User Manual

WE Mate App

V1.1 -2024 -05-15

Contents

1 About This Manual

- This manual introduces commonly used operations in WE Mate app.
- Before setting any parameters, read through this document and the equipment user manual to learn the product functions and features. When the parameters are set improperly, the equipment may fail to work properly.

1.1 Target Audience

This manual applies to trained and knowledgeable technical professionals. The technical personnel has to be familiar with the product, local standards, and electric systems.

1.2 Symbol Definition

Different levels of warning messages in this manual are defined as follows:

DANGER
Indicates a high-level hazard that, if not avoided, will result in death or serious injury.
WARNING
Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.
CAUTION
Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.
NOTICE
Highlights key information and supplements the texts. Or some skills and methods to solve product-related problems to save time.

2 Product Introduction

WE Mate app is a mobile application that communicates with the inverter via Bluetooth, WIFi, 4G, or GPRS. Commonly used functions are as follows:

1. Check the operating data, software version, alarms, etc.
2. Set safety country, grid parameters, power limit, communication parameters, etc.
3. Equipment maintenance.

2.1 Downloading and Installing the App

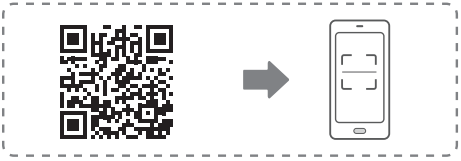
Make sure that the mobile phone meets the following requirements:

- Mobile phone operating system: Android 4.3 or later, iOS 9.0 or later.
- The mobile phone can access the Internet.
- The mobile phone supports WLAN or Bluetooth.

Method 1: Search WE Mate in Google Play (Android) or App Store (iOS) to download and install the app.

WE Mate App

Method 2: Scan the QR code below to download and install the app.



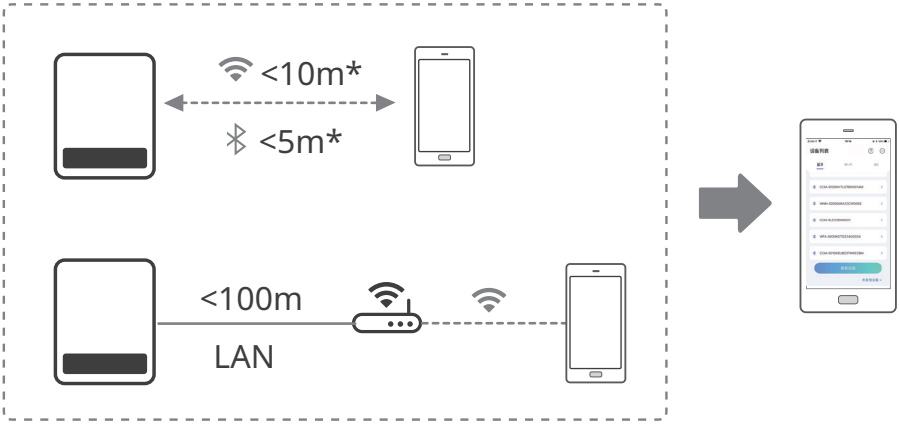
WE Mate App

NOTICE
After installing the app, it can automatically prompt users to update the app version.

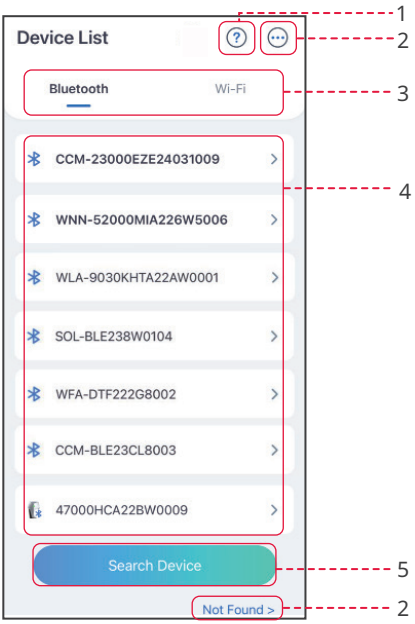
2.3 App Connection

Connect as the following shows after powering on the equipment.

NOTICE
The connection distance varies depending on communication module. Refer to the actual used communication module.



2.4 GUI Introductions to Login Page



No.	Name/Icon	Description
1	(?) Not found	Tap to read the connection guide.
2	(...)	• Check information such as app version. • Settings like data update , language.
3	Bluetooth/WiFi	Select based on actual communication method. If you have any problems, tap (?) or **NOT Found** to read the connection guide.

4	Device List	• The list of all devices. The last digits of the device name are normally the serial number of the device.
		• Select the device by finding the serial number of the master inverter when multi inverters are parallel connected.
		• The device name varies depending on the inverter model or communication module:
		  • Wi-Fi/LAN Kit, Wi-Fi Kit, Wi-Fi Box: Solar-WiFi***
		  • External or integrated bluetooth mudule:Solar-BLE***
		  • WiFi/LAN Kit-20: WLA-***
		  • WiFi Kit-20: WFA-***
		  • Ezlink3000: CCM-BLE***/CCM-***/***

5	Search Device	Tap **Search Device** if the device is not found.

3 App Operations for Grid-Tide PV Inverters

NOTICE

- All the user interface (UI) screenshots or words in this document are based on **WE Mate app V1.1.0**. The UI may be different due to the version upgrade. The screenshots, words or data are for reference only.
- The method to set parameters is the same for all inverters. But the parameters displayed varies based on the equipment model and safety code. Refer to the actual interface display for specific parameters.
- Before setting any parameters, read through user manual of the app and the inverter or charger to learn the product functions and features. When the inverter parameters are set improperly, the inverter may fail to connect to the utility grid or fail to connect to the utility grid in compliance with related requirements and damage the battery, which will affect the inverter's power generation.

3.1 Log In as Grid-Tied PV Inverter

NOTICE

- Log in using the initial password for the first time and change the password as soon as possible. To ensure account security, you are advised to change the password periodically and keep the new password in mind.
- The screenshots in this chapter are based on WiFi or Bluetooth login.

Step 1 Ensure that the inverter is power on, both the inverter and the communication module are working properly.

Step 2 Tap **Bluetooth** or **WiFi** tab on the homepage of WE Mate app based on the communication method.

Step 3 (optional): If you choose to connect the device via WiFi, open the WiFi settings of your phone first and connect to the inverter's WiFi signal (Solar-WiFi***). Default password: 12345678.

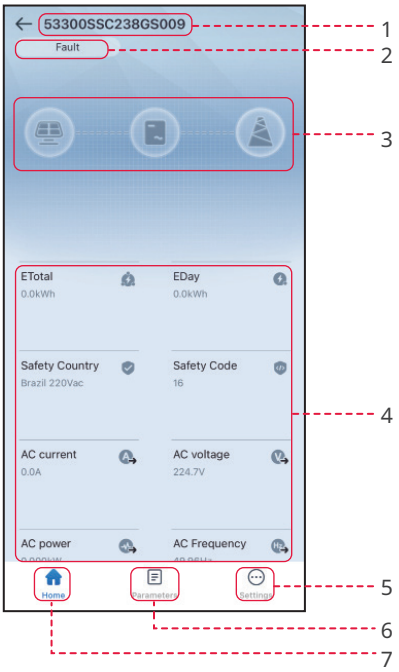
Step 4 Pull down or tap **Search Device** to refresh the device list. Find the device by the the inverter serial number. Tap the device name to log in. Select the device by checking the serial number of the master inverter when multi inverters are parallel connected.

Step 5(optional): For first connection with the device via Bluetooth, there will be a Bluetooth pairing prompt, tap **Pair** to continue the connection.

Step 6 Log in as an Owner or an Installer. Initial password: 1234.

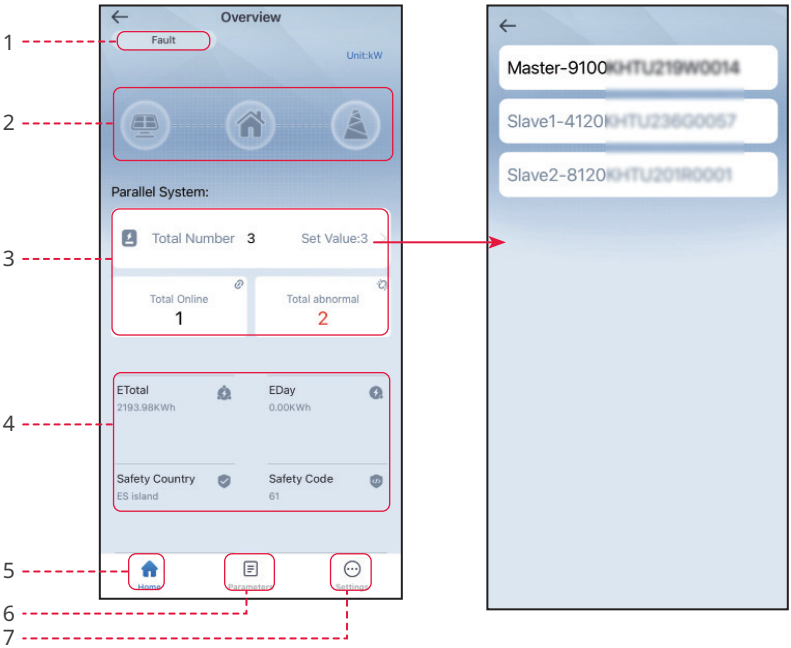
3.2 GUI Introductions to Grid-Tied PV Inverters

Single Inverter



No.	Name/Icon	Description
1	Serial Number	Serial number of the connected inverter.
2	Device Status	Indicates the status of the inverter, such as **Working**, **Fault**, etc.
3	Energy Flow Chart	Indicates the energy flow chart of the PV system. The actual page prevails.
4	System Status	Indicates the working status of the PV system, such as **Etotal**, **Safety Country**, **AC Current**, **AC Voltage**, etc.
5		Home. Tap **Home** to check **Serial Number**, **Device Status**, **Energy Flow Chart**, **System Status**, etc.
6		Parameters. Tap **Parameters** to check the inverter **Data**, like **Device Model, FW Version, PV, AC Current, AC Voltage**, etc.. Or check **Alarm** like **Utility Loss, Undervoltage**, etc..
7		Settings. Tap **Settings** to set parameters like **Safety Code**, **Communication Settings**, **Power Limit**, **Firmware Update**, **AFCI Detection**, **Grid Switch**, etc..

Parallel Connected Inverters



No.	Name/Icon	Description
1	System Status	Indicates the status of the parallel system, such as **Working**, **Fault**, etc..
2	Energy Flow Chart	Indicates the energy flow chart of the PV system. The actual page prevails.
3	Parallel System	• **Total Number**: total number of inverters in the parallel system. • **Total Online**: online inverters in the parallel system. • **Total abnormal**: offline inverters in the parallel system. • Tap **Total Number** to check serial numbers of all the inverters. Tap the serial number to enter the setting page of the single inverter.
4	System Status	Indicates the working status of the PV system, such as **Etotal** of the system, and **Safety Country**, **AC Current**, **AC Voltage** and others of the master inverter.
5		Home. Tap **Home** to check **Serial Number**, **Device Status**, **Energy Flow Chart**, **System Status**, etc.
6		Parameters. Tap Parameters to check the **model** or **status** of both master and slave inverters in the system, or check **FW Version, AC Current, AC Frequency**, etc. of the master inverter. Or check Alarm like **Utility Loss, Undervoltage**, etc..
7		• Settings. Tap to set **Quantity**, **Safety Code**, **Grid Switch**, **DRED**, etc.. • The settings are effect to all the inverters in the parallel system.

3.3 Checking Version Information

Step 1 Tap **Home** > **Settings** > **Device Information** to check the firmware information.

No.	Parameters	Description
1	DSP FW Version	DSP version of the inverter.
2	ARM FW Version	ARM version of the inverter.
3	Communication Module FW Version	Software version of the connected communication module.

3.4 Setting Basic Information (Owner/Installer)

Step 1 Tap **Home** > **Settings** > **Basic Settings**, to set the basic parameters according to the inverter location and actual application scenarios.

No.	Parameters	Description
1	Safety Code	• Set the safety country in compliance with local grid standards and application scenario of the inverter. The default parameters varies depending on different safety code. The safety parameters can be changed in **Safety Parameters**. • Tap **Safety Code** > **Export** to export the default value of some parameters. • Password for changing the safety parameters: 123456.
2	Time	Set time according to the actual time in the country or region where the inverter is located. Both automatic calibration and manual setting are allowed at present.
3	SPD	After enabling this function, when the SPD module is abnormal, there will be SPD module exception alarm prompt.
4	Output Type(On-Grid)	Set the grid type according to the actual grid type. Supported grid type: star grid and delta grid.
5	Shadow Scan	Enable the shadow scan function if the PV panels are shadowed. Set the Shadow Scan interval and MPPT shadow scan if the inverter supports.
6	DC Tripping	Enable the DC tripping function to disconnect the DC switch automatically when the inverter fails.
7	Power scheduling	Set the output value of the inverter.
8	AUTO TEST	Enable **AUTO TEST** to set auto test for grid tying in compliance with local grid standards and requirements.
9	Change Password	The login password can be changed. Keep the changed password in mind after changing it. Contact the after-sales service if you forget the password.

3.5 Setting Remote Shutdown/DRED/RCR

Enable Remote Shutdown/DRED/RCR before connecting the third party DRED, remote shutdown, or RCR device to comply with local laws and regulations.

Step 1 Tap **Home** > **Settings** > **Advanced Settings** to set the parameters.

Step 2 Enable **Remote Shutdown**, **DRED** or **RCR** based on actual needs.

3.6 Setting PID Repair

When the inverter is connected to the grid, the potential difference between the negative pole of the PV array and the module frame decreases the energy generated by the PV modules. That is the PID effect. Enable PID recovery, the inverter rises the voltage of the negative pole of the PV array to ground to approx. 1/2 DC BUS voltage through the PID module to recover the PID effect.

Step 1 Tap **Home** > **Settings** > **Advanced Settings** to set the parameters.

Step 2 Enable **PID Repair** based on actual needs

3.7 Setting the Power Limit Parameters (Installer)

Enable Power Limit when power limiting is required by local grid standards and requirements.

Step 1 Tap **Home** > **Settings** > **Advanced Settings** > **Power Limit** to set the parameters.

Step 2 Enable **Power Limit**, set **Export Power** and **External CT Ratio** based on actual needs and tap √. The parameters are set successfully.

3.7.1 Power Limit Setting (For countries and regions except Australia)

No.	Parameters	Description
1	Power Limit	Enable **Power Limit** when power limiting is required by local grid standards and requirements.
2	Select Mode	• Select power limit mode for some inverters. Supports: Single-Phase and Three-Phase. • Limit the power per phase when Single-Phase is selected, and limit total power of the three phases when Three-Phase is selected.
3	Export Power	Set the value based on the actual maximum power feed into the utility grid.
4	External CT Ratio	Set the ratio of the primary current to the secondary current of the external CT.

3.7.2 Power Limit Setting (Only for Australia)

No.	Parameters	Description
1	Soft Limit	Enable Soft Limit when power limiting is required by local grid standards and requirements.
2	Select Mode	• Select power limit mode for some inverters. Supports: Single-Phase and Three-Phase. • Limit the power per phase when Single-Phase is selected, and limit total power of the three phases when Three-Phase is selected.
3	Export Power	Set the value based on the actual maximum power feed into the utility grid.
4	External CT Ratio	Set the ratio of the primary current to the secondary current of the external CT.
5	Hard Limit	After enabling this function, the inverter and the utility grid will automatically disconnect when the power feeds into the grid exceeds the required limit.

3.8 Setting the N-PE Voltage Detection

Step 1 Tap **Home** > **Settings** > **Advanced Settings** > **N-PE Voltage Detection** to set the parameters.

Step 2 Enable **N-PE Voltage Detection**, set **N-PE Error Threshold** based on actual needs and tap √**.** The parameters are set successfully.

3.9 Set the AFCI Detection Parameters (Installer)

Step 1 Tap **Home** > **Settings** > **Advanced Settings** > **AFCI Test** to set the parameters.

No.	Parameters	Description
1	AFCI Test	The inverter ARC function is optional and off by default. Enable or disable AFCI accordingly.
2	Clear AFCI alarm	Clear ARC Faulty alarm records.
3	Self-check	Tap Start to check whether the AFCI function works normally.

3.10 Setting the Power Scheduling Response Parameters

Step 1 Tap **Home > Settings** > **Advanced Settings > Power Scheduling Response Parameters** to set the parameters.

Step 2 Select **Disable**, **Gradient Control,** or **PT-1 Behavior** from the **Active Power Dispatching Response Mode** drop down list based on actual needs. If **Gradient Control** is selected, enter **Power Gradient** value. If **PT-1 Behavior** is selected, enter **PT-1 Behavior Tau** based on actual needs.

Step 3 Select **Disable**, **Gradient Control,** or **PT-1 Behavior** from the **Reactive Dispatching Response Mode** drop down list based on actual needs. If **Gradient Control** is selected, enter **Power Gradient** value. If **PT-1 Behavior** is selected, enter **PT-1 Behavior Tau** based on actual needs.

Step 4 Tap ✓ to save the settings.

No.	Parameters	Description
Active Power Dispatching Response Mode		
1	PT-1 Behavior	Realize active scheduling based on the first-order LPF curve within the response time constant.
2	PT-1 Behavior Tau	Set the time constant within which the active power changes based on the first order LPF curve.
3	Gradient Control	Realize active scheduling based on the power change slope.
4	Power Gradient	Set the active power change slope.
Reactive Dispatching Response Mode		
5	PT-1 Behavior	Realize reactive scheduling based on the first-order LPF curve within the response time constant.
6	PT-1 Behavior Tau	Set the time constant within which the reactive power changes based on the first order LPF curve.
7	Gradient Control	Realize reactive scheduling based on the power change slope.
8	Power Gradient	Set the reactive power change slope.

3.11 Setting Safety Parameters (Installer)

NOTICE
The parameters vary depending on the safety country or region.

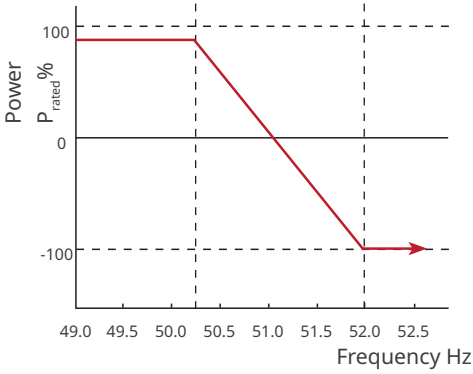
3.11.1 Setting the Active Curve

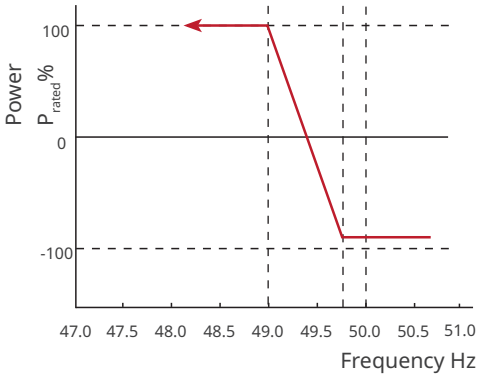
3.11.1.1 Setting the P(F) Curve

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Active Curve Settings** to set the parameters.

Step 2 Enable **P(F) Curve (Frequency Power Curve)**.

Step 3 Set the parameters based on actual needs. Tap ✓ to complete the settings.





No.	Parameters	Description
1	P(F) Curve (Frequency Power Curve)	Enable P(F) Curve when it is required by local grid standards and requirements.
Overfrequency Unloading		
2	Overfrequency Threshold	The inverter output active power will decrease when the utility grid frequency is too high. The inverter output power will decrease when the utility grid frequency is higher than **Overfrequency Threshold**.
3	Overfrequency Endpoint	The inverter output active power will decrease when the utility grid frequency is too high. The inverter output power will stop decreasing when the utility grid frequency is higher than **Overfrequency Endpoint**.
4	Power Reference	Adjust the inverter output power based on Apparent Active Power, Rated Active Power, Momentary Active Power, Or Max. Active Power.

No.	Parameters	Description
5	Power Response To Overfrequency Gradient	The inverter output active power will increase when the utility grid frequency is too high. Indicates the slope when the inverter output power decreases.
6	Tentional Delay Ta	Indicates the delayed response time when the inverter output power is higher than the **Overfrequency Threshold**.
7	Hysteretic Power Recovery Slope	Indicates the variation slope when the power recovers.
Underfrequency Loading		
8	Underfrequency Threshold	The inverter output active power will increase when the utility grid frequency is too low. The inverter output power will increase when the utility grid frequency is lower than **Underfrequency Threshold**.
9	Underfrequency Endpoint	The inverter output active power will increase when the utility grid frequency is too low. The inverter output power will stop increasing when the utility grid frequency is lower than **Underfrequency Endpoint**.
10	Power Reference	Adjust the inverter output power based on Apparent Active Power, Rated Active Power, Momentary Active Power, Or Max. Active Power.
11	Power Response to Underfrequency Gradient	The inverter output active power will increase when the utility grid frequency is too low. Indicates the slope when the inverter output power increases.
12	Tentional Delay Ta	Indicates the delayed response time when the inverter output power is lower than the **Underfrequency Threshold**.
13	Hysteretic Power Recovery Slope	Indicates the variation slope when the power recovers.

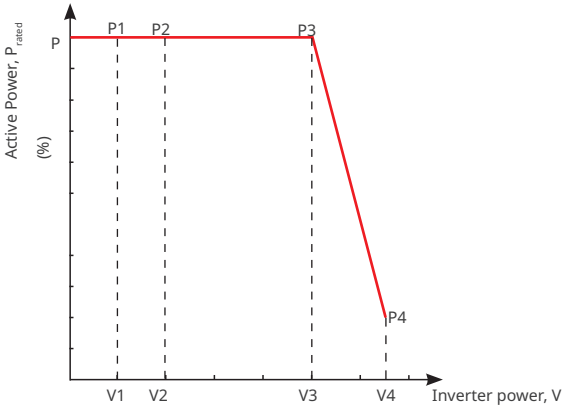
3.11.1.2 Setting the P(U) Curve

When the grid voltage is too high, decrease the inverter output power to decrease the grid-tied power.

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Active Curve Settings** to set the parameters.

Step 2 Enable **P(U) Curve (Voltage Power Curve)**.

Step 3 Set the parameters based on actual needs. Tap ✓ to complete the settings. The inverter will adjust the active output power to the apparent power ratio in real time according to the actual grid voltage to the rated voltage ratio.



No.	Parameters	Description
1	P(U) Curve	Enable P(U) Curve when it is required by local grid standards and requirements.
2	Vn Voltage	The percentage of actual voltage to the rated voltage at Vn point, n=1, 2, 3, 4. For example, setting **Vn Voltage** to 90 means V/V_{rated}%=90%.
3	Vn Active Power	The percentage of the output active power to the apparent power at Vn point, (n=1, 2, 3, 4). For example, setting **Vn Active Power** to 48.5 means P/P_{rated}% =48.5%
4	Output Response Mode	Set the active power output response mode. Supports: • **Disable** • **PT-1 Behavior**, realize active scheduling based on the first-order LPF curve within the response time constant. • **Gradient Control**, realize active scheduling based on the power change slope.
5	PT-1 Behavior Tau	Set the time constant within which the active power changes based on the first order LPF curve when the **Output Response Mode** is set to be **PT-1 Behavior**.
6	Power Gradient	Set the active power change slope when the **Output Response Mode** is set to be **Gradient Control**.

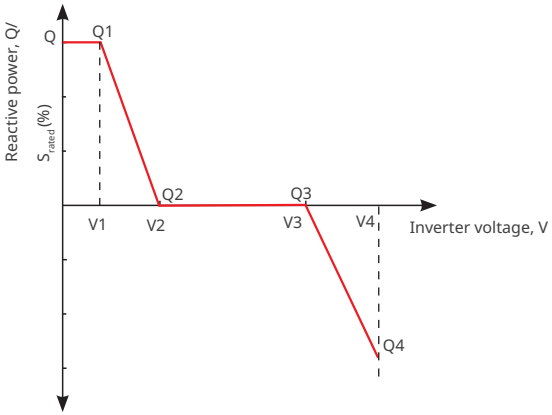
3.11.2 Setting the Reactive Curve

3.11.2.1 Setting the Q(U) Curve

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Reactive Curve Settings** to set the parameters.

Step 2 Select **Q(U) Curve**.

Step 3 Set the parameters based on actual needs. Tap ✓ to complete the settings. The inverter will adjust the reactive output power to the apparent power ratio in real time according to the actual grid voltage to the rated voltage ratio.



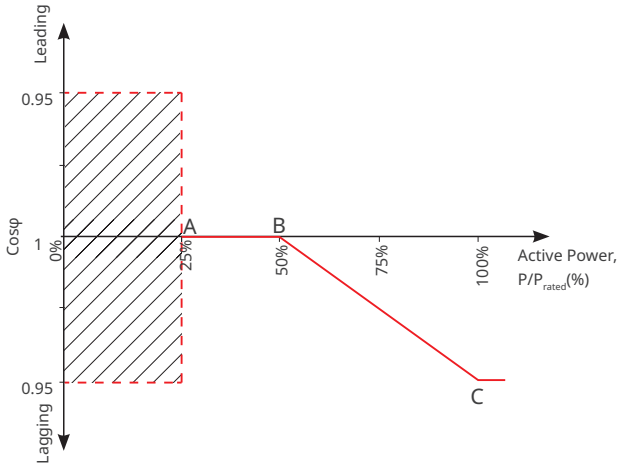
No.	Parameters	Description
1	Q(U) Curve	Enable Q(U) Curve when it is required by local grid standards and requirements.
2	Vn Voltage	The percentage of actual voltage to the rated voltage at Vn point, n=1, 2, 3, 4. For example, setting **Vn Voltage** to 90 means V/V_{rated}%=90%.
3	Vn Reactive Power	The percentage of the reactive output power to the apparent power at Vn point, n=1, 2, 3, 4. For example, setting **Vn Reactive Power** to 48.5 means Q/S_{rated}%=48.5%
4	Time Constant	The power is required to reach 95% in the first order LPF curve within three time constant.
5	Lock-In Power	When the inverter output reactive power to the rated power ratio is between the Lock-in power and Lock-out power, the ratio meets Q(U) curve requirements.
6	Lock-out Power	

3.11.2.2 Setting the Cosφ(P) Curve

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Reactive Curve Settings** to set the parameters.

Step 2 Select **Cosφ(P) Curve**.

Step 3 Set the parameters based on actual needs. Tap ✓ to complete the settings. The inverter will adjust the active output power to the apparent power ratio in real time according to the actual grid voltage to the rated voltage ratio.



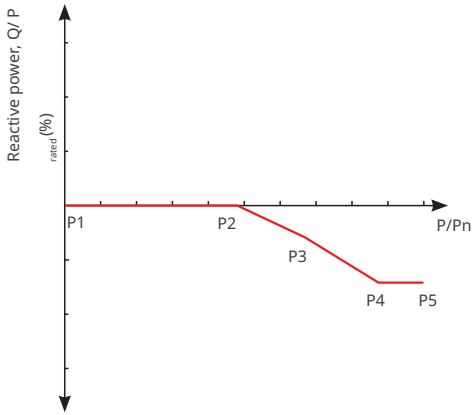
No.	Parameters	Description
1	Cosφ(P) Curve	Enable Cosφ Curve when it is required by local grid standards and requirements.
2	Point A/B/C/D Power	The percentage of the inverter output active power to the rated power at point A/B/C.
3	Point A/B/C/D Cosφ	The power factor at point A/B/C.
4	Time Constant	The power is required to reach 95% in the first order LPF curve within three time constant.
5	Lock-in Voltage	When the grid voltage is between Lock-in Voltage and Lock-out Voltage, the voltage meets Cosφ curve requirements.
6	Lock-out Voltage	

3.11.2.3 Setting the Q(P) Curve

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Reactive CurveSettings** to set the parameters.

Step 2 Select **Q(P) Curve**.

Step 3 Set the parameters based on actual needs. Tap ✓ to complete the settings. The inverter will adjust the reactive output power to the apparent power ratio in real time according to the actual grid voltage to the rated voltage ratio.



No.	Parameters	Description
1	Q(P) Curve	Enable Q(P) Curve when it is required by local grid standards and requirements.
2	Pn Reactive Power	The percentage of the output reactive power to the rated power at Pn point, n=1, 2, 3, 4, 5, 6. For example, setting **Pn Active Power** to 90 means Q/P_{rated}%=90%.
3	Pn Power	The percentage of the output active power to the rated power at Pn point, n=1, 2, 3, 4, 5, 6. For example, setting **Pn Power** to 90 means P/P_{rated}%=90%.
4	Time Constant	The power is required to reach 95% in the first order LPF curve within three time constant.

3.11.3 Setting Protection Parameters

NOTICE
Set the safety parameters in compliance with local requirements. Do not change the parameters without the prior consent of the grid company.

3.11.3.1 Setting Voltage Protection Parameters

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Protection Parameters** to set the parameters.

Step 2 Set the parameters based on actual needs. Tap ✓ to complete the settings.

No.	Parameters	Description
1	OV Stage n Trip Value	Set the grid overvoltage protection threshold value.
2	OV Stage n Trip Time	Set the grid overvoltage protection tripping time.
3	UV Stage n Trip Value	Set the grid undervoltage protection threshold value.
4	UV Stage n Trip Time	Set the grid undervoltage protection tripping time.
5	10Min Overvoltage Trip Threshold	Set the 10min overvoltage protection threshold value.
6	10Min Overvoltage Trip Time	Set the 10min overvoltage protection tripping time.

3.11.3.2 Setting Frequency Protection Parameters

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Protection Parameters** to set the parameters.

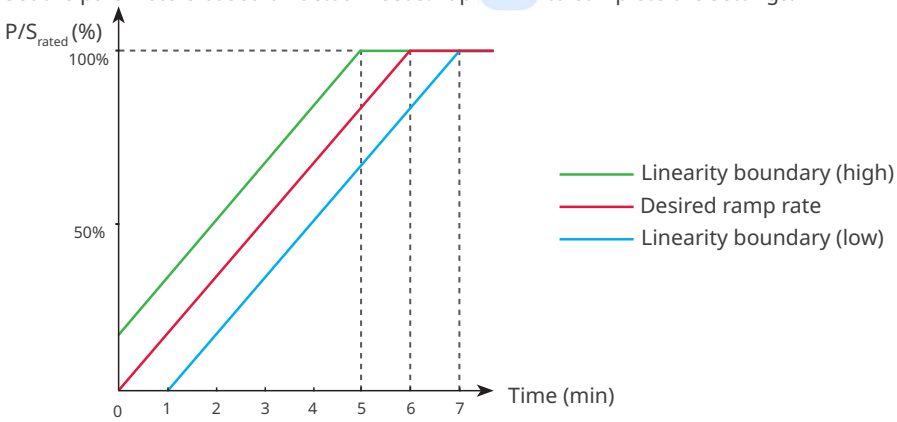
Step 2 Set the parameters based on actual needs. Tap ✓ to complete the settings.

No.	Parameters	Description
1	OF Stage n Trip Value	Set the grid overfrequency protection threshold value.
2	OF Stage n Trip Time	Set the grid overfrequency protection tripping time.
3	UF Stage n Trip Value	Set the grid underfrequency protection threshold value.
4	UF Stage n Trip Time	Set the grid underfrequency protection tripping time.

3.11.4 Setting Connection Parameters

Step 1 Tap **Home** > **Settings** > **Advanced Settings** > **Safety Parameters** > **Connection Parameters** to set the parameters.

Step 2 Set the parameters based on actual needs. Tap ✓ to complete the settings.



No.	Parameters	Description
Ramp Up		
1	Upper Voltage	The inverter cannot connect to the grid if it is powered on for the first connection and the grid voltage is higher than the **Upper Voltage**.
2	Lower Voltage	The inverter cannot connect to the grid if it is powered on for the first connection and the grid voltage is lower than the **Lower Voltage**.
3	Upper Frequency	The inverter cannot connect to the grid if it is powered on for the first connection and the grid frequency is higher than the **Upper Frequency**.
4	Lower Frequency	The inverter cannot connect to the grid if it is powered on for the first connection and the grid frequency is lower than the **Lower Frequency**.
5	Observation Time	The waiting time for connecting the inverter to the grid when meeting the following requirements. 1. The inverter is powered on for the first connection. 2. The utility grid voltage and frequency meet certain requirements.
6	Soft Ramp Up Gradient	Indicates the percentage of incremental output power per minute based on the local requirements when the inverter is powered on for the first time. For example, setting **Soft Ramp Up Gradient** to 10 means the start-up slope is 10%P_{rated}/min.
Reconnection		
7	Upper Voltage	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid voltage is higher than the **Upper Voltage**.

No.	Parameters	Description
8	Lower Voltage	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid voltage is lower than the **Lower Voltage**.
9	Upper Frequency	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid frequency is higher than the **Upper Frequency**.
10	Lower Frequency	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid frequency is lower than the **Lower Frequency**.
11	Observation Time	The waiting time for connecting the inverter to the grid when meeting the following requirements. 1. The inverter is reconnecting to the grid due to a fault. 2. The utility grid voltage and frequency meet certain requirements.
12	Reconnection Gradient	Indicates the duration for the output power increases to the rated power when the inverter reconnects to the utility grid due to a fault.

3.11.5 Setting Voltage Ride Through Parameters

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Voltage Ride Through** to set the parameters.

Step 2 Enable **LVRT** or **HVRT** and set the parameters based on actual needs. Tap ✓ to complete the settings.

No.	Parameters	Description
LVRT		
1	UVn Voltage	The ratio of the ride through voltage to the rated voltage at UVn point during LVRT.
2	UVn Time	The ride through time at UVn point during LVRT.
3	Enter Into LVRT Threshold	The inverter will not be disconnected from the utility grid immediately when the grid voltage is between **Enter Into LVRT Threshold** and **Exit LVRT Endpoint.**
4	Exit LVRT Endpoint	
5	Gradient K1	K-factor for reactive power during LVRT.
6	Zero Current Mode	The system outputs zero current during LVRT.
7	Entry Threshold	Set the entry threshold of zero current mode.
HVRT		
6	OVn Voltage	The ratio of the ride through voltage to the rated voltage at OVn point during HVRT.

No.	Parameters	Description
7	OVn Time	The ride through time at OVn point during HVRT.
8	Enter High Crossing Threshold	The inverter will not be disconnected from the utility grid immediately when the grid voltage is between **Enter High Crossing Threshold** and **Exit High Crossing Threshold.**
9	Exit High Crossing Threshold	
10	Slope K2	K-factor for reactive power during HVRT.
11	Zero Current Mode	The system outputs zero current during HVRT.
12	Entry Threshold	Set the entry threshold of zero current mode.
13	Current Distribution Mode	Set the current distribution mode. Supports: Constant Current Mode, Reactive Current Priority Mode, and Active Current Priority Mode.
14	Active Power Recovery Mode After Crossing	Set the active power recover mode after LVRT or HVRT. Supports: Disable, Gradient Control, or PT-1 Behavior.
15	Power Gradient	Realize active power recovery based on the power change slope.
16	PT-1 Behavior Tau	Set the time constant within which the active power changes based on the first order LPF curve.
17	Traversing The End Of Reactive Power Recovery Mode	Set the active power recover mode after LVRT or HVRT. Supports: Disable, Gradient Control, or PT-1 Behavior.
18	Power Gradient	Realize active power recovery based on the power change slope.
19	PT-1 Behavior Tau	Set the time constant within which the reactive power changes based on the first order LPF curve.

3.11.6 Setting Frequency Ride Through Parameters

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Frequency Ride Through** to set the parameters.

Step 2 Enable **Frequency Ride Through** and set the parameters based on actual needs. Tap ✓ to complete the settings.

No.	Parameters	Description
1	UFn Frequency	The frequency at the UFn point during frequency ride through.
2	UFn Time	The ride through duration at the UFn point during frequency ride through.
3	OFn Frequency	The frequency at the OFn point during frequency ride through.
4	OFn Time	The ride through duration at the OFn point during frequency ride through.

3.12 Starting/Stopping the Grid

Step 1 Tap **Home** > **Settings** > **Advanced Settings** > **Grid Switch.**

Step 2 Tap ▶ to start connecting to the grid. Or tap ⏸ to end connection.

3.13 Setting PV Access Mode

Select the PV access mode based on the actual connections between the PV strings and MPPT ports of the inverter.

Step 1 Tap **Home > Settings > Advanced Settings > PV Access Mode** to set the parameters.

Step 2 Set the access mode to **Independent Access**, **Partial Parallel Connect** or **Parallel Connection** based on actual connections. Tap **Save** to complete the settings.

No.	Parameters	Description
1	Stand-alone Connect	The PV strings are connected to the MPPT terminals one by one.
2	Partial Parallel Connect	The PV strings are connected to the inverter in both stand-alone and parallel connection. For example, one PV string connect to MPPT1 ad MPPT2, another PV string connect to MPPT3.
3	Parallel Connect	The external PV string is connected to multi MPPT terminals of the inverter.

3.14 Settting the Load Control

Loads can be controlled by WE Mate app when the inverter supports load control function.

Step 1 Tap **Home > Settings > Load Control** to set the parameters.

Step 2 Enable **Load Control**.

Step 3 Set the control mode based on actual needs. Supports: **Dry Contact Mode**, **Time Mode**, **Power Setting Mode**.

- **Dry Contact Mode**: when the switch is ON, the loads will be powered; when the switch isOFF, the power will be cut off. Turn on or off the switch based on actual needs.
- **Time Mode**: set the time to enable the load, and the load will be powered automatically within the setting time period.

No.	Parameters	Description
1	Start Time	The time mode will be on between the start time and end time.
2	End Time	
3	Repeat	The repeat days.

- **Power Setting Mode**: Set **Inverter Output Power**, the inverter will power the loads when the actual output power of the inverter excess the **Inverter Output Power**.

3.15 Configuring Communication Parameters

NOTICE
The communication configuration page varies depending on the communication method.

3.15.1 Configuring Network

APN Settings can only be used to configure the SIM card information of 4G communication device.

Step 1 Tap **Home > Settings > Communication Setting > Network Setting** to set the parameters.

Step 2 Configure the **WiFi**, **LAN**, or **4G** parameters based on actual needs.

No.	Parameters	Description
1	Network Name	Only for WLAN. Select WiFi based on the actual connecting.
2	Password	Only for WLAN. WiFi password for the actual connected network.
3	DHCP	• Enable DHCP when the router is in dynamic IP mode. • Disable DHCP when a switch is used or the router is in static IP mode.
4	IP Address	• Do not configure the parameters when DHCP is enabled. • Configure the parameters according to the router or switch information when DHCP is disabled.
5	Subnet Mask	
6	Gateway Address	
7	DNS Server	

3.15.2 Configuring Other Parameters

NOTICE
Set the communication address of the inverter. For a single inverter, the address is set based on actual needs. For multi connected inverters, the address of each inverter should be different while cannot be 247.

Step 1 Tap **Home > Settings > Communication Setting > Other Setting**, to set the RS485parameters.

Step 2 Set **Protocol Type**, **COM Address** and **Baud Rate** based on actual needs.

3.15.3 Configuring PLC Parameters

Only for PLC communication. Set parameters based on actual connected

Step 1 Tap **Home > Settings > Communication Settings > PLC Setting** to set the parameters.

Step 2 Set the **Transformer No.** based on actual needs.

3.15.4 Change the WiFi Password

NOTICE
The WiFi password of the communication module can be changed. Keep the changed password in mind after changing it. Contact the after-sales service if you forget the password.

Step 1 Tap **Home** > **Settings** > **Communication Setting** > **Change Password**, to change the password.

Step 2 Change the password based on actual needs.

3.16 Upgrading the Firmware

Upgrade the DSP version and ARM version of the inverter. The **Firmware Upgrade** is applicable to some inverters.

Requirements:

- The upgrade patch has been obtained from the dealer or the after sales service.
- Duplicate the upgrade patch to the smart phone for the Android system.

Step 1 Tap **Home** > **Settings** > **Firmware Upgrade**to check the firmware version.

Step 2 (Optional) Tap to import local upgrade patch. Tap **Upgrade**, follow the complete upgrade followi

3.17 Setting the (Parallel Connected Inverters)

- If the power generated by the PV system cannot be consumed by loads, the remaining power will be fed into the utility grid. Control the power fed into the grid by setting the
- Only applicable to parallel system with multiple inverters.

Step 1 Connect the master inverter in the parallel system. Tap**Home** > **Settings** > **Power-Limited Grid-Connected** to set the parameters.

Step 2 Enable **Power-Limited Grid-Connected**, enter parameters based on actual needs. Tap **Submit** to complete settings.

No.	Parameters	Description
1	Power-Limited Type	Select the output power control mode based on actual situation. • Total power: controls the total power at the grid-connection point to limit the power fed to the power grid. • Single-phase power: controls the power of each phase at the grid-connection point to limit the power fed to the power grid.
2	System Installed Capacity	Set the total capacity of all inverters in the system.

No.	Parameters	Description
3	Maximum Feeding Grid Power	Set the maximum power that is allowed feed into the utility grid based on local grid standards and requirements.
4	Maximum Feed Grid Power Offset	Set the adjustable range of the maximum power that is allowed feed into the utility grid.
5	Power Regulation Period	Set the minimum interval for adjusting the inverter power.
6	Maximum Protection Time	• According to the standards and requirements of some countries or regions, the power of feed into the utility grid is allowed to exceed the limit value within a specified duration. • Set the maximum duration from the time when detecting excessive output power to the time when output power reaches the limit value.
7	Handling Protection Exceptions	The following measures can be taken when protection exception, communication exception or meter communication exception occurs: • Shutdown: stop the equipment. • Power Limitation: the equipment continues to work at the percentage of the rated power.
8	Meter Communication Exception Handling	
9	Inverter Communication Exception Handling	
10	Inverter Communication Timeout Setting	The protective measures will be taken when the communication exception time exceeds the set time.
11	External CT Ratio	Set the ratio of the primary current to the secondary current of the external CT.

4 App Operations for Hybrid Inverters

NOTICE

- All the user interface (UI) screenshots or words in this document are based on **WE Mate app V1.1.0**. The UI may be different due to the version upgrade. The screenshots, words or data are for reference only.
- The method to set parameters is the same for all inverters. But the parameters displayed varies based on the equipment model and safety code. Refer to the actual interface display for specific parameters.
- Before setting any parameters, read through user manual of the app and the inverter or charger to learn the product functions and features. When the inverter parameters are set improperly, the inverter may fail to connect to the utility grid or fail to connect to the utility grid in compliance with related requirements and damage the battery, which will affect the inverter's power generation.

4.1 Log In as Hybrid Inverter

Step 1 Ensure that the inverter is power on, both the inverter and the communication module are working properly.

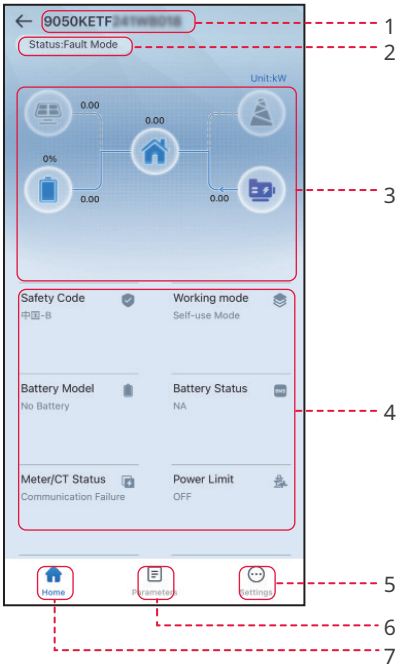
Step 2 Select **WiFi** or **Bluetooth** tab on the WE Mate app hompage.

Step 3 (Optional) If you choose to connect the device via WiFi, open the WiFi settings of your phone first and connect to the inverter's WiFi signal (Solar-WiFi***). Default password: 12345678

Step 4 Pull down or tap **Search Device** to refresh the device list. Find the device by the the inverter serial number. Tap the device name to log into the **Home** page. Select the device by checking the serial number of the master inverter when multi inverters are parallel connected.

Step 5(optional): For first connection with the equipment via Bluetooth, there will be a Bluetooth pairing prompt, tap **Pair** to continue the connection.

4.2 GUI Introductions to Hybrid Inverters



No.	Name/Icon	Description
1	Serial Number	Serial number of the connected inverter.
2	Device Status	Indicates the status of the inverter, such as **Working**,**Fault**, etc.
3	Energy Flow Chart	Indicates the energy flow chart of the PV system. The actual page prevails.
4	System Status	Indicates the system status, such as **Safety Code**, **Working Mode**, **Battery Model**, **Battery Status**, **Power Limit**, **Three-Phase Unbalanced Output**, etc..
5		Home Tap Home to check**Serial Number**, **Device Status**, **Energy Flow Chart**, **System Status**, etc.
6		Parameters Tap Parameters to check the inverter Data, like SN, FW Version, Output(On-Grid), Import Power, Import Total Power, Battery Mode, Battery Capacity, Battery Status, Charge/Discharge Current Limit, etc.. Or check Alarm like Utility Loss, Undervoltage, etc..
7		Settings Tap Settings to set the**Working Mode**, **Safety Code**, **Pv Connect Mode, Battery Connect Mode**, **SPD**, **Power Limit, AFCI Detect**, **DRED/Remote Shutdown/RCR**, **Three-Phase Unbalance**, **Battery Function Settings**, **Load Control**, **Communication Settings**, **Shadow Scan**,**Upgrade Firmware**, etc..

4.3 Configuring Communication Parameters

4.3.1 Configuring Network

The communication configuration page varies depending on the communication method.

Step 1 Tap **Home** > **Settings** > **Communication Settings** > **Network Settings** to set the parameters.

Step 2 Set the **WLAN** or **LAN** parameters based on actual situation.

No.	Parameters	Description
1	Network Name	Only for WLAN. Select WiFi based on the actual connecting.
2	Password	Only for WLAN. WiFi password for the actual connected network.
3	DHCP	• Enable DHCP when the router is in dynamic IP mode. • Disable DHCP when a switch is used or the router is in static IP mode.
4	IP Address	• Do not configure the parameters when DHCP is enabled. • Configure the parameters according to the router or switch information when DHCP is disabled.
5	Subnet Mask	
6	Gateway Address	
7	DNS Server	

4.3.2 Configuring APN Parameters

Configure the SIM card information of 4G communication device.

Step 1 Tap **Home** > **Settings** > **Communication Settings** > **APNSettings**, to set the parameters.

Step 2 Set the region and operator based on actual needs.

4.3.3 Configuring Other Parameters

NOTICE
Set the communication address of the inverter. For a single inverter, the address is set based on actual needs. For multi connected inverters, the address of each inverter should be different while cannot be 247.

Step 1 Tap **Home** > **Settings** > **Communication Settings** > **Other Settings** to set the parameters.

Step 2 Set the **Modbus Address** And **Baud Rate** base on actual situation.

4.4 Quick Setting the Basic Information

NOTICE

The setting page varies depending on inverter model.

Type I

NOTICE

- The parameters will be configured automatically after selecting the safety country/region, including overvoltage protection, undervoltage protection, overfrequency protection, underfrequency protection, voltage/frequency connection protection, cosφ curve, Q(U) curve, P(U) curve, FP curve, HVRT, LVRT, etc. Tap Home **> Settings > Advanced Settings > Safety Parameters** to check the parameters after selecting the safety country.
- The power generation efficiency is different in different working modes. Set the working mode according to the local requirements and situation.
- Back-up mode, Economic mode, and Smart charging mode can be enabled at the same time.
  - **Self-use mode:**
    - **Back-up mode:** The back-up mode is mainly applied to the scenario where the grid is unstable. When the grid is disconnected, the inverter turns to off-grid mode and the battery will supply power to the load; when the grid is restored, the inverter switches to grid-tied mode.
    - **Economic mode:** It is recommended to use economic mode in scenarios when the peak-valley electricity price varies a lot. Select Economic mode only when it meets the local laws and regulations. Set the battery to charge mode during Vally period to charge battery with grid power. And set the battery to discharge mode during Peak period to power the load with the battery.
    - **Smart charging:** In some countries/regions, the PV power feed into the utility grid is limited. Select Smart Charging to charge the battery using the surplus power to minimize PV power waste.
  - **Peak shaving mode:** Peak shaving mode is mainly applicable to peak power limited scenarios. When the total power consumption of the load exceeds the power consumption quota in a short period of time, battery discharge can be used to reduce the power exceeding the quota.

Step 1 Tap **Home > Settings > Quick Settings** to set the parameters.

Step 2 Enter the password for quick settings. Password: solar2019.

Step 3 Select safety country accordingly. Tap **Next** to set the Battery Connect Mode.

Step 4 Select the actual mode in which the battery is connected to the inverter. The basic settings are completed if there is no battery connected in the system. Tap **Next** to set the Battery Model if there is any battery connected in the system.

Step 5 Select the actual battery model. Tap **Next** to set the Working Mode.

Step 6 Set the working mode based on actual needs. Tap **Next** to conduct **System Self-Test**.

- If **Peakshaving** mode is selected, tap **Settings** to set the parameters.

No.	Parameters	Description
Peakshaving		
1	Start Time	The utility grid will charge the battery between Start Time and End Time if the load power consumption do not exceed the power quota. Otherwise, only PV power can be used to charge the battery.
2	End Time	
3	Import Power Limit	Set the maximum power limit allowed to purchase from the grid. When the loads consume power exceed the sum of the power generated in the PV system and **Import Power Limit**, the excess power will be made up by the battery.
4	Reserved SOC For Peakshaving	In Peak Shaving mode, the battery SOC should be lower than **Reserved SOC For Peakshaving**. Once the battery SOC is higher than **Reserved SOC For Peakshaving**, the peak shaving mode fails.

- When **Self-Use Mode** is selected, tap Settings to set the **Depth Of Discharge(On-Grid)** and **Depth Of Discharge(Off-Grid).** And tap **Advanced Settings** to set **Back-Up Mode**, **Economic Mode** or **Smart Charging** based on actual needs. If **Economic Mode** is selected, tap **Add** to set the working time and working mode of the battery group.

No.	Parameters	Description
Self-use mode		
1	Depth Of Discharge(On-Grid)	The maximum depth of discharge of the battery when the system is working on-grid.
2	Depth Of Discharge(Off-Grid)	The maximum depth of discharge of the battery when the system is working off-grid.
Back-up mode		
3	Charging From Grid	Enable Charging From Grid to allow power purchasing from the utility grid.
4	Rated Power	The percentage of the purchasing power to the rated power of the inverter.
Economic mode		
5	Start Time	Within the Start Time and End Time, the battery is charged or discharged according to the set Battery Mode as well as the Rated Power.
6	End Time	
7	Battery Mode	Set the Battery Mode to Charging or Discharging accordingly.
8	Rated Power	The percentage of the charging/discharging power to the ratedpower of the inverter.

No.	Parameters	Description
9	Charge Cut-off SOC	The battery stop charging/discharging once the battery SOC reaches Charge Cut-off SOC.
Smart charging		
10	Smart Charging Month	Set the smart charging months. More than one month can be set.
11	Peak Limiting Power	Set the Peak Limiting Power in compliance with local laws and regulations. The Peak Limiting Power shall be lower then the output power limit specified by local requirements.
12	Switch To Charge	During Charging time, the PV power will charge the battery.
13	Charging Time	

Step 6 Execute device self-check or skip it based on actual needs.

Step 7 Tap **Recheck** or **Next** to complete the test based on your actual needs. Tap **Export** to export the test reports if needed.

Step 8 Tap **Complete** to complete the quick settings.

Type II

NOTICE
The parameters will be configured automatically after selecting the safety country/region, including overvoltage protection, undervoltage protection, overfrequency protection, underfrequency protection, voltage/frequency connection protection, cosφ curve, Q(U) curve, P(U) curve, FP curve, HVRT, LVRT, etc. Tap **Home > Settings > Advanced Settings > Safety Parameters** to check the parameters after selecting the safety country.
The power generation efficiency is different in different working modes. Set the working mode according to the local requirements and situation. • **General Mode:** The power generated by the PV panels firstly supports the load, secondly it charges the battery, and the rest of the power is exported to the grid. • **Forced Off-Grid Mode:** PV and batteries form a purely off-grid system, suitable for grid-free areas. • **Back-up mode:** Battery is only discharged for urgent use to support backup loads when grid is unavailable. • **Eco mode:** It is recommended to use economic mode in scenarios when the peak-valley electricity price varies a lot. Select Economic mode only when it meets the local laws and regulations. • **Peak Shaving Mode:** Peak Shaving mode is mainly applicable to industrial and commercial scenarios. When the total power consumption of the load exceeds the power consumption quota in a short period of time, battery discharge can be used to reduce the power exceeding the quota.

Step 1 Tap **Home > Settings > Quick Settings** to set the parameters.

Step 2 Enter password to set the quick settings. Password: solar2019.

Step 3 Select safety country accordingly. Tap **Next** to set the Battery Connect Mode.
The basic settings are completed if there is no battery connected in the system. Tap **Next** to set the Battery Model.

Step 4 Select the actual mode in which the battery is connected to the inverter. Tap **Next** to set the Battery Model.

Step 5 Select the actual battery model. Tap **Next** to set the Working Mode.

Step 6 Set the working mode based on actual needs. Tap **Next** to set the complete the settings.

4.5 Setting the SPD

After enabling **SPD**, when the SPD module is abnormal, there will be SPD module abnormal alarm prompt.

Step 1 Tap **Home > Settings > Basic Settings > SPD**, to set the parameters.

Step 2 Tap or to enable or disable the function based on actual needs.

4.6 Setting the Shadow Scan

Enable Shadow Scan when the PV panels are severely shadowed to optimize the power generation efficiency.

Step 1 Tap **Home > Settings > Basic Settings> Shadow Scan**, to set the parameters.

Step 2 Tap or to enable or disable the function based on actual needs. Set the **Shadow Scan interval** and **MPPT shadow scan** if the inverter supports.

4.7 Setting the Back-up Power

After enabling Backup, the battery will power the load connected to the backup port of the inverter to ensure Uninterrupted Power Supply when the power grid fails.

Step 1 Tap **Home > Settings > Basic Settings > Backup**, to set the parameters.

Step 2 Set the backup supply function based on actual needs.

No.	Parameters	Description
1	UPS Mode - Full Wave Detection	Check whether the utility grid voltage is too high or too low.
2	UPS Mode - Half Wave Detection	Check whether the utility grid voltage is too low.
3	UPS Mode - Supports LVRT	Stop detecting utility grid voltage.
4	First Cold Start (Off-grid)	Take effect once. In off-grid mode, enable First Cold Start (Off-grid) to output backup supply with battery or PV.
5	Cold Start Holding (Off-grid)	Take effect multiple times. In off-grid mode, enable First Cold Start (Off-grid) to output backup supply with battery or PV.
6	Clear Overload History	Once the power of loads connected to the inverter BACK-UP ports exceeds the rated load power, the inverter will restart and detect the power again. The inverter will perform restart and detection several times until the overloading problem is solved. Tap **Clear Overload History** to reset the restart time interval after the power of the loads connected to the BACK-UP ports meets the requirements. The inverter will restart immediately.

4.8 Setting Auto-Test

Enable AUTO TEST to set auto test for grid tying in compliance with local grid standards and requirements.

Step 1 Tap **Home > Settings > Basic Settings > Auto Test** to set the parameters.

Step 2 Set Auto-Test based on actual needs.

4.9 Setting the Connected Phase

The standards of some countries/regions require that the phase sequence of inverters should be set when three single phase inverters form a three phase equipment.

Step 1 Tap **Home > Settings > Basic Settings > Connected Phase Settings** to set the parameters.

Step 2 Tap or  to enable or disable **Parallel** function.

Step 3 Set the phase sequence of the inverter based on actual connections. Tap **Save** to complete the settings.

No.	Parameters	Description
1	Parallel	Enable Parallel when it is required by local grid standards and requirements.
2	Master Or Slave:	• Set the connected inverter as master inverter or slave inverter based on actual connections. • The inverter connected to the R phase is the master inverter and the inverter connected to the S/T phase is the slave inverter.
3	Phase	Set the phase of the connected inverter.

4.10 Setting DRED/Remote Shutdown/RCR

NOTICE
Password for Advanced Settings: solar2019.

Enable **DRED/Remote Shutdown/RCR** before connecting the third party DRED, remote shutdown, or RCR device to comply with local laws and regulations.

Step 1 Tap **Home > Settings > Advanced Settings > DRED/Remote Shutdown/RCR** to set the parameters.

Step 2 Tap  or  to enable or disable the function based on actual needs.

4.11 Setting Three-phase Unbalanced Output

Enable the Three-phase unbalanced output when connecting unbalanced loads, which means L1, L2, L3 of the inverter respectively connected to loads with different power. Only for three phase inverters.

Step 1 Tap **Home > Settings > Advanced Settings > Three-phase Unbalanced Output** to set the parameters.

Step 2 Tap or to enable or disable the function based on actual needs.

4.12 Setting the Backup N and PE Relay Switch

To comply with local laws and regulations, ensure that the relay inside the back-up port remains closed and the N and PE wires are connected when the inverter is working off-grid.

Step 1 Tap **Home > Settings > Advanced Settings > Backup N and PE Relay Switch** to set the parameters.

Step 2 Tap or to enable or disable the function based on actual needs.

4.13 Setting Power Limit Parameters

4.13.1 Power Limit Setting (For countries/regions except Australia)

Step 1 Tap **Home > Settings > Advanced Settings > Power Limit** to set the parameters.

Step 2 Tap or to enable or disable the function based on actual needs.

Step 3 Enter the parameters and tap √. The parameters are set successfully.

No.	Parameters	Description
1	Power Limit	Enable **Power Limit** when power limiting is required by local grid standards and requirements.
2	Export Power	Set the value based on the actual maximum power feed into the utility grid.
3	External CT Ratio	Set the ratio of the primary current to the secondary current of the external CT.

4.13.2 Power Limit Setting (Only for Australia)

Step 1 Tap **Home > Settings > Advanced Settings > Power Limit** to set the parameters.

Step 2 Tap or to enable or disable the function based on actual needs.

Step 3 Enter the parameters and tap √. The parameters are set successfully.

No.	Parameters	Description
1	Soft Limit	Enable Soft Limit when power limiting is required by local grid standards and requirements.
2	Export Power	Set the value based on the actual maximum power feed into the utility grid.
3	Hard Limit	After enabling this function, the inverter and the utility grid will automatically disconnect when the power feeds into the grid exceeds the required limit.

4.14 Set the AFCI Detection

Step 1 Tap **Home > Settings > Advanced Settings > AFCI Detection** to set the parameters.

Step 2 Enable **AFCI Detection**, Clear AFCI Alarm and Self-Check based on actual needs.

No.	Parameters	Description
1	AFCI Detection	Enable or disable AFCI accordingly.
2	AFCI Detection Status	The detection status like Not Self-checking.
3	Clear AFCI Alarm	Clear alarm records.
4	Self-check	Tap to check whether the AFCI function works normally.

4.15 Setting the Battery

Step 1 Tap **Home > Settings > Advanced Settings > Battery Function Setting** to set the parameters.

Step 2 Enter the parameters and tap '√'. The parameters are set successfully.

Lithium battery

No.	Parameters	Description
1	Max. Charging Current	Set the maximum charging current based on actual needs.
2	Max. Discharging Current	Set the maximum discharging current based on actual needs.
3	SOC Protection	Start battery protection when the battery capacity is lower than the Depth of Discharge.
4	Depth Of Discharge (On-Grid)	Indicates the depth of discharge of the battery when the inverter is on-grid or off-grid.
5	Depth Of Discharge (Off-grid)	

No.	Parameters	Description
6	Backup SOC Holding	The battery will be charged to preset SOC protection value by utility grid or PV when the system is running on-grid. So that the battery SOC is sufficient to maintain normal working when the system is off-grid.
7	Immediate Charging	Enable to charge the battery by the grid immediately. It will only take effect once. **Enable** or **Disable** based on actual needs.
8	SOC (Discontinue)	Stop charging the battery once the battery SOC reaches **SOC (Discontinue)**.
9	Immediate Charging Power	Indicates the percentage of the charging power to the inverter rated power when enabling **Immediate Charging**. For example, setting the **Immediate Charging Power** of a 10kW inverter to 60 means the charging power of the inverter is 10kW*60%=6kW.

Lead Acid Battery

No.	Parameters	Description
1	Battery Capacity	Set the battery capacity based on actual connected battery.
2	Floating Voltage	Set the charging voltage during floating charging based on actual needs..
3	Constant Charging Voltage	Set the charging voltage during constant charging based on actual needs..
4	Lower Limit Of Discharge Voltage	Set the minimum voltage during battery discharging based on actual needs.
5	Max. Charging Current	Set the maximum charging current based on actual needs.
6	Max. Discharging Current	Set the maximum discharging current based on actual needs.
7	Battery Internal Resistance	Set the battery internal resistance based on actual connected battery.
8	Charge Factor	Set the ratio of the battery's charging current to the battery's rated capacity. For example, for a battery of 100Ah, when the **Charge Factor** is 20%, the charging current is20A.
9	Maximum Current For Switching To Float Charge	Set the maximum charging current when the charging mode switch from **Equalization Charge** to **Floating Charge**.

No.	Parameters	Description
10	Time Period For Switching To Float Charge	Set the charging time when the charging mode switch from **Equalization Charge** to **Floating Charge**.
11	Temperature Compensation For Charging	• The battery charging voltage will be influenced by the battery temperature. Based on 25℃, each time the battery temperature changes 1℃, the upper limit of the charging voltage will be adjusted according to the **Temperature Compensation For Charging**. • For example, if the **Temperature Compensation For Charging** is 10, when the battery temperature rises to 26℃, the upper limit of the charging voltage will decrease by 10mV.
12	SOC Protection	Start battery protection when the battery capacity is lower than the **Depth of Discharge**.
13	Depth Of Discharge (On-Grid)	Indicates the depth of discharge of the battery when the inverter is on-grid or off-grid.
14	Depth Of Discharge (Off-grid)	
15	Backup SOC Holding	The battery will be charged to preset SOC protection value by utility grid or PV when the system is running on-grid. So that the battery SOC is sufficient to maintain normal working when the system is off-grid.
16	Immediate Charging	Enable to charge the battery by the grid immediately. It will only take effect once. **Enable** or **Disable** based on actual needs.
16	SOC (Discontinue)	Stop charging the battery once the battery SOC reaches **SOC (Discontinue)**.
17	Immediate Charging Power	Indicates the percentage of the charging power to the inverter rated power when enabling **Immediate Charging**. For example, setting the **Immediate Charging Power** of a 10kW inverter to 60 means the charging power of the inverter is 10kW*60%=6kW.

4.16 Setting PV Connect Mode

Select the PV access mode based on the actual connections between the PV strings and MPPT ports of the inverter.

Step 1 Tap Home > **Settings** > **Advanced Settings** > **PV Connect Mode** to set the parameters.

Step 2 Set the access mode to **Independent Access**, **Partial Parallel Connect** or **Parallel Connection** based on actual connections. Tap **Save** to complete the settings.

No.	Parameters	Description
1	Stand-alone Connect	The PV strings are connected to the MPPT terminals one by one.
2	Partial Parallel Connect	The PV strings are connected to the inverter in both stand-alone and parallel connection. For example, one PV string connect to MPPT1 ad MPPT2, another PV string connect to MPPT3.
3	Parallel Connect	The external PV string is connected to multi MPPT terminals of the inverter.

4.17 Setting the PX Curve

Step 1 Tap **Home > Settings > Advanced Settings > PX Curve** to se the parameters.

Step 2 Tap  or  to enable or disable the function based on actual needs.

Step 3 After enabling the PX curve, set parameters based on actual needs. And tap '√'.The parameters are set successfully.

4.18 Setting Safety Parameters

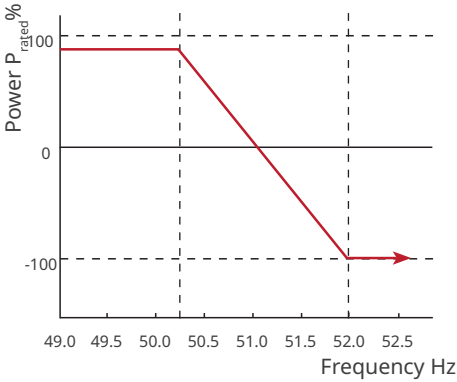
NOTICE
Set the custom safety parameters in compliance with local requirements. Do not change the parameters without the prior consent of the grid company.

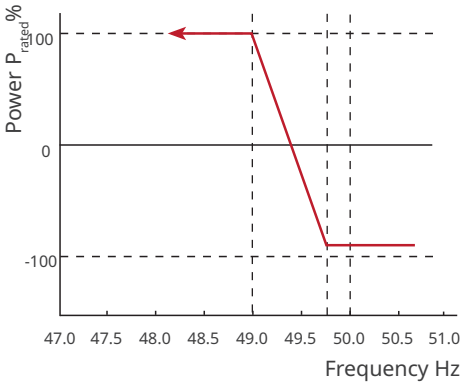
4.18.1 Setting the Active Curve

4.18.1.1 Setting the P(F) Curve

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Active Curve Settings** to set the parameters.

Step 2 Set the parameters based on actual needs.





No.	Parameters	Description
1	Output Active Power	Set the output power of the inverter.
2	P(F) Curve	Enable P(F) Curve when it is required by local grid standards and requirements.
3	Overfrequency Threshold	The inverter output active power will decrease when the utility grid frequency is too high. The inverter output power will decrease when the utility grid frequency is higher than **Overfrequency Threshold**.
4	Overfrequency Endpoint	The inverter output active power will decrease when the utility grid frequency is too high. The inverter output power will stop decreasing when the utility grid frequency is higher than **Overfrequency Endpoint**.
5	Overfrequency Unloading	The inverter output active power will decrease when the utility grid frequency is too high.
6	Underfrequency Threshold	The inverter output active power will increase when the utility grid frequency is too low. The inverter output power will increase when the utility grid frequency is lower than **Underfrequency Threshold**.

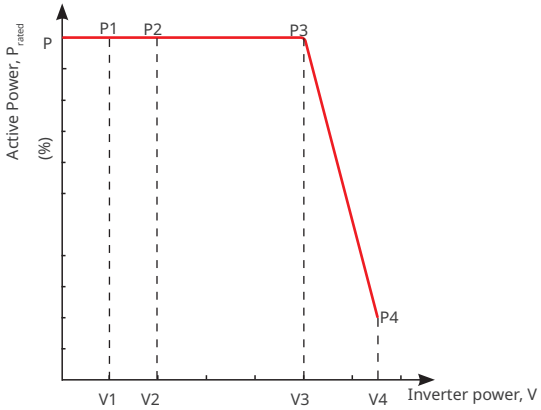
No.	Parameters	Description
7	Underfrequency Endpoint	The inverter output active power will increase when the utility grid frequency is too low. The inverter output power will stop increasing when the utility grid frequency is lower than **Underfrequency Endpoint**.
8	Power Response to Underfrequency Gradient	The inverter output active power will increase when the utility grid frequency is too low. Indicates the slope when the inverter output power increases.
9	Observation Time	Indicates the time the output power of the inverter needs for recovering after the power grid recovers.
10	Upper Frequency	The inverter output active power will decrease when the utility grid frequency is too high. The inverter output power will increase when the utility grid frequency is lower than **Underfrequency Threshold**.
11	Lower Frequency	The inverter output active power will increase when the utility grid frequency is too low. The inverter output power will decrease when the utility grid frequency is higher than **Overfrequency Threshold**.
12	Reconnection Gradient	Indicates the variation slope when the power recovers.
13	Recovery Power Slope	Indicates the variation slope when the power recovers.

4.18.1.2 Setting the P(U) Curve

When the grid voltage is too high, decrease the inverter output power to decrease the grid-tied power.

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Active Curve Settings** to set the parameters.

Step 2 Enter the parameters. The inverter will adjust the active output power to the apparent power ratio in real-time according to the actual grid voltage to the rated voltage ratio.



No.	Parameters	Description
1	P(U) Curve	Enable P(U) Curve when it is required by local grid standards and requirements.
2	Vn Voltage	The percentage of actual voltage to the rated voltage at Vn point, n=1, 2, 3, 4. For example, setting **Vn Voltage** to 90 means V/V_{rated}%=90%.
3	Vn Active Power	The percentage of the output active power to the apparent power at Vn point, (n=1, 2, 3, 4). For example, setting **Vn Reactive Power** to 48.5 means P/P_{rated}%=48.5%
4	Time Constant	The power is required to reach 95% in the first order LPF curve within three time constant.

4.18.2 Setting the Reactive Power Mode

4.18.2.1 Setting the Fix PF

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Reactive Power Mode Settings** to set the parameters.

Step 2 Set the parameter based on actual needs. The power factor remains fixed during the inverter working process.

No.	Parameters	Description
1	Fix PF	Enable Fix PF when it is required by local grid standards and requirements.
2	Under-excited	Set the power factor as lagging or leading based on actual needs and local grid standards and requirements.
3	Over-excited	
4	Power Factor	Set the power factor based on actual needs. Range: 0-~-0.8, or +0.8~+1.

4.18.2.2 Setting the Fix Q

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Reactive Power Mode Settings** to set the parameters.

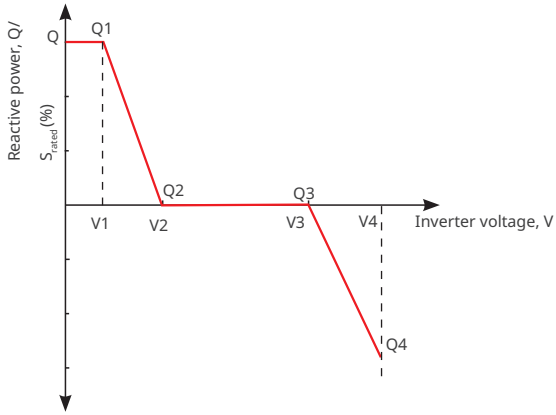
Step 2 Set the parameter based on actual needs. The output reactive power remains fixed during the inverter working process.

No.	Parameters	Description
1	Fix Q	Enable Fix Q when it is required by local grid standards and requirements.
2	Under-excited	Set the reactive power as inductive or capacitive reactive power based on actual needs and local grid standards and requirements.
3	Over-excited	
4	Reactive Power	The percentage of reactive power to the apparent power.

4.18.2.3 Setting the Q(U) Curve

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Reactive Power Mode Settings** to set the parameters.

Step 2 Enter the parameters. The inverter will adjust the reactive power to the apparent power ratio in real-time according to the actual grid voltage to the rated voltage ratio.

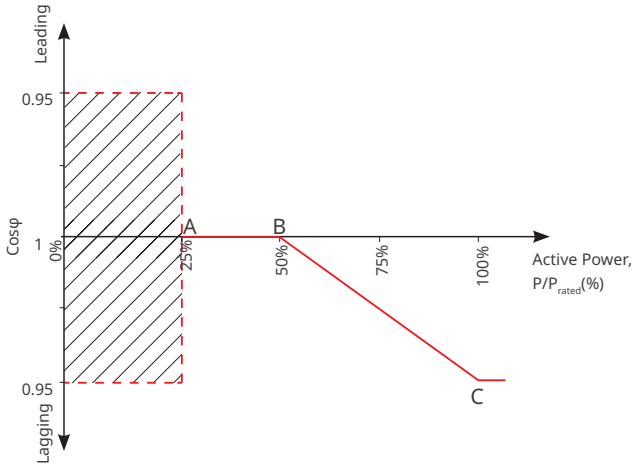


No.	Parameters	Description
1	Q(U) Curve	Enable Q(U) Curve when it is required by local grid standards and requirements.
2	Vn Voltage	The percentage of actual voltage to the rated voltage at Vn point, n=1, 2, 3, 4. For example, setting **Vn Voltage** to 90 means V/V_{rated}%=90%.
3	Vn Reactive Power	The percentage of the reactive output power to the apparent power at Vn point, n=1, 2, 3, 4. For example, setting **Vn Reactive Power** to 48.5 means Q/S_{rated}%=48.5%
4	Time Constant	The power is required to reach 95% in the first order LPF curve within three time constant.
5	Lock-In Power	When the inverter output reactive power to the rated power ratio is between the Lock-in power and Lock-out power, the ratio meets Q(U) curve requirements.
6	Lock-out Power	
7	Min. cosPhi	Set the lower limit of the power factor.

4.18.2.4 Setting the Cosφ Curve

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Reactive Power Mode Settings** to set the parameters.

Step 2 Enter the parameters. The inverter will adjust the active output power to the apparent power ratio in real-time according to the actual grid voltage to the rated voltage ratio.



No.	Parameters	Description
1	Cosφ(P) Curve	Enable Cosφ Curve when it is required by local grid standards and requirements.
2	Point A/B/C/D Power	The percentage of the inverter output active power to the rated power at point A/B/C/D.
3	Point A/B/C/D Cosφ	The power factor at point A/B/C/D.
4	Time Constant	The power is required to reach 95% in the first order LPF curve within three time constant.
5	Lock-in Voltage	When the grid voltage is between Lock-in Voltage and Lock-out Voltage, the voltage meets Cosφ curve requirements.
6	Lock-out Voltage	
7	Lock-out Power	The Cosφ curve cannot work when the output active power to rated power ratio is lower than the Lock-out power.

4.18.3 Setting Protection Parameters

4.18.3.1 Setting Voltage Protection Parameters

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Protection Parameters** to set the parameters.

Step 2 Set the parameters based on actual needs.

No.	Parameters	Description
1	OV Stage n Trip Value	Set the grid overvoltage protection threshold value.
2	OV Stage n Trip Time	Set the grid overvoltage protection tripping time.
3	UV Stage n Trip Value	Set the grid undervoltage protection threshold value.
4	UV Stage n Trip Time	Set the grid undervoltage protection tripping time.
5	10min Overvoltage Trip Threshold	Set the 10min overvoltage protection threshold value.

4.18.3.2 Setting Frequency Protection Parameters

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Protection Parameters** to set the parameters.

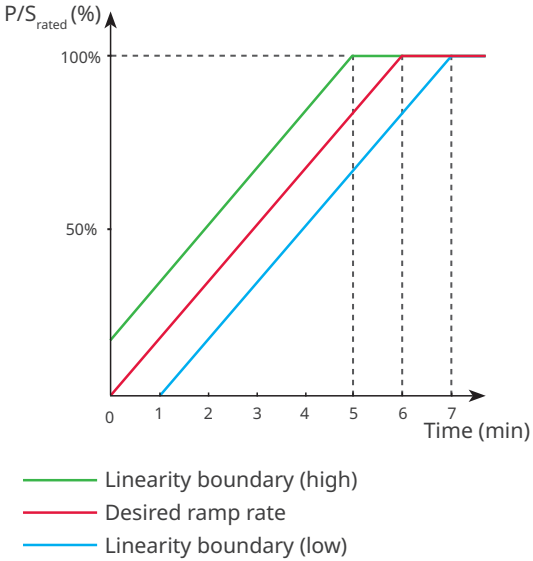
Step 2 Set the parameters based on actual needs.

No.	Parameters	Description
1	OF Stage n Trip Value	Set the level n overfrequency protection threshold value.
2	OF Stage n Trip Time	Set the level n overfrequency protection tripping time.
3	UF Stage n Trip Value	Set the level n underfrequency protection threshold value.
4	UF Stage n Trip Time	Set the level n underfrequency protection tripping time.
5	OF Stage n Trip Value	Set the grid overfrequency protection threshold value.
6	OF Stage n Trip Time	Set the grid overfrequency protection tripping time.
7	UF Stage n Trip Value	Set the grid underfrequency protection threshold value.
8	UF Stage n Trip Time	Set the grid underfrequency protection tripping time.

4.18.4 Setting Connection Parameters

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Protection Parameters** to set the parameters.

Step 2 Set the parameters based on actual needs.



No.	Parameters	Description
Ramp Up		
1	Upper Voltage	The inverter cannot connect to the grid if it is powered on for the first connection and the grid voltage is higher than the **Upper Voltage**.
2	Lower Voltage	The inverter cannot connect to the grid if it is powered on for the first connection and the grid voltage is lower than the **Lower Voltage**.
3	Upper Frequency	The inverter cannot connect to the grid if it is powered on for the first connection and the grid frequency is higher than the **Upper Frequency**.
4	Lower Frequency	The inverter cannot connect to the grid if it is powered on for the first connection and the grid frequency is lower than the **Lower Frequency**.
5	Observation Time	The waiting time for connecting the inverter to the grid when meeting the following requirements. 1. The inverter is powered on for the first connection. 2. The utility grid voltage and frequency meet certain requirements.
6	Soft Ramp Up Gradient	Enable the start up power slope.

No.	Parameters	Description
7	Soft Ramp Up Gradient	Indicates the percentage of incremental output power per minute based on the local requirements when the inverter is powered on for the first time. For example, setting **Soft Ramp Up Gradient** to 10 means the start-up slope is 10%P_{rated}/min.
8	Observation Time	Time for self-checking when the inverter is powered on for the first time.
Reconnection		
9	Upper Voltage	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid voltage is higher than the **Upper Voltage**.
10	Lower Voltage	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid voltage is lower than the **Lower Voltage**.
11	Upper Frequency	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid frequency is higher than the **Upper Frequency**.
12	Lower Frequency	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid frequency is lower than the **Lower Frequency**.
13	Observation Time	The waiting time for connecting the inverter to the grid when meeting the following requirements. 1. The inverter is reconnecting to the grid due to a fault. 2. The utility grid voltage and frequency meet certain requirements.
14	Reconnection Gradient	Enable the start up power slope.
15	Reconnection Gradient	Indicates the percentage of incremental output power per minute based on the local requirements when the inverter is not connected to the grid for the first time. For example, setting **Reconnection Gradient** to 10 means the reconnect slope is 10%P/S_{rated}/min.
16	Observation Time	Indicates the duration for the output power increases to the rated power when the inverter reconnects to the utility grid due to a fault.

4.18.5 Setting Voltage Ride Through Parameters

Step 1 Tap **Home > Settings > Advanced Settings > Safety Parameters > Voltage Ride Through** to set the parameters.

Step 2 Set the parameters based on actual needs.

No.	Parameters	Description
LVRT		
1	UVn Voltage	The ratio of the ride through voltage to the rated voltage at UVn point during LVRT.
2	UVn Time	The ride through time at UVn point during LVRT.
3	Enter Into LVRT Threshold	The inverter will not be disconnected from the utility grid immediately when the grid voltage is between **Enter Into LVRT Threshold** and **Exit LVRT Endpoint.**
4	Exit LVRT Endpoint	
5	Gradient K1	K-factor for reactive power during LVRT.
6	Zero Current Mode	The system outputs zero current during LVRT.
7	Entry Threshold	Set the entry threshold of zero current mode.
HVRT		
6	OVn Voltage	The ratio of the ride through voltage to the rated voltage at OVn point during HVRT.
7	OVn Time	The ride through time at OVn point during HVRT.
8	Enter High Crossing Threshold	The inverter will not be disconnected from the utility grid immediately when the grid voltage is between **Enter High Crossing Threshold** and **Exit High Crossing Threshold.**
9	Exit High Crossing Threshold	
10	Slope K2	K-factor for reactive power during HVRT.
11	Zero Current Mode	The system outputs zero current during HVRT.
12	Entry Threshold	Set the entry threshold of zero current mode.

4.19 Setting Generator/Load Control

Loads and generators can be controlled by WE Mate app when the inverter supports load control function.

Step 1 Tap **Home > Settings > Generator/Load Control**, to set the parameters.

Step 2 (Optional) For some models, such as ET50kW, select **Generator Connection** or **Load Connection** based actual connection.

Step 3 Select **Generator Control** or **Load Control** based on actual needs.

Step 4 (Optional) When setting the generator control function, select the generator type according to the actual access situation. Currently supported:**Not Installed**, **Manual Control Of Generator,** or **Automatic Control Generator.** And set the parameters according to the selected generator type.

- **Not Installed**: if no generator is connected, select **Not Installed**.
- **Manual Control Of Generator(Doesn'T Support Dry Node Connection):**

No.	Parameters	Description
	Generator Information Settings	
1	Rated Power	Set the rated power of the generator.
2	Upper Voltage	Set the operation voltage range of the generator.
3	Lower Voltage	
4	Upper Frequency	Set the operation frequency range of the generator.
5	Lower Frequency	
6	Delay Time Before Loading	Set the time generator running without loads.
Generator To Charge The Battery		
7	Max Charging Power	Set the charging power to charge the battery with a generator.
8	Start SOC	Set the SOC threshold to turn on the generator when lithium batteries are connected. The dry contact will be connected to start the generator when the battery SOC is lower than **Start SOC**.
9	Stop SOC	Set the SOC threshold to turn off the generator when lithium batteries are connected. The dry contact will be disconnected to stop the generator when the battery SOC is higher than Stop SOC.
10	Turn-on Voltage	Set the voltage threshold to turn on the generator when lead-acid batteries are connected. The dry contact will be connected to start the generator when the battery voltage is lower than **Turn-on Voltage**.

No.	Parameters	Description
11	Close Voltage	Set the voltage threshold to turn off the generator when lead-acid batteries are connected. The dry contact will be disconnected to stop the generator when the battery voltage is higher than **Close Voltage**.

- **Automatic control generator (Supports dry node connection):**

No.	Parameters	Description
1	Startup Mode	Switch Control Mode/Automatic Control Mode
2	Generator Dry Node Switch	Only for Switch Control Mode.
3	Prohibited Working Hours	Only for Automatic Control Mode
Generator Information Settings		
4	Rated Power	Set the rated power of the generator.
5	Running Time	Set the generator's continuous runtime, after which the generator will be turned off.
6	Upper Voltage	Set the operation voltage range of the generator.
7	Lower Voltage	
8	Upper Frequency	Set the operation frequency range of the generator.
9	Lower Frequency	
10	Delay Time Before Loading	Set the time generator running without loads.
Generator To Charge The Battery		
11	Max Charging Power	Set the charging power to charge the battery with a generator.
12	Start SOC	Set the SOC threshold to turn on the generator when lithium batteries are connected. The dry contact will be connected to start the generator when the battery SOC is lower than **Start SOC**.
13	Stop SOC	Set the SOC threshold to turn off the generator when lithium batteries are connected. The dry contact will be disconnected to stop the generator when the battery SOC is higher than Stop SOC.
14	Turn-on Voltage	Set the voltage threshold to turn on the generator when lead-acid batteries are connected. The dry contact will be connected to start the generator when the battery voltage is lower than **Turn-on Voltage**.
15	Close Voltage	Set the voltage threshold to turn off the generator when lead-acid batteries are connected. The dry contact will be disconnected to stop the generator when the battery voltage is higher than **Close Voltage**.

Step 5 (Optional) Set the control mode based on actual needs. Currently supports: **Power Switch Mode**, **Time Mode**, **Backup Load Control**.

- **Power Switch Mode**: when the switch is **ON**, the loads will be powered; when the switch is **OFF**, the power will be cut off. Turn on or off the switch based on actual needs.
- **Time Mode**: set the time to enable the load, and the load will be powered automatically within the setting time period. Select standard mode or intelligent mode.

No.	Parameters	Description
1	Standard	The loads will be powered within the setting time period.
2	Intelligent	Once the excess energy of the photovoltaic exceeds the load nominal power within the time period, the loads will be powered.
3	Start Time	The time mode will be on between the **Start Time** and **End Time**.
4	End Time	
5	Repeat	The repeat days.
6	Load Consumption Time	The shortest load working time after the loads been powered. The time is set to prevent the loads be turned on and off frequently when the PV power fluctuates greatly. Only for Intelligent mode.
7	Load Rated Power	The loads will be powered when the excess energy of the photovoltaic exceeds the nominal power of load. Only for Intelligent mode.

- **Backup** load control: the inverter has integrated dry contact controlling port, which can control whether the load is powered or not by contactor. In off-grid mode, the load connected to the port will not be powered if the BACKUP overload is detected or the battery SOC value is lower than the Off-grid battery protection value. Set **Off-grid Battery Protection** Value based on actual needs.

4.20 Equipment Maintenance

4.20.1 Meter/CT-Assisted Test

Meter/CT-Assisted Test is used to auto-check if the Smart Meter and CT are connected in the right way and their working status.

Step 1 Tap **Home > Settings > Meter/CT Assisted Test** to set the function.

Step 2 Tap **Start Test** to start test. Check **Test Result** after test.

4.20.2 Checking Firmware Information/Upgrading Firmware Version

Through **Firmware Information**, you can view or upgrade the DSP version, ARM version, BMS version, and communication module software version. Software version of some communication modules cannot be upgraded through the WE Mate app. Please refer to the actual product.

Step 1 Tap **Home > Settings > Firmware Information**to check the firmware version.

Requirements:

- The upgrade patch has been obtained from the dealer or the after sales service.
- Duplicate the upgrade patch to the smart phone for the Android system.

Step 2 (Optional) Tap to import local upgrade patch. Tap **Upgrade** and follow prompts to complete the upgrade.

5 Troubleshooting

5.1 App Troubleshooting

No.	Fault	Cause	Solutions
1	Cannot install the app	1. The smart phone operating system version is too low. 2. The smart phone prevents installing the app.	1. Upgrade the phone operating system. 2. Select Setting > Security > Install apps from external sources on your smart phone.
2	Communication failure	The communication distance between the smart phone and the inverter is out of range.	Place the smart phone near the inverter and reconnect the WiFi module.
3	Fail to obtain the data during operation or the connection between the inverter and WiFi is interrupted.	The communication between the inverter and Solar-WiFi or bluetooth is interrupted.	
4	The WiFi signal is not included in the app device list.	The app is not connected to the WiFi signal.	1. Make sure that the WiFi module works normally. 2. Refresh the device list. If the signal is still missing, restart the app.

5.2 Inverter Alarms

No.	Alarm	Causes	Solutions
1	SPI Fail	1. The exception is caused by an external fault. 2. Control board of the inverter cannot work properly.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.
2	EEPROM R/W Fail	1. The exception is caused by an external fault. 2. Control board of the inverter cannot work properly.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.
3	Fac Fail	1. Wrong safety code. 2. Unstable grid frequency.	1. Check the safety code. 2. Check whether the AC frequency(Fac) is within the normal range. 3. If the problem occurs occasionally, the utility grid may be abnormal temporarily.
4	AFCI Fault	1. The PV string cables are in poor contact. 2. The insulation between the PV string and ground is abnormal.	1. Check whether the PV cables are connected poorly. 2. Contact after-sales service if the problem persists.If the problem persists, contact the after-sales service.
5	Night SPS Fault	The equipment cannot work properly.	1. Restart the equipment. 2. Upgrade the software version to solve the problem.
6	L-PE Fail	The live wire of the inverter output terminal is connected improperly.	1. Check the wiring of the grid. 2. If the problem persists, contact the after-sales service.
7	Relay Chk Fail	1. The relay is abnormal or short-circuited. 2. The control circuit is abnormal. 3. The AC cable is connected improperly, like a virtual connection or short circuit.	1. Measure the voltage between N and PE cable on AC side. If the voltage is higher than 10V, it means the cables are connected improperly. 2. Restart the equipment.

No.	Alarm	Causes	Solutions
8	N-PE Fail	1. The N and PE cables are connected improperly. 2. The N wire of the inverter output terminal is connected improperly.	1. Make sure that the N and PE cables are connected correctly. 2. Make sure that the output cable is connected correctly. 3. If the problem persists, contact the after-sales service.
9	ARC Fail-HW	The power limit function is abnormal. (For Australia)	1. Make sure that the grid and smart meter are connected correctly. 2. If the problem persists, contact the after-sales service.
10	PV Reverse Fault	The PV strings are connected reversely.	1. Make sure that the PV strings are connected correctly. 2. If the problem persists, contact the after-sales service.
11	String OverCurr	The current of one PV string is too high.	Check the PV string connection.
12	LCD Comm Fail	The LCD connection is not firm.	Contact the after-sales service.
13	DCI High	DC component exceeds the allowed range.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.
14	Isolation Fail	1. The PV panels are connected improperly. 2. The DC cable is broken. 3. The N and PE cables are connected improperly. 4. The system is in a moist environment like rainy days, early morning or sunset.	1. Disconnect and connect the PV strings in turn to find the one caused error. 2. Check whether the DC cable is broken. 3. Measure the voltage between N and PE cable on AC side. If the voltage is higher than 10V, it means the cables are connected improperly. 4. Make sure that the PV modules are grounded properly.
15	Vac Fail	1. Wrong safety code. 2. Unstable grid frequency. 3. Improper AC cable specifications, like too long or too thin. 4. The AC cable is connected improperly.	1. Check the safety code. 2. Make sure that the voltage of each phase (Between L1&N, L2&N, L3&N) is within a normal range. 3. Make sure the grid voltage is stable.

No.	Alarm	Causes	Solutions
16	EFan Fail	1. The external fan is blocked. 2. or connected improperly.	Clear the external fan to remove the blocks.
17	PV Over Voltage	Excess PV modules are connected, and the open circuit voltage is higher than the max DC input voltage of the inverter.	1. Measure whether the open circuit voltage of the PV string is higher than the max DC input voltage of the inverter. 2. If the voltage is high, remove some panels connected to make sure that the open circuit voltage meets the requirement.
18	Overtemp.	1. The ambient temperature is too high. 2. The inverter is installed in a place with poor ventilation.	1. Cool down the ambient temperature. 2. Make sure that the installation meets the environment requirements listed in the inverter user manual. 3. Power off the inverter and restart 15 minutes later.
19	IFan Fail	1. The internal fan is blocked. 2. or connected improperly.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.
20	DC Bus High	1. The PV voltage is too high. 2. Control board of the inverter cannot work properly.	1. Measure whether the open circuit voltage of the PV string is higher than the max DC input voltage of the inverter. 2. Reduce the number of PV panels per string if the DC voltag is too high.
21	Ground I Fail	1. The AC PE cable is not connected well. 2. The system is in a moist environment like rainy days, early morning or sunset.	Detect the voltage between the enclosure and the ground. The PE cable is connected improperly if any voltage detected.

No.	Alarm	Causes	Solutions
22	Utility Loss	1. Utility grid power fails. 2. The AC cable is disconnected. 3. or the AC breaker is off. 4. AC breaker fails.	1. Ensure that the utility grid is available. 2. Measure the AC voltage using a multimeter. 3. Check whether the breaker is broken. 4. Check whether the AC cable is connected properly. 5. Ensure that the grid is connected and AC breaker turned ON. 6. Disconnect the AC output switch and DC input switch, then connect them 5 minutes later.
23	AC HCT Fail	1. The exception is caused by an external fault. 2. Control board of the inverter cannot work properly.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.
24	Relay Dev Fail	1. The exception is caused by an external fault. 2. Control board of the inverter cannot work properly.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.
25	GFCI Fail	1. The exception is caused by an external fault. 2. Control board of the inverter cannot work properly.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.
26	DC SPD Fail	Lighting strike	1. Improve the lightning protection facilities around the inverter 2. Replace the inverter with a new one if it cannot work anymore.
27	DC Switch Fail	The DC trip switch is used exceeds the service life time.	Contact the after-sales service.
28	Ref 1.5V Fail	1. The exception is caused by an external fault. 2. Control board of the inverter cannot work properly.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.

No.	Alarm	Causes	Solutions
29	AC HCT Chk Fail	The sampling of the AC HCT is abnormal.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.
30	GFCI Chk Fail	The sampling of the GFCI HCT is abnormal.	1. Restart the inverter. If the inverter recovers, the problem is accidental and does not affect system working. 2. If the problem persists, contact the after-sales service.

5.3 Battery Alarms

No.	Alarm	Troubleshooting
1	High battery temperature	The ambient temperature is too low to run the battery.
2	Low battery temperature	
3	Battery cell voltage differences	If the problem persists, contact the after-sales service.
4	Battery over total voltage	
5	Battery discharge overcurrent	
6	Battery charge over current	
7	Battery under SOC	If the PV works properly but the problem persists, contact the after-sales service.
8	Battery under total voltageBattery over total voltage	
9	Battery communication failure	Check the electrical connections by professionals.
10	Battery output shortage	
11	Battery SOC too high	If the problem persists, contact the after-sales service.
12	BMS module fault	
13	BMS system fault	
14	BMS internal fault	
15	High battery charge temperature	
16	High battery discharge temperature	The battery is overloaded. You are recommended to reduce loads. If the problem persists, contact the after-sales service.
17	Low battery charge temperature	The ambient temperature is too low to run the battery.
18	Low battery discharge temperature	

6 Appendix

6.1 Safety Country

No.	Safety Code	No.	Safety Code
Europe			
1	AT-A	33	GR
2	AT-B	34	HU
3	BE	35	IE EirGrid
4	GB G98	36	IE ESB
5	GB G99-A	37	IE-16/25A
6	GB G99-B	38	IE-72A
7	GB G99-C	39	IT CEI 0-16
8	GB G99-D	40	IT CEI 0-21
9	BG	41	NL 16/20A
10	CY	42	NL-A
11	CZ-A1	43	NL-B
12	CZ-A1-09	44	NL-C
13	CZ-A2	45	NL-D
14	CZ-A2-09	46	G98/NI
15	CZ-B1	47	NR
16	CZ-B1-09	48	PL-A
17	CZ-B2	49	PL-B
18	CZ-C	50	PL-D
19	CZ-D	51	PT-D
20	DK1	52	RO-A
21	DK2	53	RO-D
22	EE	54	SK
23	FI-A	55	ES island
24	FI-B	56	ES-A
25	FI-C	57	ES-B
26	FI-D	58	ES-D
27	FR island 50Hz	59	SE LV
28	FR island 60Hz	60	SE MV
29	FR mainland	61	CH
30	DE LV with PV	62	EN 50549-1

No.	Safety Code	No.	Safety Code
31	DE LV without PV	63	EN 50549-2
32	DE MV		
Global			
1	50Hz 127Vac Default	5	IEC61727 50Hz
2	50Hz Default	6	IEC61727 60Hz
3	60Hz 127Vac Default	7	Warehouse
4	60Hz Default		
North America			
1	PR 208Vac	20	US HI 208Vac
2	PR 208Vac-3P	21	US HI 208Vac-3P
3	PR 220Vac-3P	22	US HI 220Vac-3P
4	PR 240Vac	23	US HI 240Vac
5	PR 240Vac-3P	24	US HI 240Vac-3P
6	PR 480 Vac	25	US HI 480Vac
7	US 208Vac Default	26	US ISO-NE 208Vac
8	US 208Vac Default-3P	27	US ISO-NE 208Vac-3P
9	US 220Vac Default-3P	28	US ISO-NE 220Vac-3P
10	US 240Vac Default	29	US ISO-NE 240Vac
11	US 240Vac Default-3P	30	US ISO-NE 240Vac-3P
12	US 480Vac Default	31	US ISO-NE 480Vac
13	US CA 208Vac	32	US Kauai 208Vac
14	US CA 208Vac-3P	33	US Kauai 208Vac-3P
15	US CA 220Vac-3P	34	US Kauai 220Vac-3P
16	US CA 240Vac	35	US Kauai 240Vac
17	US CA 240Vac-3P	36	US Kauai 240Vac-3P
18	US CA 480Vac	37	US Kauai 480Vac
19	Mexico 220Vac Default	38	Mexico 440Vac Default
South America			
1	Argentina	9	Brazil ONS
2	Barbados	10	Cayman
3	Brazil 127Vac	11	Chile BT
4	Brazil 208Vac	12	Chile MT-A

No.	Safety Code	No.	Safety Code
5	Brazil 220Vac	13	Chile MT-B
6	Brazil 230Vac	14	Colombia
7	Brazil 240Vac	15	Mexico 220Vac Default
8	Brazil 254Vac	16	Mexico 440Vac Default
Oceania			
1	Australia A	4	Newzealand
2	Australia B	5	Newzealand:2015
3	Australia C	6	NZ GreenGrid
Asia			
1	India	16	Thailand PEA
2	India CEA	17	DEWA LV
3	Israel HV	18	DEWA MV
4	Israel LV	19	Vietnam
5	Israel MV	20	臺灣
6	Israel OG	21	香港
7	JP 50Hz	22	中国-242-河北
8	JP 60Hz	23	中国-242-山东
9	Korea	24	中国-A
10	Malaysia LV	25	中国-B
11	Malaysia MV	26	中国-PCS
12	Mauritius	27	中国电站
13	Philippines	28	中国较高压
14	Sri Lanka	29	中国最高压
15	Thailand MEA	30	India Higher
Africa			
1	Ghana	3	South Africa MV-B
2	South Africa LV	4	South Africa MV-C

6.2 Australia Safety Regulations

For the Australian market, to comply with AS/NZS 4777.2:2020, please select from Australia A, Australia B, Australia C, or New Zealand. Please contact your local electricity grid operator on which Region to select.

Selecting a Region B should then automatically load all region B setpoints for volt-watt, volt-var, underfrequency, overfrequency, etc.

Volt–var response set-point values

Region	Default value	U1	U2	U3	U4
Australia A	Voltage	207V	220V	240V	258V
	Inverter reactive power level (Q) % of Srated	44 % supplying	0%	0%	60 % absorbing
Australia B	Voltage	205V	220V	235V	255V
	Inverter reactive power level (Q) % of Srated	30 % supplying	0%	0%	40 % absorbing
Australia C	Voltage	215V	230V	240V	255V
	Inverter reactive power level (Q) % of Srated	44 % supplying	0%	0%	60 % absorbing
New Zealand	Voltage	207V	220V	235 V	244 V
	Inverter reactive power level (Q) % of Srated	60 % supplying	0%	0%	60 % absorbing
Allowed range	Voltage	180 to 230 V	180 to 230 V	230 to 265 V	230 to 265 V
	Inverter reactive power level (Q) % of Srated	30 to 60 % supplying	0%	0%	30 to 60 % absorbing

NOTE 1 Inverters may operate at a reactive power level with a range up to 100 % supplying or absorbing.

NOTE 2 Australia C parameter set is intended for application in isolated or remote power systems.

Volt–watt response default set-point values

Region	Default value	U3	U4
Australia A	Voltage	253V	260V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
Australia B	Voltage	250V	260V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
Australia C	Voltage	253V	260V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
New Zealand	Voltage	242 V	250V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
Allowed range	Voltage	235 to 255 V	240 to 265 V
	Inverter maximum active power output level (P) % of S_{rated}	100%	0 % to 20 %

NOTE: Australia C parameter set is intended for application in isolated or remote power systems.

Passive anti-islanding voltage limit values

Protective function	Protective function limit	Trip delay time	Maximum disconnection time
Undervoltage 2 (V < <)	70 V	1 s	2 s
Undervoltage 1 (V <)	180 V	10 s	11 s
Overvoltage 1 (V >)	265 V	1 s	2 s
Overvoltage 2 (V > >)	275V	-	0.2 s