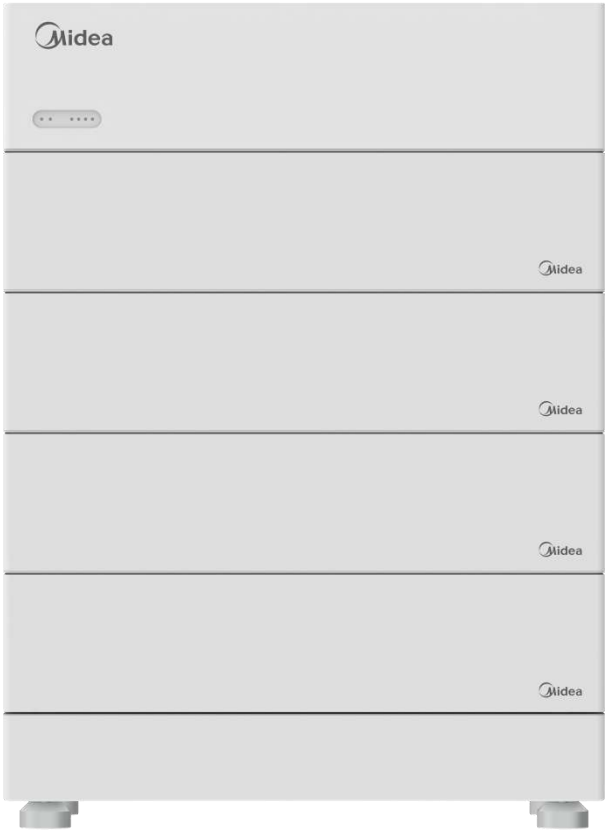
High Voltage Battery System
ME B10H - ME B25H

User Manual



Thank you for purchasing our product.
Before using the unit, please read this manual carefully and keep it for future reference.

About This Document

This document describes the installation, electrical connection, operation, commission, maintenance and troubleshooting of Midea High Voltage Battery System. Before installing and operating Midea High Voltage Battery System, ensure that you are familiar with product features, functions, and safety precautions provided in this document.

Symbol	Description
 WARNING	Indicates a potentially hazardous situation, if not avoided, could result in serious injury or death.

Contents

1 Product Overview

1.1 Intended Use

The entire Midea High Voltage Battery System includes a PDU ME-HJXH (High Voltage Controller) and multiple Battery modules ME-B5H (Battery Pack).

Each battery pack ME-B5H consists of 52Ah cells which form 102.4V voltage battery pack via 1 parallel and 32 serial connection (1P32S). Two to five ME-B5H can be connected in serial to extend the capacity and power of energy storage system.

Midea High Voltage Battery System can be connected to hybrid inverter.

1.2 Appearance

1.2.1 ME-HJXH PDU (High Voltage Controller)

The high voltage controller is composed of BCM board of BMS, DC breaker, power supply, RS485 / CAN box, Pre-charge RES, relay, fuse and communication terminals. The appearance of the product is shown below.

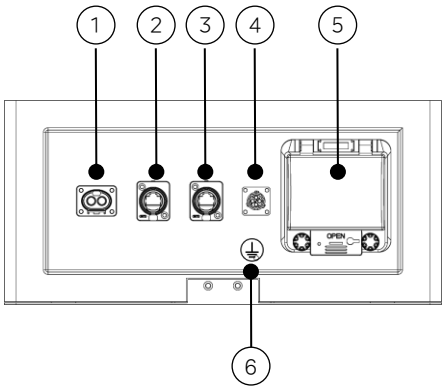


Fig 1.1: Schematic diagram of power panel

Location	Component	Function
1	HV DC Out Terminal	Battery DC terminal to PCS
2	4G COM	Connect to 4G terminal
3	Communication port	Communication port to PCS

4	24V DC Power port	External DC Power source for PDU
5	Power Breaker	Turn on / off PDU
6	⏚	Ground terminal

1.2.2 ME-B5H (Battery Pack)

Midea Battery pack ME-B5H consists of battery module (including cell and mechanical parts), Battery management unit (BMU) as well as power and communication terminals. Product appearance is shown below.

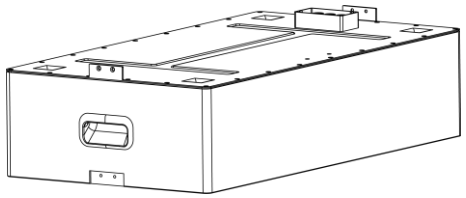


Fig 1.2: Dimension of ME-B5H

Dimension (unit: mm) 700*370*165

1.2.3 ME-HJXH Battery Base

ME-HJXH Battery Base consists of a mechanical base and connectors. The product appearance is shown below.

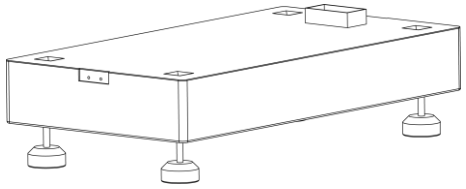


Fig 1.3: ME-HJXH Battery Base

Dimension (unit: mm) 700*370*100

1.3 Working Principle and Function

The Midea high voltage battery system is composed of a high voltage controller PDU ME-HJXH and stackable ME-B5H modules in series. It contains electrochemical batteries,

battery control units, battery management units, power and signal terminals, and mechanical parts.

Compared with other battery systems, the Midea high voltage battery system has better charging and discharging performance, more accurate status monitor, longer cycle life and less self-discharge loss.

A single cluster system can connect 2 to 5 packs in series to increase the capacity and power of the battery system. The entire battery system communicates with the inverter through CAN communication, and the operation stability is high.

- Monitoring: voltage, current and temperature detection of both single cells and battery system.
- Protection and Alarm: protection and alarm when over voltage, under voltage, over current, over temperature or under temperature occurs. See Appendix I for the details.
- Report: report all alarm and status data to PCS.
- Series connection: support two to five packs in series connection.
- Power failure triggered by fault: 10 seconds after the battery system and PCS communication is disconnected.

2 Safety

When installing or using a battery system, the safety information contained in this section must always be followed. For safety reasons, it is the installer's responsibility to be familiar with this manual and all warnings before installation.

2.1 Basic Security

The battery system has been designed and tested in accordance with strict rules with international safety certification requirements. Before any installation or use of the battery system, please read all safety instructions carefully and always follow the relevant rules. Midea is not responsible for any consequences resulting from violation of the following regulations:

- Damage occurred during transportation.
- Incorrect transportation, storage, installation and use, or customer fails to convey the correct information about transportation, storage, installation.

- Non-professional installation.
- Failure to obey the rules of this operation instructions and safety precautions in this document.
- Unauthorized modifications or removal of the software package.
- The product's tamper label is damaged or the product lacks any parts (except authorized disassembly parts).
- Operation in extreme environments which are not allowed in this document.
- Repair, disassemble, or change packs without authorization and cause failure.
- Damage to shell labels or modifies date of production.
- Packs fail to be charge for more than six months.
- Damages due to force majeure (such as lightning, earthquakes, fire, and flood).
- Warranty expiration.

2.2 Safety Precautions

2.2.1 Environment Requirements

- Do not expose the battery to temperature above 50℃ or heat sources.
- Do not install or use the battery in wet locations, area with moisture, corrosive gases or liquids, such as bathroom.
- Do not expose the battery to direct sunlight for extended periods.
- Place the battery in a safe place away from children and animals.
- Battery power terminals shall not touch conductive objects such as wires.
- Do not dispose of the batteries in a fire, which may cause an explosion.
- The battery system shall not come in contact with liquids.

2.2.2 Operation Precautions

- Do not touch the battery system with wet hands.
- Do not disassemble the battery system without permission.
- Do not crush, drop or pierce the battery pack and high voltage controller.
- Dispose of the batteries according to local safety regulations.
- Store and recharge battery in accordance with this manual.
- Ensure the connection of ground wire reliable.

- Remove all metal objects such as watches and rings that could cause a short-circuit before installation, replacement and maintenance.
- The pack shall be repaired, replaced or maintained by skilled personnel that has been authorized.
- When storing or handling batteries, do not stack batteries without package.
- Do not break the battery. The released electrolyte may be toxic and harmful to the skin and eyes.
- Packaged batteries should not be stacked more than the specified number stipulated on the packing case.
- Do not use damaged, failed or deformed batteries, which may lead to high temperature or even dangerous accidents. Continued operation of the damaged battery may result in electrical shock, fire or even worse.

2.3 Warning Labels

Symbols	Description
	Do not dispose in trash
	Lithium-ion battery can be recycled
	Electric shock hazard
	May leak corrosive electrolyte
	Heavy enough to cause severe injury
	Keep the Pack away from children
	Do not expose to fire
	Operate as the Manual

Fig 2.1: Nameplate

Fig 2.2: Nameplate

Fig 2.3: Label

Notice	The performance will be limited when the temperature is below 0°C.

2.4 Emergency Responses

The manufacturer takes foreseeable risk scenarios into consideration during the design process to minimize hazards and dangers. However, if any of the following situation occurs, please follow the instruction provided.

Situation Occurs	Description and action need
Leakage	Avoid touching any leaking liquid or gas. If you come into contact with the leaking electrolyte, please follow the instructions immediately. Inhalation: Evacuate the contaminated area and seek medical help. Eye contact: Rinse eyes with flowing water for 15 minutes and seek medical help. Skin contact: Rinse contacted area thoroughly with soap and water and seek medical help. Ingestion: Vomiting and seek medical help.
On fire	It's highly unlikely for the battery system to ignite spontaneously. If the battery has caught a fire, do not try to extinguish the fire but evacuate people immediately.
Wet Packs	If the battery system is soaked or submerged in water, do not access it. Contact your supplier for technical assistance.
Damaged shell	Damage to the shell is very dangerous, so special attention must be paid. They are no longer suitable for use and may be dangerous to personnel. If the battery case is damaged, please stop using it and contact your supplier for technical assistance.

3 Storage and Transportation

3.1 Storage Requirements

- Place the product following the identification on the packing case during storage.
- Do not put the product upside down or sidelong.
- The defective product needs to be separated from other products.
- The storage environment requirements are as follows:
  - Place the product in a dry, clean and well-ventilated place.
  - The storage temperature for a short period（7 days） is between -20°C to 50℃.
  - If you store the product over a long period of six months, the storage temperature is between -20°C to 40°C, relative humidity: 5%~95%RH.
  - Place the product away from corrosive and organic substances (including gas exposure).
  - Avoid direct exposure to sunlight and rain.
  - Maintain a minimum distance of two meters from heat sources (such as a radiator).
  - Avoid exposure to intensive infrared radiation.
- If the battery is stored for more than six months, the battery pack shall be recharged to 50% SOC every six months using a charger.

 Notice	If not follow the above instructions for long-term storage, the battery cycle life will be reduced or even damaged.

3.2 Transportation Requirement

Battery pack has been certified in UN38.3.

Battery pack is classified as category 9 dangerous goods.

- The battery pack shall not be transported with other inflammable, explosive or toxic substances.

- Ensure the original package and label complete and recognizable.
- Prohibit direct exposure to sunlight, rain, condensing water caused by temperature difference and mechanical damages.
- Prohibit to pile up more than five battery pack.
- There will be a drop in capacity during transportation and storage.
- Transportation temperature should be between -20°C to 40°C, relative humidity: 5%~95%RH.

4 Installation

 WARNING	• The installation and use of batteries involve a lot of expertise. Therefore, please ensure that technicians have obtained relevant technical certificates before operation. • Ensure to read the Guidance before installation in order to understand product information and safety cautions. • Operators should be well-trained technicians and fully understand the whole photovoltaic system, grid network, battery system, working principle as well as national and regional standards. • Installers must use insulating tools and wear safety equipment. • Device damages caused by failure to comply with storage, transportation, installation and use requirements specified in Guidance are not covered by Warranty. • Do not install or use batteries near explosive or inflammable substances. • Use battery in well-ventilated environment with temperature ranging from -10℃ to 50 ℃. • Maintain a minimum level of dust and dirt in the environment. • Do not install battery in highly humid area such as bathroom. • Please make sure that all battery packs connected in series are from the same batch, the same model and the same manufacturer. Do not mix old batteries with new batteries. A battery pack that does not exceed 300 cycles is defined as a new battery.
 Notice	• Before installing the battery packs in series, make sure that the voltage difference of the battery pack must be less than or equal to 0.5V. • When installing the batteries, we recommend that the manufacturing date of batteries in the same system should be within 3 months. The manufacturing date of batteries can be interpreted through the bar code. (Refer to Appendix 1)

4.1 Installation Environment

The battery system can be installed indoors or outdoors. The battery system should be installed on the ground. The following conditions are allowed:

Do not place the battery pack upside down. Please note the distance between batteries.

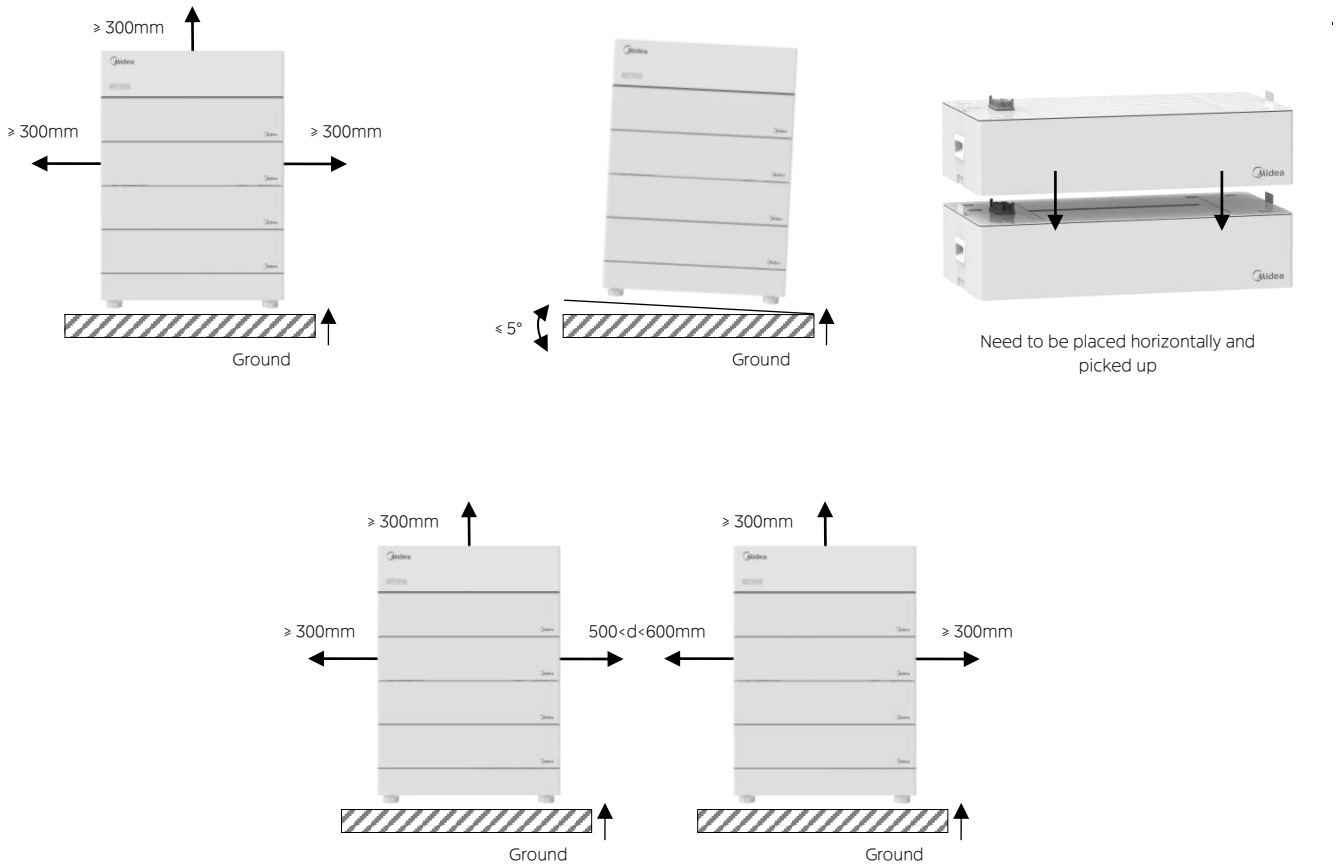


Fig 4.1: Acceptable floor standing installation

When installing outdoors, it is necessary to install sunshades and rain shelters to avoid direct exposure to sunlight and rain.

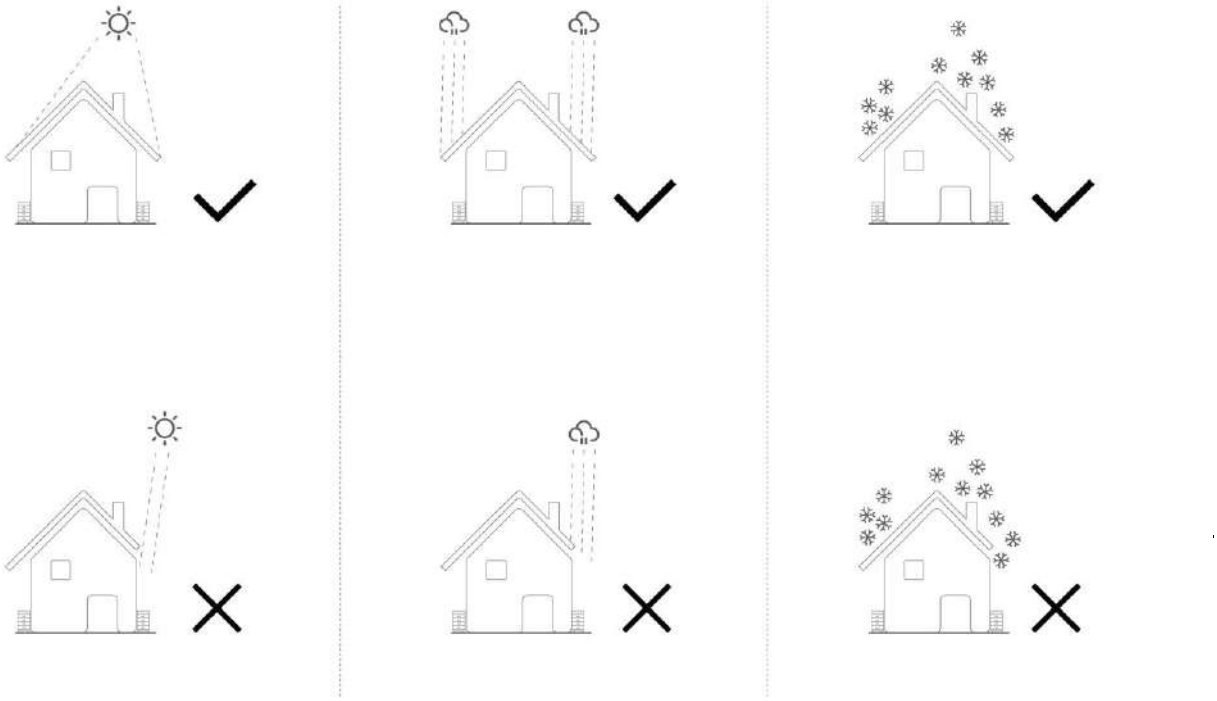
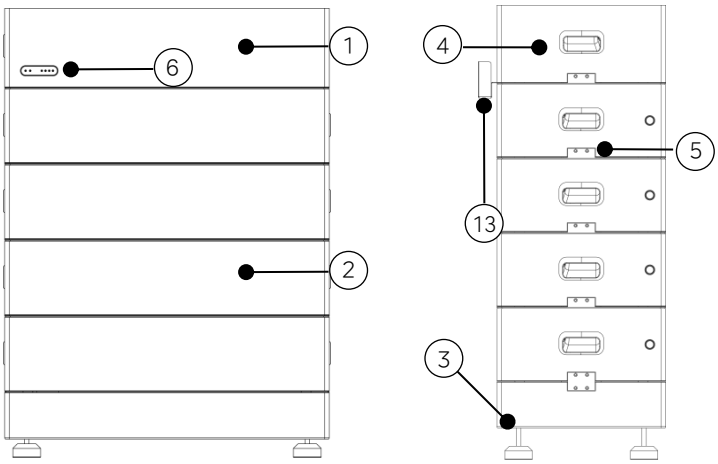


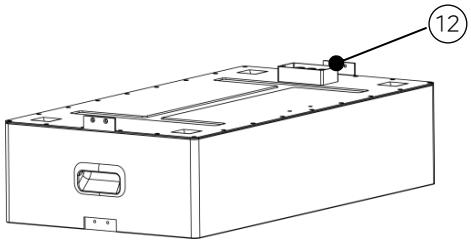
Fig 4.2: Sunshades and rain shelters

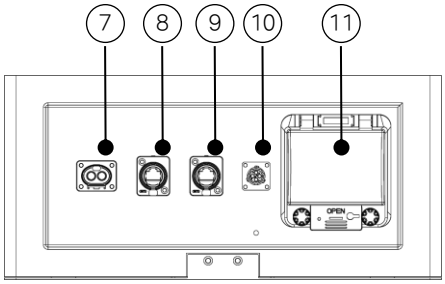
Note:

- Due to product version upgrades or other reasons, the content of this document will be updated from time to time. Please contact your supplier for the latest user manual version.
- Before installing the device, please read the user manual carefully to understand product information and safety precautions.
- All installation operations of the equipment must be carried out by well-trained professional electrical technicians. Operators must wear personal protective equipment.
- Before installing the equipment, please check whether the delivery is complete, and whether there is any obvious external damage according to the "Package List". If anything is missing or damaged, please contact your supplier.
- Equipment damage caused by failure to operate according to the document is not covered by the equipment warranty.

4.2 Product Introduction







① HV - PDU

② HV - Battery Module

③ HV - Base

④ Module handle

⑤ Module Connecting PAD

⑥ LED Light

⑦ PCS Positive & Negative interface

(BAT+/BAT－)

⑧ 4G-COM communication interface

⑨ PCS communication port (CAN/RS485)

⑩ DC 24V (external power supply)

11 DC Breaker (Main Switch)

12 Module connection interface

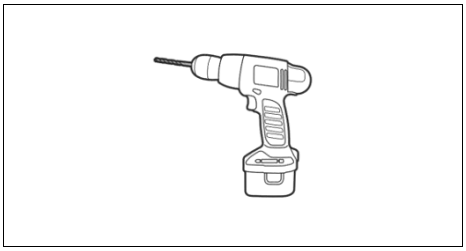
(BAT+/BAT－)

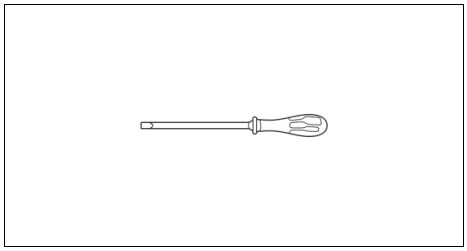
13 Wall fix bracket

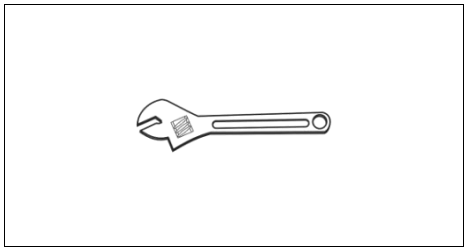
4.3 Installation Tools and Precautions

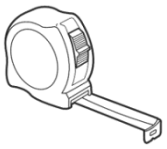
WARNING	Before drilling, please make sure to avoid the pre-buried water pipe and electricity lines in the wall to avoid danger.

The following tools are required to install the battery system.







Drill	Screwdriver	Wrench
 Pencil	 Tap Measure	 Multimeter

It is recommended to wear the following safety gear when dealing with the battery system.

 Insulated Glove	 Safety Goggle	 Safety Shoes

Note:

- The package is delivered with M6×60 expansion bolts. If the length or quantity cannot meet the installation requirements, please prepare M6 stainless steel expansion bolts.
- The expansion bolts provided with the box are mainly used for solid brick-concrete structure walls. If you choose other types of installation walls, please ensure that the load-bearing requirements of the battery are met, and choose installation bolts yourself.
- In residential areas, do not install the battery on plasterboard walls or similar poorly sound-insulated walls, so as to avoid disturbing the residents in the living area by the noise it emits during operation.
- Just loosen the nut, flat washer and spring washer of the lower expansion bolt properly, and there is no need to unscrew them all.

4.4 Installation Procedures

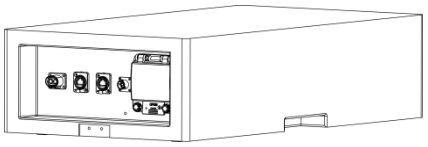
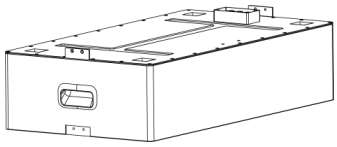
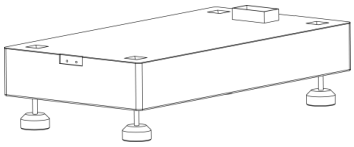
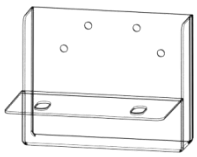
4.4.1 Pre-installation Check

- Check the PACK package before opening it. If any abnormity is detected, do not open

the Package and contact your supplier.

- Check the Power. Check and confirm the pack is powered off before installation.
- Check the quantity of all parts inside according to the package list. If there is any part missing or damaged, please contact your supplier.

4.4.2 Check the list of ME HV ESS

 HV - PDU	 HV - Battery Module	 HV - Base
 Support Feet ×4	 Power Cable x1 (Battery to PCS - 1.5m)	 COM Cablex1
 Package List ×1 Operation Manual ×1 Warranty Card ×1	 M6 Explosive screw ×2 M6×10 Combination screw ×2	 Wall fix bracket ×1

4.4.3 Installation Environment

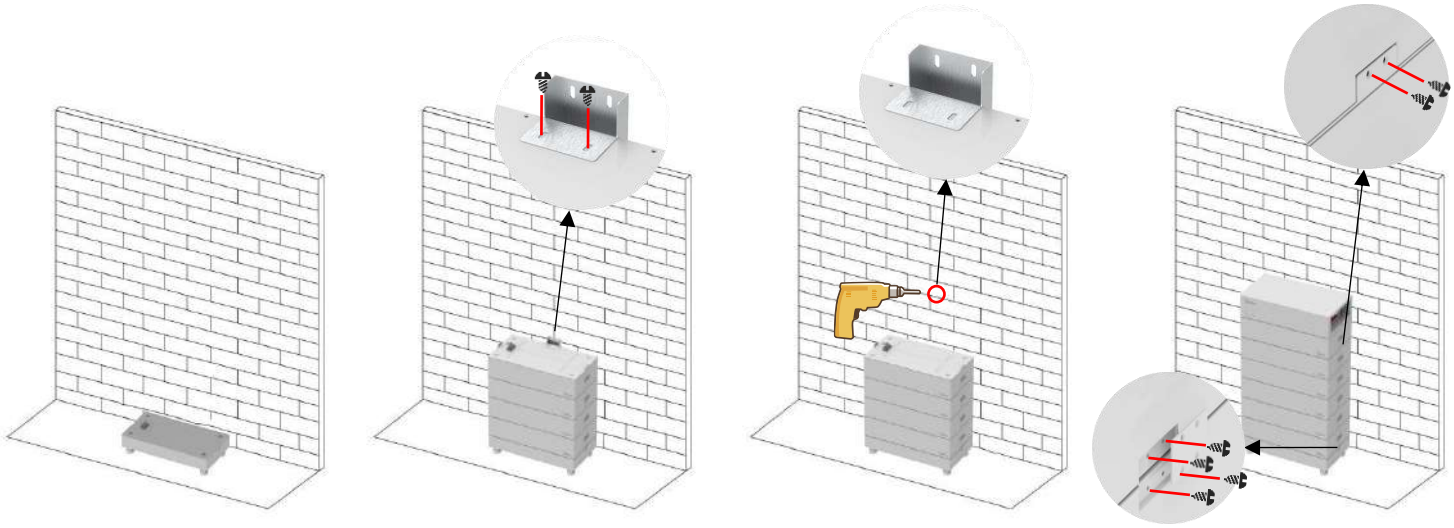
The ambient temperature for the installation of the battery system shall be above -10℃, below 50℃, and the humidity shall between 5% and 95%.



Max.+50℃	Min.-10℃	RH.+5%~+95%

4.4.4 Floor Standing Installation

WARNING	Before drilling, please make sure to avoid the pre-buried water pipe and electricity lines in the wall to avoid danger.



WARNING	Need to be placed horizontally and picked up

Step 1: Connect the 4 supporting feet to the base, place the base in the area to be installed.

Step 2: Stack the battery modules on the base one by one. Pay attention to the connection between the modules need to be inserted horizontally.

Step 3: Choose an alloy drill with a diameter of 10mm, and drill a mounting hole at least 60mm deep on the wall. Insert the expansion tube into the hole and tighten the screws to fix the wall fix bracket.

Step 4: Place the PDU on top.

Step 5: Connect the connecting pieces between all the modules and lock the screws.

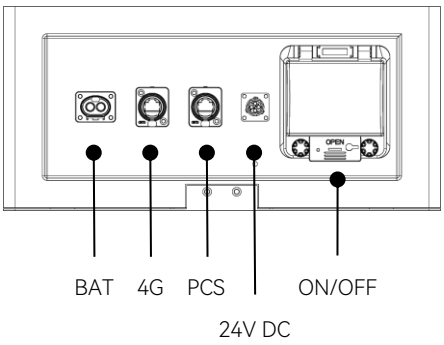
Step 6: Check all the screws to make sure the battery does not shake.

WARNING	• The module base needs to be installed to use more than one battery. • The PDU needs to be installed on the top module. Once the number of battery modules exceeds 6, a new base and PDU need to be added to form a new cluster. • Do not forget wear ESD wrist strap and gloves, safety gloves and goggles.

4.5 Electric Wiring Connection

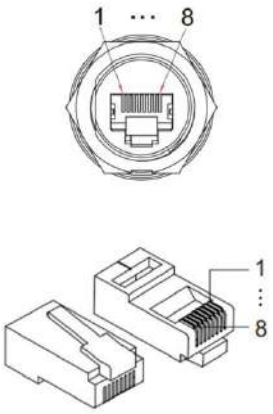
- The battery is not allowed to be installed in the running state. Turn off the system power before installation.
- To ensure system security, do not forget to install ground wire.
- Don't forget to connect the communication plug of the last battery pack, otherwise it will cause system failure.
- When installing in two rows, please purchase the extended serial cable and RJ45 HUB box.

WARNING	Do not forget to wear ESD wrist strap and gloves, safety gloves and goggles.



- Connect the battery power cable according to the direction of the interface.
- The PCS communication terminal is used to communicate to the PCS.
- For the breaker between PCS and HV Battery, we recommend using molded case circuit breaker with rated working voltage greater than 700V and rated working current greater than 125A.

4.5.1 Definition of RJ45 Communication Port Pin

Item	Crystal head picture	Serial no.	Definition
PCS		1	RS485_A
		2	RS485_B
		3	RS485_GND
		4	/
		5	CAN1_H
		6	CAN1_L
		7	CAN1_GND
		8	/

4.5.2 System Connection Diagram

Notice	• When connecting the power line, it must be the same color terminal to connect, otherwise there may be dangers such as short circuit. • A DC circuit breaker has been installed in the high voltage controller. If you want to install a DC circuit breaker between the battery system and the PCS, you need to purchase it yourself according to the following specifications: a. Voltage: 700Vdc/1000Vdc b. Current: 125A

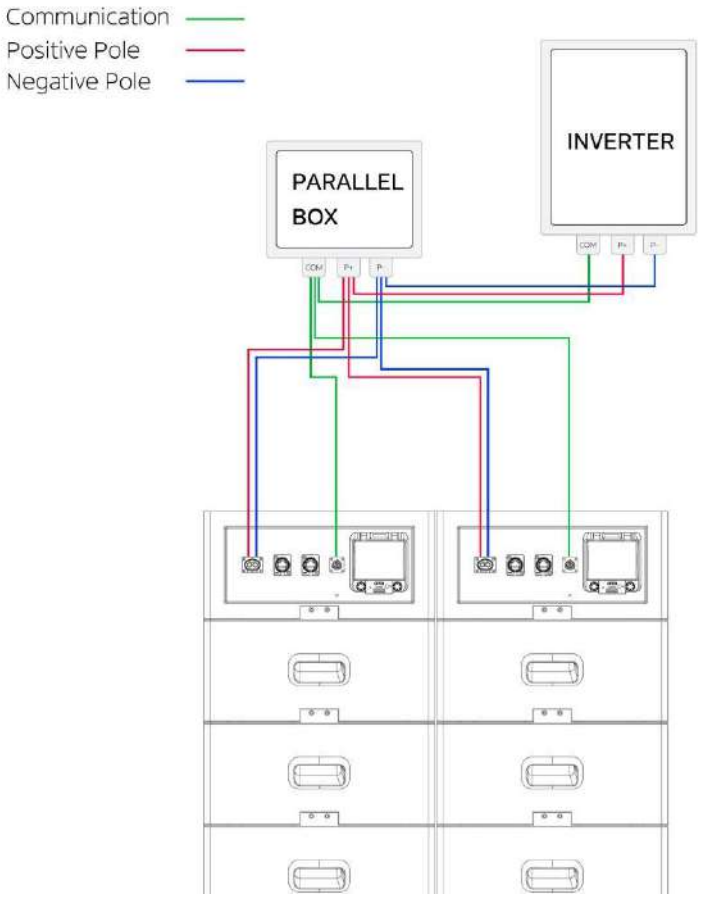


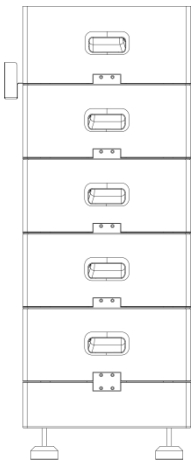
Fig 4.3: Two lines installation

Note:

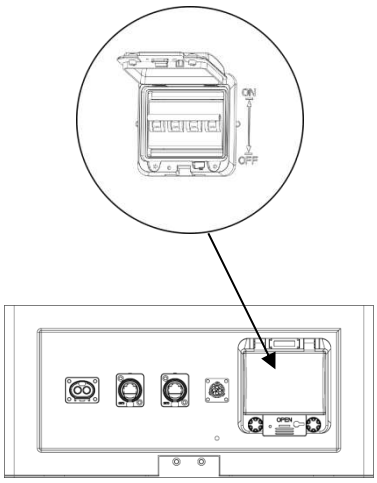
- The battery is not allowed to be installed in the running state. Turn off the system power before installation.
- To ensure system security, do not forget to install ground wire.
- Do not forget to connect the communication plug of the PDU, otherwise it will cause system failure.
- When installing in two rows, please purchase the extended serial cable and junction HUB box.
- The cable connecting PCS can be purchased from supplier.

5 Power On/Off Battery System

Notice	• The installation and use of batteries need to be operated by professional technicians. • Do not contact any positions with potential voltage difference. • Prohibition sign should be hung on the battery: "non-professionals, do not touch". • If any abnormalities occur during the startup phase, power off the system immediately. After problem confirmed, proceed again. • Make sure the inverter is turned off before checking the battery system.



The high-voltage version module does not have an independent switch, just turn on



Turn the DC breaker to "On/Off" to turn On/Off the entire battery system.

the main switch.

Before turning on the battery, please check if the cable is properly connected.

Power on the battery system by pressing breaker to ON		
Serial no.	Procedures	Acceptation criteria
1	Power cable	Make sure the power cable is well connected and not loose.
2	Communication Line	Make sure the communication line is connected and not loose.
3	On/off battery system	Turn on the main switch of the PDU module.
4	Make sure all the breaker is ON	1. If both RUN and SOC lights turn on normally, system is powered on successfully. 2. If ALM light turns red, there is a failure and should solve it before power on again.

Notice	• Do not turn on battery without DC connection to inverter and keep it on for more than one week. The DC/DC module inside the PDU would consume the power itself. It would make damage to battery with keeping it on without charging from inverter. • When user turn off the inverter, please make sure the battery is turned off at the same time. • When battery reach low SOC, the red LED would be on. Please charge the battery to SOC 50% to ensure no damage to the battery.

6 Maintenance Guide

6.1 Preparation

Before maintenance, please make sure that the battery system is powered off and the DC circuit breaker is turned off.

6.2 Battery Pack or High Voltage Controller Replacement

- Wear safety gloves.
- Turn off the breaker and power off the battery system.
- Disconnect power lines and CAN communication lines of the battery system.
- Uninstall the safety screws on both sides of the battery pack or high voltage controller. Lift up the battery pack or high voltage controller.

- Put the battery pack or high voltage controller into the packing box according to the repair procedure and transport the battery pack or high voltage controller to the designated repair site.
- Install new battery pack or high voltage controller based on procedure specified below:

Notice	• Before replacing the battery, use the charger to charge the new battery and the existing battery to full (SOC 100%). • If the battery is not used, it is recommended to charge and discharge the battery every 3 months to activate the chemical characteristics, and the maximum interval shall not exceed 6 months.

6.3 System Failure Information and Troubleshooting Suggestions

Error Indication ALM	Error Description	Error cause	Suggested actions
● (ALM Light Flickers)	Discharge under voltage protection	Single cell voltage below the threshold for under-voltage protection	There is over discharge risk. User should stop discharging and arrange recharge.
	Charge over voltage protection	Single cell voltage exceeding threshold for protection threshold	1. There is no safety threat. 2. User should stop charging. Wait for the battery system to automatically resolve the fault.
	High temperature protection	The temperature exceeds the protection value	It is dangerous. Please stop using the battery immediately, and wait for the battery temperature to drop. The fault will be automatically resolved.
	Low temperature protection	The temperature is below the protection value	No safety risk. Please wait for the temperature to rise. The fault will be automatically resolved.
	Discharge short circuit	External short circuit of battery system	There is safety risk and user should stop using battery. User should contact installer to repair PCS and battery.
	Precharge short circuit		
	Precharge overtime		
	Voltage sampling anomaly protection	BMS Voltage sampling failure	There is safety risk and user should stop using battery. User should contact installer to repair battery.
	Current sampling fault	BMS Current sampling failure	

	Main circuit fault	BMS Main power circuit failure	There is safety risk and user should stop using battery. User should contact installer to repair battery.
	Interior Communication failure	Communication loss between two packs	1. Check whether the communication and battery pack are connected OK. 2. Check whether the communication line between the high voltage controller and the battery pack is connected OK.
	External CAN Communication failure	Communication loss between PCS and battery system	1. There is no safety threat and user should stop using battery. 2. Check if PCS and battery communication terminal is well connected. 3. If PCS and battery system cannot communicate when the communication wire is confirmed well connected, user should contact installer to repair battery.

7 Technical Specification

7.1 System Data

System Model	ME-B10H	ME-B15H	ME-B20H	ME-B25H
Module Number	2	3	4	5
Nominal Energy	10.2kWh	15.3kWh	20.4kWh	25.5kWh
Max Power	5kW	8kW	12kW	16kW
Rated Capacity	52Ah(@25℃)			
Nominal Voltage	204.8V	307.2V	409.6V	512.0V
Voltage Range	192V~230.4V	288V~345.6V	384V~460.8V	480V~576V
Dimensions (mm)	700/370/643	700/370/808	700/370/973	700/370/1138
Weight	126kg	175.3kg	224.6kg	273.9kg
Rated current	26A(@25℃)			
Max current	40A(@25℃)			
Fault current	47A(@25℃)			
DoD	90%			
Operating ambient temperature	-10℃~50℃			

RTE	⩾ 95%
Battery pack in series	Maximum support 5 units in series, series voltage difference △V ⩽ 0.5V
Humidity	5%~95%
Storage temperature	- 20℃~50℃/7 days; -20℃~40℃/6 months; 95%RH
Cooling method	Natural cooling
Installation	Floor stacking installation
Altitude	⩽ 2000m
Communication method	CAN (to PCS)
Certified product	IEC62619/IEC60730/ UKCA/CE
Transport certification	UN38.3
IP rating	IP65
Environmental requirements	RoHS, Reach

7.2 ME-HJXH

No.	Items	Specification
1	Model	ME-HJXH
2	Input/output voltage range	160~584V
3	Max continuous current	40A
4	Operating ambient temperature	-10~50℃
5	IP rating	IP65
6	Communication method	CAN2.0
7	Dimensions (W/D/H)	W700*D370*H170mm ±2mm
8	Weight	10.7±0.2kg
9	Certification	CE-EMC
10	Environmental requirements	RoHS, Reach

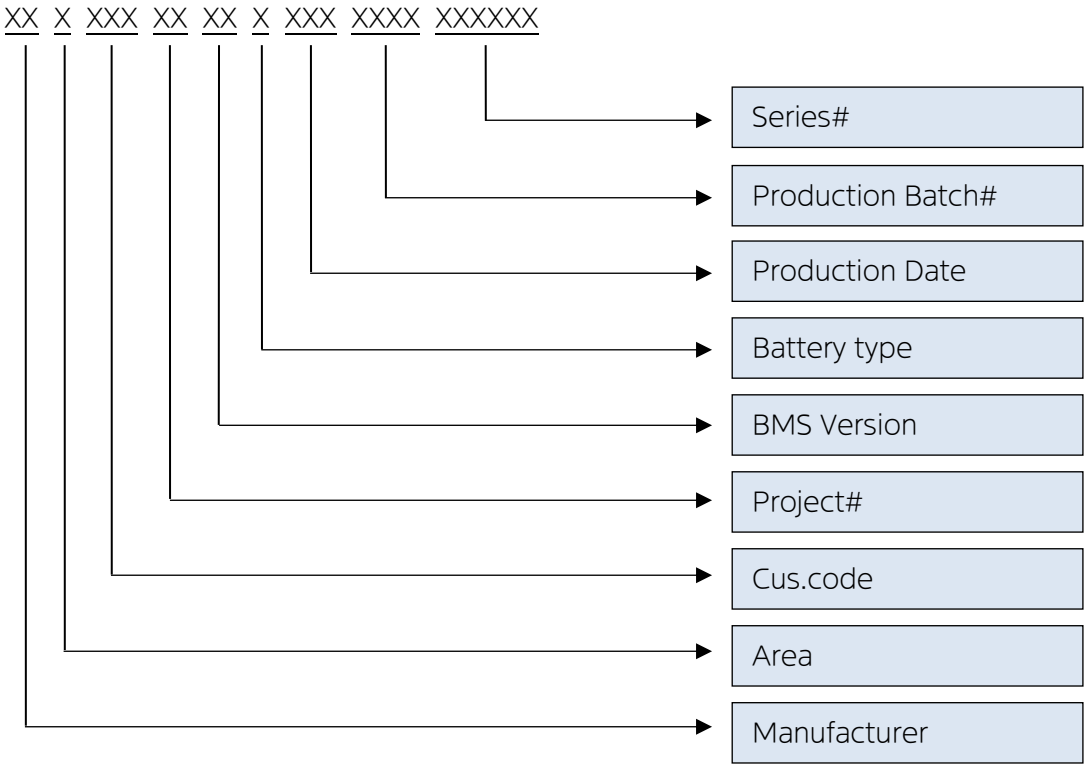
Notice	• Method for calculating rated capacity Rated capacity of the measured module: 52 Ah Number of modules connected in series: 2~5 Calculated rated capacity (Ah) = 52 Ah *1 =52Ah • The performance will be limited when the temperature is below 0°C.

7.3 ME-B5H

No.	Items	Specification
1	Battery pack module	ME B5H
2	Rated Capacity/Energy	52Ah/5.32kWh
3	Nominal voltage	102.4V
4	Operating voltage	96V - 115.2V
5	Max continuous current	40A
6	Battery type	Cobalt Free Lithium Iron Phosphate (LFP)
7	Operating ambient temperature	-10~50℃
8	Storage conditions	- 20℃~50℃/7 days, -20℃~40℃/6 months, 95%RH
9	Cooling	Natural cooling
10	Dimension (W/D/H)	W700*D370*H165mm ±2mm
11	Weight	49±1kg
12	Installation	Floor standing installation with Base
13	Ingress protection	IP65
14	Cell safety certification	IEC62619/IEC60730
15	safety certification	IEC62619/IEC60730/CE/UKCA
16	Transportation test standard	UN38.3
17	Environmental requirements	RoHS/REACH
18	Battery designation	IFpP29/149/119[(1P32S)*S]M/- 10+50/90

Appendix I

Barcode coding rules
Bar code number position:



1. The 1st and 2nd digits indicate the Midea Manufacturer code.
2. The 3rd digit indicates the Area code.
3. The 4th to 6th digits indicate the Cus. code.
4. The 7th and 8th digits indicate the Project#.
5. The 9th and 10th digits indicate the BMS Version.
6. The 11th digit indicates the Battery type code.
7. The 12th to 14th digits indicate the Production Date.
8. The 15th to 18th digits indicate the Production Batch#.
9. The 19th to 24th digits indicate the Series#.

NROA110103BD22NR1A000000

Appendix II

LED indication Control Mechanism

LED light definition								
Status	Items	ALM	RUN	SOC indication				Remark
		LED1	LED2	LED3	LED4	LED5	LED6	
Charge SOC	0%-25%		RUN light is always on	(3S)				
	26%-50%			●	(3S)			
	51%-75%			●	●	(3S)		
	76%-99%			●	●	●	(3S)	
	100%			●	●	●	●	
Discharge SOC	100%-76%			●	●	●	●	
	75%-51%			●	●	●		
	50%-26%			●	●			
	25%-5%			●				
	4%-0%			(1S)				
Protection	Cell charge over voltage alarm	(2S)		●	●	●	●	
	Cell charge over voltage protection	●		●	●	●	●	
	Cell discharge under voltage alarm	(2S)		OFF				
	Cell discharge under voltage protection	●						

	PACK charge over voltage alarm	(2S)		🟢	🟢	🟢	🟢	
	PACK charge over voltage protection	🔴		🟢	🟢	🟢	🟢	
	PACK discharge under voltage alarm	(2S)		OFF				
	PACK discharge under voltage protection	🔴						
	Cell Large voltage difference alarm	(2S)		SOC indicates current remaining capacity				
	Cell Large voltage difference protection	🔴						
	Over temperature alarm	(2S)	RUN light is always on					
	Over temperature protection	🔴						
	Low temperature alarm	(2S)						
	Low temperature protection	🔴						
	Temperature imbalance alarm	(2S)						
	Temperature imbalance protection	🔴						
	LOW SOC alarm	(2S)						
	High charging current alarm	(2S)						
	High charging current protection	🔴						
	High discharging current alarm	(2S)						
	High discharging current protection	🔴						
Fault, personnel handling required	Discharge short circuit	🔴						
	Precharge short circuit	🔴						
	Interior communication failure	🔴						

	External CAN communication failure	●			
	Voltage sampling fault	●			
	Current sampling fault	●			
	Main circuit fault	●			

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