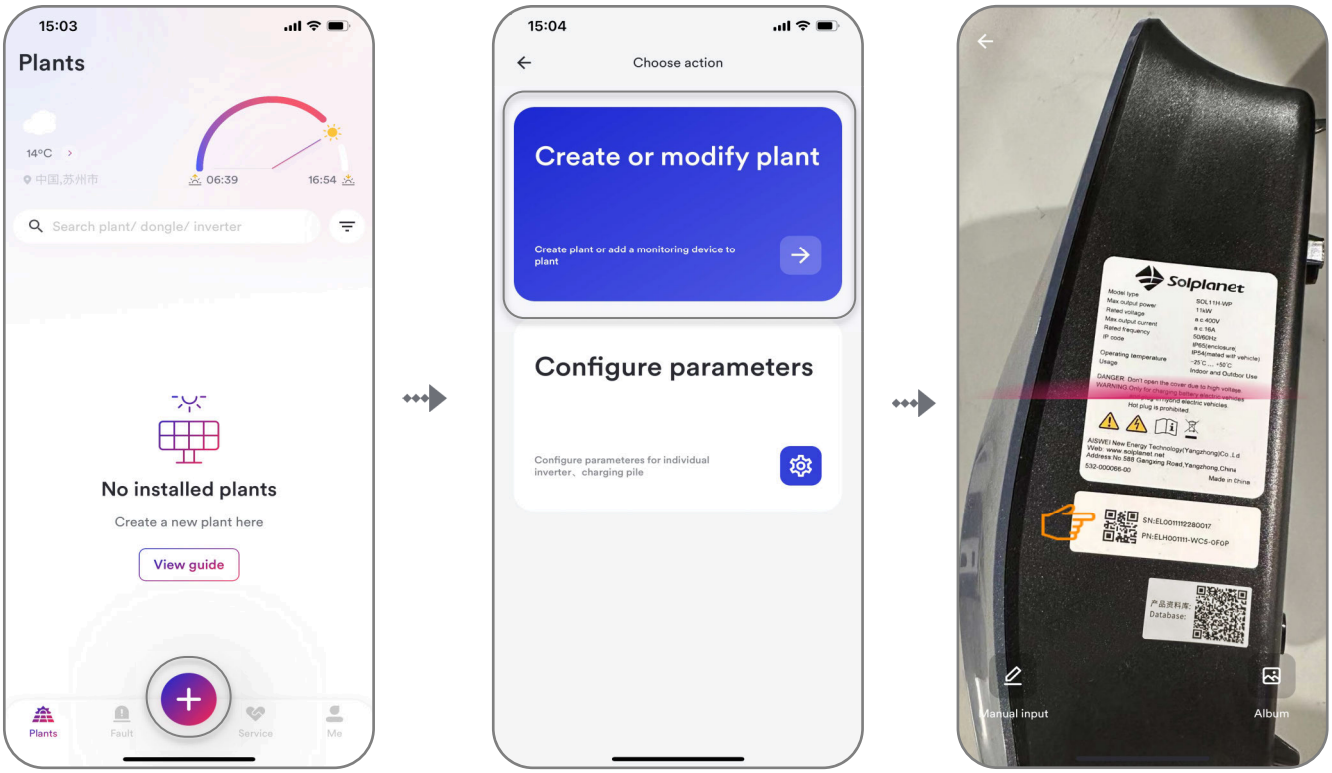
Fig. 8. Invite end-customer

4.3 Add the EV Charger to the plant

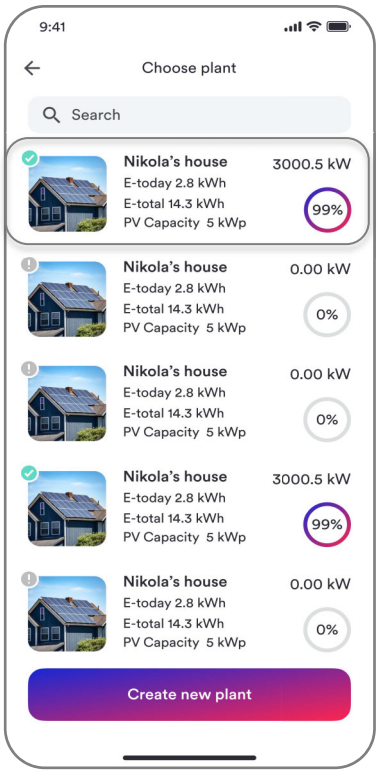
Before performing the following operations, please ensure that the Bluetooth function is enabled on your mobile phone.

Step 1: Click the symbol <+> to enter the next screen, and click <Create or modify plant>, and scan the SN QR code of the EV charger then it will automatically enter the next scree.

Step 2: Please select an existing plant to go to the next screen.



Step 1



Step 2

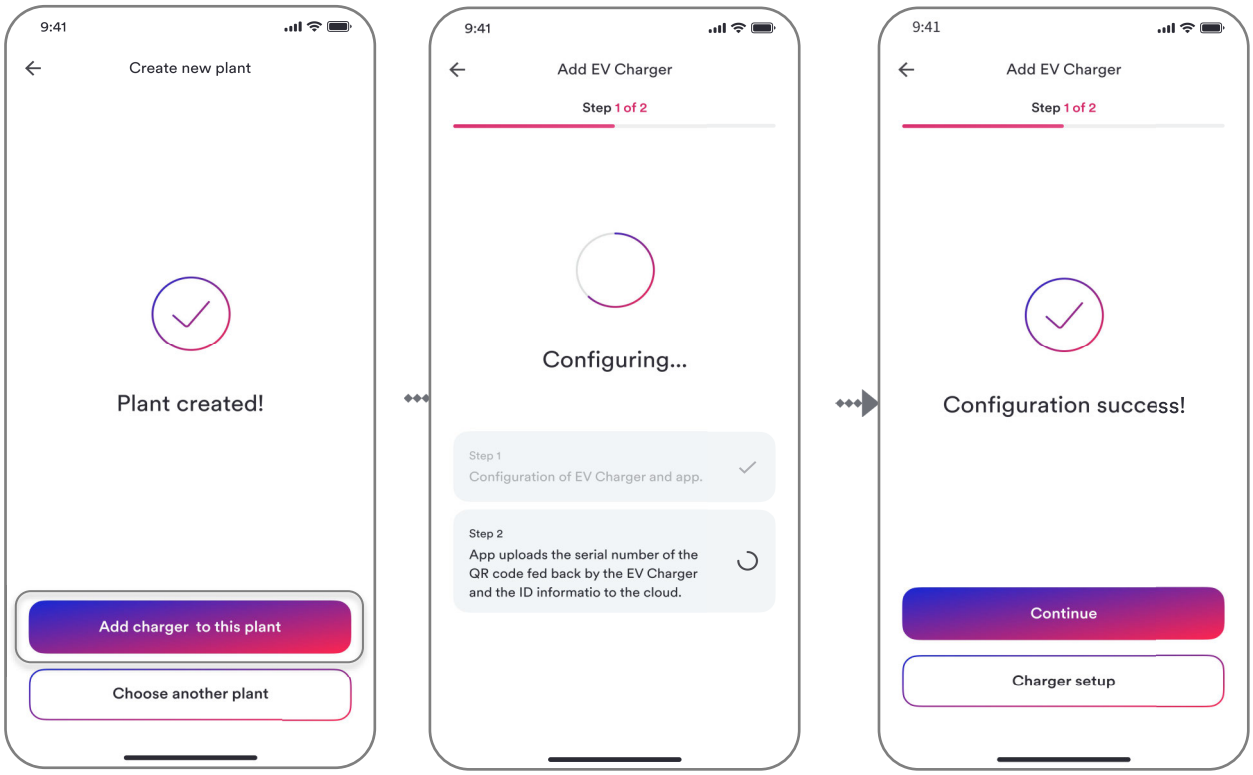
Step 3: Click <Add charger to this plant>.

Step 4: The EV Charger will automatically connect to the Solplanet app via Bluetooth. Please do not perform any actions during this time and wait for a few minutes until < Configuration successful ! > is displayed. Then click <Continue> and enter the next page.

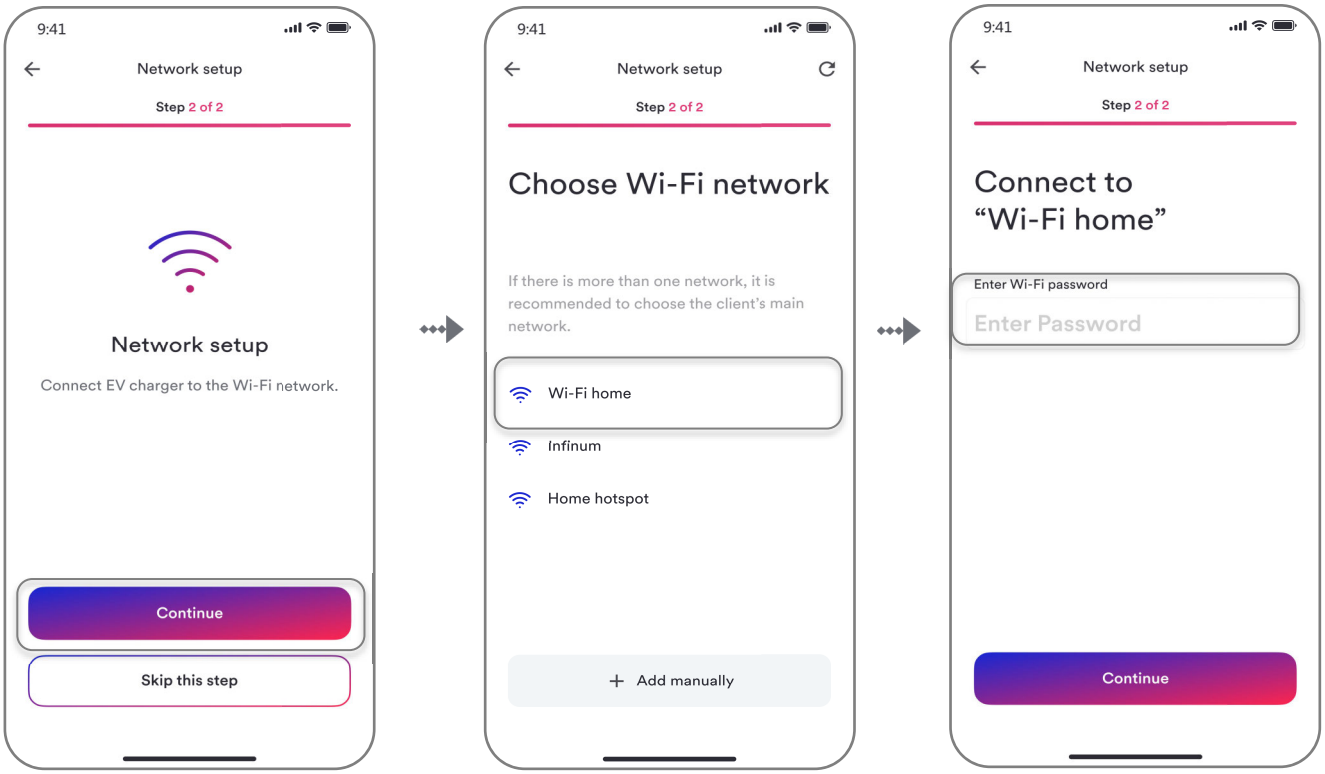
Step 5: Click <Continue> after < Network setup > is displayed.

Step 6: Select the Wi-Fi network from the list and enter the Wi-Fi network password. Then click <Continue>, the system will prompt that the configuration is successful.

Step 7: Until it appears “Success”, then click <Continue> to end the process.

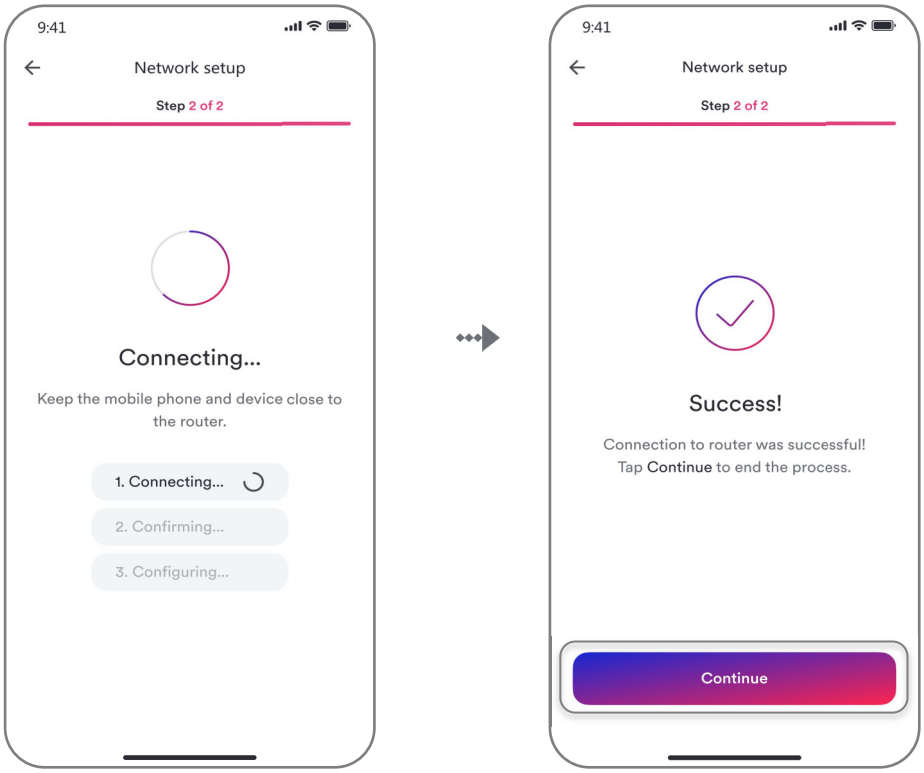


Step 3 Step 4



Step 5

Step 6



Step 7

Fig. 9. Add EV Charger to plant

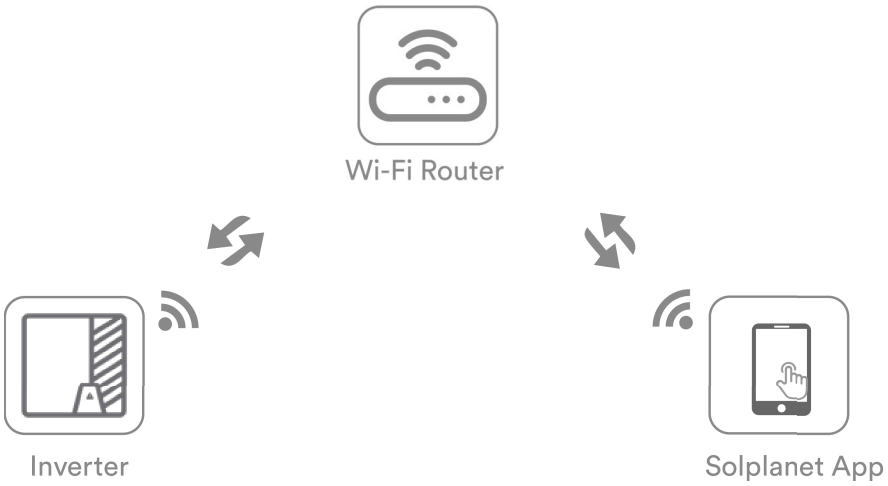
5 Inverter parameter configuration

5.1 Choose the connection method

5.1.1 Connect by “Network configuration”

If you have configured the dongle to connect to your home network or a specific network as described in Section 4.2, you may choose this method.

The smart phone is connected to the home network router via WLAN, and the dongle is also connected to the same router, either via Ethernet or WLAN.



Step 1: Click on the <+> icon.

Step 2: Click the <Configure parameters> icon.

Step 3: Scan dongle QR code or manually enter the serial number and the registration code.

Step 4: Select the <Network> to enter the next page，then you can configure the devices in the plant.

> ***Note***
>
> Business users and end users have different permissions here. Business users can modify the inverter grid code and protection parameter settings for the inverter. However, end users can only perform firmware upgrade operations here.

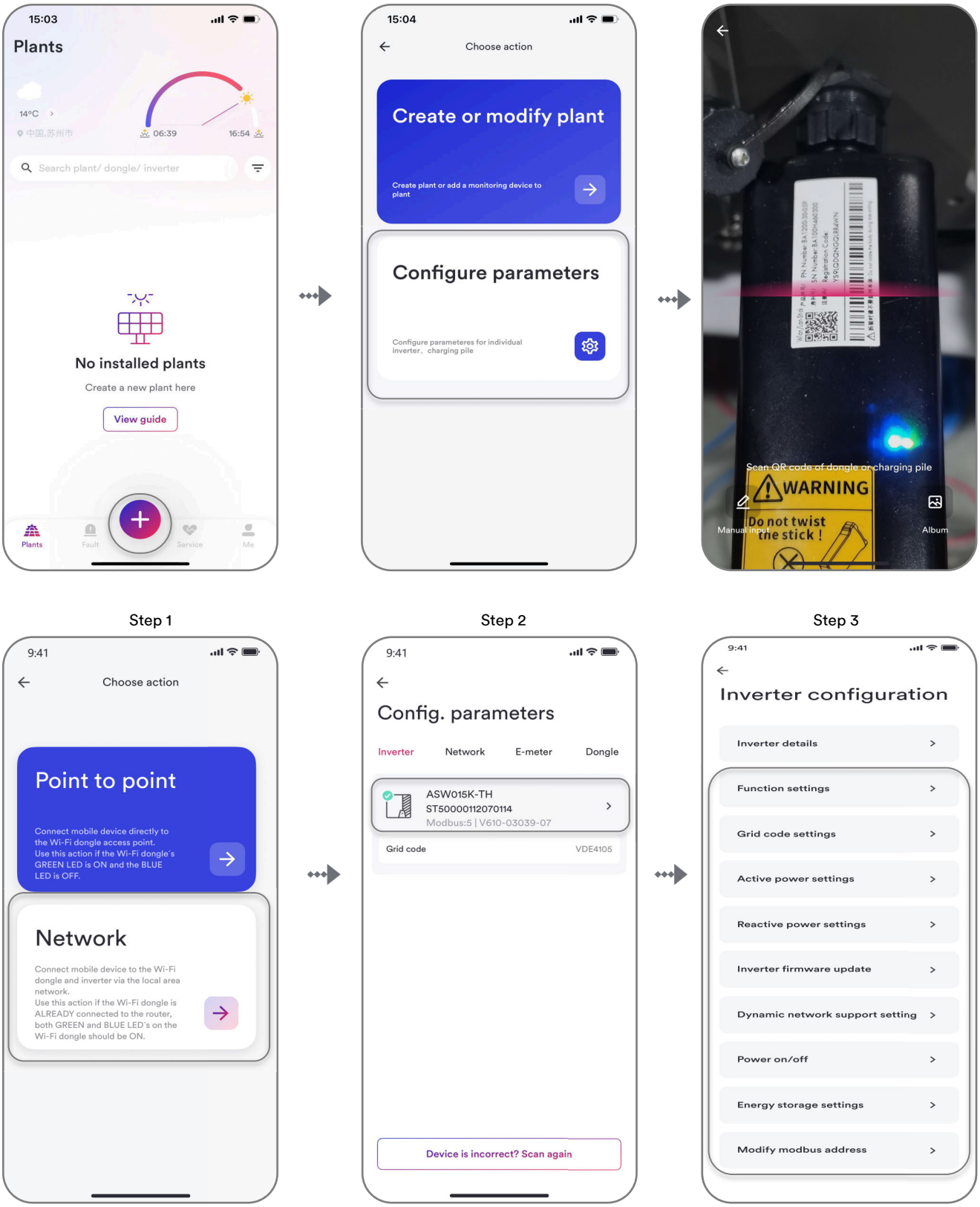
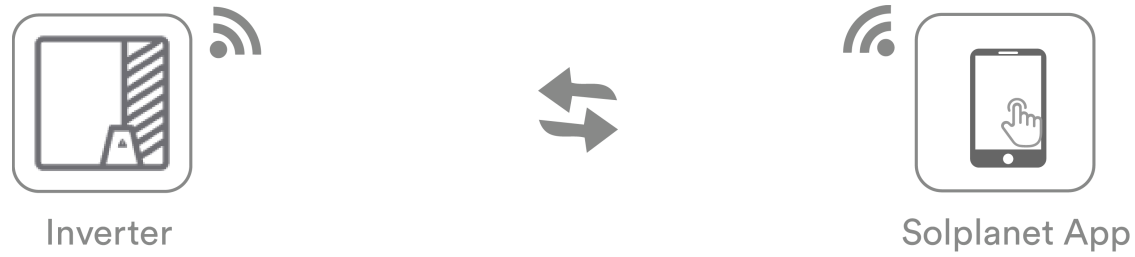


Fig. 10. Network configuration

5.1.2 Connect by “Point to Point”



If you have not configured the dongle to connect to your home network or a specific network, you may choose this method.

The smartphone connects directly to the dongle's built-in hotspot via WLAN.

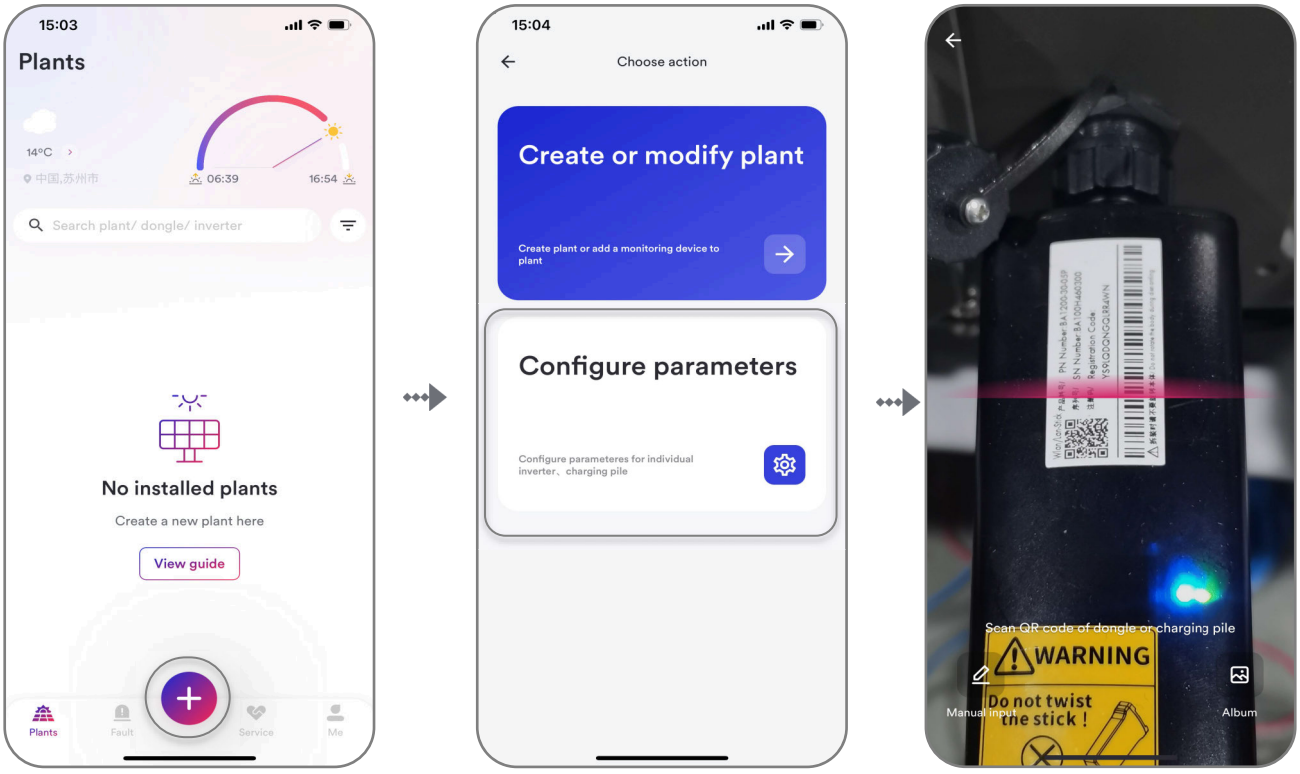
Step 1: Click on the <+> icon.

Step 2: Click the <Configure parameters> icon.

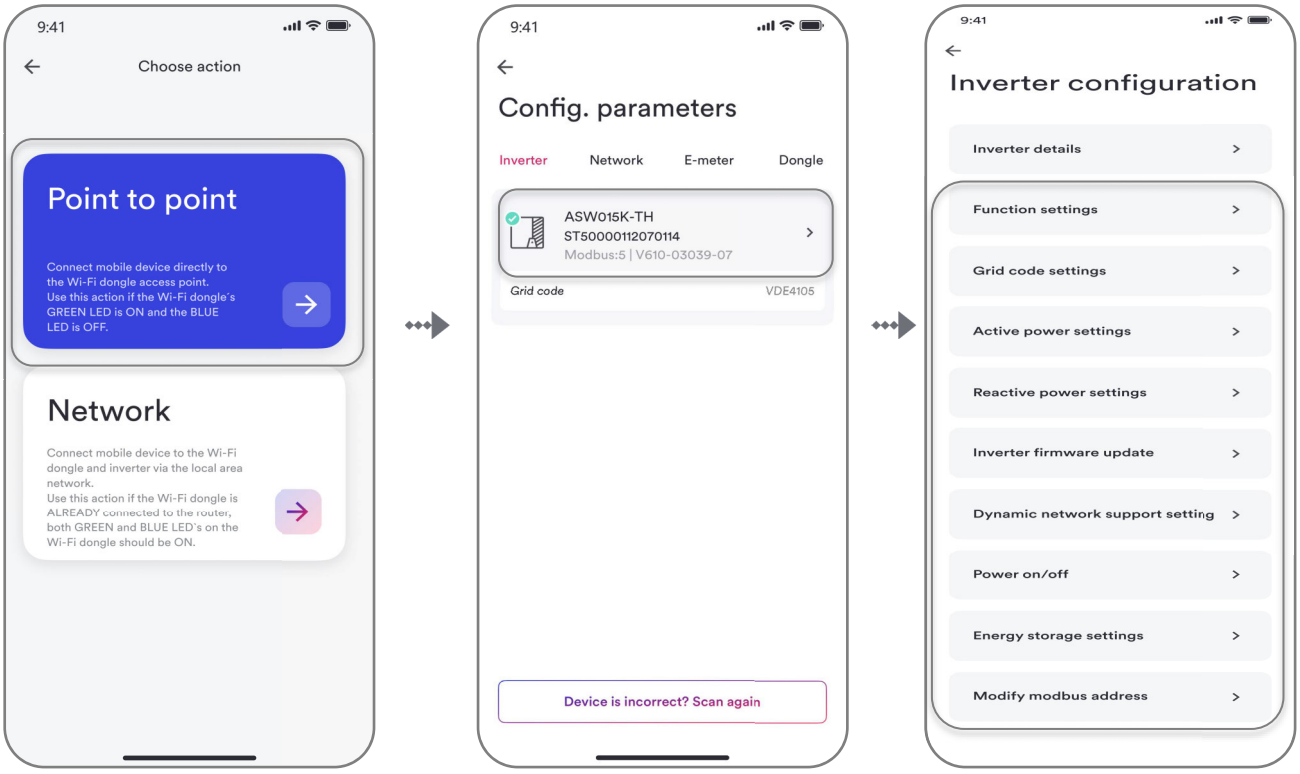
Step 3: Scan dongle QR code or manually enter the serial number and the registration code.

Step 4: Select the <Point to point> to enter the next page，then you can configure the devices in the plant.

> ***Note***
>
> Business users and end users have different permissions here. Business users can modify the inverter grid code and protection parameter settings for the inverter. However, end users can only perform firmware upgrade operations here.



Step 1 Step 2 Step 3



Step 4

Fig. 11. Device hotspot configuration

5.2 Inverter list

This page displays a list of inverters connected to the dongle. If the installed inverter is not listed, click < Scan inverter> and wait for 5 minutes. You can select any inverter from the list to configure its detailed parameters.

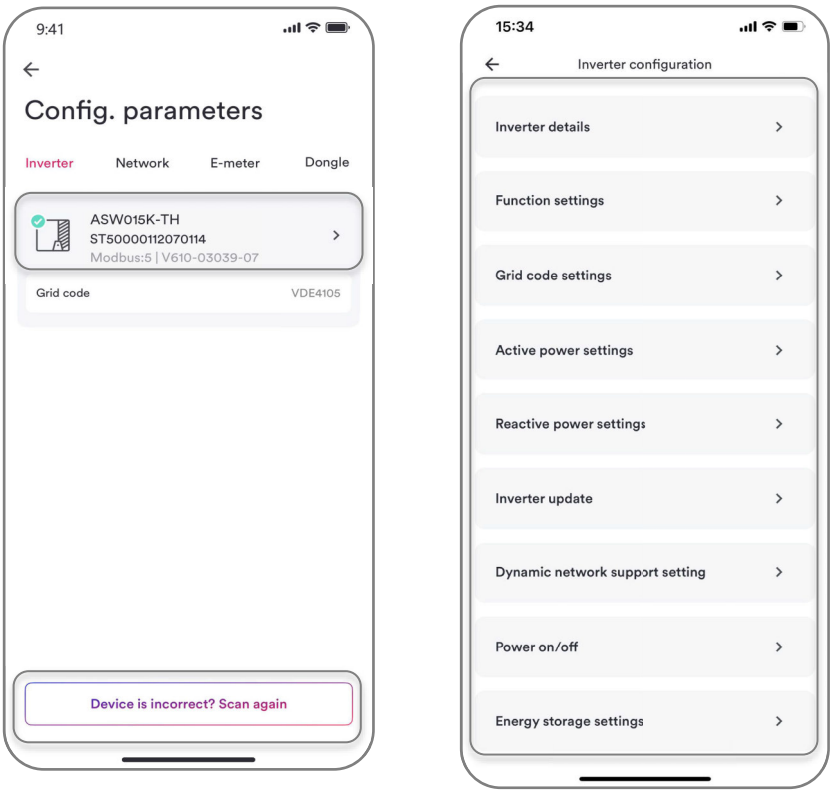


Fig. 12. Inverter list

Solplanet's products comply with local grid codes when leaving the factory. The grid code and the parameters according to the requirements of the installation site should still be checked and confirmed. Once configuration of the product is completed, the product will start operating automatically.

Function	Description
Inverter Details	Displays the general information of the inverter. Displays the present operation value of the inverter.
Function settings	Activate general inverter functions.
Grid code settings	Choose a grid code. Allows the configuration of protection parameters, start operation parameters and automatic reconnection parameters.
Active power settings	Configure the parameters of the P(U) curve, P(f) curve, active power limit and active power ramp rate.
Reactive power settings	Configure the parameters of the Q (U) curve, cos φ (P) curve, fixed Q value or fix cos φ value.
Inverter firmware update	Update the firmware of the inverter.
Dynamic network support setting	Allows the configuration of LVRT and HVRT parameters.
Power on/off	Remote turn ON/OFF of the inverter on the App.
Energy storage settings	Configure the parameters of the hybrid inverter. Configure the parameters of the battery that is connected to the inverter.
Modify Modbus address	Configure the address of Modbus

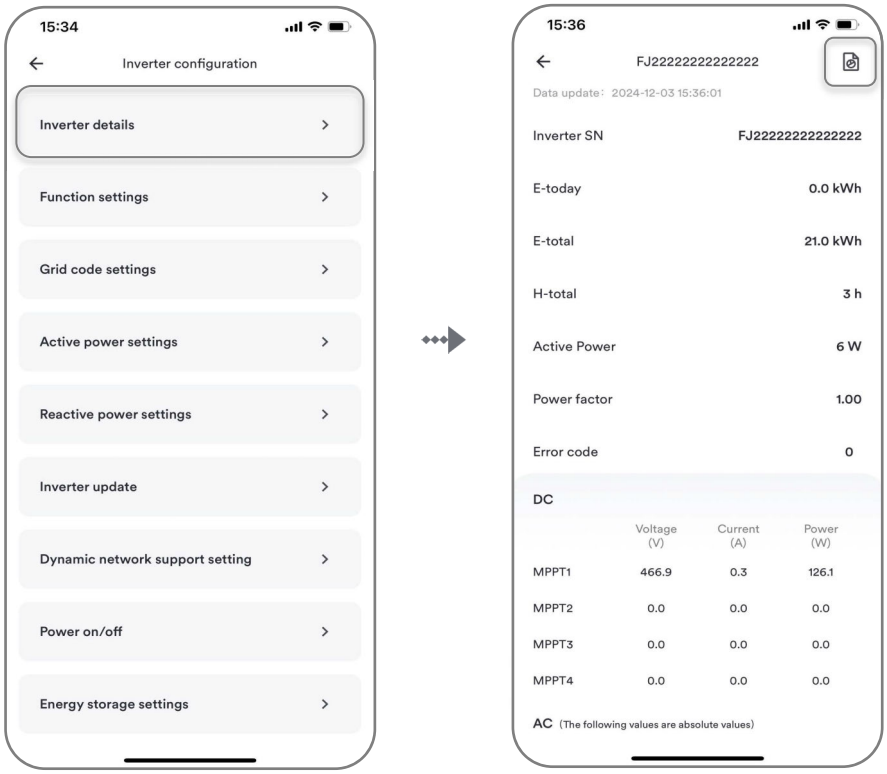
Note

Inverter parameter configuration requires very professional knowledge of both the inverter and the power grid. Incorrect configuration may damage the inverter or cause abnormal grid behaviour, so please perform this task under the guidance of professionals.

5.2.1 Inverter details

Please refer to Inverter Manual for the explanation of inverter error codes.

The page displays the inverter serial number and inverter details, and the inverter configuration parameters can be exported as a report.



Click the export button to generate the report, sign your name to confirm, and the report will be created. You can then download the report to your smartphone.

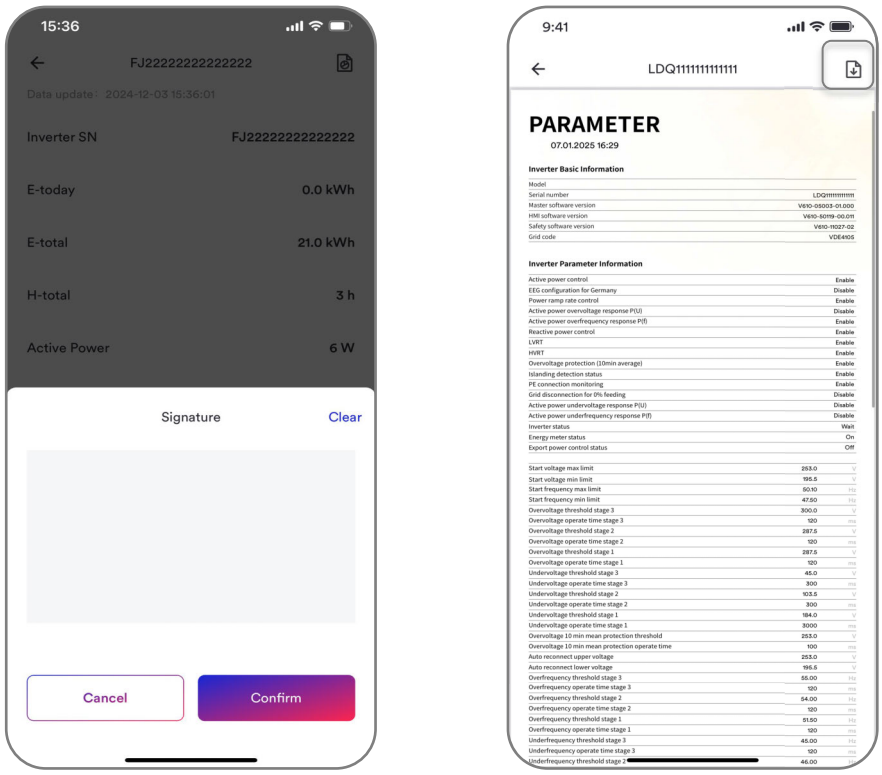


Fig. 13. Inverter details & Export the report

5.2.2 Function settings

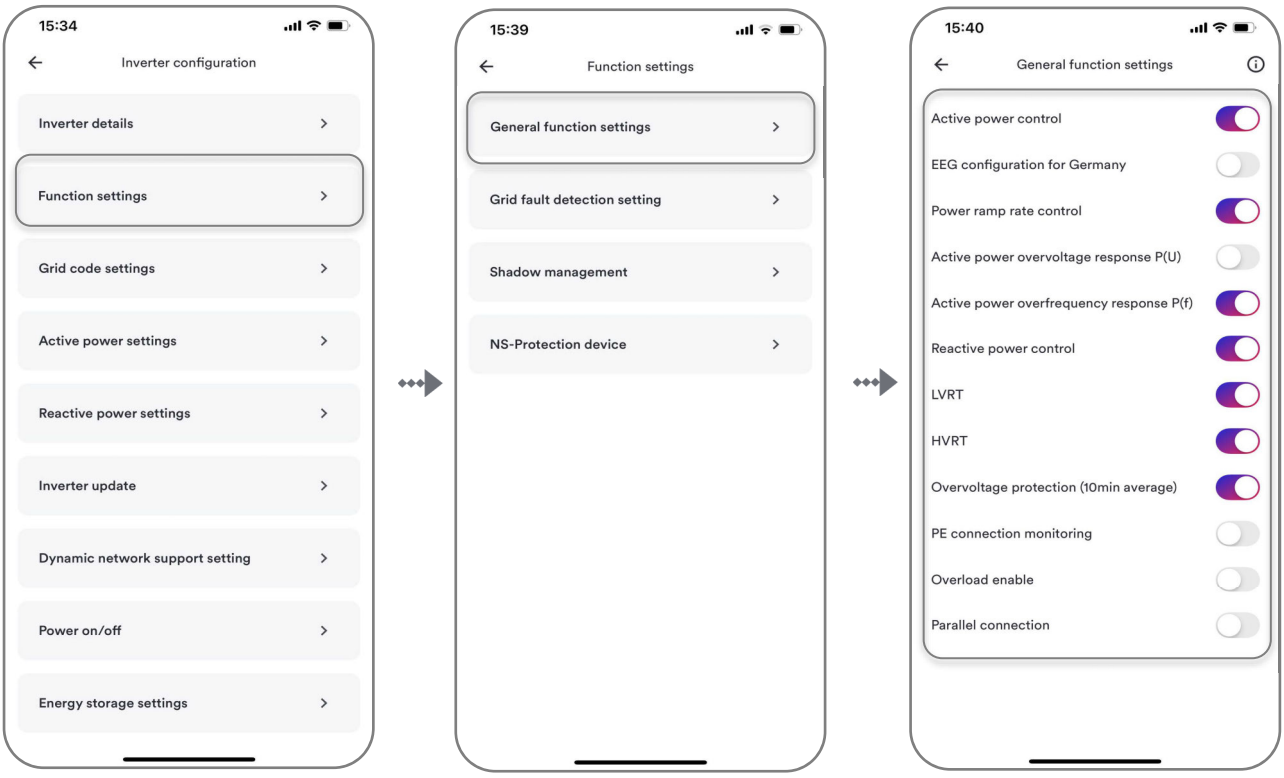
5.2.2.1 General function settings

Some general functions related to the grid code can be activated.

Step 1: Select < Function settings > to go to the next screen.

Step 2: Select < General function settings >

Step 3: Each function has a switch. Once turned on, the function will be activated.



Step 1 Step 2 Step 3

Fig. 14. General function settings

5.2.2.2 Grid fault detection setting

For hybrid inverters, the transfer time for the inverter to switch from on-grid mode to off-grid mode can be chosen.

Step 1: Select < Function settings > to go to the next screen.

Step 2: Select < Grid fault detection setting >

Step 3: Choose the < UPS mode > or < EPS mode >.

> ***Note***
>
> **UPS Mode:** EPS load is high priority. When a grid voltage fault occurs, immediately switch from on-grid mode to off-grid mode, with a transfer time of less than 10ms.
>
> **EPS Mode:** Grid support is high priority. When a grid voltage fault occurs, the inverter will support the grid (e.g. LVRT function) first, then switch to off-grid mode.

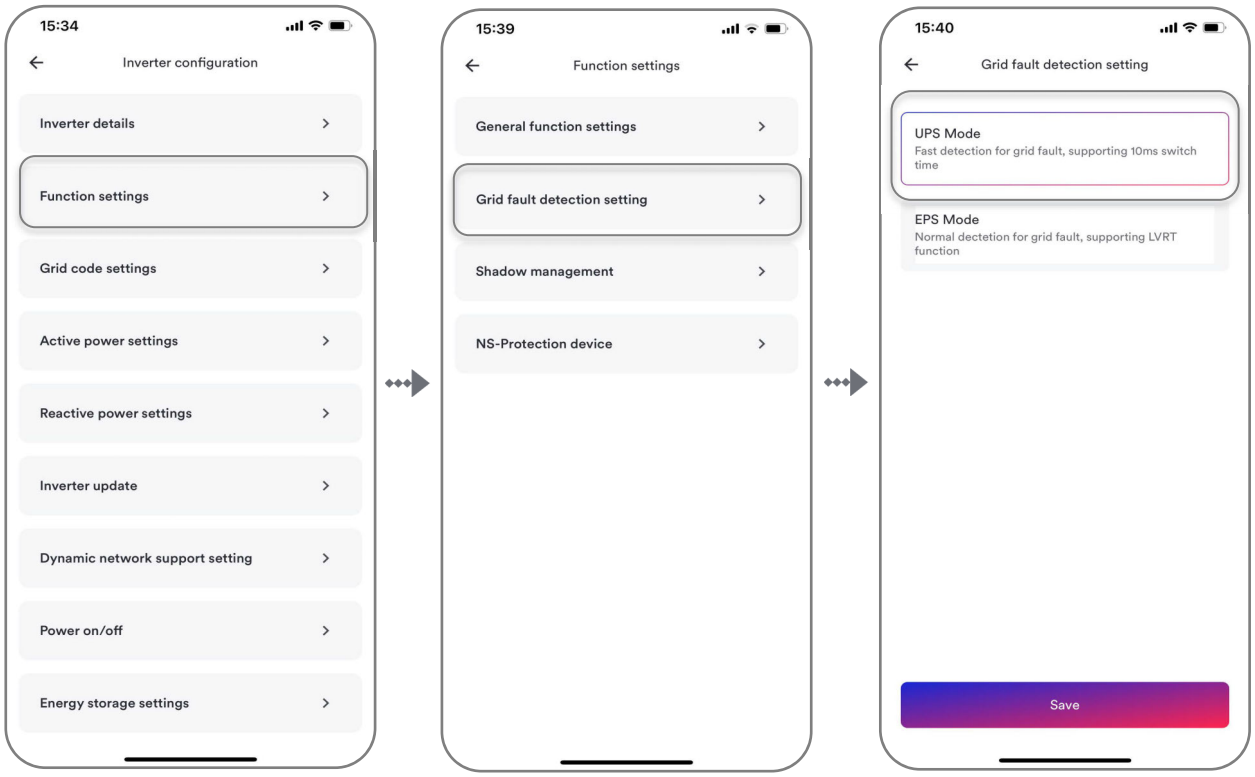


Fig. 15. Grid fault detection setting

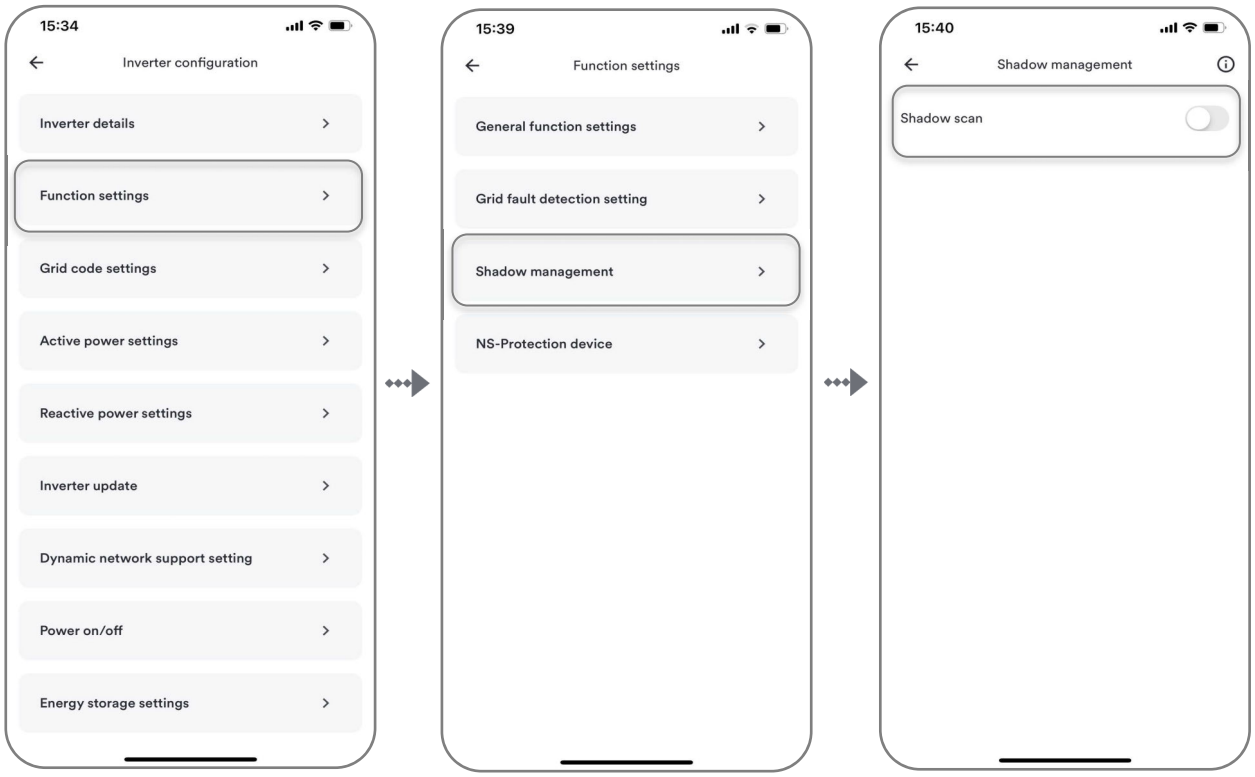
5.2.2.3 Shadow management

Activate the shadow management to optimize MPP tracking. Once activated, each MPP channel is scanned at 10-minute intervals. The system captures and tracks the maximum power point voltage when the output power is not limited, and the input power of this MPP channel is not overdriven.

Step 1: Select < Function settings > to go to the next screen.

Step 2: Select < Shadow management >.

Step 3: Turn on to activate the shadow scan function.



Step 1 Step 2 Step 3

Fig. 16. Activate shadow management

5.2.2.4 NS-Protection device

Depending on the total of the maximum apparent power of all power generation systems and storage systems at a network connection point ΣSAmax. the central network and system protection (NS protection) at the central meter panel may be required. If the inverter supports connection to the NS-protection device and the device is already connected, this function needs to be activated.

Step 1: Select < Function settings > to go to the next screen.

Step 2: Select < NS-Protection device >

Step 3: Turn on to activate the function to start detecting the NS-Protection device signal.

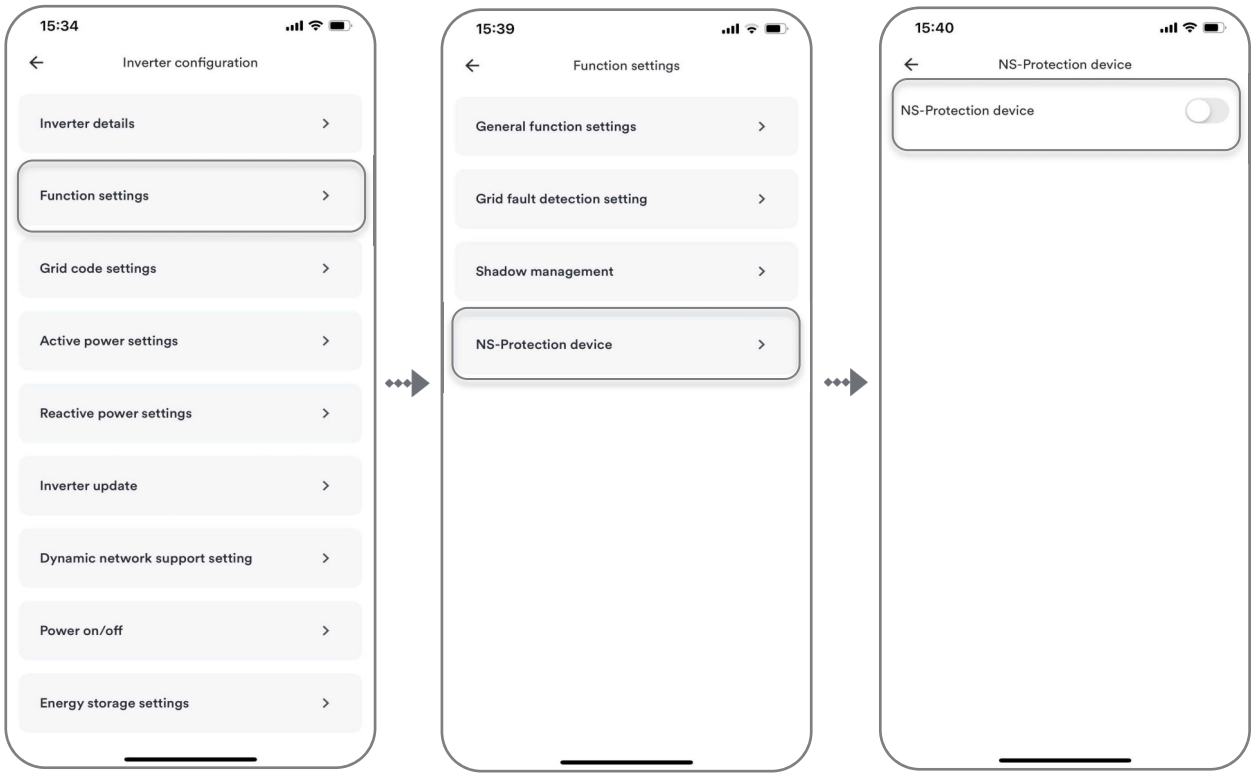


Fig. 17. Activate NS-protection device

5.2.3 Grid code settings

5.2.3.1 Grid code settings

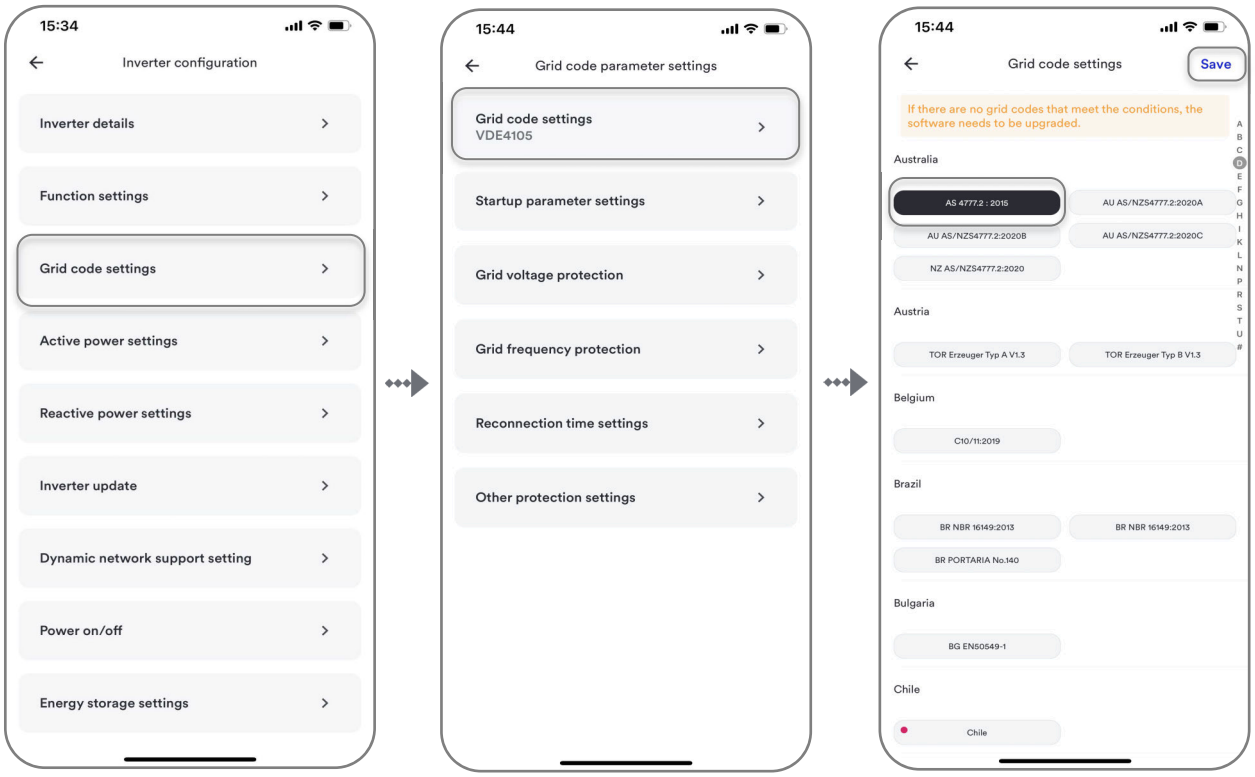
If the current grid code is not set reasonably according to the requirements of the local distribution system operator, the right grid code should be chosen.

Step 1: Select < Grid code settings > to go to the next screen.

Step 2: Click < Grid code settings >

Step 3: Select the operator country and grid type in the field according to the grid operator requirements and confirm with <Save>.

By default, all required parameters are activated via the relevant grid code.



Step 1 Step 2 Step 3

Fig. 18. Select country & grid code

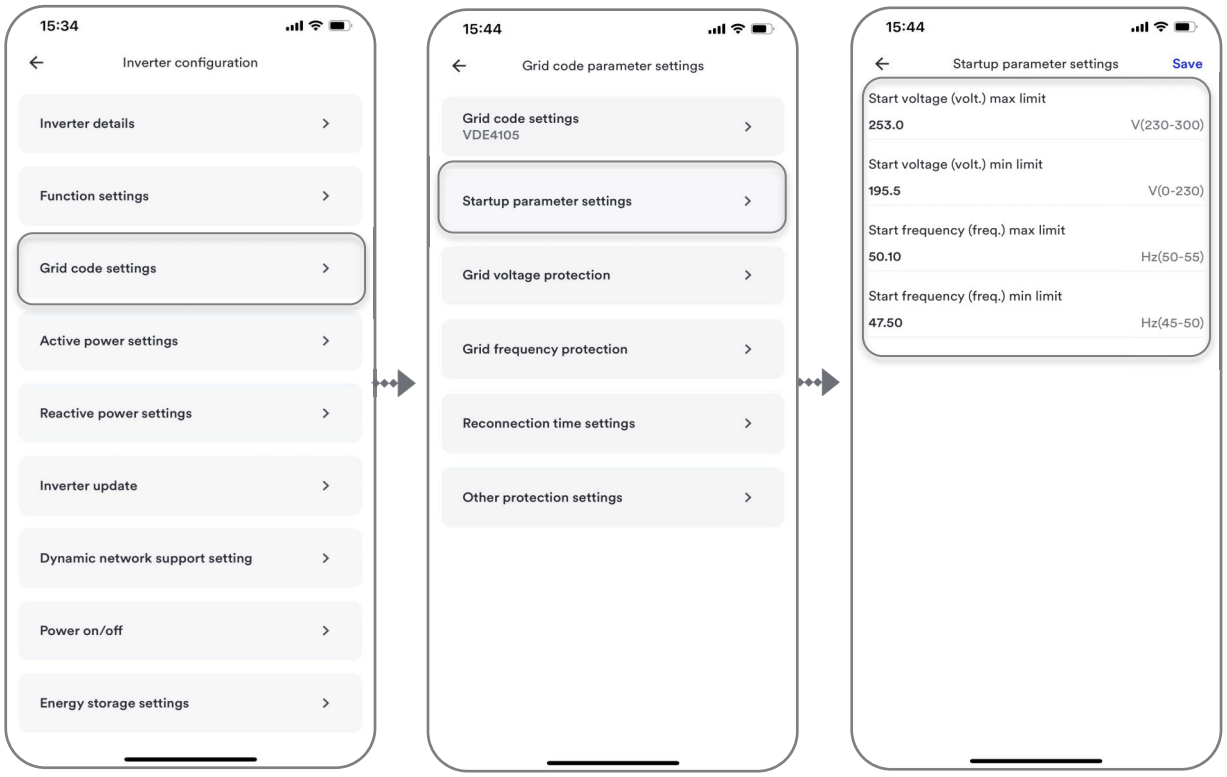
5.2.3.2 Startup parameter settings

The voltage range and the frequency range can be adjustable if the local distribution system operator required.

Step 1: Select < Grid code settings > to go to the next screen.

Step 2: Click < Startup parameter settings >

Step 3: Set the parameters for startup and confirm with <Save>.



Step 1 Step 2 Step 3

Fig. 19. Set start voltage and start frequency value

5.2.3.3 Grid voltage protection settings

There are three threshold levels for overvoltage and undervoltage protection. The threshold Stage 1 represents the minimum range, and the threshold Stage 3 represents the maximum range.

All thresholds need to follow the following principles:

- Overvoltage threshold stage 1 ≤ Overvoltage threshold stage 2 ≤ Overvoltage threshold stage 3
- Undervoltage threshold stage 1 ≥ Undervoltage threshold stage 2 ≥ Undervoltage threshold stage 3
- Operate time stage 1 ≤ Operate time stage 2 ≤ Operate time stage 3

Step 1: Select < Grid code settings > to go to the next screen.

Step 2: Click < Grid voltage protection > , the next page will display the parameters.

Step 3: Set the voltage protection parameters and confirm with <Save>.

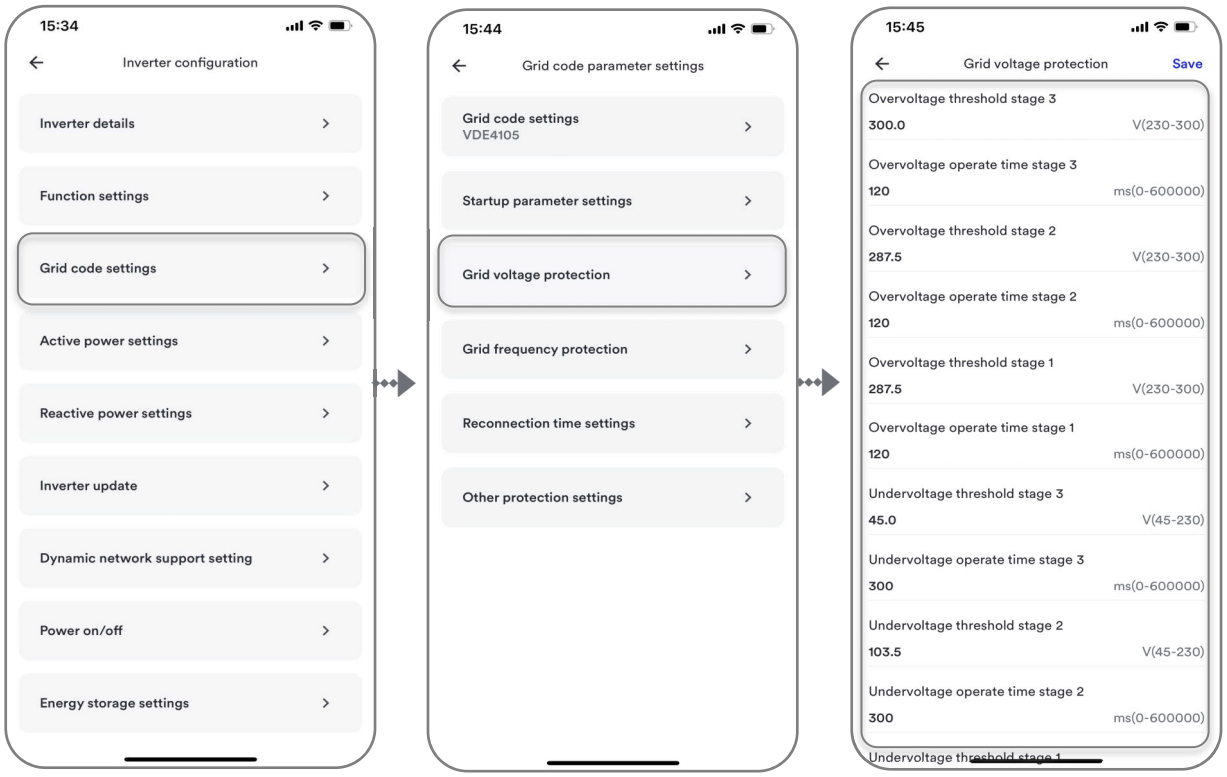


Fig. 20. Grid voltage protection settings

5.2.3.4 Grid frequency protection settings

There are three threshold levels for overfrequency and underfrequency protection. The threshold Stage 1 represents the minimum range, and the threshold Stage 3 represents the maximum range.

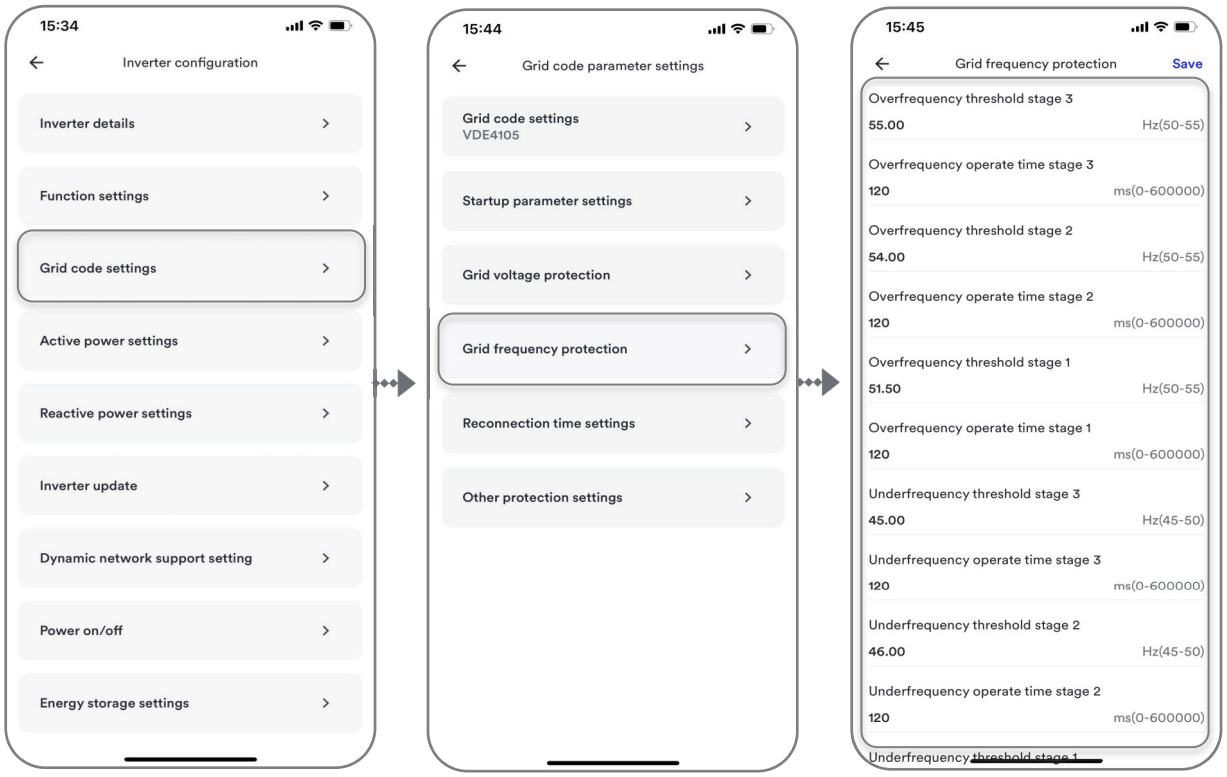
All thresholds need to follow the following principles:

- Overfrequency threshold stage 1 ≤ Overfrequency threshold stage 2 ≤ Overfrequency threshold stage 3
- Underfrequency threshold stage 1 ≥ Underfrequency threshold stage 2 ≥ Underfrequency threshold stage 3
- Operate time stage 1 ≤ Operate time stage 2 ≤ Operate time stage 3

Step 1: Select < Grid code settings > to go to the next screen.

Step 2: Click < Grid frequency protection > , the next page will display the parameters.

Step 3: Set the frequency parameters and confirm with <Save>.



Step 1 Step 2 Step 3

Fig. 21. Grid frequency protection settings

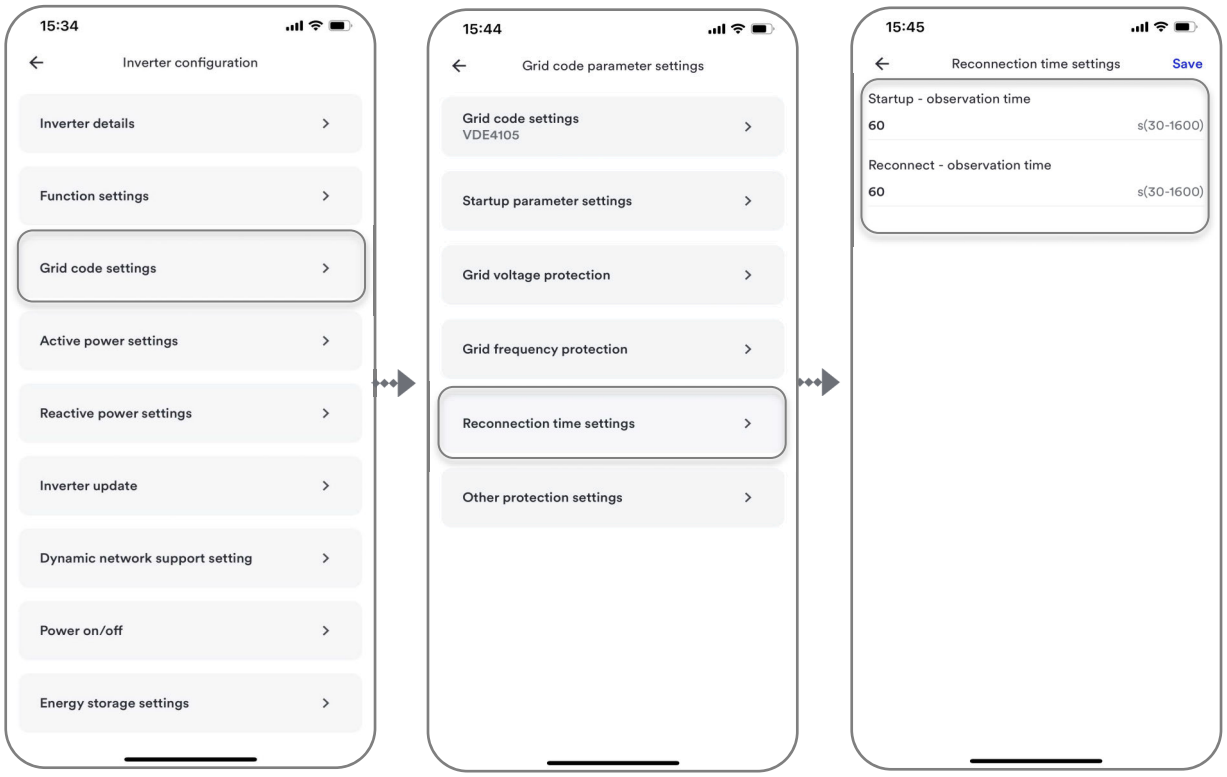
5.2.3.5 The observation time settings for starting and reconnection

Connection and starting to generate electrical power is only allowed after voltage and frequency are within the allowed voltage and frequency ranges for at least the specified observation time. The observation time for starting and reconnection can be set seperately.

Step 1: Select < Grid code settings > to go to the next screen.

Step 2: Click < Reconnection time settings > , the next page will display the parameters.

Step 3: Set the observation time and confirm with <Save>.



Step 1 Step 2 Step 3

Fig. 22. Reconnection time settings

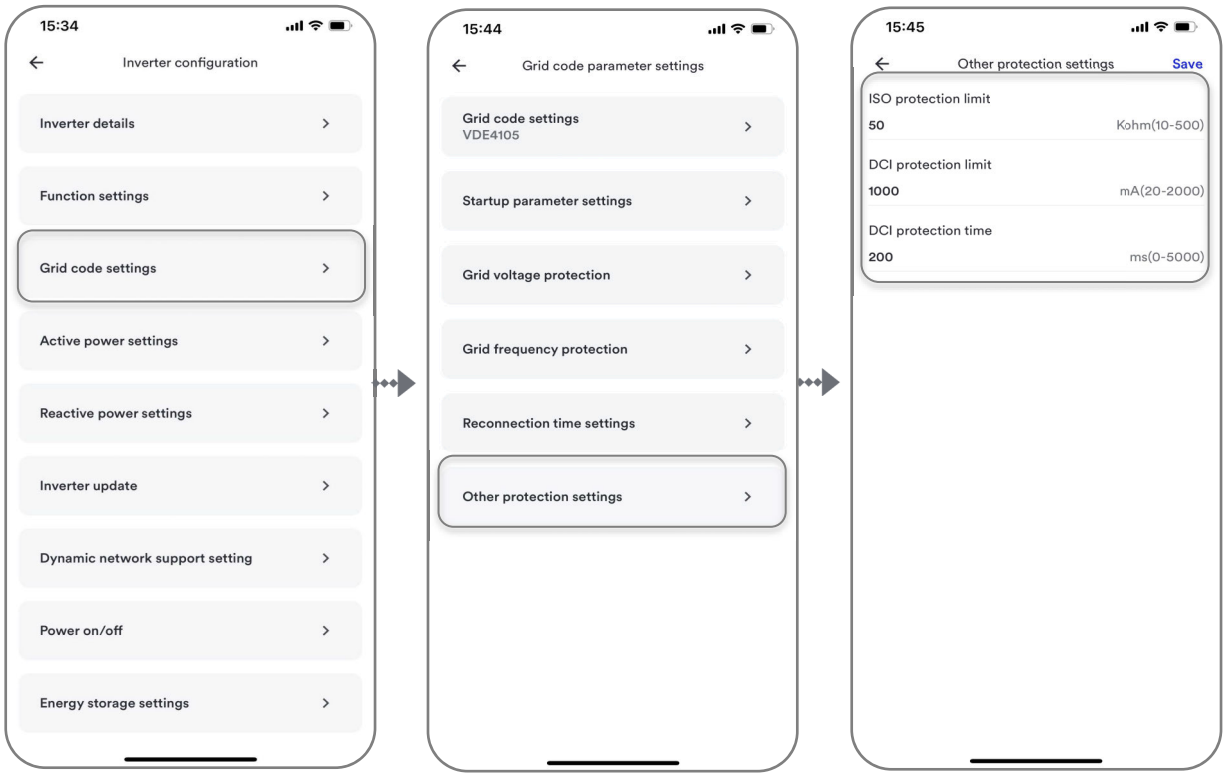
5.2.3.6 Other protection settings

The parameters for some other safety-related functions can be configured.

Step 1: Select < Grid code settings > to go to the next screen.

Step 2: Click < Other protection settings > , the next page will display the parameters.

Step 3: Set the parameters and confirm with <Save>.



Step 1 Step 2 Step 3

Fig. 23. Other protection settings

5.2.4 Active power settings

5.2.4.1 Ramp rate settings

After connection or reconnection, the active power generated by the inverter shall not exceed the prescribed gradient, expressed as a percentage of the inverter's nominal active power per minute. The active power gradient for "Startup" and "Reconnection" can be configured .

Step 1: Select < Active power settings > to go to the next screen.

Step 2: Click < Ramp rate settings > , the next page will display the parameters.

Step 3: Set the gradient as the percentage of the inverter's nominal active power per minute and confirm with <Save>.

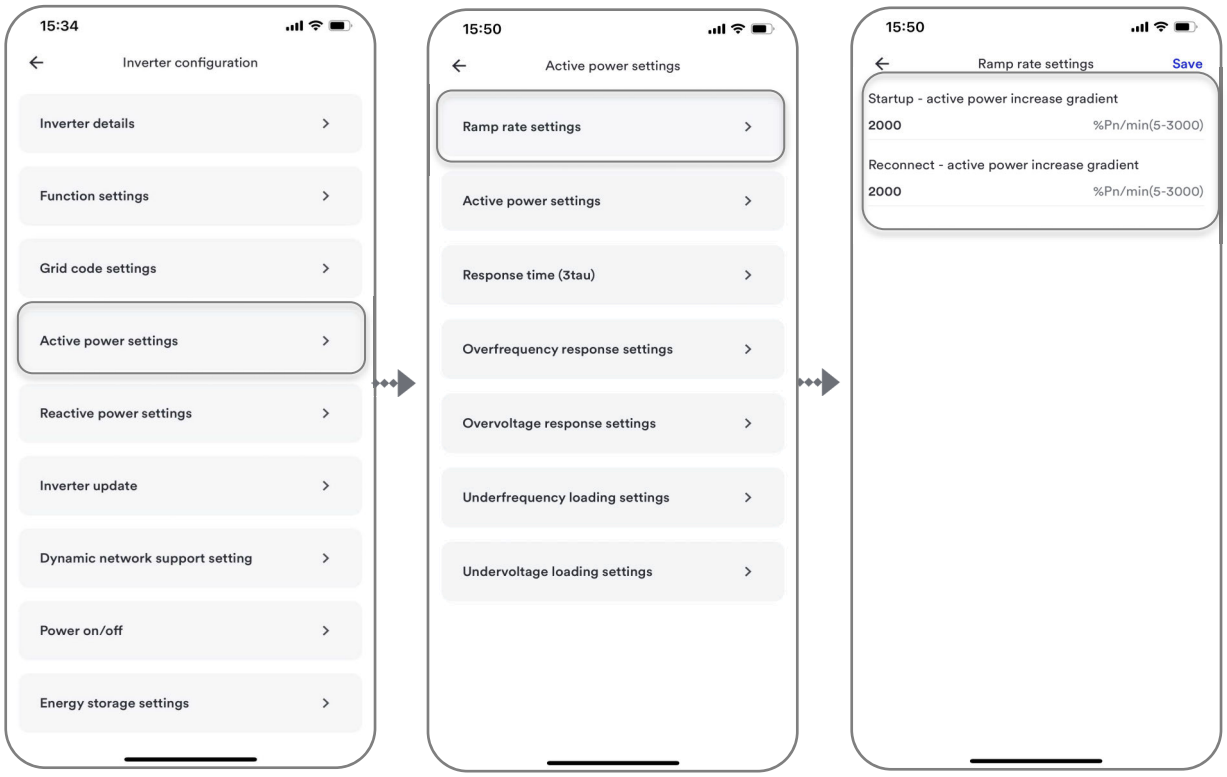


Fig. 24. Ramp rate settings

5.2.4.2 Active power limit settings

The output active power of the device can be set permanently to a lower value than the maximum output active power. This may be necessary in order to limit the maximum active power rating of the system at the grid connection point, upon the grid operator's request. The active power changing shall not exceed the prescribed gradient, expressed as a percentage of the inverter's nominal active power per minute.

Step 1: Select < Active power settings > to go to the next screen.

Step 2: Click < Active power settings > , the next page will display the parameters.

Step 3: Set <Active power limit> as the percentage of the inverter's nominal active power.

Step 4: Set the gradient as the percentage of the inverter's nominal active power per minute. and confirm with <Save>.

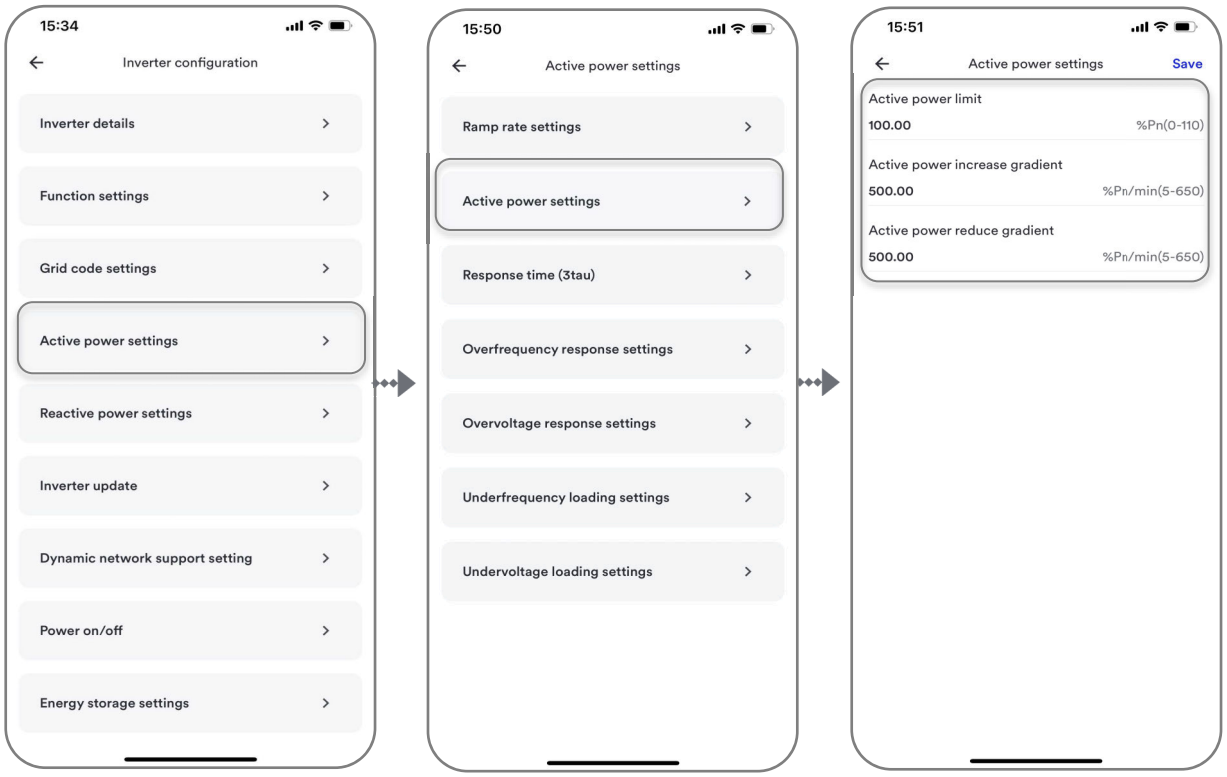


Fig. 25. Power limitation defined.

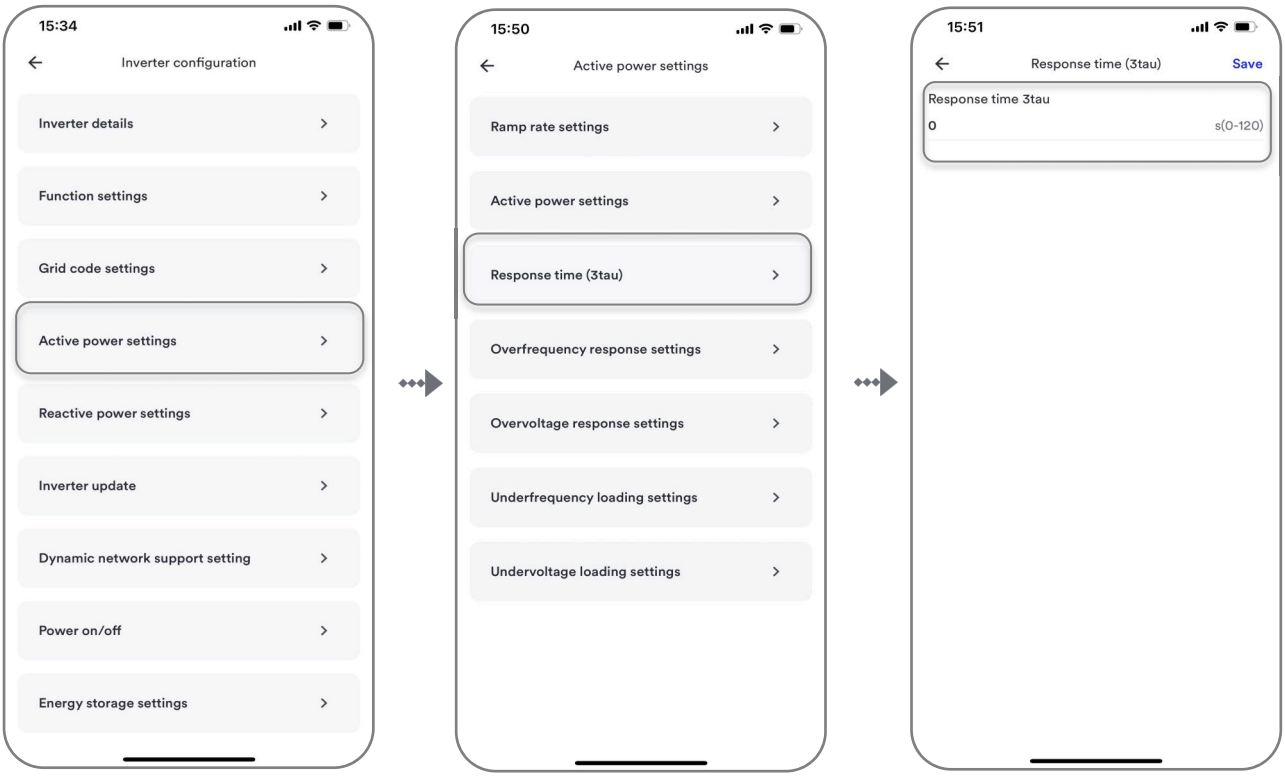
5.2.4.3 Response time 3tau

The dynamics of the P(U) control shall correspond with a first-order filter with a configurable time constant between 3 s and 60 s for some country code, e.g. Austria. That means 95% of a new setpoint must be achieved within three times the time constant. The response time is defined as three times the time constant.

Step 1: Select < Active power settings > to go to the next screen.

Step 2: Click < Response time 3tau > , the next page will display the parameters.

Step 3: Set the response time and confirm with <Save>.



Step 1 Step 2 Step 3

Fig. 26. Response time(3tau)

5.2.4.4 Active power overfrequency response P(f)

'Limited frequency sensitive mode - overfrequency' or 'LFSM-O' or 'Active power frequency response to overfrequency' means a power-generating module which will result in active power output reduction in response to a change in system frequency above a certain value.

There are nine modes which can be chosen for this function and certain parameters can be configured according to the requirement of the local grid company.

Step 1: Select < Active power settings > to go to the next screen.

Step 2: Click < Overfrequency response settings > to go to the next screen.

Step 3: Click the drop-down menu to choose the mode of this function.

Step 4: Configure the parameters and confirm with <Save>.

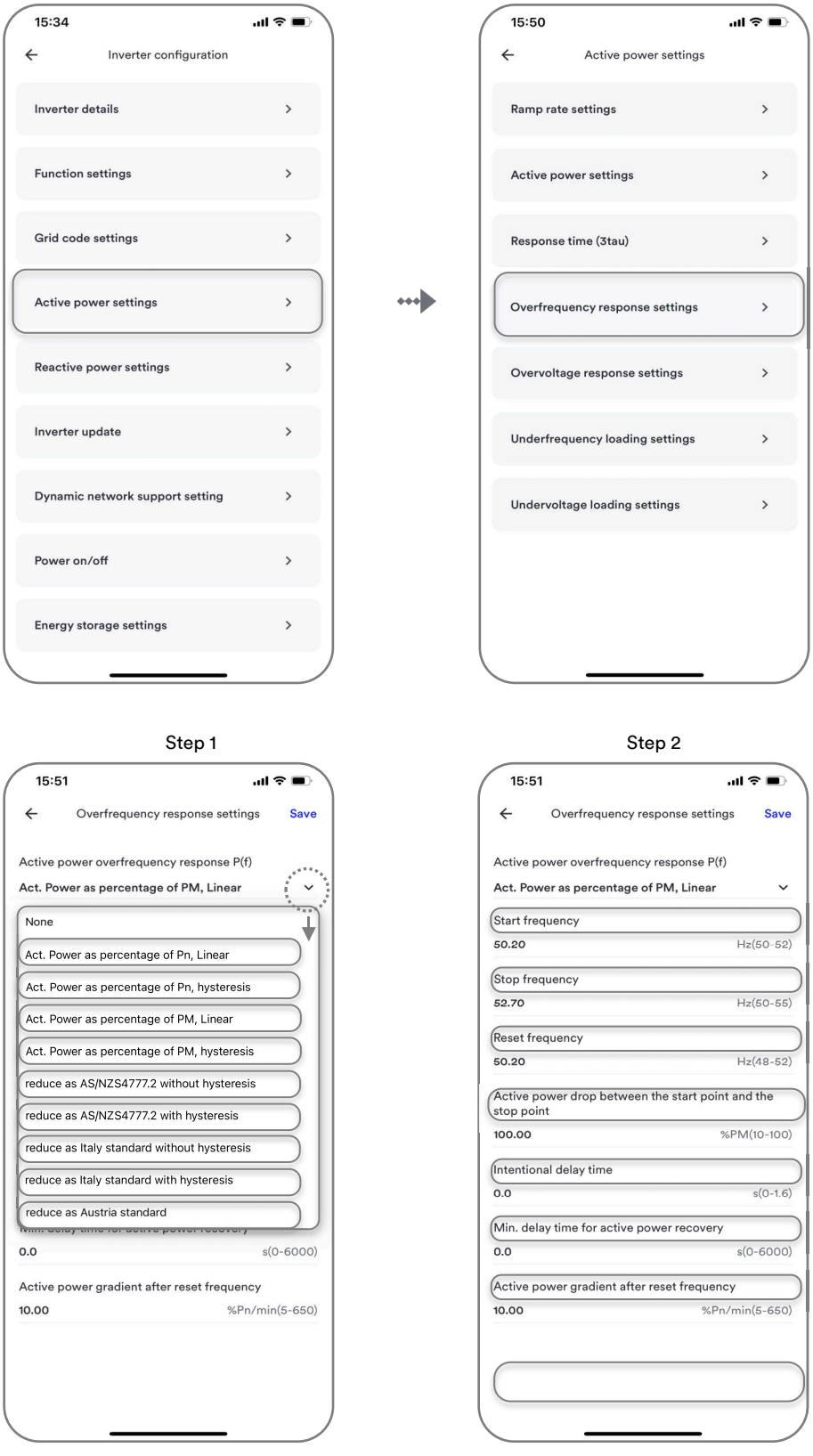
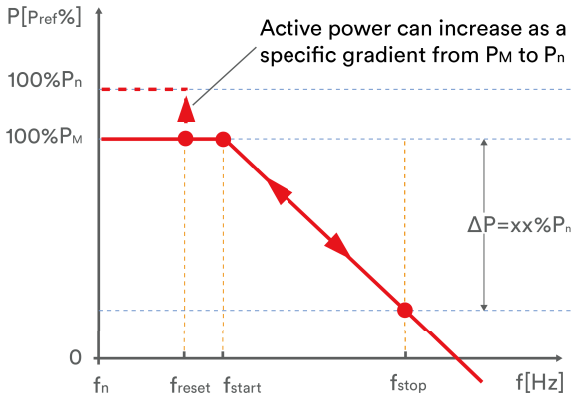


Fig. 27. Overfrequency response settings

Mode 1: Act. Power as a percentage of P_n, Linear



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold fstart.

f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency

ΔP: Active power drop between the start frequency point and the stop frequency point

Active power drop "ΔP" between the start frequency point and the stop frequency point is defined the percentage of the inverter's nominal active power (P_n).

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from P_M to P_n as a percent of P_n per minutes.

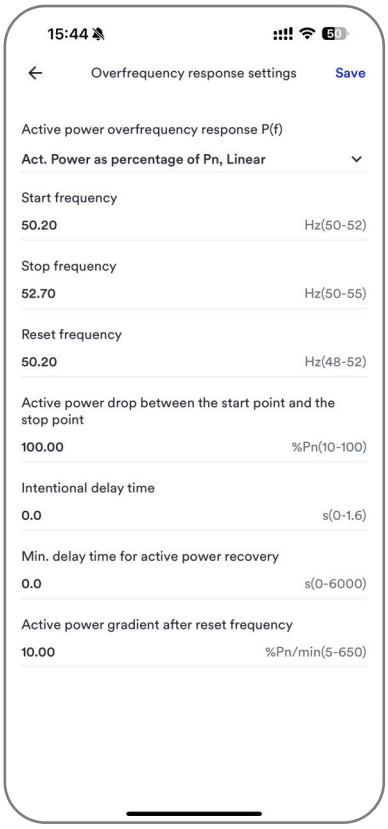
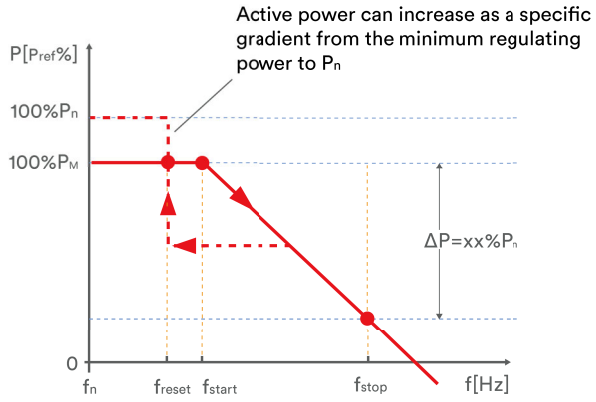


Fig. 28. Act. Power as percentage of P_n, Linear

Mode 2: Act. Power as a percentage of Pn, hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency

ΔP: Active power drop between the start frequency point and the stop frequency point

Active power drop "ΔP" between the start frequency point and the stop frequency point is defined the percentage of the inverter's nominal active power (P_n).

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from the minimum regulating power to P_n as a percent of P_n per minutes.

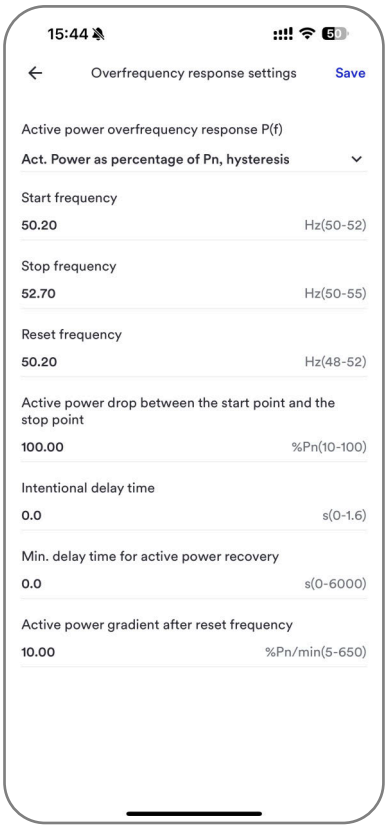
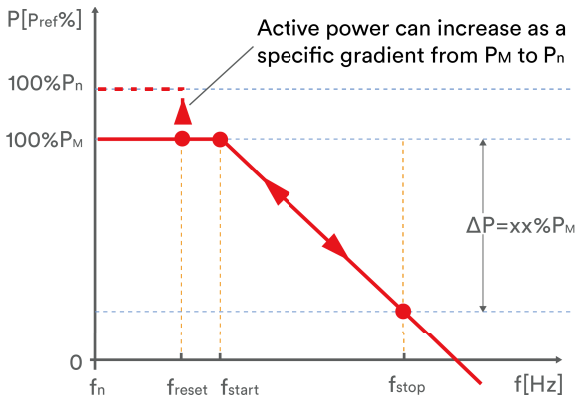


Fig. 29. Act. Power as percentage of Pn, hysteresis

Mode 3: Act. Power as percentage of P_M, Linear



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

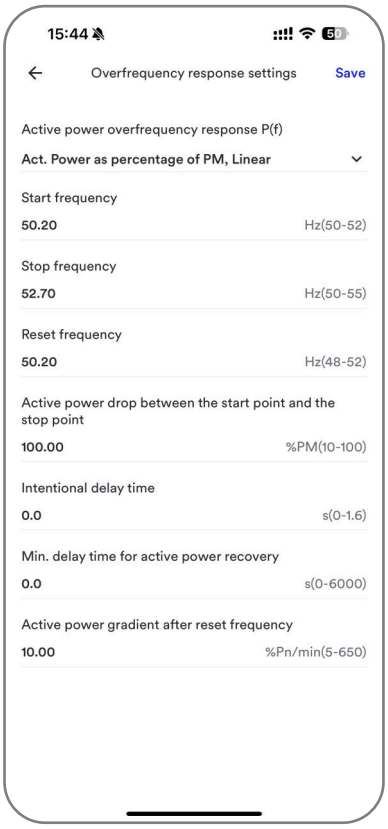
f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency

ΔP: Active power drop between the start frequency point and the stop frequency point



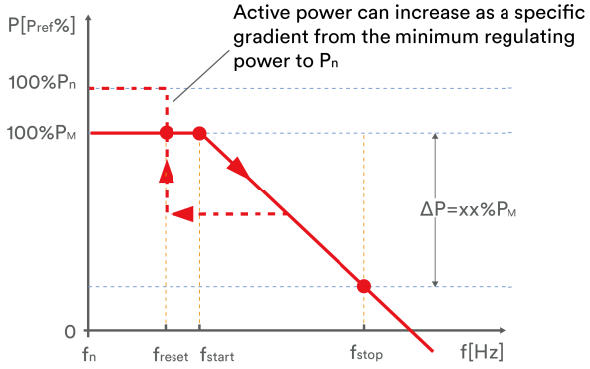
Active power drop "ΔP" between the start frequency point and the stop frequency point is defined the percentage of P_M.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from P_M to P_n as a percent of P_n per minutes.

Fig. 30. Act. Power as percentage of P_M, Linear

Mode 4: Act. Power as percentage of P_M, hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

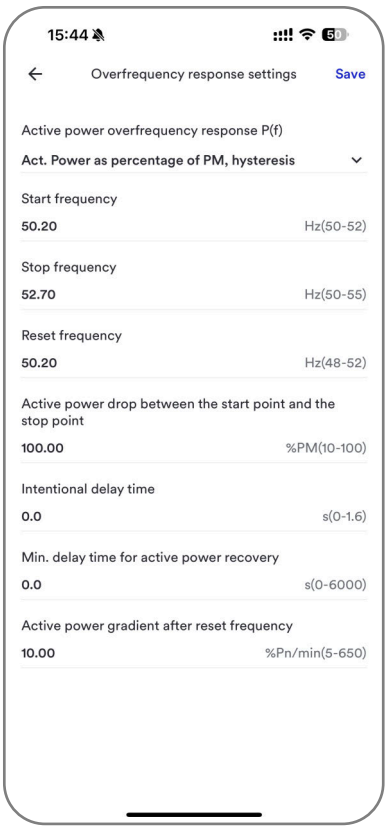
f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency

ΔP: Active power drop between the start frequency point and the stop frequency point



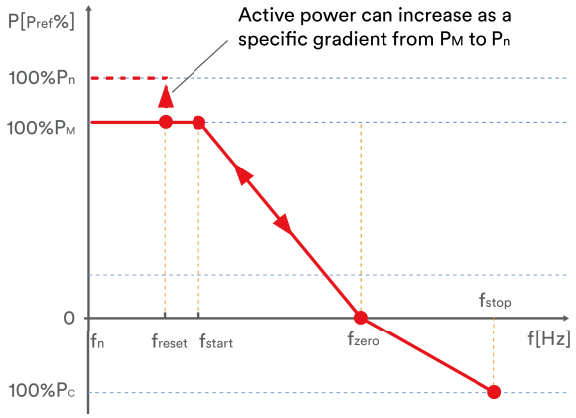
Active power drop "ΔP" between the start frequency point and the stop frequency point is defined the percentage of P_M.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from the minimum regulating power to P_n as a percent of P_n per minutes.

Fig. 31. Act. Power as percentage of P_M, hysteresis

Mode 5: reduce as AS/NZS4777.2 without hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

P_C: Nominal charge power

fn: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{zero}: The frequency when the active power is zero

f_{stop}: Stop frequency

This model applies to hybrid inverter according to AS/NZS 4777.2 and the other standards with similar requirements. Frequency points f_{start}, f_{zero}, and f_{stop} correspond to 100%P_M, 0% P_n, and 100% P_C, respectively.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from P_M to P_n as a percent of P_n per minutes.

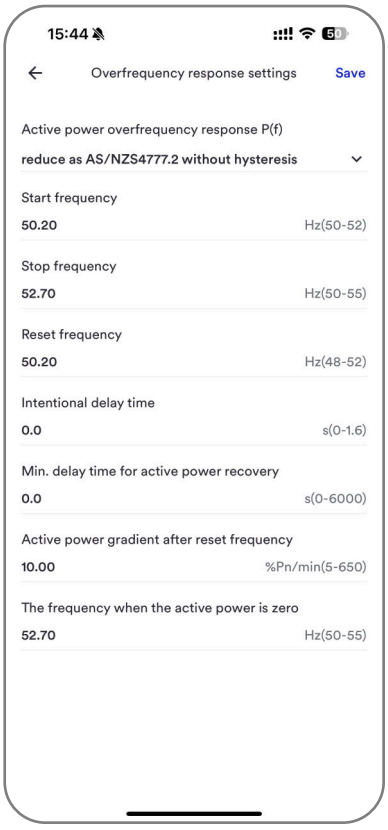
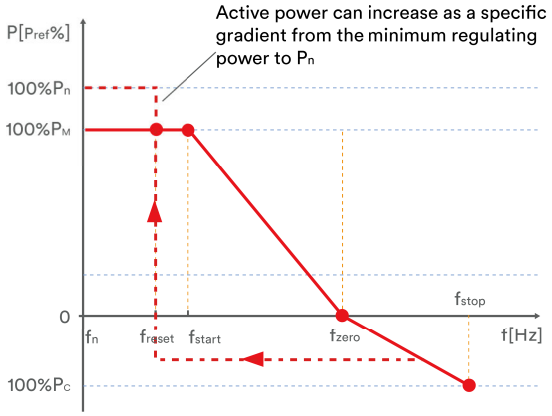


Fig. 32. reduce as AS/NZS4777.2 without hysteresis

Mode 6: reduce as AS/NZS4777.2 with hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

P_C: Nominal charge power

f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{zero}: The frequency when the active power is zero

f_{stop}: Stop frequency

This model applies to hybrid inverter according to AS/NZS 4777.2 and the other standards with similar requirements. Frequency points f_{start}, f_{zero}, and f_{stop} correspond to 100%P_M, 0% P_N, and 100% P_C, respectively.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from the minimum regulating power to P_n as a percent of P_n per minutes.

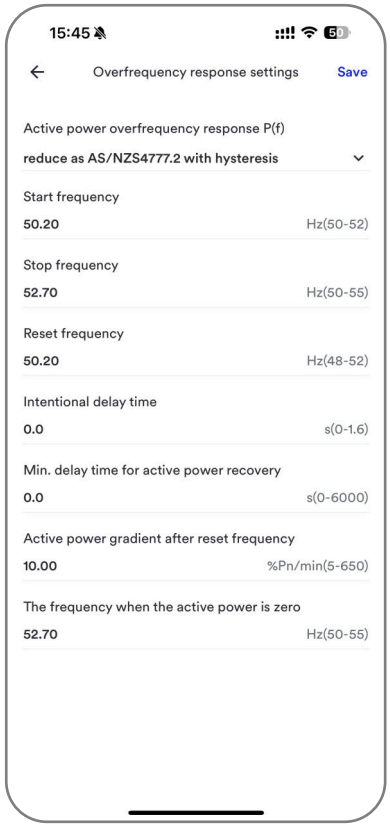
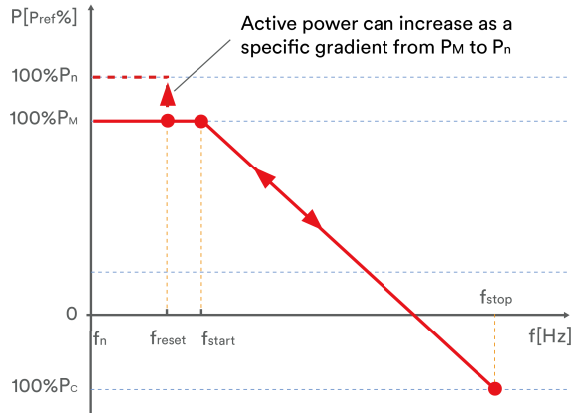


Fig. 33. reduce as AS/NZS4777.2 with hysteresis

Mode 7: reduce as Italy standard without hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

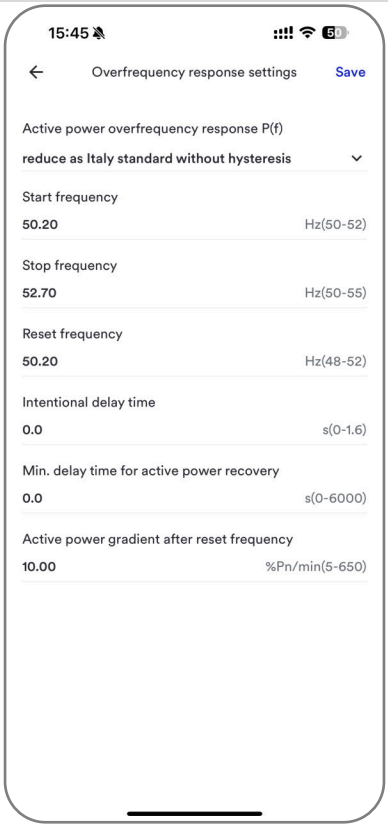
P_C: Nominal charge power

f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency



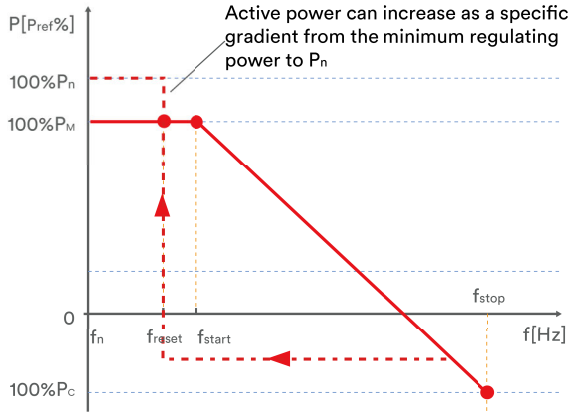
This model applies to hybrid inverter according to CEI 0-21 and CEI 0-16 and the other standards with similar requirements. Frequency points f_{start} and f_{stop} correspond to 100%P_M and 100% P_C, respectively.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from P_M to P_n as a percent of P_n per minutes.

Fig. 34. reduce as Italy standard without hysteresis

Mode 8: reduce as Italy standard with hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

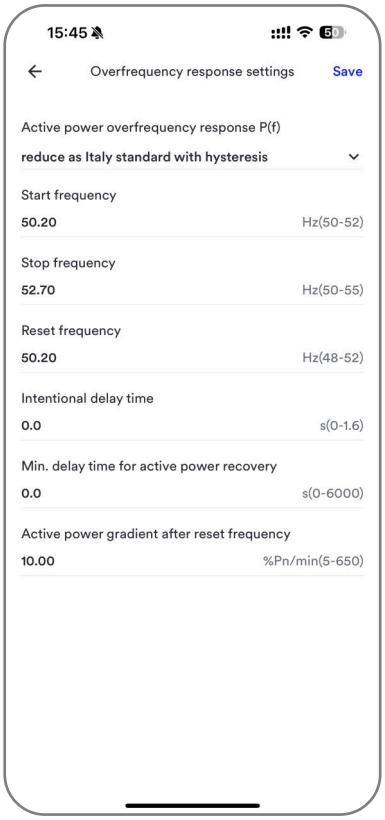
P_C: Nominal charge power

f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency



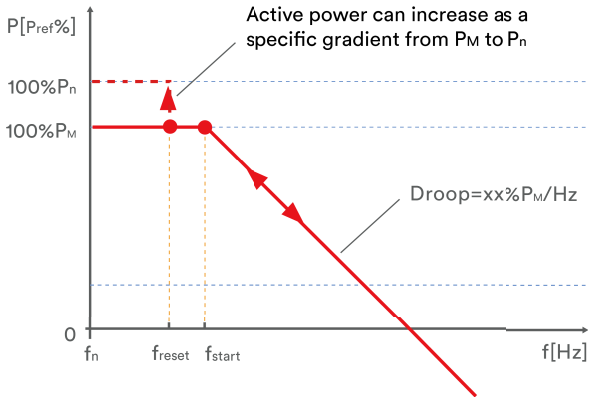
This model applies to hybrid inverter according to CEI 0-21 and CEI 0-16 and the other standards with similar requirements. Frequency points f_{start} and f_{stop} correspond to 100%P_M and 100% P_C, respectively.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from the minimum regulating power to P_n as a percent of P_n per minutes.

Fig. 35. reduce as Italy standard with hysteresis

Mode 9：reduce as Austria standard



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold $f_{start.}$

f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

Droop: the gradient as the percentage of P_M per Hertz.

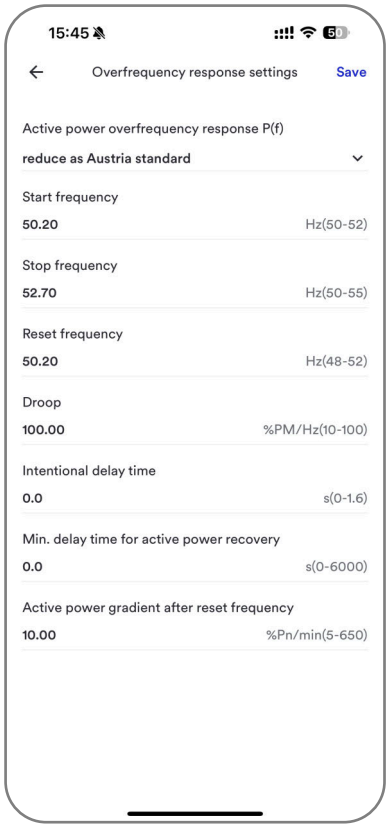


Fig. 36. reduce as Austria standard

This model is same as “Act. Power as percentage of P_M, Linear” except the active power drop “ΔP” changing to “Droop”. Droop is defined as the gradient as the percentage of P_M per Hertz. And the stop frequency is no longer effective.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from P_M to P_n as a percent of P_n per minutes.

5.2.4.5 Active power overvoltage response P(U)

In order to avoid disconnection due to overvoltage protection, generating units are allowed to reduce active power output as a function of this rising voltage. This function normally call “Voltage-Watt response” or “Voltage-controlled active power limitation P (U)” or “Active power overvoltage response P(U)”.

There are five modes which can be chosen for this function and certain parameters can be configured according to the requirement of the local grid company.

Step 1： Select < Active power settings > to go to the next screen.

Step 2： Click < Overvoltage response settings > to go to the next screen.

Step 3： Click the drop-down menu to choose the mode of this function.

Step 4： configure the parameters and confirm with <Save>.

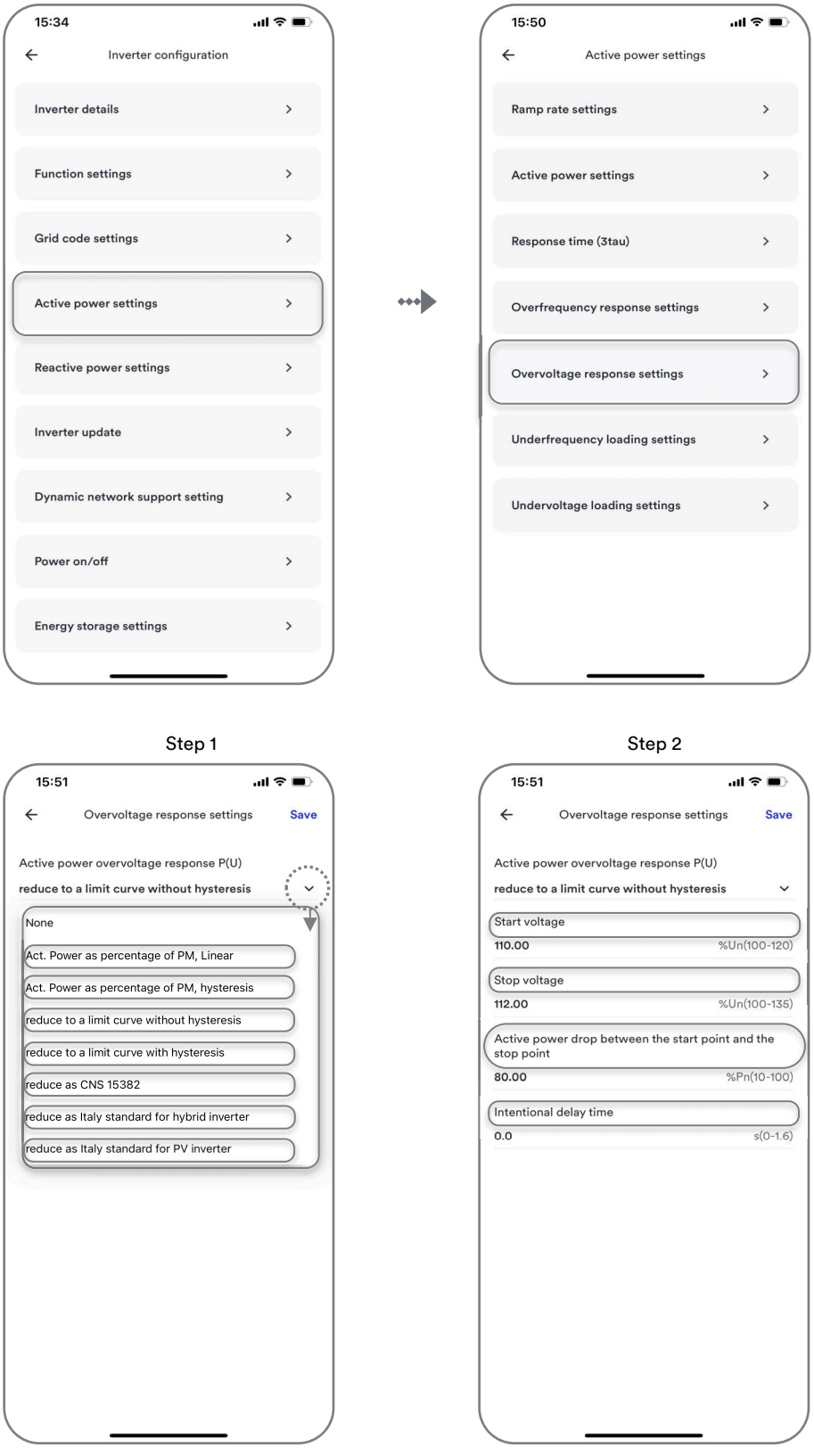
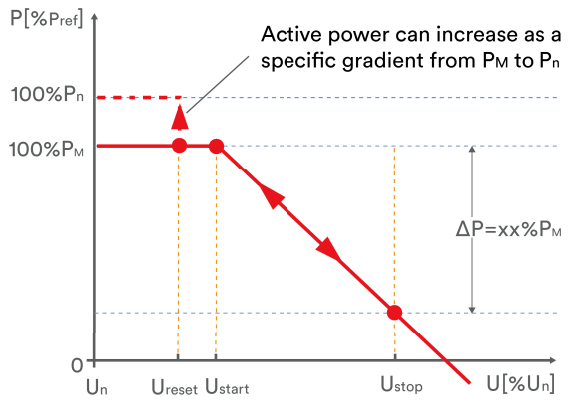


Fig. 37. Overvoltage response settings

Mode 1: Act. Power as percentage of P_M, Linear



P_n: Nominal output active power

P_M: the actual active power at the instant when the grid voltage reaches the threshold U_{start}.

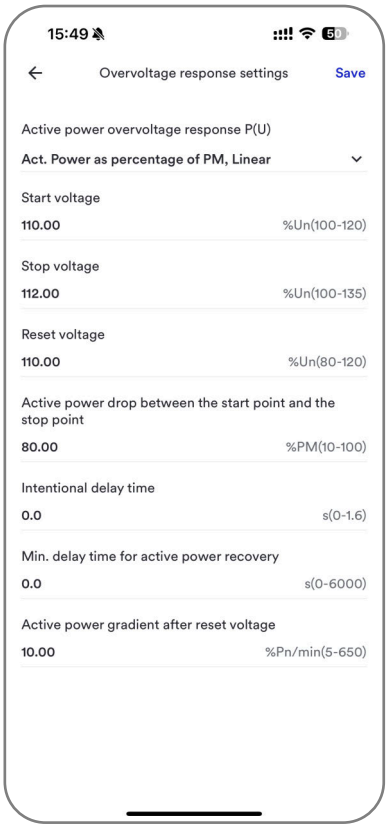
U_n: Nominal grid voltage

U_{reset}: Reset voltage

U_{start}: Start voltage

U_{stop}: Stop voltage

ΔP: Active power drop between the start voltage point and the stop voltage point



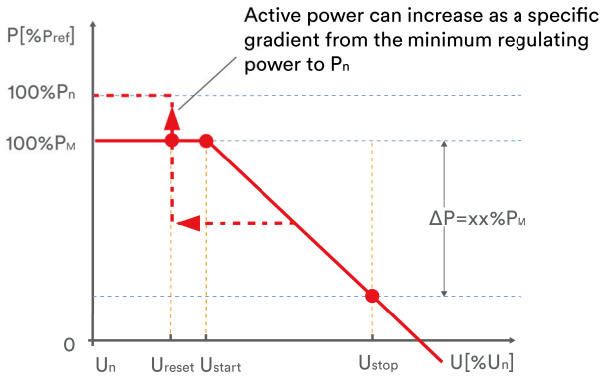
Active power drop "ΔP" between the start voltage point and the stop voltage point is defined the percentage of P_M.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the voltage falls below U_{reset} for a configurable delay time. Then the active power increase from P_M to P_n as a percent of P_n per minutes.

Fig. 38. Act. Power as percentage of P_M, Linear

Mode 2: Act. Power as percentage of P_M, hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the grid voltage reaches the threshold U_{start}.

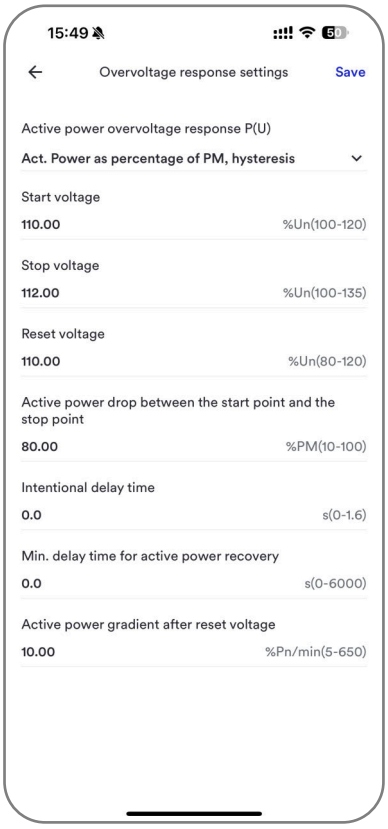
U_n: Nominal grid voltage

U_{reset}: Reset voltage

U_{start}: Start voltage

U_{stop}: Stop voltage

ΔP: Active power drop between the start voltage point and the stop voltage point



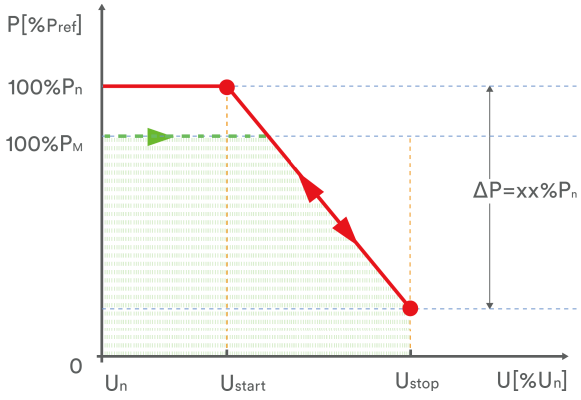
Active power drop "ΔP" between the start voltage point and the stop voltage point is defined the percentage of P_M.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the voltage falls below U_{reset} for a configurable delay time. Then the active power increase from the minimum regulating power to P_n as a percent of P_n per minutes.

Fig. 39. Act. Power as percentage of P_M, hysteresis

Mode 3：reduce to a limit curve without hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the grid voltage reaches the threshold U_{start}.

U_n: Nominal grid voltage

U_{reset}: Reset voltage

U_{start}: Start voltage

U_{stop}: Stop voltage

ΔP: Active power drop between the start voltage point and the stop voltage point

Active power drop "ΔP" between the start voltage point and the stop voltage point is defined the percentage of P_n.

If the inverter is operating below the limit curve, the active power does not need to be reduced; if the inverter is operating above the limit curve, the active power needs to be reduced to the limit curve.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

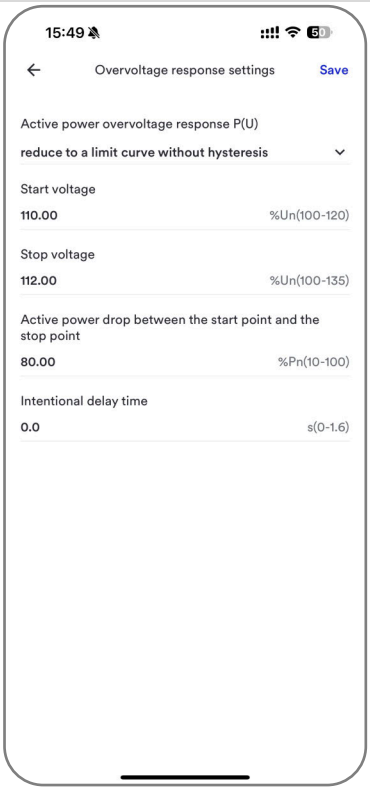
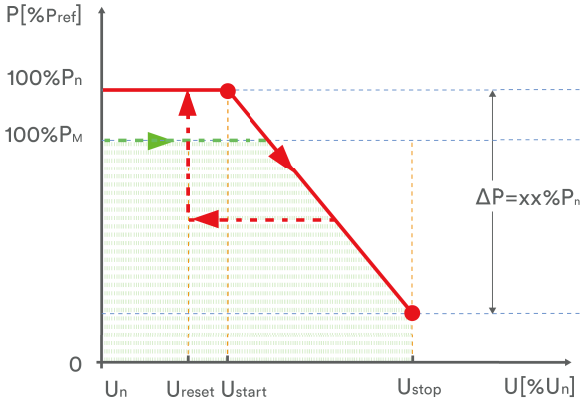


Fig. 40. reduce to a limit curve without hysteresis

Mode 4：reduce to a limit curve with hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the grid voltage reaches the threshold U_{start}.

U_n: Nominal grid voltage

U_{reset}: Reset voltage

U_{start}: Start voltage

U_{stop}: Stop voltage

ΔP: Active power drop between the start voltage point and the stop voltage point

Active power drop "ΔP" between the start voltage point and the stop voltage point is defined the percentage of P_n.

If the inverter is operating below the limit curve, the active power does not need to be reduced; if the inverter is operating above the limit curve, the active power needs to be reduced to the limit curve.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the voltage falls below U_{reset} for a configurable delay time. Then the active power increase from the minimum regulating power to P_n as a percent of P_n per minutes.

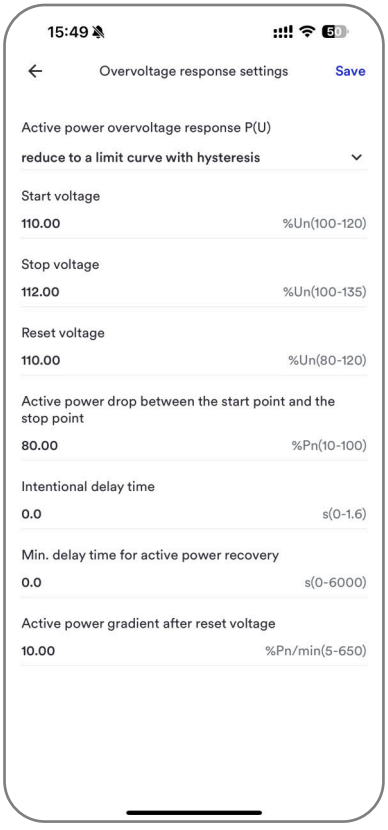
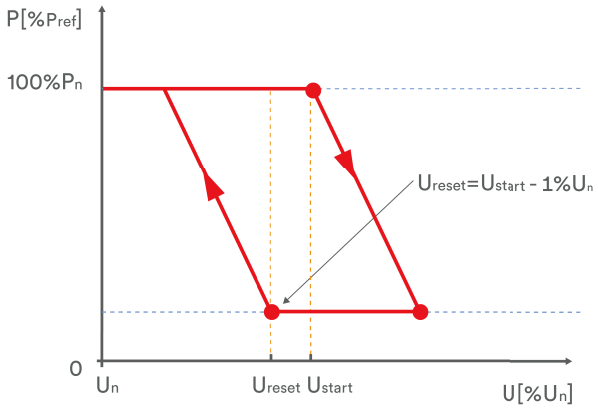


Fig. 41. reduce to a limit curve with hysteresis

Mode 5: reduce as CNS 15382



P_n: Nominal output active power

U_n: Nominal grid voltage

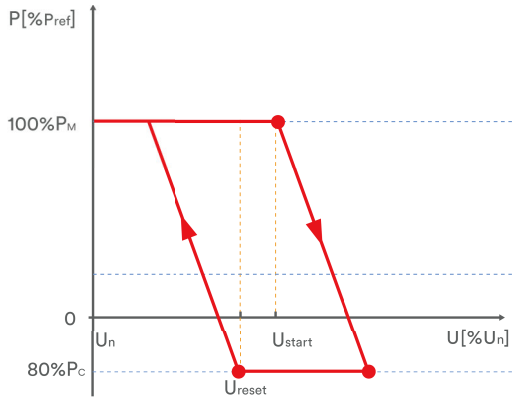
U_{reset}: Reset voltage

U_{start}: Start voltage

This mode is only used for CNS 15382. The active power reduces to 10%P_n within one second after the grid voltage reaches the threshold $U_{start.}$ And the active power will increase to 100%P_n within one second after the grid voltage back to the threshold $U_{reset.}$

Fig. 42. reduce as CNS 15382

Mode 6: reduce as Italy standard for hybrid inverter



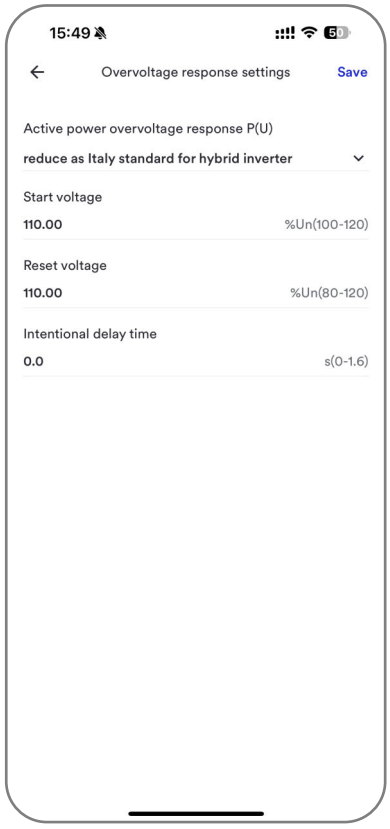
P_n: Nominal output active power

P_C: Nominal charge power

U_n: Nominal grid voltage

U_{reset}: Reset voltage

U_{start}: Start voltage



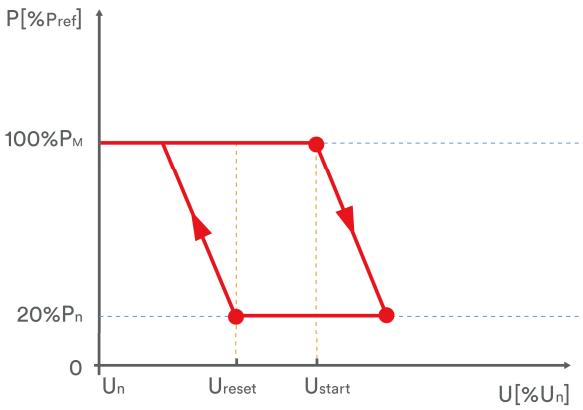
This model applies to hybrid inverter according to CEI 0-21 and CEI 0-16 and the other standards with similar requirements.

The active power reduces to zero and switches to charge to 80%P_C within five minutes after the grid voltage reaches the threshold $U_{start.}$ And the charge power will reduce to zero and switches to discharge to 100%P_n within five minutes after the grid voltage back to the threshold $U_{reset.}$

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

Fig. 43. reduce as Italy standard for hybrid inverter

Mode 7：reduce as Italy standard for PV inverter



P_n: Nominal output active power

U_n: Nominal grid voltage

U_{reset}: Reset voltage

U_{start}: Start voltage

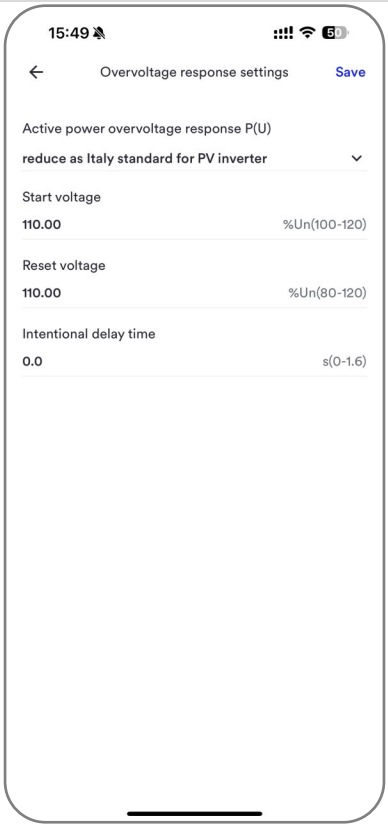


Fig. 44. reduce as Italy standard for PV inverter

This model applies to PV inverter according to CEI 0-21 and CEI 0-16 and the other standards with similar requirements.

The active power reduces to 20%P_n within five minutes after the grid voltage reaches the threshold U_{start}. And the charge power will increase to 100%P_n within five minutes after the grid voltage back to the threshold U_{reset}.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

5.2.4.6 Active power underfrequency response P(f)

'Limited frequency sensitive mode - underfrequency' or 'LFSM-U' or 'Active power frequency response to underfrequency' means a power-generating module which will result in active power output increase in response to a change in system frequency below a certain value.

There are five modes which can be chosen for this function and certain parameters can be configured according to the requirement of the local grid company.

Active power response to underfrequency shall be provided when all of the following conditions are met:

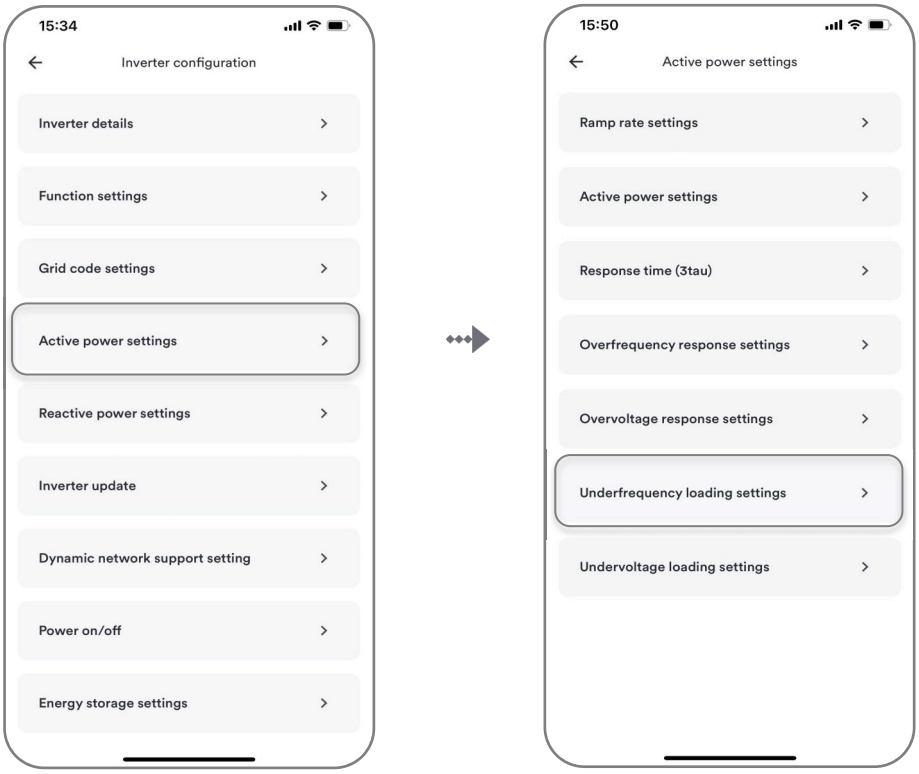
- When generating, the generating unit is operating at active power below its maximum active power Pmax;
- When generating, the generating unit is operating at active power below the available active power PA;
- The voltages at the point of connection of the generating plant are within the continuous operating voltage range; and when generating, the generating unit is operating with currents lower than its current limit.

Step 1: Select < Active power settings > to go to the next screen.

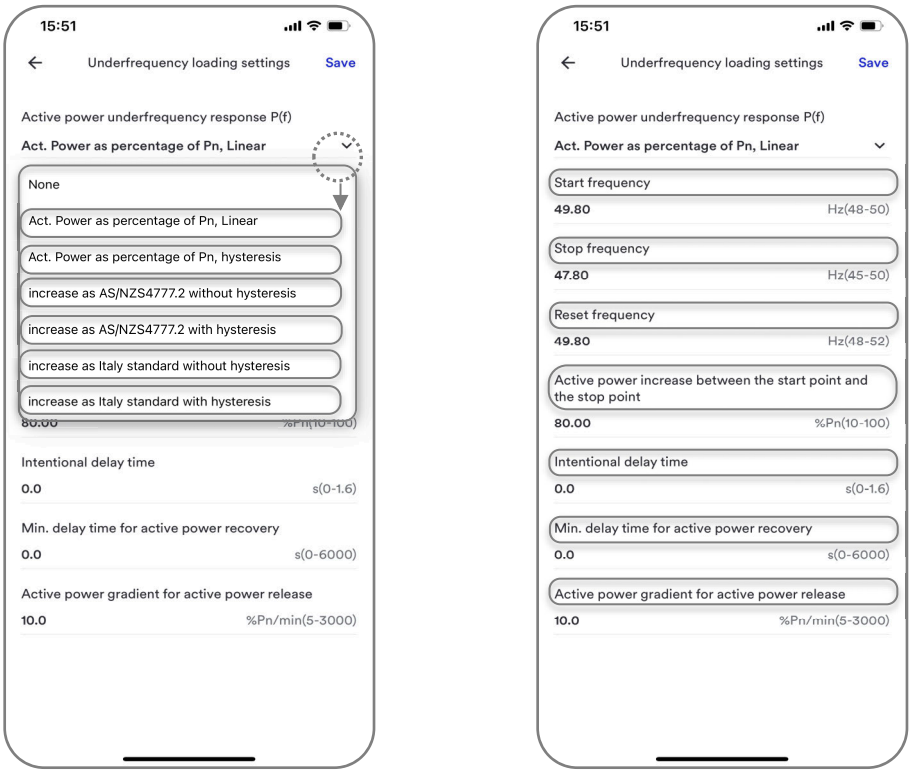
Step 2: Click < Underfrequency loading settings > to go to the next screen.

Step 3: Click the drop-down menu to choose the mode of this function.

Step 4: Configure the parameters and confirm with <Save>.



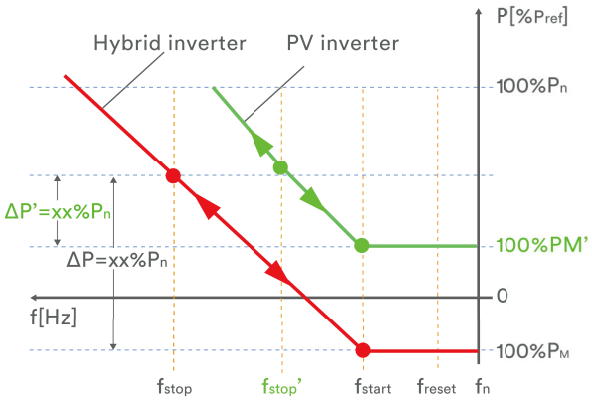
Step 1 Step 2



Step 3 Step 4

Fig. 45. Underfrequency loading settings

Mode 1: Act. Power as percentage of P_n, Linear



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

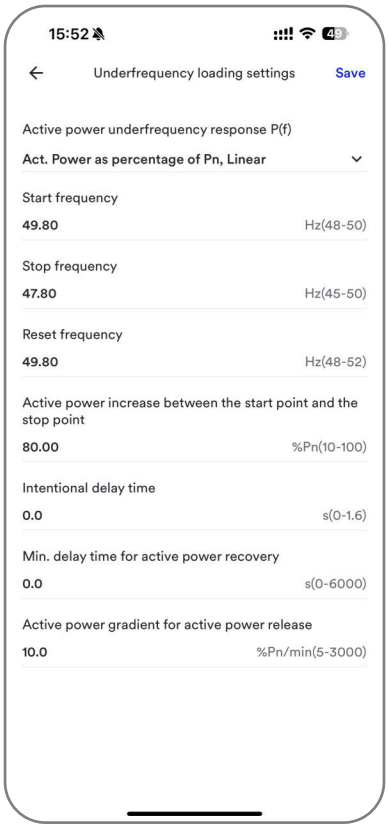
f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency

ΔP: Active power increase between the start frequency point and the stop frequency point



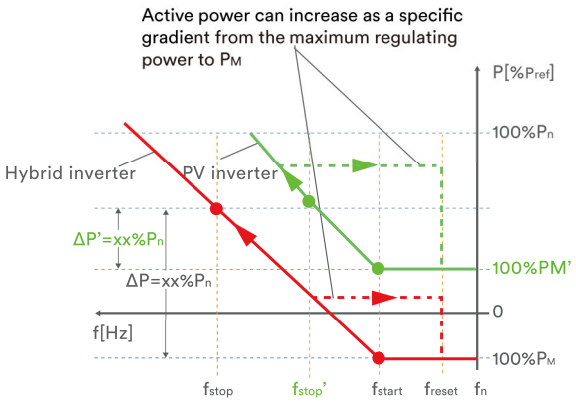
Active power drop "ΔP" between the start voltage point and the stop voltage point is defined the percentage of P_n.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the voltage falls below U_{reset} for a configurable delay time. Then the active power increase from P_M to a new target active power as a percent of P_n per minutes.

Fig. 46. Act. Power as percentage of P_n, Linear

Mode 2: Act. Power as percentage of P_n, hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

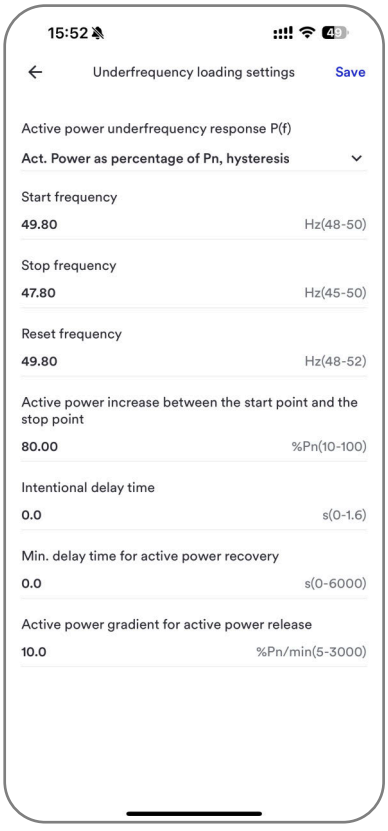
f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency

ΔP: Active power increase between the start frequency point and the stop frequency point



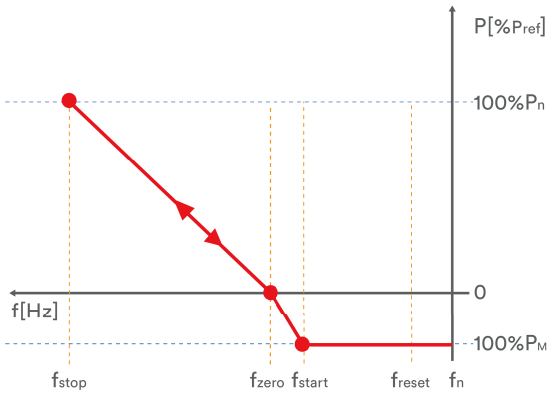
Active power increase "ΔP" between the start frequency point and the stop frequency point is defined the percentage of the inverter's nominal output active power (P_n).

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from the maximum regulating power to PM as a percent of P_n per minutes.

Fig. 47. Act. Power as percentage of P_n, hysteresis

Mode 3：increase as AS/NZS4777.2 without hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

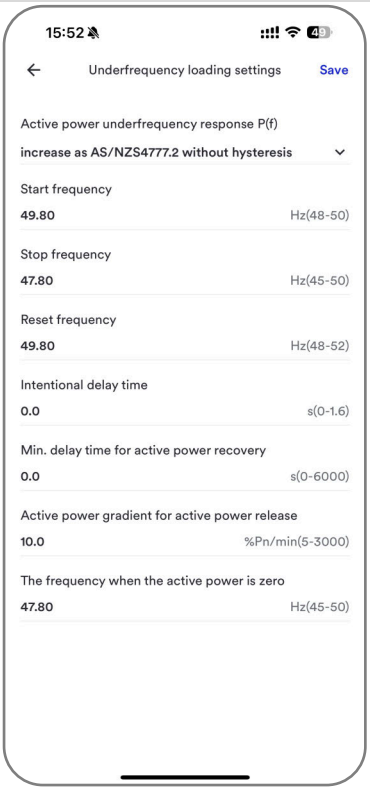
f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{zero}: The frequency when the active power is zero

f_{stop}: Stop frequency



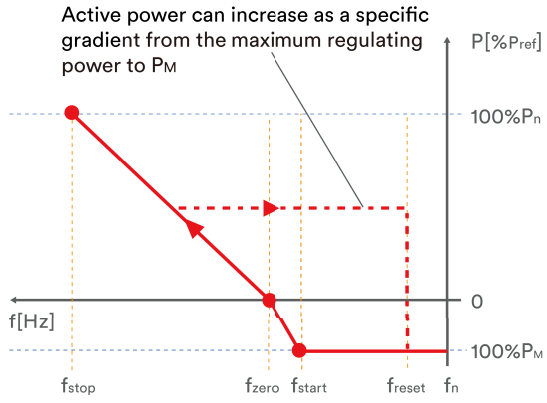
This model applies to hybrid inverter according to AS/NZS 4777.2 and the other standards with similar requirements. Frequency points f_{start}, f_{zero}, and f_{stop} correspond to 100%P_M, 0% P_n, and 100% P_n, respectively.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from P_M to a new target active power as a percent of P_n per minutes.

Fig. 48. increase as AS/NZS4777.2 without hysteresis

Mode 4：increase as AS/NZS4777.2 with hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

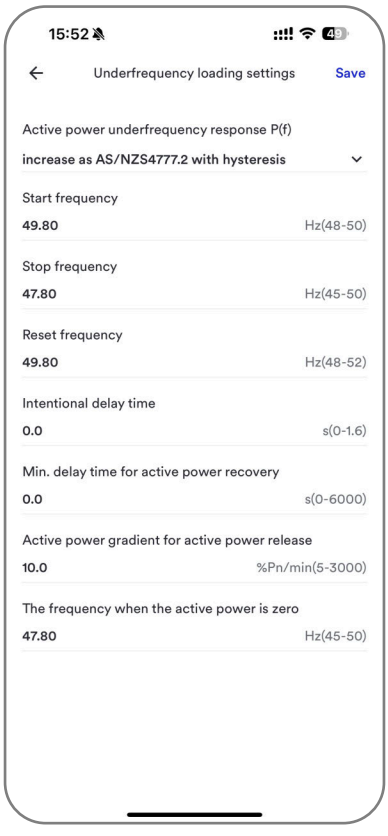
f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{zero}: The frequency when the active power is zero

f_{stop}: Stop frequency



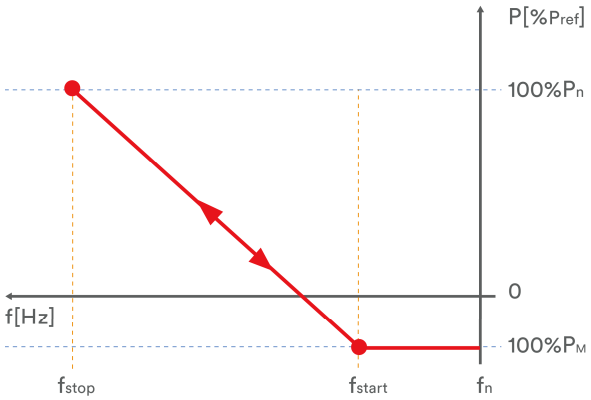
This model applies to hybrid inverter according to AS/NZS 4777.2 and the other standards with similar requirements. Frequency points f_{start}, f_{zero}, and f_{stop} correspond to 100%P_M, 0% P_N, and 100% P_n, respectively.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from the maximum regulating power to PMas a percent of P_n per minutes.

Fig. 49. increase as AS/NZS4777.2 with hysteresis

Mode 5: increase as Italy standard without hysteresis



P_n: Nominal output active power

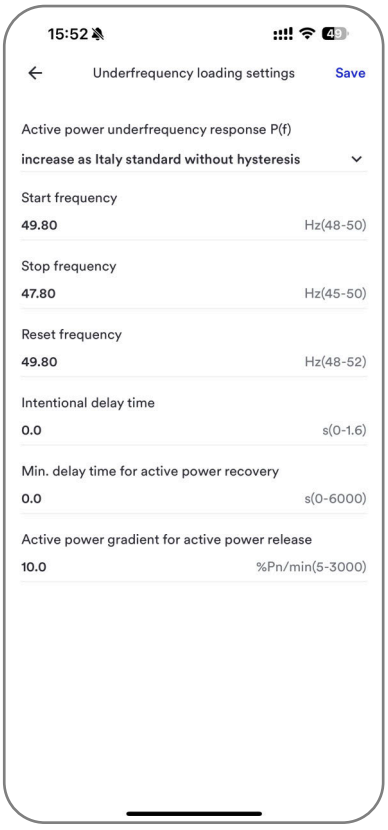
P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency



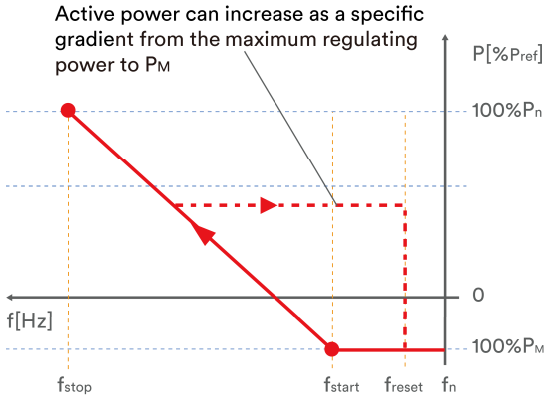
This model applies to PV inverter or hybrid inverter according to CEI 0-21 and the other standards with similar requirements. Frequency points f_{start} and f_{stop} correspond to 100%P_M and 100% P_n, respectively.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from P_M to a new target active power as a percent of P_n per minutes.

Fig. 50. increase as Italy standard without hysteresis

Mode 6: increase as Italy standard with hysteresis



P_n: Nominal output active power

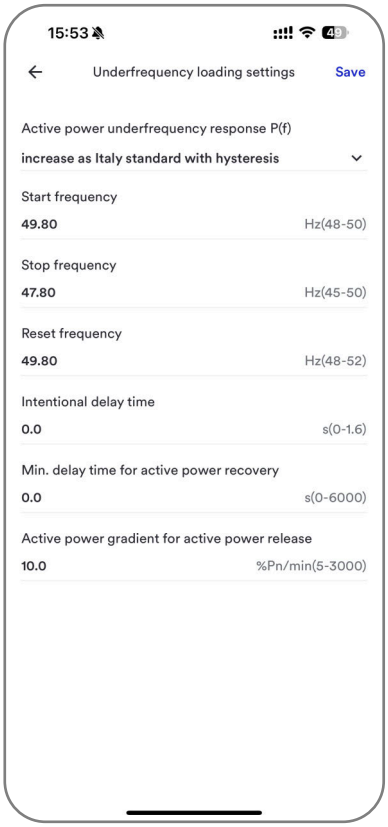
P_M: the actual active power at the instant when the frequency reaches the threshold f_{start}.

f_n: Nominal frequency

f_{reset}: Reset frequency

f_{start}: Start frequency

f_{stop}: Stop frequency



This model applies to PV inverter or hybrid inverter according to CEI 0-21 and the other standards with similar requirements. Frequency points f_{start} and f_{stop} correspond to 100%P_M and 100% P_n, respectively.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the frequency falls below f_{reset} for a configurable delay time. Then the active power increase from the maximum regulating power to PM as a percent of P_n per minutes.

Fig. 51. increase as Italy standard with hysteresis

5.2.4.7 Undervoltage loading settings

Similar to active power overfrequency response P(f), the active power undervoltage response P(U) can also be set. In order to avoid disconnection due to undervoltage protection, generating units are allowed to increase the output active power or reduce the input active power (Charging power) as a function of this reducing voltage. This function normally is called “Voltage-Watt response” or “Voltage-controlled active power limitation P (U)” or “Active power overvoltage response P(U)”.

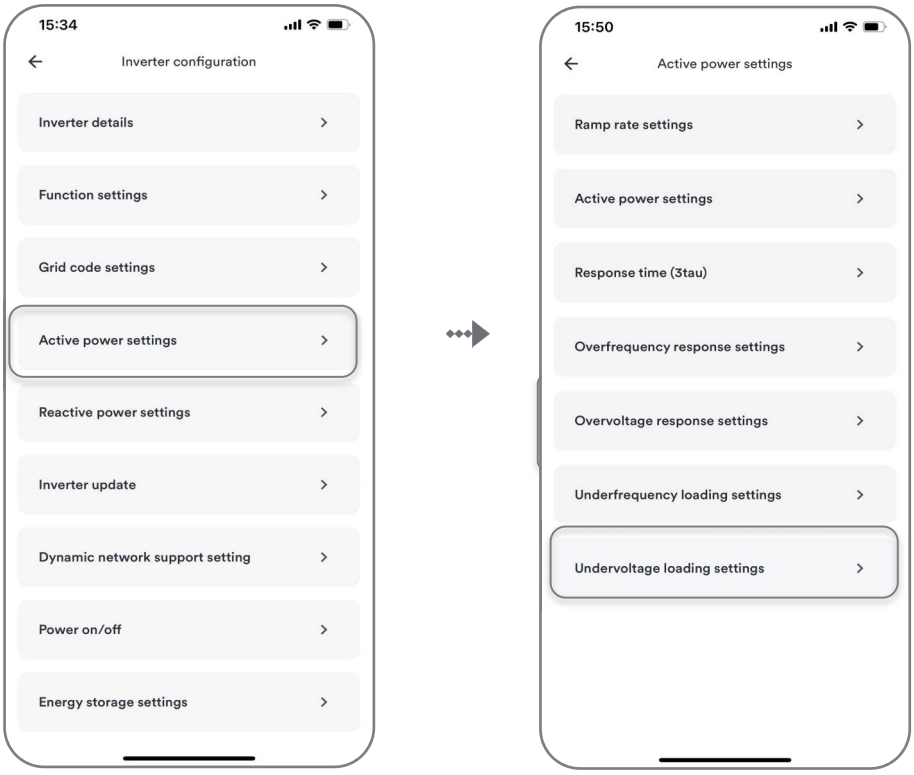
There are three modes which can be chosen for this function and certain parameters can be configured according to the requirement of the local grid company.

Step 1: Select < Active power settings > to go to the next screen.

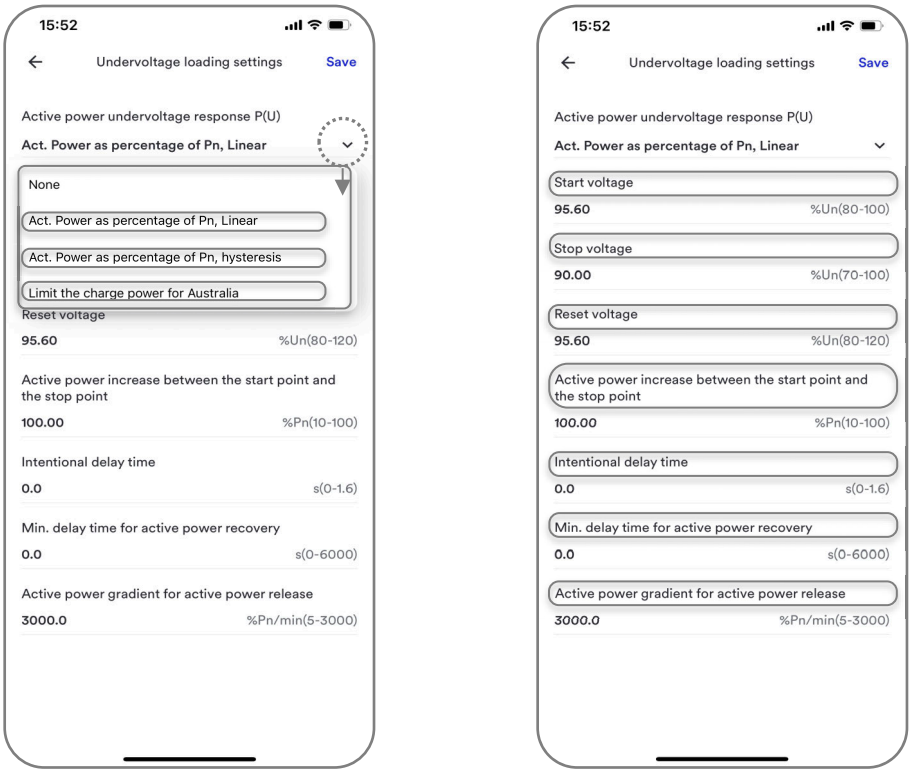
Step 2: Click < Undervoltage loading settings > to go to the next screen.

Step 3: Click the drop-down menu to choose the mode of this function.

Step 4: Configure the parameters and confirm with <Save>.



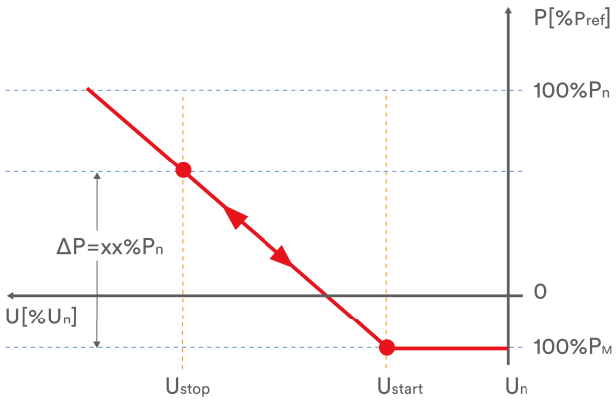
Step 1 Step 2



Step 3 Step 4

Fig. 52. Undervoltage loading settings

Mode 1: Act. Power as percentage of P_n, Linear



P_n: Nominal output active power

P_M: the actual active power at the instant when the voltage reaches the threshold U_{start}.

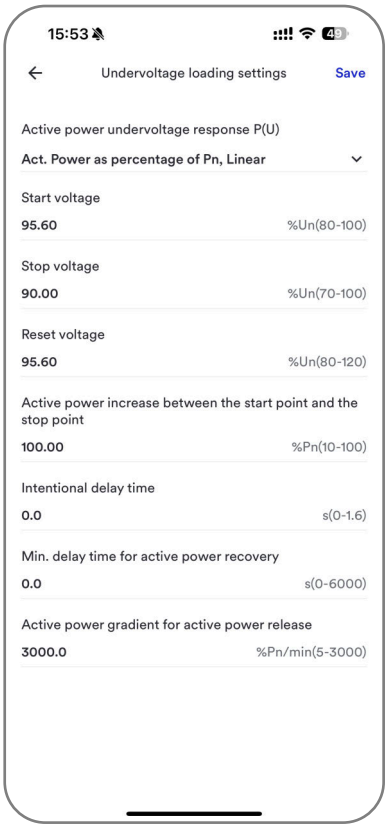
U_n: Nominal voltage

U_{reset}: Reset voltage

U_{start}: Start voltage

U_{stop}: Stop voltage

ΔP: Active power increase between the start voltage point and the stop voltage point



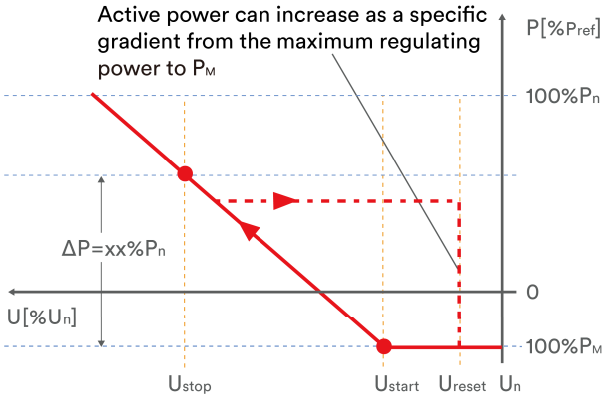
Active power increase "ΔP" between the start voltage point and the stop voltage point is defined the percentage of the inverter's nominal output active power (P_n).

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the voltage falls below Ureset for a configurable delay time. Then the active power increase from P_M to a new target active power as a percent of P_n per minutes.

Fig. 53. Act. Power as percentage of P_n, Linear

Mode 2: Act. Power as percentage of P_n, hysteresis



P_n: Nominal output active power

P_M: the actual active power at the instant when the voltage reaches the threshold U_{start}.

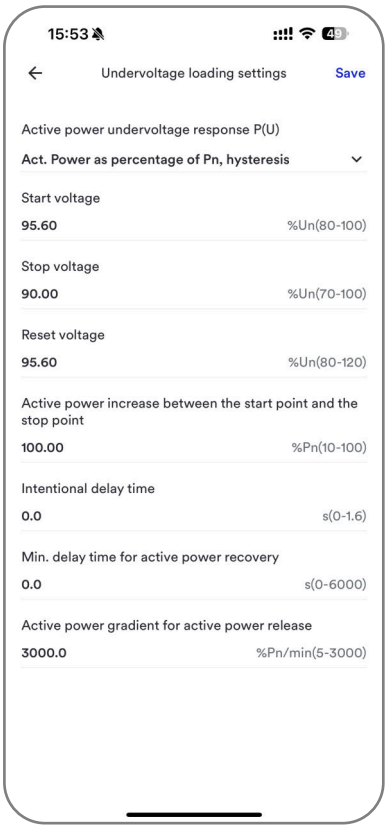
U_n: Nominal voltage

U_{reset}: Reset voltage

U_{start}: Start voltage

U_{stop}: Stop voltage

ΔP: Active power increase between the start voltage point and the stop voltage point



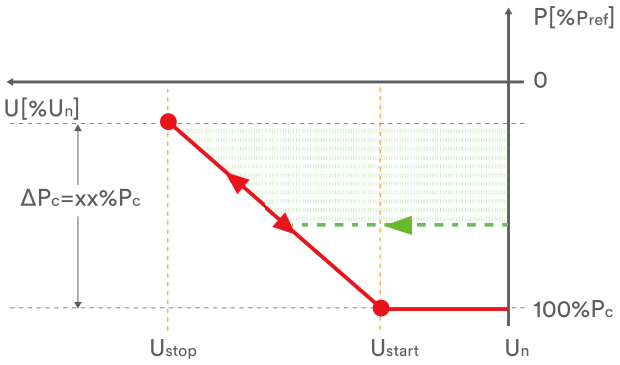
Active power increase "ΔP" between the start voltage point and the stop voltage point is defined the percentage of the inverter's nominal output active power (P_n).

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

The minimum delay time for active power recovery also can be configured. The active power is kept constant until the voltage falls below U_{reset} for a configurable delay time. Then the active power increase from the maximum regulating power to PM as a percent of P_n per minutes.

Fig. 54. Act. Power as percentage of P_n, hysteresis

Mode 3：Limit the charge power for Australia



P_n: Nominal output active power

P_M: the actual active power at the instant when the voltage reaches the threshold $U_{start.}$

P_C: Nominal charge power

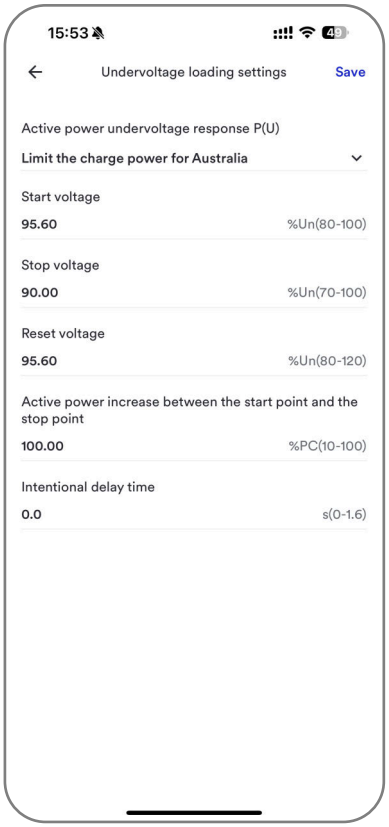
U_n: Nominal voltage

U_{reset}: Reset voltage

U_{start}: Start voltage

U_{stop}: Stop voltage

ΔP: Charging active power reduce between the start voltage point and the stop voltage point



This model applies to hybrid inverter according to AS/NZS 4777.2 and the other standards with similar requirements.

Charging active power drop “ΔP” between the start voltage point and the stop voltage point is defined the percentage of P_C.

If the inverter is operating above the limit curve, the charging active power does not need to be reduced; if the inverter is operating below the limit curve, the charging active power needs to be reduced to the limit curve.

An intentional delay time can be configured. The intentional delay time shall not be higher than 1.6s, because the total time for the intrinsic dead time and the intentional delay time shall less than 2s.

Fig. 55. Limit the charge power for Australia

5.2.5 Reactive power settings

5.2.5.1 Reactive power control model

Steady-state voltage stability is understood to be the reactive power supply by a power generating plant for the purpose of voltage stability in the distribution network. The steady-state voltage stability is intended to keep slow (quasi-steady-state) voltage changes in the distribution network within tolerable limits.

There are four modes which can be chosen for this function and certain parameters can be configured according to the requirement of the local grid company. Only one of the four reactive power control modes can be selected at one time.

Step 1: Select < Reactive power settings > to go to the next screen.

Step 2: Click < Reactive power control model > , the next page will display the parameters.

Step 3: Choose one of the reactive power control modes.

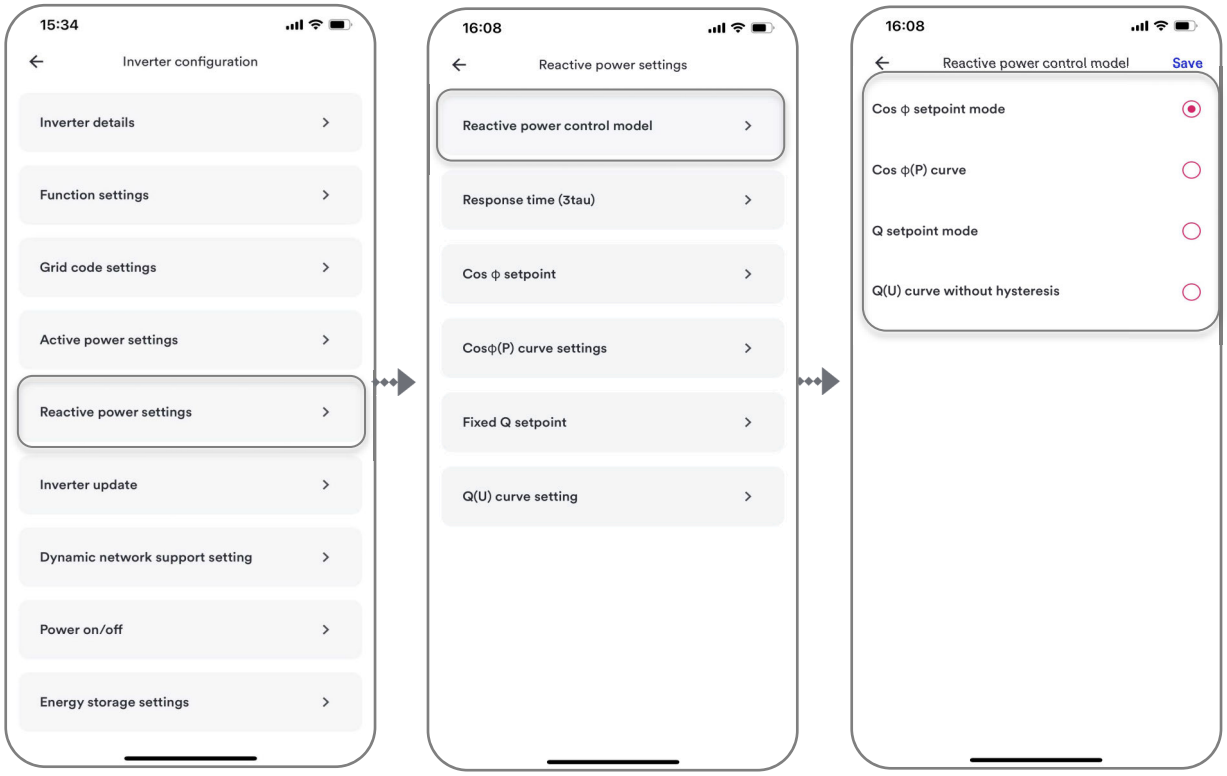
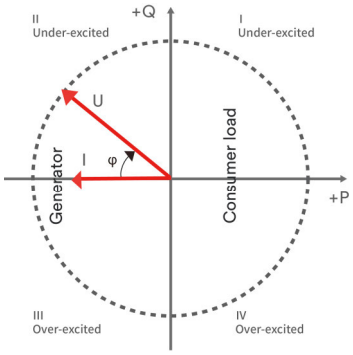


Fig. 56. Static reactive power

Information

From the perspective of the grid, the inverter behaves like a load in accordance with the national standard. This means that the inverter operates in quadrant II (under-excited) or III (over-excited).



Load-reference arrow system

Over-excited reactive power, also known as capacitive reactive power or leading power factor.

Under-excited reactive power, also known as inductive reactive power or lagging power factor.

5.2.5.2 Response time (3tau)

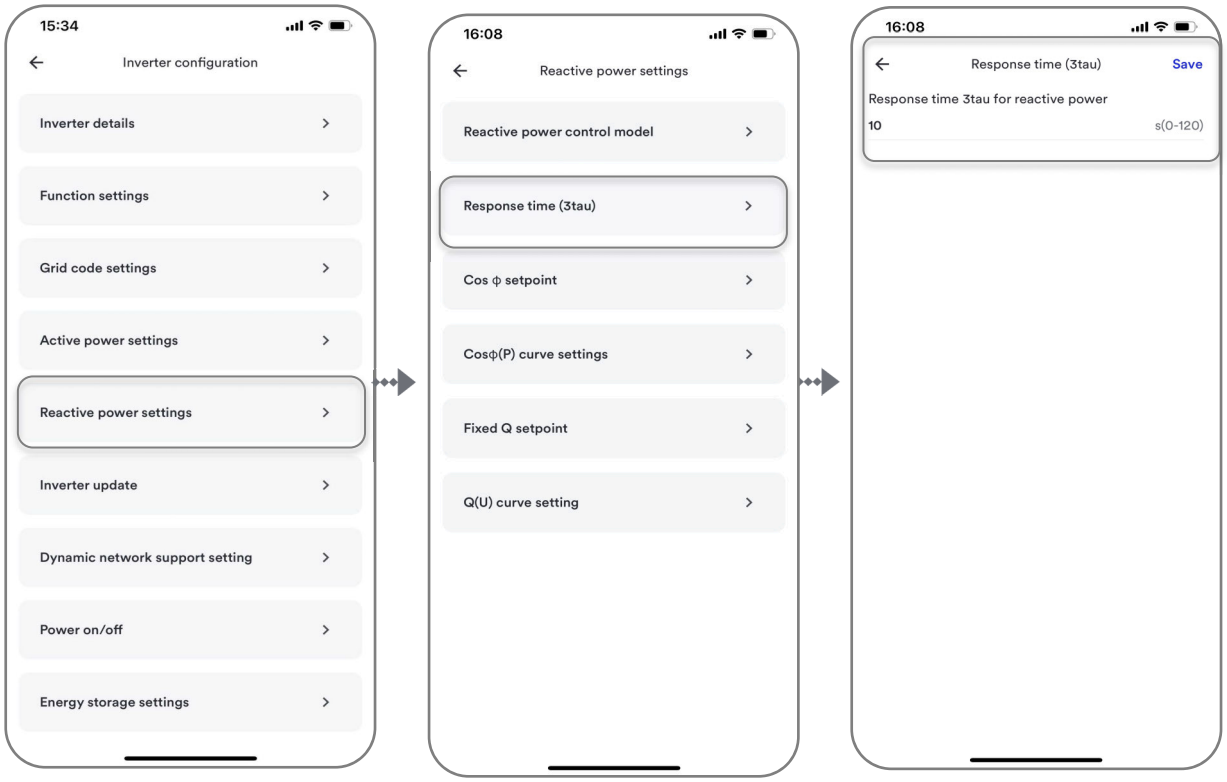
The dynamics of the reactive power control shall correspond with a first-order filter with a configurable time constant between 3 s and 60 s . That means 95% of a new setpoint must be achieved within three times the time constant. The reactive power settling time is defined as three times the time constant.

The response time (3 tau) is used for every reactive power control mode.

Step 1: Select < Reactive power settings > to go to the next screen.

Step 2: Click < Response time (3tau) > , the next page will display the parameters.

Step 3: Set the value and confirm with <Save>.



Step 1 Step 2 Step 3

Fig. 57. Response time (3tau)

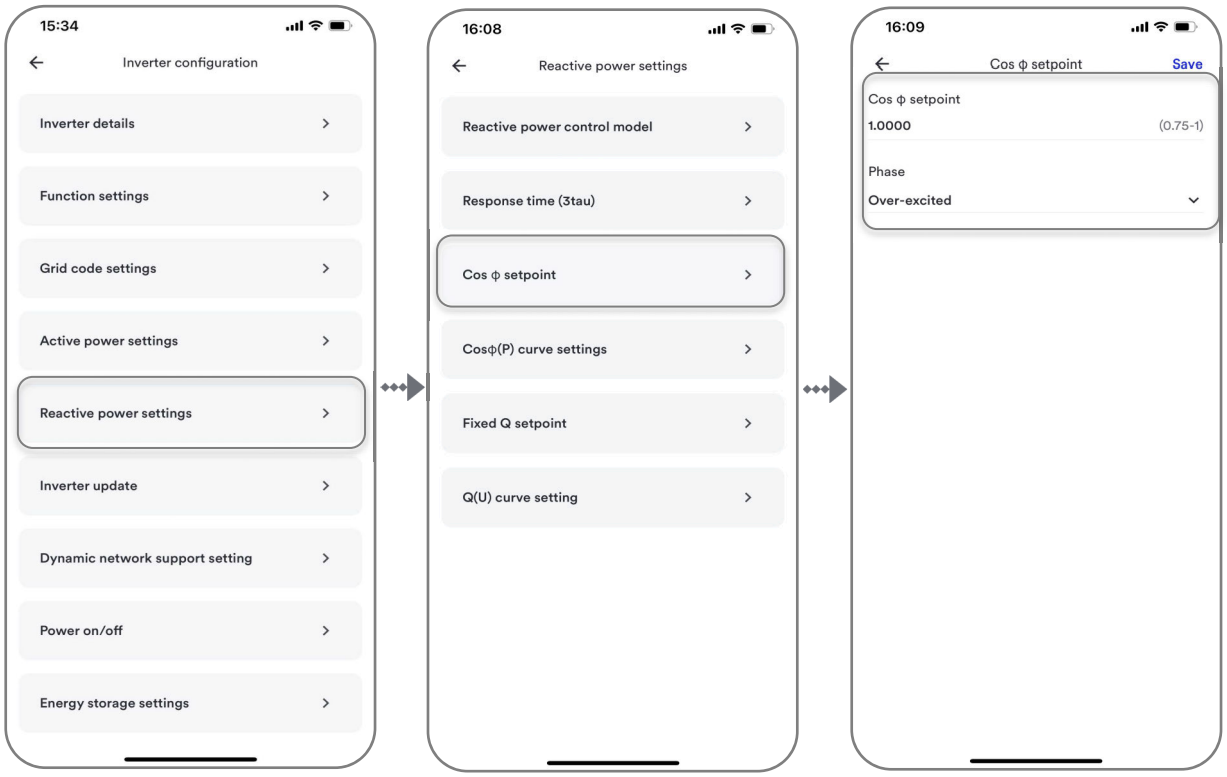
5.2.5.3 Cos φ setpoint

Cos φ setpoint mode control the cos φ of the output power according to a set point. Cos φ is defined the cosine of the phase angle between the fundamental components of a phase-to-earth voltage and of the current on the same conductor

Step 1: Select < Reactive power settings > to go to the next screen.

Step 2: Click < Cos φ setpoint> , the next page will display the parameters.

Step 3: Set Cos φ value and choose Over-excited or Under-excited from the drop-down field, then confirm with <Save>.



Step 1 Step 2 Step 3

Fig. 58. Define the cos-phi target value

5.2.5.4 Cos φ (P) curve settings

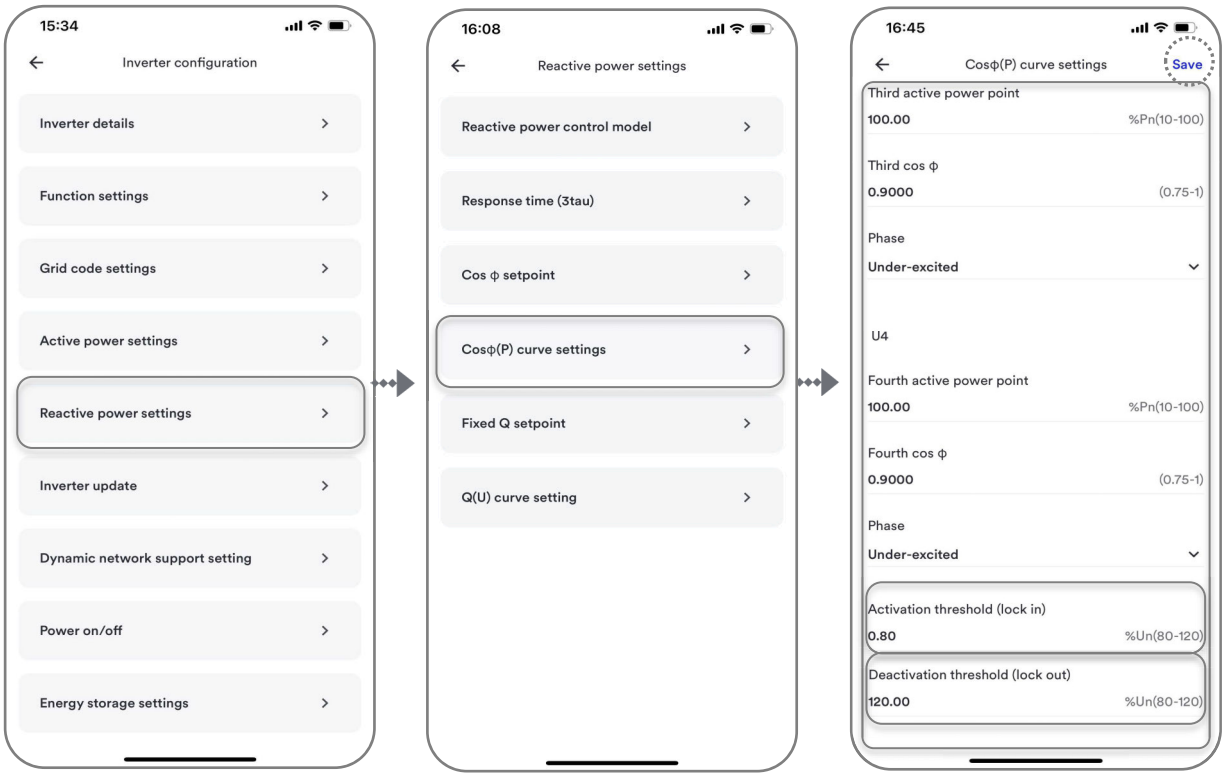
The power related control mode cos ϕ (P) controls the cos φ of the output as a function of the active power output.

Step 1: Select < Reactive power settings > to go to the next screen.

Step 2: Click < Cos φ (P) curve setting > , the next page will display the parameters.

Step 3: Set the value for the curve.

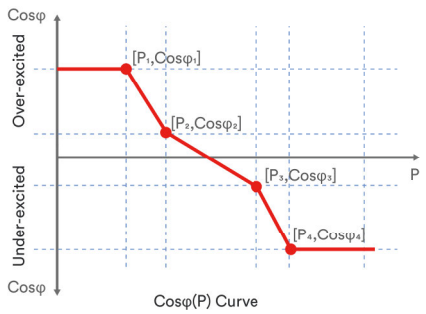
Step 4: Set the < Activation threshold > and < Deactivation threshold >, if available, and confirm with <Save>.



Step 1 Step 2 Step 3

Fig. 59. Set Cos (P) parameters

There are four adjustable coordinate points on the curve, as shown below



The horizontal axis of the coordinate point represents the percentage of P_n, and the vertical axis of the coordinate represents the cos φ value.

A grid operator can specify two voltage thresholds as a percentage of P_n to activate or deactivate the function. The voltage thresholds are normally referred to as the “Lock-In” and the “Lock-Out” voltage.

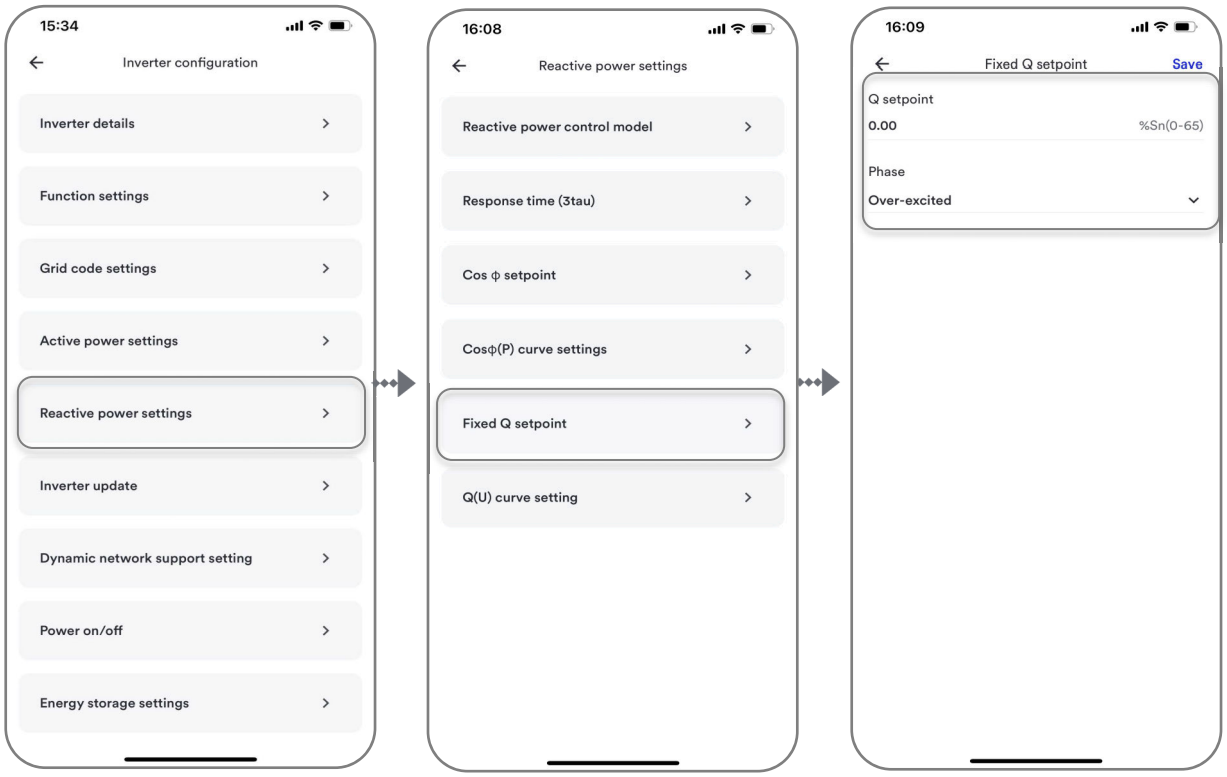
5.2.5.5 Fixed Q setpoint

Reactive power Q setpoint mode control the output reactive power according to a set point.

Step 1: Select < Reactive power settings > to go to the next screen.

Step 2: Click < Fixed Q setpoint> , the next page will display the parameters.

Step 3: Set reactive power Q value as the percentage of Sn and choose Over-excited or Under-excited from the drop-down field, then confirm with <Save>.



Step 1 Step 2 Step 3

Fig. 60. Define Q target value

5.2.5.6 Q(U) curve setting

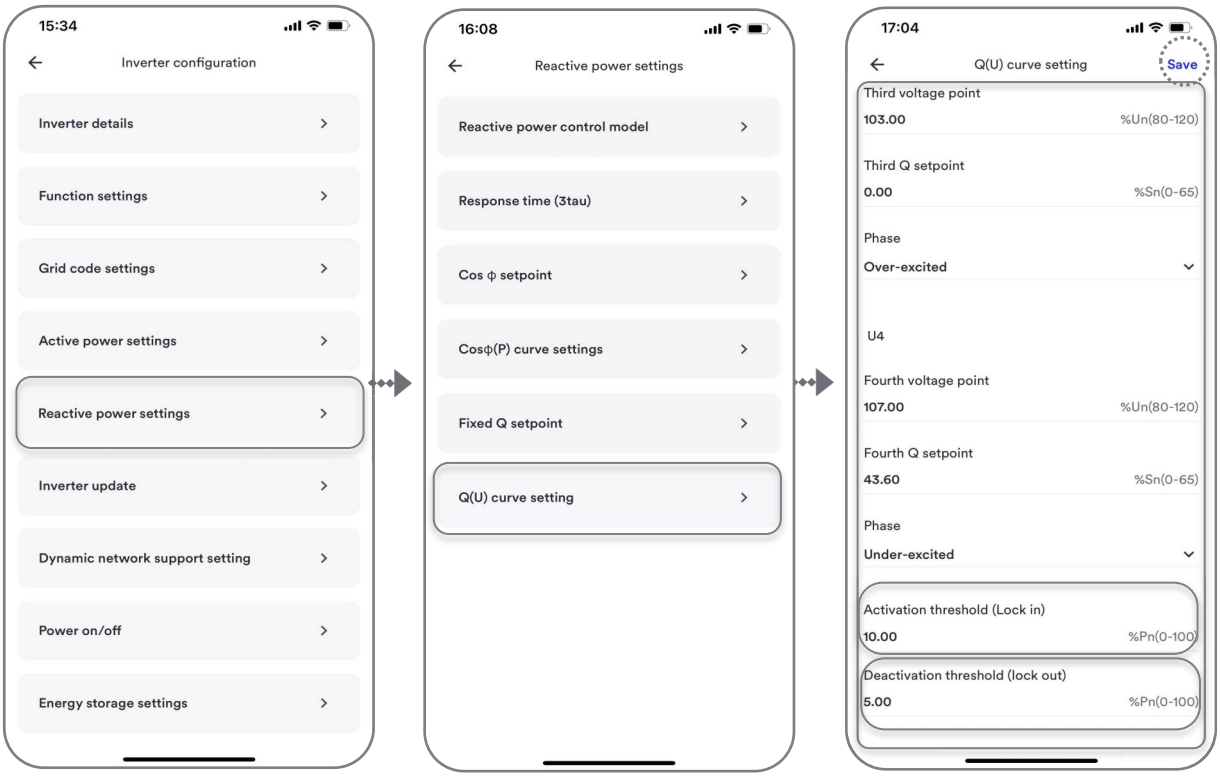
The voltage related control mode Q (U) controls the reactive power output as a function of the voltage.

Step 1: Select < Reactive power settings > to go to the next screen.

Step 2: Click < Cos φ setpoint> , the next page will display the parameters.

Step 3: Set the value for the curve.

Step 4: Set the < Activation threshold > and < Deactivation threshold >, if available, and confirm with <Save>.

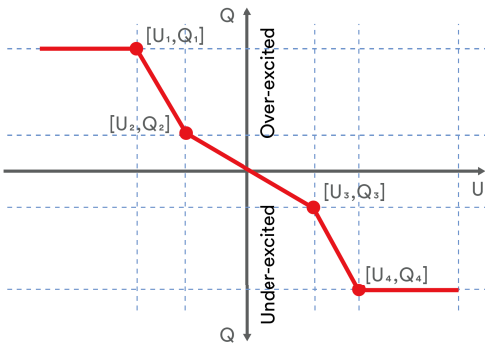


Step 1 Step 2 Step 3

Fig. 61. Set Q(U) parameters

Q(U) curve settings is as shown:

There are four adjustable coordinate points on the curve, as shown below



Q(U)Curve with non-hysteresis

The horizontal axis of the coordinate point represents the percentage of U_n, and the vertical axis of the coordinate represents the reactive power Q value.

A grid operator can specify two voltage thresholds as a percentage of P_n to activate or deactivate the function. The voltage thresholds are normally referred to as the “Lock-In” and the “Lock-Out” voltage.

5.2.6 Inverter upgrade

> ***Note***
>
> Make sure that there is sufficient DC voltage which must be stable and higher than the starting voltage.
>
> Also note that the sequence of the firmware update for the associated *bin files must be observed. This process takes approx. 15 minutes. The files must not be renamed.
>
> Before updating the inverter, the firmware of the Communication device needs to be updated.

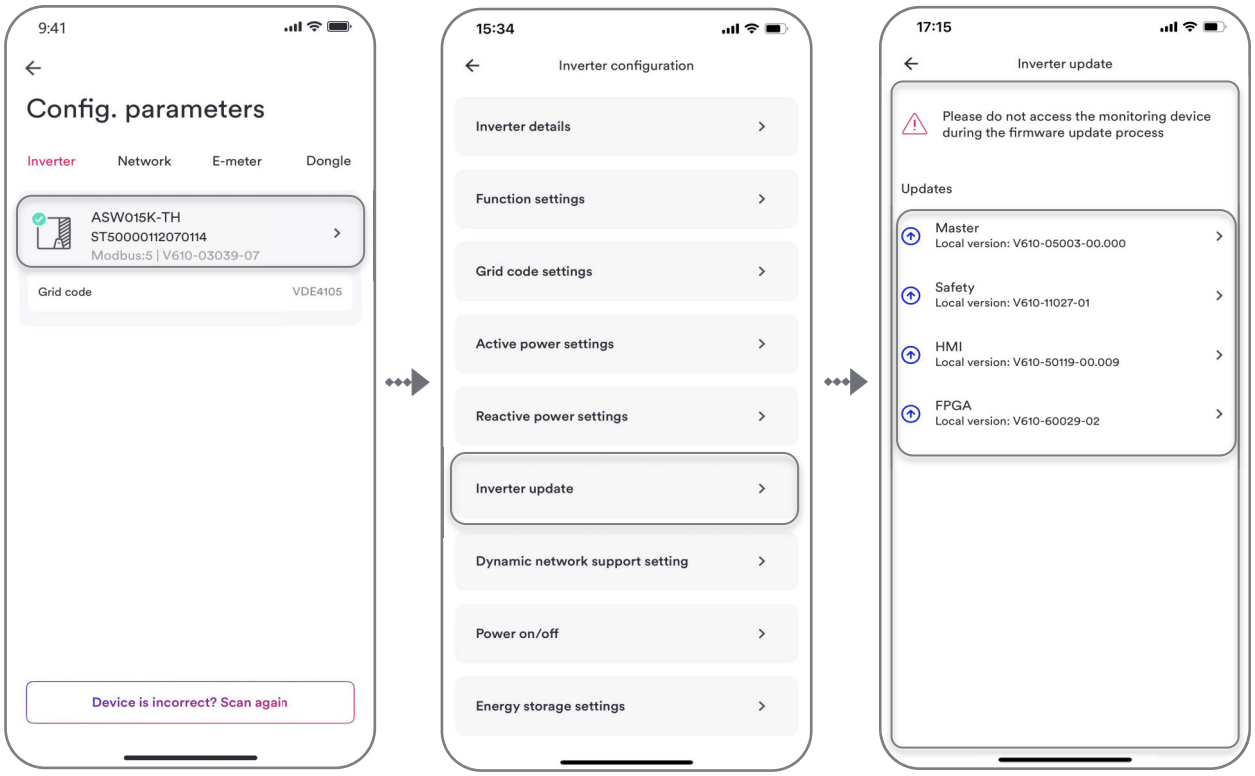
Step 1: Click on the inverter to go to the next screen.

Step 2: Click < Inverter upgrade >

Step 3: Click < Master/ >Save the firmware to your smart phone.

Step 4: Click the update button to find the firmware in your smart phone.

Step 5: Wait for the uploading and keep the power during the upgrade process, and the whole process will take about 10 minutes at least. After 10 minutes, you can check the firmware with the tool app.



Step 1 Step 2 Step 3

Fig. 62. Inverter upgrade

Sections 5.2.6.1 and 5.2.6.2 both describe only the HMI, but in reality the process of selecting an upgrade package in the phone is the same whether it is Master, Safety or FPGA.

5.2.6.1 Steps for storing Android upgrade files

The prerequisite for using this function is that the upgrade file has been placed in the phone's SDCARD (the file name cannot be modified, otherwise it will cause the upgrade to fail). The following steps are for Android operation. Please refer to“5.2.6.2 Steps for storing iOS upgrade files” for selecting the upgrade file.

Open the Solplanet application, refer to section 5.2.6 Open to the Inverter Upgrade page .

Step 1: HMI can be upgraded, downgraded, or upgraded to the same version. Click < HMI >go to the file selector (the current HMI version is comm V610-50119-00.009).

Step 2: Click on the More button in the upper left corner of the file selector to open the left menu.

Step 3: Click < Downloads > to go to the next screen.

Step 4: Click < WeiXin > to go to the next screen.

The paths shown below may vary depending on the brand of your phone. In this example, take HUAWEI Mate 30 as an example, the upgrade file is stored in Downloads Documents folder “WeiXin”, the actual upgrade file needs to be selected according to your storage location. Open the Documents folder.

Step 5: Select< commV610-50119-00.014.bin > to go to the next screen.

Step 6: Click <OK> to start sending the upgrade file.

Step 7: After successfully sending the upgrade file, go back to the homepage.

Note

Please wait for the upload and keep the power off during the upgrade process, the whole process will take at least 15 minutes. 15 minutes later, you can see the current version of the HMI has been changed to V610-50119-00.014, the upgrade is successful!

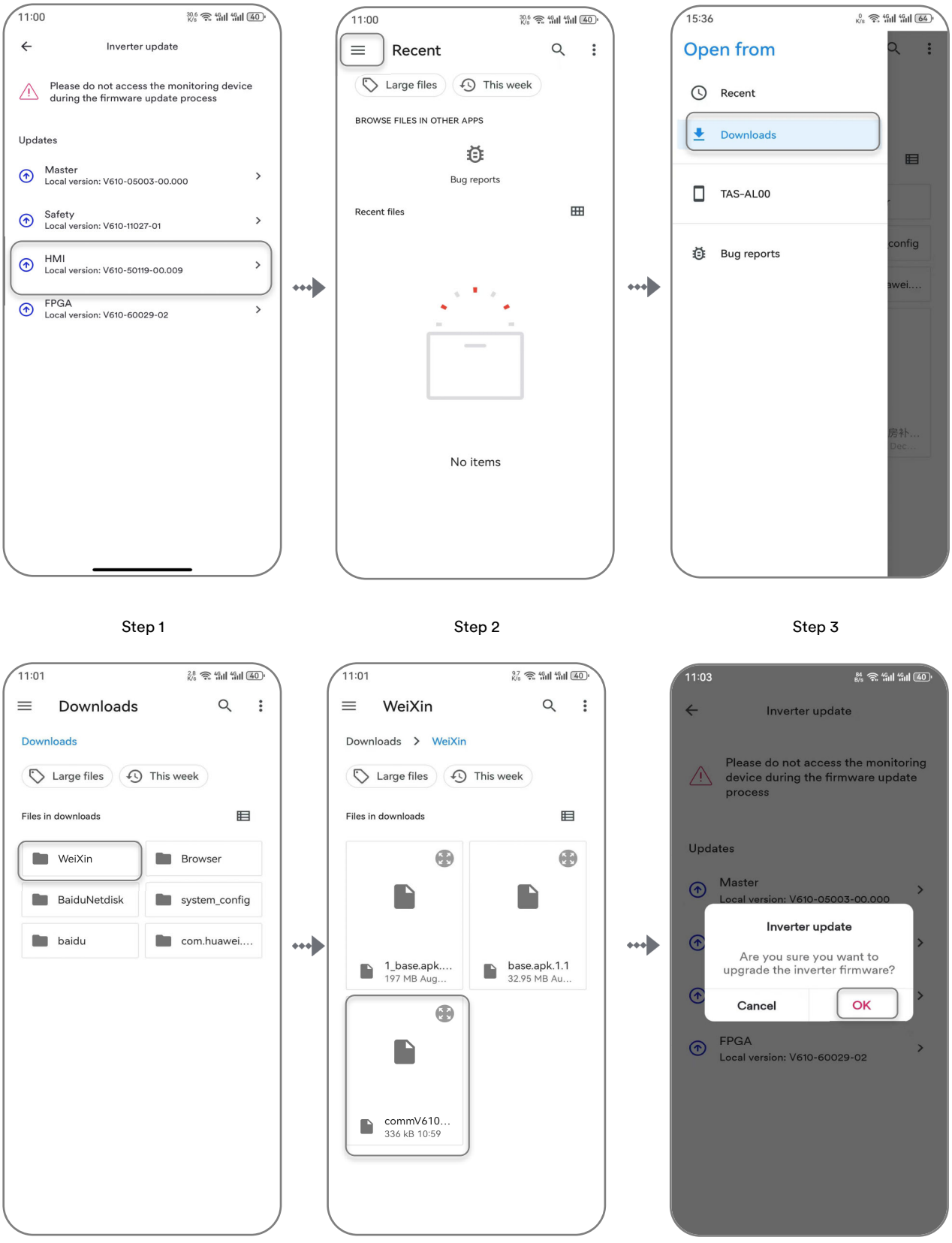
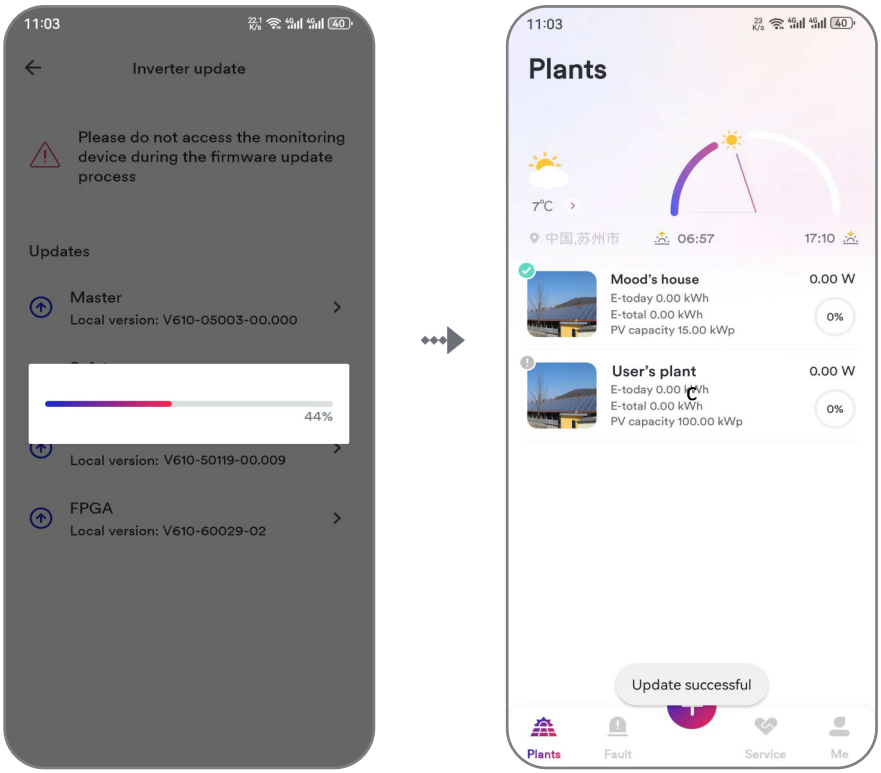


Fig. 63. Inverter upgrade



Step 6 Step 7

Fig. 64. Steps for storing Android upgrade files

5.2.6.2 Steps for storing iOS upgrade files

Step 1: Transfer the upgrade file to "Chat tool" and receive it (if using other instant messaging software, the operation steps are similar).

Step 2: Click<Open in Other App> and choose to open it using another app.

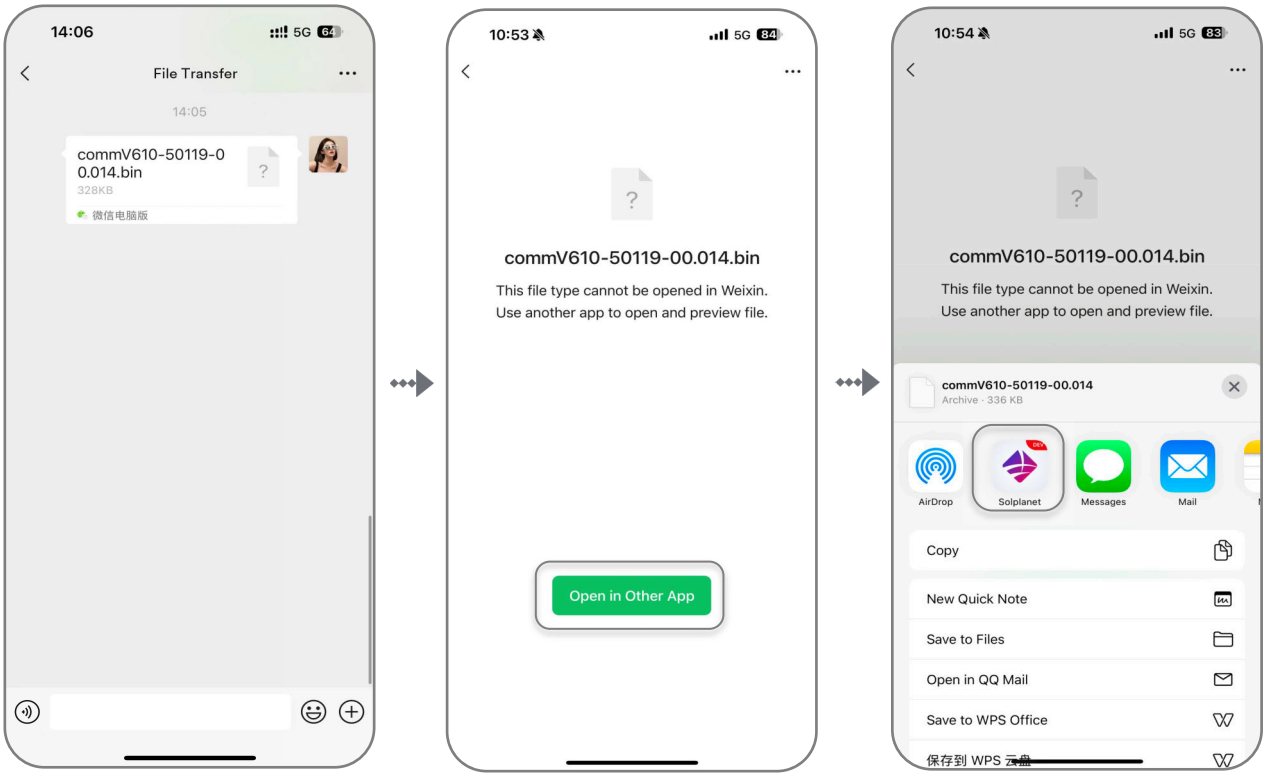
In the pop-up app list, select <Solplanet> to enter the Solplanet App. After the Solplanet App is opened normally, it indicates that the file has been saved locally and can be upgraded normally in the future.

Step 3: Open the Solplanet application, refer to section 5.2.6 Open to the Inverter Upgrade page and click < HMI> to go to the next screen.

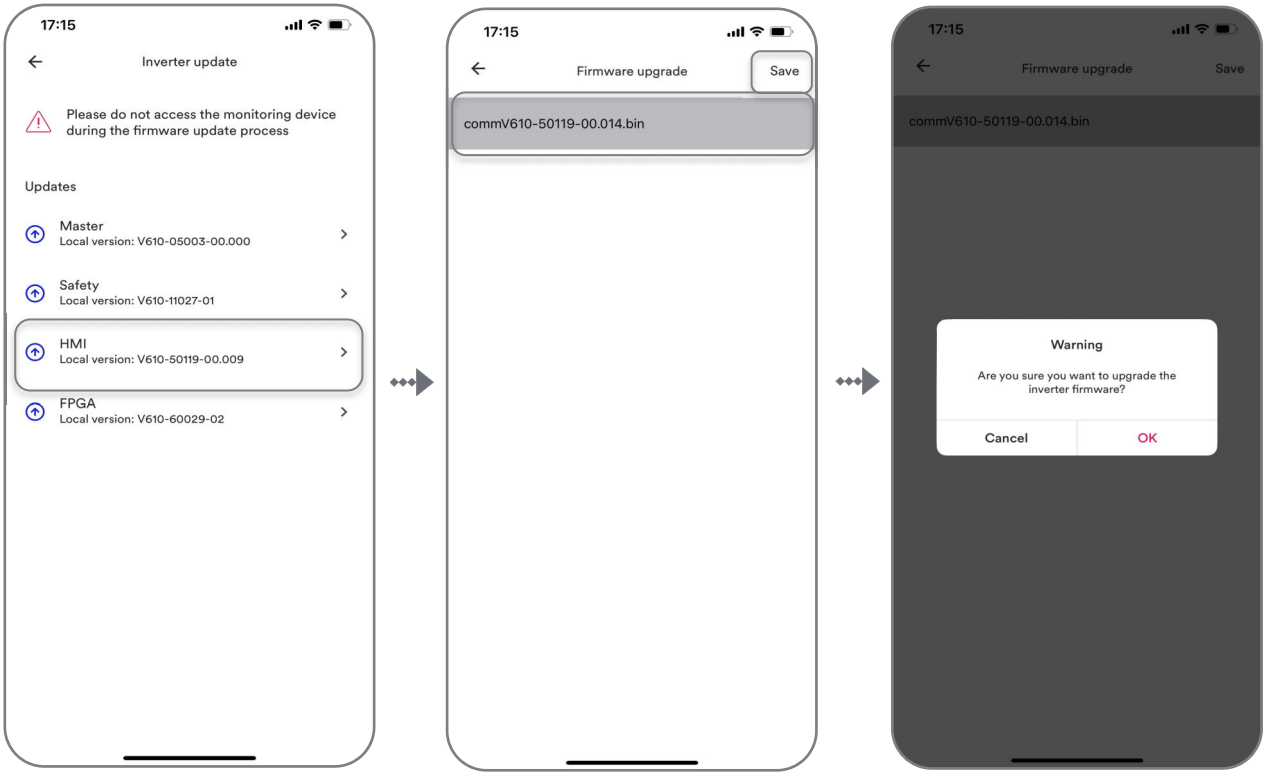
Step 4: Enter the software version selection page, select the version you want to upgrade, click <Save> to proceed with the upgrade.

Note

Please wait for the upload and keep the power off during the upgrade process, the whole process will take at least 15 minutes. 15 minutes later, you can see the current version of the HMI has been changed to V610-50119-00.014, the upgrade is successful!



Step 1 Step 2



Step 3 Step 4

Fig. 65. Steps for storing iOS upgrade files

5.2.7 Dynamic network support setting

The dynamic network stability is to prevent any unintentional disconnection of the generation power and the risk to the network stability involved, in the event of short-term voltage dips or rises.

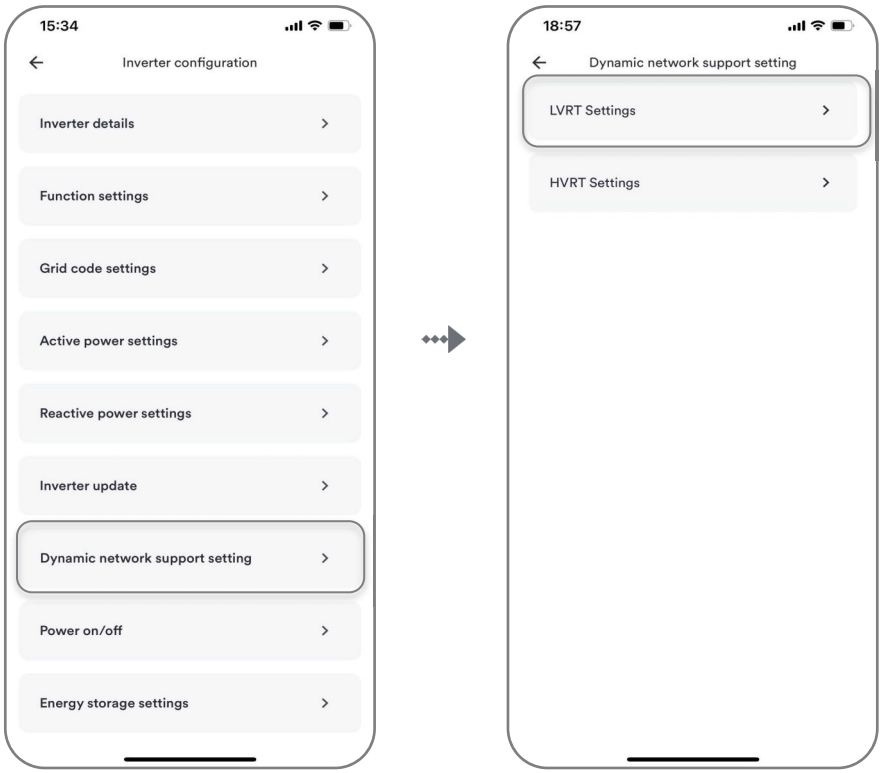
The dynamic network stability for voltage dips is normally called Under-voltage ride through (UVRT) or Low-voltage ride through (LVRT). And the function for voltage rises is called Over-voltage ride through (OVRT) or High-voltage ride through (HVRT).

5.2.7.1 LVRT Setting

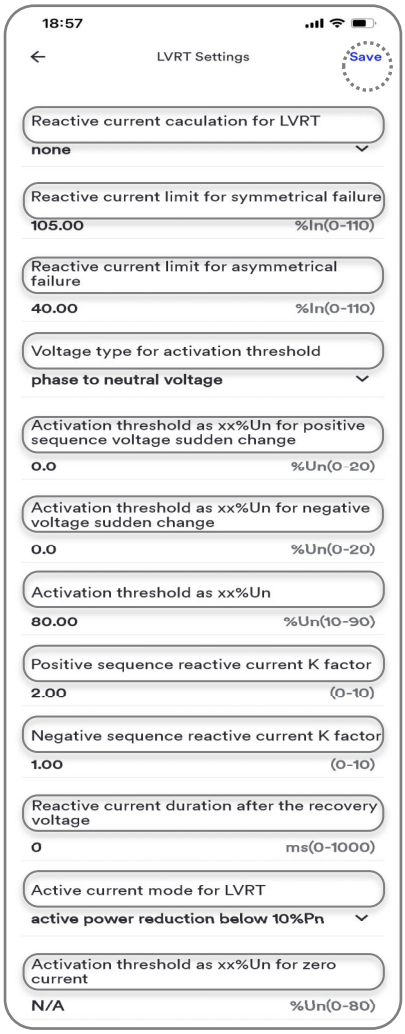
Step 1: Select < Dynamic network support setting > to go to the next screen.

Step 2: Click < LVRT Settings >

Step 3: Set and check all set parameters and confirm with <Save>.



Step 1 Step 2



Step 3

Fig. 66. Set LVRT parameters

Parameter	Description
Reactive current calculation for LVRT	The additional reactive current should be provided for voltage supporting and it can be chosen according to different standard. The “None” can be chosen if the additional reactive current is not need.
Reactive current limit for symmetrical failure Reactive current limit for asymmetrical failure	Some special standards maybe need set the different reactive current limited value for the asymmetrical failure and symmetrical failure.
Voltage type for activation threshold	The voltage type for activation threshold can be chosen as phase to phase voltage, phase to neutral voltage or positive sequence voltage.
Activation threshold as xx%U_n for positive sequence voltage sudden change Activation threshold as xx%U_n for negative sequence voltage sudden change Activation threshold as xx%U_n	The activation threshold for voltage sudden change and voltage dips can be set as the percent of the nominal voltage.
Positive sequence reactive current K factor Negative sequence reactive current K factor	The gradient k factor can be configurable in the range of 0 – 10.
Reactive current duration after the recovery voltage	Some special standards maybe require the reactive current continues to be output for a period time after the grid voltage returns to normal range.

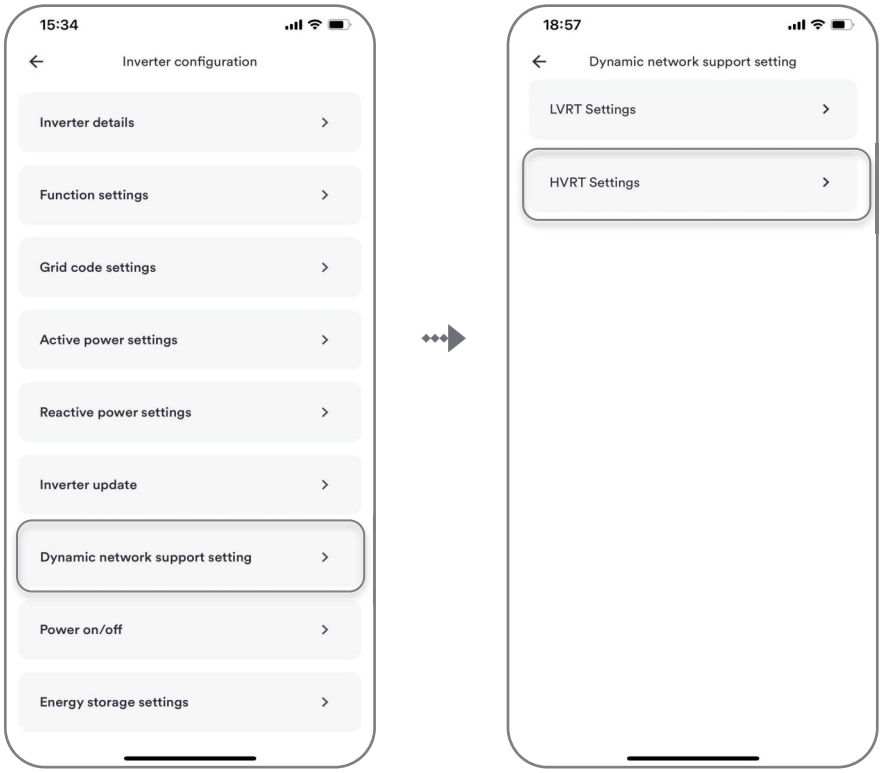
Active current mode for LVRT	The active current mode during the LVRT also can be chosen according to different standard.
Activation threshold as xx%U_n for zero current	Some special standards maybe require the current reduce down to or below 10 % of the rated current as fast as technically feasible when the voltage falls below a configured zero current thresholds.

5.2.7.2 HVRT Setting

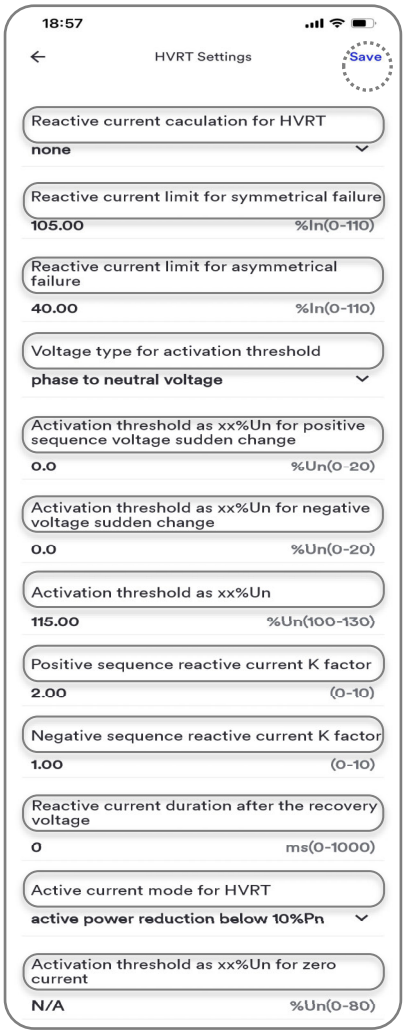
Step 1: Select < Dynamic network support setting > to go to the next screen.

Step 2: Click < HVRT Settings >

Step 3: Set and check all set parameters and confirm with <Save>.



Step 1 Step 2



Step 3

Fig. 67. Set HVRT parameters

Parameter	Description
Reactive current calculation for HVRT	The additional reactive current should be provided for voltage supporting and it can be chosen according to different standard. The “None” can be chosen if the additional reactive current is not need.
Reactive current limit for symmetrical failure Reactive current limit for asymmetrical failure	Some special standards maybe need set the different reactive current limited value for the asymmetrical failure and symmetrical failure.
Voltage type for activation threshold	The voltage type for activation threshold can be chosen as phase to phase voltage, phase to neutral voltage or positive sequence voltage.
Activation threshold as xx%U_n for positive sequence voltage sudden change Activation threshold as xx%U_n for negative sequence voltage sudden change Activation threshold as xx%U_n	The activation threshold for voltage sudden change and voltage dips can be set as the percent of the nominal voltage.
Positive sequence reactive current K factor Negative sequence reactive current K factor	The gradient k factor can be configurable in the range of 0 – 10.
Reactive current duration after the recovery voltage	Some special standards maybe require the reactive current continues to be output for a period time after the grid voltage returns to normal range.

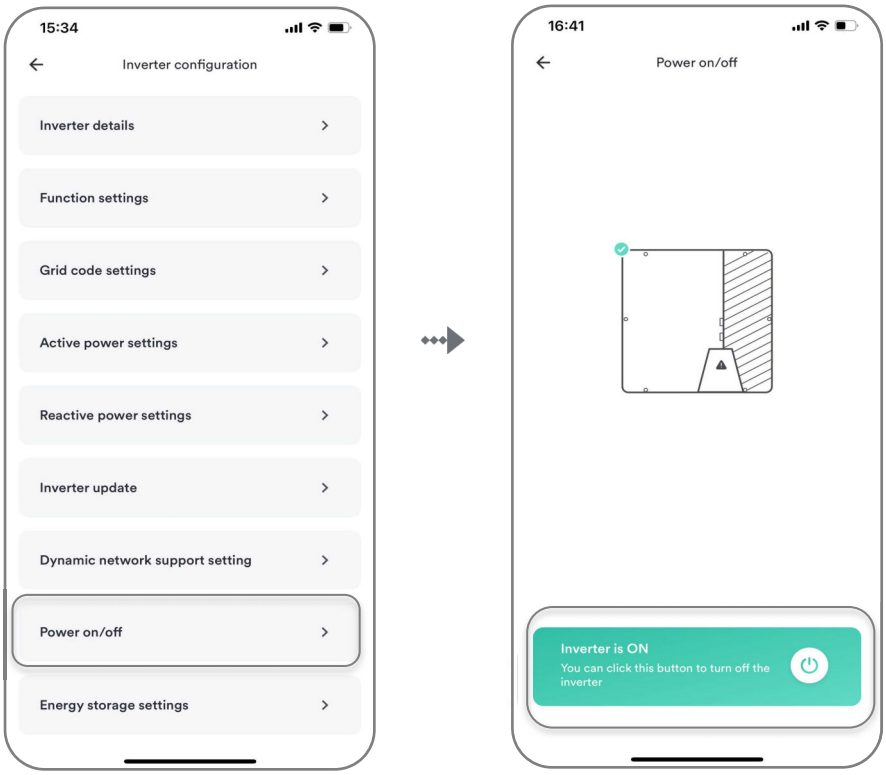
Active current mode for HVRT	The active current mode during the HVRT also can be chosen according to different standard.
Activation threshold as xx%U_n for zero current	Some special standards maybe require the current reduce down to or below 10 % of the rated current as fast as technically feasible when the voltage falls below a configured zero current thresholds.

5.2.8 Power on/off

If the local grid company has special needs, the inverter can be turned on and off remotely.

Step 1: Select < Power on/off > to go to the next screen.

Step 2: You can click this button to turn off the Inverter.



Step 1 Step 2

Fig. 68. Power on/off

5.2.9 Energy storage settings

5.2.9.1 Battery settings

It is necessary to set the parameters of the battery during commissioning or when changing the operating mode of the hybrid inverter.

Step 1: Select < Energy storage settings >.

Step 2: Click < Battery settings> , the next page will display the settings.

Step 3: Set the relevant value and select the working mode.

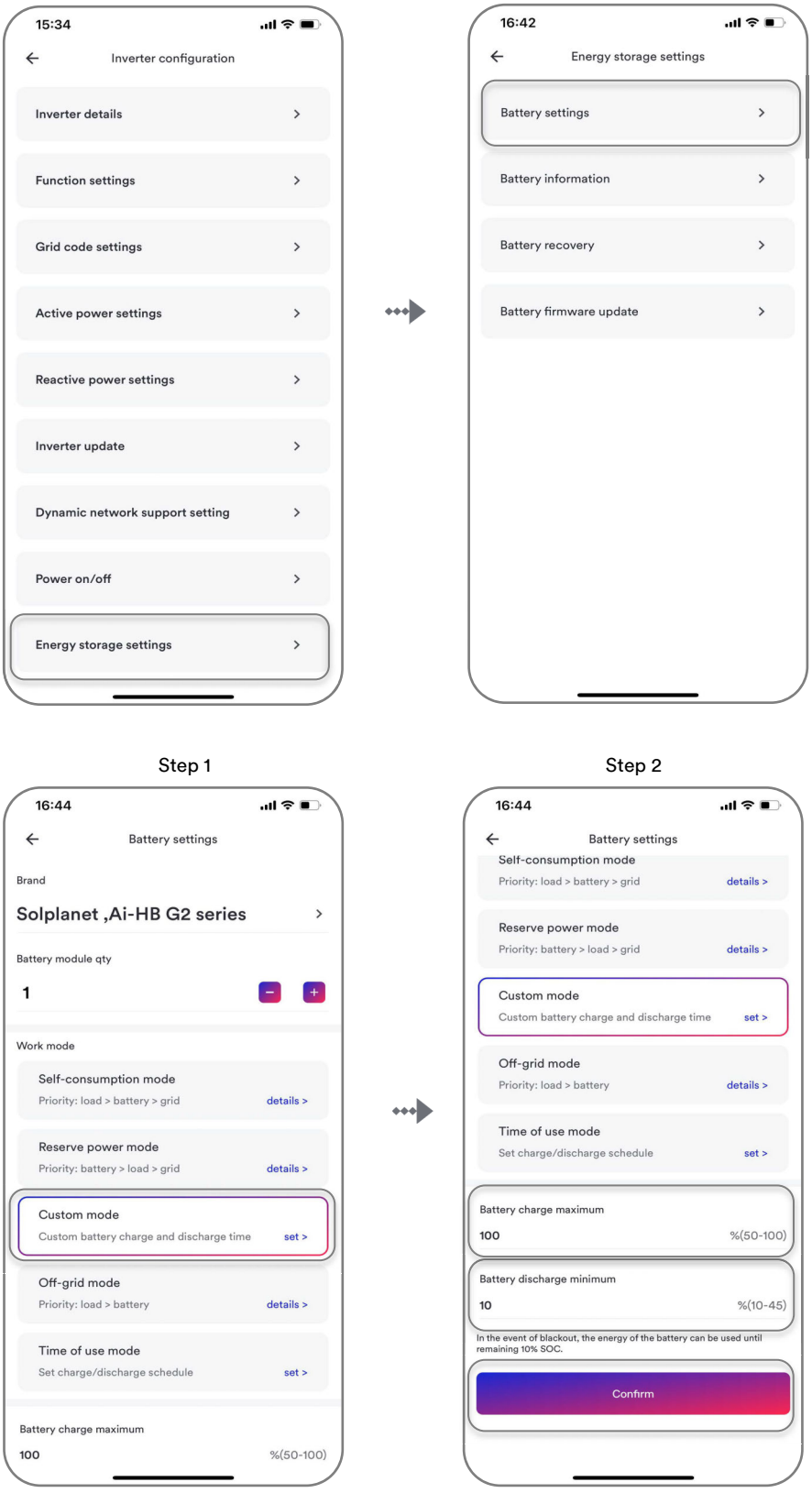


Fig. 69. Setting working mode

Introduction to battery working mode

Self-consumption mode

In this mode, when there is sufficient sunlight, the photovoltaic system supplies power to the household loads, and any excess energy is first used to charge the battery, and the remaining surplus energy can then be sold to the grid. When sunlight is insufficient and solar energy alone cannot meet the household's power demand, the battery discharges to help supply the load along with the solar energy. If the battery is also insufficient, the grid provides the remaining power required to meet the household's needs.

The priorities for using energy from the photovoltaic system are as follows:

Load＞Battery＞Grid

Reserve storage mode

In this mode, the photovoltaic system always prioritizes charging the battery first. Once the battery is fully charged, any excess energy is used to power the household loads, and if there is still surplus energy, it is sold to the grid. This mode is primarily intended for emergency situations, such as power outages, to ensure that the power supply to critical loads is not disrupted.

The priorities for using energy from the photovoltaic system are as follows:

Load＞Battery＞Grid

Custom mode

In this mode, you can customize the charging power and the corresponding charging time period, as well as the discharging power and its respective time period. This mode is mainly used to reduce peak loads and fill valleys, ensuring smooth input and output power for the grid.

Off-grid mode

In this mode, when there is sufficient sunlight, the photovoltaic system supplies power to the household loads, and any excess energy is first used to charge the battery. When sunlight is insufficient and solar energy alone cannot meet the household's power demand, the battery discharges to help supply the load along with the solar energy. This mode is used when there is no grid.

The priorities for using energy from the photovoltaic system are as follows:

Load＞Battery

Time of use mode

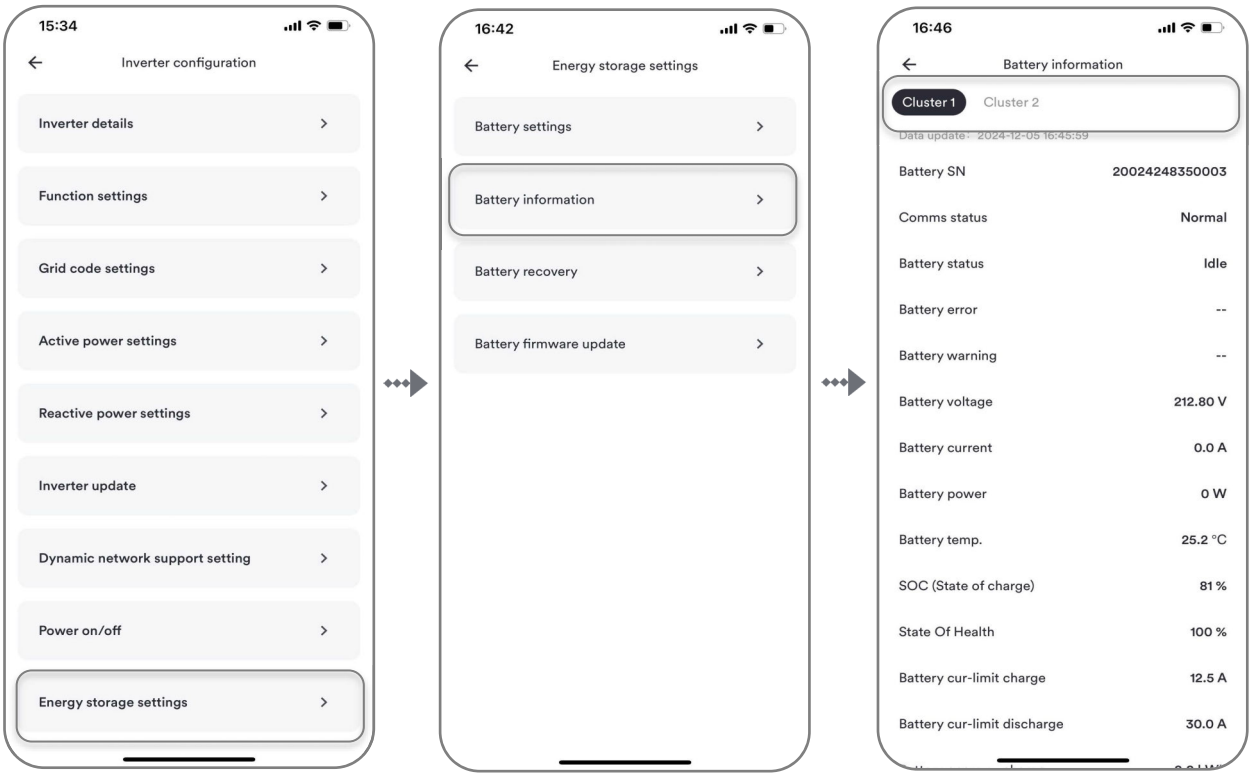
Normally, the hybrid inverter operates in self-consumption mode. When the battery's State of Charge (SOC) drops below a specified threshold, the inverter automatically switches to reserve storage mode.

5.2.9.2 Battery information

In the case of replacing a new battery, the basic information of the battery can be queried.

Step 1: Select < Energy storage settings >.

Step 2: Click < Battery information> , the next page will display the Battery information.



Step 1 Step 2

Fig. 70. Battery information

5.2.9.3 Battery recovery

Some energy storage batteries in a dormant state need to be activated or "awakened" to function properly, typically by applying a low-level charge.

Step 1: Select < Energy storage settings >.

Step 2: Click < Battery recovery > to go to the next screen.

Step 3: Click < Battery recovery >

Note
Please do not access the monitoring device during the battery recovery process.

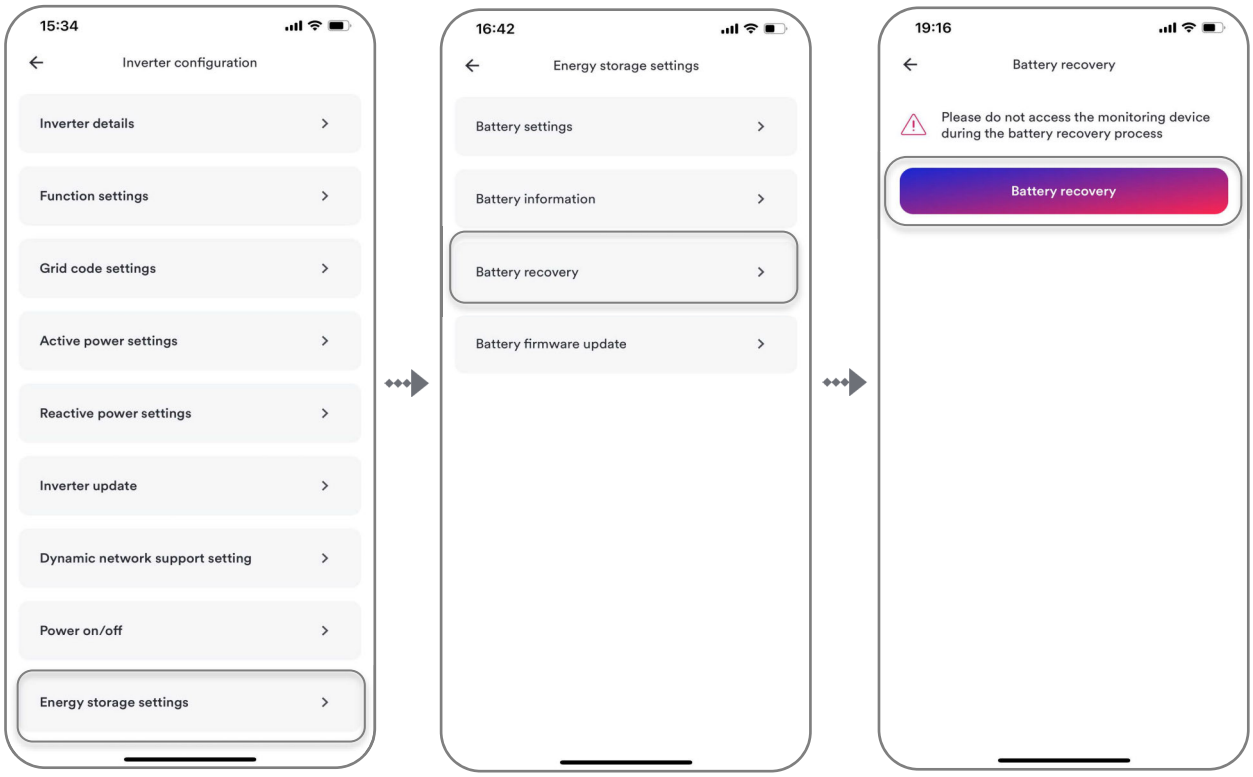


Fig. 71. Battery recovery

5.2.9.4 Battery firmware update

In some cases, such as when the communication protocols of the battery and the inverter are incompatible, it may be necessary to update the battery firmware.

Step 1: Select < Energy storage settings >.

Step 2: Click < Battery firmware update > to enter the next screen.

Step 3: Click <Battery software> to update.

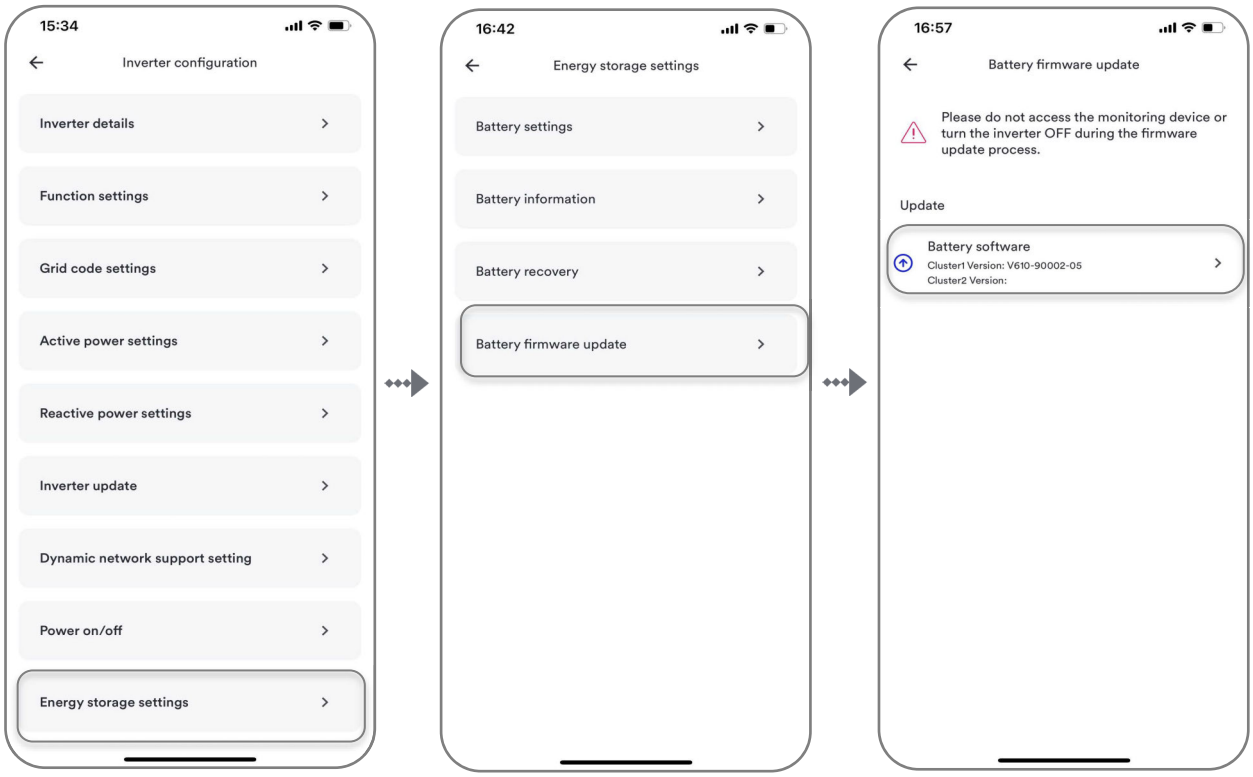


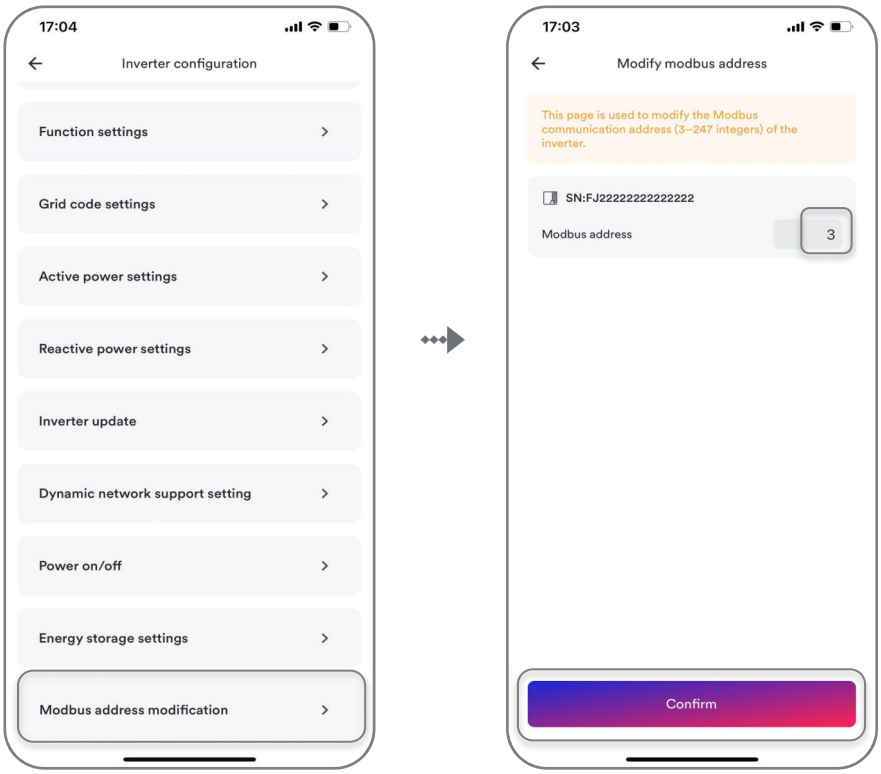
Fig. 72. Battery firmware update

5.2.10 Modify Modbus address

Normally, there is no need to set the inverter's ModBus address, as the communication device will automatically assign an address to the inverter. However, in some special cases, the inverter's ModBus address may need to be arranged in a specific order, and in such cases, the address must be set manually.

Step 1: Select <Modbus address modification>.

Step 2: If necessary, enter a new value for inverter and <Confirm> after entering.



Step 1 Step 2

Fig. 73. Modify Modbus address

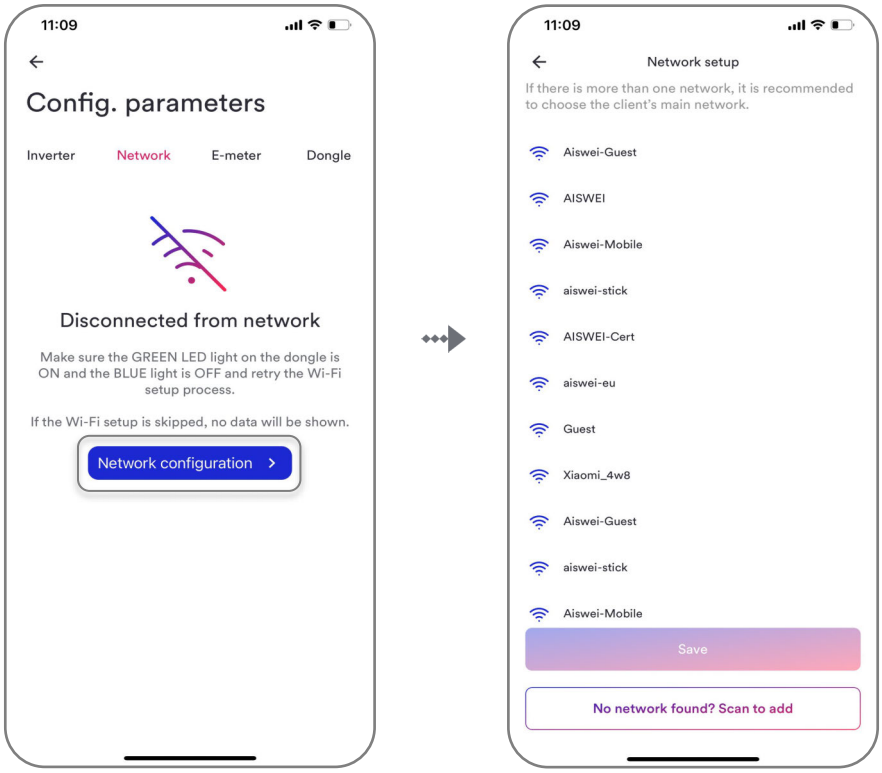
5.3 Network

During the commissioning phase, the communication network is typically configured. However, in some cases, such as when the router is replaced, the network connection may need to be reconfigured.

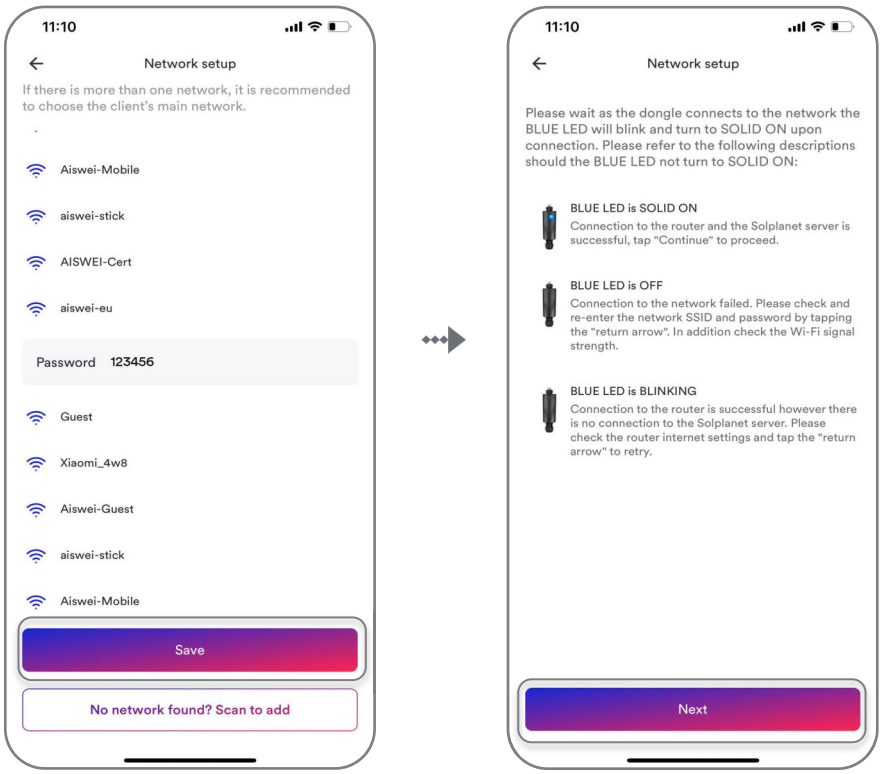
Step 1: Click <Network configuration> and get the router SSID nearby the dongle.

Step 2: Choose the right router SSID and enter the password and click <Save>. You can determine if the router is successfully connected by checking the status of the blue LED light. Click <Next> to exit.

- **Blue LED off**: The dongle is unable to connect to the router, possibly due to an incorrect password or being too far from the router.
- **Blue LED flashing**: The dongle is connected to the router, but unable to connect to the cloud server.
- **Blue LED on**: The dongle is successfully connected to both the router and the cloud server.



Step 1



Step 2

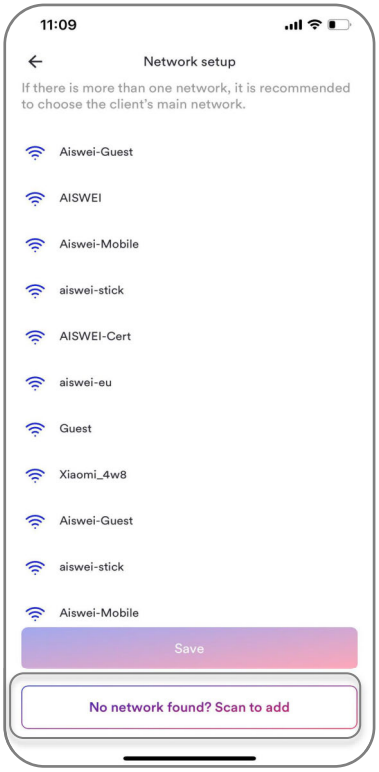
Fig. 74. Network - router configuration

If the SSID is not found in the Wi-Fi list, you can manually add the SSID.

Step 1: Click < No network found? Scan to add> to go to the next screen.

Step 2: Click < Manual input> to enter the next screen.

Step 3: Enter the SSID and password, and then click <join>.



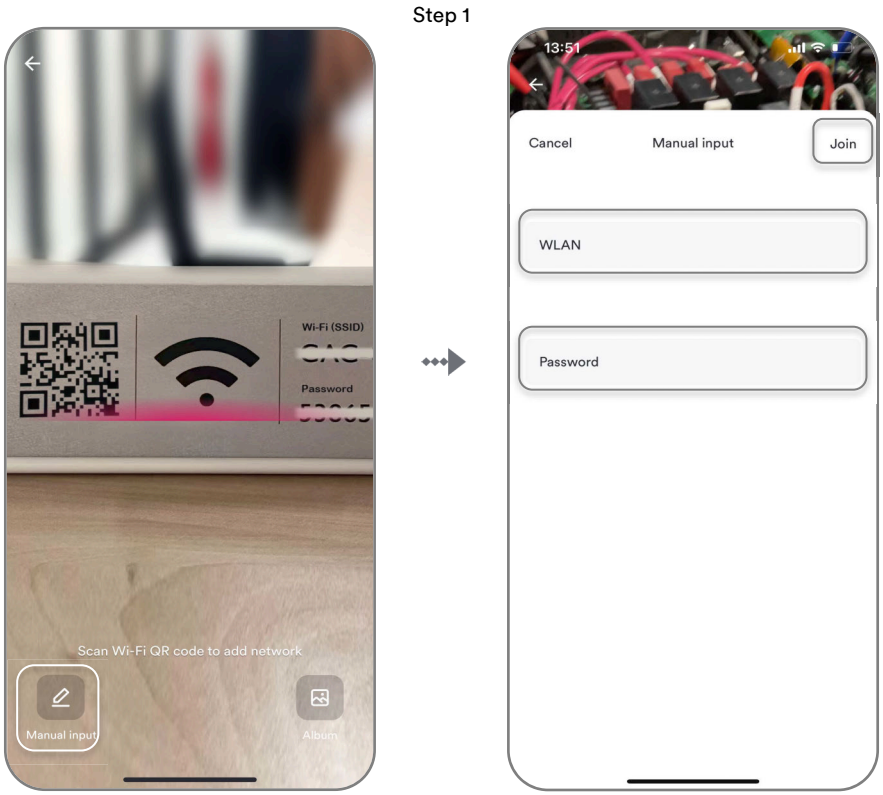


Fig. 75. Network - router configuration manually

5.4 E-meter (Export active power control)

During the commissioning phase, the export power control is typically configured. However, in some cases, such as when the smart meter is replaced, the export power control may need to be reconfigured.

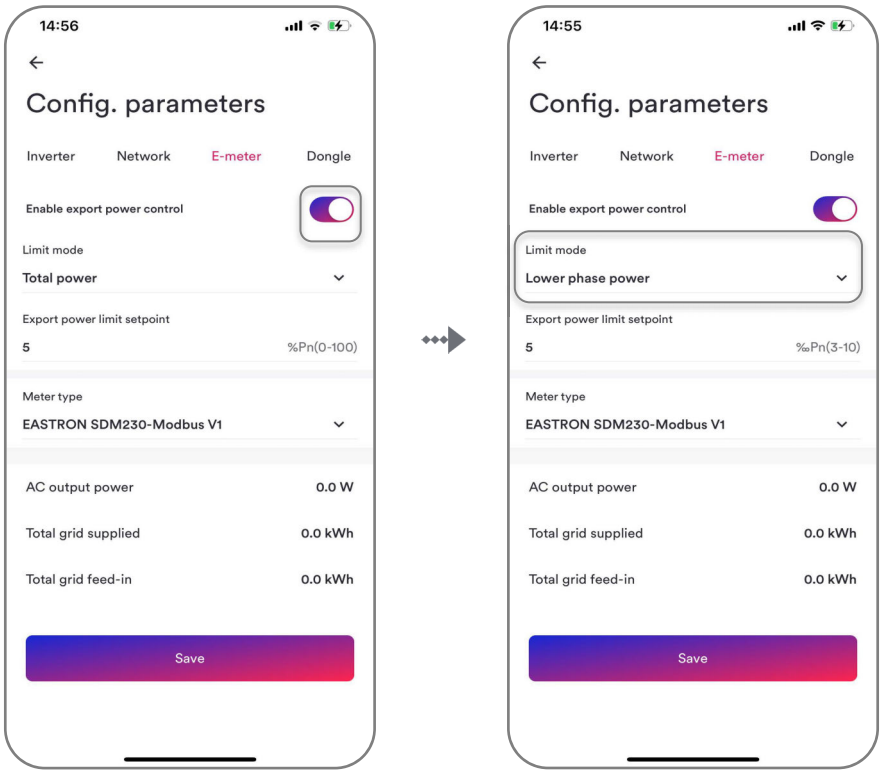
Note

Only smart meters that are compatible with the communication protocol of Solplanet products can be used. The following smart meter models are compatible with Solplanet products:

Manufacture	Model
EASTRON	SDM230-Modbus V1
	SDM120CT(40mA)
	SDM630MCT V2
	SDM630-Modbus V2
CHINT	DTSU666
	DDSU666
	DDSU666(40mA)
	DTSU666 (40mA)
Acrel	ADL400N-CT
STMHALL	CT
Solplanet	CT

Step 1: Click< Enable export power control> button to turn on or off the active power limitation function. Target power limit needs to be set after enabling active power limitation function.

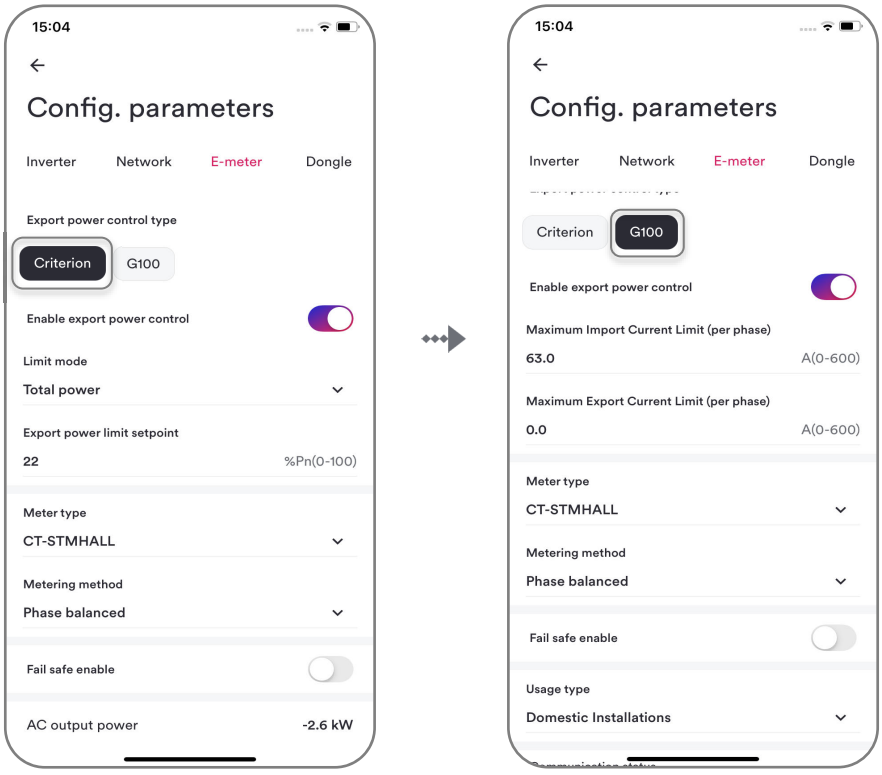
Step 2: Set the anti-reverse flow function as you want and click Save



Step 1 Step 2

Fig. 76. Active power limitation setting

When the meter supports G100 function, the control type displays Criterion and G100.



Step 1 Step 2

Fig. 77. G100

5.5 Dongle

The basic information of the smart dongle can be viewed in this page.

1. View the status of cloud platform connection: normally connection to the cloud platform is indicated by a green tick; abnormal connection to the cloud platform is indicated by a red exclamation mark, the network exception code is in parentheses, and the code description is shown in appendix 2.
2. Click < Current time> button to synchronize the phone's time to the monitoring device. If the monitoring device can access the cloud platform through the external network, the monitoring device will be synchronized with the time of the cloud platform.
3. Click < Reset smart dongle > button will restore the factory settings. You need to reconfigure the network before you can use it. For details, see 5.3 Network.
4. Click < Restart smart dongle > button will restart the Smart Dongle. You need to rescan and configure parameters in the App.

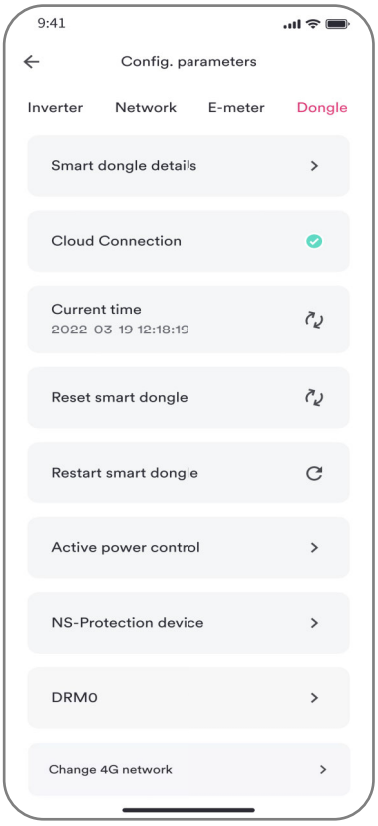


Fig. 78. Support to change 4G

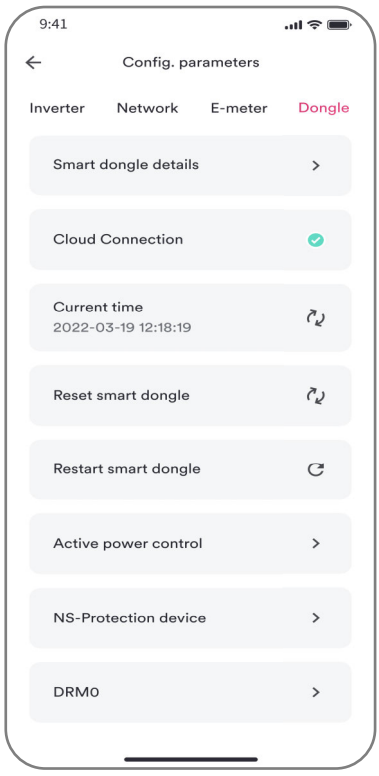


Fig. 79. Not support to change 4G

5.5.1 Dongle firmware upgrade

If the communication device firmware is not up to date, you can download the latest version of the firmware to your mobile phone via the mobile network and then transfer it to the dongle for upgrading.

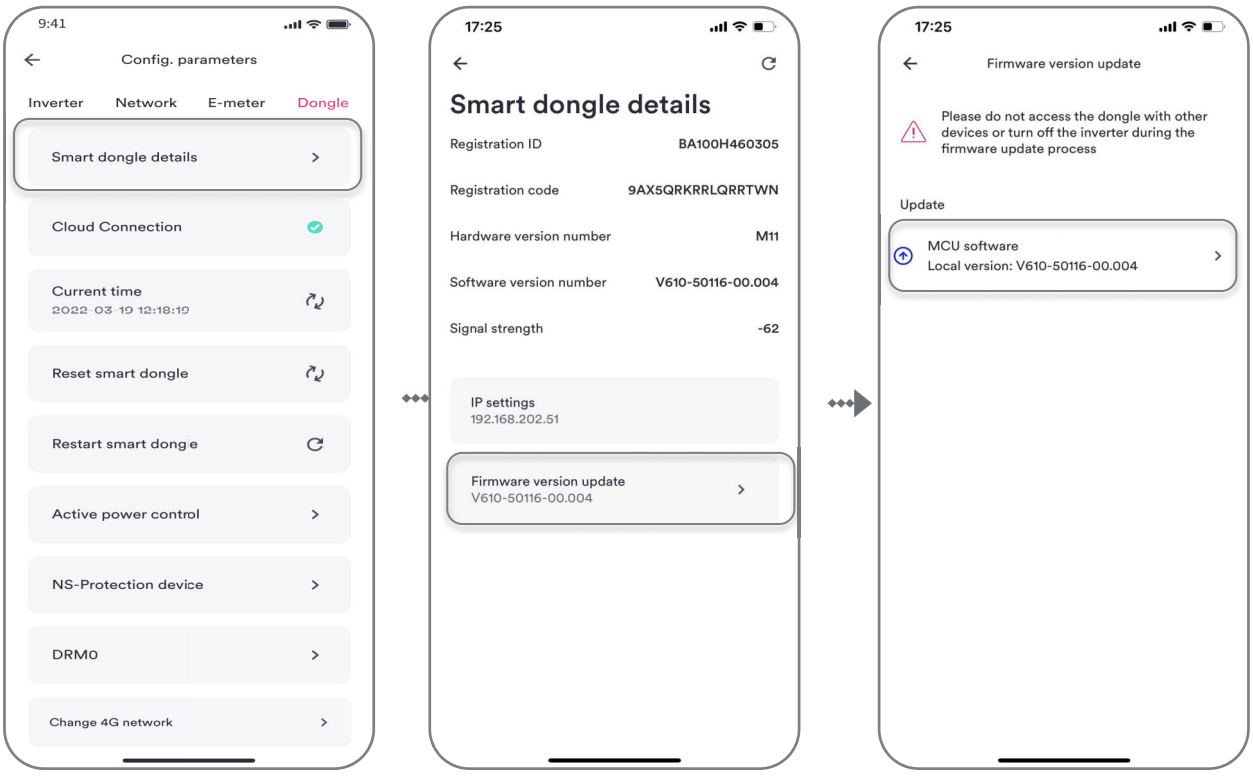


Fig. 80. Dongle firmware upgrade

5.5.2 Active power control (Ripple control receiver settings)

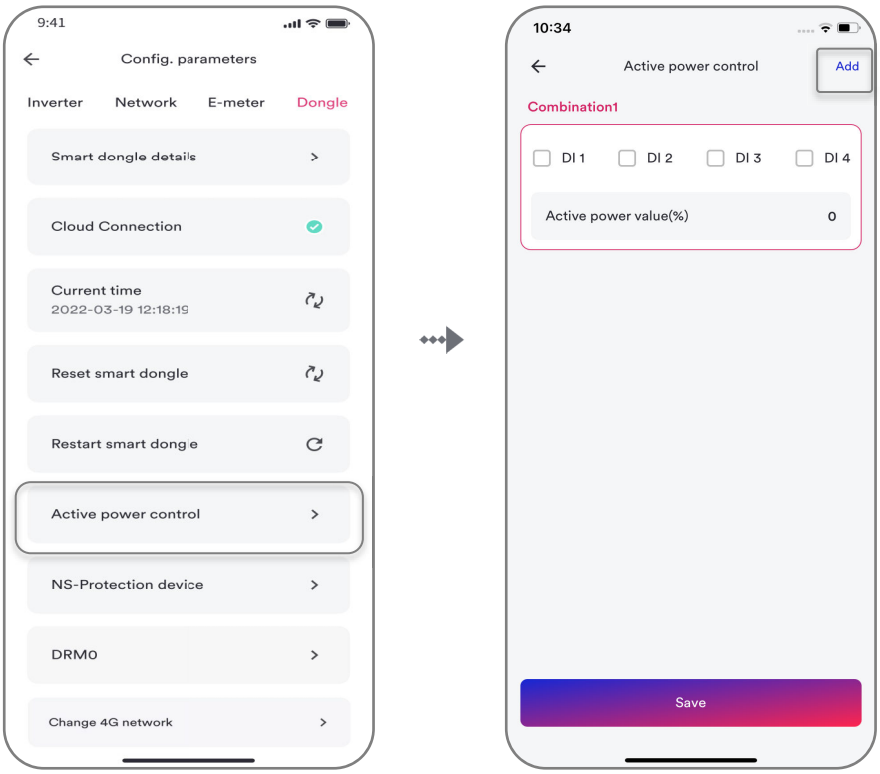
Network security management requires that the power generation systems and storage systems must be able to reduce their active power to a value specified by the network operator at the network connection point without disconnecting from the network. Normally the grid company maybe use the ripple control receiver to do Network security management in Germany.

The states of the four digital input signal ports connected to the ripple control receiver can be customized to correspond to specific active power limits. Each combination of these input states can be configured to define a unique active power threshold, allowing for flexible control and adjustment based on the system's requirements.

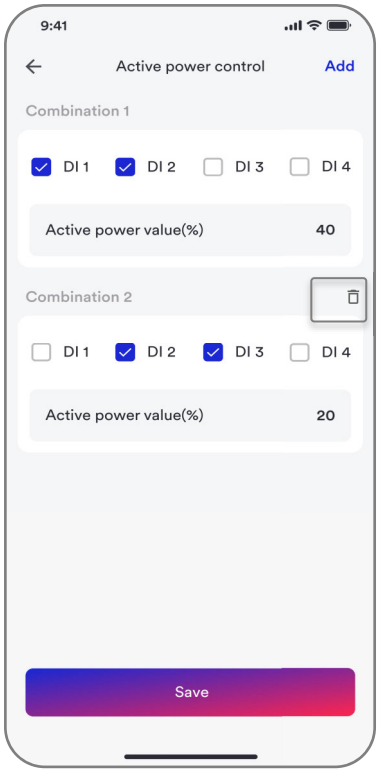
Step 1: Click< Active power control > to go to the next screen.

Step 2: Click <Add> to create a group combination. Click the DI to set the signal to a high level, then enter the active power value to define the limit for the group combination. You c click <Add> to create additional group combinations. Click <Save> after adding the desired groups.

Two combinations cannot be identical; otherwise, a note information will be reported.



Step 1 Step 2



Step 2

Fig. 81. Active power control

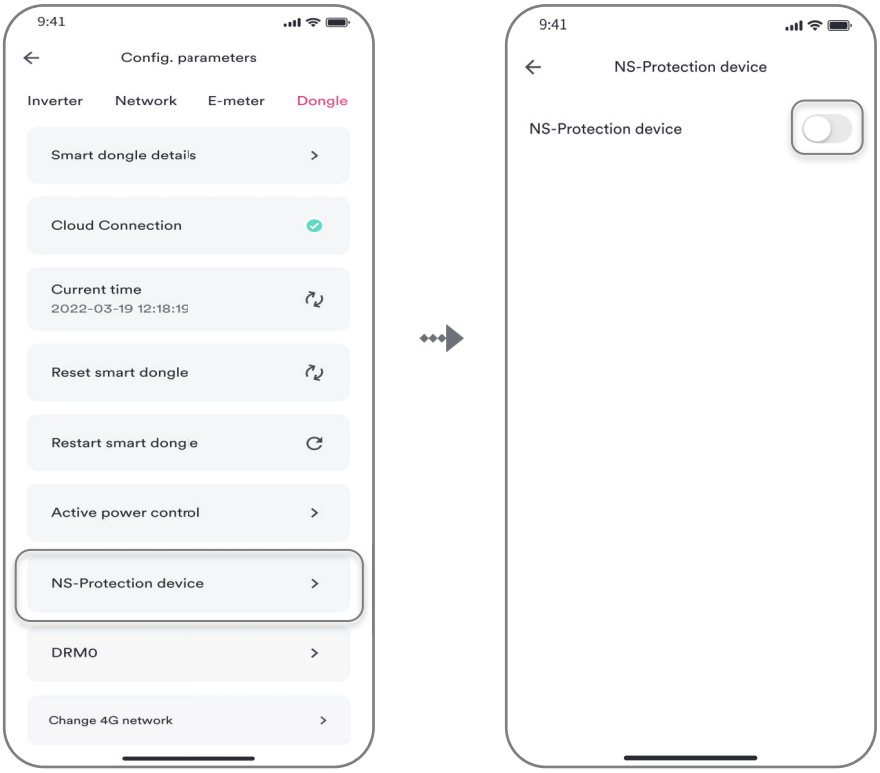
5.5.3 NS-Protection device

Depending on the total of the maximum apparent power of all power generation systems and storage systems at a network connection point ΣS_{Amax}, maybe the central NS protection at the central meter panel should be installed.

The function should be activated when the central NS protection device is connected to the product.

Step 1: Click< NS-Protection device > to go to the next screen.

Step 2: Activate < NS-Protection device > function.



Step 1 Step 2

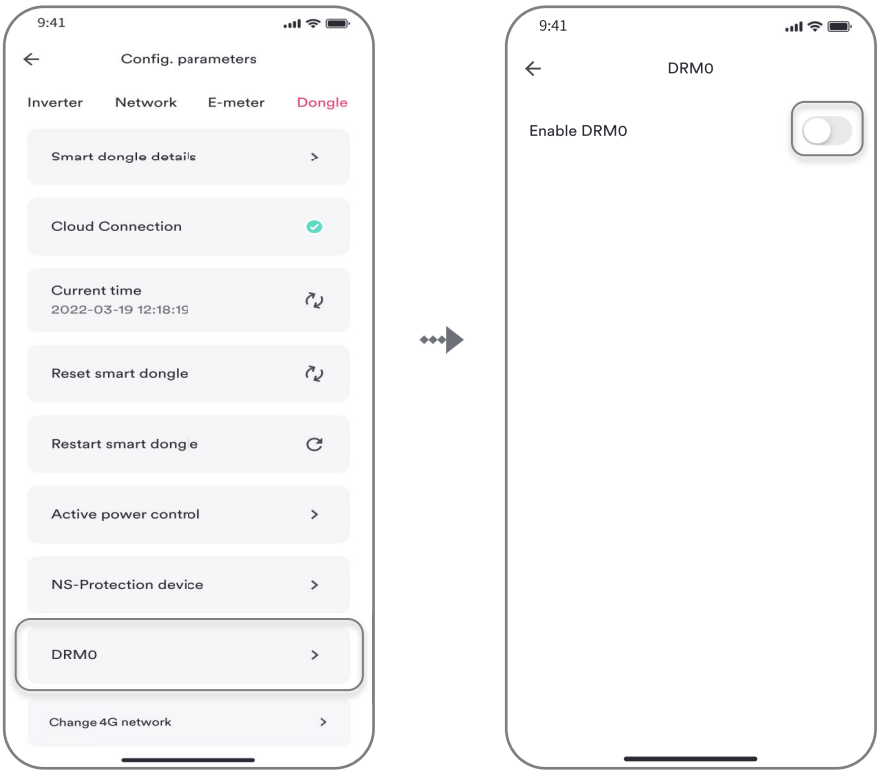
Fig. 82. NS-Protection device

5.5.4 DRM0

The inverter shall support the demand response mode DRM 0 according to AS/NZS 4777.2 for Australia market. The function should be activated when the demand response enabling device (DRED) is connected to the product.

Step 1: Click< DRM 0> to go to the next screen.

Step 2: Activate < Enable DRM 0 > function.

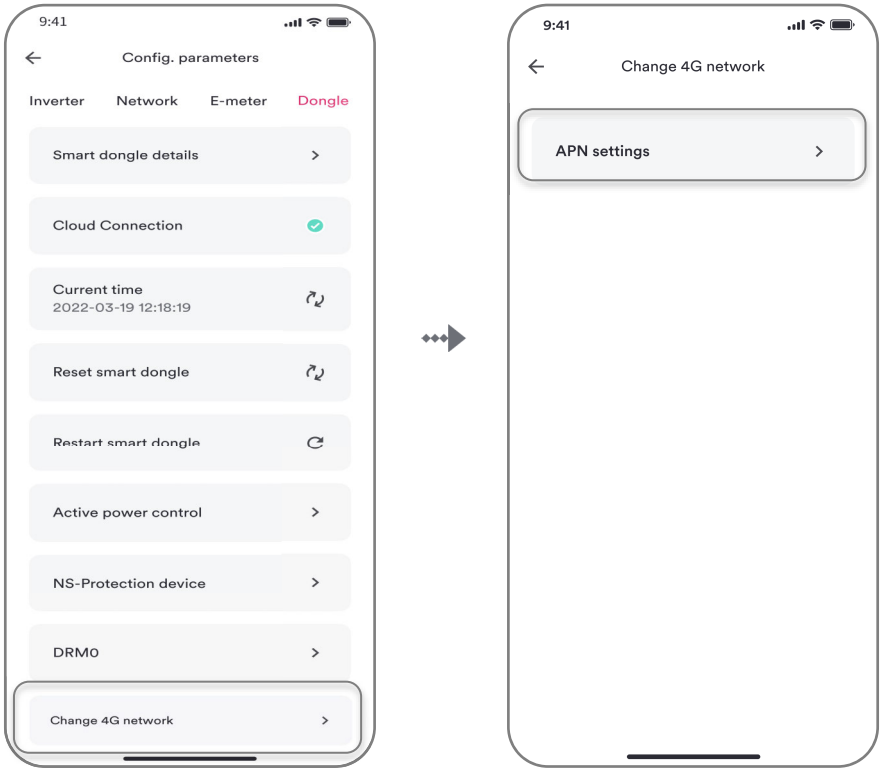


Step 1 Step 2

Fig. 83. DRMO

5.5.5 Change 4G network

If your stick supports changing to a 4G network, do the following:



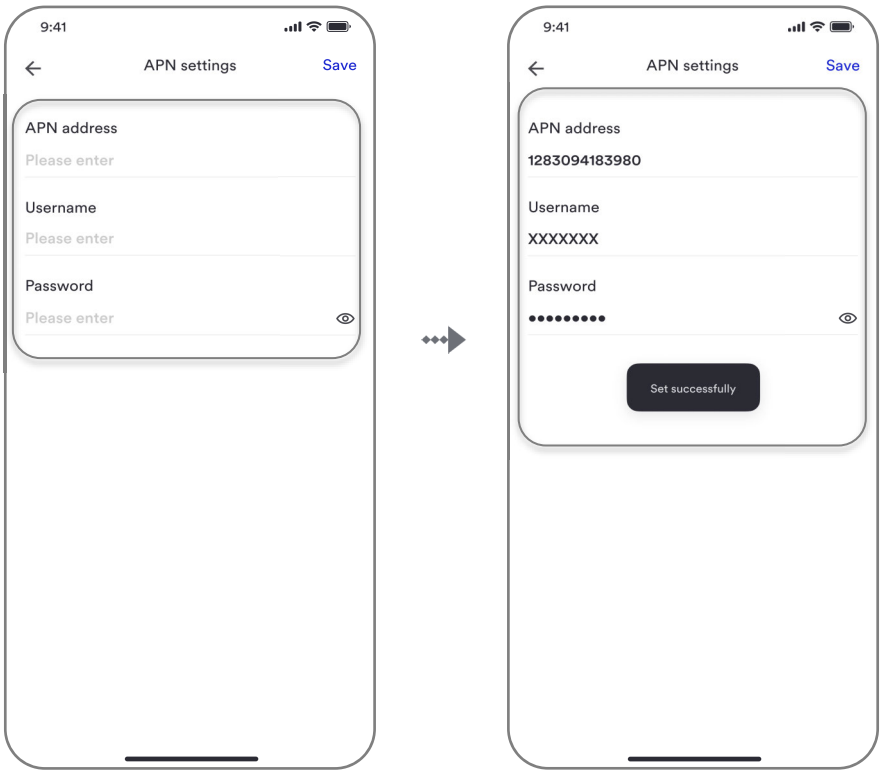


Fig. 84. Change 4G network

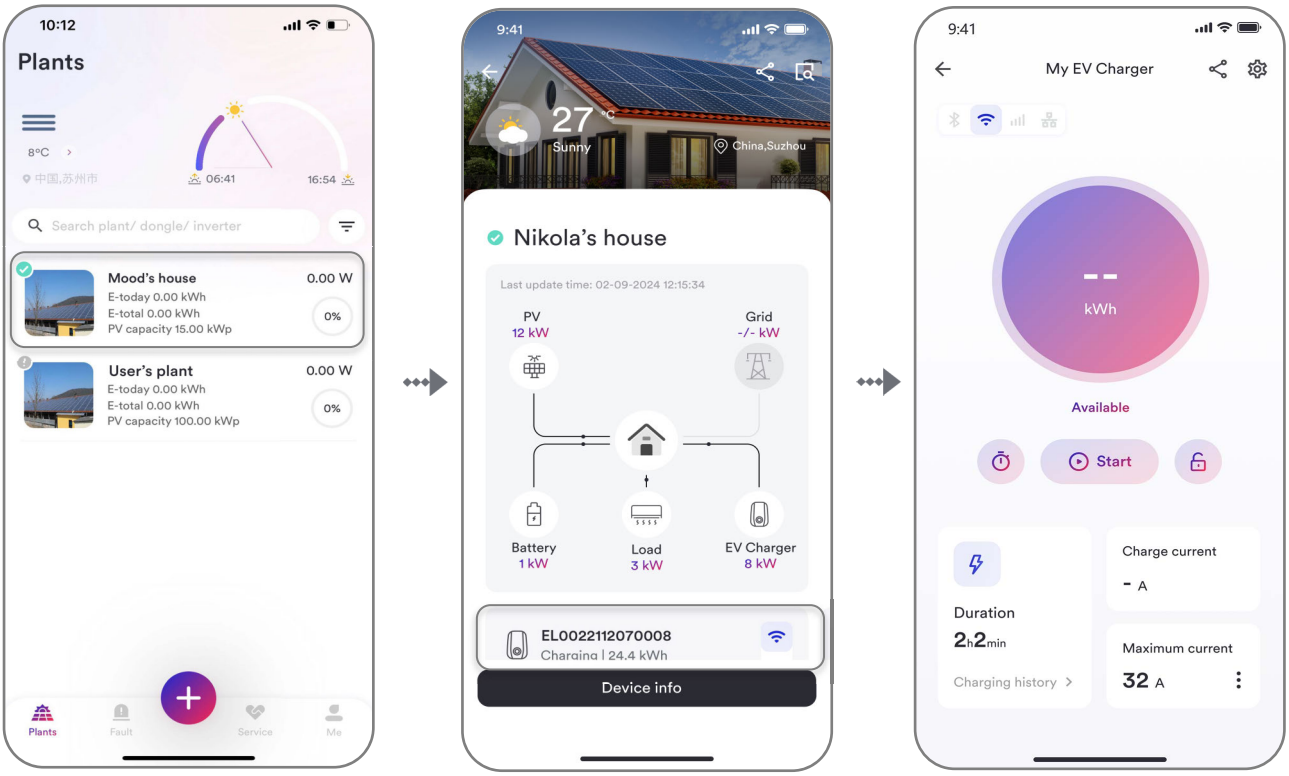
6 EV charger setting parameters

6.1 My EV Charger screen

* Referring to section 4.3, you have successfully added the EV Charger to the plant.

Step 1: Please select an existing plant and click the plant name to enter the next screen.

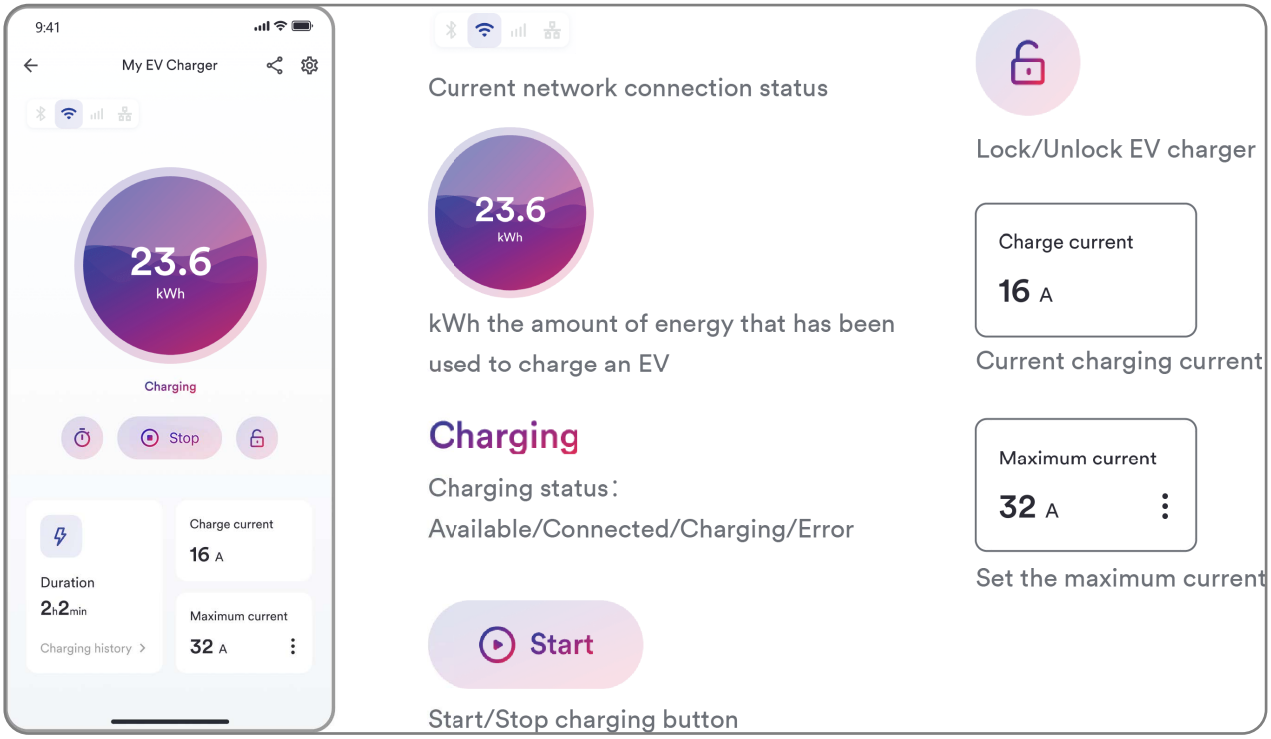
Step 2: Click the series number of the EV Charger to enter the next screen. Then the status of the EV Charger can be viewed.



Step 1 Step 2

Fig. 85. Selected plant

The following figure provides a detailed explanation of each section of the screen.



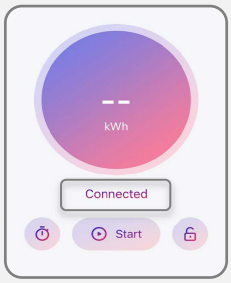
Icon	Charging status	Description
	Available	The EV Charger is available and the green light is always on.
	Waiting for response from vehicle	Waiting for vehicle response, blue light is always on.
	Connected	Vehicle is connected, blue light is always on.
	Charging paused due to vehicle	Car end pause, blue light always on.
	Charging	Charging, blue light breathing.
	Error	Fault, red light flashing.
Icon	**Charging status**	**Description**
	Start	When the connect status is displayed, tap start to start charging.
	Stop	When the charging status is displayed, tap stop to stop charging.

Fig. 86. My EV Charger Screen

6.1.1 Scheduled charging

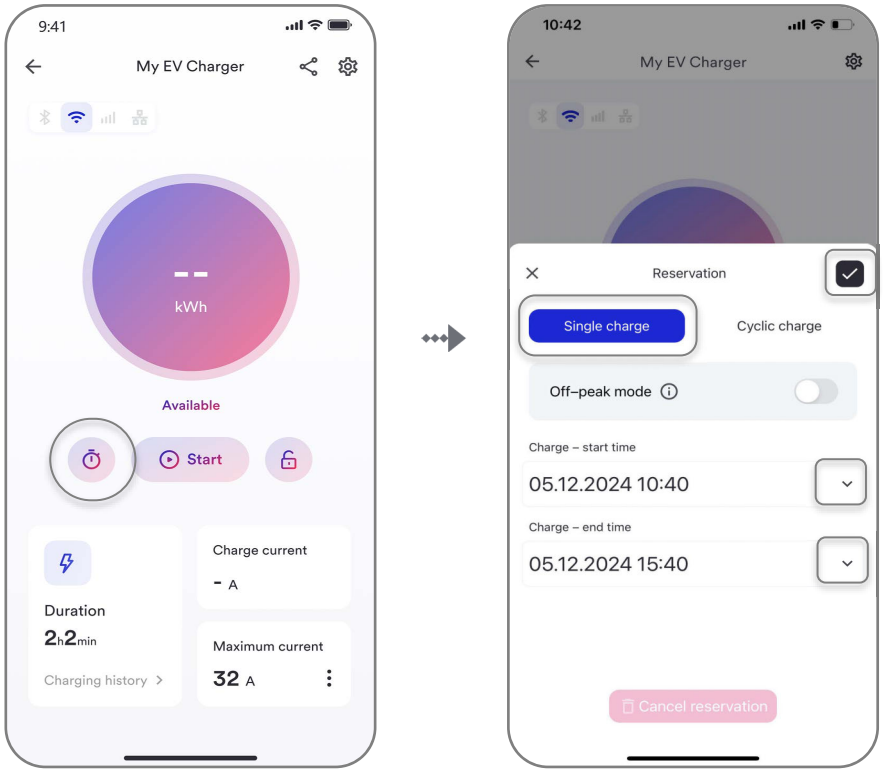
6.1.1.1 Single charge

You can schedule a charging time for your electric car, and the EV Charger will automatically begin charging at the setting time.

Step 1: Click the scheduled charging < > icon.

Step 2: Click <Single charge >and set the start time and end time for charging.

Step 3: Click < > icon and the electric vehicle will be charged as per the schedule.



Step 1 Step 2

Fig. 87. Set single charge

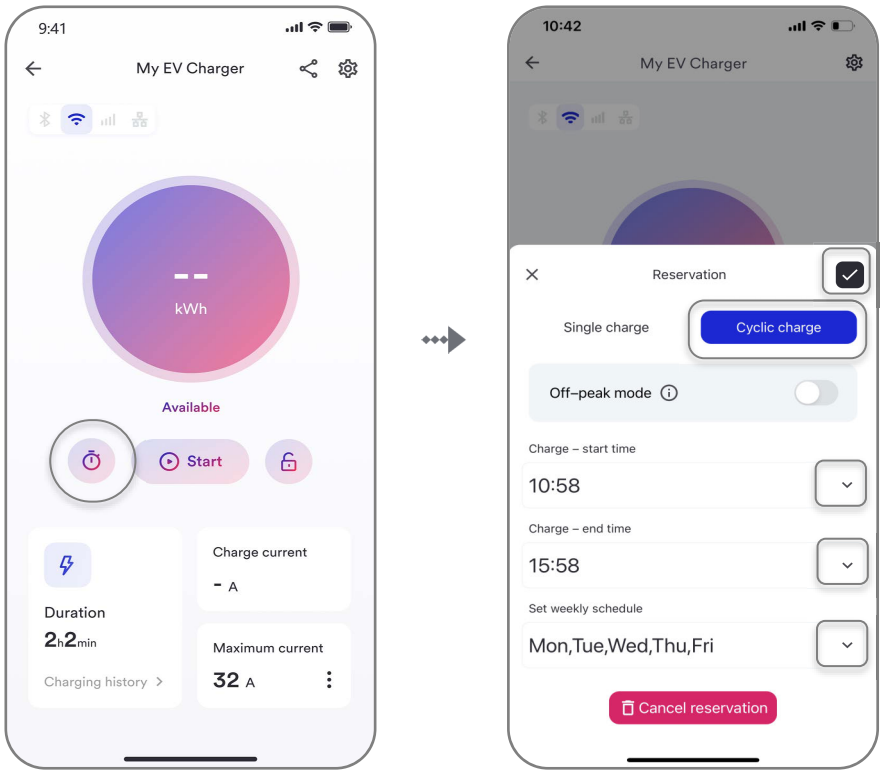
6.1.1.2 Cyclic charge

You can set a fixed charging time for the same period each day, and the EV Charger will automatically charge your electric car according to your preset schedule.

Step 1: Click the scheduled charging < > icon.

Step 2: Click < Cyclic charge >and define start time, end time and weekly schedule for charging.

Step 3: Click < > icon and the electric vehicle will be charged as per the schedule.



Step 1 Step 2

Fig. 88. Set cyclic charge

6.1.1.3 Off-peak mode

Taking advantage of lower electricity prices to charge your electrical car by enabling off-peak mode, you can set the start time and end time to avoid peak demand of power, ensuring that charging occurs only during the more affordable off-peak hours.

Step 1: Click the scheduled charging < > icon.

Step 2: Select < Cyclic charge >or < Single charge > , Click < > icon enable Off-peak mode .

Step 3: Click < Set > to add peak hour period.

Step 4: Click <+ Add > to define peak hours start time and end time, and confirm with <OK >.

Step 5: Click <Save>, the EV charger will not operate during peak hours.

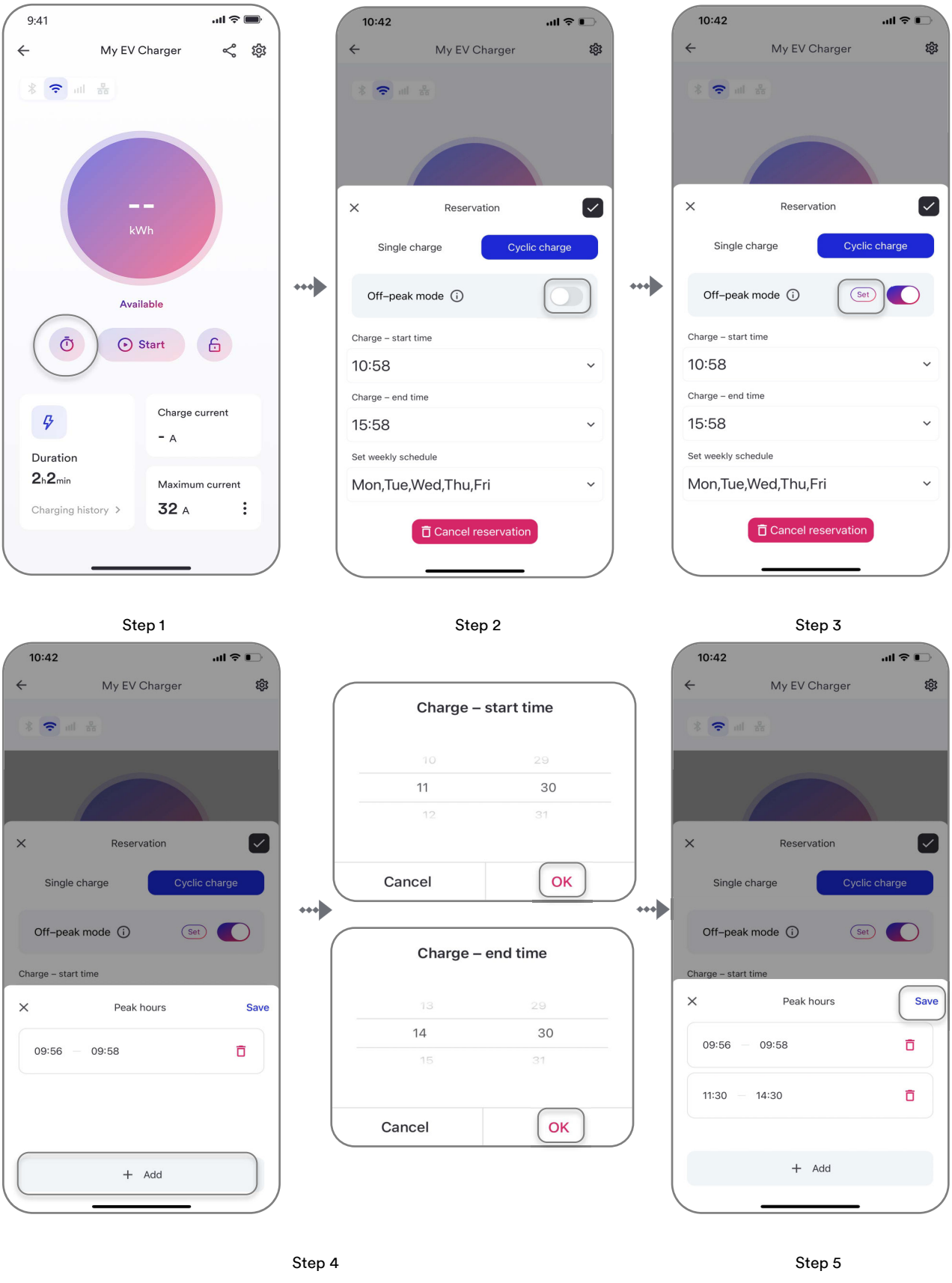


Fig. 89. Off-peak mode

6.1.1.4 Scheduled charging for UK region

As per the UK's regulation, your EV charger has been pre-set not to charge at peak times. You can turn off the Off-peak mode, or change the default settings. Click< Skip > to accept the preset peak hours from 8-11am and 4-10pm, or click <Set> to modify according to your local rules..

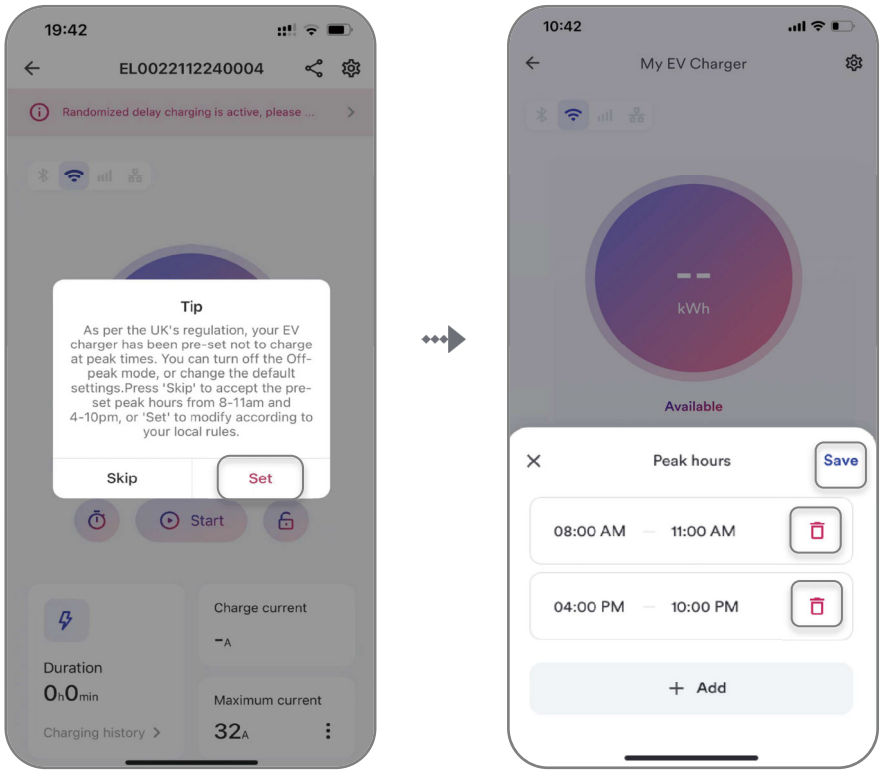


Fig. 90. Scheduled charging for UK region

6.1.2 Lock/Unlock EV charger

Icon	Charging status	Description
	Lock	When the charging pile is not in charging or error state, you can lock the charging pile, after locking the pile, the charging pile can not be operated and the LED strip will become yellow.
	Unlock	The EV charger can be operated after unlocking it, and the LED strip will change colour according to the current status display, refer to section 6.1 for details.

6.1.3 Charging history

You can query the detailed historical charging data of the EV Charger.

Step 1: Click the < Charging history> to go to the next screen.

Step 2: You can see all the charging times recorded. Click < >icon to switch the view

Step 3: You can view the charging history more intuitively. . Click <All > to switch users to view.

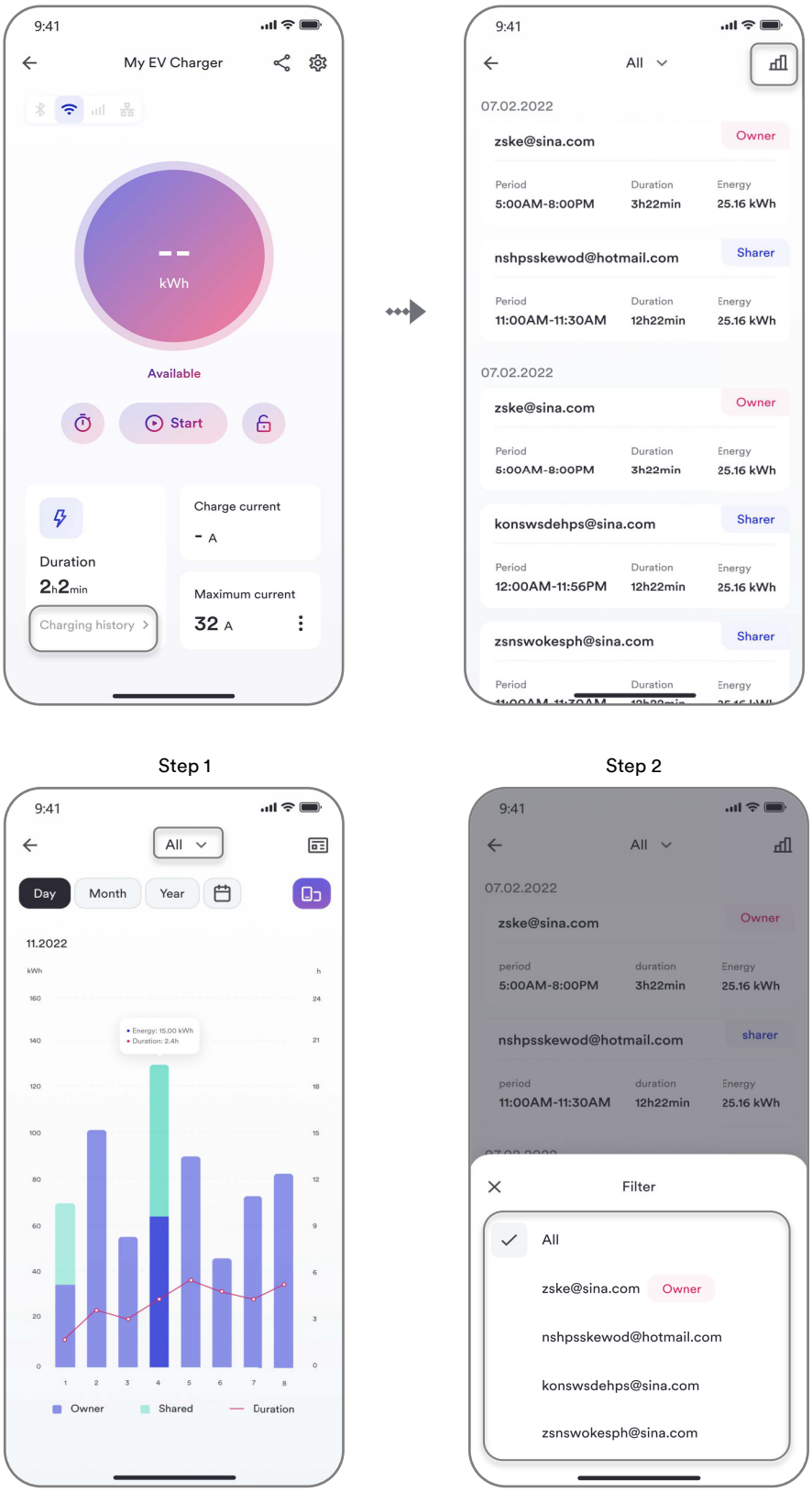


Fig. 91. View charging history

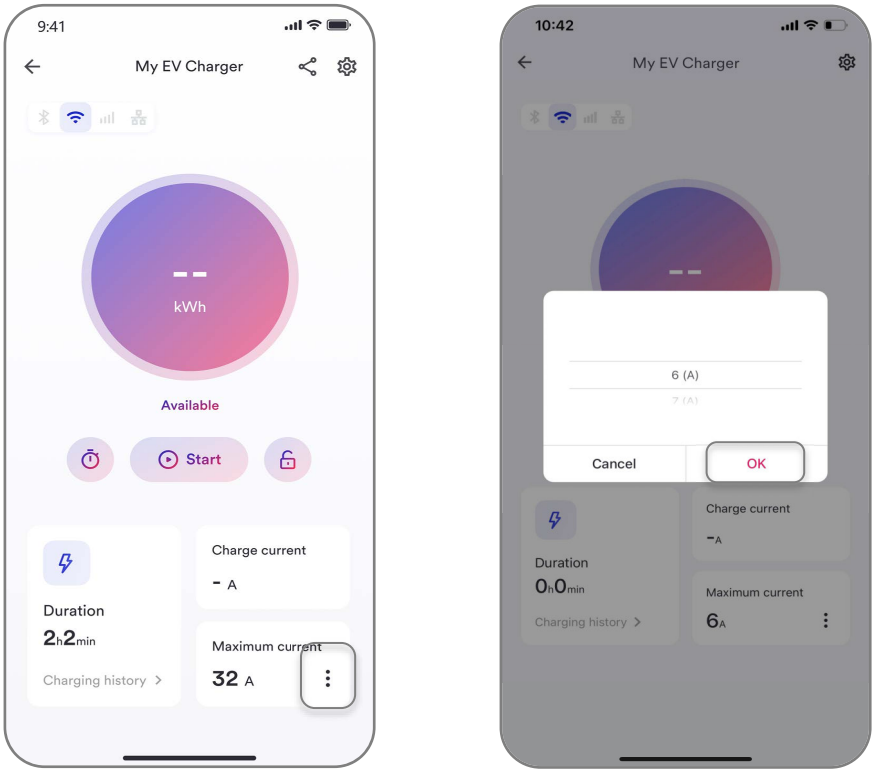
6.1.4 Max. charging current configuration

Setting the maximum charging current, only in the non-charging state.

Step 1: Click the < ⋮ > icon to go to the next screen.

Step 2: You can set the maximum allowable charge current to charge the electric vehicle.

> **Note**
>
> The maximum charging current can be adjusted between 6 A and 32 A.



Step 1 Step 2

Fig. 92. Set Max. allowable charging current

6.2 Charger configuration

6.2.1 EV charger information

You can view the basic information of the EV Charger and select the appropriate smart meter same as installed.

Step 1: Click the < > icon to go to the next screen.

Step 2: Select <EV charger information> to go to the next screen.

Step 3: Click <Energy meter>.

Step 4: Select smart meter model, enter the serial number, Click < Continue >the message shows “Configuration successful!”, the energy meter is added successfully.

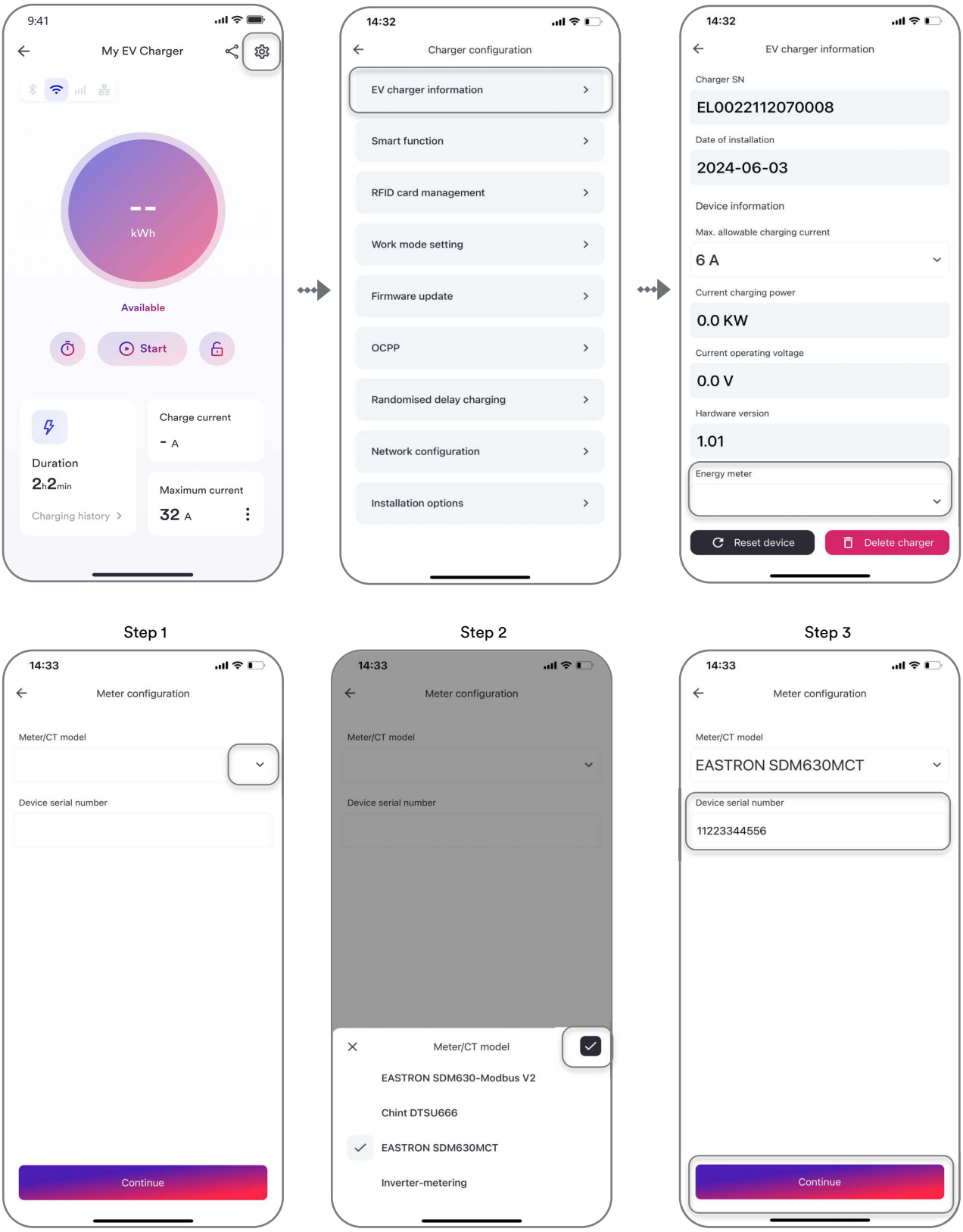


Fig. 93. Manually to add meter

6.2.2 Smart function

6.2.2.1 Dynamic Load Balancing

Dynamic load balancing ensures you never overdraw your property's power capacity by balancing the power consumption between your EV charger and other electrical household appliances. The system measures the power consumption of the house by the energy meter (or assorted hybrid inverter with meter) and allocates all available power to your EV. The charging power is continuously adjusted, in response to changes in generation or power consumption elsewhere around the house. The EV charger may prioritise the use of excess solar power generated by a PV system, if available, rather than the grid power.

In order to enable dynamic load balancing function for your EV charger, you will need to install a compatible energy meter or assorted hybrid inverter with meter.

Note

Only smart meters that are compatible with the communication protocol of Solplanet products can be used. The following smart meter models are compatible with Solplanet products:

Manufacture	Model
EASTRON	SDM230- Modbus V2
	SDM630-Modbus V2
	SDM630MCT(40mA)
	SDM120CT
CHINT	DDSU666
	DTSU666

Step 1: Click <Smart function> to go to the next screen.

Step 2: Click <Dynamic Load balancing>.

Step 3: Activate < Load balancing>.

Step 4: Set the <Maximum system current> value and Click <Save>.

If the energy meter is not added or is not a compatible energy meter, the message will show: The specified meter is not installed. This function cannot be used. Click <Install> to bind the meter.

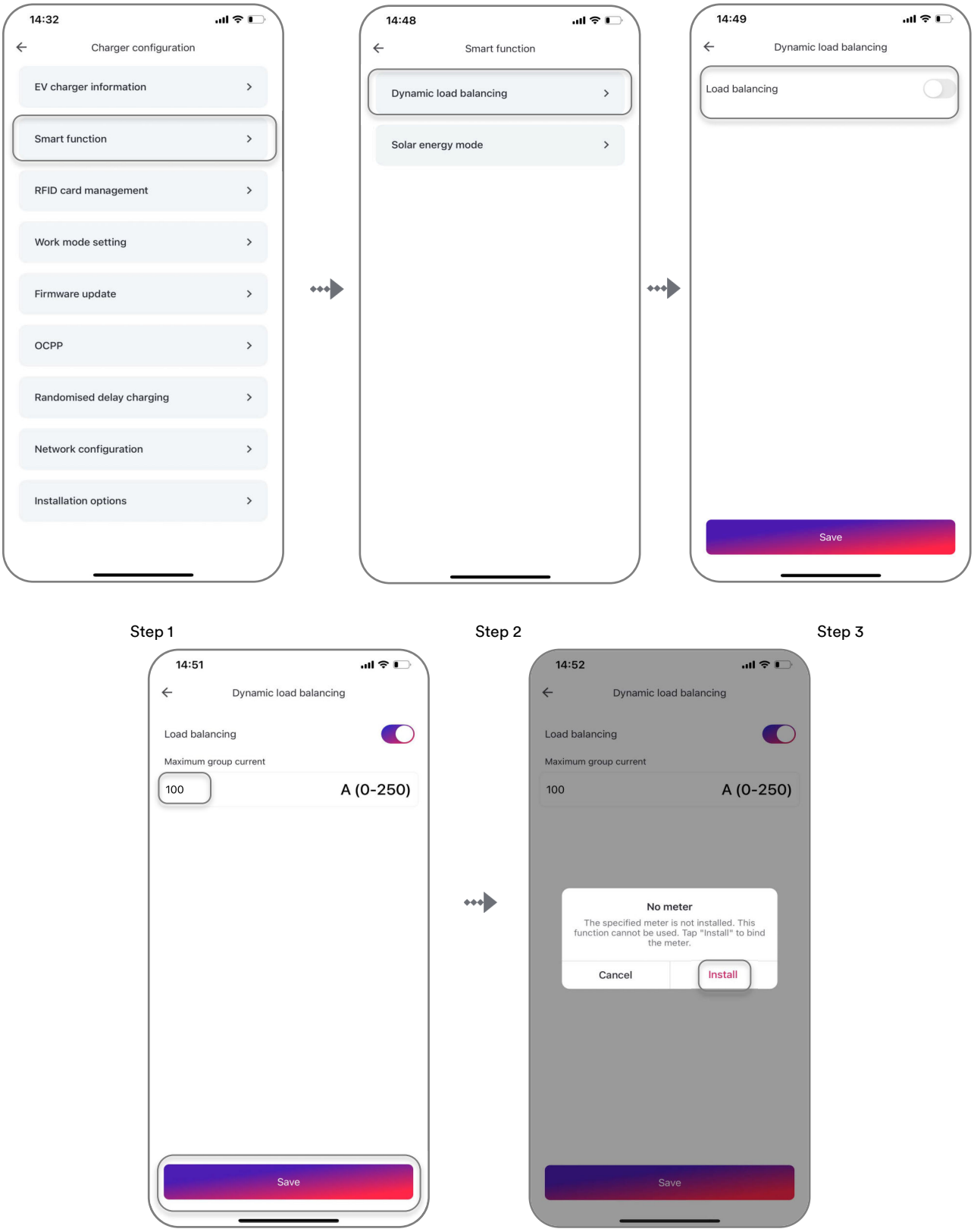


Fig. 94. Dynamic Load Balancing

6.2.2.2 Solar Energy Mode

Solar Energy mode allows you to use the photovoltaic generated energy to charge your electric vehicle in a sustainable and eco friendly way. It offers three different charging modes: Eco mode, boost Eco mode and Solar PV mode.

- **Eco mode/Boost Eco mode:** Unused surplus green energy will be detected and combined with grid power to charge vehicle.
- **Solar PV mode:** Uses 100% solar energy to charge vehicle.

Note

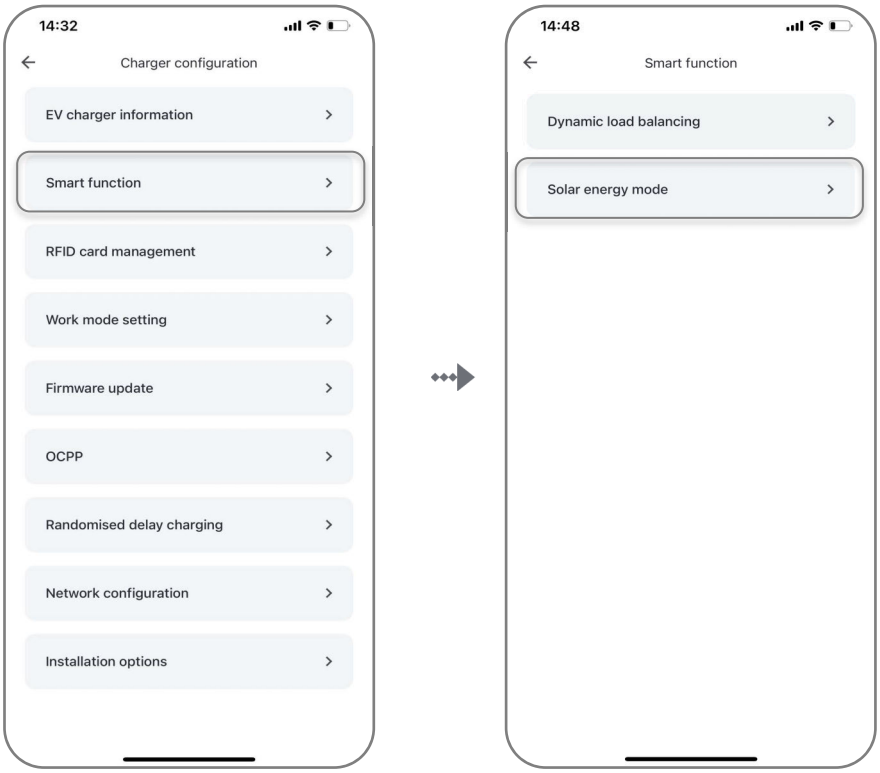
In order to enable solar energy mode for your EV charger, a compatible energy meter is required.

Step 1: Click <Smart function> to go to the next screen.

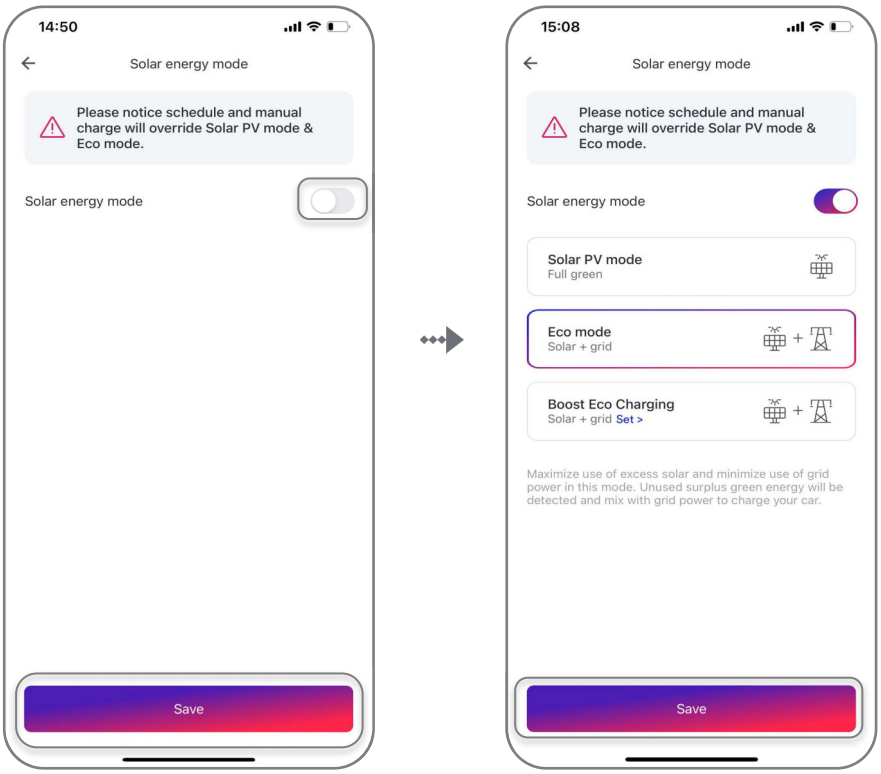
Step 2: Click <Solar Energy Mode>.

Step 3: Activate <Solar Energy Mode>.

Step 4: Click <Eco mode> or <Solar PV mode> or <Boost Eco Mode> and confirm with <Save>.



Step 1 Step 2



Step 3 Step 4

Fig. 95. Solar Energy Mode

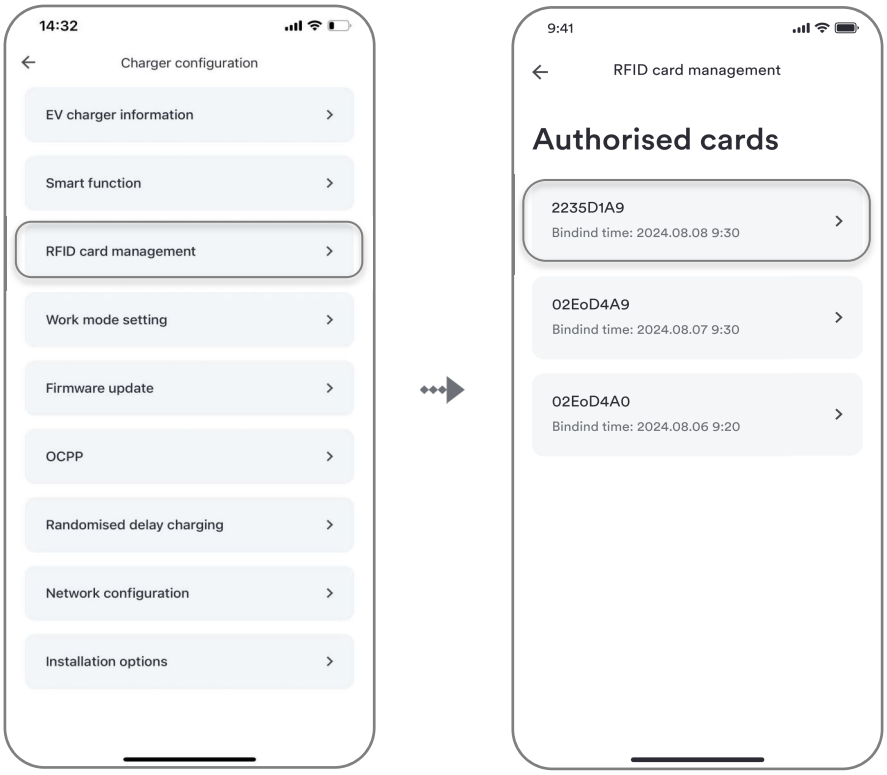
6.2.3 RFID card management

There are 3 authorized RFID cards bound to every EV charger, follow the next steps to enter the RFID card management function.

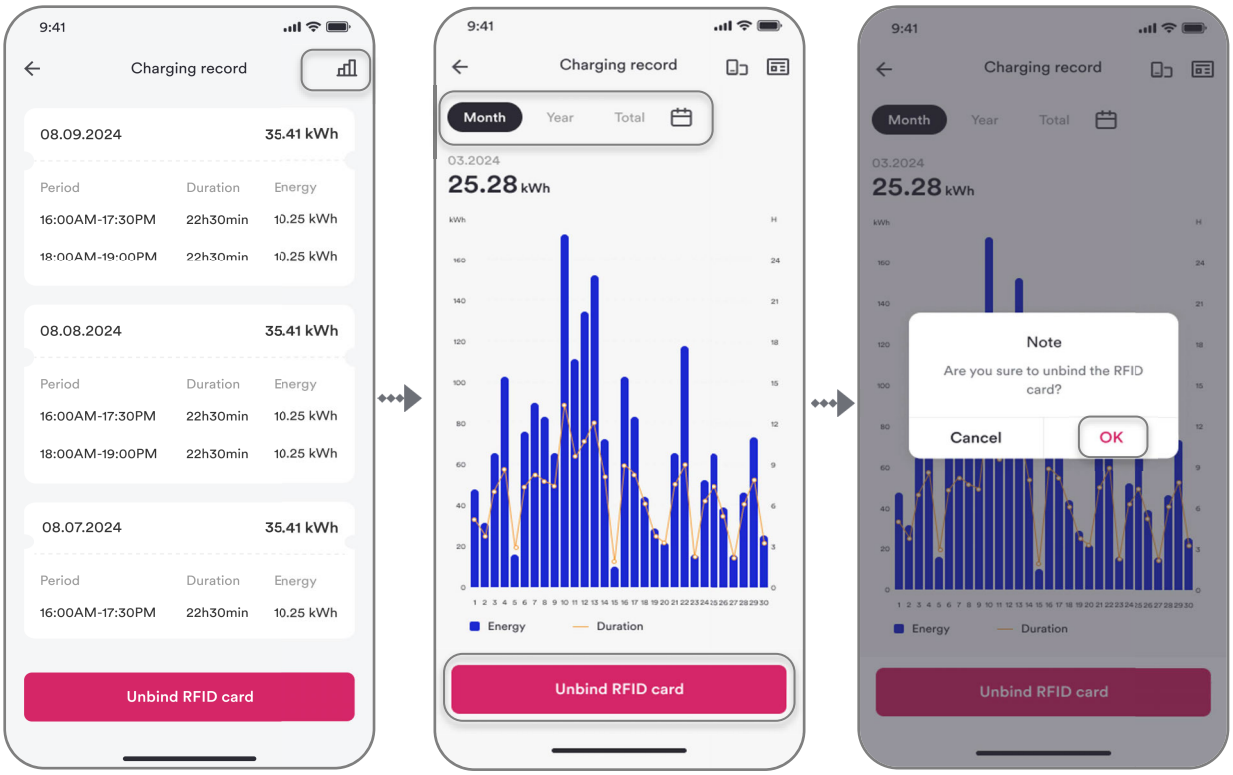
Step 1: Click <RFID card management> and you will see authorized cards.

Step 2: By clicking on the authorisation card (or click on the icon in the top right hand corner),

you can see the charge amount, charge duration and charge time for each RFID card.



Step 1



Step 2

Fig. 96. *RFID card management*

- Do not connect your charging plug to your EV when your RFID card is activating.
- Currently, the recording of electricity consumption per card is only available when the EV charger is connected to the network.

- To delete RFID cards from the RFID management screen simply tap unbind icon and confirm the remove of the card.
- Maximum 3 RFID cards can be bound.

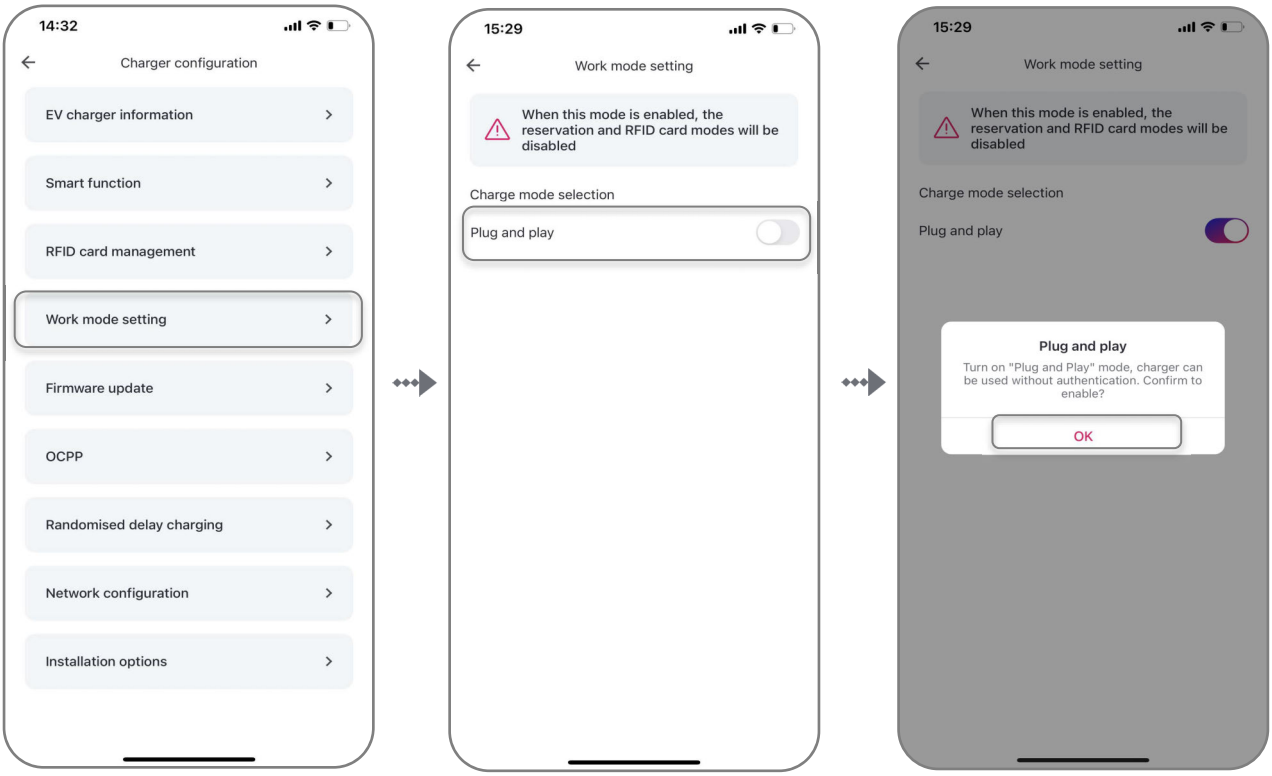
6.2.4 Work mode setting

Plug and play mode: This mode allows users to charge the EV simply by connecting the charger to the EV without the need of the App or swiping the authorized RFID card.

Step 1: Click <Work mode setting> to go to the next screen.

Step 2: Enable <Plug and play> mode.

> ***Note***
>
> After the Plug and play mode is turned on, the scheduled charging and RFID card modes will not be enabled.



Step 1 Step 2

Fig. 97. Work mode setting

6.2.5 Firmware update

Note

Sections 5.2.6.1 and 5.2.6.2 only describe the local upgrade of the HMI software for the inverter. However, software upgrades for the Master, FPGA, and Safety parts of the inverter, as well as local upgrades for the dongle and Ev-charger, are all done by selecting the ". bin" file in the phone folder.

6.2.5.1 Local firmware upgrade - Bluetooth

Note

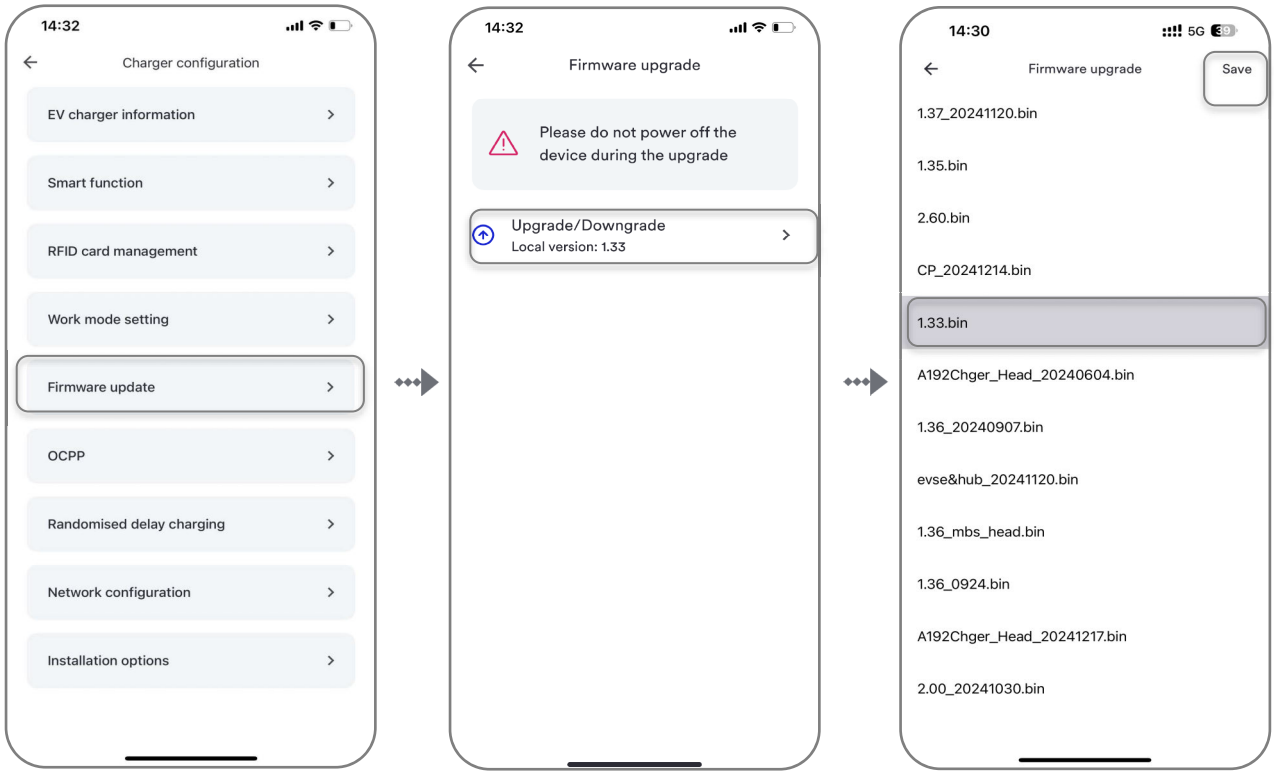
Please do not interrupt the Bluetooth connection or power off the EV charger during the upgrade process.

Step 1: Click <Firmware update> to go to the next screen.

Step 2: Save the firmware to your smart phone, Click<Upgrade/Downgrade> button to find the firmware in your smart phone.

Note

Wait for the uploading and keep the power during the upgrade process, and the whole process will take about 15 minutes at least. After 15 minutes, you can check the firmware version with the app.



Step 1 Step 2

Fig. 98. Local firmware upgrade - Bluetooth

6.2.5.2 Remote firmware upgrade - 4G, Wi-Fi, Ethernet

Note

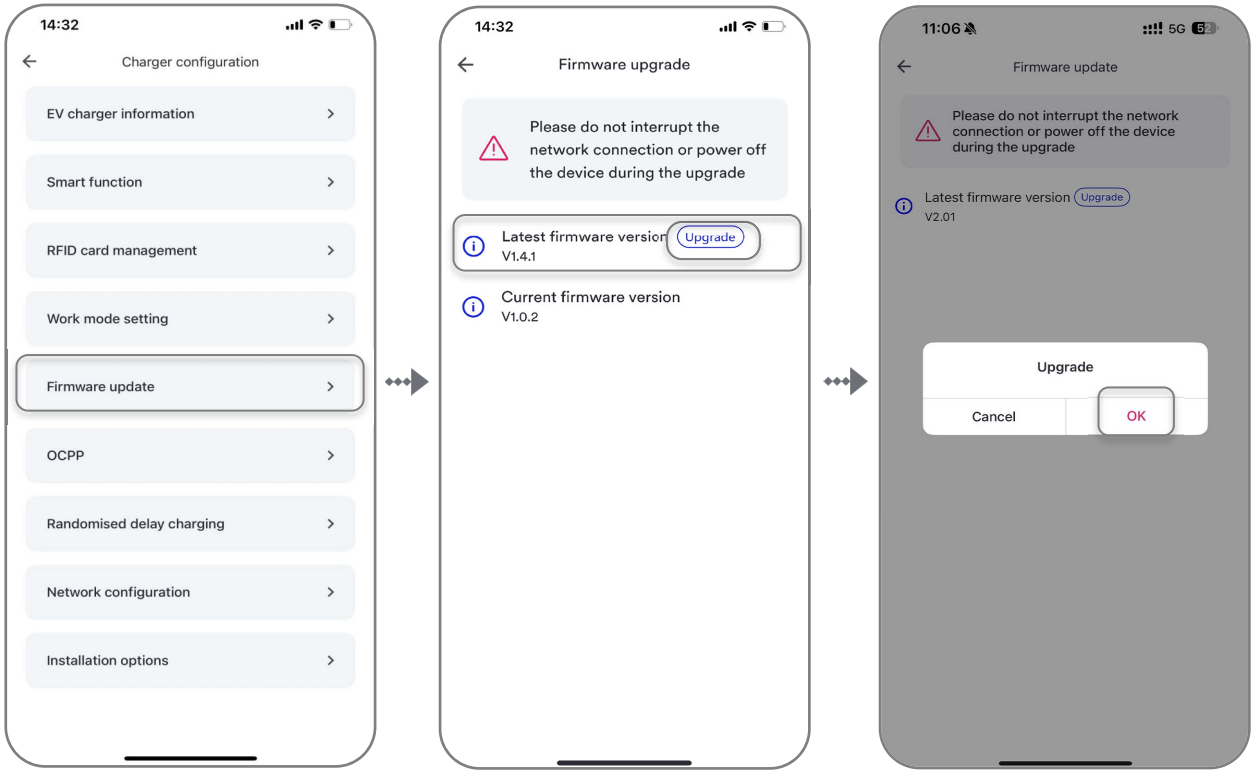
Please do not interrupt the network connection or power off the EV charger during the upgrade process.

Step 1: Click <Firmware update> to go to the next screen.

Step 2: If the latest version exists, click <Upgrade>.

Note

Wait for the uploading and keep the power during the upgrade process, and the whole process will take about 15 minutes at least. After 15 minutes, you can check the firmware version with the app.



Step 1 Step 2

Fig. 99. Remote-firmware-upgrade-~4G,-Wi-Fi, Ethernet

6.2.6 OCPP

By enabling OCPP mode, you can make Connecting charging piles connceted to a third-party OCPP platforms.

Step 1: Click <OCPP> to go to the next screen.

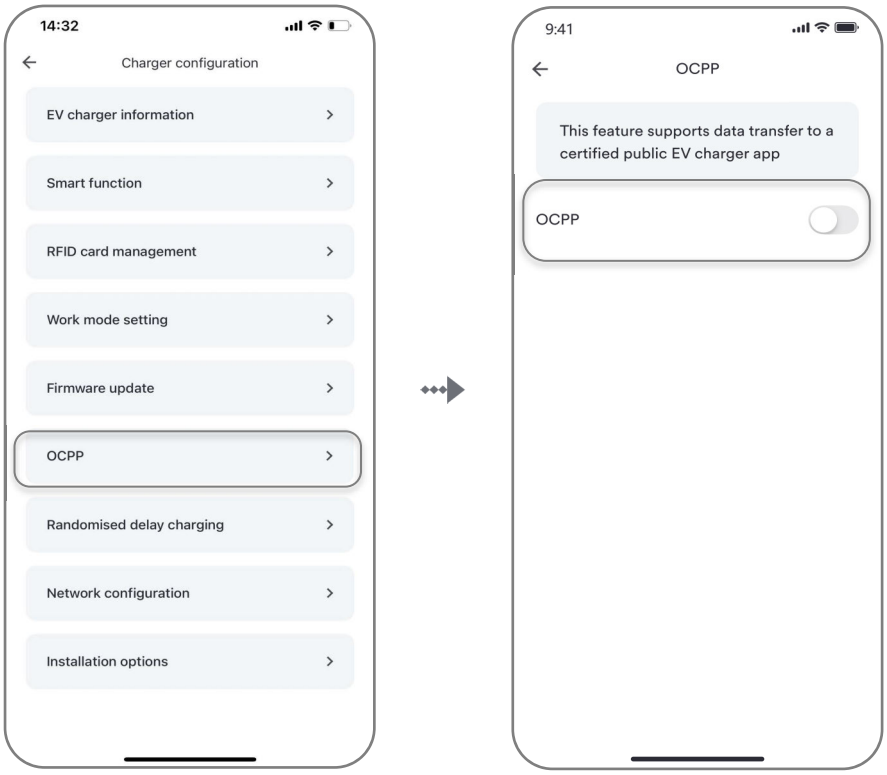
Step 2: Enable <OCPP> mode.

Step 3: Scroll down to select the platform docking address.

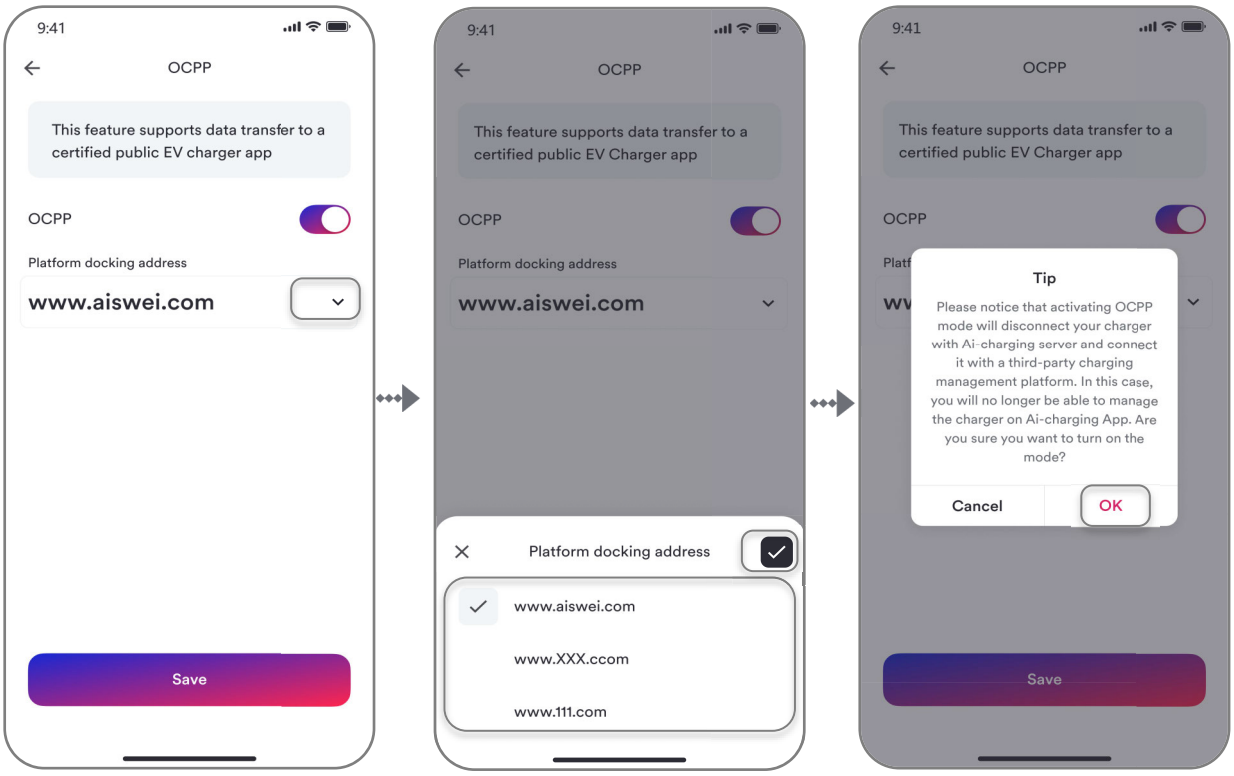
Step 4: Click <OK> and confirm with <Save>.

Note

After OCPP function is enabled, the EV charger will disconnect from the Solplanet server and the communication between the EV charger and the server will stop, the operation by Solplant app will be forbidden. You can place an authorized RFID card in the front of the card reader for 10 seconds and the EV charger will emit a “beep” to disable the OCPP function



Step 1 Step 2



Step 2 Step 3

Fig. 100. *OCPP mode*

6.2.7 Randomised delay charging

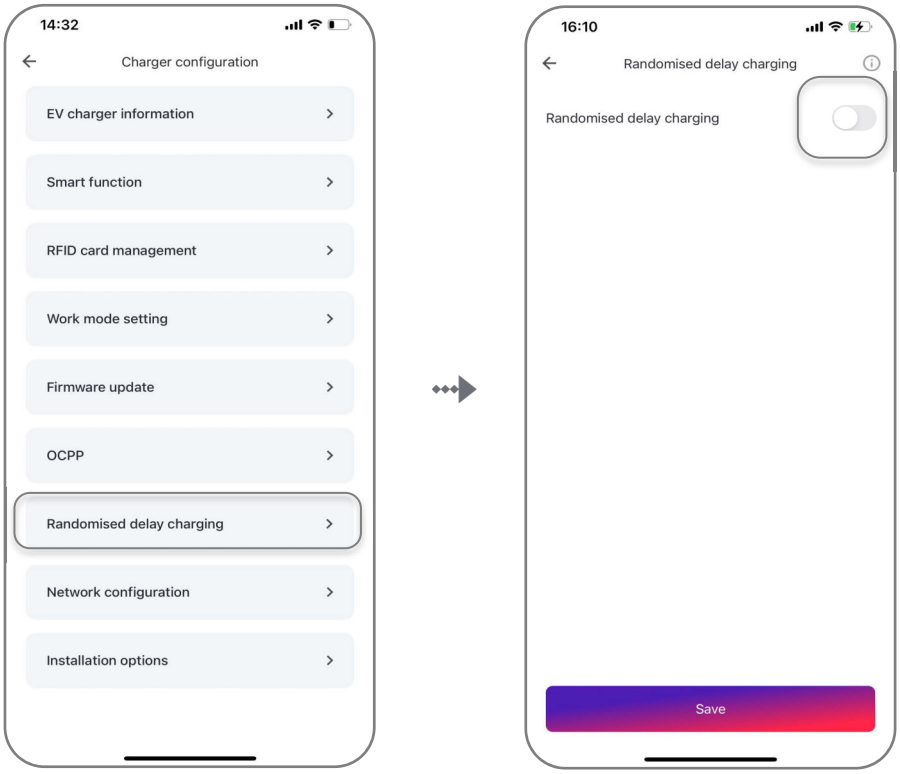
After connect the EV charger to your EV, the EV charger will start charging automatically after a while, the delay time will be between 600 and 1800 seconds, it also can be set manually. This function can help the region reduce the risk of the potential grid stability issues where multiple EV chargers begin to charge at the same time.

Step 1: Click < Randomised delay charging>to go to the next screen.

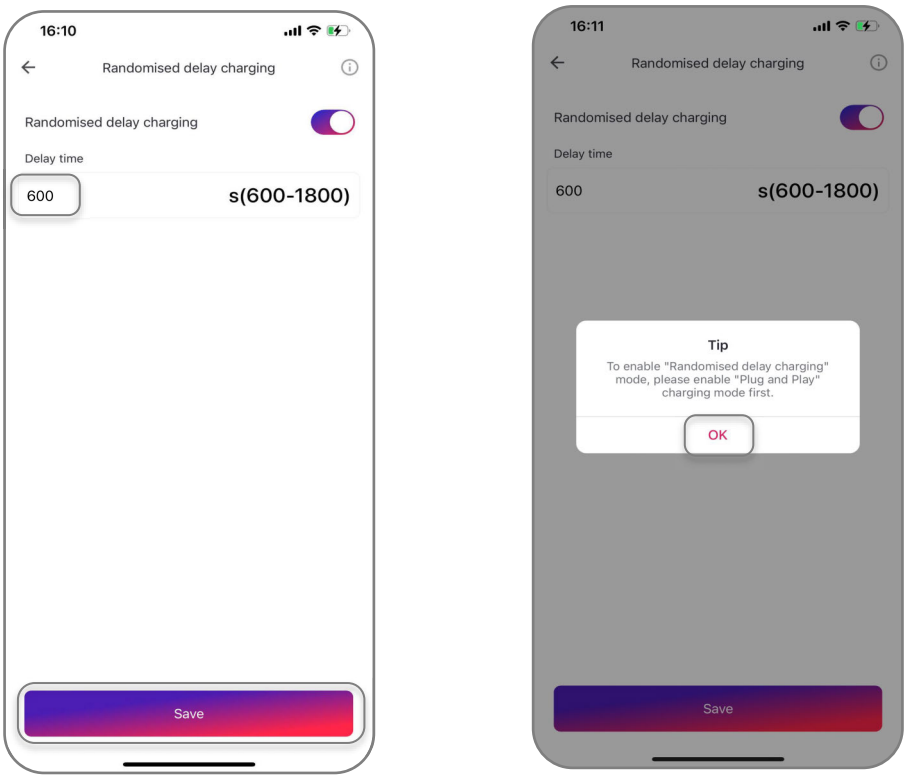
Step 2: Enable <Randomized delay charging> mode.

Step 3: Set delay time, Click <Save> and will active this mode.

Note
Before enable the randomised delay charging, please make sure Plug and Play function has been enabled.



Step 1 Step 2



Step 3

Fig. 101. Randomised delay charging

If you are UK user, after the EV charger is successfully set up, the randomised delay setting will be enabled by default based on UK regulation, user can manually override the setting after the initial set up.

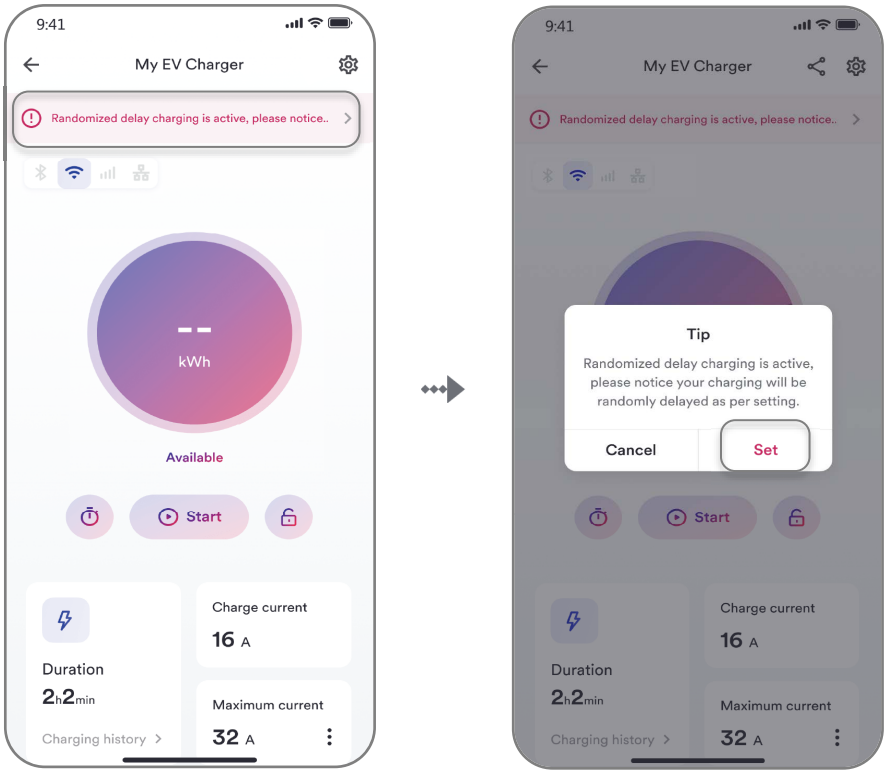
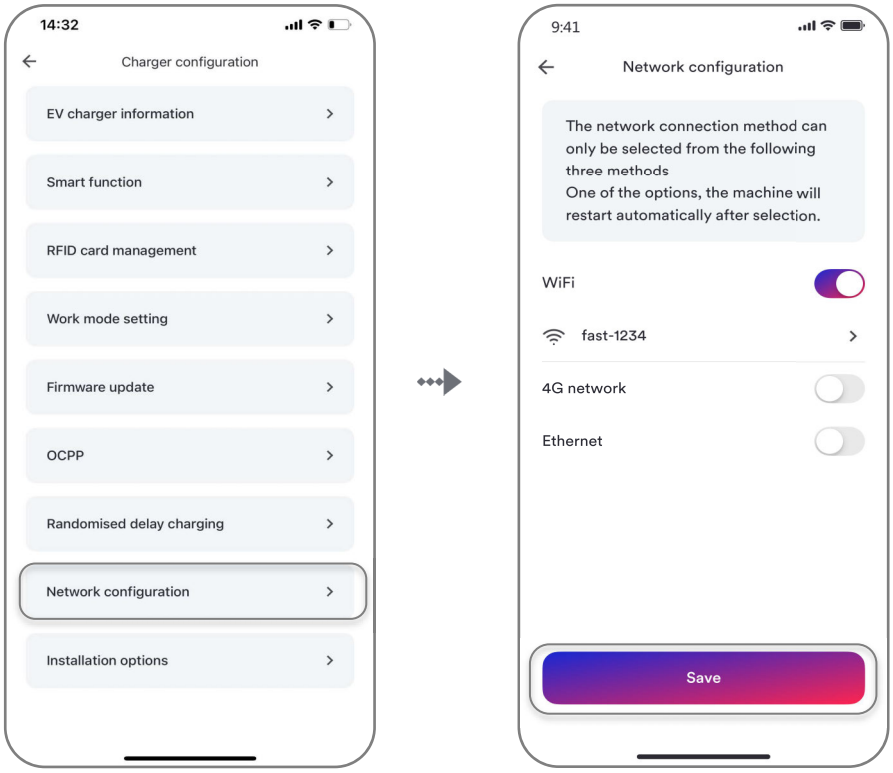


Fig. 102. Randomised delay charging in UK

6.2.8 Network configuration

Step 1: Click the <Network Configuration> entry.

Step 2: Choose and enable the network type to be used (4G, Wi-Fi, Ethernet), then click the <Save> button to validate the network configuration.



Step 1 Step 2

Fig. 103. Network Configuration

Note

- Only one network connection mode can be selected and enabled (two or more cannot be turned on at the same time).
- After changing the network mode, the EV charger will restart.
- Enter this entry, if you have previously configured Wi-Fi or 4G, the corresponding switch will show on the state. After select the Wi-Fi, 4G or Ethernet network mode and save process, the corresponding icon status will become blue from grey.

Wi-Fi configuration introduction

Here you can configure the Wi-Fi network or change the current Wi-Fi network.

Step 1： Click < Network configuration> to go to the next screen.

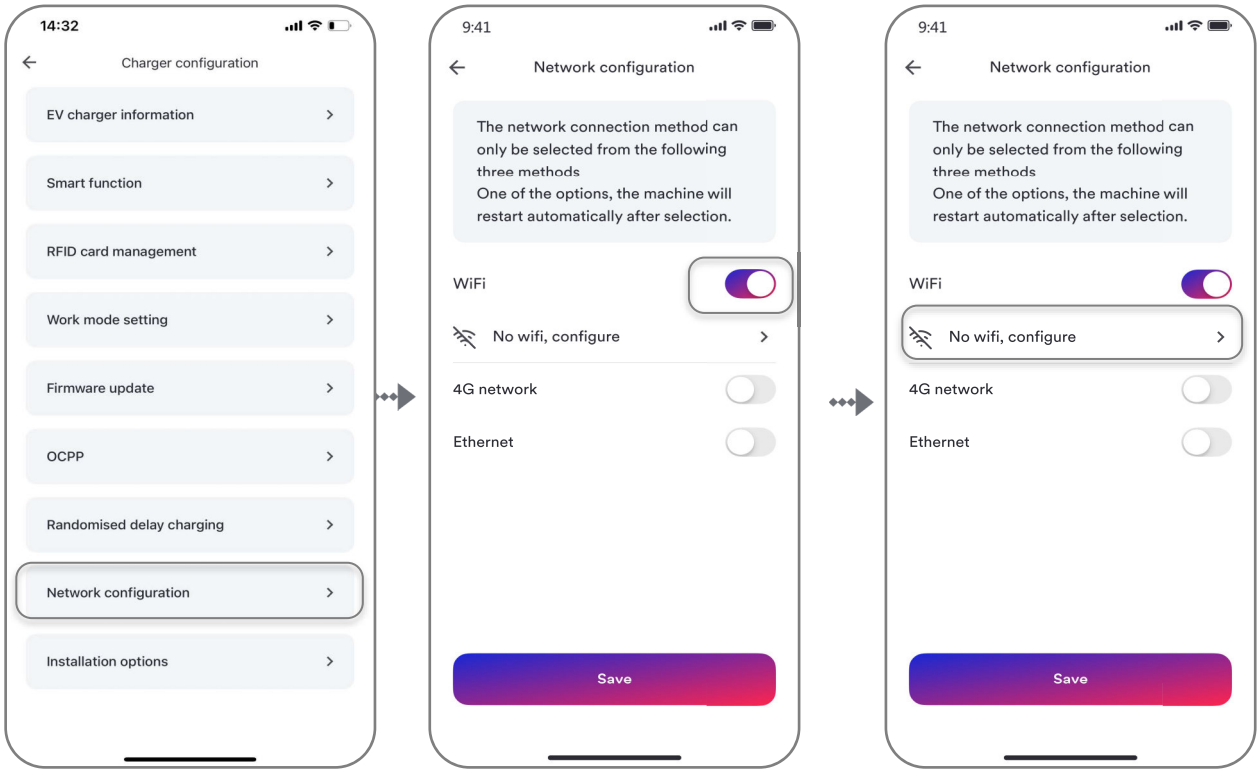
Step 2： Enable Wi-Fi.

Step 3： Select network from the list you want to configure or choose a different Wi-Fi network name and enter the password，then Click <Continue>.

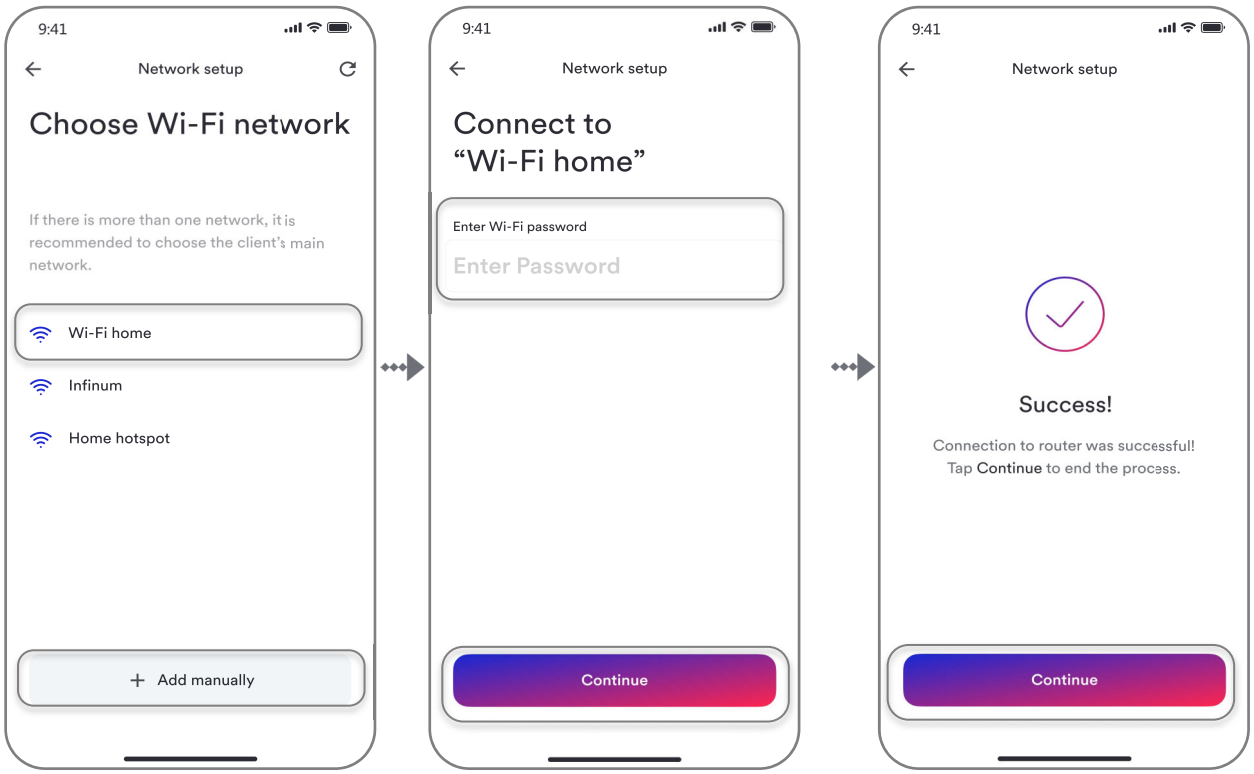
*If your Wi-Fi network does not appear in the search list, you can manually search to configure it by entering the Wi-Fi name (SSID) and password.

Step 4： After completing the above steps, the app will feedback a “success” on the screen, click <Continue> to end the process.

Step 5： At this point, return to the higher-level page and click the <Save> button to make the network configuration effective.

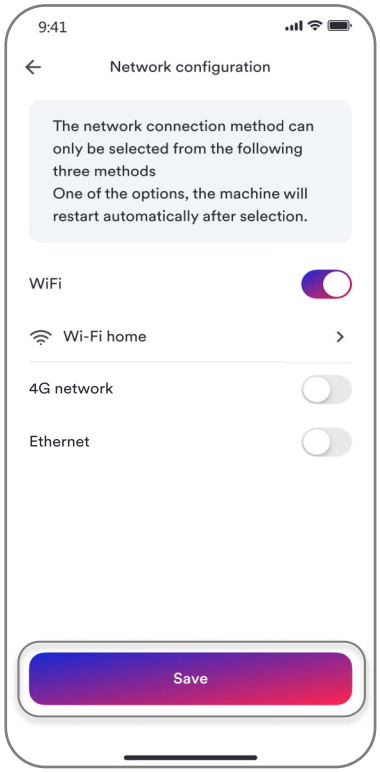


Step 1 Step 2



Step 3

Step 4



Step 5

Fig. 104. Wi-Fi configuration

6.2.9 Installation options

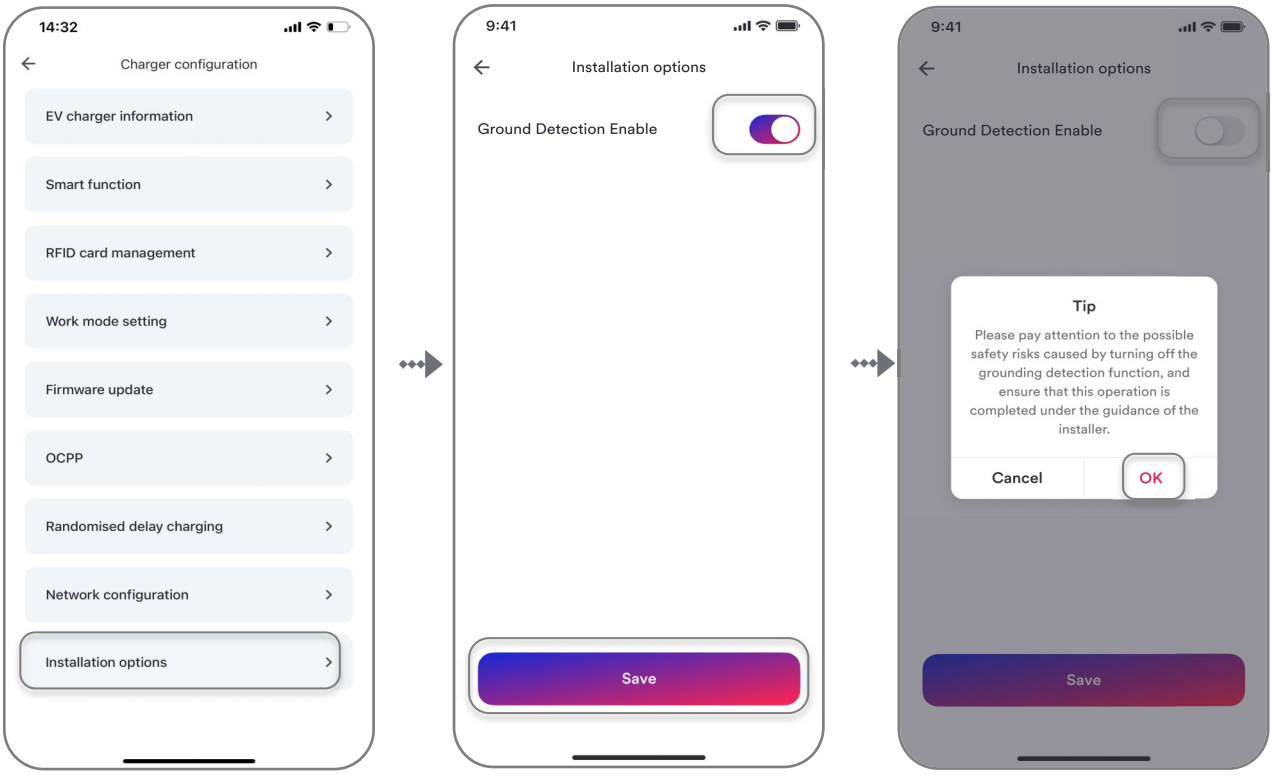
Protective earth wire may not connected well for some users in their house and the EV charger will detect a PE fault, you can turn off the grounding detection function to ignore this fault, however, we recommend that keep this function on for safety reasons.

Step 1: Click < Installation options>to go to the next screen.

Step 2: Enable < Ground Detection Enable> mode,

Note

Please pay attention to the possible safety risks caused by turning off the grounding detection function, and ensure that this operation is completed under the guidance of the installer.



Step 1 Step 2

Fig. 105. Installation options

7 Monitoring information

7.1 About plants

- Click to view the weather condition of the coming week in the location of the app.
- Here you can search for eligible power plants by fuzzy search of “power plant name”, “collector serial number” and “inverter serial number”.
- Filter the list of eligible power plants according to the specified conditions.
- Show the list of power plants under this account.

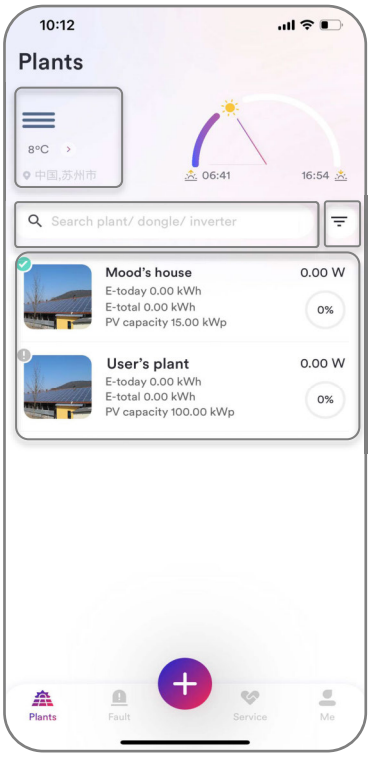


Fig. 106. View Plant

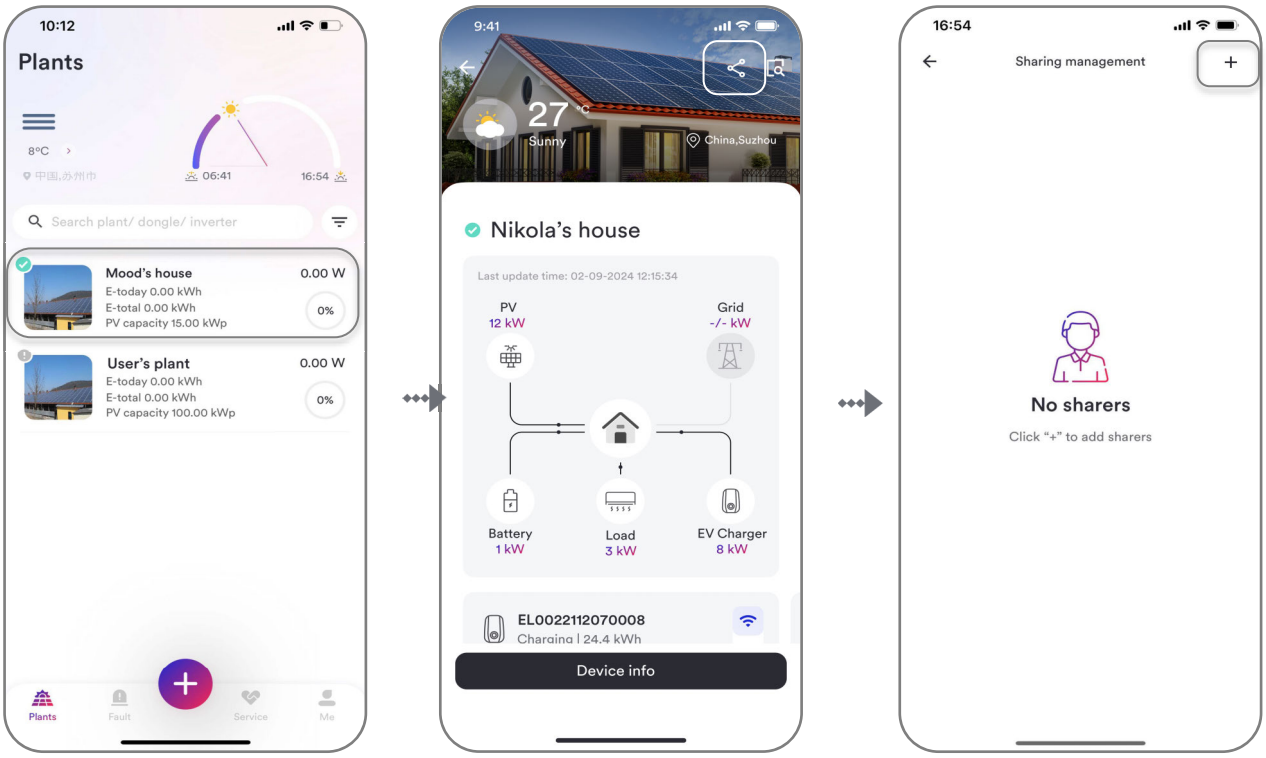
7.1.1 Share plants

Step 1: Choose the Plant to be shared, to go to the next screen.

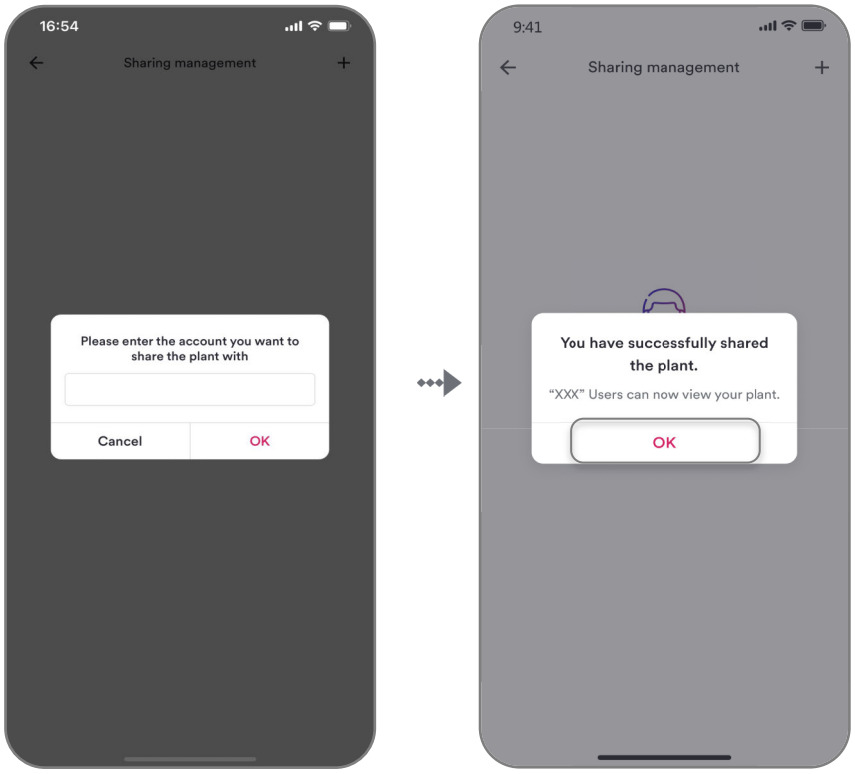
Step 2: Click the Share icon in the upper right corner.

Step 3: Click <+>to add sharers, enter the account you want to share, then click <OK>.

Step 4: Click <OK>，Plant is successfully shared!



Step 1 Step 2 Step 3



Step 3 Step 4

Fig. 107. Share Plant

7.1.2 Edit a plant

Step 1: Add a power station editing button to the power station details page. Click to enter and edit other detailed information of the power station.

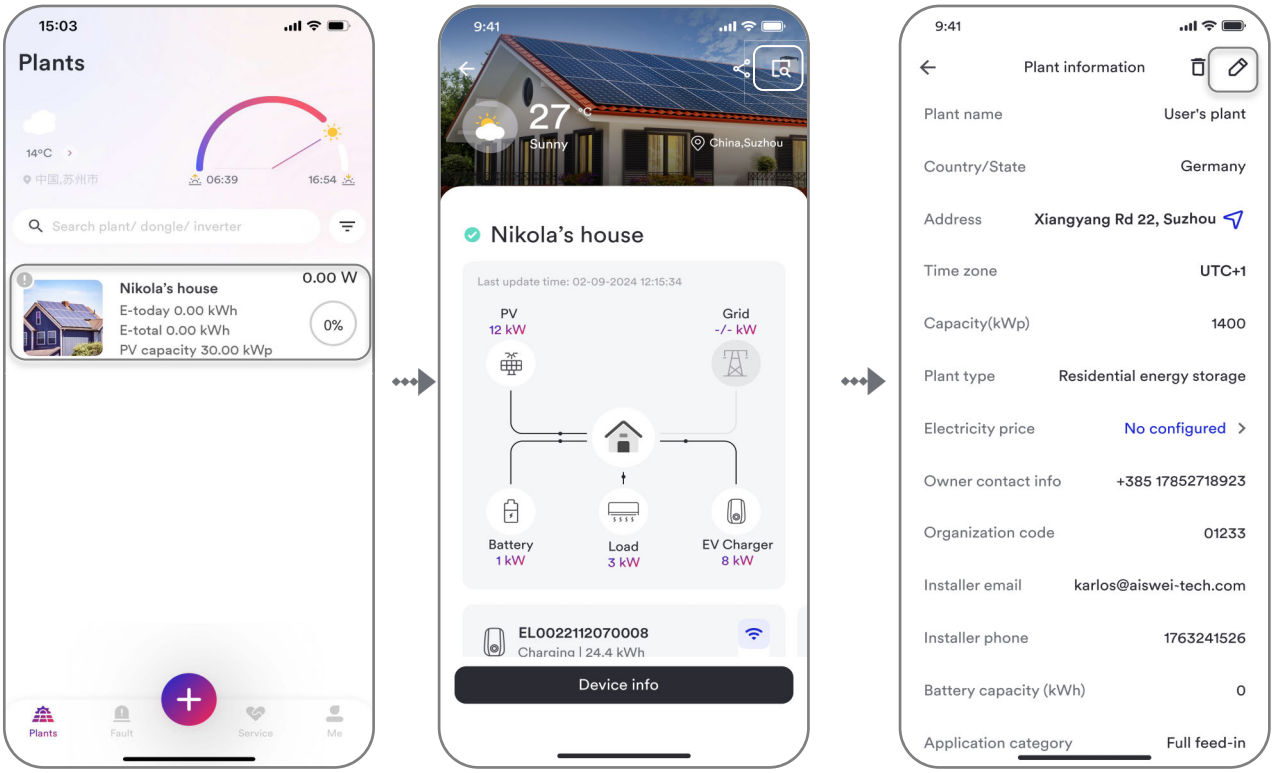
Step 2: Incomplete information was not filled in during the creation of the power station, which can be edited in this step.

Step 3: Click on the electricity price setting to enter the electricity price editing page. There are two options for the Tariff type that are fixed price and peak- valley.

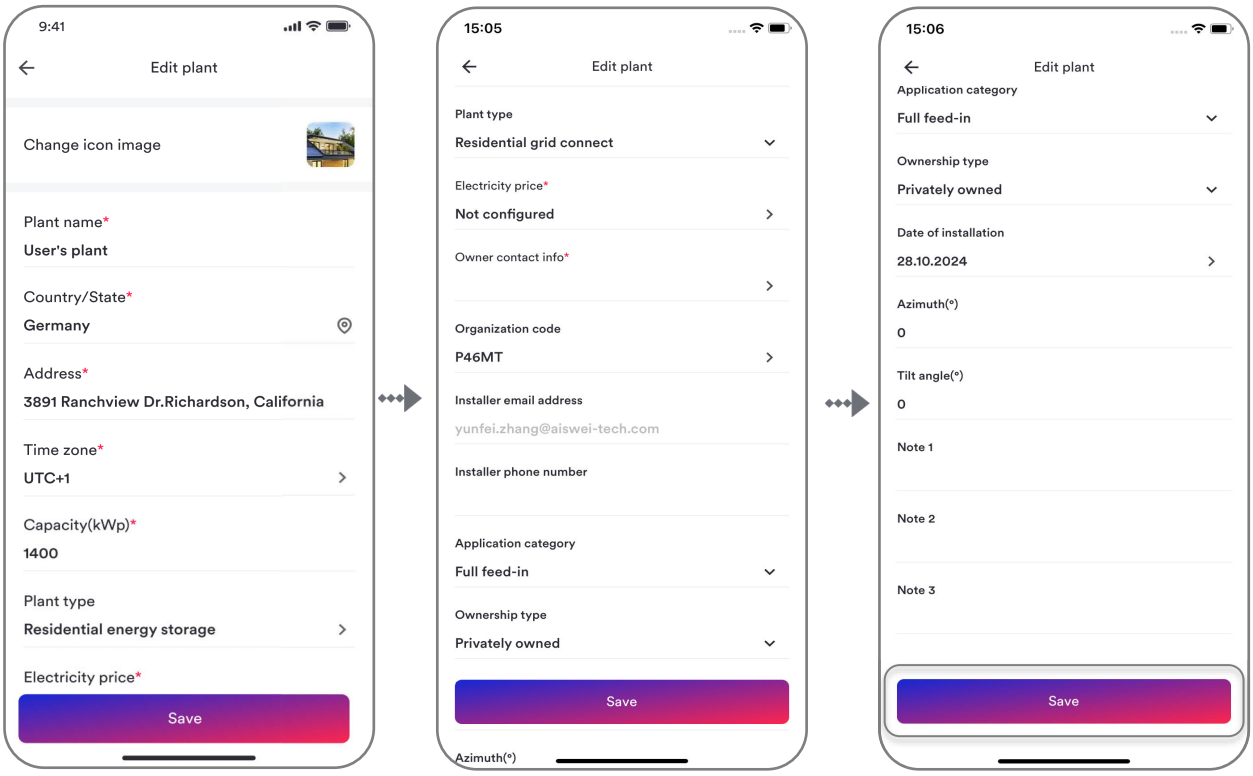
Step 4: Drop down to select peak valley electricity price. You can set the time period from Monday to Sunday and import/export traffic, Click to <Go to setting> .

Step 5: If set to be completed 24 hours a day on Monday, you can click on the copy operation to copy to another date.

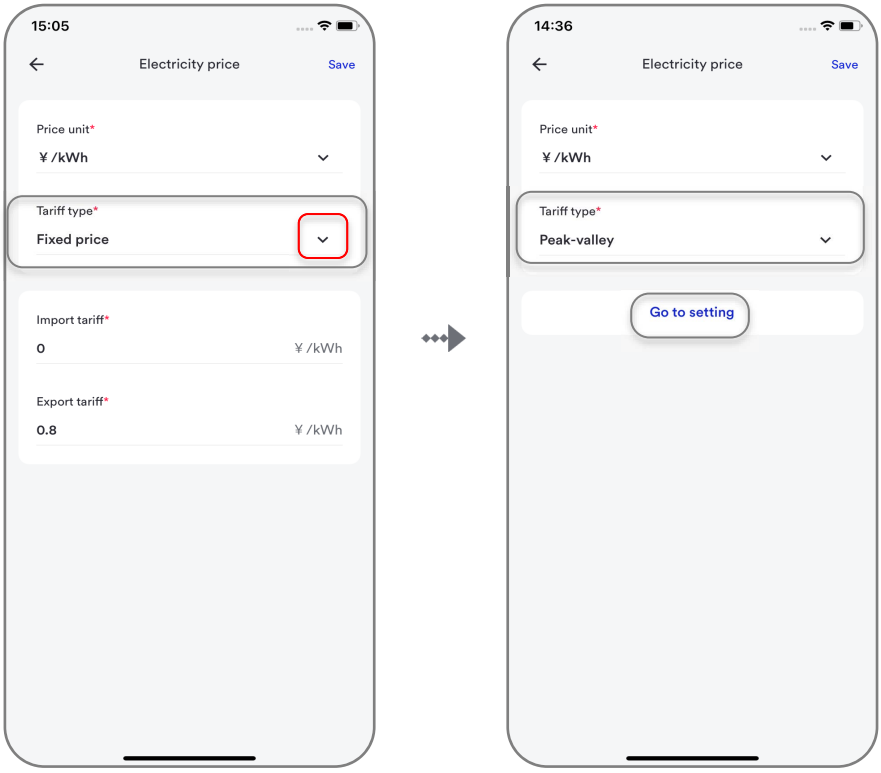
Step 6: You can also delete the power station by clicking on the delete icon, and there will be a prompt asking if you want to delete it.



Step 1

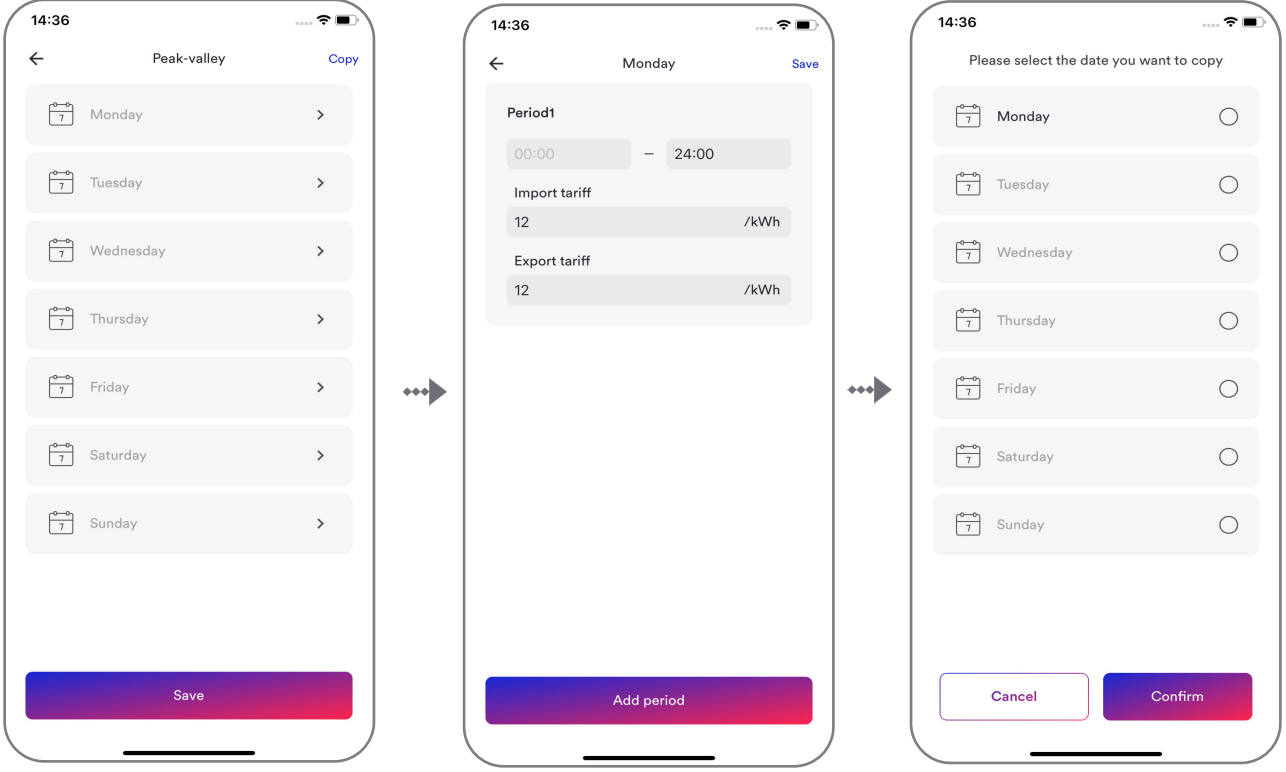


Step 2

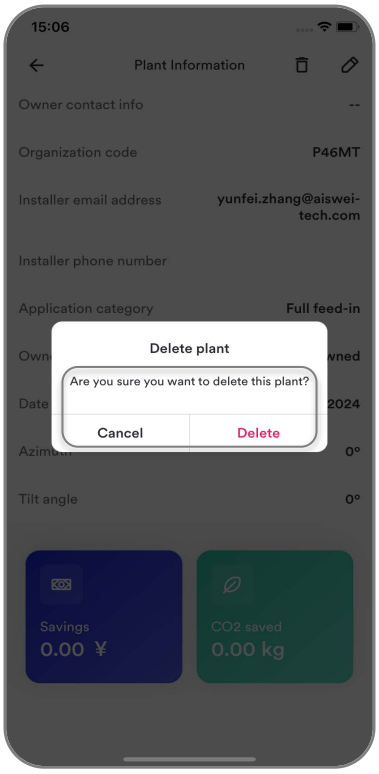


Step 3

Step 4



Step 5

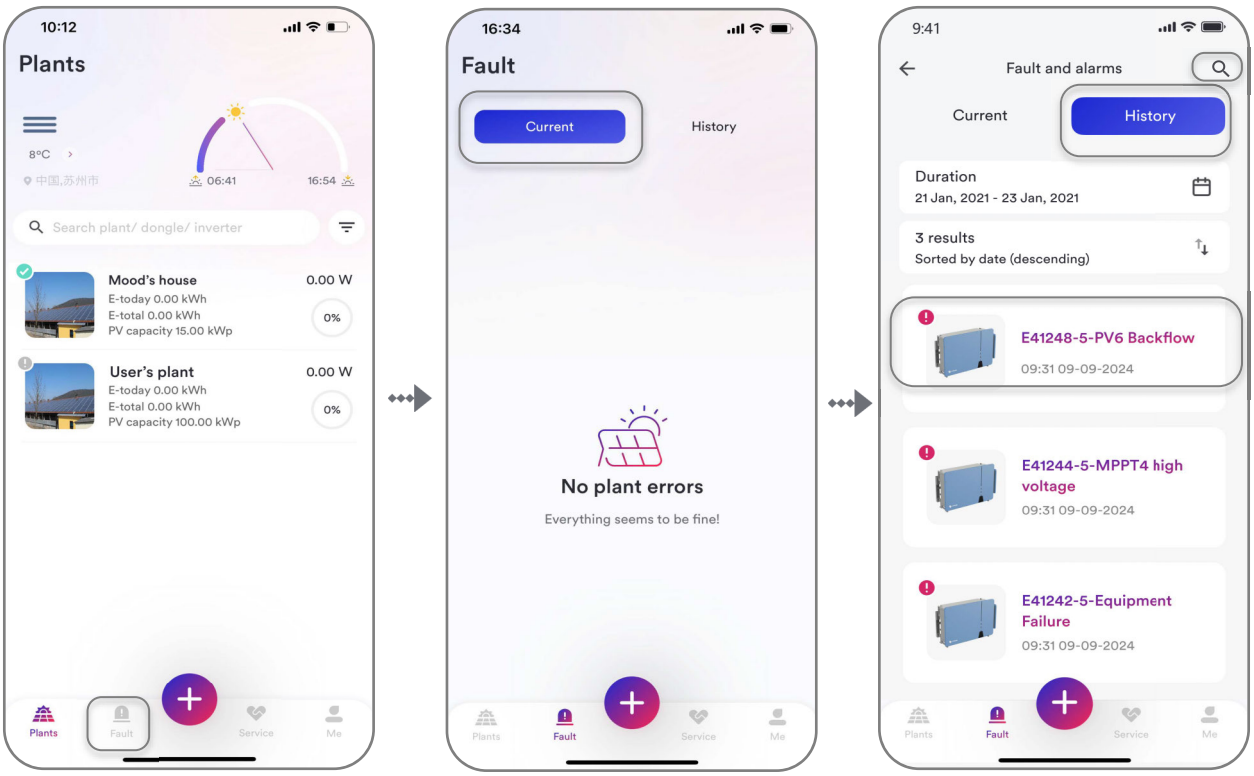


Step 6

Fig. 108. Edit a plant

7.2 About Fault

If there is a faulty device under your account ID, you can view the fault in the two dimensions of “current” and “history” through the “Fault” column of the home page. Click on the specified fault to view the details and get a solution.



You can select a fault and click to enter and view details

Click on the magnifying glass to enter the inverter serial number for search. Other forms of input do not support search operations.

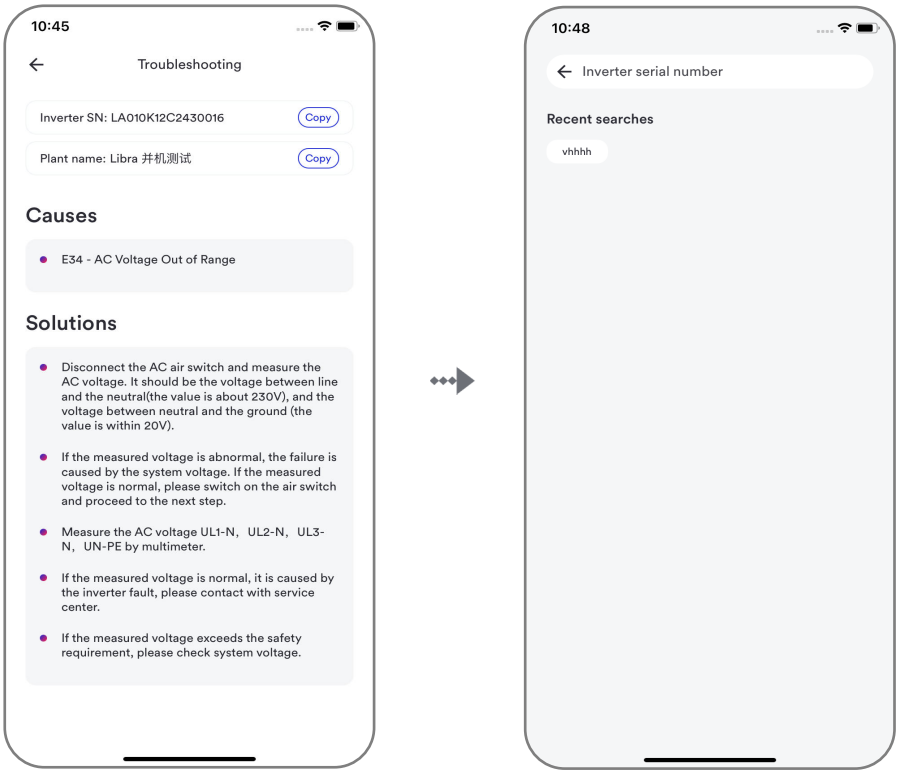


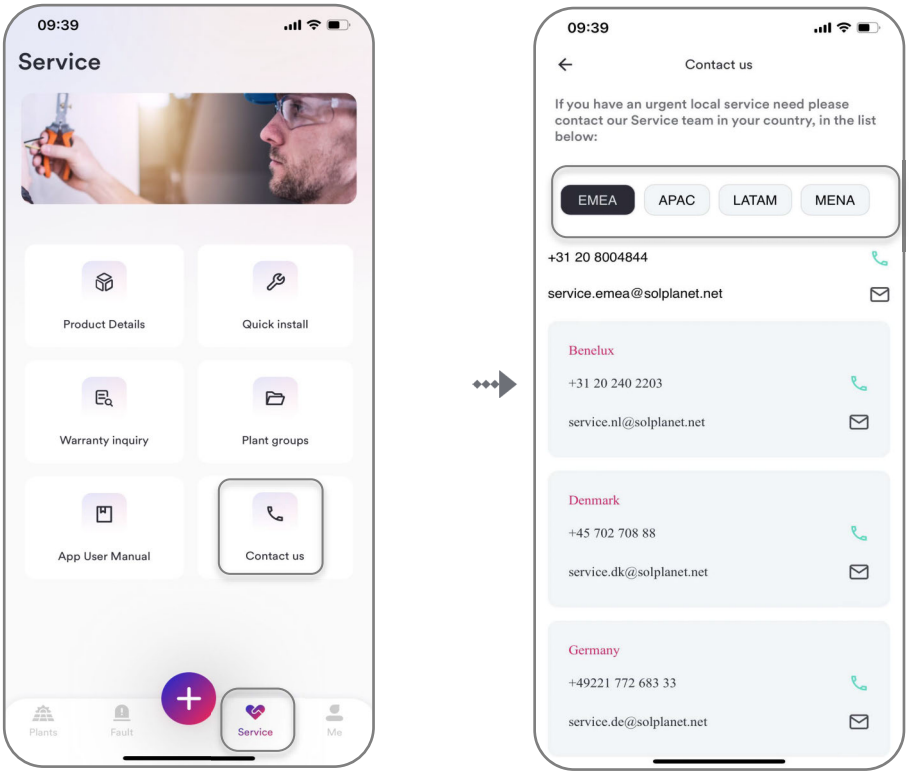
Fig. 109. View fault details

7.3 About Service

If you encounter technical issues related to our product, please contact our regional service department within working hours.

Follow below steps to find the contact information of different regions for help.

1. Click< Product Details>, you can go to the information platform, according to the machine side label on the inverter type query supporting information (including: Manuals, Quick install, Datasheet, Install video, Protocol, Warranty and other information).
2. Click< Quick install > to quickly search for installation videos for your machine.
3. Click< Warranty inquiry>, you can inquire the warranty start time and end time of the specified inverter.
4. Click< Plant groups > can be assigned to the existing plants under this account, which is convenient for subsequent batch operation and maintenance management.
5. Click< App User Manual> to get the latest app manual.
6. Click< Contact us > for contact information for different regions.



Step 1 Step 2

Fig. 110. Contact us

7.4 About Me

Account login, click <Me >, enter the service module.

The End user login screen does not look like the Business user login screen.

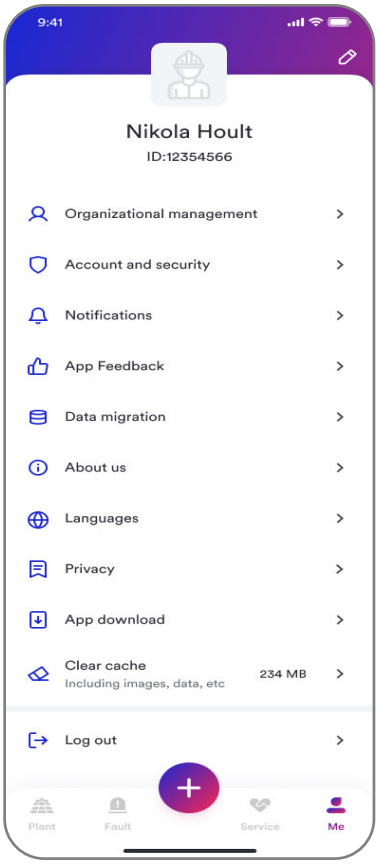


Fig. 111. B-end

No.	Name	Description
1	Organizational management	For hierarchical management of the Business user of the organization.
2	Account and security	Can be cancelled account, binding (mobile phone / email) to change the password and other settings
3	Notifications	To set the form of notification (mobile phone/email).
4	App Feedback	You can feedback the problems and suggestions you encountered when using the app, we look forward to your better suggestions!
5	Data Migration	Refer to section 7.4.2.
6	About us	To know more about us.
7	Languages	For the Privacy Policy and Terms of Service, including system permission settings.
8	Privacy	For the Privacy Policy and Terms of Service, including system permission settings.
9	App download	You can see the version model of the current app, of course the QR code below, you are welcome to recommend it to the people around you who need it. Thank you for sharing!
10	Clear cache	To cache memory containing images, data, etc.
11	Log out	To log out of the current login.

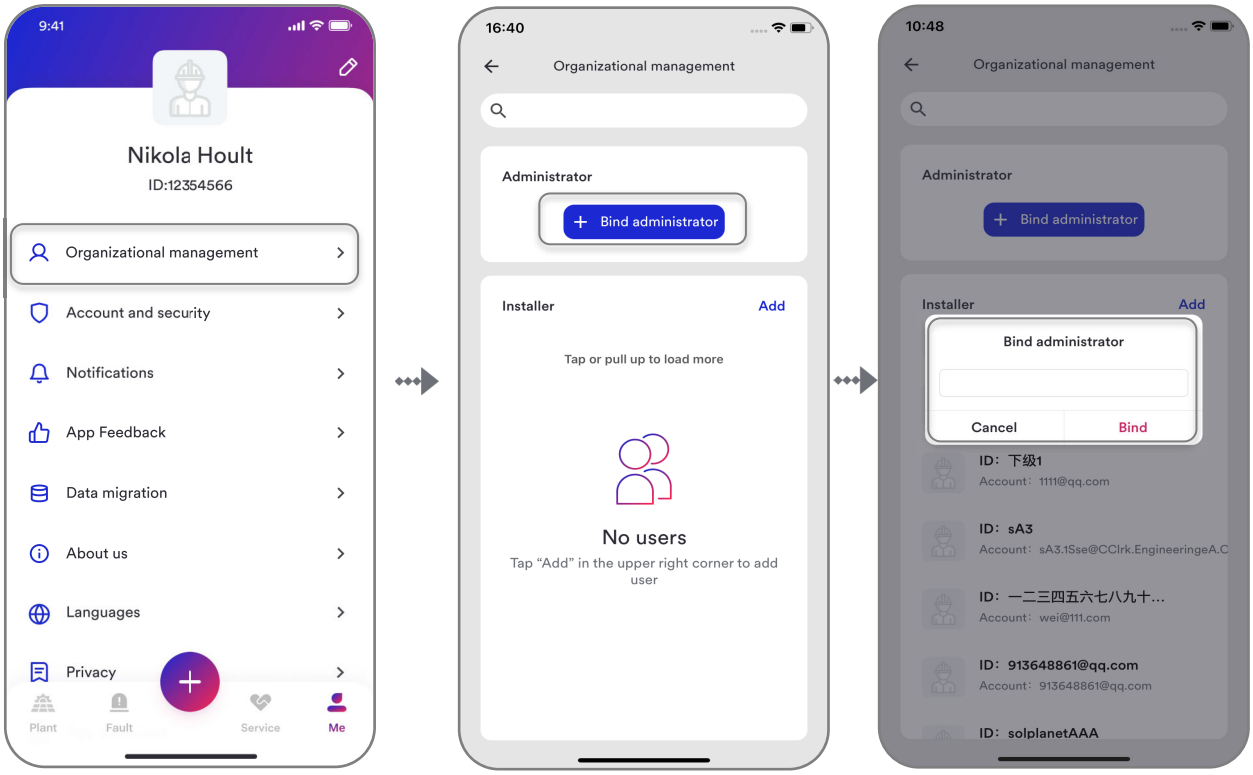
7.4.1 Organizational management

Business user logs in and clicks on organization management to bind administrator and add subordinates.

Step 1: Click< Organizational management > to go to the next screen.

Step 2: Click< Bind administrator > in the upper right corner to add administrator.

Step 3: Fill in the ID of the administrator.



Step 1 Step 2 Step 3

Fig. 112. Bind administrator

If you don't have a subordinate account, you can create one by clicking <Add>.

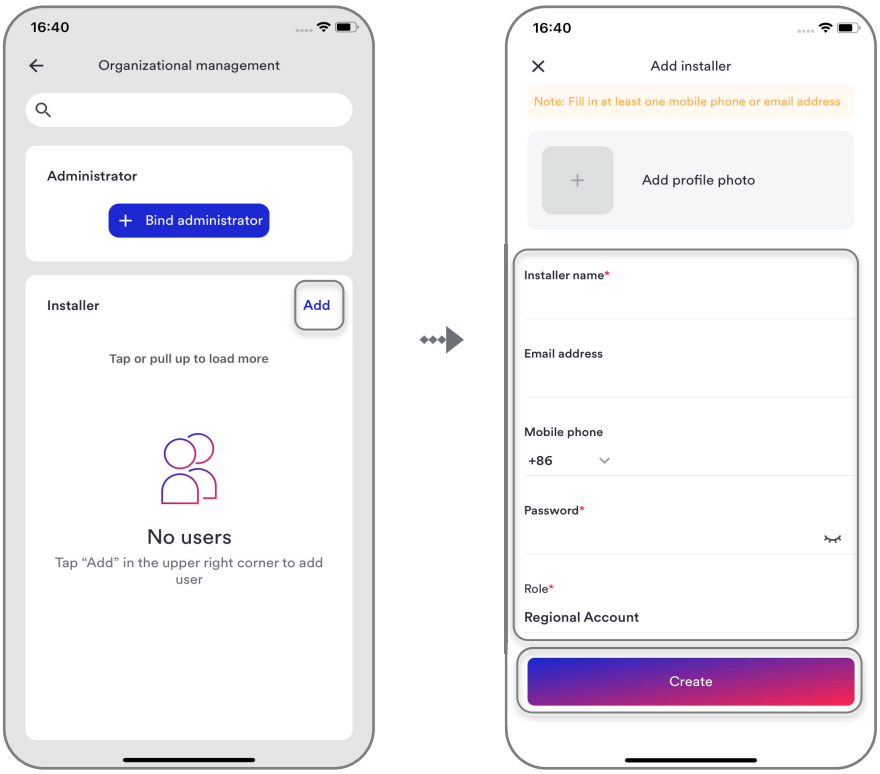
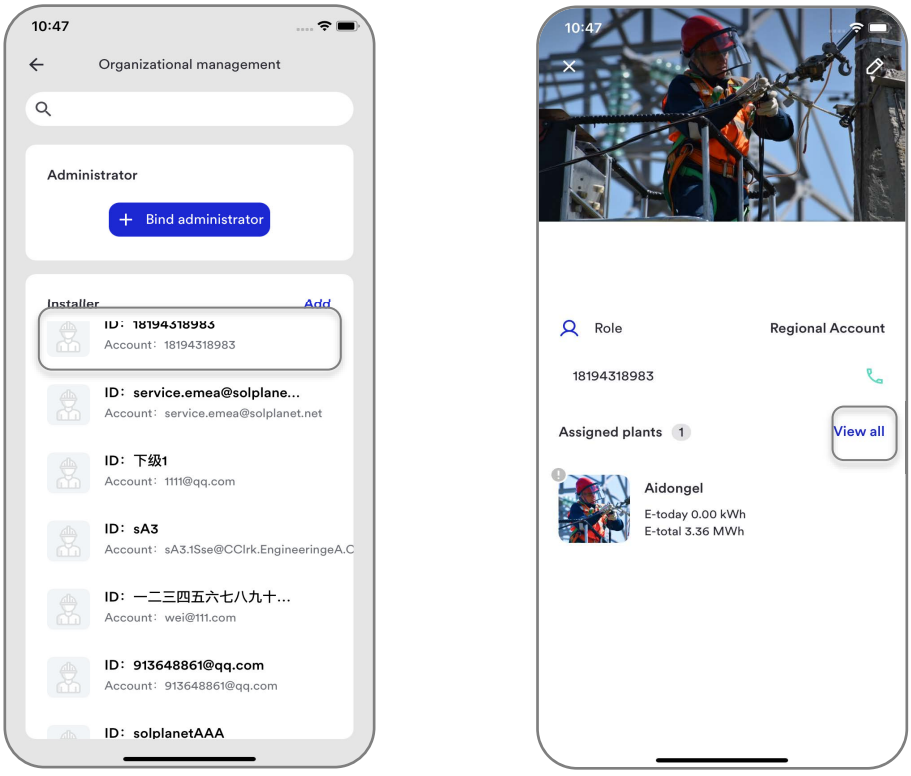


Fig. 113. Adding subordinate accounts

Click on an existing subordinate to enter the management page, where you can verify account information and view assigned power stations.

Click on the <View all > button to enter the list of assigned plants. When assigning plants again, you can select them one by one or select them all. After successful selection, the allocation is successful.



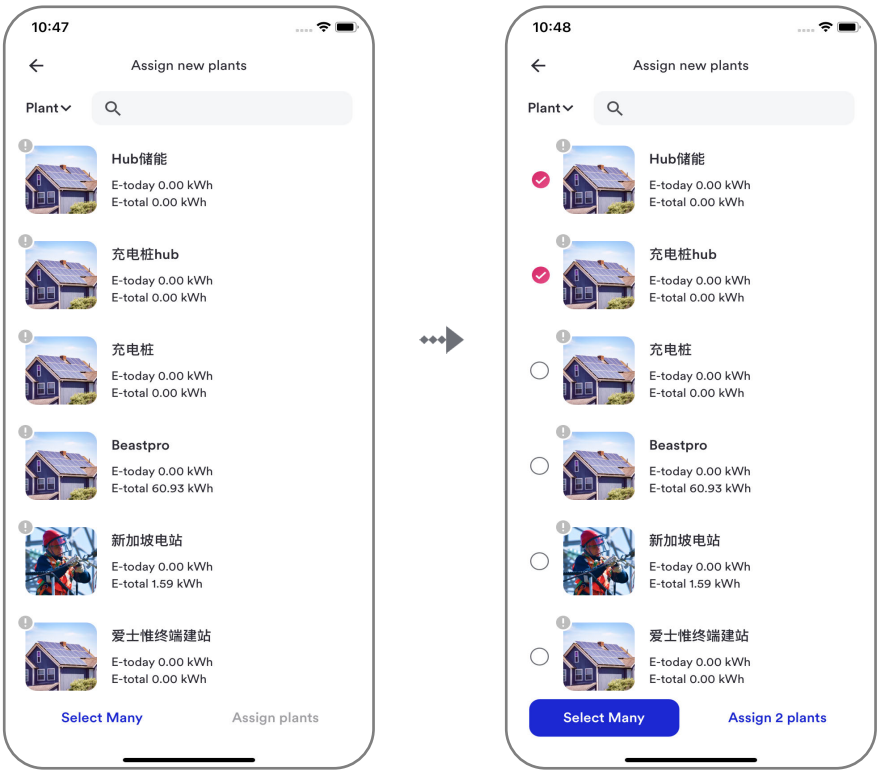


Fig. 114. Assign plants

Click the edit button to edit the information of the subordinate account. You can modify the account information and click save. Save successfully.

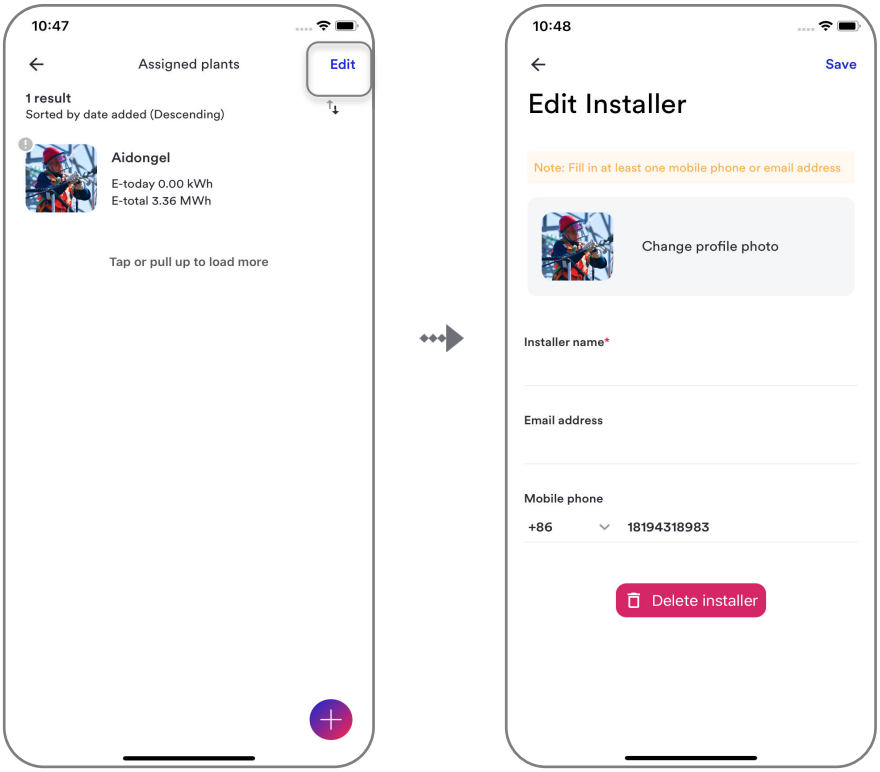


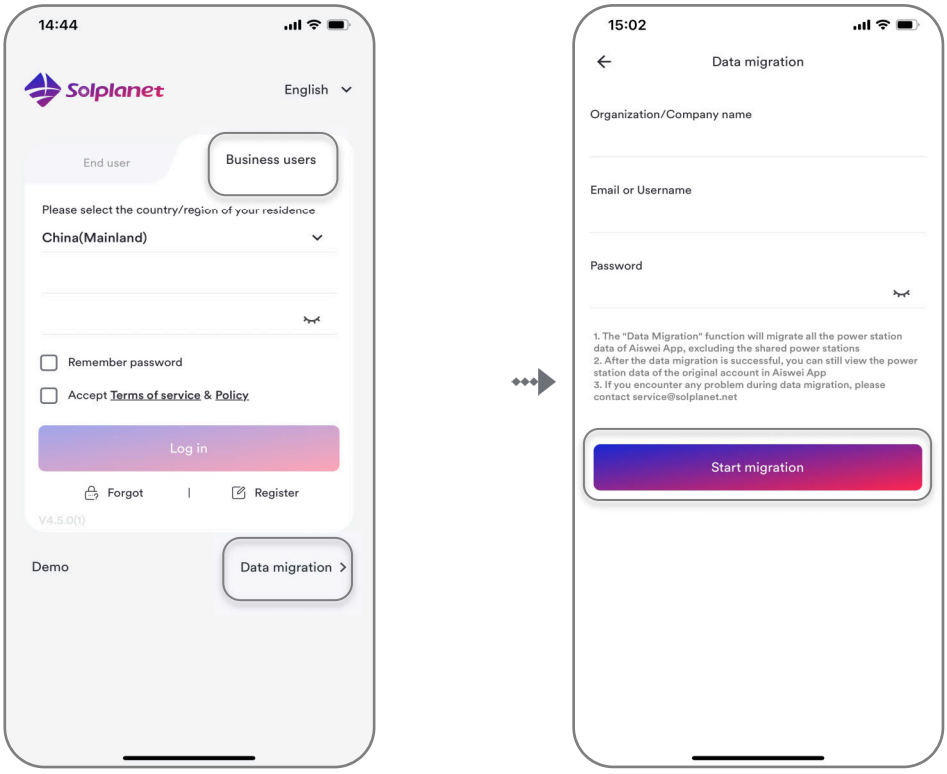
Fig. 115. Editing subordinate account information

7.4.2 Data migration

- This function is used for upgrading end users in this application to Business users, and migrating all power station information under the end user account to Business users. After the migration is successful, the account of the original end user will not be able to log in again. If you want to be an end user, you need to register again.
- The data migration function can only migrate your own power station, not the shared power station.
- If you encounter any problem during data migration, please contact service@solplanet.net.

Step 1: In the login window, switch the login identity to “Business users”.

Step 2: After entering the corresponding information, click “Start migration” to proceed.



Step 1 Step 2

Fig. 116. Data migration

- If you have registered an account with Business user identity through the “Solplanet” application and want to migrate all the power station information in the account with your end user identity. You can migrate data through <Data migration> on the <Me> page. The operation steps are the same as the data migration on the login page above.

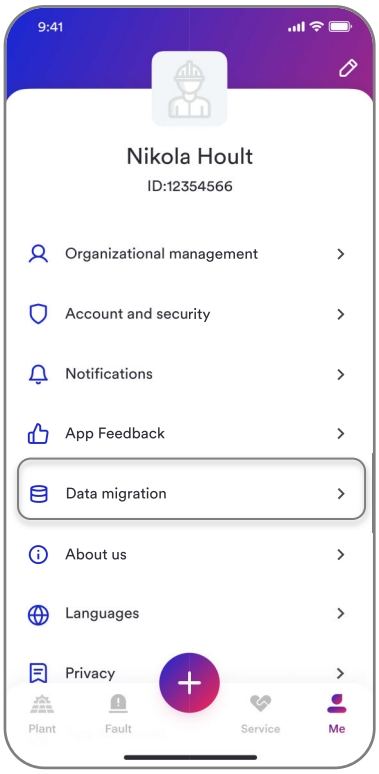


Fig. 117. Data migration

Solplanet App