



Combiner box ASW1000-CB-HB

User Manual

Version:02

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1 General information

1.1 About this document

This document describes the mounting, installation, commissioning, configuration, operation, and decommissioning of the product as well as the operation of the product user interface.

You will find the latest version of this document and further information on the product in PDF format at www.solplanet.net.

It is recommended that this document is stored in an appropriate location and is always available.

1.2 Area of the validity

This document is valid for the following models:

- ASW1000-CB-HB

1.3 Target group

This document is intended for qualified persons who must perform the tasks exactly as described in this user manual.

All installation work must be performed by appropriately trained and qualified persons. Qualified persons must possess the following skills:

- Knowledge of how batteries work and are operated.
- Knowledge of how an inverter works and is operated.
- Training in how to deal with the dangers and risks associated with installing, repairing and using electrical devices, batteries and installations.
- Training in the installation and commissioning of electrical devices.
- Knowledge of all applicable laws, standards, and directives.
- Knowledge of and compliance with this document and all safety information.

1.4 Safety warning symbols guide

DANGER

Indicates a hazardous situation which, if not avoided, will result in serious injury or death.

WARNING

Indicates a hazardous situation which, if not avoided, could result in serious injury or death.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTE

Indicates a situation which, if not avoided, can result in property damage.



Information that is important for a specific topic or goal, but is not safety relevant.

1.5 Symbols on the label



Beware of high voltage and operating current!

The product operates at high voltage and current. Work on the product must only be carried out by skilled and authorized electricians.



Beware of hot surfaces

The product may become hot during operation. Avoid contact during operation.



WEEE Designation

Do not dispose of the product together with household waste. Dispose the product in accordance with local disposal regulations for electronic waste.



CE marking

The product complies with the requirements of the applicable EU directives.



RCM Mark

The product complies with the requirements of the applicable Australian standards.



Capacitor discharge

Danger to life due to high voltages in the product. Do not touch live parts for 10 minutes after disconnection from the power sources.



Observe the documentation

Observe all documentation supplied with the product.

2 Safety

2.1 Intended use

- The product must only be used in countries for which it is approved or released by Solplanet.
- Use this product only in accordance with the information provided in this documentation and with the locally applicable standards and directives. Any other application may cause personal injury or property damage.
- The type label must remain permanently attached to the product.
- This document does not replace any regional, state, provincial, federal, or national laws, regulations or standards that apply to the installation, electrical safety and use of the product.

2.2 Important safety instructions

The product has been designed and tested in accordance with international safety requirements. As with all electrical or electronic devices, there are residual risks despite careful construction. To prevent personal injury and property damage and to ensure long-term operation of the product, read this section carefully and always observe all safety information.

DANGER

Danger to life due to high voltage of the Combiner Box!

High voltages are present in the live components of the Combiner Box. Touching live components results in serious injury or death due to electric shock.

- Wear personal protective equipment when working on the Combiner Box.
- Do not touch live components.
- Before performing any work, always disconnect the Combiner Box from voltage sources and ensure that no voltage is present. Cover or isolate any adjacent live components. Protective covers must always be mounted.

DANGER

Danger to life from electric shock if the Combiner Box is damaged!

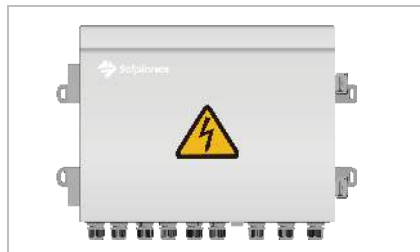
If the Combiner Box is damaged, dangerous situations may arise during operation that results in serious injury or death from electric shock.

- Only use the Combiner Box when it is in a technically faultless condition and safe to operate.
- Regularly check the Combiner Box for visual damage.
- Make sure that all external safety equipment is freely accessible at all times.
- Make sure that all safety equipment is in good working order.

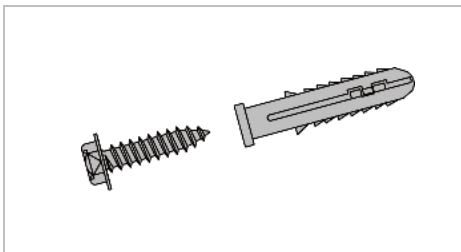
3 Unpacking and storage

3.1 Scope of delivery

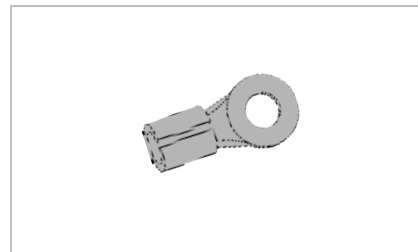
Check the scope of delivery for completeness and any visible external damage. Contact your supplier if the scope of delivery is incomplete or damaged.



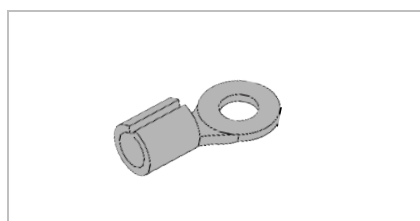
A



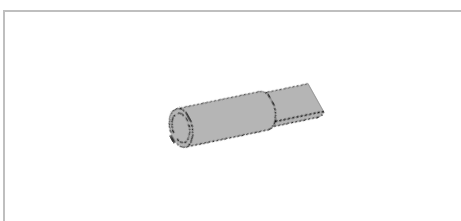
B



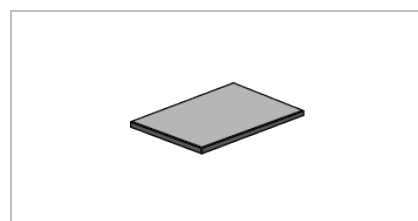
C



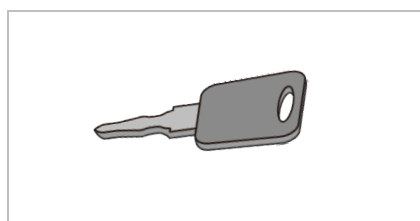
D



E



F



G

NO.	Name	Quantity
A	ASW1000-CB-HB	1 unit
B	M8*40 Expansion Anchor Bolt	4 pieces
C	Terminals RNB8-6	5 pieces
D	Terminals RNBS5.5-4	8 pieces
E	Terminals C45-10	2 pieces
F	Documents	1 piece
G	Key	4 pieces

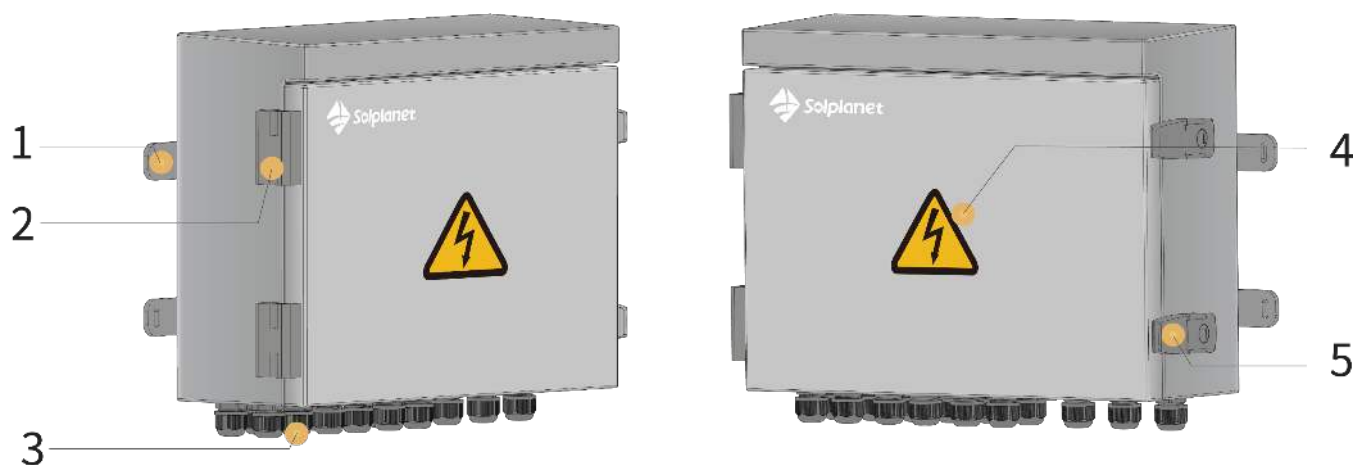
3.2 Product storage

Suitable storage is required if the Combiner Box is not installed immediately:

- Store the Combiner Box in the original package.
- The storage temperature must be between -40°C to +50°C, and the storage relative humidity must be between 5% and 95%, non-condensing.

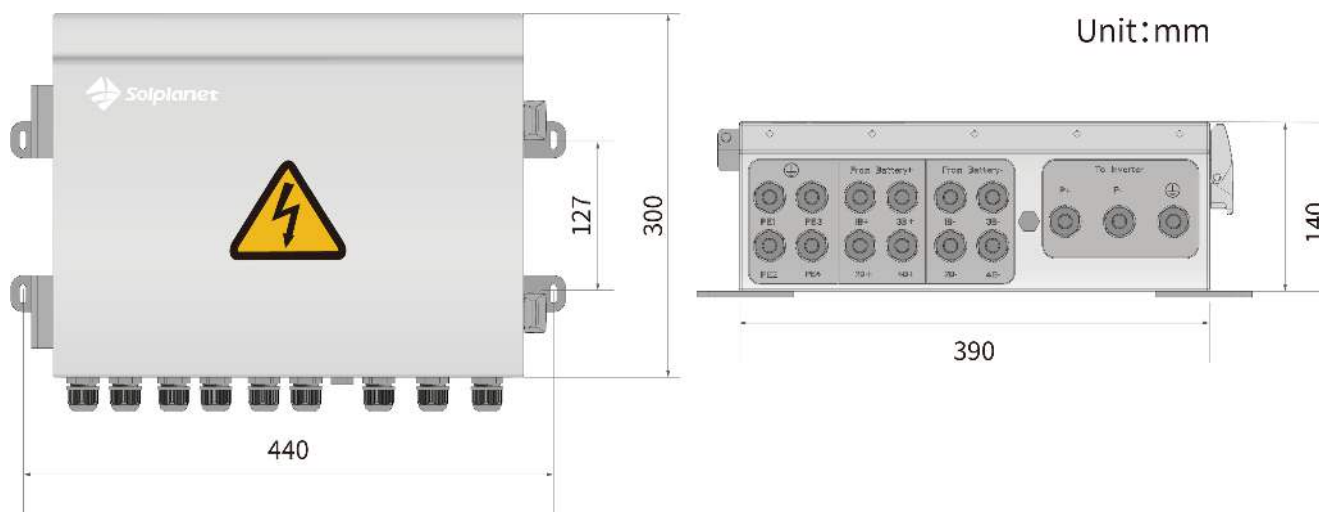
4 Overview

4.1 Product description



NO.	Name	Description
1	Mounting ears	Four ears, used for mounting the Combiner Box
2	Hinge	Connect the case and cover
3	Wiring area	Cable connection
4	Label	Warning symbols
5	Lock	Switch the cover

4.2 Dimensions



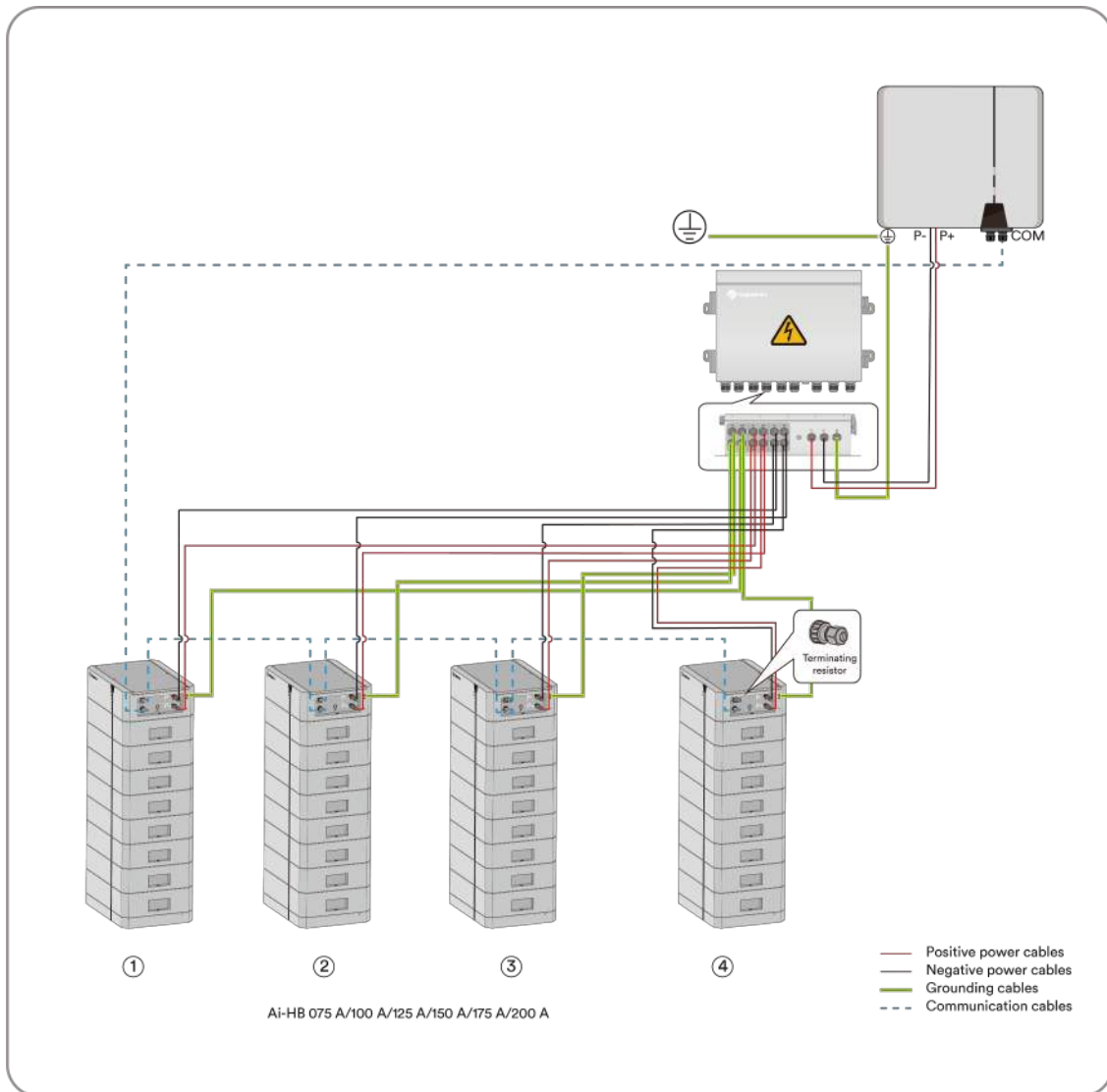
4.3 Parallel system connection diagram

The combiner box developed and produced by AISWEI New Energy Technology (Yangzhong) Co., Ltd. is mainly used in parallel connection of high-voltage batteries. Adopting outdoor design, it can meet the needs of modular design and rapid installation for parallel connection of high-voltage batteries, ensuring long-term, reliable, efficient, and safe operation.

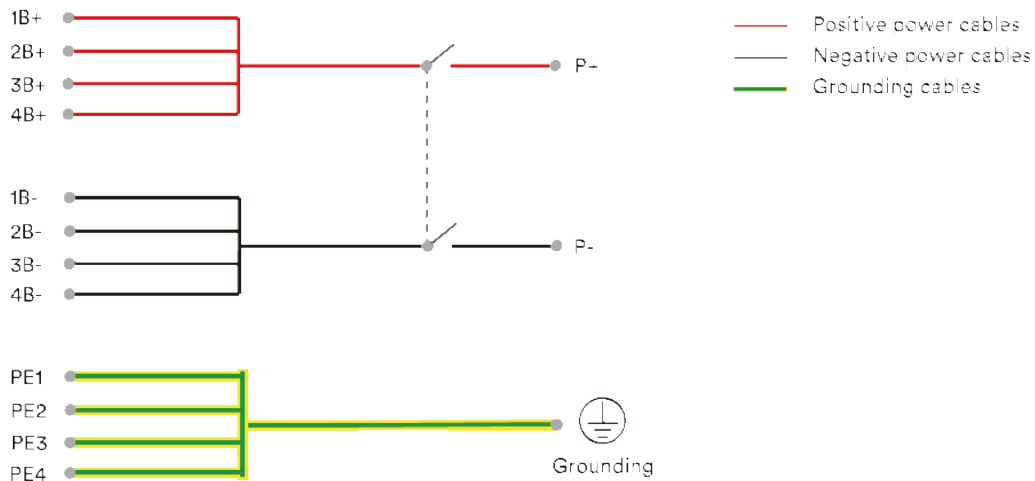
Parallel connection of high-voltage batteries with the combiner box is shown in the figure.

NOTE

When high-voltage batteries are combined, only high-voltage batteries with the same power can be combined.



The circuit diagram of Ai-HB G2 Combiner Box is as follows.



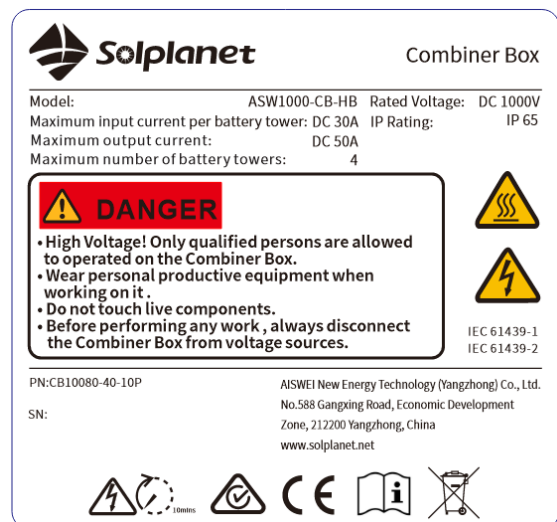
4.4 Type Label

There is one type of label attached to the Combiner Box.

The type of label is located on the right upside of the Combiner Box.

You will find the following information on the type of label:

- Manufacturer
- Device type
- Serial number
- Device-specific characteristics



You will require the information on the type label to use the product safely when seeking customer support from Solplanet local service. The type label must remain permanently attached to the product.

5 Mounting

5.1 Requirements for mounting

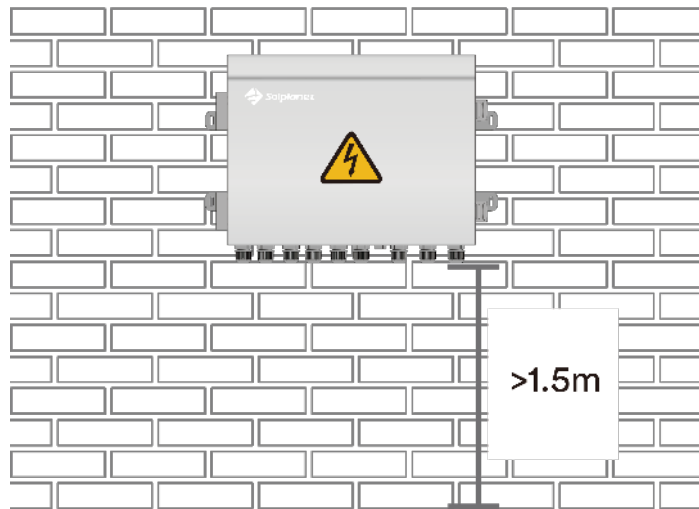
5.1.1 Requirements for the mounting location

DANGER

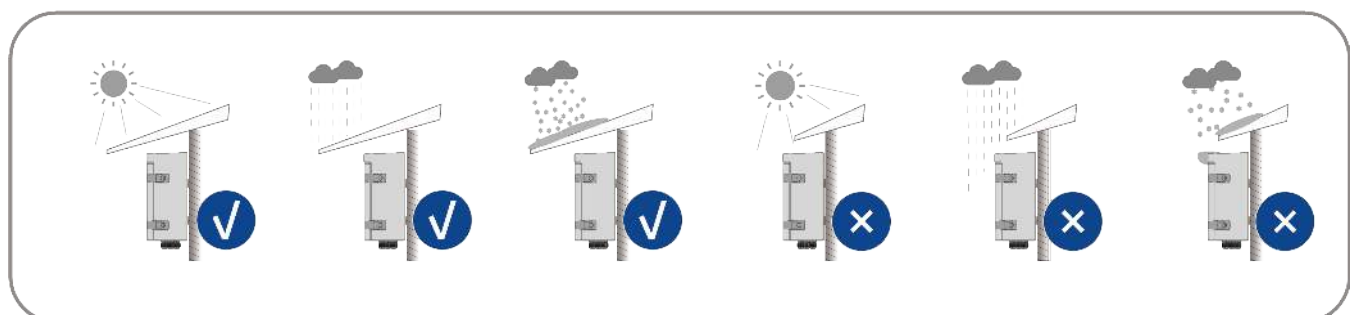
Fire hazard due to incorrect choice of mounting location !

Under fault conditions electric arcs may occur in the Combiner Box. Electric arcs can cause fires if the Combiner Box is mounted on flammable materials.

- Do not mount the Combiner Box on flammable construction materials.
 - Do not mount the Combiner Box near highly flammable materials.
 - Do not mount the Combiner Box in potentially explosive environments.
- The recommended height of the location is higher than 1.5 meters from the ground. Refer to local installation regulations for further information.

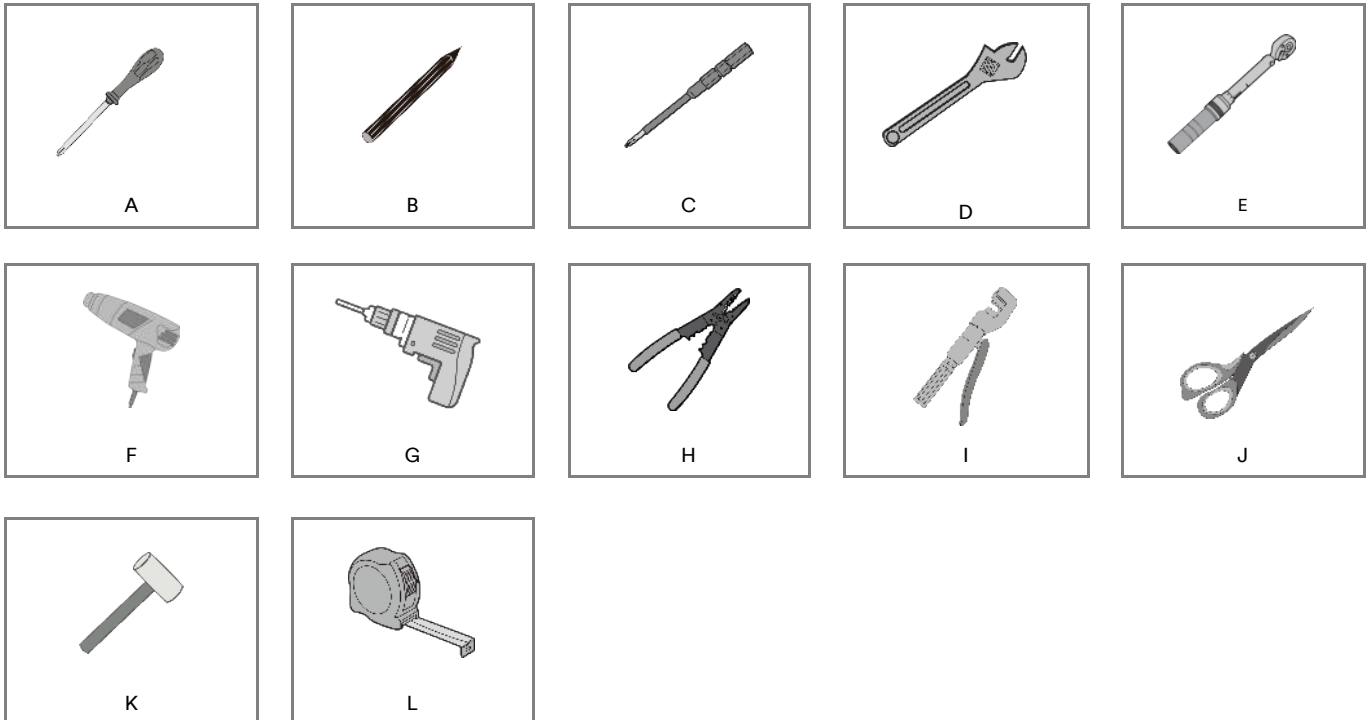


- The mounting location must not obstruct any emergency escape routes or emergency exits.
- The mounting location must always be freely and safely accessible without the necessity for any auxiliary equipment (such as scaffolding or lifting platforms). Non-fulfilment of these criteria may restrict servicing.
- The mounting location must be suitable for the weight and dimension of the Combiner Box.
- The mounting location must not be permanently exposed to direct sunlight.
- Ensure that the Combiner Box enclosure is not mounted in the path of rainwater.



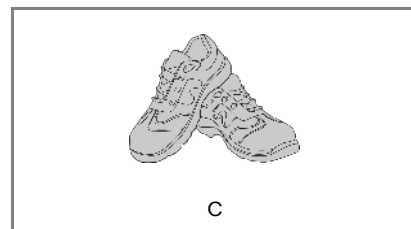
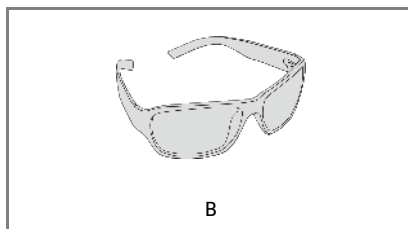
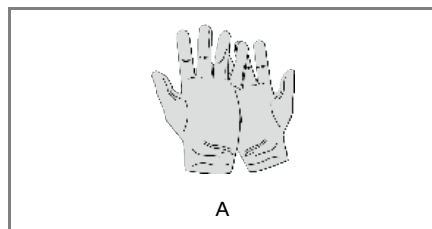
- Mount the Combiner Box in such a way that the connection area is facing downwards.

5.1.2 Tools



NO.	Name
A	Phillips-screwdriver Specification:M4
B	Marker pen
C	Phillips screwdriver bit
D	Wrench
E	Torque wrench
F	Heat gun
G	Electric drill
H	Wire stripper
I	Crimping pliers
J	Scissor
K	Hammer
L	Tape measure

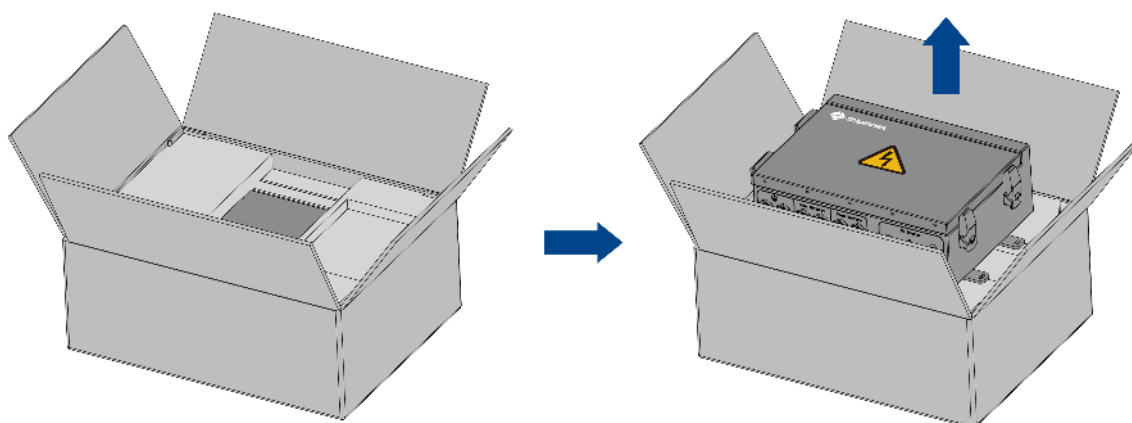
5.1.3 Safety gear



NO.	Name
A	Insulated gloves
B	Safety goggles
C	Safety shoes

5.2 Unpacking the Combiner Box

Open the carton, take out the pearl cotton and accessories bag, and take out the combiner box.



5.3 Mounting the Combiner Box

CAUTION

Danger of personal injury due to falling combiner box.

If the hole depth and distance are not correct, the combiner box may fall off the wall.

- Before inserting the bolts into the wall, measure the depth of the hole.

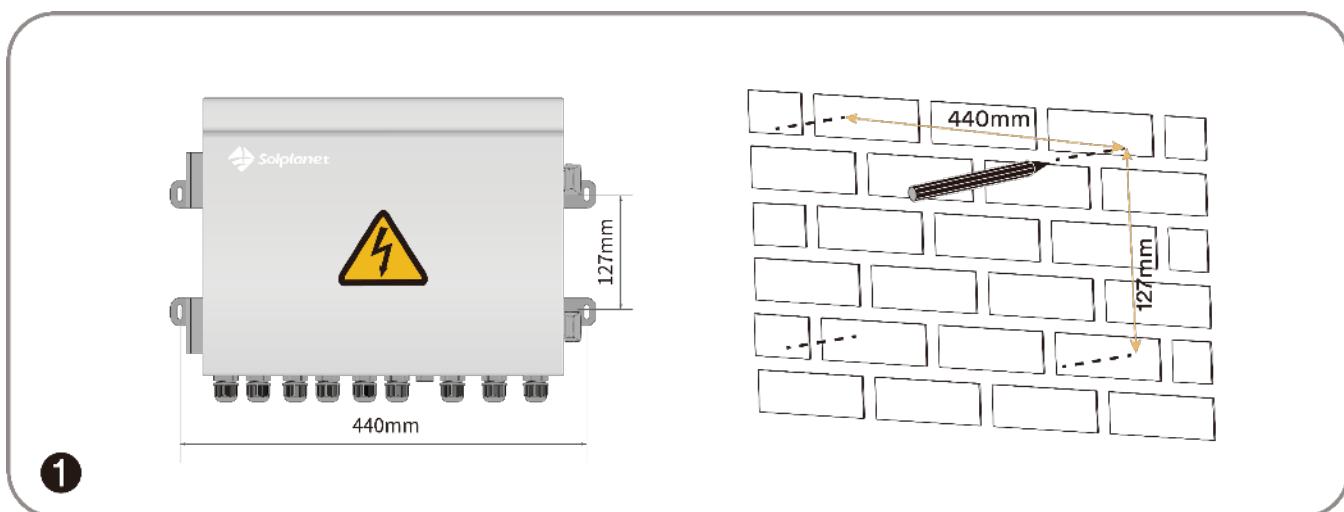
NOTE

Damage to cable glands and plug connections due to improper transport and installation.

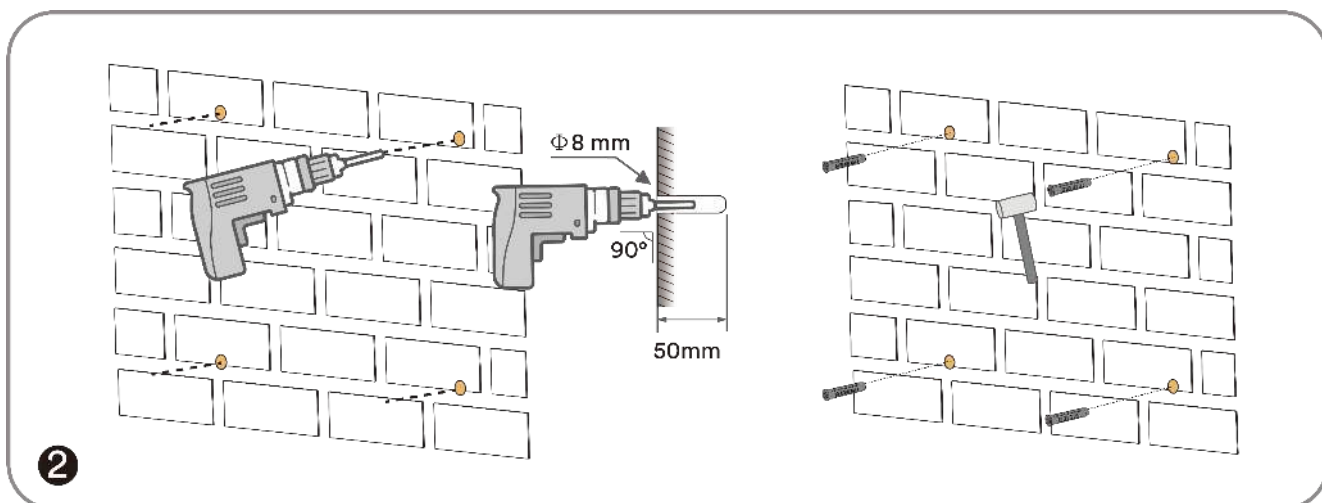
The cable glands and plug connections protrude from the enclosure.

Procedure:

- Step 1:** Mark the position of the holes on the wall.

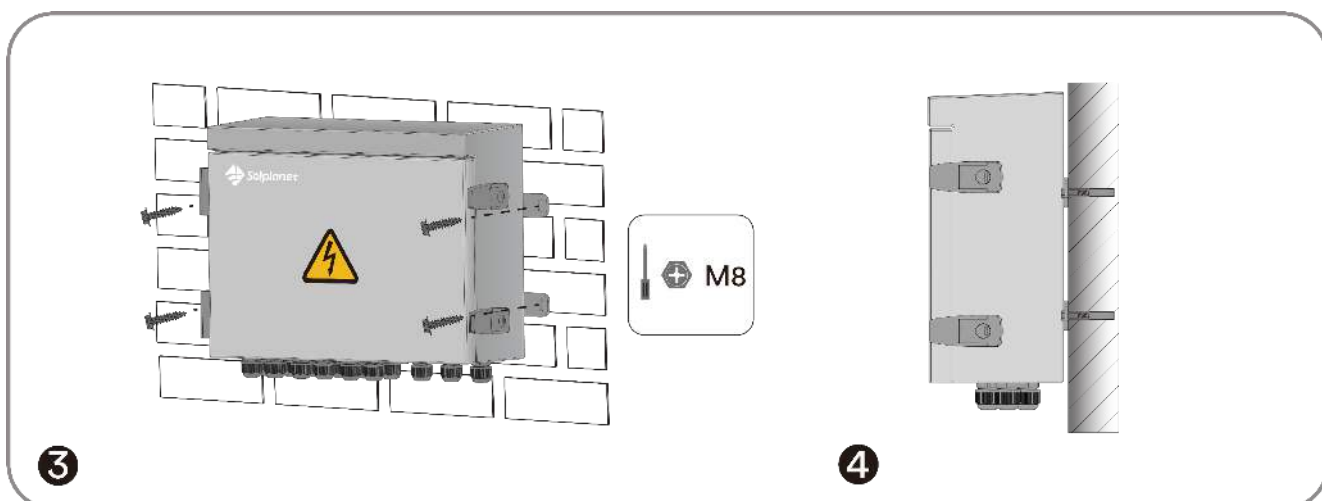


Step 2: Drill holes at the marked positions.



Step 3: Fasten the Combiner Box to the wall using screws (M8*40).

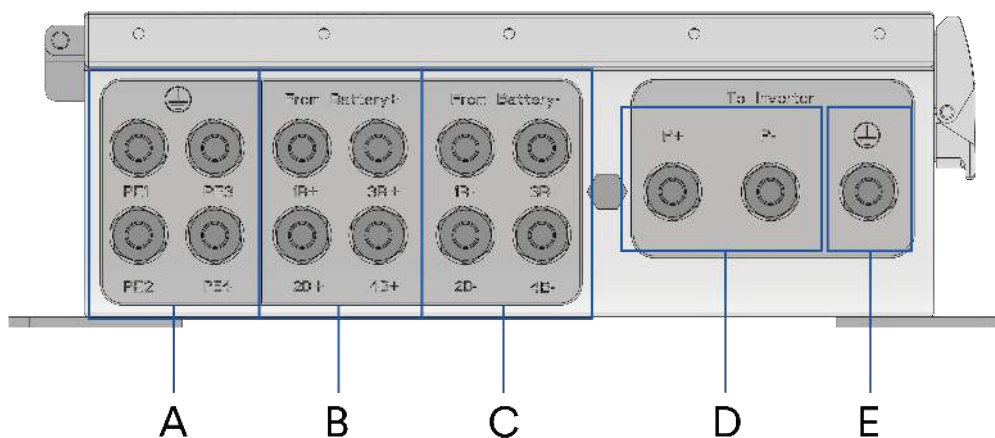
Step 4: Ensure that the Combiner Box is securely fixed.



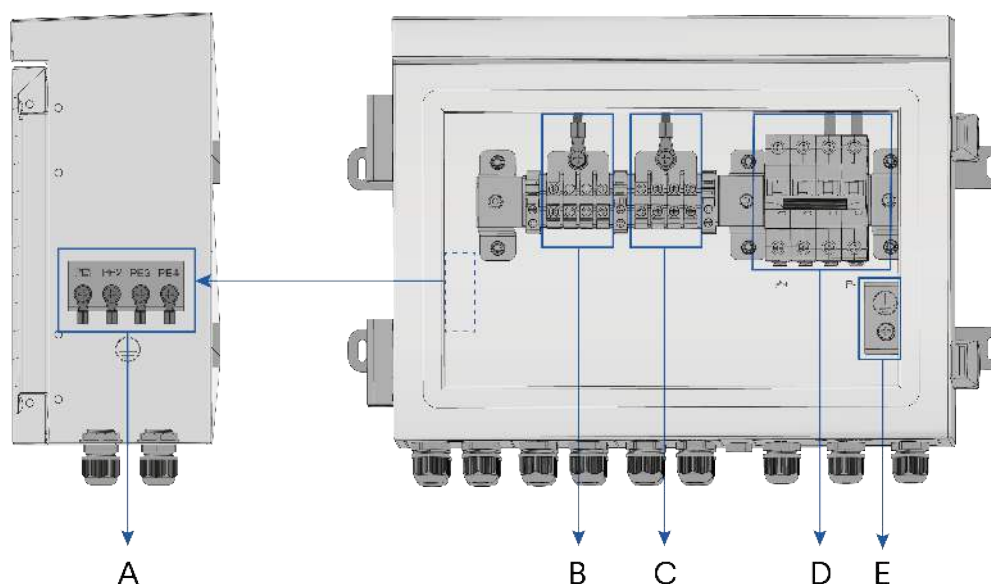
6 Electrical connection

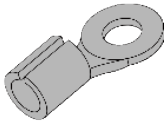
6.1 Cable Connection Interface

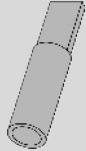
*Cable connection areas



*Internal cable area



No.	silk screen	Cable type	Cross-sectional area of the cable (mm²)	Matching terminals
A/E	PE1, PE2, PE3, PE4, ground	Ground cable PE	10	RNB8-6 
B/C	1B+, 1B-, 2B+, 2B-, 3B+, 3B-, 4B+, 4B-,	DC input cable	6	RNBS5.5-4 

D	P+, P-	DC output cable	10	C45-10 
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6.2 Preparation before connecting cables

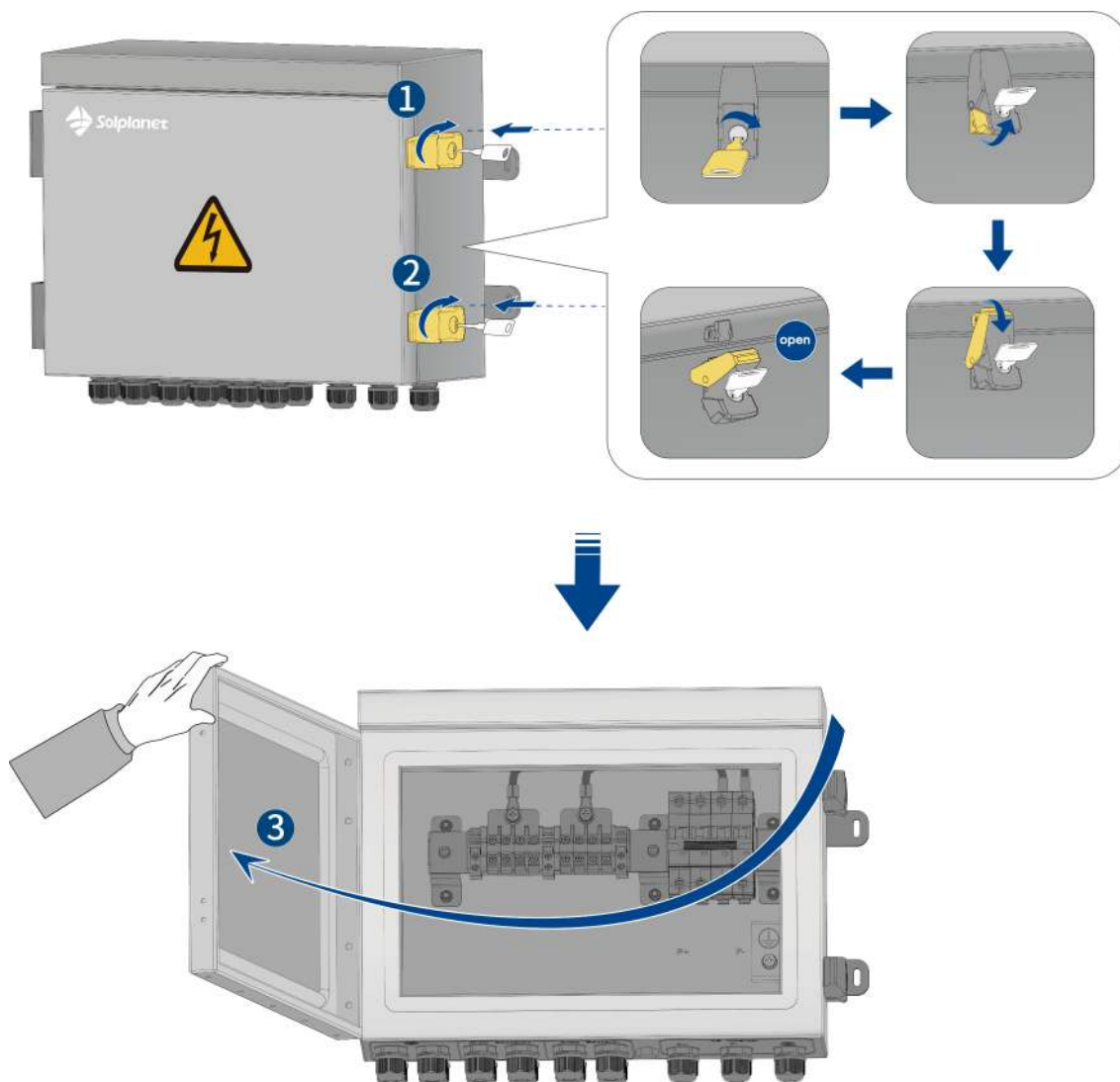
6.2.1 Open the door

NOTE

To prevent moisture from entering the cabinet, do not open the cabinet door when it is raining or snowing. If unavoidable, take protective measures.

Procedure:

Step 1: Use the special key included in the delivery to open the combiner box.



6.2.2 Isolation of Energy Sources

DANGER

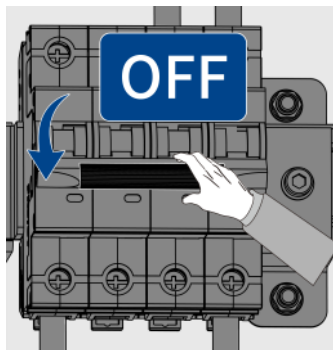
Danger to life due to high voltage of the Combiner Box!

High voltages are present in the live components of the Combiner Box. Touching live components result in death or serious injury due to electric shock.

- Wear personal protective equipment when working on the Combiner Box.
- Do not touch live components.
- Before performing any work, always disconnect the Combiner Box from voltage sources and ensure that no voltage is present. Cover or isolate any adjacent live components. Protective covers must always be mounted.
- Before performing any work, always turn off the high-voltage batteries' circuit breakers on the left side and ensure that no voltage is present.
- Before performing any work, always turn off the inverter's DC switch and ensure that no voltage is present.

Step 1: Check whether the breaker in the combiner box is in the "OFF" position.

Step 2: Turn off the breaker on each battery tower.



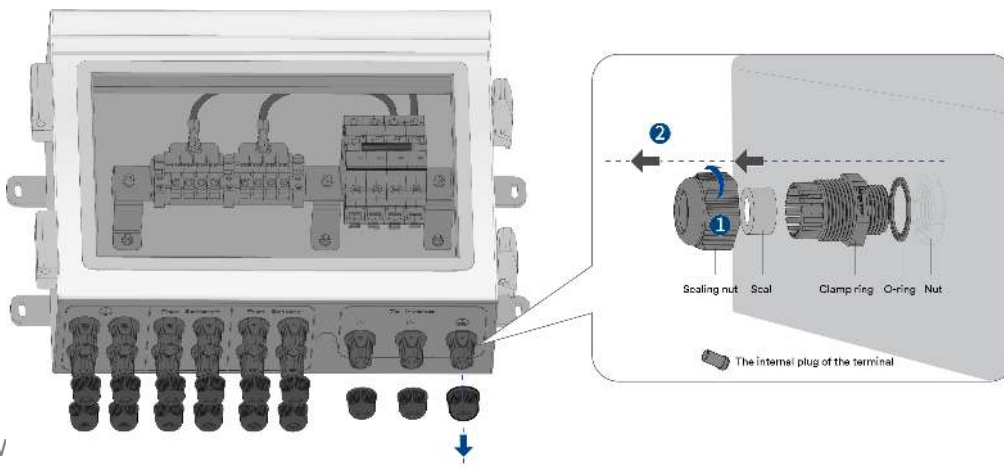
6.3 Connection Instructions



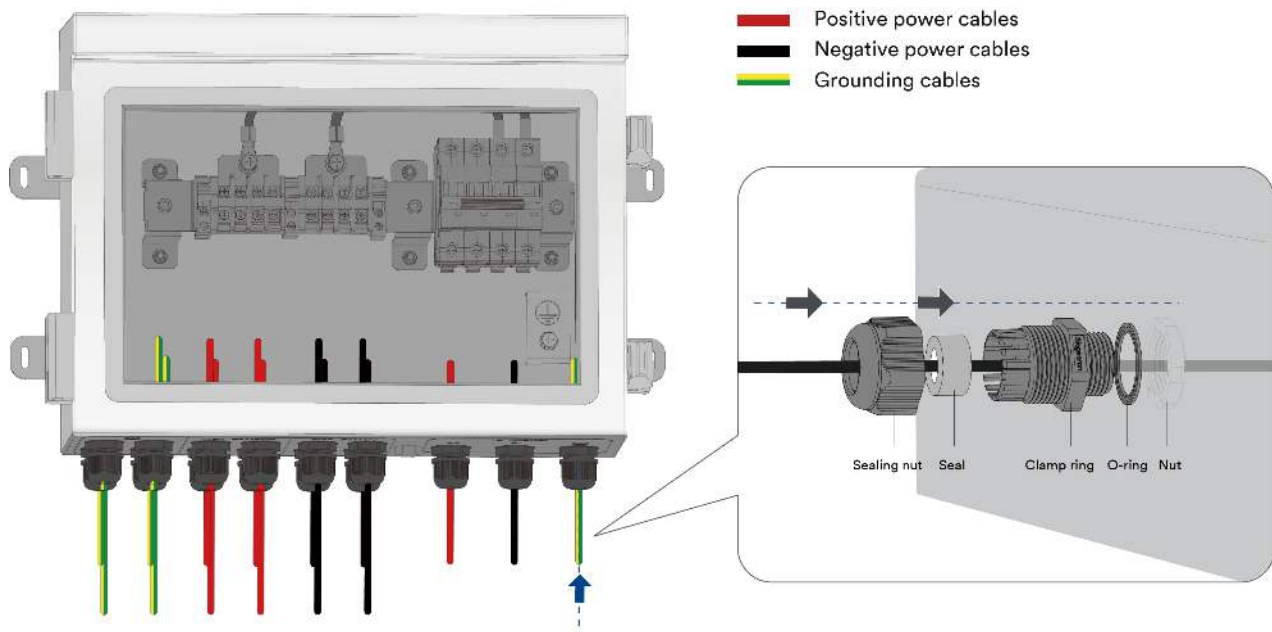
When using copper core cables, please use copper terminals. When using copper-clad aluminium cables, please use copper terminals. When using aluminium alloy cables, please use copper-aluminium transition terminals, or aluminium terminals with copper-aluminium transition gaskets.

Procedure:

Step 1: Unscrew the sealing nut, remove the plug and seal.



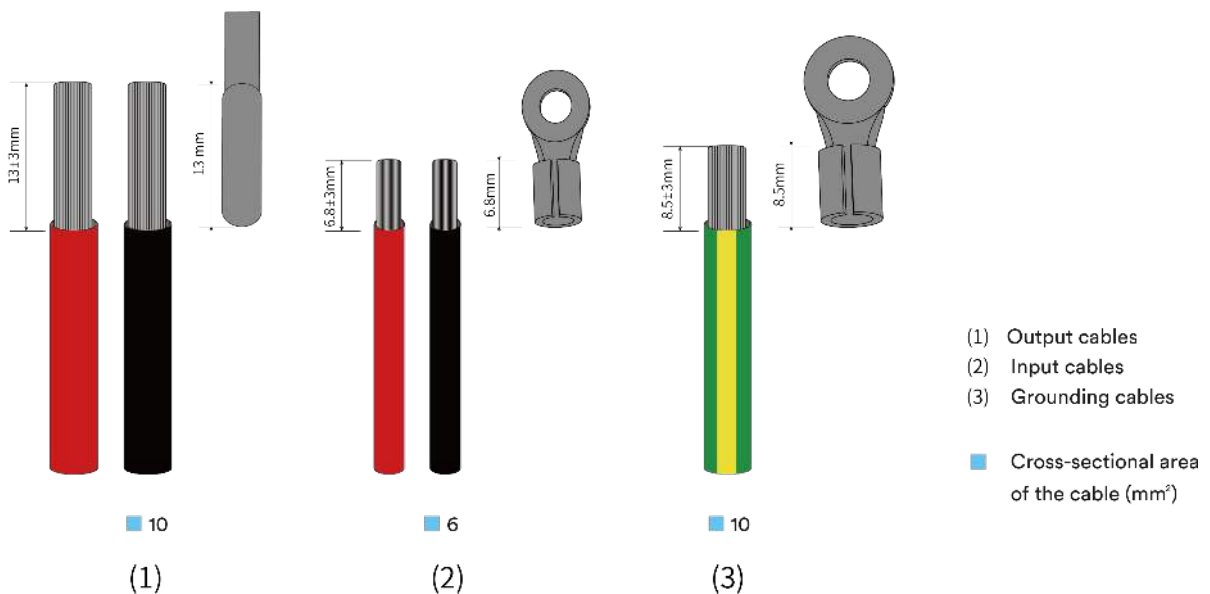
Step 2: Thread the cable through the sealing nut and seal in sequence.



The cable length should be left with appropriate length so that it can be bent as required and fixed inside the combiner box.

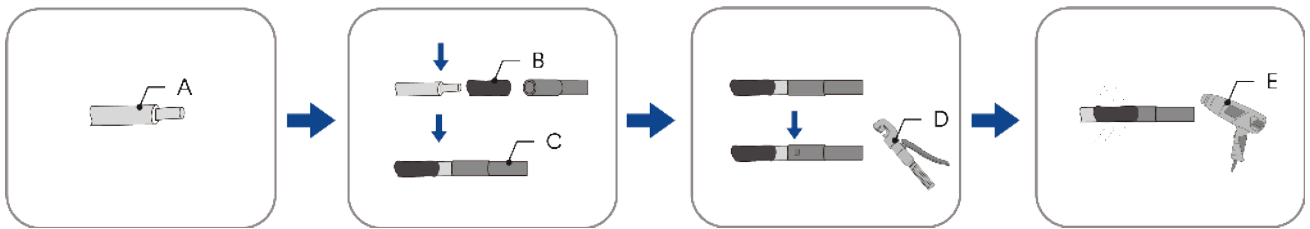
Step 3: Make cables and crimp OT terminals, as shown in the figure below.

- 1) Output cable stripping length:
- 2) Input cable stripping length:
- 3) Ground cable stripping length:

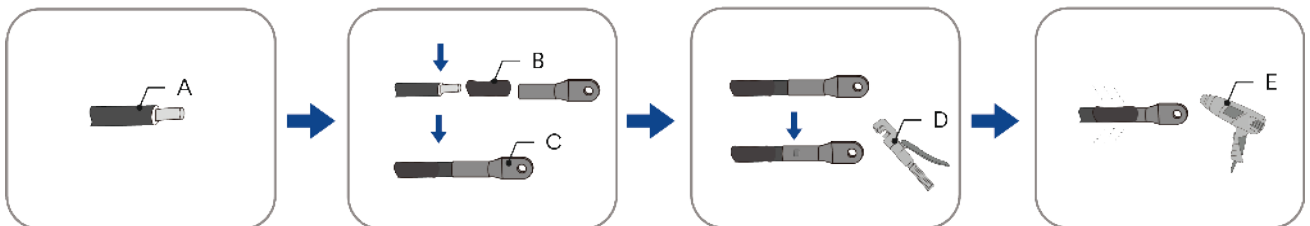


Step 4: The photo illustration requires removing a certain length of protective layer and insulation layer, as shown in the figure below:

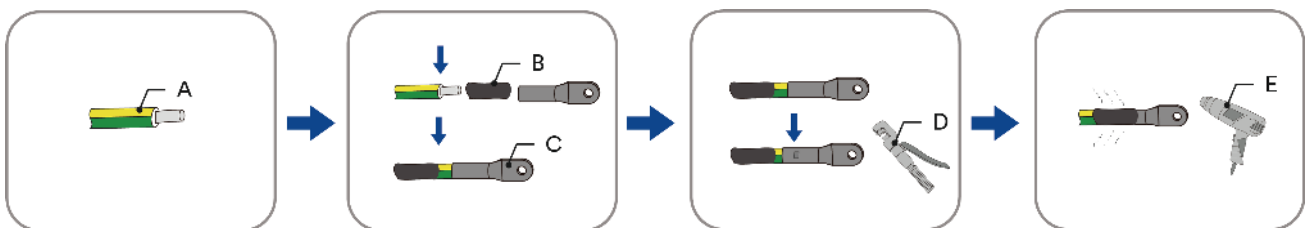
1) Terminal C45-10 crimping



2) Terminal RNBS5.5-4 crimping



3) Terminal RNB8-6 crimping



Output cables Input cables Grounding cables

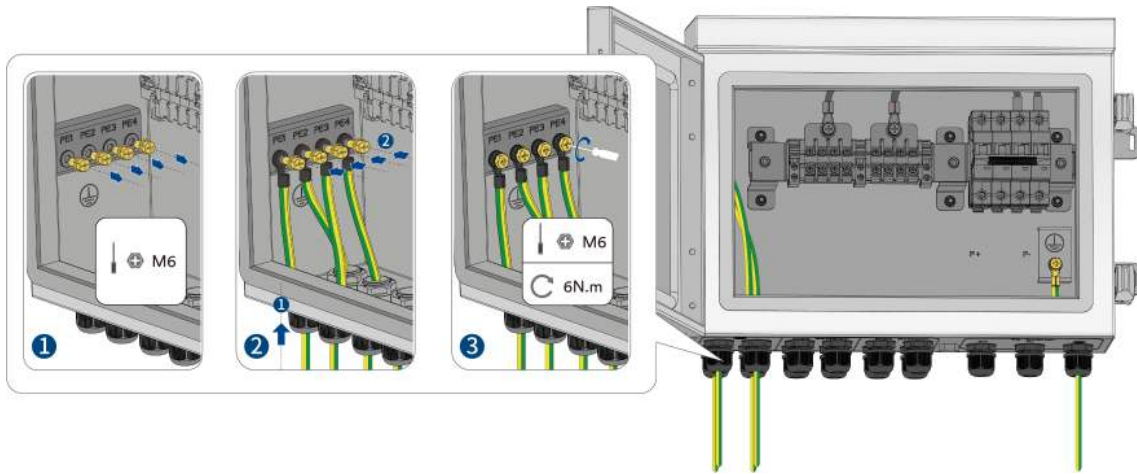
A): Cable B): Heat shrink tube* C): Terminal D): Crimping pliers E): Heat gun

*  Supplied by customer

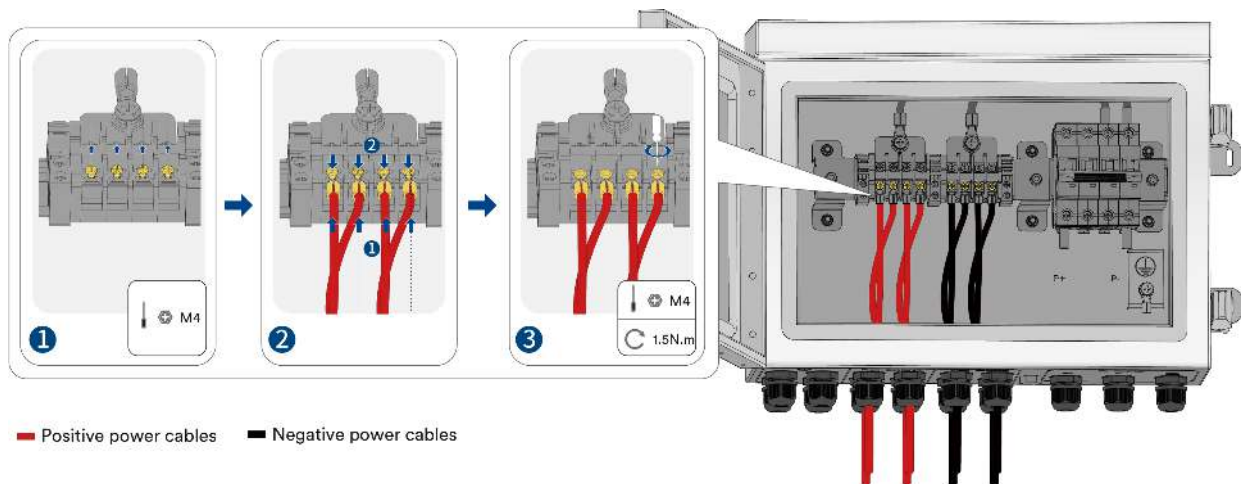
6.4 Cable connection

Step 1: Secure the cable to the corresponding terminal.

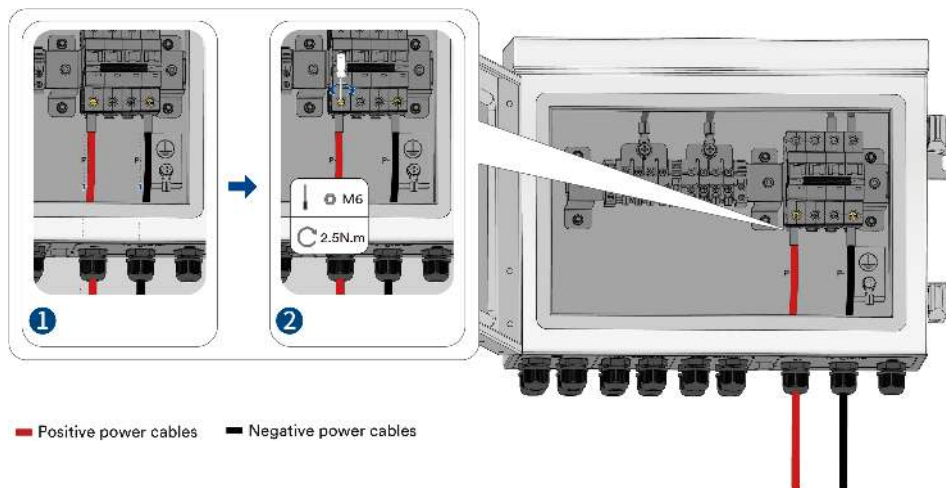
- Connect the ground cable to the ground terminal



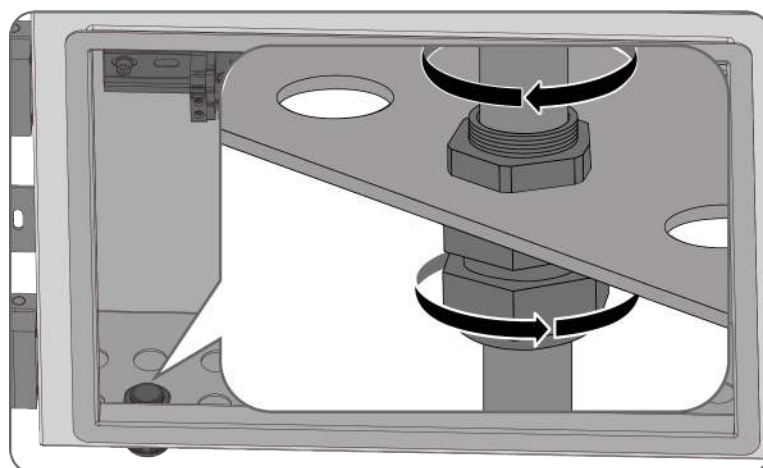
- Connect battery cables to the battery input terminal



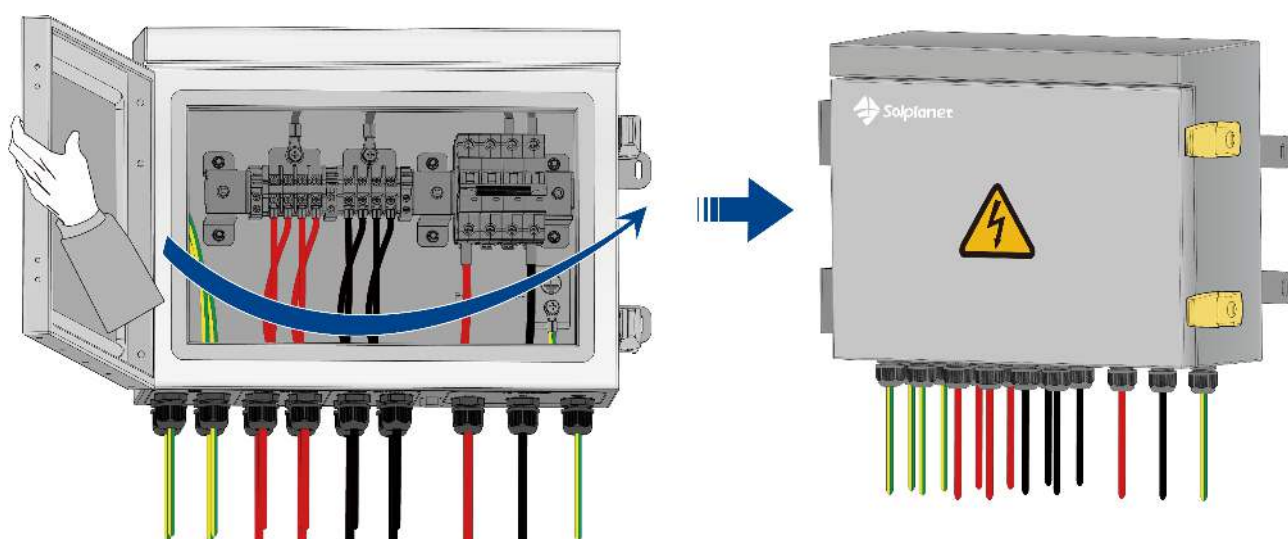
- Connect battery output cable to the breaker terminals



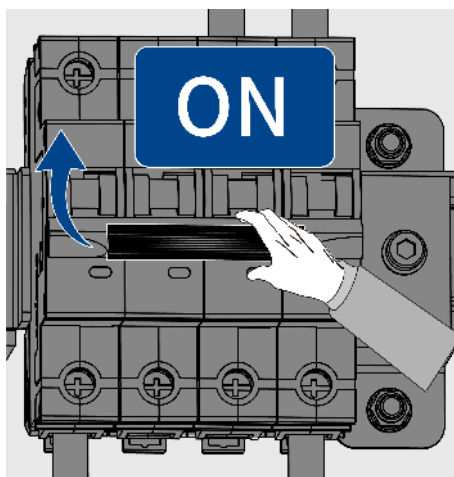
Step 2: Tighten the swivel nut and the sealing nut of the cable gland.



Step 3: Close the combiner box cover and lock it.



After settling down all the connections, please confirm that the breaker is in the on state before closing the cabinet door, please confirm that the breaker is in the on state.



7 Decommissioning the product

7.1 Disassembling the Combiner Box

DANGER

Danger to life due to electric shock when touching live components of the Combiner Box.

Observe the following safety rules when disconnecting:

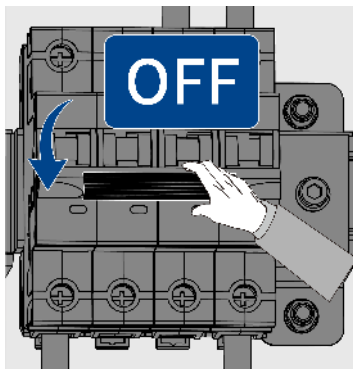
- Disconnect from voltage sources.
- Ensure that the device cannot be reconnected.
- Check that no voltage or current is present.
- Cover or isolate any adjacent live components.

Requirement:

The Combiner Box must be disconnected from voltage sources.

Procedure:

- Step 1:** Open the door of the Combiner Box.
- Step 2:** Turn off the inverter, see the relevant user manual for the correct shutdown procedure.
- Step 3:** Turn off the battery, see the relevant user manual for the correct shutdown procedure.
- Step 4:** Turn off the breaker on each battery tower.
- Step 5:** Turn off the breaker in the Combiner Box.



- Step 6:** Disconnect the battery cables from the battery input terminal.
- Step 7:** Disconnect the output cables.
- Step 8:** Disconnect the grounding cables.
- Step 9:** Loosen the cable glands.
- Step 10:** Pull all cables out of cable glands and isolate them.
- Step 11:** Remove or disassemble the Combiner Box as required.

7.2 Disposing of the Combiner Box

Dispose of the Combiner Box in accordance with the applicable disposal regulations for electronic waste.

8 Technical data

General Data

Maximum operating voltage (Un)	1000 VDC
Rated insulation voltage (Ui)	1000 VDC
Rated impulse voltage (Uimp)	6 kV
Maximum input current per battery tower	30 A
Maximum output current	50 A
Rated short-time withstand current (Icw)	< 4.5 kA
Pollution degree	3

Mechanical Data

Enclosure	Aluminium alloy
Dimensions (Length/ Width/ Height)	390 × 300 × 140 mm(Body size)
Weight	4.4 kg
Degree of Protection	IP65

Environment Data

Operating temperature range	-40~+50℃
Storage temperature range	-40~+50℃
Humidity	5 % to 95 % non-condensing
Altitude	≤ 4,000 m

Dc Input Data

Maximum number of battery towers	4
Batter input cable glands entry	12* M20
DC conductor cross-section	6 mm ²
Ground cable cross-section	10 mm ²

Dc Output Data

Battery output cable glands entry	3* M20
DC conductor cross-section	10 mm ²
Ground cable cross-section	10 mm ²

9 Recycling and disposal

Dispose of the packaging and replaced parts according to the rules applicable in the country where the device is installed.



Do not dispose of the product together with the household waste but in accordance with the disposal regulations for electronic waste applicable at the installation site.

10 EU declaration of conformity

Within the scope of the EU directives

- Restriction of the use of certain hazardous substances 2011/65/EU (L 174/88, June 8, 2011) and 2015/863/EU (L 137/10, March 31, 2015) (RoHS)
- Low voltage directive 2014/35/EU (L 96/357-374, March 29, 2014) (LVD)



AISWEI New Energy Technology (Yangzhong) Co., Ltd. confirms herewith that the combiner box described in this manual is in compliance with the fundamental requirements and other relevant provisions of the above mentioned directives.

The entire EU Declaration of Conformity can be found at www.solplanet.net.

11 Service and warranty

If you have any technical problems concerning our products, please contact Solplanet service. We require the following information in order to provide you with the necessary assistance:

- Combiner Box serial numbers
- Combiner Box type and model
- Battery serial numbers
- Battery type and model
- Inverter device type
- Inverter serial number
- Mounting location
- Installation date
- Warranty card

Warranty terms and conditions can be downloaded at www.solplanet.net.

When the customer needs warranty service during the warranty period, the customer must provide a copy of the invoice, factory warranty card, and ensure the electrical label of the inverter is legible. If these conditions are not met, Solplanet has the right to refuse to provide with the relevant warranty service.

12 Contact

EMEA

Service email: service.EMEA@solplanet.net

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