



COM100A-UEN-Ver60-202103

COM100A

Communication Box

User Manual

SUNGROW

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1 About This Manual

1.1 Intended Use

This manual is intended to provide the reader with detailed information and description of the installation and operation about the following products:

- COM100A

It is referred to as "device" for short unless otherwise specified.

1.2 Target Group

This manual is intended for technically qualified persons who need to install and operate the device.

1.3 How to Use This Manual

Read this manual carefully before performing operation on the device. Keep the manual in a convenient place for future reference.

All rights reserved including the pictures, symbols, and markings used in this manual. Any disclosure, even partially, of the contents of this manual is strictly prohibited without prior written authorization of SUNGROW.

The content of the manual will be periodically updated or revised as per the product development. It is probably that there are changes in manuals for the subsequent module edition. If there any mismatch between the product and its manual, the actual product shall govern.

1.4 Additional Information

For more details about the equipment inside COM100A, please scan the following QR codes.

Device	Related documents
Logger3000	
IO Module	

1.5 Symbol Explanation

This manual contains important safety and operational instructions that must be accurately understood and respected during the installation and maintenance of the device. To ensure the optimum use of this manual, note the following explanations of the symbols used.

DANGER

DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury

CAUTION

CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE indicates a situation which, if not avoided, could result in equipment or property damage.

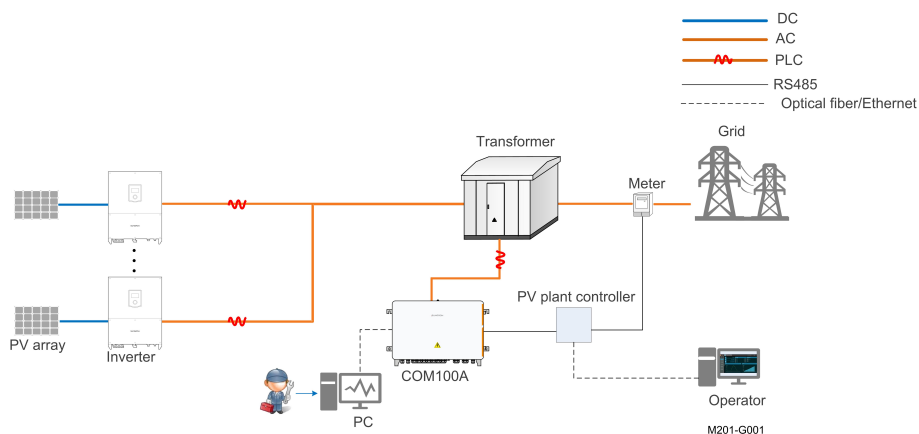


indicates additional information, emphasized contents or tips to help you solve problems or save time.

2 Product Description

2.1 Function Description

The system block diagram is shown in the following figure.



The equipment is a professional product.

Non-professionals are strictly prohibited to install and operate this equipment.

2.2 Main Features

Smart and flexible

- Integrating data collector, support of local intelligent commissioning
- Wall mounting available, flexible installation

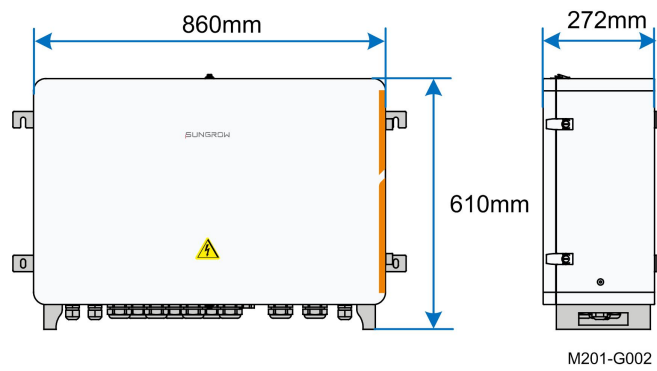
Simple and efficient

- Seamless connection to iSolarCloud, easy management of PV devices
- Built-in PLC communication, communication and management of string inverters developed by SUNGROW without cable routing

Safe and reliable

- Equipped with SPD protection, steady and reliable operation
- Ingress of protection IP65, long-term reliable outdoor operation

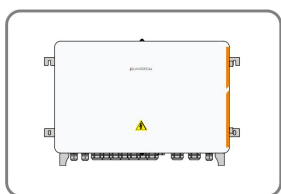
2.3 Dimensions



3 Mechanical Mounting

3.1 Inspection before Installation

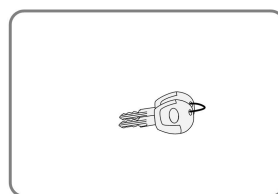
Check the scope of delivery for completeness according to the packing list. The following items should be included:



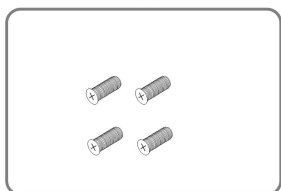
A



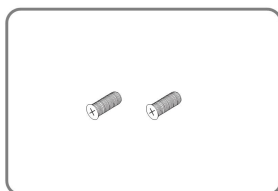
B



C



D



E

M201-1009

Item	Description	Sum
A	COM100A	1
B	Documents, including certificate, warranty card, delivery inspection report, user manual, etc.	1
C	Keys	1
D	M10x45 bolt assembly	4
E	M6x14 bolt	1

NOTICE

The device is carefully tested and inspected before delivery, but damage may be caused during shipping. Therefore, inspect the device before installation. If there any damage, contact the forwarding company or SUNGROW.

3.2 Location Requirements

- With the ingress of protection IP65, COM100A can be installed outdoors.
- Ambient temperature: -30°C to +60°C , and ambient humidity: 5% – 95%。Excessive moisture can damage internal components.

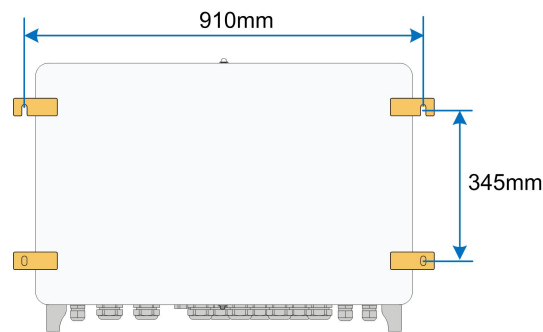
- Take anti-moisture and anti-corrosion measures.

3.3 Installation Method

⚠ WARNING

Beware of the weight of the device throughout the installation process!
Tilting or falling of the device due to inappropriate processing can cause personal injury!

The installation dimensions of mounting ears on the back of the device are shown in the following figure.

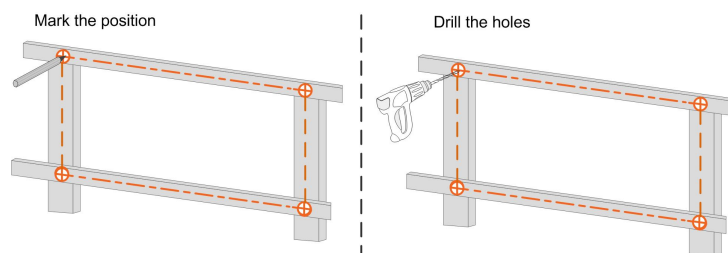


M201-I002

Wall mounting and bracket mounting are both available. Choose the corresponding installation method according to actual needs.

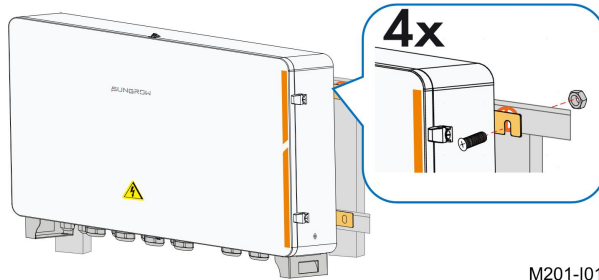
3.3.1 Bracket Mounting

step 1 Mark the hole locations on the mounting brackets according to the installation dimensions of mounting ears and drill holes on the marked locations according to bolt specifications.



M201-I013

step 2 Fasten the device on the brackets in the order of M10x45 bolt, mounting ear, mounting bracket, and nut with a fastening torque of $37 \pm 3\text{N.m}$.



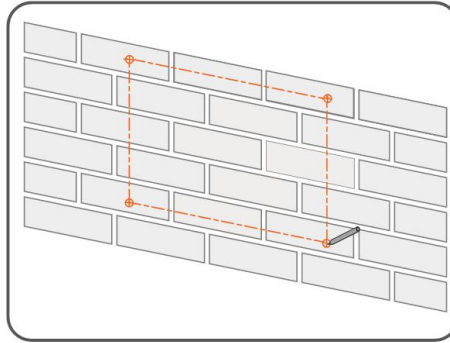
M201-I014

step 3 Check to ensure the device is firmly in place.

-- End

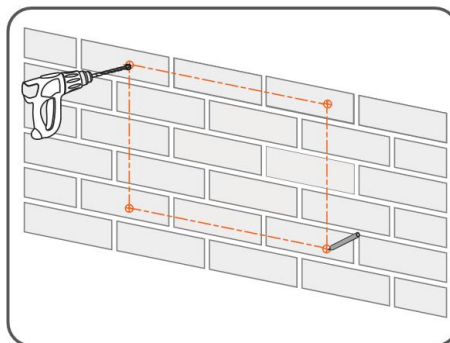
3.3.2 Wall Mounting

step 1 Mark the hole locations on the installation wall according to the foregoing installation dimensions.



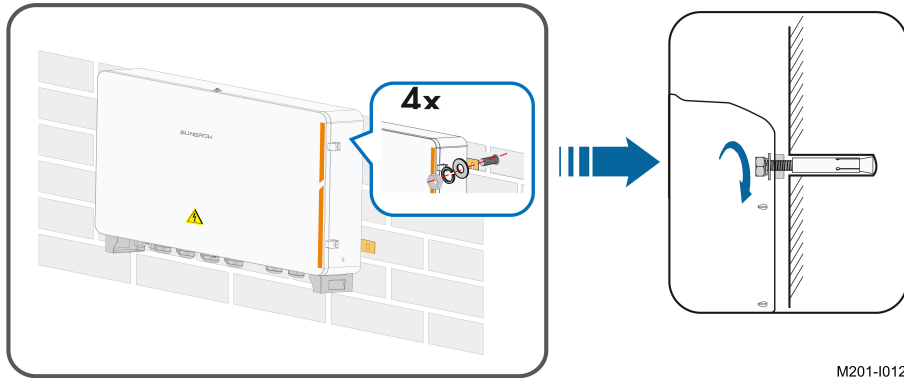
M200-I010

step 2 Drill holes on the marked locations.



M200-I011

step 3 Place the M10x80 expansion sleeve(not included in the scope of delivery) into the hole, and tap it with a rubber hammer. Make it completely embedded in the wall.



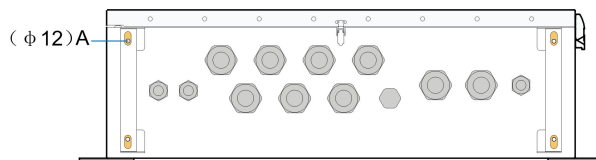
The length of the expansion solenoid should be selected reasonably in accordance with the drilling depth.

step 4 Fasten the device on the wall in the order of nut, lock washer, flat washer, mounting ear, and expansion sleeve with a fastening torque of $37 \pm 3\text{N.m}$.

-- End

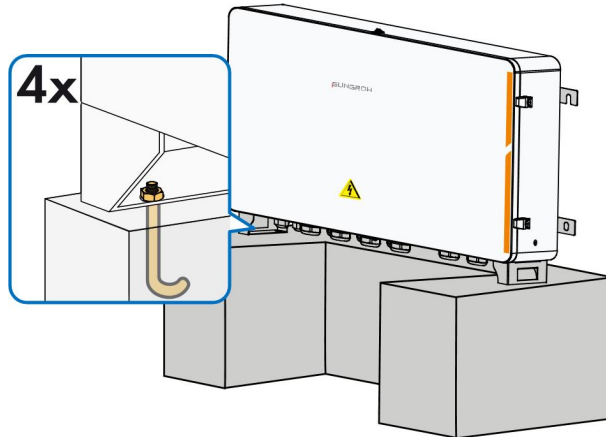
3.3.3 Ground Mounting

For the ground mounting, the device is fixed to the foundation via the installation holes in the bottom of the device (shown in Figure A below).



step 1 Construct the foundation according to the exterior dimensions of the device.

step 2 Pre-embed the foundation bolts in the four corners of the foundation, and the bolts used are M10.



M201-I016

step 3 Secure the installation holes in bottom of the device to the foundation with a fastening torque of $37 \pm 3\text{N.m}$.

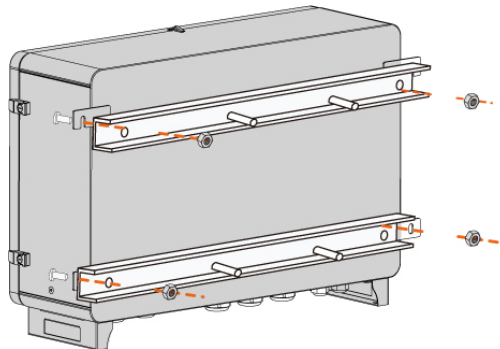
-- End

3.3.4 Pole Mounting (optional)

COM100A supports pole mounting. If necessary, specify your requirements when placing an order. SUNGROW will design according to actual installation conditions.

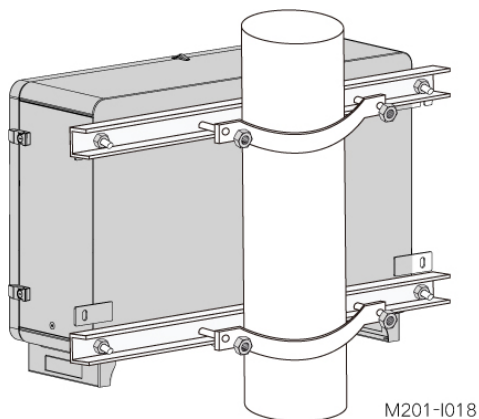
Accessories supplied with COM100A include matching screw combinations, nuts, brackets, clamps, and the like.

step 1 Fasten the mounting ears of COM100A onto the brackets by using the matching screw combinations, as shown in the figure below.



M201-I017

step 2 Fix the brackets and the clamps by using the nuts.

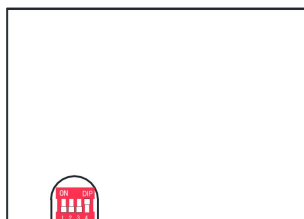


M201-I018

-- End

3.4 Set Communication Address(optional)

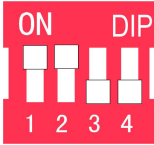
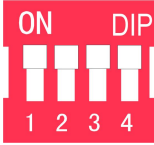
Take out the IO module, find the dip switch on the back, and set the communication address through the dip switch. The setting range of the communication address is from 1 to 15.



M201-I021

The DIP switches are from left to right from low position to high position.

Example of communication address setting	Binary address	Decimal address
	0001	1 ($1 \times 2^0=1$)
	0010	2 ($1 \times 2^1+0 \times 2^0=2$)

Example of communication address setting	Binary address	Decimal address
	0011	3 ($1 \times 2^1 + 1 \times 2^0 = 3$)
⋮	⋮	⋮
	1111	$1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 15$

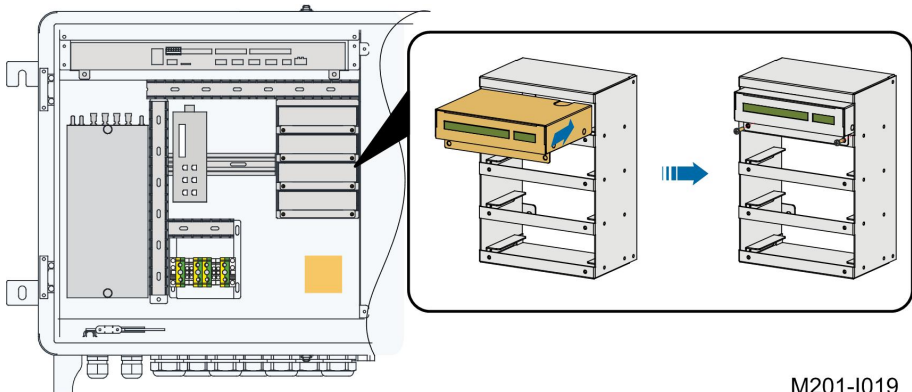
NOTICE

The dip switch addresses on each IO module must be different.

3.5 Installing IO Modules (Optional)

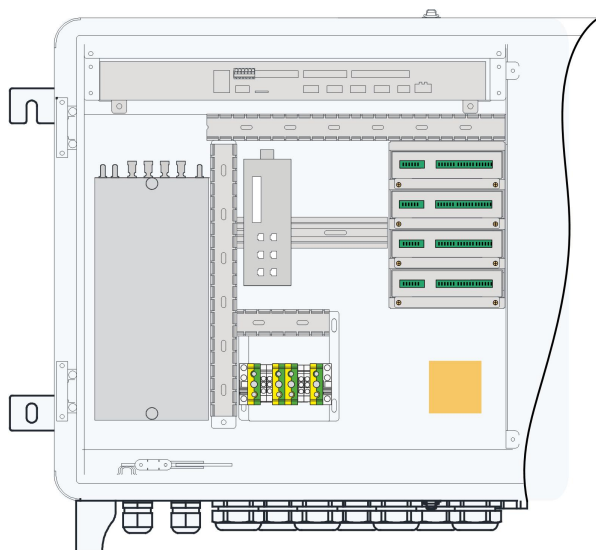
This operation is required if IO modules are ordered.

step 1 Remove the IO modules and M4 screw assembly from the IO module deliverables.



step 2 After inserting the IO modules into the reserved area, tighten them with M4 screw assembly with a tightening torque of 1.2N.m.

step 3 All four IO modules should be installed as shown in the following figure.

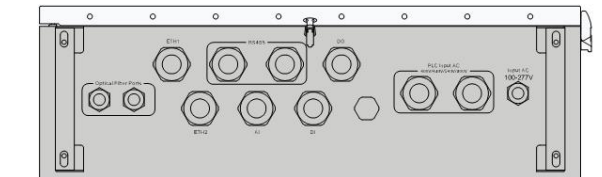


M201-I020


-- End

4 Electrical Connection

4.1 Waterproof Terminal Description

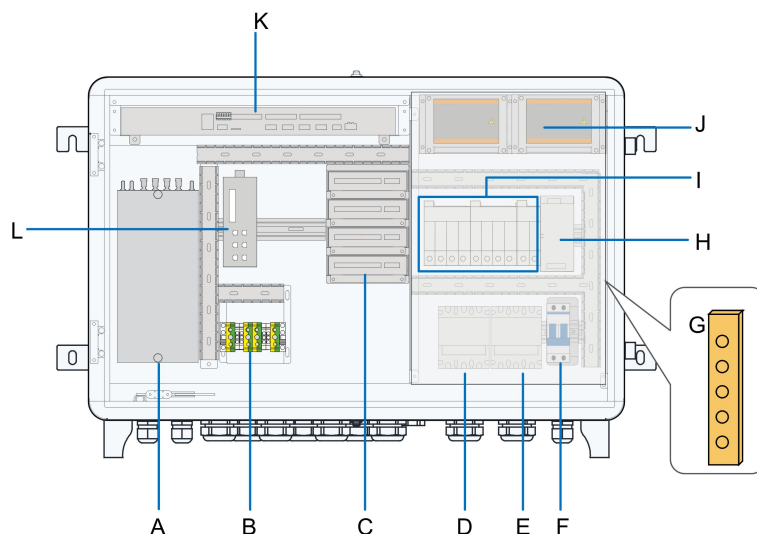


M201-E001

Mark	Description
ETH1	Waterproof terminals for Ethernet communication cables
ETH2	Waterproof terminals for Ethernet communication cables
RS485	Waterproof terminals for RS485 communication cables
AI	Waterproof terminals for analog input cables
DI	Waterproof terminals for dry contact input cables
PLC Input AC400V/480V/540V/800V	Waterproof terminal for PLC communication cables
Input AC100 – 277V	Waterproof terminal for AC 100 – 277V power cables
Optical fiber ports	Waterproof terminals for optical fibers
	Grounding waterproof terminal

4.2 Internal Structure

The internal structure of COM100A is shown in the following figure.



M201-E002

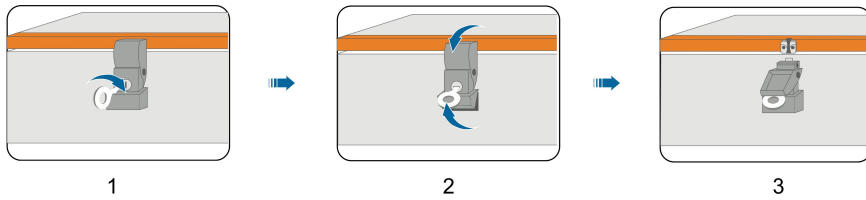
Internal components may differ as per selected product module. For details, refer to the product received.

No.	Description	Recommended Cable Specification	Source
A*	Splice box	—	—
B	RS485 communication terminal	2 x (0.75~1.5) mm ² outdoor ultraviolet protection STP	Beyond the scope of delivery
C*	IO module	0.75mm ²	Beyond the scope of delivery
D	PLC1 terminal	4mm ² ~ 10mm ² or 7 ~ 11AWG are recommended, withstanding voltage: To ground operating voltage ≥ 1,000V	Beyond the scope of delivery
E	PLC2 terminal		
F	220Vac power supply terminal	1~1.5 mm ² or 15~17AWG outdoor ultraviolet protection cable	Beyond the scope of delivery
G	Grounding terminal	4mm ² ~ 10mm ² or 7 ~ 11AWG	Beyond the scope of delivery
H	Surge protective device	—	—
I	PLC module	—	—
J	Logger3000	—	—
K*	Switch	—	—

* is optional.

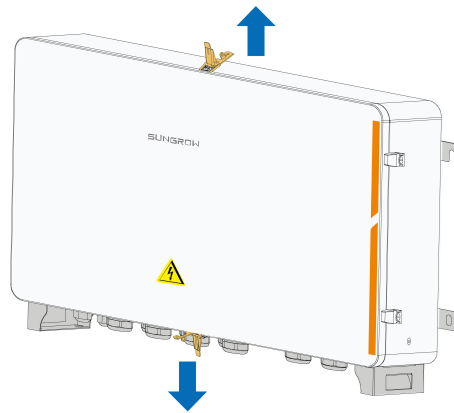
4.3 Preparation Before Connection

step 1 Open the cabinet. Unlock the door with the specific key, as shown in the following figure.



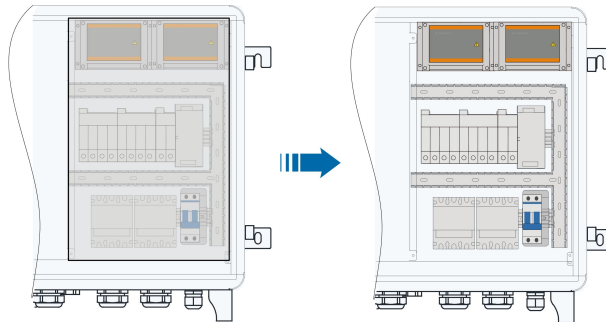
M200-E025

step 2 Unclip the top and bottom clips of the cabinet.



M201-E027

step 3 Remove the protective cover inside the cabinet.



M201-E026

step 4 Disconnect the upstream input switch of the device, and turn the power switch inside the device to the "OFF" position to ensure the device is voltage-free.



M201-E028

step 5 Disconnect the switch of the transformer side.

-- End

4.4 Connection Steps

4.4.1 Grounding

Safety Instructions

⚠ WARNING

The grounding cable must be grounded reliably! Otherwise,

- Lethal electrical shock can be caused when fault occurs!
- The device may be damaged by lightning!

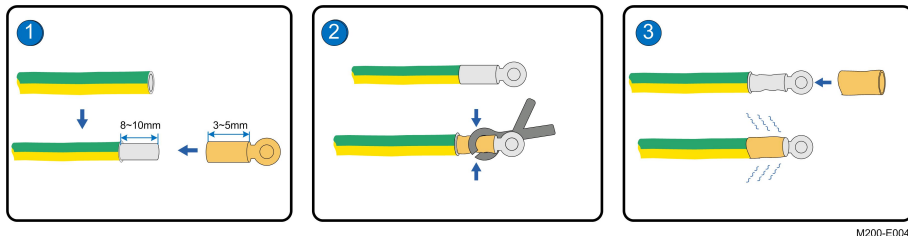
Brief Introduction

The device is designed with two grounding terminals: grounding copper bar inside the cabinet and external PE point.

On site, connect both grounding terminals reliably.

Preparation before Installation

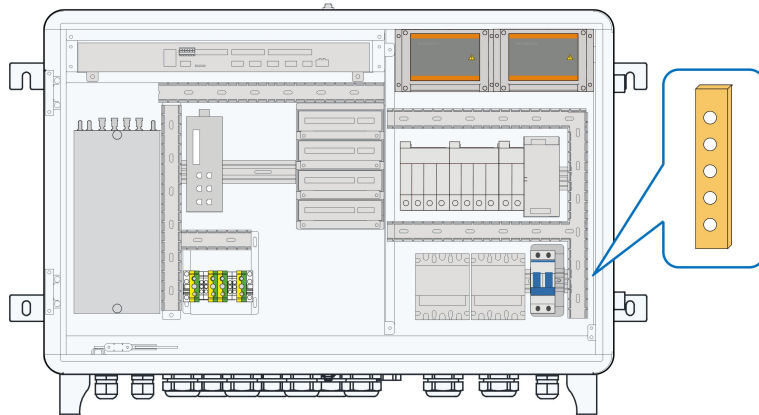
- Prepare the grounding cable.
- Strip the cable and crimp the OT terminal, and then use heat shrink tubing to tighten the cable and the OT terminal.



4.4.1.1 Cooper Bar Grounding


Position Description


The grounding copper bar is located inside the cabinet, as shown in the figure below.

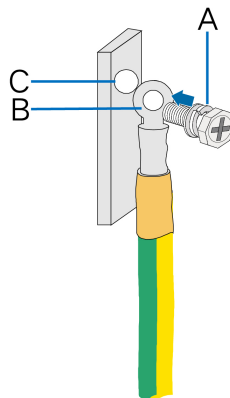


M201-E005

Wiring Steps

step 1 Unscrew the waterproof terminal “” at the bottom of the device.

step 2 Connect the yellow-green grounding cable led from outside to the grounding copper bar inside the device through the internal waterproof terminal “”.



No.	Definition
A	M6x12 bolt(Beyond the scope of delivery)
B	OT terminal
C	Grounding hole

step 3 Secure the cable with M6x12 bolt with a fastening torque of $7.5 \pm 0.5 \text{ N} \cdot \text{m}$.

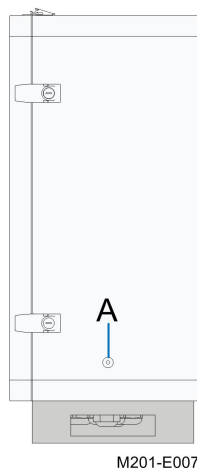
step 4 Screw the waterproof terminal at the bottom of the device.

-- End

4.4.1.2 PE Point Grounding

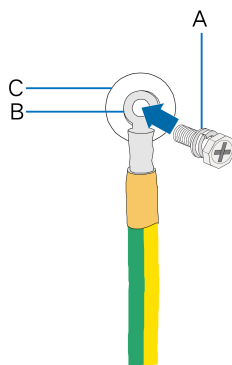
Position Description

The external PE point of the device is shown by A in the figure below.



Wiring Steps

Anchor the prepared OT terminal to the grounding hole with bolt assembly with a fastening torque of $7.5 \pm 0.5 \text{ N} \cdot \text{m}$.



No.	Definition
A	M6 x 14 bolt assembly(included in the scope of delivery)
B	OT terminal
C	Grounding hole

4.4.2 RS485 Communication Terminal Connection

Preparation Before Connection

NOTICE

When the COM100A is connected to external devices by RS485, make sure that the external devices are protected against lightning.

Cable Requirements

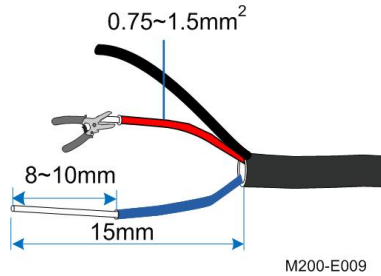
Cables connected to the device must be $2 \times (0.75 \sim 1.5) \text{ mm}^2$ in cross-sectional area.

Wiring Steps

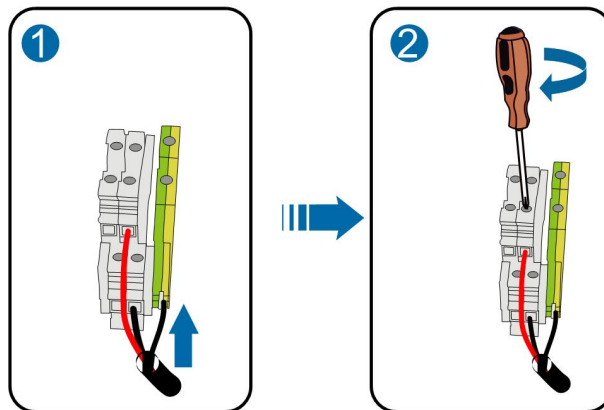
step 1 Unscrew the "RS485" waterproof terminal at the bottom of the device.

step 2 Connect the RS485 cable led from outside to the communication terminal inside the device through the "RS485" waterproof terminal.

step 3 Strip the cable jacket with a wire stripper.



step 4 Connect the cable to the corresponding terminal, and secure it with a screwdriver with a fastening torque between $0.5\text{N} \cdot \text{m}$ and $0.6\text{N} \cdot \text{m}$.



Mark	Definition
A	Connected to RS485 – A, corresponding to upper-layer terminal
B	Connected to RS485 – B, corresponding to lower-layer terminal
GND	Connected to RS485 cable shield

step 5 Gently pull the cable backwards to ensure firm connection.

step 6 Screw the "RS485" waterproof terminal at the bottom of the device.

-- End

4.4.3 Optical Fibre (Optional)

Preparation before Installation

Before installation, prepare the required components. Components listed below are for reference only, and the actual situation may differ.

No.	Component
1	Pigtail: single-mode ST
2	Jumper: Single-mode single-core ST-SC, 500mm
3	ST flange
4	Network cable, 460mm

Installation Steps

step 1 Unscrew the waterproof terminal "Optical fiber ports", and lead the optical fibre through the terminal.

step 2 Splice the optical fibre inside the splice box.



For details, contact SUNGROW.

step 3 Screw the waterproof terminal "Optical fiber ports".

-- End

4.4.4 100ac – 277Vac Power Supply Connection

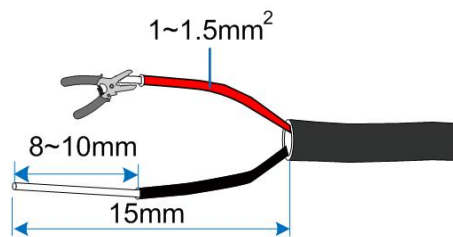
Preparation before Installation

- Before wiring power supply, ensure that the micro circuit breaker is in the OFF position.
- Prepare the AC cable.

Installation Steps

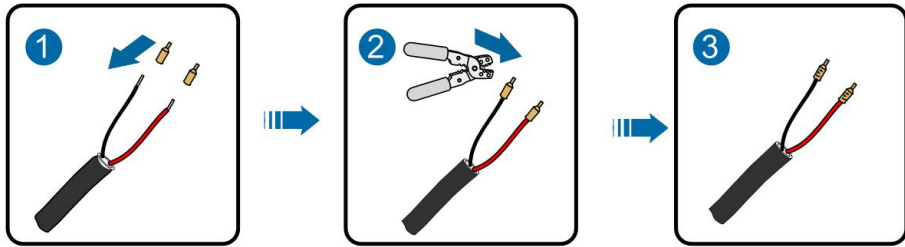
step 1 Unscrew the waterproof terminal "Input AC 100 – 277", and lead the external power supply cable through the terminal.

step 2 Strip the cable with a wire stripper.



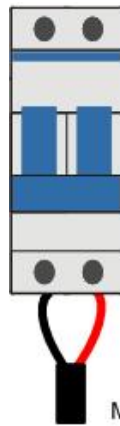
M200-E011

step 3 Crimp the cord end terminal.



M200-E012

step 4 Connect the cord end terminal to the corresponding terminal, and secure it with a screw with a fastening torque of $2.0\text{N} \cdot \text{m}$.



M201-E013

step 5 Screw the waterproof terminal “Input AC 100 – 277” .

-- End

4.4.5 PLC Port Connection

Wiring Diagram

The device can be connected to a double-split transformer or a double-winding transformer, as shown in the figures below.

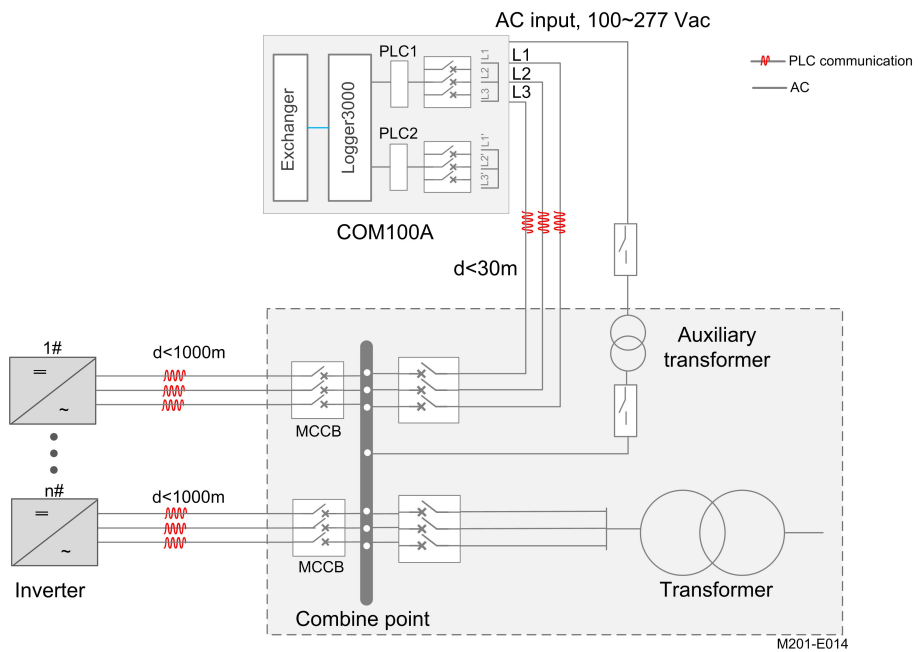


figure 4-1 Connection to double-winding transformer

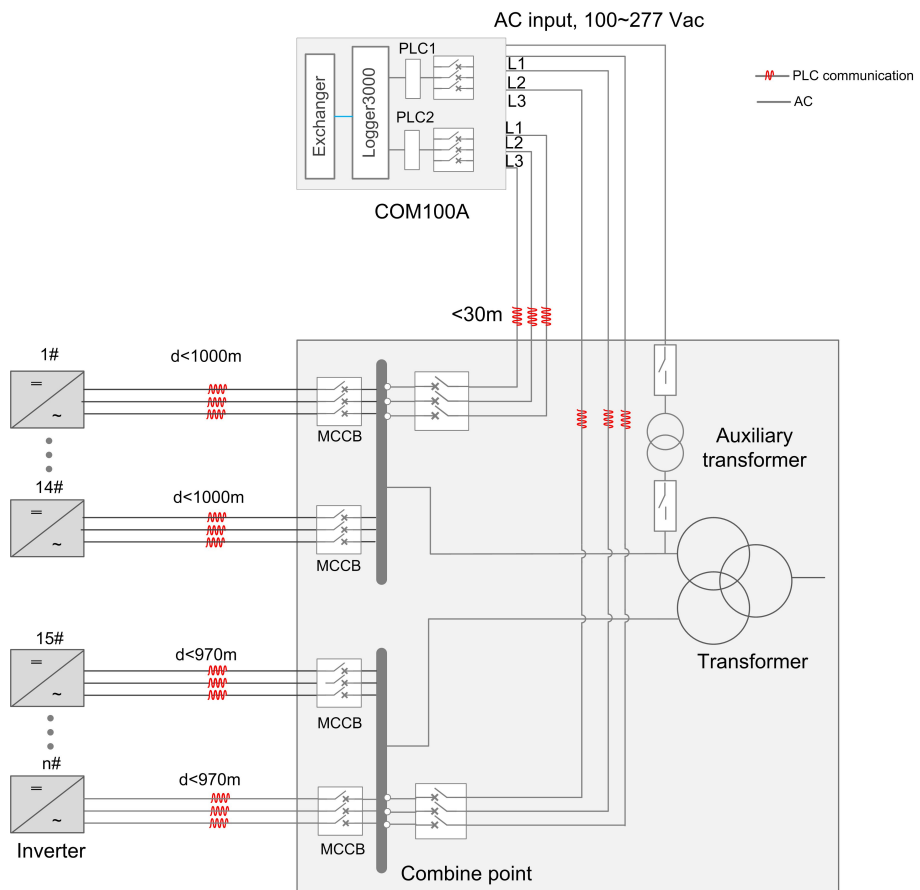


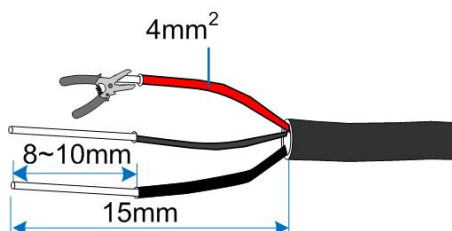
figure 4-2 Connection to double-split transformer

Preparation before Installation

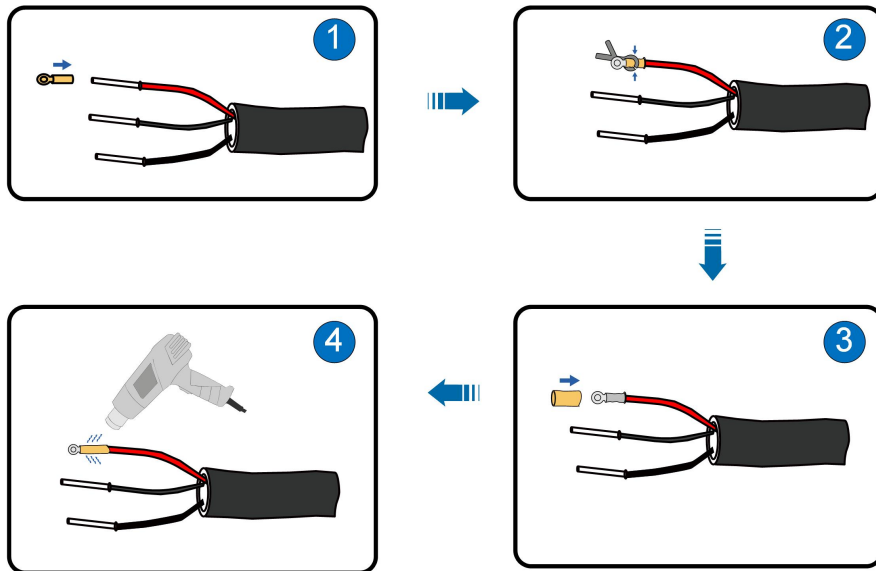
Before wiring, ensure that upstream AC switches and circuit breakers inside the device are all disconnected.

Installation Steps

- step 1** Unscrew the waterproof terminal "Input AC 400V/480V/540V/800V" at the bottom of the device, and lead external AC cable through the terminal.
- step 2** Strip the cable jacket with a wire stripper to reveal the copper core as shown in the figure below.



step 3 Crimp the OT terminal, whose specification is recommended to be OT2.5-6.



M201-E017

step 4 Connect the cable to the corresponding terminal.

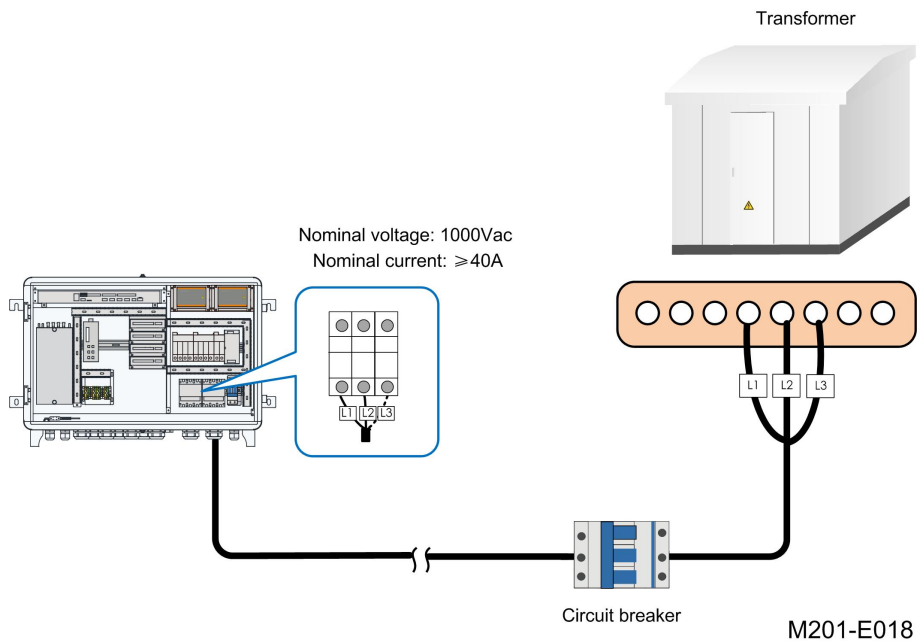


figure 4-3 Three-phase three-wire connection

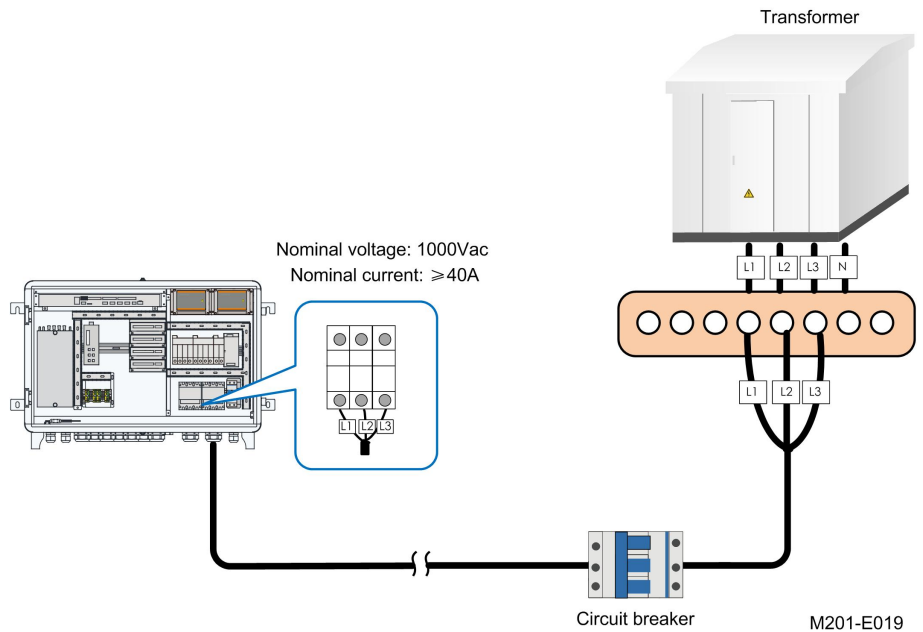


figure 4-4 Three-phase four-wire connection



The parameters of the transformer side circuit breaker need to be selected in combination with the short-circuit current of the transformer.



When wiring, be sure to pay attention to the phase sequence of cables and terminals.

step 5 Check the cable for correct connection, and then secure it with a screw with a fastening torque of $5.5\text{N} \cdot \text{m}$.

-- End

4.4.6 DI/DO Port Connection

If the model purchased is not equipped with IO modules, the DI/DO port asks for a direct data collector. For the specific wiring method, refer to Logger3000 User Manual.

If the model purchased is equipped with IO modules, the DI/DO port should be connected to IO modules. For the specific wiring method, refer to IO Module Quick User Manual.

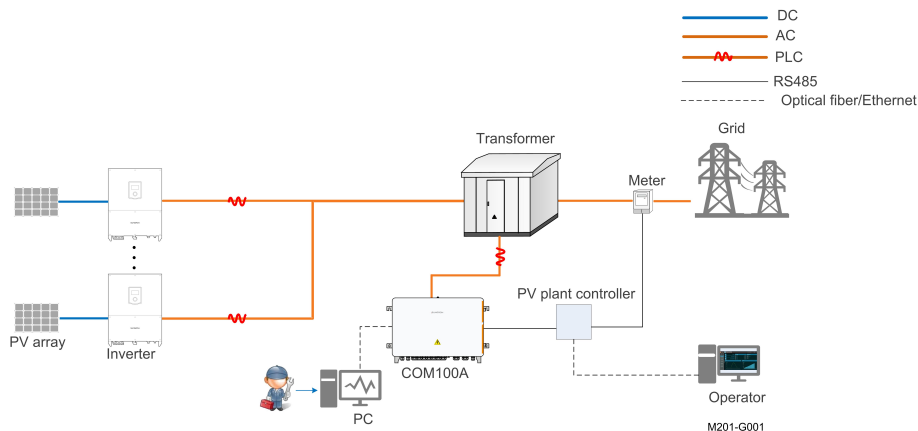
4.5 Post-wiring Processing

Gently pull the cable backwards to ensure firm connection when finish wiring.
Restore the protective cover inside the cabinet.

4.6 Communication Methods

The COM100A can collect the operating data of the inverter, transformer and other equipment in the system and upload it to the remote monitoring system.

Via the remote monitoring system, users can access the WEB interface to view operation information and set parameters.



5 Commissioning

5.1 Inspection before Commissioning

No.	Inspection item
1	All cables are connected correctly and firmly.
2	The phase sequence of all cables is correct.
3	The internal and external grounding points of the device are reliably grounded.

5.2 Commissioning Steps

Commissioning Steps

Item	Description
1	Connect the internal fuse of COM100A.
2	Connect the control switch of AC power supply.
3	Check whether the switch and 24V switch-mode power supply operate normally.
4	Observe running indicators of Logger3000. If the PWR indicator keeps steady on, and the RUN indicator flickers once every second, the device operates normally.
5	Connect the transformer-side circuit breaker.

Configure Logger3000 through WEB Interface

Item	Description
1	Connect PC to the Ethernet port of the switch inside COM100A by using a network cable. IP of the Ethernet port is 13.13.13.13 by default.
2	Set IP of the PC, which should be in the same network segment as that of the ETH2 port of the Logger3000. For example, it can be set to 13.13.13.x (x ranges between 1 and 255, except 13), and the subnet mask can be set to 255.255.255.0.
3	Enter the IP of the Logger3000, such as 13.13.13.13, in the PC address bar, to enter the corresponding Web interface.
4	Configure serial port parameters.
5	Add devices.
6	Configure device IP.

Item	Description
	Configure iSolarCloud address if inverter data needs to be uploaded to iSolarCloud.
7	<ul style="list-style-type: none"> • Accessed iSolarCloud site is "Chinese Server" by default. • In mainland Chain, set the site to "Chinese Server"; • In Europe, set the site to "European Server". • In other regions, set the site to "International Server".
8	Access the Web interface of Logger3000 and check whether the running data of string inverters manufactured by SUNGROW is normal.
9	Create power plants through iSolarCloud App, and check whether the data displayed on iSolarCloud is normal.

Additional Description

To create power plant through iSolarCloud App, download and install the App and then proceed as follows:

- 1 Log into the Web interface of Logger3000 and click "About", to obtain the QR code.



- 2 Scan the QR code with the App or manually input the S/N to add communication device.

For more details, refer to Logger3000 User Manual, which can be obtained by scanning the foregoing QR code.

6 Troubleshooting

Fault	Possible Cause	Corrective Measures
According to the back-ground monitoring device, some devices in the PV array are abnormally disconnected.	1. RS485 cable is abnormal.	1. Measure the voltage between RS485 – A and RS485 – B with a multimeter, and check whether the voltage is about 5V.
	2. There are repeated device addresses in the PV array.	2. Check whether there are repeated device addresses.
	3. Parameters of Logger3000 are incorrectly configured.	3. Check, through the WEB interface “ System ” -> “ Port Paramter ” -> “ RS485 ”, whether the PLC access is enabled.
	4. Master and slave node modules of the PLC are abnormal.	4. Check whether the indicator D12 keeps steady red while the indicator D8 flickers green. If not, the modules are abnormal.
	5. Other causes	If the fault persists, please contact SUNGROW.
According to the back-ground monitoring device, some devices in the PV array are unstably connected.	1. There are repeated device addresses in the PV array.	1. Check whether there are repeated device addresses.
	2. Parameters of Logger3000 are incorrectly configured.	2. Check, through the WEB interface “ System ” -> “ Port Paramter ” -> “ RS485 ”, whether the PLC access is enabled.
	3. Other causes	If the fault persists, please contact SUNGROW.

7 Appendix A: Technical Parameters

Configuration	
Logger	Logger3000
Fibre channel switch (Optional)	2 optical ports, 6 electrical ports
Splice box (Optional)	4-input, 24-output, SC single-mode
Power supply	100 – 277 Vac, 50/60 Hz
PLC port input voltage	400Vac/480Vac/540Vac/800Vac
PLC power supply voltage	Master node of PLC module: 24 Vdc
Power consumption	<ul style="list-style-type: none"> Average power consumption: 30W Max. power consumption: 60W
Ambient parameters	
Operating temperature	- 30°C - +60°C
Storage temperature	- 40°C - +70°C
Operating humidity	5% – 95%, non-condensing
Operating altitude	≤4000m
Protection degree	IP65
Mechanical parameters	
Dimensions (W x H x D)	860mm x 610mm x 272mm
Weight	32kg
Installation method	Wall mounting, bracket mounting, ground mounting, and pole mounting
Cable in and out mode	Bottom in, bottom out

8 Appendix B: General Information

8.1 Quality Assurance

When product faults occur during the warranty period, SUNGROW will provide free service or replace the product with a new one.

Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, SUNGROW has the right to refuse to honor the quality guarantee.

Conditions

- After replacement, unqualified products shall be processed by SUNGROW.
- The customer shall give SUNGROW a reasonable period to repair the faulty device.

Exclusion of Liability

In the following circumstances, SUNGROW has the right to refuse to honor the quality guarantee:

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in harsh conditions beyond those described in this manual.
- The fault or damage is caused by installation, repairs, modification, or disassembly performed by a service provider or personnel not from SUNGROW.
- The fault or damage is caused by the use of non-standard or non-SUNGROW components or software.
- The installation and use range are beyond stipulations of relevant international standards.
- The damage is caused by unexpected natural factors.

For faulty products in any of above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of SUNGROW.

8.2 Contact Information

Should you have any question about this product, please contact us.

We need the following information to provide you the best assistance:

- Model of the device

- Serial number of the device
- Fault code/name
- Brief description of the problem

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