

User Manual

Data Logger

Logger1000A-EU



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About This Manual

The manual mainly contains the product information, as well as guidelines for installation, operation and maintenance. Readers can get additional information at www.sungrowpower.com or on the webpage of the respective component manufacturer.

Validity

This manual is valid for the following models:

· Logger1000A-EU

It is referred to as "Logger1000" hereinafter unless otherwise specified.

Target Group

This manual is intended for qualified technicians who are responsible for installation, operation, and maintenance of the product, and users who need to check inverter parameters.

The product must only be installed by qualified technicians. The qualified technical technician must:

- Have electronic, electrical wiring, and mechanical expertise, and be familiar with electrical and mechanical schematics.
- Have received professional training related to the installation and commissioning of electrical equipment.
- Be able to respond quickly and effectively to dangers or emergencies that may occur during installation and commissioning.
- Be familiar with local standards and relevant safety regulations of electrical systems.
- Read this manual thoroughly and understand the safety instructions related to operations.

How to Use This Manual

Read through this manual carefully before using the product, and keep it properly in an easy-to-reach place.

The information in this manual is subject to ongoing updates and revisions. Although efforts have been made to ensure accuracy, there might be slight variations or errors compared to the actual product. Please refer to the actual product purchased, and the latest manual can be obtained from **support.sungrowpower.com** or sales channels.

Security Declaration

For details on the product's network security vulnerability response process and vulnerability disclosure, please visit the following website:

https://en.sungrowpower.com/security-vulnerability-management

Symbols

This manual contains important safety instructions, which are highlighted with the following symbols, to ensure personal and property safety during usage, or to help optimize the product performance in an efficient way.

Symbols used in this manual are listed below. Please review carefully for better use of this manual.



A DANGER

Indicates high-risk potential hazards that, if not avoided, will result in death or serious injury.



M WARNING

Indicates moderate-risk potential hazards that, if not avoided, may lead to death or serious injury.



A CAUTION

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

NOTICE

Indicates potential risks that, if not avoided, may lead to device malfunction or financial losses.



"NOTE" indicates additional information, important content, or helpful tips that may solve problems or save time.

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1 Safety Instructions

When installing, commissioning, operating, and maintaining the product, strictly observe relevant safety instructions. Improper use or misoperation may result in:

- Injury or death to the operator or a third party.
- Damage to the product or the property of the operator or a third party.

Strictly follow the safety instructions stated in the manual to avoid the hazards mentioned above.

A WARNING

Do not perform any operation on the product (including but not limited to, handling, installing, powering on, and maintaining the product, performing electrical connection, and working at heights) in harsh weather conditions, such as thunder and lightning, rain, snow, and Level 6 or stronger winds. SUNGROW shall not be held liable for any damage to the device due to force majeure, such as earthquakes, floods, volcanic eruptions, mudslides, lightning strikes, fires, wars, armed conflicts, typhoons, hurricanes, tornadoes, and other extreme weathers.

In case of fire, evacuate from the building or product area and call the fire alarm. Re-entry into the burning area is strictly prohibited under any circumstances.

Tighten the screws to the specified torque using tools when fastening the product and terminals. Otherwise, the product may be damaged. And the damage caused is not covered by the warranty.

Learn how to use tools correctly before using them to avoid hurting people or damaging the device.

NOTICE

Maintain the device with sufficient knowledge of this manual and use proper tools.

1 Safety Instructions User Manual



 The safety instructions in this manual are only supplements and cannot cover all the precautions that should be followed. Perform operations considering actual on-site conditions.

- SUNGROW shall not be held liable for any damage caused by violation of general safety operation requirements, general safety standards, or any safety instruction in this manual.
- When installing, operating, and maintaining the device, comply with local laws and regulations. The safety precautions in this manual are only supplements to local laws and regulations.
- During the product transport, installation, wiring, maintenance, etc.,
 the materials and tools prepared by users must meet the requirements
 of applicable local laws and regulations, safety standards, and other
 specifications. SUNGROW shall not be held liable for any damage to the
 product caused by the adoption of materials and tools that fail to meet the
 above-mentioned requirements.
- Operations on the product, including but not limited to, handling, installing, wiring, powering on, maintenance, and use of the product, must not be performed by unqualified personnel. SUNGROW shall not be held liable for any damage to the product resulting from operations done by unqualified personnel.
- Where the transport of the product is arranged by users, SUNGROW shall
 not be held liable for any damage to the product that is caused by users
 themselves or the third-party transport service providers designated by the
 users.
- SUNGROW shall not be held liable for any damage to the product caused by the negligence, intent, fault, improper operation, and other behaviors of users or third-party organizations.
- SUNGROW shall not be held liable for any damage to the product arising from reasons unrelated to SUNGROW.

1.1 Unpacking and Inspection

MARNING

Check all safety signs, warning labels, and nameplates on devices.

The safety signs, warning labels and nameplates must be clearly visible and cannot be removed or covered before the device is decommissioned.

User Manual 1 Safety Instructions

NOTICE

After receiving the product, check whether the appearance and structural parts of the device are damaged, and check whether the packing list is consistent with the actual ordered product. If there are problems with the above inspection items, do not install the device and contact the distributor first. If the problem persists, contact SUNGROW in time.

1.2 Installation Safety

A DANGER

Make sure there is no electrical connection before installation.

Make sure to avoid the water and electricity wiring in the wall before drilling.

A CAUTION

Improper installation may cause personal injury!

 When handling the product, be aware of the product weight and keep the balance to prevent it from tilting or falling.

NOTICE

Before operating the product, please check and ensure that tools to be used have been maintained regularly.

1.3 Electrical Connection Safety

A DANGER

Before electrical connections, please make sure that the product is not damaged. Otherwise, it may cause danger!

Before electrical connections, please make sure that the product switch and all switches connected to the product are set to "OFF", otherwise electric shock may occur!

1 Safety Instructions User Manual

A DANGER

· Be sure to use special insulation tools during cable connections.

- Note and observe the warning labels on the product, and perform operations strictly following the safety instructions.
- Respect all safety precautions listed in this manual and other pertinent documents.

M WARNING

Damage to the product caused by incorrect wiring is not covered by the warranty.

- Electrical connection must be performed by qualified personnels.
- Check the power cord and confirm that the identifier is correct before connecting it.
- All cables used shall comply with the requirements of local laws and regulations, and must be firmly attached, properly insulated, and adequately dimensioned.

NOTICE

Comply with the regulations related to the local grid during wiring.

1.4 Operation Safety

A DANGER

- · When the product is running, do not touch its enclosure.
- When the product is running, do not touch any wiring terminal of the product.

 Otherwise, electric shock may occur.
- When the product is running, do not dismantle any components of the product.

 Otherwise, electric shock may occur.

1.5 Maintenance Safety

A DANGER

Unauthorized modification or use of parts not sold or recommended by SUNGROW may result in fires and electric shocks.

User Manual 1 Safety Instructions

A CAUTION

To prevent misuse or accidents caused by unrelated personnel. Post prominent warning signs or demarcate safety warning areas around the product to prevent accidents caused by misuse.

NOTICE

- To avoid the risk of electric shock, do not perform any other maintenance operations beyond this manual. If necessary, contact SUNGROW for maintenance. Otherwise, the losses caused are not covered by the warranty.
- If a fault occurs, only re-power the device after the fault is cleared. Otherwise, the fault may expand, and the device may be damaged.

1.6 Disposal Safety

A WARNING

Please scrap the product in accordance with relevant local regulations and standards to avoid property losses or casualties.



2 Product Description

2.1 Function Introduction

The Logger1000 is a device used for data collection, power control, and protocol conversion for inverters and other PV equipment in the PV plant. The device is also integrated with communication gateway and plant O&M function.

The Logger1000 features flexible networking, auxiliary maintenance, and easy operation.

2.2 Performance Features

Flexible Networking

- Support RS485, 4G, WLAN, and Ethernet communication.
- Support the collection of data from various environment sensors, Smart Energy Meters, Meteo Stations, inverters, and other equipment.

Auxiliary Maintenance

- · Support batch inverter parameter setting and software upgrading.
- · Support remote desktop, which reduces maintenance costs.
- Support transmitting grid control commands and power factor control.
- Support local real-time monitoring, without the need for an internet connection.

Easy Operation

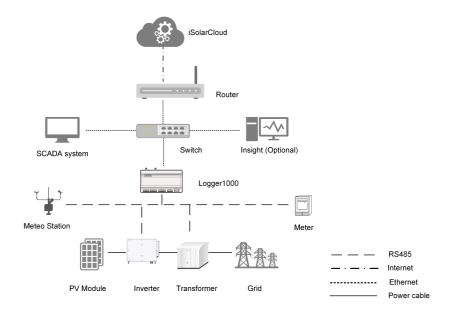
- · Support automatic search and allocation of inverter addresses.
- Include a web-based interface that allows for easy access from mobile phones without the need to download a separate App.

2.3 Networking Application

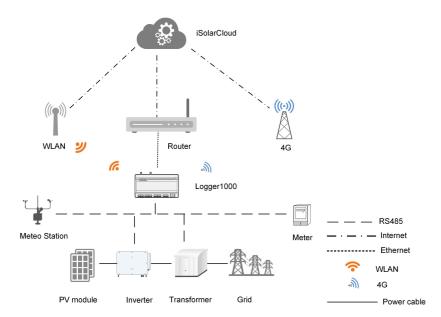
The Logger1000 can be connected to iSolarCloud via an Ethernet switch.



User Manual 2 Product Description



The Logger1000 can be connected to iSolarCloud via the router or connected to the iSolarCloud via the WLAN or 4G network.



- The Logger1000 offers support for multiple communication methods, including WLAN and 4G networks.
- The Data Logger can be connected to various environmental sensors, Smart Energy Meters, Meteo Stations, and inverters in the PV power generation system using an RS485 bus.

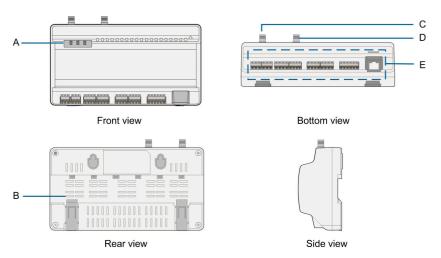
2 Product Description User Manual

• Users can access the web interface using a mobile phone or PC. Through the interface, they can configure parameters and perform remote online upgrades.

- The Data Logger can send data to iSolarCloud and forward commands to other devices connected to it.
- Support grid dispatching, including active power control and reactive power regulation.

2.4 Product Introduction

Appearance



Item	Name	Description
A	Indicators	Indicates the running state of the Logger1000
В	Vent	-
С	WLAN antenna mounting hole	-
D	4G antenna mounting hole	-
Е	Wiring area	See 5.2 Port Introduction

Indicators

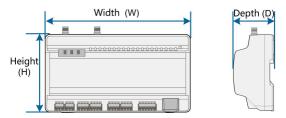
Indicator (print)	LED color	LED status	Description
Running	5. //	Off	No external power supply connected
indicator (RUN)	Red/green	Slow flash (Green)	Normal operation
		Slow flash (Red)	Device alarm

User Manual 2 Product Description

Indicator (print)	LED color	LED status	Description
		Steady on (Red)	There is a fault with
		Steady on (Ned)	Logger1000
		Off	No data communication
4G indicator	Blue	Steady on (Red)	4G connected
(4G)		Slow flash	Data communication in
		Slow liasti	progress
WLAN indicator (WLAN)		Off	No data communication
	Rlue	Steady on (Red)	WLAN connected
	ыис	Slow flash	Data communication in
			progress

- Slow flash means that the indicator flashes once every second.
- When the communication indicator on the Logger1000A is slowly flashing, it indicates
 that data communication is in progress. If there is no data communication with
 iSolarCloud for 10 seconds, the indicator will remain steady.

Dimensions



Width (W)	Height (H)	Depth (D)
200mm	110mm	60mm

3 Unpacking and Storage

3.1 Scope of Delivery

Check the scope of delivery to ensure that all items listed on the packing list are included. The delivery should include the following items:

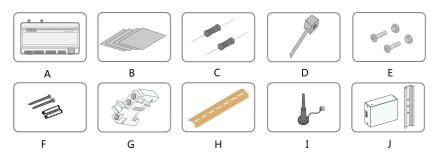
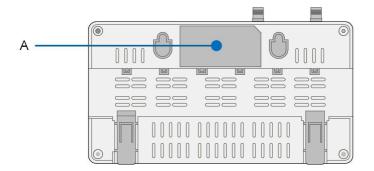


figure 3-1 Scope of delivery

Item	Name	Description
Α	Data Logger	Logger1000
В	Documents	Quick Installation Guide, quality certificate, packing list, product test report, and warranty card
С	Communication terminal resistor	$6x120\Omega$ (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	Nylon cable tie	Used to tie cables
E	Fastener assembly	4 sets, M4x16, used for wall-mounting to secure the device on the metal surface
F	Expansion bolt	4 sets, ST4.8x19, used for wall-mounting to secure the device on the concrete wall
G	Terminal fastener	2 sets, E/UK-1201442, used for secure the Data Logger on the guide rail
Н	Guide rail	Length: 240mm
1	WLAN antenna 4G antenna	Length: 2m
J	Power box	Converts the AC current into DC current. Length of supporting guide rail: 170mm

3.2 Identifying the Data Logger

The model and important technical parameters of the Data Logger can be found on the nameplate. The model and important technical parameters of the Data Logger can be found on the nameplate.



A WARNING

The nameplate contains important parameters, which must be kept visible and free of stains and damage.

3.3 Checking upon Receiving

The product is thoroughly inspected and packed before delivery. However, it is possible for damage to occur during transport. Check the following items carefully once receiving the product:

- · Check if the packing list matches the items included in the delivery.
- Confirm that the received model is the same as the purchased one.
- · Check the device thoroughly and ensure there are no visible damages.

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

A WARNING

Proceed with installation and commissioning only if the product is intact without signs of damage! Before installation, ensure that:

- · The product is intact without any damages.
- · Related documents, such as quick installation guide, are enclosed.

3 Unpacking and Storage User Manual

3.4 Storage

If the Data Logger is not installed immediately after receiving, observe the following requirements to store it properly.

- Store the Data Logger in its original packing case in a well-ventilated, dry, and clean indoor environment.
- Ensure that the storage carrier can carry the weight of the Data Logger with the package.
- Ensure the device is kept in a well-ventilated and moisture-proof place, without accumulation of water.
- Ambient temperature: -40°C~+70°C. Relative humidity: 0-95%, no condensation.
- Take precautions to protect the device against damage due to harsh environment such as sudden temperature changes or collision.
- Conduct regular inspection, preferably at least once a week. Check whether the
 packaging is intact and prevent any damage that may be caused by pests and animals.
 Replace the packaging immediately if it is damaged.
- If the storage period exceeds six months, open the packaging to inspect the equipment and conduct power-on testing.

M WARNING

- · Do not store the equipment without packaging!
- · Do not store the equipment outdoors or under direct sunlight.
- No tilting or stacking!



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

4 Mechanical Installation

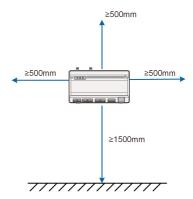
4.1 Installation Location Selection

Environment Requirements

- The Data Logger has an IP20 protection rating and should only be installed indoors.
- Ambient temperature: -30°C to +60°C. Ambient relative humidity: 0% to 95% (no condensation). Excessive humidity may cause damage to internal components.
- Pay attention to moisture prevention and ensure that the installation environment is free from flammable, explosive, and chemically corrosive substances.

Clearance Requirements

- Before installing the Data Logger, ensure that there is sufficient space around the installation location.
- Ensure that the Data Logger is oriented correctly, with the wiring terminals positioned at the bottom. This helps prevent dust, particles, and other airborne substances from entering the equipment over time, which could potentially impact its service life.
- Keep the Data Logger at least 1,500mm above the ground surface. Reserve a clearance
 of at least 500mm for convenient maintenance and servicing. The following figure shows
 the required minimum spacing.



NOTICE

When connecting outdoor equipment, such as a Meteo Station, to the Data Logger, install a Surge Protection Device (SPD) to protect the communication system. Choose the right SPD based on the site conditions and requirements.



4 Mechanical Installation User Manual

4.2 Installation Tools

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



4.3 Mounting the Data Logger

The Data Logger can be installed either by wall-mounting or by using a guide rail, depending on user preference.

User Manual 4 Mechanical Installation

4.3.1 Wall-Mounted Installation



Mount the Data Logger onto the concrete wall or metal surface according to onsite conditions.

For wall-mounted installation, the Data Logger is secured in place using wall-mounting holes

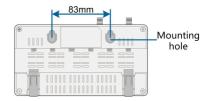
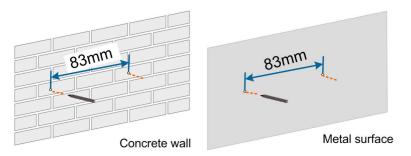


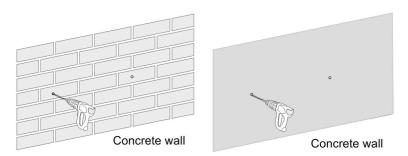
figure 4-1 Wall-mounting hole dimension

step 1 Select an appropriate installation surface.

step 2 Mark positions for drilling holes with a marker.



step 3 Drill the holes with a drill according to the marked positions.



▲ DANGER

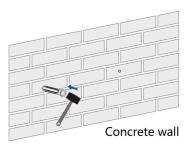
Avoid drilling holes in the utility pipes and/or cables attached to back of the wall!

4 Mechanical Installation User Manual

NOTICE

Operation personnel should wear goggles and dust mask throughout the drilling process to avoid dust inhalation or contact with eyes.

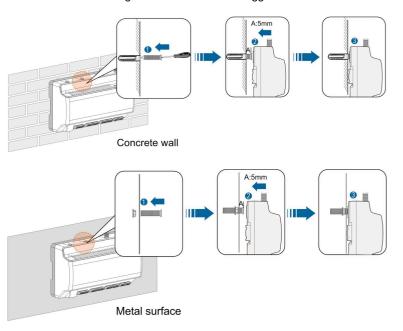
step 4 Secure the expansion bolts into the holes with a rubber mallet.



1

If the Data Logger is installed onto the metal surface, skip this step.

step 5 Fasten the screw or bolt to the installation surface, ensuring that it protrudes from the wall surface by approximately 5mm. Hang the Logger1000 onto the screws on the concrete wall or metal surface via the wall-mounting holes on the back of Logger1000.



step 6 Check and ensure that the Logger1000 is firmly installed.

- - End

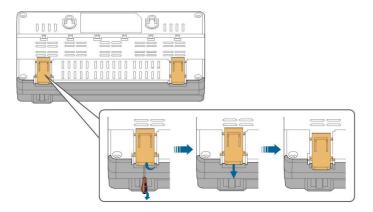
User Manual 4 Mechanical Installation

4.3.2 Guide Rail-Mounted Installation

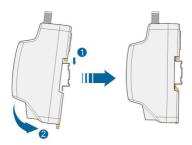
For guide rail-mounted installation, the Data Logger is secured in place using the rail buckles.



- step 1 Install and secure the guide rail at the appropriate location.
- **step 2** Slight press down the recessed part under the buckle of Logger1000 with a flat-head screwdriver or other similar tools to pull out the buckle outwards.

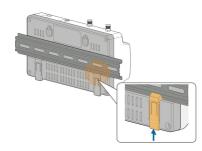


step 3 Hook the Logger1000 into the guide rail from above and press down the lower part of the Logger1000 until it snaps into place.

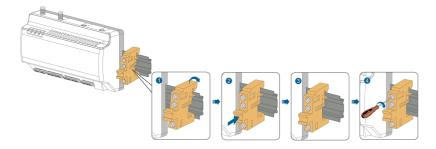


4 Mechanical Installation User Manual

step 4 Push the buckle of the Logger1000 upwards to clamp the guide rail.



step 5 Secure the terminal fasteners on both ends of the guide rail, to prevent the Logger1000 from moving.



step 6 Check and ensure that the Logger1000 is firmly installed.

- - End

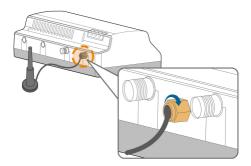
4.4 Installing Antenna

To ensure proper signal reception, the suction cup base must be placed on a metal surface outside the container.

Antenna entry should be reserved and pre-drilled on the container, and the diameter of the entry hole is 20mm.

Secure the suction cup base to the exterior of the container. Insert the end of the suction cup antenna with the nut through the drilled hole and clockwise screw it onto the corresponding antenna port of the Logger1000, as shown in the diagram below.

User Manual 4 Mechanical Installation

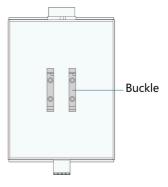


4.5 Installing Power Box



Mount the Data Logger onto the concrete wall or metal surface according to onsite conditions.

Secure the power box via the buckles (as shown in the figure below) on the back of it.



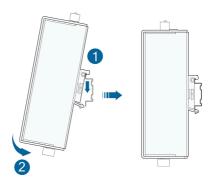
4 Mechanical Installation User Manual

step 1 Install and secure the power box guide rail at the appropriate location.

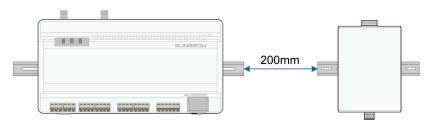


To ensure proper connection of the power cable from the power box to the power input port of the Logger1000, keep a distance of 200mm between the power box and the Logger1000.

step 2 Tilt the power box and hook the buckle into the guide rail. Press down the power box until it snaps into place with an audible "Click" sound.



step 3 The installation of the power box and Logger1000 is completed.



- - End

5 Electrical Connection

5.1 Safety Instructions

NOTICE

Incorrect wiring may result in damage to the Data Logger and potential harm to the operator.

NOTICE

All cables are intact, well-insulated, and appropriately dimensioned.

5.2 Port Introduction

External wiring terminals are located at the bottom of Logger1000, and the wiring area is shown in the figure below.

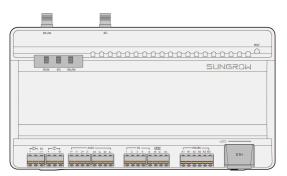


figure 5-1 Wiring area

table 5-1 Port description

Port	Function	Description
24V OUT	24V power output	24V±5%, the max. output current:
		0.5A
DI	Converts AI into DI	Enabling switch for converting Al
		function to DI function
24V IN	24V power input	24V±3%
	Grounding	Connecting protective grounding
		cable

5 Electrical Connection User Manual

Port	Function	Description
AI/DI	Compatible with AI/DI	Default AI input sampling: 0-10V or
	function	4-20mA
DI	Digital input	Digital signal input
DRM	DRM (Demand Response	Works together with the DI1~DI4
	Modes) function	to achieve the DRM function
0V	Digital reference point	-
RS485	RS485 communication port	Support of 3 inputs of RS485
	SIM card slot	Support of Micro-SIM card
ETH	Ethernet port	Can be connected to background
		master via devices such as
		Ethernet switch and router
WLAN	WLAN antenna	-
4G	4G antenna	-
RST	Restart	Press and hold it for > 3s to
		restart.
		Press and hold it for > 60s to
		restore the default settings.



For the RS485 (A1B1~A3B3) ports, the communication distance should not exceed 1,000m.

5.3 Connection to PV Devices

Devices in the PV system that can be connected to the Logger1000 include the inverter, Meteo Station, Smart Energy Meter, etc.

5.3.1 Connection to a Single Inverter

The RS485 port of SUNGROW inverter is RS485 terminal block or RJ45 port.

5.3.1.1 RS485 Terminal Block Connection

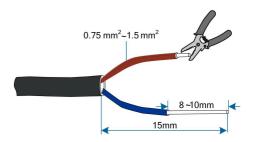
Communication cable specification:

Cable	Туре	Recommended cross-section
RS485 communication cable	Shielded twisted pair	0.75mm ² ~1.5mm ²

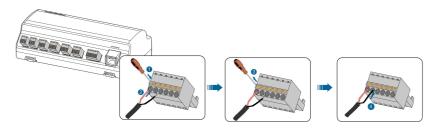
User Manual 5 Electrical Connection

step 1 Lead the RS485 communication cable from the inverter to the wiring area of Logger1000.

step 2 Strip the cable jacket and insulation layer with a wire stripper by about 15mm and 8mm to 10mm respectively.



step 3 Connect the stripped cable to the RS485 ports of the Logger1000, as shown in the figure below.



NOTICE

Connect RS485A to port A and RS485B to port B.

NOTICE

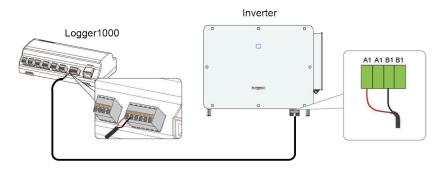
The RS485 communication cable must be the shielded twisted pair with the shielding layer single-point grounded.

5 Electrical Connection User Manual



When a multi-core multi-strand copper wire cable is used, crimp an appropriate euro style terminal at the communication cable head and then connect it to the RS485 port of the Logger1000.

step 4 Connect the Logger1000 to the inverter.



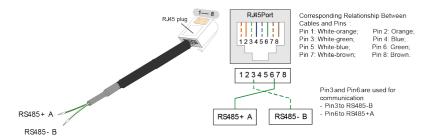
- - End

5.3.1.2 RJ45 Port Connection

Communication cable specification:

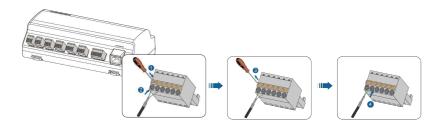
Cable	Туре
RJ45 communication cable	Shielded twisted pair Ethernet cable

- step 1 Lead the RJ45 communication cable from the inverter to the wiring area of Logger1000.
- step 2 Strip the insulation layer of the communication cable with an Ethernet wire stripper, and lead the corresponding RS485A/B signal cables out. Insert cord end terminals into signal cable RS485+ A and signal cable RS485- B, and crimp them with a crimper. Cut off the redundant signal cable and warp it with a heat-shrink tubing. If the communication cable is Shielded Ethernet cable, white-green wire 3 is defined as RS485- B wire and the green wire 6 as RS485+ A wire.

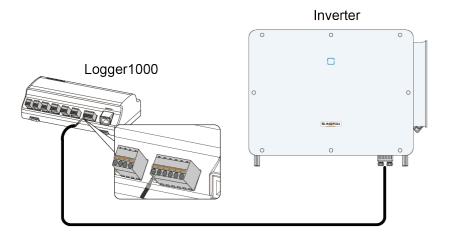


User Manual 5 Electrical Connection

step 3 Connect the communication cable to the RS485 ports of the Logger1000, as shown in the figure below.



step 4 Connect the Logger1000 to the inverter.

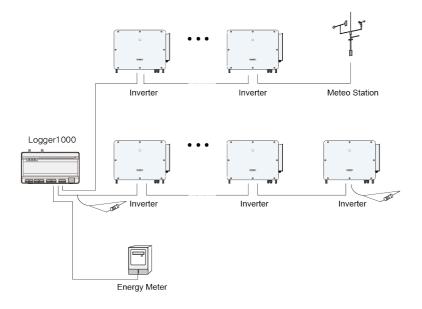


- - End

5.3.2 Connection to Multiple Devices

Multiple inverters are connected to the Logger1000 in the RS485 daisy chain manner. If more than 15 inverters (14 inverters, for devices other than Logger1000) are connected on the RS485 bus, it is recommended to connect a 120Ω terminal resistor in parallel on the RS48 5A and RS485 B lines at the head and tail end of the bus.

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NOTICE

With an outdoor device connected to the Logger1000, it is recommended to connect an SPD to protect the Logger1000 from lightning damage.

- The Logger1000 allows for 3 inputs of RS485 buses and 30 devices at most.
- When the number of device types is less than or equal to the number of RS485 ports of Logger1000, it is recommended to connect different types of devices to different RS485 ports separately.
- The addresses of devices on each RS485 bus must be different from one another and within the address range set for the Logger1000 (address range of residential inverters and string inverters manufactured by SUNGROW: 1-247; address range of third-party devices: 1-255). Otherwise, communication error will occur.
- Serial port parameters of each device on the RS485 bus should be consistent with those of the Logger1000. Configure the device's baud rate, check bit, data bit, and stop bit.

5.3.3 Connection to Smart Energy Meter

It is recommended to use the Smart Energy Meter whose communication protocol complies with DL/T645-1997/2007 protocol or Modbus protocol. Logger1000 can be connected to the Smart Energy Meter through RS485 port or Ethernet port. The recommended Smart Energy Meter types are as follows:

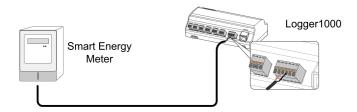
Item	Manufactu rer	Model	Protocol Type	Wiring
1	Sfere	PD194E/Z	Modbus RTU	RS485 Connection

User Manual 5 Electrical Connection

Item	Manufactu rer	Model	Protocol Type	Wiring
2	Acrel	PZ96-E3		
3	Acrel	DTSD1352	_	
4	Weidmueller	EM 610	_	
5	SUNGROW	DTSU666	_	
6	Schneider	IEM3255	_	
7	Janitza	UMG604,	Modbus RTU	RS485 Connection
1	Janıza	UMG104	Modbus TCP	Ethernet Connection

RS485 Connection

The following figure shows the connection between the Logger1000 and the Smart Energy Meter.



Connect the communication cable led from the Smart Energy Meter to the RS485 port of the Logger1000.



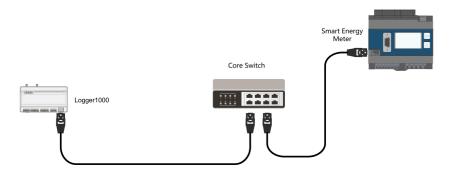
All devices on each RS485 bus support the same communication protocol.

When using Weidmüller or Janitza meters, connect the RS485 A/B port of the meter to the RS485 B/A port of the Logger1000.

Ethernet Connection

The following figure shows the connection between the Logger1000 and the Smart Energy Meter.

5 Electrical Connection User Manual



Prepare two appropriate Ethernet cables. Connect the cable led from the Smart Energy Meter to a port of the core switch. Connect one end of the other Ethernet cable to another port of the core switch and the other end to the "ETH" port of the Logger1000.



If there is no core switch connected on site, connect the cable led from the Smart Energy Meter directly to the "ETH" port of the Logger1000.

The farthest effective transmission distance of the network cable is 100m, and it is recommended that the actual distance should be no more than 90m. CAT 5E cable or network cable with higher category is recommended.

5.3.4 Connection to Meteo Station

Meteo Station includes standard Meteo Station and discrete Meteo Station. The discrete Meteo Station consists of several sensors.

It is recommended to use Meteo Station that complies with the Modbus protocol. Meteo Station can be connected to Logger1000 through RS485 port or Al port. The recommended Meteo Station types are as follows:

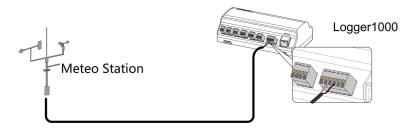
Item	Model	Wiring
1	PC-4	
2	PC-4 PRO	_
3	WING-TRACKER	_
4	WS601	_
5	SMP10	RS485 Connection
6	RT1	_
7	PVMet75	_
8	PVMet200	_
9	Si-RS485TC	_
10	TEMPER_SENSOR	Al Connection

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Item	Model	Wiring
11	Meteo sensor	

RS485 Connection

The following figure shows the connection between the Logger1000 and the Meteo Station.



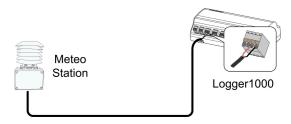
Connect the communication cable led from the Meteo Station to the RS485 port of the Logger1000.



If multiple inverters are connected to the Logger1000 together with the Meteo Station, the Meteo Station should be connected on the very end of the daisy chain.

Al Connection

The following figure shows the connection between the Logger1000 and the Meteo Station.



Connect the communication cable led from the Meteo Station to the Al port of the Logger1000.

5.4 Connection to Background

The Logger1000 can be connected to the background of the PV system via the network port, and the communication protocol is standard Modbus TCP or IEC104.

As a secondary device, the Logger1000 can be accessed by multiple backgrounds and communicate by using the standard protocol. The following figure shows the connection between the Logger1000 and the background.

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The Logger1000 can be connected to multiple monitoring background systems via the Ethernet switch or router, or it may be connected to the single monitoring background system via the network cable.

For example, the Logger1000 is connected to the background system via the Ethernet switch, and the wiring steps are as follows:

- step 1 Prepare an Ethernet cable of suitable length.
- **step 2** Insert one end of the cable into the port of the Ethernet switch and the other end to the "ETH" port of the Logger1000.
- **step 3** Set IP address of the ETH port to be within the same network segment as that of the background monitoring system.

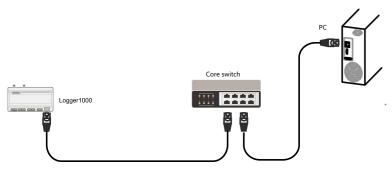


figure 5-2 Connection to PV background system

NOTICE

Default IP of "ETH": 12.12.12.12.

- - End

5.5 Installing the Micro-SIM Card

Micro-SIM Card Requirements

- Size: 12mm × 15mm.
- Recommended SIM card provider: Telekom, Vodafone, T-Mobile, or O2.
- Ensure that the SIM card has been properly configured the monthly data plan.

NOTICE

If using a nano-SIM card with an adapter, ensure that the nano-SIM is properly seated, and is correctly oriented to avoid improper insertion, difficulty in removing the SIM, or potential damage to the device.

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The Micro-SIM card is not included in the scope of delivery.

table 5-2 Data Calculations for Different Devices

Device Connected	Monthly Data Required
Inverter	Number of inverters × 25 MB + 25 MB
Optimizer	Number of optimizers × 0.52 MB + 130 MB
Meter and meteo station	Number of meters and meteo stations × 12.5 MB + 12.5 MB

Estimated Monthly Data Usage for Different Configurations

For example, the following provides estimated monthly data usage for specific configurations with nominal 450Wp modules.

Scenario	Configuration	Monthly Data Required
Residential	1 × SUNGROW inverter20 × optimizer1 × meter	215 MB
Industrial and	1 × SUNGROW inverter140 × optimizer1 × meter	277 MB
Commercial	2 × SUNGROW inverter280 × optimizer1 × meter	375 MB

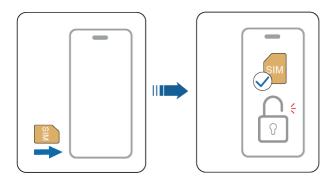
step 1 Insert the SIM card into a compatible smart device to check its PIN status.

step 2 If the SIM is protected with a PIN, disable the PIN lock by following the on-screen instructions.



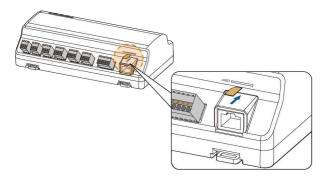
Check the original packaging of your SIM card for the PIN. If you enter the PIN incorrectly multiple times and it gets locked, you will need to enter the PUK (PIN Unlocking Key) to unlock it. Contact your SIM card provider if the original packaging is unavailable or if you need assistance with the PUK.

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step 3 Remove the SIM card from the smart device.

step 4 Align the SIM card with the slot based on the silk screen direction of the Logger1000, and press the card gently until it clicks into place.



step 5 To eject the SIM card from the Logger1000, push the card inward slightly to release the locking.



Micro-SIM card hot-plugging is supported.

- - End



If the SIM card fails to connect to the Internet, configure the Public Network APN in the Web UI on page $System > Port\ Parameter > Mobile\ Network$. Contact your SIM card provider to obtain the correct APN settings. See 7.12.11.3 Cellular Network.

5.6 Connection to Power Box

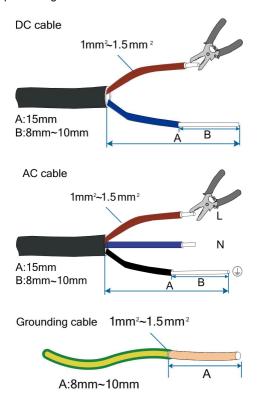
The Logger1000 supports DC24V power supply. Prepare two-core DC cable, three-core AC cable, and grounding cable before wiring. Power cable specifications are shown in the table below.

User Manual 5 Electrical Connection

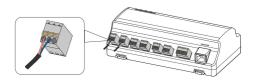
table 5-3 Power cable specification

Cable	Recommended cross-section	Length of cable jacket to be stripped off	Length of insulation to be stripped off
DC cable, AC cable	1mm ² ~1.5mm ²	15 mm	8 mm~10 mm
Grounding Cable	1mm ² ~1.5mm ²	8 mm~10 mm	-

step 1 Strip the cable jackets and insulation layers of the DC cable, AC cable, and grounding cable with a wire stripper by appropriate length.

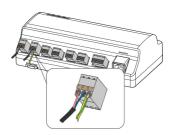


step 2 Insert the stripped DC cable into the "24V IN" and "24V OUT" ports of the Logger1000. Connect the DC cable led from the "24V OUT" port of the Logger1000 to other devices that need 24V DC power supply.

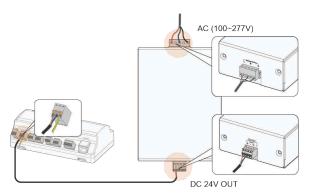


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step 3 Connect the stripped grounding cable to the corresponding port of the Logger1000.



step 4 Connect the DC cable led from the "24V IN" port of the Logger1000 to the "DC 24V OUT" port of the power box. Connect the stripped AC cable to the "AC (100~277V)" port of the power box, and connect the other end of the AC cable to the 220V AC power.



NOTICE

The power source should meet limited power source or PS2 requirements.

- - End

5.7 Connection to Emergency Stop Device

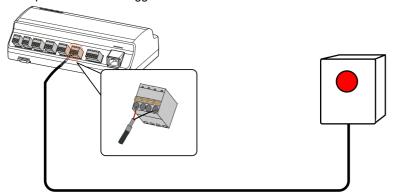
The Data Logger can receive DI signals from the emergency stop device.



The DI5 port should only be used for connecting the emergency stop device. The emergency stop device is not included in the scope of delivery.

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Connect the signal wire from the emergency stop device to the "DI5" port, and the ground wire to the "0V" port of the Data Logger.



5.8 Cable Routing Requirements

Cables used in the system generally include power cables and communication cables.

The communication cable needs to be routed away from the power cable, and the cables need to form a right angle at the intersection. The communication cable needs to be as short as possible and keeps a distance from the power cable.

Power cables and communication cables should be routed in different cable trenches to avoid long-distance parallel cable routing of power cables and other cables, thereby reducing electromagnetic interference due to output voltage transient.

The distance between the power cable and communication cable should be greater than 200mm. When the cables meet with each other, the cross angle should be 90°, and the distance can be reduced accordingly.

The following table shows the recommended minimum distances between parallel shielded communication cables and power cables.

Parallel cable length (m)	Min. distance (m)
200	0.3
300	0.5
500	1.2

The communication cables should be routed as closely to the ground surface or supports (such as support beam, steel channel, or metal rail) as possible.

6 Commissioning

6.1 Inspection before Commissioning.

No.	Check Item	Result
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.	

6.2 Commissioning Step

Item	Step	Result
1	Perform inspection before commissioning.	
2	Power on the Logger1000.	
3	Verify if the indicators on the Logger1000 are flashing as expected.	
4	Connect PC to the "ETH" port of the Logger1000 using an Ethernet cable. The default IP address of the "ETH" port is 12.12.12.12. Log in to the web interface at 12.12.12.12 through an Internet browser such as Internet Explorer, Safari, or Chrome.	
5	Make sure that the communication cable between the device and Logger1000 is firmly connected. Switch on the DC-side circuit breaker of the inverter and verify that the inverter is powered on.	
6	Configure the device's baud rate, check bit, data bit, and stop bit. See 7.12.11.1 RS485. The default setting is 9600bps, 8 data bit, 2 stop bit, and no check bit.	

User Manual 6 Commissioning

Item	Step	Result
7	Set the devices connected to the Logger1000 through the device management function. When connecting a SUNGROW string inverter for the first time, use auto search with addresses allocated automatically. See 7.10.1.1 Auto Search. Other devices must be manually added. See 7.10.1 Device List. For the devices of other types, the	
8	communication address needs to be preset. Enable the DHCP service of the router, so that the Logger1000 automatically obtains the IP address via the DHCP function.	
9	Set the iSolarCloud address if data needs to be uploaded to cloud server. The default iSolarCloud server is "European Server". Users in other regions select "International Server".	
10	Verify the accuracy of the data from the SUNGROW string inverter on the real-time information page.	
11	Create a plant via the iSolarCloud App and verify the accuracy of the data.	



When connecting multiple devices to the same communication port, ensure that each device has a unique address to prevent conflicts.

After making any configuration changes, save the settings to ensure they take effect.



Use the iSolarCloud App to create a new plant. Scan the QR code on the front label of the Logger1000, or manually enter the serial number (S/N) to add the communication equipment. For details, refer to the Quick Guidance of iSolarCloud App. Scan the QR Code to view or obtain the Quick Guidance of iSolarCloud App.



7 Web Interface

7.1 Running Requirements

Item	Description
Browser	IE11 or later, Chrome65 or later, and Safari11 or later
Min. resolution	1024*768

7.2 Establishing a Connection



Please connect the Logger1000A-EU to the PC using an Ethernet cable when powering on and commissioning the device for the first time.

7.2.1 Establishing a Connection via Wireless Hotspot

Necessary information for connection

- SSID: SG-[device S/N number] (for example, **SG-A1234567890**)
- IP address of the Logger1000: 11.11.11.1

step 1 On your PC, navigate to the wireless network settings, and connect to Logger1000's network.



The serial number (S/N) can be found on the Logger1000's front label.

step 2 Open your web browser and enter **11.11.11.1** in the address bar to navigate to Logger1000's login page.



For LOGGER-SV500.001.00.P007 or later: To log in to the Logger1000 Web system, enter the IP address manually: https://11.11.11.11

- - End

7.2.2 Establishing a Connection via Ethernet

Prerequisites

• The Logger1000 is connected to the PC using an Ethernet cable.

Necessary information for login

• Default IP address of the ETH port: 12.12.12.12

• Default subnet mask: 255.255.255.0

step 1 Set your PC's network card to match the Logger1000's network segment.
For example, assign an IP address to your PC within the same range: 12.12.12.125, with the subnet mask set to 255.255.255.0.



The IP address should have the same first three octets as the Logger1000. The fourth octet should be unique within the range of 1 to 254 to avoid conflicts (excluding 12, which is used by the Logger1000).

step 2 Open your web browser and enter **12.12.12.12** in the address bar to navigate to Logger1000's login page.



For LOGGER-SV500.001.00.P007 or later: To log in to the Logger1000 Web system, enter the IP address manually: https://12.12.12.12

- - End

7.3 Logging to the Web UI

table 7-1 Factory Default Passwords

Username	User role	Initial password
maintain	O&M user	pw1111
administrator	System administrator	pw@111111
develop	Developer Account	Dynamic password

7.3.1 Local Login

For example, log in as a O&M user:

step 1 Enter your login credentials based on the page displayed.

If	Then
	a. Enter the username: maintain.
The Web UI navigates to the login page	b. Enter the default password pw1111 .
	c. Click Login .
The Web UI displays the page General	a. In the upper right of the page, click Login to open the dialog box.
Information.	b. Enter the default password pw1111 .
	c. Click Login .

After logging in, the Web UI defaults to the interface with O&M user permissions.

step 2 Check the firmware version, and verify if the Logger1000 needs updating. See 12.6 Viewing the Firmware Version.



If an update is needed, see 12.3 Updating the Logger1000 .

- - End

7.3.2 Remote Login via Maintenance Link

Prerequisites

- · Remote maintenance is enabled on this Logger1000.
- · The necessary maintenance information is provided.

For example, log in as a O&M user:

- **step 1** Enter the address **https://rm.isolarcloud.com** in the browser address bar and navigate to the remote maintenance portal.
- step 2 Select the server site and product category.
 - Server site: Select as instructed in the remote maintenance information provided.
 - · Product category: Select communication device.
- step 3 Enter the device S/N and password.
- step 4 Log in and navigate to the Logger1000's login page.
- step 5 Enter the username: maintain.
- step 6 Enter the initial password pw1111, and click Login.

After logging in, the Web UI defaults to the interface with O&M user permissions.

- - End

7.4 Modify Password

It is recommended to change the login password after initial login.



Not changing the default password can lead to unauthorized access, and continued use of the initial password increases the risk of theft and hacking. Additionally, loss of the password can prevent access to the device, potentially causing losses to the power station. In these cases, SUNGROW shall not be liable for any losses incurred due to non-compliance with the recommended security practices.



If you forgot password, contact the relevant administrator.

step 1 Click O&M User > Modify Password to open the corresponding dialog.

step 2 Enter the old password and the new password.

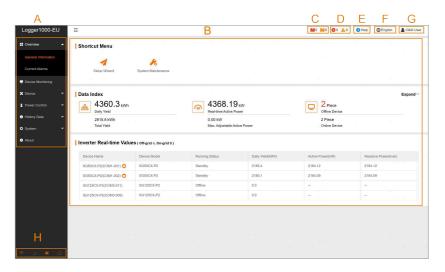
step 3 Click Save.

- - End

7.5 Web Main Interface

When logging into the web for the first time as an O&M user, the **Help** page pops up. Follow the instruction to perform operations such as time synchronization, device connection, and forwarding configuration.

The main interface is as follows:



Item	Name	Description
A	Navigation menu	Display main function modules of the Web
В	Function display area	Display the current interface
С	Optimizer fault and alarm	Display the counts of fault and alarm of the connected optimizer. Click the icon to enter the Device Monitoring page.
D	Alarm icon	Display the current alarm level and alarm number. Users can click the icons to enter the corresponding alarm page.

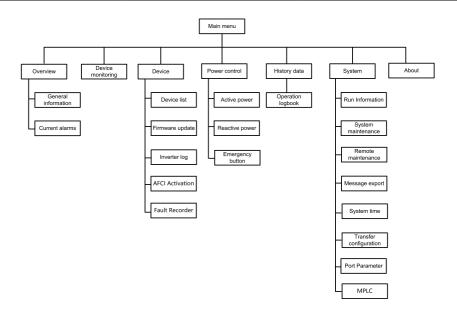
Item	Name	Description
E	Help	Display the basic configuration steps of the Logger1000.
F	Language menu	Click the button to select the desired language.
G	User	Display the current login user.
Н	Information icon	: WLAN connection : Mobile network connection : Ethernet connection : Cloud access If the corresponding icon shows orange, the device has accessed to the service.

Note: If the Logger1000 is connected to WLAN, mobile network, and Ethernet at the same time, Ethernet will be the most preferred option for data transfer, followed by mobile network and then WLAN.

7.6 Web Menu

The Web has seven main function modules: Overview, Device Monitoring, Device, Power Control, History Data, System, and About.

The permissions of the O&M users are as follows:



7.7 Operation Procedure

Prerequisites

- · Finished the electrical connection.
- · Logged into the Web.

step 1 Configure serial ports of the Data Logger.

After logging into the Web, first configure the serial ports to ensure that the Data Logger can normally communicate with downstream devices. See 7.12.11 Port Parameter.

step 2 Calibrate the system time.

Check whether the current system time is correct, and perform manual time synchronization or automatic time synchronization when necessary. See 7.12.5 System Time.

step 3 Add the device via auto search.

Devices that can be automatically searched, such as SUNGROW string inverter, can be added via the auto search function with addresses allocated automatically. See 7.10.1 Device List.

- step 4 Add other devices. See 7.10.1 Device List.
- step 5 Configure forwarding service.

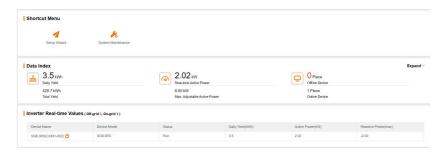
After all devices have been added, configure the forwarding service to ensure that the Data Logger can forward the data to upstream devices. See 7.12.6 iSolarCloud~7.12.9 Third-party Portal.

- - End

7.8 Overview

7.8.1 General Information

Click Overview > General Information to enter the corresponding page.



Shortcut Menu

- **Setup Wizard**: Quickly configure the network settings of the Data Logger, add devices, and set up a power plant.
- **System Maintenance**: Support of operations such as system upgrade, log export, and rebooting. See 7.12.2 System Maintenance.

Data Index

Information such as today yield, total yield, real-time active power, and number of offline devices can be viewed.

Click **Expand** to view more information.

Inverter Real-time Values

Information on the inverter such as state, daily yield, active power, and reactive can be viewed.

7.8.2 Current Alarms

Click **Overview > Current Alarms** to enter the corresponding page.

Information such as device name, alarm name, alarm type, alarm time, fault code, and fault ID can be viewed.

7.9 Device Monitoring

Click **Device Monitoring** to view the corresponding information.

Device information such as real-time values, DC data, initial parameters, operation parameters, system parameters, protection parameter, power regulation parameters, general parameter, device instruction and device information can be viewed on this interface.



The device data will be cached for 7 days. In the case of network outage during the operation of the device, the inverter data generated during the period of network outage will be uploaded after the network service is back to normal. Contact SUNGROW if you want to check the data uploaded after the network outage event.

7.9.1 RealTime Values

Realtime information such as power generation, device state, and active power can be viewed on this page.

step 1 Click Device Monitoring > Realtime Values to view the corresponding information.

step 2 Click to select the device type.

- - End

7.9.2 DC Info

On this interface, voltage and current information of multiple inputs of MPPTs and strings can be viewed.

Click **Device Monitoring > DC Info** to view the corresponding information.

7.9.3 Initial Parameter

Click **Device Monitoring > Initial Parameter** to enter the corresponding page and set the initial parameters.

Select a meter, set PT Transformation Ratio, CT Transformation Ratio, Meter Reverse Connection Enable, and Access Type, and click **Save**.



When the meter cable is connected reversed, but it is not easy to change the wiring, the correct meter data can be obtained after opening the meter reversing enable switch.

The meter reversal function supports single-phase meters and three-phase meters. Note that only the reverse connection of three phases is supported, and the reverse connection of one or two of the three phases is not supported.

For inverters, both individual and batch settings are supported.

7.9.3.1 Individual Device Settings

step 1 Select the device's Country/Region and Grid Type.

step 2 Click Settings to set initial parameters for an individual device.

- - End

7.9.3.2 Batch Settings

- step 1 Select the device's Country/Region and Grid Type.
- step 2 Click Configure Synchronization.
- step 3 Select the desired devices in the pop-up device list, and click Save to apply the changes.

- - End

7.9.4 Operation Parameters

Click **Device Monitoring > Operation Parameters** to enter the corresponding page and set operation parameters.

Both individual and batch settings are supported. For configuration methods, see 7.9.3 Initial Parameter.

7.9.5 System Parameters

Click **Device Monitoring > System Parameters** to enter the corresponding page and set the system time of the device.

Both individual and batch settings are supported. For configuration methods, see 7.9.3 Initial Parameter.

7.9.6 Protection Parameter

Click **Device Monitoring > Protection Parameters** to enter the corresponding page and set protection parameters.

Both individual and batch settings are supported. For configuration methods, see 7.9.3 Initial Parameter.

7.9.7 Protection Parameters (Other)

Click **Device Monitoring > Protection Parameters (Others)** to enter the corresponding page and set protection parameters.

Both individual and batch settings are supported. For configuration methods, see 7.9.3 Initial Parameter.



The parameters on this page may vary by inverter model. Please refer to the actual page.

7.9.8 Power Regulation Parameters

Click **Device Monitoring > Power Regulation Parameters** to enter the corresponding page and set power regulation parameters.

Both individual and batch settings are supported. For configuration methods, see 7.9.3 Initial Parameter.

7.9.9 General Parameter

- **step 1** Click **Device Monitoring > General Parameters** to enter the corresponding page and set general parameters.
- step 2 Select Read-back, set Register Address, Register Number and Address Type, and click Read-back to read the current value of the device.
- **step 3** Select **Settings**, set **Register Address**, **Data Type** and **Set Value**, and click **Save** to apply the changes to an individual device.



For parameters that need to be set, refer to corresponding communication protocol of the inverter.

- step 4 Optional: Configure general parameters in batch.
 - i. Click Configure Synchronization to apply the changes.
 - ii. Select the desired devices in the pop-up dialog, and click **Save** to apply the changes.
 - - End

7.9.10 Device Instruction

Users can perform power on, power off, and factory reset operations on SUNGROW inverters. Both individual and batch settings are supported.

Take powering on inverter as an example:

- step 1 Click Device Monitoring > Device Instruction to enter the corresponding page.
- step 2 Optional: Click ★ to select needed device type in the drop-down list.
- step 3 Select a device, and click Boot to open the dialog box. Click Boot.
- step 4 Click Yes to power on a specific inverter.
- step 5 Optional: Batch powering on devices.
 - i. Select a device, and click **Configure Synchronization** to open the dialog box.
 - ii. Select the desired devices in the pop-up dialog, and click **Save** to apply the changes.
 - - End

7.9.11 Device Information

Click **Device Monitoring > Device Information** to view the corresponding information.

Parameter information such as device S/N, device model, and rated active power can be viewed.

7.10 Device Maintenance

7.10.1 Device List

The **Device List** function is used for managing devices connected to the Data Logger and configuring addresses for these devices. Devices can be searched and automatically added.

7.10.1.1 Auto Search

The "Auto Search" function is used for SUNGROW string inverters with addresses automatically allocated.



Inverters without a serial number do not support the automatic search function and device adding function.



Automatic address allocation pops up only when there is an actual address confrontation.

- **step 1** Click **Device > Device List** to enter the corresponding page.
- step 2 Click Auto Search to open the Auto Search pop-up window. Select Port, and click Search.
- step 3 The devices that meet the search criteria will be displayed.
 - - End

7.10.1.2 Export

step 1 Click Device > Device List to enter the corresponding page.

step 2 Click to export the device list.

- - End

7.10.1.3 Import

step 1 Click Device > Device List to enter the corresponding page.

step 2 Click to export the device list.

step 3 After the device list is exported, user can modify device names in batch.

step 4 After the modification is completed, save the device list file in the .csv format.

step 5 Click to import the .csv file into the Web interface.

- - End

7.10.1.4 Add Device

step 1 Click Device > Device List to enter the corresponding page.

step 2 Click **Add Device** to open the **Add Device** pop-up window, select **Device Type** and fill in the information required.

- - End

7.10.1.5 Add the Third-party Meter (Import Files)

step 1 Click Device > Device List to enter the corresponding page.

step 2 Click Add Device to open the Add Device pop-up window, and select Meter in Device Type.

step 3 Select the port (COM1/COM2/COM3/NET) that the device is actually connected to in the Port.

step 4 Set Device Model to Others.

step 5 Set Configuration Method to Import Files.

step 6 Select the corresponding measuring point template in Configuration File. Or click import the configuration file.



step 7 Enter Beginning Address and Quantity of Device, and click Save.



Pay attention to the number of devices added in each port. Beginning Address to be entered should be bigger than the device address existed if they are in the same port.

- - End

7.10.1.6 Add the Third-party Meter (Custom)

- step 1 Click Device > Device List to enter the corresponding page.
- step 2 Click Add Device to open the Add Device pop-up window, and select Meter in Device Type.
- step 3 Select the port (COM1/COM2/COM3/NET) that the device is actually connected to in the Port.
- step 4 Set Device Model to Others.
- **step 5** Set Configuration Method to **Custom**. Click **Next** to open the **Configure Measuring Point** popup window.

table 7-2 Parameters description

Parameter	Description	
Byte Order	The order to parse the read byte stream. Refer to the communication protocol of the meter for details.	
PT Transformation Ratio	The voltage transformation ratio. Refer to the communication protocol of the meter for details.	
CT Transformation Ratio	The current transformation ratio. Refer to the communication protocol of the meter for details.	
Beginning Address	The beginning address of the device.	
Quantity of Device	The number of the device.	
Debug Address	Specify the device address to be read when clicking Read-back . The range is [("Beginning Address"), ("Beginning Address" + "Quantity of Device"-1)]	
Device Modbus ID	The address of Modbus communication protocol. It is recommended to select the register address corresponding to the data type of "Float". Refer to the communication protocol of the meter for details.	
Register Type	The register type of the corresponding measuring point. Refer to the communication protocol of the meter for details.	

Parameter	Description	
Data Type	The data type of the corresponding measuring point. Refer to the communication protocol of the meter for details.	
Read Type	With or without framing when send messages at this point. It is recommended to select Continuous	
Coefficient	The coefficient that multiplied the value of the data read. Refer to the communication protocol of the meter for details.	
Read-Back Value	Specify the value of the selected measuring point read when clicking Read-back	



User can select up to 21 measuring points for configuration. For the corresponding parameters (such as Modbus address), refer to the user manual of the connected meter.

step 6 Select the points to be measured, click **Read-back** to read the information from the Meteo Station in real-time to verify the accuracy of the data.



Only when the "Read-Back Value" is consistent with the displayed value of the electric meter, the parameter setting of the measuring point is correct.

- **step 7** When the "Read-Back Value" is consistent with the displayed value of the electric meter, click **Save Template** to save the measuring point setting of this/these meter(s) as a template.
- step 8 Enter the template name in the pop-up window and click Confirm to save the template.



The template name should be a combination of numbers, letters, dashes and underscores starting with English letters, with a maximum length of 32 bits.

step 9 In the **Configure Measuring Point** window, click **Confirm** to add the device and apply the changes.

- - End

7.10.1.7 Add the Third-party Meteo Station (Import Files)

- step 1 Click Device > Device List to enter the corresponding page.
- **step 2** Click **Add Device** to open the **Add Device** pop-up window, and select **Meteo Station** in Device Type.
- step 3 Select the port (COM1/COM2/COM3) that the Meteo Station is actually connected to in the Port.
- step 4 Set Device Model to Others.

step 5 Set Configuration Method to Import Files.



step 6 Select the corresponding measuring point template in Configuration File. Or click import the configuration file.

ı

step 7 Enter Beginning Address and Quantity of Device, and click Save.



The Modbus ID addresses of the devices connected in the same COM port of the Data Logger cannot be repeated.

- - End

7.10.1.8 Add the Third-party Meteo Station (Custom)

- step 1 Click Device > Device List to enter the corresponding page.
- step 2 Click Add Device to open the Add Device pop-up window, and select Meteo Station in Device Type.
- step 3 Select the port (COM1/COM2/COM3) that the Meteo Station is actually connected to in the Port.
- step 4 Set Device Model to Others.
- **step 5** Set Configuration Method to **Custom**. Click **Next** to open the **Configure Measuring Point** popup window.

table 7-3 Parameters description

Parameter	Description
Byte Order	Refer to the device Modbus map, parse the order of the read byte
	stream.
Beginning Address	The beginning address of the device.
Quantity of Device	The number of the device.
Debug Address	Specify the device address to be read when clicking Read-back . The range is [("Beginning Address"), ("Beginning Address" + "Quantity of Device"-1)]
Read Type	With or without framing when send messages at this point. It is recommended to select Continuous
Coefficient	Refer to the Modbus map of the device, the coefficient that multiplied the value
Read-Back Value	Specify the value of the selected measuring point read when clicking Read-back



User can select up to 13 measuring points for configuration. For the corresponding parameters (such as register address, and register type), refer to the user manual of the connected Meteo Station.

step 6 Select the points to be measured, click **Read-back** to read the information from the Meteo Station in real-time to verify the accuracy of the data.

- step 7 After confirming that the read-back data is correct, then click Save Template.
- step 8 Enter the template name in the pop-up window and click Confirm to save the template.



The template name should be a combination of numbers, letters, dashes and underscores starting with English letters, with a maximum length of 32 bits.

step 9 In the **Configure Measuring Point** window, click **Confirm** to add the device and apply the changes.

- - End

7.10.1.9 Edit Device

- step 1 Click Device > Device List to enter the corresponding page.
- **step 2** Click to open the **Edit Device** pop-up window. The name of the device connected to the Data Logger and other parameters can be modified.



The "**Device Name**" is named in the form: device model (port number-communication address).

Take "SG36KTL-M (COM1-7)" as an example. "SG36KTL-M" is device type, "COM1" is the communication port, and "7" is the communication address.

Address for Modbus Forwarding: Integer, ranging from 1 to 246; used for data forwarding in Modbus TCP and Modbus RTU modes (this parameter is available for LOGGER-SV500.001.00.P007 or later).

step 3 Click Save to apply the changes.

- - End

7.10.1.10 Delete Device

After a device is deleted on site, the user can delete the device from the **Device List** page, to keep device consistency.

- **step 1** Click **Device > Device List** to enter the corresponding page.
- step 2 Select the device to be deleted, click Delete.
- step 3 Click Confirm in the pop-up window, to delete the device.

- - End

7.10.2 Correcting Cumulative Power Generation

During operation, Rapid Shutdown Devices (RSDs) monitor the cumulative power generation data of the solar panels they are connected to. If an RSD fails and is replaced, the new device must be configured to continue monitoring data from the point recorded by the old device. O&M personnel can manually input and update the cumulative power generation data from the old device via the Web UI, ensuring continuity and accuracy of the data.

Prerequisites

- · The RSD replacement has been completed.
- Firmware version LOGGER-SV500.001.00.P007 and above support this function.



When using the device replacement feature in iSolarCloud, the cumulative power generation data can be automatically corrected. For detailed instructions, see iSolarCloud App User Manual.

- step 1 Click Device Monitoring to navigate to the corresponding page.
- **step 2** In the device list on the left, select the connected RSD, then click the tab **RSD Parameter** on the right.
- **step 3** In the field **PV Module Total Yield Adjustment**, enter the actual cumulative power respective module as recorded.
- step 4 Click Settings to apply the changes.
 - - End

7.10.3 Automatic Frequency Point Assignment

Frequency point assignment involves assigning specific communication frequencies to devices to ensure that data is exchanged smoothly between them. Before connecting inverters to the network, it helps prevent signal interference between devices, ensuring the accuracy of data acquisition.

Prerequisites

Firmware version LOGGER-SV500.001.00.P007 and above support this function

- step 1 Click Device > Device List to navigate to the corresponding page.
- step 2 Click Automatic Frequency Point Assignment to open the dialog box Select Measuring Points.

step 3 From the drop-down menu, select the frequency points as indicated, ensuring they meet the required range and count.

step 4 Click Confirm.

- - End

7.10.4 Uploading Physical Layout

In environments lacking network connectivity, it's essential for O&M personnel to upload the physical layout configurations of devices like inverters via the Web UI. This step ensures devices are correctly recognized and managed on the platform.

Prerequisites

Firmware version LOGGER-SV500.001.00.P007 and above support this function

- step 1 Click Device > Device List to navigate to the corresponding page.
- step 2 Click Topology White List to open the Topology Information dialog box.
- step 3 Download the template in .xlsx format to your local computer.
- step 4 Edit the layout template.
 - i. Open this template with Excel and follow the provided instructions to fill out the device numbers and serial numbers (S/N).
 - ii. Save your modifications.

step 5 Upload the configuration.

- i. Return to the Logger1000's Web UI and in the dialog box Topology Information, click Select File.
- ii. Browse to the file location through the file explorer window that pops up and select the updated template file.
- iii. Click **Open** to upload the file and confirm the upload.
- iv. In the dialog **Topology Information**, click **Import**.Once uploaded, the Web UI will automatically check the file for accuracy.
- v. If any errors are detected, refer to the on-screen prompts to make necessary corrections to the template file and upload it again.

- - End

7.10.5 Firmware Update

Users can upgrade the SUNGROW residential inverter and string inverter.

step 1 Click Device > Firmware Update to enter the corresponding page.

step 2 Click Select a Firmware File to select an update method.

Update Methods	Description
Local Update Package	Users need to obtain the device update package in advance and save it locally.
Online Update Package	Use the update package downloaded via iConfig for updating. This requires users to install the iConfig. Contact SUNGROW customer service for the installation package if needed.
iSolarCloud Upgrade Package	Use the update package on iSolarCloud for updating. This requires the Data Logger to access to iSolarCloud. See 7.12.6 iSolarCloud.



The firmware file should be in the ".zip" format.

- step 3 Select the upgrade file, and click Open to import the file. Matching devices are displayed.
- step 4 Select the device, and click Upgrade.



Never interrupt the upgrade.

- **step 5** Complete firmware update to view current version, target version, start time, end time and other information.
 - - End

7.10.6 Inverter Log

- step 1 Click Device > Inverter Log to enter the corresponding page.
- **step 2** Select the device running information, and click to view the export progress.
- step 3 Click Export to store the exported log locally.
- step 4 Click Cancel and then Confirm on the pop-up window, to cancel the current operation.
 - - End

7.10.7 AFCI Activation

- step 1 Click Device > ACFI Activation to enter the corresponding page.
- **step 2** Check the devices that need to self-checking, click **Self Checking** and then **Confirm** on the popup window.



The status of the self-checking device must be **Enable** . If the self-checking status is **Disable**, you can click $\stackrel{\vee}{}$ to set the self-checking status to **Enable**.

- **step 3** The result column shows the self-checking status as Self-Testing. After 7~8 seconds, the self-checking result will be displayed as Self-checking Failure or Self-test Pass.
- step 4 Click Clear Fault to bring up a dialog box showing the status of fault clearing.
 - - End

7.10.8 Fault Recorder

- step 1 Click Device > Fault Recorder to enter the corresponding page.
- step 2 Check the device, and click to export the data. The exported file needs to be unzipped
- **step 3** Find the .txt file, which is contained in the exported file mentioned in Step 2, and open it using iConfig. You may now check the fault recording of the device.



Contact SUNGROW customer service for the installation package and instructions for iConfig.

- - End

7.11 History Data

Click **History Data > Operation Log** to enter the corresponding page.

History information can be viewed.

7.12 System

7.12.1 Run Information

Click **System > Run Information** to enter the corresponding page.

The following information can be viewed:

· General Information

Check information like system time, IP address, MAC address, and mobile network.

IO Information

Check information like Al voltage and current values, and DI status.

· Forwarding Information

Check the current value of MODBUS-TCP and IEC104 parameters.

7.12.2 System Maintenance

7.12.2.1 System Update

Users can upgrade the Data Logger on the Web interface.

- **step 1** Click **System > System Maintenance** to enter the corresponding page.
- **step 2** Click **System Update**, select the upgrade method, and import the upgrade file following the onscreen instructions.



The upgrade package is a .zip file.

step 3 Click Upgrade on the pop-up version information window. The system enters upgrade state.

- - End

7.12.2.2 Log Export

- step 1 Click System > System Maintenance to enter the corresponding page.
- step 2 Click Log Export to enter the Log Export page.
- step 3 Select the type of logs to be exported, and click Confirm.
 - - End

7.12.2.3 Rebooting

- step 1 Click System > System Maintenance to enter the corresponding page.
- **step 2** Click **Rebooting** and a warning window will pop up. Click **Confirm** to continue the rebooting operation.
 - - End

7.12.2.4 Reset All Settings

step 1 Click System > System Maintenance to enter the corresponding page.

step 2 Click **Reset All Settings** and a warning window will pop up. Click **Confirm** to continue the reset all settings operation.

- - End



Restoring the factory settings refers to restoring all modified settings to the factory state and will not clear the data.

7.12.3 Remote Maintenance

Prerequisites

• The iSolarCloud forwarding service is enabled. See 7.12.6 iSolarCloud.

step 1 Click System > Remote Maintenance to enter the corresponding page.



table 7-4 Parameters description

Remote maintenance switch state	Description
Disable	Cannot perform remote maintenance on the Data Logger.
Enable	Can perform remote maintenance on the Data Logger.

- **step 2** The **Server** is associated with the iSolarCloud forwarding address. If you need to change it, modify the iSolarCloud server. For details, see 7.12.6 iSolarCloud.
- step 3 Click Save to enter the Remote Access page.
- step 4 Enter the login password and click Confirm.

step 5 Access information is saved in the following two ways.

- Click Copy Remote Access Information, and save the access information locally after successful copying.
- Enter the email address and click **Send** to send the access information to the email address.
- **step 6** Enter the access link in the URL field to enter the **Remote Maintenance** page. Enter the device S/N and password, and click **Login** to perform remote maintenance.
 - - End

7.12.4 Message Export

step 1 Click **System > Message Export** to enter the corresponding page.



table 7-5 Parameters description

Parameter	Description	Range
Port	-	Serial port: COM1, COM2, COM3 Network port: ETH, WiFi, Mobile Network
Duration	Export the message recorded during the set time	1 min ~ 10 min

step 2 Set Port, Serial Port, and Duration. Click Start to start recording message. The recording automatically stops when the set time reaches, or user may click Stop to manually stop recording.

step 3 Click Export to export the message.

- - End

7.12.5 System Time

Users can check whether the current system time is correct, and allows for setting the system's current time and schedule time synchronization for inverters.

Click **System > System Time** to enter the corresponding page.



Method of setting system time:

- When Inverter Timing is selected, SUNGROW inverter time will be synchronized with the time of Logger1000.
- When the clock source is set to **User Define**, user can manually set the current system time and time zone in the following two manners:
 - Select **Use PC Time** to synchronize the time of the Logger1000 with the time of the PC.
 - Click the Time Zone drop-down list and select the local time zone. Enter Date and Time, and click **Save** to manually set the time.
- When the clock source is set to NTP, it allows for the synchronization of time across all
 devices. Click the Time Zone drop-down list and select the local time zone. Fill in Server,
 set Time Interval, and click Save. This synchronizes the time of the Logger1000 with the
 time of the server.
- The clock source is set to **IEC104**. Both the Logger1000 and the background must use the **IEC104** communication protocol. Otherwise, this method will not be valid.
- · The clock source is set to iSolarCloud.
- · The clock source is set to Modbus-TCP.

It is recommended to select **User Define** for debugging purposes.

It is recommended to select the IEC104 communication protocol for time synchronization, followed by iSolarCloud.

NOTICE

Set the system time when using the Logger1000 for the first time.

7.12.6 iSolarCloud

step 1 Click System > Transfer Configuration to enter the corresponding page.

step 2 Click to modify the forwarding configuration information of iSolarCloud.



The default iSolarCloud server is "European Server". Users in other regions select "International Server".

To ensure the Data Logger can function properly, please complete the router whitelist settings first. For details, see Router Whitelist Settings.

- - End

7.12.7 IEC104

Configure the IEC104 forwarding service for the Data Logger on this page.

Server Mode

In the Server Mode, the Data Logger is used a server and connected to PC server to implement data transmission and command delivery.



The local port number is 2404 when configuring IEC104 forwarding service.

Client Mode

In the Client Mode, the Data Logger is used as a client and connected to PC server to implement data transmission and command delivery.

7.12.7.1 White List Settings

When **Enable White List** is not selected, and the default IP address is "0.0.0.0", any background devices with valid IP address can access the Data Logger.

When **Enable White List** is selected, and specified IP address is entered, only the device with the specified IP address can access the Data Logger.

7.12.7.2 Generate Point Table

- step 1 Turn on the switch of local port 2404.
- **step 2** Click **Generate Point Table**, and the default IEC104 point table will be automatically imported to the configuration file.
 - - End

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7.12.7.3 Edit IEC104 Forwarding Point Table

- step 1 Click Export of Configuration Tools to export the IEC104 forwarding point table.
- step 2 Unzip the exported package.
- step 3 Open the forwarding point table and set the parameters as needed.
 - i. Click the **Introduce** sheet. Five types of data can be viewed: telemetry, telesignalling, remote pulse, remote control, and remote regulating.
 - ii. Click the **Cfg Para** sheet. The addresses shown in the following table are default ones and can be modified according to actual situation.

table 7-6 Cfg Para tab parameters

Data Type	ΥX	YC	YM	YK	YT
Bngr Addr	1	16385	15221	15271	15000

iii. Open the sheets such as inverter, Smart Energy Meter, Meteo Station, and Logger1000, to set corresponding measuring point data.

table 7-7 Parameters of each equipment sheet

Data Type	DataID	State	Invert	Coefficient	Unit	Data Name
YC	1	Υ	N	1000	W	Р
YC	2	Υ	N	1000	Var	Q
YX	3	Υ	Υ	1	NA	On-grid
YX	4	Υ	N	1	NA	Off-grid
YM	5	Υ	N	1	kWh	E-Daily
YK	6	Υ	N	1	NA	Power On / Off
YT	7	Υ	N	1	kW	P-Set
YT	8	Υ	N	1	Var	Q-Set

table 7-8 Description of parameter

Parameter	Value	Description
Data Type	-	Data type
Data ID	-	Data type
State*	Υ	Data is uploaded to the background via the IEC104 communication protocol
	N	Data is not uploaded to the background
Invert*	Υ	Negate, 0 is 1, and 1 is 0, available for telesignalling only
	N	No negate, 0 is 0 and 1 is 1
Coefficient*	-	Coefficient, available for telemetry, remote pulse, and remote regulating only

Parameter	Value	Description
		Unit, available for telemetry, remote pulse,
Uint	-	and remote regulating only
		NA indicates no unit
Data Name	-	Data name in multiple languages

Note: * indicates that the parameters should be set according to onsite conditions.

iv. Open the **Device List** sheet to sort the devices.

No	DeviceType	ComID	CollectID	AccessID	Template Sheet	Reserved YX Addr	Reserved YC Addr	Reserved YM Addr	Reserved YK Addr	Reserved YT Addr
1	Plant			0	Plant	0	0	0	0	0
2	SG80KTL-M	COM1	1	1	SGINV-Old	0	0	0	0	0
3	SG80KTL-M	COM1	2	2	SGINV-Old	0	0	0	0	0
4	SG50KTL	COM2	1	3	SGINV-Old	0	0	0	0	0
	CCSOVTI	COM2	2	1	CCIMIL OLD	0	0	0	0	0

figure 7-1 The Device List sheet parameters

table 7-9 Description of parameter

Parameter	Description
No.	Sort devices, and only support moving the whole line for the device type corresponds one-to-one to its parameters in the same line
Device Type	Device type
Com ID*	The number of COM port to which device connected, corresponding to the port data on the Device List page.
Collect ID*	Collect device's Modbus address, corresponding to communication address on the Device List page.
Access ID*	The background access address, corresponding to the forwarding address on the Device List page.
Template Sheet	Keep consistent with the that in the device sheet
Reserved YX Addr	Reserved telesignalling address
Reserved YC Addr	Reserved telemetry address
Reserved YM Addr	Reserved remote pulse address
Reserved YK Addr	Reserved remote control address
Reserved YT Addr	Reserved remote regulating address

Note: Export the excel from the **Device List** page and copy the data in the exported excel.

step 4 After editing the IEC104 forwarding point table, click **Export > IEC104 CFG** on the menu bar to convert the excel file into the .xml file. The generated xml file and the excel file are at the same file directory.

- - End

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7.12.7.4 Import IEC104 Forwarding Point Table

step 1 Click to open the Advanced Settings pop-up window.

step 2 Click oto import the .xml file.

step 3 Click Save.

- - End

7.12.7.5 Add Peer Port Information

- **step 1** Configure the forwarding point table on the **Client** page. See 7.12.7.3 Edit IEC104 Forwarding Point Table.
- step 2 Click Add to open the Advanced Settings dialog box.
- step 3 Enter Server and Peer Port, and select Remote Signaling Measuring Point Type, Remote Signaling Time Mark, and Upload with a Change.
- step 4 Click oto import the .xml file.
- step 5 Click Save to apply the changes.

- - End

7.12.7.6 Configuring SSL Encryption



Firmware version LOGGER-SV500.001.00.P007 and above support this function.

The ports used by the IEC104 forwarding service support SSL encryption. Users can enable or disable SSL encryption via the Web user interface.

step 1 Navigate to System > Forwarding Configuration, and click IEC104.

step 2 Choose the Server tab. Here, you can enable or disable SSL Encryption for the local port.



Ports 2404 to 2418 are used for the IEC104 forwarding service. Port 2418 is enabled by default with SSL encryption activated. The other ports are disabled by default, and SSL encryption is also disabled. Users can manually enable or disable the port and SSL encryption.

If non-secure ports are used:

- If SSL encryption is enabled: When enabling the port manually, no security warning will appear.
- If SSL encryption is disabled: When enabling the port manually, a message will
 appear indicating that the protocol is insecure and risky. Verify that the device is
 operating on a secure network before enabling the port.
- When manually disabling SSL encryption for an enabled port: A message will
 appear stating that this protocol is risky. Verify that the device is operating on a
 secure network before disabling SSL encryption.
- When enabling SSL encryption for an enabled port: No security warning will appear.
- When the port is disabled: Actions on the SSL Encryption button will not trigger a security warning.

- - End

7.12.8 MODBUS

Configure the MODBUS forwarding service for the Data Logger on this page.



When Logger1000 (firmware version: LOGGER-SV500.001.00.P007 or later) works in "Server" or "RTU" mode, Address for Modbus Forwarding is required if the user wants to acquire data through third-party monitoring.

Click **Device** > **Device List** to navigate to the corresponding page. Obtain the forwarding address of the device in the **Address for Modbus Forwarding** column.

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7.12.8.1 Server Mode

In the Server Mode, the Data Logger is used a server and connected to PC server using the Modbus TCP protocol to implement data transmission and command delivery.

step 1 Click System > Transfer Configuration > MODBUS to enter the Server page.

step 2 For the white list setting, see 7.12.7.1 White List Settings.

- - End

7.12.8.2 Client Mode

In the Client Mode, the Data Logger is used a client and connected to PC server using the Modbus TCP protocol to implement data transmission and command delivery.

- step 1 Click System > Transfer Configuration > MODBUS to enter the Server page.
- step 2 Click Client to enter the Client page.
- step 3 Click Add to open the Advanced Settings dialog box.
- step 4 Enter Server and Peer Port, and click Save.

- - End

7.12.8.3 RTU Mode

In the RTU Mode, Data Logger is connected to PC server using the Modbus TCP protocol to implement data transmission and command delivery.

- step 1 Click System > Transfer Configuration > MODBUS to enter the Server page.
- step 2 Click RTU to enter the RTU page.
- step 3 Select Serial Port Name, and enter Delay.
- step 4 Click 🗎 .

- - End



Serial Port Name is set to **Forwarding Is Prohibited** by default, in which case this port can only be used to collect data. If the logger is connected to a third-party device through a COM port for data forwarding, select the COM port in the drop-down list of **Serial Port Name**. A maximum of two COM ports can be used for forwarding.

7.12.8.4 Configuring SSL Encryption



Firmware version LOGGER-SV500.001.00.P007 and above support this function.

The ports used by the Modbus forwarding service support SSL encryption. Users can enable or disable SSL encryption via the Web user interface.

step 1 Navigate to System > Forwarding Configuration, and click Modbus.

step 2 Choose the Server tab. Here, you can enable or disable SSL Encryption for the local port.



Ports 502 to 516 are used for the Modbus forwarding service. Port 516 is enabled by default with SSL encryption activated. The other ports are disabled by default, and SSL encryption is also disabled. Users can manually enable or disable the port and SSL encryption.

If non-secure ports are used:

- If SSL encryption is enabled: When enabling the port manually, no security warning will appear.
- If SSL encryption is disabled: When enabling the port manually, a message will
 appear indicating that the protocol is insecure and risky. Verify that the device is
 operating on a secure network before enabling the port.
- When manually disabling SSL encryption for an enabled port: A message will
 appear stating that this protocol is risky. Verify that the device is operating on a
 secure network before disabling SSL encryption.
- When enabling SSL encryption for an enabled port: No security warning will appear.
- When the port is disabled: Actions on the SSL Encryption button will not trigger a security warning.

- - End

7.12.9 Third-party Portal

Configure the third-party cloud forwarding service for the Data Logger on this page.

step 1 Click System > Transfer Configuration > Third-party Portal to enter the Third-party Portal page.

step 2 Turn on the switch.

User Manual 7 Web Interface

to open the Advanced Settings dialog box.

step 4 Modify the configuration information and click Save.



Set the FTP path and name it as "/FTP server directory".

For example, for the name "/SUNGROW", / is the root directory, and SUNGROW is the directory where data is stored on the FTP server.

- - End

7.12.10 Echonet

Configure the Echonet forwarding service for the Data Logger on this page.

step 1 Click System > Transfer Configuration > Echonet to enter the corresponding page.

step 2 Turn on the switch.

step 3 Click



to open the Advanced Settings pop-up window.

step 4 Click ⁶



to import the .xml file, and click Save.

- - End



Click 📴 to export the .xml file.

Click Quick Configuration to apply the default Echonet forwarding points configuration of Data Logger for forwarding.

7.12.11 Port Parameter

Configure serial ports of the Data Logger.

7.12.11.1 RS485

step 1 Click System > Port Parameter > RS485 to enter the RS485 page.

step 2 Click to modify Baud Rate, Parity Bit, and Stop Bit.

step 3 Click Save to apply the changes.

- - End



When the Data Logger is connected to a device via the serial port, the settings of Baud Rate, Parity Bit, and Stop Bit of the serial port should match those set for the connected device, to ensure normal communication. The default setting is 9600bps, 1 stop bit, and no check bit.

7.12.11.2 Ethernet

Perform Ethernet settings on this interface.

- step 1 Click System > Port Parameter > Ethernet to enter the Ethernet page.
- **step 2** If auto IP allocation is **Open**, it is recommended to obtain the current IP address of the ETH port by connecting the WLAN module and logging into 11.11.11.1.
- **step 3** If the parameter Automatically obtain IP settings (DHCP) is set to **Close**, fill in the information such as the IP Address, Subnet Mask, and Default Gateway, and click to save the operation.

- - End



The default IP address of the ETH port is 12.12.12.12.

If both auto IP allocation and WLAN STA client are enabled, ensure that the Ethernet and the WLAN STA are at different network segment. Otherwise, it is probably that neither of the two networks is available.

7.12.11.3 Cellular Network

Ensure that the Logger1000 can be correctly connected to the specified cellular network.

Prerequisites

The Access Point Name (APN) setup has been completed.

- step 1 Click System > Port Parameters > Cellular Network to navigate to the corresponding page.
- step 2 Click the APN Settings tab, enter the APN in APN and configure the Authentication Type, Username, and Password for Public Network Apn.



The parameters on the **APN Settings** tab are optional and are not configured by default. To obtain the parameter values, contact the SIM card provider. If the **Authentication Type** is set to **PAP** or **CHAP**, you must enter the username and password.

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Firmware version LOGGER-SV500.001.00.P007 and above support this function.

step 3 Click Save.

- - End

7.12.11.4 WiFi

Configure WLAN settings on this page.

Client

In the client mode, the Logger1000 is configured to connect to another hotspot or router using its WLAN function.

Click **System > Port Parameter > WiFi** to enter the **WiFi** page. Users will enter the Client mode by default, and the WLAN switch is turned on.

Hotspot

In Hotspot mode, the Logger1000 operates as a hotspot. Other devices such as PCs or mobile phones can connect to the Logger1000 using its WLAN function.

Click **System > Port Parameter > WiFi** to enter **WiFi** page. Click **Hotspot** to enter the **Hotspot** page.

table 7-10 Hotspot parameters description

Parameter	Description
	Enable: Turn on the Logger1000 hotspot. Users can
	then search for the hotspot on their PC or mobile
AP Hotspot Enable Switch	phone.
	Disable: Turn off the Logger1000 hotspot. Users
	cannot access the web interface through the hotspot.
Network Name	Network name
	None: no password required
Security	WPA2: enable encryption and require a password for
	access



When changing the WLAN hotpot password, it is necessary to reconnect the WLAN.

7.12.11.5 Analog Input (AI) Port

The Logger1000 has 4 Al ports supporting functions such as active and reactive power control.

Tab	Description		
Built-in	Set Al port parameters of the Logger1000		
External	Set Al port parameters for external IO device connected to the Logger1000		

step 1 Click **System > Port Parameter > AI** to navigate to the corresponding page.

The Built-in tab page displays.

step 2 Under Input Type, select the data type for the sampling signal of different Al ports.

- Voltage
- Current

step 3 Depending on the data type, enter the upper and lower limits for the sampling signal in the **Lower Limit** and **Upper Limit** fields.

- Lower limit for voltage: 0~10 V. (Default value: 0)
- Upper limit for voltage: 0~10 V. (Default value: 10)
- Lower limit for current: 4~20 mA. (Default value: 4)
- Upper limit for current: 4~20 mA. (Default value: 20)

step 4 In the field Purpose, describe what the AI port is used for.

step 5 Click 🖺 .

step 6 If the Logger1000 is connected to an external IO device via AI port, click **External** to set the related parameters.

- - Fnd

7.12.11.6 DI

step 1 Click System > Port Parameter > DI to enter the DI page.

step 2 Click to apply the changes.

- - End

7.12.11.7 DO

An external IO module is required to enable the DO function.

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step 1 Click System > Port Parameter > DO to enter the DO page.

step 2 Set the following parameters.

Parameter	Description
	The status of the DO port during normal operation.
Initial Status	• NO
	• NC
Function	Communication Control: Issue commands via iSolarCloud or a third-party device.
Function	 Manual Control: Control the status of the DO port manually on the web interface.
Action Mode	 Level: The status of the DO port changes, and then stays the same. Pulse: The status of the DO port changes and, after staying the same for a certain period of time, switches to the initial status. The duration of this period is set in Pulse Duration.
Pulse Duration	Only when Action Mode is set to Pulse , can you configure Pulse Duration. Range: 1-60s.
Purpose	It notes the purposes of the DO port.

step 3 Click Manual Control at the upper right of the page. Set Control Method to Reset or Action, and click Confirm.

- Reset: The DO port is restored to the initial status.
- Action: The DO port switches to the reverse status of Initial Status.



This step is applicable only when Function is set to Manual Control.

If Initial Status is NO, its reverse status is NC.

If Initial Status is NC, its reverse status is NO.

step 4 Click



to apply the changes.

- - End

7.12.12 MPLC

step 1 Click **System > MPLC**, select the MPLC to be set, and click to open the pop-up window and set the following parameters.

Parameter	Description	
Band Num	Band1: default band. Band2: standby band.	
Array ID	Select the current array ID. The ID of adjacent arrays cannot be	
	the same.	
Winding ID	Select the winding ID.	



Verify the accuracy of Array ID and Winding ID. If not, the device may go offline.

step 2 Click Next to set the slave node. Check the device to be set and click Synchronization.

step 3 Check the device to be rebooted, and click Reboot. After the rebooting is complete, click Next.



The parameters set in Step 1 take effect only after click **Reboot** in Step 3.

step 4 Click Reboot Master Node and click Confirm.

- - End

7.12.13 About

Click **About** to enter the **About** page.

Information such as firmware information of the Data Logger can be viewed.

- Device S/N: Check the SN of the device.
- Version Information: Click Value for five times to check the Application Software Version, Build Software Version, and System Software Version of the device.

Users can scan the QR code via the iSolarCloud App to add the Data Logger.

8 Power Control (PV System)

NOTICE

Power control is available only when the inverter supports active power control, power factor control, and reactive power regulation!

For details, refer to the inverter user manual or consult the local retailer.

8.1 Function Description

The Logger1000 can regulate power output to the connected inverter.

- Supports control of the SUNGROW inverter's power output.
- Supports closed-loop power regulation, with improved accuracy and real-time performance achievable through the use of a meter.
- Supports rapid command transmission channels with millisecond-level processing delays, while ensuring accurate delivery of dispatch commands to all inverters.
- · Supports control of power output according to locally preset commands.
- Supports regulation commands via remote communication protocols (IEC104, MODBUS, and TCP), analog inputs (AI), and dry contact inputs (DI).

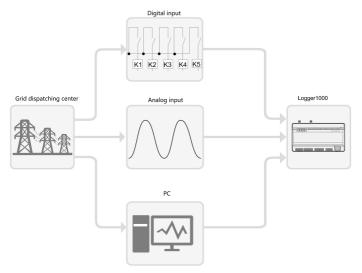


figure 8-1 System structure for the power control function

8.2 Interface Description

The Logger1000 is equipped with digital control interfaces and analog control interfaces for receiving digital and analog signals sent by the grid dispatching center.

8.2.1 Digital Control Interface

- The analog control interfaces are at the bottom of Logger1000. There are five ports dedicated to digital inputs.
- There are also 4 ports labeled as "Al/DI" that can serve as either analog or digital inputs.
 To configure the "Al/DI" ports for digital input, a power cable should be connected from the "24V OUT+" port to the "DI" port.

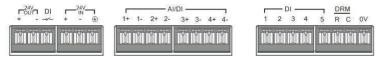


figure 8-2 Digital Control Interface

table 8-1 Digital control interface signal definition

Signal	Definition
DI	Enables the switch of AI ports to function as DI ports.
1+, 1-, 2+, 2-, 3+, 3-, 4+, 4-	4 input channels for dry contact signals.
1, 2, 3, 4, 5	5 digital input channels for dry contact signals. The DI5 port is used for connecting the emergency stop device.
DRM	Works together with DI1 to DI4 ports to implement the Demand Response Management (DRM) function.
0V	Grounding point for emergency stop device.



In Germany and some other European countries, grid companies use Ripple Control Receiver to convert grid dispatching signals and transmit them through dry contacts. In this case, the power plant needs to receive the grid dispatching signals through dry contact communication.

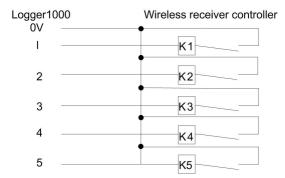


figure 8-3 Circuitry overview of the connection to a wireless remote controller

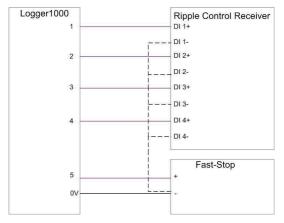


figure 8-4 Circuitry overview of the connection to active power dry contact

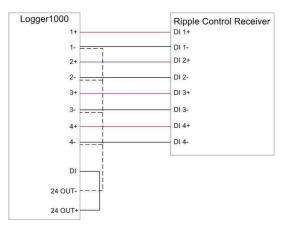


figure 8-5 Circuitry overview of the connection to reactive power dry contact

8.2.2 Analog Control Interface

- The analog control interfaces are at the bottom of Logger1000, and a total of 4 analog input ports are provided.
- The Logger1000 supports 4 analog inputs, either 4-20mA for current or 0-10V for voltage.

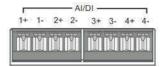


figure 8-6 Analog Control Interface

table 8-2 Analog control interface signal definition

Signal	Definition
1+ , 1- , 2+ , 2- , 3+ , 3- , 4+ , 4-	4 analog input channels

8.2.3 DRM Control Interface

- The DRM control interface are located at the bottom of Logger1000.
- The DRM interface works together with the DI1 to DI4 ports to implement the DRM function.
- To enable the DRM function, the Logger1000 must connect to a Demand Response Enabling Device (DRED). The connection can be established via wiring terminals or RJ45 connector.

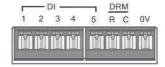


figure 8-7 DRM Control Interface

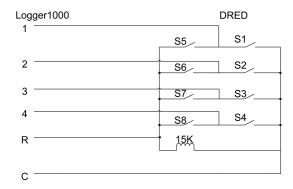


figure 8-8 Circuitry overview of the connection to the DRED

8.3 Options for Power Control Method

When adjusting active or reactive power, you can select between two control method: open-loop or closed-loop.

Open-Loop Control

Open-loop control does not rely on feedback from the inverter's actual output. Once the Data Logger sends the initial power control command, no further adjustments are made based on the inverter's output. This control method is suitable for scenarios that require quick adjustments.

Closed-Loop control

Closed-loop control depends on feedback from the inverter's actual output. The Data Logger continuously monitors the inverter's output power and compares it to the target power. If any deviation is detected, the Data Logger automatically adjusts the control commands to ensure accuracy and stability in output power. This control method is ideal for scenarios that require precise power adjustments.



To ensure accurate data feedback, closed-loop control requires connecting an smart energy meter or a box transformer with a control device to the Data Logger.

8.4 Selecting Power Control Mode

Both active power limitation and reactive power adjustment support various control methods. You can select based on the scale and needs of your power station.

Mode	Description
	Remotely control the photovoltaic power generation.
Remote Power	Recommended for scenarios requiring power adjustment
Control	through PPC (Power Plant Controller) or AGC (Automatic
	Generation Controller).
Local Power Control	Directly control the inverter's photovoltaic power via the Data
	Logger. This method is suitable for distributed power stations
	and zero-feed-in scenarios. Recommended when the power
	station is in a commissioning phase.
Analog Input	Use digital signals from the Data Logger's Al port (e.g., current
	or voltage) to adjust inverter power.
Digital Input	Use digital signals from the Data Logger's DI port, typically for
	responding to dry contact signals.



Mode	Description
DRM Mode	Demand Response Management (DRM) is a method for controlling power consumption that adjusts the load in response to signals from the power grid.
Country Mode	Suitable for meeting specific national or regional grid requirements.
Disable Dispatching	Select this option when the power adjustment has started and the inverter needs to maintain its current state.
Disable Derating	Recommended for scenarios where the inverter needs to maintain maximum power output. For example, during peak energy demand periods, this option ensures active power output is not reduced due to power adjustment. Only supports active power control.
Disable Output	Recommended for scenarios where the inverter needs to stop reactive power output. Only supports reactive power control.

Prerequisites

- The web UI has switched to the data acquisition scenario.
- step 1 Click Power Control in the navigation bar, from the expanded menu options, select Active Power or Reactive Power.
- step 2 On the page Active Power or Reactive Power, in the drop-down list Active Control Mode or Reactive Control Mode, select the desired power control method.
 - - End

8.5 Settings for Active Power Control

Prerequisites

• The web UI has switched to the data acquisition scenario.

Click **Power Control > Active Power** to navigate to the corresponding page.

8.5.1 Remotely Regulating Active Power

Select the monitoring backend that uses the IEC104 or MODBUS TCP protocol as the source of dispatch commands.

Once the remote dispatch configuration is complete, users can send dispatch commands through the monitoring backend.



8.5.1.1 Open-Loop Control

Prerequisites

- The Active Control Mode is currently set to Remote Power Control. Refer to 8.4 Selecting Power Control Mode.
- step 1 In the drop-down list Control Method, select Open-loop Control.
- **step 2** In the field **Query Recovery Time**, specify the time to pause data interaction between the Logger1000 and the inverter.
 - When power adjustment starts, the Logger1000 temporarily stops regular data reading to prioritize adjusting the inverter's power output for quick and accurate control.
 - For example, if **Query Recovery Time** is set to "60," the Logger1000 will not collect data from the inverter for 60 seconds after the power adjustment command is received. This might cause a delay in viewing device data via the Web UI or cloud platform during this period.
- **step 3** In the field **Frame Delay**, specify the frame interval for the Logger1000 to read inverter data. **step 4** Click **Save**.
 - - End

Once the configuration is complete, you can send further power control commands through the backend.

8.5.1.2 Closed-Loop Control

- The current Active Control Mode is set to Remote Power Control. Refer to 8.4 Selecting Power Control Mode.
- · A gateway meter or a box transformer with monitoring and control devices is connected.
- step 1 In the drop-down list Control Method, select Closed-loop Control.
- **step 2** In the drop-down list **Select energy meter/transformer**, select the meter or transformer for power regulation.
- **step 3** In the drop-down list **Control Cycle**, specify the interval at which the Logger1000 sends dispatch commands to the inverter.
- **step 4** In the field **Error Limit**, specify the allowable error range for the ratio between the difference in actual active power and the target value, relative to the rated power.
 - If the ratio is within the error range, the power adjustment is considered to have reached the target value. You should adjust this parameter in real-time based on the inverter's output power.



step 5 In the field **Adjustment Ratio**, set the ratio between the inverter's output power and the target value.

If If the adjustment result does not reach the set target value, the Logger1000 will adjust according to the set adjustment ratio to achieve the target value. You should adjust this parameter in real-time based on the inverter's output power.

step 6 Click Save.

- - End

Once the configuration is complete, you can send further power control commands through the backend.

8.5.2 Locally Regulating Active Power

Configure the parameters for local active power control.

8.5.2.1 Open-Loop Control

Prerequisites

- The Active Control Mode is currently set to Local Power Control. Refer to 8.4 Selecting Power Control Mode.
- step 1 In the drop-down list Control Method, select Open-loop Control.
- **step 2** In the drop-down list **Control Cycle**, specify the interval at which the Logger1000 sends dispatch commands to the inverter.
- **step 3** In the drop-down list **Instruction Type**, select the designated unit for power regulation.
 - kW: Adjusts the power by setting the total rated power of the inverter array. Recommended
 for scenarios where precise control of the inverter's output power is required, such as when a
 power station needs to comply with grid capacity limits.
 - %: Adjusts power based on a percentage of the inverter's maximum rated power.
 Recommended for scenarios where the output needs to be adjusted according to the inverter's capacity.

step 4 Click Save.

--End

After configuration, specify the time and target values for local power control. Refer to 8.5.2.3 Configuring Adjustment Time and Target Values.

8.5.2.2 Closed-Loop Control

- The current Active Control Mode is set to Local Power Control. Refer to 8.4 Selecting Power Control Mode.
- For closed-loop control, a gateway meter for power control must be connected.
- step 1 In the drop-down list Control Method, select Closed-loop Control.
- **step 2** In the drop-down list **Select energy meter/transformer**, select the meter or transformer for power regulation.
- **step 3** When the communication with the meter is interrupted, configure the relevant parameters of the Logger1000.
 - i. In the field Power Limit in Case of Meter Communication Anomaly, specify the target value as a percentage to be issued by the Logger1000 when there is a communication failure with the meter.
 - When **Power Limit in Case of Meter Communication Anomaly** is set to "0%", the Logger1000 will send a shutdown command to the inverter after confirming the communication failure with the meter.
 - ii. When the inverters are shut, in the drop-down list Start After Communication Recovery, select whether the Logger1000 should send a power-on command to the inverters when communication with the meter resumes.
 - Enable: When the communication resumes, the inverter will restart.
 - **Disable**: When the communication resumes, the inverter will remain shut down.
 - iii. In the field Start Delay After Communication Recovery, specify the waiting time for the Logger1000 to send a power-on command to the inverter after communication is restored.
- **step 4** If zero power feed-in is required, in the drop-down list **Wiring Mode**, select the connection mode of the Logger1000 based on the actual situation.
 - Direct Connection: The Logger1000 establishes direct connections with all string or central inverters.
 - **Cascading**: Multiple Logger1000s are interconnected in a cascading manner, with this particular Logger1000 as the master unit within the network.



- **step 5** In the drop-down list **Feed-in Stop**, select whether the Logger1000 should send a shutdown command to the inverter when gird power feed-in is detected.
 - **Enable**: The inverter will shut down when feed-in power is detected by the meter. Select this option when zero power feed-in is required.



After the inverter shuts down, if the meter detects that the power draw exceeds 10% of the system's rated power, the Logger1000 will send a power-on command to the inverter.

- Disable: The inverter will remain on even when feed-in power is detected by the meter.
- **step 6** In the drop-down list **Feed-in Control Mode**, select the grid control mode according to the type of data the meter collects.
 - **Total Active Power Control**: The meter collects three-phase data on the grid side as the feedback value for regulation.
 - **Split Phase Active Power Control**: The meter collects single-phase data as the feedback value for regulation.
- **step 7** In the field **Energy Meter Response Time**, based on the model of the connected meter, adjust the meter response time, to improve grid feed-in speed and precision.
- step 8 In the field Over-scaling, enter the desired value for over-scaling.

 Based on the initial power limit target, Logger1000 will adjust the inverter's output once to ensure it stays below the set limit, without the need for repeated adjustments. It is recommended to use this parameter in scenarios that require stringent power control, such as anti-backflow or achieving zero power feed-in.
- **step 9** In the drop-down list **Control Cycle**, specify the interval at which the Logger1000 sends dispatch commands to the inverter.
- step 10 In the drop-down list Instruction Type, select the designated unit for power regulation.
 - kW: Adjusts the power by setting the total rated power of the inverter array. Recommended
 for scenarios where precise control of the inverter's output power is required, such as when a
 power station needs to comply with grid capacity limits.
 - %: Adjusts power based on a percentage of the inverter's maximum rated power.
 Recommended for scenarios where the output needs to be adjusted according to the inverter's capacity.
- step 11 When kW is selected, set a reasonable feed-in power value according to local regulations.

- **step 12** When % is selected, in the drop-down list **Feed-in Limitation Method**, select a reference for limiting the grid-connected power.
 - **Nominal Power**: Calculate the value to be sent for power control based on the inverter's rated power.
 - **Installed PV Power**: Calculate the value to be sent for power control based on the installed PV capacity. Enter the total installed power of PV modules at the power plant.

step 13 Click Save.

- - End

After configuration, specify the time and target values for local power control. Refer to 8.5.2.3 Configuring Adjustment Time and Target Values.

8.5.2.3 Configuring Adjustment Time and Target Values

Prerequisites

• The selected power control strategy and related configurations are complete.

The specific time and target values for local power control is presented in a table.





If no additional combinations of time and target values are set, the Logger1000 will adjust power according to default values throughout the day.

- **step 1** Position the cursor in the column **Start Time**, and in the time picker, select the time to deliver the power control command.
 - Time is precise to the minute. The default power adjustment starts at "00:00" and cannot be changed.
- **step 2** Depending on the selected **Instruction Type**, enter the target value for active power in the corresponding column **Fixed Value of Active Power** or **Percentage**.





To meet zero power feed-in or anti-backflow requirements, set the target value to "0", indicating that the inverter will not output any active power to the grid.

However, to strictly control feed-in power and handle load fluctuations, it is recommended to set the target value to a negative number. After configuration, the load will draw power from the grid instead, ensuring the inverter does not active power is fed into the grid.

step 3 To delete a specific adjustment time and target value, check the corresponding box in the first column, and click **Clear Data**.

step 4 Click Save.

- - End

8.5.3 Regulating Active Power via Analog Input

- The Active Control Mode is currently set to Analog Input. Refer to 8.4 Selecting Power Control Mode.
- For closed-loop control, a gateway meter for power control must be connected.
- Certain parameters are only configurable when the IOM424 module is connected.
- step 1 In the drop-down list Control Method, select Open-loop Control or Closed-loop Control.
- **step 2** For **Closed-loop Control**, in the drop-down list **Select energy meter/transformer**, select the meter or transformer for power regulation.
- **step 3** In the drop-down list **Control Cycle**, specify the interval at which the Logger1000 sends dispatch commands to the inverter.
- step 4 In the drop-down list Al Port, select the Al port that accepts the analog input signals.
 To configure the Al port parameters, click Al Configuration to navigate to the System > Port Parameter > Al page.
- **step 5** In the drop-down list **Instruction Type**, select the designated unit for power regulation.
 - **kW**: Adjusts the power by setting the total rated power of the inverter array. Recommended for scenarios where precise control of the inverter's output power is required, such as when a power station needs to comply with grid capacity limits.
 - %: Adjusts power based on a percentage of the inverter's maximum rated power.
 Recommended for scenarios where the output needs to be adjusted according to the inverter's capacity.



step 6 Depending on the **Instruction Type**, in the field **Min** and **Max**, set the target value range for power control.

- When **Instruction Type** is set to **%**, the range of **Min** and **Max** is 0 to 100%.
- Instruction Type When selecting kW, the range of Min and Max is 0.0 kW to 999999.9 kW.

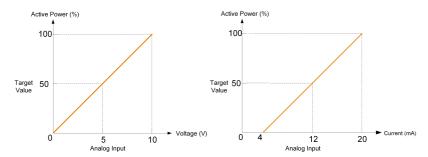


figure 8-9 Example of the relationship between analog input values and target values

step 7 Depending on **Instruction Type**, in the field **Step**, set the minimum difference value between two consecutive power control commands.

step 8 When Open-loop Control is selected, configure the following parameters.

- i. In the **Sampling Value Less Than Lower Limit Power Value** field, enter the power limit ratio to be sent when the sampled value from the Al channel is below the lower limit.
- ii. In the drop-down list **Sampling Value Less Than Lower Limit Associated DO**, select the associated DO port.
 - If the sampled value from the Al channel falls below the lower limit, this DO port will be activated to perform the specified action.
- iii. In the field Sampling Value Less Than Lower Limit Fault Recovery Time, set the time required for the DO port to restore to the initial state when the sampled value from the Al channel falls below the lower limit.
- iv. In the Sampling Value Greater Than Upper Limit Power Value field, set the power limit ratio to be sent when the sampled value from the AI channel exceeds the upper limit

- v. In the drop-down list **Sampling Value Greater Than Upper Limit Associated DO**, select the associated DO port.
 - If the sampled value from the AI channel exceeds the upper limit, this DO port will be activated to perform the specified action.
- vi. In the field **Sampling Value Greater Than Upper Limit Fault Recovery Time**, set the time required for the DO port to restore to the initial state when the sampled value from the AI channel exceeds the upper limit.

step 9 Click Save.

- - End

8.5.4 Regulating Active Power via Digital Input

- The Active Control Mode is currently set to Digital Input. Refer to 8.4 Selecting Power Control Mode.
- For closed-loop control, a gateway meter for power control must be connected.
- step 1 In the drop-down list Control Method, select Open-loop Control or Closed-loop Control.
- **step 2** For **Closed-loop Control**, in the drop-down list **Select energy meter/transformer**, select the meter or transformer for power regulation.
- **step 3** In the drop-down list **Control Cycle**, specify the interval at which the Logger1000 sends dispatch commands to the inverter.
- step 4 In the drop-down list Instruction Type, select the designated unit for power regulation.
 - **kW**: Adjusts the power by setting the total rated power of the inverter array. Recommended for scenarios where precise control of the inverter's output power is required, such as when a power station needs to comply with grid capacity limits.
 - %: Adjusts power based on a percentage of the inverter's maximum rated power.
 Recommended for scenarios where the output needs to be adjusted according to the inverter's capacity.
- **step 5** When **Closed-loop Control** is selected, and the unit for target value is set to %, in the drop-down list **Feed-in Limitation Method**, specify a reference for limiting the grid-connected power.
 - Nominal Power: Calculate the value to be sent for power control based on the inverter's rated power.
 - Installed PV Power: Calculate the value to be sent for power control based on the installed PV capacity. Enter the total installed power of PV modules at the power plant.
- **step 6** In the table at the bottom of the page, set the target values for power control corresponding to the digital input signals.



- i. Based on the dry contact signals received by the DI ports, check the corresponding DI port.
- ii. Depending on the **Instruction Type**, enter a fixed value or a percentage for active power control.



To delete the DI signal configuration, select the checkbox in the first column of the row, and click **Clear Data** .

step 7 Click Save.

- - End

8.5.5 Regulating Power via DRM

Prerequisites

- The Active Control Mode is currently set to DRM Mode. See 8.4 Selecting Power Control Mode.
- step 1 When selecting DRM mode, check the box Whether it coexists with other active power control methods according to actual requirements.
- step 2 Click Save.
 - - End

8.5.6 Regulating Active Power via Country Mode

Implement power regulations according to the commands issued by the national grid dispatching center.

8.5.6.1 Korea

- step 1 In the drop-down list Country, select Korea.
- step 2 In the drop-down list PPC Type, select the power plant controller DER-AVM.
- step 3 In the field Forwarding Modbus ID, enter the Modbus forwarding address (Range: 1~10).
- step 4 Click Save.
 - - End

8.5.6.2 Japan

- step 1 In the drop-down list Country, select apan.
- step 2 In the drop-down list Control Method, select Open-loop Control or Closed-loop Control.

step 3 When **Closed-loop Control** is selected, click **Closed-loop Control Parameters** to modify the closed-loop control related parameters.

The following parameters can be configured:

- · Select Meter
- · Wiring Mode
- · Feed-in Control Mode
- · Energy Meter Response Time
- Over-scaling
- Active Power Change Rate:: The rate of change of active power over time. Used to control
 the acceleration and deceleration of active power to prevent sudden power changes from
 impacting the grid.
- Control Cycle

step 4 In the drop-down list **Scheduling Mode**, select the required power company for the power plant. The Logger1000 will connect to the dispatch server designated by the power company.

step 5 In the drop-down list Obtaining Schedule, select the method to retrieve the dispatch schedule.

- **Remote Download**: Download the schedule through the server address. The ID of the power plant must be entered.
- · Local Import: Manually upload the schedule.

step 6 In the drop-down list **Parameter Type**, select the type of the parameters.

- Plant Parameter: Both Plant Information and PV Module Capacity must be set.
- Device Parameter: Click Detailed Device Parameter to view and set the device's detailed information.

step 7 In the drop-down list Time Calibration, select the number of minutes to adjust the current time.

Select a positive value to advance the time, or select a negative value to set the time back.

The field **Time Validity** displays the time calibration result.

If it displays **Invalid**, the Logger1000 sends a shutdown command to the connected inverters, until the time is correctly calibrated or synchronized.

The time calibration may not be valid for the following reasons:

- The Logger1000 system time is earlier than the calibrated time
- The Logger1000 system time is earlier than the time synchronized via NTP

step 8 Click Save.

- - End

8.5.7 Disabling Active Power Control

If the Logger1000 has already limited the inverter's active power and you need the inverter to maintain its current state, you can disable active power control.

step 1 On the Active Power page, set Active Control Mode to Disable Dispatching.
step 2 Click Save.

- - End

Once the settings are completed, the inverter will continue to operate with the current active power adjustment limit.

8.5.8 Prohibiting the Inverter from Reducing Power Output

step 1 On the Active Power page, set Active Control Mode to Disable Derating.
step 2 Click Save.

- - End

Once the settings are completed, the Logger1000 will stop limiting active power, and the inverter will operate at full load, maintaining an output power level of "100%".

8.6 Settings for Reactive Power Control

Prerequisites

The web UI has switched to the data acquisition scenario.

Click **Power Control > Reactive Power** to navigate to the corresponding page.

8.6.1 Remotely Regulating Reactive Power

- The Reactive Control Mode is currently set to Remote Power Control. Refer to 8.4 Selecting Power Control Mode.
- For closed-loop control, a gateway meter or a box transformer with monitoring and control devices must be connected.
- step 1 In the drop-down list Control Method, select Open-loop Control or Closed-loop Control.
- **step 2** When **Open-loop Control** is selected, refer to the remote active power control and configure the corresponding parameters. Refer to 8.5.1.1 Open-Loop Control.
- **step 3** When **Closed-loop Control** is selected, refer to the remote active power control and configure the corresponding parameters. Refer to 8.5.1.2 Closed-Loop Control.



step 4 When **Closed-loop Control** is selected, in the drop-down list **Reactive Power Direction**, select whether the reactive power output direction recorded by the meter or transformer matches the inverter.



By default, the SUNGROW inverter outputs inductive reactive power (positive) when the grid needs to increase voltage, and capacitive reactive power (negative) when it needs to decrease voltage.

- **Forward Direction**: The reactive power direction recorded at the grid connection point matches the inverter's reactive power direction.
- **Direction Reverse**: The reactive power direction recorded at the grid connection point is opposite to the inverter's reactive power direction.

step 5 Click Save.

- - Fnd

8.6.2 Locally Regulating Reactive Power

Configure the parameters for local reactive power control.

- The Reactive Control Mode is currently set to Local Power Control. Refer to 8.4 Selecting Power Control Mode.
- For closed-loop control, a gateway meter for power control must be connected.
- step 1 In the drop-down list Control Method, select Open-loop Control or Closed-loop Control.
- step 2 In the drop-down list Instruction Type, select the designated unit for power regulation.
 - **PF**: Adjusts power based on the power factor. Recommended for scenarios where the inverter needs to maintain a specific power factor level.
 - %: Adjusts power based on a percentage of the inverter's maximum rated power.
 Recommended for scenarios where the output needs to be adjusted according to the inverter's capacity.
- **step 3** When **Open-loop Control** is selected, refer to the local active power control and configure the corresponding parameters. Refer to 8.5.2.1 Open-Loop Control.
- **step 4** When **Closed-loop Control** is selected, refer to the local active power control and configure the corresponding parameters. Refer to 8.5.2.2 Closed-Loop Control.
- **step 5** When **Closed-loop Control** is selected, in the field **Line Reactive Power Compensation**, estimate and set the reactive power loss in the line.
- **step 6** Refer to local active power control and add dispatch time and target values. Refer to 8.5.2.3 Configuring Adjustment Time and Target Values.
 - - End

8.6.3 Regulating Reactive Power via Analog Input

- The Reactive Control Mode is currently set to Analog Input. Refer to 8.4 Selecting Power Control Mode.
- For closed-loop control, a gateway meter for power control must be connected.
- step 1 In the drop-down list Control Method, select Open-loop Control or Closed-loop Control.
- step 2 When Closed-loop Control is selected, configure the following parameters.
 - i. In the drop-down list **Select energy meter/transformer**, select the meter or transformer for power regulation.
 - ii. In the drop-down list **Control Cycle**, specify the interval at which the Logger1000 sends dispatch commands to the inverter.
- step 3 In the drop-down list Al Port, select the Al port that accepts the analog input signals.
 To configure the Al port parameters, click Al Configuration to navigate to the System > Port
 Parameter > Al page. See 7.12.11.5 Analog Input (Al) Port.
- step 4 In the drop-down list Instruction Type, select the designated unit for power regulation.
 - **PF**: Adjusts power based on the power factor. Recommended for scenarios where the inverter needs to maintain a specific power factor level.
 - %: Adjusts power based on a percentage of the inverter's maximum rated power.
 Recommended for scenarios where the output needs to be adjusted according to the inverter's capacity.
- **step 5** Depending on the **Instruction Type**, in the field **Min** and **Max**, set the target value range for power control.
 - %: The range of **Min** and **Max** is -100% to 100%.
 - PF: The range of Min and Max is -1~-0.8 or 0.8 to 1.



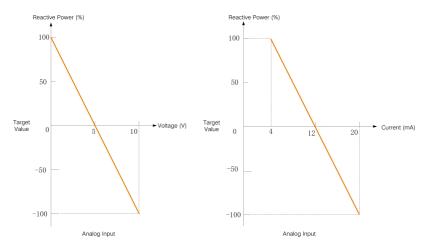


figure 8-10 Example of the relationship between analog input values and target values

- **step 6** Depending on **Instruction Type**, in the field **Step**, set the minimum difference value between two consecutive power control commands.
- **step 7** For with **Instruction Type** to **PF**, in the field **Hysteresis Range**, specify a deadband range that maintains the PF at ±1 to avoid frequent sudden changes in power factor.

step 8 Click Save.

- - End

8.6.4 Regulating Reactive Power via Digital Input

Prerequisites

- The **Reactive Control Mode** is currently set to **Digital Input**. Refer to 8.4 Selecting Power Control Mode.
- For closed-loop control, a gateway meter for power control must be connected.

step 1 In the drop-down list Control Method, select Open-loop Control or Closed-loop Control.

step 2 When Closed-loop Control is selected, configure the following parameters.

- i. In the drop-down list **Select energy meter/transformer**, select the meter or transformer for power regulation.
- ii. In the drop-down list **Control Cycle**, specify the interval at which the Logger1000 sends dispatch commands to the inverter.

step 3 In the drop-down list Instruction Type, select the designated unit for power regulation.

- **PF**: Adjusts power based on the power factor. Recommended for scenarios where the inverter needs to maintain a specific power factor level.
- %: Adjusts power based on a percentage of the inverter's maximum rated power.
 Recommended for scenarios where the output needs to be adjusted according to the inverter's capacity.
- **step 4** In the table at the bottom of the page, set the target values for power control corresponding to the digital input signals.
 - i. Based on the dry contact signals received by the DI ports, check the corresponding DI port.
 - ii. Depending on the **Instruction Type**, enter a percentage or a power factor for reactive power control.



To delete the DI signal configuration, select the checkbox in the first column of the row, and click **Clear Data** .

step 5 Click Save.

- - End

8.6.5 Regulating Reactive Power via Country Mode

Implement power regulations according to the commands issued by the national grid dispatching center.

Prerequisites

 The Reactive Control Mode is currently set to Country Mode. See 8.4 Selecting Power Control Mode.

step 1 In the drop-down list **Country**, select the country where inverters are located.

step 2 When the country is set to **Korea**, configure the following parameters.

- i. In the drop-down list **PPC Type**, select the power plant controller DER-AVM.
- ii. In the field **Forwarding Modbus ID**, enter the Modbus forwarding address (Range: 1~10).
- iii. In the drop-down list $\mbox{\bf Instruction Type},$ select the type of dispatch commands.

step 3 Click Save.

- - End

8.6.6 Disabling Reactive Power Control

Disable the Logger1000 from controlling reactive power to the inverter.

step 1 On the Reactive Power page, set Reactive Control Mode to Disable Dispatching.
step 2 Click Save.

- - End

Once the settings are completed, the inverter will continue to operate with the current reactive power adjustment limit.

8.6.7 Disabling Reactive Power Output

In certain situations, such as when the grid company does not require voltage regulation at the grid-connection point and no reactive power compensation is needed, you can set the inverter to stop reactive power output. This helps maintain overall grid stability and prevents voltage fluctuations caused by reactive power adjustment.

step 1 On the Reactive Power page, set Reactive Control Mode to Disable Output.
step 2 Click Save.

- - End

Once the settings are completed, the inverter's reactive power output will return to "0%".

8.7 Setting Emergency Stop

If the emergency stop switch is activated, the Logger1000 will initiate a batch power-off operation on the inverters.

- The Logger1000 is connected to the emergency stop device.
- step 1 Click Power Control > Emergency Button to navigate to the corresponding page.
- step 2 Set Emergency Button to Enable.
- **step 3** Optional: Set Inverter Status During Emergency Stop Recovery to **Boot**.

 After resetting the emergency stop switch, the inverters will automatically power on.
- step 4 Click Save to apply the changes.
 - - End



If the inverters remain in standby mode after resetting the emergency stop switch, manually start the inverters through **Device Monitoring > Device Instruction**. If there is any problem, contact SUNGROW.

8.8 Configuring Cascaded Scheduling



Firmware version LOGGER-SV500.001.00.P007 and above support this function.

step 1 Navigate to Device Maintenance > Device List.

step 2 Click Add Device and set Device Type to SUNGROW Logger in the pop-up window.

step 3 Select the status of host-client scheduling control in Cascaded Scheduling.

• **Enable**: Enable Cascaded Scheduling, where the client Logger1000 is subject to the control by the host Logger1000. Multiple Logger1000 devices are cascaded and the current Logger1000 serves as the host.



In Cascaded Scheduling mode, to use a client Logger1000 device for energy management or power regulation, first log in to the host Logger1000 in the system and disable Cascaded Scheduling for that client.

- Disable: Disable Cascaded Scheduling, where he client Logger1000 is not controlled by the host Logger1000. All inverters are connected to the same Logger1000 device and the inverters must all be string inverters or central inverters.
- - End

9 Power Control (Energy Storage System)



In the energy management scenario, the options for power control may vary depending on the firmware version of the Logger1000. Always refer to the actual interface for up-to-date and precise information.

9.1 Settings for Active Power Control

Prerequisites

• The web UI has switched to the energy management scenario.

9.1.1 Power Regulation using Digital Inputs

The DI power control support Demand Response Management (DRM) and Ripple Control systems through dry contact communication. If an emergency stop device is connected, an emergency stop function can be implemented for additional safety and control.

The following options are supported:

- DRM
- · Ripple Control



To disable power control using DI, in the drop-down list ${\bf DI}$ ${\bf Control}$ ${\bf Method}$, select ${\bf Close}$.

9.1.1.1 Controlling Power via DRM

Demand Response Management (DRM) is a method for controlling power consumption that adjusts the load in response to signals from the power grid.

step 1 Click **Power Control > Active Power** to navigate to the corresponding page. The **DI Power Regulation** tab page displays.

step 2 In the drop-down list DI Control Method, select DRM.

step 3 Click Save.

- - End

9.1.1.2 Controlling Power via Ripple Control

The Ripple Control mode adjusts power according to the grid's control signal received through dry contacts, suitable for Germany and other parts of Europe.

When Ripple Control is activated, dispatch signals are conveyed by the power grid company through digital input ports. There are 16 available DI signal configurations, each associated

with a specific power ratio. You must configure these DI ports on the Web UI according to the requirements of the utility company to correctly receive and respond to these signals.

table 9-1 Signal states of DI ports

The digital signal source is in an open state. The digital signal source is in a closed state.		Icon Desc
The digital signal source is in a closed state	in an open state.	The o
The digital signal source is in a closed state.	in a closed state.	The o



Each DI signal configuration must be unique.

step 1 Click **Power Control > Active Power** to navigate to the corresponding page. The **DI Power Regulation** tab page displays.

- step 2 In the drop-down list DI Control Method, select Ripple Control.
- **step 3** In the drop-down list **Inverter Output Power Limit Ratio Calculation Basis**, select the reference for limiting the inverter's output power.
 - **Nominal Power**: Calculate the value to be sent for power control based on the inverter's rated power.
 - **Installed PV Power**: Calculate the value to be sent for power control based on the installed PV capacity. Enter the total installed power of PV modules at the power plant.
- **step 4** Check the digital signal ports and specify the desired power ratio (range: 0-100%). A default DI signal configuration appears below for initial setup.
- step 5 Click (+) to add additional DI signal configurations.
- step 6 Click Save.
 - - End

9.1.1.3 Setting Emergency Stop

When the emergency stop function is enabled, you can initiate an emergency shutdown of the inverter.

Emergency stop modes

Mode	Description
Close	Do not enable the emergency stop.
	When the emergency stop is activated, the
Stop Inverter	inverters will cease feeding electricity into the
Stop inverter	grid and will not accept electricity from the grid.
	The inverter enters emergency stop state.



Mode	Description
	When the emergency stop is, the inverters will
	cease feeding electricity into the grid, and the
	batteries will also stop electrical interaction
Stop Inverter and Trip Battery	with the inverters and the grid. This means the
	batteries will neither charge nor discharge. The
	inverter enters emergency stop state, and the
	battery enters a tripped state.

Prerequisites

- The Logger1000 is connected to the emergency stop device.
- **step 1** Click **Power Control > Active Power** to navigate to the corresponding page. The **DI Power Regulation** tab page displays.
- **step 2** In the drop-down list **Emergency Stop Function**, select whether to enable the emergency stop function and the preferred emergency stop mode.



If the batteries enter standby mode due to an emergency stop, they need to be manually restarted to resume normal operation.

- **step 3** If **Stop Inverter** or **Stop Inverter and Trip Battery** is selected, in the drop-down list **Emergency Stop Status**, specify which state of the digital signal source from the DI5 port will initiate the emergency stop.
 - Disconnect: The emergency stop is triggered when the emergency stop switch is in an open state.
 - Closed: The emergency stop is triggered when the emergency stop switch is in a closed state.

step 4 Click Save.

- - End

9.1.2 Local Power Control

If active power is controlled locally, the system directly accepts adjustment commands from the Logger1000. You can configure feed-in power related parameters to prevent anti-backflow or achieve zero power feed-in. When a communication failure occurs between the

Logger1000 and the meter, you can configure the relevant parameters to effectively manage and maintain the inverter's power output.



You can set feed-in power limit parameters on the page **Power Control > Grid-connection Power Regulation** or **Power Control > Active Power**. In practical applications, if settings are made in two places simultaneously, the smaller value will prevail.

Prerequisites

- For closed-loop control, a gateway meter for power control must be connected.
- **step 1** Click **Power Control > Active Power** to navigate to the corresponding page. The **DI Power Regulation** tab page displays.
- step 2 Select tab Local Power Control.
- step 3 In the drop-down list Local Power Control Method, select Closed-loop Control.
- **step 4** When the communication with the meter is interrupted, configure the relevant parameters of the Logger1000.
 - i. In the field Power Limit in Case of Meter Communication Anomaly, specify the target value as a percentage to be issued by the Logger1000 when there is a communication failure with the meter.
 - When **Power Limit in Case of Meter Communication Anomaly** is set to "0%", the Logger1000 will send a shutdown command to the inverter after confirming the communication failure with the meter.
 - i. When the inverters are shut, in the drop-down list Start After Communication Recovery, select whether the Logger1000 should send a power-on command to the inverters when communication with the meter resumes.
 - Enable: When the communication resumes, the inverter will restart.
 - **Disable**: When the communication resumes, the inverter will remain shut down.
 - In the field Start Delay After Communication Recovery, specify the waiting time for the Logger1000 to send a power-on command to the inverter after communication is restored



- **step 5** In the drop-down list **Feed-in Stop**, select whether the Logger1000 should send a shutdown command to the inverter when gird power feed-in is detected.
 - **Enable**: The inverter will shut down when feed-in power is detected by the meter. Select this option when zero power feed-in is required.



After the inverter shuts down, if the meter detects that the power draw exceeds 10% of the system's rated power, the Logger1000 will send a power-on command to the inverter.

- **Disable**: The inverter will remain on even when feed-in power is detected by the meter.
- **step 6** In the drop-down list **Feed-in Control Mode**, select the grid control mode according to the type of data the meter collects.
 - **Total Active Power Control**: The meter collects three-phase data on the grid side as the feedback value for regulation.
 - **Split Phase Active Power Control**: The meter collects single-phase data as the feedback value for regulation.
- **step 7** In the field Over-scaling, enter the desired value for over-scaling.

Based on the initial power limit target, Logger1000 will adjust the inverter's output once to ensure it stays below the set limit, without the need for repeated adjustments. It is recommended to use this parameter in scenarios that require stringent power control, such as anti-backflow or achieving zero power feed-in.

- step 8 Specify the unit for the target value: kW or %.
- **step 9** When the unit for target value is set to **kW**, set a reasonable feed-in power value according to local regulations.
- **step 10** When the unit for target value is set to %, in the drop-down list **Feed-in Power Limit Ratio Calculation Basis**, select a reference for limiting the grid-connected power.
 - **Nominal Power**: Calculate the value to be sent for power control based on the inverter's rated power.
 - **Installed PV Power**: Calculate the value to be sent for power control based on the installed PV capacity. Enter the total installed power of PV modules at the power plant.

step 11 Click Save.

--End

9.1.3 Remote Power Control

When controlling active power remotely, the system receives adjustment commands through TCP services such as Modbus TCP.



Using remote control to adjust active power automatically deactivates any locally selected energy management modes. Adjustments are made through commands from the remote backend.

- **step 1** Click **Power Control > Active Power** to navigate to the corresponding page. The **DI Power Regulation** tab page displays.
- step 2 Select tab Remote Power Control.
- step 3 In the drop-down list Remote Power Control Method, select Open-loop Control.
- step 4 Click Save.
 - - End

9.2 Settings for Reactive Power Control

If reactive power is controlled locally, the system directly accepts adjustment commands from the Logger1000. You can configure the power factor for the grid-connection point. Once configured, the inverter adjusts its reactive output based on the meter's data to maintain grid stability and efficiency.

Prerequisites

- The web UI has switched to the energy management scenario.
- **step 1** Click **Power Control > Reactive Power** to navigate to the corresponding page. The **Local Power Control** tab page displays.
- step 2 In the drop-down list Local Power Control Method, select Closed-loop Control.
- **step 3** In the drop-down list **Instruction Type**, select the designated unit for power regulation. The default is **PF** (power factor).
- **step 4** In the field **Line Reactive Power Compensation**, estimate and set the reactive power loss in the line.
- **step 5** In the drop-down list **Control Cycle**, specify the interval at which the Logger1000 sends dispatch commands to the inverter.
- **step 6** In the field **Target Power Factor**, enter the target power factor for adjustment based on the actual energy usage at the power station. Data range: -1 to -0.8 or 0.8 to 1.
- step 7 Click Save.
 - - End



9.3 Configuring Cascaded Scheduling



Firmware version LOGGER-SV500.001.00.P007 and above support this function.

- step 1 Navigate to Device Maintenance > Device List.
- step 2 Click Add Device and set Device Type to SUNGROW Logger in the pop-up window.
- step 3 Select the status of host-client scheduling control in Cascaded Scheduling.
 - **Enable**: Enable Cascaded Scheduling, where the client Logger1000 is subject to the control by the host Logger1000. Multiple Logger1000 devices are cascaded and the current Logger1000 serves as the host.



In Cascaded Scheduling mode, to use a client Logger1000 device for energy management or power regulation, first log in to the host Logger1000 in the system and disable Cascaded Scheduling for that client.

- Disable: Disable Cascaded Scheduling, where he client Logger1000 is not controlled by the host Logger1000. All inverters are connected to the same Logger1000 device and the inverters must all be string inverters or central inverters.
- - End

10 Energy Management

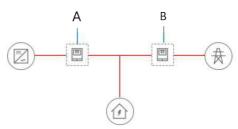
In the energy management scenario, you can control the energy distribution of the energy storage system by limiting grid-connected power, selecting a working mode, and adjusting active or reactive power.

10.1 Requirements

10.1.1 Adding a Meter

Prerequisites

- The web UI has switched to the energy management scenario.
- The meter is connected to the Logger1000.
- **step 1** Navigate to the page **Device > Device List**, and click **Add Device** to open the **Add Device** dialog box.
- step 2 In the drop-down list Device Type, select Meter.
- step 3 Select the type of the meter.
 - i. In the drop-down list **Access Type**, select the type of the meter according to its purpose and actual installation location: **Electricity Meter** or **Gateway Meter**.



Position	Туре	Description
A	Electricity meter	Used to monitor power consumption on the inverter side.
В	Gateway meter	Used to monitor power consumption on the grid side.



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ii. If **Electricity Meter** is selected, in the drop-down list **Meter Usage**, select the purpose of the meter based on the actual use scenario.

- Fcas Sampling: This meter is used for grid-data sampling for Frequency Control
 Ancillary Services (FCAS). Select this option for scenarios involving integration with
 the FCAS system in Australia. After configuration, the FCAS system regulates the
 inverter's power generation to maintain the stability of the energy storage system.
- Third-party Power System Sampling: This meter is used for monitoring energy consumption and production in third-party generation systems. Recommended for scenarios that involve connecting to third-party inverters.
- iii. If **Gateway Meter** is selected, in the drop-down list **Meter Usage**, select the purpose of the meter based on the actual use scenario.
 - **Grid-connected Power Control:**: This meter is used for monitoring and controlling the power station's output power. By default, the system regulates power based on the feedback values recorded by the meter.
 - Grid-connected Power Monitoring:: This meter is used for collecting data from associated devices and syncs it to the cloud. Recommended for verifying data at the grid-connection point.

step 4 In the drop-down list Port, select the port that the meter is connected to.

step 5 If NET is selected, set the network parameters for the meter.

- i. In the drop-down list **Protocol Type**, select the communication method between the meter and the Logger1000. The default is **MODBUS-TCP**.
- ii. In the fields **Peer IP Address** and **Peer Port**, enter the IP address and port number of the meter, respectively.

step 6 In the drop-down list Device Model, select the model of the meter.



If the model is not in the drop-down list, select **Others**, and import the meter information either by setting measuring points or by uploading a configuration file.

- step 7 Enter the address of the meter based on the selected model.
- step 8 Click Save.
- **step 9** If you need to change the type of the meter, the page modify its initial parameters on the page **Device Monitoring**.
 - --End

10.1.2 Controlling Grid-Connection Power

You need to set the power thresholds for the energy storage system first. The power thresholds for drawing and feeding set the maximum power of the system during grid

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connection, ensuring system stability and energy efficiency. These thresholds will affect the actual range of power control.

Prerequisites

· The web UI has switched to the energy management scenario.



You can set feed-in power limit parameters on the page **Power Control > Grid-connection Power Regulation** or **Power Control > Active Power**. In practical applications, if settings are made in two places simultaneously, the smaller value will prevail.

- **step 1** Click **Power Control > Grid-connection Power Regulation** to navigate to the corresponding page.
- step 2 In the drop-down list Energy Purchase Control Method, select No Limit or Purchase Energy with Limited Power.
- step 3 If Purchase Energy with Limited Power is selected, in the field Power Limit for Energy Purchase, specify a value based on the rated current of the primary power source equipment connected to your system, such as the household's main circuit breaker.
- step 4 In the drop-down list Feed-in Control Method, select No Limit or Feed-in Limited Power.
- step 5 If Feed-in Limited Power is selected, specify the unit for the target value: kW or %.
- **step 6** When the unit for target value is set to **kW**, set a reasonable feed-in power value according to local regulations.
- **step 7** When the unit for target value is set to %, in the drop-down list **Feed-in Power Limit Ratio Calculation Basis**, select a reference for limiting the grid-connected power.
 - **Nominal Power**: Calculate the value to be sent for power control based on the inverter's rated power.
 - Installed PV Power: Calculate the value to be sent for power control based on the installed PV capacity. Enter the total installed power of PV modules at the power plant.
- **step 8** In the drop-down list **Swift grid dispatching mode**, select whether to enable rapid grid dispatching.

To meet strict zero power feed-in or anti-backflow requirements, it is recommended to enable this mode for faster active power control.

step 9 Disable or Enable the Third-Party Power Generation Systems

Users can make selection based on their actual needs if any third-party inverter is connected in the system.

Firmware version LOGGER-SV500.001.00.P007 and above support this function.

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step 10 If Enable is selected in Third-Party Power Generation Systems, users can specify the rated power in Rated Power of Third-Party Power Generation Systems (kW). Range: 0–99999999, unit: kW. The default value is 0

Users can specify the Rated Power of Third-Party Power Generation Systems based on the rated power of the connected third-party inverter.

Firmware version LOGGER-SV500.001.00.P007 and above support this function.

step 11 Click Save.

- - End

10.2 Selecting Energy Management Working Modes

You can select a desired working mode to effectively manage electricity.



Before selecting a working mode for energy management, make sure to disable remote power control on the Logger1000.

The following working modes are supported for the Logger1000:

Mode	Description	
Self-Consumption	Suitable for scenarios where photovoltaic power generation fully meets load requirements. This mode maximizes the use of the photovoltaic system and battery storage for power supply, achieving energy self-sufficiency through demand control and battery usage plans.	
Time Plan	Suitable for scenarios with significant differences in peak and off-peak electricity prices. This mode optimizes energy costs by scheduling specific battery charging and discharging times.	
VPP	A Virtual Power Plant (VPP) is an energy management system that integrates multiple distributed energy resources into a centralized, virtual power generation and management system. Suitable for scenarios that require energy management through external systems.	
Compulsory Mode	Suitable for scenarios where the energy storage system needs to respond immediately to charging and discharging commands. Recommended for the system installation and commissioning phase.	

10.2.1 Self-Consumption

The self-consumption mode is designed to maximize the use of photovoltaic (PV) generation and battery-stored energy to supply power to loads, thereby reducing electricity drawn from

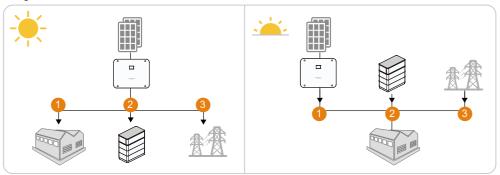
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the grid. Additionally, you can set desire battery charging and discharging times based on varying electricity prices to reduce costs.

Energy supply and energy consumption precedence

When PV generation is sufficient, the system prioritizes using solar power to meet load demands, storing excess energy in the batteries. If there is still surplus PV energy, the system feeds the excess back to the grid.

When PV generation cannot meet load demands, the system utilizes stored battery power. If both PV output and battery storage are insufficient, the system draws additional power from the grid.

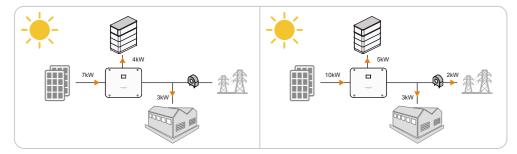


Example

Assuming the PV installation power of the inverter is 10kW, with the inverter's rated power at 5kW, and the maximum charge and discharge power of the battery also at 5kW, the system operates as follows.

When there is sufficient sunlight:

- If the PV generates 7kW and the load demands 3kW, then the surplus of 4kW will be used to charge the batteries.
- If the PV generates 10kW and the load demands 3kW, then the batteries will charge at its maximum capacity of 5kW, and the remaining 2kW will be fed into the grid.

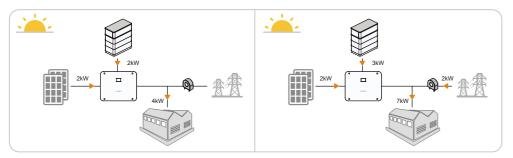


When there is insufficient sunlight:

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 If the PV generates 2kW and the load demands 4kW, then the batteries will supply 2kW to meet the load requirements.

• If the PV generates 2kW and the load demands 7kW, then the batteries will discharge at 3kW, and the system will pull an additional 2kW from the grid.



Prerequisites

- · The web UI has switched to the energy management scenario.
- step 1 Click Energy Management to navigate to the corresponding page.
- step 2 In the drop-down list Working Mode, select Self-Consumption.
- step 3 Click Save.
 - - End

10.2.1.1 Demand Control

Demand control refers to setting the power thresholds for drawing from and feeding into the grid by the storage system. In the self-consumption mode, you can adjust power supply and consumption precedence based on different sunlight conditions to either reduce electricity costs or increase feed-in profits. You can set power thresholds according to real situations.

Threshold on Power Feed-in (Demand Control)

Setting the feed-in threshold means setting the power level for feeding electricity back into the grid. When sunlight is sufficient to meet load demands, you can gain economic benefits from feeding surplus electricity into the grid. If there is an abundance of sunlight, it is recommended to configure **Threshold on Power Feed-in (Demand Control)**, so that excess solar energy is fed into the grid first, changing the precedence in which the energy storage system supplies electricity.

After configuration, when there is enough sunlight, the energy storage system first meets the load demands, and then feeds any extra solar electricity into the grid. Only when the **Threshold on Power Feed-in (Demand Control)** exceeds a certain threshold will the excess be used to charge the battery.

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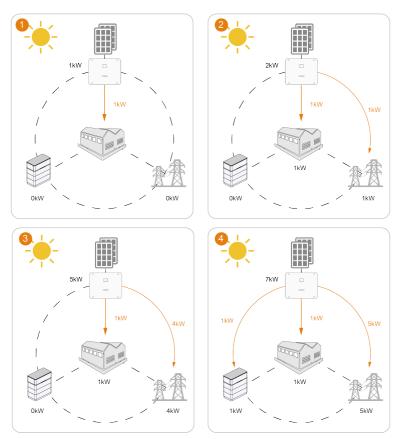


figure 10-1 Power supply precedence (when Threshold on Power Feed-in (Demand Control) is set to 5kw)

Threshold on Power Feed-in (Demand Control)

Setting the power purchase threshold means setting the power level for the load to draw electricity from the grid. In some regions, to encourage users to reduce electricity use during peak times and decrease the load on the grid, utility companies charge extra fees based on the peak electricity use within a certain time frame. In such cases, it is recommended to configure **Threshold on Power Feed-in (Demand Control)** to change the precedence in which the energy storage system draws power.

After configuration, when sunlight is insufficient and the solar power output is not enough for the load, the storage system controls the load to prioritize drawing power from the grid. When the draw power exceeds the set threshold, the system switches to drawing from the battery, thereby reducing electricity costs.

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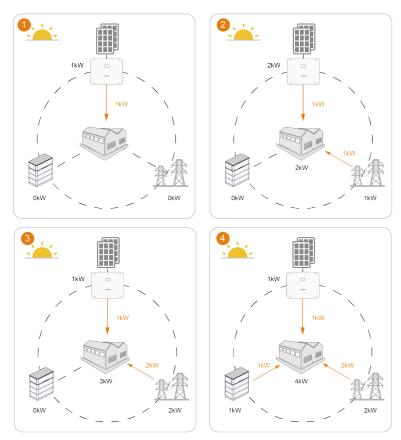


figure 10-2 Power consumption precedence (when **Threshold on Power Feed-in (Demand Control)** is set to 2kw)

Prerequisites

- The working mode for energy management has selected Self-Consumption. See 10.2.1 Self-Consumption.
- **step 1** In the field **Threshold on Power Feed-in (Demand Control)**, enter the maximum allowed value for power consumption from the grid (Default value: 0).
- **step 2** In the field **Threshold on Power Feed-in (Demand Control)**, enter the maximum allowed grid feed-in power value (Default value: 0).
- step 3 Click Save.
 - - End

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10.2.1.2 Adding Battery Usage Plan

In the self-consumption mode, you can customize battery charging and discharging time slots to ensure the system maximally utilizes PV generation during peak demand periods and minimizes grid electricity usage during low PV generation periods.



- Battery usage times and forced charging times may overlap. In such scenarios, forced charging takes precedence.
- It is recommended to set the period of high electricity prices as **Allow**Discharging , and the period of low electricity prices as Force Charging .

Discharging time

When adding time slots in timeline **Allow Discharging**, in the specified time period, the battery is allowed to discharge and power your loads. The default setting allows for battery discharge continuously throughout the day (0-24h).

Forced charging time

When adding time slots in timeline **Force Charging**, in the specified time period, the battery will charge at its maximum allowable power within the specified period until it reaches the desired State of Charge (SOC). This process is not restricted by **Threshold on Power Feed-in (Demand Control)**. If PV generation is insufficient, the system will draw from the grid to complete charging. There is no default time set for forced charging.



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 When PV generation is sufficient, the system first uses PV generation to charge the battery. Excess energy is supplied to the loads. If there is still surplus PV energy, the system feeds the excess back to the grid.

 When PV generation is insufficient, the system prioritizes battery charging. If solar power generation cannot meet the battery's needs, the system will purchase electricity from the grid. The loads also draw power from the grid.

Time periods without specific settings

The battery cannot discharge, and it is not allowed to draw power from the grid for charging. The battery can only be charged by solar power.

- The primary goal is to use as much of the energy generated by the PV system as
 possible for current energy needs (loads). Any additional energy produced is stored in
 batteries for future or nighttime use. If PV energy exceeds the total demand of both the
 battery and the loads, the additional power is fed back to the grid.
- However, when solar power is not enough to meet load demands, the battery does not discharge, and the system buys power from the grid to meet the load requirements.

Status of time slots	Description
04:45~05: 45	When there is a time indicator on the slot, it means that discharging or charging times have been set within that time range.
	The time slot will be highlighted and selected when you hover your mouse over it. You can perform the following:
94:45~05 45	 Click and drag the boundary of a time slot to modify its start and end time. The minimum time range for a time slot is 15 minutes.
	Click the upper-right corner of the time slot to delete it.

Prerequisites

 The working mode for energy management has selected Self-Consumption. See 10.2.1 Self-Consumption.

step 1 Turn on the switch Custom Season.

By default, one seasonal schedule is displayed and all 12 months are selected.

- **step 2** Under the field **Select Month**, select the applicable months for the current settings.

 You can customize time slots according to the energy demand patterns and seasonal variations of each month.
- **step 3** In the drop-down list **Time Period**, select the scheduling pattern for battery charging and discharging.

The charging and discharging schedule can be configured to activate daily or to specifically target weekdays or weekends. By default, the schedule is set to activate daily.

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• Every Day(Default): The charging and discharging time slots are applied to each day. It is recommended for locations where energy needs do not vary significantly from day to day.

Weekdays&Weekends: Set distinct charging and discharging time slots for typical workdays
or weekends, accommodating different energy usage patterns.

step 4 If Every Day is selected, directly set the battery discharging and enforced charging times.

- i. On the timeline **Allow Discharging**, click on the desired start point to add a discharge time slot. The default duration for a time slot is one hour.
- ii. On the timeline **Force Charging**, click on the desired start point to add an enforced charging time slot. The default duration for a time slot is one hour.
- iii. Click on the time slot to open the floating window. In the field **Target SOC**, specify the desired target SOC percentage for the enforced charging session.

step 5 If Weekdays&Weekends is selected, click weekend, to configure battery discharging and forced charging times for weekdays and weekend scenarios separately.

step 6 To add a seasonal schedule, click Add next to the default seasonal schedule.



On the seasonal schedule tab, click : to edit the name of the schedule, or delete it.

step 7 Click Save.

- - End

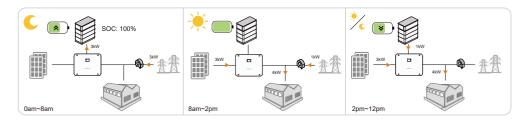
Example

Assuming the PV installation power of the inverter is 10kW, with the inverter's rated power at 5kW, and the maximum charge and discharge power of the battery also at 5kW, the system operates as follows.

When setting the time from 14:00 to 24:00 as the time slot for **Allow Discharging**, and 0:00 to 8:00 as the time slot for **Force Charging**, with **Target SOC** set to "100%", the power distribution is as follows:

- 0:00 to 8:00: When the battery's state of charge is below **Target SOC**, it draws power from the grid to charge the battery until the SOC requirements are met and then stops.
- 8:00 to 14:00: no settings are configured for this time period. When solar power
 generation cannot meet the load demands, the battery is not allowed to discharge,
 and the system will directly purchase power from the grid. If the battery's energy is
 insufficient, the system only uses solar power to charge the battery.
- 14:00 to 24:00: When solar power is insufficient to meet the load demands, the system controls the battery to discharge.

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10.2.2 Time Plan

The time plan mode mainly used in energy trading scenarios, leveraging differences between peak and off-peak pricing to manually set times and powers for battery charging and discharging to maximize economic benefits.



According to the TOU electricity prices, it is recommended to set the peak hours as **Discharge**, and the off-peak hours as **Charge**.

Discharging time

When adding time slots in the timeline **Discharge**, in the specified time period, the battery will discharge at the set power level until it is fully discharged.

Charging time

When adding time slots in the timeline **Charge**, in the specified time period, the battery will charge at the set power level until it is fully charged.

- When PV generation is sufficient, the system first uses PV generation to charge the battery. Excess energy is supplied to the loads. If there is still surplus PV energy, the system feeds the excess back to the grid.
- When PV generation is insufficient, the system prioritizes battery charging. If solar power
 generation cannot meet the battery's needs, the system will purchase electricity from the
 grid. The loads also draw power from the grid.



The discharging time and charging time must not overlap.

Time periods without specific settings

The battery cannot discharge, and it is not allowed to draw power from the grid for charging. The battery can only be charged by solar power.

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The primary goal is to use as much of the energy generated by the PV system as
possible for current energy needs (loads). Any additional energy produced is stored in
batteries for future or nighttime use. If PV energy exceeds the total demand of both the
battery and the loads, the additional power is fed back to the grid.

 However, when solar power is not enough to meet load demands, the battery does not discharge, and the system buys power from the grid to meet the load requirements.

10.2.2.1 Selecting the Time Plan Mode

Prerequisites

• The web UI has switched to the energy management scenario.

step 1 Click Energy Management to navigate to the corresponding page.

step 2 In the drop-down list Working Mode, select Time Plan.

step 3 Click Save.

- - End

10.2.2.2 Configuring Battery Usage Plan

Prerequisites

- The working mode for energy management has selected **Time Plan**. See Time Plan.
- **step 1** Click **Energy Management** to navigate to the corresponding page.
- step 2 In the drop-down list Working Mode, select Time Plan.
- step 3 Under the field Select Month, select the applicable months for the current settings.
 You can customize time slots according to the energy demand patterns and seasonal variations of each month.
- **step 4** In the drop-down list **Time Period**, select the scheduling pattern for battery charging and discharging.

The charging and discharging schedule can be configured to activate daily or to specifically target weekdays or weekends. By default, the schedule is set to activate daily.

- **Every Day**(Default): The charging and discharging time slots are applied to each day. It is recommended for locations where energy needs do not vary significantly from day to day.
- Weekdays&Weekends: Set distinct charging and discharging time slots for typical workdays
 or weekends, accommodating different energy usage patterns.

step 5 If Every Day is selected, directly set the time slots for battery discharging and enforced charging.

- i. On the timeline **Discharge**, click on the desired start point to add a discharge time slot. The default duration for a time slot is one hour.
- ii. Click on the time slot to open the floating window. In the field **Power**, specify the desired power level you want the battery to discharging at during this time slot.

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- iii. On the timeline Charge, click on the desired start point to add a charging time slot.
- iv. Click on the time slot to open the floating window. In the field **Power**, specify the desired power level you want the battery to charge at during this time slot.

step 6 If Weekdays&Weekends is selected, click weekend, to configure battery discharging and forced charging times for weekdays and weekend scenarios separately.

step 7 To add a seasonal schedule, click Add next to the default seasonal schedule.



On the seasonal schedule tab, click to edit the name of the schedule, or delete it.

step 8 Click Save.

- - End

10.2.3 Virtual Power Plant (VPP) Dispatching

In the VPP mode, the energy storage system allows for management of grid-side resources through platforms like iSolarCloud with external API interfaces.

The energy storage system responds dynamically to the commands and operational directives issued by power grid companies and operators.

Prerequisites

- · The web UI has switched to the energy management scenario.
- step 1 Click Energy Management to navigate to the corresponding page.
- step 2 In the drop-down list Working Mode, select VPP.
- step 3 Click Save.
 - - End

10.2.4 Compulsory Mode

The compulsory mode is mainly used for battery operation and maintenance, enabling the battery to function based on specific charging and discharging settings. After maintenance, restore the system to its original working mode.

Prerequisites

- The web UI has switched to the energy management scenario.
- step 1 Click Energy Management to navigate to the corresponding page.
- step 2 In the drop-down list Working Mode, select Compulsory Mode.

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step 3 In the drop-down list Charging/Discharging Command, select the required action.

- Charge: The battery charges at the set power level until it is fully charged.
- Discharge: The battery discharges at the set power level until it is fully discharged.
- **Stop**: Manually stop the battery from charging or discharging. The batteries will enter the standby mode.

step 4 If **Charge** or **Discharge** is selected, in the field **Charging/Discharging Power**, specify the desired power level for charging or discharging.

step 5 Click Save.

- - End

10.3 Configuring Cascaded Scheduling



Firmware version LOGGER-SV500.001.00.P007 and above support this function.

- step 1 Navigate to Device Maintenance > Device List.
- step 2 Click Add Device and set Device Type to SUNGROW Logger in the pop-up window.
- step 3 Select the status of host-client scheduling control in Cascaded Scheduling.
 - Enable: Enable Cascaded Scheduling, where the client Logger1000 is subject to the control by the host Logger1000. Multiple Logger1000 devices are cascaded and the current Logger1000 serves as the host.



In Cascaded Scheduling mode, to use a client Logger1000 device for energy management or power regulation, first log in to the host Logger1000 in the system and disable Cascaded Scheduling for that client.

- Disable: Disable Cascaded Scheduling, where he client Logger1000 is not controlled by the host Logger1000. All inverters are connected to the same Logger1000 device and the inverters must all be string inverters or central inverters.
- - End

11 Charger Control

In industrial and commercial scenarios, chargers serve as intelligent terminal loads when integrated with a PV system, forming an intelligent PV charging system that can enhance the operational efficiency of PV power plants and increase user profits.



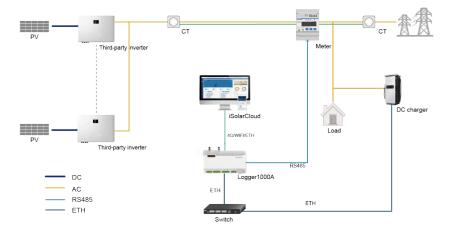
Firmware version LOGGER-SV500.001.00.P007 and above support this function.

11.1 Application Scenarios



- · Charger control strategies are only applicable to PV systems.
- To ensure stable communication, chargers are connected to a router or a switch via Ethernet, and can be monitored and maintained through iSolarCloud.
- The total number of chargers and meters connected to a plant where the Logger1000 is deployed cannot exceed 30.

Third-Party PV Scenario

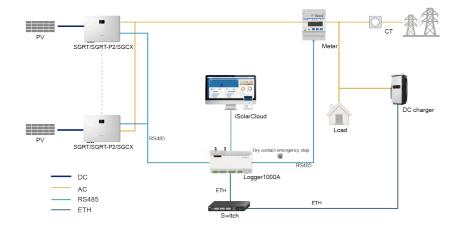


The compatible devices are listed below.

User Manual 11 Charger Control

PV inverter Meter Charger DTSU666-20 DTSD1352 Only gateway meters can IDC30E be used in the system. IDC180E Each DTSU666-20 meter is used together with two IDC30E has current transformers. Two one charging DTSD1352 meters are connector and used together with one supports a current transformer, with Third-party minimum charging one meter connected at the inverter current of 2 A. gateway port and the other IDC180E has at the inverter port. two charging · For successful upload connectors of Channel 2 data when and supports a a DTSU666-20 meter is minimum charging connected to the system, current of 1 A. you must enable the **Channel 2 CT Connection** function. By default, this

Self-Developed PV Scenario



function is disabled.

The compatible devices are listed below.

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PV inverter	Meter	Charger
	DTSU666-20 DTSD1352	IDC30E IDC180E
SGRT/SGRT-P2/SGCX series	Only gateway meters can be used in the system. The meter and the current transformer are connected at the gateway port.	one charging connector and supports a minimum charging current of 2 A. IDC180E has two charging connectors and supports a minimum charging current of 1 A.

11.2 Charger Management

11.2.1 Adding Chargers

Prerequisites

Chargers operate in OCPP mode by default. Before adding a charger on the Logger1000's Web UI, you must enable EMS mode through iEnergyCharge or the liquid crystal display (LCD) screen of the charger.

- **step 1** Navigate to the page **Device > Device List** and click **Add Device** to open the **Add Device** dialog box.
- step 2 In the drop-down list Device Type, select Charger.
- step 3 In the drop-down list Port, select NET.
- step 4 In the drop-down list Protocol Type, select MODBUS-TCP.
- **step 5** In the fields **Peer IP Address** and **Peer Port**, enter the IP address and port number of the charger, respectively.
- step 6 In the drop-down list Device Model, select the model of the charger.

User Manual 11 Charger Control

step 7 Enter the beginning address of the chargers in the field **Beginning Address** and the number of chargers to be added in the field **Quantity of Device** based on the selected model.

step 8 Click Save.

- - End

11.2.2 Configuring Parameters for Chargers

- step 1 Click Device Monitoring to navigate to the corresponding page.
- **step 2** From the device list on the left, select the charger whose control parameters you want to configure.
- **step 3** On the right, select the tab page **Control Parameters** to modify the charger's control parameters.
 - In the field Charger Enable/Disable, select one of the following options:
 - **Enable**: Enables the charger. If the charger is enabled, other control parameters can be configured.
 - Disable: Disables the charger. If the charger is disabled, other control parameters cannot be configured.
 - In the field Charger Output Power, enter the output power of the charger.
 - In the fields Connector 1 Output Power Setting and Connector 2 Output Power Setting, enter the output power of Connector 1 and Connector 2, respectively.
 - In the fields Charger Connector 1 Start/Stop and Charger Connector 2 Start/Stop, select Start or Stop to configure the start/stop of the charging connectors.



Determine whether multiple charging connectors exist based on the displayed charging connectors of the connected charger. IDC30E has one charging connector and IDC180E has two charging connectors.

step 4 Click Settings in the upper right corner to save the control parameter settings of the charger.

- - End

11.2.3 Viewing Charger Information

After adding a charger and configuring the control parameters for the charger, you can view the real-time data and device information of the charger.

- **step 1** Click **Device Monitoring** to navigate to the corresponding page.
- step 2 From the device list on the left, select the charger whose information you want to view.

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- step 3 Click the Realtime Values tab on the right to view the real-time data of the charger.
- step 4 Click the Device Information tab on the right to view the Device S/N, Device Model, Max.

 Charging Power of Charger, and Current Version of the charger.
 - - End

11.2.4 Rebooting Chargers

- step 1 Click Device Monitoring to navigate to the corresponding page.
- step 2 From the device list on the left, select the charger that you want to reboot.
- step 3 Click the Device Instruction tab on the right and click Reboot to reboot the charger.
 - - End

11.3 Charger Energy Control

Prerequisites

- Charger control strategies are only applicable to PV systems. The web UI has switched to the data acquisition scenario.
- DTSU666-20 or DTSD1352 gateway meters are added to the Web UI.
- step 1 Click Charger Control to navigate to the corresponding page.
- step 2 In the drop-down list Meter, select a meter.
- **step 3** In the drop-down list **Energy Purchase Control Method**, select an energy purchase control method. Default value: **No Limit**.
 - Purchase Energy With Limited Power: Select this method to set an upper power limit on energy purchase in the Power Limit for Energy Purchase field. Range: 0–999999.99.
 Default value: 0. Unit: kW.



The **Power Limit for Energy Purchase** value must be greater than the sum of the minimum charging powers of all charging connectors.

- · No Limit: There is no energy purchase limit.
- step 4 In the drop-down list Multi-Charger Control Strategy, select a multi-charger control strategy to distribute power across chargers based on the preset strategy to meet the varying demands of different users. Default value: First Come First Charged.
 - First Come First Charged: Based on charger sequence and grid power limits, allocate
 power according to electric vehicle (EV) needs, prioritizing earlier-sequence EVs for quicker
 charging.
 - Power Distributed Evenly: Allocate charging power evenly according to the quantity of EVs and grid power limits.

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step 5 In the drop-down list **Charging Mode**, select a charging mode. Default value: **Eco & Economic Charging**.

• Eco & Economic Charging: The PV power will be first used for the loads, with any surplus supplied to the EV charger. If the surplus falls below the charger's minimum charging power, the system will either ensure the minimum charging power for the charger or stop charging, depending on whether drawing power from the grid is allowed.



If Charging Mode is set to **Eco & Economic Charging**, you can configure the **Allow Power Purchasing or Not** parameter. Default value: Yes. Setting the value to **No** may interrupt the charging process. To continue charging in this case, you need to disconnect and then reconnect the charging connector.

- Eco & Fast Charging: The EV charger maximizes the use of PV energy. If PV power exceeds the charger's minimum charging power, no additional power will be drawn from the grid. Conversely, if PV power falls short, the charger can supplement with grid power to meet the minimum charging power.
- **Fast Charging**: The EV charger can use both PV energy and grid energy. In this mode, the charger operates at the rated power, delivering the exact power required by the EV.
- **No Control**: The EV charger is not under the control of power dispatch commands.

step 6 Click Save.

- - End

12 Maintaining the Data Logger

12.1 Setting System Time

Ensure the Logger1000's system time is accurate. Both manual and automatic time synchronization methods are supported.



During commissioning, it is recommended to synchronize with the local machine time using **User Define**. If the Logger1000 is connected to the Internet, prioritize time synchronization with iSolarCloud. If iSolarCloud is not accessible, use NTP (Network Time Protocol) for time synchronization.

step 1 Click System > System Time to navigate to the corresponding page.

step 2 In the drop-down list Clock Source, select the preferred time synchronization method.

The following time synchronization methods are supported:

- User Define: Manually set the current time and time zone of the Logger1000.
- NTP: Synchronize the time of the Logger1000 with the server's time.
- IEC104: Synchronize the clock using the IEC 104 communication protocol.
- iSolarCloud: Synchronize the Logger1000's time with iSolarCloud.
- Modbus-TCP: Synchronize the clock over TCP/IP networks using the MODBUS-TCP protocol.

step 3 Click Save.

- **step 4** Optional: Check **Inverter Timing** to synchronize the Logger1000's time with that of connected SUNGROW inverters.
 - - End

12.2 Enabling Remote Maintenance

After remote maintenance is enabled, O&M users can access the Web UI through the remote maintenance link and user authentication information.

step 1 Click System > Remote Maintenance to navigate to the corresponding page.

step 2 In the drop-down list Remote Maintenance Switch, select Enable.

step 3 Select the corresponding server.



The server address is associated with the iSolarCloud forwarding Modbus ID. If you need to change it, modify the iSolarCloud server.

- step 4 Click Save to open the Remote Access dialog box.
- step 5 Enter the login password and click Confirm.

A remote maintenance link will be created.

- step 6 Click Copy Remote Access Information to save the access information locally.
- step 7 In the field Email, enter the desired email address to receive the access information, and click Send.
 - - End

12.3 Updating the Logger1000

You can update the Logger1000's firmware via the Web UI.



- For the required tools and resource files for the update, contact SUNGROW.
- The update package file must be in .zip format.
- For LOGGER-SV500.001.00.P007 or later: In O&M mode, the Web system
 can be updated to a later version, but reverting to an earlier version is not
 allowed. To revert to an earlier version, switch to R&D mode first.
- step 1 Click System > System Maintenance to navigate to the corresponding page.
- **step 2** Click **System Update**, in the dialog**Select a Firmware File**, select an update method. The following update methods are supported:
 - Local Update Package: In the resource window, choose the firmware file and verify the matching devices.
 - Online Update Package: Obtain the firmware package through the iConfig tool and proceed with the update.
 - **iSolarCloud Upgrade Package**: Use the online firmware package available through iSolarCloud to update the device.
- **step 3** Follow the on-screen instructions to complete the update process.

A confirmation dialog box appears. Upon confirmation, the Logger1000 will automatically restart to apply the firmware update. The new firmware will take effect after a reboot.

- - End



12.4 Restarting Logger1000

- step 1 Click System > System Maintenance to navigate to the corresponding page.
- step 2 Click Rebooting.
- step 3 In the prompt, click Confirm.
 - - End

12.5 Restoring to the Factory Settings

This will restore all modified Logger1000 settings to the factory state.

- step 1 Click System > System Maintenance to navigate to the corresponding page.
- step 2 Click Reset All Settings.
- step 3 In the prompt, click Confirm to restore all parameters to the default settings.
 - - End

12.6 Viewing the Firmware Version

Check the firmware information of the Logger1000.

- step 1 Click About to navigate to the corresponding page.
- step 2 Under Version, click the corresponding to Value for five times to view the following information.

The firmware version of the Logger1000 is identified by Application Software Version, formatted as "LOGGER-SV300.001.00.P[XXX]". For easier recognition, the firmware version is often shortened and referred to as "P[XXX]."

- - End



To add this Data Logger to iSolarCloud, simply scan the QR code on the page **About** using iSolarCloud App. The App will automatically detect the Data Logger's serial number.

12.7 Viewing History Operations

Click **History Data > Operation Log** to navigate to the corresponding page.

You can review a log of past activities or changes made within the system.

12.8 Certificate Management

Users can import HTTPS, IEC104, and Modbus TCP certificates for the Logger1000 and view details about the IEC104 and Modbus TCP certificates.



Firmware version LOGGER-SV500.001.00.P007 and above support this function.

Pre-configured Certificate Risk Statement

Certificates are pre-configured on SUNGROW devices during the manufacturing process as their necessary identity credentials. Regarding the use of these pre-configured certificates, please note the following:

- Pre-configured certificates are only used to establish an initial secure channel for the
 device to access the customer network during the deployment process. SUNGROW
 does not promise or guarantee the security of the pre-configured certificates.
- SUNGROW does not promise or guarantee the security of the pre-configured certificates when used in services. It is recommended that users replace them with their own secure certificates.
- The validity period for the HTTPS, IEC104 and Modbus TCP certificates pre-configured by SUNGROW is 25 years. Once a pre-configured certificate expires, the related service will be interrupted.
- If users choose to use their own certificates, it is recommended that they properly
 manage the certificate lifecycle. Certificates with a short validity period are
 recommended to ensure security.

Steps

- **step 1** Navigate to **System > Certificate Management**. Three types of certificate are available here: HTTPS, IEC104, and Modbus TCP.
- **step 2** To import an HTTPS certificate, for example, click **Import Certificate**. Then, in the pop-up window, click to select the .crt certificate file and the .key private key file.
- **step 3** Click **Confirm**. Once the files are successfully imported, a prompt will appear asking whether to restart the system.
- step 4 Click Certificate Information on the IEC104 Certificate or Modbus TCP Certificate tab page to view the detailed information about the certificate, including version, S/N, signature algorithm, validity period, public key, issuer, and user.
 - - End

13 User Management

The system administrator can create and manage O&M user accounts, reset account passwords, set account protection and session security parameters, and enable the developer debugging mode.

Prerequisites

- Firmware version of Logger1000-EU: P005 or above. See 7.12.13 About.
- · The user has administrator permissions.

13.1 User Roles and Permissions

The following roles are provided:

- · O&M user
- · Developer Account
- · System administrator



The Developer account is reserved only for SUNGROW's technical support engineers.

	User role	9
Menu permissions	O&M user	System administrator
View real-time data of the power plant	1	×
Configure serial ports of the Data Logger	✓	×
Configure data communication and transfer protocols	✓	×
Device Administration	✓	×
Configure device parameters	✓	×
Export data	✓	×
Control active and reactive power	✓	×
Maintain the Data Logger	✓	×
View available accounts of all O&M users	×	1
Create or delete O&M user accounts	×	1
Reset account password	×	✓
Set account protection and session parameters	×	✓
Enable the Developer Account mode	×	1

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13.2 Factory Default Passwords

Username	User role	Initial password
maintain	O&M user	pw1111
administrator	System administrator	pw@111111
develop	Developer Account	Dynamic password

13.3 Setting Up Administrator Account

The super administrator account must be associated with an email or phone number. This ensures that if you forget your password, it can be reset through verification via your phone or email.

step 1 Click Link Account to navigate to the corresponding page.

step 2 Enter the necessary contact information.

Depending on the interface language, you can associate the account with the following:

- · Email address
- · Phone number



If both an email address and phone number are added, the system will prioritize the phone number for verification purposes in the event of password recovery.

step 3 Click Save.

step 4 Optional: To delete the associated email pr phone number from the account, click Unlink.

- - End

13.4 Creating O&M Users

You can create additional operation and maintenance user accounts to meet the needs of operation and maintenance.

The default O&M user account is "maintain" and it cannot be deleted.

As a system administrator, you can create up to 4 additional O&M user accounts.

Username requirements

- May include uppercase letters, lowercase letters, numbers, and underscores (_)
- · Must begin with a letter
- Username length should be between 4 to 16 characters

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Password requirements

- · Must contain at least three of the following four types of characters: uppercase letters, lowercase letters, numbers, and special characters
- · Password length should be between 8 to 32 characters
- step 1 Click User Management to navigate to the corresponding page.
- step 2 Click Add to open the Add User dialog box.
- **step 3** Enter the desired username and password.
- step 4 In the drop-down list Permission, select O&M User.
- step 5 Click Confirm.
 - - End

13.5 Deleting O&M Users

- step 1 Click User Management to navigate to the corresponding page.
- **step 2** Locate the user account you intend to remove, and in the action column, click $\overline{\parallel}$



- step 3 In the confirmation pop-up, click Confirm to remove the user account.
- step 4 Optional: To remove all user accounts except "maintain", click Clear Users
 - - End

13.6 Resetting Account Password

13.6.1 Resetting O&M Account Password

- step 1 Click User Management to navigate to the corresponding page.
- step 2 Click Q to open the **Modify User** dialog box.
- step 3 Reset password.
- step 4 Click Confirm.
 - - End

13.6.2 Resetting Administrator Account Password

- step 1 Open the Logger1000's login page.
- step 2 Enter the username: administrator.
- step 3 Click Forgot Password to open the Modify Password dialog box.

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step 4 Enter the private key.

You can receive the private key via the email or phone number associated with the administrator account.



If the administrator account is not associated with an email or a phone number, contact SUNGROW Customer Service.

step 5 Enter the new password and confirm.

step 6 Click Confirm.

- - End

13.7 Setting Account Security Parameters

To enhance account security, you can configure the related parameters to control login behavior and session validity.

step 1 Click Login Management to navigate to the corresponding page.

step 2 Modify account security related parameters:

The following parameters can be configured:

- **Number of Illegal Visits**: Specify how many times a user can attempt to log in. An account will be auto-locked if the number of incorrect password attempts exceeds this limit. (Range: 3-6; Default: 6)
- Login Timeout: Specify a duration of inactivity after which the system will automatically log the user out, requiring re-authentication. (Range: 10-30; Default: 10)
- **User Lock Time**: Set the duration before a locked account, due to consecutive failed sign-in attempts, is automatically unlocked. (Range: 10-30; Default: 10)

step 3 Click Save.

- - End

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13.8 Enabling the O&M Mode

To permit the R&D user to access the Web UI, the administrator needs to activate **R&D Debugging**.

step 1 Click R&D Management to navigate to the corresponding page.

step 2 Turn on the switch.

The switch will automatically turn off after being turned on continuously for 24 hours. By default, this switch is turned off.

- - End



14 Troubleshooting

A WARNING

The grounding cable must be grounded reliably. Otherwise, electric shock can cause personal injury!

Refer to the table below for common faults and troubleshooting steps. If the problem still persists or there are any other questions, please contact SUNGROW.

Fault	Possible Causes	Corrective measures
Power-on fault	 The power supply terminal of the Logger1000 has no power connection. Power source failure Logger1000 fault 	 Connect the power cable to the power supply terminal of the Logger1000. Replace the power source. Contact Sungrow.
Cannot find any device	 The RS485 port is not connected to any devices or the connection cable is loose or connected reversely. The RS485 communication parameters are set incorrectly. The devices that do not support automatic search are not manually added, such as Meteo Station and Smart Energy Meter. The address of the manually added device is inconsistent with the actual device address. Device does not operate normally. 	 Check the RS485 communication cable connection; reconnect and tighten the cable if necessary. Check the RS485 communication parameter setting; and make sure the Baud rate and the communication address setting are correct. Manually add the devices such as Meteo Station and Smart Energy Meter. Check the device address setting. Check the device operation status.

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Fault	Possible Causes	Corrective measures
The Logger1000 displays the device state as disconnection	 Communication cable between the device and the Logger1000 is loose or disconnected. Device does not operate normally. The device is removed or its configuration is changed. 	 Check the cable connection between the device and Logger1000, and reconnect and tighten the cable if necessary. Power on the device if the device connection is correct. Check if there is a device replaced. If so, research or add the device manually. If the device is removed, navigate to the "Device List" page and perform Delete operation.
Cannot communicate	 The network between the Logger1000 and the background is failed. Network parameter setting 	 Check if the Ethernet port of the Logger1000 is connected to the PC or router correctly. Check if the network parameter
with the background	is incorrect.	is set correctly.
	3. The forwarding protocol configuration is incorrect.	Check if the forwarding protocol is set correctly.

15 Routine Maintenance

Due to ambient temperature, humidity, dust, and vibration, the internal components of the Data Logger may age and wear, which may lead to potential failures inside the device. Therefore, it is necessary to perform daily and regular maintenance on the Data Logger to ensure its normal operation and service life.

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

15.1 Safety Instructions

WARNING

Only qualified and authorized personnel may perform maintenance and other operations on the Data Logger.

Do not leave screws, washers or other metal parts in the Data Logger during maintenance. Otherwise, damage may be caused to the device!

A WARNING

After the Data Logger stops running, wait at least 5 minutes before performing any operation on it.

Five Safety Rules

The following five safety rules shall be observed during maintenance or troubleshooting of the Data Logger to ensure operators' safety:

- · Disconnect the Data Logger from all external connections and internal power supplies.
- · Ensure that the Data Logger will not be inadvertently connected.
- Ensure that the Data Logger is voltage-free using a multimeter.
- · Connect necessary grounding cables.
- If there are parts in the operation area that may carry voltage, cover them with insulated cloth for insulation shielding.



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15.2 Maintenance List

NOTICE

Do not perform maintenance beyond the manual's scope to avoid electric shock. If necessary, contact SUNGROW for maintenance. Otherwise, the losses caused are not covered by the warranty.



Maintain maintenance logs to extend product lifespan.



The device has two USB ports, one for system replacement and the other for function commissioning. These ports are intended for qualified technical personnel only. To use them, the device enclosure must be removed by using special tools.

- USB 1: If the device encounters an exception and cannot function properly, contact Sungrow O&M personnel to replace the system via the USB port for restoration.
- USB 2: Reserved for internal use by R&D personnel during function commissioning.

Item	Method
Working environment	Ensure that there are no devices emitting strong electromagnetic interference near the Data Logger.
	Ensure that there are no heat sources near the Data Logger.
	 Ensure that there are no corrosive materials present near the Data Logger.
Hardware	 Ensure that the power supply voltage is within the normal range. Ensure that the wiring connections are secure and reliable. Ensure that the device is properly grounded.
System cleaning	 Ensure that the enclosure, circuit board and other components are clean. Check for dust or obstructions in the ventilation holes.

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Item	Method
Terminal and cable connection	 Check whether the screws of control terminals are loose. Tighten them with a screwdriver if necessary.
	 Check whether the copper bars or screws are oxidized and discolored.
Commoduem	 Visually inspect the connections and distribution of terminals and cables.
Software	Log in to the web interface to check the device's communication status.
	 Log in to the web interface to review and adjust the parameters of the Data Logger.
	 Log in to the web interface to check the software version of the Data Logger.

15.3 Module-Level Rapid Shutdown

Module-level rapid shutdown ensures that photovoltaic (PV) modules can be quickly and safely deactivated during maintenance or emergencies, enhancing the overall system safety.

Prerequisites

- Optimizers or shutdown devices with rapid shutdown capabilities are already installed in the current PV arrays.
- Firmware version LOGGER-SV500.001.00.P007 and above support this function.

step 1 Connect the Logger1000 and the rapid shutdown button through any DI port.



If DI5 is already used for an inverter emergency stop device, connect the rapid shutdown button to a different DI port. However, If you use DI5 for the rapid shutdown button, no other DI ports can be used for an additional inverter emergency stop device.

step 2 Log into the Logger1000's web UI and configure the DI port settings. See 7.12.11.6 DI.

step 3 Press the rapid shutdown button to activate the rapid shutdown feature.

- - End

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15.4 Replacing Logger1000

If it becomes necessary to replace the Logger1000 due to reasons such as power station upgrades, ensure to reconfigure the settings on the Web UI after completing the hardware replacement to maintain normal device communication.

Prerequisites

- The inverters connected to the original Logger1000 are operating normally.
- The new Logger1000 intended for replacement has been reset to factory settings.
- Firmware version LOGGER-SV500.001.00.P007 and above support this function.

A DANGER

If the Logger1000 is in the COM100D/E, you must first disconnect the power to the COM100D/E before proceeding with the replacement.

- step 1 Turn off the power to the Logger1000.
- step 2 Disconnect all cables connected to the Logger1000.
- **step 3** Remove the Logger1000 and install the new one in the same location.
- step 4 Reconnect the wiring according to the original Logger1000's device connection setup.
- step 5 Restore power to the Logger1000.
- step 6 Log in to the Logger1000's Web UI as an O&M user.
- **step 7** Follow the setup wizard to configure the network and ensure stable communication with the iSolarCloud.
- step 8 Navigate to the page Device > Device List to re-add inverters.
- step 9 Modify the inverter addresses.
 - i. On the page **Device List**, click to open the dialog box **Edit Device**.
 - ii. Update the inverter device information to ensure the forwarding address matches the previous one.
 - iii. Click Save ..
- step 10 Log in to the iSolarCloud App, and locate the power station initially created with the original Logger1000 to complete the device replacement. For detailed instructions, see iSolarCloud App User Manual.
 - - End

16 Appendix

16.1 Technical Data

Parameter	Logger1000A-EU	
Basic Data		
Supported Device Number	Max. 30*	
Communication		
RS485	3	
Ethernet	1 x RJ45, 10/100/1000Mbps	
Digital Input	5, Max. 24VDC	
Analog Input	4, support 4 ~ 20mA or 0~10VDC	
Operation Band	LTE(FDD): B1, B3, B7, B8, B20, B28A LTE(TDD): B38, B40, B41 GSM: B3/B8	
WLAN(AP Mode)	802.11 a/b/g/n/ac; HT20/40/80MHz; 2.4GHz/5GHz	
Power Supply		
DC input	24 ± 0.72VDC,1.2 A	
DC output	24 ± 0.72VDC,0.5 A	
Power consumption	Typ. 30 W, Max. 40 W	
Ambient Conditions		
Operating temperature	-30°C ~ +60°C	
Storage temperature	-40°C ~ +70°C	
Allowable relative humidity range	0%~95% ,non-condensing	
Max. operating altitude	4000m	
Protection class	IP20	
Mechanical Parameters		
Dimensions (W x H x D)	200 mm x 110 mm x 60 mm	
Weight	400 g	
Installation	DIN Rail / Wall mounting	
General Data		



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Parameter	Logger1000A-EU
Support for Software	10 years
Updates	io years



All the devices connected via ports, including inverters, meters and meteo stations, are counted.

16.2 Dry Contact Wiring Cable

The wiring cable used for each Logger1000 dry contact needs to meet the requirements in the following table.

Dry contacts	Specification
	Use outdoor UV rated twisted pair with a shielding layer. The
RS485	recommended cable diameter is 0.75~1.5mm ² . The maximum
	wiring distance should be less than 1000m.
AI	The recommended cable diameter is 0.75mm ² . The recommended
AI	maximum wiring distance is 10m.
DI	The recommended cable diameter is 0.75mm ² . The recommended
ы	maximum wiring distance is 10m.
Ethernet	Use CAT5E or higher specification network cable. Communication
Ememer	distance should be less than 100m.
	The recommended cable diameter is 4~10mm². The maximum
PLC	wiring distance is 1000m. Cable withstand voltage to ground must
	be greater than 1000V.

16.3 Quality Assurance

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

- When product faults occur during the warranty period, SUNGROW will provide free repairs or replace the product with a new one.
- After replacement, unqualified products shall be processed by SUNGROW.
- The customer shall give SUNGROW a reasonable period to repair the faulty device.

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

- · The device is damaged during transport.
- · The device is improperly installed.
- · The device is improperly refitted.
- · The device is improperly used.
- The device operates in harsh conditions beyond those described in this document.
- The damage is caused by an unexpected natural factors.

16.4 Contact Information

If you have any questions about this product, please reach out to us. In order to be more responsive and provide you with better service, please offer the following information:

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

HQ Tel: 0551 - 6532 7878 / 0551 - 6532 7877

For detailed information, see https://www.sungrowpower.com/headquarter.html .

