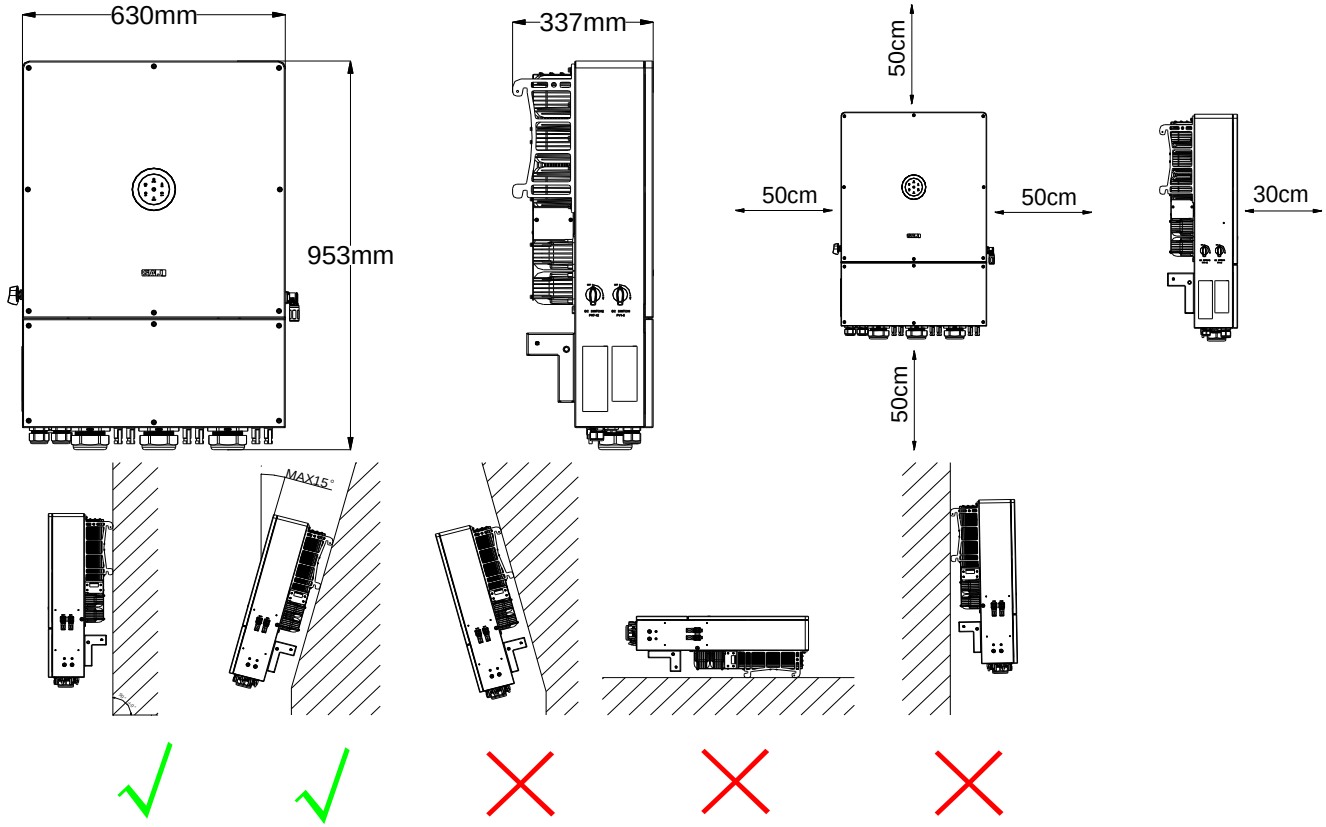
CH2 Inverter Quick Installation Guide

This quick installation guide is applicable for inverters CH2-(29.9K-50K)-(T4, T6). For more information, refer to the inverter user manual.

To get the latest CH2 series user manual and quick guide, scan the following QR code:

☐ 1. Check the installation methods and clearance



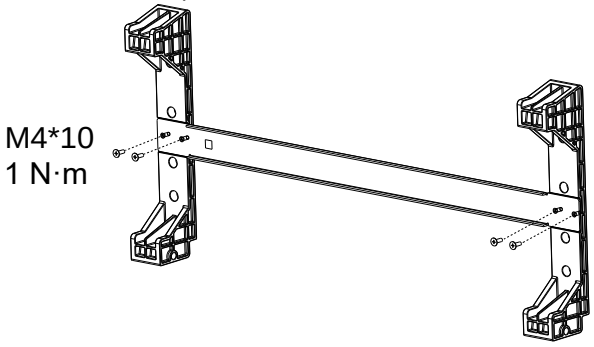
☐ 2. Install the inverter

Select one of the following options to mount the inverter:

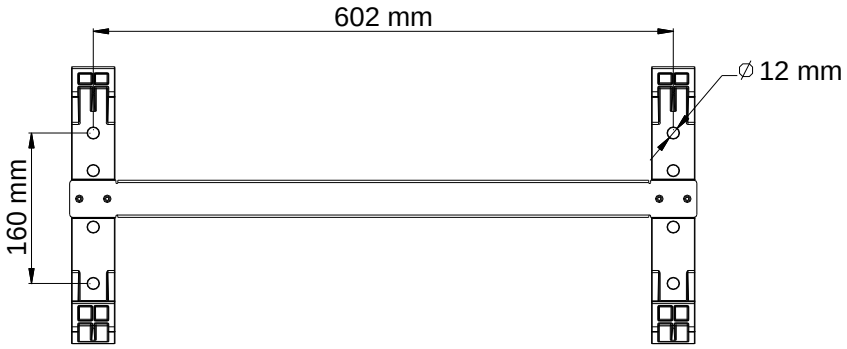
- Mount the inverter on the wall.
- Mount the inverter on a frame. With this option, the installer needs to prepare the frame. Four M10*45 screws are provided in the delivery for securing the mounting bracket to the frame.

To install the inverter on the wall:

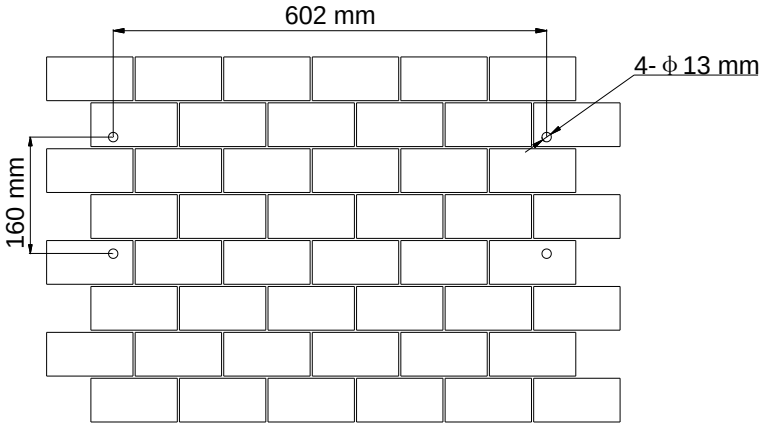
Step 1. Secure the back panel with the two side brackets to assemble the mounting bracket.



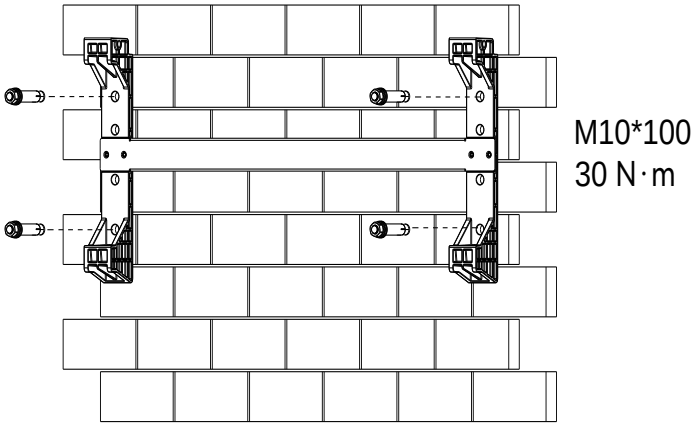
Step 2. Mark the drilling positions on the wall with the mounting bracket.



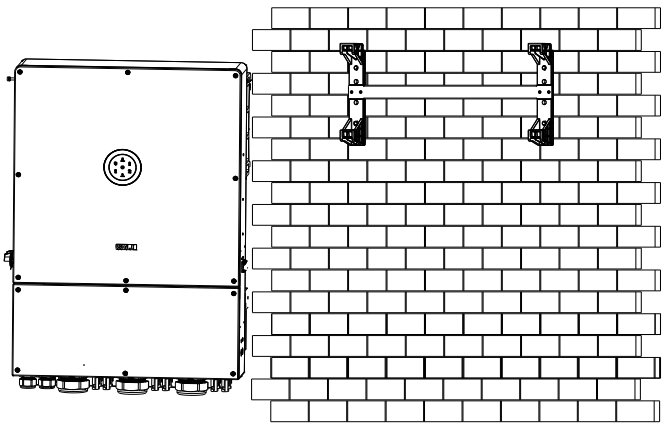
Step 3. Drill four holes at the depth of 80-90 mm in the wall, and place the expansion tubes in the holes using a rubber mallet.

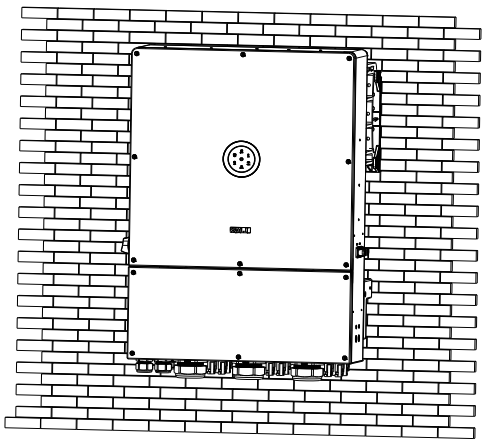


Step 4. Secure the mounting bracket to the wall with screws.

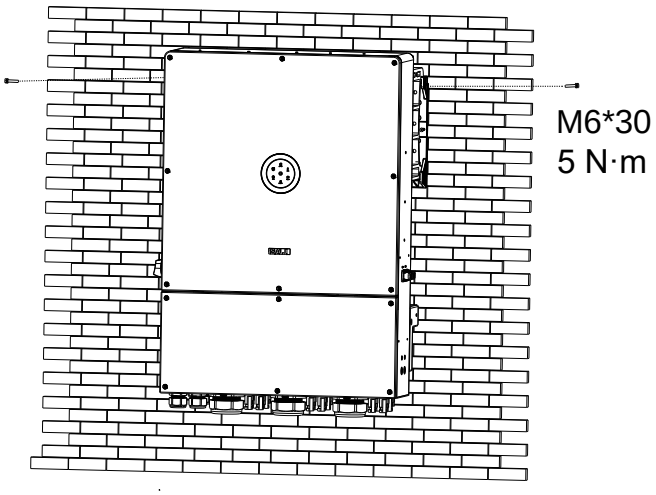


Step 5. Carefully mount the inverter onto the mounting bracket. Make sure that the rear part of the inverter is closely mounted into the bracket.



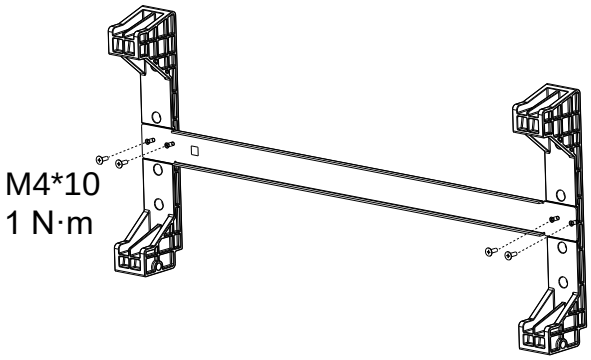


Step 6. Secure the inverter to the mounting bracket with one screw on each side.

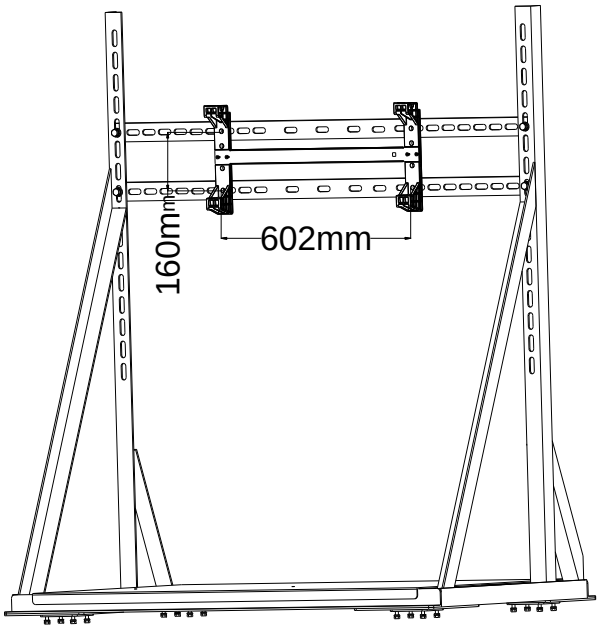


To install the inverter on a frame:

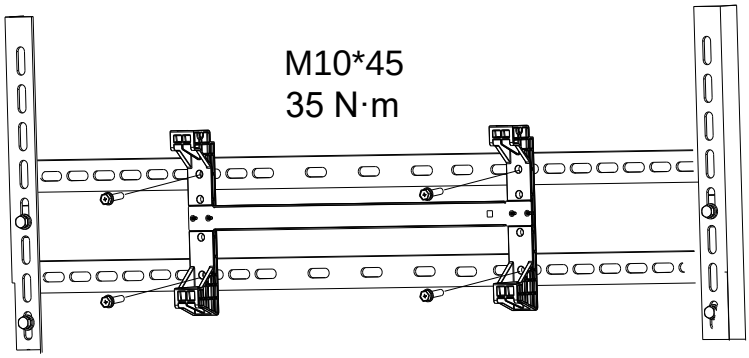
Step 1. Secure the back panel with the two side brackets to assemble the mounting bracket.



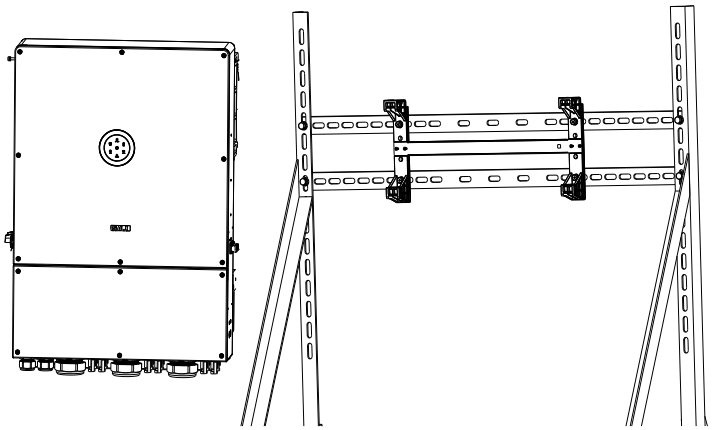
Step 2. Drill four holes on the frame or adjust the existing positions of the frame according to the mounting bracket as needed.



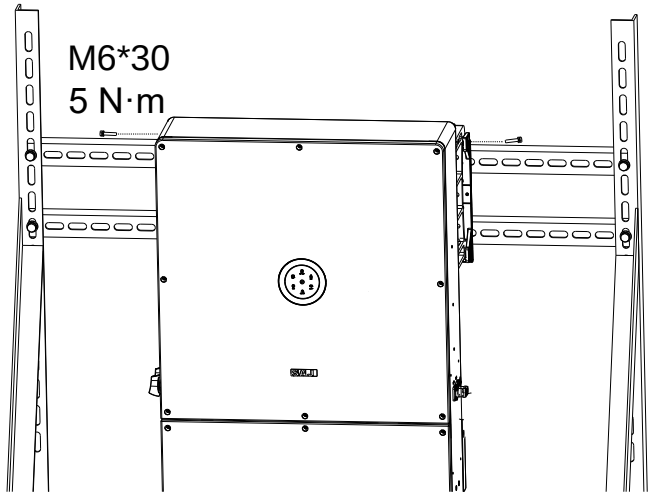
Step 3. Secure the mounting bracket to the frame with screws.



Step 4. Carefully mount the inverter onto the mounting bracket.



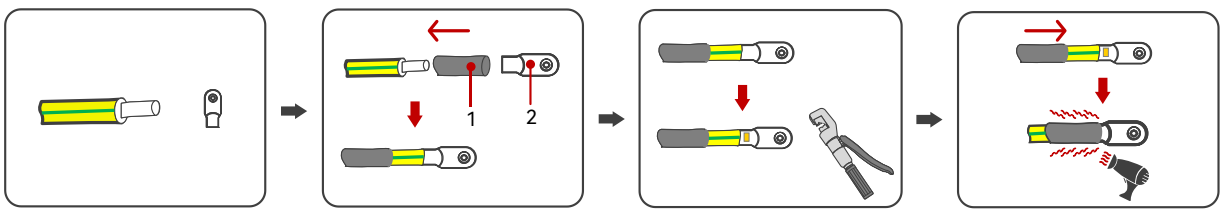
Step 5. Secure the inverter to the mounting bracket with one screw on each side.



☐ 3. Connect the grounding cable

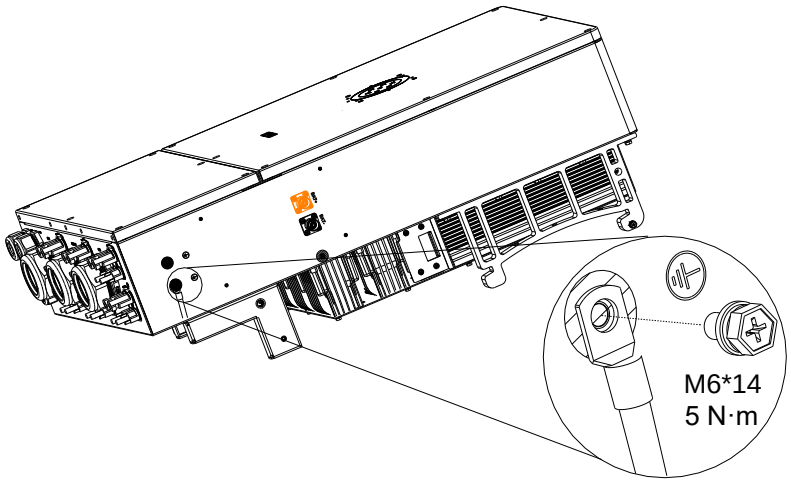
The recommended conductor cross-sectional area of the grounding cable is 6 mm².

Step 1. Assemble the cables with the RNBS38-8 OT/DT terminals as follows:



1. Heat shrink tubing 2. OT/DT terminal

Step 2. Remove the screw of the grounding terminal, insert the screw through the OT/DT terminal, and secure the cable with the screw.



☐ 4. Communication Connection

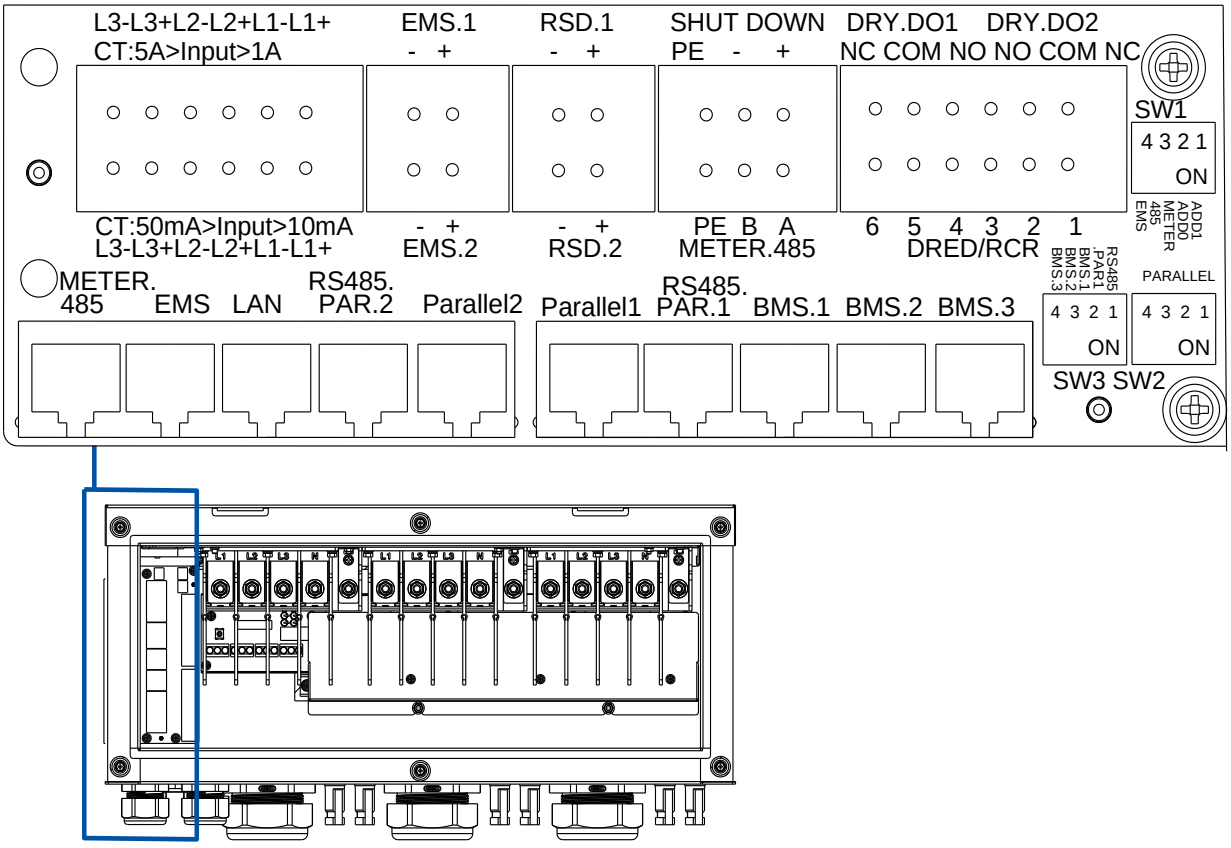
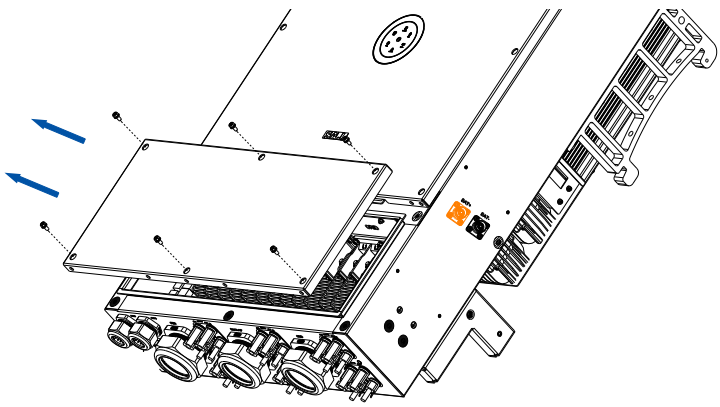
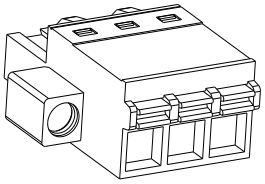


Figure 4.1. Communication interfaces overview

Step 1. Untighten the front cover of the inverter, and keep the cover and the screws in a proper location.

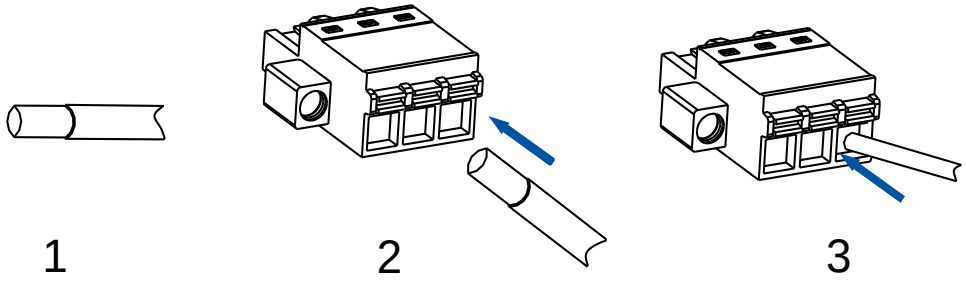


Step 2. Prepare the wires for the 2-pin, 3-pin, and 6-pin plugs depending on which communication functions are required. The recommended wire is of 12-24 AWG.

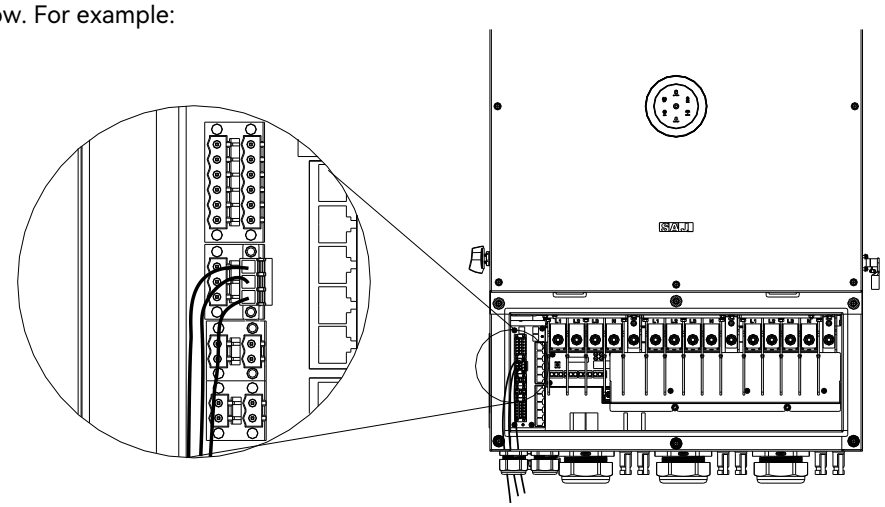


Step 3. Loosen the water-proof cable gland, and insert the wires through the COM1 or COM2 cable gland.

Step 4. Peel off the insulation skin of the wire by proper length. Insert the wire into the plug and press the orange button to secure the cable.



Step 5. Connect the communication plugs for the corresponding functions according to the port descriptions of items **A** to **H** below. For example:



A. Select the corresponding terminals for connection depending on the following input current range of the CTs:

- 10 mA to 50 mA;
- 1 A to 5 A

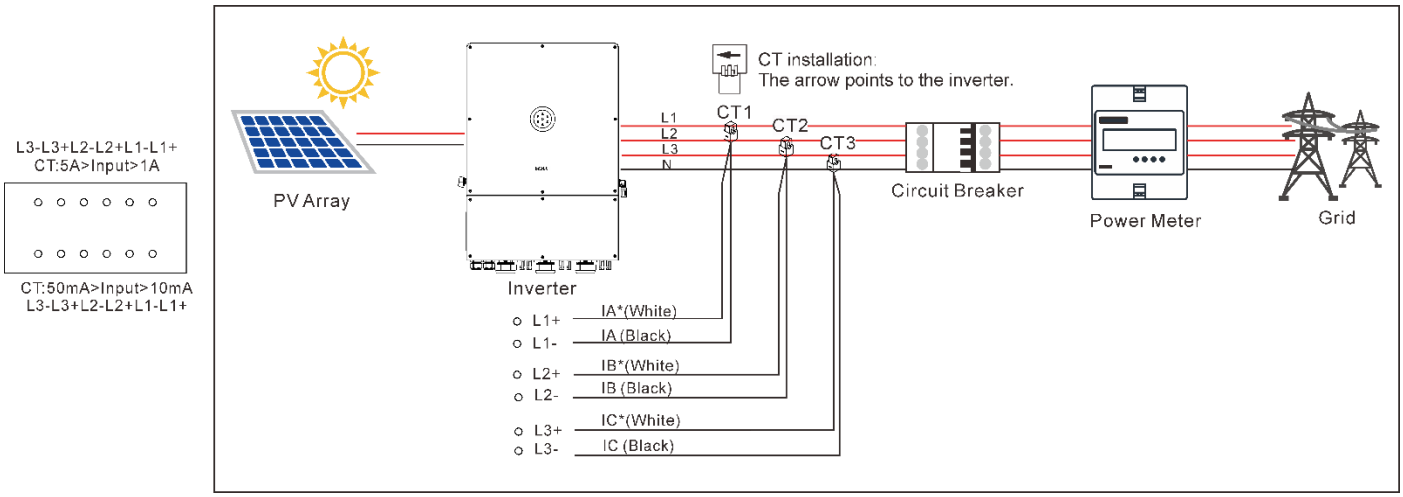


Figure 4.2. Grid Current Transformer Connection

B. The EMS.1 and EMS.2 ports can supply power to the external energy management system (EMS) at the rated output voltage of 20 V in parallel deployment. Multiple inverters in parallel deployment can supply power to the EMS at the same time, and at least two inverters must provide the power supply to the EMS. The length of the power supply wire to the EMS is limited to 50 meters.

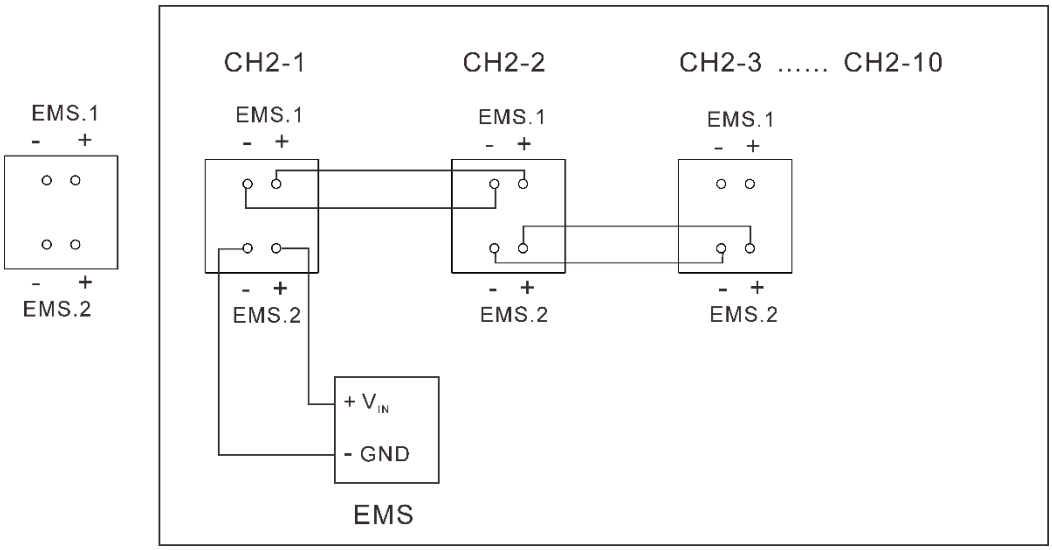


Figure 4.3. EMS connection

C. The RSD.1 and RSD.2 ports can supply power to the fast shutdown module of the photovoltaic system at the rated voltage of 12 V. The two ports control the fast shutdown and startup of the PV system by turning on or off the power supply to the fast shutdown module.

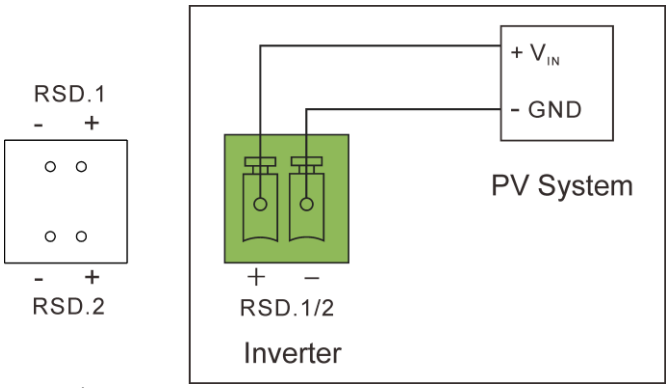


Figure 4.4. PV connection

D. The DRY.DO1 port can connect with the generator to control the start and stop of the generator.

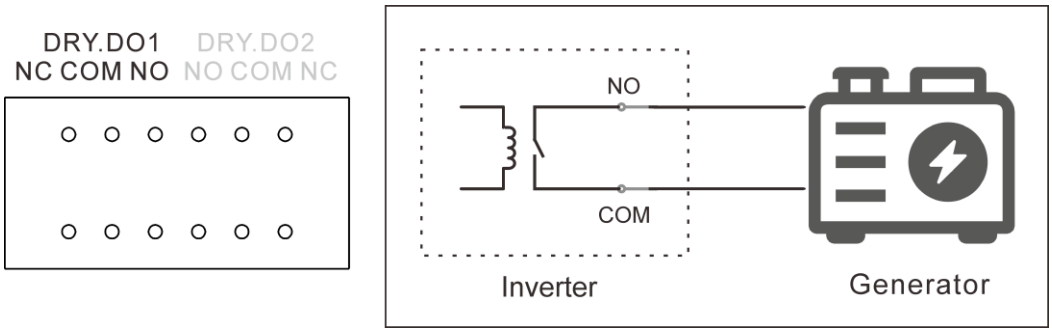


Figure 4.5. Generator connection

E. The SHUT DOWN port can connect with an external switch to stop the inverter immediately in emergent situations.

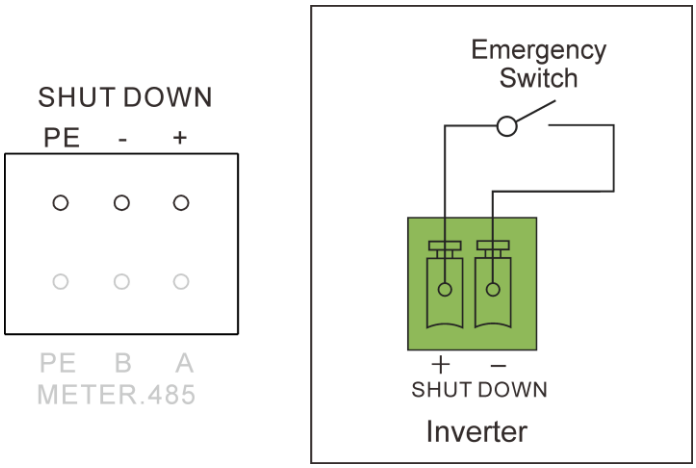


Figure 4.6. Emergency stop switch connection

F. The METER.485 port can connect with the external meter to provide RS485 communication. The additional grounding through the PE pin can be connected as needed.

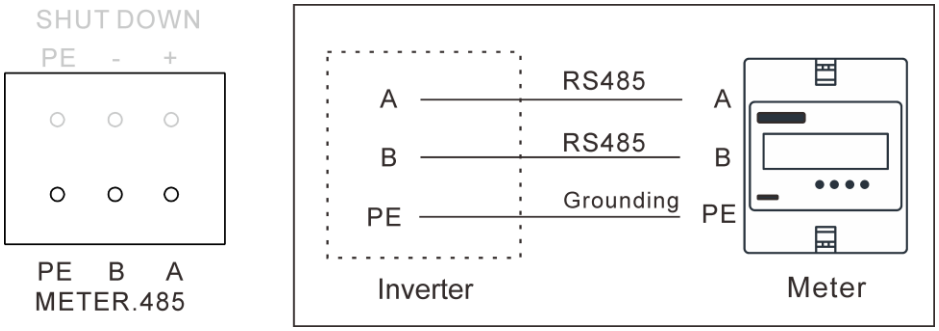


Figure 4.7. Meter connection

G. The DRED/RCR ports can connect with external residual current devices (RCD) or demand response enabling devices (DRED) to provide the RCR signal control function. This function meets the power grid dispatching requirements in Germany and other countries and regions.

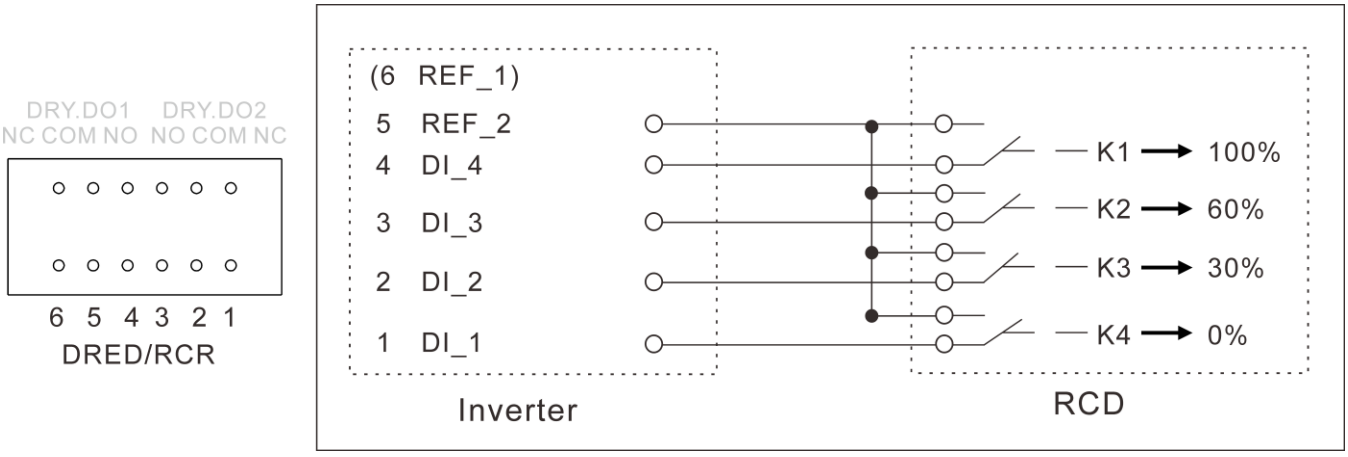


Figure 4.8. RCD connection

H. The SW1/2/3 dual inline package (DIP) switches are provided to control the activation of 120 Ω terminal resistors to ensure the communication stability of the corresponding communication functions.

Port	Switch	Function
SW1	ADD1, ADD2	Reserved for future use.
	METER.485	Provide the 120 Ω terminal resistors for RS485 communication with the external meters. Turn the switch on as needed.
	EMS	Provide the 120 Ω terminal resistors for RS485 communication with the EMS. Turn the switch on as needed.
SW2	PARALLEL	Provide the 120 Ω terminal resistors when multiple inverters are deployed in parallel. Turn the 3 and 4 switches to the ON position on the two inverters that are physically farthest apart.
SW3	RS485.PAR1	Provide the 120 Ω terminal resistors for RS485 PAR1 communication. Turn the switch on as needed.
	BMS.1, BMS.2, BMS.3	Provide the 120 Ω terminal resistors for the CAN communication between battery management systems (BMS). Turn the switch on as needed.

Table 4.1. DIP switch functions

Step 6. Prepare and connect RJ45 cables for the corresponding functions as needed.

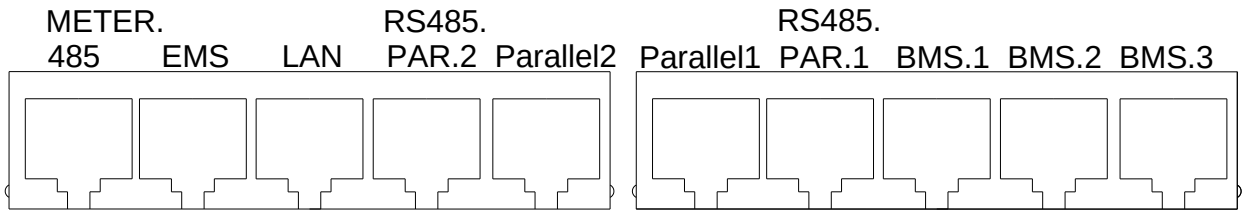


Figure 4.9. RJ45 ports

Port	Function
METER.485	For meter RS485 connection.
EMS	For RS485 communication with the SAJ EMS or the third-party EMS.
LAN	For LAN communication with the SAJ EMS or the third-party EMS.
RS485.PAR.1	RS485 communication ports reserved for future use.
RS485.PAR.2	
Parallel1	For CAN communication connection between CH2 inverters in parallel deployment with the backup loads connected.
Parallel2	
BMS.1	For CAN communication connection from the SAJ CB2 battery system.
BMS.2	CAN communication port reserved for future use.
BMS.3	For CAN communication connection from the third-party battery system.

Table 4.2. RJ45 port descriptions

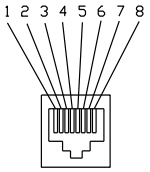
Prepare the RJ45 cables according to the following specification for the corresponding functions as needed:

Port	Cable type	Maximum length (m)
METER.485	Standard CAT6 outdoor shielded network cable.	300
EMS		300
LAN		100
Parallel1, Parallel2		100
BMS.1		20
BMS.3		20

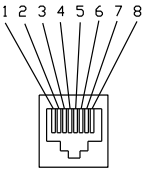
Table 4.3. RJ45 cable specification

Crimp the cable ends with the RJ45 plugs in the delivery package according to the pin definitions below:

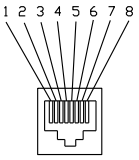
EMS	
1	NC
2	NC
3	NC
4	NC
5	NC
6	NC
7	RS485-A
8	RS485-B



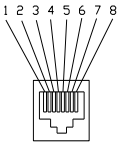
RS485.PAR.1/RS485.PAR.2	
1	NC
2	NC
3	NC
4	NC
5	NC
6	NC
7	RS485-A
8	RS485-B



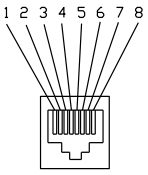
METER.485	
1	RS485-B
2	RS485-A
3	NC
4	RS485-B
5	RS485-A
6	NC
7	RS485-A
8	RS485-B



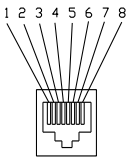
BMS.1/ BMS.2/ BMS.3	
1	Shut down—BMS
2	GND_S
3	NC
4	CANH
5	CANL
6	NC
7	NC
8	NC



Parelle1/ Parelle2	
1	SYN B
2	SYN A
3	SYN B
4	SYN A
5	SYN B
6	SYN A
7	CANL
8	CANH



LAN	
1	TX_D1+
2	TX_D1-
3	RX_D2+
4	BI_D3+
5	BI_D3-
6	RX_D2-
7	BI_D4+
8	BI_D4-

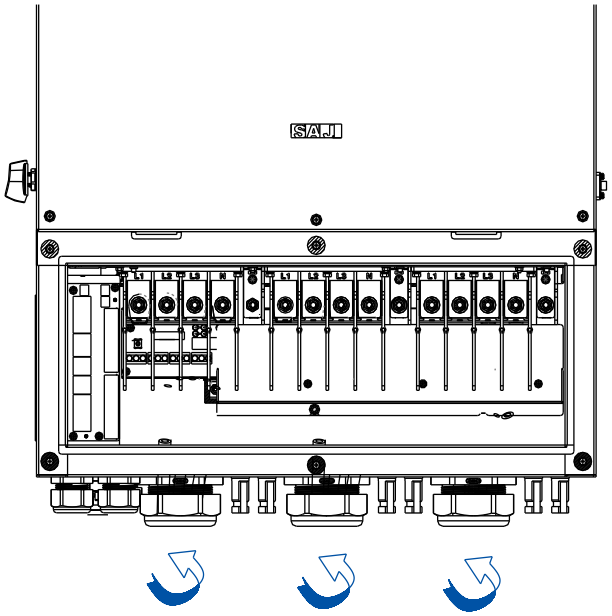


☐ 5. Connect the AC cables

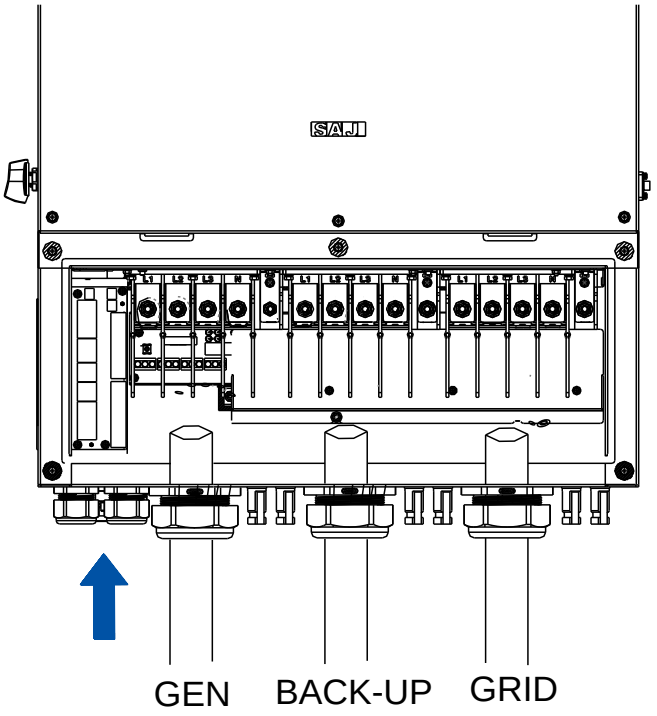
NOTICE
Confirm that the DC switch is OFF during installation to avoid short circuit.

Prepare the GRID, GEN, and Backup cables according to different deployment scenarios of the customer. For detailed cable specifications, see Section 5.8 “System Connection Diagram” in the *User Manual*.

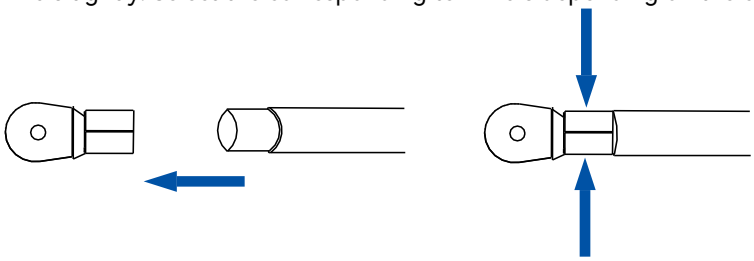
Step 1. Loosen the water-proof nuts of GEN, BACK-UP, and GRID cable glands at the bottom of the inverter.



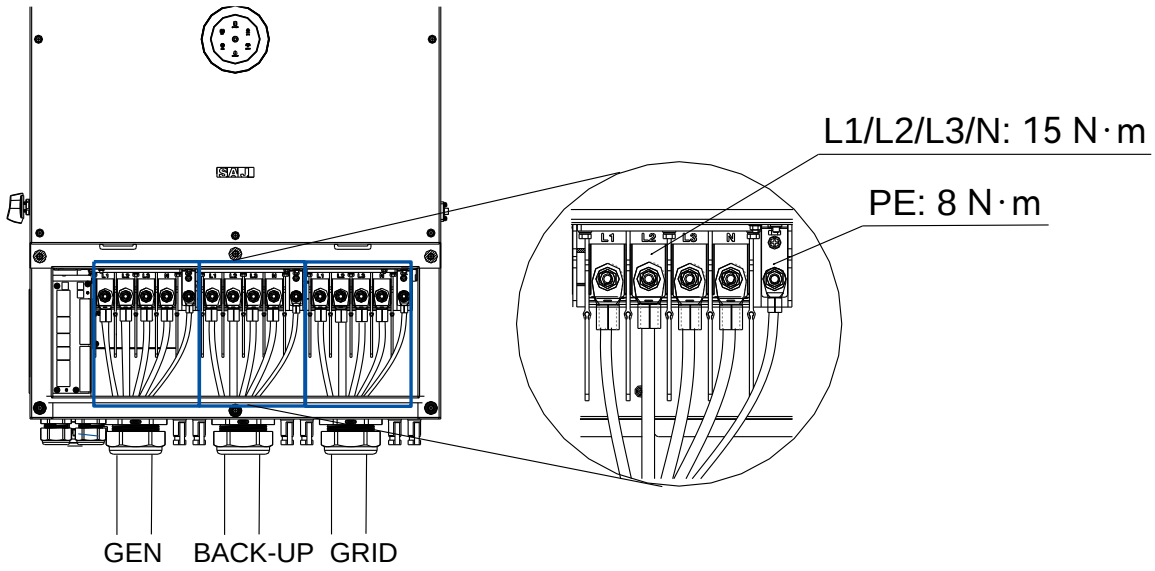
Step 2. Insert the AC cables through the corresponding cable glands at the bottom of the inverter.



Step 3. Peel off the insulation skin of the AC cables at proper length and crimp the cable ends with the RNB70-10 or SC50-10 OT/DT terminals tightly. Select the corresponding terminals depending on the cable specification.



Step 4. Loosen the screws on the L1, L2, L3, N and PE ports. Secure the AC cables to the corresponding ports of L1, L2, L3, N and PE with the screws. (L1/L2/L3/N: 15 N·m; PE: 8 N·m)



Step 5. Fasten the water-proof nuts of GEN, BACK-UP, and GRID cable glands at the bottom of the inverter.

Step 6. Install an external circuit breaker to ensure that the inverter can be disconnected from the grid safely.

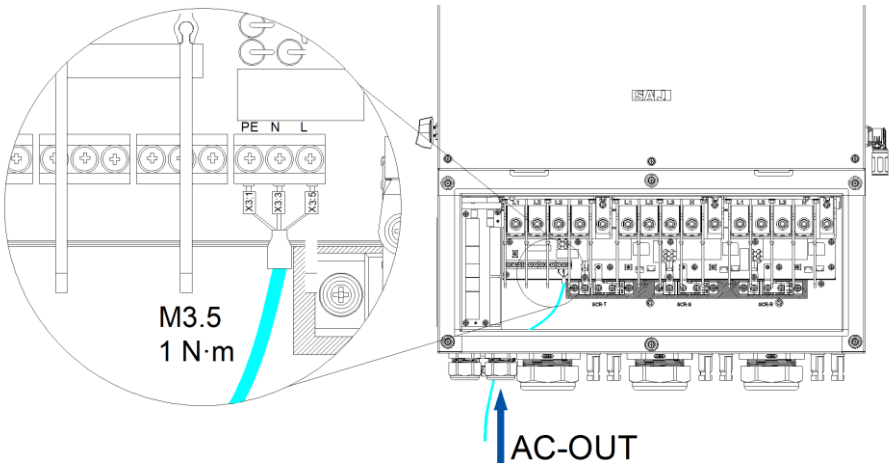
Model	Backup load connected	
	Yes	No
CH2-(29.9K-50K)-(T4, T6)	200 A	100 A
Notice: Do not connect multiple inverters to one AC circuit breaker.		

Table 5.1. Recommended circuit breaker specification

Step 7. (optional) Connect an external residual current device with the inverter to protect the system from tripping when it is required by regional or local regulations. Either type A or type B RCD is compatible with the inverter. The action current of external residual current device should be 300 mA.

Step 8. The inverter **AC-OUT** port provides 220V AC power supply that can be connected as needed for third-party battery systems. For example, the air conditioner power supply of the third-party system.

To use the 220V AC power supply, the cable conductor cross-sectional area needs to range from 1-5 mm^2.



☐ 6. Connect the PV cables

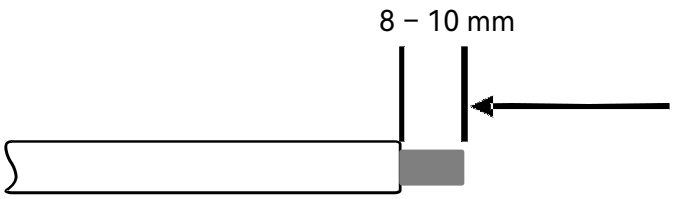
⚠ WARNING
Make sure the PV array is well insulated to the ground before connecting it to the inverter.

Conductor cross-sectional area of cables (mm^2)		Conductor material
Range	Recommended value	Outdoor multi-core copper wire cable, complying with 1000 V DC
4.0–6.0	4.0	

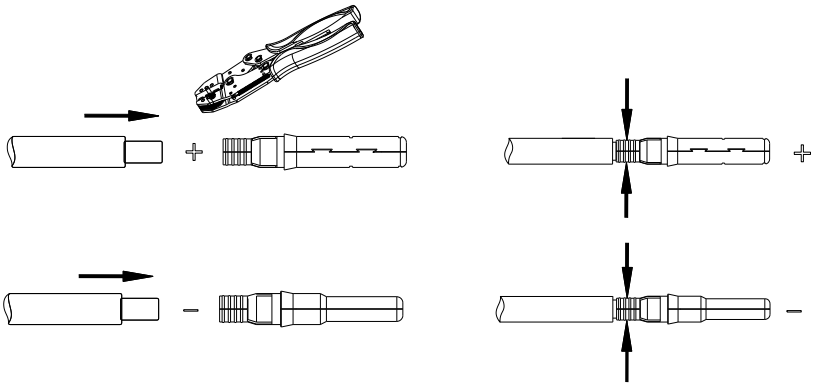
Table 6.1. Recommended specifications of DC cable

Step 1. Loosen the lock screws on the positive and negative connectors.

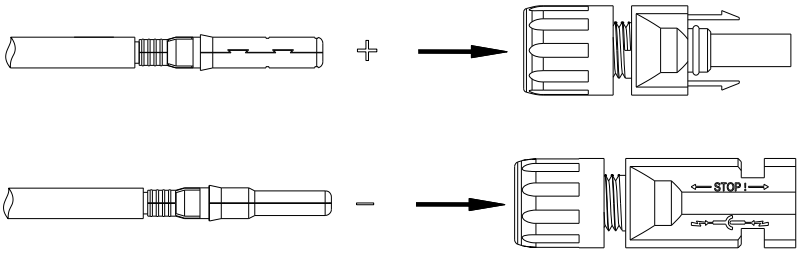
Step 2. Use a 3-mm wide-bladed screwdriver to strip the insulation layer by 8 to 10 mm from one end of each cable.



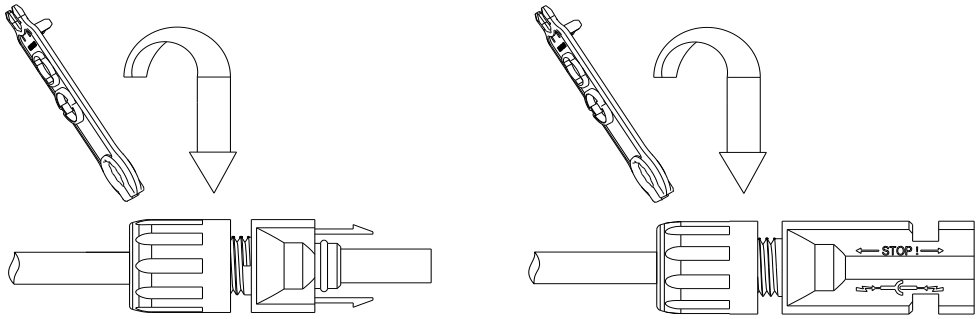
Step 3. Insert the cable ends to the sleeves. Use a crimping plier to assembly the cable ends.



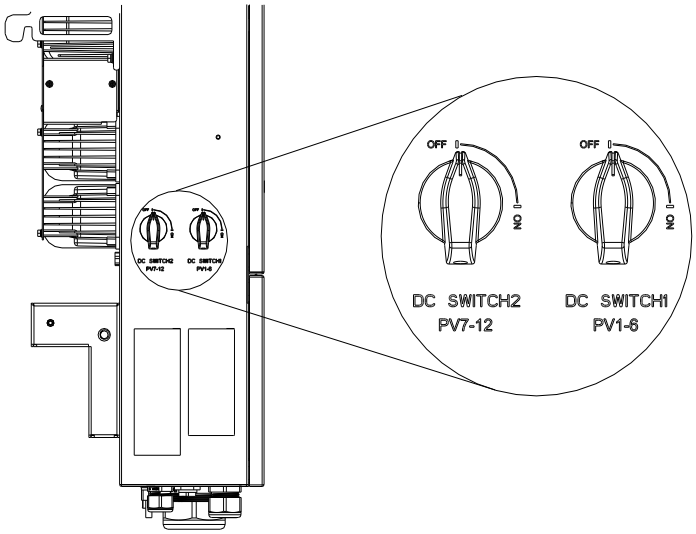
Step 4. Insert the positive and negative cables into the positive and negative connectors. Gently pull the cables backward to ensure firm connection.



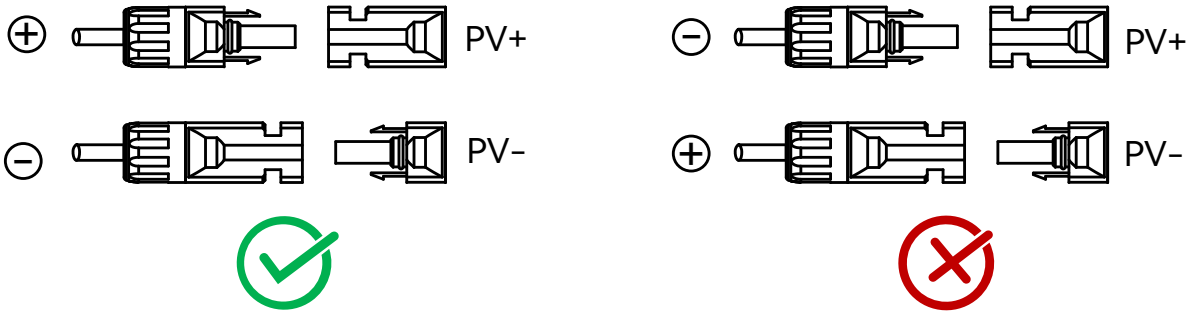
Step 5. Tighten the lock screws on the positive and negative cable connectors with the D4 assembly tool.



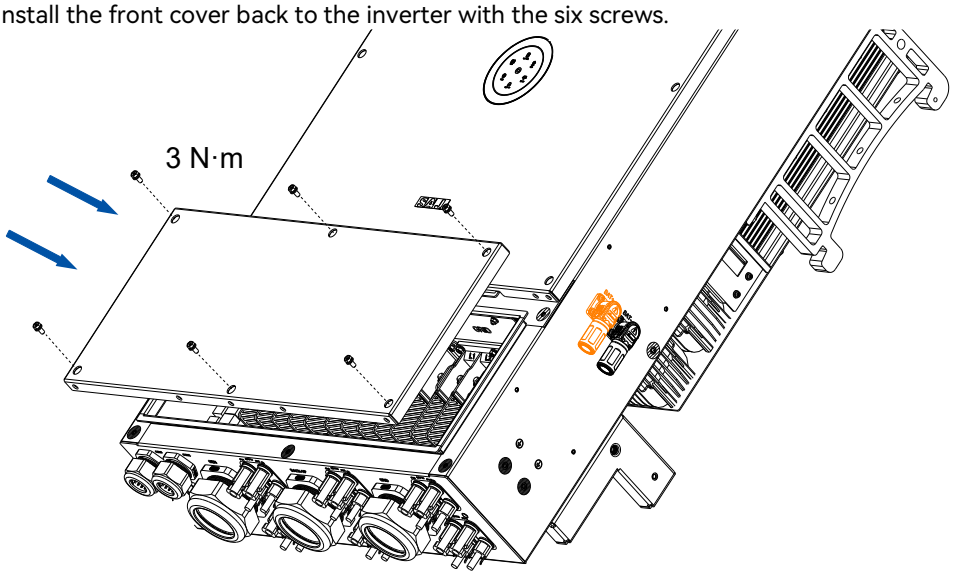
Step 6. Make sure the two DC switches are at the OFF position.



Step 7. Insert the positive and negative cable connectors into the positive and negative PV ports on the inverter until you hear a “click” sound.

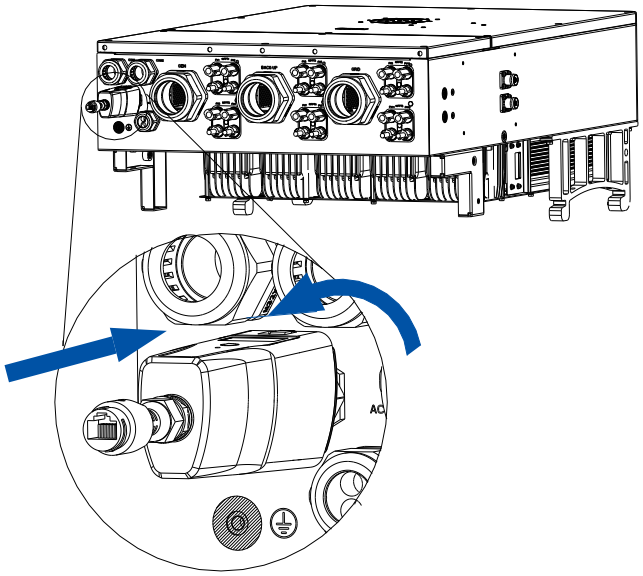


Step 8. Install the front cover back to the inverter with the six screws.



☐ 7. Connect the communication module

Remove the dust-proof cover from the 4G/WIFI port, plug in the communication module, and rotate less than 90 degrees to secure the module.



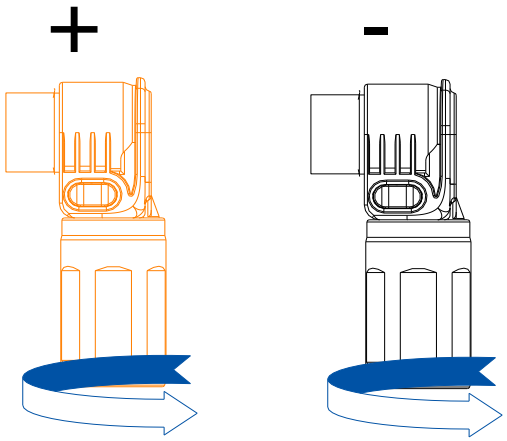
☐ 8. Connect the battery power cables

Cable cross-sectional area (mm^2)
42

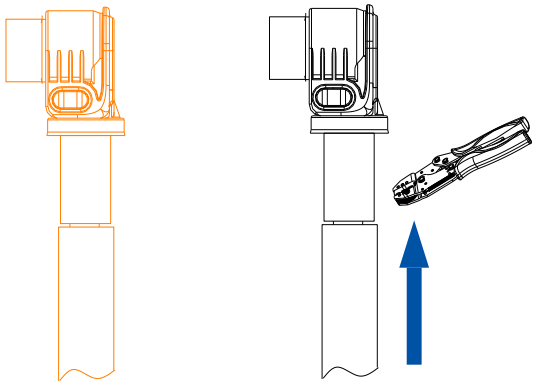
Table 8.1. Recommended specifications of battery connection cables

It is optional to install a breaker between the battery system and the inverter.

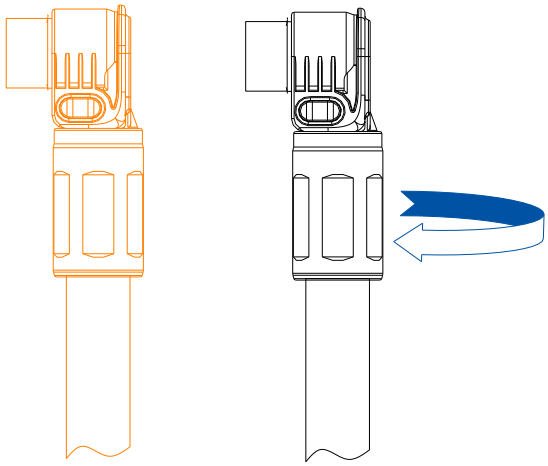
Step 1. Loosen the lock screw off the positive and negative connectors of the battery cables.



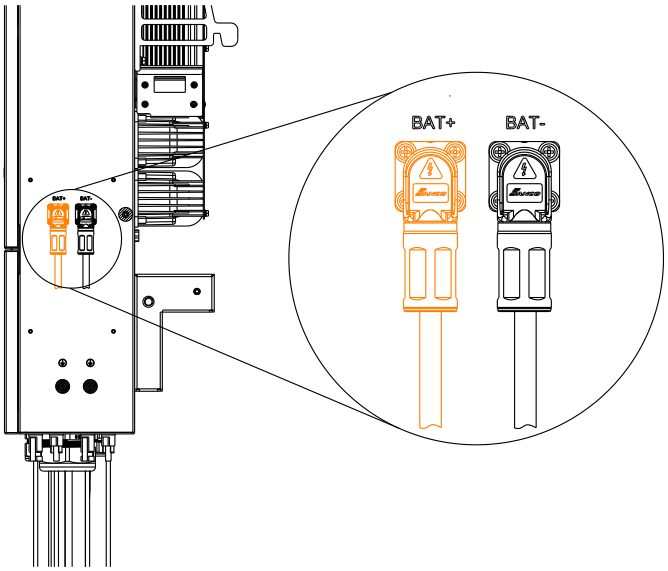
Step 2. Insert the cable into the cable connector, and crimp the cable and the copper tube of the connector.



Step 3. Fasten the lock screws back to the positive and negative connectors.



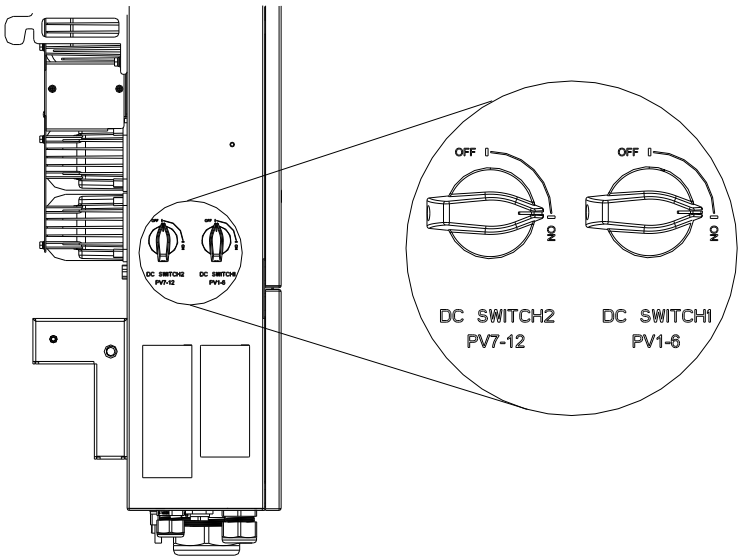
Step 4. Insert the positive and negative battery cables to the corresponding ports on the right side of the inverter.



☐ 9. Start up the inverter and complete initialization on App

Step 1. Turn on the DC switches on the left side of the inverter to start up the inverter.

When the LED indicator shows solid green, it indicates that the inverter is up and running.



Step 2. Log in to the elekeeper App and complete the initialization. For detailed instructions, refer to the inverter *User Manual*.

Installer: _____

