MARSTEK

M5000-N Movable Power Station

USER MANUAL

EN DE IT ES FR NL PL PT

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Attention! Please read this manual carefully before using this product.

Safety Precautions

1. Important Safety Instructions

DANGER

Danger!
Danger to life due to high voltages in the inverter!
All work must be carried out by qualified electrician.
The appliance is not to be used by children or persons with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

CAUTION

Caution!
Danger of burn injuries due to hot enclosure parts!
During operation, the upper lid of the enclosure and the enclosure body may become hot.
Only touch the lower enclosure lid during operation.

Caution!
Possible damage to health as a result of the of radiation!Do not stay closer than 20 cm to inverter for any length of time.

Note!
Grounding the PV generator.
Comply with the local requirements for grounding the PV modules and the PV generator. It is recommends connecting the generator frame and other electrically conductive surfaces in a manner which ensures continuous conduction and ground these in order to have optimal protection of system and persons.

WARNING

Warning!
Ensure input DC voltage ⩽Max. DC voltage .Over voltage may cau- se permanent damage to inverter or other losses, which will not be included in warranty!

Warning!
Authorized service personnel must disconnect both AC and DC power from inverter before attempting any maintenance or cleaning or working on any circuits connected to inverter.

WARNING !
Risk of electric shock!

IMPORTANT SAFETY INSTRUCTIONS

PLEASE READ THIS ENTIRE MANUAL BEFORE ATTEMPTING TO USE THIS PRODUCT.

These instructions contain critical safety information. Failure to follow them may result in fire, electric shock, serious injury, or death.

- Provide close adult supervision when the product is used near children. Do not insert fingers or hands into any openings.
- Only use attachments and accessories recommended or sold by MARSTEK. The use of non-compatible items may result in fire, electric shock, or injury.
- To disconnect the power, pull directly on the plug. Never pull the cord to unplug.
- Operate only within the specified temperature range: -10°C to 55°C.
- Unplug the device during thunderstorms, before cleaning, after use, and in case of malfunction.
- Do not operate the device with wet hands.
- Fire/Explosion Hazard: Do not expose the power pack to fire, excessive heat (above 130°C), or short-circuit, impact, or disassemble the battery. Do not use a damaged or modified battery or device.
- Electric Shock Hazard: After disconnecting all inputs, wait at least 5 minutes before servicing. Internal capacitors retain lethal voltage. Do not operate energized components.
- Liquid Hazard: If device liquids contact skin or eyes, rinse immediately with plenty of water and seek medical attention.
- Stop use immediately if the device is damaged, dropped, shows signs of water ingress, or exhibits abnormalities (unusual odors, overheating, rust, deformation). Contact after-sales service.

USER MAINTENANCE INSTRUCTIONS

These are the only maintenance procedures the user should perform. All other servicing must be done by qualified personnel.

- Visual Inspection: Before use, inspect the power cord, plug, and output cables for any signs of damage (cuts, crushing, fraying). Do not use if damage is found.
- Placement: Ensure the device is placed on a stable, level surface. Ensure the power cord is routed to avoid becoming a tripping hazard.Do not place the power pack on the floor or any surface lower than 457 mm (18 inches) above the floor during use in a repair facility.
- Ventilation: When charging the internal battery, ensure the device is in a well-ventilated area and that ventilation openings are not blocked.
- Unplug the device before cleaning.
- Clean only with a soft, dry cloth. Do not use any harmful chemicals, abrasives, or detergents.
- When connecting to a battery:
  - Attach output cables to the battery and chassis as indicated in the manual.
  - Never allow the output clamps to touch one another.
- Do not disassemble the power pack or device housing.
- Do not attempt to repair or replace internal components, including the power cord.
- All internal repairs must be referred to a qualified service technician using only identical MARSTEK replacement parts.

GROUNDING INSTRUCTIONS

This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes ordinances.

WARNING – Improper connection of the equipment grounding conductor is able to result in a risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product – if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

INSTALLATION INSTRUCTIONS

• Inspection: Before installation, thoroughly inspect the device, all cables, and accessories for any signs of damage (e.g., dents, cracks, frayed wires). Do not proceed with installation if any damage is found. Contact your supplier.
• Voltage Check: Verify that the voltage marked on the device nameplate matches your local power supply voltage.
• Plan the Lift: Develop a detailed lifting plan that accounts for the product's weight, dimensions, center of gravity, and site conditions. Ensure all personnel involved understand the plan.
• Use Designated Points: Attach lifting equipment only to the designated lift points or structural supports as specified in the product manual. Ensure the load is balanced to prevent tilting.
• Inspect Equipment: Thoroughly inspect all lifting equipment (cranes, slings, hooks) for damage or wear before use. Only certified operators may perform the lift.
• Secure the Area: Establish a clear safety zone around the lifting operation. Assign a signaler to direct and supervise the lift. Suspend operations immediately in adverse weather conditions (e.g., strong winds, heavy rain).
• Stable Surface: Install the device on a stable, level, and robust surface capable of supporting its weight.
• Ventilation: Ensure adequate clearance around the device for proper ventilation and heat dissipation as specified in the manual.
• Environment: Keep the device away from damp, extremely dusty, high-temperature environments, and away from open flames or heat sources.

MOVING AND STORAGE INSTRUCTIONS

1. Transportation Precautions

• Inspect Packaging: Before moving, inspect the product's packaging for damage. If compromised, inspect the product itself for damage before proceeding.
• Secure the Load: When transporting, use a vehicle with adequate capacity and stability. Secure the product firmly using appropriate fastening devices (straps, ropes) to prevent shifting, jolting, or tipping during transit. Distribute tension evenly.
• Environmental Protection: During transit, protect the product from rain, dust, direct sunlight, and extreme temperatures using protective materials like tarps or insulation.
• Safe Driving: Drivers should maintain steady speeds and avoid sudden braking, acceleration, or sharp turns to keep the cargo stable.
• Periodic Checks: During long-distance transport, periodically check that the securing devices remain tight and that the product condition is unchanged.

2. Manual Handling

• Team Lift: For heavy products, use a team lift or mechanical aids (trolleys, forklifts). Coordinate movements with others to prevent accidental drops.
• Lifting Technique: Use proper lifting techniques (bend your knees, keep your back straight) to avoid personal injury.
• Clear Path: Ensure the moving path is clear of obstacles to prevent tripping or slipping.

3. Storage

• Environment: Store the product in a clean, dry, well-ventilated environment. Avoid areas with: extreme temperature fluctuations, high humidity, direct sunlight, corrosive chemicals, or excessive dust.
• Battery Care: For long-term storage of device, maintain the battery charge at approximately 30% - 60% and store at room temperature (20°C - 30°C is ideal). Recharge every 3 months to prevent over-discharge.
• Disposal: Dispose of used batteries according to local regulations. Do not dispose of in general waste.

DISCLAIMER

Damage or personal injury resulting from incorrect voltage connection, use of non-original accessories, unauthorized disassembly, or operation in extreme environments is not covered under warranty. Please read the entire manual carefully before operation and consult a licensed electrician when necessary.

SAVE THESE INSTRUCTIONS

2. Explanation of Symbol

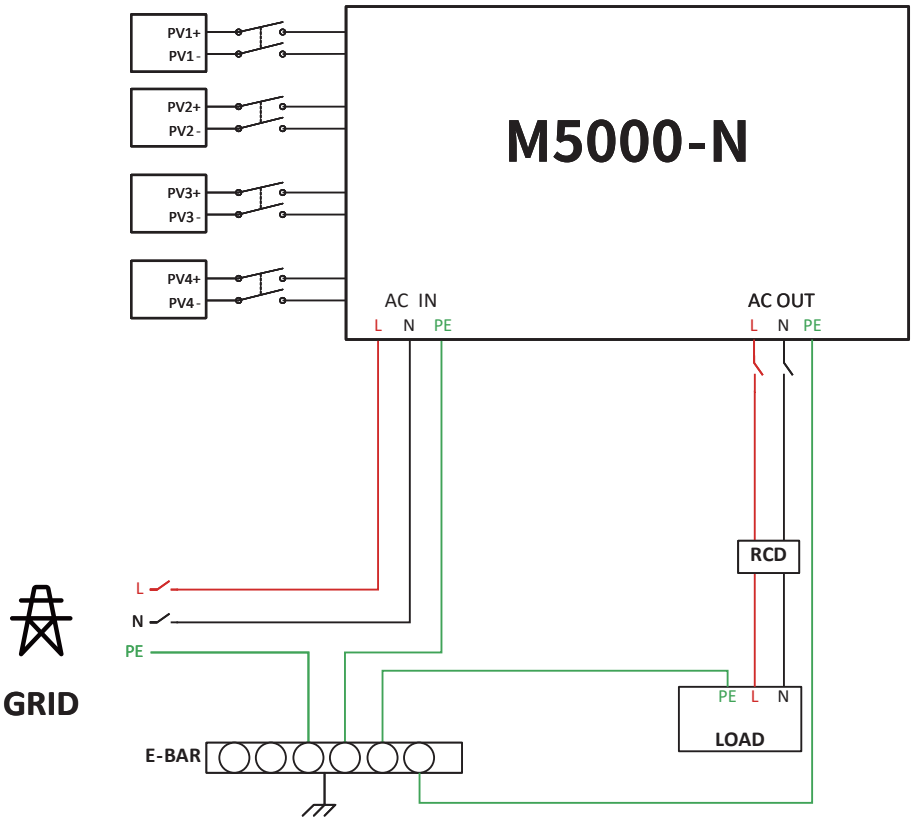
This section gives an explanation of all the symbols shown on the inverter and on the type label.

Symbol	Explanation
CE	CE mark. The inverter complies with the requirements of the applicable CE
	Beware of hot surface. The inverter can become hot during operation. Avoid contact during operation.
	Danger. Risk of electric shock!
	Danger to life due to high voltages in the inverter!
	Please note the provisions of the instruction manual.
	The inverter can't be disposed together with the household waste. Disposal information can be found in the enclosed documentation.
	Do not operate inverter until it is isolated from battery, mains and on-site PV generation suppliers.
	Danger to life due to high voltage. There is residual voltage existing in the inverter after powering off. Which needs 5 min to discharge. Wait 5 min before you open the upper lid or the DC lid.

Product Overview

1. Basic features

M5000-N is a high quality power station which can convert solar energy to AC energy and store energy into battery.
M5000-N can make power consumption, store in the battery for future use or feedin to public grid. Work mode depends on PV energy and user's preference. It can provide power for emergency use during the grid lost by using the energy from battery and inverter(generated from PV).In addition, the parallel function is available(off grid model).



Note! The instrument and switch in the above figure are provided by users.

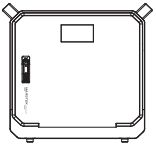
2. Working modes

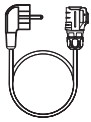
Inverter provides multiple work modes based on different requirements.

	Battery supplies power to the load.
	On charge time, grid will charge battery and supply power to the connected loads at the same time.
	When solar generation is insufficient for load demand, solar and battery jointly power the load.
	When solar generation exceeds load demand, solar powers the load while simultaneously charging the battery.
	Solar charges the battery while grid powers the load.

3. Packing List

- **Package 1**


M5000-N*1

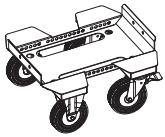

Mains cable*1


key*2


Lifting belt*1

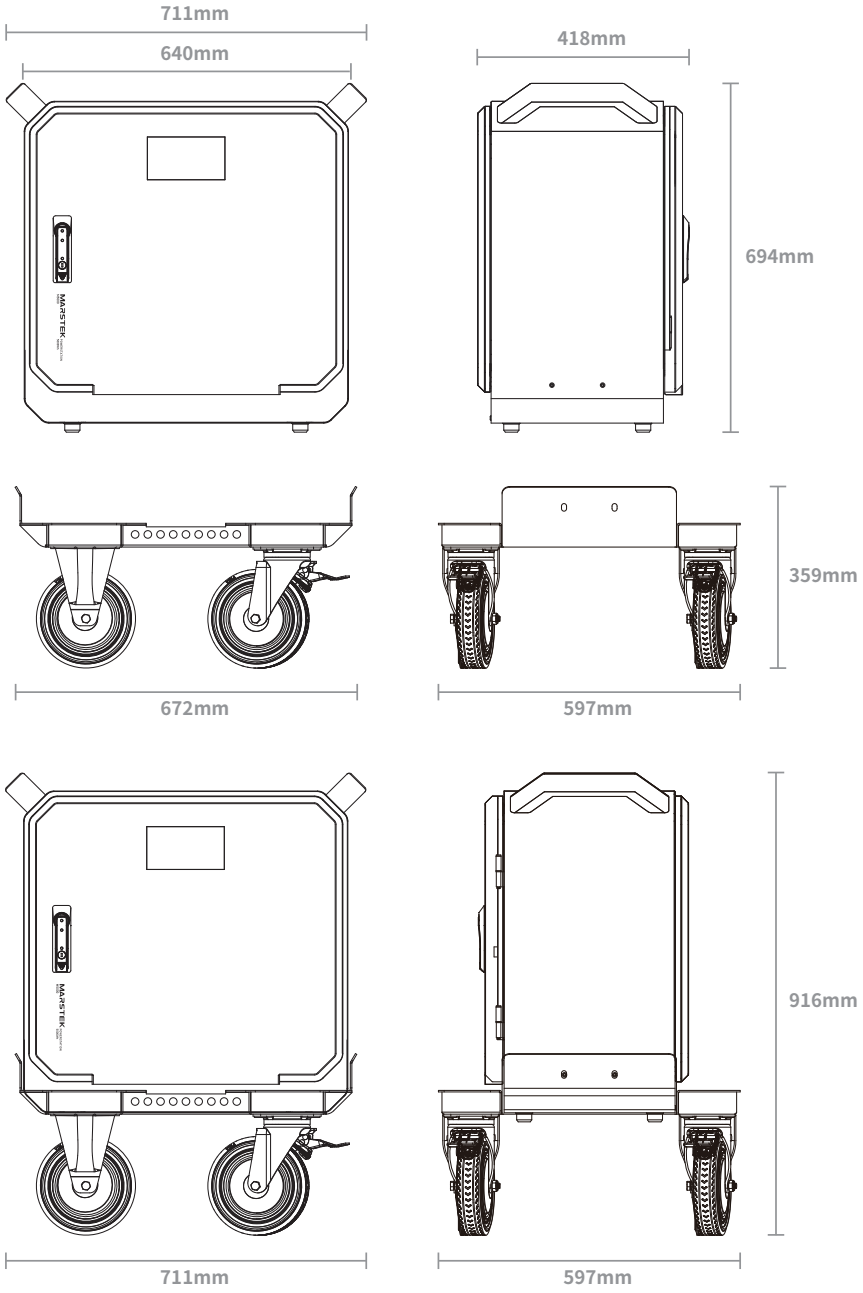
Quick Installation guide*1

- **Package 2**


Separable trolley*1


Screw*4

4. Dimension (Unit: mm,tolerance：±1mm)



- **Separable trolley Installation Steps**

- Unpack the M5000-N package and locate the accessories: lifting straps.
- Unpack the M5000-N trailer package, take out the trailer, and find the 4 self-tapping screws.

1. Lock the Swivel Wheels – Secure the trailer’ s casters to prevent movement during installation.
2. Position the M5000-N – Use lifting straps or multiple people to lift the machine and place it onto the trailer (align with the 4 positioning holes; no orientation restrictions).
3. Secure the Machine – Fasten the 4 self-tapping screws through the trailer and M5000-N side holes to lock it in place.
4. Complete Installation – Unlock the swivel wheels to finish setup.

1

Lock the Swivel Wheels

2

Position the M5000-N
(align with the 4 positioning holes; no orientation restrictions).

3

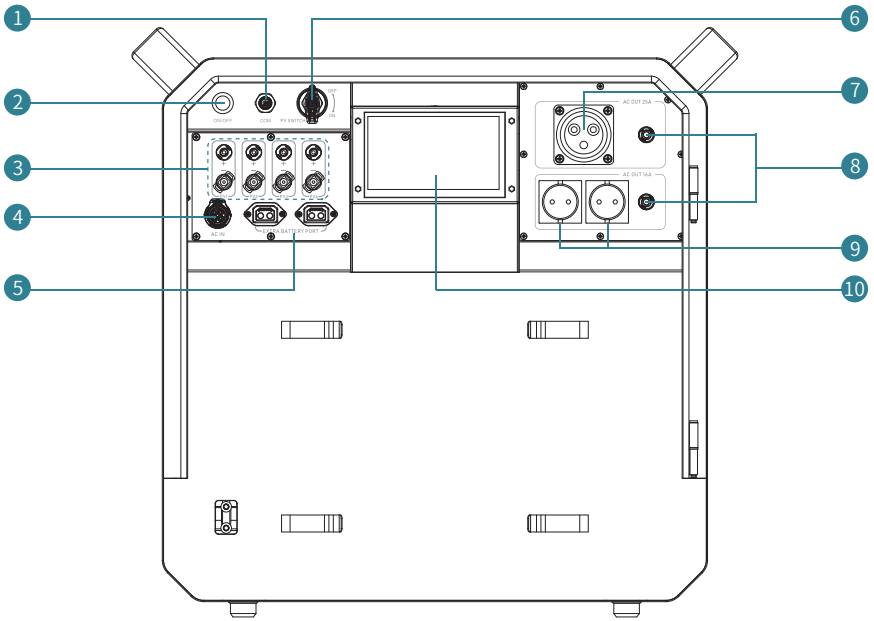
Secure the Machine

4

Complete Installation
Unlock the swivel wheels

***Installation precautions: Refer to the "Safety Precautions – Lifting and Hoisting Precautions" section in the instruction manual.**

5. Interface



1. COM: Engineering Debug Port
2. Power Button: Press and hold for 5s to power ON/OFF
3. 4× MC4 PV Input Ports: 85–500V DC
4. AC Charging Ports:

   Slow Charge: 230V~ 16A 3680W MAX (included cable)

   Fast Charge: Requires separate wiring (not included)
5. Extra Battery Port: Always cover with dust cap when unused to prevent oxidation/corrosion
6. PV Switch: Must be set to ON position for PV charging
7. AC Output（25A）: 230V~ 5000W MAX (plug sold separately)
8. Overcurrent Protection Button: Industrial Socket: 32A / EU Standard Socket: 20A
9. AC Output（16A）
10. LCD display panel

6. Performance & Parameters

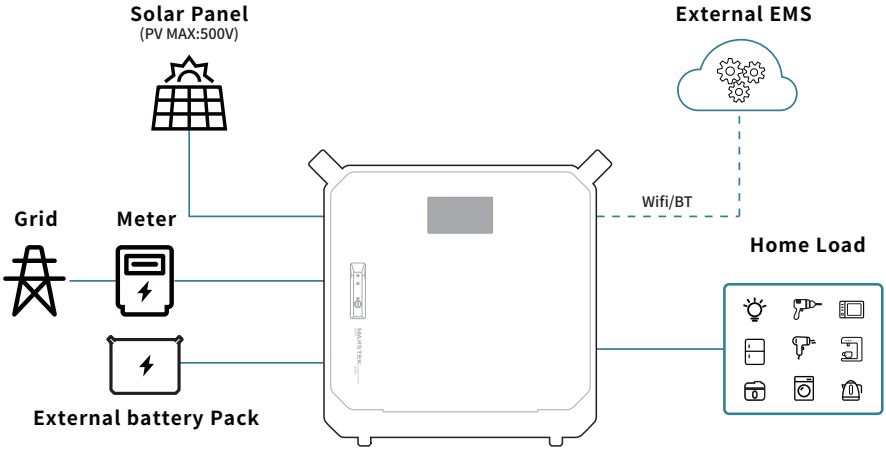
M5000-N

DC Input（from PV）	
Max. PV power	10kW
Max. DC input voltage	550V
Nominal DC input voltage	360V
Start-up voltage	85V
MPPT voltage range	85-500V
Number of MPP. Trackers	4
Number of PV strings per MPPT	1
Max. input current per MPPT	14A
Max. short-circuit current per MPPT	16A
AC Input	
Nominal Input power	5kW
Nominal Input current	21.7A
Max. Input current	25A
Nominal output voltage	230V/207V~253V
Grid input mode	CEE7/3: 3.6kW IEC60309 332C6H: 5kW
Nominal grid frequency	50/60Hz
Power factor	⩾0.99
Total current harmonic distortion	THDi < 3%
Efficiency	
DC Max. efficiency	97.60%
MPPT efficiency	99.80%
AC Output	
Nominal output power	5kW
Peak output power (10 min)	110%~125%
Peak output power (1 min)	125%~150%
Peak output power (10 seconds)	150%~200%
Short-circuit duration	200ms
Nominal output voltage	Single phase: 230V
Total voltage harmonic distortion	THDv < 3%
Disruption time of backup switch	15ms

Battery	
Onboard battery Capacity	5.12kWh
External battery module models	P5000-N
Number of external modules per inverter	2PCS
Nominal voltage of external module	104V
Max. charging power	5kW
Max. charging current	55A
Max. discharging power	5kW
Max. discharging current	55A
Protection	
Safety protection feature	Insulation monitoring, Residual current monitoring, DC reverse polarity protection, AC OV/OC/SC protection, Type II DC/AC surge protection.
General Data	
Battery type	$LiFePO_4$
Dimensions (W/H/D)	(L*W*H)640*408*640mm
Weight	114±1kg
Storage temperature range	-25°C~60°C
Operating temperature range	-10°C~55°C
Relative humidity range	0~100%
Max. operating altitude	4000m, derating from 2000m
Cooling	Natural cooling
Standby power consumption	<20W (Work) /< 10mW (Sleep)W
System ingress protection rating	IP65
Noise level	30dB
Display	10.1'' LCD, App
Communication	External Battery access CAN * 2, RS485 for EMS, Wifi/BT
PV connectors	MC4 * 4
AC input connector	PVAC-05CRBA40-03
AC charging cable	CEE7/7 (slow charging), IEC60309 330B6H (fastcharging)
AC output connector	IEC60884-1 AC Socket * 3

Use Instructions

Any installation, connections or commissioning of this equipment must be carried out by an appropriately qualified person. The work must be performed in full accordance with the local regulations, Personal protective equipment and insulated tools must be used in line with commonly accepted industry principles.



1. Charging Instructions

1. Grid connection and EPS connection

M5000-N designed for single phase grid. Voltage is 220/230/240V, frequency is 50/60Hz. Other technical requirements should comply with the requirements of the local public grid.

- **Cable specification: 5-6mm² multi-strand copper cable rated for AC voltage, current and the connection environment.**
- **Circuit breaker: 32A, must be installed between the inverter and the grid.**

• AC Slow Charging (3600W)

1. Connect the provided AC power cable directly to the unit's AC input port
2. Plug into a standard mains socket (230V/50Hz)
3. After powering on, the battery will charge at up to 3600W max.

Note: Requires 16A+ rated socket

- **AC Fast Charging (5000W)**

1. Procure or install power cables according to specifications

Cable installation requirements:

- Terminal 1 → Connect to Live (L) conductor
- Terminal 2 → Bridge to Terminal 1 (short-circuit connection)
- Terminal 3 → Connect to Neutral (N) conductor
- Terminal 4 → Connect to Earth Ground (PE)

2. Must connect to a dedicated circuit (25A current capacity required)

3. Standard household sockets are prohibited

4. Maximum charging power: 5000W

WARNING

Warning: Installation must be performed by certified electricians

2. PV connection

The M5000-N portable generator can be connected with 1-4 arrays of solar PV modules. Single PV string capacity 2.5kW, total capacity for four strings 10kW. This connection is optional. If no solar charging is required, the unit can be charged from mains power and used as a portable power pack.

If PV charging is required, either 1-4 strings of solar modules linked in series can be connected to the M5000-N. Ensure that each string meets these requirements at any temperature:

- **Open-circuit voltage (Voc) is less than 550V**
- **MPPT voltage (Vmp) is within the range60V–500V**

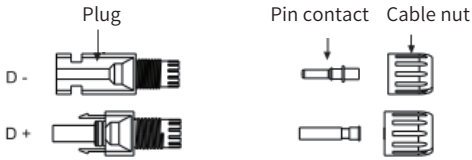
- **PV Charging**

1. Connect PV array(s) to the unit's PV input port(s)
2. Activate the PV switch
3. Single array supports up to 2.5kW charging power
4. Quad arrays support up to 10kW charging power

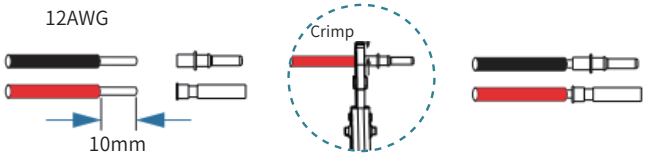
Connection Steps:

Step 1. Check each string of PV modules to ensure the voltage is within the specified range. Turn off the breakers to avoid working with live cables. Double-check the PV polarity.

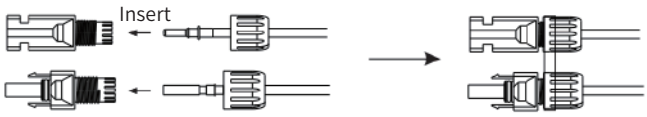
Step 2. Disassemble the PV connectors.



Step 3. Wiring:
3.1 Use solar PV cables with a cross-section of at least 4mm^2 per core.
3.2 Strip 10mm of insulation from the cable ends.
3.3 Insert the stripped ends into the pins and crimp them securely using a solar crimping tool.



Step 4. Insert the crimped cable ends through the connector nuts and push them firmly into the PV connector housing until you hear a click. Perform a pull test to ensure secure connection, then tighten the nuts.



Step 5. Plug the PV connectors into the corresponding PV sockets on the M5000-N.

Warning:
The high voltage in PV modules poses a danger. Ensure that the installation is carried out by a qualified person and complies with all electrical safety rules and regulations.
Do not ground either the positive or negative PV cables.

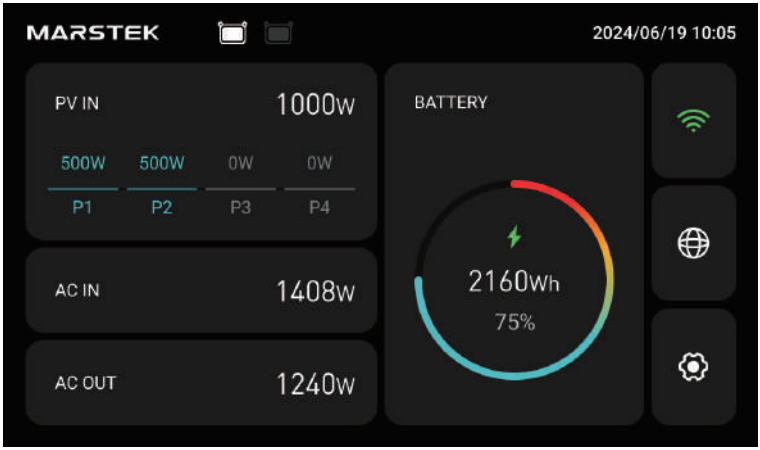
2. Supplying power to the load

AC Output (25A): Maximum power 5kW
AC Output (16A) × 2: Maximum power per channel: 3.6kW， Total combined power: 3.6kW
Total maximum output power: 5kW
The 25A and 16A ratings are the current protection values of the output breakers.

To supply 5kW to a single device: Use the 5kW AC output port (blue EPS port) with fixed wiring.

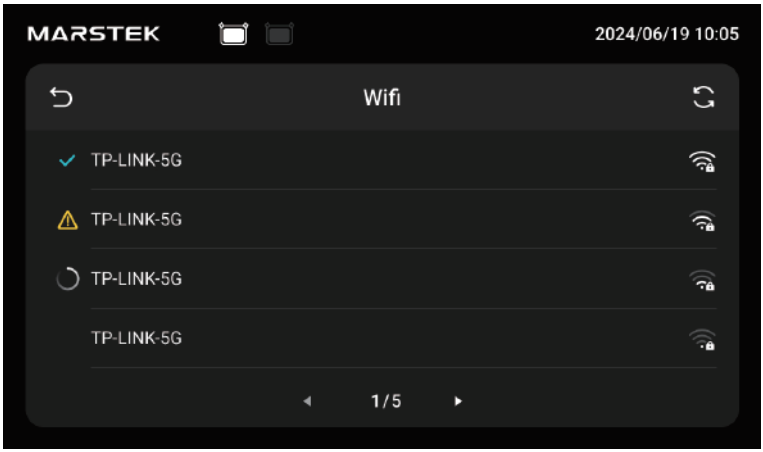
Display Screen Instructions

1. Turn on the device, and after the startup animation, the home page will appear.



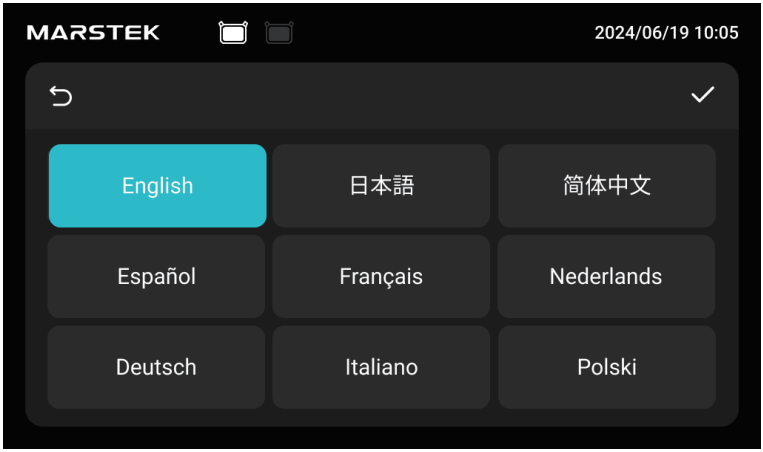
Display Symbols		Status	Description
	External Supplementary Power Pack	Lit icon	Connected
		Unlit icon	Not connected
PV IN	Current PV (Photovoltaic) Power	Lit icon	Connected
		Unlit icon	Not connected
P1-P4	Solar Panel 1-4	Lit icon	Connected
		Unlit icon	Not connected
AC IN	Grid Power (AC)	Lit icon	Connected
		Unlit icon	Not connected
AC OUT	Load Output Status	Lit icon	Connected
		Unlit icon	Not connected
BATTERY	Internal Battery Information	Displays total battery capacity and SOC	
	Charging Status	Blinking icon	Charging
		Solid Light	Discharging
		Unlit icon	Idle (no activity)
	Wi-Fi Status & Configuration Click to enter Wi-Fi setup interface	Lit icon	Connected
		Unlit icon	Not connected
	Language Selection	Click to enter the language selection interface	
	Settings Menu	Click to enter the settings page	

2. Click the Wi-Fi button to enter the Wi-Fi configuration interface, and select the corresponding Wi-Fi for network setup. After selecting the corresponding Wi-Fi, enter the password input page.（Password must contain at least 8 characters）



Display Symbols	Description
✓	WiFi Connected and Network Available
⚠	Connection Failed (Incorrect Password or Network Error)
◌	Connecting to WiFi...
↻	Scanning for Available Networks

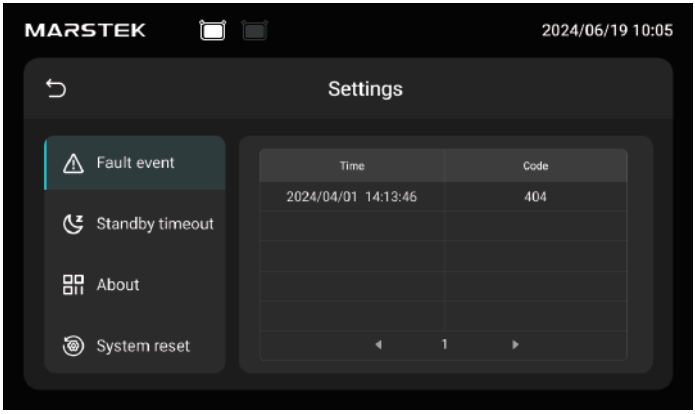
3. Click to enter the language selection page, where you can switch languages. After selecting the desired language, click the button in the upper right corner to complete the language switch.



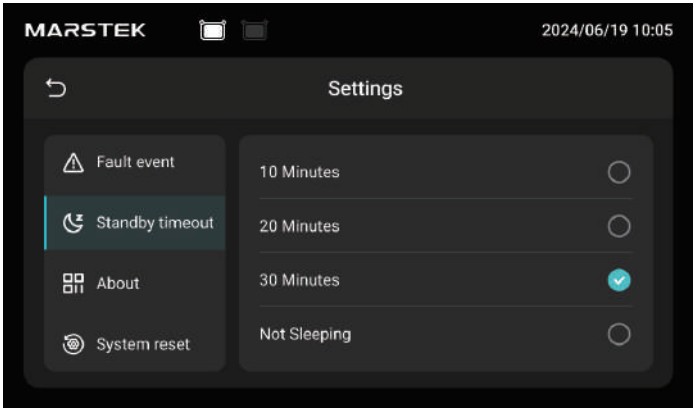
4. Click to enter the settings page.

Display Symbols	Description
Fault event	View History Page
Standby timeout	Auto-Sleep Configuration
About	Device Information Page
System reset	Restore Factory Settings Page

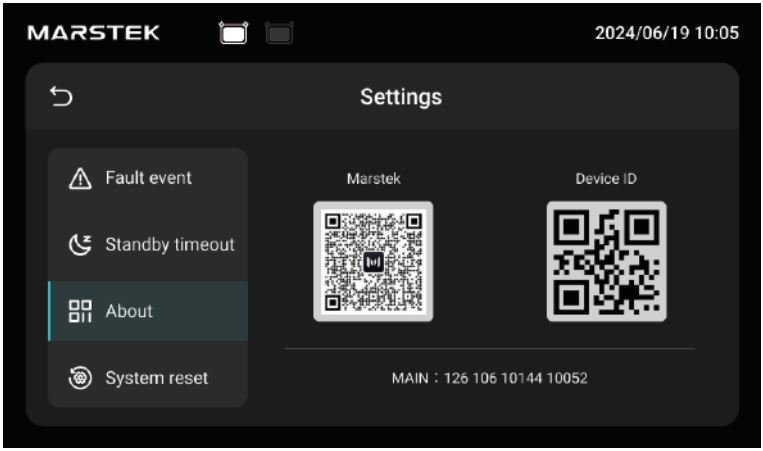
4.1 On the fault events page, you can view the device's historical fault information. The fault information includes all historical fault records since the device left the factory, with a maximum of 100 entries. When the limit is reached, the newest record will overwrite the oldest one.



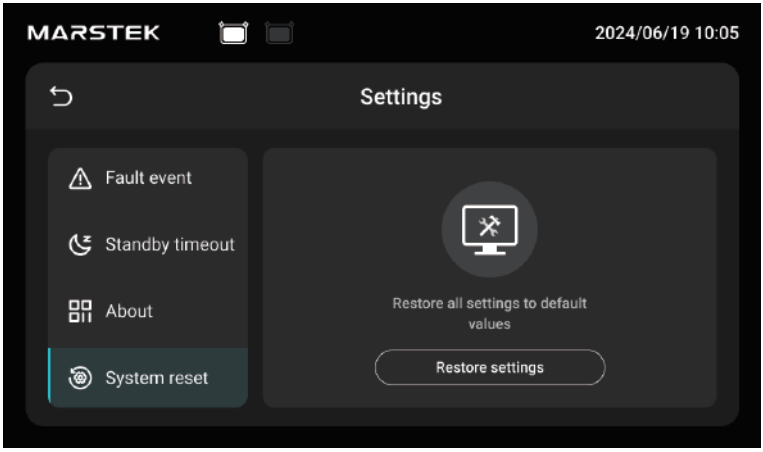
4.2 On the standby timeout page, select the corresponding option to activate the device's standby timeout function. "Standby timeout" refers to the device entering battery mode (with no AC or PV input, only battery connected) and no load. After selecting the standby timeout duration, the device will put the battery into sleep mode once the time elapses. The battery will need to be manually awakened afterward.



4.3 On the device information page, you can scan the QR code to download the Marstek APP and use the APP to scan the device ID to connect to this device. For details, refer to the APP user manual.



5. On the restore factory settings page, click the "Restore Factory Settings" button at the bottom to reset the DOD and standby timeout settings to factory defaults and clear all fault information records on the device.



6. When the device is not charging, if there is no click operation on the LCD screen for 60 seconds, the LCD screen will enter standby mode. Click the standby timeout page to wake up the LCD screen again.

APP Instructions

1. APP Download

- Android: Download via Google Play
- iOS: Download via App Store
- Download Link: https://eu.hamedata.com/ems/apk/marstek/index.html
- QR Code Download:

2. How to Use the App

- Scan the QR code to access the APP user guide.

Fault diagnosis and solutions

The following table lists some basic problems that may occur in practice and the corresponding basic solutions. When you encounter the following problems, please refer to the following solutions. If the problem is still not solved, please contact your local distributor.

Code	Alarm range	Alarm status	Suggested treatment
1101 -1104	PV Side	PV Current Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
1201 -1204	PV Side	PV Overvoltage	Check if the PV voltage is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
1207 -1210	PV Side	PV Overcurrent	The system will automatically restart the PV. If it fails after three attempts, restart the device. If normal operation still cannot be restored, contact customer support.
1213 -1216	PV Side	Negative Bus RMS Overvoltage	Restarting the device will resolve the issue.
1217 -1220	PV Side	Negative Bus RMS Undervoltage	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
1223	PV Side	PV Temperature Too High 1	The photovoltaic system can be restored once the temperature drops below the high-temperature recovery threshold.
1225	PV Side	Inverter Communication Abnormality	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
1226	PV Side	Monitoring Communication Abnormality	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
1228 -1231	PV Side	PV Instantaneous Overcurrent	The system will automatically restart the PV. If it fails after three attempts, restart the device. If normal operation still cannot be restored, contact customer support.
1302 -1305	PV Side	PV Short Circuit	Power cycle the device and check for abnormal PV connections. If it fails to operate normally after three consecutive attempts, contact customer support.
1316	PV Side	Bus Balance Overcurrent Protection	Restarting the device will resolve the issue.
2101	PV Side	BUCK/BOOST 1 Current Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
2102	PV Side	BUCK/BOOST 2 Current Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.

2108	PV Side	External Battery Current Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
2201	PV Side	BUCK/BOOST 1 Overcurrent	The system will automatically restart. If it fails after three attempts, restart the device. Contact customer support if normal operation still cannot be restored.
2202	PV Side	BUCK/BOOST 2 Overcurrent	The system will automatically restart. If it fails after three attempts, restart the device. Contact customer support if normal operation still cannot be restored.
2207	PV Side	Battery Overvoltage	Check if the PV voltage is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
2208	PV Side	Battery Undervoltage	Check if the PV voltage is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
2211	PV Side	External Battery Overvoltage	Check if the PV voltage is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
2212	PV Side	External Battery Undervoltage	Check if the PV voltage is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
2213	PV Side	External Battery Charging Overcurrent	The system will automatically restart. If it fails after three attempts, restart the device. Contact customer support if normal operation still cannot be restored.
2214	PV Side	External Battery Discharging Overcurrent	The system will automatically restart. If it fails after three attempts, restart the device. Contact customer support if normal operation still cannot be restored.

2301	BAT Side	Battery Cell Low Voltage Protection	The battery can be restored once the minimum single-cell voltage reaches above the low-voltage recovery threshold.
2302	BAT Side	Battery Cell High Voltage Protection	The battery can be restored once the maximum single-cell voltage drops below the high-voltage recovery threshold.
2303	BAT Side	Battery Pack Low Temperature Protection	The battery can be restored once the minimum single-cell temperature rises above the low-temperature recovery threshold.
2304	BAT Side	Battery Pack High Temperature Protection	The battery can be restored once the maximum single-cell temperature drops below the high-temperature recovery threshold.
2305	BAT Side	Charging Low Temperature Protection	The battery can resume charging once the minimum single-cell temperature rises above the low-temperature charging recovery threshold.

2306	BAT Side	Charging High Temperature Protection	The battery can resume charging once the maximum single-cell temperature drops below the high-temperature charging recovery threshold.
2307	BAT Side	Discharging Low Temperature Protection	The battery can resume discharging once the minimum single-cell temperature rises above the low-temperature discharging recovery threshold.
2308	BAT Side	Discharging High Temperature Protection	The battery can resume discharging once the maximum single-cell temperature drops below the high-temperature discharging recovery threshold.
2309	BAT Side	Battery Pack Charging Overcurrent	It will automatically restore after 60 seconds.
2310	BAT Side	Battery Pack Discharging Overcurrent	It will automatically restore after 60 seconds.
2311	BAT Side	Battery Module Low Voltage Protection	The battery pack can be restored once the voltage reaches above the module's low-voltage recovery threshold.
2312	BAT Side	Battery Module High Voltage Protection	The battery pack can be restored once the voltage drops below the module's high-voltage recovery threshold.
2314	BAT Side	Shunt OverTemperature Protection	The shunt can be restored once the temperature drops below the over-temperature recovery threshold.
2315	BAT Side	Connector OverTemperature Protection	The connector can be restored once the temperature drops below the over-temperature recovery threshold.
2316	BAT Side	Excessive Temperature Difference Protection	The system can be restored once the temperature difference drops below the excessive temperature difference recovery threshold.
2317	BAT Side	Temperature Sensor Fault	Reset the BMS. If it still fails after three consecutive attempts, contact after-sales support.
2318	BAT Side	Contactor Sticking Fault	Reset the BMS. If it still fails after three consecutive attempts, contact after-sales support.
2319	BAT Side	Internal Network Communication Fault	Reset the BMS. If it still fails after three consecutive attempts, contact after-sales support.
2320	BAT Side	CAN Communication Fault	Reset the BMS. If it still fails after three consecutive attempts, contact after-sales support.
2321	BAT Side	Insulation Resistance Too Low	Reset the BMS. If it still fails after three consecutive attempts, contact after-sales support.

3101	Inverter Side	R-Phase Inverter Voltage Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3102	Inverter Side	S-Phase Inverter Voltage Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3104	Inverter Side	R-Phase Inverter Current Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3105	Inverter Side	S-Phase Inverter Current Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3107	Inverter Side	R-Phase Load Voltage Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3108	Inverter Side	S-Phase Load Voltage Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3110	Inverter Side	R-Phase Load Current Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3111	Inverter Side	S-Phase Load Current Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3125	Inverter Side	R-Phase Grid Current DC Component Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3126	Inverter Side	S-Phase Grid Current DC Component Sampling Error	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3201	Inverter Side	Primary Grid Overfrequency	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3202	Inverter Side	Secondary Grid Overfrequency	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3203	Inverter Side	Primary Grid Underfrequency	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3204	Inverter Side	Secondary Grid Underfrequency	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3205	Inverter Side	R-Phase Grid Overvoltage V1	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.

3206	Inverter Side	S-Phase Grid Overvoltage V1	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3208	Inverter Side	R-Phase Grid Overvoltage V2	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3209	Inverter Side	S-Phase Grid Overvoltage V2	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3211	Inverter Side	R-Phase Grid Undervoltage V1	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3212	Inverter Side	S-Phase Grid Undervoltage V1	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3214	Inverter Side	R-Phase Grid Undervoltage V2	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3215	Inverter Side	S-Phase Grid Undervoltage V2	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3224	Inverter Side	Phase Sequence Error	Check if the grid is abnormal. Reconnect to the grid. If it fails to operate normally after three consecutive attempts, contact customer support.
3226	Inverter Side	Grid Disconnection	Grid absence alarm. No action required.
3228	Inverter Side	R-Phase Inverter Instantaneous Overcurrent	The system will automatically reinvert three times. If it fails after three attempts, reboot the device. Contact customer support if normal operation still cannot be restored.
3229	Inverter Side	S-Phase Inverter Instantaneous Overcurrent	The system will automatically reinvert three times. If it fails after three attempts, reboot the device. Contact customer support if normal operation still cannot be restored.
3231	Inverter Side	R-Phase Inverter RMS Overcurrent	The system will automatically reinvert three times. If it fails after three attempts, reboot the device. Contact customer support if normal operation still cannot be restored.
3232	Inverter Side	S-Phase Inverter RMS Overcurrent	The system will automatically reinvert three times. If it fails after three attempts, reboot the device. Contact customer support if normal operation still cannot be restored.

3401	Inverter Side	R-Phase Inverter Overvoltage	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3402	Inverter Side	S-Phase Inverter Overvoltage	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3404	Inverter Side	R-Phase Inverter Undervoltage	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3405	Inverter Side	S-Phase Inverter Undervoltage	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3407	Inverter Side	Inverter Soft-Start Fault	Restarting the device will resolve the issue.
3408	Inverter Side	Inverter Short Circuit	Power off the device and check if the load positive and negative terminals are short-circuited.
3409	Inverter Side	Positive Bus Instantaneous Overvoltage	Restarting the device will resolve the issue.
3410	Inverter Side	Negative Bus Instantaneous Overvoltage	Restarting the device will resolve the issue.
3411	Inverter Side	Positive Bus RMS Overvoltage	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3412	Inverter Side	Negative Bus RMS Overvoltage	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3413	Inverter Side	Positive Bus Hardware Overvoltage	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3415	Inverter Side	Positive Bus RMS Undervoltage	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3418	Inverter Side	Bus Soft-Start Fault	Restart the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3420	Inverter Side	Inverter OverTemperature 1	Shut down the device, wait for 10 minutes, and then restart it.
3421	Inverter Side	Inverter OverTemperature 2	Shut down the device, wait for 10 minutes, and then restart it.
3422	Inverter Side	PV Communication Abnormality	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
3423	Inverter Side	Monitoring Communication Abnormality	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.

3430	Inverter Side	Over-Temperature Load Shedding	Grid absence alarm. No action required.
3601	Inverter Side	R-Phase Off-Grid Overload Protection Level 1	Disconnect the load, check if the load is oversized, and restart the device.
3602	Inverter Side	S-Phase Off-Grid Overload Protection Level 1	Disconnect the load, check if the load is oversized, and restart the device.
3604	Inverter Side	R-Phase Off-Grid Overload Protection Level 2	Disconnect the load, check if the load is oversized, and restart the device.
3605	Inverter Side	S-Phase Off-Grid Overload Protection Level 2	Disconnect the load, check if the load is oversized, and restart the device.
3607	Inverter Side	R-Phase Off-Grid Overload Protection Level 3	Disconnect the load, check if the load is oversized, and restart the device.
3608	Inverter Side	S-Phase Off-Grid Overload Protection Level 3	Disconnect the load, check if the load is oversized, and restart the device.
3616	Inverter Side	R-Phase Grid-Connected Overload Protection Level 3	Disconnect the load, check if the load is oversized, and restart the device.
3617	Inverter Side	S-Phase Grid-Connected Overload Protection Level 3	Disconnect the load, check if the load is oversized, and restart the device.

4101	Monitor Side	WiFi Module Failure	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
4102	Monitor Side	MQTT Connection Disconnected	Check if the WiFi network is normal. After connecting to a normal 2.4GHz WiFi network, power cycle the device to restore functionality.
4103	Monitor Side	WiFi Module Hardware Connection Failure	Power cycle the device. If it fails to operate normally after three consecutive attempts, contact customer support.
4104	Monitor Side	HTTP Upload Failure	Check if the WiFi network is normal. After connecting to a normal 2.4GHz WiFi network, power cycle the device to restore functionality.