

Logger3000

Data Logger

User Manual



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About this Manual

1.1 Validity

This manual is valid for the following data loggers:

• Logger3000

1.2 Target Group

This manual is applicable to technical personnel who are responsible for the installation, operation and maintenance of the Logger3000 and to users who need to perform daily operation. Readers should have the following qualifications:

- Have some knowledge of electrical and electric cabling and mechanical knowledge; and be familiar with electrical and mechanical diagrams.
- Be familiar with the PV grid-connected power generation system and its working principle.
- Have received professional training in installing and commissioning of the electrical devices.
- Be capable of handling the danger or emergency that may occur during installation or commissioning.
- Be familiar with the national/local standards and regulations.
- · Be familiar with the description in this manual.

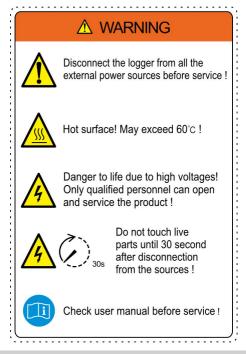
Only personnel meeting the foregoing requirements can conduct installation, maintenance, and troubleshooting. Unauthorized personnel is prohibited to perform any operation on the device.

1.3 Symbol Explanations

Warning Label

Warning label on enclosure of the Logger3000 is as follows:

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Symbols Explanation



Disconnect the Logger3000 from all the external power sources before service!



Hot surface! Do not touch!



Risk of electric shock! If not avoided, lethal hazard can be caused.



Do not touch live parts until 30second after disconnection from the sources!



Check user manual before service!

Symbols

This manual contains important safety and operational instructions that must be accurately understood and respected during the installation and maintenance of the equipment.

To ensure the optimum use of this manual, note the following explanations of the symbols used.

A DANGER

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

User Manual 1 About this Manual

▲ WARNING

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

A 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.



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

1.4 How to Use This Manual

Read this manual carefully before performing operation on the device. This manual must be stored at hand and available at all times.

All rights reserved including the pictures, symbols, and markings used in this manual. Any reproduction or 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 prevail and the manual of the latest version can be obtained from SUNGROW.

2 Safety Instructions

This chapter mainly introduces safety instructions that need to be respected during the operation of Logger3000.

The Logger3000 has been designed and tested strictly according to international safety regulations. As electrical and electronic equipment, the Logger3000 must be installed, commissioned, operated, and maintained in strict accordance with related safety instructions. Incorrect operation or misuse of the device may cause:

- · damage to personnel safety of the operators or the third party
- damage to the Logger3000 or other properties belong to the operators or the third party

Therefore, the following safety instructions must be read and always kept in mind prior to any work. All detailed work-related safety warnings and notes will be specified at the critical points in corresponding chapter.

M WARNING

All operations and electrical work must only be performed by qualified personnel.

Before Installation

NOTICE

After receiving the device, please check if there is damage caused during transport. Contact SUNGROW or the forwarding company once any problem is found.

The related operators must be familiar with the safety instructions in this manual and other safety regulations about the installation, operation and maintenance of the Logger3000.

Move, transport, install, operate, and maintain the Logger3000 correctly and appropriately.

During Installation

NOTICE

The Logger3000 can only be used as described in this manual. Altering the product without authorization or using spare parts not sold or recommended by SUNGROW may lead to fire, electric shock or other damages.

User Manual 2 Safety Instructions

NOTICE

Disconnect all electrical connections and the upstream input switch and make sure the Logger3000 is voltage-free during installation.

Maintenance and Replacement

MARNING

The maintenance of the Logger3000 can only be performed by qualified personnel from SUNGROW or other qualified personnel.

User can never maintain or replace the modules and other parts. Serious personal injury or property loss may follow if otherwise.

NOTICE

Never replace the internal components of the Logger3000 without authorization. SUNGROW shall not be held liable for any possible damage caused by ignorance of this warning.



3 Product Introduction

3.1 Function Description

The Logger3000 is equipped with the following functions:

Support of Device Connection

The Logger3000 can be connected to devices in the PV system via an RS485 bus, and it can be also connected to SUNGROW string inverter equipped with the PLC communication function through the PLC cable. The Logger3000 can store and process device information as well as convert data communication protocol.

Management of Communication Device

The Logger3000 can centrally manage devices connected to it, including parameter setting, firmware upgrade, etc, which makes onsite maintenance more convenient.

Configuration through WEB Interface

Users can set system time, network, serial port, etc. and maintain the protocol point table through the embedded WEB interface of the Logger3000.

Data Forwarding Service

The Logger3000 can forward collected data to cloud platform, for example, iSolarCloud.

Protocol Conversion Service

The Logger3000 provides protocol conversion service, including converting ModbusRTU into IEC104, MQTT, etc.

Grid Dispatching

The Logger3000 can receive and execute dispatching instructions from the grid, including remote IEC104 instructions, remote dispatching from Japan utility power company, and AI/DI dispatching control instructions.

The Logger3000 can perform active power control and reactive power regulation on the inverter connected to it.

Local Dispatching

The Logger3000 can receive and execute local dispatching instructions, including delivering fixed value, energy meter closed-loop dispatching, etc.

I-V Curve Scanning

The Logger3000 can perform I-V curve scanning on SUNGROW inverter, and users can view scanning result via iSolarCloud or Insight. For detailed description of the I-V curve scanning, refer to the manual of iSolarCloud or Insight.



User Manual 3 Product Introduction

3.2 Application scenario

The Logger3000 is connected to the inverter, transformer, Meteo Station, and energy meter in the PV system via RS485 bus, or it can be connected to SUNGROW string inverter equipped with PLC communication function through PLC (power line carrier communication) bus.

The Logger3000 sends the collected data to Insight or a third-party server via a core switch, and then the background sends the data to iSolarCloud through a router.

Connection through Sore Switch

The following figures shows how the Logger3000 is connected to the Insight or iSolarCloud through a core switch.

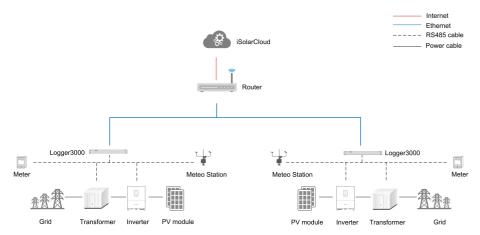


figure 3-1 Ring networking

3 Product Introduction User Manual

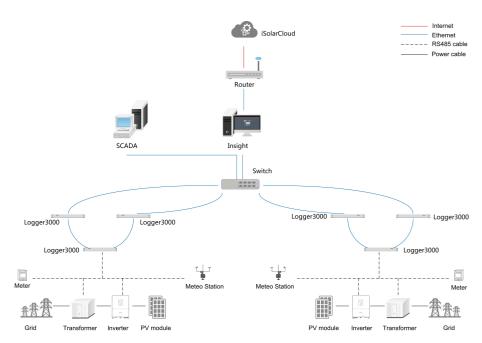
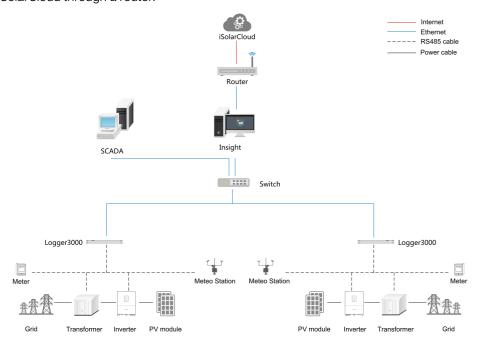


figure 3-2 Star networking

User Manual 3 Product Introduction

Connection through Router

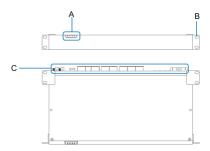
As shown in the figure below, the Logger3000 can be directly connected to the iSolarCloud through a router.



3.3 Appearance

3.3.1 Appearance

Appearance of the Logger3000 is shown in the following figure.



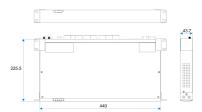
No.	Description
Α	Indicator
В	Mounting ear
С	Wiring terminal

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Indicator

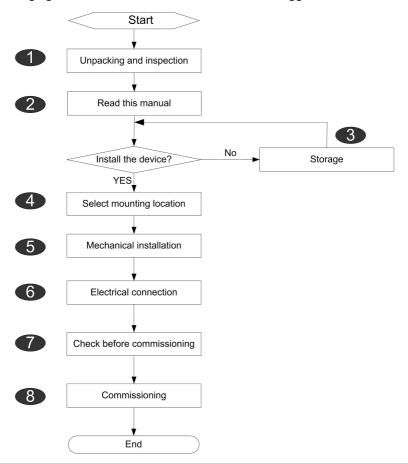
Indica-	Name	Description	
tor			
PWR	Power	On: power supply is normal; Off: power supply is	
	indicator	abnormal	
RUN	Running	Flashing: running is normal; Off: running is abnormal	
	indicator		
BLE	Bluetooth	Reserved	
	indicator		
FAULT	Fault indicator	On: fault occurs in connected inverter; Off: connected	
		inverter is free of fault	

3.3.2 Dimensions



4 Installation Flow

The following figure shows the overall installation flow of Logger3000.



No.	Procedure	Reference chapter
1	Unpacking and inspection	"5.1 Scope of Delivery"
2	Read the user manual, especially "Safety Instructions"	"2 Safety Instructions"
3	Store the Logger3000 properly if it is not to be installed immediately	"5.4 Storage"
4	Installation location selection	"6.1 Location Selection"
5	Mechanical installation	"6 Mechanical Installation"
6	Electrical installation	"7 Electrical Connection"

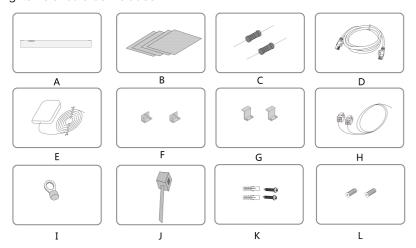
4 Installation Flow User Manual

No.	Procedure	Reference chapter
7	Check before commissioning	"8.1 Inspection before Commissioning"
8	Commissioning	"8.2 Commissioning Steps"

5 Unpacking and Storage

5.1 Scope of Delivery

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



No.	Name	Description
Α	Logger3000	-
В	Documents	Quick User Manual, quality certificate, packing list, product test report, and warranty card
С	Communication terminal resistor	(Note: if there are more than 15 devices connected on the RS485 bus, it is recommended to connect a 120Ω terminal resistor in parallel on the A and B lines at the head or tail end of the bus)
D	Ethernet cable	1x2m
Е	GPS antenna	Optional
F	Mounting ear	2
G	Bottom supporter	2
Н	PLC cable	2 x1m
1	OT terminal	RNBL5-4
J	Nylon cable tie	Used to tie cables

No.	Name	Description
K	Tapping screw assembly	8, including ST4.8x19 expansion bolts and tapping screws, used for wall-mounted installation
L	Fastener assembly	6, M4x8 cross recessed countersunk head screws, used to anchor the mounting ears to the Logger3000

5.2 Identifying the Logger3000

The type and key technical parameters of the Logger3000 can be found on the nameplate. The nameplate is attached to the upper right corner of the Logger3000, shown by A in the figure below.



M WARNING

The nameplate contains important parameters. Ensure it is intact and clearly legible.

5.3 Checking upon Receiving

The Logger3000 is thoroughly inspected and packed before delivery, but damage may be still caused during transport. Check the following items carefully once receiving the Logger3000.

- Check the scope of delivery for completeness according to "5.1 Scope of Delivery".
- Ensure that the device type is correct.
- Check the device thoroughly and ensure there are no visible damages.

If there are any problems, contact SUNGROW or the forwarding company.

M WARNING

Only undamaged Logger3000 can be installed and commissioned. Before installation, ensure that:

- The Logger3000 is intact without any damages.
- Related documents, such as quick user manual, are enclosed.

5.4 Storage

If the Logger3000 is not to be installed immediately after receiving, observe the following requirements to store it properly:

- The Logger3000 should be store in its original packing case and placed in a well-ventilated, dry, and tidy room.
- The storage carrier should be suitable for the weight of the Logger3000.
- The storage environment should be well ventilated, dry, and without any accumulated water.
- Ambient temperature: -40°C to +85°C; relative humidity: 0~95%, no condensation.
- Take precautions to protect the device against damage due to harsh environment such as shock cooling, shock heating, and collision.
- Regularly inspect the Logger3000, usually at least once a week. Check the packing case for intactness and replace it immediately when necessary.
- Unpack and check the Logger3000 in powered on state if it has been stored more than half a year.

▲ WARNING

- · The Logger3000 must be packed during storage!
- Never store the Logger3000 outdoors or in a place directly exposed to!
- · No tilting or stacking!



After long-time storage, thoroughly check the Logger3000 and ensure it is undamaged before installation. If necessary, install the Logger3000 only after it has been tested by qualified personnel.

6 Mechanical Installation

6.1 Location Selection

This section is intended to guide the user in selecting an appropriate installation location.

Installation Location Requirements

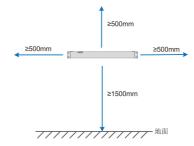
- With the ingress of protection IP 20, the Logger3000 can be installed only indoors.
- Ambient temperature range: -30°C to +60°C. The relative humidity should not exceed 95%. If otherwise, the internal components will be damaged.
- The installation environment should be free of inflammable, explosive, and corrosive materials.

Requirement for Installation Clearance

Reserve enough clearances around the Logger3000.

Before installation, make sure the wiring terminals are at the bottom of the Logger3000 to prevent the dust or particles in the air penetrating into the device, impairing the service life.

The installation location should be 1,500mm above the ground surface. Clearances of at least 500mm should be reserved around the Logger3000 for ease of maintenance. The follow figure shows the requirement for minimum clearances.



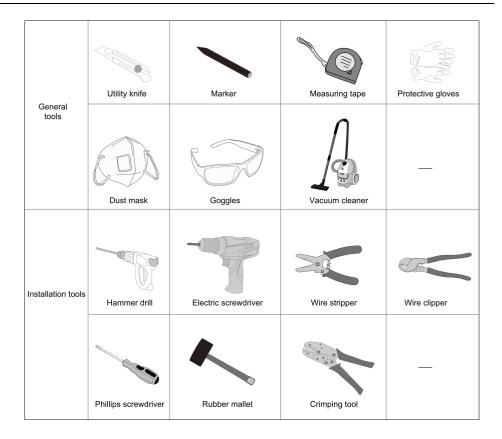
NOTICE

When there are external devices (such as Meteo Station) connected to the Logger3000, users should install corresponding communication SPD according to onsite conditions.

6.2 Installation Tools

Installation tools include but are not limited to the following recommended ones. If necessary, use other auxiliary tools on site.

User Manual 6 Mechanical Installation



6.3 Installing Logger3000

The Logger3000 can be installed anywhere in the room meeting the installation environment requirements. Wall-mounted installation and rack-mounted installation are supported.

6.3.1 Wall-Mounted Installation

A DANGER

Avoid drilling holes in the utility pipes and/or cables attached to back of the wall!



Turn on the vacuum cleaner and wear safety goggles and dust mask throughout the drilling process to avoid dust inhalation or contact with eyes.

Installation component parts

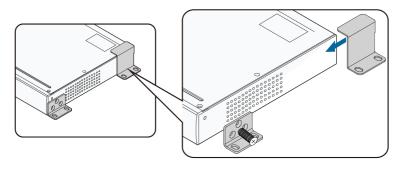
- Marker (beyond the delivery scope)
- Hammer drill (beyond the delivery scope)
- Bottom supporter (in the delivery scope)
- Mounting ear (in the delivery scope)

6 Mechanical Installation User Manual

- Expansion bolt (in the delivery scope)
- Tapping screw (in the delivery scope)
- Screwdriver (beyond the delivery scope)

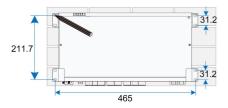
Install Mounting Ears and Bottom Supporters

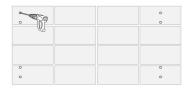
Anchor the mounting ears and bottom supporters to the Logger3000 with supplied M4x8 cross recessed countersunk head screws. The fastening torque is $1.8-2.4N \cdot m$, and the anchoring method is as follows:



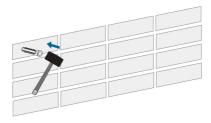
Mount the Logger3000 to the Wall

step 1 Mark positions for drilling holes on the installation wall. Drill the holes with a hammer drill of ϕ 6mm. (Note: Reserve sufficient clearances around the Logger3000.)



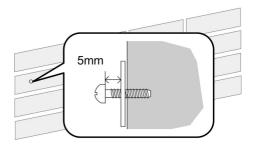


step 2 Insert the expansion sleeve into the drilled hole, and make it completely embedded in the wall with a rubber hammer.



step 3 Insert the tap screw and mounting ear successively into the expansion sleeve, to fix the Logger3000 onto the wall.

User Manual 6 Mechanical Installation



step 4 Fasten the tapping screw with a screwdriver by the torque of 0.3N · m.

- - End

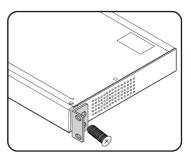
6.3.2 Rack-mounted Installation

Use 1U standard rack in case of the rack-mounted installation. Installation tools and component parts

- 1U standard rack (beyond the scope of delivery)
- Electric screwdriver (beyond the scope of delivery)
- Screw (beyond the scope of delivery)
- Nut (beyond the scope of delivery)

Install mounting ears

Anchor the mounting ears to the Logger3000 with supplied M4x8 cross recessed countersunk head screws. The fastening torque is $1.8-2.4N \cdot m$, and the anchoring method is as follows:



step 1 Mark positions on the rack according to dimensions of the Logger3000.



step 2 Drill holes on the rack with a hammer drill of φ 6mm.

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step 3 Level the mounting ears with the drilled holes on the rack.



step 4 Fix the Logger3000 in the sequence of screws, mounting ears, rack, and nuts.

- - End

7 Electrical Connection

7.1 Safety Instructions

⚠ DANGER

High voltage hazard!

The Logger3000 should be reliably ground. Never touch the AC power supply port "AC ($10\sim277V$)" and PLC communication port "PLC (L1 、L2)" when the device is powered on.

NOTICE

High voltage hazard! Danger will be caused by touching the PLC communication port immediately after powering down. Wait at least 30s to have the capacitor discharge completely.

NOTICE

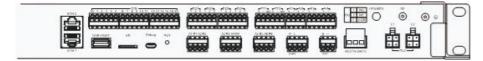
Incorrect wiring will cause device damage or even personal injury.

NOTICE

All cables must be intact, well insulated, appropriately dimensioned, and firmly connected.

7.2 Port Introduction

External wiring terminals are located at the bottom of Logger3000, and the wiring area is shown in the figure below.



7 Electrical Connection User Manual

Port	Function	Description	
'		ETH2 can be connected to the	
ETU1 ETU2	Ethornot port	background through devices like	
ETH1, ETH2	Ethernet port	switch and router.	
		Function of ETH1 is reserved.	
DIN	Digital input	Dry contact input interface	
USB-HOST	USB port	Reserved	
SD	SD port	Reserved	
Dobug	Dobug port	Used for debugging of the	
Debug	Debug port	Logger3000	
DCT	Donat	Used for hardware reset of	
RST	Reset	Logger3000	
		Relay output interface	
DO1~DO4	Digital output	Relay specification: 250Vac/1A or	
		30Vdc/1A	
PT1, PT2, Al1~Al4	Analog input	Reserved	
	DC 40F	Support of 6 inputs of RS485	
A1B1~A6B6	RS485 communication interface	Can be connected to both slave	
	Пенасе	device and background	
CAN	CAN communication	Reserved	
	port		
	DC24V power supply	If the current is \leq 2.0A, the switch	
24V	port	mode power supply at this port	
	P 0.1	requires reinforced insulation.	
AC(110~277V)	AC power supply port	Connecting 110~277Vac (50/	
	- To power dappiy port	60Hz), current≤0.5A	
GPS/BDS	GPS antenna interface	Used for time synchronization and	
	or o anterna interrace	positioning	
RF	Wireless antenna	Reserved	
	interface		
	Grounding hole	Connecting protective grounding	
		cable	
,	PLC communication	Can be connected to string	
PLC (L1, L2)	interface	inverters equipped with PLC	
		communication function	

User Manual 7 Electrical Connection

AC power supply port and PLC communication interface

High voltages may be present on the AC power supply port "AC $(110\sim277V)$ " and communication interface "PLC (L1, L2)". Therefore, before cable connection, ensure that the two ports are free of voltage and the grounding cable is reliably connected.

Digital input/output ports

Digital input/output ports (DIN and DO1~DO4) are configured to collect node data and control node communication.

GPS wireless antenna

The wireless antenna should be installed outdoors. The GPS antenna port (GPS/BDS) are used for time synchronization and positioning.

- The time synchronization function is available to the Logger3000 itself only.
- Positioning function can be used to read out the geographic position of the Logger3000 with the help of communication devices.

Ensure that the Logger3000 has been powered down before installing or removing the GPS antenna.

RS485 communication ports

For the RS485 communication ports (A1B1~A6B6), the communication distance should be no more than 1,000m.

7.3 Overview

The Logger3000 can be connected to:

- devices in the PV system such as the inverter, combiner box, Meteo Station, and energy meter through the RS485 port
- · background devices through the Ethernet port
- transformer or other devices through the PLC port

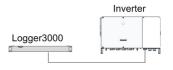
7.4 RS485 Port

7.4.1 Connecting to the Device with RS485 Port

Use an RS485 shielded twisted pair (STP) to connect any RS485 port (A1B1 – A6B6) of the Logger3000 and the RS485 communication terminal of the inverter.

Connecting to a Single Inverter

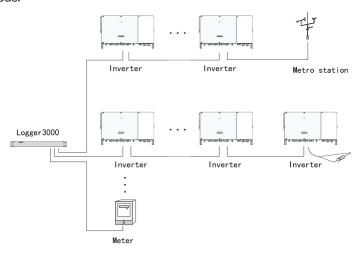
Insert the communication cable led from the inverter to any RS485 port (A1B1 – A6B6) of the Logger3000.



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Connecting to Multiple Inverters

Multiple inverters are connected to the Logger3000 in the RS485 daisy chain manner. If more than 15 inverters are connected on the RS485 bus, it is recommended to connect a 120Ω terminal resistor in parallel on the RS485A and RS485B lines at the head or tail end of the bus.



NOTICE

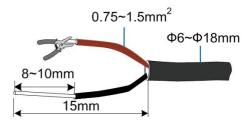
With an outdoor device connected to the Logger3000, it is recommended to connect an SPD to protect the device from lightning damage.

- The Logger3000 supports 6 RS485 buses and 200 devices at most. Each RS485 bus supports 60 devices at most.
- Devices of different types must be connected to different RS485 communication ports of the Logger3000. For example, the transformer and the inverter should be connected to different RS485 communication ports of the Logger3000.
- The address of each device on the RS485 bus should be within the set address range (1 to 246) of the Logger3000 without repetition. Otherwise, communication failure occurs.
- Serial port parameters of each device on the RS485 bus should be consistent with those of the Logger3000. The serial port parameters include baud rate, data bit, stop bit, and check bit.

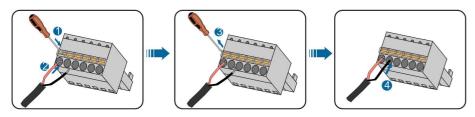
Connection Procedure

- **step 1** Lead the RS485 communication cable from the inverter to the wiring area of Logger3000.
- **step 2** Strip the protection layer of the communication cable with a wire stripper. Cable specification and stripped length are as follows:

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step 3 Crimp the wiring terminal.



NOTICE

RS485A is connected to port A while RS485B is connected to port B.

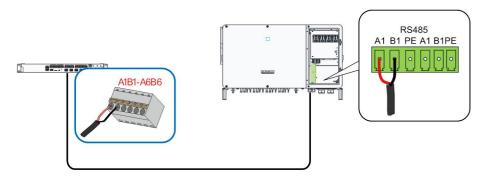
NOTICE

The RS485 communication cable must be the shielded twisted pair with the shielding layer single-point grounded.



When a multi-core multi-strand copper cable is used, crimp an appropriate euro style terminal at the communication cable head and then connect it to the RS485 port of the Logger3000.

step 4 Connect the wiring terminal to the terminal "A1B1~A6B6" of the Logger3000.



--End

7.4.2 Connecting to the Device with RJ45 Port

step 1 Lead the RS485 communication cable from the inverter to the wiring area of Logger3000.

7 Electrical Connection User Manual

step 2 Strip the Ethernet cable.



1

The white-green wire 3 is defined as RS485-B wire and the green wire 6 as RS485+A wire.

step 3 Connect the communication cable to the RS485 port of the Logger3000, as shown in the figure below.

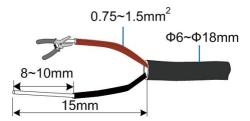


- - End

7.4.3 Connecting to the Meteo Station

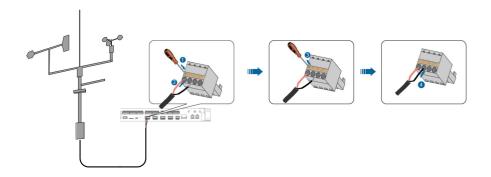
Meteo Station of the Modbus-RTU protocol can be connected to the Logger3000.

- **step 1** Connect the communication cable led from the Meteo Station to the RS485 port of the Logger3000.
- **step 2** Strip the protection layer and insulation layer of the communication cable with a wire striper, as shown in the figure below.



step 3 Connect the stripped cable to the RS485 port of the Logger3000, as shown in the figure below.

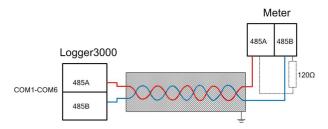
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- - End

7.4.4 Connecting to the Energy Meter

Communication connection between the Logger3000 and the energy meter is as follows:



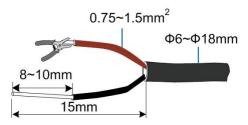
Energy meter can be connected to the Logger3000. The following table shows the communication port, port definition, and protocol type of a commonly used energy meter.

Brand	RS485 communication port	Port definition	Protocol type
Acrel	21	RS485-A	Modbus RTU
	22	RS485-B	Modbus RTU

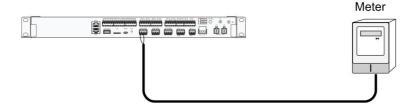
Wiring method

- step 1 Lead the RS485 cable from the energy meter to the wiring area of the Logger3000.
- **step 2** Strip the protection layer and insulation layer of the communication cable with a wire striper, as shown in the figure below.

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step 3 Connect the stripped cable to the RS485 port of the Logger3000, as shown in the figure below.

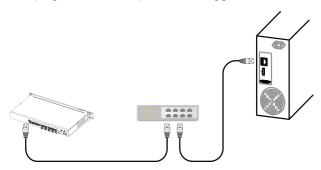


--End

7.5 Ethernet Port

The Logger3000 is equipped with two Ethernet ports: ETH1 and ETH2. The function of the ETH1 is reserved. The Logger3000 can be connected to the Ethernet switch and router through the ETH2 port.

step 1 Insert one plug of the supplied network cable into the network port of the Ethernet switch and the other plug into the ETH2 port of the Logger3000.



step 2 Configure network parameters.

- - End

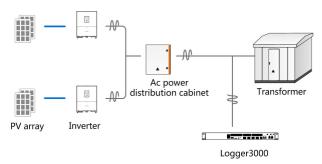


- Default IP address of the ETH2 port is 192.168.1.100.
- If the ETH2 port has enabled the Dynamic Host Configuration Protocol (-DHCP) function, the IP address of the port can be read out after the it is connected to a router or other devices.

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7.6 PLC Port

Integrated with PLC master node, the Logger3000 can be connected to the inverter integrated with PLC slave node and achieve PLC communication by using existing power cable.

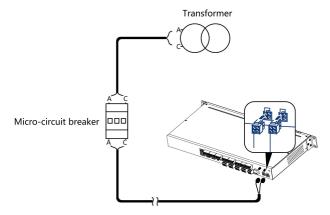


Preparation before wiring

- Disconnect the transformer from the grid.
- Disconnect the DC side of the inverter and make sure the system is in safe state.

Wiring method

Connect one end of the supplied PLC power cable to any two phases of the micro circuit breaker and the other end to the port "PLC (L1, L2)" of the Logger3000.



NOTICE

Isolation voltage of the PLC cable should be greater than 800V, recommended cable specification: 1.5mm.

Add 800 insulation sleeve to the PLC cable.

PLC cable must be connected to an additional SPD. Otherwise, device damage may occur.

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NOTICE

The built-in PLC module of the Logger3000 supports AC voltage less than 800V. In case of PLC communication, the distance between the Logger3000 and the inverter should be no more than 1,000m.

NOTICE

PLC networking is intended for medium voltage grid-connection. If low voltage grid-connection is desired, observe the following two conditions:

- Never connect a load between the Logger3000 and the PLC slave node.
- The distance between the Logger3000 and the load should be greater than 20m, that is, the LV grid-connection point should be more than 20m away from the nearest load distribution line. The load includes air conditioners, machines, motors, etc.

NOTICE

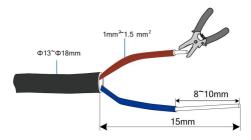
In case of PLC communication, note that:

- Electrical connection between the inverter and its downstream transformer has been correctly performed.
- Input and output circuit breakers of the Logger, inverter, and transformer are connected.

7.7 Connecting to the AC Power Supply

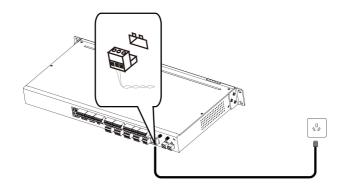
The Logger3000 can be connected to a power source with voltage ranging from 110 to 277Vac.

- **step 1** Lead the external power supply cable to the wiring area of the Logger3000.
- step 2 Strip the power supply cable by an appropriate length and crimp it to an euro style terminal.



step 3 Insert the euro style terminal to the external jack "AC110~277V" of the Logger3000.

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- - End

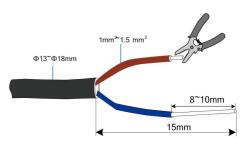


The Logger3000 can be connected to both AC power supply and DC power supply. UPS can be used as a DC backup power source.

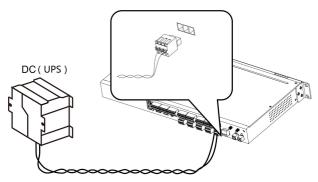
7.8 Connecting to the DC Power Supply

The Logger3000 can be connected to 24Vdc external power supply. UPS can be used as a power source.

- **step 1** Lead the external power supply cable to the wiring area of the Logger3000.
- **step 2** Strip the power supply cable by an appropriate length and crimp it to an euro style terminal.



step 3 Insert the euro style terminal to the external jack "24V (+, -) " of the Logger3000.



- - End

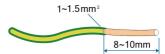
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7.9 Earthing Connection

MARNING

The grounding cable should be grounded reliably. Otherwise, lethal electric shock may occur in case of fault; and the device may be damaged due to lightning.

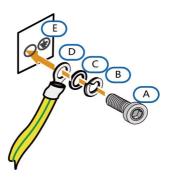
step 1 Strip the protection layer and insulation layer of the grounding cable by specific length, as shown in the figure below.



step 2 Crimp the stripped cable into an appropriate euro style terminal.



step 3 Secure the grounding cable to the grounding hole of the Logger3000, as shown in the figure below.



No.	Description	Note
Α	Bolt	M4
В	Spring washer	_
С	Flat washer	_
D	OT terminal	_
Е	Grounding hole	_

step 4 Fasten the screw with a wrench by the torque of $5 \pm 1 \text{N} \cdot \text{m}$.

- - End

8 Commissioning

8.1 Inspection before Commissioning

No.	Inspection item
1	All cables are intact, well-insulated, and appropriately dimensioned.
2	All cables are connected correctly and firmly.
3	The polarity of the power supply cable is correct. The grounding cable is
	reliably grounded.

8.2 Commissioning Steps

Commission the Logger3000 only after all the foregoing items meet requirements. Commissioning steps are as follows:

No.	Step
1	Power on the Logger3000.
2	Check whether the RUN indicator of Logger3000 is normal state.
3	Enter the IP address, such as 192.168.1.100, of the Logger3000 in the PC address bar.
4	Configure serial port parameters on the WEB interface.
5	Add the PV devices connected to the Logger3000 to the WEB interface by means of searching or manual adding.
6	Configure IP address.
7	Configure the address of iSolarCloud if running data needs to be uploaded to iSolarCloud.
	If the Logger3000 is used in mainland China, it is unnecessary to configure the address.
	If the Logger3000 is used in regions other than mainland China, set the address to api.isolarcloud.com.hk and the port to 19999.
8	Check whether running data of SUNGROW inverter is correct via the WEB interface.
9	Check whether the forwarding data is correct via the background monitoring system.
10	Create new plant through the iSolarCloud APP and check whether the platform data is correct.



9 Web Interface

9.1 Running Requirements

Item	Parameter
System	WIN7, WIN8, WIN10
Browser	IE10 - IE11, Chrome43 - Chrome45
Min. resolution	1366 x 768
CPU	CPU frequency higher than 2.5GHz

9.2 Preparation before Login

- Connect the PC to the ETH2 port of the Logger3000, and the IP address of the ETH port is 192.168.1.100 by default.
- Set the PC IP address to a value within the same network segment as that of the IP address of the port ETH2. For example, the PC IP address can be set to 192.168.1.125 and the subnet mask to 255.255.255.0.

9.3 Login Steps

step 1 Enter the IP address, for example, 192.168.1.100, of the port ETH2 in the address bar of the PC, to enter the login interface, as shown in the figure below.



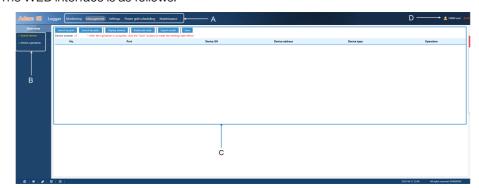
step 2 Select the desired language and user role (for example, O&M user), enter the default password "adamg1", fill in the verification code, and click "Login".

Role	Password
O & M user	adamg1
R & D user	Unavailable
Factory user	Unavailable
Anonymous	Log in without a password

- - End

9.4 Web Interface

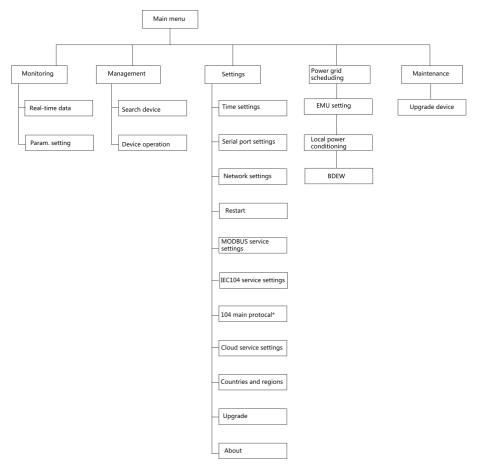
The WEB interface is as follows:



No.	Name	Description
А	1 st navigation menu	Display the main function modules of WEB
В	2 st navigation menu	After selecting the 1st function module, check or set the corresponding info through the 2nd navigation menu
С	Function display area	Display the present selected check or set function interface
D	User	Display the present login user
E	Info icon	Internet access CPU use rate memory use rate hardware use rate total number of online devices

9.5 Web Menus

The following figure shows the menus of the O&M user.



Note: * is optional.

9.6 Operation Flow

Operate as follows to log into the Logger3000 for the first time.

Step	Reference chapter
1. Check that external devices are	"7 Flectrical Connection"
correctly connected to the Logger3000.	7 Electrical Connection
2. Set the serial port of the Logger3000.	"9.9.2 Serial Port Setting"
3.*Automatically search device.	"9.8.1 Searching Device"

Step	Reference chapter
4. Add device.	"9.8.2 Device Operation"
	"9.9.5 Modbus Service"
E Dorform the continue cottinue	"9.9.6 IEC104 Service Settings"
5.Perform the service settings.	"9.9.7 IEC104 Main Protocol Settings
	(Optional)"

Note: For devices that support automatic search function (like SUNGROW string inverters), you can search the devices and allocate the address automatically.

9.7 Monitoring

On the "Monitoring" interface, users can perform the following operations:

- View information such as the real-time data of devices (for example, inverter) connected to the Logger3000.
- Set parameters of devices managed by the Logger3000, including initial parameters, running parameters, protection parameters, and system parameters.

The left sidebar "Overview" displays a list of devices currently managed by the Logger3000.



9.7.1 View Real-Time Data

Click "Monitoring" -> "Real-time data" to enter the corresponding interface.



Select a device, for example, an inverter, from the sidebar "Overview" to view real-time data of the corresponding device.

Click "DC data" and "Device attributes" on this interface to view corresponding information.

Tick the checkbox "Auto refresh" so that the system will refresh data once every 10s.

9.7.2 Single-Parameter Setting

- step 1 Select a device from the left sidebar "Overview".
- step 2 Tick a to-be-set parameter and enter the setting value.
- step 3 Click "Setting."
 - --End

9.7.3 Batch Setting

- step 1 Select a device from the left sidebar "Overview".
- step 2 Tick multiple to-be-set parameters and enter the setting values.
- step 3 Click "Batch setting".
 - - End

9.7.4 Parameter Readback

The function is used to read out set parameter values of the current device.

- step 1 Select a to-be-read back device from the left sidebar "Overview".
- step 2 Tick a to-be-read back parameter.
- step 3 Click "Query" to read out the parameter value of the device.
 - - End



If parameter values fall beyond the set range or the device does not support the readback function, the set values will be in red.

9.7.5 Checking the Parameter Setting Log

The function is used to view parameter setting logs of a device. The method is as follows:

- step 1 Click the icon interface.
- in the upper right corner on the "Monitoring" -> "Param. setting"
- step 2 Select a device name.
- step 3 Click "Search".
 - - End

9.8 Device Management

The "Management" menu is used to manage devices connected to the Logger3000 and configure addresses for them.

9.8.1 Searching Device

The function is used to search for devices equipped with searching function, such as string inverter, and allocate address to them.

Devices can be searched for in the following two manners:

- · Searching by Port
- · Searching by Address

9.8.1.1 Searching by Port

- step 1 Click "Management" -> "Search device" to enter the corresponding interface.
- step 2 Click "Search by port", select a serial port name, enter the device number, and click "Search".

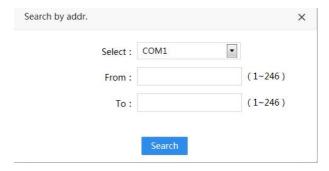


step 3 Click "Save" after the searching operation ends.

- - End

9.8.1.2 Searching by Address

- **step 1** Click "Management" -> "Search device" to enter the corresponding interface.
- **step 2** Click "Search by addr.", select a serial port name, enter the start address and end address, and click "Search".



step 3 Click "Save" after the searching operation ends.

Corresponding device information can be viewed after the searching operation ends.

--End



There should be no repeated addresses. Otherwise, the searching shall fail.

9.8.1.3 View Searched Devices

View the searched devices in the following three manners on the "Search device" interface.

Function button	Device
Display devices	All devices searched
Search by port	Devices searched by port
Search by addr.	Devices searched by address range

9.8.1.4 Export Results

After the searching operation ends, click "Export results" on the "Search device" interface, to export the searched devices in the report form.

9.8.1.5 Reallocate Address

This function is used to allocate address to devices searched.



In this case, the devices should support the automatic address allocation function.

- step 1 Click "Reallocate addr." on the "Search device" interface.
- step 2 Select a serial port, enter start address and end address, and click "Allocate".



step 3 Click "Save".

- - End

9.8.1.6 Modify the Device Address

After the searching operation ends, a list of devices searched will be displayed on the "-Search device" interface.

On this interface, click "Reallocate addr." to enter the device address manually, and click "Save" to finish the setting.





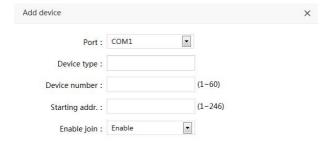
Never modify the device address arbitrarily. Make sure the new address is not repeated and consistent with the actual device address.

9.8.2 Device Operation

This function is used to add, modify, and delete devices connected to the Logger3000.

Add Device

Click "Add device" on the "Device operation" interface, and fill in the required information on the pop-up window.



Add

Parameter	Description
Port	Includes COM1~COM6, PLC, NET_TCP, and NET_IEC104
Device type	Select the corresponding type of the device
	The max. value is 5 when the port parameter is set to "NET_
Dougla a mumah ay	TCP" or "NET_IEC104"
Device number	It can only be set to 1 when the port parameter is set to "NET_
	IEC104"

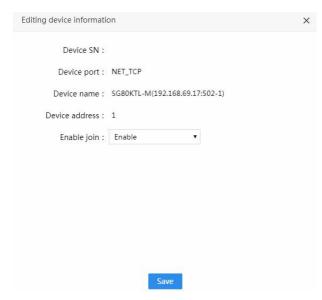
Parameter	Description
Starting address	Range: 1~246
Enable join	Can be set to "Enable" or "Disable" according to requirements

After filling in the information, click "Add" to save the operations.

Editing Device Information

This function is used to modify names and addresses of devices connected to the Logger3000. The method is as follows:

Click "Edit" on the "Device operation" interface, and then "Save" to save the editing operation.



Parameter	Description
	Named in the format of device type-(port number-port
D .	address)
Device name	PLC communication port: C
	COM (A1B1~A6B6) communication ports: 1, 2, 3, 4, 5, and 6
	Range: 1~246
Device address	Never modify the device address arbitrarily. Make sure the
Device address	new address is not repeated and consistent with the actual
	device address.
Enable join	Enable/Disable

Deleting Device

If a device has been removed on site, it should be deleted from the Web interface. The method is as follows:

Select the device to be deleted, click "Delete" on the operation bar, and click "Save" to save the operation.

9.8.3 Firmware Upgrade

This function is used to upgrade the firmware of the Logger3000.

Method: Click "Setting" -> "Upgrade" to enter the corresponding interface.



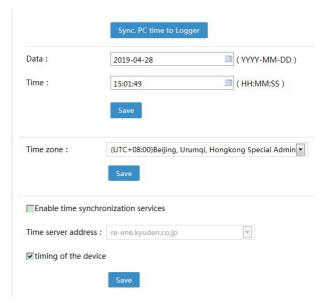
Click "browse" to import an upgrading file, and then click "Confirm upgrade".

9.9 System Setting

9.9.1 SystemTime Setting

This function is used to set the system time and time zone of the Logger3000. The method is as follows:

- **step 1** Click "Settings" -> "Time setting" to enter the corresponding interface.
- **step 2** Fill in the required information on the interface.



Time setting method is as follows:

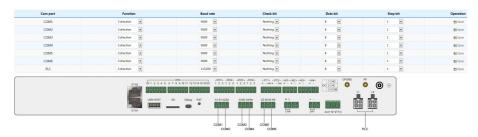
Parameter	Description
Sync. PC time to	Click this button to synchronize the time of Logger3000 and PC.
Logger	
Date	System date of the Logger3000 is in the format of "YYYY-MM-
	DD", that is, year-month-day.
Time	System time of the Logger3000 is in the format of "HH:MM:SS",
	that is, hour-minute-second.

- - End

9.9.2 Serial Port Setting

This function is used to set serial port parameters of the Logger3000, such as PLC port and COM port (A1B1~A6B6). The parameters include function, baud rate, check bit, stop bit, etc.

Click "Settings" -> "Serial port settings" to enter the corresponding interface.



Parameter	Description
	Includes collection and forwarding background
Function	When a device is connected to the serial port of the Logger3000, set the function to "Collection".
	There should be no more than 3 serial ports whose "function" is set to "Forwarding background". It is recommended to use COM4/COM5/COM6 as the forwarding serial port.
Baud rate	Default value: 9600bps
Check bit	Default value: Null
Data bit	Default value: 8
Stop bit	Default value: 1



When a device is connected to the serial port of the Logger3000, make sure the "bud rate", "check bit", "data bit" and "stop bit" of the serial port are consistent with the configuration of the device, to ensure normal communication.

9.9.3 Network Setting

This function is used to configure network parameters of the Logger3000. The method is as follows:

Click "Settings" -> "Network settings" to enter the corresponding interface. After performing the operation, click "Save" in the right operation bar.





Default IP address of the ETH2 is 192.168.1.100.

9.9.4 Restarting

This function is used to restore factory settings or restart the Logger3000.

Click "Settings" -> "Restart" to enter the corresponding interface.



Operation	Description
Restart	Performed to restart the Logger3000.
Timing restart	Tick "Timing restart", select the time, and click "Save", so that
	the Logger3000 will be restarted at the set time.
Restore factory	Click "Restore factory settings" to clear all information except
settings	for IP address of the Logger3000.



The modification of parameters (serial port parameters, network parameters, and service configuration) will not be valid before the system is restarted.

9.9.5 Modbus Service

This function is used to configure the Modbus service of the Logger3000. The method is as follows:

Click "Settings" -> "Modbus services" to enter the corresponding interface.

- Click "Forwarding service cfg." to view the configuration information.
- Click "Network port" to set network port parameters.





If the access IP is set to "0.0.0.0", any background device with valid IP address can access the Logger3000. If the access IP is set to a specific value, only this background can access the Logger3000.

9.9.6 IEC104 Service Settings

This function is used to configure the IEC104 services of the Logger3000. The method is as follows:

Click "Settings" -> "IEC104 service settings" to enter the corresponding interface.



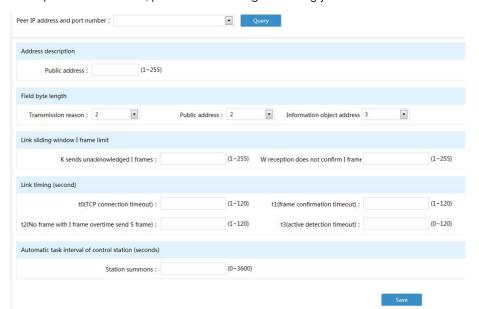


If the access IP is set to "0.0.0.0", any background device with valid IP address can access the Logger3000.

If the access IP is set to a specific value, only this background can access the Logger3000.

9.9.7 IEC104 Main Protocol Settings (Optional)

If a device whose type is NET_IEC104 has been added on the "Management" -> "-Device operation" interface, perform this setting accordingly.



Parameter	Description	Range
Address description		
Public address	Address of different	1~255
	slave stations on the	
	IEC104 link	

Parameter	Description	Range
Field byte length		
Transmission reason	Byte length of the	1, 2
	transmission reason	
Public address	-	1, 2
Information object	-	1, 2, 3
address		
Link sliding window I	frame limit	
K sends	When the number of	1~255
unacknowledged I	frames unacknowledged	
frames	by the slave station	
	reaches K, the master	
	station stops sending	
	data and wait the slave	
	station to acknowledge	
	them.	
W reception does not	When the number of	1~255
confirm I frames:	frames unacknowledged	
	by the master station	
	reaches W, the master	
	station actively sends	
	acknowledgement	
	frames.	
Link timing (second)		
t0(TCP connection	TCP connection timeout	1~120
timeout)	time	
t1 (frame	Frame	1~120
confirmation timeout)	acknowledgement	
	timeout tim	
t2(No frame with I	Timeout time for sending	1~120
frame overtime send	the S frame by the non-	
S frame)	piggy frame I	
t3(active detection	Active detection timeout	0~120
timeout)	time	
Automatic task interval of control station (seconds)		
Station summons	Station summon period	0~3600

9.9.8 Cloud Service Setting

On this interface, users can set parameters related to iSolarCloud service, including whether to enable cloud service settings, corresponding domain, service port, uploading period, storage cycle, etc., and whether to enable the silence function, the start time an end time. The method is as follows:

Domain(IP): apt.isolarcloud.com

Service port: 19999 (1-65535)

Uploading period(min): 5 (5~15)

Storage cycle(min): 5 (5~15)

Start time (H): 19

End time (H): 20

Click "Settings" -> "Cloud service settings" to enter the corresponding interface.

Cloud service setting

Enable the cloud service setting function if you want to upload the device information collected by the Logger3000 to the iSolarCloud. Otherwise, you may enable or disable the function.

 $(0 \sim 23)$

 $(0 \sim 23)$

The method is as follows:

Tick the option "Enable cloud service settings" on the "Cloud service settings" interface, and set corresponding parameters.

Parameter	Description	Range
Domain (IP)	Domain of iSolarCloud: api. isolarcloud.com	-
Service port	-	1-65535
Uploading period (min)	Period of data transmission between the Logger3000 and iSolarCloud	5~15
Storage cycle (min)	-	5~15

Nocturnal silence function and parameter setting

If the "Nocturnal silence" function is enabled, there will be no data exchange between the Logger3000 and iSolarCloud during the set time.

Generally, the time segment can be set to $0\sim23h$. specifically, you may set the start time and end time according to needs.

9.9.9 Country and Region Setting

According to the requirements of the grid company, the working status of the inverter forwarded by the Logger3000 must be uploaded to the local background according to the local standards.

Therefore, set the country and region to the location where the Logger3000 is installed before using it.

The method is as follows:

Click "Settings" -> "Countries and regions" to enter the corresponding interface.



For different regions, the codes of inverter working status forwarded by the Logger3000 are shown in the table below.

9.9.10 About

This interface includes information such as the name of the Logger3000, serial number, password, firmware version, and web version.

Click "Settings" -> "About" to enter the corresponding interface and view related information.

9.10 Maintenance

On this interface, user can upgrade devices managed by the Logger3000. The method is as follows:

step 1 Click "Maintenance" -> "Upgrade device" to enter the corresponding interface.



step 2 Click "browse" to select an upgrade file, and click "Upload" to upload the desired file.



step 3 Select devices to be upgraded.



- - End

10 Grid Dispatching

10.1 Function Description

The Logger3000 includes a power control module inside used to receive control instruction from the grid dispatching center and send the control instruction to the monitored inverters through the RS485 port, thereby controlling the output active power, reactive power, power factor, and start or stop of the inverter.

10.2 Grid Dispatching Plans

The grid dispatching plans include direct-connection networking and cascading networking.

Direct-connection Networking

In the direction-connection mode, all inverters of the current power plant are connected to one Logger3000. In this mode, the Logger3000 has the following two functions:

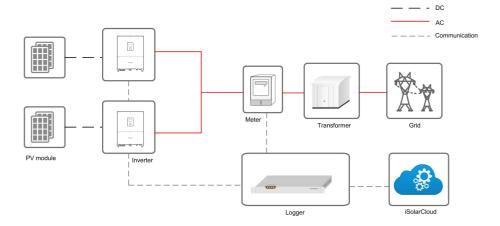
• EMU (energy management) function

The Logger3000 can compare data of the gateway meter with the real-time power of the inverter, thereby dynamically adjusting the active power or reactive power of the inverter. For more information. refer to "10.3 EMU Setting".

Data upload function

The Logger3000 can upload the running data of the inverter in the PV system to iSolarCloud.

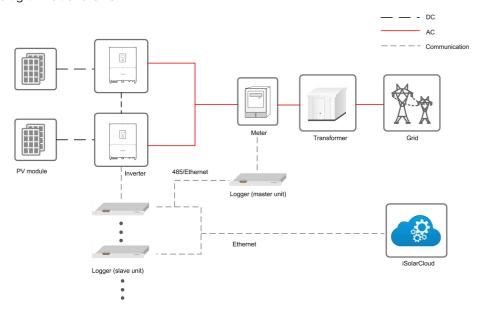
The schematic diagram of the direct-connection networking is as follows:



10 Grid Dispatching User Manual

Cascading Networking

In the cascading mode, inverters can be connected to multiple Loggers. The schematic diagram is as follows:



The Logger3000 connected to the inverter is slave unit by default; and the Logger3000 connected to the meter and the slave unit is master unit by default.

Master unit function	Slave unit function		
	Data upload function		
EMU function	Directly upload running data of the inverter to iSolarCloud.		
	 Upload running data of the slave unit to the master unit and receive control instruction from the master unit. 		

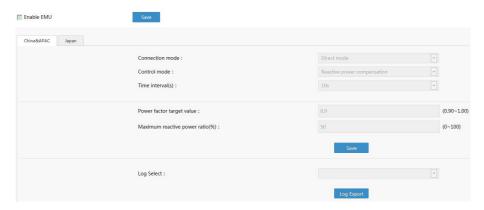
The function needs to be enabled manually. For specific method, refer to "10.3 EMU Setting"

10.3 EMU Setting

This function is applicable to China & APAC and Japan only.

step 1 Click "Power grid scheduling" -> "EMU setting" to enter the corresponding interface.

User Manual 10 Grid Dispatching



- **step 2** Select the corresponding country/region.
- step 3 Tick the option "Enable EMU".
- step 4 Set related parameters.

For China & APAC, description of the settable parameter are as follows:

Parameter	Description
	It can be set to direct mode or cascading host mode.
	Set the connection mode according to actual networking scheme.
	 In case of direct-connection networking, set the connection mode to "Direct mode", and then click "Management" -> "Device operation" to add inverter and meter connected to the Logger3000.
Connection mode	 In case of cascading networking, set the connection mode to "- Cascading host mode", and then click "Management" -> "Device operation" to add slave units and meter connected to the master unit. The salve units and meter should support Modbus TCP protocol, and the address of the slave unit can only be set to 247. A maximum of 5 inputs of connections are supported.
	Note: For the cascading mode, only the EMU function of the master
	unit can be enabled. Never enable the EMU function of the slave unit.
Control	It can be set to reactive power compensation or active control
mode	according to needs.
Maximum	
reactive	When the "control mode" is set to "Reactive power compensation",
power ratio (%)	the parameter needs to be configured.
Power factor	When the "control mode" is set to "Reactive power compensation",
target value	the parameter needs to be configured.
Time interval (s)	It can be set to 10s, 20s, or 30s; and it is 10s by default.

For Japan, description of the settable parameter are as follows:

10 Grid Dispatching User Manual

Parameter	Description
Remote scheduling	Tick the option "Enable EMU", enable the "Remote scheduling" function, fill in related information, import the scheduling file, and click "Save", to enable the remote scheduling function.
Local scheduling	Tick the option "Enable EMU", select the "Local scheduling" function, import the scheduling file, set the parameter type, and click "Save", to enable the local scheduling function.
Time modification	Perform modification according to actual conditions. The parameter ranges from -10 to +10. After the modification saved, the option "-Time settings" -> "Sync. PC time to Logger" will not be displayed.
	When the system time of the Logger3000 < the time modified through "Time modification", or the time of the Logger3000 < NTP time,
	the information " will appear on in the upper right corner of the interface. In this case, the Logger3000 sends stop instruction to the inverter.
	Time state of Kyushu Electric Power: will " will
	not disappear until operation such as "Time modification" or NTP
	synchronization is performed.

- - End

A CAUTION

After saving the operations, enter the permission password Sglogger2018 to have the settings valid.

If an error schedule is imported due to human reasons, causing abnormal sending of control instructions, SUNGROW shall not be held liable for any damage caused.

10.4 Local Power Regulation

The Logger3000 can regulate the power of inverter connected to it. The regulation includes active power regulation and reactive power regulation. The method is as follows:

step 1 Click "Power grid scheduling" -> "Local power conditioning" to enter the corresponding interface.



User Manual 10 Grid Dispatching

step 2 Tick the option "Enable" in the upper left corner and click "Save", to enable the local regulation function.

step 3 Select the corresponding local regulation mode, for example, active power regulation and reactive power regulation.

table 10-1 Description of active regulation parameters

Parameter	Description
Active power control mode	The control mode is set to "Fixed value of active
	power".
Power rise speed (%/min)	Rising rate of active power, ranging from 8 to
	6000. For specific meanings, refer to the inverter
	manual.
Power drop rate (%/min)	Decline rate of active power, ranging from 8 to
	6000. For specific meanings, refer to the inverter
	manual.
Start time	Click "Add", "Modify", and "Delete" to edit the
	start time of the active power fixed value.

table 10-2 Description of reactive regulation parameters

Parameter	Description
Popotivo power central mode	Includes reactive power percentage start time
Reactive power control mode	and power factor fixed value
	When the reactive power control mode is set to
	"reactive power percentage", the start time also
Reactive power percentage start	needs to be set.
time	Method: Click "Add", "Modify", and "Delete" to
	edit the start time of the reactive power
	percentage.
	When the reactive power control mode is set to
	"power factor fixed value", the start time also
Reactive power fixed value start	needs to be set.
time	Method: Click "Add", "Modify", and "Delete" to
	edit the start time of the reactive power fixed
	value start time.

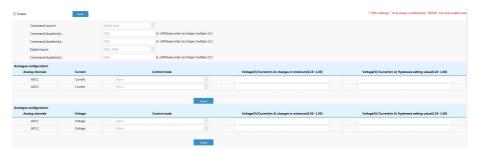
- - End

10 Grid Dispatching User Manual

10.5 BDEW

According to the BDEW standard, it is necessary to configure a digital input or an analog input to the Logger3000, to achieve the remote grid dispatching function. The method is as follows:

step 1 Click "Power grid scheduling" -> "BDEW", to enter the corresponding interface, as shown in the figure below.



- **step 2** Tick the option "Enable", to set the parameters.
- **step 3** Select the corresponding command source.

When the "Command source" is set to "Digital input", set the following parameters:

Parameter	Description
Digital input	Includes DIN1- DIN 4, DIN5- DIN 8, and DIN9
Command duration (s)	Ranging from 1 to 60, integral number
	Used to configure the parameters of one or multiple digital input nodes, including control mode and percentage
DIN configuration	Click "Add", "Modify", and "Delete" to edit the current node parameter
	If it is selected, the parameter is set to 1
	If it is not selected, the parameter is set to 0

When the "Command source" is set to "Voltage input" or "Current input", set the following parameters:

Parameter	Description
Command duration (s)	Ranging from 1 to 60, integral number
Analog configuration	Used to set the control mode, changes in minimum, and hysteresis value of an analog channel

- - End

11 Maintenance

Due to the influence of ambient temperature, humidity, dust and vibration, the inner components of the Logger3000 will be aging and worn out. To ensure the system safety and maintain the efficiency of the Logger3000, it is necessary to carry out routine and periodic maintenance.

All measures, which can help the Logger3000 to keep good working conditions, are within the maintenance scope.

11.1 Safety Instructions

M WARNING

Only qualified personnel can perform the work described in this chapter.

Do not leave any screws, washers or other metallic parts inside the Logger3000 to avoid device damage.

M WARNING

After the Logger3000 stops, wait at least 5 minutes before performing any work on it.

Five Safety Rules

Respect the following five rules throughout the maintenance or service process to ensure personnel safety.

- Disconnect the Logger3000 from all the external connections and internal power supplies.
- Ensure that the Logger3000 will not be inadvertently connected.
- Ensure that the Logger3000 is voltage free with a multimeter.
- · Connect necessary grounding cables.
- Cover the electrical components with insulation cloth during operation.

11 Maintenance User Manual

11.2 Maintenance List

Item	Method
	Check to make sure there is no strong EMC interference device
\\/avlsina	around the Logger3000
Working environment	Check to make sure there is no hot source around the Logger3000.
CHVIIOHHICH	Check to make sure there is no corrosive materials around the
	Logger3000
Llaushinaus	Check to make sure the power supply voltage is normal
Hardware maintenance	Check to make sure the cables are connected firmly
maintenance	Check to make sure the grounding cable is grounded properly
System	Clean the enclosure, circuit board and the components
cleaning	Check the heat dissipation hole and the ensure it is not covered
	Check if the screws of the control terminals are loose. Refasten
Terminal and	them with screwdriver if necessary
cable connection	Check if the connection copper bar or screws are discoloring
Connection	Visually check the wiring layout and the device terminal connection
Coffee	Log in Web to check the device communication situation
Software maintenance	Log in Web to check the parameter setting of the Logger3000
	Log in Web to check the software version of the Logger3000

12 Troubleshooting

12.1 Safety Instructions

▲ DANGER

The ground cable must be grounded reliably. Otherwise, electric shock may occur to the operators!

12.2 Common Faults and Corrective Measures

The following table shows common faults and corresponding corrective measures. If the fault still persists after you perform the corrective measures as described in this manual, contact SUNGROW with the following information provided:

- Serial number of the Logger3000, date of manufacture, and software version
- Manufacture, type, configuration, and other information of device connected to the Logger3000
- · Fault information and brief description
- Picture of the fault (if possible)

Fault	Possible cause	Corrective measure
	1. Cable connection between	1. Check whether the PC is
	the PC and the Logger3000 is	normally connected to the
	abnormal.	port ETH1 of the Logger3000.
		2. Check whether the network
	2. PC network signal is	signal icon of the PC is
	abnormal.	Ф- п
		abnormal, like this
Failure to log into		3. Manually set the IP address
the Web	3. IP address of the PC is	to be within 0 network
	incorrect.	segment, for example,
		192.168.0.123.
		4. Use the shortcut key win+R
		to call up the running
	4. The PC cannot normally	command box and enter "-
	receive data.	ping 192.168.0.100", to
		check whether the PC can
		receive data packets.

12 Troubleshooting User Manual

Fault	Possible cause	Corrective measure
	5. Confrontation with network card or anti-virus software occurs. 1. The RS485 cable connecting the device and the Logger3000 is abnormal.	5. If the PC cannot receive data packets, disable other network cards, anti-virus software or fireproof wall, and try the login again. 1. Check the RS485 cable connecting the device and the Logger3000 and ensure it is not in short circuit, open circuit, or reverse connection between RS485 – A and RS485 – B.
Communication failure between the Logger3000 and devices connected	2. Configuration of the serial port is inconsistent with the RS485 parameters of the device.3. The current device is an inverter, and the inverter	 2. Log into the Web, and click "Settings" -> "Serial port settings" to check whether the port configuration is consistent with the RS485 parameters of the device. 3. Manually input the inverter
to it	cannot be added to the Web system in automatic search manner.	address to add the inverter to the Web system.
	4. Communication connection status between the Logger3000 and the device is abnormal.	4. Log into the Web, and click "Monitoring", to check whether the communication status icon is like this and check whether repeated addresses are allocated to the same port. If the fault persists, contact SUNGROW.
Data communication between the Logger3000 and background via ModbusRTU failed	1. The RS485 cable connecting the device and the Logger3000 is abnormal.	1. Check the RS485 cable connecting the device and the Logger3000 and ensure it is not in short circuit, open circuit, or reverse connection between RS485 – A and RS485 – B.

User Manual 12 Troubleshooting

Fault	Possible cause	Corrective measure
	2. COM port parameter is incorrectly set on the web interface.	2. Log into the Web, and click "Settings" -> "Serial port settings" to check whether the COM port is set to "- Forwarding background". Check whether the serial port parameter is correct.
	3. Collection address of the device does not match with access address.	3. Log into the Web, and click "Settings" -> "Modbus service settings" to ensure that the collection address of the matches with the access address.
	 Protocol configuration of the background is inconsistent with that of the device. 	4. Ensure that the protocol configuration of the background is consistent with that of the device.
No data exchange between the and background via ModbusTCP	1. Network connection between the and background is incorrect.	 Check that the network connection between the and the background is correct. Set the IP address of the
	2. Configuration of port ETH2 of the is incorrect.	port ETH2 of the to the one that the background needs to access.
	3. Collection address of the device does not match with forwarding address.	3. Log into the Web, and click "Settings" -> "Modbus service settings" to ensure that the collection address of the matches with the forwarding address.
	4. Background IP is incorrectly set.	4. Log into the Web, and click "Settings" -> "Network settings" to check whether the background IP is set to fixed IP. It is recommended to set the background IP parameter of the to 0.0.0.0 or the actual background IP address.

12 Troubleshooting User Manual

Fault	Possible cause	Corrective measure
	5. Protocol configuration of	5. Ensure that the protocol
	the background is	configuration of the
	inconsistent with that of the	background is consistent with
	device.	that of the device.
	1. Network connection	1. Check that the network
	between the and background	connection between the and
	is incorrect.	the background is correct.
		2. Log into the Web, and click
		"Settings" -> "IEC104
	0.15	service settings" to check that
	2. IP address of the	the access address is set to
No data exchange	forwarding device or	0.0.0.0.
between the and	background IP address is	It is recommended to set the
background via	incorrect.	background IP parameter of
IEC104		the to 0.0.0.0 or the actual
		background IP address.
		3. Check that the
	3. The communication device	communication device is
	is abnormal.	normal.
	4 Deal	4. Ensure that the
	4. Background parameters	background parameters are
	are incorrectly configured.	correctly configured.
		1. Log into the Web, and click
	1. System time of the is	"Settings" -> "Time settings"
	incorrect.	to check whether the time
N		setting is correct.
No data exchange	O. The sea I ETI IO's also seed	2. Users access the Internet
between the and	2. The port ETH2 is abnormal.	via the port ETH2.
iSolarCloud	3. Communication between	3. Check that the can
	the and devices like inverter	normally communicate with
	and combiner box is	devices such as inverter and
	abnormal.	combiner box.
	1. The current inverter does	1. Ensure that the current
Remote inverter	not support remote upgrading	inverter supports the remote
	function, or the upgrading file	upgrading function, and the
upgrading failed	is inconsistent with the actual	sgu file is consistent with the
	device type.	actual device type.

User Manual 12 Troubleshooting

Fault	Possible cause	Corrective measure
	2. The upgrading file is abnormal.	2. The upgrading file is invalid, for example, the file is encrypted or the file is named incorrectly.
	3. The type of to-be- upgraded inverter is inconsistent with the upgrading file.	3. Check whether the type of the to-be-upgraded inverter is inconsistent with the upgrading file.
	4. Communication connection is abnormal.	4. Check whether the communication cable is correctly connected, and try to upgrade the inverter again if so. If the fault persists, contact SUNGROW.
	Communication connection is abnormal.	1. Log into the Web, and click "Monitoring", to check whether the communication status icon is normal, like this
Remote parameter setting failed	2. The current operation mode of the inverter does not support the parameter setting.	2. Identify the current operation mode of the inverter. For example, the active power rising speed and drop speed can be set only when the speed control switch of the inverter is enabled.

13 FAQ

Q1. How many types of communication ports does the Logger3000 support, what are the corresponding ports, and how to set the port parameters?

Туре	Port	Parameter setting
	ETH1	Reserved
		Default IP: 192.168.1.100; subnet mask:
		255.255.255.0
Ethernet	ETH2	Gateway: 192.168.1.254
		DNS1: 1.2.4.8
		DNS2: 8.8.8.8
		Default Baud rate: 9600
DC 405	A4D4 ACDC	Check bit: Null
K5485	RS485 A1B1~A6B6	Data bit: 8
		Stop bit: 1
		Default Baud rate: 115200
	DI O	Check bit: Null
PLC	PLC	Data bit: 8
		Stop bit: 1

Q2. What are the forwarding protocols supported by the Logger3000?

Protocol	Description
	The Logger3000 sends the collected data of devices (-
	such as inverter, combiner box, Meteo Station) to the
ModbusRTU/ModbusTCP	background. The background allocates forwarding
	addresses to theses devices, thereby accessing and
	obtaining the data of the devices.
	1. Add or search devices on the Web interface (such
	as inverter, combiner box, Meteo Station).
IEC104	2. Export the IEC104 point table by clicking "Settings"
	-> "IEC104 service settings". The point table shows
	measuring point information of devices.

Q3. How to log into the system via R&D account and how to obtain the password? Generally, the O&M users have access to most of onsite configurations. If there should be any needs to use the R&D account, contact SUNGROW to obtain a temporary password which is valid only as of this day.

Q4. How to connect multiple Logger3000s to the background through the network?

User Manual 13 FAQ

1 Logger3000s closer to the Ethernet switch (<100m) are connected to the Ethernet switch by using network cables.

- 2 Logger3000s relatively far away from the Ethernet switch (> 100m) are connected to the Ethernet switch by using routed fiber optic cables.
- 3 After cable connection, IP address of the multiple Logger3000s should be set to be within the same network segment, without repeated addresses.



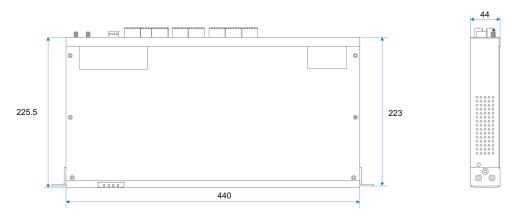
14 Appendix A: Technical Data

Communication	
Inverter communication	RS485
PC communication	Ethernet / RS485
Max. Communication Range	
RS485/Ethernet	1000 m /100 m
Interface Design	
RS485	6
Digital input port	16
Ethernet port	2
Power Supply	
Power module	110 V ~ 277 V (50 / 60 Hz)
Adapter input voltage	9 V - 24 V
Power consumption	Typ. 8 W / Max. 15 W
Environmental Conditions	
Operating Temperature	-30 °C to +60 °C
Storage Temperature	-40 °C to +80 °C
Relative humidity	≤ 95 %(non-condensing)
Max.operating altitude	3000m
Protection class	IP20
Memory	
Internal	4 GB circulating memory
General Data	
Dimension (W x H x D)	440 x 44 x 241mm
Weight	3 kg
Installtion method	Rack-mounted installation, wall mounted
	installation
Man-Machine Interaction	WEB
Language	Chinese, English, Japanese
Compliance	UL 60950-1, FCC, IEC 62109-1, IEC 61000-6-
	2/-4

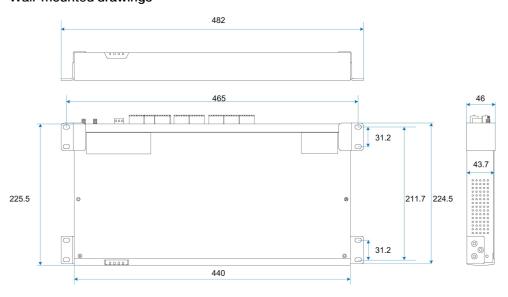
15 Appendix B: Related Drawings

Rack-mounted drawings





Wall-mounted drawings



16 Appendix C: General Information

16.1 Quality Guarantee

SUNGROW shall service or replace the faulty product for free within the warranty period.

Evidence

Within the warranty period, SUNGROW shall require the customer to present the purchase invoice and date. The trademark on the product shall be clearly visible, and SUNGROW shall hold no liability if otherwise.

Exclusion of Liability

- The free warranty period for the whole machine/components has expired
- The device is damaged during transport
- The device is installed, altered, or operated incorrectly
- The device operates in an environment harsher than that described in this manual
- The fault or damage is caused due to installation, maintenance, alteration, or disassembly performed by persons not from SUNGROW
- The fault or damage caused by using non-standard components or software or using components or software not from SUNGROW
- The installation and operation do not comply with stipulations of relevant international standards
- The damage is caused by unpredictable factors

For the foregoing faults or damages, SUNGROW can provide a paid service at the request of the client after judgment.



The dimensions and parameters of the device are subject to changes without notification, and reference can be made to the latest document.

Software Licenses

- It is prohibited to use data contained in firmware or software developed by SUNGROW, in part or in full, for commercial purposes by any means.
- It is prohibited to perform reverse engineering, cracking, or any other operations that compromise the original program design of the software developed by SUNGROW.

16.2 Contact Information

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

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

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

China (HQ)	Australia
Sungrow Power Supply Co., Ltd	Sungrow Australia Group Pty. Ltd.
Hefei	Sydney
+86 551 65327834	+61 2 9922 1522
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India	Italy
Sungrow (India) Private Limited	Sungrow Italy
	•
Sungrow (India) Private Limited	Sungrow Italy
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Clean power for all

