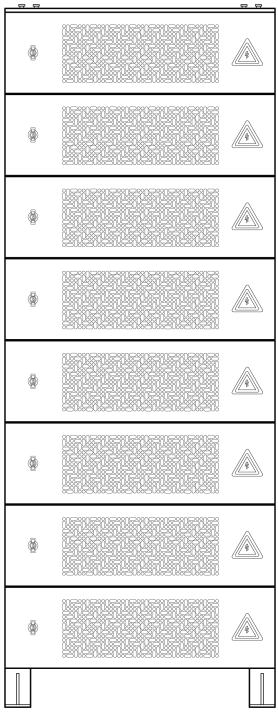
User Manual

Product Name: MS-MPPT-200-2
MPPT Model: SUN-MPPT-L01-EU-AM8



Contents

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 so on. 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.

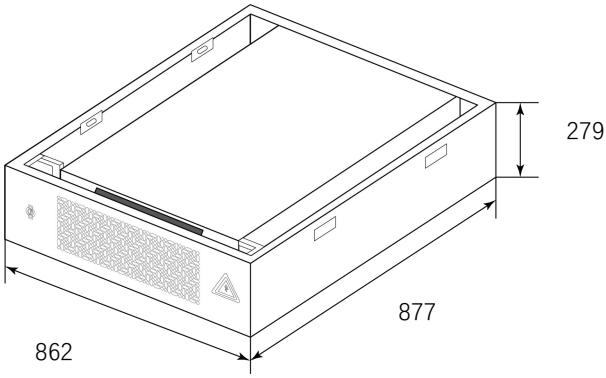
2 Product Description

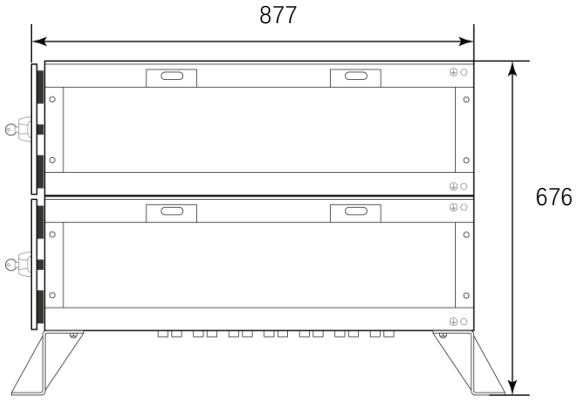
2.1 Product Introduction

This product adapts the MPPT technique, which stands for Maximum Power Point Tracking, is a control strategy or technique used in photovoltaic (PV) systems and other renewable energy applications. Its core function is to continuously adjust the electrical operating point of the power generation device to ensure it operates at its Maximum Power Point (MPP)under varying environmental conditions, thereby maximizing the system's energy output .

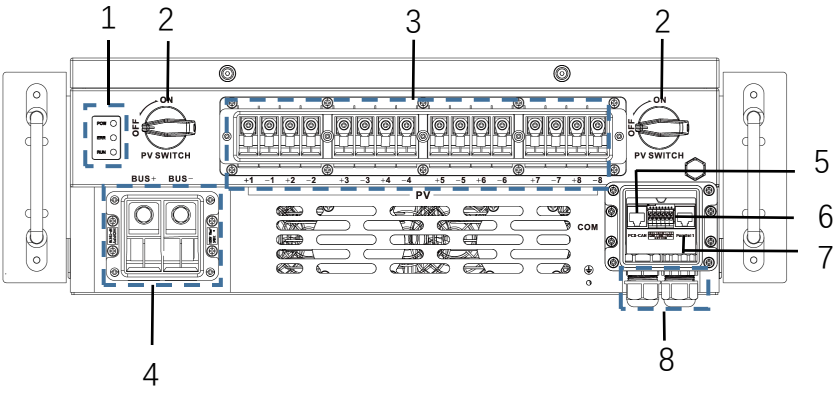
Your product features a stack design, allowing the number of stacks to be selected as needed. It possesses the following characteristics:
1. Independent Channel Operation: Each MPPT channel operates independently, preventing performance issues in one string (e.g., due to shading) from affecting the output of other strings. This effectively solves the "bottleneck effect" common in traditional systems where the weakest panel dictates the performance of the entire string .
2. Modular and Redundant Architecture: The physical and electrical stacking of standardized MPPT units allows for easy expansion and built-in redundancy. This enhances system reliability and availability .
3. Advanced Control Algorithms: Sophisticated algorithms manage power distribution and coordination among the multiple MPPT channels, ensuring optimal system operation under various conditions

2.2 Product Size





2.3 Product Overview



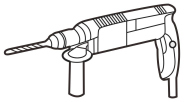
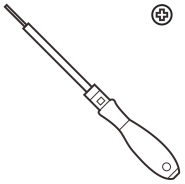
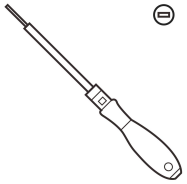
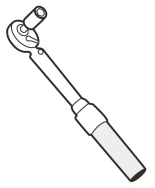
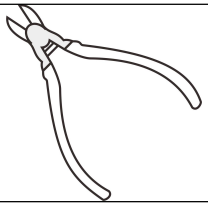
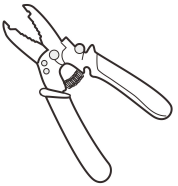
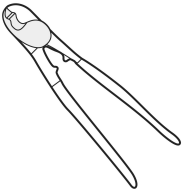
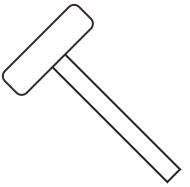
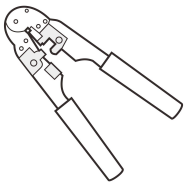
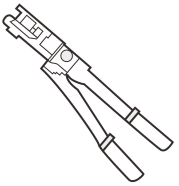
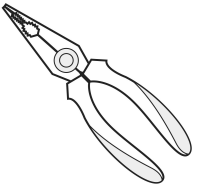
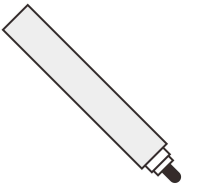
1. Status indicators	5. PCS-CAN port
2. PV switch	6. Function port
3. PV input ports	7. Parallel 1 port
4. DC output	8. Inlet of cables

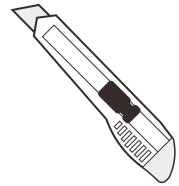
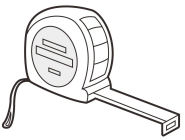
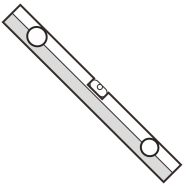
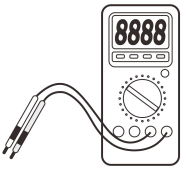
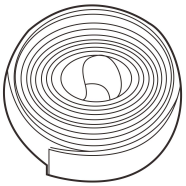
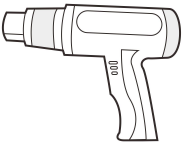
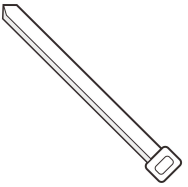
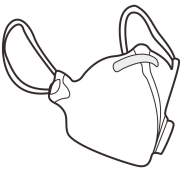
There are three status indicators by to display the equipment's state:

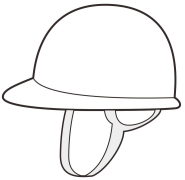
Status indicator	State	Messages
POW	Solid green light	MPPT modules are powered on
ERR	Off	Normal
	Solid red light	MPPT modules are malfunctioning
RUN	Solid green light	Normal

3 Installation

3.1 Materials Required

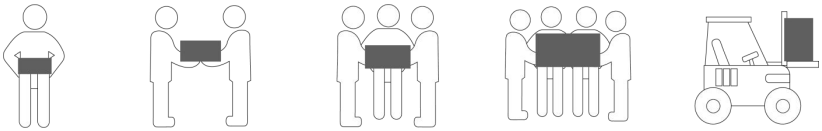
Tools			
			
Hammer drill	Phillips insulated torque screwdriver	Flat-head insulated torque screwdriver	Insulated torque socket wrench
			
Diagonal pliers	Wire stripper	Cable cutter	Rubber mallet
			
RJ45 crimping tool	Hydraulic pliers	Needle-nose pliers	Marker

			
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 table for movement of heavy objects.



Weight	Method	Recommendation
<18 kg (40lbs)	Manual handling	1 person
18~32 kg (40~70lbs)	Manual handling	2 persons
32~55 kg (40~70lbs)	Manual handling	3 persons
55~68 kg (121~150lbs)	Manual handling	4 persons
> 68 kg (150lbs)	Moving device	Forklift

When moving heavy objects manually:

• If multiple persons need to move a heavy object together, determine the manpower and work division with consideration of height and other condition to ensure that the weight is equally distributed.

• If two persons or more move a heavy object together, ensure that the object is lifted and landed simultaneously and moved at a uniform pace under the supervision of one person.

• Wear personal protective gears such as protective gloves and shoes when manually moving the equipment.

• To move an object by hand, approach to the object, squat down, and then lift the object gently and stably by the force of the legs instead of you back. Do not lift it suddenly or turn your body around.

• Move a heavy object stably with balanced force at an even and low speed. Put down the object stably and slowly to prevent any collision or drop from scratching the surface of the equipment or damaging the components and cables.

• When moving a heavy object, be aware of the workbench, slope, staircase, and slippery places. When moving a heavy object through a door, ensure that the door is wide enough to avoid bumping or injury.

When moving with forklift:

• 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 machine or placing it upside down. If the device must be tilted or inverted , please straighten it as soon as possible, and the system needs to be left standing for 2 hours before it can be powered on.

3.3 Unpacking

Warning！

• After setting up the equipment well, carefully unpack the package so as to avoid scratching equipment.

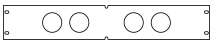
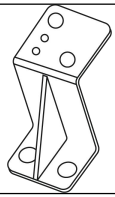
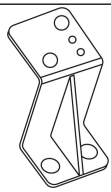
• If possible, do not remove the transport packaging before arrival at the installation site.

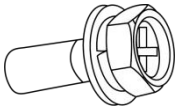
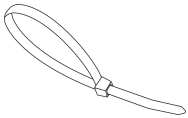
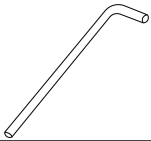
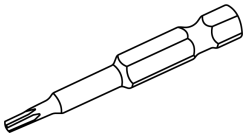
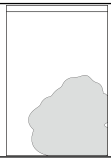
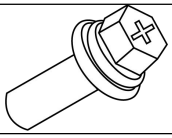
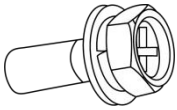
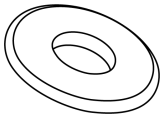
• After unpacking, check whether the fasteners and removable parts are missing. If they are missing, please contact you vendor at once.

• Keep the equipment stable during unpacking.

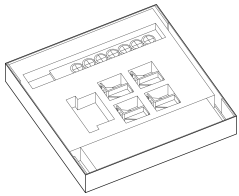
• If the installation environment is not friendly to the equipment, take measures to prevent failure caused by condensation or dust corrosion (for example, cover with woven cloth or dust cover).

• 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 1		
		
625*100*2.5 Epoxy board×2n pcs	772*100*2.5 Epoxy board×n pcs	Round PVC grommet ×18n pcs
		
M6 Flange nut ×16n pcs	140*80*126 Mounting feet (left) ×2n pcs	140*80*126 Mounting feet (right)×2n pcs

		
860*876*10 Top cover×n pcs	M8 *20 Cross recessed hexagon bolt with indentation ×12n pcs	5*200 Plug-in cable tie ×100n pcs
		
4*200 (500pcs/bag) Self-locking cable tie ×100n pcs	T20*25*65 Ring spanner ×n pcs	M10*120 Expansion bolt × 8n pcs
		
Plum hollow drill bit×1 pcs	Fire-resistant mud 2.5kg	
Packing List 2		
		
M6 *20 Hexagon bolt ×2m pcs	M8 *20 Cross recessed hexagon bolt with indentation ×4m pcs	8*20*2 Flat washer ×4m pcs
		
100mm 8AWG Ground cable ×(m-1) pcs		

[1] All attachments listed in the **Packing List 1** are placed in to the container. See the figure.



[2] The attachments listed in the **Packing List 2** are supplied in a self-sealing bag. The bag is fixed to the handle of the MPPT module via a cable tie.

[3] **m**: stacked MPPT modules; **n**: the number of clusters

3.4 Installation

Warning!

• 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.

3.4.1 Installation Requirements

3.4.1.1 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.

3.4.1.2 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, or ventilation vents. 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 equipment 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。
•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 the equipment in salt-damaged or polluted areas because they may be corroded. This product 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 product when it within 500m to 2000m away from the coast . The equipment 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 equipment 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 equipment is

running.
• Do not install the equipment 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.

3.4.1.3 Foundation requirements

An inadequately constructed foundation can introduce substantial challenges to the installation of MPPT modules, affecting the smooth operation of doors and the overall functionality of the system. Consequently, the foundation for MPPT modules must be meticulously designed and constructed in accordance with established standards. This ensures it fulfills the necessary requirements for mechanical support, cable routing, and future maintenance and overhaul operations. During the construction of the foundation, at least the following criteria must be satisfied:

1. **Surface Material:** Install cabinets on concrete or other non-combustible surfaces.
2. **Surface Condition:** Ensure the surface is level, secure, flat, with sufficient load-bearing capacity, and free of depressions or tilts.
3. **Concrete Specifications:** Default to C30 grade concrete with a thickness of 200mm if not specified.
4. **Extension Beyond Cabinet:** Extend each side 300mm beyond the cabinet edges.
5. **Reinforcing Steel Bars:** Use HRB400 (Grade III) steel bars, 12mm diameter, spaced 150mm apart.
6. **Anti-Corrosion Measures:** Apply anti-corrosion treatments to steel bars after rust removal as per standards.
7. **Bedding Layer:** Use a 100mm thick C15 grade bedding layer under the slab.
8. **Bearing Stratum:** Foundation bearing stratum must be undisturbed soil with a characteristic bearing capacity ⩾100Kpa.
9. **Dewatering Measures:** Implement dewatering during construction to prevent waterlogging in the foundation pit.
10. **Excavation Safety**: Ensure proper safety measures for excavation support.
11. **Water Prevention:** After excavation, the foundation pit must not be soaked in water. If disturbed by water, further excavation and replacement filling are required.

12. **Height Requirement:** The foundation must be higher than the local historical highest water level and at least 300mm above the ground level.
13. **Drainage System:** Build drainage facilities according to local geology and municipal drainage requirements to ensure no water accumulation occurs at the equipment foundation. It should meet the drainage needs for the largest rainfall in local history. Discharged water from the drainage system must be treated in accordance with local laws and regulations.
14. **Surface Leveling:** The levelness error between the equipment foundation and the cabinet contact surface must be ≤3mm.
15. **Pit Compaction:** The bottom of the equipment foundation pit must be compacted and leveled before proceeding with construction.
16. **Weight Bearing:** The equipment foundation is configured according to the total weight of the equipment. If the bearing capacity of the foundation does not meet requirements, re-verification is necessary.
17. **Cable Management:** When building the foundation, consider the cable outlet of MPPT modules and reserve trenches or inlet holes accordingly.
18. **Sealing:** Both the reserved holes of the equipment foundation and the inlet holes at the bottom of the equipment should be sealed after installation.

Cable Trench Requirements

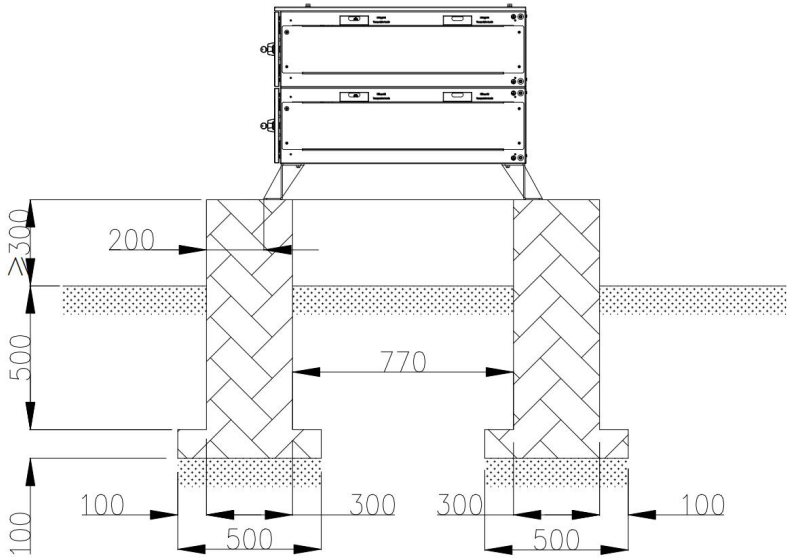
For MPPT modules adopting the bottom cable entry method, a trench must be preinstalled on-site since no side cable inlets are provided to prevent foreign objects from entering. The following requirements apply to the trenches:

1. **Dust-proof and Rodent-proof Design:** To avoid foreign objects entering MPPT modules, the trench must have an effective dust-proof and rodent-proof design.
2. **Waterproof and Moisture-proof Measures:** In order to prevent cable aging and short circuits that could impact the normal operation of the MPPT modules, the trench needs waterproof and moisture-proof measures.
3. **Sufficient Cable Bending Radius:** Considering the larger power rating

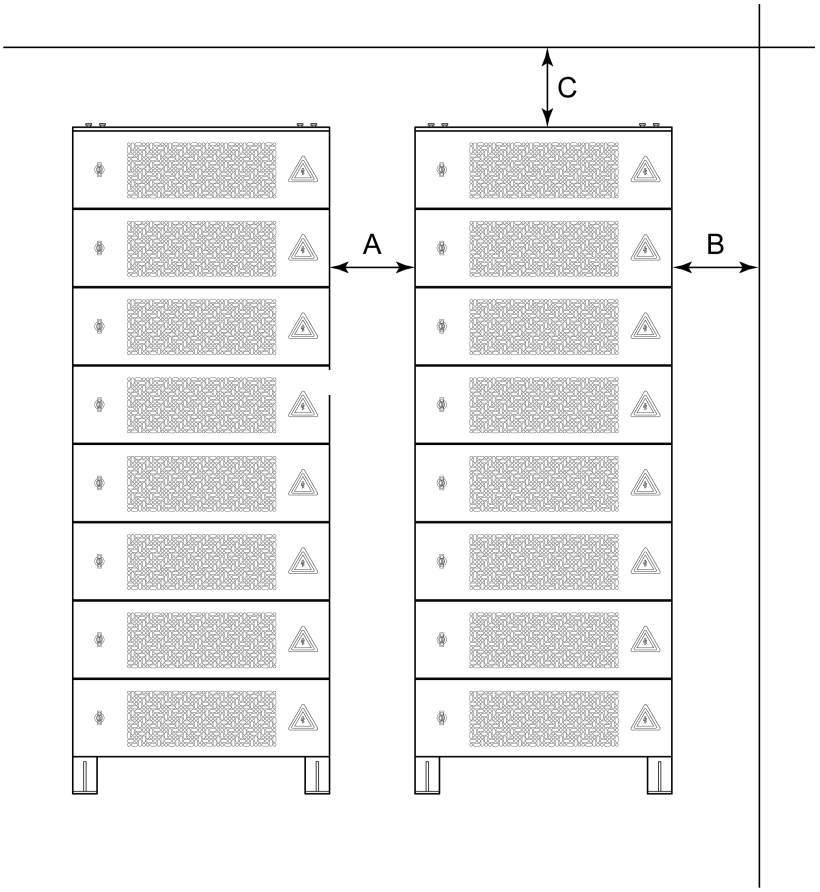
of the MPPT modules and the requirement for thicker cables, the trench design must take into account the cross-sectional area of the cables and provide a sufficient bending radius.

Warning!

The foundation drawing cannot be used as the final construction drawing but only for reference. Users must verify the design parameters of the foundation based on the installation environment, ground bearing capacity, geological conditions, and seismic requirements of the project site.



3.4.1.4 Installation clearance requirement



Item	Distance (mm)
A	≥1000
B	
C	

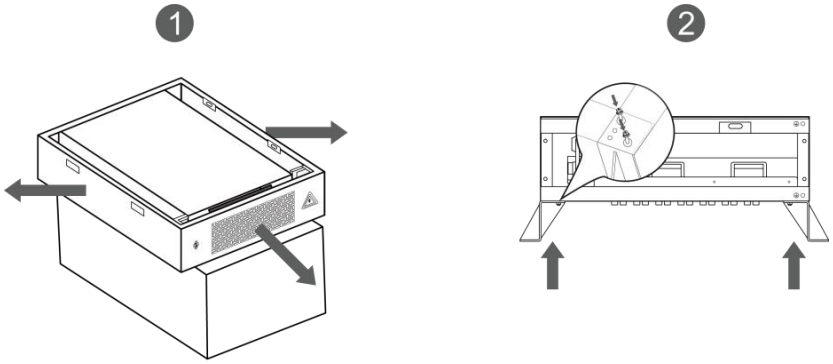
3.4.2 Installing MPPT Modules

Caution！

For this product, there are two installation methods, which differ only in the first two steps. If a sturdy and level workbench is available on-site, the method 1 is recommended.

Method 1: If a sturdy and level surface (such as workbench) is available

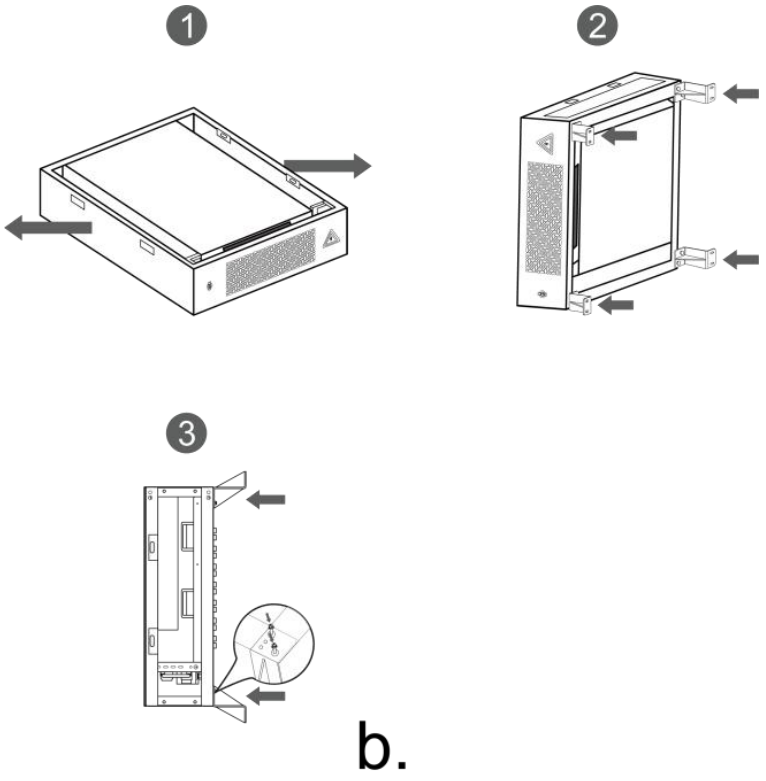
1. Open the front door, and remove the left and right plates by unfastening M4 screws with a ring spanner or drill. Keep those M4 screws for future use.
2. Take the mounting feet from the accessory kit. Install them sequentially onto the four corners of the machine body from the bottom. Secure the mounting feet using the provided M8x20 bolts. Each mounting feet requires two bolts. The recommended tightening torque for the bolts is 15 N·m. Making sure four mounting feet are attached firmly, place the module steadily on the level ground for further installation. Place the module steadily on the level ground with the top side upward.



a.

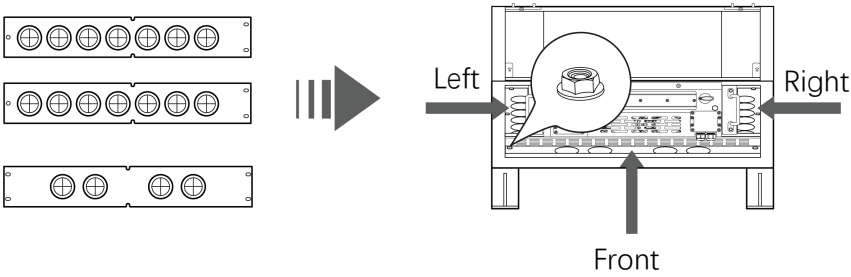
Method 2: If a sturdy and level surface (such as workbench) is unavailable

1. Remove the left and right plates.Tilt the machine body to the side for subsequent installation.
2. Take the mounting feet from the accessory kit. Install them sequentially onto the four corners of the machine body from the bottom. Secure the mounting feet using the provided M8*20 bolts. Each mounting feet requires two bolts. The recommended tightening torque for the bolts is 15 N·m. Place the module steadily on the level ground with the top side upward.

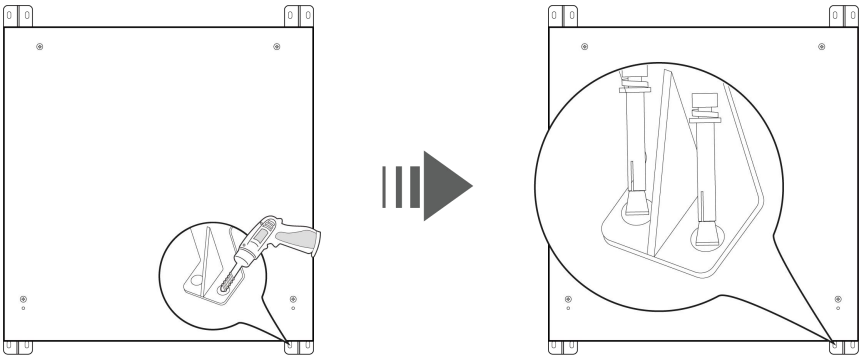


b.

3. Firstly, install two square plastic sheets, each with 7 grommets, to the left and right sides inside the module, securing each with five M6 flange nuts, and then one square plastic sheet with 4 grommets to the front side, securing it with six M6 flange nuts.

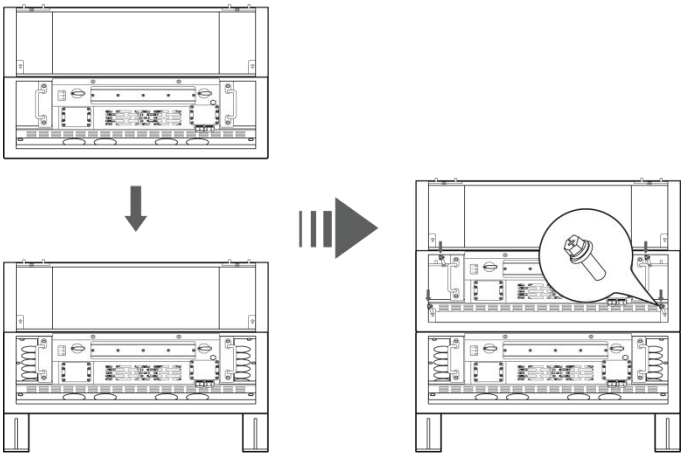


4. Align with the mounting feet holes and drill 12.5 mm diameter holes to a depth exceeding 95 mm. Secure using eight M10×120mm expansion bolts. The recommended installation torque is 40 N.m.



5. Place the second MPPT module over the first MPPT module and secure with 4 flat washers and 4 M8*20 bolts listed in the unpacking list.The recommended tightening torque for the bolts is 15 N·m. You can choose to stack 2, 4, 6, or 8 MPPT modules according to your needs.

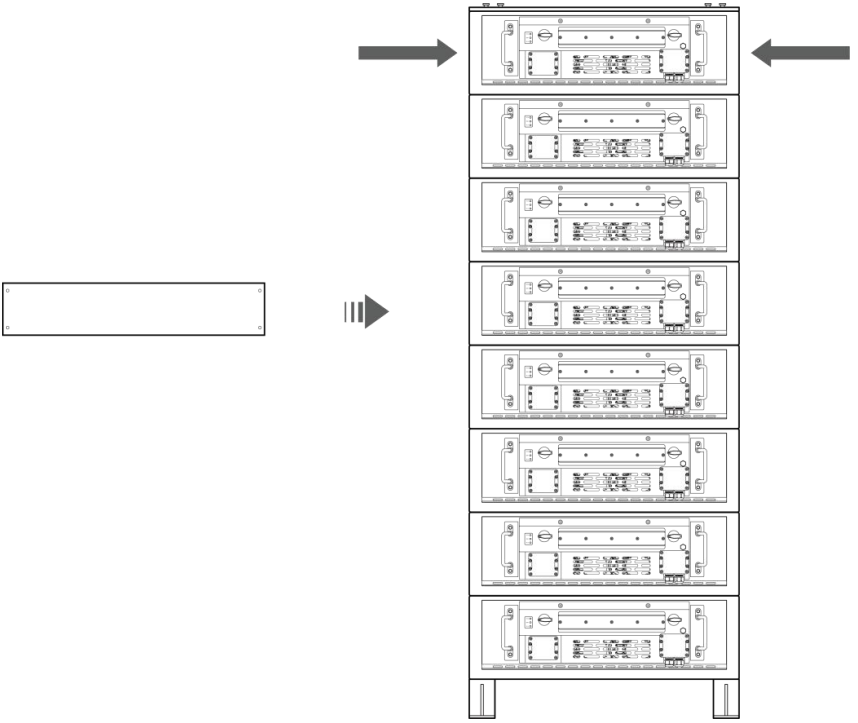
Note: Your product can be stacked up to a maximum 8 MPPT modules in one cluster.



6. Ensuring MPPT modules are stacked in place, install the top cover over the top MPPT module. The top cover is installed using 4 M8*25 bolts. The recommended installation torque is 15 N.m.

7. Perform the electrical connection carefully according the chapter 4.

8. Attach the left and right plates by fastening M4 screws mentioned in the first step.



4 Electrical Connection

4.1 Preparation before Connection

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.

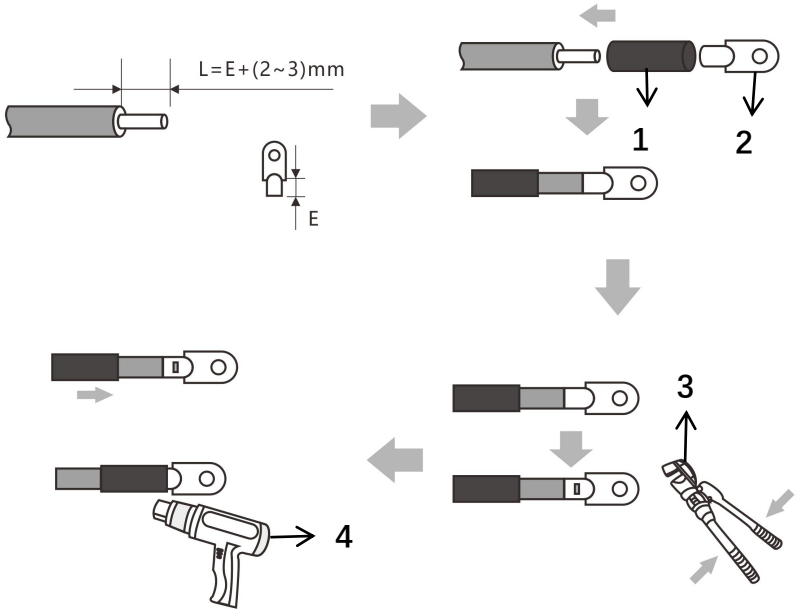
Cable Requirements

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?

Notice！

- Avoid scratching the core wire when stripping a cable.
- The cavity formed after the conductor crimp strip of the OT terminal is crimped must wrap the core wire completely. The core wire must make close contact with the OT terminal.
- Wrap the wire crimping area with heat shrink tubing or insulation tape. The heat shrink tubing is used as an example.
- Use a heat gun carefully to avoid heat damage to the equipment.



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

4.2 Cable Connection

Danger!

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

Danger!

Do not smoke or have an open flame around the equipment. 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.

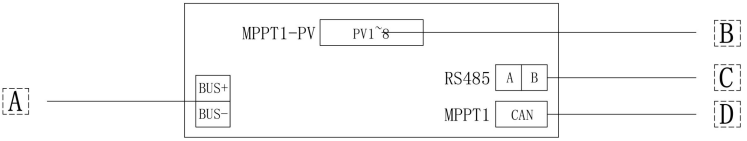
Warning!

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

Caution!

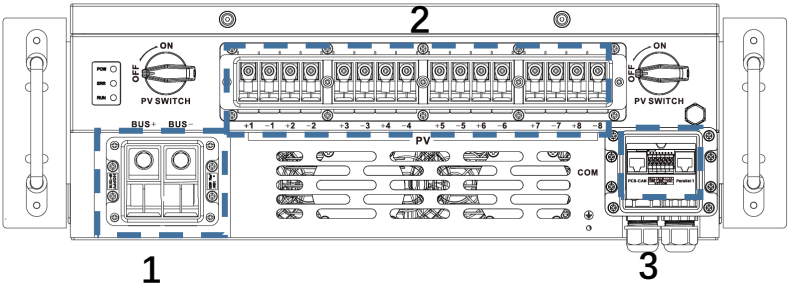
- When connecting cables, observe the installation diagram and pay attention to the polarity of terminals . Otherwise, the products may not work properly due to incorrect cable installation.
- Stay away from the equipment when preparing cables to prevent cable scraps from entering the equipment. Cable scraps may cause sparks and result in personal injury and equipment damage.

4.2.1 Connection guidance

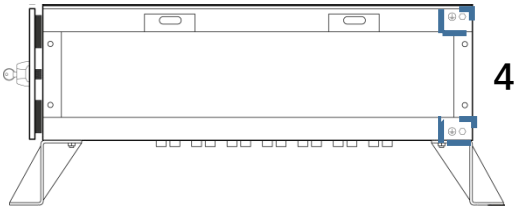


Cable	Recommendation
A	70 mm²
B	10 mm²
C	0.5 mm²
D	CAT6 FTP

4.2.2 Connection steps



Front view

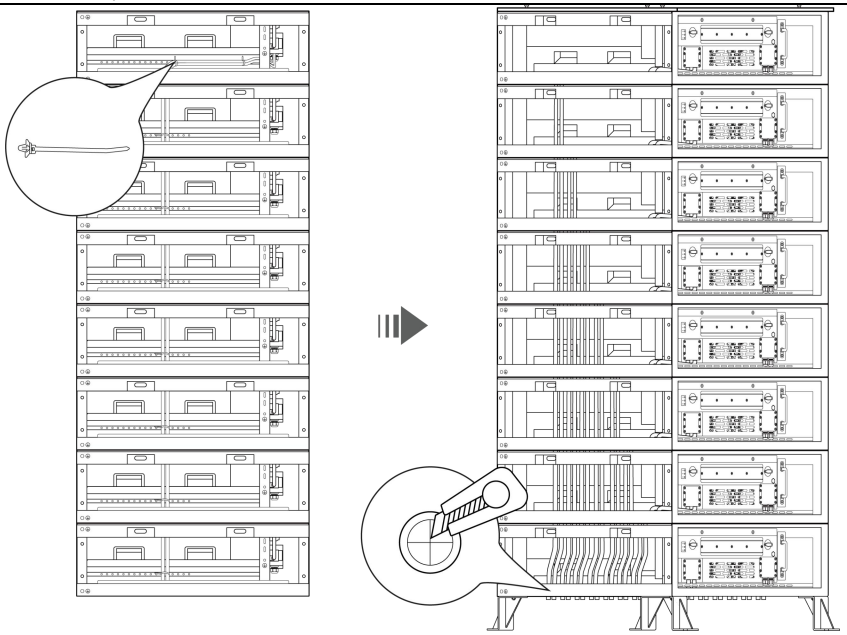


Side view

1. Power cable:

Caution!

- Prior to wire routing, use a utility knife to score along the cross-marked impression on the left-side grommet, based on the wire diameter and actual wiring requirements, to facilitate subsequent termination.
- All power cables shall exit through the left-side cable holes, except for 2 power cables from the bottom MPPT module , which are routed through the front cable holes.

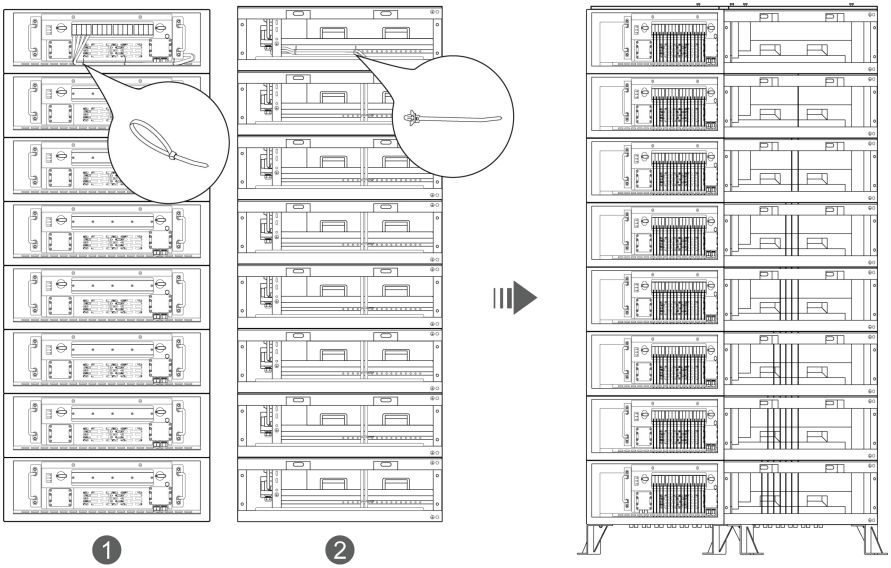


No.	Cable	Port
1	Power cable	BUS-
		BUS+

2. PV cable:

Caution!

- Prior to wire routing, use a utility knife to score along the cross-marked impression on the right-side grommet, based on the wire diameter and actual wiring requirements, to facilitate subsequent termination.
- All PV cables shall exit through the right-side cable holes, except for 16 PV cables from the bottom MPPT module , which are routed through the front cable holes.
- The use of the provided cable ties, as illustrated, facilitates a more organized and secure wire connection.
- The two provided types of cable ties should be applied using the methods and at the positions specified in the diagram.



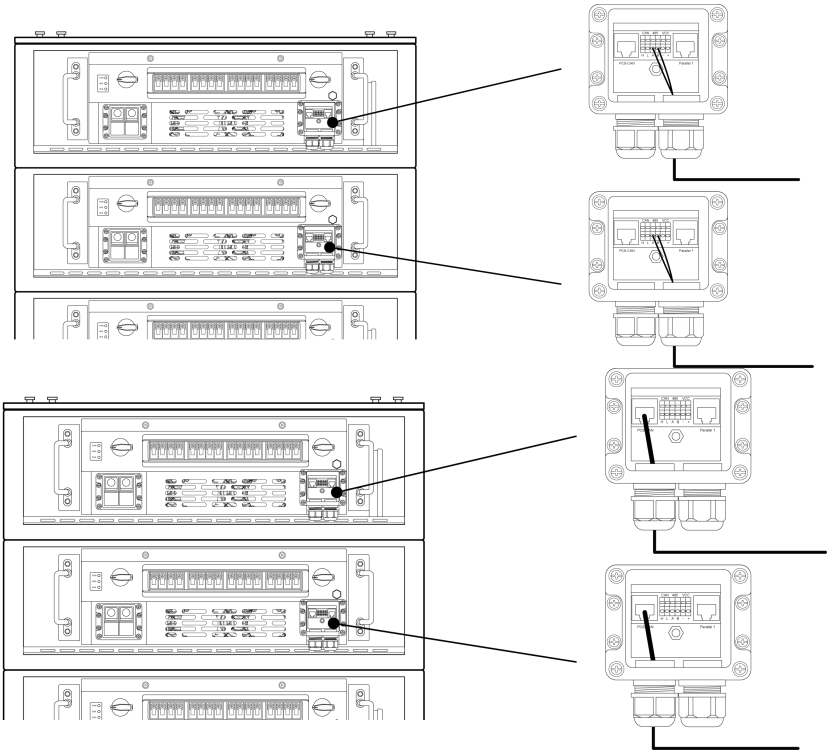
No.	Cable	Port
2	PV cable	+1~+8
		-1~-8

3. Communication cable:

Caution!

• Prior to wire routing, use a utility knife to score along the cross-marked impression on the front-side grommet, based on the wire diameter and actual wiring requirements, to facilitate subsequent termination.

• Route communication cables from MPPT modules through cable holes located on the front to establish the electrical connection.



No.	Cable	Port
3	Communication cable	RS485_A
		RS485_B
		PCS CAN

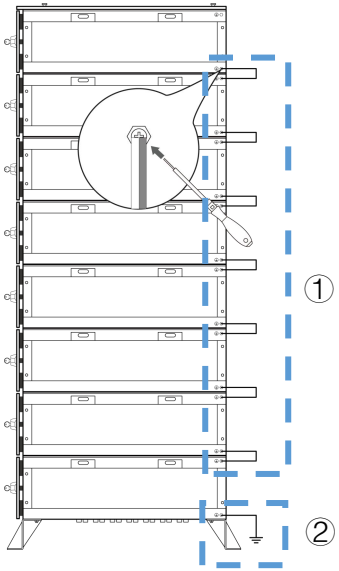
4. Grounding

Warning!

Ensure that the PE cable is securely connected. Otherwise, electric shocks may occur.

Note!

- The PE point at the AC output port is used only as a PE equipotential bonding point and cannot substitute for the PE point on the enclosure.
- It is recommended that silicone grease or paint be applied around the ground terminal after the PE cable is connected.
- After completing the grounding connection, the grounding resistance must be measured. The specific grounding resistance value should comply with the relevant national/local standards and regulations.

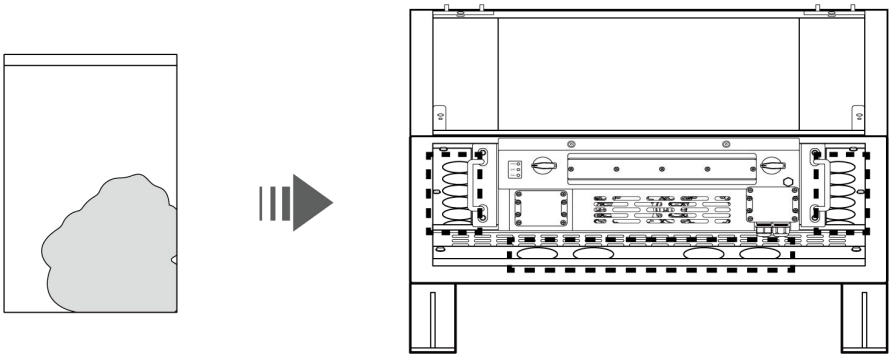


Cable	Protective earth	
Code	①	②
Name	Inter-cluster protective grounding	Cluster grounding

Section (AWG)	8	8 (recommended)
Length (mm)	100	——
Torque (N•m)	6	6.5 (recommended)
Mounting hole	——	M6-sized threaded holes with a thread depth of 18 mm
Remarks	Provided with the cabinet	Provided by user

4.3 After Connection

After completing the wire connection, use fire-resistant mud to seal the cable pass-through holes. It is noted that only cable holes through which cables pass need to be sealed with fire-resistant mud.



5 Operation Instructions

5.1 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	Grounding	• Ground correctly according to local requirements.
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.
6	Cabinet grounding	The ground conductor is securely connected to the ground terminal of the cabinet.

5.2 Power On/OFF 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 equipment, rectify the faults, and then continue with the procedure.
- If the equipment has not been used for six months or longer after being installed, it must be checked and tested by professionals before operation.
- 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 the equipment is put into operation for the first time, ensure that the parameters are set correctly by professional personnel. Incorrect parameter settings may result in noncompliance with local grid connection requirements and affect the normal operations of the equipment.

1. Verify the absence of short circuits between the positive and negative power terminals prior to initial energization.
2. To power on, turn the PV switch to the “ON” position, with all indicators are on normally.
3. To power off, turn the PV switch to the “OFF” position, with all indicators are off.

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 MPPT modules.
- Do not use wet cloth to clean exposed copper bars or other conductive parts.
- Do not use water or any solvent to clean MPPT modules.

Warning!

- 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!

- 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.
- 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 Routine Maintenance

Maintenance Category	Maintenance Action	Expected Result
System	Log in to the system management platform (WEB/EMS/APP, etc.) to view system alarm information	●NO primary or secondary alarm info.
Indicator	Check that indicators are in normal state.	All indicators are in normal run.
Outside the cabinet	Check that there are any foreign objects wrapped around the cabinet	●The cabinet is never wrapped around or covered by any foreign objects.
Inside the cabinet	Perform an inspection: ● Temperature ● Humidity	●Check that the temperature and humidity inside the cabinet are in reasonable ranges.

6.2.2 Quarterly Maintenance

Maintenance Category	Maintenance Action	Expected Result
Safety inspection	Check that switches to shut off the equipment can work normally	●Switches can work normally
Cabinet	Perform the visual inspection: ● Appearance ● Rust condition ● Door lock ● Vent ● Fasteners	● 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.

6.2.3 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	● 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.
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 water is entering into your device ● Check whether any insulating tape on terminals is not detached. ● Check whether all cables are routed correctly.	●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. ●Cable routing is performed correctly and reasonably

6.2.4 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	● 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.
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 water is entering into your device ● Check whether any insulating tape on terminals is not	●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. ●Cable routing is performed correctly and reasonably

	detached. ● Check whether all cables are routed correctly.	
Alert labels	●Check the warning labels.	●All warning labels are visible, and no damages or stains on them.
Fire-resistant mud/Foundation	Perform an inspection: ●Fire-resistant mud ●Foundation	● The fire-resistant mud exhibits excellent adhesion. ● The foundation is intact with a smooth surface

7 Troubleshooting

When any error exists in your equipment, please contact the service center or service engineers for help.

8 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.

8.1 Strong Impact

• If the equipment 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.

8.2 Flood

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

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

• Do not force the equipment that have been soaked in water. Contact the customer service center for help.

8.3 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 product types, capacity, and so on.

• Do not enter the affected building or equipment area under any circumstances, and do not open the doors of the equipment. 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 product types, capacity, user manuals and so on.

• 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 equipment 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 product types, capacity, user manuals and so on.

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

• Follow local fire fighting regulations.

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

9 Storage

Note!

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

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

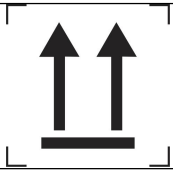
- You are advised to store the equipment in a dry, clean, and ventilated indoor environment that is free from sources of strong infrared or other radiations, organic solvents, corrosive gases, and conductive metal dust. Keep the equipment far away from sources of heat and fire.

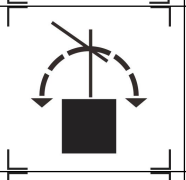
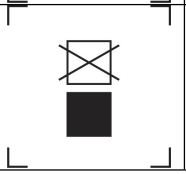
- Store the equipment separately to avoid mixing with other equipment. The site must be equipped with qualified fire fighting facilities, such as fire sand and fire extinguishers.

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

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

The 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 the equipment if it will be stored for a long time.
- Do not stack the equipment.
- 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.
- If the equipment has been stored for longer than allowed, promptly report the condition to the person in charge.
- Handle the equipment with care to prevent damage.

10 Transport

1. The 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 the product.
3. Transporting an end-of-life, damage 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 packaging, labels, and markings are intact and there is no abnormal smell, leakage, smoke, or fire. Otherwise, the equipment must not be transported.
6. Exercise caution when moving the product 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.

Store the product in a separate area away from heat sources. Protect the product from moisture, water, and rain.

11 Technical Specifications

Product Name	MS-MPPT-200-2
MPPT Model	**SUN-MPPT-L01-EU-AM8**
PV String Input Data	
Max. PV Input Power (kW)	200
Max. PV Input Voltage (V)	800
Start-up Voltage (V)	200
MPPT Voltage Range (V)	180-750
Full Load MPPT Voltage Range（V）	450-750
Rated PV Input Voltage（V）	600
Max.Operating PV Input Current (A)	40+40+40+40+40+40+40+40
Max.Input Short-Circuit Current (A)	60+60+60+60+60+60+60+60
No. of MPP Trackers	8
Efficiency	
Max. Efficiency	>99%
MPPT Efficiency	>99.9%
Equipment Protection	
DC input reverse protection	YES
DC ARC protection	Optional
Anti-PID (Potential Induced Degradation)	Optional
DC Switch	YES
Surge Protection Level	TYPE II
General Data	
Ingress Protection(IP) Rating	IP20(MPPT IP65)
Cabinet Size[W×H×D] (mm)	862x279x877
Weight (kg)	70
Type Of Cooling	Intelligent air cooling
Safety EMC/Standard	IEC/EN 62109-1
DC Output Data	
DC Output Voltage Range(V)	630-1000
Max. DC Output Current(A)	200

12 EU Declaration of Conformity

CE

NINGBO DEYE ESS TECHNOLOGY CO. , LTD. confirms herewith that the products described in this document are in compliance with the fundamental requirements and other relevant provisions of the above mentioned directives .

Deye

250401001
www.deyeinverter.com

EU Declaration of Conformity

Product:**MPPT Module of ESS**
Models:SUN-MPPT-L01-EU-AM8

Name and address of the manufacturer: Ningbo Deye Inverter Technology Co., Ltd.
No. 26 South Yongjiang Road, Daqi, Beilun, NingBo, China

This declaration of conformity is issued under the sole responsibility of the manufacturer. Also this product is under manufacturer's warranty.
This declaration of conformity is not valid any longer: if the product is modified, supplemented or changed in any other way, as well as in case the product is used or installed improperly.

The object of the declaration described above is in conformity with the relevant Union harmonization legislation: The Low Voltage Directive (LVD) 2014/35/EU;the Electromagnetic Compatibility (EMC) Directive 2014/30/EU;the restriction of the use of certain hazardous substances (RoHS) Directive 2011/65/EU.

References to the relevant harmonized standards used or references to the other technical specifications in relation to which conformity is declared:

LVD:	
EN 62109-1:2010	●
EN 62109-2:2011	●
EMC:	
EN IEC 61000-6-1:2019	●
EN IEC 61000-6-2:2019	●
EN IEC 61000-6-3:2021	●
EN IEC 61000-6-4:2019	●
EN IEC 61000-3-2:2019+A1:2021	●
EN 61000-3-3:2013/A2:2021/AC:2022-01	●
EN IEC 61000-3-11:2019	●
EN 61000-3-12:2011	●
EN 55011:2016/A2:2021	●

Nom et Titre / Name and Title: Bard Dai
Senior Standard and Certification Engineer

Au nom de / On behalf of: Ningbo Deye Inverter Technology Co., Ltd.
Date / Date (yyyy-mm-dd): 2025-04-01
A / Place: Ningbo, China

宁波德业变频技术有限公司 NINGBO DEYE INVERTER TECHNOLOGY CO.,LTD.

EU DoC – v1

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