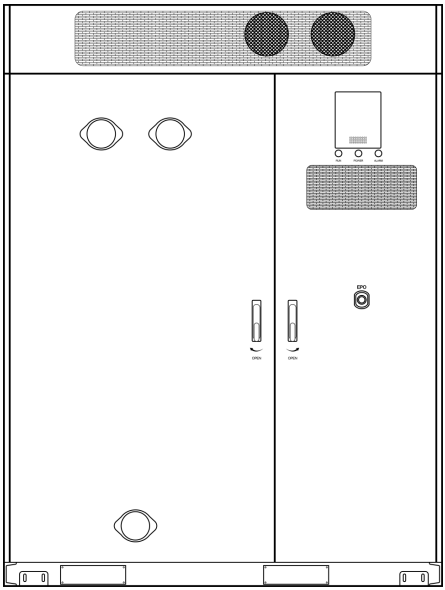
User Manual

Model: MS-GS215-2H2
MS-GS215-2H3
MS-GS215-2H6



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1 General information

Warning!

Read and follow carefully all safety warnings, instructions, illustrations and specifications provided with this product. Failure to follow instructions mentioned may results in electric shock, fire or serious injury.

Save all warnings and instructions for future reference.

1.1 All Rights Reserved

Trademarks and Permissions

The trademarks used in this manual are owned by the manufacturer. All other trademarks or registered trademarks mentioned in this manual are owned by their respective owners.

Software Licenses

* It is prohibited to use data contained in firmware or software developed by the manufacturer, in part or in full, for commercial purposes by any means.
* It is prohibited to perform reverse engineering, cracking, or any other operations that compromise the original program design of the software developed by the manufacturer.

Disclaimer

“DANGER”, “WARNING”, “CAUTION”,“NOTICE” and “NOTE” in this manual do not represent all safety matters that should be followed, and you must also comply with relevant international, national or regional standards and industry practices. The manufacturer shall not be liable for personal injury,

property loss, product damage and subsequent losses under the following circumstances:
* Damages caused by force majeure, including earthquake, flood, volcanic eruption, mudslide,, lightning, fire, war, military conflict,typhoon, hurricane, and so on.
* Failure to comply with the provisions of this manual.
* The installation, operation and storage environment does not meet the relevant international, national or regional standards;
* Incorrect use of this product.
* Unauthorized or unqualified personnel repair the product, disassembly the rack and perform other operations.
* Use of unapproved spare parts.
* Unauthorized modifications or technical changes to the product or software.
* Incorrect shipment by yourself or the third party commissioned by you.
* Unsatisfactory materials and tools from you own that do not meet the relevant international, national or regional standards.
* Damage caused by yourself or the third party's negligence, intent, gross negligence, improper operation, or other accidents not caused by Deye.

1.2 About This Manual

This manual mainly describes the product information, guidelines for installation, operation and maintenance. In this manual, “equipment” or “ device” refers to relevant product, software, part, spare part or service,etc; “The manufacturer” refers to the producer, seller or service provider of the equipment.

1.3 Intended Use

The product is a high-voltage lithium-ion energy storage system. It is characterized by high integration, good reliability, long service life, wide working temperature range, etc. The system is modular. It provides a

reliable backup power supply for private and commercial use, such as supermarkets, banks, schools, farms and small factories, to smooth the load curve and achieve peak load transfer. It can also improve the stability of renewable systems and promote the application of renewable energy. Misuse or abuse caused by unauthorized use may result in personal injury or property loss. If that happens, the user, instead of the manufacturer, shall bear liability.

2 Product Description

2.1 Product Introduction

The ESS mainly consists of lithium battery packs , power converter system (PCS), thermal management system, maximum power point tracking (MPPT) and fire suppression device .

It plays a significant role in reducing electricity costs, ensuring power reliability, integrating renewable energy, and optimizing energy management.

2.2 Application Scenarios

The energy storage system has a wide range of application scenarios, which can be described as follows:

• Electricity saving:

-Cut peak and fill valley to reduce electricity bills;

-Demand control reduces capacity chargers;

• Scenery tolerance:

-The remaining electricity emitted by the photovoltaic during the day is stored for the nigh discharge to smooth the output fluctuations of the wind power;

• Optical storage micro-grid:

-Electricity can be saved, and applications such as standby power supply can provide stable power supply for islands, mountains and other areas that cannot be connected to the grid.

• Power expansion:

-When the power distribution capacity cannot meet the load requirements, the power is discharged to meet the load requirements and achieve virtual capacity expansion.

• Standby power supply:

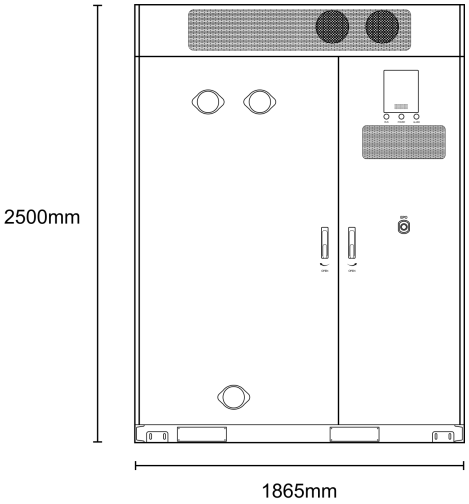
-Discharge in the case of power outage or power restriction to ensure power consumption

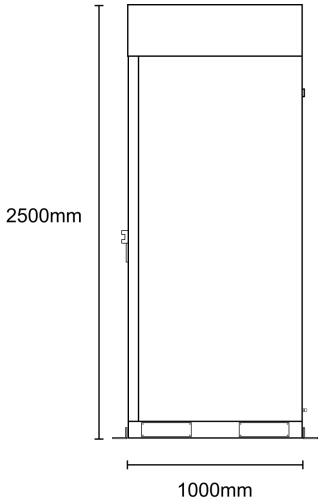
• Demand and response:

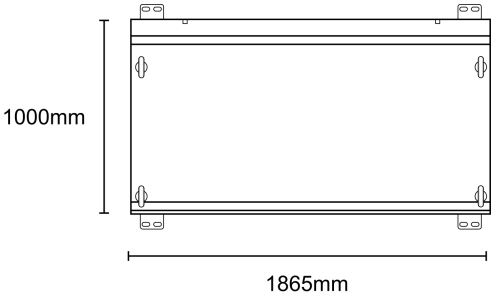
-Receive power grid dispatching and enjoy dispatching subsidies

Various applications can be achieved with the assistance of the EMS. The use and other detailed information of the EMS can be available through scanning the QR code:

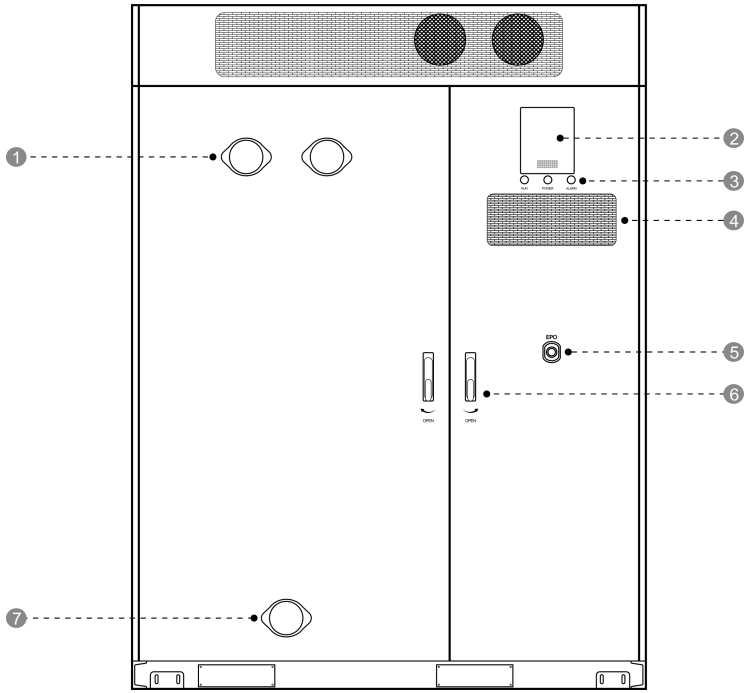
2.3 Product Size

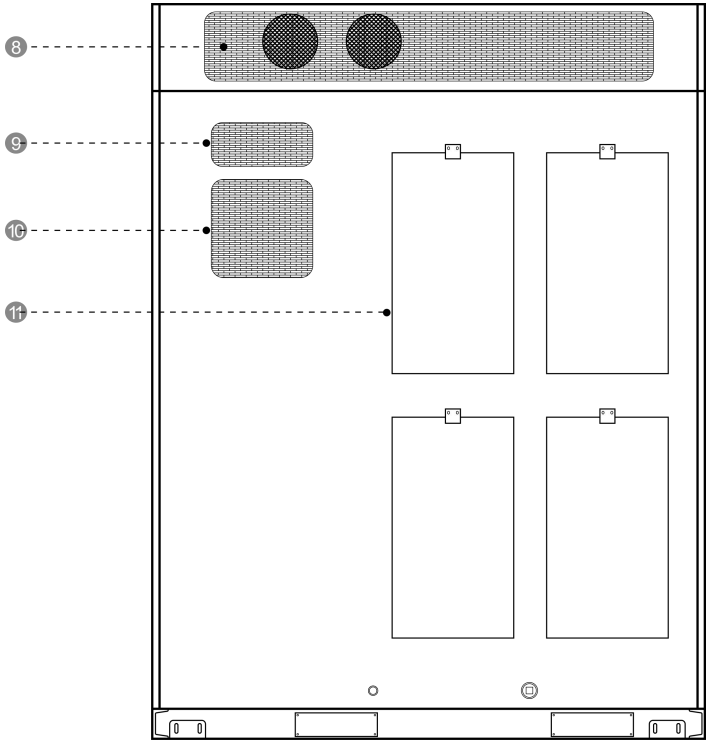






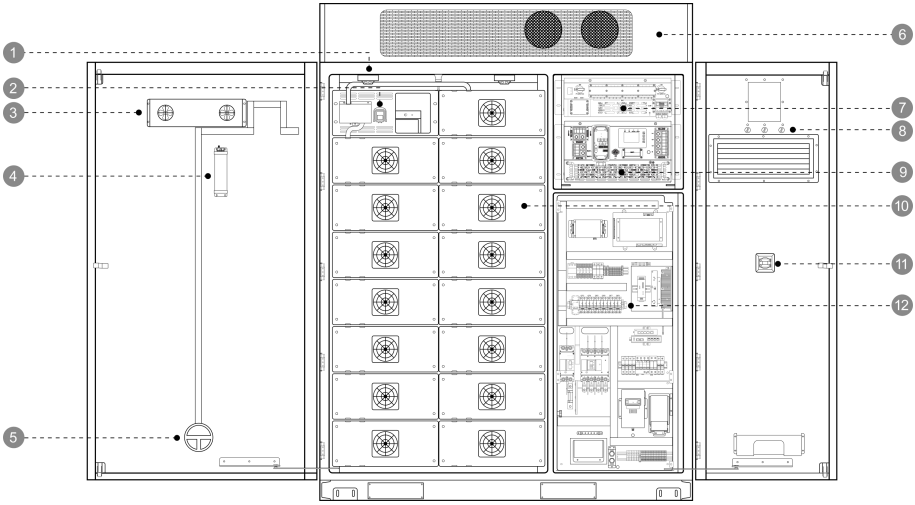
2.4 External Overview





No.	Item	No.	Item
1.	Exhaust fan for battery compartment	7.	Air inlet for battery compartment
2.	Sounder strobe	8.	Air conditioner vent
3.	Status indicators	9.	Air outlet for MPPT
4.	Air inlet for PCS	10.	Air outlet for PCS
5.	Emergency stop switch	11.	Explosion relief panel
6.	Door lock		

2.5 Internal Overview

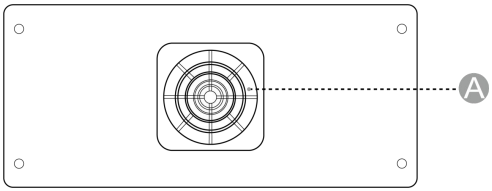


1. Heat detector	7. MPPT (Optional)
2. MSD (Manual Service Disconnect)	8. Status indicators
3. Exhaust fan for battery compartment	9. PCS
4. Aerosol fire extinguisher	10. Battery pack
5. Air inlet for battery compartment	11. EPO (Emergency Stop Switch)
6. Air conditioner	12. Meter and controls

2.6 Components

2.6.1 Battery Pack

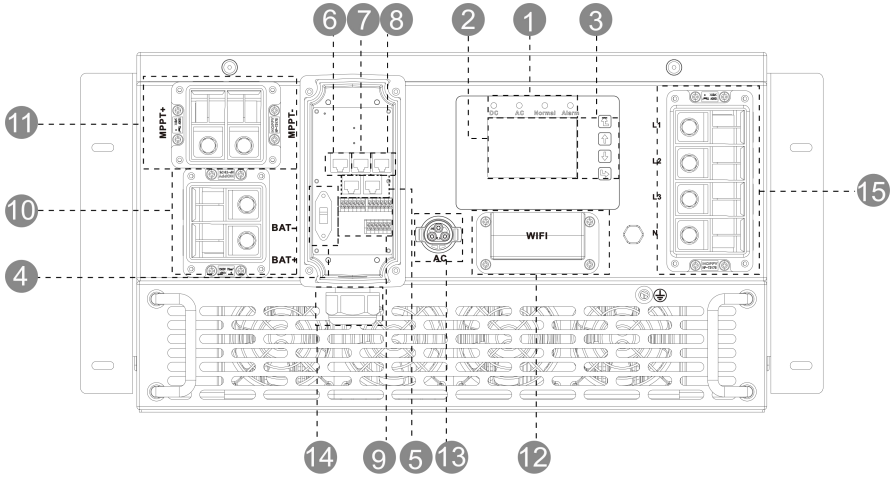
- Battery charging: the electricity from the mains or other power supplies is converted by the PCS into DC electricity, which is then stored in batteries.
- Battery discharging: the electricity released by batteries is converted by the PCS into AC electricity, which is then supplied to loads.



No.	Item
A	Fan

2.6.2 PCS

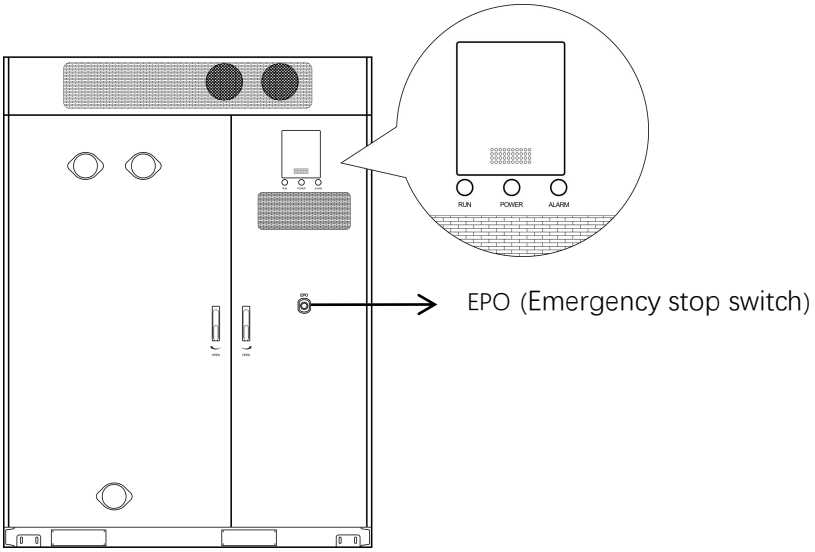
The PCS converts the DC voltage discharged from the ESS into specified AC voltage and converts AC voltage into DC voltage to charge the ESS. Refer to the separate **PCS manual** provided with this document for more information.



No.	Item	No.	Item
1.	Indicators	9.	Function port
2.	LCD display	10.	Battery input
3.	Function buttons	11.	MPPT input
4.	AC switch	12.	Interface for logger
5.	Parallel port	13.	Auxiliary power port
6.	MPPT-CAN port	14.	Inlet of cables
7.	BATBMS port	15.	AC input/output port
8.	RJ45 port		

2.6.3 Status Indicator and EPO

The ESS consists of 3 LEDs that indicate the status of the equipment in real time.



State	Description	
	RUN stays on	System works normally (Charge/Discharge)
	POWER stays on	The ESS is powered normally
	ALARM stays on	System error occurs

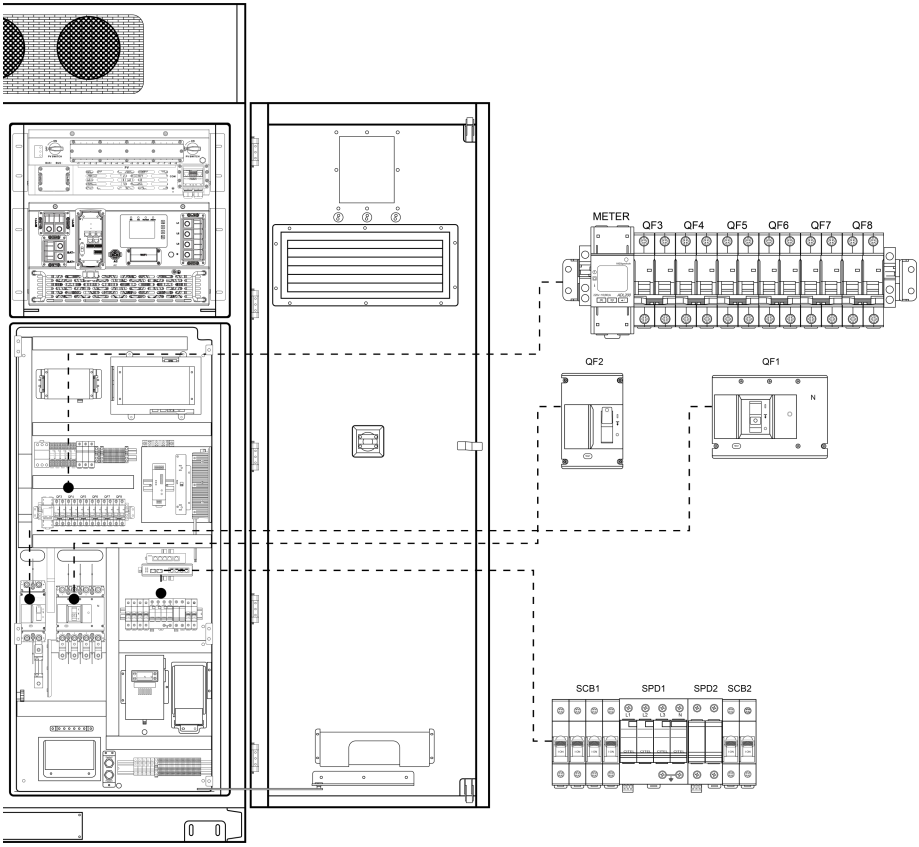
EPO (Emergency stop switch)

When in the emergency, press the EPO to shut off the system at once.

Notice!

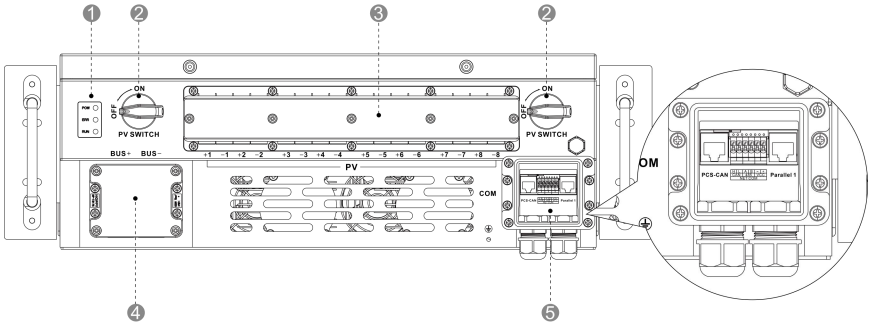
Do not stop the ESS through the EPO if the system is running normally or the operator does not encounter with emergent conditions.

2.6.4 Controls



Identifier	Description	Identifier	Description
QF1	Grid molded case circuit breaker	QF8	Lead-acid battery micro circuit breaker
QF2	Battery cluster molded case circuit breaker	SCB1	Grid switch control box
QF3	Mains electricity micro circuit breaker	SCB2	Main power switch control box
QF4	Emergency power supply micro circuit breaker	SPD1	Grid surge protection device
QF5	Switching mode power supply micro circuit breaker	SPD2	Mains electricity surge protection device
QF6	HVAC micro circuit breaker	METER	Meter
QF7	DC24V micro circuit breaker		

2.6.5 MPPT (Optional)

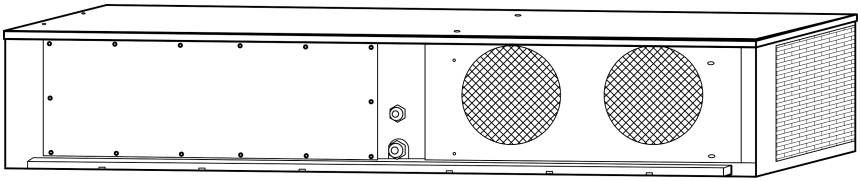


No.		Description	
1. Indicators		POW	The indicator will become green when the MPPT is powered
		ERR	The indicator will become yellow when the MPPT is in error
		RUN	The indicator will become green when MPPT is in parallel mode.
2. PV SWITCH		To turn on/off the PV	
3. PV Input		Connect with barrier terminal blocks of PV	
4. Battery Input		Connect with battery cables	
5.1 PCS-CAN		Communicate with master PCS so that the master PCS can read MPPT's data	
5. 2 NET COM	CAN	CAN communication port	
	485	Connect with the upper computer in order to monitor and manage the MPPT	
	UCC	Connect with the output port of an external 12V power supply for program upgrade	
5.3 Parallel 1		An communication port for the MPPT to be parallel	

2.6.6 Air conditioner

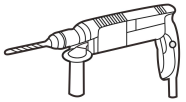
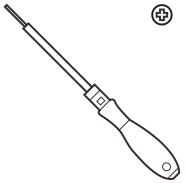
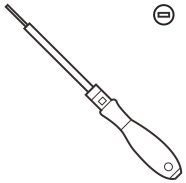
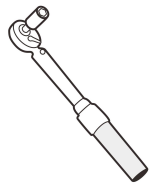
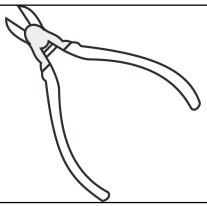
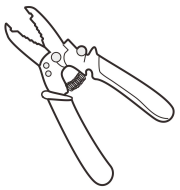
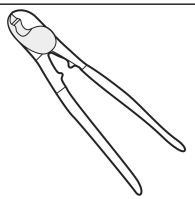
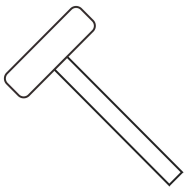
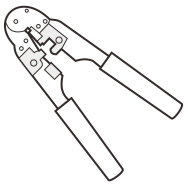
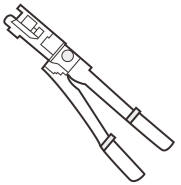
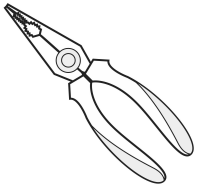
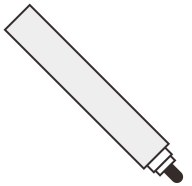
The air conditioning system can produce cold air and then send it to the internal air duct of the ESS to cool batteries.

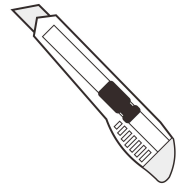
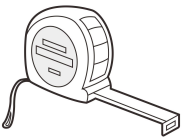
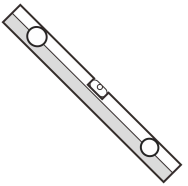
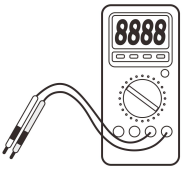
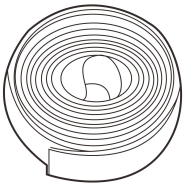
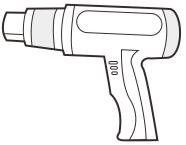
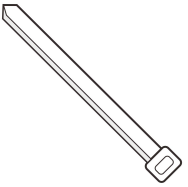
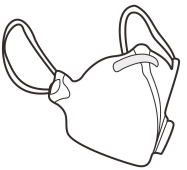
The air conditioner is regarded as a part of air circulation.When the air conditioner is running, air circulation is formed inside the cabinet. The cool air is blown into the pack and then discharged out of the pack.

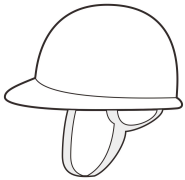


3 Installation

3.1 Materials Required

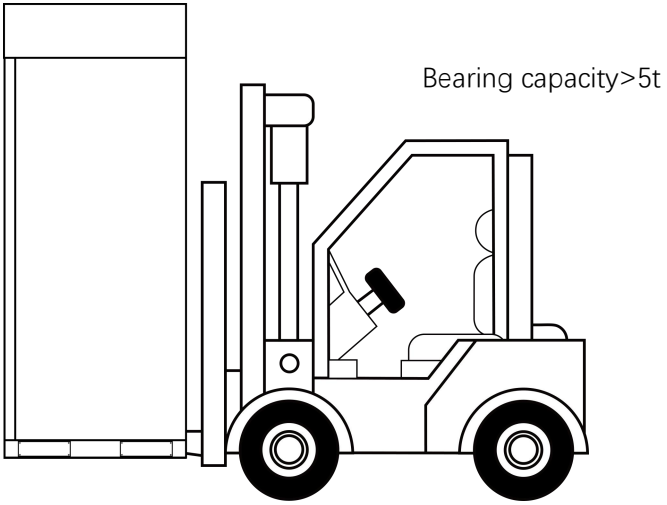
Tools			
			
Hammer drill	Phillips insulated torque screwdriver	Flat-head insulated torque screwdriver	Insulated torque socket wrench
			
Diagonal pliers	Wire stripper	Cable cutter	Rubber mallet
			
RJ45 crimping tool	Hydraulic pliers	Needle-nose pliers	Marker

			
Utility knife	Steel measuring tape	Level	Multimeter DC voltage measurement
			
Heat shrink tubing	Heat gun	Cable tie	Insulated ladder
			
Powered industrial forklift	Crane		
Personal Protective Equipment			
			
Insulated gloves	Protective gloves	Goggles	Dust mask

			
Insulated shoes	Safety helmet	Protective suit	

3.2 Moving Heavy Objects

After arrival of your goods, perhaps you need move it to designated working area. Refer to the following picture for movement of heavy objects.



When moving your product:

- Keep at least 2m away from the forklift during operation.
- No passengers are permitted to stand on or be lifted by forklifts.
- Do not overload forklifts or raise loads too high, as this can affect overall stability.
- Maintain speeds below 3mph and avoid sharp turns.
- Before reversing, the forklift operator must check behind them and ensure it is safe to proceed.
- When reversing in confined spaces, a spotter is needed,who directs the forklift operator.

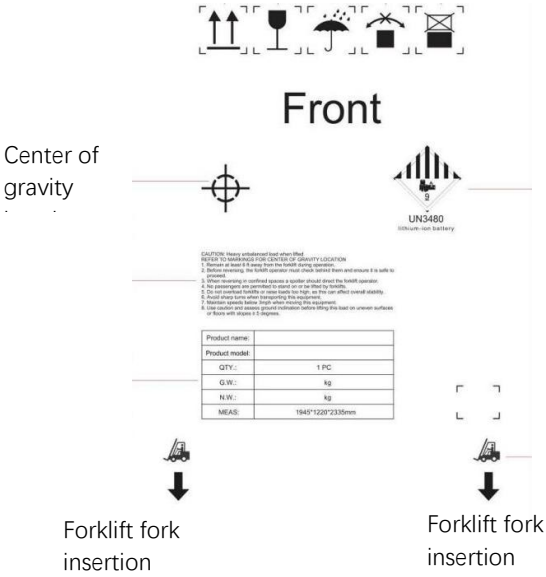
• Use caution when lifting this load on uneven surfaces.

• Never operate the forklift on slopes ⩾ 5 degrees.

• During movement, avoid tilting the cabinet or placing it upside down. If the cabinet must be tilted or inverted , please straighten it as soon as possible, and the cabinet needs to be left standing for 2 hours before it can be powered on.

• Suggest to insert the forklift tooth into the position indicated by the "Forklift fork insertion: in the package material. See the following figure.

• When lifted heavy unbalanced load, refers to the marking for center of gravity location.



3.3 Unpacking

Warning!

- After setting up the equipment well, carefully unpack the package so as to avoid scratching equipment.
- If possible, do not remove the transport packaging before arrival at the installation site.
- After unpacking, check whether the fasteners and removable parts are missing. If they are missing, please contact you vendor at once.
- Keep the equipment stable during unpacking.
- If the installation environment is not friendly to the equipment, take measures to prevent failure inside the battery caused by condensation or dust corrosion (for example, cover with woven cloth or dust cover).

When it comes to package, EPE foam is broadly used for most of products, which characterizes with anti-shock and easy-disassemble. Certainly, some of products are shipped in wooden case. If the latter is selected, proceed as follows:

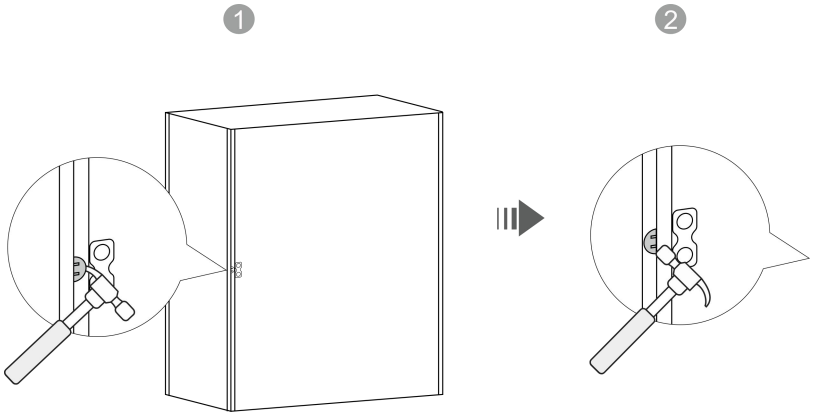


Figure.1

Figure.2

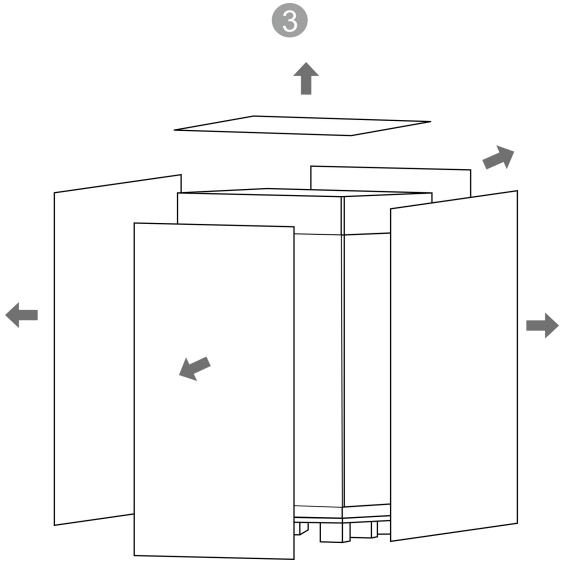


Figure.3

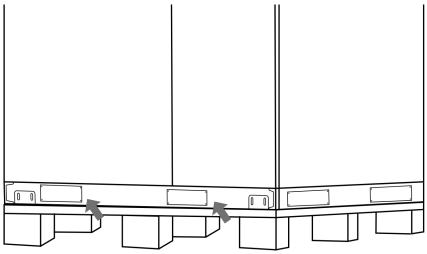


Figure.4

5

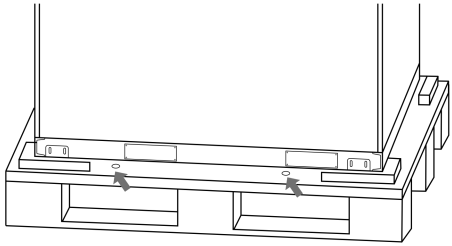
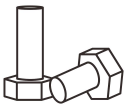
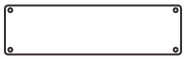
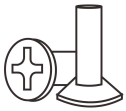
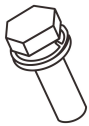


Figure.5

1. Use a claw hammer to pry open the nail and then hammer it flat. See the Figure.1 and Figure.2
2. Pry out all nails and disassembly the top plate and side plates.See the Figure.3
3. Unscrew two protection plates at the bottom of the cabinet.See the Figure.4
4. Unscrew and remove four screws. Now it is ready for lifting and moving.See the Figure.5

After unpacking the equipment, check that the deliverable contents are intact and complete, and free from any damage. If any items listed in the *Packing List* is missing or damaged, contact your dealer or call service hotline: **+86-0574-86320560.**

Packing List			
			
M30*40 Outer hexagon screw **×4**	Cover Plate **×8**	M5*12 Cross head screw **×32**	M10*25 Hexagon combination screw **×8**
			
Steel Angle **×4**	M30 Hanging ring **×4**	M16*100 Expansion bolt **×8**	

3.4 Hoisting

3.4.1 Hoisting Equipment

Warning!

- The hoisting personnel must be trained and qualified until they can take up the post.
- Use only approved lifting equipment to move the battery cabinet system.

Warning!

- Never operate the lifting equipment in bad weather, such as typhoon, heavy rain, thick fog,thunder and so on.
- Before hoisting, ensure that the crane and hoisting ropes meet the load-bearing requirements.
- Do not drag the cabinet when assembling or disassembling the hoisting equipment. Otherwise, the cabinet may be scratched.
- Do not lift or move the equipment after installing batteries into the energy storage system.
- Ensure that all doors of the equipment are closed and locked before hoisting.

3.4.2 Installing the Hanging rings

1. Remove four M30*40 hexagon screws that are preset at the factory to prevent dust or other foreign objects entering the equipment. See the Figure.1.
2. Insert the four hanging rings into holes on the top f the machine and then turn them clockwise until they are secured firmly. See the Figure.2 and Figure.3.

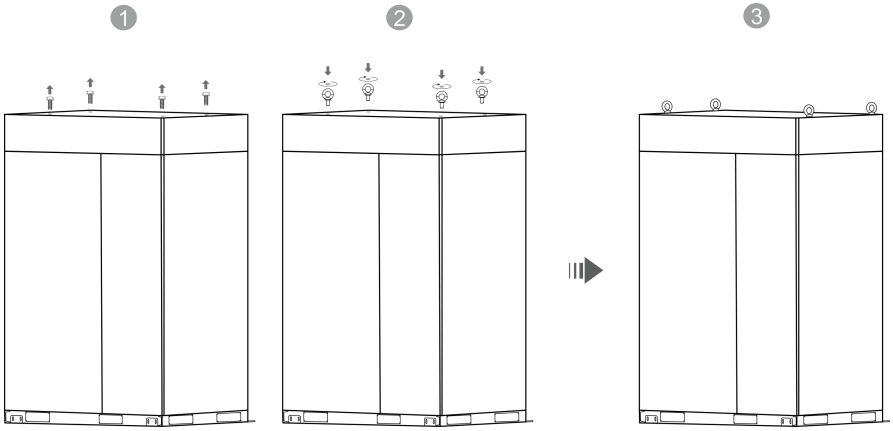


Figure.1 Figure.2 Figure.3

3.4.3 Hoisting the ESS

Warning!

Remember to make sure that your device is connected to the lifting tool correctly and firmly before hoisting. Failure to do so may result in product damages, serious injury,even death.

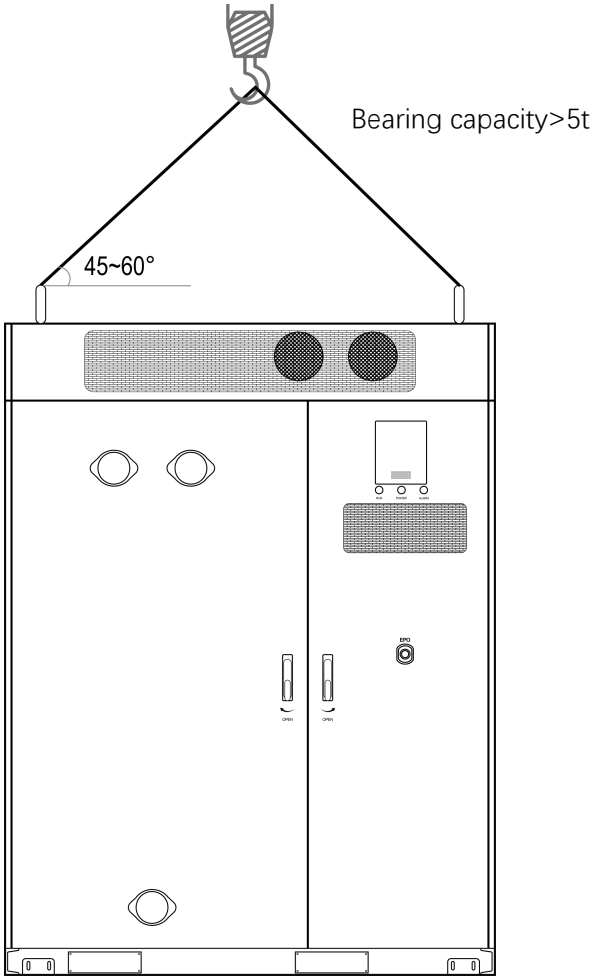


Figure.1

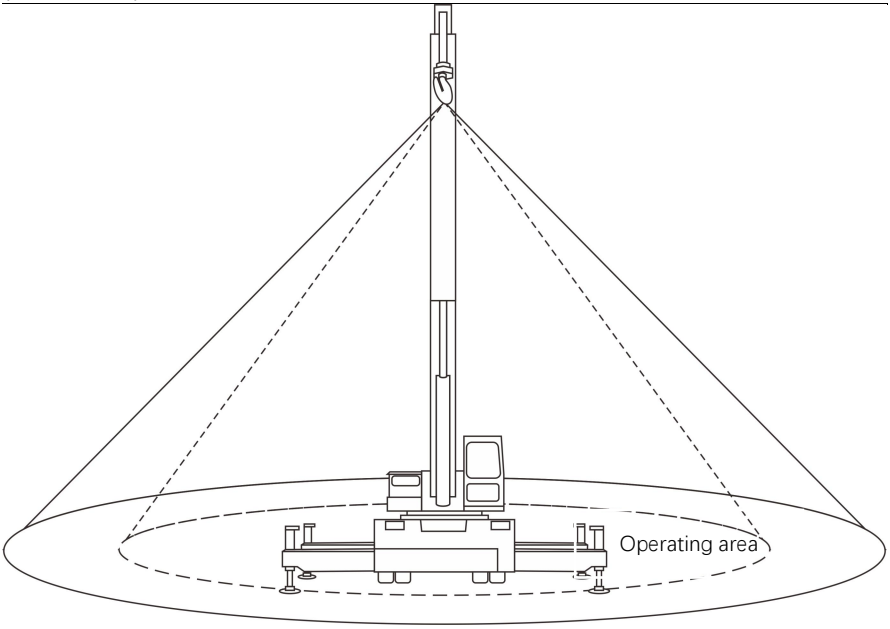


Figure.2

• Ensure that all sling connections are safe and reliable, and that the lengths of the slings connected to the corner fittings are equal. See the Figure.1

• Do not stand within 0.5-1m of the lifting area! During the whole lifting process, no one is allowed to stand under the boom or the work station. See the Figure.2

• A professional instructor is needed in the whole hoisting process.

• The length of the sling can be adjusted appropriately according to the actual requirements of installation site.

• During the lifting process, the devices must be stable and not skewed.

• Please lift the devices from the bottom.

• It is recommended to hoist the equipment from left to right or from right to left to ensure the smooth hoisting.

• Ensure that the crane position is suitable, no long distance hoisting.

• The equipment should be hoisted vertically and should not be dragged on any surface during hoisting.

- Do not shake the crane in order to avoid sudden drop or shock against equipment.
- Hoisting should be handled gently, and the cabinet should fall slowly and smoothly to avoid shock against equipment.

3.5 Installation

Warning!

• Your product is delivered without full charge. It is recommended to make your equipment charged within three months.
• Assembly must be carried out in accordance with the design, technological requirements, regulations and relevant standards.
• The parts must be cleaned before assembly, free of burrs, flash edges, oxide, rust, sand, dust and stains.
• The parts shall not be bumped, scratched or rusted during assembly.
• Wear appropriate personal protective equipment at all times during any assembly operation on site. The following personal protective equipment is considered a minimum requirement:
-In a dry environment, wear S3 safety shoes .
-On rainy or wet ground, wear S5 safety boots .
-Wear flame-retardant work clothes.
-Wear flame-retardant work pants.
-Safety gloves.

3.5.1 Installation Requirements

3.5.1.1 Installation Personnel

• Only qualified professionals or trained personnel are allowed to install, the equipment.

-Professionals:personnel who are familiar with the working principles and structure of the equipment, trained or experienced in equipment operations and are clear of the sources and degree of various potential hazards in equipment installation.

-Trained personnel:personnel who are trained in technology and safety

have required experience,are aware of possible hazards on themselves in certain operations and are able to take protective measures to minimize the hazards on themselves and other people.

• Personnel who plan to install the equipment must receive all necessary safety precautions and local relevant standards.

•Only qualified professionals are allowed to remove safety facilities and inspect the equipment.

•Knowledge of electronic, electrical wiring and mechanical expertise, and be familiar with electrical and mechanical schematics.

• Understanding and complying with this document and other applicable documents.

3.5.1.2 Installation site requirements

Danger!

Do not expose the equipment to flammable or explosive gas or smoke. Do not perform any operation on the equipment in such environments.

Danger!

Do not store any flammable or explosive materials in equipment area.

Danger!

Do not place the equipment near heat sources or fire sources, such as smoke, candies, heaters, or other heating devices. Overheat may damage the equipment or cause a fire.

Warning!

Install the equipment in an area far away liquids. Do not install it under areas prone to condensation, such as under water pipe and air exhaust vent, or area prone to water leakage, such as air conditioner vents, ventilation vents, or feeder windows of the equipment room. Ensure that no liquid enters the equipment to prevent faults or short circuits.

Warning!

To prevent damage or fire due to high temperature, ensure that the ventilation vents or heat dissipation systems are not obstructed or covered by other objects while the equipment is running.

• The installation and usage environment must meet relevant international, the local laws and regulations.The user is obliged to protect the ESS against fire or other hazards.

• Do not install in low-lying areas. The installation level must be at least 300mm higher than the highest water level in the area.

• To protect the equipment from wildfires caused by high temperatures in summer, it should be free of vegetation and flammable plants within 3 meters of the surrounding area.

• Considering safety, the distance between the equipment and residential buildings should be more than 12m, and the distance between the equipment and schools, hospitals and other densely populated buildings should be more than 30.5m. If this safety distance cannot be met, a firewall should be built between the equipment and the building.

• The safe distance between the equipment and the production building shall comply with local fire codes or standards.

• Outdoor storage systems should be at least 10 feet away from boundaries, public roads, buildings, flammable materials, hazardous materials, high piles, and other hazards not associated with the grid infrastructure.

• The equipment should be installed in an environment free from the risk of explosion。

• During the installation, commissioning, and operation of the energy storage system, comply with the principle: the number of fire extinguishers near each unit is not less than 2.

• The distance between the exhaust device of the energy storage system and the heating, ventilation, and air conditioning intakes, windows, doors, discharge platforms, and fire sources of other buildings or facilities shall be more than 4.6m.

•Reserve enough space for expansion according to the needs of the whole life cycle.

• Ensure that the equipment is installed in a clean, dry and well ventilated area with proper temperature, humidity ,altitude range and so on. Check for more data in the "***Technical Specifications***" section.

• Do not install energy storage systems in salt-damaged or polluted areas because they may be corroded. Energy storage systems can be used in the following or better environments:

-In a place where is 2000m far away from the coast. It is not recommended to use the energy storage system when it within 500m to 2000m away from the coast . The energy storage system cannot be used when the distance from the coast is less than 500m .

-In a place where the distance from heavy pollution sources, such as smelters, coal mines, thermal power plants, is more than 1500m at least.

-In a place where the distance from moderate pollution sources such as chemical, rubber, and electroplating is more than 1000m at least.

-In a place where the distance from light pollution sources such as food, leather, heating boilers, slaughter houses, centralized garbage dumps, and sewage treatment stations is more than 500m at least.

• Keep the ESS out of the reach of children and away from daily working or living area, including but not limited to the following areas:studio, bedroom, lounge, living room, music room, kitchen,game room, room theater, sunroom,toilet,bathroom,laundry,and attic.

• Do not install the equipment in places without proper fire fighting facilities, or difficult for firefighters to access.

• Do not install the equipment in an easily accessible position because the temperature of the enclosure and heat sink is high when the ESS is running.

• Do not install the ESS on a moving object, such as ship, train, or car.

• Do not install the equipment in an environment with magnetic dust, volatile or corrosive gases, infrared and other radiations, organic solvents, conductive metal,or salty air.

• Do not install the equipment in an area conducive to growth of microorganism such as fungus or mildew.

• Do not install the equipment in an area with strong vibration, noise, or electromagnetic interference.

• Do not install the equipment in an position that may be submerged in water.

3.5.1.3 Foundation requirements

Unreasonably constructed foundation will bring great troubles to the installation of the ESS, affecting the normal opening and closing of the doors and the normal operation. Therefore, the foundation of the ESS must be designed and constructed according to certain standards to meet the requirements of mechanical support, cable routing and later maintenance and overhaul. At least the following requirements shall be met during foundation construction:

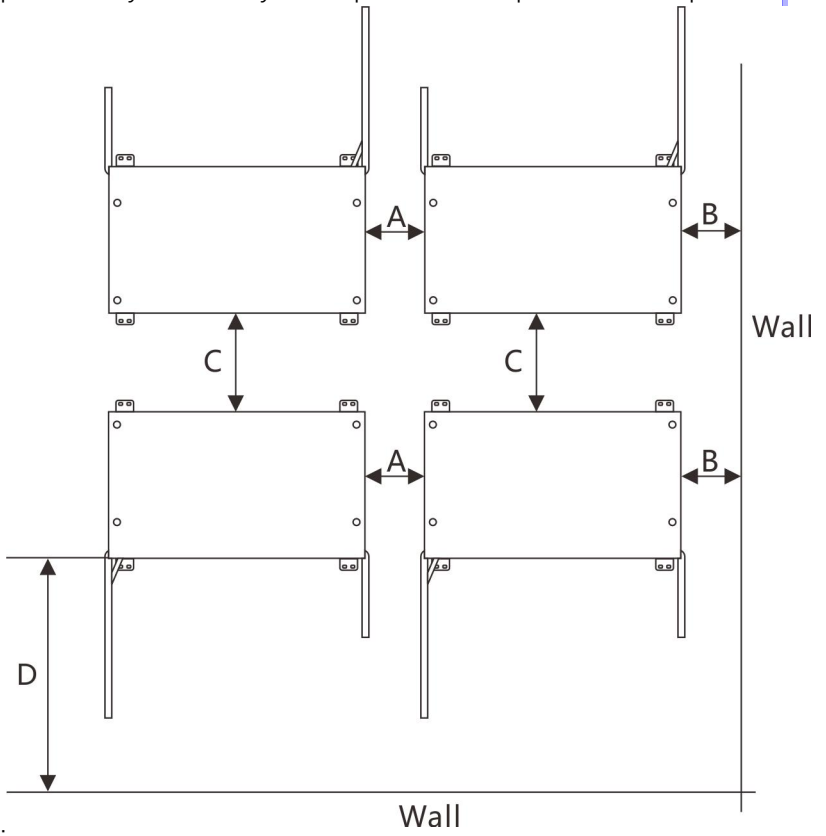
- The energy storage system must be installed on concrete or other non-combustible surfaces. Ensure that the foundation is level, firm, and smooth, and has sufficient bearing capacity. No sag or tilt is allowed.
- Ensure that the ground in the installation environment is solid, free from spongy or soft soil, and not prone to subsidence. The site must not be located in a low-laying land prone to water or snow accumulation.
- The cross-sectional area and height of the foundation should vary according to equipment dimension.
- Construct corresponding drainage in conjunction with local geological conditions.
- Consider cable routing when building the foundation.
- Built a maintenance platform around the foundation to facilitate later maintenance.
- During the foundation construction, reserve enough space for the AC/DC side cable trench according to the position and size of the cable inlet and outlet holes of the ESS and related machines, and preset the cable conduit. Determine the specifications and quantity of the perforating gun according to the model and quantity of the cables.
- Both ends of all embedded pipes should be temporarily sealed to prevent impurities from entering and causing troubles to later wiring.
- After all cables are connected, cable inlet and outlet and connector should be sealed with fireproof mud or other suitable materials to prevent rodent access.

- The dregs excavated during the foundation construction should be removed immediately to avoid affecting the hoisting in the later stage.

3.5.1.4 Installation clearance requirements

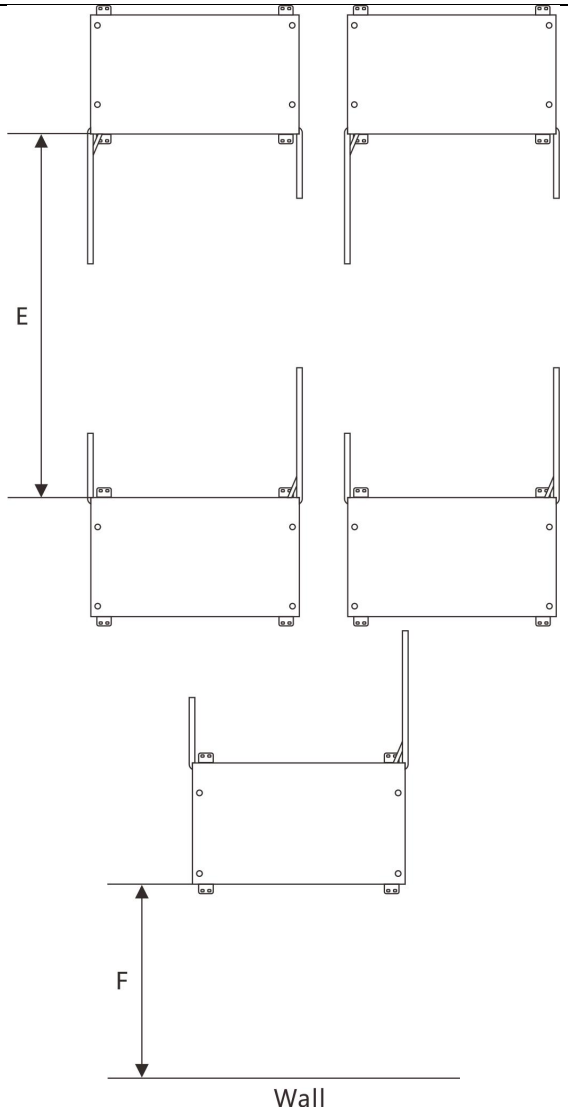
Danger!

No one is allowed to pass within 1.5m behind the cabinet, otherwise this person may be hurt by the explosion relief panel when explosion.



.

Serial number	Distance (mm)
A	150
B	150
C	800
D	1500

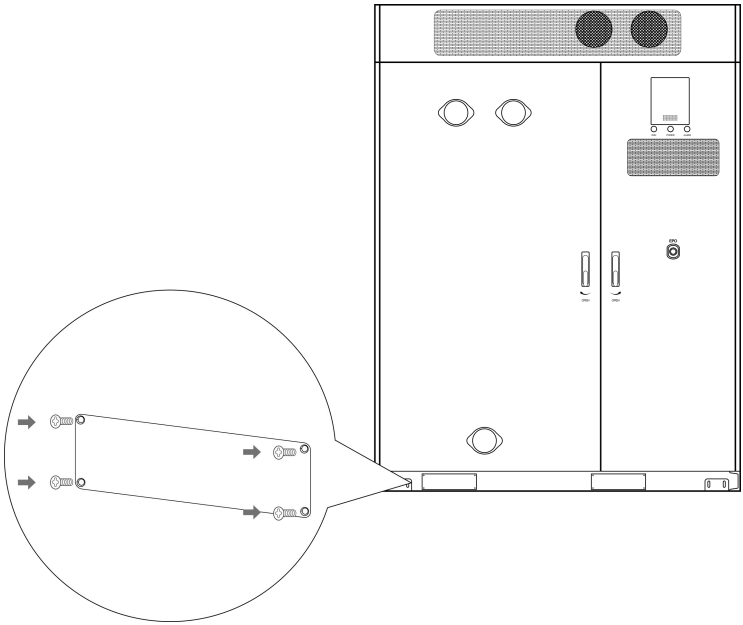


Installation clearance drawing（Vertical view）

Serial number	Distance (mm)
E	3000
F	1500

3.5.2 Attach the Boards

Making sure that the ESS cabinet has been seated well, you need to attach one board onto every hole for forklift fork insertion, which is used to prevent dust or other foreign objects entering the machine.



3.5.3 Fixing the ESS

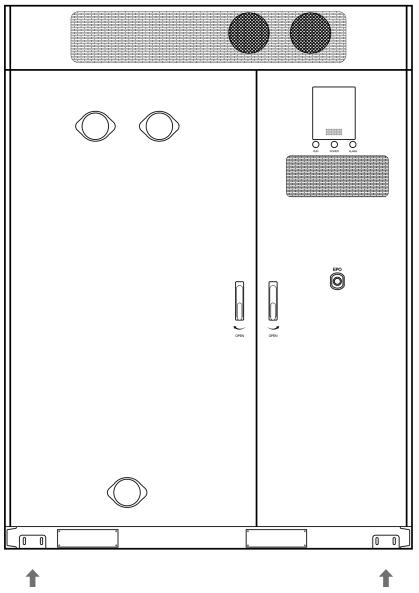


Figure.1-1

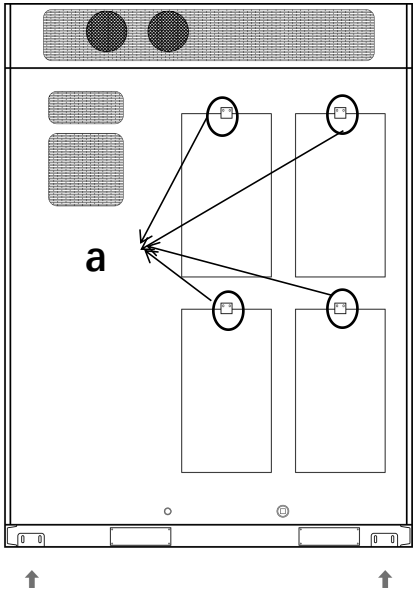


Figure.1-2

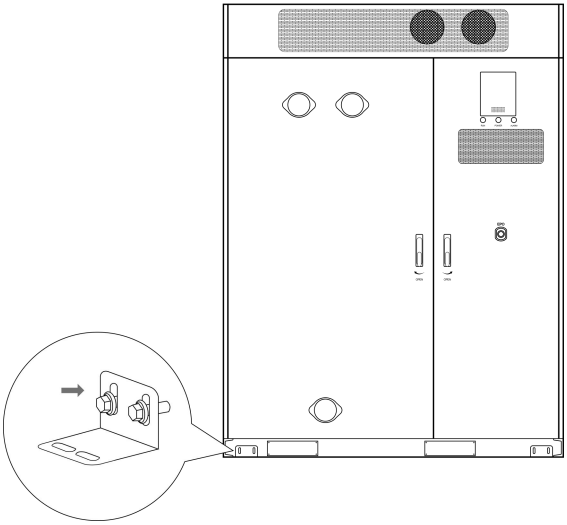


Figure.2-1

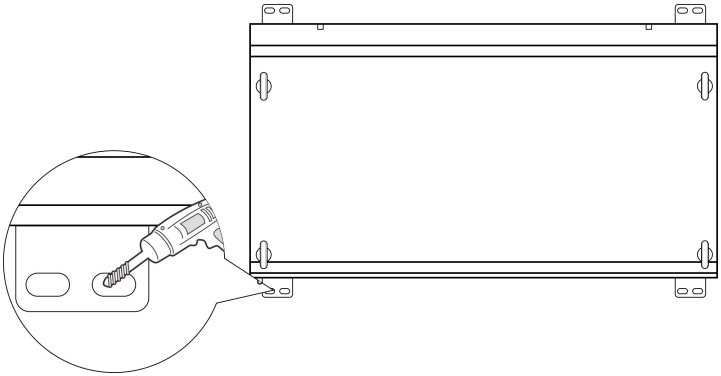


Figure.2-2

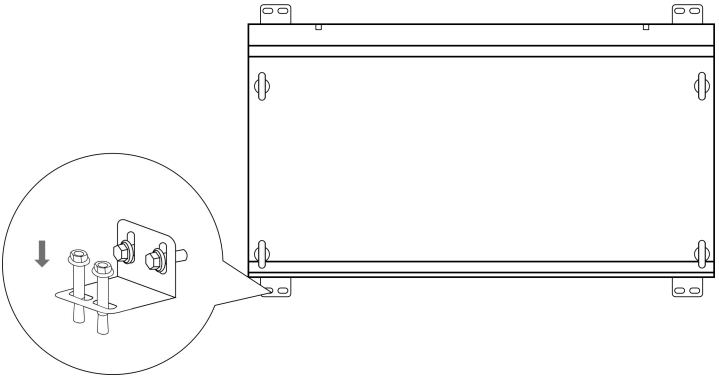


Figure.2-3

1. Locate four mounting holes, 2 holes on the front of the cabinet (Figure.1-1) and others on the back(Figure.1-2).
2. If your product is shipped with 4 L-shaped angle steels, fix them to the cabinet using 8 screws(M10*25) with 30N·m torque. (Figure.2-1&Figure.2-1)
3. After the step 2 is finished, you need to drill 8 holes on the ground using an electric hammer. (Figure.2-2)
4. Fix the 4 angle steels to the ground using 8 expansion screws (M16*100). (Figure.2-3)
5. Remove the 4 items (a) shown in the Figure.1-2.

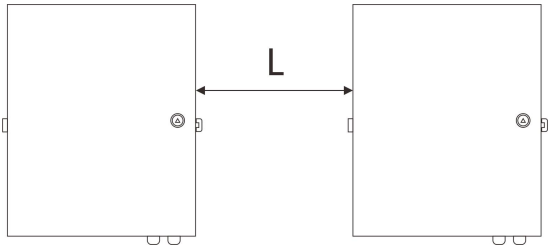
Note!

Due to the uncertainty of drilling accuracy and bit material, it is recommended to choose a drill bit from Φ16.5 to Φ17.

3.5.4 Install the EMS (Optional)

When your EMS products are mounted side by side, there should be sufficient space for opening the EMS door. See the following table.

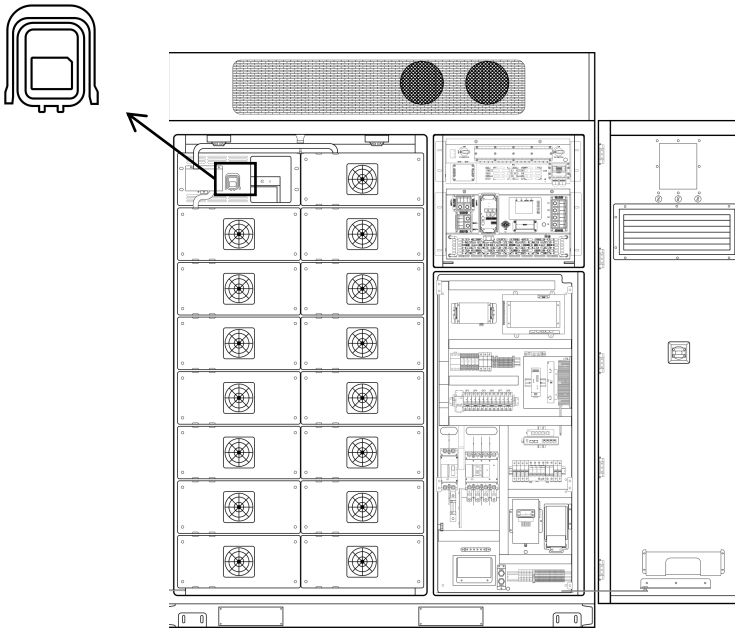
Note: You can acquire relevant information from the data sheet of EMS.



Serial number	Distance (mm)
L	500

3.5.5 Install the MSD

When all installment is completed, remember to plug in the MSD.



4 Electrical Connection

4.1 Preparation before Connection

Notice!High voltage! Shock!

- Do not contact live parts directly without protection!
- Before installation, ensure that there is no voltage on the AC side and DC side.
- Do not place the equipment on a flammable surface.

Warning!

- Sand and moisture infiltration can damage the electrical equipment in the container or affect its operating performance!

-Do not perform electrical connections during sandstorms or when the relative humidity of the surrounding environment is greater than 95%.

-Make electrical connections when there is no wind or sand and when the weather is clear and dry.

- Before connecting cables, check that the polarity of all input cables is correct. Do not pull wires and cables forcibly during electrical installation.
- Otherwise, the insulation performance may be affected. Make sure all cables and wires have enough room to bend. Take necessary auxiliary measures to reduce the stress on cables and wires.
- After each connection is complete, carefully check whether the connection is correct and secure.

4.1.1 Cable Requirements

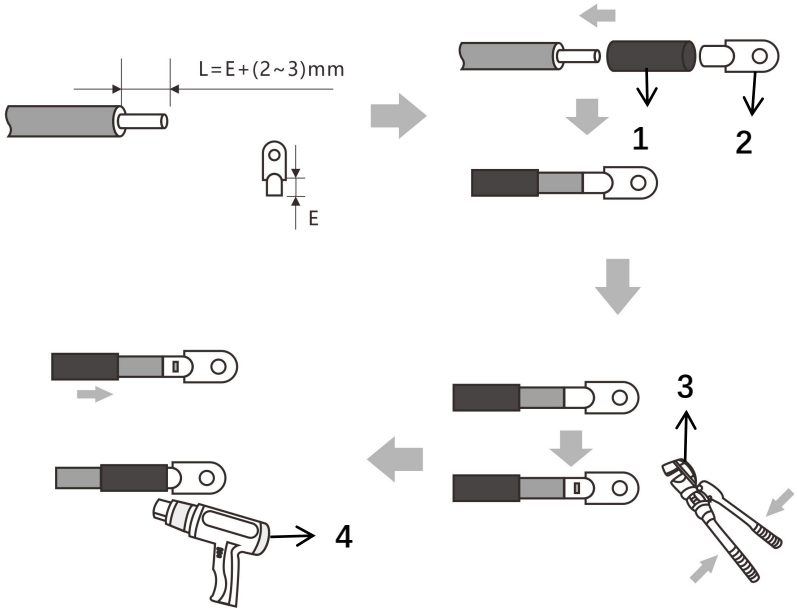
When wiring, cables are supposed to meet the following requirements:

- Sufficient current-carrying capacity. Factors that can influence this capacity are shown as follows:

-environment condition;
-the type of insulated materials of conductors;
-cable routing;
-material and cross-section of cables;

- Suitable diameter and length of cables
- Correct specification and material of cables used for DC input
- Correct specification and material of cables used for AC input
- Only use fire-resistant cables.

How to crimp an OT or DT terminal



NO.	Description	NO.	Description
1	Hot air duct	3	Hydraulic pliers
2	OT/DT	4	Heat Gun

4.1.2 Opening the Door

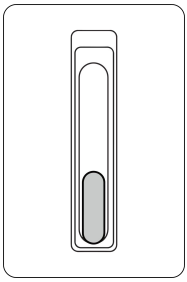


Figure.1

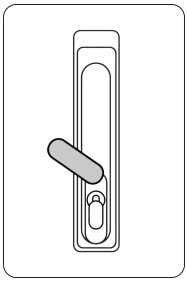


Figure.2

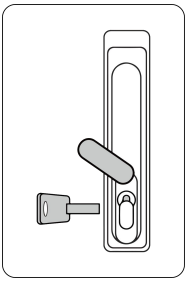


Figure.3

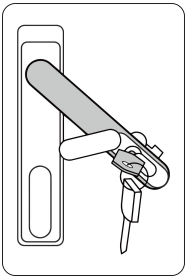


Figure.4

1. The door of the cabinet is in locked state.See the Figure.1
2. Move upward the cover above the keyhole.See the Figure.2
3. Insert the door key and turn it clockwise to eject the handle.See the Figure.3.
4. Turn the handle clockwise and pull out the door.See the Figure.4

4.2 Cable Connection

Danger!

All electrical connections must be made when the equipment is completely powered off.

Danger!

Note the polarities when installing batteries. Do not connect the positive and negative poles of a battery or battery string together. Otherwise, the battery may be short-circuited.

Danger!

Do not smoke or have an open flame around batteries.wear personal protective equipment and and use dedicated insulated tools to avoid electric shocks or short circuits.

Warning!

- Equipment damage caused by incorrect connections is not covered by the product warranty.
- Only qualified electrical technicians are allowed to connect cables.
- Operation personnel must wear proper PPE when connecting cables.

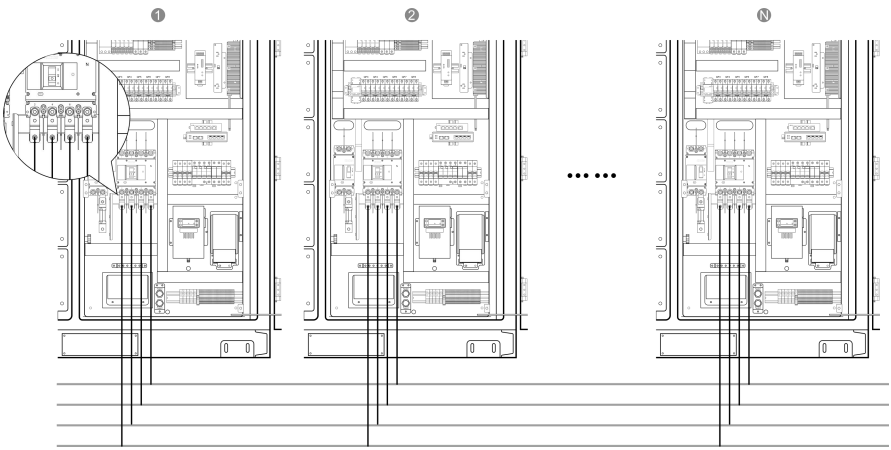
Warning!

When connecting cables, do not place installation tools, metal parts, or sundries on the ESS. After the connection, clean up objects around the area.

Caution!

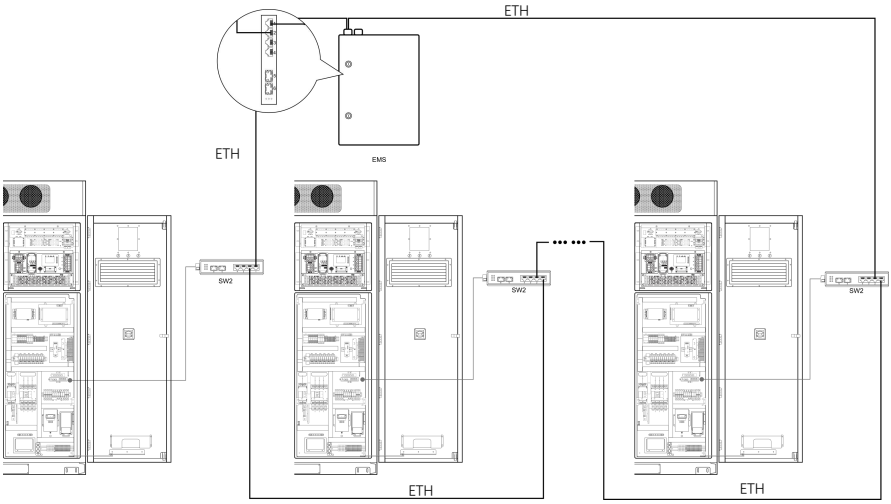
- Do not connect two or more cables to the positive or negative power port a battery in parallel.
- Stay away from the equipment when preparing cables to prevent cable scraps from entering the equipment. Cable scraps may cause sparks and result in personal injury and equipment damage.

4.2.1 GRID

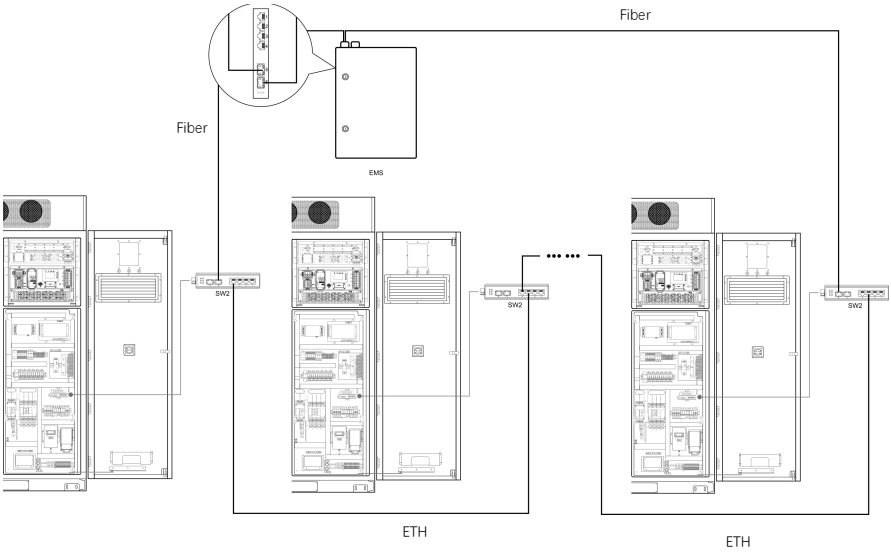


4.2.2 Connection between ESS and EMS

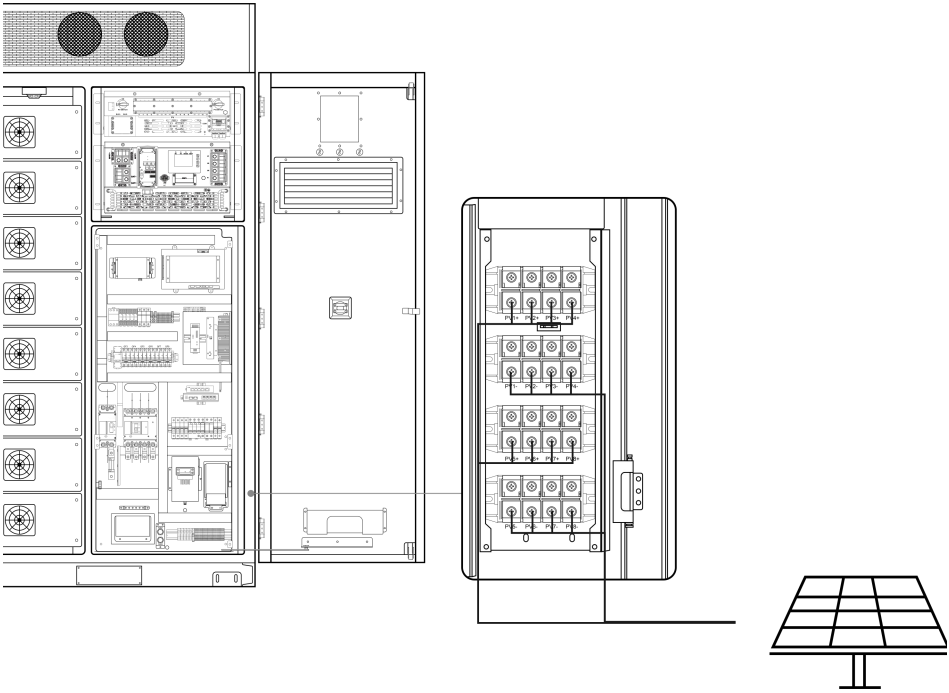
When both distances between the 1st ESS and EMS, the last ESS and EMS are less than100m, use the ETH that is made of CAT5E shielded twisted pair cable and shielded crystal head.



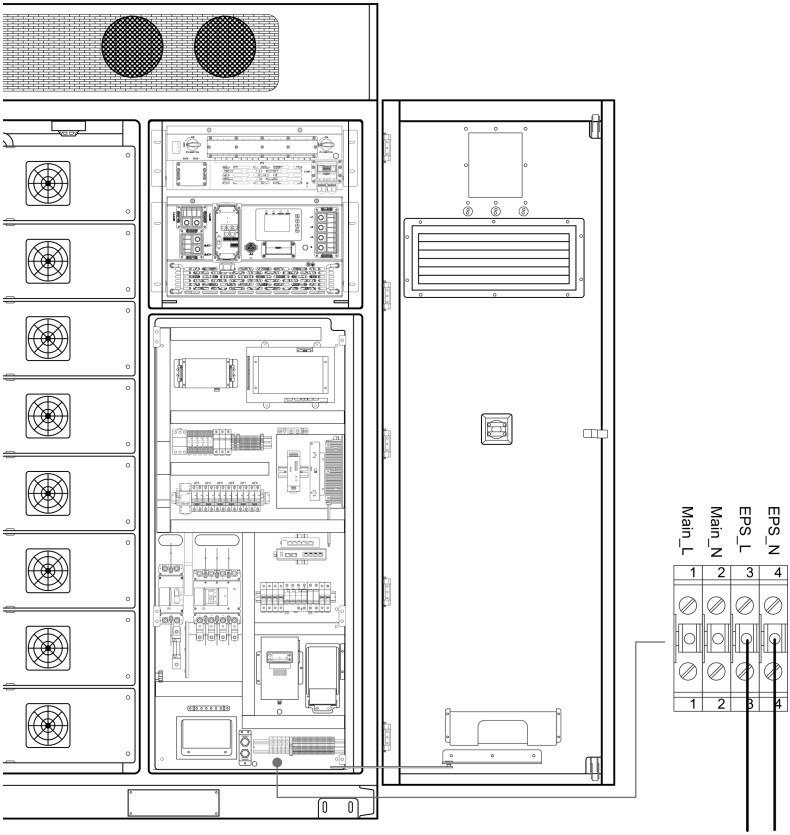
When both distances between the 1st ESS and EMS, the last ESS and EMS are more than100m, use the Fiber. Within ESS cabinets, connect with each other using the ETH that is made of CAT5E shielded twisted pair cable and shielded crystal head.



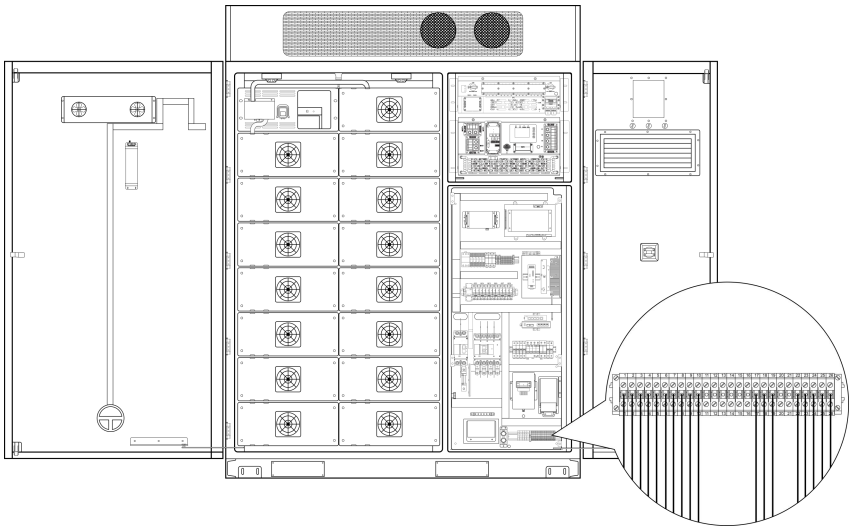
4.2.3 MPPT (Optional)



4.2.4 Backup Power



4.2.5 Communicative Terminal Blocks



Terminal NO.	Function
1,2	Used for emergency signal output
3,4,5	RS-485 communicative terminals blocks for anti-backflow meter
6,7,8	RS-485 communicative terminals blocks for the meter of one ESS
9,10	Used for dry contact output of diesel generator's startup and shutdown
17,22	Used for emergency signal output
18,19	RS-485 communicative terminals blocks for diesel generator
23,24	Used for signal output of the previous ESS's monitoring module
25,26	Used for signal input of the next ESS's monitoring module

5 Operation Instructions

5.1 Powering on the Equipment

5.1.1 Check Before Power-On

General Check

No.	Check Item	Acceptance Criteria
1	Appearance	• The equipment is intact and free from rust or paint flake-off. If the paint flakes off, repair the damaged paint. • The labels on the device are clear. Damaged labels must be replaced.
2	Cable appearance	• Cable sheathings are properly wrapped and not damaged. • Cable hoses are intact.
3	Cable connection	• Cables are connected in the designed positions. • Terminals are prepared as required and securely connected. • Labels on both ends of each cable are clear and specific, and attached in the same direction.
4	Cable routing	• Cables are neat and tidy. • Cable tie joints are evenly cut without burrs. • Cables are placed properly and with slack at bending points to avoid stress. • Cables are routed neatly without twists or crossovers in the cabinets.

Cabinet

No.	Check Item	Acceptance Criteria
1	Installation	• The installation meets the design requirements. • The cabinet is level, and each door opens normally.
2	Appearance	• The cabinet surface is free from cracks, dents, and scratches. If the paint flakes off, repair the damaged paint.
3	Cabinet grounding	• Ground the cabinet correctly according to the requirements of the power distribution system.
4	Accessory	• The number and positions of accessories installed meet design requirements.
5	Label	• All labels are correct, clear, and complete.

Interior

No.	Check Item	Acceptance Criteria
1	Cable	The bolts for installing the cables are tightened and the cables are not loose.
2	Cable hole sealing	Cable holes are sealed.
3	Components	All components are intact.
4	Foreign object	Foreign objects such as tools and remaining materials are cleared.
5	Meter	The meter is free from cracks, dents, and damage, and its buttons are normal.
6	Cabinet grounding	The ground conductor is securely connected to the ground terminal of the cabinet.

5.1.2 Power-On Operations

Danger!

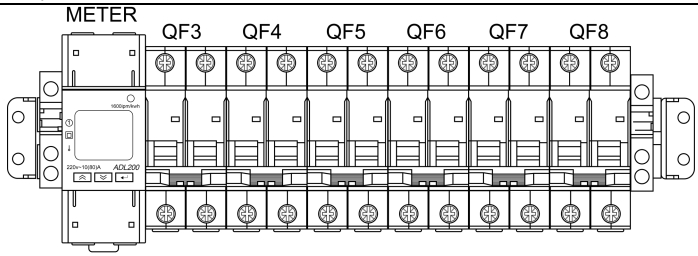
Wear insulated gloves and use insulated tools to prevent electric shocks or short circuits.

Caution!

- During the power-on procedure, monitor the system for faults. If you detect any faults, power off the ESS, rectify the faults, and then continue with the procedure.
- If batteries are fully discharged or over-discharged during system installation and commissioning, charge the batteries promptly to prevent damage due to over-discharge.
- If the ESS has not been used for six months or longer after being installed, it must be checked and tested by professionals before operation. If a circuit breaker in the ESS trips, check the corresponding load side.
- Turn on the circuit breaker only after you have confirmed that there is no short circuit or other fault to prevent the fault from spreading and causing safety risks.

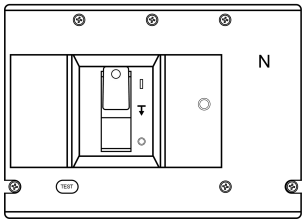
Notice!

Before power-on and long-term operation, remove the desiccants from the ESS and dispose of them according to the applicable local waste disposal act. If the ESS is powered off immediately after being powered on, keep the desiccants in the ESS.



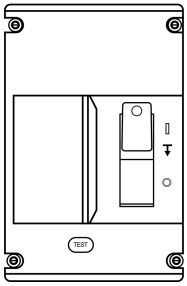
Step 1: Have all the circuit breakers closed from QF3 to QF8 in order.

QF1



Step 2: Turn the QF1 to the “I” position.

QF2



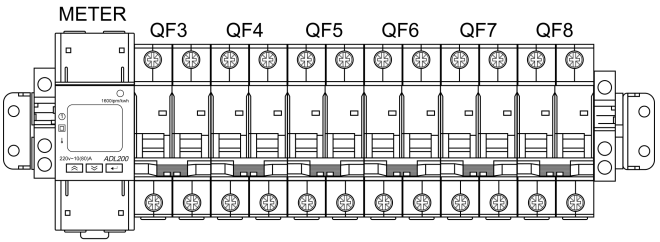
Step 3: Turn the QF2 to the “I” position.

End

5.2 Powering Off The Equipment

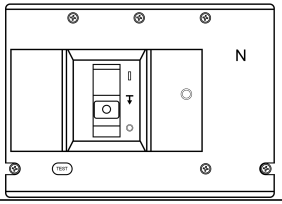
Notice!

Press the emergency stop switch to stop the ESS only in emergency situations.



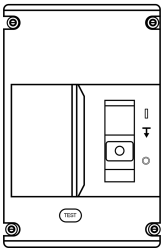
Step 1: Have all the circuit breakers disconnected from QF8 to QF3 in order.

QF1



Step 2: Turn the QF1 to the “O” position.

QF2



Step 2: Turn the QF2 to the “O” position.

End

6 Maintenance

6.1 General Maintenance

Danger!

- Servicing should be performed or supervised by professional personnel.
- Wear personal protective equipment and use dedicated insulated tools to avoid electric shocks or short circuits
- Do not smoke or have an open flame around batteries.
- Do not use wet cloth to clean exposed copper bars or other conductive parts.
- Do not use water or any solvent to clean batteries.
- Charge your equipment in 48 hours after over-discharge.

Warning!

- Do not maintain batteries with power on. Before moving or reconnecting the equipment, disconnect the mains and batteries and wait for five minutes until the equipment powers off. Before maintaining the equipment, check that no hazardous voltages remain in the components to be maintained by using a multi-meters.
- Do not wear jewelry, watches and other metal jewelry when servicing.

Caution!

- Do not connect two or more cables to the positive or negative power port of a battery in parallel.
- Place a warning sign indicting that switch must not be turned on at the position where the switch resides.
- Use a electroscope of a proper voltage level to check whether the equipment is energized and ensure that the equipment is completely powered off.
- Before performing maintenance or repair, securely connect the loop to be

repaired to the main ground loop using a ground cable.
• After the maintenance or repair is complete, remove the ground cable between the loop that has been maintained and the main ground loop.
• Stay away from the equipment when preparing cables to prevent cable scraps from entering the equipment. Cable scraps may cause sparks and result in personal injury and equipment damage.
• Cables should be inserted and removed in accordance with regulations. Violent or brute force operations are prohibited.
• After the maintenance is complete, clean the tools and materials in time, and check whether metal objects remain inside or on the top of the product.
• When replacing batteries, replace with the same type of spare parts.
• Do not open or damage batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
• If you have any questions about the operation and maintenance of this product, please contact the customer service center. Do not operate without authorization.

6.2 Maintenance Schedule

6.2.1 Quarterly Maintenance

Maintenance Category	Maintenance Action	Expected Result
Safety inspection	Check that EPO and switches to shut off the equipment can work normally	●EPO and switches can work normally
Air conditioner	● Check the radiator. ● Clean the filter[1] .	● The radiator can direct the heat out of the air conditioner efficiently. ● The filter is clean and free from blockage.
Cabinet	Perform the visual inspection: ● Rust condition ● Settings	●There is no obvious paint peeling or rust. ●Meet technical requirements in normal run.
Pressure relief window[2]	Perform the visual inspection: ● Appearance ● Rust condition ● Foreign objects/Ice and snow	● There is no obvious paint peeling or rust. ● Pressure relief windows are not damaged. ● There is no foreign object, ice, or snow on the top.
Battery pack	Perform the visual inspection: ● Temperature and humidity ● Run condition	● Check that there is no obvious damage, paint peeling off, or rust on the appearance.

		●Check that the temperature and humidity around batteries are in reasonable ranges ● Check whether voltage and current are in reasonable ranges when in run.

Note [1]: You are advised to clean the filter after each occurrence of a sandstorm and before summer in sandstorm-stricken areas. In other areas, clean the filter according to the actual situation and ensure that the filter or condenser is not blocked. The recommended tool is high pressure water gun.

Note [2]: In areas with severe sandstorms or heavy ice or snow, perform maintenance based on the actual situation. Ensure that there is no foreign object, ice, or snow on the pressure relief windows. Clean the foreign objects, ice, or snow in the specified area to avoid damaging the pressure relief devices due to improper operations.

6.2.2 Semi-annual Maintenance

Maintenance Category	Maintenance Action	Expected Result
Outside the cabinet	Perform the visual inspection: ● Inflammable materials.	There is no any inflammable objects around the cabinet.
Cabinet	Perform the visual inspection: ● Appearance ● Rust condition ● Door lock ● Vent ● Fasteners ● Settings	● There is no obvious paint peeling or rust. ● The door locks are not damaged. ● There is no dust at the vents. ● There are no insects, rodents, snakes or other animals. ● All fasteners are secured firmly. ● All technical settings can support the normal run of the equipment.
Cables	● Check whether cables are securely connected. ● Check whether cables are damaged, especially whether the cable sheath that contacts a metal surface is damaged. ● Check whether	●Cables are securely connected. ●No damages are found on the cables. ●No water enters the equipment and contacts with cables. ●There are no insulating tape is peeling off.

	water is entering into the ESS ● Check whether any insulating tape on terminals is not detached. ● Check whether all cables are routed correctly.	●Cable routing is performed correctly and reasonably
Grounding reliability	● Check whether the PE cable is securely connected.	The PE cable is securely connected.
Battery pack	Perform the visual inspection: ● Appearance ● Rust condition ● Foreign objects ● Fan	● The coating is not peeling or scratched. ● There is no obvious rust. ● There is no foreign objects around the batteries. ● The fan rotates properly without excessive noise.

6.2.3 Annual Maintenance

Maintenance Category	Maintenance Action	Expected Result
System	Perform the visual inspection: ● Appearance ● Temperature and humidity ● Vent ● Dust ● Rust	● There is no obvious deformation inside the cabinet . ● Temperature and humidity are in normal ranges. ● There is no dust at the vents. ● There is no obvious noise when interior devices are in normal run. ● There is no rust inside the cabinet.
Alert labels	● Check the warning labels.	● All warning labels are visible, and no damages or stains on them.
Overload protection devices and fuses	Perform the visual inspection: ●SCB2, SCB1 ● Fuse	● These devices including fuse,SCB2, and SCB1 are secured firmly.
Battery pack	Perform the visual inspection: ● Appearance ● Temperature and humidity ● Vent ● Dust ● Rust	● There is no obvious deformation on the battery. ● Temperature and humidity are in normal ranges when in run. ● There is no dust at the vents.

	● Cable	● There is no obvious noise when batteries are in run. ● There is no rust inside the batteries. ● Cable are connected correctly between battery and battery, battery and other devices.
Fire suppression system	Perform the visual inspection: ● Fire suppression devices ● Cables	● No any obvious damages on the appearance. ● The settings of all the fire suppression devices can meet relative requirements. ●There is no obvious obstacles when the fire suppression devices are in run. ● Cable are connected correctly and securely. ●There are no insulating tape is peeling off.

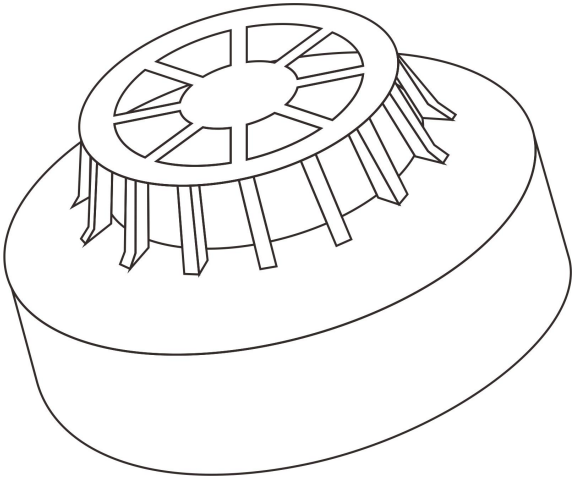
*Gas detector: LEL detector is recommended to be zeroed once every six months and calibrate once 1 year; The CO detector is recommended to be zeroed once every 1 year and calibrated once every 2 years. Remote/field zeroing is possible.

7 Fire suppression system

7.1 Heat detector

The heat detector monitors temperature and provides a voltage output proportional to the external air temperature by using either a dual thermistor network. One thermistor is exposed to give good thermal contact with the surrounding air while the other thermistor is thermally insulated and it emits red light to reminder the operator when detecting abnormality.

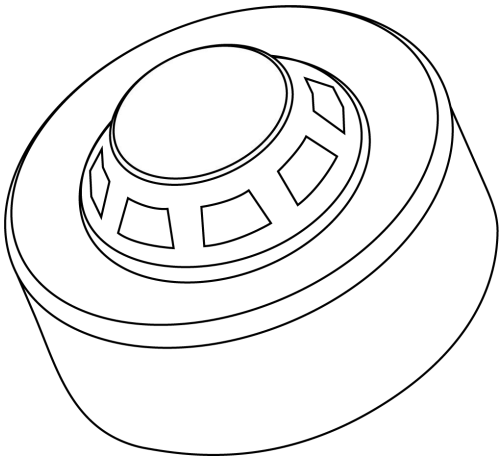
- Ideal for environments that are dirty or smoky under normal circumstances
- Wide operating voltage.



7.2 Smoke Detector

The smoke detector uses the scattered light principle to detect smoke entering the chamber located within the detector housing.

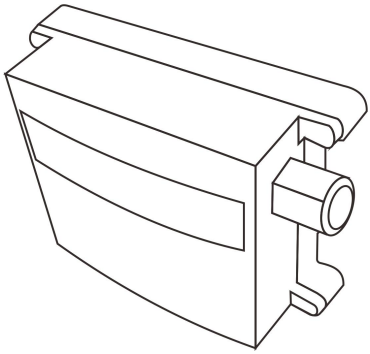
- Responds well to slow burning, smouldering fires
- Unaffected by wind or atmospheric pressure
- Flashing LED and magnet operated test switch option on selected detectors.
- Alarm indicator:Clear light emitting diode (LED) emitting red light



7.3 Gas Detector

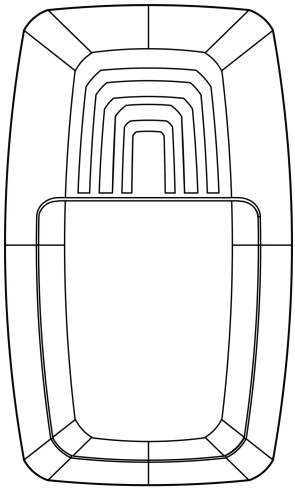
The sensors are used to accurately measure carbon monoxide, hydrogen and combustible gas concentrations in the environment.This module adopts RS485 mode output and alarm point output, which is convenient for users to use and has good consistency and stability.

- Long life
- High stability
- High precision and sensitivity
- Modular design and easy maintenance



7.4 Sounder Strobe

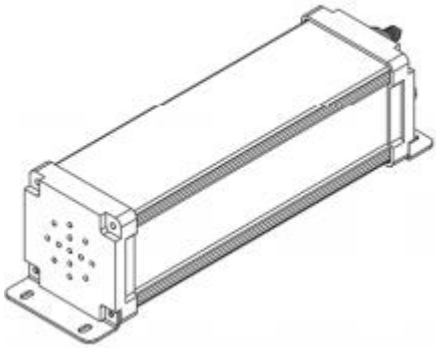
This is an audible combined visual alarm device used to warn people in field when fire occurs. It can give audible and visual alarm signal when applied to external 24VDC power.



7.5 Fire Suppression System

7.5.1 Aerosol Fire Suppression Device

This is a aerosol extinguishing device. When a fire occurs, the fire extinguishing device ignites the thermal line after receiving the electric start signal or the open fire, and the electric initiator or thermal line burns and activates the aerosol generator in the fire extinguishing device. The aerosol generator decomposes the chemical coolant through the heat released by a series of reactions, so that the aerosol generator and the coolant can be combined to fight against the fire.



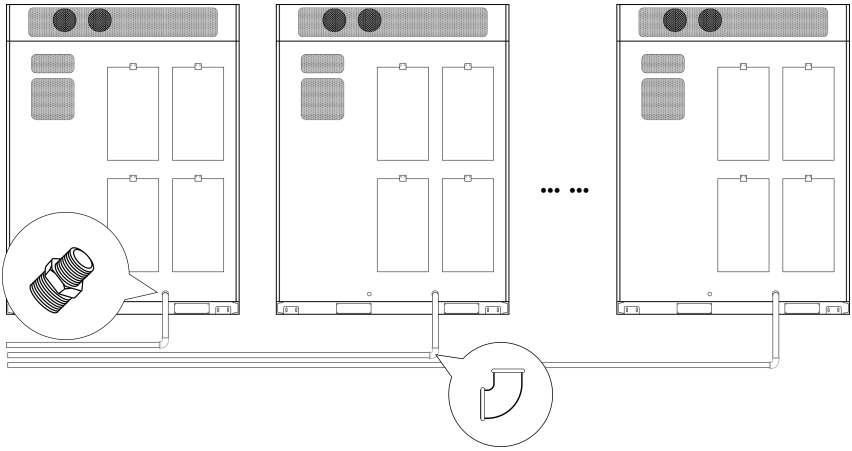
7.5.2 Water Fire Suppression System

Water fire protection is the last protective barrier, opened when all fire protection Settings are executed or fail.
The water spray extinguishing system should be opened manually or automatically (optional).

Notice!： The recommended water pipe is R11/4inch.

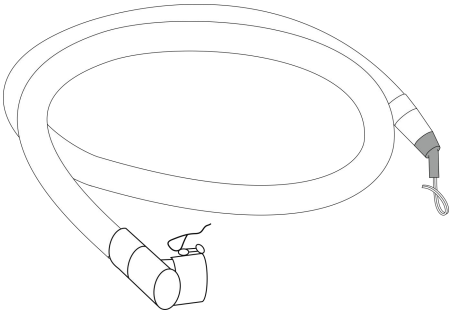
How to install the water pipe?

When installing multiple cabinets, you are advised to install an extension pipe (the length is based on customer requirements),Tee-junction connectors, and finally connect the water source (the direction of water supply varies according to customer demand).



7.5.3 FK5112 Fire Suppression Tube (Optional)

Flexible suppression tube is a fully submerged automatic fire suppression product, made of special polymer thermal tube and stainless steel accessories, with a clean fire extinguishing agent (FK5112) in the tube, when the temperature at any point of the suppression tube reaches at 100 ±10℃, regardless of whether there is an open flame, the suppressor tube automatically bursts and the extinguishing agent stored in the suppressor tube is released instantly to suppress early fires.



Caution!

FK5112 fire extinguishing agent has limited fire effect in the following situations:

※ Certain chemicals or chemical mixtures, such as cellulose nitrate and gunpowder, which can oxidize rapidly in the absence of air

* Active metals such as lithium, sodium, potassium, magnesium, titanium, zirconium, uranium, and plutonium

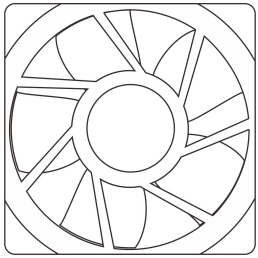
※ Metal oxide

* Chemicals that can withstand self-thermal decomposition, such as certain organic peroxidase and hydrazine.

7.6 Exhaust Fan and Explosion Relief Outlet

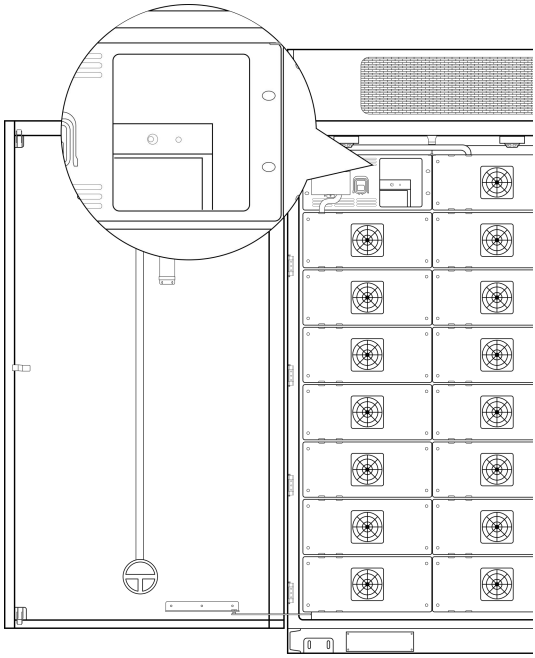
7.6.1 Exhaust Fan

The exhaust fan is the actuator of the active exhaust system. When the combustible gas is released from the battery, the exhaust fan reduces the concentration of combustible gas in the battery cabinet.



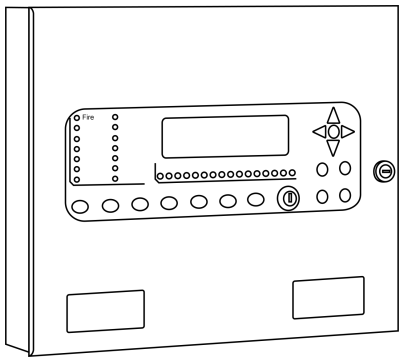
7.6.2 Pressure Relief Window

The Pressure relief window is located at the back of the battery compartment. In the event of an explosion, the explosion pressure before and after the battery compartment is balanced, and the shock wave generated at the front is smoothly transmitted to the window , so that the explosion relief panel can be opened smoothly and the impact inside the ESS can be reduced.

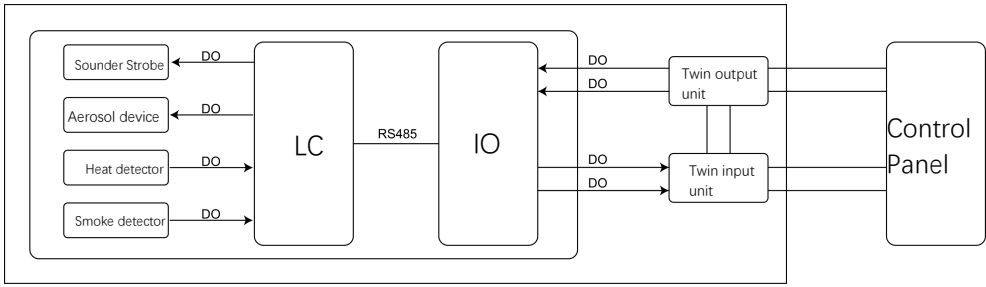


7.7 Fire control panel (Optional)

There is an analogue address fire control panel. It can receive signals sent by smoke and heat detector, and output signals that control sounder strobe and aerosol device. It is with such functions as signal display and action equipment positioning, resetting, and fault feedback. In addition, it supports reading LC/EMS output dry contact signal under the help of smart module.



If needed, the control panel should be installed in the fire control chamber and the twin input/output unit should be installed onto the cabinet board. The unit works as a central conversion device, one end being connected with the IO board, the other end being connected to the control panel.



8 Repair Paint Damage

8.1 Prerequisites

• Do not apply paint in bad weather, such as rain, snow, strong wind, and sandstorm, when there is no shelter outdoors.
• You have prepared the required paint that matches the color palette delivered with equipment.

8.2 Paint Repair Description

The equipment appearance should be intact. If paint has flaked off, repair paint damage immediately.

Note!
Check the paint damage on the equipment and prepare appropriate tools and materials. The number of materials depends on site requirements.

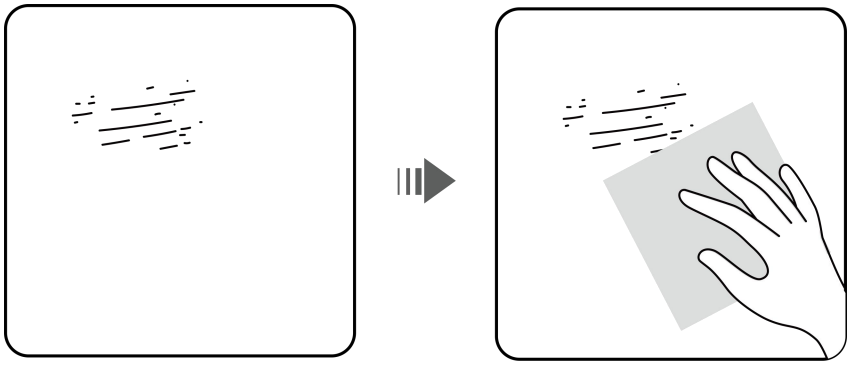
8.2.1 Paint repair description

<table>
<tr><th>Paint Damage</th><th>Tool and Material</th><th>Procedure</th><th>Description</th></tr>
<tr><td>Slight scratch (steel base material not exposed)</td><td rowspan="2">Spray paint or paint, brush (required for repainting a small area), fine sandpaper, anhydrous alcohol, cotton cloth, and paint spray gun (required for repainting a large area)</td><td rowspan="2">Steps 1, 2, 4, and 5</td><td rowspan="4">1. For a few scratches, smudges, or rust, manual paint spraying or brushing is recommended.
2. For many scratches or large-area smudges and rusts, use a paint spray gun.
3. The paint coating should be thin and even. Paint drops are prohibited on the coating. The surface should be smooth.
4. Leave the repainted area for approximately 30 minutes before performing any further operation.</td></tr>
<tr><td>Smudges and rust that cannot be removed</td></tr>
<tr><td>Deep scratch (primer damaged, steel base material exposed)</td><td>Spray paint or paint, zinc-rich primer, brush (required for repainting a small area), fine sandpaper, anhydrous alcohol, cotton cloth, paint spray gun (required for repainting a large area)</td><td>Steps 1, 2, 3, 4, and 5</td></tr>
<tr><td>Logo and pattern damage</td><td colspan="2">If a logo or pattern is damaged, provide the logo size and color number. Seek help from a local supplier of advertisement coatings to formulate a repair solution based</td></tr>
</table>

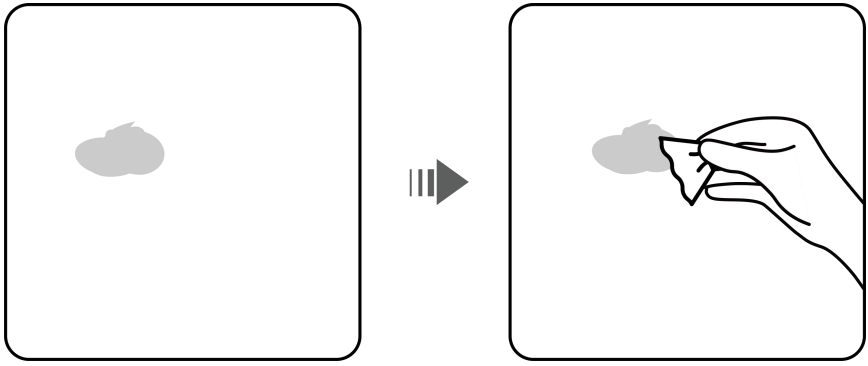
	on the logo size, color, and damage.	
Dent	If a dent is less than or equal to 100 mm² in area and less than 3 mm in depth, fill the dent with Poly-Putty base and then perform the same operations as those for processing deep scratches. If a dent is greater than 100 mm2 in area or greater than 3 mm in depth, ask the local supplier for an appropriate repainting solution.	

8.2.2 Procedure

1. Gently polish damaged areas using fine sandpaper to remove smudges or rust.



2. Dip a piece of cotton cloth into anhydrous alcohol and wipe the polished or damaged area to remove the dirt and dust. Then wipe off the anhydrous alcohol with a clean and dry cotton cloth.



3. Paint zinc-rich primer on the damaged coat using a brush or paint spray gun.

Notice!

• If the base material is exposed in the area to be repaired, apply epoxy zinc-rich primer, wait until the paint has dried, and then apply acrylic acid top coat.

• Select epoxy zinc-rich primer or acrylic acid top coat with a color the

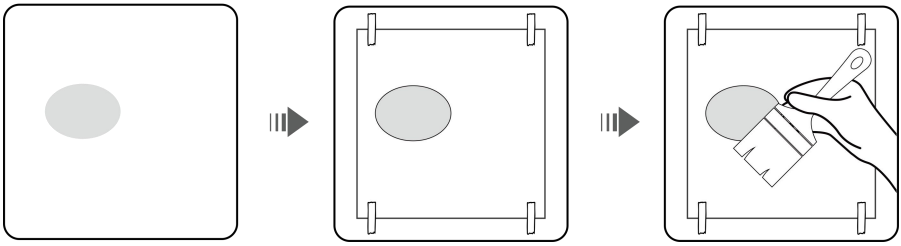
same as the surface coating color of the equipment.

4. Apply paint evenly to the damaged area based on the damage degree of the paint using an aerosol spray, brush, or paint spray gun until all damage traces are invisible.

Notice!

• Ensure that the painting is thin, even, and smooth.

• In the case that an equipment pattern has different colors, to prevent undamaged areas and those with different colors as the damaged area from being contaminated during repainting, cover such areas using white paper and adhesive tape before repairing paint.



5. Wait for 30 minutes and check whether the painting meets the requirements.

Note!

• The color of the repainted area must be consistent with that of the surrounding area. Make sure that there is no visible edge between the repainted area and the surrounding area. The paint should be free of bulges, scratches, flaking, or cracks.

• If you choose to spray paint, it is recommended that you spray paint three times before checking the result. If the color does not meet the requirements, paint more times until the painting meets the requirements.

9 Emergency Handling

If an accident (including but not limited to the following) occurs on the site, ensure the safety of onsite personnel first and contact the service engineers.

9.1 Battery Falling or Strong Impact

• If a battery has obvious damage or abnormal odor, smoke, or fire occurs, evacuate the personnel immediately, call emergency services, and contact the professionals. The professionals shall use fire extinguishing facilities to extinguish the fire under safety protection.

• If the appearance is not deformed or damaged, and there is no obvious abnormal odor, smoke, or fire, ensure safety and perform the following operations:

–Warehouse: Evacuate personnel, transfer the battery to an open and safe place by professionals using mechanical tools, and contact the service engineers. Leave the battery for an hour and ensure that the battery temperature is within the room temperature range (tolerance: ±10°C) before handling.

–ESS onsite: Evacuate personnel, close the doors of the ESS, transfer the battery to an open and safe place by professionals using mechanical tools, and contact the service engineers. Leave the battery for an hour before handling.

9.2 Flood

• Power off the system if it is safe to do so.

• If any part of the batteries is submerged in water, do not touch the batteries to avoid electric shock.

• Do not use batteries that have been soaked in water. Contact a battery recycling company for disposal.

9.3 Fire

Danger!

• If a fire occurs, power off the system if it is safe to do so.

• Extinguish the fire with carbon dioxide, FM-200 or ABC dry powder fire extinguishers.

• Ask firefighters to avoid contact with high-voltage components during fire fighting to prevent the risk of electric shock.

• Overheating may cause battery deformation, faults, and leakage of corrosive electrolytes or toxic gases. Use respiratory protective equipment and keep a safe distance from the batteries to prevent skin irritation and chemical burns.

9.4 Fire Alarm Horn/Strobe

When the alarm indicator on the equipment blinks or buzzes:

• Do not approach.

• Do not open the door.

• Stay away immediately.

• Cut off the power supply remotely only when your safety is guaranteed.

9.5 Gas Exhaust

• Onsite personal protection: Do not directly face the exhaust vents.

• Post-disaster product maintenance: Contact the service engineers for evaluation.

9.6 Extinguishant Release or Fire

Suggestions for onsite O&M personnel:

• When a fire occurs, evacuate from the building or equipment area, press the fire alarm bell, and immediately call the fire emergency service. Notify the professional firefighters and provide them with relevant product information, including but not limited to battery pack types, ESS capacity, and battery pack location and distribution.

• Do not enter the affected building or equipment area under any circumstances, and do not open the doors of the ESS. Isolate and monitor the site. Keep irrelevant personnel away from the site.

• After calling the fire emergency service, remotely power off the system while ensuring your own safety.

• After professional firefighters arrive, provide relevant product information, including but not limited to battery pack types, ESS capacity, battery pack location and distribution, and user manuals.

• After the fire is extinguished, the site must be handled by professionals in accordance with local laws and regulations. Do not open the doors of the ESS without permission.

• Post-disaster product maintenance: Contact the service engineers for evaluation.

Suggestions for professional firefighters:

• For product information, see the information provided by O&M personnel, including but not limited to battery pack types, ESS capacity, battery pack location and distribution, and user manuals.

• Do not open the doors of the ESS before it is deemed safe by professionals.

• Follow local fire fighting regulations.

• When a fire occurs, prevent the fire from spreading to nearby ESSs.

10 Storage

Note!

- Only trained and qualified personnel are allowed to operate batteries. Wear insulated gloves and use dedicated insulated tools during the operation.

- Do not store battery packs for extended periods. Batteries that have been stored for extended period shall be charged periodically.

Long-term storage of lithium batteries cay cause capacity loss.

- The storage environment must comply with local regulations and standards.

10.1 ESS Storage

Storage Requirements

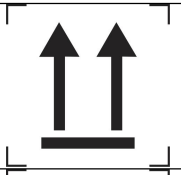
• You are advised to store the ESS in a dry, clean, and ventilated indoor environment that is free from sources of strong infrared or other radiations, organic solvents, corrosive gases, and conductive metal dust. Do not expose the ESS to direct sunlight or rain. Keep the ESS far away from sources of heat and fire.

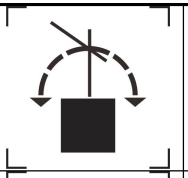
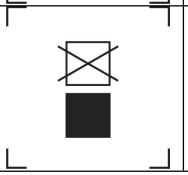
• Store the ESS separately to avoid mixing with other equipment. The site must be equipped with qualified fire fighting facilities, such as fire sand and fire extinguishers.

• The ESS must be disconnected from external equipment during storage, and the ESS indicators must be off.

Place the ESS correctly according to the signs on the packing case during storage. Do not place the ESS upside down, lay it on one side, or tilt it.

The ESS packaging signs are described as follows.

Name	Symbol	Description
Up		The package shall be kept upright during transportation and storage.
Fragile		The package contains fragile objects and shall be handled with care.
Keep dry		The package shall be protected against rain, and rainproof measures shall be taken during transportation and storage.

Do not roll		The package shall not be rolled during transportation.
Do not stack		The package shall not be stacked.

- Do not unpack an ESS if it will be stored for a long time.
- Do not stack the ESS.
- Ensure that the ground surface is flat (for long-term or temporary storage).
- Refer to the section “Technical Specification” for storage temperature and humidity.
- Close the cabinet door.
- For long-term storage (more than six months after delivery), replace the desiccants with those of the same specifications and amount.
- The storage duration starts from the latest charge time labeled on the ESS packaging.The following table lists the maximum charge intervals. Charge the ESS promptly and calibrate the SOC to 50%. Otherwise, the battery performance and service life may be deteriorated.
- When stored in low SOC, the batteries must be charged within the maximum interval corresponding to the SOC when the batteries are powered off. If the ESS is not charged within the specified interval, the batteries may be damaged due to over-discharge.

- If the ESS has been stored for longer than allowed, promptly report the condition to the person in charge.
- Ensure that the ESSs are delivered on a "first-in, first-out" basis.
- Handle the ESS with care to prevent damage.

10.2 Battery Storage

- Ensure that batteries are stored in a dry, clean, and ventilated indoor environment that is free from sources of strong infrared or other radiations, organic solvents, corrosive gases, and conductive metal dust. Do not expose batteries to direct sunlight or rain and keep them far away from sources of heat and ignition.
- Store batteries in a separate place. Do not store batteries together with other devices. Do not stack batteries too high. The site must be equipped with qualified fire fighting facilities, such as fire sand and fire extinguishers.
- After batteries are powered off, static power consumption and self-discharge loss may occur in internal modules, which may cause battery damage due to over-discharge. Do not store batteries in low SOC and charge batteries in a timely manner.
- The batteries in storage must be disconnected from external devices. The indicators on the batteries must be off.
- If a battery experiences an abnormality such as bulging or smoking during charge, stop charging immediately and dispose of it.
- If batteries have been stored for longer than allowed, promptly report the event to the person in charge.
- Ensure that batteries are delivered based on the "first in, first out" rule.
- Handle batteries with caution to avoid damage.

10.3 PCS Storage

When devices are stored as spare parts and will not be put into use immediately, the following storage requirements must be met:

- If devices are unpacked but will not be used immediately, put them back to the original packaging with the desiccant, and seal with tape.
- When temporarily storing devices outdoors, do not stack them on a pallet. Take rainproof measures such as using tarpaulins to protect devices from rain and water.
- Refer to the Technical specification for more information including storage temperature and relative humidity
- Do not remove the packaging. Check the packaging regularly (recommended: once every three months). Replace any packaging that is damaged during storage.
- Do not store devices for more than two years. If devices have been stored for two years or longer, they must be checked and tested by professionals before being put into use.
- To avoid personal injury or device damage, exercise caution when stacking devices to prevent them from falling over.

11 Transport

1. The battery products should be transported after packaging and during the transportation process. Severe vibration, impact, or extrusion should be prevented to prevent sun and rain. It can be transported using vehicles such as cars, trains, and ships.
2. Always check all applicable local, national, and international regulations before transporting a Lithium Iron Phosphate battery.
3. Transporting an end-of-life, damaged, or recalled battery may, in certain cases, be specially limited or prohibited.
4. Transportation and storage service providers must have the certification for dangerous goods operations required by local laws, regulations, and standards.
5. Before transportation, make a compliant and accurate declaration. Ensure that the battery packaging, labels, and markings are intact and there is no abnormal smell, leakage, smoke, or fire. Otherwise, the batteries must not be transported.
6. Exercise caution when moving batteries to prevent bumping and ensure personal safety.
7. Unless otherwise specified, dangerous goods must not be mixed with goods containing food, medicine, animal feed, or their additives in the same vehicle or container, and sharp objects are not allowed in the same vehicle or container.
8. Store batteries in a separate area away from heat sources. Protect batteries from moisture, water, and rain. Stack batteries according to the labels on the packing case. Do not stack batteries more than the allowed stacking layers. Do not place batteries on one side or upside down.
9. When transporting faulty batteries, avoid approaching flammable material storage areas, residential areas, or other densely populated places, such as mass transit facilities or elevators.
10. The transport of the Li-Ion battery falls under hazard class UN3480, class 9. For transport over water, air and land, the battery falls within packaging group PI965 Section I. Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of lithium-ion

batteries which are assigned Class 9. Refer to relevant transportation documents.

Miscellaneous Dangerous Goods and UN Identification Label

12 Environmental Disposal

• Used batteries can not be disposed of as household waste. Incorrect disposal may result in pollution or explosion.

• If damages or leakage happen to the battery, ask for technical supports or contact the qualified recycle body to help deal with batteries.

• Batteries of end of life need to be disposed of in an environmentally-friendly manner.

• You are obliged to handle waste batteries, such as removal of privacy on product, and return them to designated or authorized recovery point according to applicable regulations and standards on waste battery disposal.

Attention!

1. Do not dispose of batteries and rechargeable batteries as domestic waste! You are legally obliged to return used batteries and rechargeable batteries.
2. Waste batteries may contain pollutants that can damage the environment or your health if improperly stored or handled.
3. Batteries also contain iron, lithium and other important raw materials, which can be recycled.

For more information, please visit http://www.deyeess.com. Do not dispose of batteries as household waste!

Service Hotline: +86-0574-86320560

Email: service-ess@deye.com.cn

Website: http://deyeess.com