



Air Cooling Energy Storage System

AELIO-P50B100 / AELIO-P60B100

Installation Manual

Version 4.0

www.solaxpower.com



Manual in the QR code or at
<http://lib.solaxpower.com/>

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Safety


















General Notice

1. Contents may be periodically updated or revised. SolaX reserves the right to make improvements or changes in the product(s) and the program(s) described in this manual without the prior notice.
2. The installation, maintenance and grid-related setting can only be performed by qualified personnel who:
 - Are licensed and/or satisfy state and local jurisdiction regulations;
 - Have good knowledge of this manual and other related documents.
3. Before installing the device, carefully read, fully understand and strictly follow the detailed instruction of the user manual and other related regulations. SolaX shall not be liable for any consequences caused by the violation of the storage, transportation, installation, and operation regulations specified in this document and the user manual.
4. Use insulated tools when installing the device. Individual protective tools must be worn during installation, electrical connection and maintenance.
5. Please visit the website www.solaxpower.com of SolaX for more information.

Safety Instruction

For safety reasons, installers are responsible for familiarizing themselves with the contents of the Manual and all warnings before performing installation.

Descriptions of Labels

	CE mark of conformity		TUV certification
	RCM mark of conformity		Grounding point
	Additional grounding point		Caution, risk of danger
	The battery module may explode.		Caution, risk of electric shock
	Caution, hot surface		Do not operate this inverter until it is isolated from mains and on-site PV generation suppliers.
	Read the enclosed documentations.		Keep the battery system away from children.
	Keep the battery system away from open flames or ignition systems.		Do not dispose of the battery module together with household waste.
	Danger of high voltage. Do not touch live parts for 15 minutes after disconnection from the power sources.		The battery system must be disposed of at a proper facility for environmentally-safe recycling.
	Danger of high voltage. Do not touch live parts for 5 minutes after disconnection from the power sources.		

 **DANGER!**

- According to the local laws and regulations related to high-altitude work, operators must wear PPE, e.g., a helmet, safety belt, or waist harness, when they work at heights, while the other end of the harness must connect to a secure structure to prevent fall incidents.

 **DANGER!**

- Do not connect the positive and negative poles of a battery together. Otherwise, it may be short-circuited. This will result in an excessive flow of current and large quantities of energy for a short time, and then will cause battery leakage, smoke, the emission of flammable gases, thermal runaway, fire, or even an explosion. Therefore, the battery must be powered off before maintenance.
- If a battery is overheated, it will cause leakage, smoke, release of flammable gases, thermal runaway, fire, or even an explosion. Therefore, please ensure that the installation site shall be well ventilated and kept away from high temperatures.
- Do not dismantle, change, shake, drop, crush, impact, cut, penetrate with a sharp object, or any other ways to damage the battery. Otherwise, it may cause leakage, smoke, emission of flammable gases, thermal runaway, fire, or even an explosion.
- Do not mix different types or makes of the battery. Otherwise, it may cause leakage or rupture, resulting in personal injury or property damage.
- The battery electrolyte is toxic and volatile. Never get in contact with the leaked liquids or inhale gases in the case of the battery leakage or odor, and contact professionals immediately. The professional must wear PPE (including but not limited to safety glasses, safety gloves, gas masks, and protective clothing) before powering off the device, and then contact our company at once after removing the damaged battery.
- Normally, the battery will not release any gases. However, in the following situations: burnt, needle-pricked, squeezed, struck by lightning, overcharged, or subject to other adverse conditions that may cause battery thermal runaway, the battery may be damaged or an abnormal chemical reaction may occur inside the battery, resulting in electrolyte leakage or production of gases. If the battery needs to exhaust flammable gas, safe emission measures must be taken to prevent fire and device corrosion.
- Do not use damaged batteries, and ensure that the installation site must be well ventilated.

 **DANGER!**

- Exposure to sunlight can result in the generation of high DC voltage by PV modules, which can lead to electric shock causing severe injuries or even death.
- Never touch the positive or negative poles of the PV connecting device, and avoid touching both poles simultaneously.
- Do not ground the positive or negative poles of the PV modules.
- Only qualified personnel can perform the wiring of the PV modules.

DANGER!

- Only operate the inverter if it is in a technically faultless condition. Operating a faulty inverter may lead to electric shock or fire.
- Do not attempt to open the enclosure without authorization from SolaX. Unauthorized opening of the enclosure will void the warranty and can result in lethal danger or serious injury due to electric shock.
- Make sure that the inverter is reliably grounded before any operation to prevent the risk of electric shock causing lethal danger or serious injury.
- Only qualified personnel can perform the installation, wiring, maintenance of the inverter by following this document and the related regulations.

DANGER!

- Please make sure that the unit is free from any damage before the electrical connection.
- Do not modify, change, or dismantle the device, do not change the power-on and power-off sequences and the installation procedure written in the document, and please properly and correctly operate it.
- Do not power on the device during installation. Otherwise, it may cause a fire, personal injury, or device damage.
- Must remove earrings, rings, bracelets, watches, and any other metal jewelry before operation, to avoid electrical shock, burns, or even death.
- During operation, special insulated tools must be used to avoid electric shock or short circuit failure. The insulated tools' voltage ratings must exceed the system voltage ratings. Please refer to "12 Technical Data" for system information.

WARNING!

- Please prepare tools that meet the requirements before installation, and check the number of tools after installation, to avoid leaving them inside the equipment.
- Please ensure that the cabinet has been thoroughly secured before operating it. Otherwise, it may cause personal injury or equipment damage due to tilting or collapsing the cabinet.
- Please ensure that the cabinet's vents and cooling system are working properly when it is running. If the vents are blocked, it will lead to overheating, and even equipment damage or fire hazard.
- Please ensure that the cabinet's vents and cooling system are kept away from heat sources.
- Do not drill holes in the device to avoid equipment failure.
- If the circumstances that may cause personal injury or equipment failure occur, such as, fluid flowing into the equipment, stop operation and power off immediately. Otherwise, it may cause a short circuit or damage.
- Do not open the cabinet doors on a rainy or high humid day ($\geq 80\%$ humidity). If the doors have to be opened on such days, please take proper protective measures.

 **WARNING!**

- Please read the document carefully before installation, operation and maintenance.
- Must arrange fire-fighting equipment in advance according to the local laws, regulations, and standards while installing and commissioning the device.
- Please check that there is no damage to the outer packaging before and after unpacking, and in the process of storage and transportation. The battery shall be correctly placed or stacked in accordance with the requirements stipulated on the labels to prevent damaging or scrapping the battery resulting from crushing or falling.
- Must tighten screws securing cables and on the copper bars according to the torque information specified in the document, and check whether they are tightened periodically. For instance, whether there is any rust, corrosion, or any other foreign object on it, and then clean it up if any. Because the loose screw connections may result in excessive voltage drops and large currents, leading to generating a lot of heat and burning the battery.
- The battery should be charged in time after discharge, to prevent battery damage due to overdischarge. If a battery pack is stored for a long time, please periodically recharge it to protect it from damage according to the storage requirements specified in the document.
- Please charge the battery within the specific temperature range because the low temperature may result in a short circuit. Hence, do not charge it when the temperature is below the low limit of the operating temperature.
- Do not use the battery when you find a bulge, or dents on the battery housing, and contact the installer or professional maintenance personnel to dismantle and replace it. The damaged battery must be kept away from other devices and flammable and explosive articles, and do not contact it except for professionals.
- Before operation, ensure that there are no irritating or burning smells around the battery.
- Do not weld or grind near a battery. Because electric sparks or arcs may cause fires.
- Do not step, lead, stand, or set on the battery.

 **WARNING!**

- Overvoltage protection with surge arresters should be provided when the PV system is installed. The grid connected inverter is fitted with SPDs on both PV input side and MAINS side.
- Please consult professionals before installing SPDs.
- Make sure that the input DC voltage does not exceed the maximum DC input voltage specified for the inverter. Overvoltage can cause irreversible damage to the inverter, and such damage is not covered by the warranty.
- PV modules should have an IEC61730 class A rating.

WARNING!

- Operators must wear PPE while installation and maintenance of the device.
- During operation, avoid touching any parts of the inverter other than the DC switch and LCD panel.
- Never connect or disconnect the AC and DC connector while the inverter is running.
- Prior to conducting any maintenance, turn off the AC and DC power and disconnect them from the inverter. Wait for 15 minutes to fully discharge the energy.
- Avoid touching the inverter while it is running, as it becomes hot during operation and may cause personal injuries.

WARNING!

- Please wear PPE, such as, protective clothing, insulating shoes, goggles, safety helmets, insulating gloves, etc., when conducting electrical wiring.
- Do not touch the power supply equipment directly, or through conductors or damp objects.
- Do not touch the parts of the equipment of which warning signs are attached, to avoid personal injury or device damage.

CAUTION!

- Do not use a straight ladder. When electrical work is involved, a wooden ladder or an insulated ladder shall be used.
- The equipment shall not be used to provide a backup power source in the following circumstances:
 - a. Equipment related to life;
 - b. Sensitive precision instruments;
 - c. Home appliances will be faulty in the case of a power failure during operation.

CAUTION!

- Make sure that children are supervised to prevent them from playing with the inverter.
- Pay attention to the weight of the inverter and handle it properly to avoid personal injuries.

CAUTION!

- Do not power on the device until it has been installed and confirmed by professionals.
- In the event of a fire, evacuate immediately and call the local fire services.

NOTICE!

- The signs and messages on the labels and nameplates attached to the device need to be visible and clear.

NOTICE!

Transportation requirements for battery:

- Relevant qualifications for the transport of dangerous goods must be obtained by the forwarding agent engaged in such businesses, and they must strictly abide by the local regulations for the transport of dangerous goods.
- Please check the battery before transportation. If a battery leaks, smells, or is damaged, do refuse to transport it.
- Please handle gently in the process of loading and unloading, transportation, and moving a battery to prevent bumping, and take effective moisture-proof measures to prevent personal injuries and battery damage.
- Unless otherwise specified, do not transport the batteries, which are classified as dangerous goods, together with food, medicine, or other additives on the same means of transport.

If the battery leaks electrolyte or any other chemical materials, the electrolyte leakage can lead to toxic gases. Therefore, do not contact with them at all times. In case of accidentally coming into contact with them, please do as follows:

- In case of inhalation: Leave the contaminated area immediately, and seek medical attention at once;
- In case of contact with eyes: Rinse eyes with running water for at least 15 minutes, and seek medical attention;
- In case of contact with skin: Wash the contact area thoroughly with soap, and seek medical attention;
- In case of ingestion: Induce vomiting, and seek medical attention.

NOTICE!

If a fire breaks out where the battery is installed, please do as follows:

- In case a battery is charging when the fire breaks out, provided it is safe to do so, press the emergency stop button and unplug the power cable;
- In case a battery is not on fire yet, use a water-based fire extinguisher or a carbon dioxide extinguisher to extinguish the fire;
- In case a battery catches fire, do not try to put it out, and evacuate immediately;
- A battery may catch fire when it is heated above 150°F/60°C. If the battery catches fire, please evacuate immediately since it will generate noxious and poisonous gases.

Recovery of damaged or wasted battery:

- Dispose of the damaged or wasted batteries according to local laws and regulations instead of placing them in the household trash or curbside recycling bins. Otherwise, it may cause environmental pollution or explosions.
- Ensure that the damaged or wasted batteries are not exposed to the following situations: high temperatures, high humidity, direct sunlight, corrosive environments.
- Contact a battery recycling company to scrap the battery, which leaks electrolytes, or is damaged or expired.
- Please take protective steps to prevent battery short circuits before moving batteries.
- Please keep away from flammable material storage areas, residential areas, and other population centers when transporting and storing the damaged battery.

NOTICE!

- Only connect the inverter to the grid with the permission of the local utility grid company.

NOTICE!

- The inverter has an integrated Residual Current Monitoring Unit (RCMU). If an external Residual Current Device (RCD) is required by local regulations, verify the type of RCD required. It is recommended to use a Type-A RCD with a rating of 300 mA unless a lower value is required by the specific local electric codes. When required by local regulations, the use of an RCD type B is permitted.
- Keep all product labels and the nameplate on the inverter clearly visible and well-maintained.

NOTICE!

- Please operate according to the safety code for power station.
- Before installation, it is necessary to set up temporary safety fences or warning lines and hang warning signs in the operation area, to prohibit non-staff from entering here.
- Please make sure that the equipment and its associated switches are off before connecting and disconnecting power cables.
- Please check whether the protective housing and insulating sleeve for an electrical component have been installed correctly after finishing installation, to avoid electric shock.
- Must turn off the output switch of the power supply equipment when maintaining its electrical terminal device and power distribution device.
- If the device is required to be powered off during troubleshooting and diagnosis, please do as the following procedure: power off > electricity testing > connecting grounding cable > hanging warning signs and setting up guardrails.
- Must hang up "Do Not Switch On" warning signs on the relevant switches or circuit breakers before completing maintenance, to prevent power connection. Do not switch on before the fault is solved.
- Do not use water, alcohol, oil, or other solvents when cleaning electrical components inside and outside the device.

NOTICE!

Grounding Requirements:

- The device's grounding impedance shall meet the requirements of local electrical safety standards.
- The equipment shall be permanently connected to a grounding wire within the building's electrical system. Please check whether the device is reliably grounded before operation. The grounding cable should be removed last while dismantling and maintaining the device.
- Do not start the device if it is not fitted with a grounding conductor.
- All acts against the grounding conductor are prohibited.
- If the device is equipped with a three-pronged socket, make sure that the ground prong is reliably grounded.
- For the device that may generate large contact currents, please make sure that the grounding terminal on the housing has been grounded before powering on, to avoid electric shock.

NOTICE!


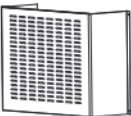




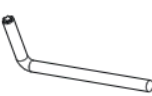










Cable Requirements:

- When deciding the wire diameter, and connecting or wiring cables, follow the local laws, regulations, and codes to ensure safety.
- When external conditions (e.g., placement method, ambient temperature, etc.) change, the cable type must be verified according to IEC-60364-5-52 or local laws, regulations and standards. For instance, whether the cable's current-carrying capacity meets the requirements.
- Before connecting power cables, please make sure that the cable labels are correctly labelled and the cable terminals are well insulated.
- Do not loop and twist cables while conducting electrical wiring. If the length of the power cable is not enough, please replace it instead of joining or welding. Ensure that all the cables of the correct type and size are fully connected and well insulated, and the edges of cable slots and crossing holes are smooth.
- It is recommended to bundle similar cables with cable ties, to ensure that the inside of the device is neat and tidy and to avoid cable jacket damage.
- Please use fireproof mud to seal the threading openings immediately after finishing wiring, to avoid the entry of water vapour or small animals.
- Cables should be kept away from heaters or other heat sources, because a high temperature environment may result in aging and damage to cable insulation.

Preparation before Installation

Packing List

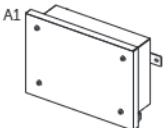

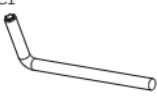








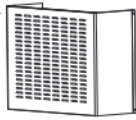
- Battery cabinet

 <p>Cabinet x 1</p>	 <p>A Large cable cover x 1</p>	 <p>B Small cable cover x 1</p>	 <p>C Eye bolt x 4</p>
 <p>D Angle support x 4</p>	 <p>E Expansion bolt x 10</p>	 <p>F Hexalobular key x 1</p>	 <p>G Cable tie x 20</p>
 <p>H¹ Power cable (3000 mm) (Ø6.7 mm²) x 1</p>	 <p>I¹ Power cable (2000 mm) (Ø6.7 mm²) x 1</p>	 <p>J TLK35-8 Terminal x 10</p>	 <p>K Fireproof mud x 2</p>
 <p>L Antenna x 1</p>	 <p>M² Key x 1 (to open screen)</p>	 <p>N² Key x 2 (to open cabinet door)</p>	 <p>O² Allen key x 1</p>
 <p>P Metal magnetic frame dust screen x 1</p>			

NOTICE!

- The mark ¹ indicates that if one of the cables connecting the high-voltage box AC input and AC power is damaged, the power cable (3000 mm) can be used as a replacement cable to connect to the AC input and the power cable (2000 mm) can be used as a replacement cable to connect to the AC power.
- The mark ² indicates that these keys are collected into a bunch.

• Accessory kit for capacity expansion (optional)

 <p>A1</p> <p>Expansion box x 1</p>	 <p>B1</p> <p>M6 Hexalobular screw x 6</p>	 <p>C1</p> <p>Hexalobular key x 1</p>	 <p>D1</p> <p>Communication cable (4000 mm) ($\varnothing 5 \text{ mm}^2$) x 1</p>
 <p>E1</p> <p>Positive power cable (for master cabinet) (2300 mm) ($\varnothing 11 \text{ mm}^2$) x 1</p>	 <p>F1</p> <p>Negative power cable (for master cabinet) (2300 mm) ($\varnothing 11 \text{ mm}^2$) x 1</p>	 <p>G1</p> <p>Positive power cable (for slave cabinet) (4000 mm) ($\varnothing 11 \text{ mm}^2$) x 1</p>	 <p>H1</p> <p>Negative power cable (for slave cabinet) (4000 mm) ($\varnothing 11 \text{ mm}^2$) x 1</p>
 <p>I1</p> <p>Communication cable (HUB) (5000 mm) ($\varnothing 5 \text{ mm}^2$) x 1</p>	 <p>J1</p> <p>EPS-GRID Power cable (5000 mm) ($\varnothing 15.7 \sim 20 \text{ mm}^2$) x 1</p>	 <p>K1</p> <p>Rubber stopper x 4</p>	 <p>L1</p> <p>Large cable cover x 1</p>

NOTICE!

- When the system needs capacity expansion, the accessory kit for capacity expansion is standard.
- For specific capacity expansion procedures, please refer to the User Manual.
- The cable diameter in the above tables refers to the outer diameter.

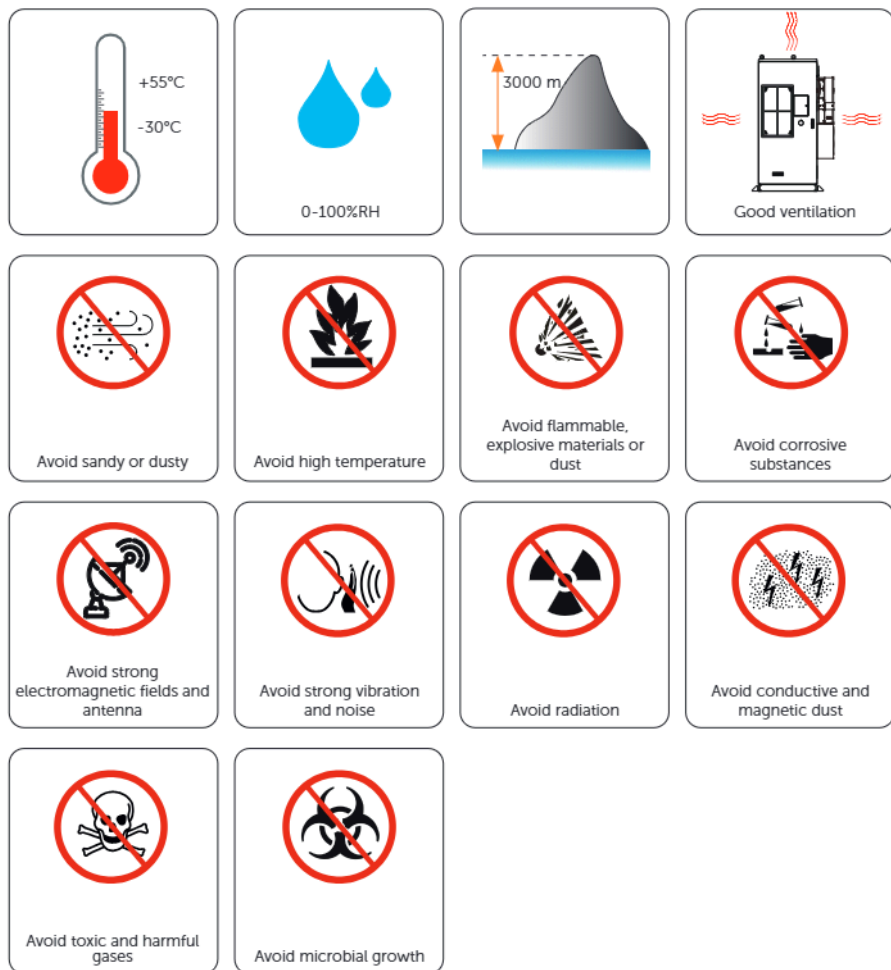
• Inverter



NOTICE!

- Refer to the actual delivery for the optional accessories.
- The positive and negative PV connector & pin contact are 10 pairs for X3-AELIO-50K, 12 pairs for X3-AELIO-60K.

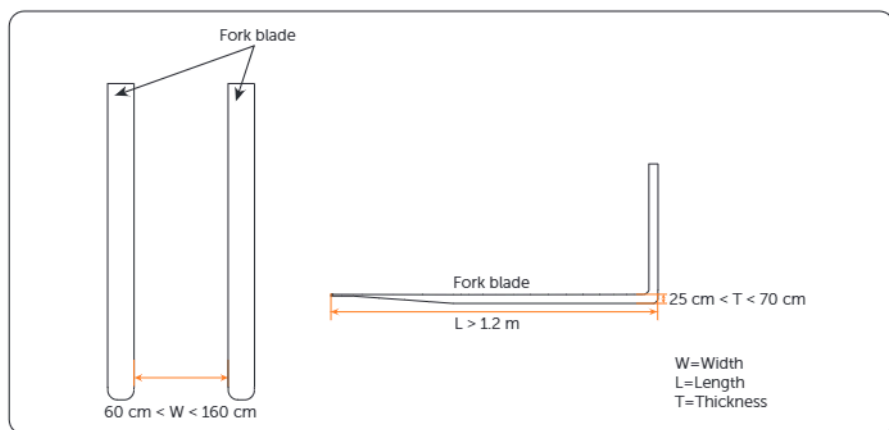
Installation Site



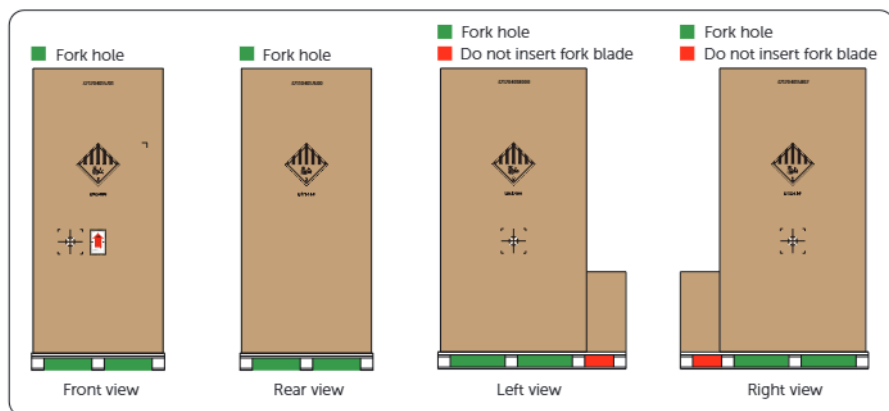
Installation Site	Distance
Distance from the device to the coast	> 2000 m
Distance from the device to the high heavily polluted area, for instance, smelting plant, coal mine, thermal power plant, etc.	> 1500 m
Distance from the device to the moderately polluted area, for instance, chemical plant, rubber plant, electroplate factory, etc.	> 1000 m
Distance from the device to the lightly polluted area, for instance, food factory, leather factory, heating boiler, slaughter house, dumping site, sewage treatment plant, etc.	> 500 m

Transportation Requirement

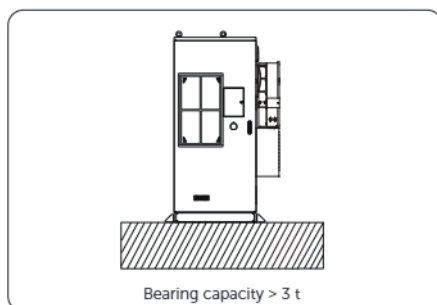
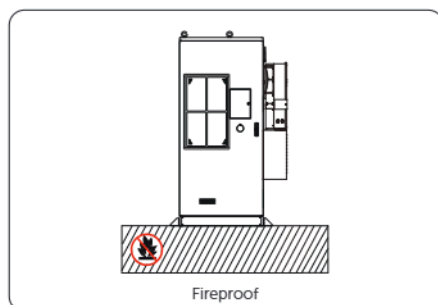
- Forklift requirement



- Carton fork holes



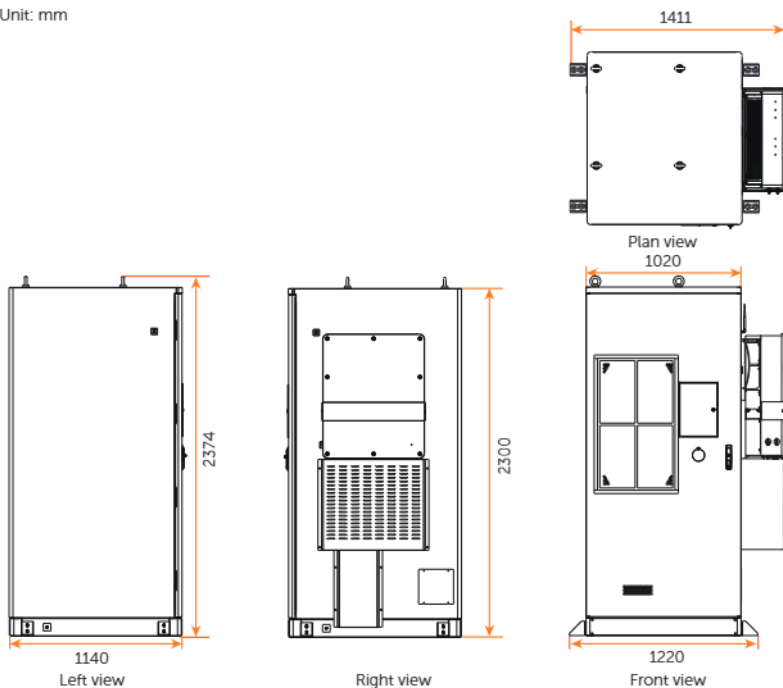
Installation Carrier



Dimension

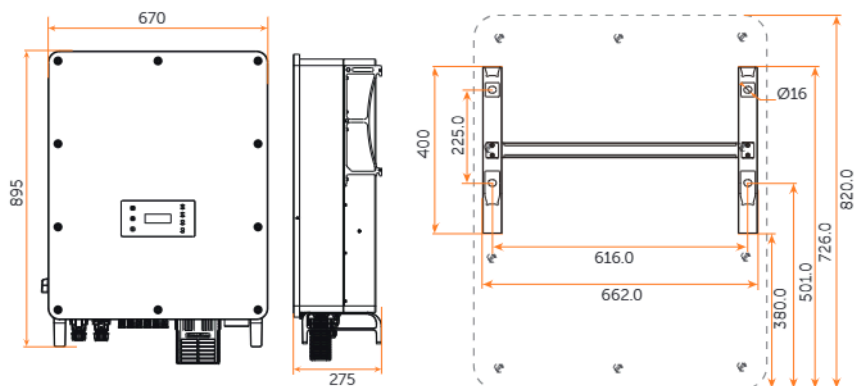
- System dimensions

Unit: mm

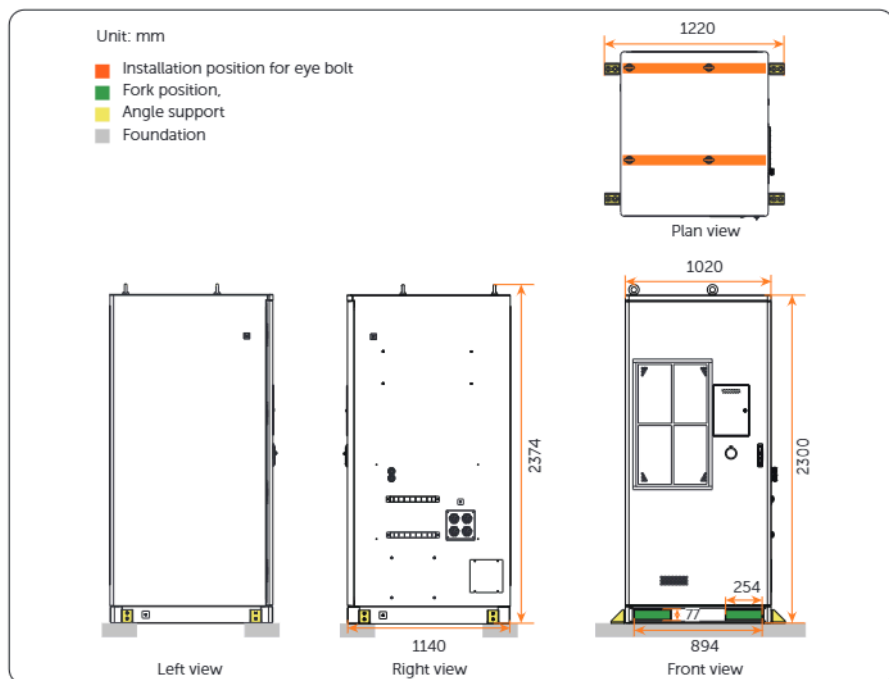


- Inverter dimensions

Unit: mm



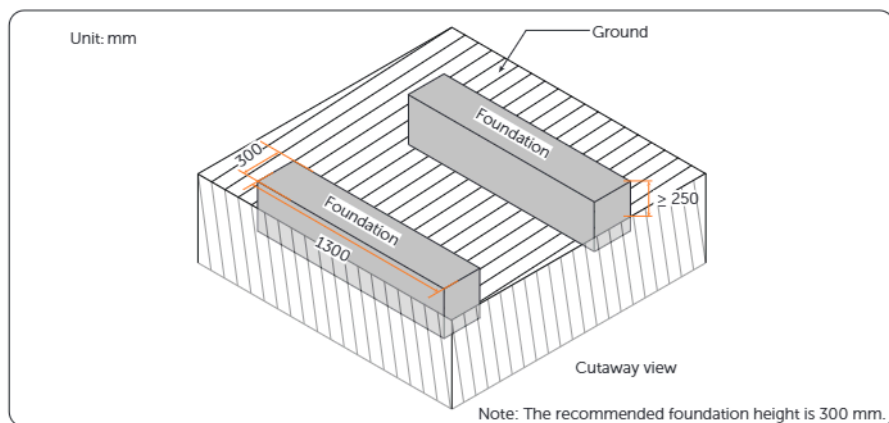
- Cabinet dimensions

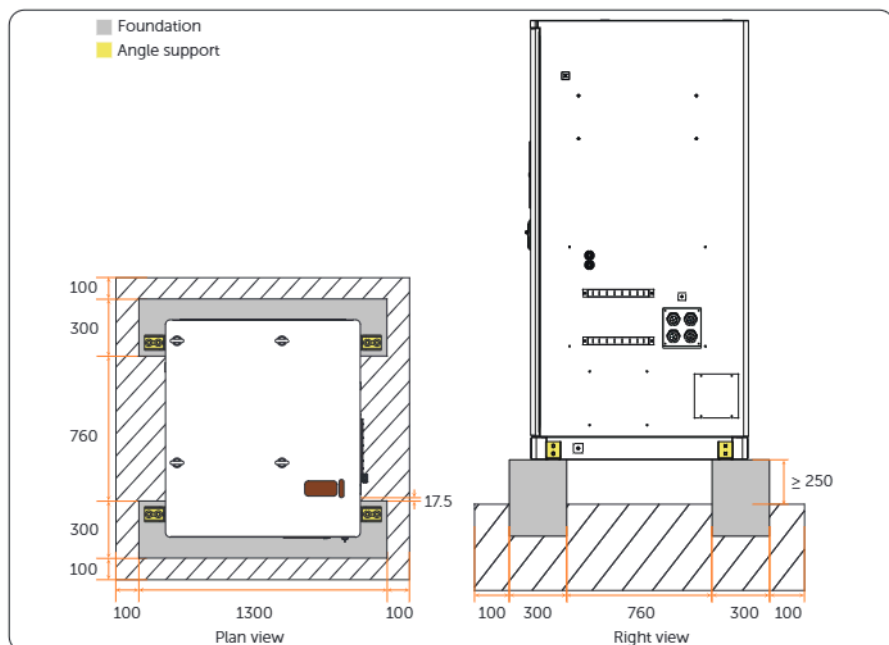


Installation Foundation

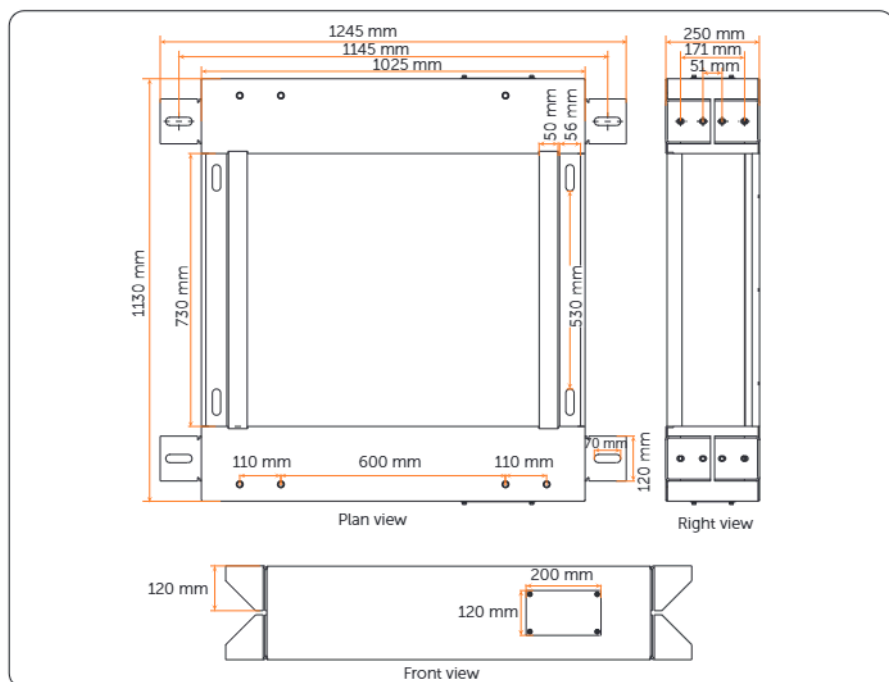
NOTICE!

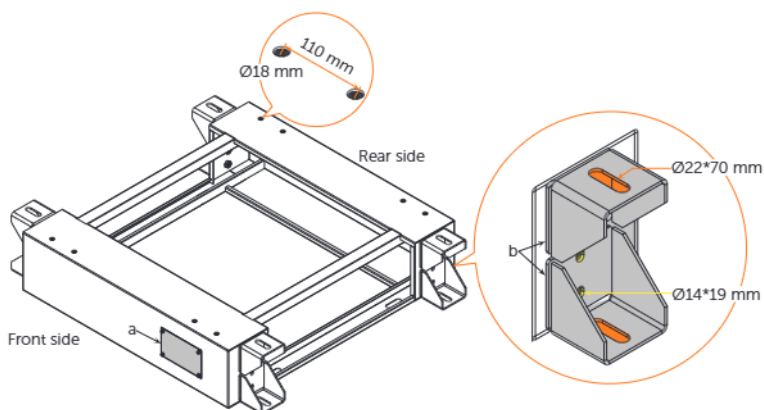
- There are two foundation schemes: concrete foundation and steel foundation.
- Concrete foundation





- Steel foundation





a: Cable threading hole. There are two holes on the steel foundation, one on the front side, and the other on the rear side.

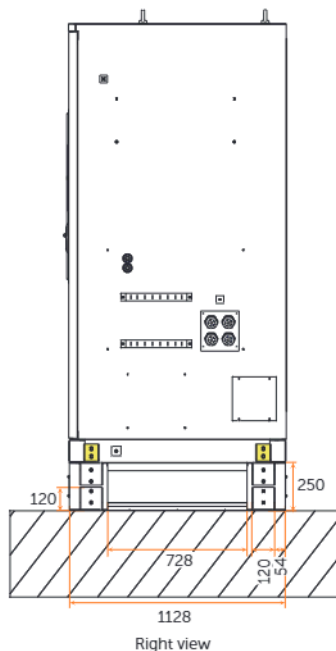
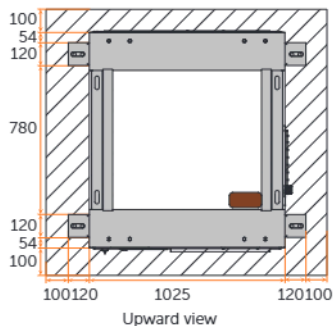
b: Angle support, to secure to the ground or the cabinet.

Unit: mm

Foundation

Angle support

Cable threading hole



Note

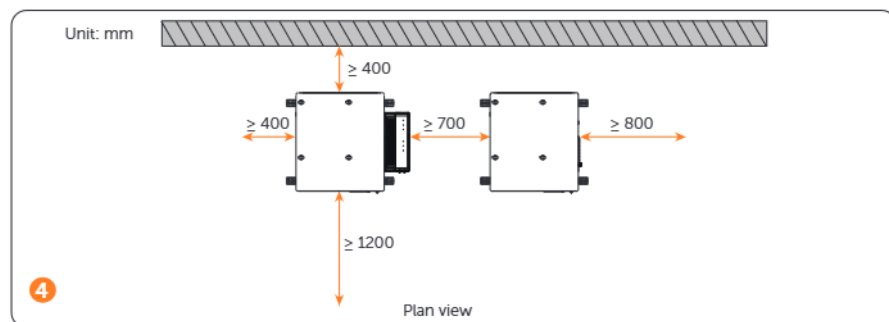
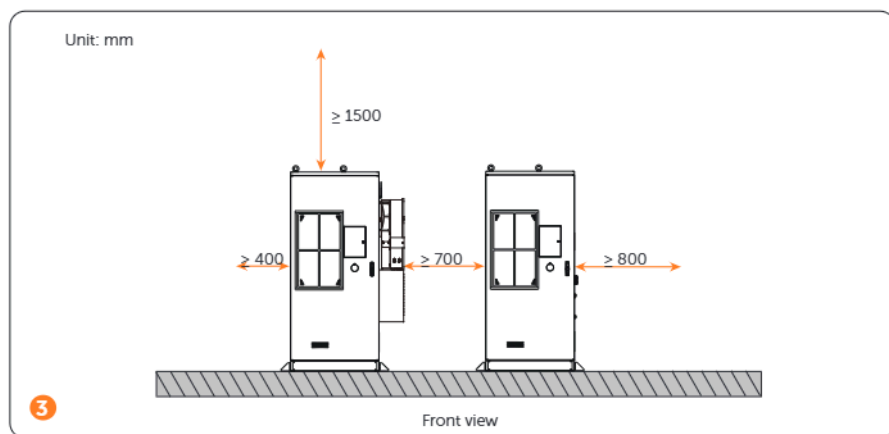
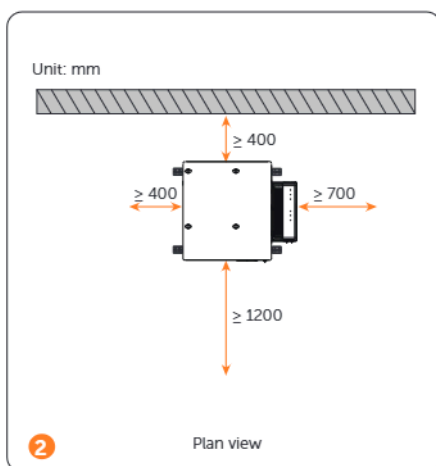
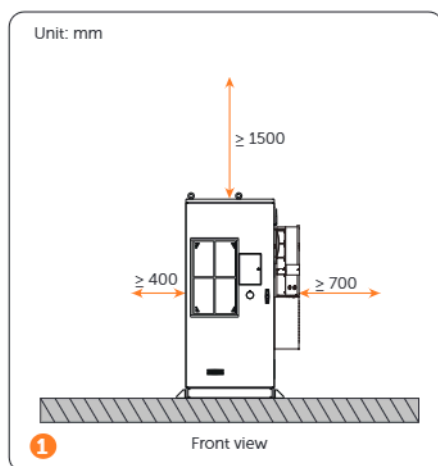
After completing construction of the steel foundation, please strictly comply with the following steps:

1. Install the bottom angle support first to secure the foundation to the ground;
2. Install the top angle support;
3. Finally, install the cabinet onto the steel foundation.

Installation Space

The device support the following installation options:

1. A single cabinet, see Figures 1 and 2;
2. Multiple cabinets, see Figures 3 and 4.



Installation Tools



Hammer drill (Ø18 mm)



Multimeter



Measuring tape



Utility knife



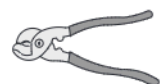
Marker



Cross screwdriver



Flat-head screwdriver



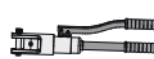
Wire cutter



Wire stripper



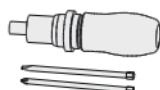
Crimping tool for RJ45



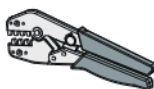
Hydraulic wire crimper



Rubber mallet
(hammer diameter < 34 mm)



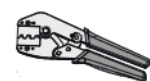
Torque screwdriver
(Flat-head: M2 / M3 / M10)
(Phillips head: M2.5 / M3 / M5 / M6)



Crimping tool



Crimping tool for ferrules



Crimping tool for
PV terminals



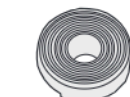
Utility knife



Spirit level



Heat gun



Heat shrink tubing
(Ø13, Ø30~60 mm)



Torque wrench (M4~M12)



Vacuum cleaner



Cable tie



Insulated ladder



Diagonal pliers



Steel wire rope
(Length > 850 mm*4)








Electric forklift



Steel pipe
(Ø25~30 mm)






Additionally Required Materials

No.	Required Material	Type	Conductor Cross-section
1	PV wire	 Dedicated PV wire with a voltage rating of 1000 V, a temperature resistance of 105°C, a fire resistance grade of VW-1	6 mm ²
2	Communication wire 1	 Network cable CAT5E	/
3	Communication wire 2	 Four-core signal cable	0.25 mm ² -0.3 mm ²
4	Grid wire	 Five-core copper cable * The conductor cross-section for L1, L2, L3 and N wires is 35 mm ² ; the conductor cross-section for PE wire is 16 mm ² .	35 mm ² * 4 + 16 mm ² * 1
5	EPS wire	 Four-core copper cable	35 mm ² * 4

No.	Required Material	Type	Conductor Cross-section
6	Additional PE wire	 Conventional yellow and green wire	16 ~25 mm ²
7*	Ethernet cable	 Category-5	/
8*	RJ45	 /	/
9	Ring terminal	 /TLK16-8 ring terminal	/

NOTICE!

- The mark "*" indicates that the materials need to be prepared only when capacity expansion is required.

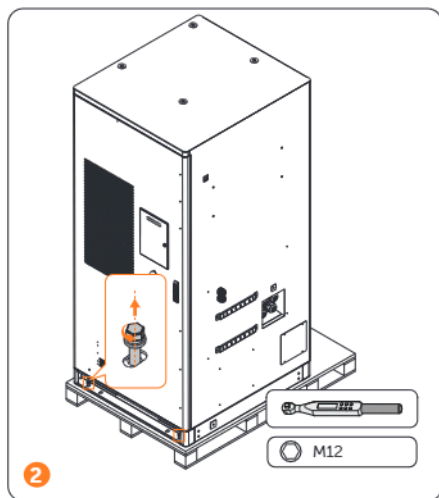
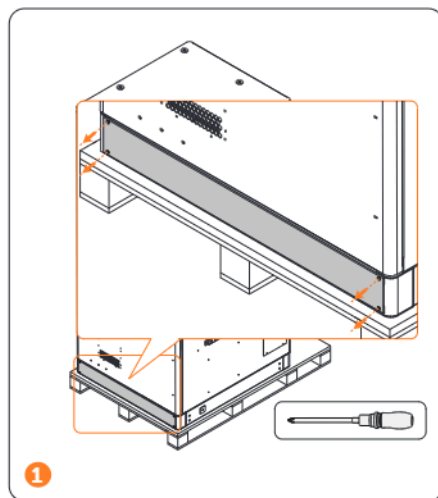
	Model	50 kW	60 kW
Grid circuit breaker		> 100A	> 125A
	Model	50 kW	60 kW
EPS circuit breaker		> 100A	> 125A
	Model	50 kW	60 kW
RCD		< 500 mA	< 600 mA

Mechanical Installation

Cabinet Removal from Wooden Pallet

NOTICE!

- Operators needs to remove the cabinet from the wooden pallet before lifting it. Please following the steps below to remove it.

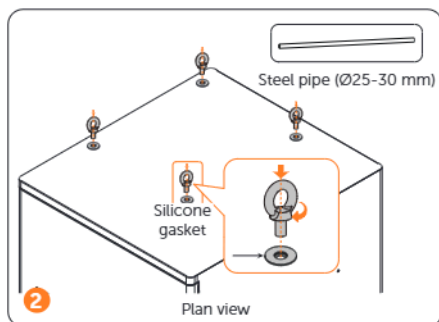
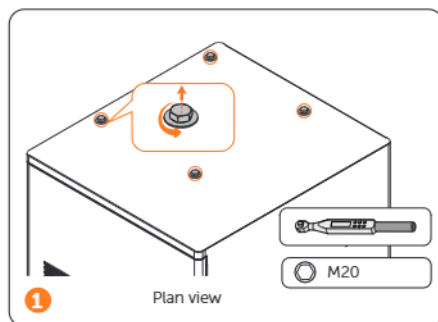


Handling

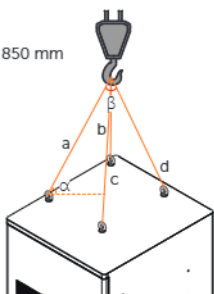
- Hoisting

NOTICE!

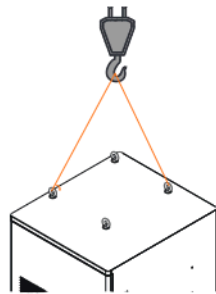
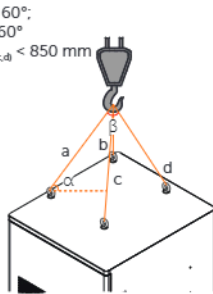
- If the eye bolts are required to be installed based on the actual situation, please strictly follow the steps below.



$\alpha > 60^\circ$
 $\beta \leq 60^\circ$
 $L_{a,b,c,d} > 850 \text{ mm}$



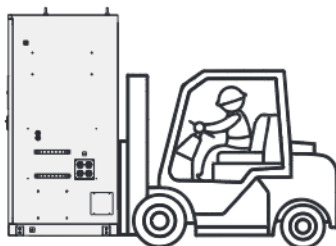
$\alpha \leq 60^\circ$;
 $\beta > 60^\circ$
 $L_{a,b,c,d} < 850 \text{ mm}$



Note!

1. Put the silicone gaskets in place before inserting the eye bolts.
2. Please ensure that the eye bolt's shoulder makes total contact with the silicone gasket.

• **Lifting**



Right view



Left view

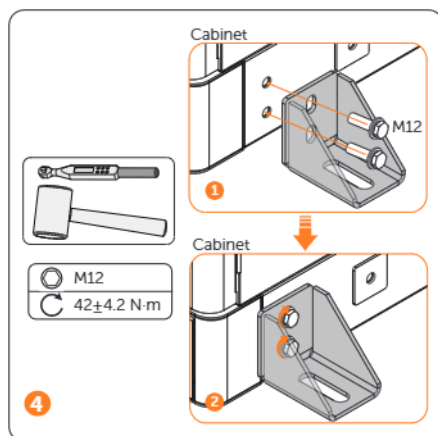
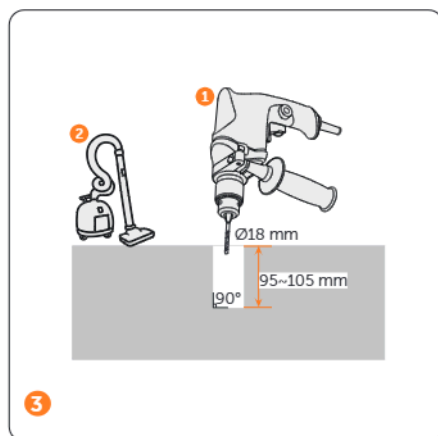
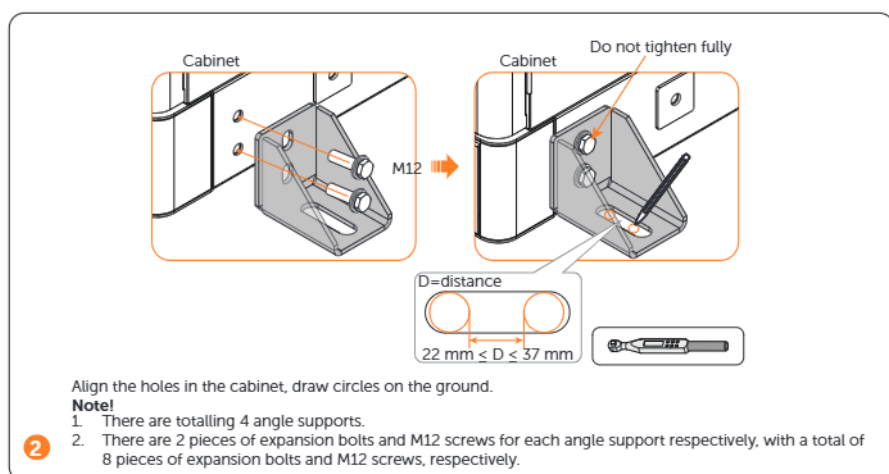
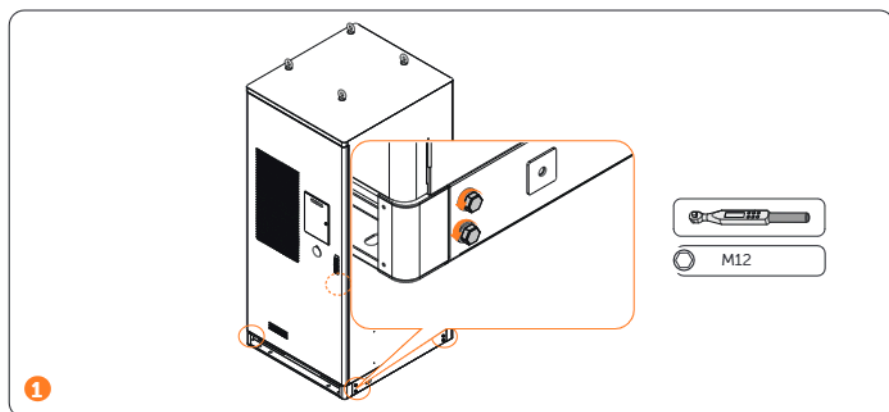


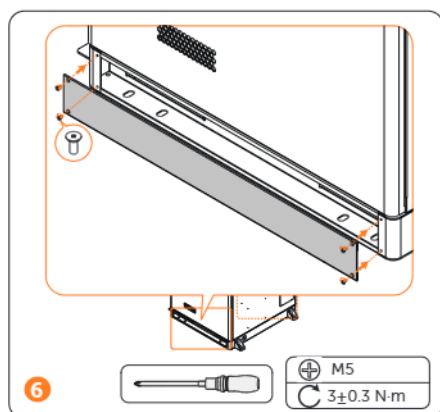
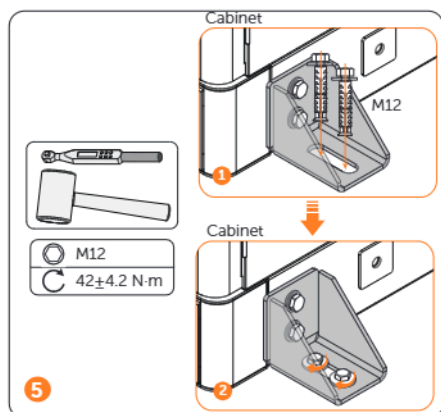
Front view



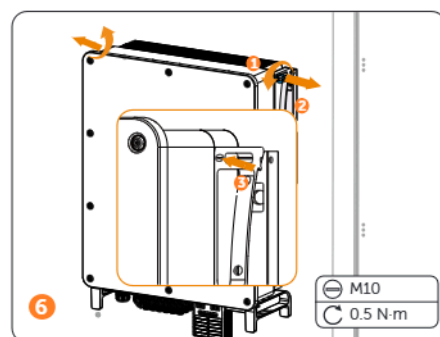
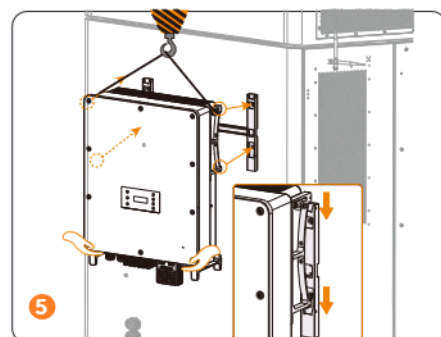
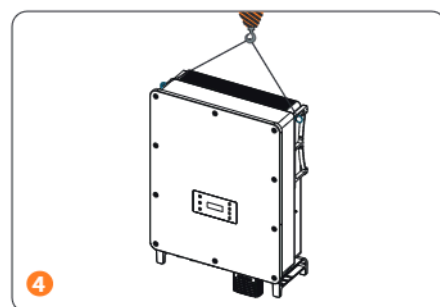
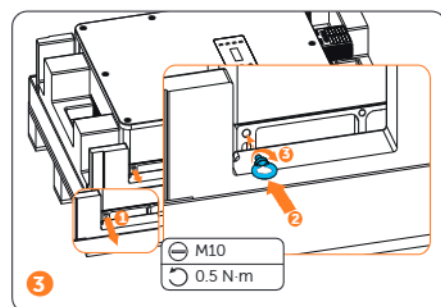
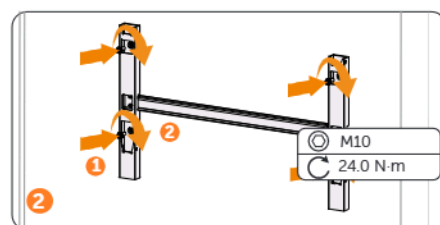
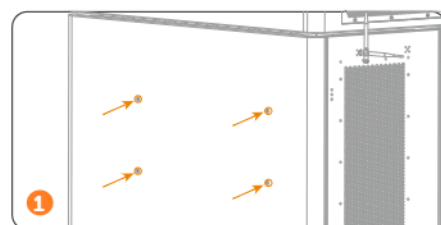
Rear view

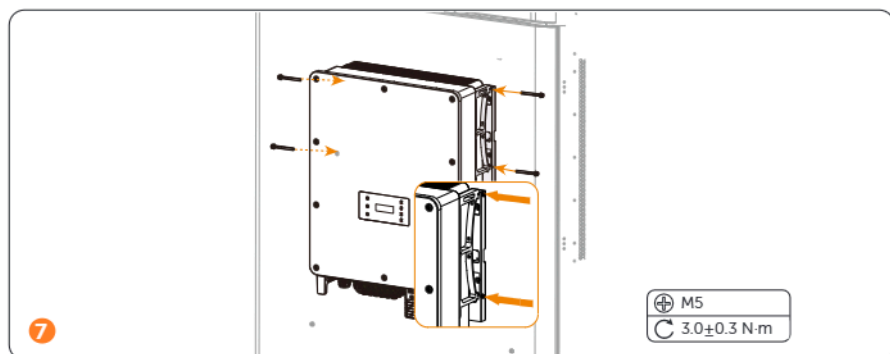
Installation of Angle support and Cover





Installation of Inverter

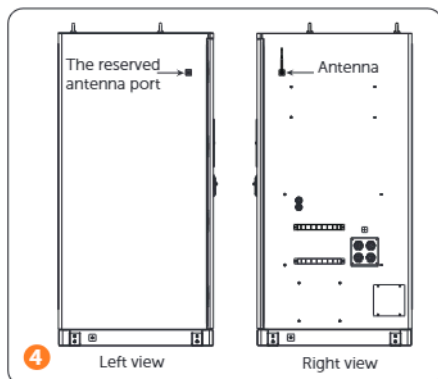
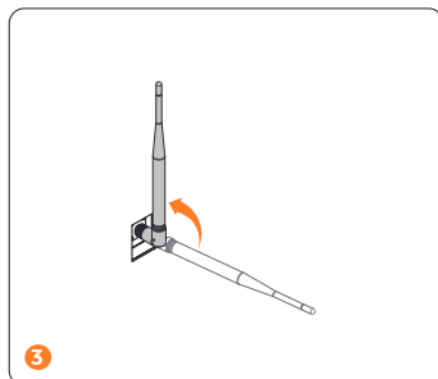
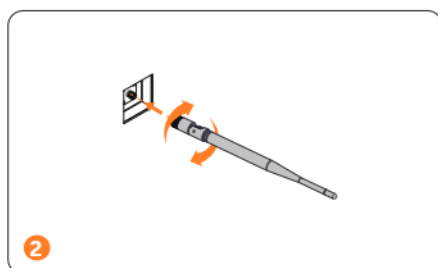
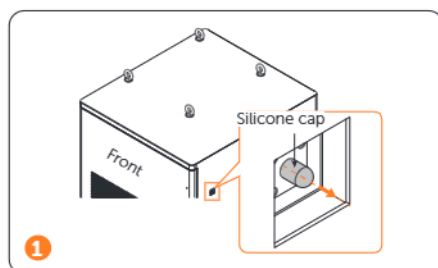




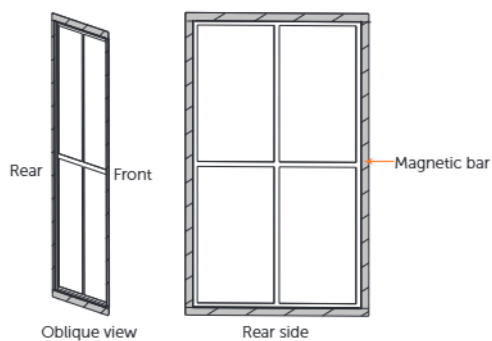
Installation of Antenna

NOTICE!

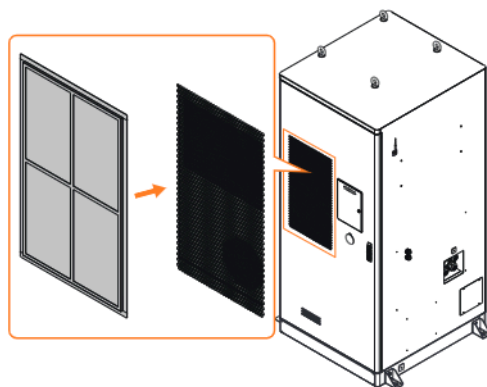
- The user can decide whether the reserved port connects an antenna based on the actual situation.
- Regarding the other antenna port (the right one), the antenna is delivered with the accessories kit.
- The antenna shall be installed after finishing installation of the inverter.



Installation of Metal Magnetic Frame Dust Screen



1



2

Note!

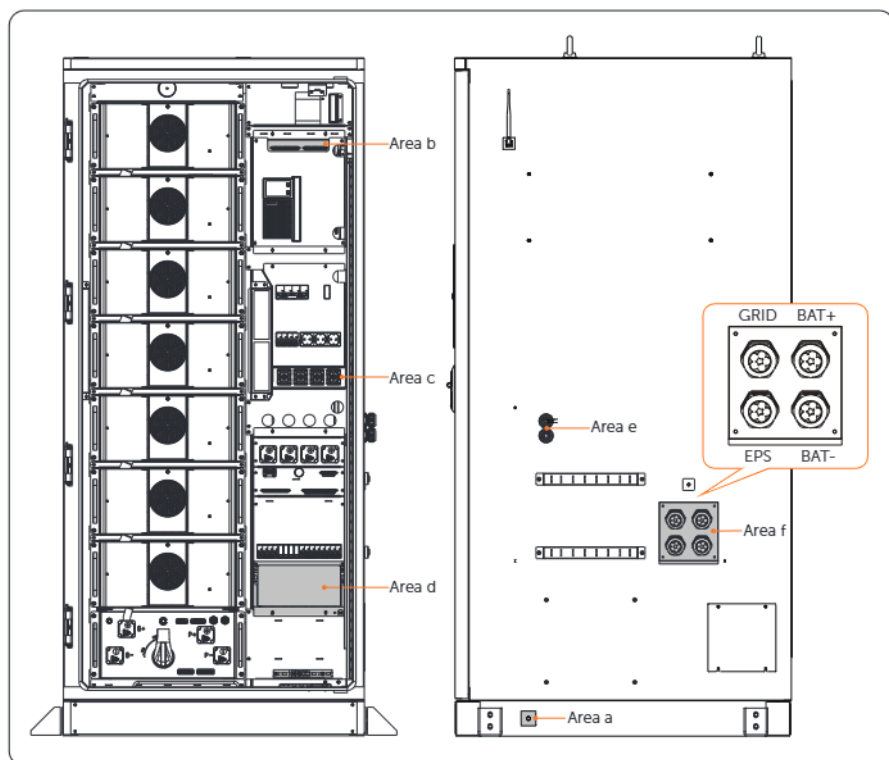
The magnetic frame dust screen shall be kept away from corrosive chemicals.
The magnetic frame dust screen shall be cleaned regularly every year.

Electrical Connection

Parts that Need Wiring

NOTICE!

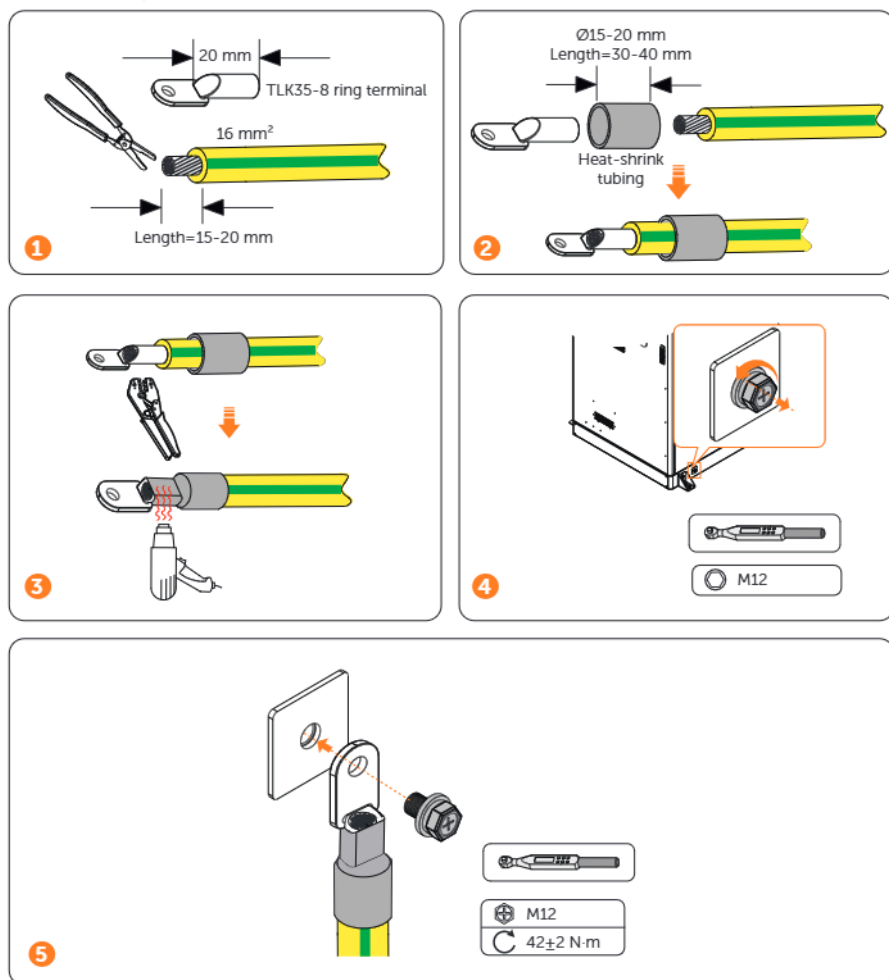
- Before wiring, operators are required to learn which parts need to be conducted wiring. For details, see the following figure.



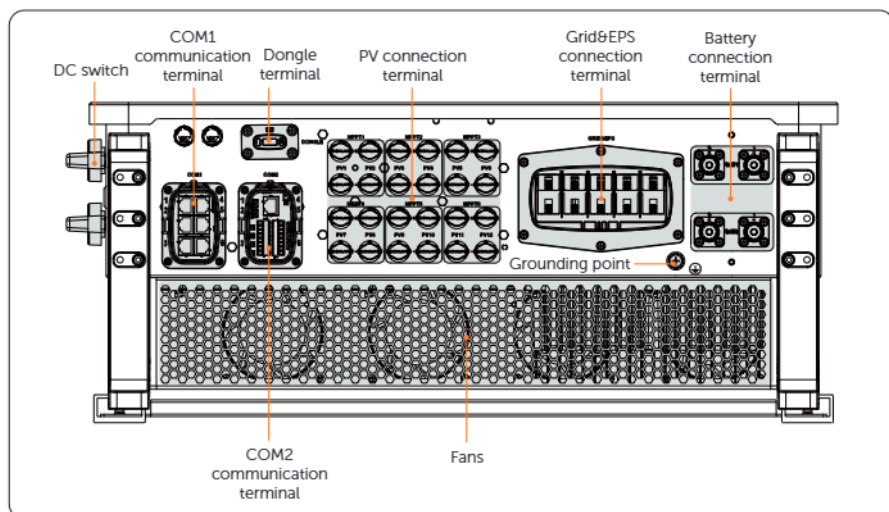
Wiring area	Description
Area a	To connect PE wire.
Area b	To connect other devices if users want.
Area c	To connect EPS wires.
Area d	To connect GRID wires.
Area e	To connect communication cable from cabinet to inverter.
Area f	To connect EPS, GRID, and battery power cables to inverter.

Cabinet Grounding

Wiring area **Area a** in "Parts that Need Wiring" must be connected PE wire. Please strictly follow the steps below.

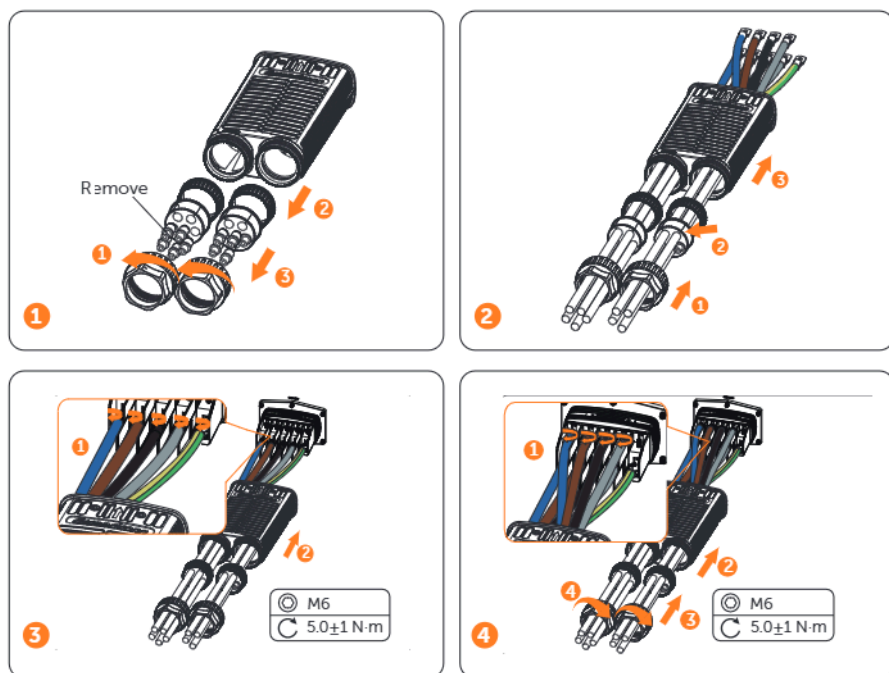


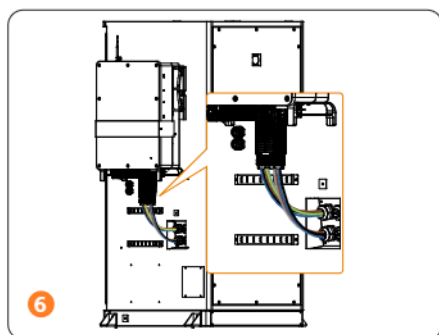
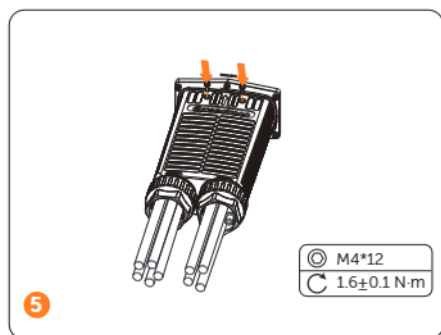
Terminals and Parts of Inverter



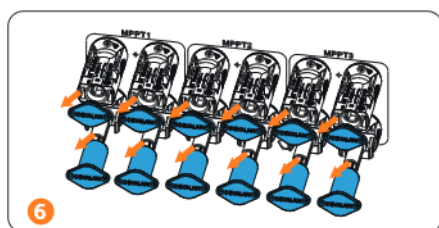
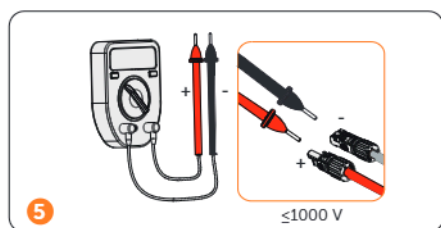
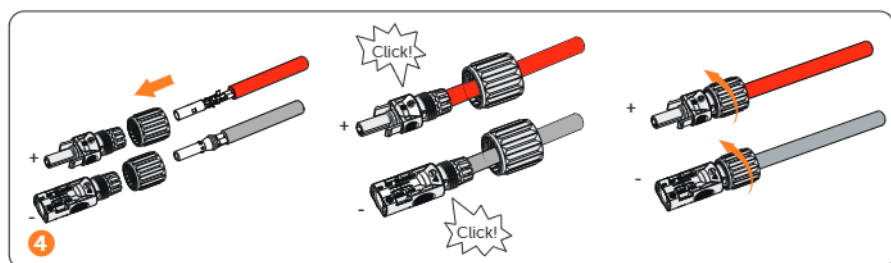
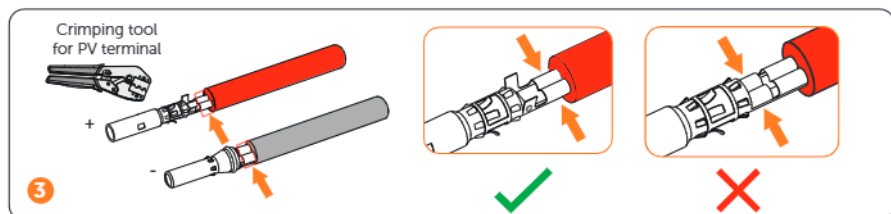
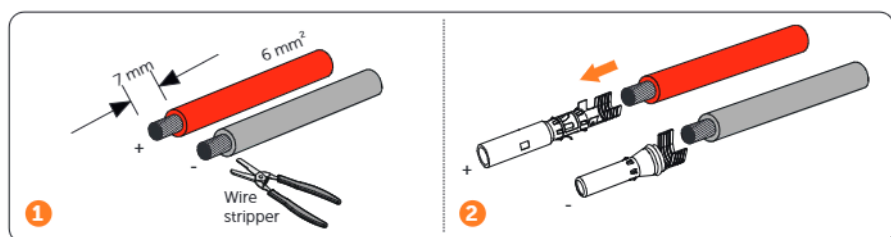
AC Side Connection

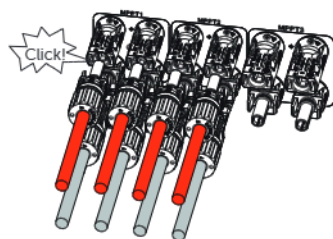
The Grid and EPS cables of the inverter outlet from the battery cabinet from the Grid and EPS port of **part f** in "Parts that Need Wiring", please strictly follow the steps below.



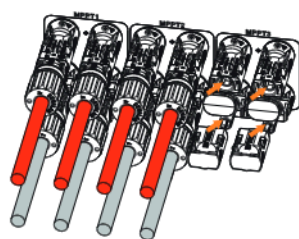


DC Side Connection



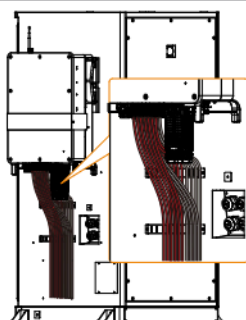


7



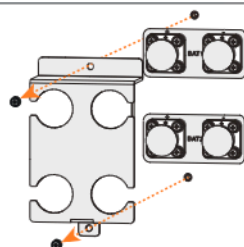
8

9 Secure the PV cables to the bracket with cable ties

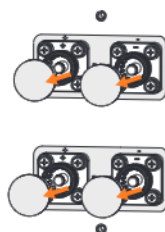


Battery Connection

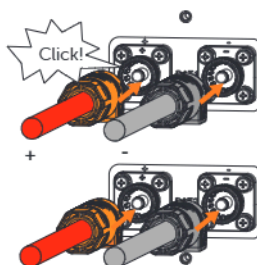
The battery cables of the inverter outlet from the BAT port of **part f** in "Parts that Need Wiring", please strictly follow the steps below.



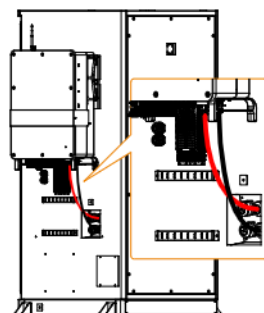
1



2



3

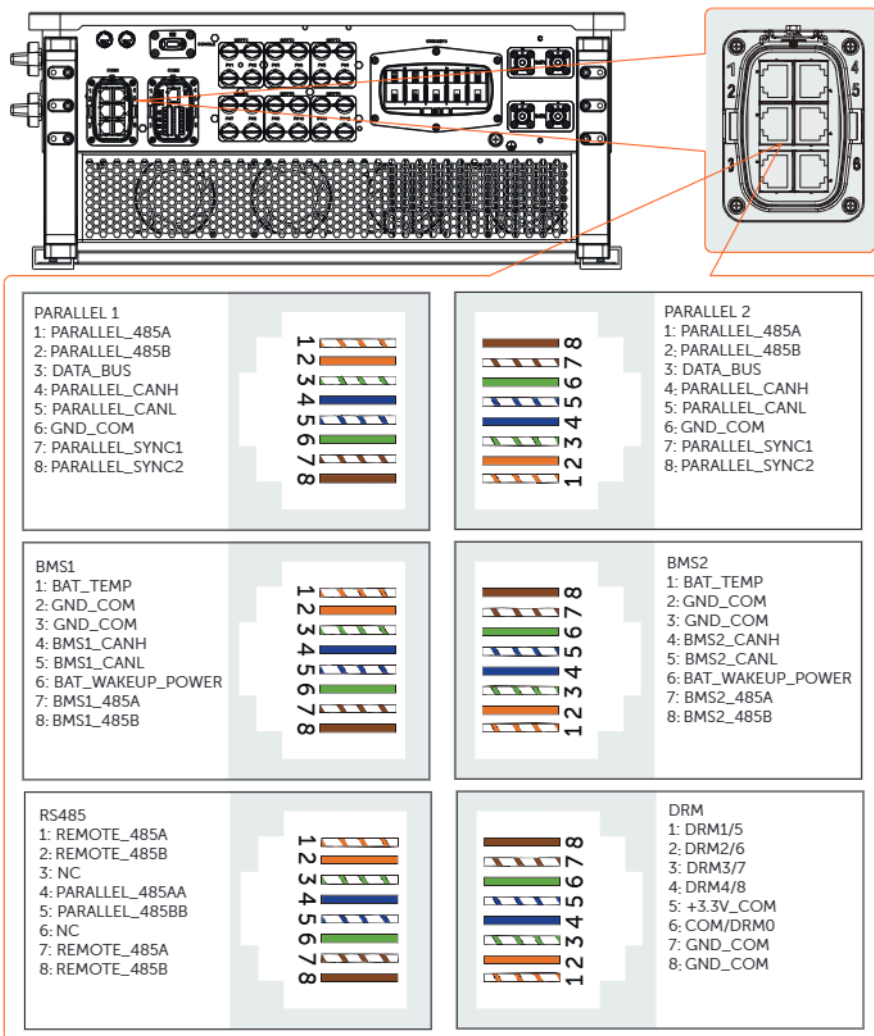


4

Communication Connection

COM 1 communication connection

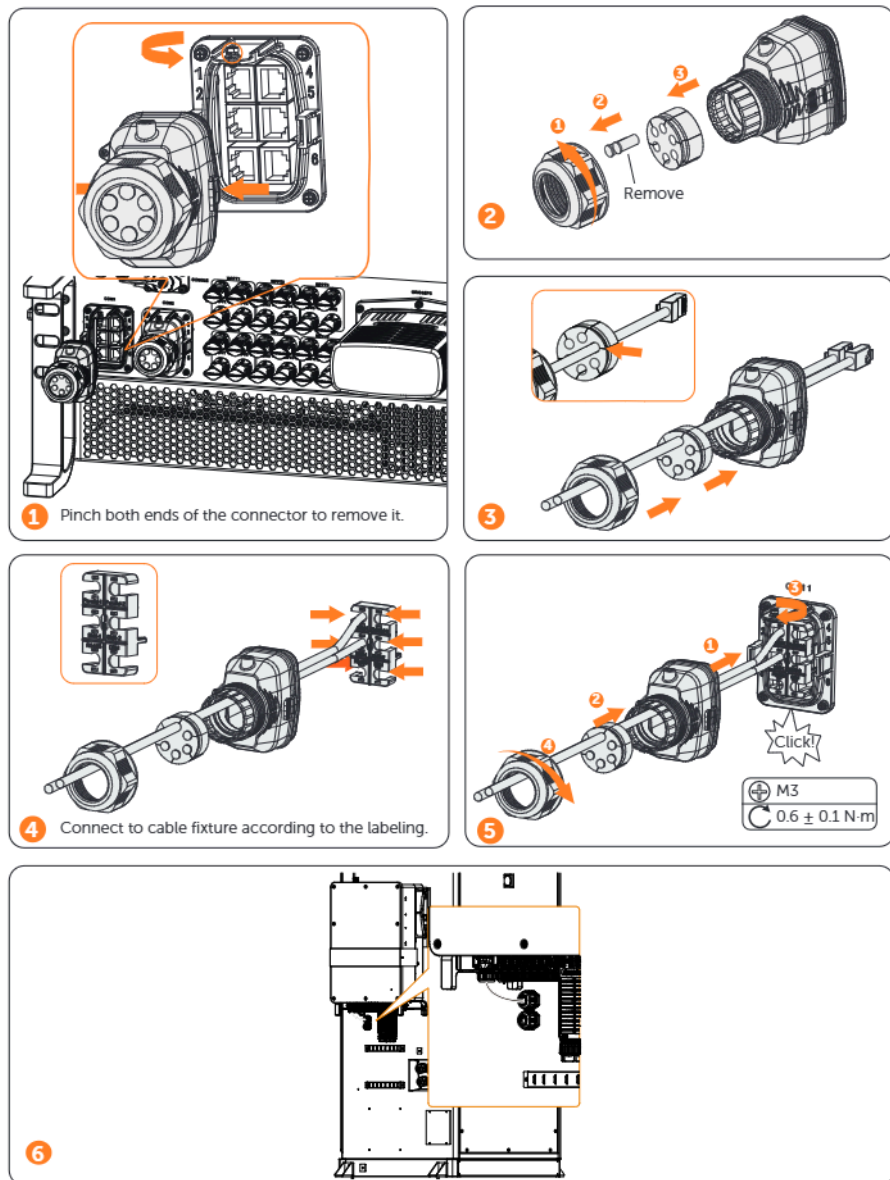
1. Pin assignment of COM 1 terminal



2. Cable connection steps

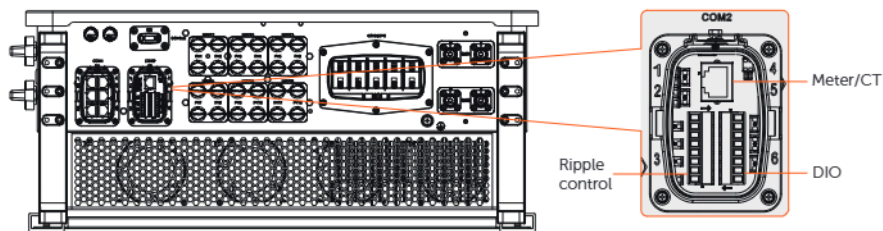
The EMS communication cable and BMS communication cable outlet from the COM 1 port of **Area e** in **"Parts that Need Wiring"**, please plug the EMS communication cable into PARALLEL 1 of COM1, plug the BMS communication cable into BMS 1 of COM1.

* Connect the cables according to the actual function requirements.



COM 2 communication connection

1. Pin assignment of COM 2 terminal

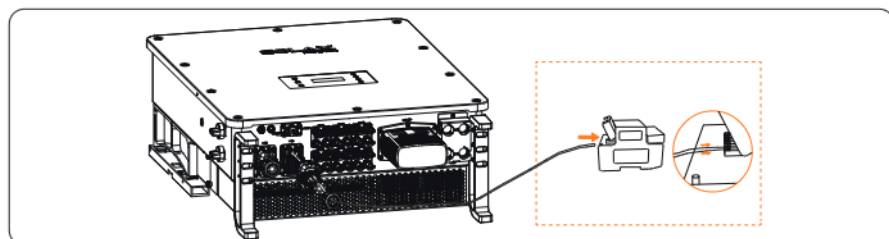


Pin	Pin assignment	Definition
Meter/CT		
1	CT_R1_CON	For CT connection
2	CT_S1_CON	
3	CT_T1_CON	
4	METER_485A	For Meter connection
5	METER_485B	
6	CT_T2_CON	For CT connection
7	CT_S2_CON	
8	CT_R2_CON	
Ripple control		
1	RP_K4	For ripple control connection
2	GND_COM	
3	RP_K3	
4	GND_COM	
5	RP_K2	
6	GND_COM	
7	RP_K1	
8	GND_COM	
DIO port		
1	DO_1	For generator dry contact output
2	DO_2	
3	DI_1+	For system switch dry contact input
4	DI_1-	

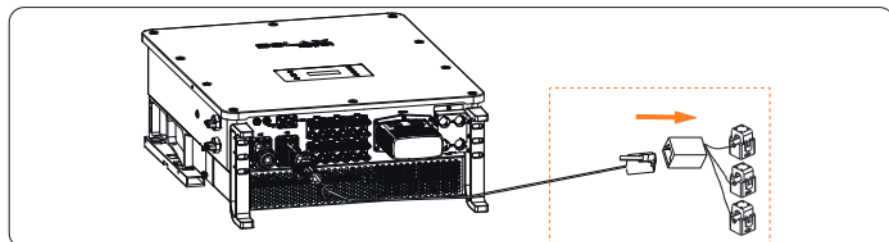
Pin	Pin assignment	Definition
5	DI_2+	Reserved
6	DI_2-	
7	GND_COM	Reserved for connecting the shielding layer of the cables if there is strong interference in the surroundings.
8	EPSBOX_RELAY_VCC	12V power supply

2. Meter/CT connection

- Connecting to wire meter



- Connecting to CT

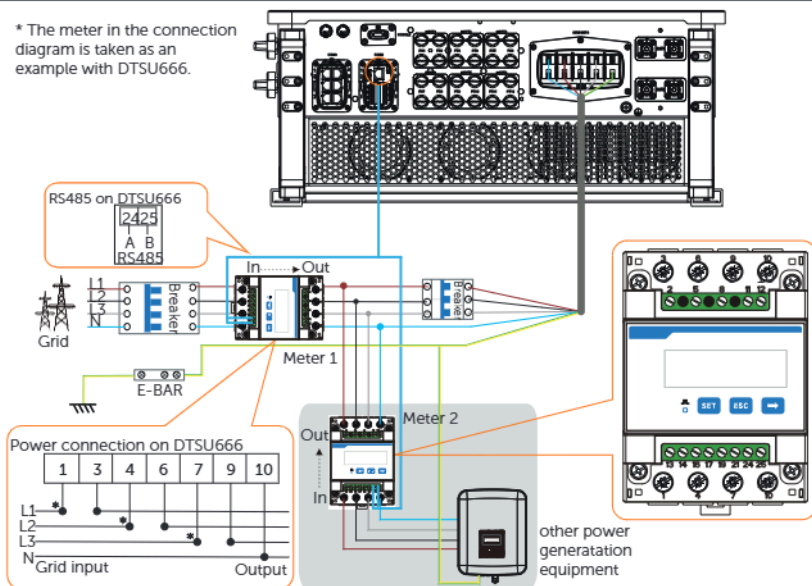


- Connection to wireless meter

* Please refer to the user manual of relevant meter for connection pin definition.

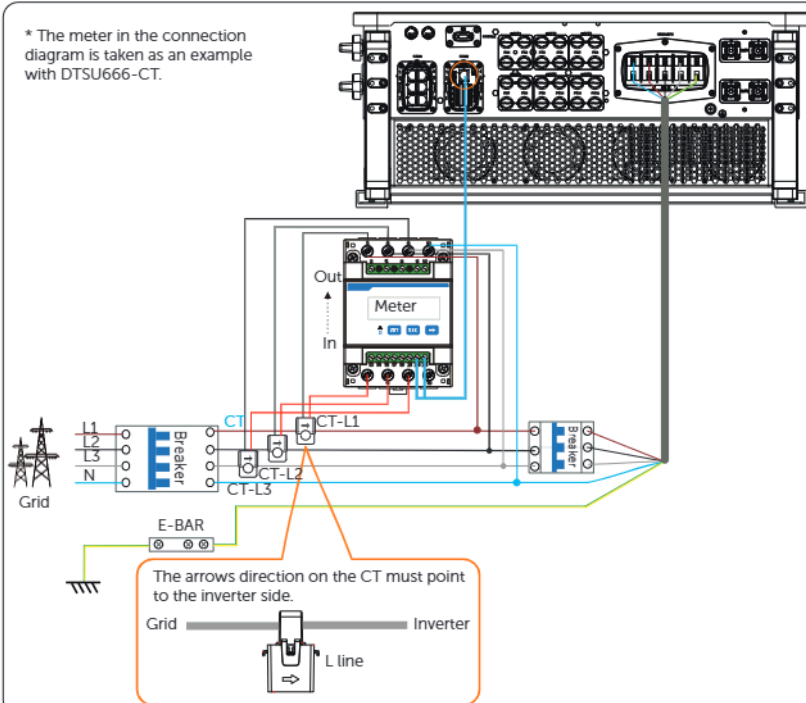
- Meter connection diagram

* The meter in the connection diagram is taken as an example with DTSU666.



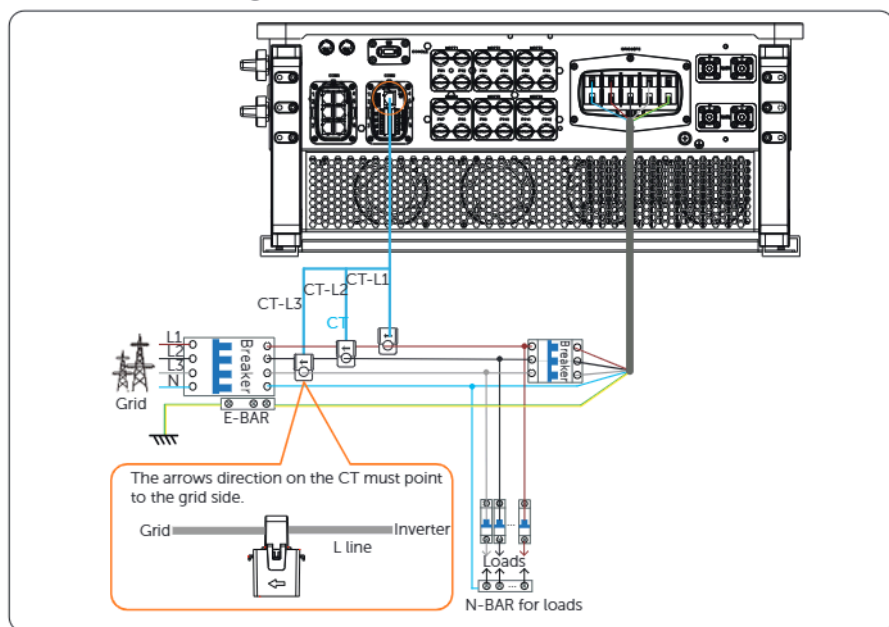
- Meter with CT connection diagram

* The meter in the connection diagram is taken as an example with DTSU666-CT.

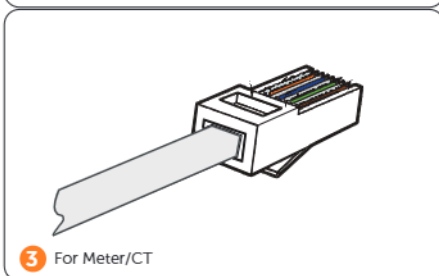
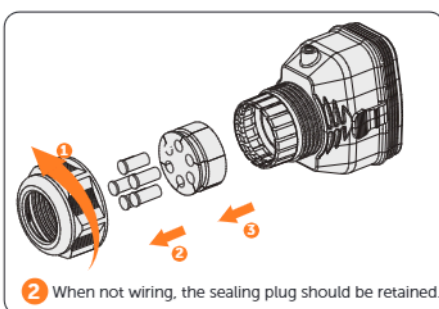
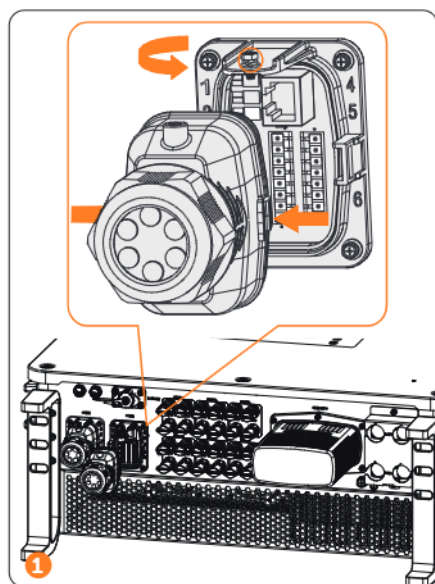


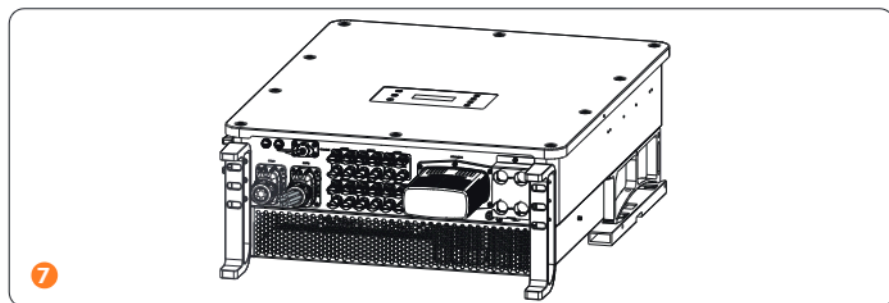
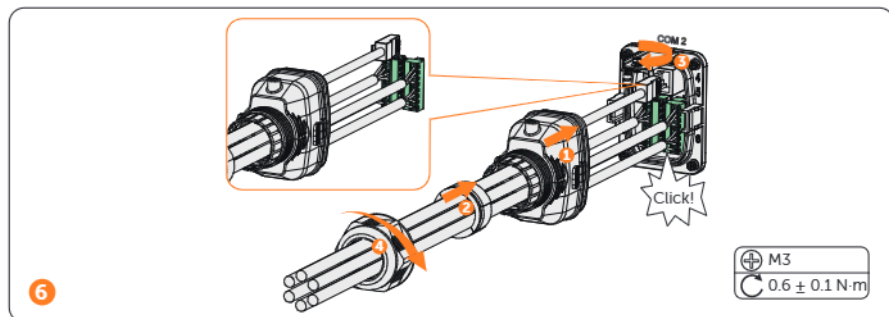
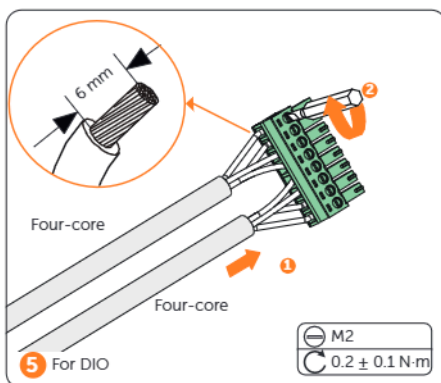
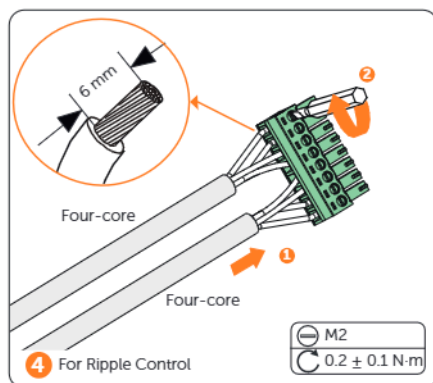
* Markings on the CTs might be R, S and T or L1, L2 and L3. Make sure to clip CT-R/CT-L1 to the L1 wire, CT-S/CT-L2 to the L2 wire, and CT-T/CT-L3 to the L3 wire.

- CT connection diagram



3. Cable connection steps



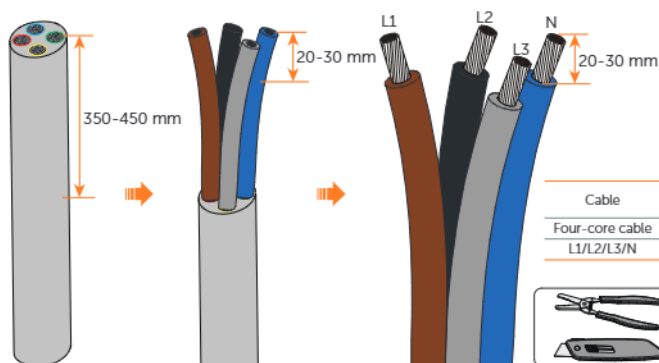


EPS Connection

Wiring area **Area c** in "Parts that Need Wiring" must be connected EPS wires. Please strictly follow the steps below.

NOTICE!

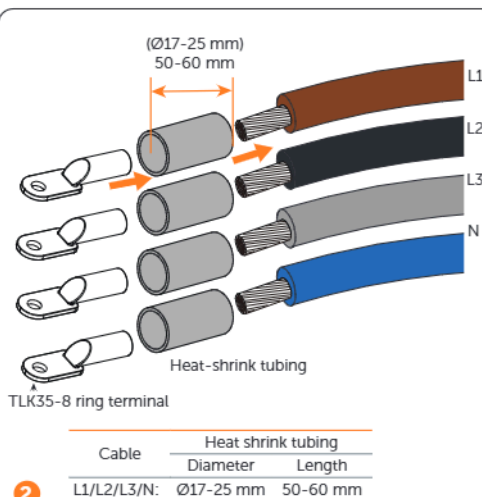
- Take out the underground electrical wiring which is buried beneath the ground.



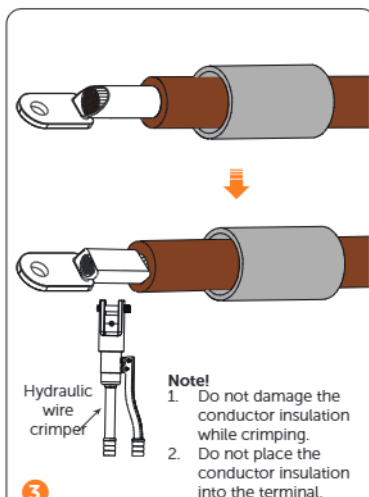
Note:

- It's important to give the power cable a health check before stripping it.
- It's necessary to use controlled motion to strip the insulation down the wire, to prevent damage to the wires.
- Make sure that the insulation layer has been stripped to a sufficient length so that the center conductor is fully exposed without any damage or nicks. In addition, make sure that no extra insulation remains beyond the connector once it's crimped on.

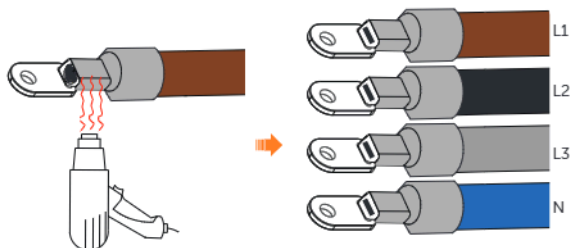
1



2

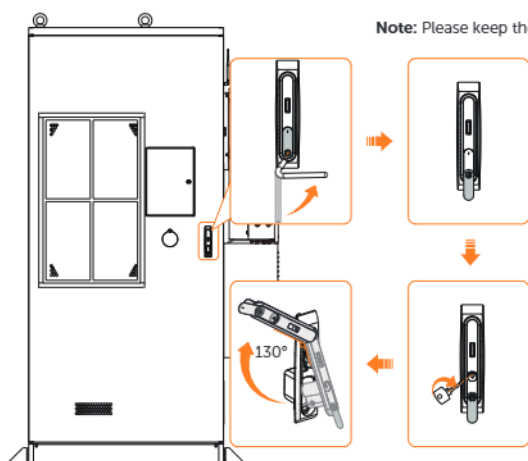


3



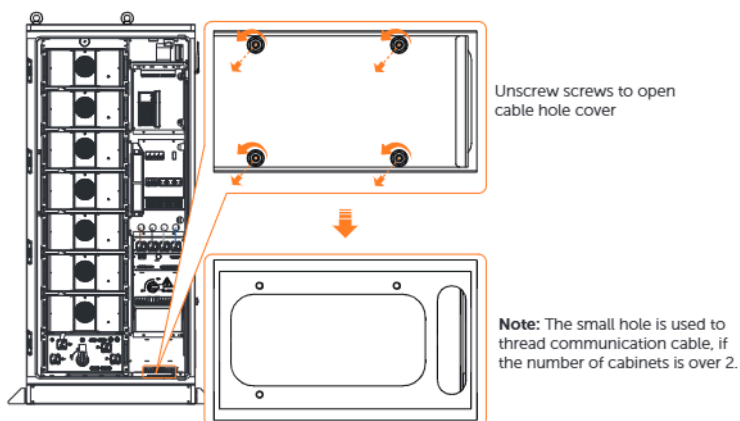
4

Note: Move the heat gun back and forth slowly to distribute the heat evenly across the surface of heat shrink tubing.



5

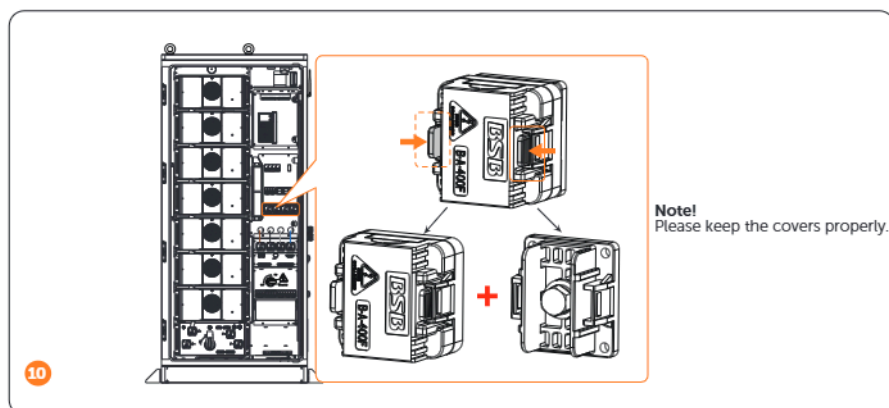
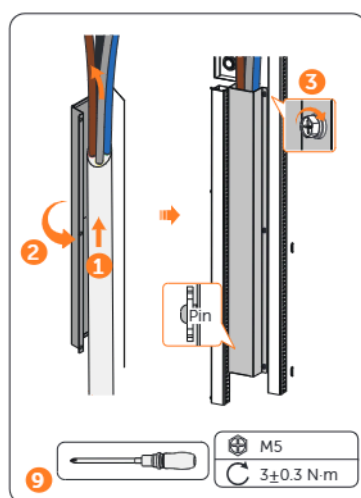
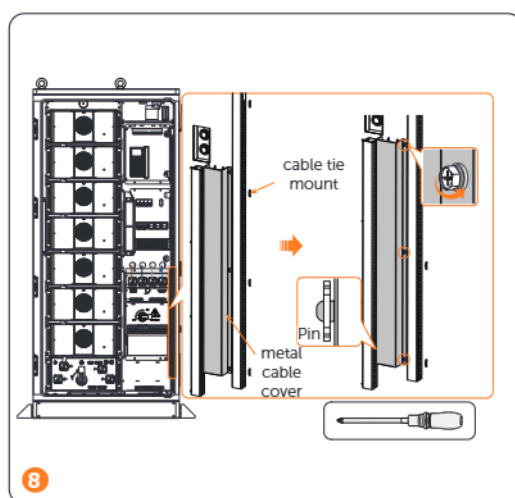
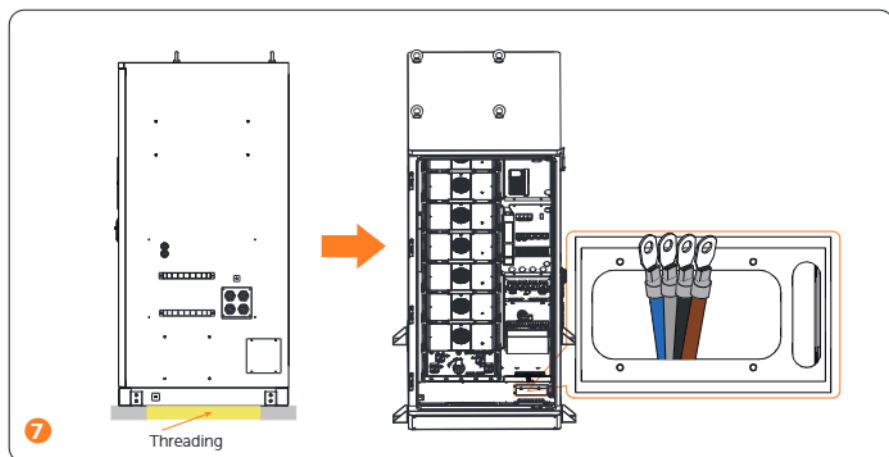
Note: Please keep the keys properly.

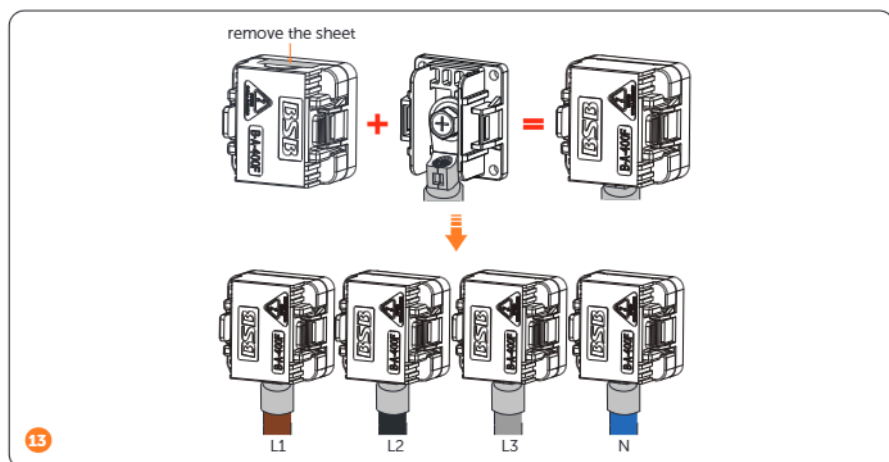
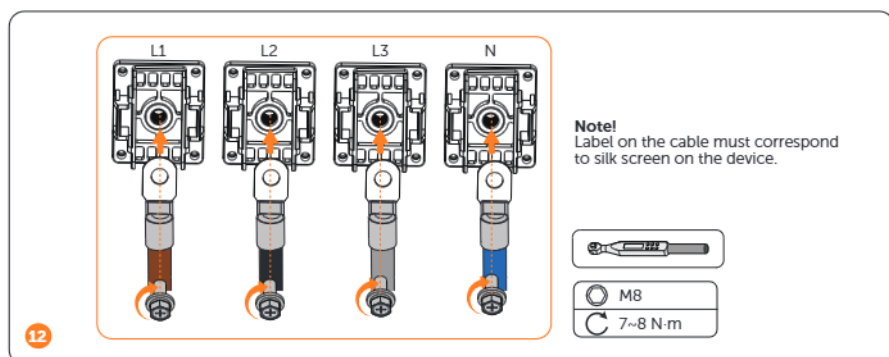
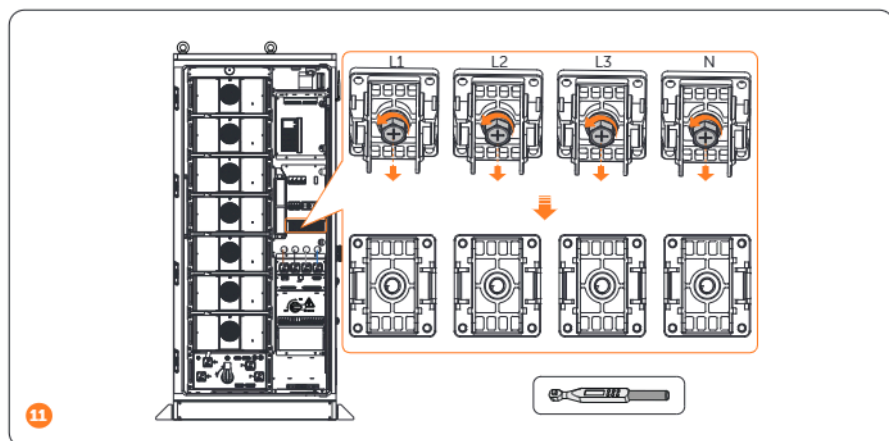


6

Unscrew screws to open cable hole cover

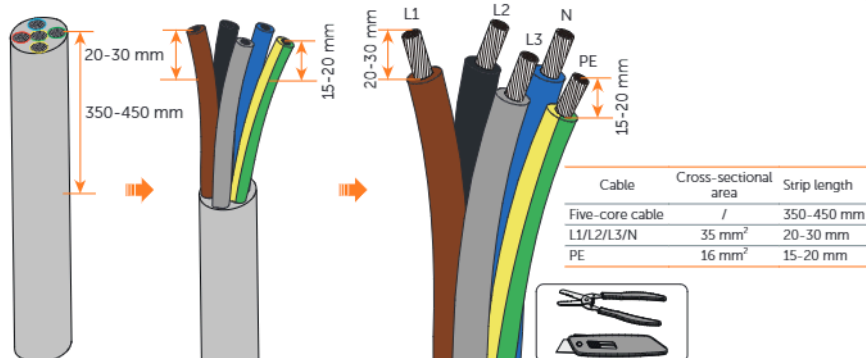
Note: The small hole is used to thread communication cable, if the number of cabinets is over 2.





Grid Connection

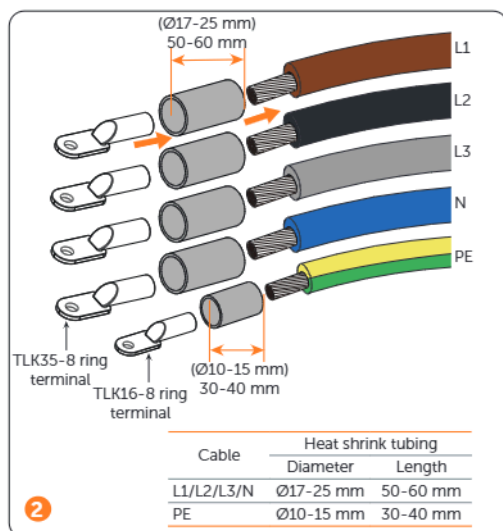
Wiring area **Area d** in "Parts that Need Wiring" must be connected GRID wires. Please strictly follow the steps below.



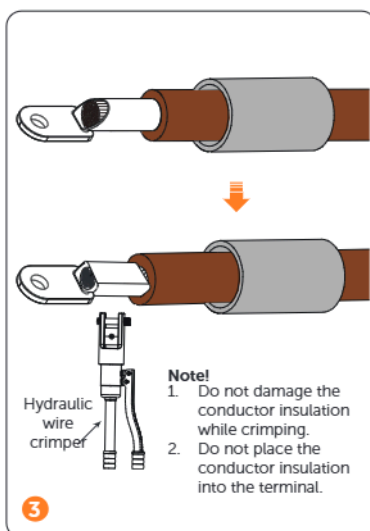
Note:

1. It's important to give the power cable a health check before stripping it.
2. It's necessary to use controlled motion to strip the insulation down the wire, to prevent damage to the wires.
3. Make sure that the insulation layer has been stripped to a sufficient length so that the center conductor is fully exposed without any damage or nicks. In addition, make sure that no extra insulation remains beyond the connector once it's crimped on.

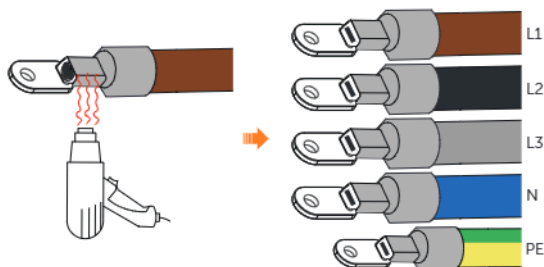
1



2

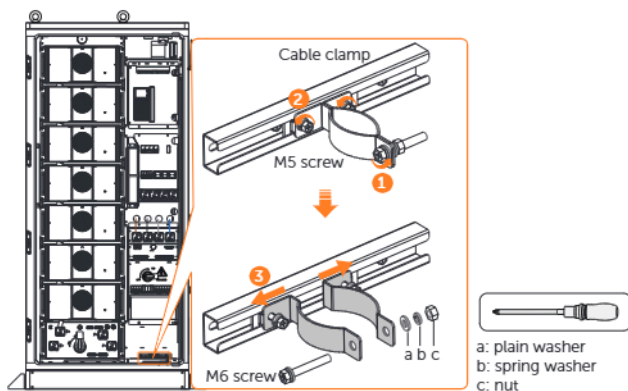


3



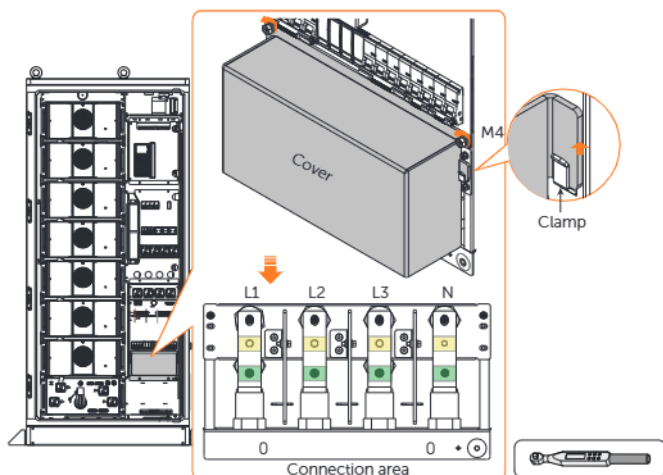
4

Note: Move the heat gun back and forth slowly to distribute the heat evenly across the surface of heat shrink tubing.



5

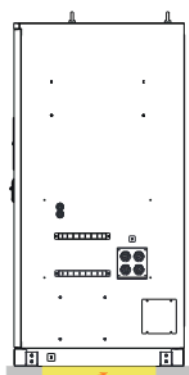
Note: Please keep the screw, washers and nut properly.



6

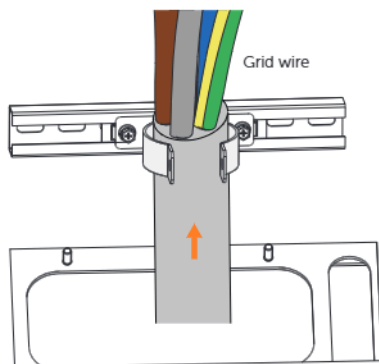
Unscrew M5 screws to remove the cover.

Note: Please keep the M5 screws and cover properly.



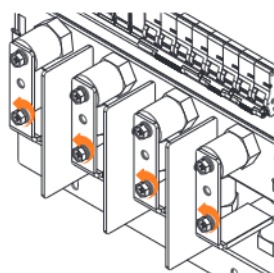
7

Threading

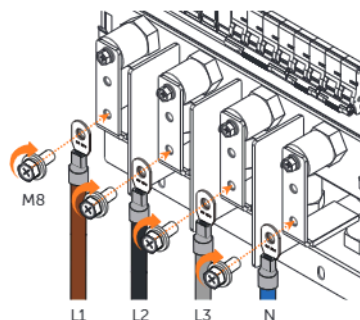


Grid wire

Note: The small hole is used to thread communication cable, if the number of cabinets is over 2.



8



M8

L1

L2

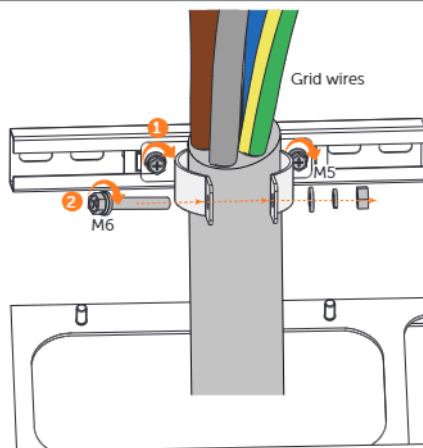
L3

N



M8

12 ± 1 N·m



Grid wires

2

M6

1

M5

9

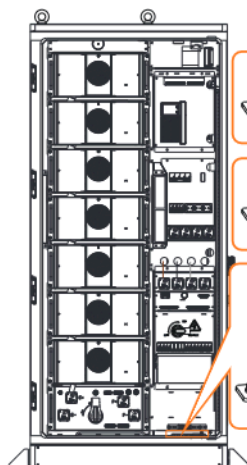


M5

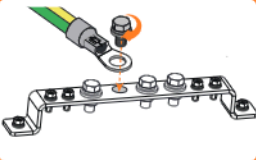
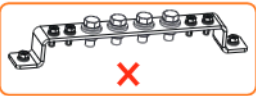
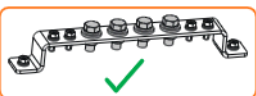
3 ± 0.3 N·m

M6

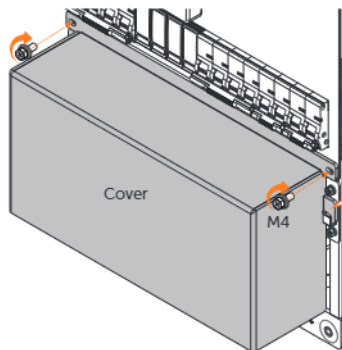
5 ± 0.5 N·m



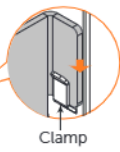
10



M8
12±1 N·m



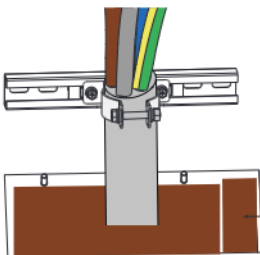
11



Clamp



M4
1.6±0.2 N·m



Fireproof mud

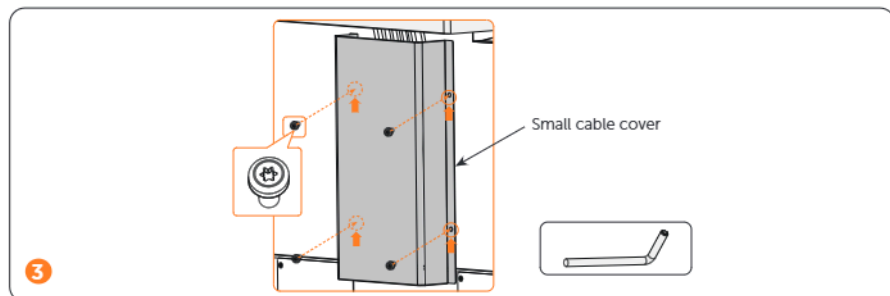
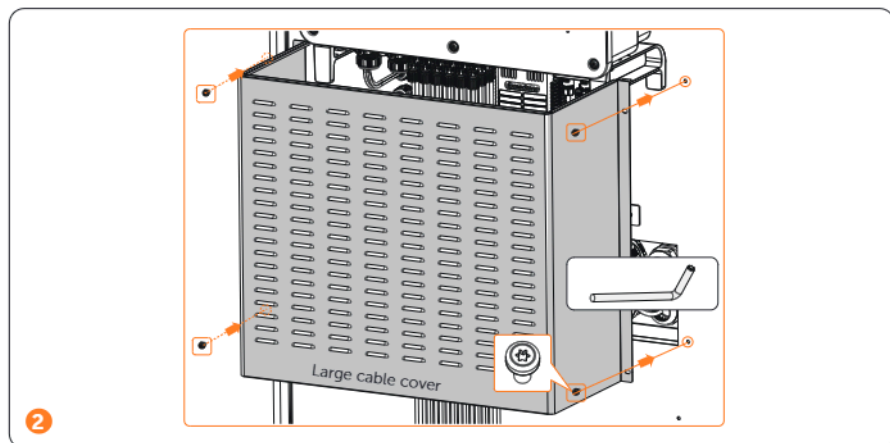
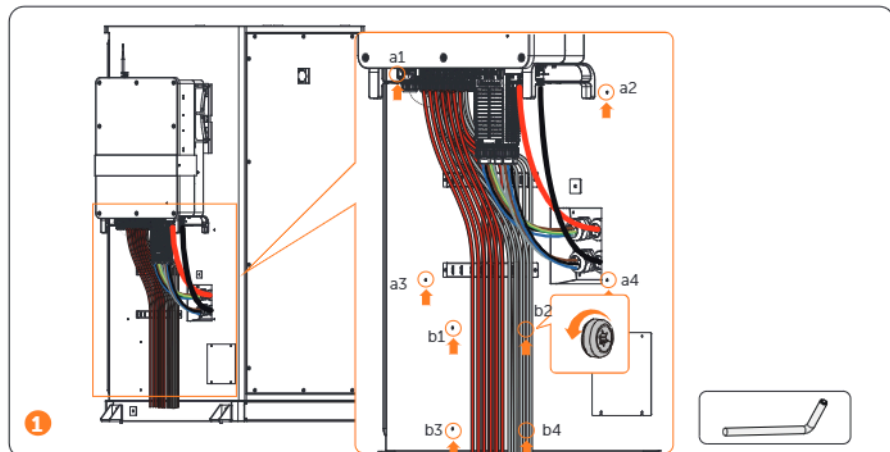
12

Notice for fireproofing mud:

1. Knead the fireproof mud into a ball shape. In the case of the low temperature, place it into warm water, of which the temperature range is between 40°C and 70 °C, with its package until it is soft.
2. Clean the area around the cable threading hole before sealing it.
3. The fireproof mud should be evenly spread, embedded, or filled in the cable threading hole. If such a hole is too large, a fireproofing board can be placed to enhance fire protection before using the mud.
4. The fireproof mud needs to be cured after sealing the cable threading hole. Prevent water from entering and colliding during curing.

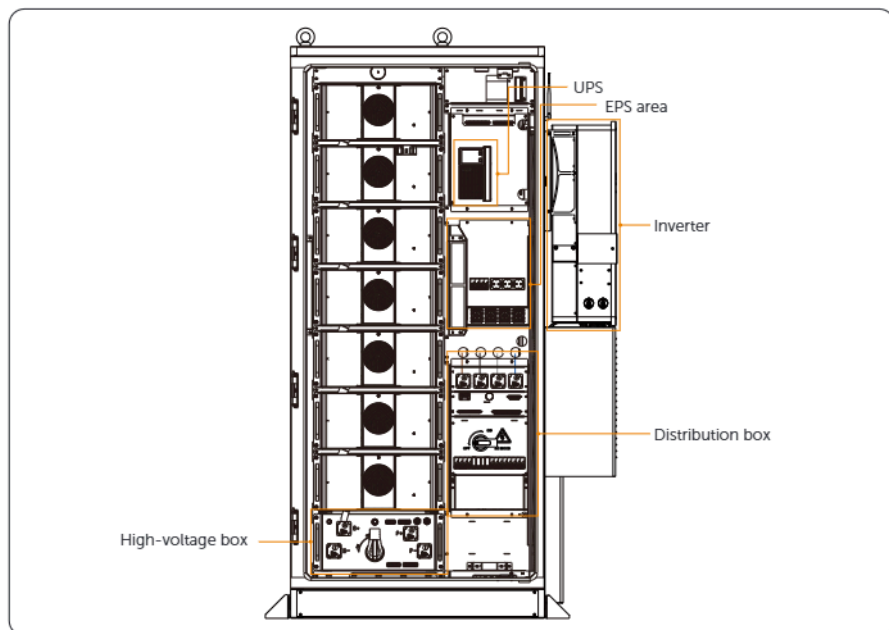
NOTICE!

- Do not install the cable cover until the all the cables are wired.

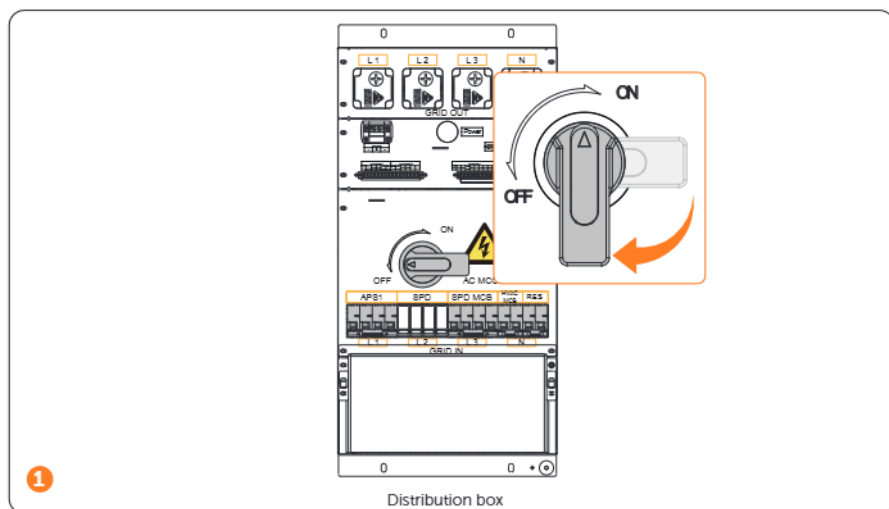


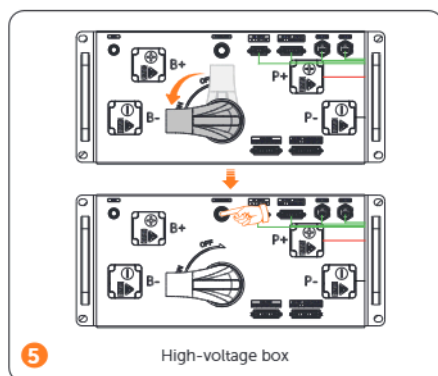
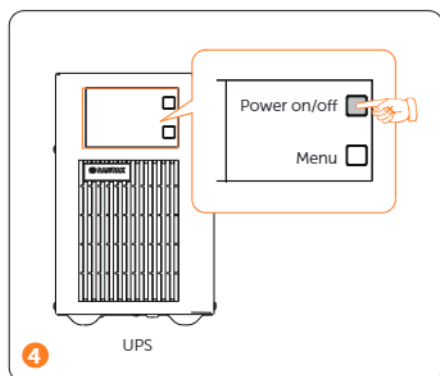
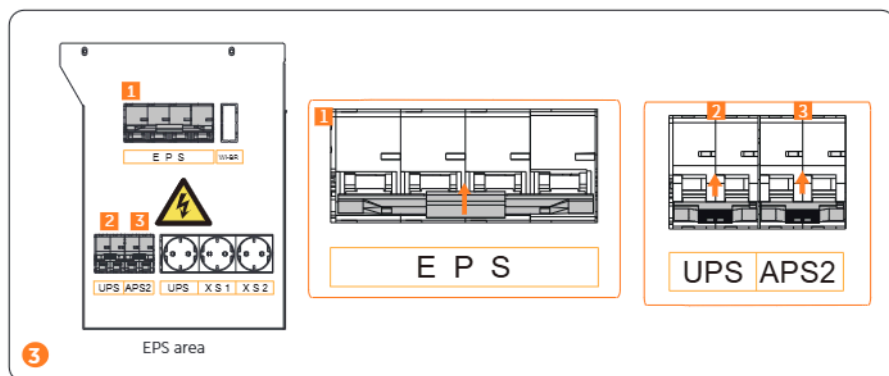
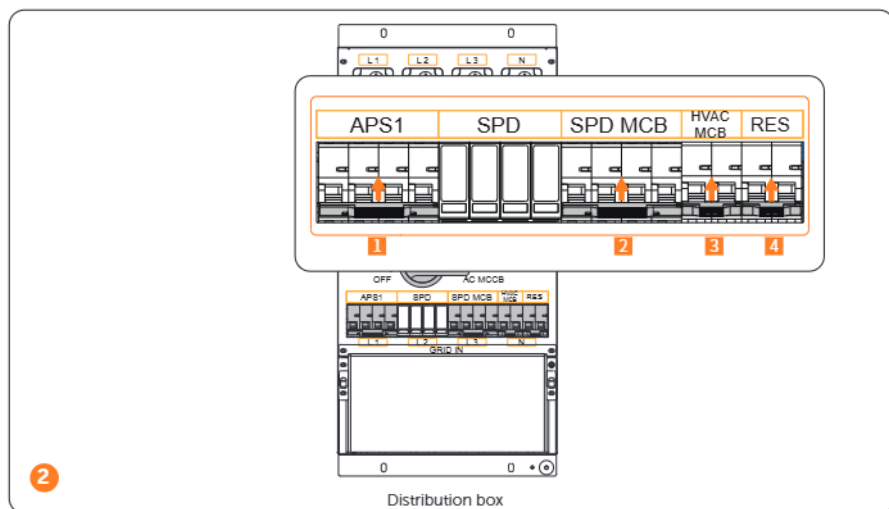
Power on the System

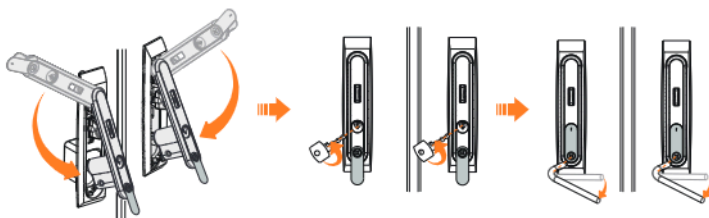
Regarding the detailed location of the modules in the cabinet, see following figure.



For the detailed steps, see following figures.



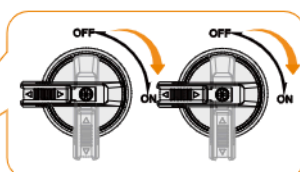




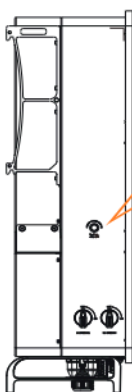
6 Note: Please properly keep the keys.



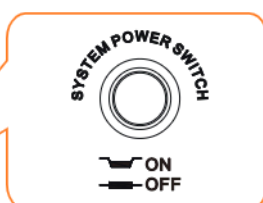
Inverter



7

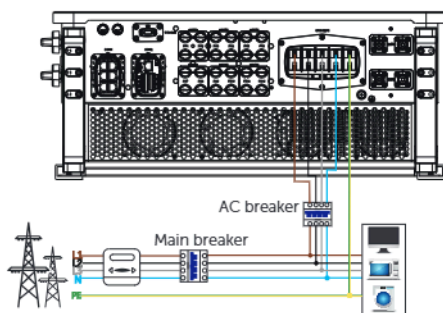


Inverter



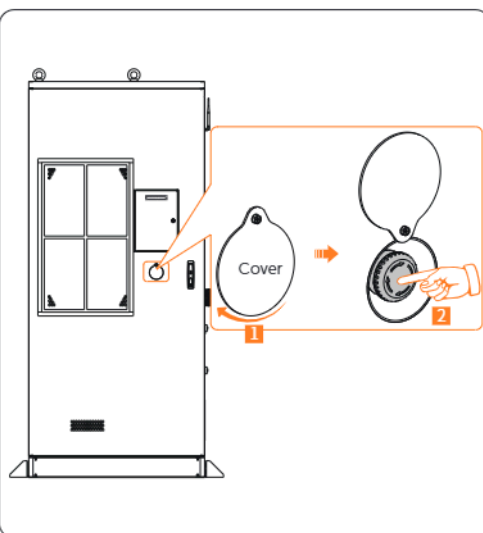
8

Turn on AC breaker



9

Emergency Power Off



Warning!

Do not press the emergency stop button except for emergencies.

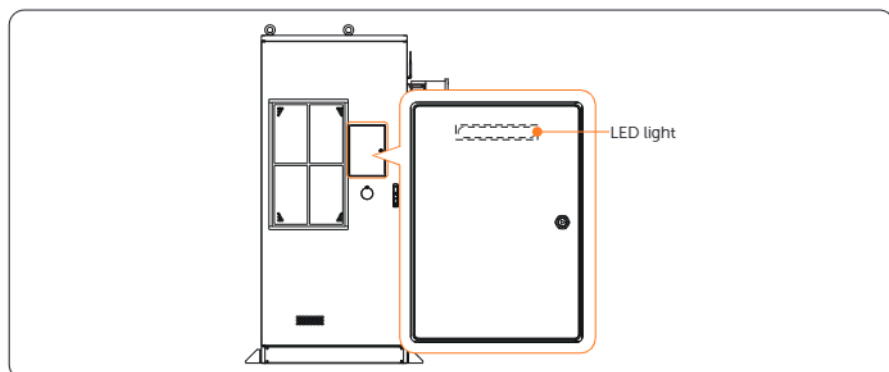
Note!




If it has been pressed, the emergency stop button must be reset before starting the equipment. The reset steps are shown as follows:

1. Rotate the cover;
2. Rotate the button according to the arrow direction shown on the button. Then the button will spring back to its original position.

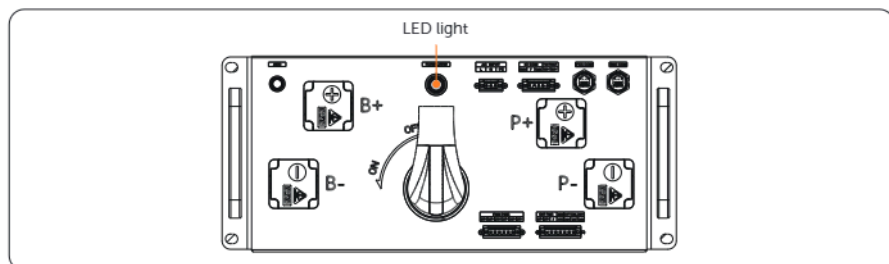
LED Indicators




Cabinet's LED Light



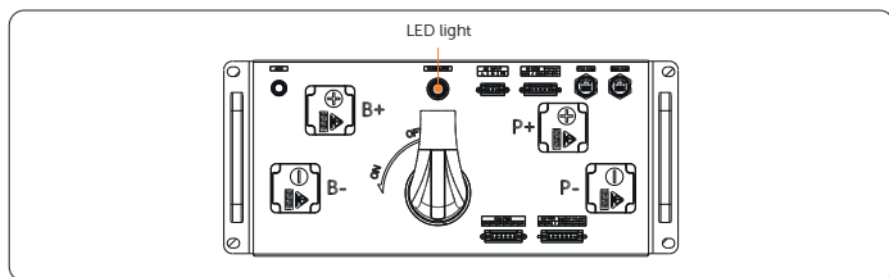
Status		Description
Light on		In standby
Light on		In operation
Light on		System failure

High-voltage Box's LED Light



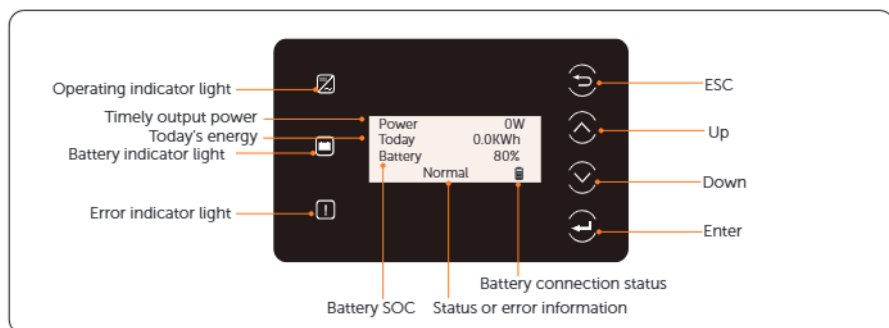
Status		Description
Blinking		In operation
Light on		Rely in off state
Light on		System failure

Battery Pack's LED Light






Status		Description
Blinking		In operation

Inverter LED Panel



- In a normal state, the "Power", "Today" and "Battery" information will be displayed. You can press the keys to switch information.
- In an error state, the fault message and error code will be displayed, please refer to corresponding solutions in the user manual.

LED indicator	Status	Definition
 Operating	Light on	The inverter is in a normal state.
	Blinking	The inverter is in a waiting or checking state.
 Error	Light on	The inverter is in a fault state.
 Battery	Light on	One of the battery terminal is connected in a normal state at least.
	Blinking	Both of the battery terminals are connected are in an idle state.

LED indicator	Status	Definition
	Solid display 	One of the battery terminals is connected normally at least.
	Blinking 	Both of the battery terminals are disconnected.

Key	Definition
ESC key	Exit from the current interface or function
Up key	Move the cursor to the upper part or increase the value
Down key	Move the cursor to the lower part or decrease the value
Enter key	Confirm the selection

System Configuration

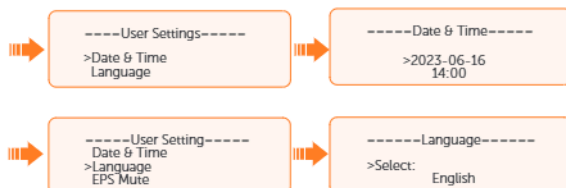
Inverter Configuration

1 User Settings



The initial password is 0 0 0 0 which should be changed for the consideration of account security.

• Data&Time, Language



2 Advance Settings



The initial password is 2014 which should be changed for the consideration of account security.

• Safety Code



Set the corresponding safety standards according to different countries

• Export Control

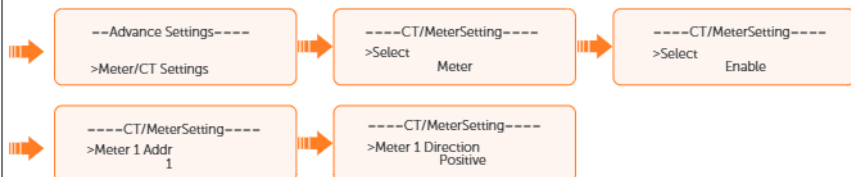


Set the control power to 0 for the countries with zero export control limit

• Meter / CT Setting-if CT is connected



• Meter / CT Setting-if Meter is connected



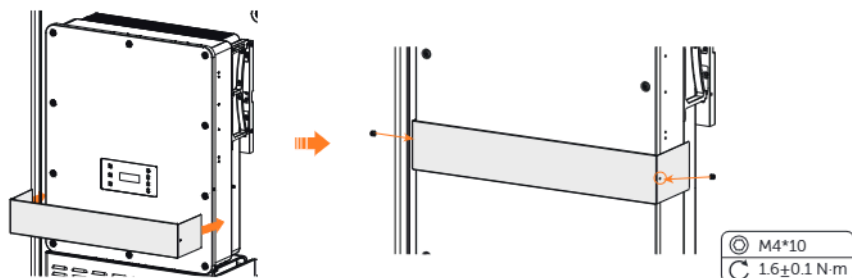
• Internal485 Settings



Set the Internal485 to EMS, check whether the baud rate is the same as EMS.

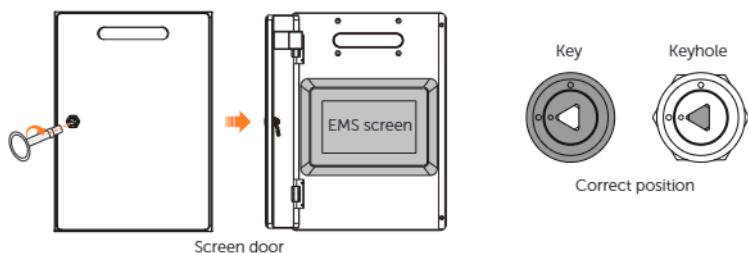
Inverter Screen Cover Installation

It is recommended that the inverter screen cover should be installed after all settings on the inverter LCD screen are set.



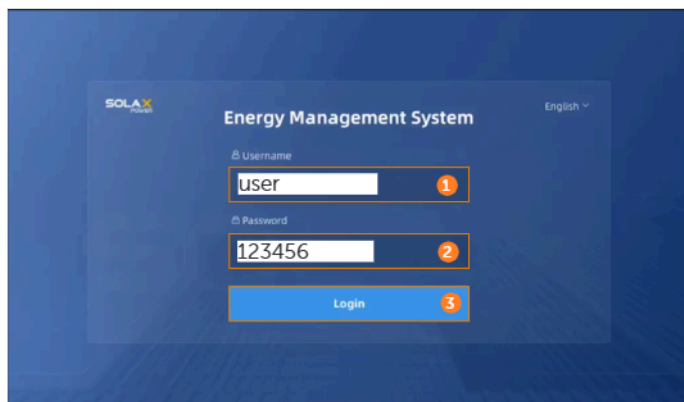
EMS Configuration

1 Unlocking screen door



2 Log in to the screen

Username	Password	Remarks
User	123456 by default	The password can be modified on EMS1000 webpage.

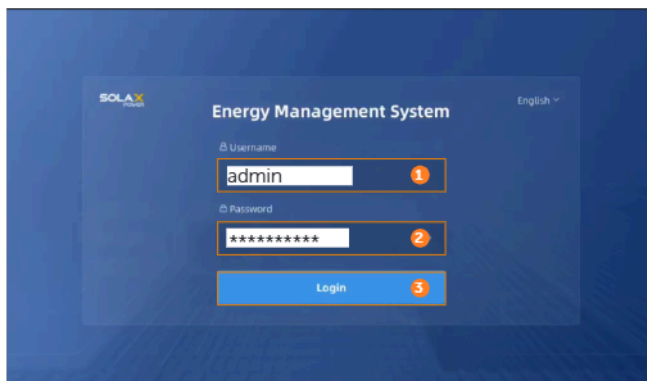


3 View EMS Registration No., and then Log out.

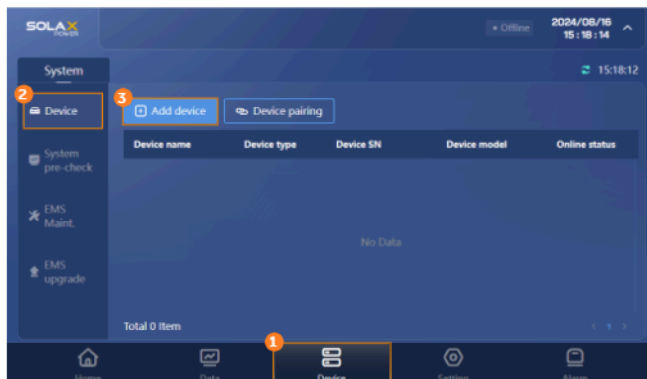
Username	Password
Admin	EMS Registration No.



4 Sign in an admin account



5 Add inverter



6 Set inverter parameters

Device type	COM method	COM port	Connected device qty	Address allocation
Inverter	Modbus RTU	COM 7	1	Auto

NOTICE!

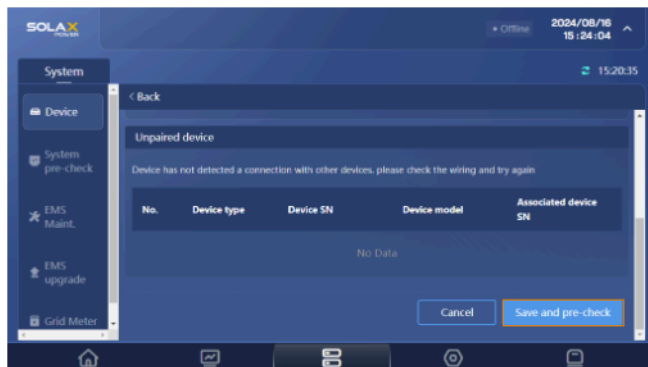
- If the device connects in parallel, the number in the "Connected device qty" column shall be based on the actual quantity of inverters.

7 Pairing device

Device name	Device type	Device SN	Device model	Online status
Grid Meter	Meter		DTSU666-CT	Offline
	Inverter		X3-AELIO	---
	Battery		TB-HR140	---
	Battery		TB-HR140	---
SOLAXPOWERLTD	IO Module		/	---

Total 6 item

8 Save and pre-check



Note

Binding will refresh the cabinet relationships in the system.

Cancel

Confirm

SolaXCloud Download



SolaXCloud

Scan the QR code to download SolaXCloud App. Follow the tutorial or online documents on the SolaXCloud App to complete the configuration.

Technical Data

- DC Side

Model	AELIO-P50B100	AELIO-P60B100
Max. PV input power [kW]	100	120
Max. PV input voltage [V]	1000	1000
Start output voltage [V]	180	180
Rated input voltage [V]	650	650
MPPT voltage range [V]	160~950	160~950
No. of MPP trackers / Strings per MPP tracker	5 (2 per MPPT)	6 (2 per MPPT)
Max. input current [A]	40	40
Max. input short circuit current [A]	50	50

- AC Side

Model	AELIO-P50B100	AELIO-P60B100
Rated AC output power [kW]	50.0	60.0
Rated AC output current [A]	75.8 @ 220V 72.5 @ 230V 69.5 @ 240V	91.0 @ 220V 87.0 @ 230V 83.4 @ 240V
Max. AC output apparent power [kVA]	55.0	66.0
Max. AC output current [A]	83.4 @ 220V 79.8 @ 230V 76.4 @ 240V	100.0 @ 220V 95.7 @ 230V 91.7 @ 240V
Nominal grid voltage [V]	3/N/PE, 220/380, 230/400, 240/415	
Nominal grid frequency [Hz]	50/60	
Auxiliary Power Input Voltage [a.c. V]	L/N/PE, 220, 230, 240	
Auxiliary Power Input Current [a.c. A]	Max. 10	
Auxiliary Power Frequency [Hz]	50/60	
Auxiliary Power Short Current [A]	350	
Adjustable power factor range	1 (0.8 Leading ~ 0.8 Lagging)	
THDi (Rated power) [%]	< 3	

- Battery

Model	AELIO-P50B100	AELIO-P60B100
Battery type	LiFePO ₄	
Rated battery capacity [kWh]	100	
Rated battery voltage [V]	358.4	
Battery voltage range [V]	280~408.8	
Discharge depth [%]	90	
Rated charge/discharge current [A]	140	
Max charge/discharge current [A]	160 (80 × 2)	

- General Parameter

Model	AELIO-P50B100	AELIO-P60B100
Dimensions (with Inverter) (W×H×D) [mm]	1310 × 2300 × 1140	
Dimensions (without Inverter) (W×H×D) [mm]	1020 × 2300 × 1140	
Weight (with Inverter) [kg]	1600	
Weight (without Inverter) [kg]	1500	
Operating ambient temperature range [°C]	-30~55	
Relative humidity(Non-condensing) [%]	0~100	
Max. operating altitude [m]	3000	
Cooling concept	Smart air cooling	
Ingress protection	Cabinet: IP55; Inverter: IP66	
Fire protection	Aerosol / Water	
Topology	Non-isolated	
Standard	IEC62619, IEC63056:2000, IEC61000, IEC62477-1, UN38.3	

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Warranty Registration Form



For Customer (Compulsory)

Name _____ Country _____
Phone Number _____ Email _____
Address _____
State _____ Zip Code _____
Product Serial Number _____
Date of Commissioning _____
Installation Company Name _____
Installer Name _____ Electrician License No. _____

For Installer

Module (If Any)

Module Brand _____
Module Size(W) _____
Number of String _____ Number of Panel Per String _____

Battery (If Any)

Battery Type _____
Brand _____
Number of Battery Attached _____
Date of Delivery _____ Signature _____

Please visit our warranty website: <https://www.solaxcloud.com/#/warranty> or use your mobile phone to scan the QR code to complete the online warranty registration.



For more detailed warranty terms, please visit SolaX official website: www.solaxpower.com to check it.





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