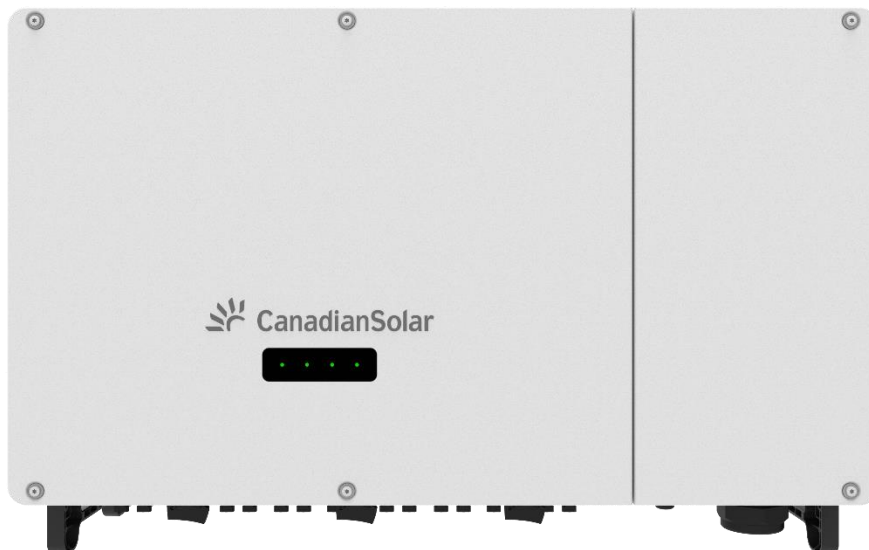


CSI-75K-T40001-E
CSI-100K-T4001A-E
CSI-100K-T4001B-E
CSI-110K-T4001A-E
CSI-110K-T4001B-E
CSI-120K-T4001A-E
CSI-120K-T4001B-E



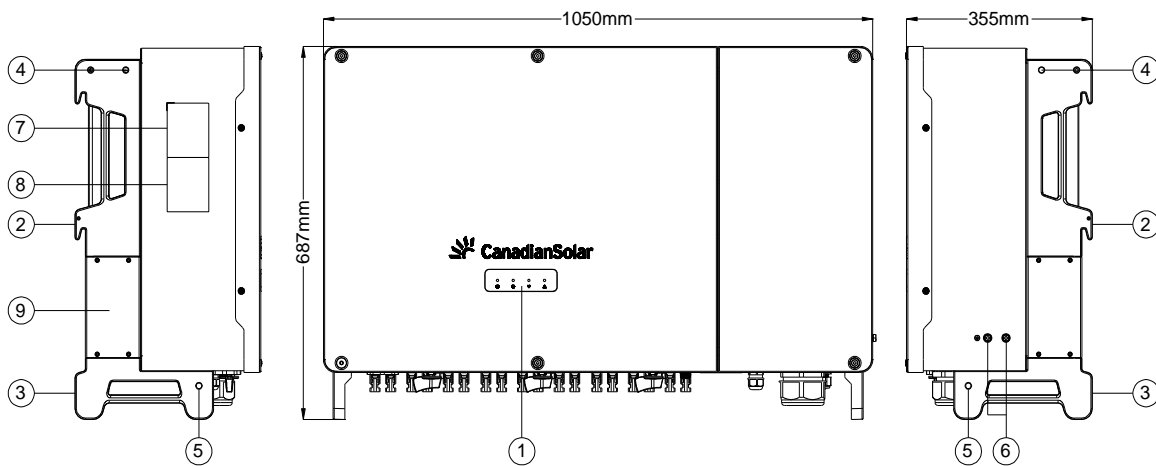
PV Inverter Quick Installation Guide

(Part No: 91000221; Release Date: February, 2023)

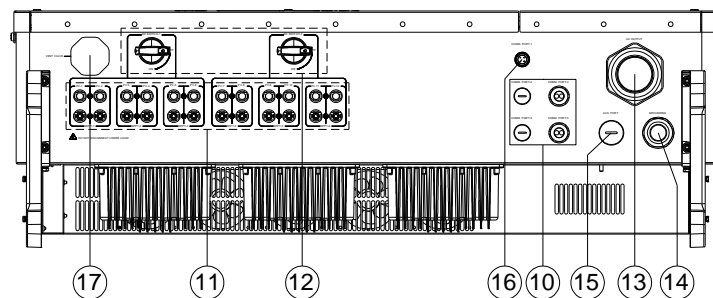
1 About This Guide

- 1) This guide only applies to the following inverters: CSI-75K-T40001-E, CSI-100K-T4001A-E, CSI-100K-T4001B-E, CSI-110K-T4001A-E, CSI-110K-T4001B-E, CSI-120K-T4001A-E and CSI-120K-T4001B-E.
- 2) This instruction only provides an overview of the installation of the above inverters
- 3) Due to product version upgrade or other reasons, this guidance will be updated irregularly. Under no circumstances can this guide replace the user manual and the safety instructions on the product.
- 4) Please read the user manual and related standard specifications carefully before performing any operation on this series of products. You can scan the QR code on the left side of the device or at the end of this guide to obtain an electronic copy of the manual.
- 5) All operations on this series of products must be completed by professional technicians. Professional and technical personnel must be specially trained, read user manual, master the safety matters related to operation, and be familiar with local standards and electrical system safety specification.
- 6) Before installing the products, please check whether the products are complete, consistent with the order, and whether there is obvious damage. If there is any abnormality, please contact the local dealer or CSI Solar Co., Ltd.

2 Product Introduction



CSI-75K-T40001-E
 CSI-100K-T4001A-E
 CSI-110K-T4001A-E
 CSI-120K-T4001A-E



CSI-100K-T4001B-E
 CSI-110K-T4001B-E
 CSI-120K-T4001B-E

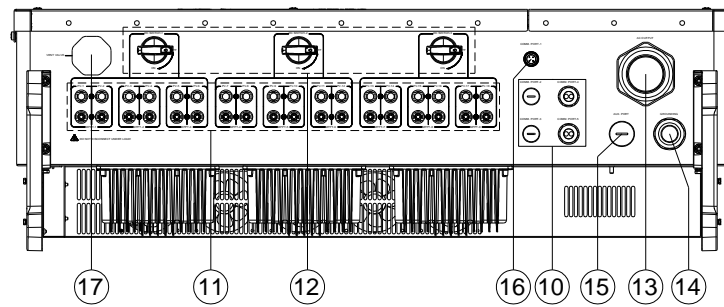


FIG 2-1 Product introduction (The picture is for reference only)

- | | |
|---|--|
| 1.LED indicator Panel | 10. Cable gland for communication |
| 2.Side handles and mounting ears | 11.PV input connectors |
| 3.Bottom handles | 12.DC disconnect switch |
| 4.M12 holes for lifting eyes or hand shanks | 13.Cable gland for AC output |
| 5.M12 holes for hand shanks | 14.Cable gland for interior grounding |
| 6.Additional grounding points | 15.Reserved auxiliary port |
| 7.Rating label | 16.Communication connector for data logger |
| 8.Warning label | 17.Breather valve |
| 9.The cover of outer fan module | |

3.1 Installation Environment Requirements

- 1) Do not install the inverter on the structures constructed of flammable, thermolabile or explosive materials.
- 2) Ensure the inverter is out of children's reach.
- 3) The ambient temperature should be between -30°C~ 60°C.
- 4) The humidity of the installation location should be below 100% without condensation.
- 5) Do not install the inverter outdoors in salt, sulfur or other corrosive areas.
- 6) Prevent the inverter from direct exposure to sun, rain and snow.
- 7) The inverter should be well ventilated. Ensure air circulation.
- 8) Never install the inverter in living areas. The inverter will generate noise during operation, affecting daily life.
- 9) Install at an appropriate height for ease of viewing LED indicators and operating switches.

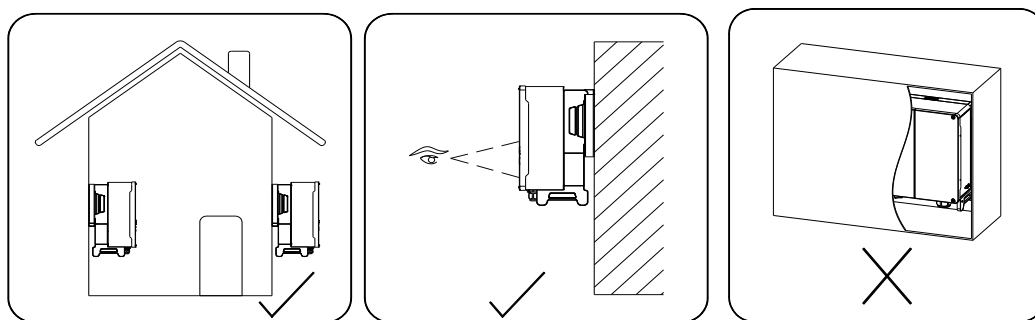


FIG 3-1 Installation site

3.2 Carrier Requirements

Max. load bearing capacity \geq 4 times of inverter weight.

3.3 Installation Angle Requirements

Inverter vertically or at a minimum back tilt of 10°. Forward installation or upside down installation is prohibited..

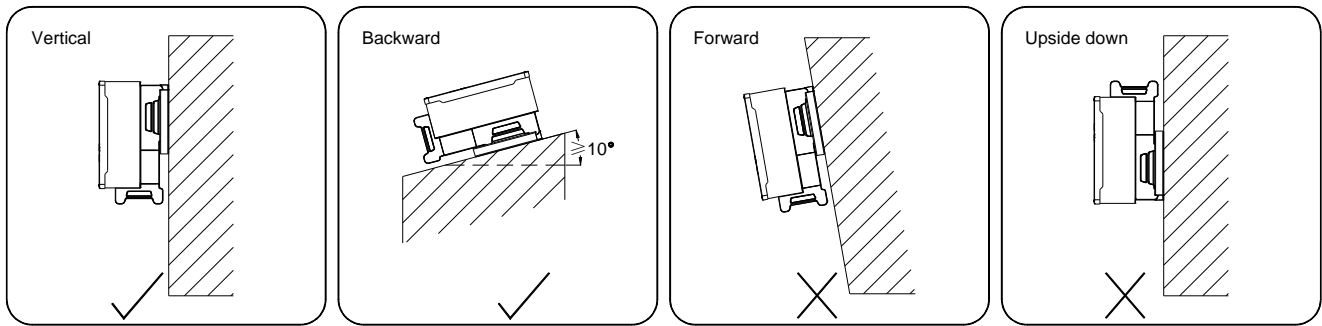


FIG 3-2 Installation angle

3.4 Installation Clearance Requirements

1) Reserve enough clearance around the inverter to ensure sufficient space for heat dissipation. (3-3 The fans are maintained on the left side of the inverter, and a larger clearance is required.)

In case the distance is less than 800mm, move the inverter from the mounting-bracket or wall before maintaining fans

2) In case of multiple inverters, reserve specific clearance between the inverters. 3-4

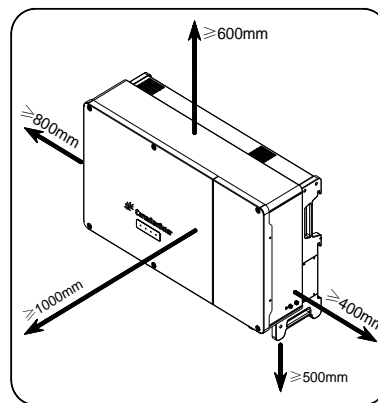


FIG 3-3 Single installation space

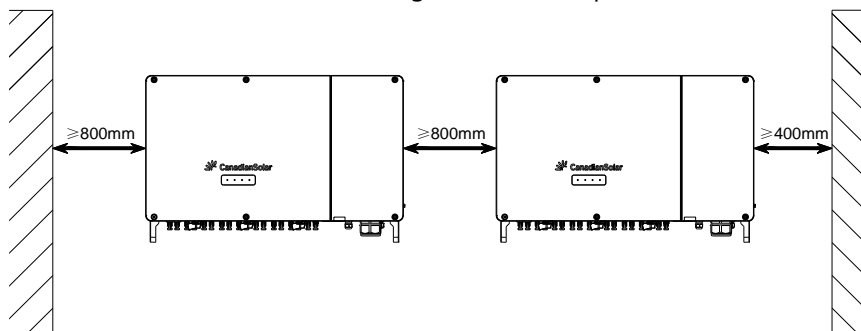


FIG 3-4 Multiple installation space

3.5 Assembling the mounting-bracket

Dimensions of the assembled mounting-bracket are as follows 3-5.

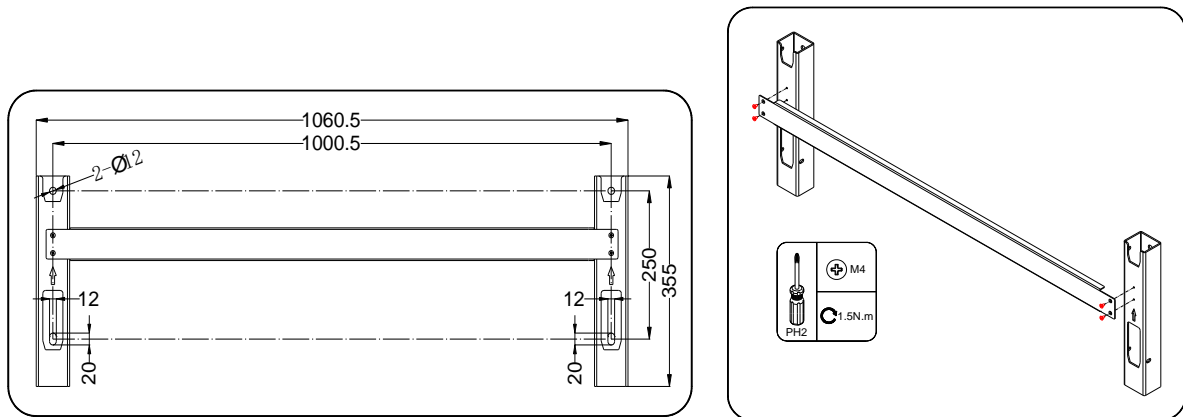


FIG 3-5 Assembly mounting bracket

3.5.1 Standard C or U Steel Installation

Mounting Steps:

Step 1 Localize the hole positions in C or U-section steel to install mounting bracket.

Step 2 Secure the mounting bracket with M10 bolts and nuts.

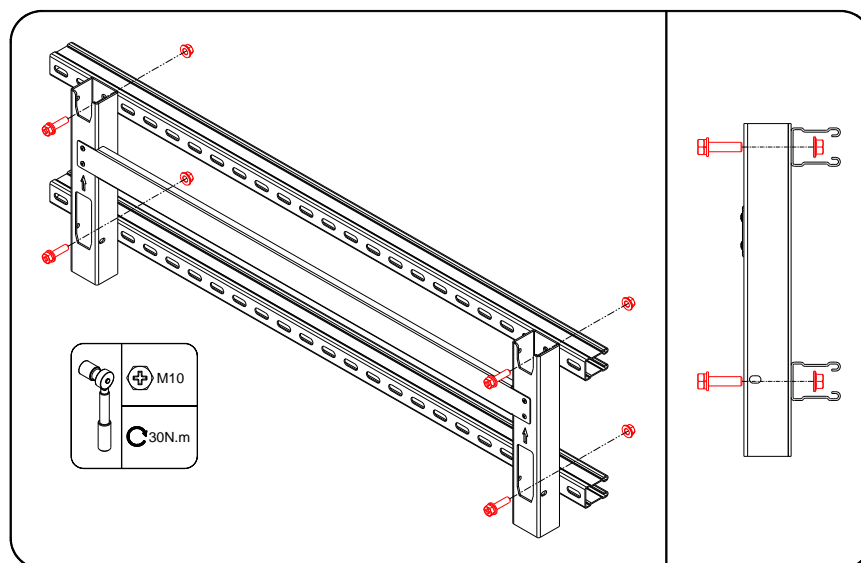


FIG 3-6 Locate the mounting hole

3.5.2 Steel Frame Installation

Mounting Steps:

Step 1: Level the assembled mounting-bracket by using a level, and mark the positions for drilling holes on the steel frame. Drill the holes by using a hammer drill. Recommended aperture 12mm.

Step 2: Secure the mounting-bracket with M10 bolts and nuts.

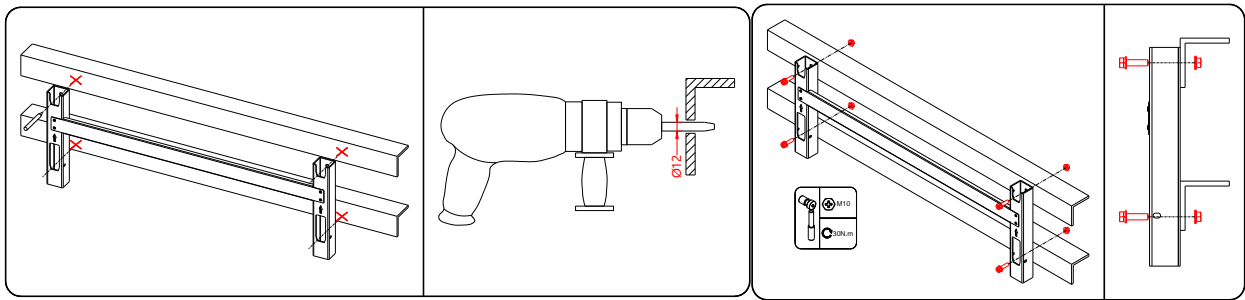


FIG 3-7 Install the wall bracket

3.6 Inverter Installation

Step 1: Take out the inverter from the packing carton.

Step 2: Hoist the inverter to the installation position.

Step 3: Hang the inverter to the mounting-bracket and ensure that the mounting ears perfectly engage with the mounting-bracket.

Step 4: Fix the inverter with screws M6x30.

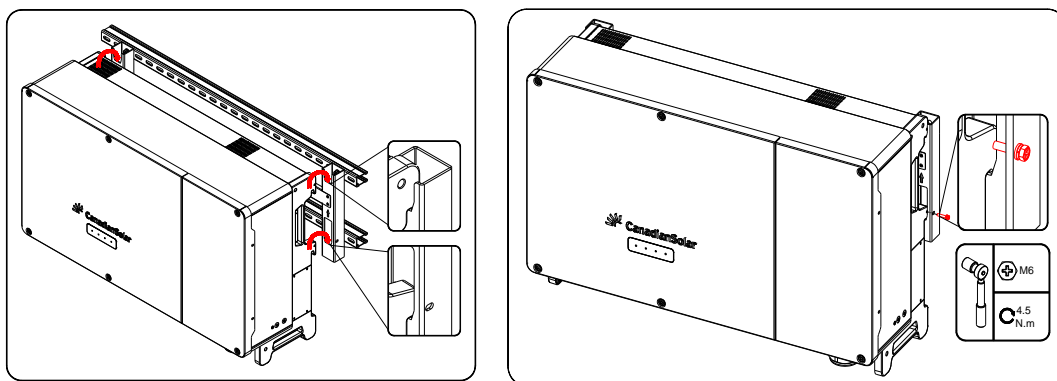


FIG 3-8 Install the inverter

4 Electrical Connection

4.1 Electrical Connection Overview

1) PV string; 2) Inverter; 3) AC distribution box/cabinet; 4) Utility grid; 5) Monitoring device

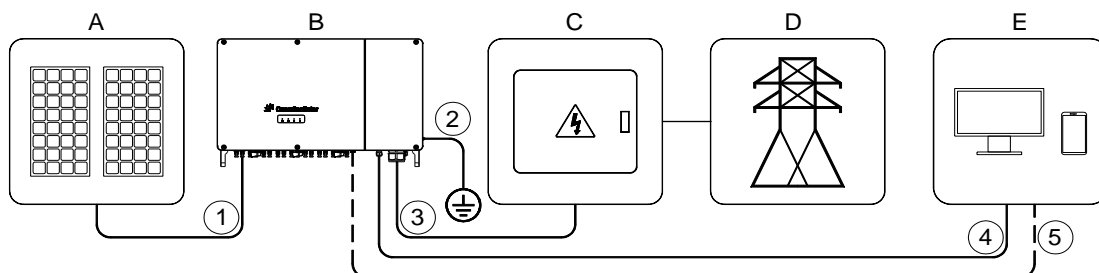


FIG 4-1 General electrical connection diagram


Table 4-1 Recommended Cables

No.	Cable Name	Cable Type	Conductor Cross-Sectional Area	Outer Diameter
1	DC cable	PV cable, complying with 1500V standard	4~6mm ²	6~9mm
2	Additional Grounding cable	Outdoor single core copper conductor cable	The same as that of the PE wire in the AC cable	N/A
3	AC cable	Four/Five-core outdoor copper or aluminum cables	1) 75KW: 4 or 5 x 50~185 mm ² 75KW: 3 x 240+1 x 120mm ²	26~57mm
			2) 100~120KW: 4 or 5 x 70~185 mm ² 100~120KW: 3 x 240+1 x 120mm ²	
4	Communication cable	Shielded twisted pair (terminal block)	0.5~1.5 mm ²	4.5~6.5mm
		CAT-5 Ethernet cable (RJ45)	N/A	
5	Wireless communication	N/A	N/A	N/A

Table 4-2 PE wire requirements

Phase wire cross section S	PE wire cross section	Outer Diameter	Note
$S > 35 \text{ mm}^2$	$S/2$	12~25mm	The specifications are valid only when the phase wire and PE wire use the same material. If otherwise, ensure that the cross section of PE wire produces a conductance equivalent to that of the wire specified in the table.

4.2 Connecting the PE Cable

 WARNING	<p>Since the inverter is a transformerless inverter, neither the negative pole nor the positive pole of the PV string can be grounded. Otherwise, the inverter will not operate normally.</p> <p>Connect the additional grounding terminal to the protective grounding point before AC cable connection, PV cable connection, and communication cable connection.</p> <p>The ground connection of this additional grounding terminal cannot replace the connection of the PE terminal of the AC cable. Make sure those terminals are both grounded reliably.</p>
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Connection Procedure:

Step 1 Prepare the cable and terminal.

Step 2 Remove the screw on the grounding terminal and fasten the cable with a wrench.

Step 3 Apply paint to the grounding terminal to ensure corrosion resistance.

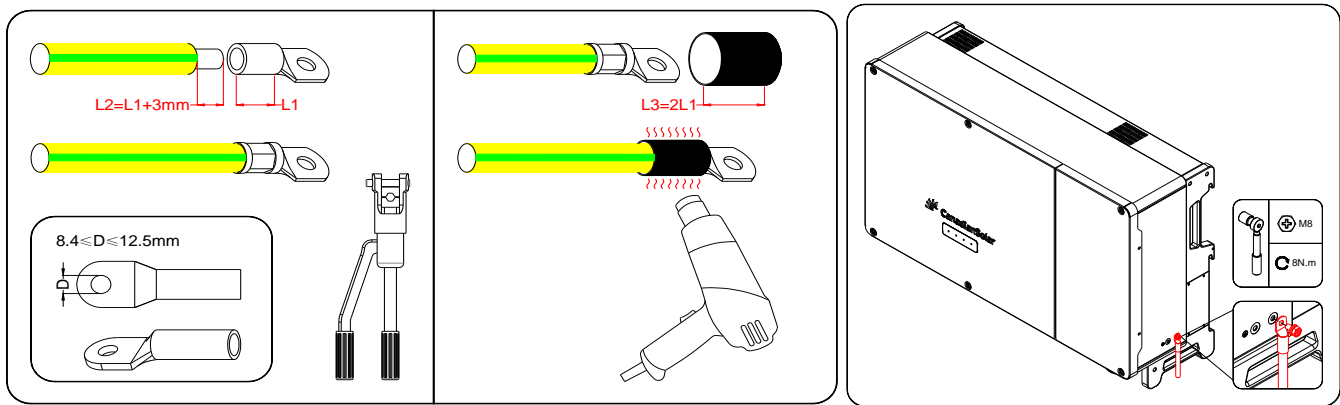


FIG 4-2 Install ground cables

4.3 Communication Cable Connection

4.3.1 Opening the Wiring Compartment

Step 1 Loosen four screws on the front cover of the wiring compartment with screwdriver T30.

Step 2 Open the wiring compartment.

Step 3 Loosen two screws on the communication board, and remove the protection cover

Note: Close the wiring compartment in reverse order after completing wiring operations.

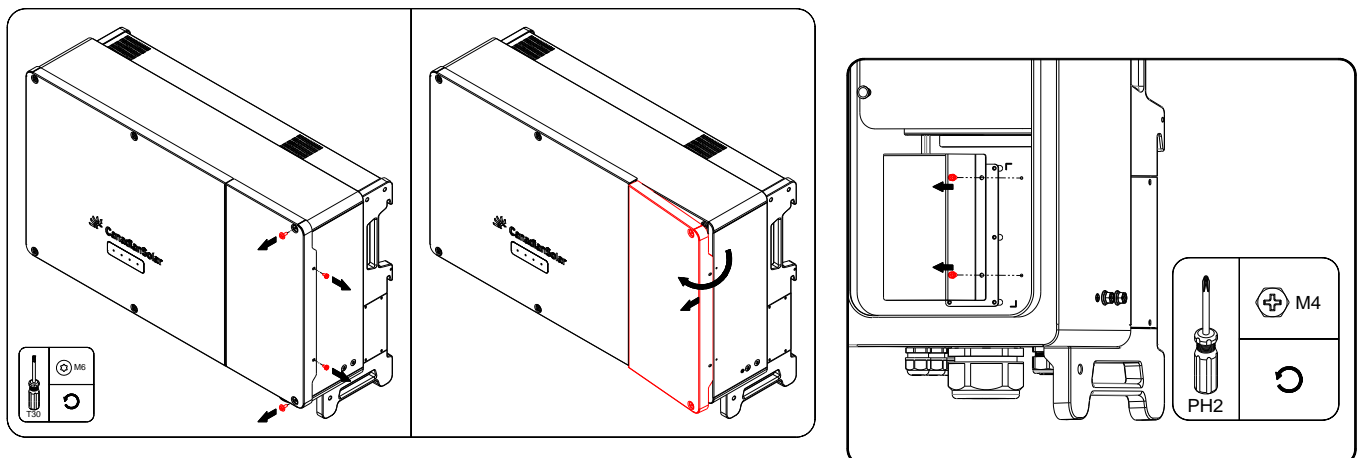


FIG 4-3 Open the Wiring Compartment

4.3.2 Communications Interface Description

The following figure shows the position of the communication wiring board in the inverter as well as the terminals equipped for the wiring board. (Note: The communication wiring board shown in the enlarged figure below is placed horizontally, while the communication board in the actual working state is placed vertically.)

4.3.3 RS485 Communication

The inverter is equipped with four groups of RS485 communication port for external communication connection, which are RS485_1, RS485_2, RS485_3, and RS485_4.

The terminal block interface and RJ45 interface have the same function with only wiring manner different. Select either interface for cable connection.

4.3.3.1 Single-inverter communication system

In case of a single inverter, select either terminal block interface (RS 485-1, and RS 485-3) or RJ45 interface (C1~C8) to connect.

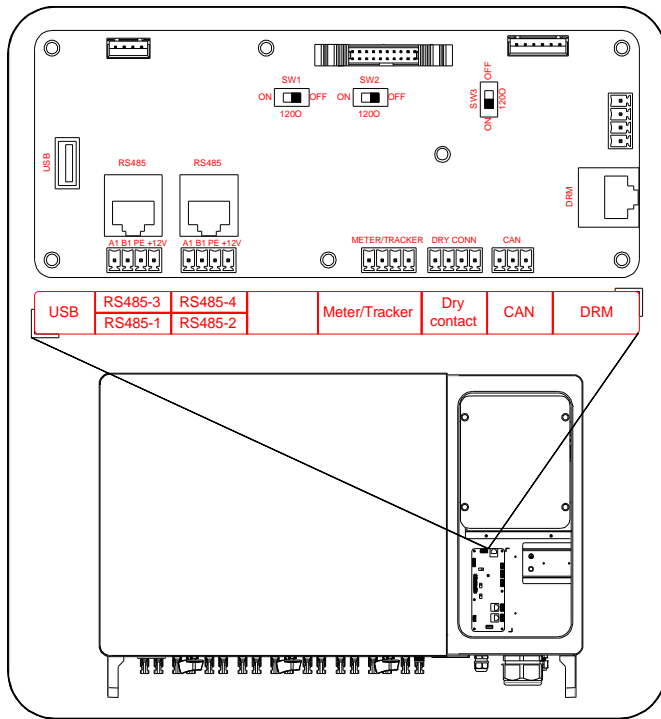


FIG 4-4 Communications Interface Description

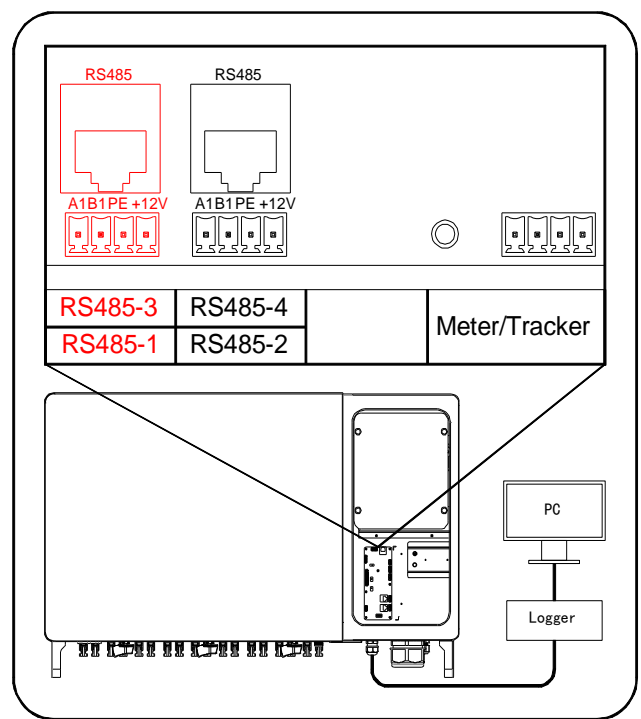


FIG 4-5 Single-inverter communication system

4.3.3.2 Multi-inverter communication system

In case of multiple inverters, select either terminal block interface or RJ45 interface to connect.

1) All the inverters are connected via terminal block interface (RS485 cables) in the daisy chain.

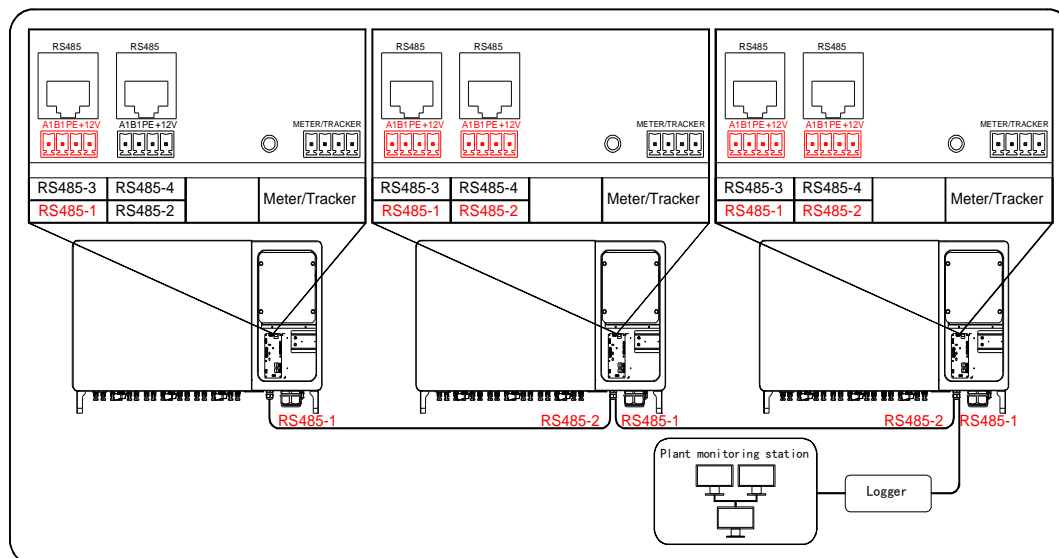


FIG 4-6 Multi-inverter communication system (RS485 cables)

2) All the inverters are connected via RJ45 interface (internet cable) in the daisy chain.

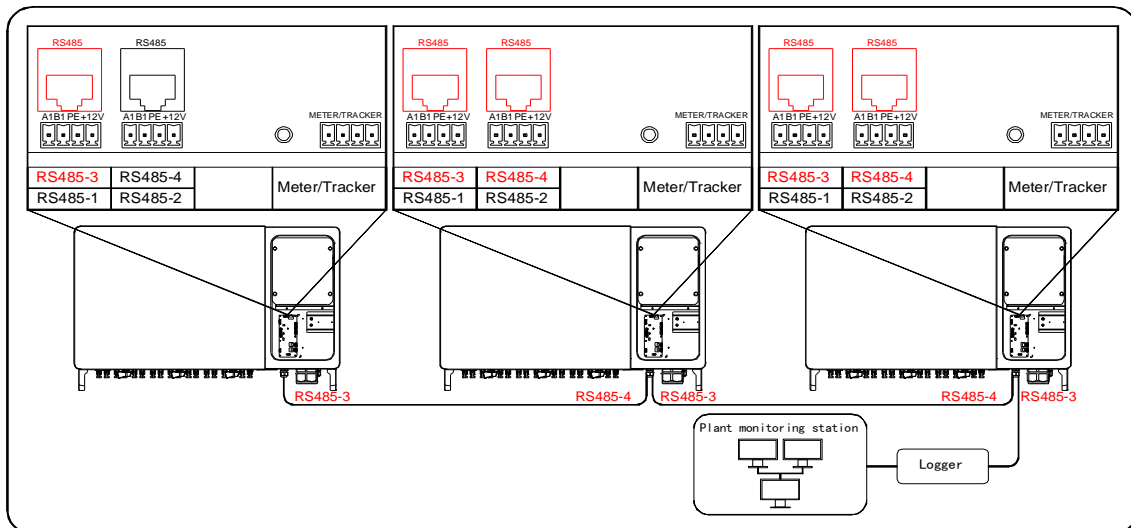


FIG 4-7 Multi-inverter communication system (RJ45 cables)

3) More than 15 pcs inverters communication.

All the inverter are connected via terminal block interface (RS485 cables) in the daisy chain.

When more than 15 inverters are connected on the same daisy chain, the inverters on two ends of the chain should be equipped with terminal resistors of 120Ω to ensure communication quality by configuring the dip switch (SW2), and the shielding layer of the communication cable should be single-point grounded.

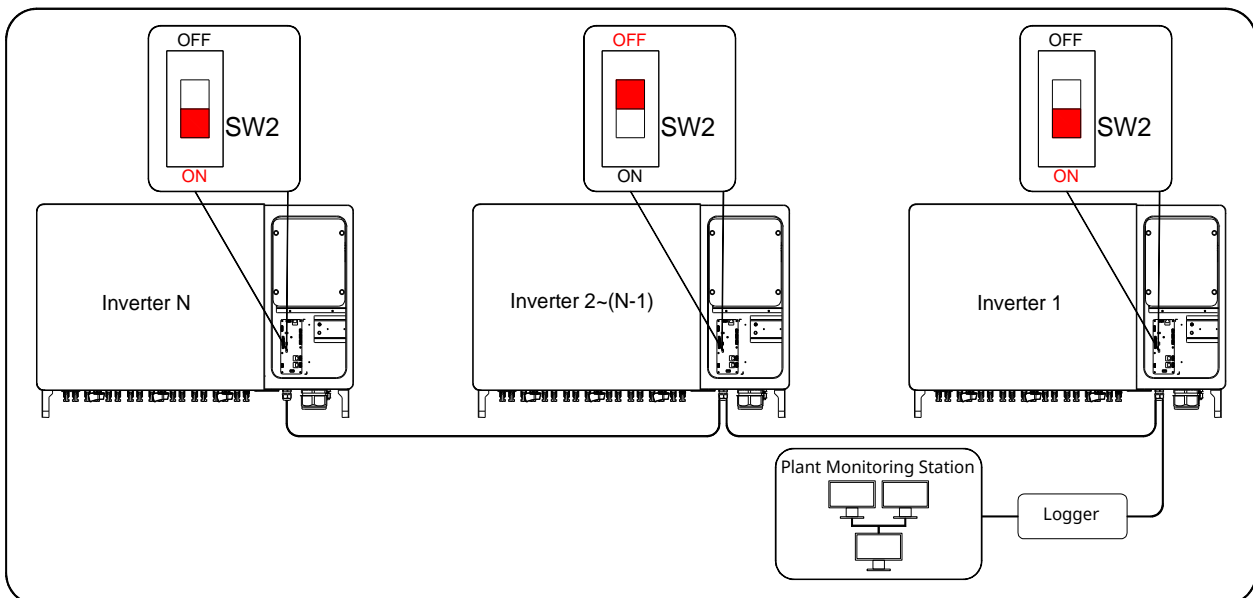


FIG 4-8 More than 15 pcs inverters communication system

4.3.3.3 Connection Procedure (Terminal Block)

Step 1: Strip the protection layer and insulation layer by appropriate length.

Step 2: Loosen the swivel nut of the communication terminal and select an appropriate seal according to cable outer diameter. Lead the cable through the swivel nut and seal successively.

Step 3: Secure the cable to the terminal base.

Step 4: Insert the terminal base into the corresponding terminal.

Step 5: Pull the cable gently to make sure it is secured, tighten the swivel nut clockwise.

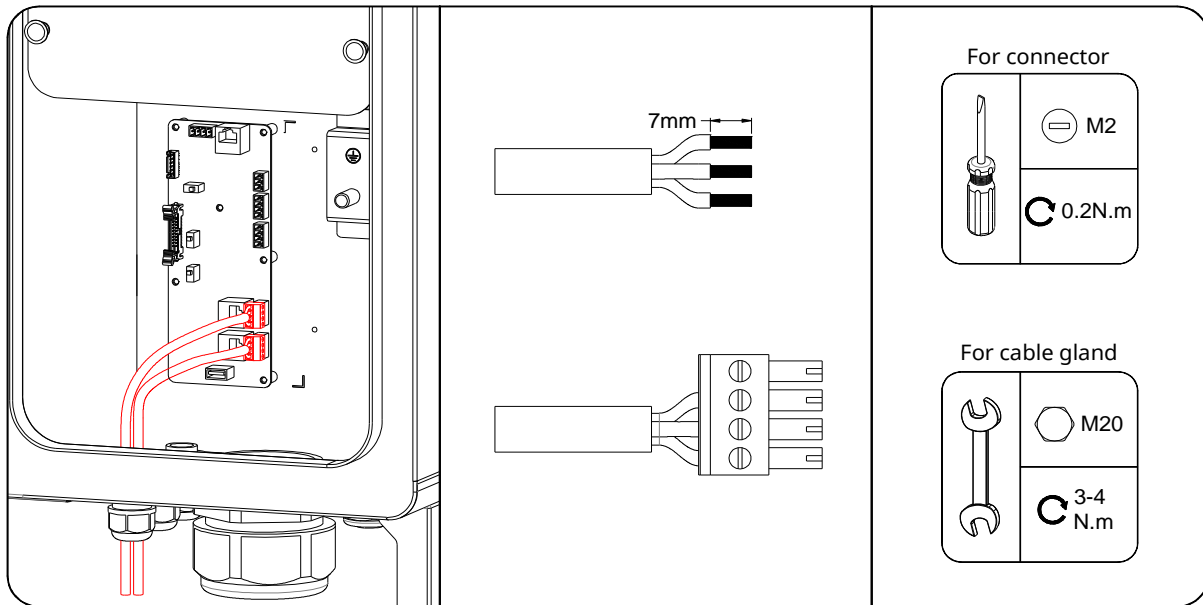


FIG 4-9 Connection Procedure (Terminal Block)

4.3.3.4 Connection Procedure (RJ45 network port)

Step 1: Loosen the swivel nut of the communication terminal and select an appropriate seal according to cable outer diameter. Lead the cable through the swivel nut and seal successively.

Step 2: Strip the insulation layer of the Ethernet cable with a wire stripper, and insert the signal wires to the RJ45 connector. Crimp the RJ45 connector with a crimping tool.

Step 3: Insert the RJ45 connector to the RJ45 jack.

Step 4: Pull the cable gently to make sure it is secured, tighten the swivel nut clockwise.

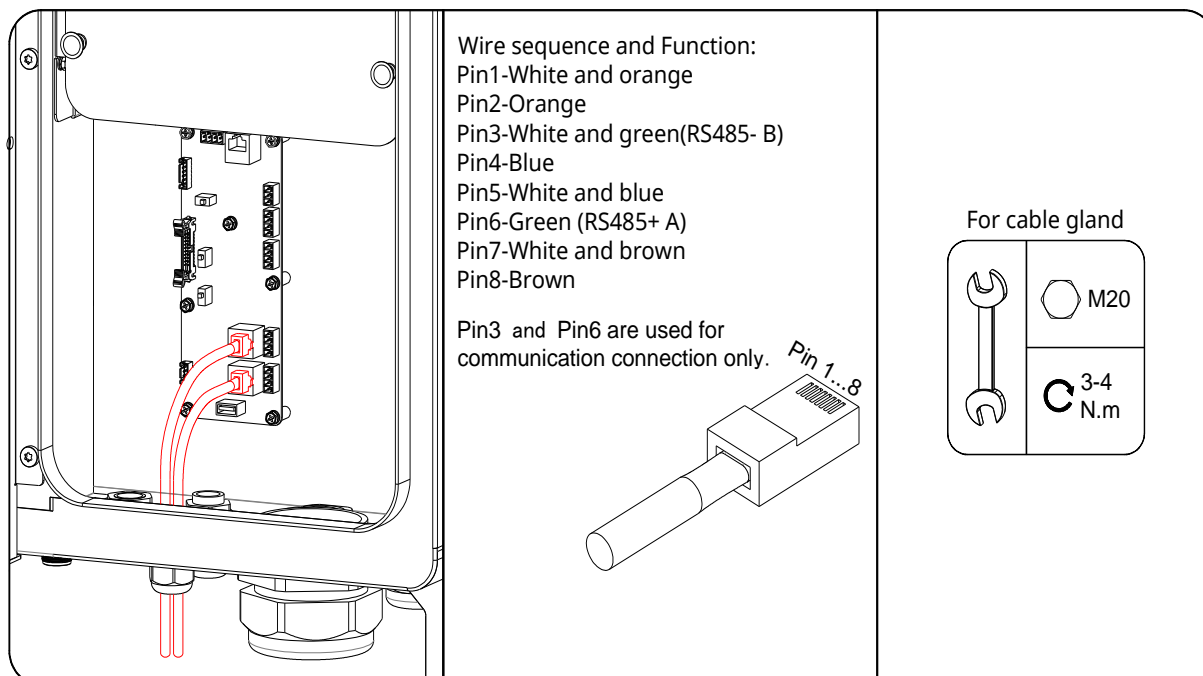


FIG 4-10 Connection Procedure (RJ45 network port)

4.4 Data Logger Connection

Connect the Data Logger to the communication accessory port.

After successful connection, information such as power generation and running state of the inverter can be viewed via the APP on the phone.

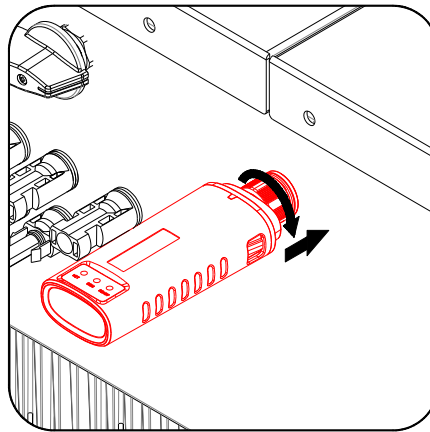


FIG 4-11 Data logger connection

4.5 AC Cable Connection

4.5.1 AC Side Requirements

Before connecting the inverter to the grid, ensure the grid voltage and frequency comply with requirements, for which, refer to Specification. Otherwise, contact the electric power company for help.



Connect the inverter to the grid only after getting an approval from the local electric power company.

4.5.2 Connection Procedure

Step 1: Open the wiring compartment.

Step 2: Pull out four plastic rivets on the protection plate, then remove the protection plate.

Step 3: Disconnect the AC-side circuit breaker and prevent it from inadvertent reconnection.

Step 4: Loosen the swivel nut of the AC waterproof connector and select a seal rings according to the cable outer diameter. Lead the cable through the swivel nut, seal rings, and wiring terminal successively.

Step 5: Strip the protection layer and insulation layer by specific length, as described in the figure below.

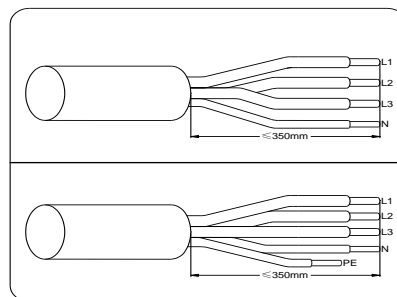


FIG 4-12 Strip the protection layer and insulation layer

Step 6: Make the cable and crimp terminal.

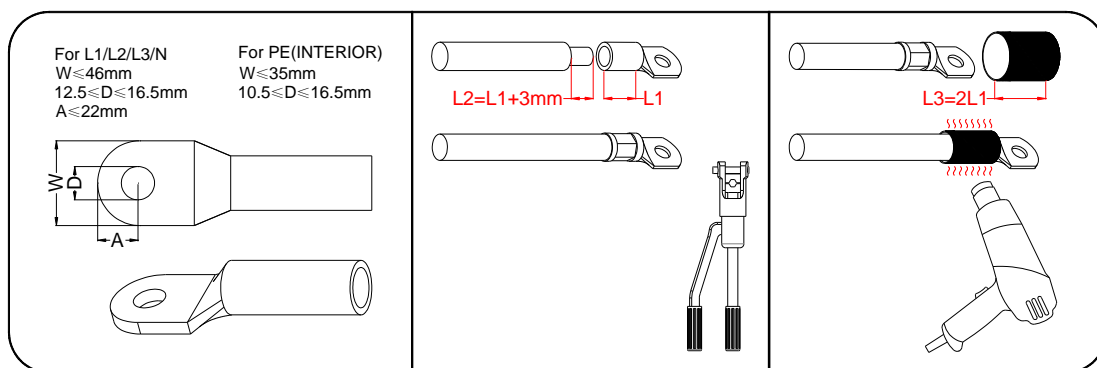


FIG 4-13 Make the cable

Step 7: Secure the wires to corresponding terminals.

Step 8: Gently pull the cable backwards to ensure firm connection, and fasten the swivel nut clockwise.

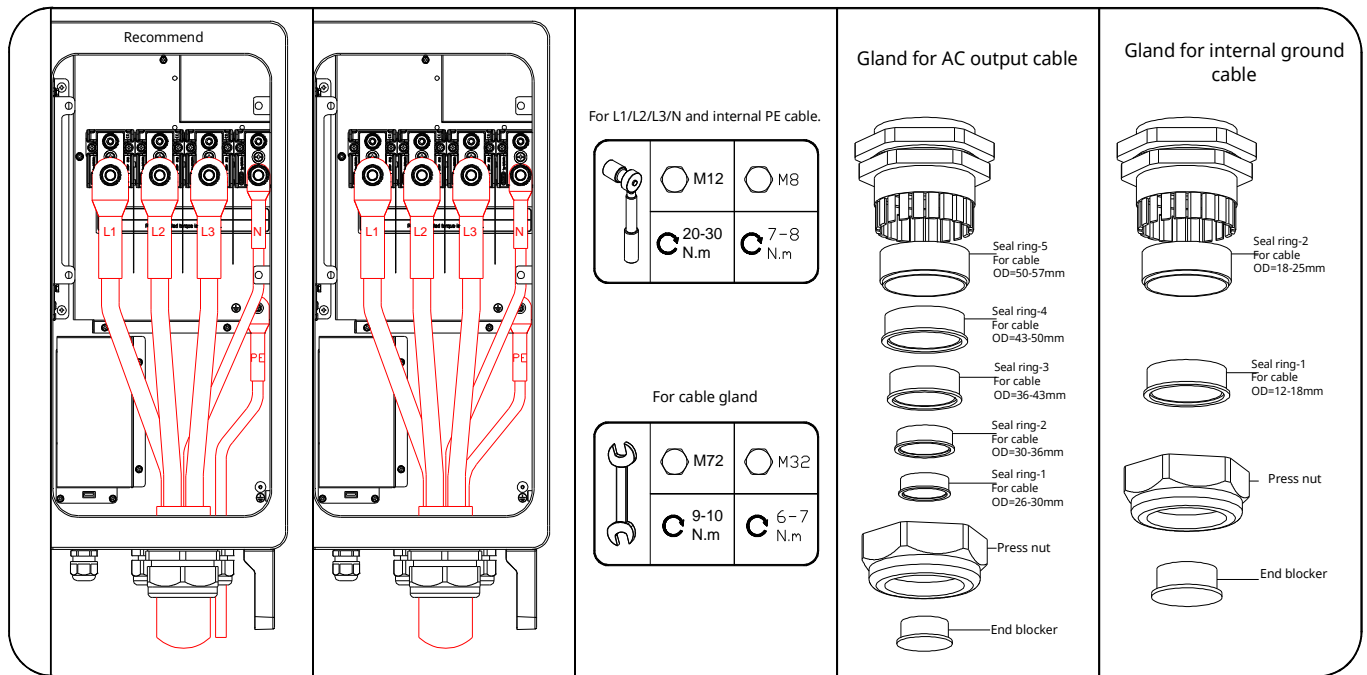


FIG 4-14 Recommended AC cable connection position

4.5.3 Closing the Wiring Compartment

Step 1: Reinstall the protection plate and push the four plastic rivets into the holes at the chassis.

Step 2: Close the wiring compartment and tighten the four screws on its front cover with screwdriver T30.

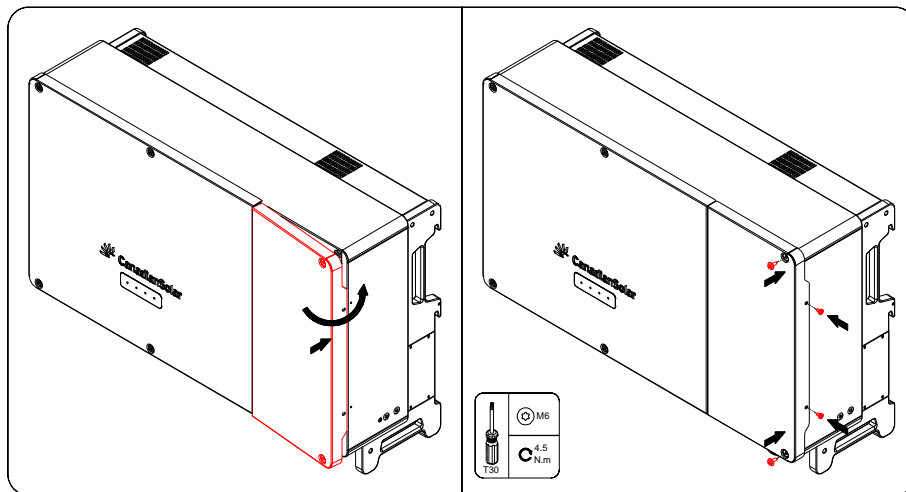




FIG4-15 Close the wiring compartment

Notice: The gap between AC cable and waterproof gland must be blocked with fireproof mud to prevent water or moisture.

4.6 DC Cable Connection

<p>DANGER</p>	<p>Electric shock! The PV array will generate lethal high voltage once exposed to sunlight. Before performing electrical operations, ensure that all cables are uncharged. Do not turn on the AC circuit breaker before the inverter is electrically connected.</p>
<p>CAUTION</p>	<p>Make sure the PV array is well insulated to ground before connecting it to the inverter. During the installation of PV strings and the solar inverter, the positive or negative terminals of PV strings may be short-circuited to ground if the power cable is not properly installed or routed. In</p>

	<p>this case, an AC or DC short circuit may occur and damage the solar inverter. The caused device is not covered under any warranty.</p>
 NOTICE	<p>There is a risk of inverter damage! The following requirements should be met. Failure to do so will void guarantee and warranty claims.</p> <ul style="list-style-type: none"> • Make sure the maximum voltage of each string is always less than 1100 V. • The inverter enters the standby state when the input voltage ranges between 1,000V and 1,100V. The inverter returns to the running state once the voltage returns to the MPPT operating voltage range, namely, 200 to 1,000V. <p>Make sure the maximum short circuit current on the DC side is within the permissible range.</p> <ul style="list-style-type: none"> • The polarities of electric connections are correct on the DC input side. The positive and negative terminals of a PV module connect to corresponding positive and negative DC input terminals of the solar inverter.
 CAUTION	<p>Use the connectors delivered with the solar inverter. If the PV connectors are lost or damaged, purchase the connectors of the same model. The device damage caused by incompatible PV connectors is beyond the warranty scope.</p>

4.6.1 Connection Procedure

Step 1: Strip the insulation from each DC cable by 7mm.

Step 2: Assemble the cable ends with the crimping pliers

Step 3: Lead the cable through cable gland, and insert into the insulator until it snaps into place.

Gently pull the cable backward to ensure firm connection. Tighten the cable gland and the insulator (torque 2.5 N.m to 3 N.m).

Step 4: Check for polarity correctness.

The inverter will not function properly if any PV polarity is reversed.

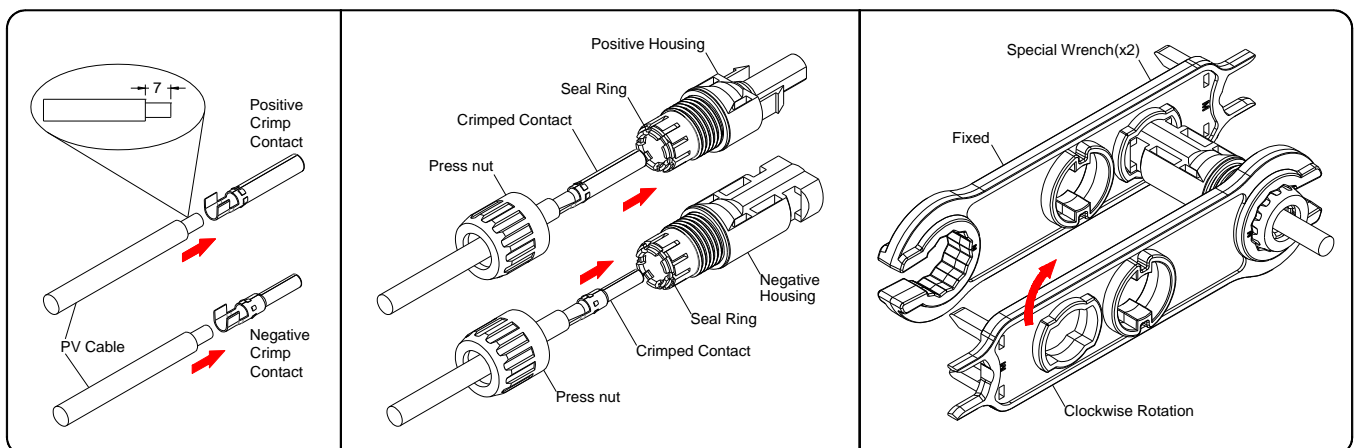


FIG 4-16 DC cable connection

4.6.2 Installing the PV Connectors

step 1: Rotate all the DC switches to "OFF" position.

step 2: Check the cable connection of the PV string for polarity correctness and ensure that the open circuit voltage in any case does not exceed the inverter input limit of 1,100V.

step 3: Connect the PV connectors to corresponding terminals until there is an audible click.

step 4: Follow the foregoing steps to connect PV connectors of other PV strings.

step 5: Seal the unused PV terminals with the terminal caps.

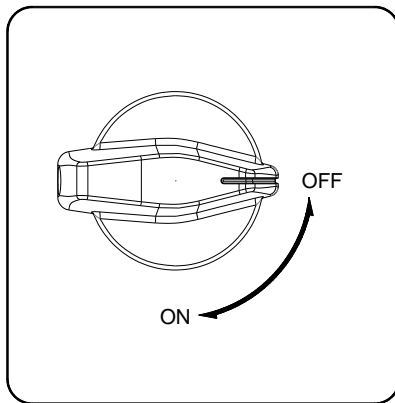


FIG 4-17 DC switch

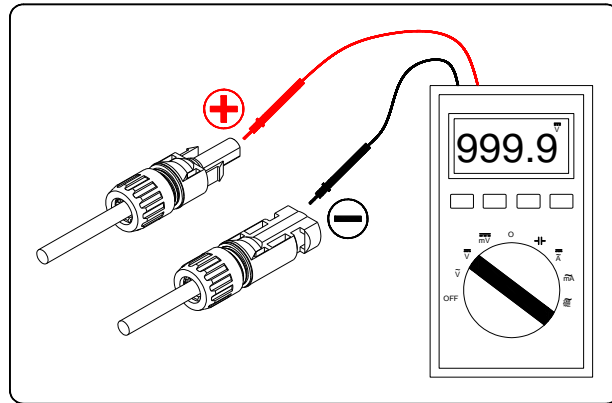


FIG 4-18 Check the polarity of PV string

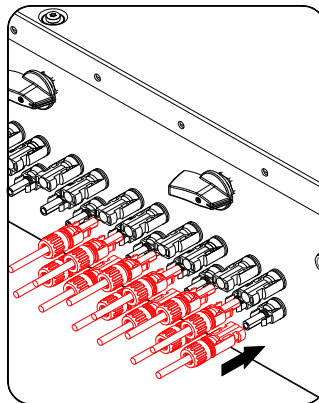


FIG 4-19 Connect the PV connectors to the inverter

5 Commissioning Inverter

5.1 Electrical Inspection

No.	Inspection Items	Result	
		Yes	No
1	The inverter DC switch and external circuit breaker are disconnected		
2	The inverter should be accessible for operation, maintenance and service.		
3	Nothing is left on the top of the inverter.		
4	The inverter is correctly connected to the external devices.		
5	The cables are routed in a safe place or protected against mechanical damage.		
6	The selection of the AC circuit breaker is in accordance with this manual and all applicable local standards.		
7	All unused terminals at the bottom of the inverter are properly sealed.		
8	Warning signs & labels are suitably affixed and durable.		

5.2 Commissioning Procedure

If all of the items mentioned above meet the requirements, proceed as follows to start up the inverter for the first time.

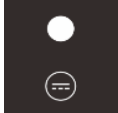
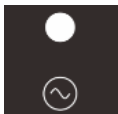


Step 1: Rotate the DC switch of the inverter to "ON" position.

Step 2: Connect the AC switch (if applicable) between the inverter and the grid.

Step 3: Connect the DC switch (if applicable) between the inverter and the PV string.

Step 4: Set initial protection parameters via the CSI Cloud App. If the irradiation and grid conditions meet requirements, the inverter will normally operate.

Step 5: Observe the LED indicator to ensure that the inverter operates normally.

LED indicator	LED state	Definition
 PV connection indicator	Steady green	At least one PV string is properly connected, and the DC input voltage of the corresponding MPPT circuit is at least 200V.
	Off	The solar inverter disconnects from all PV strings, or the DC input voltage of all MPPT circuits is less than 200V.
 Grid connection indicator	Steady green	The solar inverter is in grid-tied mode.
	Blinking green	The solar inverter is in self-test mode or wait mode.
	Off	The solar inverter is not in grid-tied mode.
 Communications/Maintenance indicator	Blinking green	The solar inverter receives communication data normally
	Off	The solar inverter has not receives communication data for 10 seconds.
	Steady green	The solar inverter is in maintenance status
 Alarm indicator	Steady red	A major alarm is generated.
	Blinking red	A minor or warning alarm is generated.
	Off	No alarm

6 CSI CloudPro APP

6.1 APP Introduction

The CSI CloudPro APP can establish communication connection to the inverter via the Blue-tooth, thereby achieving near-end maintenance on the inverter. Users can use the App to view basic information, alarms and events, set parameters, etc.

6.2 Download and Install the App

Method 1: Scan the following QR Code to download and install the App according to the prompt information.



Method 2: Download and install the App through the following application stores:

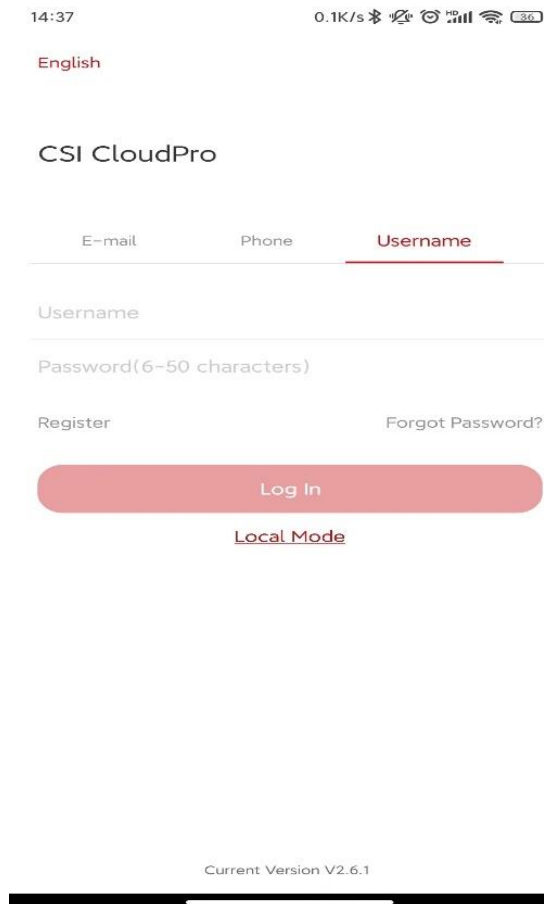
- Google Play(Android)
- APP Store(iOS)

6.3 Use the Local Mode to Login the App

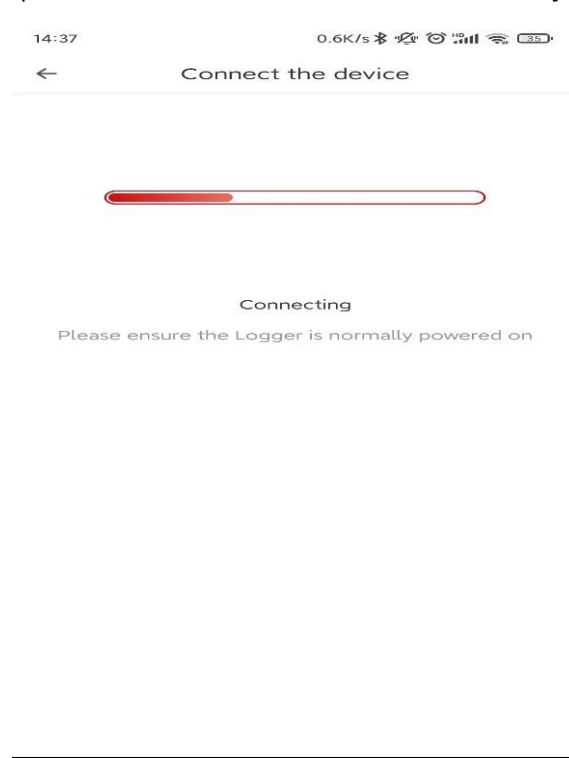
Notice: To use the local mode, the following conditions should be met:

- (1) The collector is connected to the inverter and powered on.
- (2) The distance between the mobile phone and the collector should be within 5m and there is no shelter.

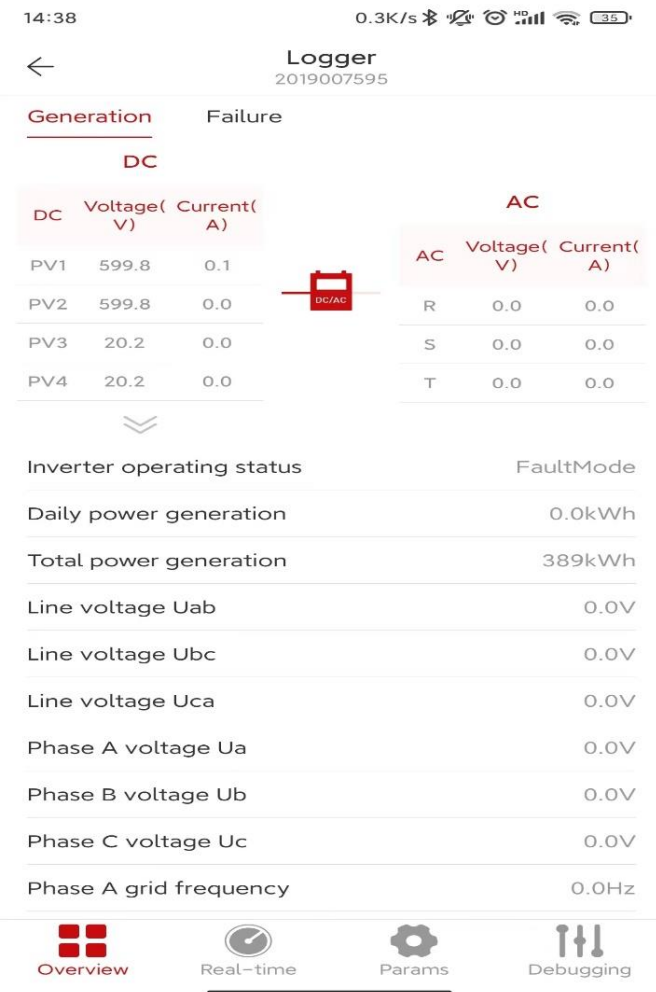
Step 1: Open the CSI CloudPro APP.



Step 2: Select "Local Mode", then scan logger SN. The mobile phone will connect to the collector automatically.



Step 3: After the connection succeeds, users can view the real-time operating data of the inverter.



Logger
2019007595

DC

DC	Voltage(V)	Current(A)
PV1	599.8	0.1
PV2	599.8	0.0
PV3	20.2	0.0
PV4	20.2	0.0

AC

AC	Voltage(V)	Current(A)
R	0.0	0.0
S	0.0	0.0
T	0.0	0.0

Inverter operating status: FaultMode

Daily power generation: 0.0kWh

Total power generation: 389kWh

Line voltage Uab: 0.0V

Line voltage Ubc: 0.0V

Line voltage Uca: 0.0V

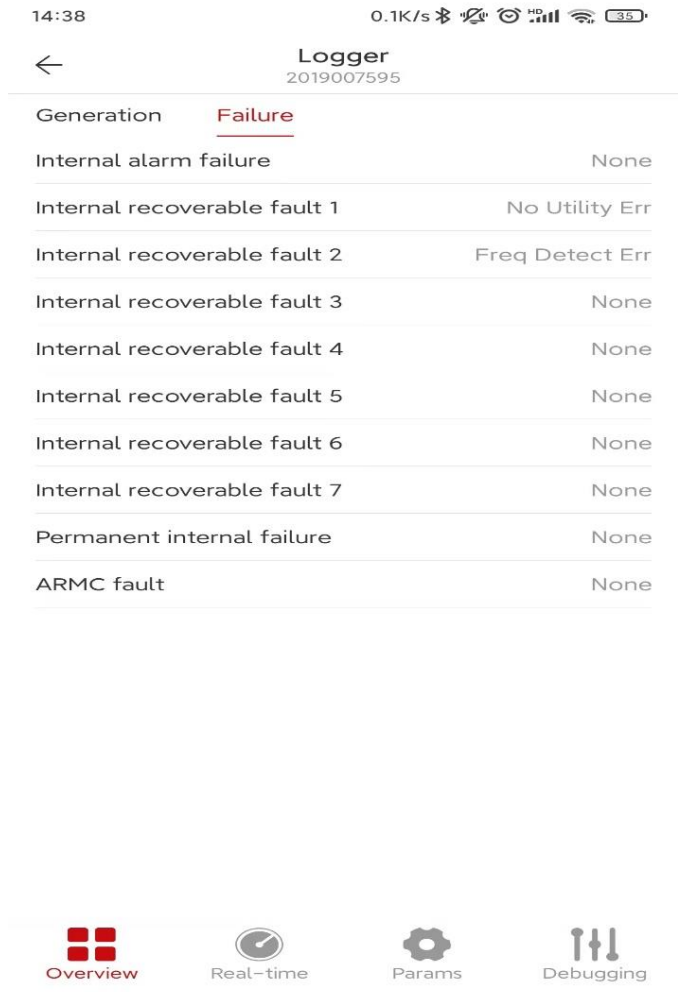
Phase A voltage Ua: 0.0V

Phase B voltage Ub: 0.0V

Phase C voltage Uc: 0.0V

Phase A grid frequency: 0.0Hz

Navigation: Overview, Real-time, Params, Debugging



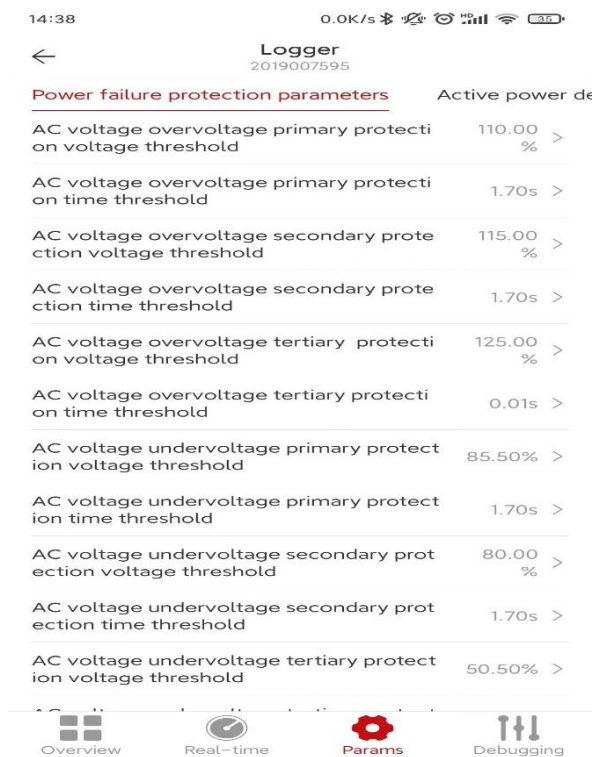
Logger
2019007595

Failure

Internal alarm failure	None
Internal recoverable fault 1	No Utility Err
Internal recoverable fault 2	Freq Detect Err
Internal recoverable fault 3	None
Internal recoverable fault 4	None
Internal recoverable fault 5	None
Internal recoverable fault 6	None
Internal recoverable fault 7	None
Permanent internal failure	None
ARMC fault	None

Navigation: Overview, Real-time, Params, Debugging

Step 4: Select "Params", enter the password 000000 and login the system. Then, users can view and modify parameters

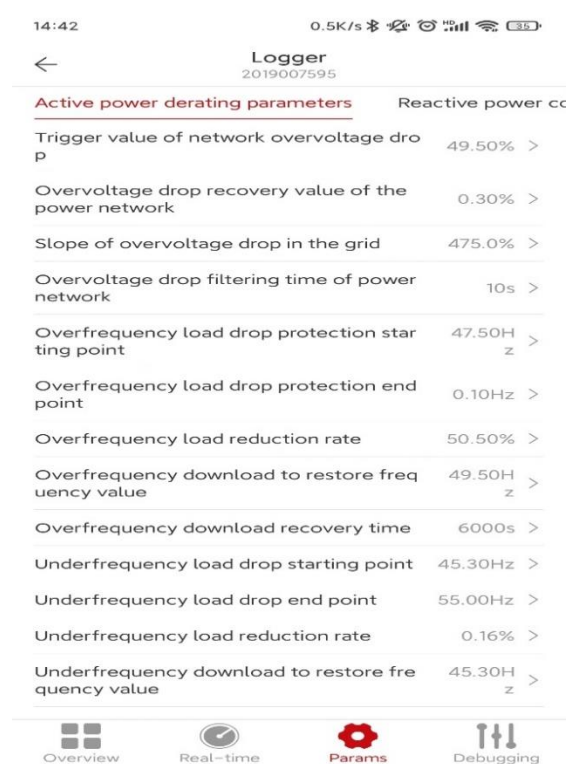


Logger
2019007595

Power failure protection parameters Active power der

AC voltage overvoltage primary protection voltage threshold	110.00 %
AC voltage overvoltage primary protection time threshold	1.70s
AC voltage overvoltage secondary protection voltage threshold	115.00 %
AC voltage overvoltage secondary protection time threshold	1.70s
AC voltage overvoltage tertiary protection voltage threshold	125.00 %
AC voltage overvoltage tertiary protection time threshold	0.01s
AC voltage undervoltage primary protection voltage threshold	85.50%
AC voltage undervoltage primary protection time threshold	1.70s
AC voltage undervoltage secondary protection voltage threshold	80.00 %
AC voltage undervoltage secondary protection time threshold	1.70s
AC voltage undervoltage tertiary protection voltage threshold	50.50%

Navigation: Overview, Real-time, Params, Debugging



Logger
2019007595

Active power derating parameters Reactive power cc

Trigger value of network overvoltage drop	49.50%
Overvoltage drop recovery value of the power network	0.30%
Slope of overvoltage drop in the grid	475.0%
Overvoltage drop filtering time of power network	10s
Overfrequency load drop protection starting point	47.50Hz
Overfrequency load drop protection end point	0.10Hz
Overfrequency load reduction rate	50.50%
Overfrequency download to restore frequency value	49.50Hz
Overfrequency download recovery time	6000s
Underfrequency load drop starting point	45.30Hz
Underfrequency load drop end point	55.00Hz
Underfrequency load reduction rate	0.16%
Underfrequency download to restore frequency value	45.30Hz

Navigation: Overview, Real-time, Params, Debugging

*APP pictures are for reference only.

7 Obtaining User Manual

Please scan the QR code for more detailed information in user manual.

