009_MSU/MAU Series_MSU2000_EN

Release Notes

This document records the changes related to SolarTrunk/PowerTrunk User Manual.

Version	Update Date	Contents
V1.0	2025-03-27	Initial Version
V2.0	2026-03-04	Parallel operation section added

Read before using

This manual is valid for the following models:

Product Name	Models
SolarTrunk MSU **PowerTrunk MAU**	TSOL-MSU2000, TSOL-MSU2000DE TSOL-MAU2000, TSOL-MAU2000DE
2kWh Extension Battery	TSOL-B2000

The following safety symbols are used in this manual. Before installing or operating the system, familiarize yourself with these symbols and their meanings.

Identification	Explanation
	**Danger:** Danger indicates a dangerous situation that may cause fatal electric shock, other serious personal injury, or fire danger.
	**Warning:** Warnings indicate such instructions must be fully understood and followed to avoid potential safety hazards, including unit damage or personal injury.

	**Note:** Notes indicate that the described operation should not be performed. Before continuing, readers should stop using and fully understand the explained operation.

The symbols on the SolarTrunk/PowerTrunk are listed below and illustrated in detail.

Label	Description
	Please read the installation manual first before installation, operation, and maintenance.
	This device SHOULD NOT be disposed in residential waste.
	This device fulfills the requirements of the Radio Equipment Directive.
RoHS	This device complies with the RoHS Directive.
	This symbol indicates the presence of high voltage and the risk of electric shock.
	To avoid electric shock or injury, do not touch or use the inverter for 3 minutes after turning off the inverter or disconnecting it from the power grid.

Read the manual and other related documents before any operation of the unit is carried out. Documents must be stored carefully and be available at all times. All rights to the content of this manual are owned by TsunESS Co., Ltd. (hereinafter “TSUN”). This document cannot be modified, distributed, reproduced or published in any form or by any means without prior written permission from TSUN. Content may be periodically updated or revised due to product development. The information in this manual is subject to change without notice. The latest manual can be acquired and downloaded at www.tsun-ess.com.

Safety Instructions

Statement:

Before installing, operating, and maintaining the unit, please read this manual first and follow all safety precautions marked on the unit and in the manual.

The "instructions", be followed, but only serve as a supplement to all safety precautions. Our company does not assume all "precautions", "warnings", and "dangers" in the manual could represent

all safety precautions that would against responsibility for violating general safety operation requirements

or violating safety standards for design, production, and use of unit.

This unit should be used in an environment that meets the design specifications, otherwise it may cause unit malfunction, resulting in unit functional abnormalities or component

damage, personal safety accidents, property losses, etc., which are not within the scope of product

warranty assurance.

Local laws, regulations, and specifications should be followed when installing, operating, and maintaining the unit. The safety precautions in the manual are only a supplement to local laws, regulations, and norms.

Our company shall not be responsible for any of the following situations.

- Not operating within the usage conditions specified in this manual.
- The installation and use environment exceed the provisions of relevant international or national standards.
- Unauthorized disassembly, modification of products, or modification of parameter or product firmware.
- Failure to follow the operating instructions and safety warnings in the product and documentation.
- Product damage caused by abnormal natural environments (force majeure, such as earthquakes, fires, storms, etc.).
- Transportation damage caused by non-authorized transportation.
- Damage caused by storage conditions not meeting requirements stated in this manual.

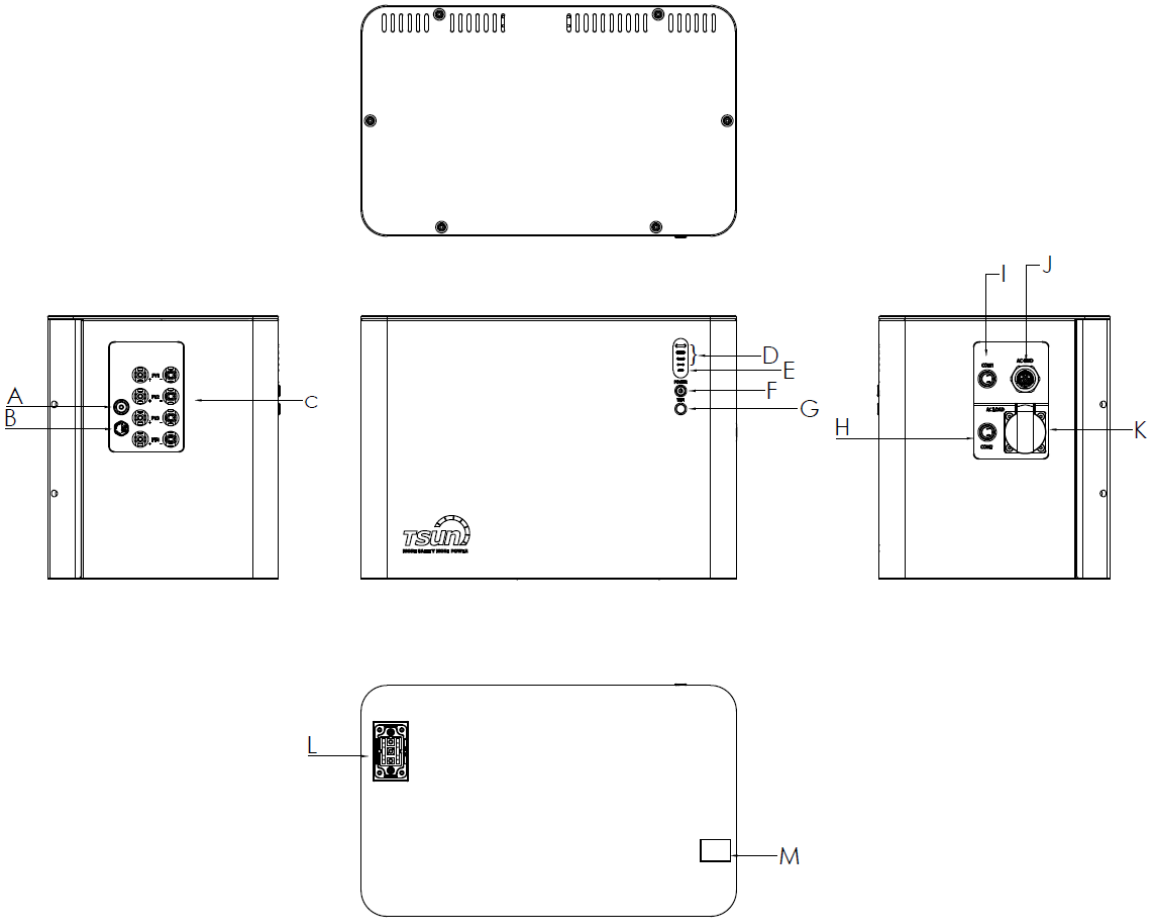
Danger:

- If fire occurs, evacuate the building or equipment area and press the fire alarm bell, or call the fire alarm number. Under any circumstances, it is strictly prohibited to re-enter a burning building.

- Do not disassemble or modify the SolarTrunk/PowerTrunk without prior written permission from Tsun.

Product Overview

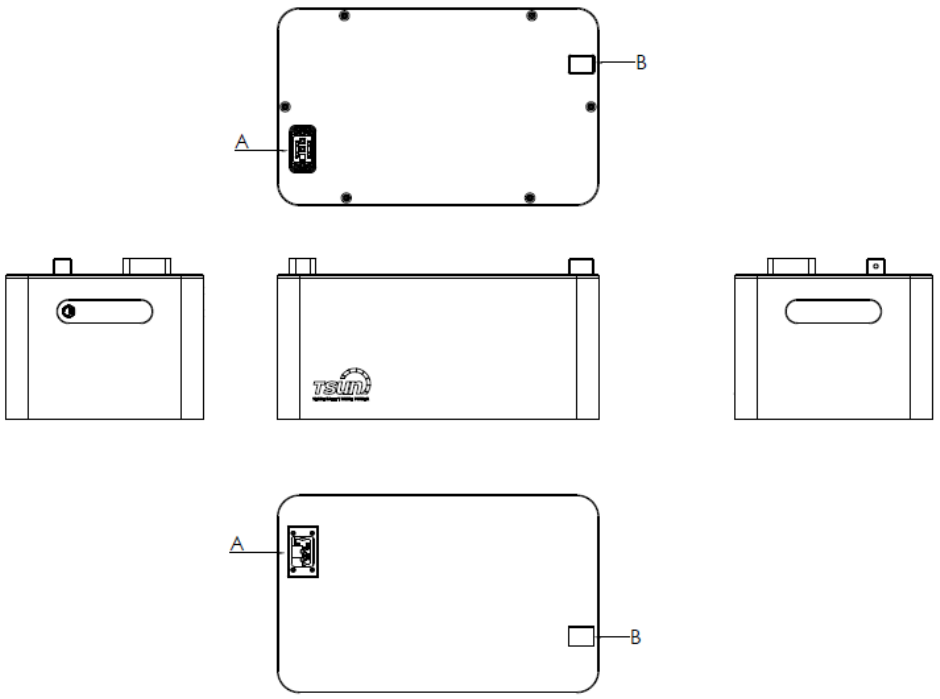
PowerTrunk



A	WiFi Antenna	**H**	COM2: for Remote Dispatch
B	Vent Valve	**I**	COM1: for RS485 Meter
C	PV inputs (4 sets of PV+/PV-)	**J**	AC Grid
D	Battery SOC Indicator	**K**	AC Load
E	Status Indicator	**L**	Battery Port
F	Power Button and Indicator	**M**	Positioning Pin
G	WiFi Button and Indicator		

*Note: PowerTrunk series don't have PV inputs on the unit.

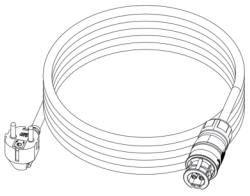
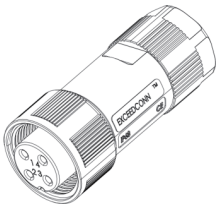
Extension Battery B2000



A	Battery Port
B	Positioning Pin

What’ s in the Box

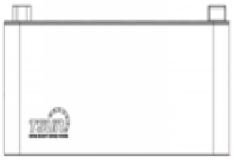
SolarTrunk/PowerTrunk

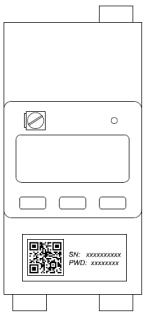
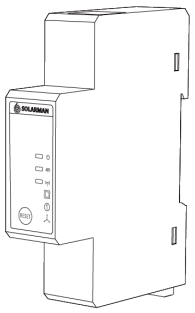
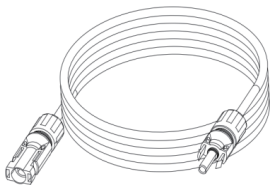
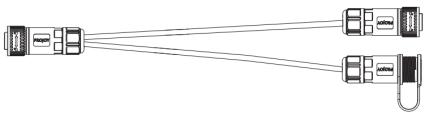
				
SolarTrunk/PowerTrunk x 1	AC End Cable with plug x 1	RS485 Connectors x 2	QIG x 1	Warranty Card*1

Optional Accessories

The following accessories must be ordered separately:

Extension Battery B2000

		
B2000	QIG x 1	Warranty Card*1

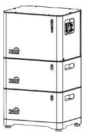
			
Smart Meter (WiFi, single-phase)	**Smart Meter** (WiFi, three-phase)	**PV Extension Cables** MC4 connector, black photovoltaic cable, 2m	**Parallel connection cable**

System introduction

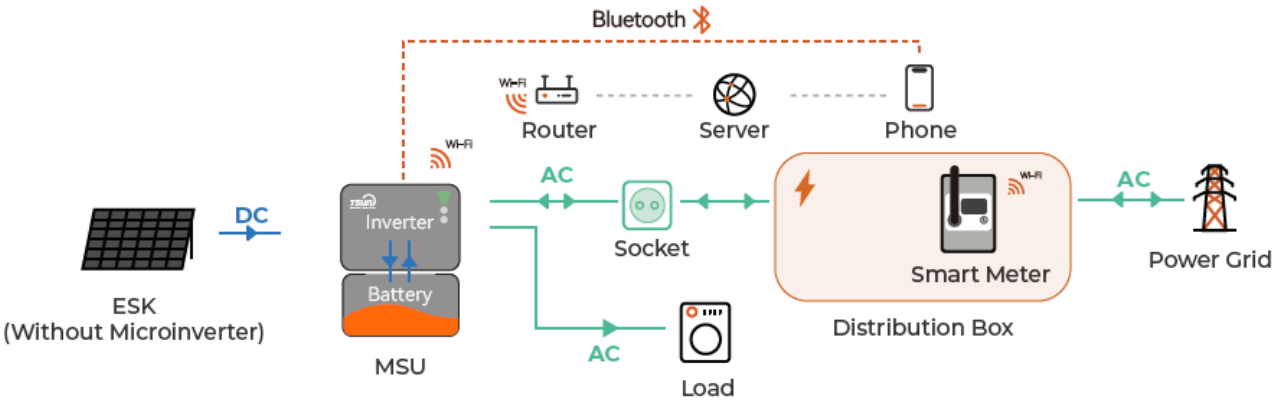
SolarTrunk is the key compoments of the plug and play storage system which is designed for end-users. For on grid balcony solar system which the solar energy will be fully injected to home for local consumption or to public grid if energy could not be fully comsumed. SolarTrunk can store excess solar energy in the battery and release it later when needed. In addition, for users who already have on grid solar system or live in condition with no possibility to install solar panels, PowerTrunk would be a good solution for providing additional source of electricity with bi-directional charging and discharging ability.

B2000 is a key accessory of the SolarTrunk/PowerTrunk system, which can expand the battery capacity of the whole system.

One B2000's capacity is 2048Wh, and one SolarTrunk/PowerTrunk supports stack up to four B2000.

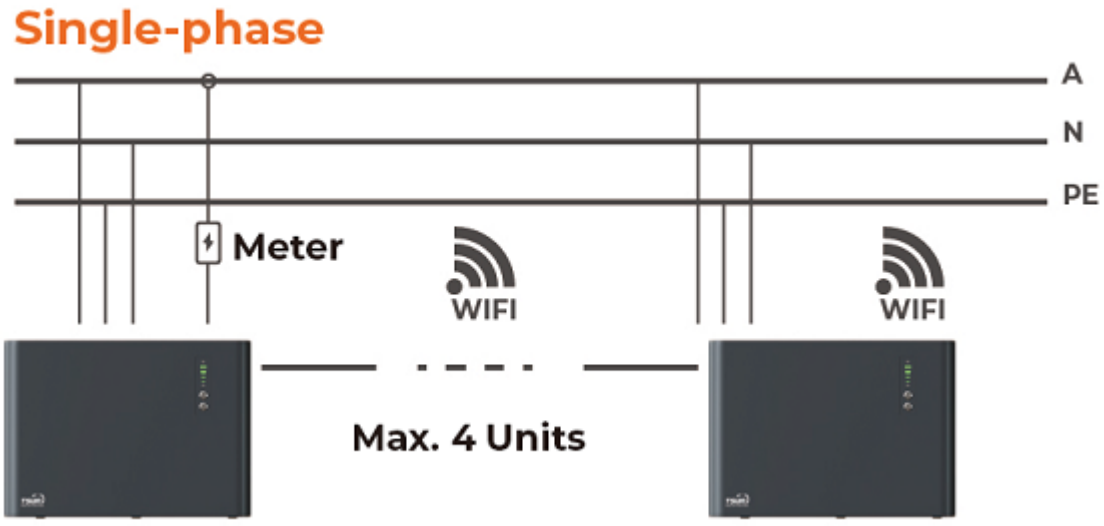
System Overview					
SolarTrunk/PowerTrunk	*1	*1	*1	*1	*1
B2000	*0	*1	*2	*3	*4
System Capacity	2048 Wh	4096 Wh	6144 Wh	8192 Wh	10240 Wh

System Diagram：

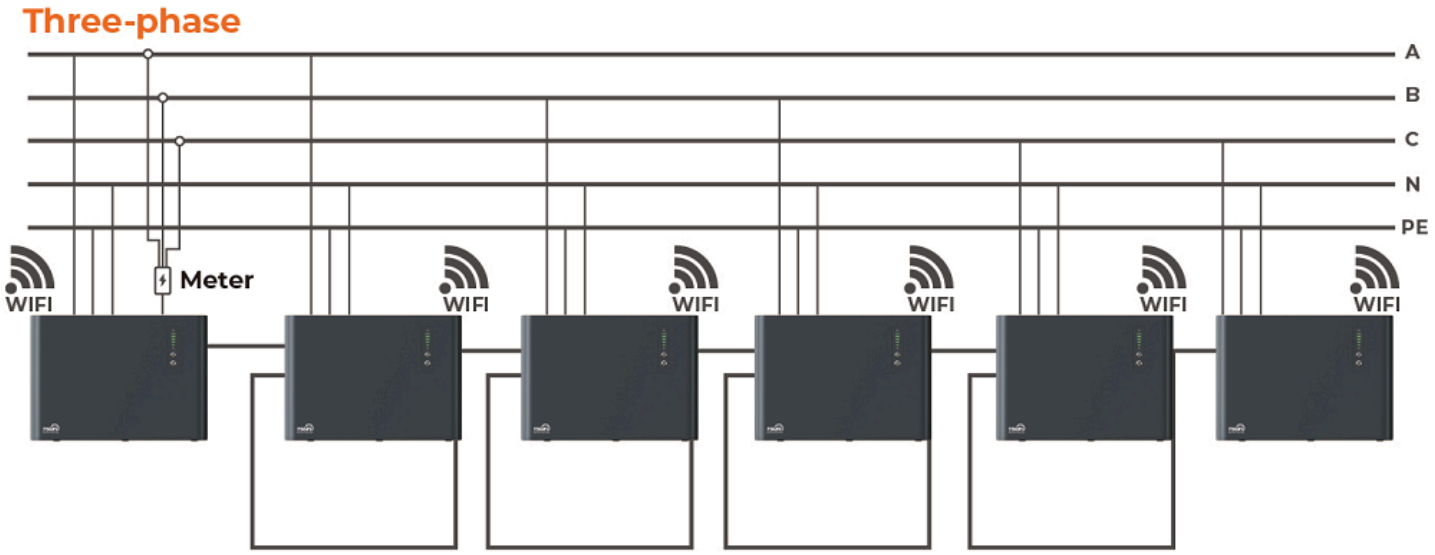


The system can be used in Off-Grid and On-Grid Hybrid Solar systems, suitable for home users and balcony scenarios.

*Single-phase Multi-MSU Networking Diagram



*Three-phase Multi-MSU Networking Diagram



SolarTrunk/PowerTrunk installation

Pre-installation

Check the Packaging

Before unpacking the unit, check the packaging for unexpected damage, such as holes and cracks, and review the unit model number. If any damage is found or the model is not what you requested, do not unpack the unit and contact your dealer or source of purchase as soon as possible.

Check the unit

After unpacking the unit, check if it is intact and complete, and free from any obvious damage. If any item is missing or damaged, contact your dealer or source of purchase.

Check the installation environment and position

When choosing the position of installation, comply with the following conditions:

- Select a suitable mounting position for the SolarTrunk/PowerTrunk. Maintain a minimum 50 mm gap between the rear of the unit and the wall (load-bearing wall preferred) to ensure adequate heat dissipation.
- The floor surface must be flat and solid, with a horizontal gradient ⩽ 3°. No loose, cracked or hollow areas are permitted.
- Do not install the unit in direct sunlight, or close to heat sources or explosives. No flammable or explosive materials may be stored within a 1-meter radius of the equipment.
- Keep the unit at least 1 meter away from balcony floor drains, drainage outlets, washing machines, mop sinks and other water-prone areas. Ensure the selected location is not at risk of flooding or other water hazards.

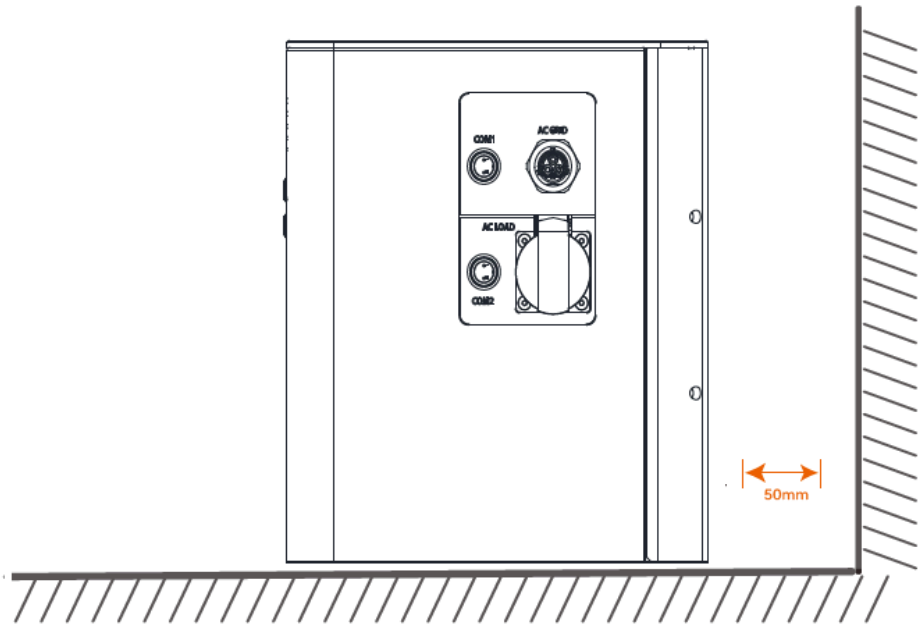
- Prioritize natural ventilation. The unit’ s air intake and exhaust vents must not be obstructed by any objects. Do not stack cartons, clothing, clutter or other combustible materials around the unit, as blocked ventilation channels may cause fire hazards.
- The recommended ambient operating temperature range for the installation site is -20°C to +55°C.
- Avoid electromagnetic interference, which can disrupt normal operation of the unit’ s electronic components.
- An AC power socket is required upon completion of installation.
- Maximum operating altitude: 2000 meters.
- The household must be equipped with a minimum of two 4 kg or larger ABC dry powder fire extinguishers or water-based fire extinguishers, placed in easily accessible locations.

Heavy Lifting Safety

- When carrying the SolarTrunk/PowerTrunk, preparations should be made for loading-bearing to avoid being crushed.
- When handling the unit by hand, it is suggested that the SolarTrunk/PowerTrunk should be lifted by two people. Protective gloves are also suggested to be worn to avoid injury.

Installations steps

1. Place the Bottom expansion Battery, and keep about 50mm away from the wall.
   （If you did't purchase the B2000 separately, please skip this step, go directly to step 3.）



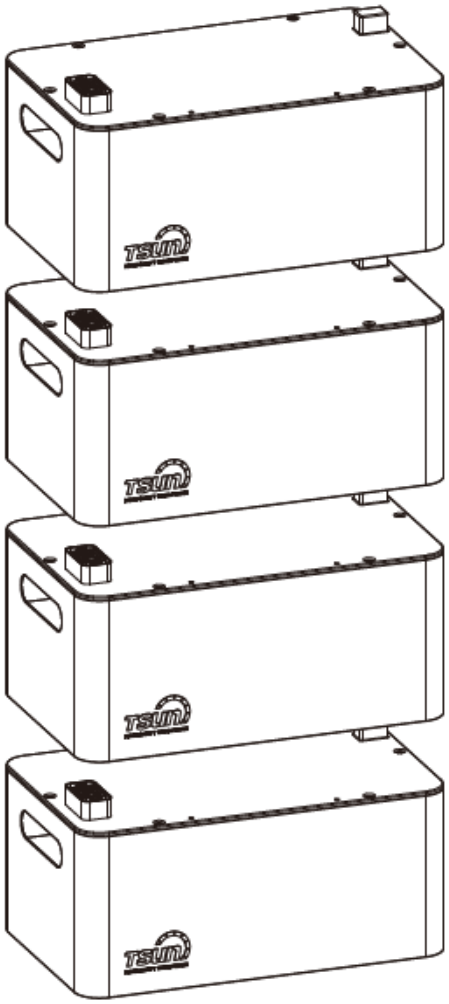
Caution:

- Make sure the selected location has a strong and stable WiFi connection.

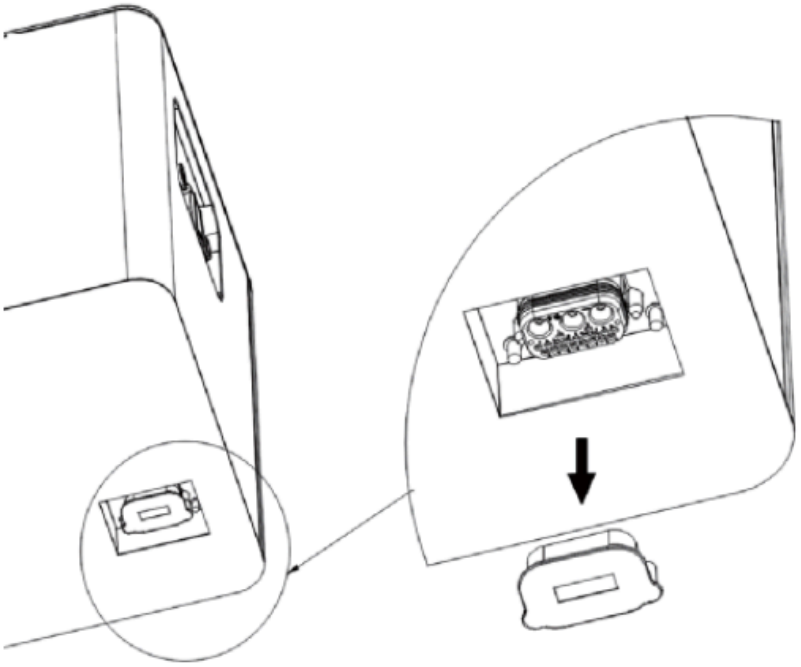
Warning:

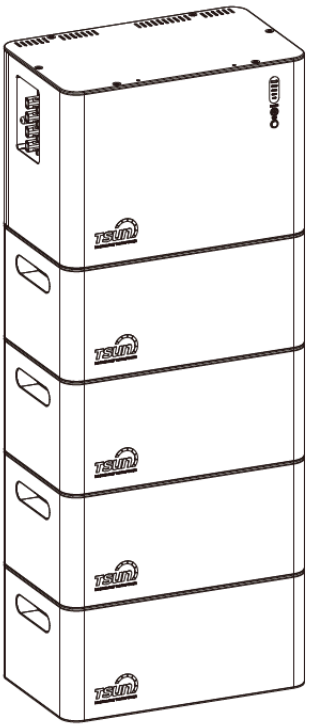
- Do not power on the device unless the installation has completed.
- Do not remove the rubber plugs of the bottom device to avoid water damage.

2. Stack all expansion batteries one by one. (Up to 4 Stackable Micro Batteries can be stacked.)



3. Remove the bottom rubber plugs of SolarTrunk/PowerTrunk, and stack it on the expansion batteries.

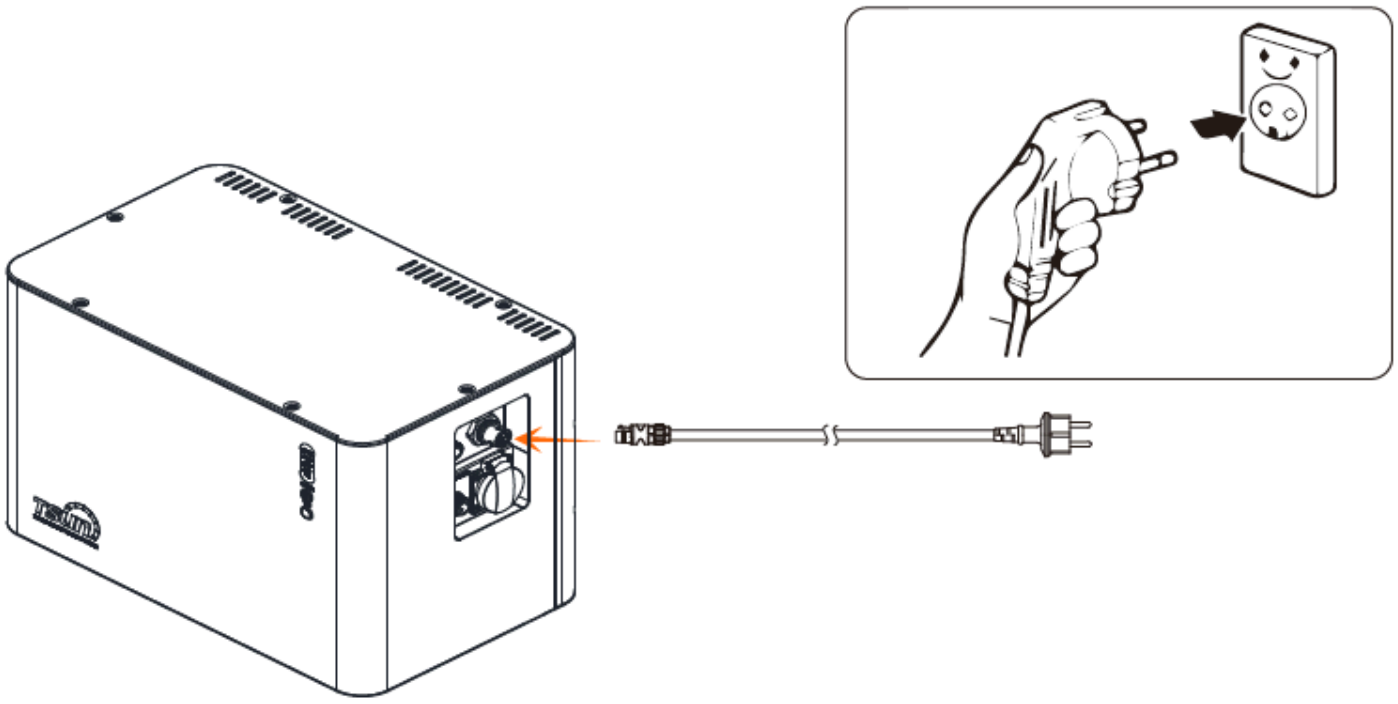




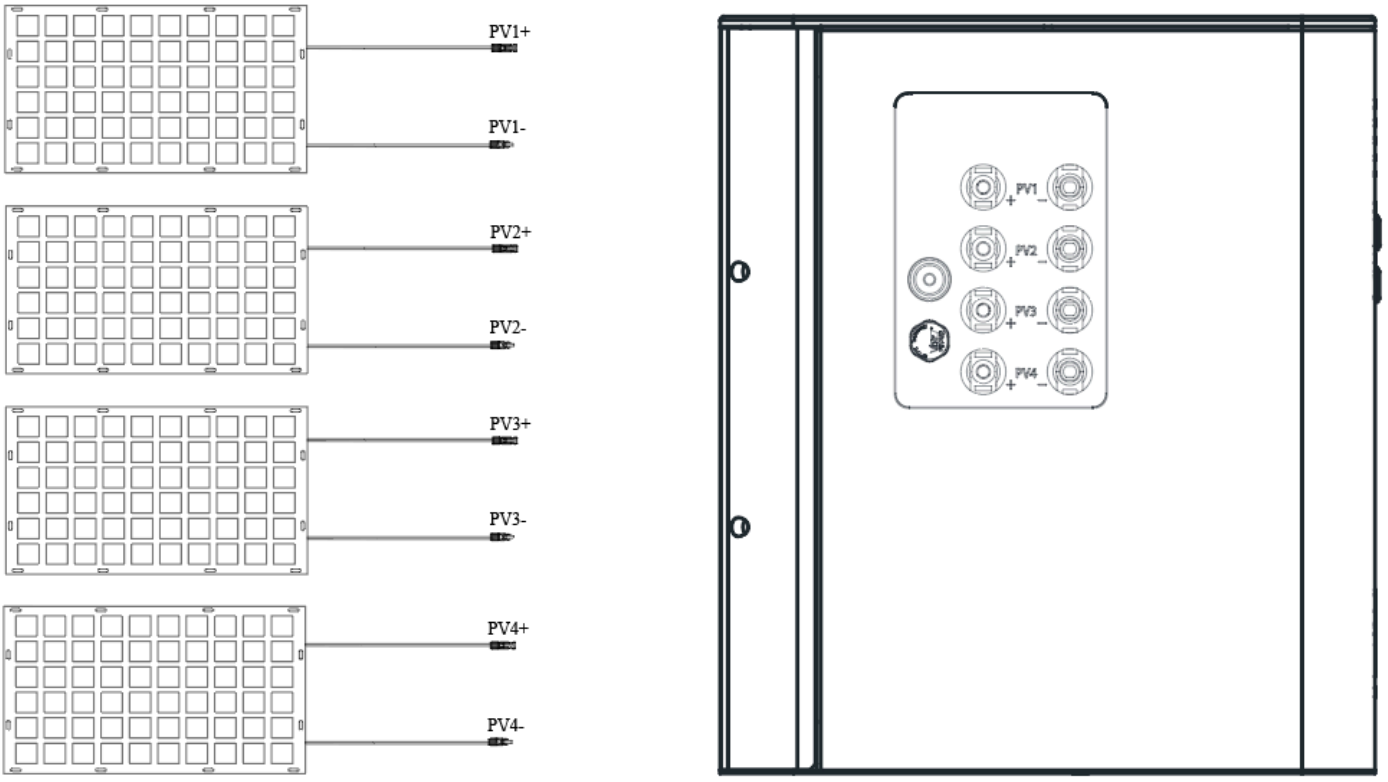
⚠	**Warning:** • If you didn't buy the expansion batteries seperately, you can place the SolarTrunk/PowerTrunk directly on the ground, but make sure that the rubber plugs of the bottom device should not be removed!

Electrical Connections

1. Connect the AC GRID connector with the included AC End Cable to your home socket.

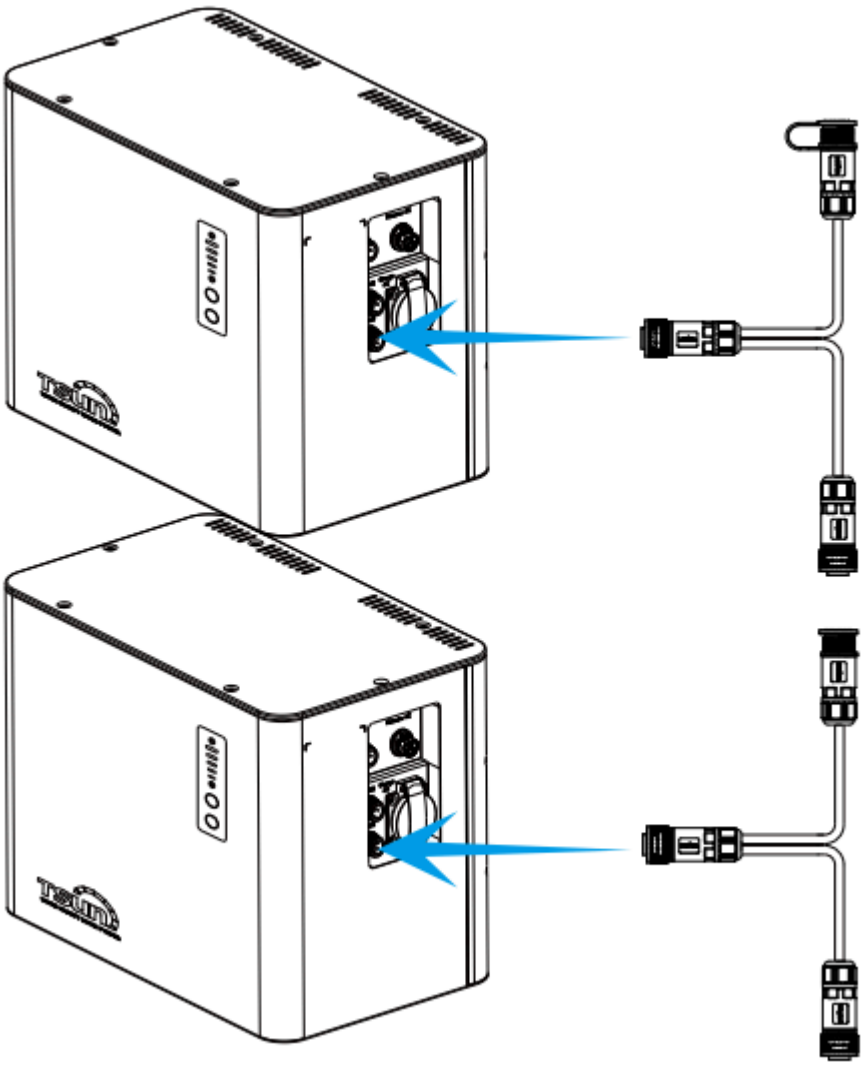


2. Use PV cables to connect each set of solar modules to the corresponding PV input ports.



⚠	**Caution:** • About PowerTrunk series, please skip this step as there are no PV input ports on the unit.

3. If multiple machines are connected in parallel, follow the steps below for wiring operation.



Power on the SolarTrunk/PowerTrunk

1. After the wiring is completed, the SolarTrunk/PowerTrunk will start automatically. And complete the "Networking" process using the "TSUN Smart" app within 30 minutes of power on the SolarTrunk/PowerTrunk (Please refer to the Monitoring System section).

Buttons control

Buttons	Action	Function
Power button	Press for 2 seconds	Turn on the battery
	Press for 2 seconds when the unit powered on	Turn off the battery
	Press once when powered on	Switch on and off AC Load
WiFi button	Press for 5 senconds	Reset WiFi configuration

If you want to reset the device to factory setting, please press both Power and WiFi buttons simultaneously for 10 seconds.

LEDs Guide

LED Indicators	LED Description	Status
WiFi indicator	Constant On	Internet connection normal
	Flashing	Wifi configuration not complete
	Off	Connection disabled
Status indicator	Green	Working nomally
	Red	Malfunction/Warning
Battery SOC	Flashing	Charging
	Constant On	Current battery level
	Cycling on	OTA upgrade

Interface Guide

COM1	COM1-1	RED	RS485 meter interface Signal A
	COM1-2	BLUE	RS485 meter interface Signal B
COM2	COM2-1	RED	Dispatch interface Signal A
	COM2-2	BLUE	Dispatch interface Signal B

Smart Meter Installation

The installation of the meter needs to be done by a professional. Please refer to the meter QIG or user manual for detailed steps.

Power Off and Disassemble the Whole System

1. Disconnect the AC end cable from the socket

2. Press the Power button once to turn off output of AC Load
3. Press and hold the Power button for more than 2 seconds to turn off output of the battery
4. Disconnect solar modules from the unit’ s PV input ports

*Note: For PowerTrunk series, please skip this step.

⚠	**Caution:** • Please scan the QR code below to check how to disassemble the DC connectors. 1. Attach the disassembly tool, rotate it, and clamp it 2. Press the tool and unplug the connector • Please follow the steps to disassemble the AC connectors. 1. Attach the disassembly tool, rotate it, and clamp it 2. Press the tool and unplug the connector

Monitoring System

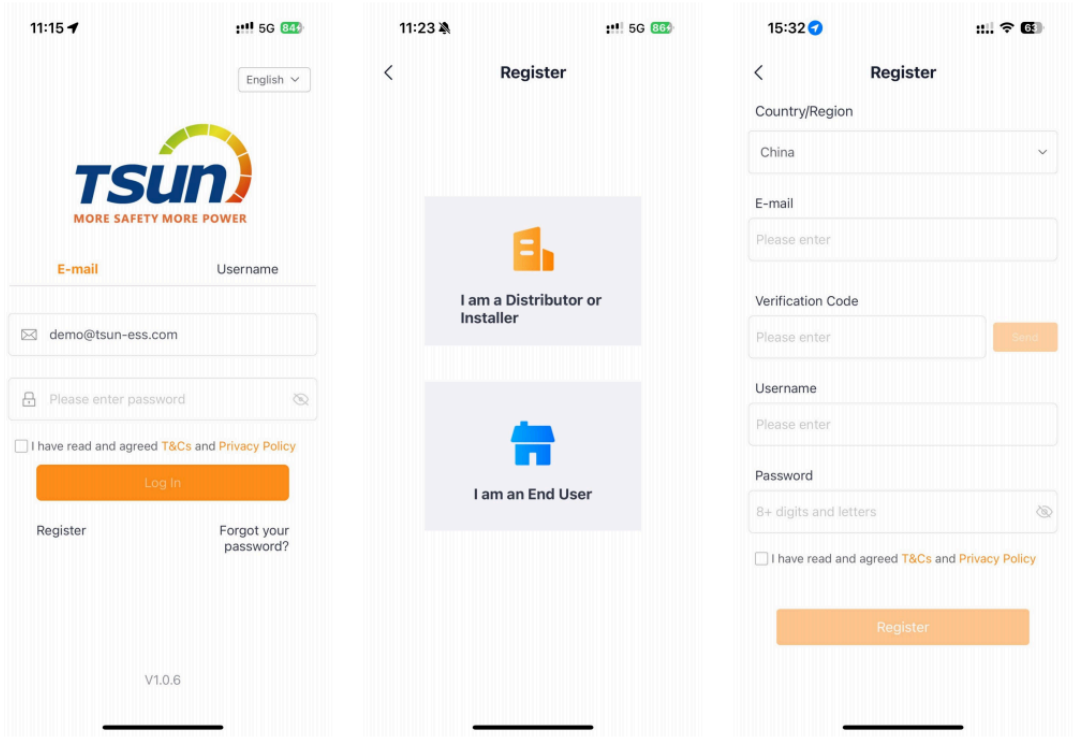
APP Basic setting

Step 1 Download the APP

1. IOS users can directly search for "TSUN Smart" in the APP Store and download the software.
2. Android users can directly search for "TSUN Smart" in Google Play and download the software.
3. Android users who cannot access Google Play can scan the QR code below to download and install "TSUN Smart".

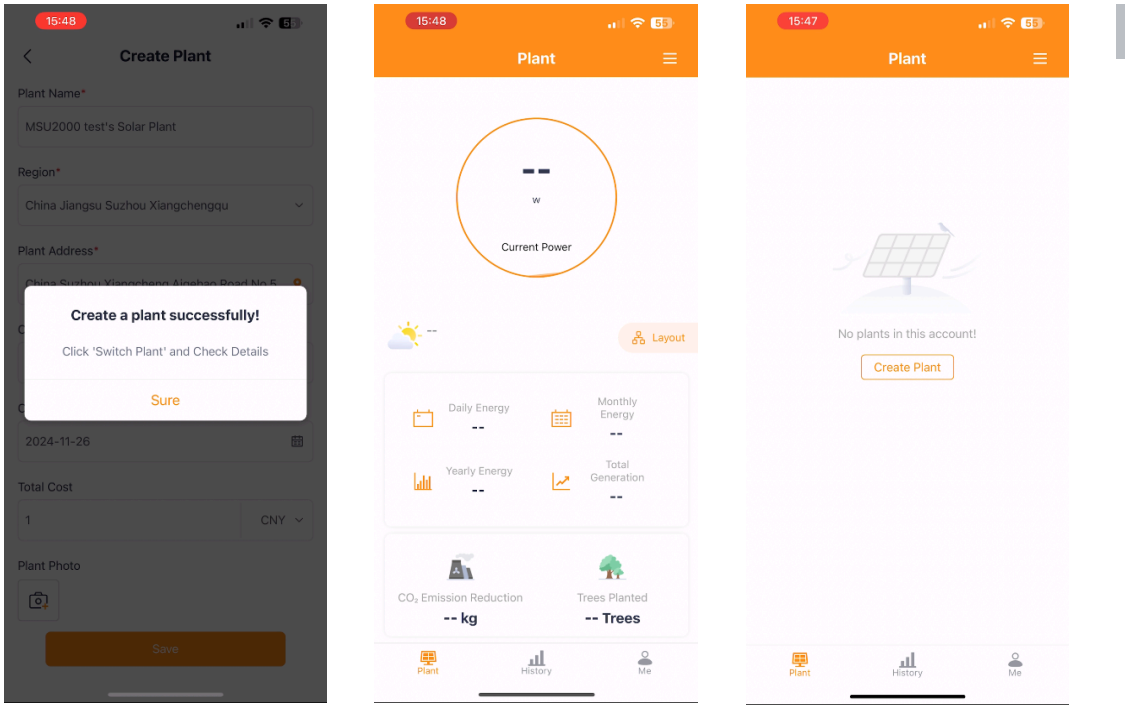
Step 2 Register & Log in

Click"Register", select "End User" , and fill in all registration details, read and click the T&C and Privacy Policy.



Step 3 Create a Solar Plant

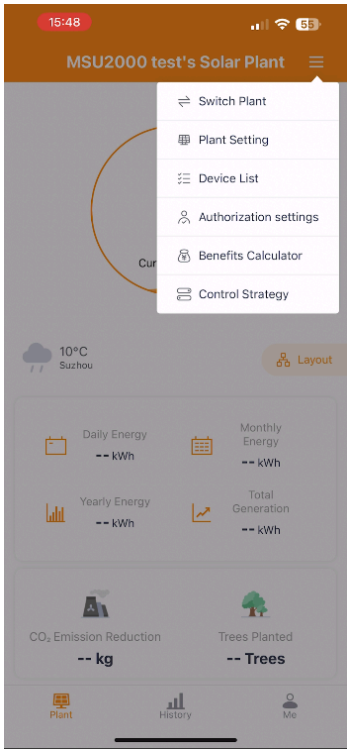
Click "+" to create a soalr plant. After filling in basic plant information, click "Save" to complete the solar plant creation.

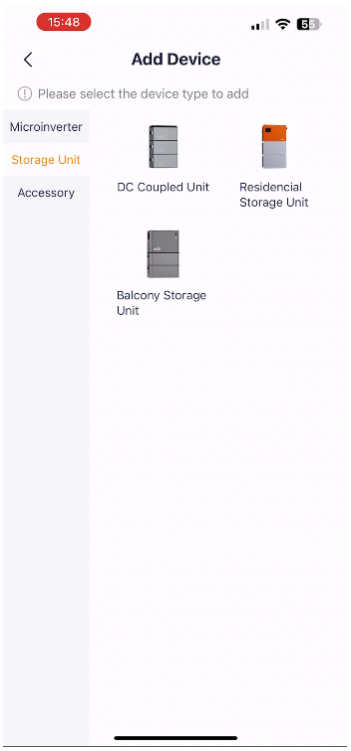


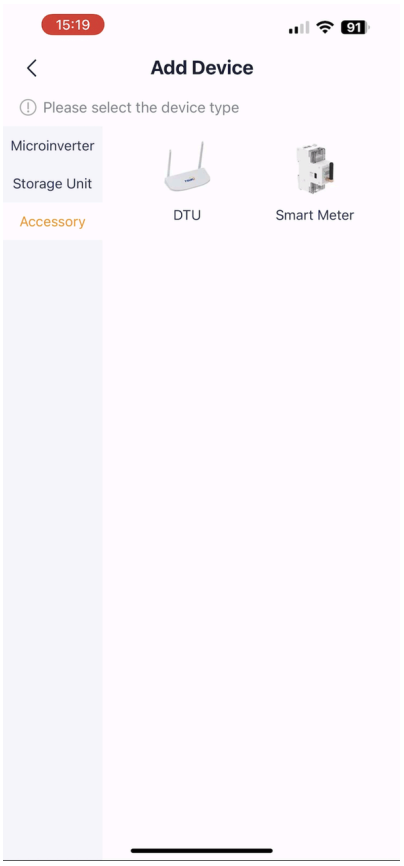
Step 4 Add devices and Configure WiFi

1. Click “≡” on the plant homepage and click "Device List " on plant homepage.
2. Click "Add Device", add "Balcony Storage Unit".
3. Scan the QR code on SolarTrunk/PowerTrunk. The QR code is on the right side of the unit label.

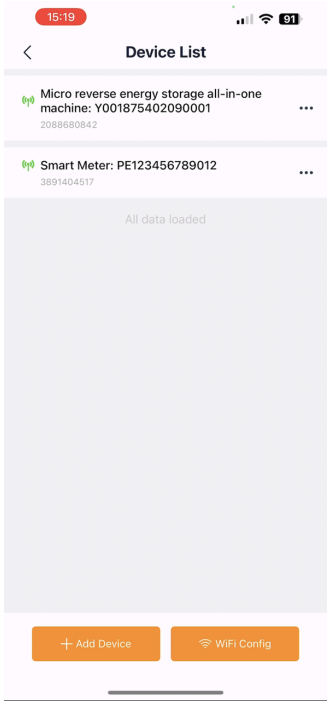
4. Click "Add Device" again, choose "Accessory" and "Smart Meter".

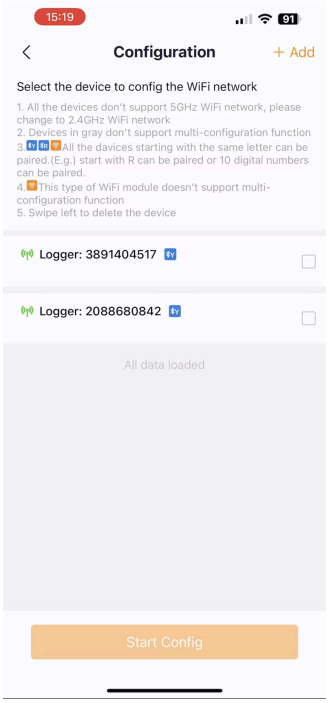


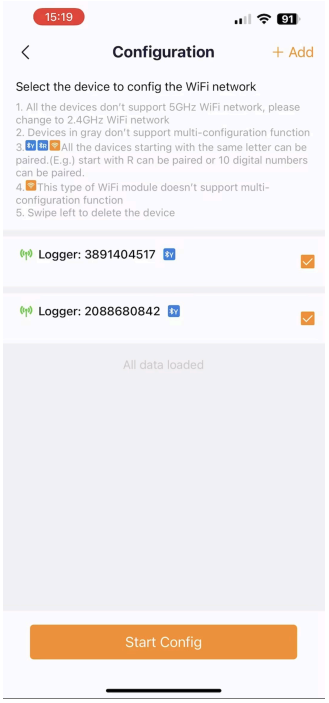


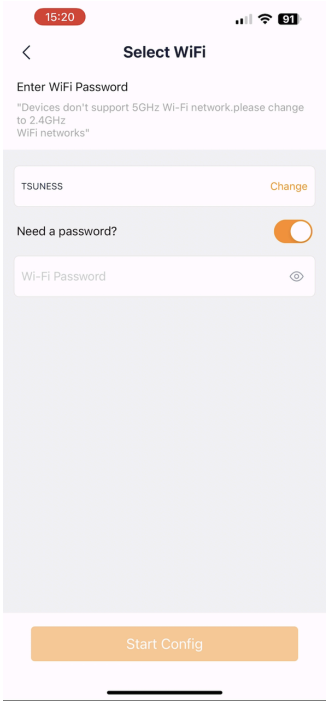


5. Click "WiFi Config" to select the corresponding SolarTrunk/PowerTrunk serial number and Smart Meter serial number for network configuration.
6. Click "Start Config" to start configuration. Select the WIFI you want to connect to, input the WIFI password, and click "Start Config"









Before installing the smart meter, please check the WiFi signal first. If the signal is weak, it is recommended to purchase a repeater and set the route and repeater in the 2.4-GHz ban.

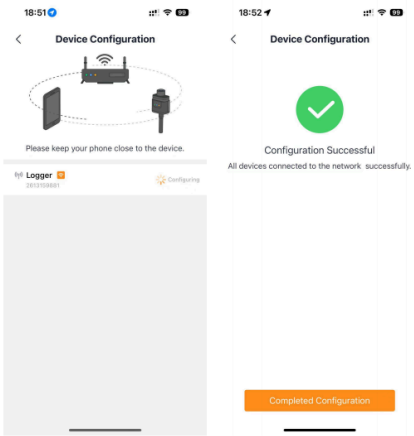
How to set the repeater, here we take FRITZ! Repeater for as an example:

Enable the 2.4-GHz band in the FRITZ!Box user interface (http://fritz.box) under “Wi-Fi / Wi-Fi Network”.Enter the website printed on the product, enter your username and password（also printed on the product）, and switch the FRITZ! repeater to the 2.4-GHz band.

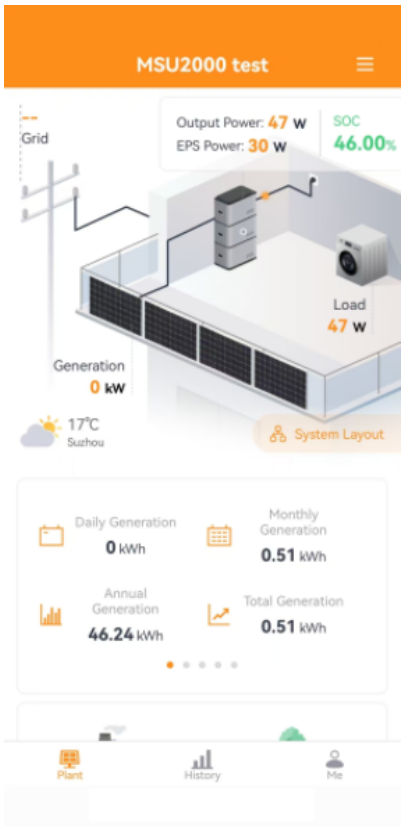
During the network configuration process, please only use the 2.4GHz network. If the page displays an error, check the following possible causes and try again:

1. Check if the WIFI password is correct or not, and make sure WIFI names no special characters, only numbers and English letters are acceptable .
2. Check if WiFi and router work only in 2.4GHz , the device cannot connect to the 5G network.
3. WiFi signal strength should be at least 2 bars shown on your phone for 2.4GHz band.
4. One router can only connect to up to 9 devices (not only SolarTrunk, but also phones, PCs, etc.). Please check if the connected device already exceeds 9.
5. Make sure that your phone's WLAN is turned on.
6. Try shortening the distance between the phone and the device.

After approximately 10 seconds, the WiFi configuration will be completed successfully, and the data of SolarTrunk will be uploaded to the server in about 5-10 minutes.



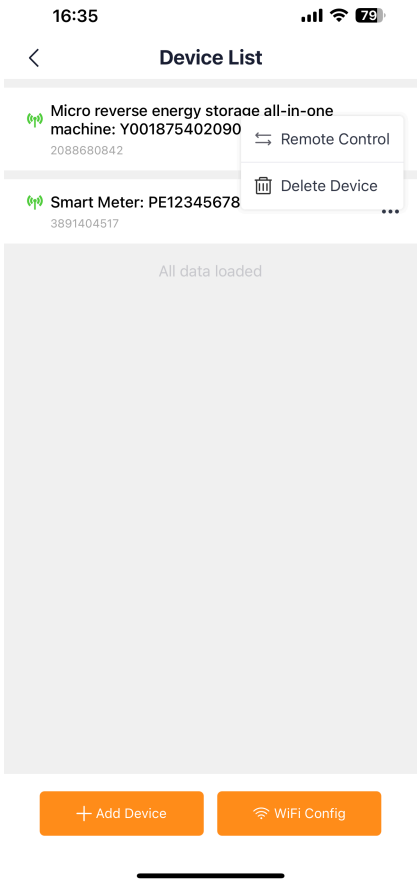
Step 5 Back to main page

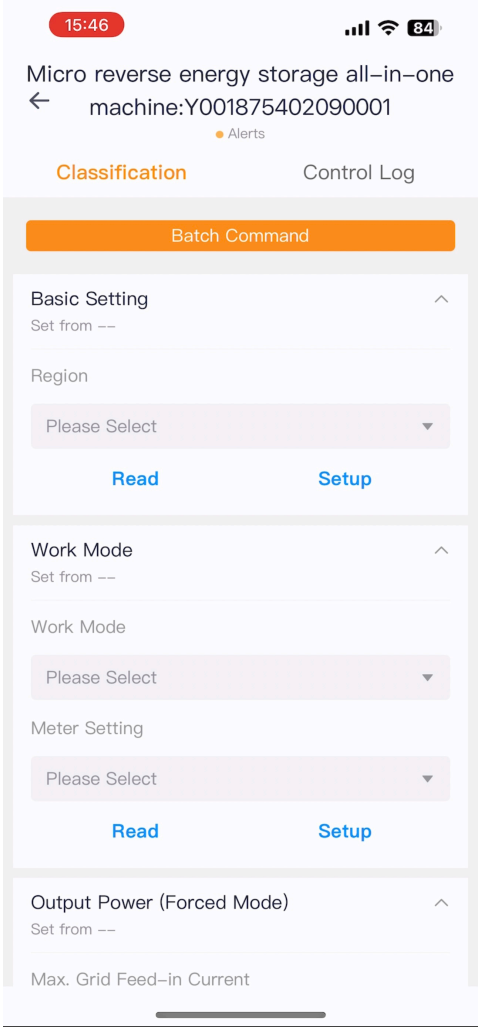


Remote Control

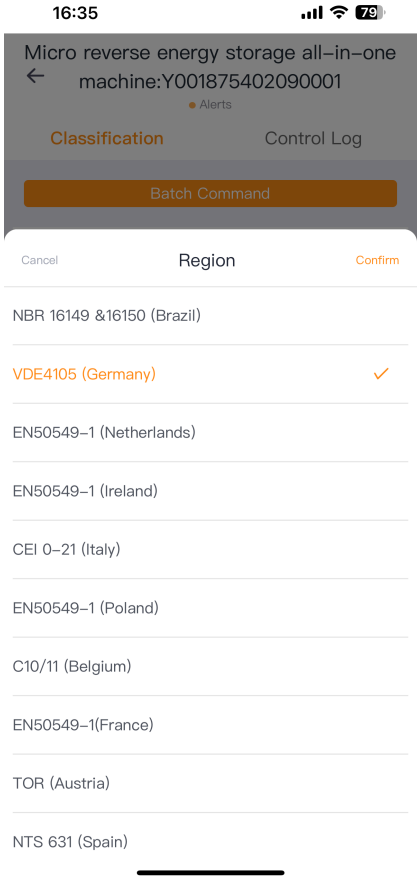
Basic Setting

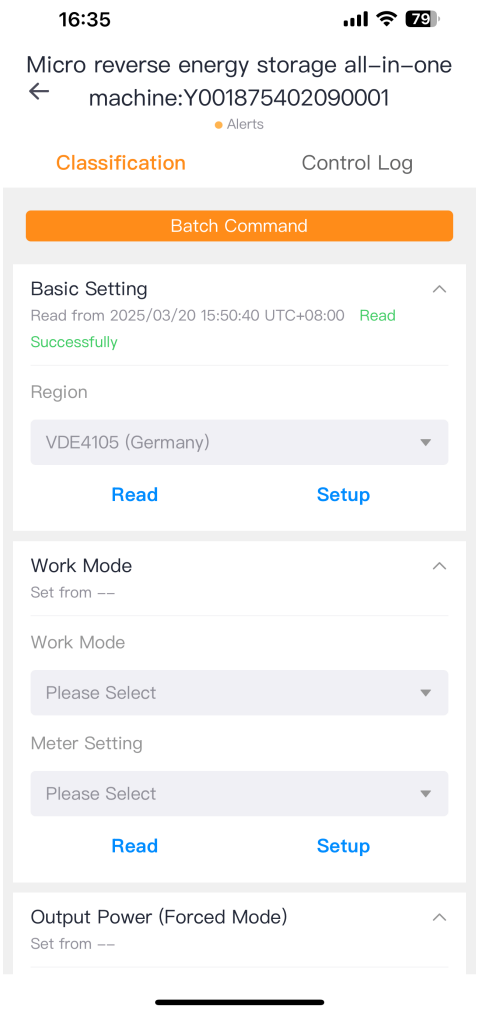
1. Click “≡” on the plant homepage and click "Device List " on plant homepage.
2. Click the "· · ·" of the SolarTrunk/PowerTrunk, and then choose "Remote Control"





3. Click "Please Select" and choose the right region and click "confirm", then click "Setup".





Work mode

⚠	**Caution:** • It should be noted that forced mode and dispatch mode are not recommended for end-users.

Self Use

In this mode, you can enable or disable the charging schedule, battery back-up function and smart meter setting:

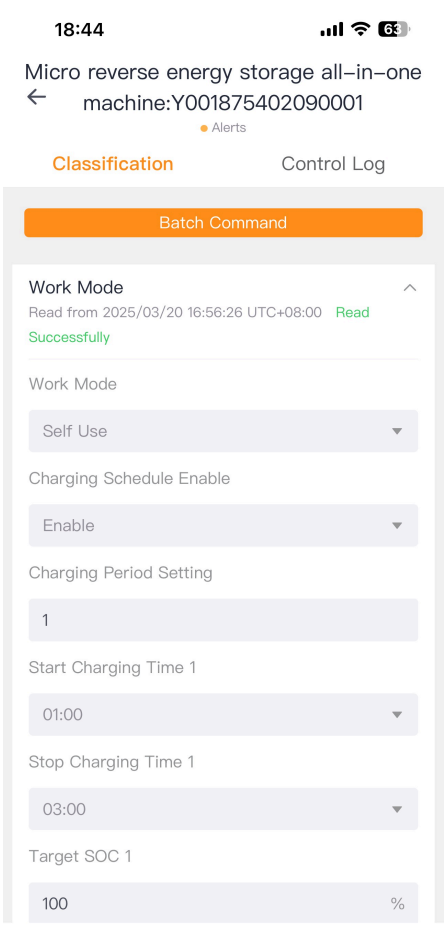
In charging schedule, you need to set start and stop time, target SOC. (Charging schedule can be set up to six periods.)

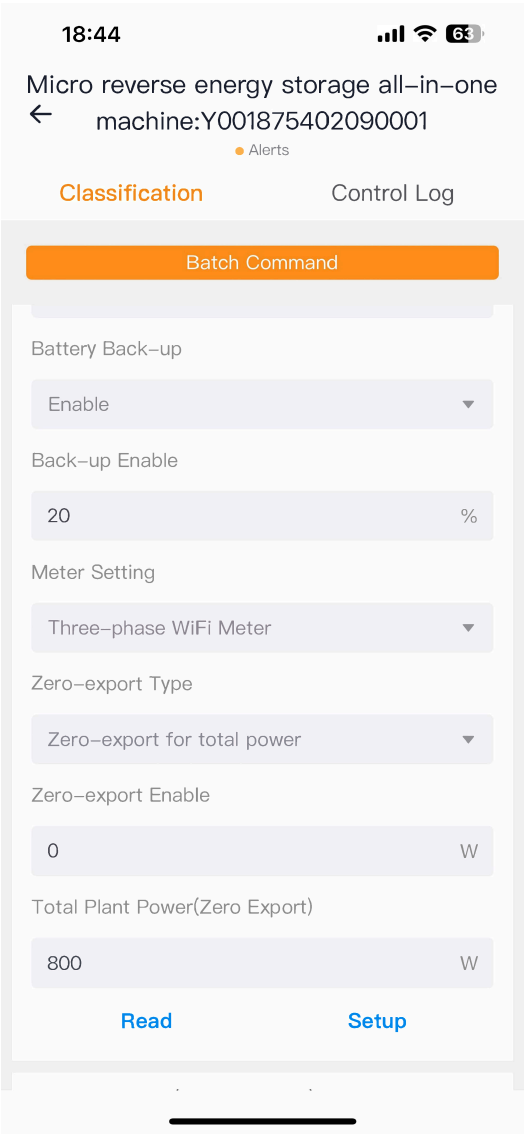
In battery back-up function, you can set the percentage of battery back-up level and the unit will charge the battery at maximum power until it reaches the SOC you have set.

In the smart meter setting, please choose the corresponding smart meter you have installed, and if you need to set the zero-export function, please choose the type you require, then set the designated export power value.

Menu	Option	Remark
Back-up Enable	_%	Setting the amount of power needed for emergency charging
Meter setting	Single-phase WiFi Meter	Choose the right type of meter you have installed
	Three-phase WiFi Meter	
	Single-phase RS485 Meter	
	Three-phase RS485 Meter	
Zero-export Type	off	Turn off the zero-export function
	Zero-export for total power	Please select the corresponding option according to the specific local regulations.
	Zero-export for specified phrase of three phase system	
Zero-export Enable	_W	The amount of power allowed to flow to the grid, usually set to “0”
Total Plant Power	_W	Maximum output power of the machine

After setting all the above parameters, remember to click on "setup" at the bottom right.



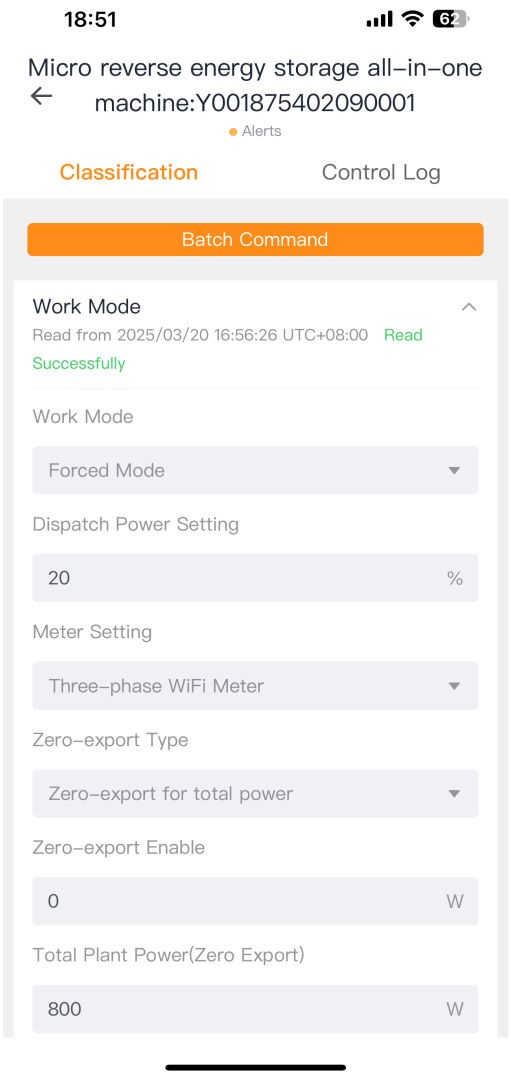


Forced Mode

In Forced mode, please set the dispatch power percentage, which represents the operating power of the battery.

About Metter setting, please follow Self Use's instructions.

After setting all the above parameters, remember to click on "setup" at the bottom of the page.

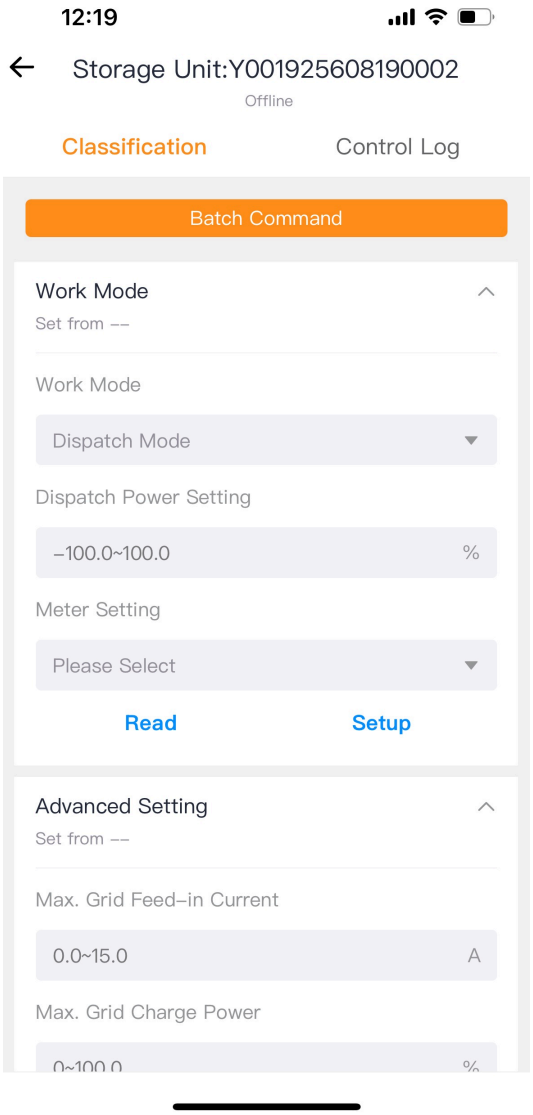


Dispatch Mode

In Dispatch mode, please set the dispatch power percentage, which represents the overall operating power of the SolarTrunk/PowerTrunk: a positive value represents the input of the unit (charging power), and a negative value represents the output of the unit (discharging power).

About Metter setting, please follow Self Use's instructions.

After setting all the above parameters, remember to click on "setup" at the bottom right.

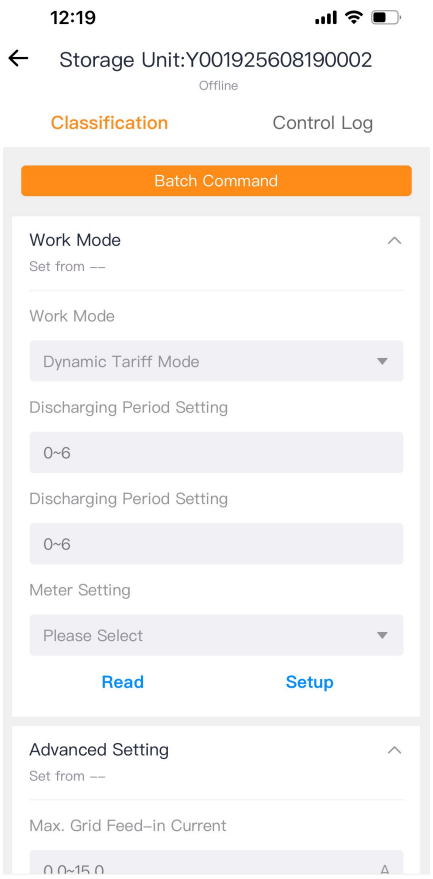


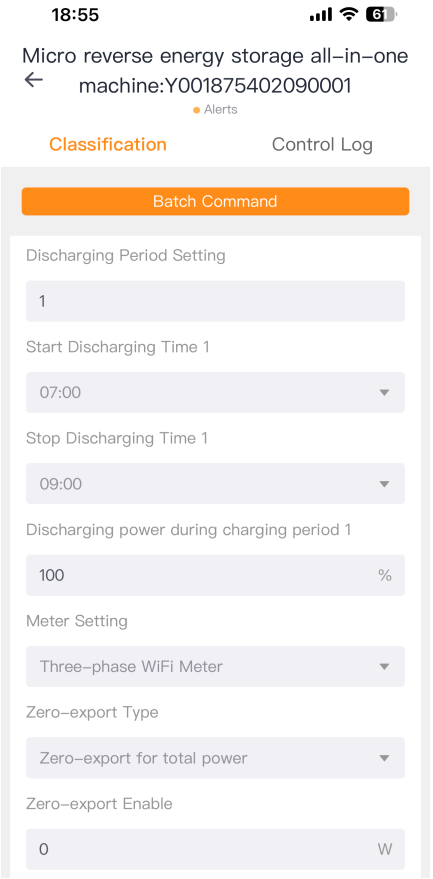
Dynamic tariffs Mode

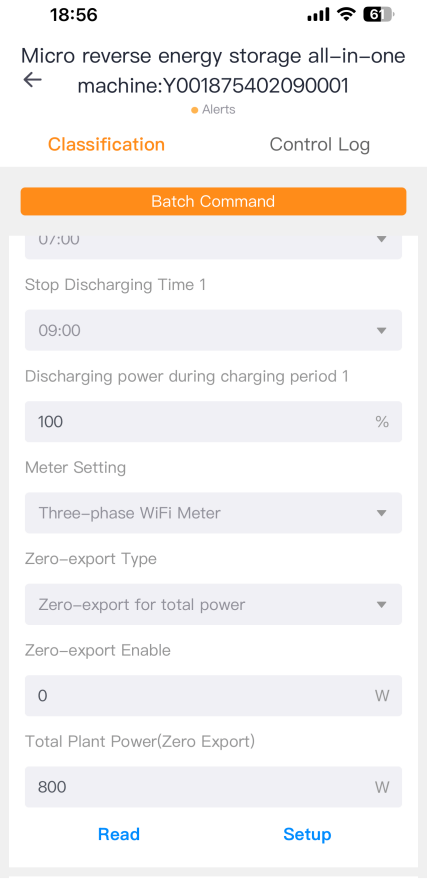
In dynamic tariffs mode, first you need to set the charge and discharge period, then set the start time, stop time, and charging/discharging power percent during the corresponding period. (Charging/discharging schedule can be set up to six periods.)

About Metter setting, please follow Self Use's instructions.

After setting all the above parameters, remember to click on "setup" at the bottom of the page.







Advanced Settings

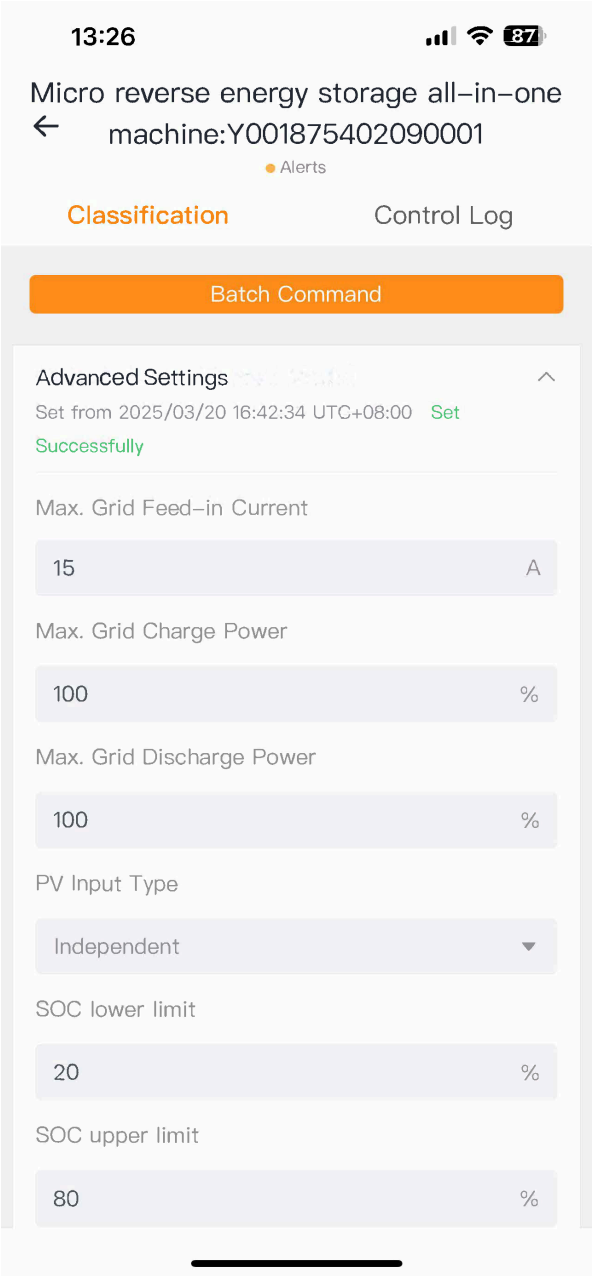
Caution:

- We do not recommend that you change the parameters in the Advanced Settings, but if you do need to, please make sure that you understand the meaning of each setting and the impact of the change.

Menu	Meaning	Remark
Max. Grid Feed-in Current	Setting the maximum current input from the grid to the unit	Maximum 15A
Max. Grid Charge Power percentage	Setting the maximum power for grid charging	When you set 50%, it represents the max grid charge power is 2000*50%=1000W.
Max. Grid Charge Power percentage	Setting the maximum power output of the unit to the grid	When you set 50%, it represents the unit's max output power to grid is 2000*50%=1000W.
PV Input Type	Independent/Two, Four, All parallel/ CV	If the unit is connecting photovoltaic panels, please set the default value

		"indepedent"
SOC lower limit percentage	Lower limit of battery power	When you set 30%, it means that the battery will stop output when its SOC reaches 2048Wh*30%=409.6Wh.
SOC upper limit percentage	Upper limit of battery power	When you set 80%, it means that the battery will stop output when its SOC reaches 2048Wh*80%=1638.4Wh.

After setting all the above parameters, remember to click on "setup" at the bottom right.



FAQS

1. Q: What precautions should I take before installing/adding expansion batteries?

A: When installing/adding expansion batteries, it is necessary to power off the system to protect yourself and the machine. Performing this operation while powered on is not covered under warranty. Please follow the steps below for proper installation:

a. Disconnect the SolarTrunk/PowerTrunk and the solar panels.

b. Press the on/off button for 2 seconds to turn off the power.

c. After turning off the SolarTrunk/PowerTrunk, install the expansion batteries to the SolarTrunk/PowerTrunk.

d. Connect solar panels for normal use.

2. Q: Are there any other precautions that need to be taken when installing and using the product?

A: Ensure that the AC outlet is properly grounded.

3. Q: Can I change the battery to the Micro Storage Battery or B2000 by myself?

A: No. If your battery in SolarTrunk/PowerTrunk or B2000 does not work or working conditions do not meet expectations, please contact the TSUN customer service team for further help.

4. Q: How to make sure the unit is safely grounded?

A: The included AC end cable already ensures that the machine is safely grounded, so there's no need to worry.

5. Q: Are microinverters required to use SolarTrunk/PowerTrunk?

A: SolarTrunk/PowerTrunk does not require a microinverter. A microinverter is already incorporated into its all-in-one design that also includes a photovoltaic controller and energy storage battery pack.

6. Q: Can the SolarTrunk/PowerTrunk charge batteries using the household power grid?

A: Yes, the SolarTrunk/PowerTrunk can charge your batteries using your home's AC power. It can be scheduled to do so during off-peak hours to reduce costs, and will also automatically charge AC power when the batteries are low and there is insufficient solar power, preventing battery damage and ensuring that you have some reserve energy available.

7. Q: How do I use SolarTrunk/PowerTrunk to achieve zero-power function?

A: You need to buy our optional accessory smart meter, which prevents energy back-flow to the public grid by adjusting the output power of the SolarTrunk/PowerTrunk, matching household load in real-time. This achieves the purpose of not transmitting energy to the public grid, which is the zero-power function.

8. Q: How does the smart meter help Micro Storage Unit achieve zero energy waste?

A: The smart meter detects the total household electricity consumption, which lets Micro Storage Unit continually adjust output power. It's real-time and precise electrical discharge for your home, helping you achieve efficient energy use without waste.

Troubleshooting

Address (Decimal)	Protocol Name	Description	Special Handling Suggestion
1001	Inverter Undervoltage	Off-grid side undervoltage, occurs with low probability in off-grid state. Replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1006	Inverter Overload Protection	Off-grid side load exceeds upper limit; recoverable by reducing load.	Triggered by external factors: display immediately.
1008	Inverter Relay Abnormality	Off-grid side relay abnormality; equipment replacement required upon occurrence.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1017	Battery Overvoltage Protection	Recoverable fault; replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1019	Battery Undervoltage Protection	Recoverable fault; replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1020	Battery Overcurrent Protection	Recoverable fault; replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1021	Battery Communication Fault	Recoverable fault; replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1040	Grid Overvoltage	Recoverable fault	Triggered by external factors: display immediately.
1041	Grid Undervoltage	Recoverable fault	Triggered by external factors: display immediately.
1042	Grid Overfrequency	Recoverable fault	Triggered by external factors: display immediately.
1043	Grid Underfrequency	Recoverable fault	Triggered by external factors: display immediately.
1044	Grid Short Circuit	Recoverable fault; replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1046	Grid Overload Protection	EPS bypass, alarm may occur during real-time price charging	Triggered by external factors: display

		due to unrestricted load; rarely triggered.	immediately.
1048	Grid Relay Abnormality	Grid relay abnormality; equipment replacement required upon occurrence.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1056	PV1 Overvoltage Protection	Recoverable fault, check module voltage	Triggered by external factors: display immediately.
1058	PV1 Overcurrent Protection	Recoverable fault; replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1059	PV1 Reverse Connection Protection	Damage will occur if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1064	PV2 Overvoltage Protection	Recoverable fault, check module voltage	Triggered by external factors: display immediately.
1066	PV2 Overcurrent Protection	Recoverable fault; replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1067	PV2 Reverse Connection Protection	Damage will occur if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1072	PV3 Overvoltage Protection	Recoverable fault, check module voltage	Triggered by external factors: display immediately.
1074	PV3 Overcurrent Protection	Recoverable fault; replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1075	PV3 Reverse Connection Protection	Damage will occur if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1080	PV4 Overvoltage Protection	Recoverable fault, check module voltage	Triggered by external factors: display immediately.
1082	PV4 Overcurrent Protection	Recoverable fault; replacement required if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1083	PV4 Reverse Connection Protection	Damage will occur if it persists for a long time.	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.

1092	Heatsink Thermostat Not Connected	For production inspection only; generally not exposed to external users.	(No special handling specified)
1094	Internal Over-temperature Protection	Covers internal temperature monitoring	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1099	Internal Protection	Includes master-slave CPU communication fault, low voltage bus undervoltage	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1100	Internal IO Fault	May occur during system upgrade process	(No special handling specified)
1105	Insulation Fault	Insulation fault	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1106	Meter Communication Abnormality	Meter communication lost	Generally delay 15 minutes (filter 3 data packets) to avoid false alarms from communication fluctuations (does not affect the 10-second timeout shutdown of the device).
1107	Meter Phase Detection Abnormality	Phase detection abnormal; manual re-detection required	Triggered by external factors: display immediately.
1108	DC Output Overvoltage Protection	High voltage bus side	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
1109	DC Output Overcurrent Protection	High voltage bus side	Prevent false triggering: filter out the first alarm, display starting from the second consecutive alarm.
4021-0	Battery Pack 1 Discharge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if charging power is normal
4021-1	Battery Pack 1 Charge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if discharging power is normal
4021-2	Battery Pack 1 Total Overvoltage Alarm	Alarm at filtered value >59V; recover at filtered value <58.5V	Check if charging port voltage is too high
4021-3	Battery Pack 1 Total Undervoltage Alarm	None	

4021-4	Battery Pack 1 Cell Overvoltage Alarm	Alarm at cell voltage >3.65V; recover at cell voltage <3.6V	Discharge appropriately
4021-5	Battery Pack 1 Cell Undervoltage Alarm	Alarm at cell voltage <2.65V; recover at cell voltage >2.8V	Charge appropriately when battery is low
4021-6	Battery Pack 1 Discharge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4021-7	Battery Pack 1 Charge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4021-8	Battery Pack 1 Discharge Low-Temperature Alarm	Alarm at temperature < -13°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature
4021-9	Battery Pack 1 Charge Low-Temperature Alarm	Alarm at temperature <2°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature
4021-10	Battery Pack 1 MOS Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place
4021-11	Battery Pack 1 Ambient Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place
4021-12	Battery Pack 1 Ambient Low-Temperature Alarm	None	
4022-0	Battery Pack 1 Discharge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if charging power is normal
4022-1	Battery Pack 1 Charge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if discharging power is normal
4022-2	Battery Pack 1 Overvoltage Protection	None	
4022-3	Battery Pack 1 Undervoltage Protection	None	
4022-4	Battery Pack 1 Short-Circuit Protection	Protection at current >50A; recover by restarting the device	Check internal wiring
4022-5	Battery Pack 1 Voltage Difference Fault Protection	Protection at voltage difference >300mV; recover at voltage difference <200mV	Check battery voltage difference
4022-6	Battery Pack 1 Discharge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place

4022-7	Battery Pack 1 Charge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4022-8	Battery Pack 1 Discharge Low-Temperature Protection	Protection at temperature < -15°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature
4022-9	Battery Pack 1 Charge Low-Temperature Protection	Protection at temperature <0°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature
4022-10	Battery Pack 1 MOS Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4022-11	Battery Pack 1 Ambient Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4022-12	Battery Pack 1 Ambient Low-Temperature Protection	None	
4041-0	Battery Pack 2 Discharge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if charging power is normal
4041-1	Battery Pack 2 Charge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if discharging power is normal
4041-2	Battery Pack 2 Total Overvoltage Alarm	Alarm at filtered value >59V; recover at filtered value <58.5V	Check if charging port voltage is too high
4041-3	Battery Pack 2 Total Undervoltage Alarm	None	
4041-4	Battery Pack 2 Cell Overvoltage Alarm	Alarm at cell voltage >3.65V; recover at cell voltage <3.6V	Discharge appropriately
4041-5	Battery Pack 2 Cell Undervoltage Alarm	Alarm at cell voltage <2.65V; recover at cell voltage >2.8V	Charge appropriately when battery is low
4041-6	Battery Pack 2 Discharge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4041-7	Battery Pack 2 Charge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4041-8	Battery Pack 2 Discharge Low-Temperature Alarm	Alarm at temperature < -13°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature
4041-9	Battery Pack 2 Charge Low-Temperature Alarm	Alarm at temperature <2°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature

4041-10	Battery Pack 2 MOS Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place
4041-11	Battery Pack 2 Ambient Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place
4041-12	Battery Pack 2 Ambient Low-Temperature Alarm	None	
4042-0	Battery Pack 2 Discharge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if charging power is normal
4042-1	Battery Pack 2 Charge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if discharging power is normal
4042-2	Battery Pack 2 Overvoltage Protection	None	
4042-3	Battery Pack 2 Undervoltage Protection	None	
4042-4	Battery Pack 2 Short-Circuit Protection	Protection at current >50A; recover by restarting the device	Check internal wiring
4042-5	Battery Pack 2 Voltage Difference Fault Protection	Protection at voltage difference >300mV; recover at voltage difference <200mV	Check battery voltage difference
4042-6	Battery Pack 2 Discharge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4042-7	Battery Pack 2 Charge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4042-8	Battery Pack 2 Discharge Low-Temperature Protection	Protection at temperature < -15°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature
4042-9	Battery Pack 2 Charge Low-Temperature Protection	Protection at temperature <0°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature
4042-10	Battery Pack 2 MOS Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4042-11	Battery Pack 2 Ambient Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4042-12	Battery Pack 2 Ambient Low-Temperature Protection	None	

4061-0	Battery Pack 3 Discharge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if charging power is normal
4061-1	Battery Pack 3 Charge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if discharging power is normal
4061-2	Battery Pack 3 Total Overvoltage Alarm	Alarm at filtered value >59V; recover at filtered value <58.5V	Check if charging port voltage is too high
4061-3	Battery Pack 3 Total Undervoltage Alarm	None	
4061-4	Battery Pack 3 Cell Overvoltage Alarm	Alarm at cell voltage >3.65V; recover at cell voltage <3.6V	Discharge appropriately
4061-5	Battery Pack 3 Cell Undervoltage Alarm	Alarm at cell voltage <2.65V; recover at cell voltage >2.8V	Charge appropriately when battery is low
4061-6	Battery Pack 3 Discharge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4061-7	Battery Pack 3 Charge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4061-8	Battery Pack 3 Discharge Low-Temperature Alarm	Alarm at temperature < -13°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature
4061-9	Battery Pack 3 Charge Low-Temperature Alarm	Alarm at temperature <2°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature
4061-10	Battery Pack 3 MOS Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place
4061-11	Battery Pack 3 Ambient Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place
4061-12	Battery Pack 3 Ambient Low-Temperature Alarm	None	
4062-0	Battery Pack 3 Discharge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if charging power is normal
4062-1	Battery Pack 3 Charge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if discharging power is normal
4062-2	Battery Pack 3 Overvoltage Protection	None	
	Battery Pack 3 Undervoltage		

4062-3	Battery Pack 3 Undervoltage Protection	None	
4062-4	Battery Pack 3 Short-Circuit Protection	Protection at current >50A; recover by restarting the device	Check internal wiring
4062-5	Battery Pack 3 Voltage Difference Fault Protection	Protection at voltage difference >300mV; recover at voltage difference <200mV	Check battery voltage difference
4062-6	Battery Pack 3 Discharge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4062-7	Battery Pack 3 Charge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4062-8	Battery Pack 3 Discharge Low-Temperature Protection	Protection at temperature < -15°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature
4062-9	Battery Pack 3 Charge Low-Temperature Protection	Protection at temperature <0°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature
4062-10	Battery Pack 3 MOS Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4062-11	Battery Pack 3 Ambient Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4062-12	Battery Pack 3 Ambient Low-Temperature Protection	None	
4081-0	Battery Pack 4 Discharge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if charging power is normal
4081-1	Battery Pack 4 Charge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if discharging power is normal
4081-2	Battery Pack 4 Total Overvoltage Alarm	Alarm at filtered value >59V; recover at filtered value <58.5V	Check if charging port voltage is too high
4081-3	Battery Pack 4 Total Undervoltage Alarm	None	
4081-4	Battery Pack 4 Cell Overvoltage Alarm	Alarm at cell voltage >3.65V; recover at cell voltage <3.6V	Discharge appropriately
4081-5	Battery Pack 4 Cell Undervoltage Alarm	Alarm at cell voltage <2.65V; recover at cell voltage >2.8V	Charge appropriately when battery is low
	Battery Pack 4 Discharge	Alarm at temperature >56°C;	Move high-temperature

4081-6	Battery Pack 4 Discharge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4081-7	Battery Pack 4 Charge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4081-8	Battery Pack 4 Discharge Low-Temperature Alarm	Alarm at temperature < -13°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature
4081-9	Battery Pack 4 Charge Low-Temperature Alarm	Alarm at temperature <2°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature
4081-10	Battery Pack 4 MOS Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place
4081-11	Battery Pack 4 Ambient Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place
4081-12	Battery Pack 4 Ambient Low-Temperature Alarm	None	
4082-0	Battery Pack 4 Discharge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if charging power is normal
4082-1	Battery Pack 4 Charge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if discharging power is normal
4082-2	Battery Pack 4 Overvoltage Protection	None	
4082-3	Battery Pack 4 Undervoltage Protection	None	
4082-4	Battery Pack 4 Short-Circuit Protection	Protection at current >50A; recover by restarting the device	Check internal wiring
4082-5	Battery Pack 4 Voltage Difference Fault Protection	Protection at voltage difference >300mV; recover at voltage difference <200mV	Check battery voltage difference
4082-6	Battery Pack 4 Discharge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4082-7	Battery Pack 4 Charge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4082-8	Battery Pack 4 Discharge Low-Temperature Protection	Protection at temperature < -15°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature

4082-9	Battery Pack 4 Charge Low-Temperature Protection	Protection at temperature <0°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature
4082-10	Battery Pack 4 MOS Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4082-11	Battery Pack 4 Ambient Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4082-12	Battery Pack 4 Ambient Low-Temperature Protection	None	
4101-0	Battery Pack 5 Discharge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if charging power is normal
4101-1	Battery Pack 5 Charge Overcurrent Alarm	Alarm at current >43A; recover at current <38A	Check if discharging power is normal
4101-2	Battery Pack 5 Total Overvoltage Alarm	Alarm at filtered value >59V; recover at filtered value <58.5V	Check if charging port voltage is too high
4101-3	Battery Pack 5 Total Undervoltage Alarm	None	
4101-4	Battery Pack 5 Cell Overvoltage Alarm	Alarm at cell voltage >3.65V; recover at cell voltage <3.6V	Discharge appropriately
4101-5	Battery Pack 5 Cell Undervoltage Alarm	Alarm at cell voltage <2.65V; recover at cell voltage >2.8V	Charge appropriately when battery is low
4101-6	Battery Pack 5 Discharge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4101-7	Battery Pack 5 Charge Overtemperature Alarm	Alarm at temperature >56°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4101-8	Battery Pack 5 Discharge Low-Temperature Alarm	Alarm at temperature < -13°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature
4101-9	Battery Pack 5 Charge Low-Temperature Alarm	Alarm at temperature <2°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature
4101-10	Battery Pack 5 MOS Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place
4101-11	Battery Pack 5 Ambient Overtemperature Alarm	Alarm at temperature >98°C; recover at temperature <95°C	Move high-temperature equipment to a cool place

4101-12	Battery Pack 5 Ambient Low-Temperature Alarm	None	
4102-0	Battery Pack 5 Discharge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if charging power is normal
4102-1	Battery Pack 5 Charge Overcurrent Protection	Protection at current >45A; recover at current <5A	Check if discharging power is normal
4102-2	Battery Pack 5 Overvoltage Protection	None	
4102-3	Battery Pack 5 Undervoltage Protection	None	
4102-4	Battery Pack 5 Short-Circuit Protection	Protection at current >50A; recover by restarting the device	Check internal wiring
4102-5	Battery Pack 5 Voltage Difference Fault Protection	Protection at voltage difference >300mV; recover at voltage difference <200mV	Check battery voltage difference
4102-6	Battery Pack 5 Discharge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4102-7	Battery Pack 5 Charge Overtemperature Protection	Protection at temperature >58°C; recover at temperature <53°C	Move high-temperature equipment to a cool place
4102-8	Battery Pack 5 Discharge Low-Temperature Protection	Protection at temperature < -15°C; recover at temperature > -10°C	Move low-temperature equipment to a suitable temperature
4102-9	Battery Pack 5 Charge Low-Temperature Protection	Protection at temperature <0°C; recover at temperature >5°C	Move low-temperature equipment to a suitable temperature
4102-10	Battery Pack 5 MOS Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4102-11	Battery Pack 5 Ambient Overtemperature Protection	Protection at temperature >100°C; recover at temperature <65°C	Move high-temperature equipment to a cool place
4102-12	Battery Pack 5 Ambient Low-Temperature Protection	None	

Product Maintenance

- During normal operation, check that the environmental and logistic conditions are appropriate. Make sure that the conditions have not changed over time and that the unit is not exposed to adverse weather conditions and has not been covered with foreign bodies.

- DO NOT use the unit if any problems are found and restore the normal conditions after the fault has been corrected.
- The firmware version can be checked by using the monitoring system.
- Avoid temporary repairs. All repairs should be carried out using only genuine spare parts.

Storage and Disposal

- If the unit is not used immediately or is stored for long periods, check whether it is correctly packed. The unit must be stored in well-ventilated indoor areas that do not have characteristics that might damage the components of the unit.
- For long-term storage, please charge and discharge this product once every 3 months. Products that have not undergone charging and discharging for more than 3 months will not be covered by the warranty.
- If the battery level of this product is critically low and it has been idle for an extended period, it needs to be recharged before it can be used again.
- Take a complete inspection when restarting after a long time or prolonged stop.
- Please dispose of the unit properly after scrapping, as component parts are potentially harmful to the environment, following the regulations in force in the country of installation.
- If conditions permit, make sure that the battery is fully discharged before disposing it in a designated battery recycling bin. The product contains batteries with potentially dangerous chemicals, so it is strictly prohibited to dispose of it in ordinary trash cans. For more details, please follow the local laws and regulations on battery recycling and disposal.
- If the battery cannot be fully discharged due to a product failure, please do not dispose of the battery directly in the battery recycling box. In such case, you should contact a professional battery recycling company for further processing.
- Please dispose of over-discharged batteries that cannot be recharged.

Warranty Service

This Warranty is subject to the following conditions:

- The products must have been installed and correctly commissioned by an authorized and licensed installer. Proof may be required of correct commissioning of the Product (such as a certificate of compliance). Claims for failures due to incorrect installation or commissioning are not covered under this Warranty.
- Where a Product or part thereof is replaced or repaired under this Warranty, the balance of the original Warranty period will apply. The replacement product or part(s) do not carry a new voluntary warranty.

- The product must have its original serial number and rating labels intact and readable.
- This Warranty does not extend to any product that has been completely or partially disassembled or modified, except where such disassembly is carried out by TSUNESS
- The terms of this Warranty cannot be amended except in writing by one of our authorized officers.
- There must have been a commissioning report signed by the end user and the installer for product commissioning and handling instructions.

Exclusions

1. TSUNESS makes no warranties, either expressed or implied, orally, or in writing, concerning any other warranty coverage except those expressly stated in this limited Factory warranty.
2. The Factory warranty does not cover damages that occur due to:
    - Transport damage;
    - Failure to observe the user manual, maintenance regulations, and intervals;
    - Modifications, changes, or attempted repairs, except as conducted by an Authorized Dealer;
    - Incorrect use or inappropriate operation;
    - Insufficient ventilation of the covered product;
    - Failure to observe the applicable safety regulations;
    - Force majeure.
3. This factory warranty does not cover cosmetic defects which do not directly influence energy production, or degrade form, fit, and function.
4. Claims that go beyond the scope of this limited factory warranty, in particular claims for compensation for direct or indirect damages arising from the defective device, for compensation forcosts arising from disassembly and installation, or loss of profits, are expressly NOT covered by this factory warranty.
5. In no event will TSUNESS Co., Ltd be held responsible or liable for any personal injuries resulting from the use of the system, or for any other damages, whether direct, indirect, incidental, orconsequential; even if TSUNESS Co., Ltd has been advised of such damages.

Appendix

Product Certificates

Micro Storage Unit Datasheet

Model	TSOL-MSU2000	TSOL-MSU2000DE
PV Input (PV)		
Recommended Module Power (Wp)	300 - 700+	
Quantity of PV Module	1 to 4	
Max. PV Input Power (W)	2800+	
Start-up Voltage @Rated condition (V)	22	
Operating Voltage Range per Input (V)	16 - 60	
MPPT Voltage Range @ Nominal Power (V)	27.7 - 54	
Max. Input Voltage per Input (V)	60	
Nominal Input Voltage (V)	42	
Short Circuit Current per Input (A)	25	
Max. Input Current per Input (A)	18	
Quantity of MPPTs	4	
Battery (DC)		
Battery Capacity (Wh)	2048	
Battery Type	LiFePO4	
Nominal Voltage (V)	51.2	
Operating Voltage Range (V)	43.2 - 58.4	
Max. Discharge Power (W)	2000	
Max. Charge Power (W)	2000	
Max. System Capacity (kWh)	10.24 (1 MSU/MAU + 4 Stackable Batteries)	
AC Port (On-grid)		
Max. AC Output Power (VA)	2000	800
Max. AC Output Current (A)	10	4
Max. AC Input Power (W)	2000	
Max. AC Input Current (A)	11	

Nominal AC Voltage (V)	220/230/240, L/N/PE	
Nominal AC Frequency (Hz)	50/60	
AC Port (Off-grid)		
Max. AC Output Power (VA)	2000	
Nominal AC Voltage (V)	220/230/240, L/N/PE	
Nominal AC Frequency (Hz)	50/60	
Efficiency		
Peak Inverter Efficiency	94.5%	
MPPT Efficiency	99.9%	
Battery Charge/Discharge Efficiency	94%/94%	94%/94%
No-load power consumption	< 25W	< 25W
Shut-down and consume electricity	< 1W	
Mechanical Data		
Dimensions (W×H×D mm)	455x320x280	
Weight (kg)	29.5kg	
General Data		
Communication	Server: WiFi (Bluetooth) / Battery: RS485	
Extra Communication Port	2 * RS485（Meter+Dispatch）	
Display	SOC Light	
Ingress Protection	IP65	
Type of Isolation	Reinforced insulation	
Cooling	Natural convection	
Protection Class	I	
Overvoltage Category	PV II; AC III	
Operating Ambient Temperature Range	-20 ~ +55 °C (Load shedding over 45°C)	

Relative Humidity	0-95%, Non condensing
Max. Operating Altitude Without Derating [m]	2000

Model	**TSOL-MAU2000**	**TSOL-MAU2000DE**
Battery (DC)		
Battery Capacity (Wh)	2048	
Battery Type	LiFePO4	
Nominal Voltage (V)	51.2	
Operating Voltage Range (V)	43.2 - 58.4	
Max. Discharge Power (W)	2000	
Max. Charge Power (W)	2000	
Max. System Capacity (kWh)	10.24 (1 MSU/MAU + 4 Stackable Batteries)	
AC Port (On-grid)		
Max. AC Output Power (VA)	2000	800
Max. AC Output Current (A)	10	4
Max. AC Input Power (W)	2000	
Max. AC Input Current (A)	11	
Nominal AC Voltage (V)	220/230/240, L/N/PE	
Nominal AC Frequency (Hz)	50/60	
AC Port (Off-grid)		
Max. AC Output Power (VA)	2000	
Max. AC Output Current (A)	220/230/240, L/N/PE	
Nominal AC Voltage (V)	50/60	
Efficiency		
Peak Inverter Efficiency	94.5%	
MPPT Efficiency	99.9%	

Battery Charge/Discharge Efficiency	94%/94%
No-load power consumption	< 25W
Shut-down and consume electricity	< 1W
Mechanical Data	
Dimensions (W×H×D mm)	455x320x280
Weight (kg)	28.6kg
General Data	
Communication	Server: WiFi (Bluetooth) / Battery: RS485
Extra Communication Port	2 * RS485（Meter+Dispatch）
Display	SOC Light
Ingress Protection	IP65
Type of Isolation	Reinforced insulation
Cooling	Natural convection
Protection Class	I
Overvoltage Category	PV II; AC III
Operating Ambient Temperature Range	-20 ~ +55 °C (Load shedding over 45°C)
Relative Humidity	0-95%, Non condensing
Max. Operating Altitude Without Derating [m]	2000

B2000

Model	**TSOL-B2000**
Battery (DC)	
Battery Capacity (Wh)	2048
Battery Type	LiFePO4
Nominal Voltage (V)	51.2

Operating Voltage Range (V)	43.2 - 58.4
Max. Discharge Power (W)	2000
Max. Charge Power (W)	2000
Max. System Capacity (kWh)	10.24 (1 MSU + 4 Stackable Batteries)
Mechanical Data	
Dimensions (W×H×D mm)	455x242x280
Weight [kg]	19
General Data	
Display	SOC Light
Ingress Protection	IP65
Cooling	Natural convection
Operating Ambient Temperature Range	-20 ~ +55 ℃
Relative Humidity	0-95%, Non condensing
Max. Operating Altitude Without Derating [m]	2000