User Manual_Micro Storage Unit

Release Notes

This document records the changes related to Micro Storage Unit User Manual.

Version	Update Date	Contents
V1.0	2025-01-02	Initial Version

Read before using

This manual is valid for the following models:

Product Name	Models
Micro Storage Unit (MSU)	TSOL-MSU2000, TSOL-MSU2000DE, TSOL-MSU1000, TSOL-MSU1000DE TSOL-MAU2000, TSOL-MAU2000DE, TSOL-MAU1000, TSOL-MAU1000DE
Stackable Micro Battery	TSOL-B2000

The following security 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 instructions that must be fully understood and followed to avoid potential safety hazards, including equipment 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 Micro Storage Unit 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 of 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 work on the battery 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 TSUN 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 at www.tsun-ess.com.

Safety Instructions

Statement:

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

The "instructions", be followed, but only serve as a supplement to all safety precautions. Our

company does not assume a "precautions", "warnings", and "dangers" in the manual do not represent

all safety precautions that should y responsibility for violating general safety operation requirements

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

This equipment should be used in an environment that meets the design specifications, otherwise it

may cause equipment malfunction, resulting in equipment functional abnormalities or component

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

quality assurance.

Local laws, regulations, and specifications should be followed when installing, operating, and maintaining

equipment. 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 software codes
- Failure to follow the operating instructions and safety warnings in the product and documentation
- Equipment damage caused by abnormal natural environments (force majeure, such as earthquakes, fires, storms, etc.).
- Transportation damage caused by customer's transportation.
- Damage caused by storage conditions not meeting product documentation requirements.

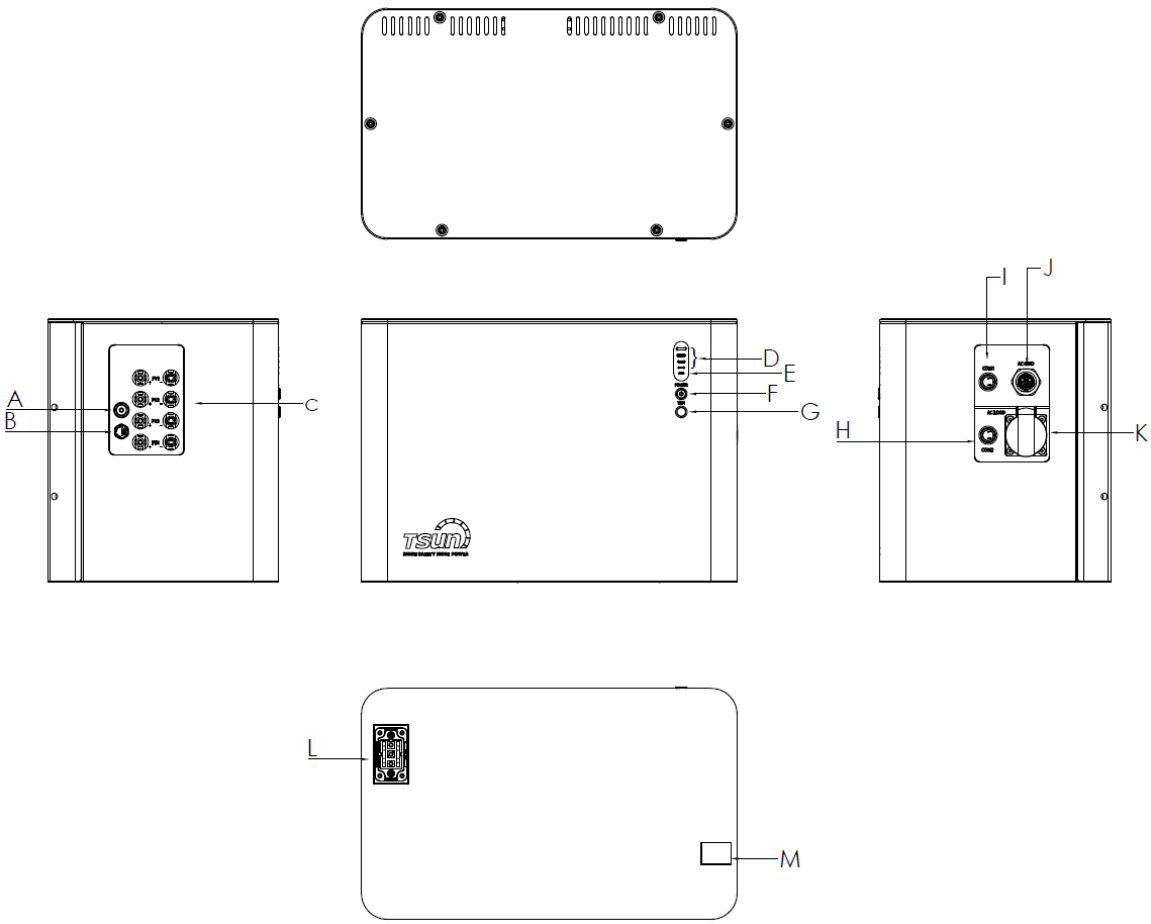
Danger：

- If a 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 Micro Storage Unit without permission.

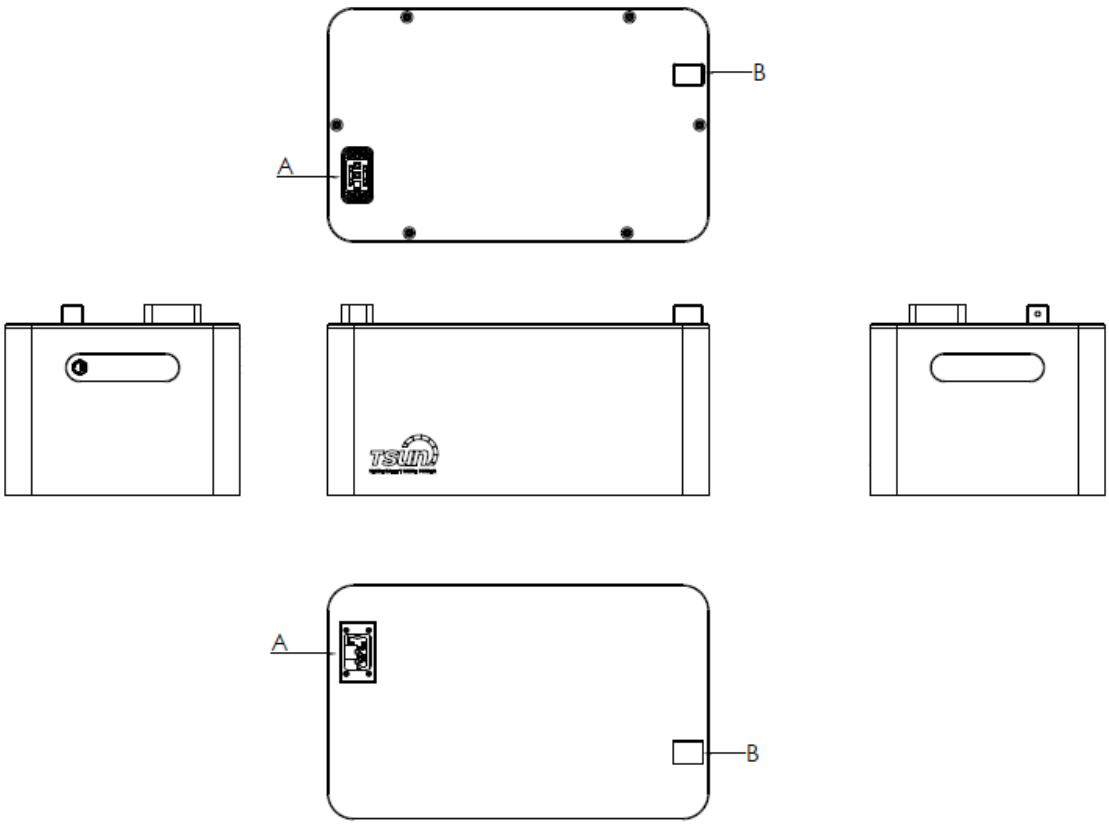
Product Overview

Micro Storage Unit



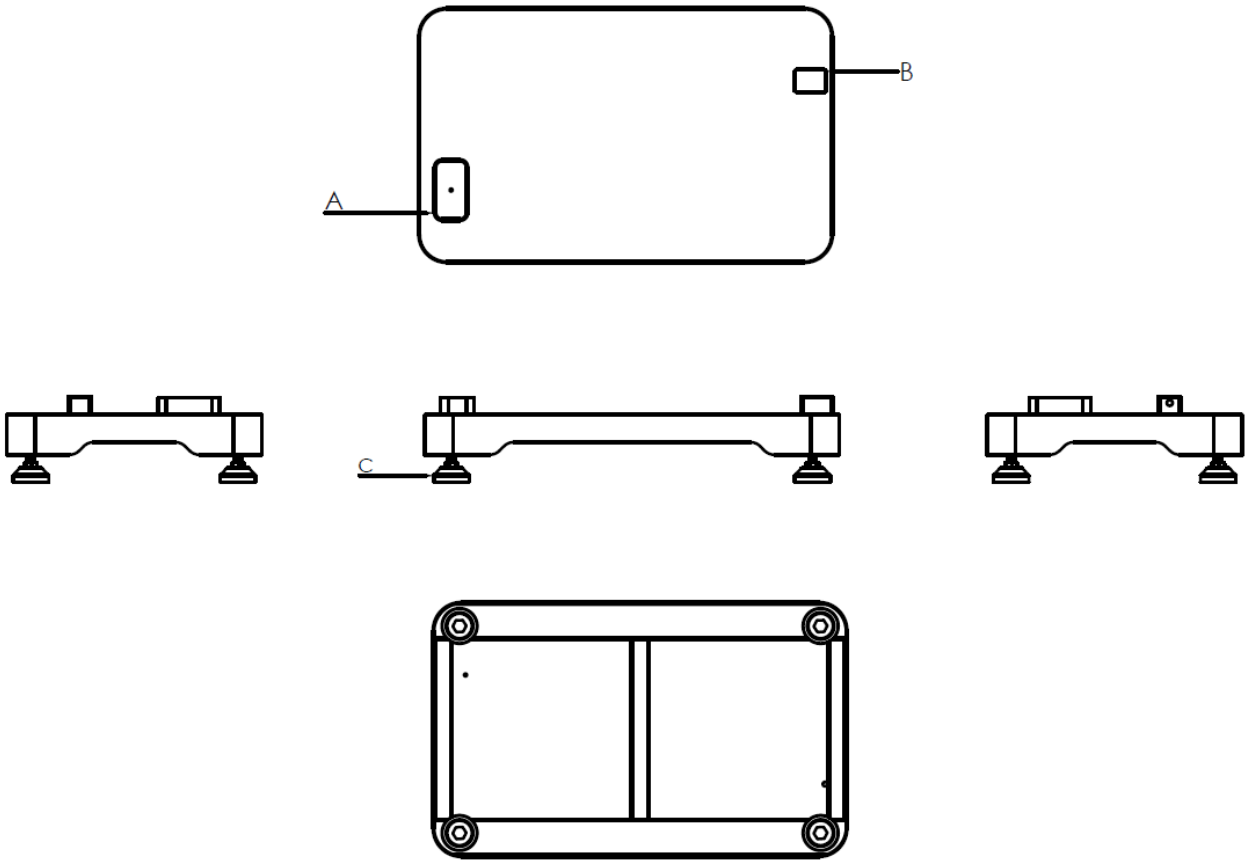
A	WiFi Antenna	**H**	RS485 port: for Dispatch
B	Vent Valve	**I**	RS485 port: for Meter
C	PV inputs	**J**	AC Grid
D	Battery SOC Indicator	**K**	AC Load
E	Status Indicator	**L**	Battery port
F	Power Button and Indicator	**M**	Positioning Pin
G	WiFi Button and Indicator		

Stackable Micro Battery



A	Battery Port
B	Positioning Pin

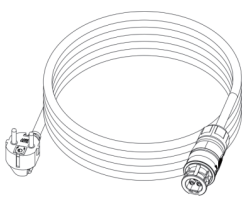
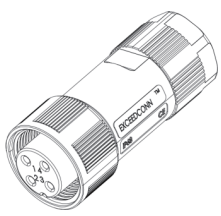
Base



A	Battery port
B	Positioning Pin
C	Knob

What’ s in the Box

Micro Storage Unit

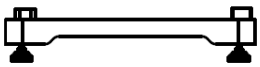




Micro Storage Unit x 1	AC End Cable (3 meters) x 1	RS485 Connectors x 2	Quick Installation Guide x 1

Stackable Micro Battery

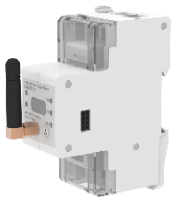
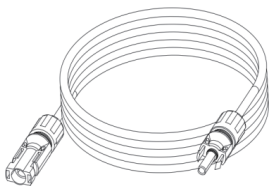
	
Stackable Micro Battery	Quick Installation Guide x 1

Base


Base

Optional Accessories

(The following accessories must be ordered separately.)

		
Smart Meter (WiFi)	Smart Meter (RS485)	PV Extension Cables

System introduction

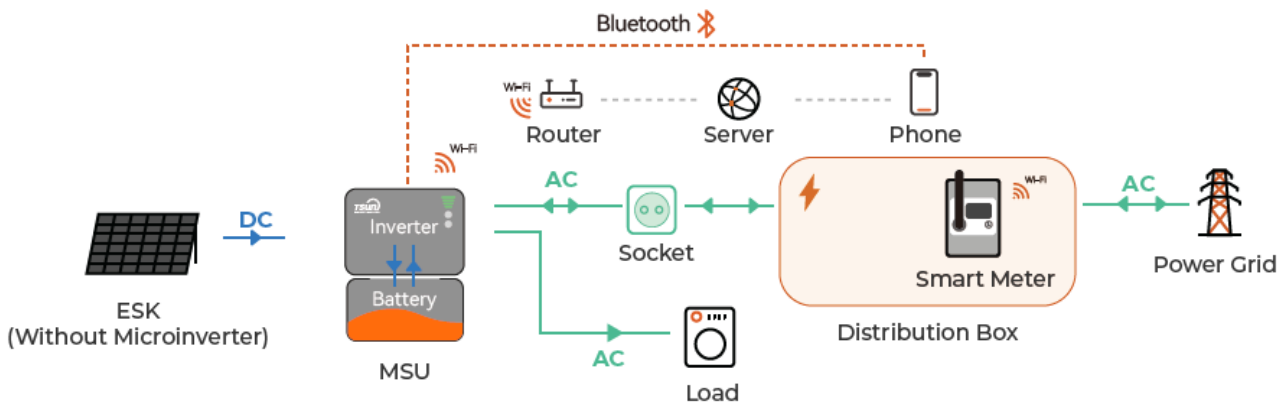
Micro Storage Unit (MSU) is one key compoments of the plug and play storage system which designed for end-users. MSU can store excess electrical energy in the battery and release it when needed. This solution, Solar Module + MSU, is typically used as an energy storage solution for small households, conventional balconies, courtyards, family carports, and other micro systems.

Stackable Micro Battery is a key accessory of the MSU system, which can expand the capacity of the whole system.

One Stackable Micro Battery's capacity is 2048Wh, and one Micro Storage Unit supports stack up to four Stackable Micro Batteries.

System Overview					
Micro Storage Unit	*1	*1	*1	*1	*1
Stackable Micro Battery	*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.

Product installation

Pre-installation

Check the Packaging

Before unpacking the equipment, check the outer packaging for damage, such as holes and cracks, and review the equipment model number. If any damage is found or the model is not what you requested, do not unpack the equipment and contact TSUN customer service as soon as possible.

Check the equipment

After unpacking the equipment, check if it is intact and complete, and free from any obvious damage. If any item is missing or damaged, contact dealer or TSUN customer service.

Check the installation environment and position

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

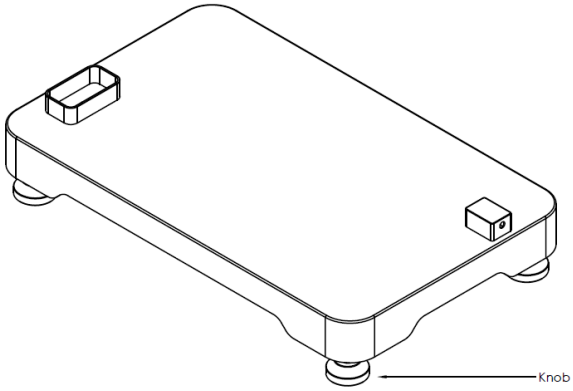
- Avoid electromagnetic interference that can compromise the correct operation of electronic equipment.
- An AC power outlet is needed while doing the installation.
- Do not install it in direct sunlight, near fire sources, or explosives.
- Ensure the selected location is not at risk from potential hazards such as flooding.
- The maximum operating altitude is 4,000 meters. Measure the distance and allow sufficient space for cooling and safety insulation.

Heavy Lifting Safety

- When carrying the Micro Storage Unit, preparations should be made for loading-bearing to avoid being crushed or twisted by heavy objects.
- When handling the equipment by hand, it is suggested that the Micro Storage Unit should be lifted by two people. Protective gloves are also suggested to be worn to avoid injury.

Installations steps

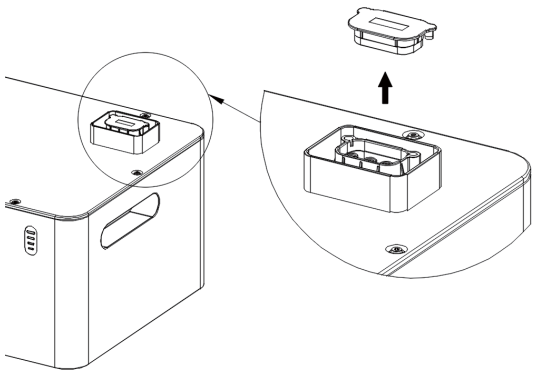
1. Place the Base in the selected location, and turn the knob to balance the base on the ground. (If you don't purchase the base separately, please skip to step 2.)

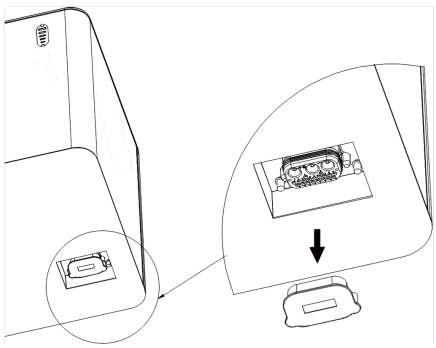


Caution:

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

2. Manually remove the top and bottom waterproof cover of all stackable Micro Batteries. （If you don't purchase the stackable Micro Battery separately, please skip to step 4.）

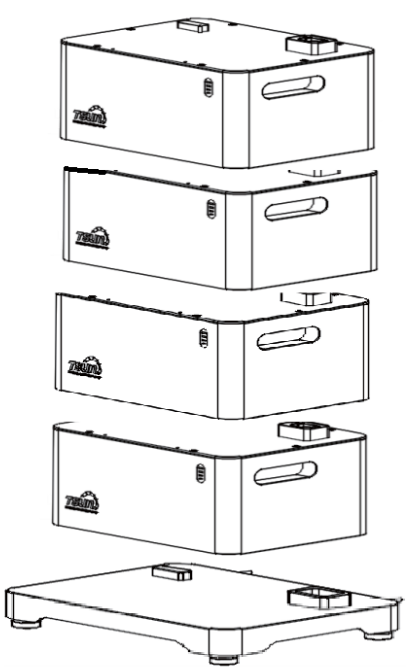




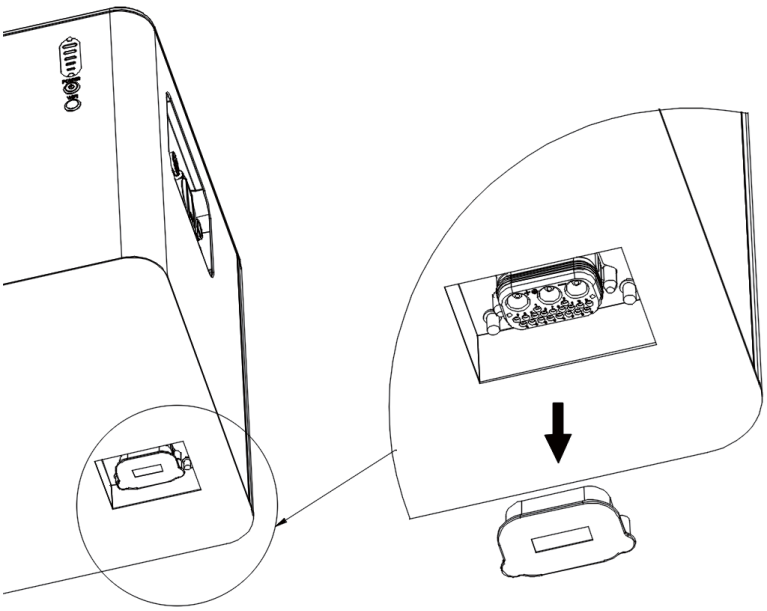
Warning:

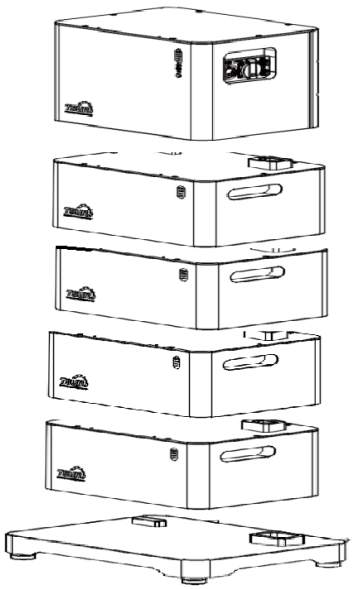
- If you don't buy the Base seperately, you can place the stackable Micro Battery directly on the ground, but make sure that the waterproof cover of the bottom one cannot be removed!

3. Stack all stackable Micro Batteries one by one on the Base. (Up to 4 stackable Micro Batteries can be stacked.)



4. Manually remove the bottom waterproof cover of Micro Storage Unit, and stack it on the Stackable Micro Battery or Base or directly on the ground.

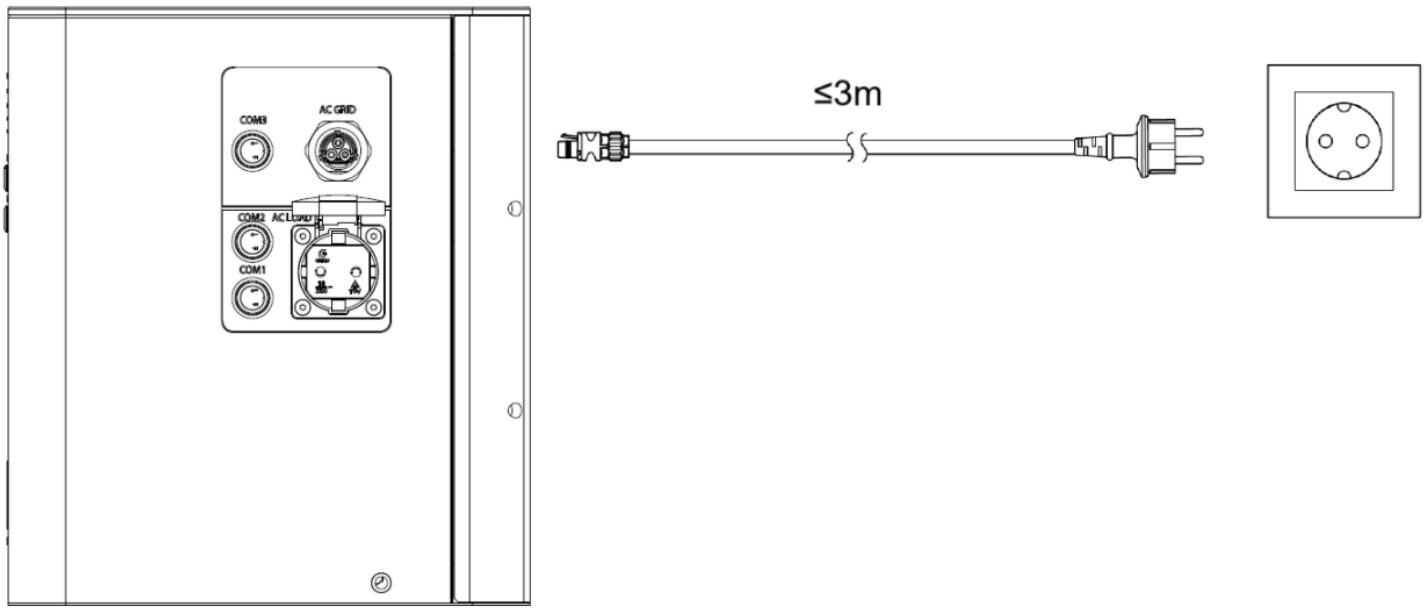




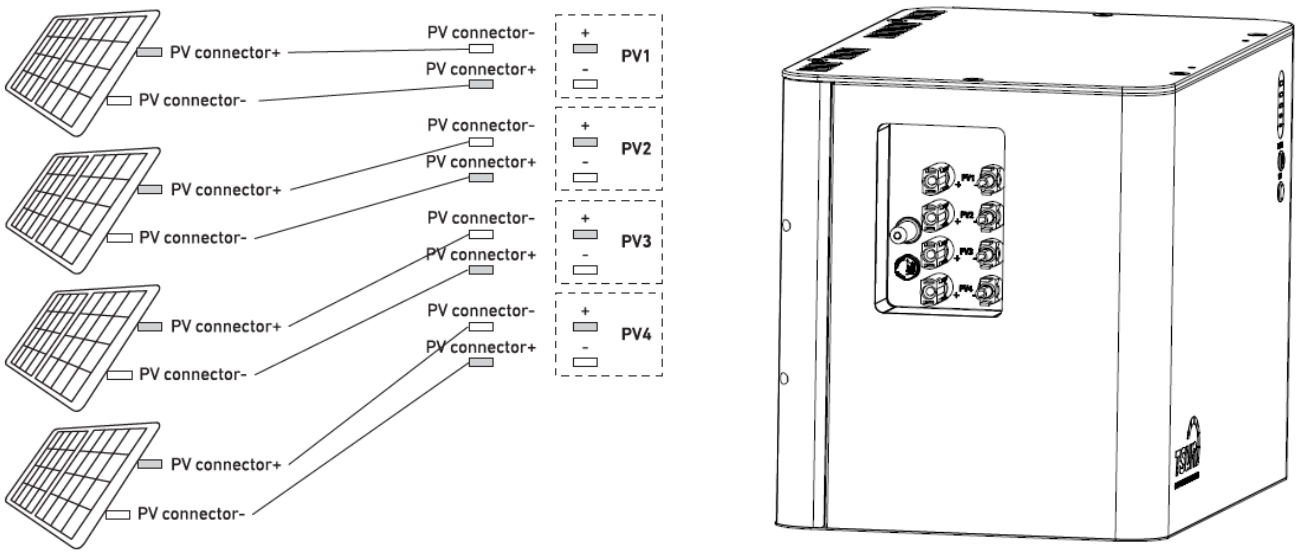
⚠	**Warning:** • If you don't buy the Stackable Micro Battery or Base seperately, you can place the Micro Storage Unit directly on the ground, and there is no need to remove the waterproof cover at the bottom. • Do not power on Micro Storage Unit unless the installation has completed.

Electrical Connections

1. Connect the AC GRID interface with the included AC End Cable to your home socket, which can also assure the equipment is well grounded.

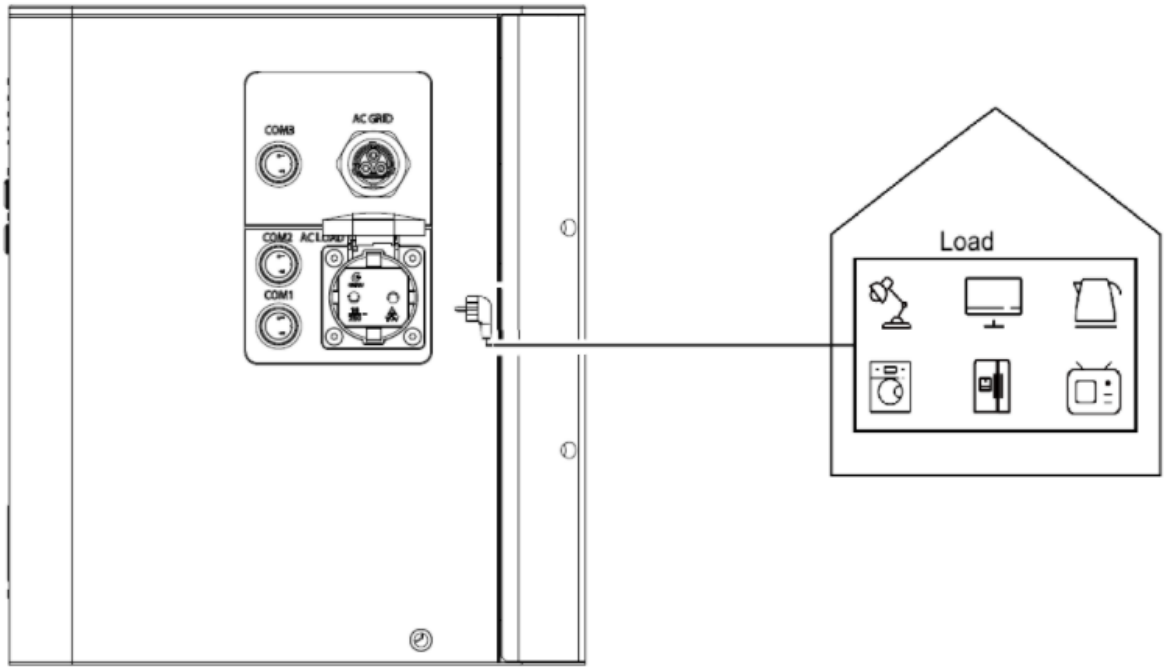


2. Use PV extension cables to connect each set of photovoltaic modules to the corresponding PV input ports.



⚠	**Caution:** • MAU series don't need advance this process because there is no PV inport ports.

3. Connect household appliances to AC LOAD if you need.



Powering on the MSU

1. After electrical connections finished, press and hold the Power button for 2 seconds to power on, which will activate WiFi configuration at the same time. Complete this process using the "TSUN Smart" app within 30 minutes (Please refer to the Monitoring System section). If the network pairing is not completed within 30 minutes, the equipment will automatically turn off.
2. To turn off the device, use the wrench to disconnect the MSU extension cable from the side of the device, then press the Power On/Off button for 2 seconds.

Button control

Buttons	Action	Function
Power Button	Press for 2 seconds	Power On
	Press for 2 seconds while working	Power Off
	Press once while working	Enable AC Load output or shut
WiFi Button	Press for 5 senconds	Reset WiFi configuration

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

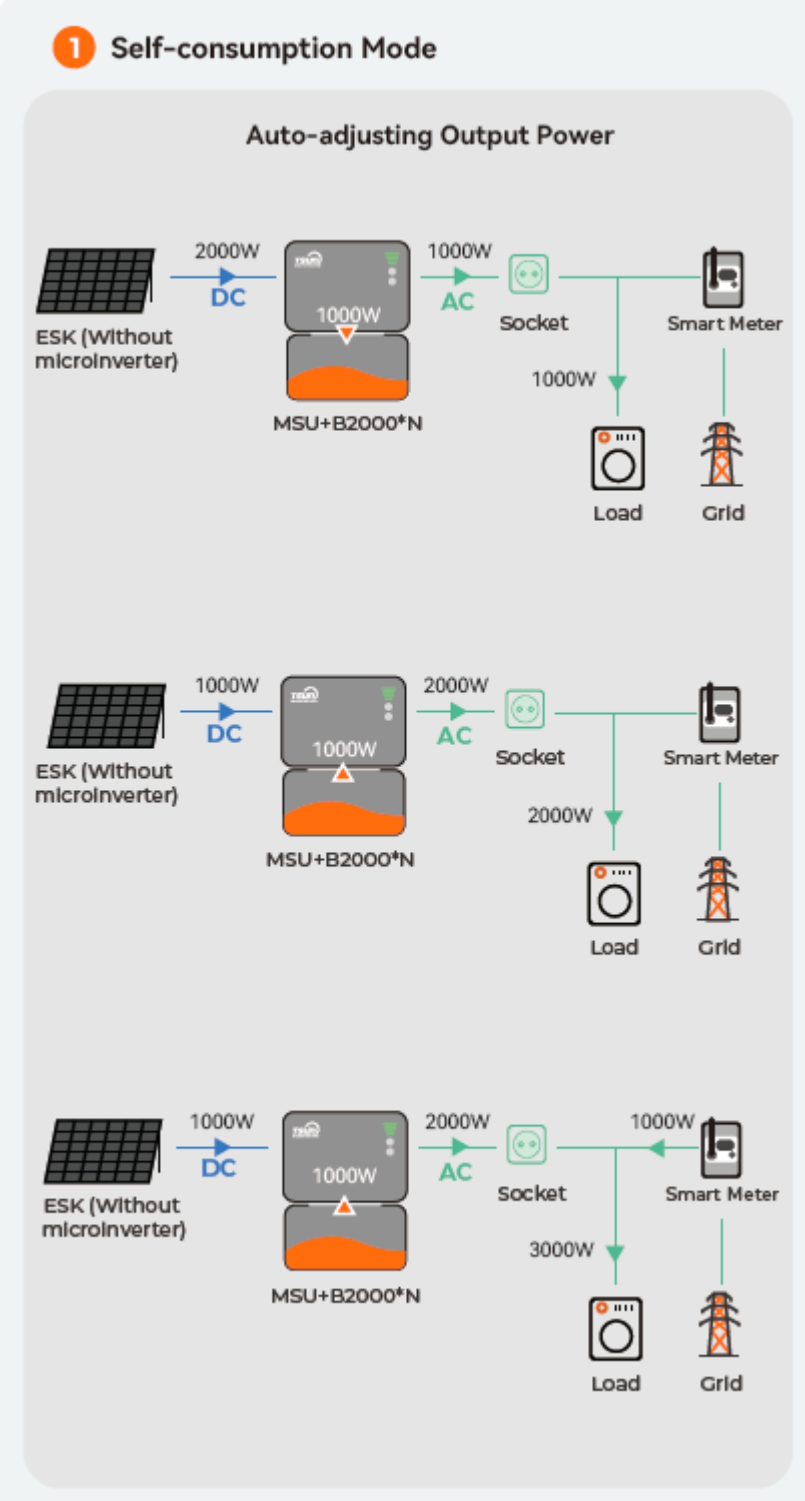
LED Guide

LED Indicators	LED Description	Status
WiFi indicator	Solid green	Internet connection normal
	Flash green	Internet connection disconnected
	Off	Connection disabled
Status indicator	Solid green	Working nomally
	Flash red	System fault warning
Energy indicator	Flash white	Normal charging
	Solid white	Current battery level
	All indicators cycle on	OTA upgrade status

Working mode

Self-consumption Mode

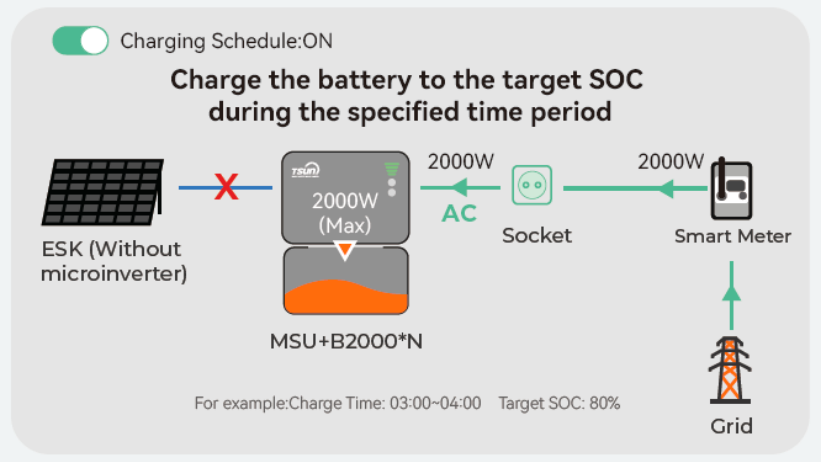
The MSU will work with the smart meter, which will measure power grid data and send it to the MSU, and the MSU will automatically control output power.



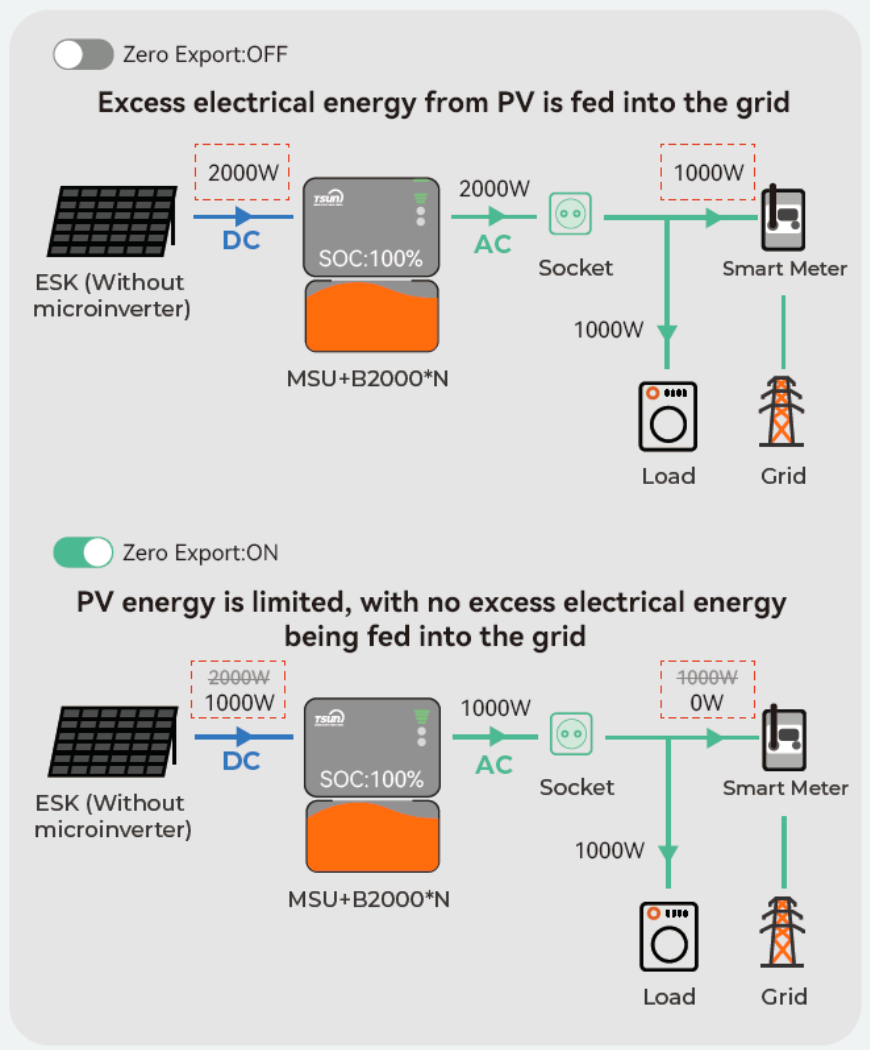
Additional functions:

The end user has three additional functions in this mode:

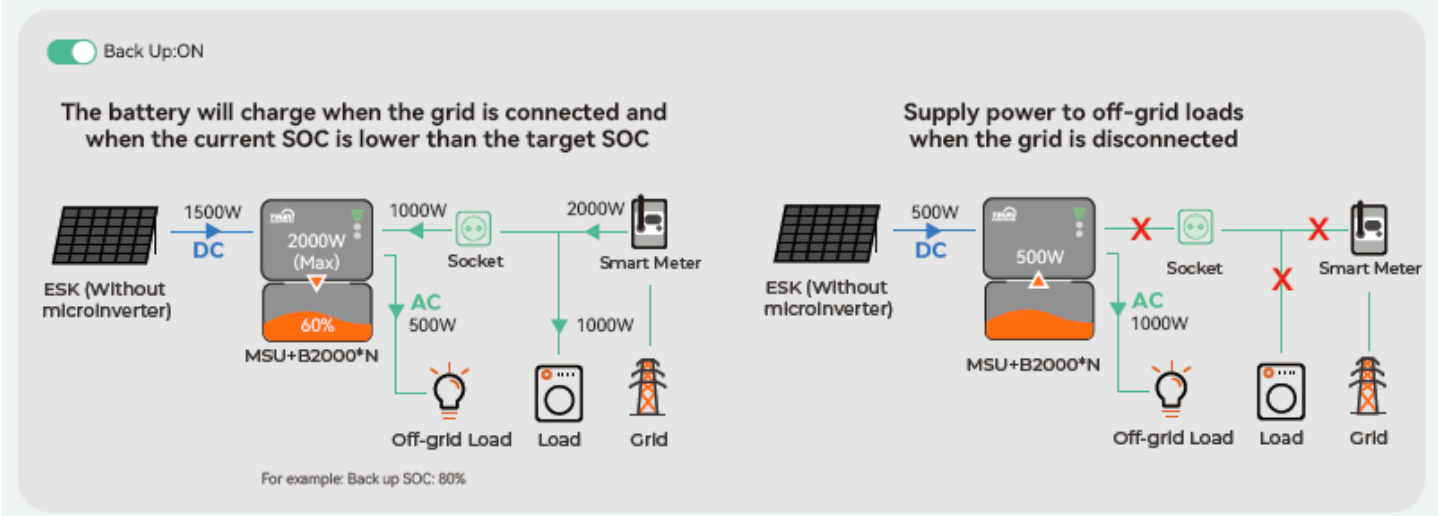
1. Enable "Charging Schedule" and set two charging time periods.



2. Enable "Zero Export" to prevent any excess PV electricity from being fed into the power grid.

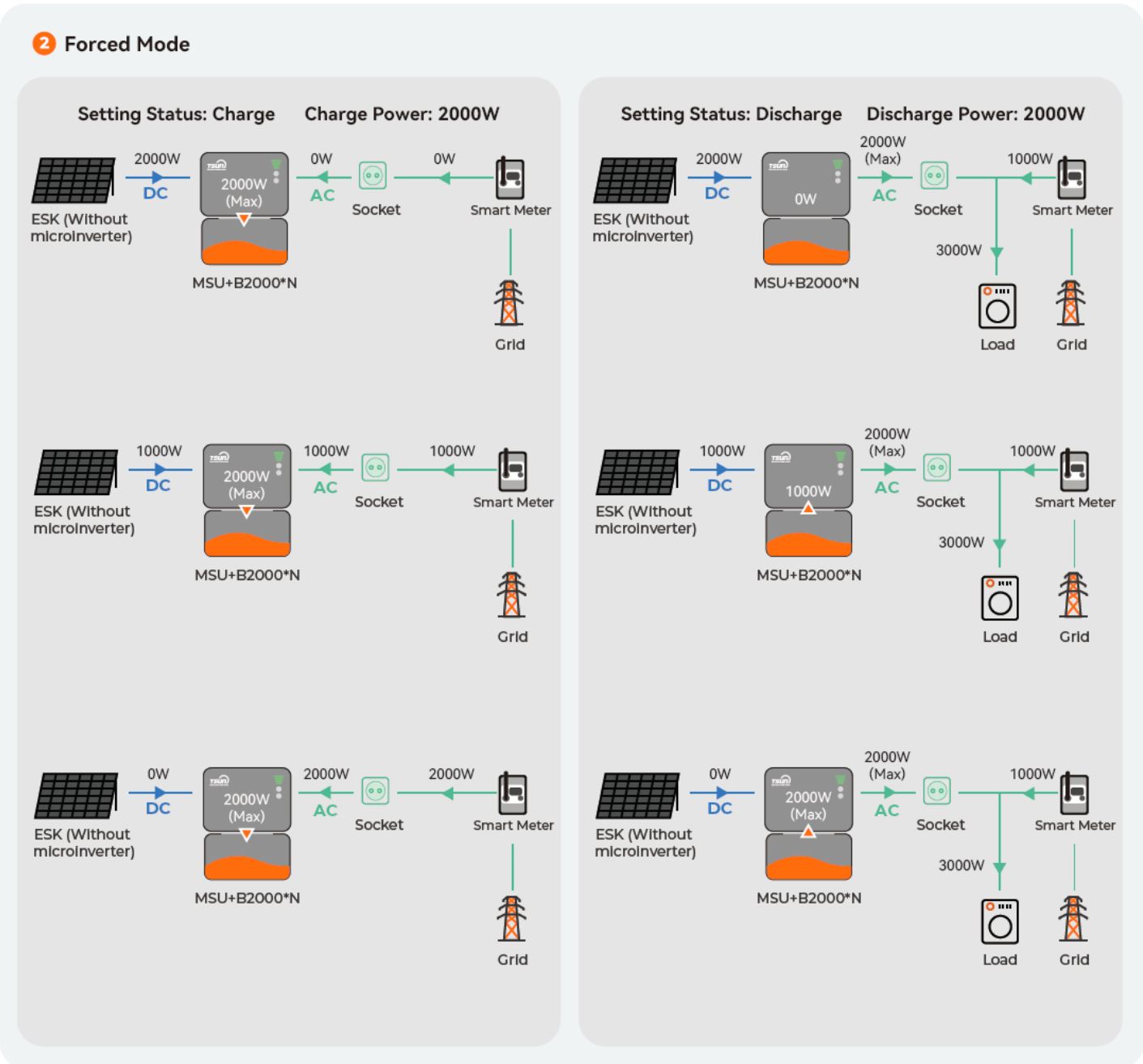


3. Enable "Back Up" to store most of the electricity and use it when the power grid is disconnected.



Forced Mode

The MSU charge or discharge battery based on the pre-set power.



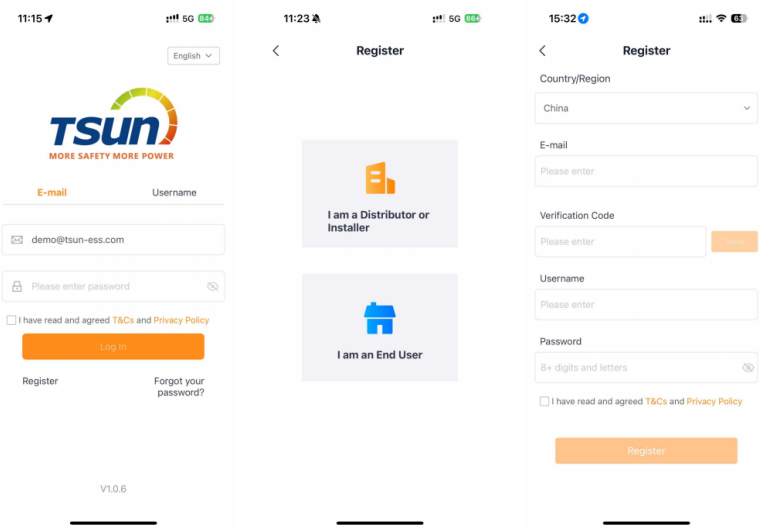
Monitoring System

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".

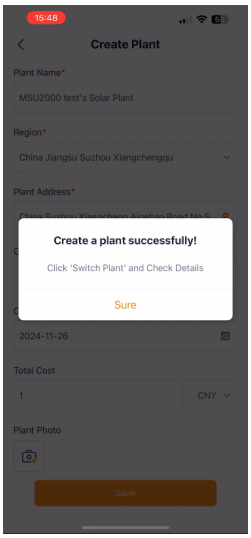
Step 2 Register & Log in

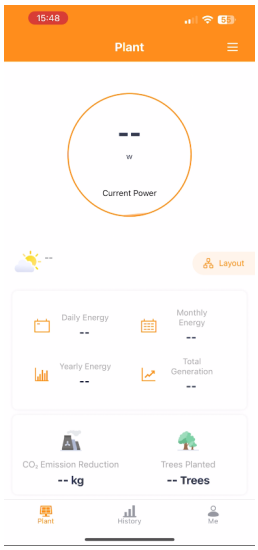
Click"Register", select "End User" , and fill in all registration details & read the T&C and Privacy Policy.

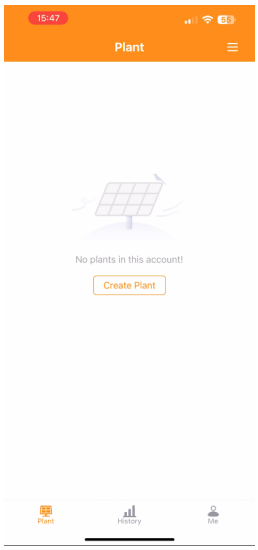


Step 3 Create a Solar Plant

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

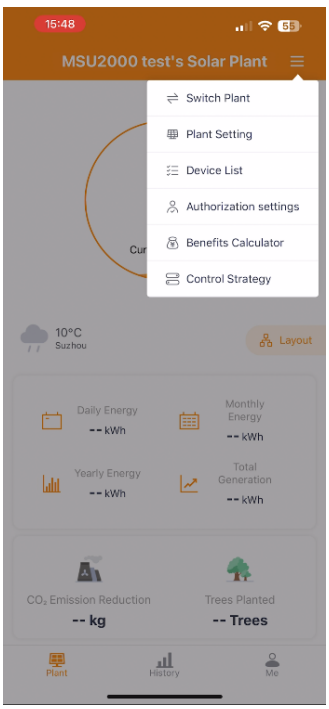


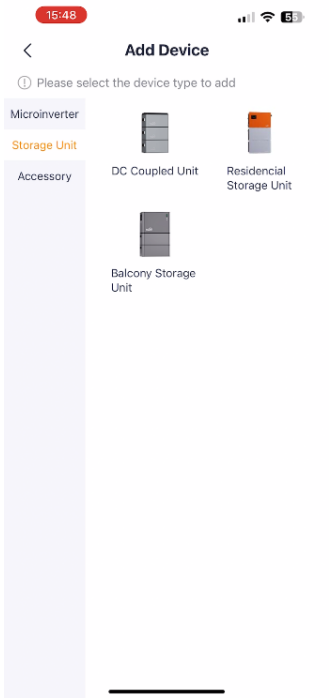


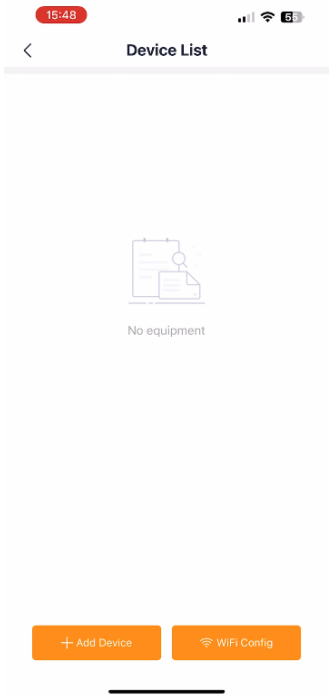


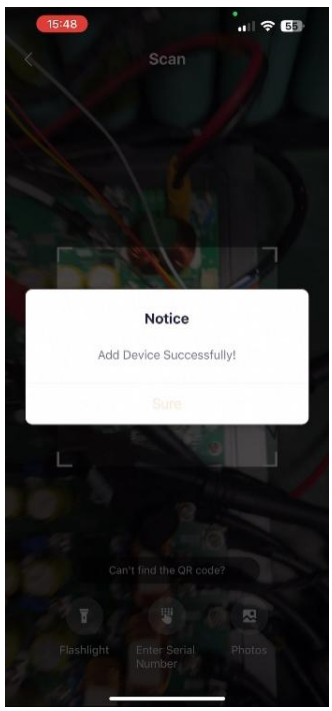
Step 4 Add a Device

1. Click “⊠” on the plant homepage and click "Device List " on plant homepage.
2. Click "Add Device", add "Balcony Storage Unit"
3. Scan QR code on MSU. The QR code label is on the right of MSU.





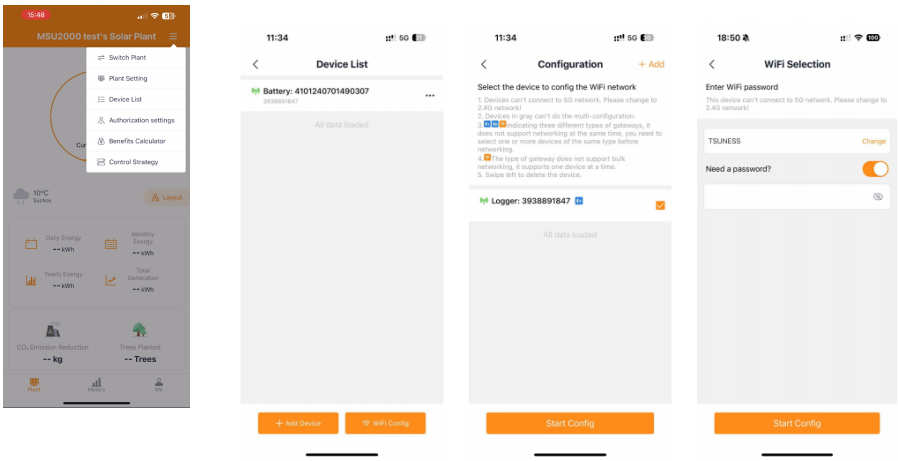




Step 5 WiFi Configuration

1. Click “⊠” on the plant homepage and click"Device List"on plant homepage.
2. Click "WiFi Config" to select the corresponding MSU for network configuration.

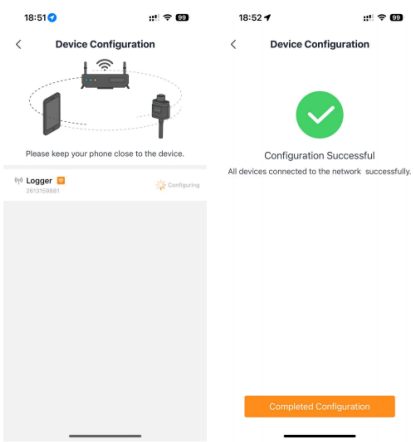
3. Click "Start Config" to start configuration. Select the WIFI you want to connect to, input the WIFI password, and click "Start Config" again.



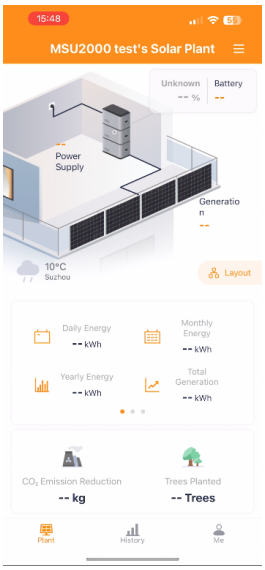
During the network configuration process, please use the 2.4GHz network. If the page displays an error, check the following possible causes and try again:

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 the phone.
4. One router can only connect to up to 9 devices (not only MSU, but also phones, PCs, etc.).
5. Make sure that the 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 MSU will be uploaded to the server soon.



Step 6 Back to main page



Step7 Mode Setting

Fault Code and Troubleshooting

Code	Fault Information	TroubleShooting
1000	Inverter Overvoltage	The Load output Voltage is abnormal. This fault will disappear automatically. If this fault appears continuously, please contact the service.
1001	Inverter Undervoltage	Same with Inverter Overvoltage
1002	Inverter Overcurrent	The backup load is over Current, please reduce the electrical equipment in backup port. This fault will disappear automatically. If this fault appears continuously, please contact the service.
1003	RE	Reserve
1004	Inverter Short Circuit	The backup load circuit is short, please check if there is a short in backup port. If this fault appears continuously, please contact the service.
1005	Inverter Overload alarm	The backup load is over the rate, please reduce the electrical equipment in backup port. This fault will disappear automatically. If this fault appears continuously, please contact the service.
1006		Same with Inverter Overload alarm

	Inverter Overload Protection Error	
1007	Inverter Fuse Error	The Fuse in backup side is abnormal, disconnect PV and grid, then restart the system，If this fault appears continuously, please contact the service.
1008	Inverter Relay Error	The Relay in backup side is abnormal, disconnect PV and grid, then restart the system，If this fault appears continuously, please contact the service.
1009~1015	Reserve	Reserve
1016	Battery Overvoltage alarm	The Battery voltage is over the maximum Battery input voltage of the inverter, Please check Bat Volt is Under the rate of inverter. If this fault appears continuously, please contact the service.
1017	Battery Overvoltage Protection Error	Same with Battery Overvoltage alarm
1018	Battery Undervoltage alarm	The Battery voltage is under the minimum Battery input voltage of the inverter, Please Charge the Battery. If this fault appears continuously, please contact the service.
1019	Battery Undervoltage Protection	Same with Battery Undervoltage alarm
1020	Battery Over current	The Battery is over Current, please reduce the electrical equipment. This fault will disappear automatically. If this fault appears continuously, please contact the service.
1021	BMS Comm Error	Battery and inverter is comm error, try to wake up the battery, if it's fail，please contact the service.
1022-1039	Reserve	Reserve
1040	AC Grid Overvoltage	The AC power grid is abnormal. This fault will disappear automatically when the AC power grid is normal. If this fault appears continuously, please contact the service.
1041	AC Grid Undervoltage	Same with AC Grid Overvoltage
1042	AC Grid Over frequency	Same with AC Grid Overvoltage

1043	AC Grid Under frequency	Same with AC Grid Overvoltage
1044	AC Grid Short Circuit	The AC power grid circuit is short, please contact the service.
1045	AC Grid Overload Alarm	The AC power grid is overload. Please reduce the electrical equipment, This fault will disappear automatically. If this fault appears continuously, please contact the service.
1046	AC Grid Overload Protection	Same with AC Grid Overload Alarm
1047	AC Grid Fuse Error	The Fuse in grid side is abnormal, disconnect PV and grid, then restart the system. If this fault appears continuously, please contact the service.
1048	AC Grid Relay Error	The Relay in grid side is abnormal, disconnect PV and grid, then restart the system. If this fault appears continuously, please contact the service.
1049-1055	Reserve	Reserve
1056	PV1 Overvoltage Protection Error	Check the voltage of the PV module and make sure that the voltage is below the maximum DC input voltage of the inverter. If this fault appears continuously, please contact the service.
1057	PV1 Undervoltage Protection Error	This warning mostly appears in the morning or at dusk. It's normal and will disappear automatically. If this warning appears in the daytime, please check the connection of PV module. If this fault appears continuously, please contact the service.
1058	PV1 Overcurrent Protection Error	Check the current of the PV module and make sure that the current is below the maximum DC input Current of the inverter. If this fault appears continuously, please contact the service.
1059	PV1 Reverse Protection Error	PV input is Reverse connection, please reverse the PV+ and PV-
1060-1063	Reserve	Reserve
1064	PV2 Overvoltage Protection Error	Same with PV1 Overvoltage Protection

1065	PV2 Undervoltage Protection Error	Same with PV1 Undervoltage Protection
1066	PV2 Overcurrent Protection Error	Same with PV1 Overcurrent Protection
1067	PV2 Reverse Protection Error	Same with PV1 Reverse Protection
1068-1071	Reserve	Reserve
1072	PV3 Overvoltage Protection Error	Same with PV1 Overvoltage Protection
1073	PV3 Undervoltage Protection Error	Same with PV1 Undervoltage Protection
1074	PV3 Overcurrent Protection Error	Same with PV1 Overcurrent Protection
1075	PV3 Reverse Protection Error	Same with PV1 Reverse Protection
1076-1079	Reserve	Reserve
1080	PV4 Overvoltage Protection Error	Same with PV1 Overvoltage Protection
1081	PV4 Undervoltage Protection Error	Same with PV1 Undervoltage Protection
1082	PV4 Overcurrent Protection Error	Same with PV1 Overcurrent Protection
1083	PV4 Reverse Protection Error	Same with PV1 Reverse Protection
	Reserve	Reserve

1084-1087		
1088	Heat-sink Over-temperature alarm	Check the installation of inverter. Make sure the inverter has good heat dissipation. If this fault appears continuously, please contact the service.
1089	Heat-sink Over-temperature Protection Error	same with Heatsink Overtemperature alarm
1090	Heat-sink Low Temperature alarm	the temperature is lower than inverter minimum temperature，Check the installation of inverter，If this fault appears continuously, please contact the service.
1091	Heat-sink Low Temperature Protection Error	same with Heatsink Low Temperature alarm
1092	Heat-sink Sensor Disconnect	the heat sensor is abnormal，If this fault appears continuously, please contact the service.
1093	Internal Over-temperature alarm	Check the installation of inverter. Make sure the inverter has good heat dissipation. If this fault appears continuously, please contact the service.
1094	Internal Over-temperature Protection Error	same with Internal Overtemperature alarm
1095-1098	Reserve	Reserve
1099	Internal Protection Error	This is an internal fault. Disconnect the AC power to restart the inverter. If this fault appears continuously, please contact the service.
1100-1104	Reserve	Reserve
1105	Insulation Fault	Check the PV module's insulation to the ground and make sure that the insulation resistance to the ground is greater than 200K. Make sure the grounding connection of the inverter is reliable. If this fault appears continuously, please contact the service.
1106		

	Meter Communication Fault	meter and inverter comm is error, try to reconnect the meter and inverter, if it's fail，please contact the service.

FAQS

1. Q: What precautions should I take before installing/adding Stackable Micro Battery?

A: When installing/adding expansion batteries, it is necessary to power off and shut down 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 Micro Storage Unit and the solar panels.

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

c. After turning off the Micro Storage Unit, install the expansion batteries to the Micro Storage Unit.

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 Stackable Micro Battery by myself?

A: No. If your battery in Micro Storage Unit or Stackable Micro Battery 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 equipment 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 Micro Storage Unit?

A: Micro Storage Unit 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 Micro Storage Unit charge batteries using the household power grid?

A: Yes, the Micro Storage Unit 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 Micro Storage Unit 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 Micro Storage Unit, matching household load in real-time. This achieves the purpose of not transmitting energy to the public grid, which is the anti-back-flow 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.

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 equipment is not exposed to adverse weather conditions and has not been covered with foreign bodies.
- DO NOT use the equipment 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 equipment is not used immediately or is stored for long periods, check whether it is correctly packed. The equipment must be stored in well-ventilated indoor areas that do not have characteristics that might damage the components of the equipment.

- 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 equipment 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	TSOL-MSU1000	TSOL-MSU1000DE
PV Input (PV)				
Recommended Module Power (Wp)	300 - 700+	300 - 700+	300 - 700+	300 - 700+
Quantity of PV Module	1 to 4	1 to 4	1 to 2	1 to 2
	2150	2150	1075	1075

Max. PV Input Power (W)				
Start-up Voltage @Rated condition (V)	22	22	22	22
Operating Voltage Range per Input (V)	16 - 60	16 - 60	16 - 60	16 - 60
MPPT Voltage Range @ Nominal Power (V)	27.7 - 54	27.7 - 54	27.7 - 54	27.7 - 54
Max. Input Voltage per Input (V)	60	60	60	60
Nominal Input Voltage (V)	42	42	42	42
Short Circuit Current per Input (A)	25	25	25	25
Max. Input Current per Input (A)	18	18	18	18
Quantity of MPPTs	4	4	2	2
Battery (DC)				
Battery Capacity (Wh)	2048	2048	2048	2048
Battery Type	LiFePO4	LiFePO4	LiFePO4	LiFePO4
Communication Mode	RS485	RS485	RS485	RS485
Nominal Voltage (V)	51.2	51.2	51.2	51.2
Operating Voltage Range (V)	43.2 - 58.4	43.2 - 58.4	43.2 - 58.4	43.2 - 58.4
Max. Discharge Power (W)	2000	2000	1000	1000
	45	45	25	25

Max. Discharge Current (A)				
Max. Charge Power (W)	2000	2000	1000	1000
Max. Charge Current (A)	40	40	20	20
Max. System Capacity (kWh)	10.24 (1 MSU + 4 Stackable Battery)	10.24 (1 MSU + 4 Stackable Battery)	10.24 (1 MSU + 4 Stackable Battery)	10.24 (1 MSU + 4 Stackable Battery)
AC Port (On-grid)				
Max. AC Output Power (VA)	2000	800	1000	800
Nominal AC Output Power (W)	2000	800	1000	800
Nominal AC Output Current (A)	8.7	3.5	4.3	3.5
Max. AC Output Current (A)	10	4	5	4
Max. AC Input Power (W)	2000	2000	1000	1000
Nominal AC Input Current (A)	8.7	8.7	4.3	4.3
Max. AC Input Current (A)	11	11	5.5	5.5
Nominal AC Voltage (V)	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE
Nominal AC Frequency (Hz)	50/60	50/60	50/60	50/60
Power Factor	>0.99 default 0.8 leading ⋯ 0.8 lagging	>0.99 default 0.8 leading ⋯ 0.8 lagging	>0.99 default 0.8 leading ⋯ 0.8 lagging	>0.99 default 0.8 leading ⋯ 0.8 lagging
THDI	⩽3%@100% Load	⩽3%@100% Load	⩽3%@100% Load	⩽3%@100% Load

AC Port (Off-grid)				
Max. AC Output Power (VA)	2000	2000	1000	1000
Nominal AC Output Power (W)	2000	2000	1000	1000
Nominal AC Output Current (A)	8.7	8.7	4.3	4.3
Max. AC Output Current (A)	10	10	5	5
Nominal AC Voltage (V)	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE
Nominal AC Frequency (Hz)	50/60	50/60	50/60	50/60
Switch Time [ms]	< 20	< 20	< 20	< 20
Efficiency				
Peak Inverter Efficiency	94.5%	94.5%	94.5%	94.5%
MPPT Efficiency	99.9%	99.9%	99.9%	99.9%
Battery Charge/Discharge Efficiency	94%/94%	94%/94%	94%/94%	94%/94%
No-load power consumption	< 25W	< 25W	< 25W	< 25W
Shut-down and consume electricity	< 1W	< 1W	< 1W	< 1W
Mechanical Data				
Dimensions (W×H×D mm)	455x320x280	455x320x280	455x320x280	455x320x280
Weight (kg)	35kg	35kg	35kg	35kg
General Data				
Communication				

	Server: WiFi (Bluetooth) / Battery: RS485	Server: WiFi (Bluetooth) / Battery: RS485	Server: WiFi (Bluetooth) / Battery: RS485	Server: WiFi (Bluetooth) / Battery: RS485
Extra Communication Port	2 * RS485 (Meter+Reserve)	2 * RS485 (Meter+Reserve)	2 * RS485 (Meter+Reserve)	2 * RS485 (Meter+Reserve)
Display	SOC Light	SOC Light	SOC Light	SOC Light
Ingress Protection	IP65	IP65	IP65	IP65
Type of Isolation	Reinforced insulation	Reinforced insulation	Reinforced insulation	Reinforced insulation
Cooling	Natural convection	Natural convection	Natural convection	Natural convection
Protection Class	I	I	I	I
Overvoltage Category	PV II; AC III	PV II; AC III	PV II; AC III	PV II; AC III
Operating Ambient Temperature Range	-20 ~ +55 °C (Load shedding over 45°C)	-20 ~ +55 °C (Load shedding over 45°C)	-20 ~ +55 °C (Load shedding over 50°C)	-20 ~ +55 °C (Load shedding over 50°C)
Relative Humidity	0-95%, Non condensing	0-95%, Non condensing	0-95%, Non condensing	0-95%, Non condensing
Max. Operating Altitude Without Derating [m]	2000	2000	2000	2000

Model	**TSOL-MAU2000**	**TSOL-MAU2000DE**	**TSOL-MAU1000**	**TSOL-MAU1000DE**
Battery (DC)				
Battery Capacity (Wh)	2048	2048	2048	2048
Battery Type	LiFePO4	LiFePO4	LiFePO4	LiFePO4
Communication Mode	RS485	RS485	RS485	RS485
Nominal Voltage (V)	51.2	51.2	51.2	51.2

Operating Voltage Range (V)	43.2 - 58.4	43.2 - 58.4	43.2 - 58.4	43.2 - 58.4
Max. Discharge Power (W)	2000	2000	1000	1000
Max. Discharge Current (A)	45	45	25	25
Max. Charge Power (W)	2000	2000	1000	1000
Max. Charge Current (A)	40	40	20	20
Max. System Capacity (kWh)	10.24 (1 MSU + 4 Stackable Battery)	10.24 (1 MSU + 4 Stackable Battery)	10.24 (1 MSU + 4 Stackable Battery)	10.24 (1 MSU + 4 Stackable Battery)
AC Port (On-grid)				
Max. AC Output Power (VA)	2000	800	1000	800
Nominal AC Output Power (W)	2000	800	1000	800
Nominal AC Output Current (A)	8.7	3.5	4.3	3.5
Max. AC Output Current (A)	10	4	5	4
Max. AC Input Power (W)	2000	2000	1000	1000
Nominal AC Input Current (A)	8.7	8.7	4.3	4.3
Max. AC Input Current (A)	11	11	5.5	5.5
Nominal AC Voltage (V)	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE
Nominal AC Frequency (Hz)	50/60	50/60	50/60	50/60
Power Factor				

	>0.99 default 0.8 leading ⋯ 0.8 lagging	>0.99 default 0.8 leading ⋯ 0.8 lagging	>0.99 default 0.8 leading ⋯ 0.8 lagging	>0.99 default 0.8 leading ⋯ 0.8 lagging
THDI	⩽3%@100% Load	⩽3%@100% Load	⩽3%@100% Load	⩽3%@100% Load
AC Port (Off-grid)				
Max. AC Output Power (VA)	2000	2000	1000	1000
Nominal AC Output Power (W)	2000	2000	1000	1000
Nominal AC Output Current (A)	8.7	8.7	4.3	4.3
Max. AC Output Current (A)	10	10	5	5
Nominal AC Voltage (V)	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE
Nominal AC Frequency (Hz)	50/60	50/60	50/60	50/60
Switch Time [ms]	< 20	< 20	< 20	< 20
Efficiency				
Peak Inverter Efficiency	94.5%	94.5%	94.5%	94.5%
MPPT Efficiency	99.9%	99.9%	99.9%	99.9%
Battery Charge/Discharge Efficiency	94%/94%	94%/94%	94%/94%	94%/94%
No-load power consumption	< 25W	< 25W	< 25W	< 25W
Shut-down and consume electricity	< 1W	< 1W	< 1W	< 1W
Mechanical Data				
	455x320x280	455x320x280	455x320x280	455x320x280

Dimensions (W×H×D mm)				
Weight (kg)	35kg	35kg	35kg	35kg
General Data				
Communication	Server: WiFi (Bluetooth) / Battery: RS485	Server: WiFi (Bluetooth) / Battery: RS485	Server: WiFi (Bluetooth) / Battery: RS485	Server: WiFi (Bluetooth) / Battery: RS485
Extra Communication Port	2 * RS485 (Meter+Reserve)	2 * RS485 (Meter+Reserve)	2 * RS485 (Meter+Reserve)	2 * RS485 (Meter+Reserve)
Display	SOC Light	SOC Light	SOC Light	SOC Light
Ingress Protection	IP65	IP65	IP65	IP65
Type of Isolation	Reinforced insulation	Reinforced insulation	Reinforced insulation	Reinforced insulation
Cooling	Natural convection	Natural convection	Natural convection	Natural convection
Protection Class	I	I	I	I
Overvoltage Category	PV II; AC III	PV II; AC III	PV II; AC III	PV II; AC III
Operating Ambient Temperature Range	-20 ~ +55 °C (Load shedding over 45°C)	-20 ~ +55 °C (Load shedding over 45°C)	-20 ~ +55 °C (Load shedding over 50°C)	-20 ~ +55 °C (Load shedding over 50°C)
Relative Humidity	0-95%, Non condensing	0-95%, Non condensing	0-95%, Non condensing	0-95%, Non condensing
Max. Operating Altitude Without Derating [m]	2000	2000	2000	2000

Stackable Micro Battery

Model	**TSOL-B2000**

Battery (DC)	
Battery Capacity (Wh)	2048
Battery Type	LiFePO4
Communication Mode	RS485
Nominal Voltage (V)	51.2
Operating Voltage Range (V)	43.2 - 58.4
Max. Discharge Power (W)	2000
Max. Discharge Current (A)	45
Max. Charge Power (W)	2000
Max. Charge Current (A)	40
Max. System Capacity (kWh)	10.24 (1 MSU + 4 Stackable Battery)
Mechanical Data	
Dimensions (W×H×D mm)	455x242x280
Weight [kg]	22.4
General Data	
Display	SOC Light
Ingress Protection	IP65
Cooling	Natural convection
Operating Ambient Temperature Range	-20 ~ +55 °C
Relative Humidity	0-95%, Non condensing
Max. Operating Altitude Without Derating [m]	2000