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BSL NEW ENERGY TECHNOLOGY CO., LTD

User Manual

M-Power S60/125

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Identification Instructions

	Please read the endorsed documentation carefully
	Danger. Risk of electric shock!
	Hazardous Substance Labeling
	Transportation Safety Certification
	Flammability risk
	Keep the battery away from open flame or ignition sources.
	Recycling
	When the user maintains and repairs，disconnect the power and wait five minutes before working to prevent a stored charge
	This marking indicates that this product should not be disposed with other household wastes

Version History

Version	Date	Version update history	Approval
V1.0	2026/11/11	First edition	

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01 Safety Instructions

1.1 Safety symbol description

When installing, operating, and maintaining equipment, please read this manual first and follow all safety precautions indicated on the equipment and in the manual.To ensure that users can better use this product and protect personal and property safety, please read the symbol prompts used below carefully.

 **Danger:** Indicates a highly potential danger that, if not avoided, could result in death or serious injury.

 **Warning:** Indicates moderate potential danger if not avoided, which may result in death or serious injury to personnel.

 **Note:** Indicates a low potential danger, and failure to avoid it may result in moderate or mild injury to personnel.

 **Illustration:** Emphasizing and supplementing content may also provide tips for optimizing product usage.

1.2 General safety

 **Illustration:**

This equipment should be used in an environment that meets the design specifications, otherwise it may cause equipment failure, resulting in abnormal equipment functions or component damage, personal safety accidents, property damage, etc., which are not within the scope of equipment quality assurance. Local laws, regulations, and standards should be followed when installing, operating, and maintaining equipment. The safety precautions in the manual are only supplementary to local laws, regulations, and norms. When any of the following situations occur, our company shall not be held responsible.

1. The installation and usage environment exceeds the provisions of relevant international, national, and regional standards.
2. Do not operate under the usage conditions described in this manual.
3. Unauthorized disassembly, alteration of products, or modification of software code.
4. Not following the operating instructions and safety warnings in the product and documentation.
5. Equipment damage caused by abnormal natural environments (force majeure such as earthquakes, fires, storms, floods, mudslides, etc.).
6. Damage caused by the customer's failure to comply with transportation and installation requirements.
7. Damage caused by storage conditions not meeting product documentation requirements.
8. Due to customer negligence, incorrect operation, or intentional damage, the hardware or data of the device is damaged.

9. System damage caused by third-party or customer reasons, including relocation and installation of systems that do not comply with the requirements of this manual, as well as damage caused by adjustments, changes, or removal of identification marks that do not comply with the requirements of this manual.
10. Defects, malfunctions or damages caused by actions, events, negligence or accidents beyond the reasonable control of the seller, including power outages or electrical failures, theft, war, riots, internal strife, terrorism, intentional or malicious damage, etc.

 **Danger:**

The equipment has high voltage, and improper operation may result in electric shock or fire, leading to death, serious personal injury, or significant property damage. Please follow the operating sequence and safety precautions provided in this manual and other relevant documents, and operate in a standardized manner:
1. Please check if the pre-installed cables on the device are securely connected. Check if the equipment is damaged, such as holes, dents, or other signs of possible internal damage. Check that there is no displacement of the internal components of the equipment, and prohibit unauthorized changes to the structure, installation sequence, etc. of the equipment.
2. Do not use water to clean the electrical components inside the equipment. When liquid is found to have entered the interior of the equipment, please immediately press the emergency stop switch and notify the on-site management personnel.
3. Installation, wiring, maintenance, and replacement operations with electricity are prohibited. Before coming into contact with any conductor surface or terminal, the voltage at the contact point should be measured, and it should be confirmed that the protective grounding wire of the equipment or components that require maintenance is reliably grounded, and there is no risk of electric shock.
4. Do not approach the equipment except for personnel operating it. Do not power on the device until it has been installed or confirmed by a professional. At least two personnel must be present on site during the first power on or live operation of the main circuit.

 **Illustration:**

1. The user's operational behavior and tools during transportation, handling, installation, wiring, and maintenance must comply with the laws, regulations, and relevant standards of the country or region where they are located.
2. During installation, operation, and maintenance, it is necessary to first clean the accumulated water, ice, snow, or other debris on the top of the cabinet before opening the cabinet door to prevent debris from falling into the cabinet.
3. Reverse engineering, decompilation, disassembly, adaptation, implantation, or other derivative operations of device software are prohibited. It is not allowed to study the internal implementation of the device, obtain the source code of the device software, steal intellectual property, or disclose the results of any device software performance testing in any way.

1.3 Electrical safety

1.3.1 Wiring requirements

1. Please select cables that comply with local laws and regulations. Cables of the same type should be tied together, and cables of different types should be laid separately. It is forbidden to wrap or cross lay them with each other.
2. If the wiring is completed or briefly left during the wiring process, the cable port should be immediately sealed, the cabinet door should be closed, and small animals should be avoided from entering.
3. The cables used in energy storage systems must be securely connected, well insulated, and meet the required specifications. The position of cable conduit or wire hole must be protected to prevent the cable from being damaged by sharp edges, burrs, etc.
4. After the cable wiring is completed, it is necessary to use cable brackets and cable clamps for reliable fixation. The cables in the backfilled soil area should be tightly attached to the ground to prevent deformation or damage caused by stress during backfilling.
5. The use of cables in high-temperature environments may cause aging and damage to the insulation layer. The distance between the cable and the periphery of the heating device or heat source area should be at least 30mm.
6. To ensure construction safety, all cables should be laid and installed at temperatures above 0 ℃. When handling cables, especially in low-temperature environments, they should be handled with care.

1.3.2 Grounding requirements

1. Do not damage the grounding conductor. The grounding body of the equipment should be permanently connected to the protective grounding grid. Before operating the equipment, the electrical connections of the equipment should be checked to ensure that it is reliably grounded.
2. The grounding impedance of the equipment meets the requirements of the national standard GB 50054 and local electrical standards.
3. It is prohibited to operate the equipment without installing a grounding conductor. When installing equipment that requires grounding, protective grounding wires must be installed first; When dismantling equipment, the protective grounding wire must be removed last.

1.3.3 Maintenance requirements

1. Before connecting or removing cables, the protective switch of the corresponding circuit must be disconnected first.
2. Use a multimeter with the corresponding voltage level to check if the device is live and ensure that it has been completely powered off.
3. If there are live objects nearby, please use insulation boards or tapes to cover or wrap them.
4. After reliably connecting the circuit to be repaired to the grounding circuit using a grounding wire, carry out operation and maintenance.

Illustration:

1. Before connecting the cable, it is necessary to confirm that the cable label identification is correct before making the connection.
2. If the device has multiple inputs, all inputs should be disconnected and the device can only be operated after it is completely powered off.
3. After the maintenance is completed, dismantle the grounding wire between the maintenance circuit and the grounding circuit.

1.4 Mechanical safety

Note:

1. When transporting without wooden crates, the bottom fence must be removed. Take off and land with care to avoid impact or vibration.
2. During transportation, the center of gravity of the box should fall between the two forks on the forklift. Long distance handling, inversion, and tilting are prohibited.
3. When transporting equipment, it may be necessary to arrange auxiliary personnel to assist due to the large size of the equipment blocking the operator's line of sight.
4. To ensure the safety of drilling outside the equipment body, a suitable location should be selected before drilling to ensure that it will not cause short circuits or other impacts. During the drilling process, the equipment should be covered to prevent debris from falling into the interior of the equipment, and debris should be cleaned up promptly after drilling.
5. When handling equipment by hand, preparation should be made for bearing weight, and safety protective equipment such as protective gloves and anti smashing shoes should be worn.
6. Be careful when moving equipment during transportation to avoid impact or falling. Avoid scratching the surface of the equipment, damaging components or cables.

1.5 Battery safety

Illustration:

We are not responsible for any damage caused to the batteries provided by our company due to the following reasons:
1. Due to customer reasons, the battery was not charged and inspected in a timely manner, resulting in expired storage, capacity loss, or irreversible damage.
2. Mechanical damage, leakage, rupture, etc. caused by improper operation or failure to connect the battery as required.
3. Customers or third parties who are not aware of our company may change the battery usage scenario on their own. Including but not limited to: connecting additional loads to the battery by oneself, mixing with other brands of batteries, mixing with batteries of different rated capacities, etc.
4. Direct damage to the battery caused by the inability of on-site equipment operating environment or external power parameters to meet the environmental requirements for normal operation. Including the actual operating temperature of the battery being too high or too low, severe power grid conditions, frequent power outages, etc.

5. The customer has not set the battery operation management parameters correctly or maintained them improperly, resulting in frequent overdischarging of the battery, on-site expansion by the customer, or long-term inability to fully charge.
6. The customer did not perform proper maintenance on the battery according to the operating manual of the supporting equipment, including but not limited to: not regularly checking whether the battery terminal screws are tightened, etc.
7. The battery was stolen and lost.
8. Batteries that have exceeded their warranty period.

Danger:

1. Do not expose the battery to high temperature environments or heat generating devices such as sunlight, fire sources, transformers, heaters, etc. Overheating of batteries may cause fires and explosions.
2. Do not disassemble, modify or damage the battery (such as inserting foreign objects, immersing in water or other liquids, etc.) to avoid battery leakage, overheating, fire or explosion.
3. Thermal runaway of batteries can produce flammable gases, as well as harmful gases such as CO and HF. The accumulation of combustible gases generated after thermal runaway of batteries poses a risk of explosion and explosion, which may cause personal injury and property damage.
4. When installing and maintaining the battery, it is necessary to wrap the exposed cable terminals on the battery with insulating tape. At the same time, avoid foreign objects (such as conductive objects, screws, liquids, etc.) from entering the interior of the battery and causing a short circuit.

Warning:

1. Batteries must be stored in a separate warehouse and in their outer packaging, avoiding mixing with other materials, storing outdoors, and stacking batteries too high. The site must have fire-fighting facilities that meet the requirements, such as fire sand, fire extinguishers, etc.
2. Batteries should be avoided from impact. When handling batteries, they should be carried in the direction required by the battery, and inversion or tilting are prohibited.
3. Please use the battery within the temperature range specified in this manual. When the ambient temperature of the battery is below the lower limit of the operating temperature, charging is prohibited to avoid crystallization caused by low-temperature charging and internal short circuit of the battery.
4. Please dispose of used batteries in accordance with local laws and regulations, and do not dispose of batteries as household waste.
5. If the battery has been charged for more than 8 months, it needs to be recharged. If not recharged as required, it may affect the performance and service life of the battery.

Measures for handling battery abnormalities

Danger:

1. When electrolyte leakage or abnormal odor occurs, contact with the leaked liquid or gas should be avoided. Non professionals are not allowed to approach, please contact professionals immediately for assistance.
2. Electrolyte is corrosive and contact may cause skin irritation and chemical burns. If in contact with battery electrolyte, immediately clean the contact area with plenty of water and soap, and seek medical help immediately.
3. After the battery drops (with or without packaging), it is prohibited to continue using it. If there is no obvious deformation or damage to the appearance and there is no obvious odor, smoke, or fire, transfer the battery to an open and safe place for 1 hour before processing, and contact our service engineer, while ensuring safety.
4. When there is a noticeable odor, damage, smoking, or fire after the battery drops, personnel should be evacuated immediately and the alarm should be reported in a timely manner. Professional personnel use fire-fighting equipment to extinguish fires while ensuring safety.

1.6 Maintenance and replacement

Warning:

1. If the device malfunctions, please contact your dealer promptly for assistance.
2. Before carrying out maintenance work, please power off the equipment first, and then follow the instructions on the delayed discharge label to wait for the corresponding time to ensure that the equipment has been powered off before operating it.
3. During the maintenance process, please try to avoid unrelated personnel entering the maintenance site, and temporary warning signs or fences must be erected for isolation.
4. Unauthorized personnel are not allowed to open the cabinet door, otherwise there is a risk of electric shock, and the resulting malfunction is not covered by the warranty.
5. It is prohibited to open the cabinet door in weather conditions such as rain, snow, lightning, dust, and heavy fog.
6. Before removing the components from the cabinet, please confirm that other components on the cabinet are not loose.
7. Operation and maintenance personnel as well as professional technicians should receive sufficient training on safe use and equipment maintenance, and should operate with sufficient preventive measures and personal protective equipment.
8. During equipment maintenance, insulation materials should be used to cover nearby live parts.
9. Before the fan is powered off or stopped rotating, it is forbidden for any object to come into contact with the running fan (such as fingers, components, bolts, etc.).
10. The equipment can only be powered on again after the fault has been resolved, otherwise it may cause the fault to expand or damage the equipment.
11. When conducting live inspection of the system, Note should be paid to the danger warning signs on the equipment to avoid standing at the cabinet door.
12. After the replacement of power components or wiring changes in the energy storage system, manual wiring inspection is required to avoid abnormal system operation.

13. When replacing the battery, please replace it with the same type of battery module.
14. After the maintenance operation is completed, it should be checked immediately to ensure that no tools or other components are missing in the equipment.
15. After completing maintenance and replacement operations, the cabinet door should be locked in a timely manner and the key should be properly kept.

02 Product Introduction

2.1 Overview of Energy Storage System

The M-Power Series S60/125 model typically consists of 6 battery packs, 1 high-voltage control box, 1 60kW hybrid inverter. The unit is equipped with a small integrated display and control screen (local EMS) for unified management of the entire S60/125 mobile energy storage system. This series of products features scalability, programmability, and easy transport. It supports charging its own batteries via charging piles, grid connection, and PV input to ensure reliable power supply to loads.

2.2 Product Description

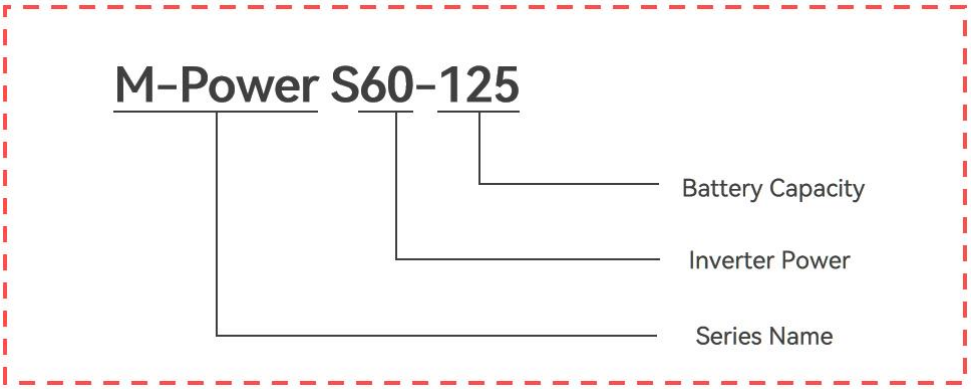


Figure 2.2

2.3 Product Application

The M-Power series produces zero emissions during operation and provides stable, reliable power supply for a wide range of application scenarios. This series is suitable for emergency backup, on-site operations, and mobile electric vehicle charging, delivering a clean, quiet, and intelligent energy supply to users.

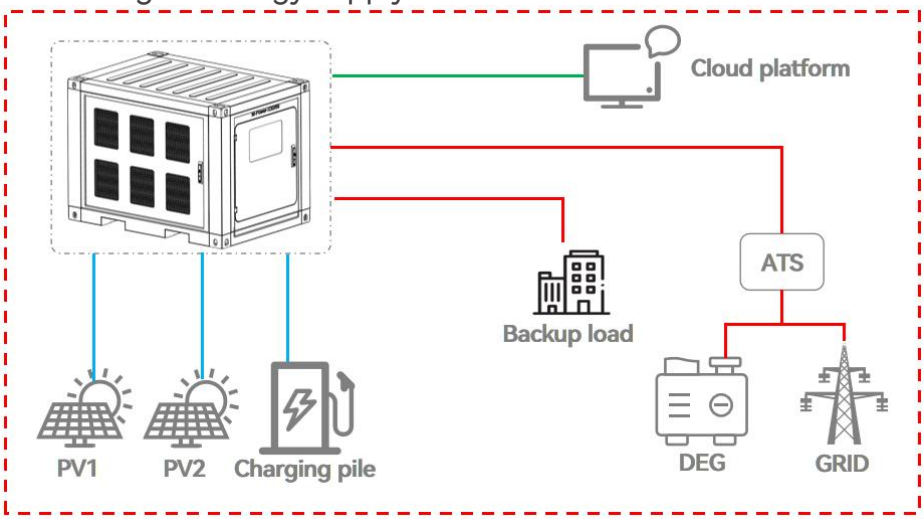


Figure 2.3-1

Illustration:

Since the S60/125 has only one AC input port, the utility grid and the diesel generator cannot be connected to this port at the same time, and only one of them is allowed to operate at a time. If the customer site is equipped with both a grid connection and a diesel generator and the intention is to make use of both — allowing the diesel generator to charge the energy storage system when the grid is down without manually switching the connection — it is recommended to install an ATS (Automatic Transfer Switch) before the AC input port. The ATS automatically switches between the grid and diesel generator inputs and then feeds into the S60/125 AC input terminal.

Solar-Storage Mode (No Charger Module):

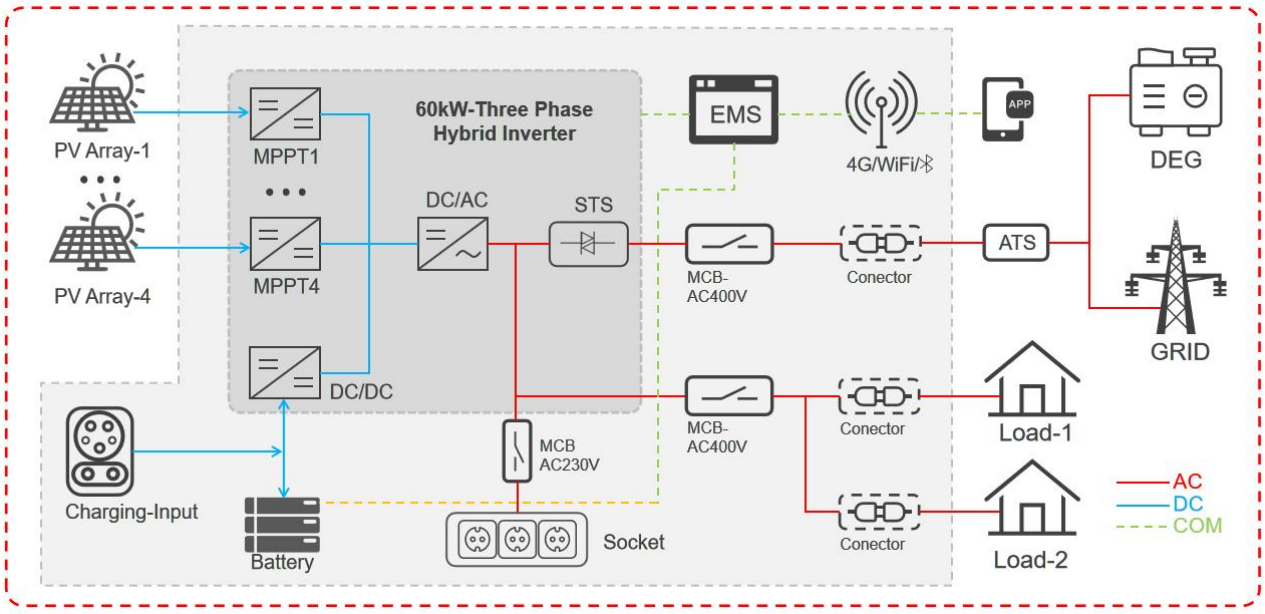


Figure 2.3-2

Product convenience

After the product is unpacked and fully charged, it can be easily transported using a transportation tool for quick movement. In areas with limited power supply, it can be used for emergency power needs, and it can also be used for quick power supply through the charging gun.

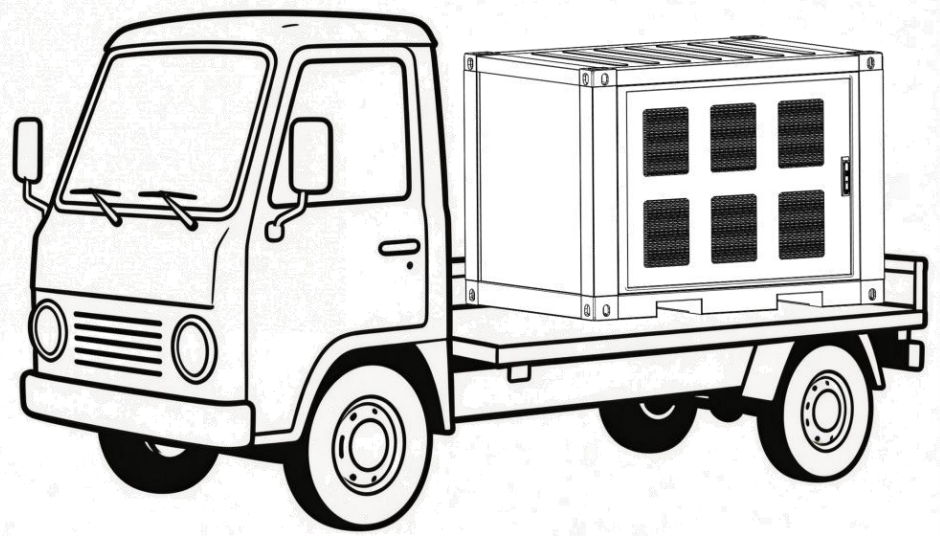


Figure 2.3-3

2.4 Product Appearance

S60-125

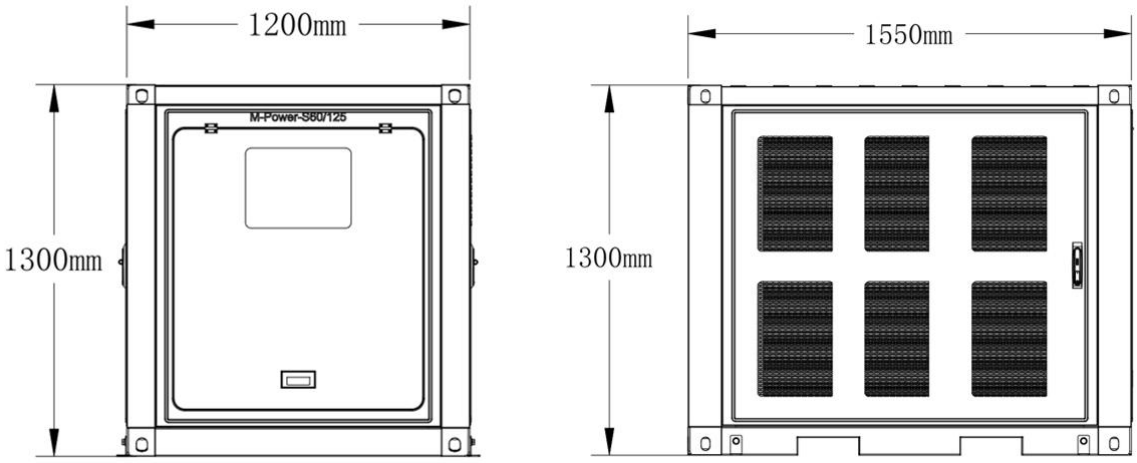


Figure 2.4

2.5 Product Specifications

M-Power series Parameter

Model	S60/125
Battery Parameters	
Cell Chemistry	Lithium Iron phosphate（LiFePO4）
Cell Capacity	3.2V/205Ah
Configuration	1P32S*6S(1P192S)
Rated Energy	125.9kWh
Rated Charge/Dlscharge Power	0.5P(25±2° C)
Max. Charge/Discharge Current	200A(25±2° C)
Rated Voltage	614.4V
Operating Voltage Range	537.6V~672.0V
PV Parameters（Optional）	
Max.Input Power	108kW
Start-up Voltage	180V
Operating Voltage Range	150V~950V
MPPT Voltage Range	40A*4
Max. PV Current	60A*4
MPPT Route	4(2+2+2+2)
PCS Parameters	
Rated Powver	60kW
Max. DC Current	160A
DC Operating Voltage Range	DC150-950A
Rated AC Voltage	AC380/400V,3W+PE/3W+N+PE

Rated AC Current	86.6A
Rated AC Frequency	50/60Hz
Power Factor	0.8leading-0.8lagging
THDI	<3%
Overload Capacity	110%-continuous;140%-10s
Exteranl Interface	
125A Three-Phase Quick Connector	3
16A Single-Phase Outlet	2
125A DC Charging Port	1
DC Output（Optional）	20kW Charge*1
General parameters	
Operating Humidity	10-90% RH(non-condensing)
Operating Temperature	-20° C~55° C(derating above 2000m)
Storage Temperature	0° C~35° C
Altitude	3000m(derating above 2000m)
Cooling Method	Intelligent air cooling
Fire Suppression	Aerosol fire extinguishing system(Optional)
Communication	RS485 / CAN / Ethernet / Wi-Fi/4G/ DRY
Isolation Method	Non-isolated
Protection Rating	IP55
Dimension(W*D*H)	1550 x 1200 x 1300 (±5 mm)
Weight	1500kg ±3%

Table2.5

Note:

The actual parameters have been set according to the customer's requirements before the product was manufactured.

2.6 Component Introduction

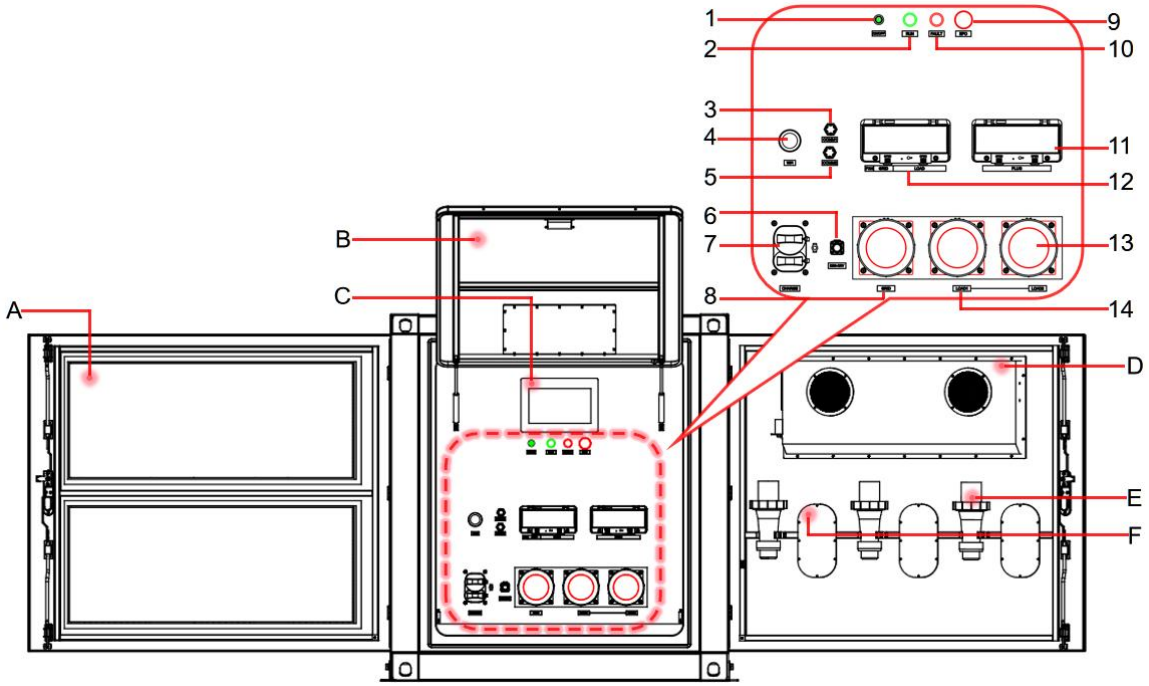


Figure 2.6-1

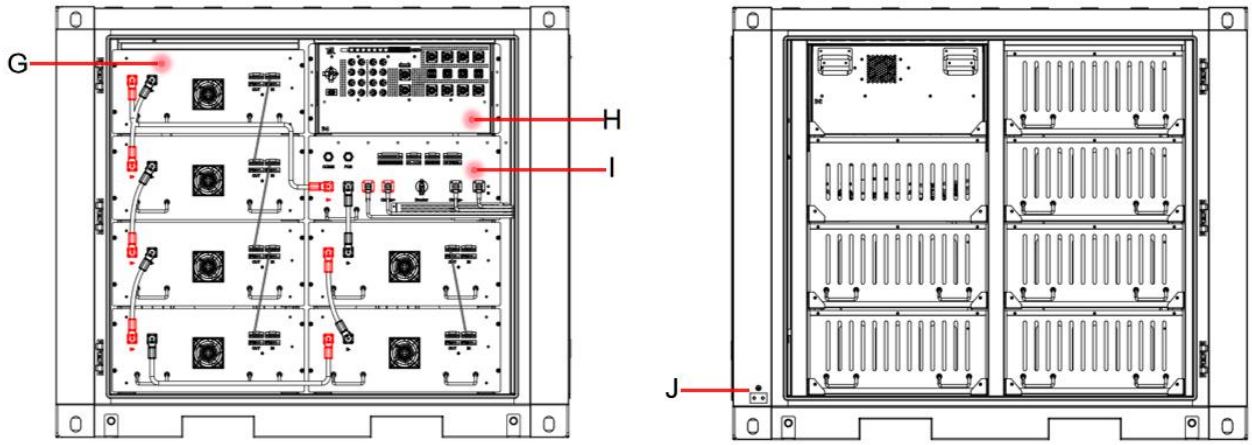


Figure 2.6-2

NO.	Model name	Descriptions
1	HMI Swich	HMI power switch
2	RUN	Equipment operation indicator light
3	Commucation interface-1	Parallel port Input
4	WiFi	System WiFi module
5	Commucation interface-2	Parallel port Output
6	DEG-DRY	Diesel generator dry contact
7	DC Charging Station	Battery charging interface, which can be charged using a charging gun.
8	GRID interface	Used for connecting the equipment to the grid side
9	EPO	Emergency stop button for equipment

10	FAULT	Equipment alarm indicator light
11	Plug	220V plug
12	Auxiliary power switch	Include:FAN,GRID,LOAD
13	LOAD interface-1	Used for connecting the equipment to the load side
14	LOAD interface-2	Used for connecting the equipment to the load side

Table2.6-1

NO.	Model name	Descriptions
A	Dust-proof screen cover	-
B	Main panel cabinet door	The main panel cabinet door can be opened by pulling it upwards.
C	HMI	Used for displaying battery parameters and related parameters of forklift charging
D	Cooling fan	24V Fan
E	Charge gun	Used for battery charging/discharging connection interface
F	Wrapping post	-
G	Battery Pack	20kWh Battery Pack
H	Hybrid inverter	60kW Hybrid inverter
I	High Voltage Box	-
J	PE	Equipment grounding interface

Table2.6-2

2.7 Configuration List

M-Power Series Configuration List

Name	Model	Unit	Qty.	Remarks
Battery system	205Ah，125.9kWh	Set	1	With control-box
Hybrid energy storage inverter	60kW 400V	Set	1	Modularization
Auxiliary system	Access control, power distribution, smoke and heat detectors, cables, etc.	Set	1	Matching
EMS	G720-G	Set	1	Matching

Table 2.7

Note:

The actual configuration will be based on the supply arrangement.

03 Transportation and installation

3.1 Packaging and Storage

3.1.1 Product Packaging

To ensure that the product is well protected during transportation, a specific wooden box is used for packaging. The equipment packaging includes the following basic parameters (and may include others), which need to be carefully verified according to the project requirements:

Parameter	Illustration
Model	Product model
Size	Size after product packaging
Weight	Total weight after product packaging
Identification	Face up, handle with care, center of gravity position, etc.

Table 3.1.1

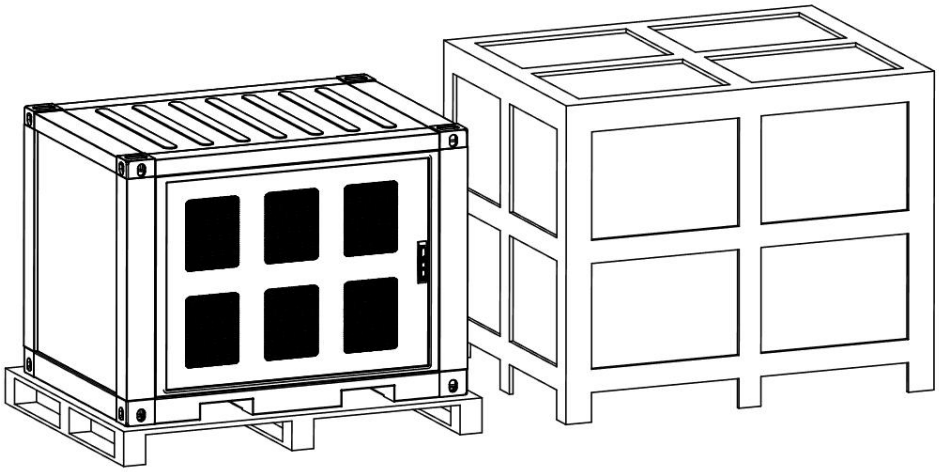


Figure 3.1.1-Packaging illustration

Note:

The actual configuration will be based on the supply arrangement.

3.1.2 Product Storage

If the product is not to be transported or installed immediately, it must be stored indoors. The storage location must meet the following conditions:

Parameter	Requirement
Storage temperature (excluding the battery)	-25℃~+60℃
Battery Storage temperature	20℃ ~ 30℃
Storage relative humidity	< 90% (Non-condensation)
Altitude	< 3000m

Table 3.1.2

When the battery is in low power storage mode, it is necessary to recharge according to the maximum time interval allowed by the battery's SOC at complete discharge. If no recharge is performed beyond this maximum time interval, the battery may be damaged due to over-discharge.

The SOC value before power-off for storage operation	The longest interval for recharging power
SOC=50%	8 months
30%≦SOC<50%	4 months
5%≦SOC<30%	20 days
SOC<5%	48h

Table 3.1.3

Note: The operation of replenishing electricity must be carried out by professionals who have received skill training, and insulated gloves and specialized insulated tools must be worn during the operation.

During the process of replenishing electricity, someone must be present on site to observe and promptly handle any abnormalities.

During the process of recharging, if the battery experiences abnormalities such as swelling or smoking, it should be immediately stopped from charging and scrapped.

3.2 Installation Environment

The installation layout of energy storage systems must meet the fire distance or firewall requirements specified by local standards, including but not limited to the *"GB 51048-2014 Design Code for Electrochemical Energy Storage Power Stations",NFPA 855 Standard for theInstallation of Stationary Energy Storage Systems*. The energy storage system is only suitable for outdoor scenarios and requires outdoor layout. It does not support indoor layout. The general requirements for site selection are as follows:

1. The installation location should be above the historical highest water level in the area. The distance from the airport, landfill, riverbank or dam should be ≥ 2km.

2. Choose a place with good ventilation. When the device is running, do not cover the ventilation openings and cooling system to prevent high temperature fires. Adequate installation space to ensure that surrounding equipment is not affected by the heat generated by the product; Ensure sufficient external wiring space in the installation location. Having convenient transportation conditions and reliable fire suppression system equipment.

3. The installation location should be away from fire sources, and flammable and explosive materials should not be placed around the equipment. If the equipment is installed in a place with lush vegetation, in addition to routine weeding, the ground below the equipment needs to be hardened to prevent overgrown weeds.

4. Do not install energy storage systems outdoors in salt affected areas to prevent equipment from corroding and causing fires. Salt damaged areas refer to areas within 2km of the coast or affected by sea winds.

5. The energy storage system must be equipped with protective measures such as fences and walls, and safety warning signs must be erected for isolation to prevent unauthorized

personnel from entering during equipment operation, which may cause personal injury or property damage.
6. The equipment should be installed in an area far away from liquids and should not be installed below water pipes, air outlets, or other locations that are prone to condensation; It should not be installed below air conditionin3g vents, ventilation openings, computer room outlet windows, and other locations that are prone to water leakage, to prevent liquids from entering the interior and causing equipment short circuits.

Illustration

When the safety distance of the site selection cannot meet the requirements of relevant national standards, it is recommended to reselect the site. Site selection should avoid scenarios that are not recommended by industry standards and regulations, including but not limited to the following locations, regions, and places:
1. Strong vibration, strong noise sources, and strong electromagnetic field interference areas.
2. Places that generate or have dust, oil fumes, harmful gases, corrosive gases, etc.
3. Places where corrosive, flammable, and explosive materials are produced or stored. Within the hazardous range of blasting.
4. Places with existing underground facilities. Densely populated areas, high-rise buildings, and underground structures.
5. There are unfavorable geological conditions such as rubber soil and weak soil layers, which are prone to water accumulation and sinking on the ground.
6. Within the boundary of the mining subsidence (displacement) zone. The area that may be submerged after a dam or embankment collapses.
7. Earthquake faults and seismic areas with a fortification intensity higher than nine degrees. Areas with direct hazards such as mudslides, landslides, quicksand, and caves.
8. Important water source hygiene protection zone.
9. Historical relics and historic sites protection area.
If there is no more suitable location, it is recommended to install a firewall with a fire resistance of no less than 3 hours for security protection, while considering the requirements for equipment transportation, installation, maintenance, and other space. Suggest referring to *T/CEC 373-2020*: The length and height of the firewall should exceed the outer contour of the energy storage cabinet by 1m each.

3.3 Preparations Before Installation

1. Before installing the product, it is necessary to check whether the product is intact and undamaged. If any signs of damage are found, please keep evidence and contact the equipment manufacturer.
2. If the product is confirmed to be normal, please check according to the delivery list to see if the accessories are complete.
3. Users need to prepare relevant installation tools before installation.

NO.	Inspection Item	Handling Measure
1	Whether the fasteners are tightened	If loose, retighten the screws
2	Whether the space environment meets the installation dimension requirements	If the space is insufficient, it is recommended to redesign before installation
3	Whether the air duct is unobstructed and free of foreign objects	If there are foreign objects, please clean them; if it is not unobstructed, eliminate the cause

Table 3.3-1 Pre-installation checklist

NO.	Name	QTY	Remarks
1	Industrial, commercial and Portable energy storage battery	1SET	Including Productdoor key
2	User Manual	1BOOK	
3	Certificate of Conformity	1PCS	
4	Delivery Inspection Report	1PCS	
5	Packing List	1PCS	

Table 3.3-2 Delivery List

Assistance Tool Table

NO.	Tool Name	Legend
1	Insulating gloves	
2	Safety goggles	
3	Insulating shoes	
4	Work clothes	
5	Safety helmet	
6	Screwdriver	
7	Wire stripper	
8	Hydraulic clamp	
9	Heat gun	

10	Multimeter	
11	Torque wrench	
12	Marker pen	

Table 3.3-3

Before making electrical connections, ensure that the battery shows no external damage, and use professional tools to open the protective cover of the battery pack to prepare for subsequent wiring. After completing the connections, replace the protective cover and secure it with M5 screws.

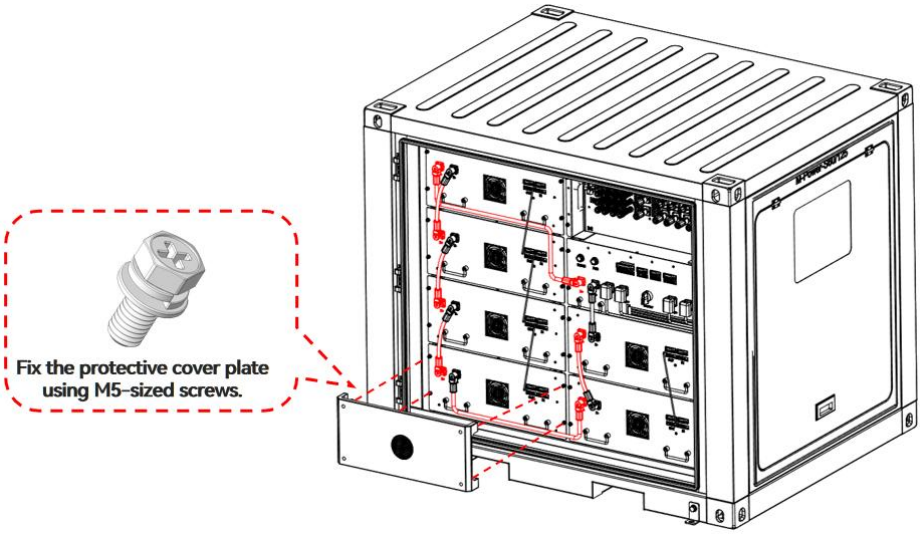


Figure 3.3

3.4 Grounding Connection

After the product is in place, the internal transportation fixing brackets should be removed, and an insulation check must be conducted before the electrical wiring.All external connections should be disconnected, the product should be grounded for discharge, and then an insulation resistance tester should be used to measure the insulation resistance between each independent circuit and the exposed conductive parts, as well as between each independent circuit. For systems with a voltage level of 1kV or below, the insulation resistance should be no less than 1MΩ. At the same time, all circuit breakers and disconnectors should be checked to ensure they are in the open position.

Note:

1. Protective ground wire, recommended specification: Type: outdoor single core copper wire, conductor cross section: 6mm2;
2.Please ensure that the cable is not loose after being pressed in place;
3.Before making the electrical connection, please perform the grounding connection as the first step, and the protective ground line should be removed as the last step when the battery system is removed.

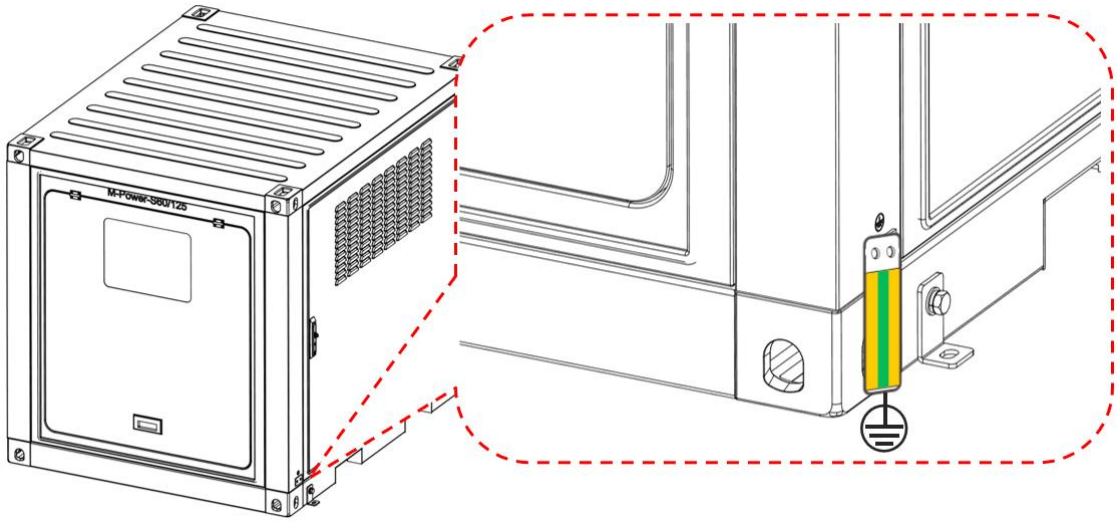


Figure 3.4

3.5 Power line connection

Danger:

1. During the connection process, pay attention to the positive and negative terminals. It is strictly prohibited to short-circuit the positive and negative terminals of the battery pack.
2. Smoking or using open flames near the battery is strictly prohibited.
3. On-site, there must be fire-fighting facilities that meet the requirements, such as fire sand and fire extinguishers.
4. Please use special protective equipment and special insulating tools to avoid electric shock injuries or short-circuit faults.

Note:

When connecting and securing the battery pack, make sure that the cables are undamaged.

Step 1:Connect the positive and negative terminals of the battery pack using the included quick-connect cable provided with the product.

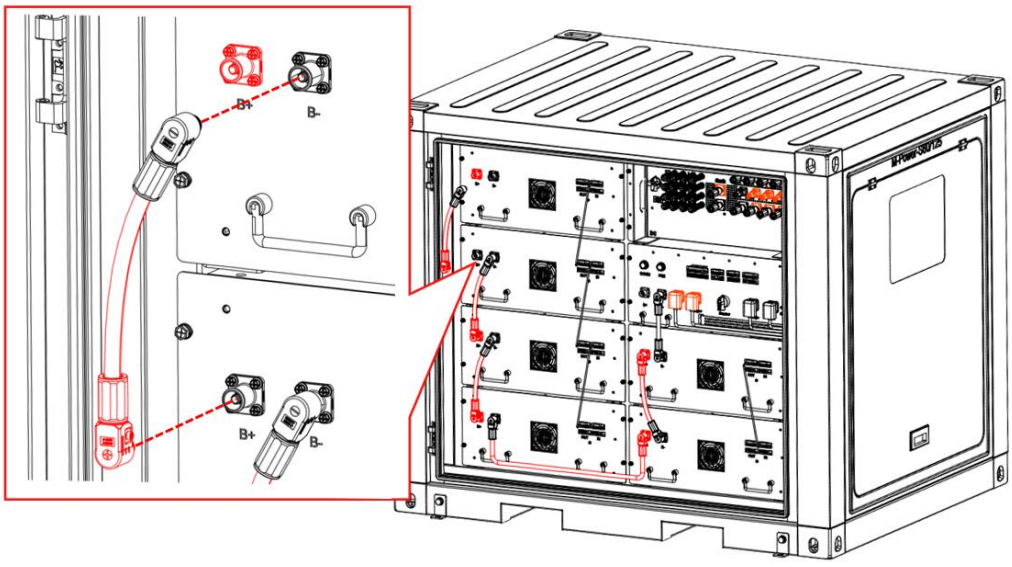


Figure 3.5-1

Step 2:After all the power cables between the battery packs have been connected, the positive and negative terminals of the battery packs ("B+" and "B-") will be connected to the positive and negative terminals of the high-voltage box ("B+" and "B-").

Illustration:

Unless the project has special requirements, the connections between the battery packs inside the cabinet will have been completed before shipment. The internal wiring reference is as follows.

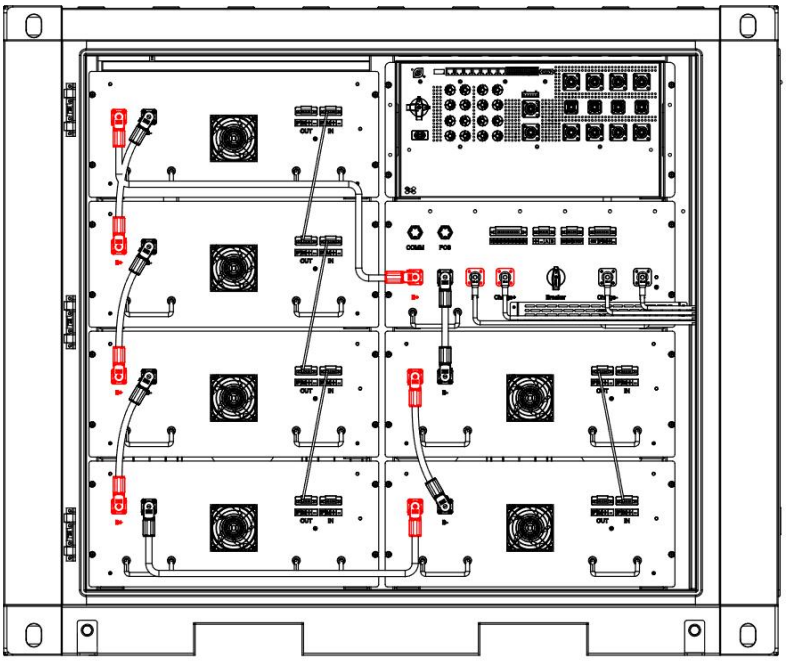


Figure 3.5-2

Step 3: Connect the PCS to the high-voltage control box

Note:

The PCS module has been pre-installed in the electrical compartment of the cabinet, and the DC side cables of the PCS have been connected before leaving the factory. The other end of these cables is connected to the high-voltage control box inside the battery compartment.

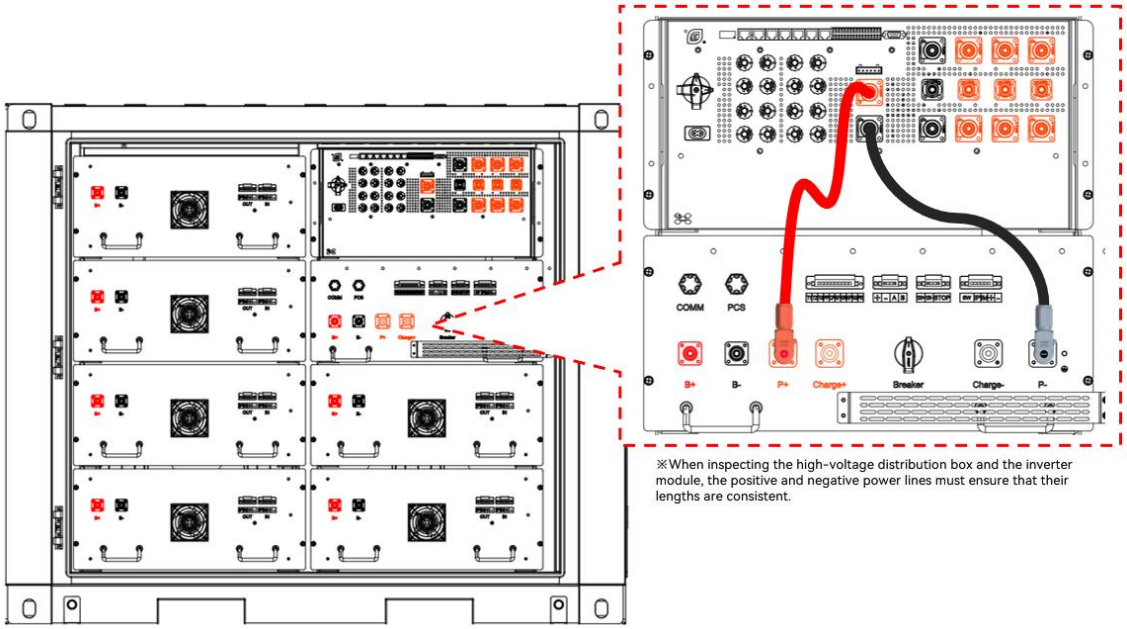


Figure 3.5-3

Note:

In the event of power failure, remove the protective covers on the "P+" and "P−" ports on the control box, connect the cables, and secure them with M8 bolts.

Illustration:

Unless there are special requirements for the project, the connections on the control box inside the cabinet have already been completed before the product was manufactured.The internal wiring reference is as follows.

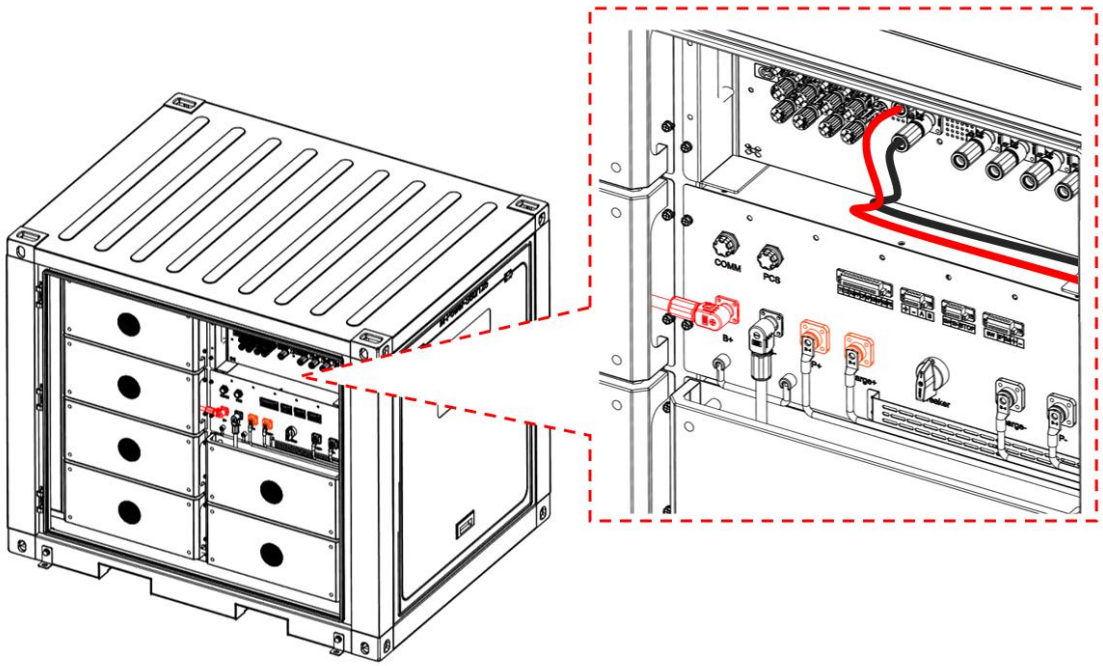


Figure 3.5-4

3.6 Check after Equipment Wiring

After the installation is completed, in order to prevent damage to the equipment and property loss, it is necessary to conduct another inspection and measurement of the following items.

NO.	Inspection item
1	Before measurement, disconnect the battery side and electrical side switches to ensure that the energy storage device is not electrified.
2	The positive and negative connections between the battery and the energy storage device are correct, the AC phase sequence is accurate and has been tightened. Measure the resistance between the three phases. It should be in the mega-ohm range. If it is in the kilo-ohm range or smaller, the wiring needs to be checked.
3	The external control cables, grounding wires and communication lines have been securely fastened.
4	The resistance of the grounding wire is less than 4Ω, and the cable is in good condition with no damage or cracks.
5	Clean up the installation area. Ensure that no tools or foreign objects are left behind within the installation area.
6	Fireproof mud is used to seal the gaps in the cables to prevent small animals from entering.

Table 3.6

04 Startup and Debugging

4.1 Pre-check before Power On

1. Check whether the circuit breakers inside the energy storage converter cabinet are in the disconnected state.
2. Verify that all communication and power cable terminals are securely connected.
3. Inspect whether the communication and power wiring harnesses as well as the power cables in the energy storage converter cabinet are correctly connected.
4. Check all communication connections on the modules and the integrated display-control unit inside the energy storage converter cabinet for any issues.

4.2 Pre-check before Startup

Before starting the product, please ensure that the installation has been completed according to specifications and a comprehensive inspection has been carried out. Only when all requirements are met should the product be powered on and put into operation.

1) Appearance Inspection

a. The equipment exterior shall be intact, free from structural damage, corrosion, or paint peeling. If paint damage is found, promptly perform touch-up painting.

b. All equipment labels and markings shall be clear and complete. Any that are damaged or illegible must be replaced immediately.

2) Grounding Inspection

A dedicated grounding point shall be present on the cabinet, and the grounding connection must be secure and reliable. All internal grounding conductors must be reliably connected to the grounding copper busbar.

3) Cable Inspection

a. Cable protective sleeves/jackets shall be intact with no visible damage.

b. Terminal crimping must comply with standards, and all connections shall be firm without looseness.

c. Labels on both ends of each cable shall be clear and correct. Cable routing shall follow the principle of separating power and signal cables. Adequate slack must be left at bends; cables must not be pulled taut.

d. Cable mounting bolts shall be tightened, and cables must not move when gently pulled. All cable entry holes must be properly sealed.

4) Busbar Inspection

Busbars shall show no cracks or significant deformation. Bolts at connection points must be tightened. Phase sequence markings shall be clear and correctly aligned. No foreign objects or debris shall be present on the busbars.

Note:

1. Insulated gloves are required for operation.
2.For transportation safety, we disconnect one section of the battery module's DC cable, leaving the entire cluster of batteries in an open circuit state. Before powering on, we need

to connect the DC cable and insert it into the connector. If you hear a "card" sound, it means it has been inserted into place.

4.3 Startup Procedure

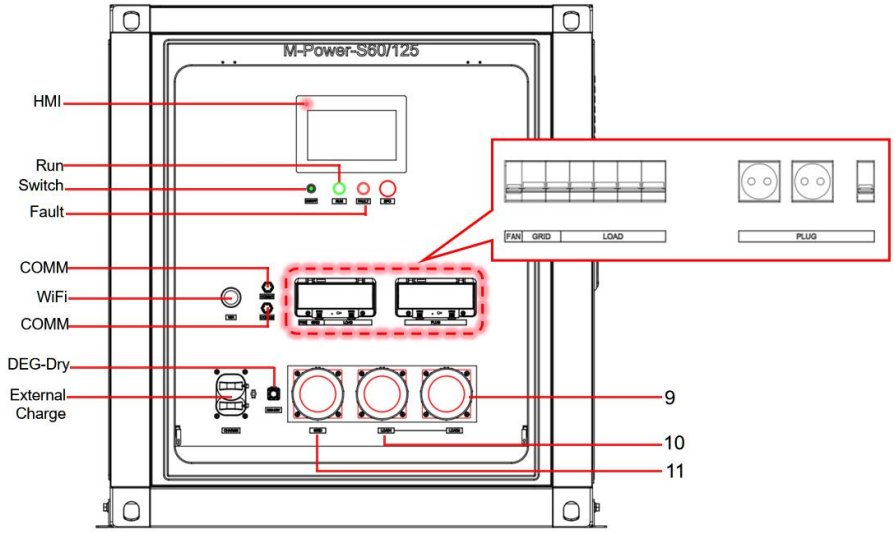


Figure 4.3-1 Switch Position Diagram

After completing the pre-startup inspection, unlock the front-side equipment door and the battery-side equipment door, connect the circuit cables, and then the system can be started. The switches and their designations are shown in Figure 4.3-2 The operation procedure is as follows:

Step 1: Close the circuit breaker (Breaker) in the battery-side high-voltage box.

Step 2: Press the HMI Switch and wait for approximately 2 minutes to allow the system to start.

Step 3: Close the auxiliary switches according to the required energy storage application mode.

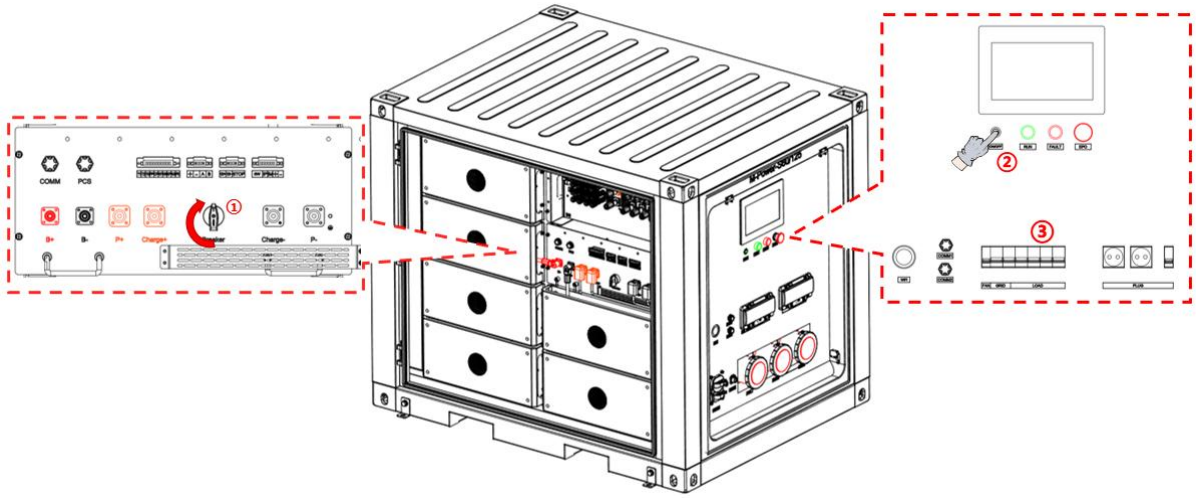


Figure 4.3-2 StartProcedure

4.4 Shutdown Procedure:

Step 1: Turn off the auxiliary switch

Step 2: Turn off the HMI Switch

Step 3: Turn off the Circuit Breaker to complete the system power-off

After shutting down the entire system, wait for 5 minutes and use professional tools to measure the equipment voltage to ensure a complete power-off of the system.

05 Maintenance and warranty

Related explanation:

Serial Number	Term	Explanation
1	Failure	When a device malfunctions, the system stops operating.
2	Alarm	When a device's output power decreases or some functions fail due to external factors, but the system's charging and discharging functions are not affected.
3	Normal operation	Refers to a system that is working every day.
4	Interval operation	Refers to a system with an irregular monthly operation frequency and cannot guarantee daily operation.
5	Lost in use	Refers to a battery system that has not been started for more than 3 consecutive months.

Table 5

5.1 Routine maintenance

Alarm fault codes and fault handling measures

Maintenance item	Maintenance measure	Maintenance period
System cleaning	Check whether there are any foreign objects or dust in the air intake, air outlet and dust filter.	Once every 3 months
Electrical connection	Check whether the electrical connections are loose, whether the appearance of the cables is damaged, and whether there is any copper leakage.	Once every 3 months
Switch check	Open and close the DC switch, battery switch, AC switch and load switch continuously at least 2 times to ensure that the functions are normal.	Once every 3 months

Table 5.1

Note:

Unauthorized repairs may result in the invalidation of the warranty. If you have any repair needs, please contact our official after-sales service department. Otherwise, our company will not bear any warranty liability or joint compensation responsibility for any losses caused thereby.

5.2 Operating Steps

Step 1: Power off and shut down the system

Step 2: Use the special tools and keys to open the system cabinet door.

Step 3: Before operation, ensure that the MPower S30/69 is completely de-energized and hang a "Do Not Close" warning tag.

Note : Use a multimeter to check if the equipment is still energized inside. Only proceed with the next step when the equipment is no longer powered.



Figure 5.2-1

Step 4: Open the cabinet door, release the snap fastener of the dust-proof cotton frame, remove the dust-proof cotton, and place the aluminum frame and the dust-proof cotton flat in the safe storage area.



Figure 5.2-2

Step 5: Use a high-pressure water gun to rinse the dust-proof cotton. If it gets too dirty, you can clean it with a cleaning agent.



Figure 5.2-3

Step 6: After the dust-proof cotton has been cleaned, place it in the aluminum dust-proof cotton frame, let it dry, and then fix it with the clips.

Step 7: Restart the machine

5.3 Warranty Services

5.3.1 Warranty Period

Provided that the product is used correctly, the warranty period shall be in accordance with the agreement stipulated in the business contract.

5.3.2 Warranty Scope

During the warranty period, the company will provide free repair or replacement for any malfunction caused by defects in the product itself. The customer shall allow a reasonable response time for the company to carry out repairs. Replaced products shall be disposed of by the company. The customer must present valid proof of purchase and ensure that the product trademark is clearly visible; otherwise, the company reserves the right to decline warranty coverage.

5.3.3 Disclaimer Statement

Under the following circumstances, the company shall have the right to decline warranty coverage but may still provide paid repair services.

1. The product has exceeded the warranty period.
2. Valid proof of purchase cannot be provided.
3. Damage caused during transportation or handling.
4. Damage resulting from improper installation, modification, or repairs performed by unauthorized personnel.
5. Damage caused by operation under abnormal conditions or in unsuitable environments.
6. Malfunction or damage resulting from the use of non-Naton components or software.
7. Failures caused by force majeure, such as fire, earthquake, or flood.

Appendix

Emergency Response Procedures for Energy Storage Systems

Battery Drop or Severe Impact

If obvious odor, damage, smoking, or fire is observed:

Immediately evacuate all personnel, call emergency services, and contact professional emergency responders.

Only trained personnel should attempt to extinguish the fire using appropriate firefighting equipment, while ensuring their own safety.

If no obvious deformation, damage, odor, smoking, or fire is observed:

Warehouse Scenario: Evacuate personnel. Using specialized mechanical tools, trained personnel must move the battery to an open, safe outdoor area. Contact a service engineer immediately. Monitor the battery for at least one hour, ensuring its temperature stabilizes within a range of ±10℃ of ambient temperature, before proceeding with further handling.

Energy Storage System Site: Evacuate personnel and close the cabinet doors. Trained personnel must move the battery to a safe area. Contact a service engineer. The battery must be left untouched for at least one hour before any further assessment or handling is performed.

Flood Occurrence

Immediately power down the energy storage system, but **only** if it is absolutely safe to do so.

If any part of the battery has been submerged, **DO NOT TOUCH** the battery to avoid the risk of electric shock.

DO NOT continue to use batteries that have been submerged in water. Contact the designated recycling company for professional disposal in accordance with hazardous waste treatment procedures.

In Case of Fire

Warning:

Power down the system if it is safe to do so.

Use a carbon dioxide (CO_2), FM-200, or ABC dry chemical fire extinguisher to fight the fire.

Firefighters must avoid contact with high-voltage components to prevent the risk of electric shock.

High battery temperatures may cause deformation, electrolyte leakage, and the release of toxic gases. Wear appropriate respiratory protection, keep a safe distance from the scene, and avoid skin exposure to prevent irritation and chemical burns.

When the audible and visual alarm is activated

DO NOT approach or open the equipment doors. Immediately evacuate the area.

If it is safe to do so, cut off the system power remotely.

In case of vent activation

On-site personnel protection:It is strictly forbidden to operate directly facing or in close proximity to the vent outlet to avoid injury from expelled high-temperature gases or materials.
Post-incident maintenance:A service engineer must be contacted to conduct a comprehensive inspection and professional assessment of the system.

In the Event of Fire Suppressant Discharge or Fire

Instructions for Operations and Maintenance Personnel:

Evacuate Immediately and Alert: Evacuate the area immediately and call the emergency services. Provide information such as the battery type, system capacity, and location layout.
Do Not Re-enter and Isolate the Area: Do not re-enter the fire zone or open the energy storage system cabinet doors. Isolate the scene and maintain a watch.
Remotely Power Down Safely: Power down the system remotely, but **only** if you can do so safely.
Provide Product Information: Provide the firefighters with detailed product information and the user manual.
Leave Handling to Professionals After the Fire: After the fire is extinguished, only trained professionals may handle the system. **DO NOT OPEN** the cabinet doors under any circumstances.
Contact Service Engineer: Contact a service engineer for a comprehensive system assessment and subsequent maintenance.

Instructions for Firefighters:

Refer to Provided Information: Refer to the product information provided by the operations personnel for context.
Do Not Open Doors Until Safe: Do not open the energy storage system cabinet doors before ensuring it is safe to do so.
Control and Contain the Fire: Employ control measures to extinguish the fire and prevent it from spreading to adjacent energy storage cabinets.

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Best Solution Cithium Battery

User Manual

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