

User Manual

3-Phase PV Grid-Connected Inverter

SG3.0RT / SG4.0RT / SG5.0RT / SG6.0RT / SG7.0RT / SG8.0RT / SG10RT / SG12RT / SG15RT / SG17RT / SG20RT /SG5.0RT-P2 / SG6.0RT-P2 / SG7.0RT-P2 / SG8.0RT-P2 / SG10RT-P2 / SG12RT-P2 / SG15RT-P2 / SG17RT-P2 / SG20RT-P2



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About This Manual

The manual mainly contains the product information, as well as guidelines for installation, operation, and maintenance. The manual does not include complete information about the photovoltaic (PV) system. 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 model of low-power grid-connected PV string inverters:

- SG3.0RT
- SG4.0RT
- SG5.0RT
- SG6.0RT
- SG7.0RT
- SG8.0RT
- SG10RT
- SG12RT
- SG15RT
- SG17RT
- SG20RT
- SG5.0RT-P2
- SG6.0RT-P2
- SG7.0RT-P2
- SG8.0RT-P2
- SG10RT-P2
- SG12RT-P2
- SG15RT-P2
- SG17RT-P2
- SG20RT-P2

It will be referred to as "inverter" hereinafter unless otherwise specified.

Target Group

This manual is intended for professional technicians who are responsible for installation, operation, and maintenance of inverters, and users who need to check inverter parameters. The inverter must only be installed by professional technicians. The professional technician is required to meet the following requirements:

- Know 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 quickly respond to hazards or emergencies that 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

Please read this manual carefully before using the product and keep it properly at a place for easy access.

All contents, pictures, marks, and symbols in this manual are owned by SUNGROW. No part of this document may be reprinted by the non-internal staff of SUNGROW without written authorization.

Contents of this manual may be periodically updated or revised, and the actual product purchased shall prevail. Users can obtain the latest manual 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.

For more information on network security, please refer to the user manual of the communication module or the Data Logger that comes with the product.

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.

Please carefully understand the meaning of these warning symbols to better use the manual.

▲ DANGER

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

⚠ WARNING

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

A CAUTION

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

NOTICE

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



"NOTE" indicates additional information, emphasized contents or tips that may be helpful, e.g., to help you solve problems or save time.

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1 Safety Instructions

When installing, commissioning, operating, and maintaining the product, strictly observe the labels on the product and the safety requirements in the manual. Incorrect operation or work may cause:

- Injury or death to the operator or a third party.
- · Damage to the product and other properties.

⚠ WARNING

- Do not perform any operation on the product (including but not limited to, handling, installing, powering on, or 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.

NOTICE

- Tighten the screws with 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.
- 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 onsite 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 product, 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

▲ WARNING

- · 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.

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 your distributor first. If the problem persists, contact SUNGROW in time.





User Manual 1 Safety Instructions

1.2 Installation Safety

A DANGER

Make sure there is no electrical connection before installation.

Before drilling, avoid the water and electricity wiring in the wall.

A CAUTION

Improper installation may cause personal injury!

- If the product supports hoisting transport and is hoisted by hoisting tools, no one is allowed to stay under the product.
- When moving the product, be aware of the product weight and keep the balance to prevent it from tilting or falling.

NOTICE

Before operating the product, must 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 inverter is not damaged, otherwise it may cause danger!
- Before electrical connections, please make sure that the inverter switch and all switches connected to the inverter are set to "OFF", otherwise electric shock may occur!

▲ DANGER

The PV string will generate lethal high voltage when exposed to sunlight.

- Operators must wear proper personal protective equipment during electrical connections.
- Must ensure that cables are voltage-free with a measuring instrument before touching DC cables.
- Respect all safety instructions listed in relevant documents about PV strings.
- The inverter must not be connected to a PV string that requires positive or negative grounding.

1 Safety Instructions User Manual

▲ DANGER

Danger to life due to a high voltage inside the inverter!

- 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 instructions listed in this manual and other pertinent documents.

MARNING

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

- · Electrical connection must be performed by professionals.
- All cables used in the PV generation system must be firmly attached, properly insulated, and adequately dimensioned.

WARNING

- Check the positive and negative polarity of the PV strings, and connect the PV connectors to corresponding terminals only after ensuring polarity correctness.
- During the installation and operation of the inverter, please ensure that the positive or negative poles of PV strings do not short-circuit to the ground. Otherwise, an AC or DC short-circuit may occur, resulting in equipment damage. The damage caused by this is not covered by the warranty.
- Do not connect any load between the inverter and the AC circuit breaker directly connected to it, so as to prevent the switch from tripping by mistake.
- Determine the specifications of AC circuit breakers strictly in compliance with the applicable local laws and regulations and safety standards or the recommendation by SUNGROW. Otherwise, the switch may not open in time in the event of something abnormal, which may then lead to safety incidents.

NOTICE

Comply with the safety instructions related to PV strings and the regulations related to the local grid.

User Manual 1 Safety Instructions

1.4 Operation Safety

▲ DANGER

When routing cables, ensure a distance of at least 30 mm between the cables and heat-generating components or areas to protect the insulation layer of cables from aging and damage.

When the product is working:

- Do not touch the product enclosure.
- · It is strictly forbidden to plug and unplug any connector on the inverter.
- Do not touch any wiring terminal of the inverter. Otherwise, electric shock may occur.
- Do not disassemble any parts of the inverter. Otherwise, electric shock may occur.
- It is strictly forbidden to touch any hot parts of the inverter (such as the heat sink). Otherwise, it may cause burns.
- Do not connect or remove any battery. Otherwise, electric shock may occur.
- Do not connect or remove any PV string or any PV module in a string. Otherwise, electric shock may occur.
- If the inverter is equipped with a DC switch, do not operate it. Otherwise, it may cause device damage or personal injury.

Do not take other actions, such as setting parameters or cutting off power, during the process of inverter firmware update, to avoid update failure.

1.5 Maintenance Safety

▲ DANGER

Risk of inverter damage or personal injury due to incorrect service!

- Before maintenance, disconnect the AC circuit breaker on the grid side and then the DC switch. If a fault that may cause personal injury or device damage is found before maintenance, disconnect the AC circuit breaker and wait until the night before operating the DC switch. Otherwise, a fire inside the product or an explosion may occur, causing personal injuries.
- After the inverter is powered off for 10 minutes, measure the voltage and current with professional instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the inverter.
- Even if the inverter is shut down, it may still be hot and cause burns. Wear protective gloves before operating the inverter after it cools down.

1 Safety Instructions User Manual

▲ DANGER

Touching the power grid or the contact points and terminals on the inverter connected to the power grid may lead to electric shock!

The power grid side may generate voltage. Always use a standard voltmeter to ensure that there is no voltage before touching.

A CAUTION

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

NOTICE

To avoid the risk of electric shock, do not perform any other maintenance operations beyond those described in this manual. If necessary, contact your distributor first. If the problem persists, contact SUNGROW. Otherwise, the losses caused is not covered by the warranty.

NOTICE

- If the paint on the inverter enclosure falls or rusts, repair it in time. Otherwise, the inverter performance may be affected.
- Do not use cleaning agents to clean the inverter. Otherwise, the inverter may be damaged, and the loss caused is not covered by the warranty.
- As the inverter contains no parts that can be maintained, never open the enclosure of the inverter or replace any internal components without authorization.
 Otherwise, the loss caused is not covered by the warranty.
- Do not open the maintenance door in rainy or snowy weather. If it is inevitable, take proper protective measures to avoid the ingress of rainwater and snow into the maintenance compartment; otherwise, the product's operation may be affected.
- Before closing the maintenance door, check whether there is any object left inside the maintenance compartment, such as screws, tools, etc.
- It is recommended for users to use cable sheathing to protect the AC cable. If the cable sheathing is used, make sure it is positioned inside the maintenance compartment.

User Manual 1 Safety Instructions

1.6 Disposal Safety

MARNING

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



2 Product Description

2.1 System Introduction

The inverter is a transformerless 3-phase PV grid-connected inverter. As an integral component in the PV power system, the inverter is designed to convert the direct current power generated from the PV modules into grid-compatible AC current and feeds the AC current to the utility grid.

MARNING

- The inverter must only be operated with PV strings with class II protection in accordance with IEC 61730, application class A. It is not allowed for the positive pole or the negative pole of the PV strings to be grounded. This can cause damage to the inverter.
- · Do not connect any local load between the inverter and the AC circuit breaker.

NOTICE

The inverter applies only to the scenarios described in this manual.

The intended usage of the inverter is illustrated in the following figure (what are in the dashed box are optional).

User Manual 2 Product Description

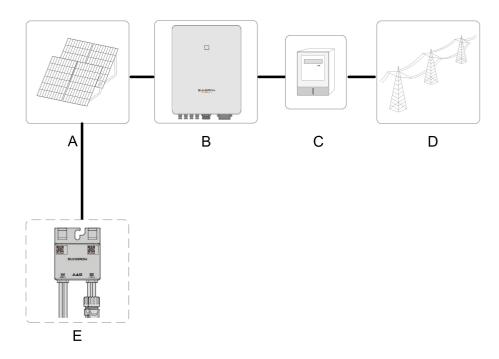


figure 2-1 Inverter Application in PV Power System

Item	Description	Note
^	D\/ atrip go	Compatible with monocrystalline silicon, polycrystalline silicon,
Α	PV strings	and thin-film modules without grounding
		SG3.0RT, SG4.0RT, SG5.0RT, SG6.0RT, SG7.0RT, SG8.0RT,
В	lavantan	SG10RT, SG12RT, SG15RT, SG17RT, SG20RT, SG5.0RT-P2,
В	Inverter	SG6.0RT-P2, SG7.0RT-P2, SG8.0RT-P2, SG10RT-P2,
		SG12RT-P2, SG15RT-P2, SG17RT-P2, SG20RT-P2
С	Metering device	Meter cupboard with power distribution system
D	Utility grid	TT, TN-C, TN-S, TN-C-S
	Optimizer	Inverters that are compatible with the optimizer include:
		SG5.0RT-P2, SG6.0RT-P2, SG7.0RT-P2, SG8.0RT-P2,
E		SG10RT-P2, SG12RT-P2, SG15RT-P2, SG17RT-P2,
		SG20RT-P2. SG3.0–20RT models are not compatible with the
		optimizer

Please refer to the optimizer user manual for details.



2 Product Description User Manual

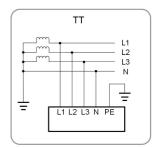


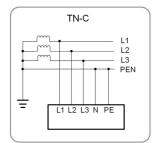
Please contact your local sales staff to confirm that the optimizer is available for sale in your territory. SP600S optimizer is not compatible with third-party products.

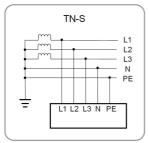
NOTICE

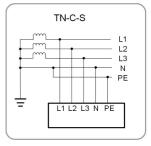
It is recommended to use the optimizer produced by SUNGROW. Optimizers from third-party manufacturers may fail or even cause unknown losses.

The following figure shows the common grid configurations.





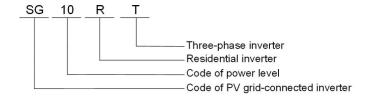




2.2 Product Introduction

Model Description

The model description is as follows (take SG10RT as an example):



Appearance

The following figure shows the appearance of the inverter. The image shown here is for reference only. The actual product received may differ.

User Manual 2 Product Description

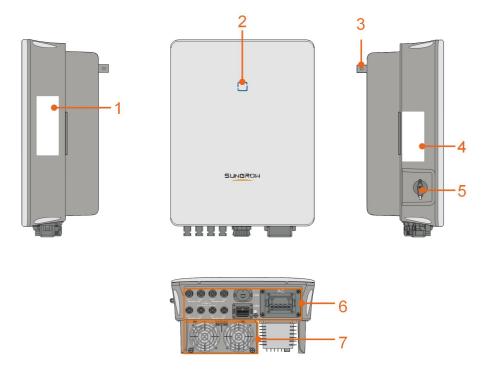


figure 2-2 Inverter Appearance

No.	Name	Description
		To clearly identify the product, including device model, S/N,
1	Nameplate	important specifications, marks of certification institutions,
		etc.
2	LED indicator	To indicate the current working state of the inverter.
	Hangar	Complement to the included wall-mounting bracket for hang-
3	Hanger	ing the inverter.
	Label	Information about COM2 pin definition, supported DRM
4		modes, etc.
	DC switch	To perfoly disconnect the DC circuit whenever necessary
5	(Optional)	To safely disconnect the DC circuit whenever necessary.
	Electrical connec-	DC terminals (SG20RT for example), AC terminal, additional
6	tion area	grounding terminal and communication terminals.
		Optimization of the inverter's heat dissipation. Only the
7	Fans	SG15RT, SG17RT, SG20RT, SG15RT-P2, SG17RT-P2 and
		SG20RT-P2 are equipped with fans.

Dimensions

The following figure shows the dimensions of the inverter.

2 Product Description User Manual

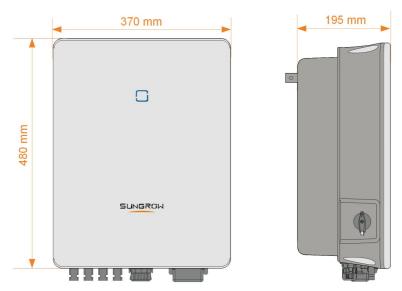


figure 2-3 Dimensions of the Inverter(in mm)

2.3 Symbols on Product

Symbol	Explanation
	Regulatory compliance mark.
TOVRObaldade CERTIFIED TOVROBAGING CERTIFIED	TÜV mark of conformity.
((CE mark of conformity.
C€	EU/EEA Importer.
UK CA	UKCA mark of conformity.
6	CMIM mark of conformity.
X	Do not dispose of the inverter together with household waste.
×	The inverter does not have a transformer.
\wedge	Disconnect the inverter from all the external power sources be-
	fore maintenance!
Ţį.	Read the user manual before maintenance!

User Manual 2 Product Description

Symbol	Explanation
	Burn danger due to the hot surface that may exceed 60°C.
\wedge	Danger to life due to high voltages!
7	Only qualified personnel can open and service the inverter.
A >.	Danger to life due to high voltages!
/4 (/)	Do not touch live parts for 10 minutes after disconnection from
10min	the power sources.
	External protective grounding terminal.

^{*} The table shown here is for reference only. The actual product received may differ.

2.4 LED Indicator

The LED indicator on the front of the inverter indicates the working state of the inverter.

table 2-1 LED Indicator State Description

LED Color	State	Definition
	On	The inverter is operating normally.
Blue	Blink	The inverter is at standby or startup state (not feeding power into the grid).
	On	A system fault has occured.
Red		
	Off	Both the AC and DC sides are powered down.
Gray		

MARNING

Voltage may still be present in AC side circuits after the indicator is off. Pay attention to the electricity safety when operating.

^{*} Users may also attach other warning signs as per the requirements of the local standards or installation specifications.

2 Product Description User Manual

2.5 Circuit Diagram

The following figure shows the main circuit of the inverter.

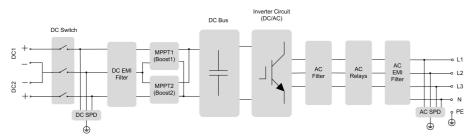


figure 2-4 Circuit Diagram (SG5.0RT for example)

- DC Switches can safely disconnect the PV input when necessary to ensure the safe operation of the inverter and the safety of personnel.
- The DC SPD provides a discharge circuit for the DC side overvoltage to prevent it from damaging the internal circuits of the inverter.
- EMI filters can filter out the electromagnetic interference inside the inverter to ensure that
 the inverter meets the requirements of electromagnetic compatibility standards.
- The MPPT is used to ensure a maximum power from PV arrays at different PV input conditions.
- The Inverter Circuit converts the DC power into grid-compliant AC power and feeds it into the grid.
- The AC filter filters the output AC component of high frequency to ensure that the output current meets the grid requirements.
- The AC relay isolates the AC output of the inverter from the grid, making the inverter safe from the grid in case of inverter failure or grid failure.
- The AC SPD provides a discharge circuit for the AC side overvoltage to prevent it from damaging the internal circuits of the inverter.

A DANGER

If the lightning level exceeds the protection level of the product, surge protection and overvoltage protection may fail, resulting in electric shock and fatal injury!

2.6 Function Description

Basic Function

Conversion function

The inverter converts the DC power from the PV array to the AC power, in conformity with the grid requirements.

· Data storage

User Manual 2 Product Description

The inverter logs running information, error records, etc.

· Parameter configuration

The inverter provides various parameter configurations for optimal operation. Parameters can be set via the iSolarCloud App or the cloud server.

Communication interface

The inverter is equipped with two communication interfaces. The communication device can be connected to the inverter via both interfaces.

After communication connection is established, users can view inverter information, operational data and can set inverter parameters through the iSolarCloud.



It is recommended to use the communication module from SUNGROW. Using a device from other companies may lead to communication failure or other unexpected damage.

Protection Function

Several protective functions are integrated in the inverter, including short circuit protection, grounding insulation resistance monitoring, residual current protection, grid monitoring, DC overvoltage/overcurrent protection, etc.

Earth Fault Alarm

The inverter is equipped with a DO relay for the local earth fault alarm. The additional equipment required is a light indicator and/or a buzzer that needs additional power supply.

After the connection, if the earth fault occurs, the DO dry-contact will switch on automatically to signal the external alarm.

DRM ("AU"/"NZ")

The DRM function is only applicable to a single inverter.

The inverter provides terminals for connecting to a Demand Response Enabling Device (DRED). After the connection, the DRED asserts demand response modes (DRMs). The inverter detects and initiates a response to all supported demand response modes listed in the following table.

table 2-2 Demand Response Mode Explanation

Mode	Explanation
DRM0	The inverter is in the state of shutdown.

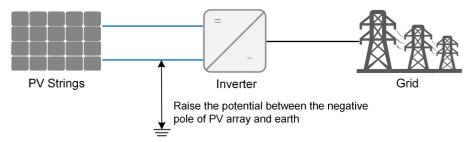
Ripple Control

The inverter provides terminals (DRM) for connecting to a Ripple Control Receiver (RCR). After the connection, the grid dispatching center issues regulation instructions via dry contact (DI). The inverter can control power output according to the local preset instructions.

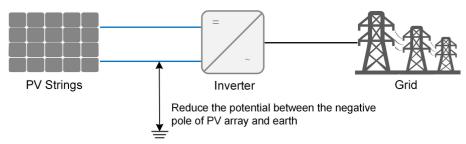
2 Product Description User Manual

PID Recovery

• For positive voltage scheme, after the PID function is enabled, the voltage to ground of all PV strings is greater than 0, and therefore the PV string-to-ground voltage is a positive value.



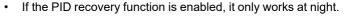
• For negative voltage scheme, after the PID function is enabled, the voltage to ground of all PV strings is lower than 0, and therefore the PV string-to-ground voltage is a negative value.



NOTICE

- Before enabling the PID recovery function, make sure the voltage polarity of the PV modules to ground meets requirement. If there are any questions, contact the PV module manufacturer or read its corresponding user manual.
- If the voltage scheme for the PID recovery function does not meet the requirement of corresponding PV modules, the PID function will not work as expected or even damage the PV modules.

When the inverter is not running, the PID module will apply inverse voltage to PV modules, to restore the degraded modules.





 After the PID recovery function is enabled, the voltage of the PV strings to ground is 500 V DC by default, and the default value can be modified through the App.

Auto-test (for Italy CEI0-21 Grid Code Only)

The Italy CEI0-21 grid code requires auto-test for the inverter before grid connection. During the auto-test, the inverter checks the protection threshold and protection time of the 1-level

User Manual 2 Product Description

overvoltage (59.S1), 2-level overvoltage (59.S2),1-level undervoltage (27.S1), 2-level undervoltage (27.S2),1-level overfrequency (81>.S1), 2-level overfrequency (81>.S2), 1-level underfrequency (81<.S1), 2-level underfrequency (81<.S2) to ensure that the inverter could meet the requirements of CEI0-21 to protect the grid from abnormality after the inverter is operational.

AFCI Function (Optional)

AFCI activation

This function can be enabled to detect whether serial fault arc occurs in the loop between PV array and inverter.

· AFCI self-test

This function is intended to test whether AFCI works as normal.

Clear AFCI Alarm

When the inverter detects the AFCI alarm, it stops working. Clear the AFCI alarm so that the inverter can restart the detection.

· Protection Coverage

Two types of classifications are defined for AFCI protection, "F (Full coverage)" and "P (Partial coverage)". Full coverage protection ("F") is available for this inverter.

AFPE

This inverter is equipped with a fully integrated AFPE, which is implemented within the inverter connected to the PV array and makes use of the enclosure and terminals of the inverter.

Method of Implementation

Two implementation options are available for AFCI protection, "D" and "I". "D" represents "Distributed detection system", where the AFPE comprises more than one device. The devices may be standalone devices or partially integrated within the power conversion equipment (PCE). While "I" represents "PCE integrated device", where the AFPE is implemented within a PCE connected to the PV array and makes use of the enclosure and terminals of the PCE. "I" is adopted for this inverter.

· Reconnection Method

Three reconnection methods are available for this inverter:

1 Manual reconnection

Reconnection can only be performed manually after arc interruption. You can log in via local access to the iSolarCloud App, and choose **More** → **Settings** → **Operation Parameters** → **AFCI Parameters** → **Clear AFCI Alarm**; after clearing the fault alarm, restart the device.

2 Product Description User Manual

2 Remote manual reconnection

Reconnection can be performed via remote access to the AFPE after interruption. You can log in to iSolarCloud remotely. Then, find the target plant and choose **Settings**; select the device, and choose **Advanced Settings** → **Power Control** → **Clear AFCI Alarm**. After clearing the fault alarm, restart the device.

3 Automatic reconnection

Reconnection can be performed automatically after arc interruption.

Rule: Upon detecting a real arc fault, the device will report a fault and shut down. Within the day, for the 1st to 4th arc fault alarm, the device will shut down for 10 minutes, then the alarm will be cleared and the device will restart; when the 5th or more arc fault is reported, the device will shut down and not resume operation on that day.

In the event of the 1st to 4th arc fault alarm, ARM is powered off and restarted, and the device can restart and reconnect to the grid normally, with the fault count reset to "0". When the 5th arc fault is detected, if ARM is powered off and restarted due to external environment factors, the device will report a fault and shut down, with the fault count changing to "1"; after 10 minutes, the fault alarm will be cleared and the device will restart. If ARM is not powered off when the 5th or more arc fault is reported, you need to clear the fault manually to get the device restarted and reconnected to the grid normally; in this case, the fault count will be reset to "0". Or you can wait for the fault to be cleared automatically the next day, in which case the fault count will change to "1". See "Manual reconnection" and "Remote manual reconnection" for instructions on how to clear the fault alarm manually.

• AFCI protection configuration.

The AFCI configuration of each inverter model is shown in the table below.

Model	SG15/ 17/20RT	SG15/ 17/ 20RT-P2	SG7.0/ 8.0/10/ 12RT	SG7.0/ 8.0/10/ 12RT-P2	SG5.0/ 6.0RT	SG5.0/ 6.0RT- P2	
Classification	F-I-AFPE	-1-2/2-2	F-I-AFPE	E-1-2/1-2	F-I-AFPE	F-I-AFPE-1-1/1-2	
Number of monitored							
strings per in- put port				1			
Number of in- put ports per channel	2	/2	2	/1	1		
Number of monitored channels	2	2	:	2	2	!	

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Rated chan- nel current	25/25	32/32	25/12.5	32/16	12.5/ 12.5	16/16
Maximum current per in- put port	12.5	16	12.5	16	12.5	16
Rated inter- ruption current	12.5	16	12.5	16	12.5	16



The fault arc detection function meets the standard requirements, please test under the working conditions as required by the standard.

SPI Function(for Italy CEI0-21 Grid Code Only)

The inverter SPI interface, only for Italy, is able to easily choose the grid protection mode based on the local plant requirements:

- Local SPI Mode: protected by the preset values in inverter.
- External SPI Mode: protected by a separate SPI protection device on site.

Plant Size	≤ 11.08 kVA		> 11.08 kVA			
SPI Control Modes	Local SPI Mode (Default in Inverter)		Local SPI Mode (Default in Inverter)		External SPI Mode	
SPI In- terface	Integrated in Inverter		Integrated in Inverter		Separate SPI Protection Device on Site	
External SPI Sig- nal Setting	0	0	0	0	1	
Local SPI Sig- nal Setting	0 (Default in Inverter)	1	0 (Default in Inverter)	1	1	
59.S1	253 V / ≤ 603 s	253 V / < 603	253 V / ≤ 603 s	253 V / ≤ 603 s	253 V / <u><</u> 603	
59.S2	264.5 V / 0.2 s	264.5 V / 0.2 s	264.5 V / 0.2 s	264.5 V / 0.2 s	264.5 V / <u><</u> 4	
27.S1	195.5 V / 1.5 s	195.5 V / 1.5 s	195.5 V / 1.5 s	195.5 V / 1.5 s	195.5 V / <u><</u> 4 s	

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Plant Size	≤ 11.08 kVA			> 11.08 kVA	
27.S2	34.5 V / 0.2 s	34.5 V / <u><</u> 4 s			
81>.S1	_	50.2 Hz / 0.1		50.2 Hz / 0.1	51.5 Hz / <u><</u> 4
		s	_	s	s
81<.S1	_	49.8 Hz / 0.1	_	49.8 Hz / 0.1	47.5 Hz / <u><</u> 4
		s		S	s
81>.S2	51.5 Hz / 0.1	51.5 Hz / <u><</u> 4			
	s	s	s	s	s
81<.S2	47.5 Hz / 0.1	47.5 Hz / 0.1	51.5 Hz / 0.1	51.5 Hz / 0.1	47.5 Hz / <u><</u> 4
	S	s	S	s	s
Notes		_	_	_	Values from
					SPI Protec-
	_				tion Device
					on site shall
					not exceed
					the above

Optimizer Functions

Module-level MPPT

Increase the power generation of the PV system by continuously tracking the maximum power point of the PV module.

Module-level shutdown

Quickly reduce module voltage.

• Module-level monitoring

The optimizer can monitor the performance of modules.

• Module-level IV curve diagnosis

The optimizer can scan the module IV curve and judge whether a module fault occurs.

3 Unpacking and Storage

3.1 Unpacking and Inspection

The product is thoroughly tested and strictly inspected before delivery. Nonetheless, damage may still occur during shipping. For this reason, please conduct a thorough inspection after receiving the product.

- · Check the packing case for any visible damage.
- · Check the scope of delivery for completeness according to the packing list.
- · Check the inner contents for damage after unpacking.

Contact SUNGROW or the transport company in case of any damage or incompleteness, and provide photos to facilitate services.

Do not dispose of the original packing case. It is recommended to store the device in the original packing case when the product is decommissioned.

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 your distributor first. If the problem
 persists, contact SUNGROW in time.
- If any tool is used for unpacking, be careful not to damage the product.

3.2 Inverter Storage

Proper storage is required if the inverter is not installed immediately.

- Store the inverter in the original packing case with the desiccant inside.
- The storage temperature must be always between -30°C and +70°C, and the storage relative humidity must be always between 0 and 95 %, non-condensing.
- In case of stacking storage, the number of stacking layers should never exceed the limit marked on the outer side of the packing case.
- · The packing case should be upright.
- If the inverter needs to be transported again, pack it strictly before loading and transporting it.
- Do not store the inverter in places susceptible to direct sunlight, rain, and strong electric field.



3 Unpacking and Storage User Manual

• Do not place the inverter in places with items that may affect or damage the inverter.

- Store the inverter in a clean and dry place to prevent dust and water vapor from eroding.
- Do not store the inverter in places with corrosive substances or susceptible to rodents and insects.
- Carry out periodic inspections. Inspection shall be conducted at least once every six months. If any insect or rodent bites are found, replace the packaging materials in time.
- If the inverter has been stored for more than a year, inspection and testing by professionals are required before it can be put into operation.

NOTICE

Please store the inverter according to the storage requirements. Product damage caused by failure to meet the storage requirements is not covered by the warranty.



4 Mechanical Mounting

M WARNING

Respect all local standards and requirements during mechanical installation.

4.1 Safety During Mounting

A DANGER

Make sure there is no electrical connection before installation.

Before drilling, avoid the water and electricity wiring in the wall.

M WARNING

For specific requirements for the installation environment, see "4.2.1 Installation Environment Requirements". In case the environment where the product is installed does not meet the requirements, SUNGROW shall not be held liable for any property damage arising therefrom.

A CAUTION

Improper handling may cause personal injury!

- When moving the product, be aware of its weight and keep the balance to prevent it from tilting or falling.
- · Wear proper protective equipment before performing operations on the product.
- The bottom terminals and interfaces of the product cannot directly contact the ground or other supports. The product cannot be directly placed on the ground.

NOTICE

During installation, ensure that no device in the system causes it hard for the DC switch and the AC circuit breaker to act or hinders maintenance personnel from operating.

If drilling is required during installation:

- · Wear goggles and protective gloves when drilling holes.
- Make sure to avoid the water and electricity wiring in the wall before drilling.
- · Protect the product from shavings and dust.

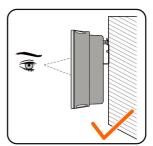
4 Mechanical Mounting User Manual

4.2 Location Requirements

To a large extent, a proper installation location ensures safe operation, service life, and performance of the inverter.

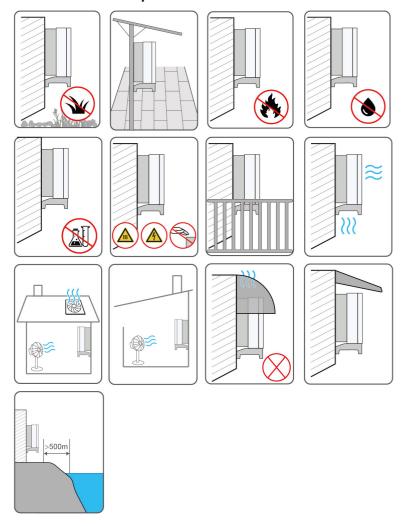
- The inverter with protection rating IP65 can be installed both indoors and outdoors.
- The inverter should be installed at a height that allows easy viewing of the LED indicator panel, as well as easy electrical connection, operation and maintenance.





User Manual 4 Mechanical Mounting

4.2.1 Installation Environment Requirements

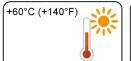


- If the inverter is installed in a place with lush vegetation, weed on a regular basis. In addition, the ground beneath the inverter needs to undergo certain treatment, such as laying cement or gravel, etc. (an area of 3m×2.5m is recommended).
- Do not install the inverter in an environment with flammables, explosives, or smoke.
- Do not install the inverter in places prone to water leak, e.g., under the air-conditioner vent, the air vent, or the cable outlet window of the machine room, so as to prevent device damage or short circuit caused by intrusion of water.
- Do no install the inverter in a place with corrosives such as corrosive gas and organic solvent, etc.
- When the inverter is running, its surface may carry high voltages or get very hot. Do not touch it; otherwise, it may lead to burns or electric shocks.
- Do not install the inverter in a place that is easy to reach for people.

4 Mechanical Mounting User Manual

The installation site must have solid ground, free of rubber-like soils (which cannot be effectively compacted) or weak soils, and should not be prone to subsidence. Also, avoid low-lying areas where water or snow may easily accumulate. Ensure the site is located above the highest recorded water level in the area.

- Do not install the inverter in a position that could be flooded.
- To prevent vegetation or water on the ground from impacting inverter operation, if the space above meets the designated requirements, elevate the inverter to an appropriate height.
- Install the inverter in a place with shelter, so as to prevent it from getting impacted by direct sunlight and severe weather (e.g. snow, rain, and lightning). The inverter will derate in high temperatures for self-protection. If installed in a place directly exposed to sunlight, as the temperature rises, the inverter may witness power reduction.
- Good heat dissipation is very important to the inverter. Please install the inverter in a ventilated environment.
- If the inverter needs to be installed in a closed or semi-closed environment, please install
 additional heat dissipation or ventilation devices. Furthermore, while the inverter is operating, ensure the indoor ambient temperature does not exceed the outdoor ambient temperature. A semi-closed environment refers to a special space where natural ventilation
 is limited and gas or heat may easily accumulate, although it is not fully enclosed on all
 six sides.
- Please consult SUNGROW before installing inverters outdoors in areas prone to salt damage, which mainly are coastal areas within 500 meters of the coast. The sedimentation amount of salt spray is correlated to the characteristics of the seawater, sea winds, precipitation, air humidity, topography, and forest coverage in the adjacent sea areas, and there are substantial differences between different coastal areas.
- Do not install the inverter in an environment contaminated with chemicals such as halogen and sulfide.
- Do not install the inverter in an environment with vibration and strong electromagnetic field. Strong-magnetic-field environments refer to places where magnetic field strength measures over 30 A/m.
- In dusty environments such as places full of dust, smoke, or floc, particles may cling to
 the device's air outlet or heat sink, thus impacting its heat dissipation performance or
 even getting it damaged. Therefore, do not install the inverter in dusty environments. If
 the inverter has to be installed in such environments, please clean its fans and heat sink
 on a regular basis to ensure a good heat dissipation performance.
- The average temperature approximately 1 m around the inverter should be taken as its ambient operating temperature. The temperature and humidity should meet the requirements below:







User Manual 4 Mechanical Mounting

4.2.2 Carrier Requirements

The mounting structure where the inverter is installed must comply with local/national standards and guidelines. Ensure that the installation surface is solid enough to bear four times the weight of the inverter and is suitable for the dimensions of the inverter (e.g. cement walls, plasterboard walls, etc.).

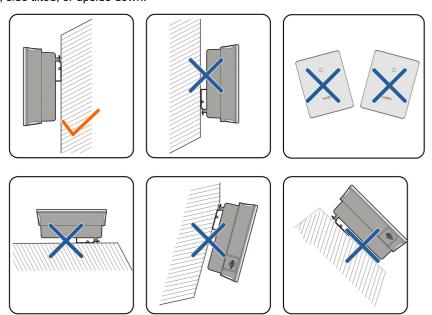
Do not install the inverter on a carrier that may vibrate in resonance, so as to avoid making bigger noise.

The structure should meet the following requirements:



4.2.3 Angle Requirements

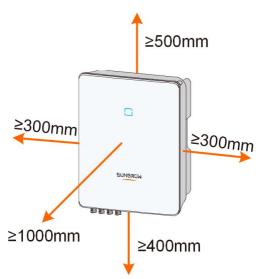
Install the inverter vertically. Never install the inverter horizontally, or at forward/backward tilted, side tilted, or upside down.



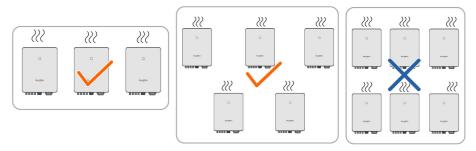
4 Mechanical Mounting User Manual

4.2.4 Clearance Requirements

Reserve enough clearance around the inverter to ensure sufficient space for heat dissipation.



In case of multiple inverters, reserve specific clearance between the inverters.

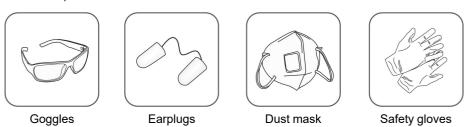


Install the inverter at an appropriate height for ease of viewing LED indicator and operating switch(es).

4.3 Installation Tools

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

table 4-1 Tool specification



User Manual 4 Mechanical Mounting



4 Mechanical Mounting User Manual





Slotted screwdriver (M2)

Connector wrench

4.4 Moving the Inverter

Before installation, remove the inverter from the packing case and move it to the installation site. Follow the instructions below as you move the inverter:

- · Always be aware of the weight of the inverter.
- Lift the inverter using the handles positioned on both sides of the inverter.
- Move the inverter by one or two people or by using a proper transport tool.
- Do not release the equipment unless it has been firmly secured.

A CAUTION

Improper handling may cause personal injury!

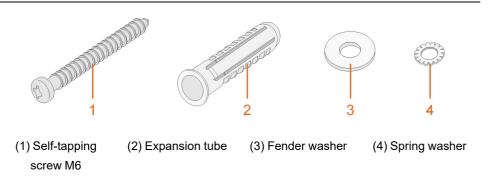
- Arrange an appropriate number of personnel to carry the inverter according to its weight, and installation personnel should wear protective equipment such as anti-impact shoes and gloves.
- Attention must be paid to the center of gravity of the inverter to avoid tilting during handling.
- Placing the inverter directly on a hard ground may cause damage to its metal enclosure. Protective materials such as sponge pad or foam cushion should be placed underneath the inverter.
- Move the inverter by holding the handles on it. Do not move the inverter by holding the terminals.

4.5 Installing the Inverter

Inverter is installed on the wall by means of wall-mounting bracket and the expansion plug sets.

The expansion plug set shown below is recommended for the installation.

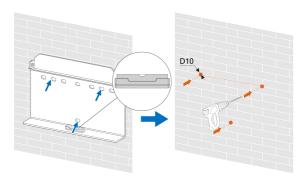
User Manual 4 Mechanical Mounting



Step 1 Place the wall-mounting bracket to a proper position on the wall. Observe the level on the bracket and adjust until the bubble is in the middle position. Mark the positions and drill the holes

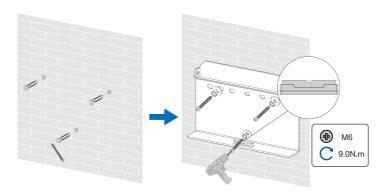
The depth of the holes should be about 70 mm.

holes. NOTICE



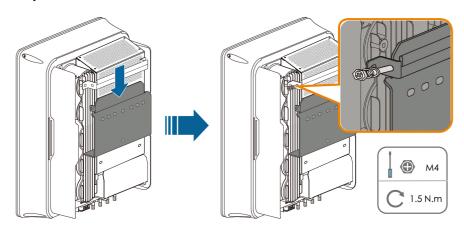
* The image shown here is for reference only. The actual product received may differ.

Step 2 Place the expansion tubes into the holes. Then secure the wall-mounting bracket to the wall firmly with the expansion bolt sets.



4 Mechanical Mounting User Manual

Step 3 Lift the inverter and slide it down along the wall-mounting bracket to make sure they match perfectly. Use the fastener set to lock the device.

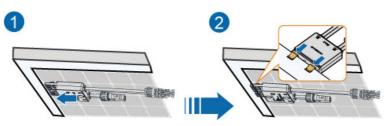


--End

User Manual 4 Mechanical Mounting

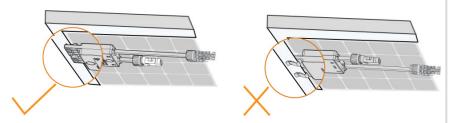
4.6 Installing Optimizer(Optional)

Step 1 As shown in the figure below, clamp the optimizer parallel to the back of the PV module by clips.

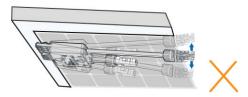


NOTICE

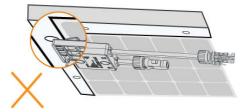
• Please ensure that the optimizer is installed facing the back of the module. Otherwise, the clip may get damaged.



 Do not forcibly bend the clips when installing the optimizer by clips. Otherwise, the clip may be damaged.



• Do not clamp the optimizer into holes in the module frame during installation. Otherwise, the optimizer cannot be removed or the clips may be damaged.



- It is recommended to install optimizers on the same side of modules.
- Do not clamp and remove the optimizer multiple times. Otherwise, the clip may become loose, affecting normal use.

--End

5 Electrical Connection

5.1 Safety Instructions

A DANGER

The PV string will generate lethal high voltage when exposed to sunlight.

- Operators must wear proper personal protective equipment during electrical connections.
- Must ensure that cables are voltage-free with a measuring instrument before touching DC cables.
- Respect all safety instructions listed in relevant documents about PV strings.

A DANGER

- Before electrical connections, please make sure that the inverter switch and all switches connected to the inverter are set to "OFF", otherwise electric shock may occur!
- Ensure that the inverter is undamaged and all cables are voltage free before performing electrical work.
- Do not close the AC circuit breaker until the electrical connection is completed.

⚠ WARNING

Do not damage the ground conductor. Do not operate the product in the absence of a properly installed ground conductor. Otherwise, it may cause personal injury or product damage.

Please use measuring devices with an appropriate range. Overvoltage can damage the measuring device and cause personal injury.

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

- Electrical connection must be performed by professionals.
- Operators must wear proper personal protective equipment during electrical connections.
- All cables used in the PV generation system must be firmly attached, properly insulated, and adequately dimensioned. Cables used shall comply with the requirements of local laws and regulations.
- The factors that affect cable selection include rated current, cable type, routing mode, ambient temperature, and maximum expected line loss.

NOTICE

All electrical connections must comply with local and national/regional electrical standards

- Cables used by the user shall comply with the requirements of local laws and regulations.
- Only with the permission of the national/regional grid department, the inverter can be connected to the grid.
- · Requires external protection device.
- Requires external multipole interruptiondevice for currentcarrying wires disconnection.
- Requires an external residual current device (DR), suitable for protection against electric shock, in accordance with the ABNT NBR 5410 standard.
- It is expressly recommended to use rapid shutdown methods, systems or devices on the d.c.circuit. that guarantee safety in firefighting situations.
- The installation of this equipment must comply with current technical standards for photovoltaic electrical installation (NBR 16690) and fire risk management in photovoltaic systems (IEC 63226).
- This equipment is compatible with external independent rapid shutdown devices.

NOTICE

 Install the external protective grounding cable first when performing electrical connection and remove the external protective grounding cable last when removing the inverter.

- Keep the AC output cable and the DC input cable close to each other during electrical connection.
- Comply with the safety instructions related to PV strings and the regulations related to the utility grid.

NOTICE

- After being crimped, the OT terminal must wrap the wires completely, and the wires must contact the OT terminal closely.
- · When using a heat gun, protect the device from being scorched.
- Keep the PV+ cable and PV- cable close to each other when connecting DC input cables.
- Before connecting a power cable (such as the AC cable, the DC cable, etc.), confirm that the label and identifier on the power cable are correct.
- When laying out communication cables, separate them from power cables and keep them away from strong interference sources to prevent communication interruption.
- All vacant terminals must be covered with waterproof covers to prevent affecting the protection performance.
- Ensure that AC output cables are firmly connected. Failing to do so may cause inverter malfunction or damage to its AC connectors.
- When the wiring is completed, seal the gap at the cable inlet and outlet holes with fireproof/waterproof materials such as fireproof mud to prevent foreign matter or moisture from entering and affecting the long-term normal operation of the inverter.



The cable colors in figures in this manual are for reference only. Please select cables according to local cable standards.

5.2 Terminal Description

All electrical terminals are located at the bottom of the inverter.

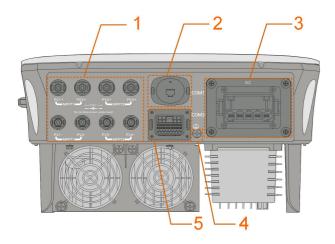


figure 5-1 Terminals (SG20RT-P2 for example)

table 5-1 Terminal Description

No.	Name	Description	Decisive Volt- age Classification
1	PV1+, PV1-, PV2+, PV2-, PV3+, PV3-, PV4+, PV4-	MC4 terminals for PV input. The terminal number depends on inverter model.	DVC-C
2	COM1	Communication accessory port to be connected to WiNet-S/WiNet-S2 for countries except Brazil or to WiFi for Brazil.	DVC-A
3	AC	AC terminal to connect to the grid.	DVC-C
4		External grounding terminal.	Not applicable
5	COM2	Communication connection for DI/ DRM, DO, Logger, and meter.	DVC-A

The pin definition of COM2 terminal is shown in the following label.

^{*} The image shown here is for reference only. The actual product received may differ.

R	SD	N:	S	D	RM		RS485-1	DO
RSD-1	RSD-2	NS-1	NS-2	D1/5	D3/7	R	A1	NO
В3	А3	B2	A2	D2/6	D4/8	С	B1	СОМ
RS485-3		Me	ter					

figure 5-2 Label of COM2 Terminal

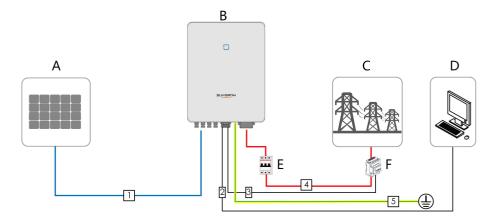
table 5-2 Label Description of COM2 Terminal

Label		Description
RSD	RSD-1, RSD-2	For inverter emergency stop*
NS	NS-1, NS-2	For inverter emergency stop**
DRM	D1/5, D2/6, D3/7, D4/8,	For external Demand Response Enabling Device ("AU"/ "NZ")
	R, C	For Ripple Control
		For inverter daisy chain
RS485-1	A1, B1	(Cannot be used simultaneously with COM1 port for WiNet-S/WiNet-S2)
		External alarm interface, e.g. light indicator and/or buzzer
DO	NO, COM	The external DC voltage should not be higher than 30 V and the current not higher than 1 A.
RS485-3	A3, B3	Reserved
Meter	A2, B2	Meter interface

^{*} For SG3.0–20RT models, this terminal is reserved.

5.3 Electrical Connection Overview

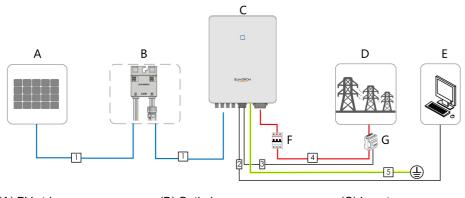
The SG3.0-20RT electrical connection should be realized as follows:



^{**} For SG3.0–20RT models, this terminal is optional.

- (A) PV string (B) Inverter (C) Grid
- (D) External device (E) AC circuit breaker (F) Meter

The SG5.0-20RT-P2 electrical connection should be realized as follows (Includes optimizer):



- (A) PV string
- (B) Optimizer

(C) Inverter

(D) Grid

- (E) External device
- (F) AC circuit breaker

(G) Meter

table 5-3 Cable Requirements

No.	Cable	Туре	Cable Diameter	Wire Conductor Cross-section
1	DC cable	Outdoor multi-core copper wire cable complying with 1100 V and 30 A standard	6 mm–9 mm	4 mm²–6 mm²
2	Ethernet cable	CAT 5E outdoor shielded network cable	5.3 mm–7 mm	8 * 0.2 mm ²
3	Meter RS485 cable	Shielded twisted pair	5.3 mm–7 mm	2 * (0.5–1.0) mm²

No.	Cable	Туре	Cable Diameter	Wire Conductor Cross-section
4	AC cable (2)	Outdoor 5-core copper wire cable	SG3.0RT to SG12RT, SG5.0RT-P2 to SG12RT-P2: 10 mm-21 mm SG15RT to SG20RT, SG15RT- P2 to SG20RT-P2: 14 mm-25 mm	SG3.0RT to SG12RT, SG5.0RT–P2 to SG12RT–P2: 4 mm ² – 6 mm ² SG15RT to SG20RT, SG15RT–P2 to SG20RT–P2: 6 mm ² – 10 mm ²
5	Additional Grounding cable	Outdoor single-core copper wire cable	The same as that of t	he PE wire in the AC

⁽¹⁾ The cable requirements for **COM2** terminal connection are the same.

5.4 External Protective Grounding Connection

▲ DANGER

- There are large currents during the inverter's operation. If the inverter is powered on and put into operation without being grounded, it may lead to electric shock hazards or failures of major protective functions such as surge protection. Therefore, before powering on the inverter, make sure it has been reliably grounded; otherwise, damages caused therefrom will not be covered by warranty.
- When performing electrical connections of the inverter, give the highest priority to grounding. Be sure to carry out the grounding connection first.

⁽²⁾ All the AC wires should be equipped with correctly colored cables for distinguishing. Please refer to related standards about the wiring color.

▲ WARNING

Since the inverter is not equipped with a transformer, neither the negative electrode nor the positive electrode of the PV string can be grounded. Otherwise, the inverter will not operate normally.

- Connect the grounding terminal to the external protective grounding point before AC cable connection, PV string connection, and communication cable connection.
- The external protective grounding point provides a reliable ground connection.
 Do not use an improper grounding conductor for grounding, Otherwise, it may cause product damage or personal injury.
- Depending on Local Rules, please also ground the PV panel subconstruction to the same common grounding point (PE Bar) in addition to local lightning protection rules.

MARNING

The external protective grounding terminal must meet at least one of the following requirements.

- The cross-sectional area of the grounding cable is not less than 10 mm² for copper wire or 16 mm² for aluminum wire. It is recommended that both the external protective grounding terminal and the AC side grounding terminal be reliably grounded.
- If the cross-sectional area of the grounding cable is less than 10 mm² for copper wire or 16 mm² for aluminum wire, ensure that both the external protective grounding terminal and the AC side grounding terminal are reliably grounded.

The grounding connection can be made by other means if they are in accordance with the local standards and regulations, and SUNGROW shall not be held liable for the possible consequences.

5.4.1 External Protective Grounding Requirements

All non-current carrying metal parts and device enclosures in the PV power system should be grounded, for example, brackets of PV modules and inverter enclosure.

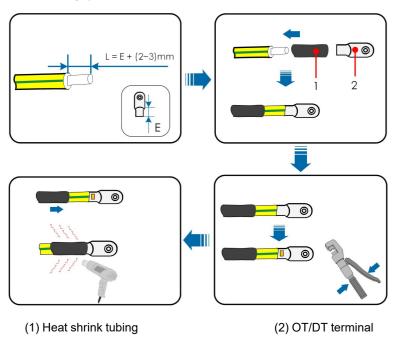
When there is only one inverter in the PV system, connect the external protective grounding cable to a nearby grounding point.

When there are multiple inverters in the PV system, connect the external protective grounding terminals of all inverters and the grounding points of the PV module brackets to ensure equipotential connections to ground cables (according to the onsite conditions).

5.4.2 Connection Procedure

External grounding cable and OT/DT terminal are prepared by customers.

Step 1 Prepare the cable and OT/DT terminal.

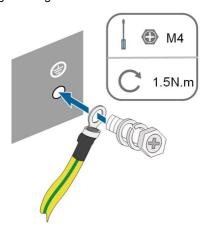




After being crimped, the OT terminal must wrap the wires completely, and the wires must contact the OT terminal closely.

When using a heat gun, protect the device from being scorched.

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



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

--End

5.5 AC Cable Connection

5.5.1 AC Side Requirements



Only with the permission of the local grid department, the inverter can be connected to the grid.

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

AC Circuit Breaker

An independent three or four-pole circuit breaker must be installed on the output side of the inverter to ensure safe disconnection from the grid. The recommended specifications are as follows.

Inverter Model	Recommended Specification
SG3.0RT/SG4.0RT/SG5.0RT/	
SG6.0RT/SG5.0RT-P2/SG6.0RT-	16 A
P2	
SG7.0RT/SG8.0RT/SG7.0RT-P2/	20 A
SG8.0RT-P2	20 A
SG10RT/SG10RT-P2	25 A
SG12RT/SG12RT-P2	32 A
SG15RT/SG17RT/SG15RT-P2/	40.4
SG17RT-P2	40 A
SG20RT/SG20RT-P2	50 A

⚠ WARNING

AC circuit breakers should be installed on the output side of the inverter and the grid side to ensure safe disconnection from the grid.

- Determine whether an AC circuit breaker with greater overcurrent capacity is required based on actual conditions.
- . Do not connect any local load between the inverter and the AC circuit breaker.
- Multiple inverters cannot share one AC circuit breaker.

Residual Current Monitoring Device

With an integrated universal current-sensitive residual current monitoring unit included, the inverter will disconnect immediately from the mains power once a fault current with a value exceeding the limit is detected.

However if an external residual current device (RCD) (type A is recommended) is mandatory, the switch must be triggered at a residual current of 300 mA (recommended). RCD of other specifications can also be used according to local standard.

In Australia, a RCD is not required according to the local standard AS3000-2018 when either of the following installation methods is adopted if the PV array capacitance to ground is large (such as a tin roof):

- Use heavy duty conduits (such as metal bushing) when run PV and AC cables through Cavity walls.
- Route the PV and AC cables through pipes (PVC or metal tubing), lay the cables and install them

Multiple Inverters in parallel Connection

If multiple inverters are connected in parallel to the grid, ensure that the total number of parallel inverters does not exceed 5. Otherwise, please contact SUNGROW for technical scheme.

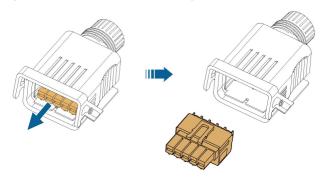
5.5.2 Assembling the AC Connector (< 15 kW)

The AC terminal block is on the bottom side of the inverter. AC connection is the three-phase-four-wire grid + PE connection (L1, L2, L3, N, and PE).

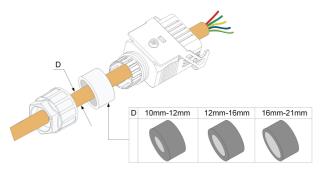
Step 1 Unscrew the swivel nut of the AC connector.



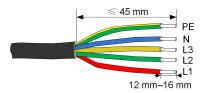
Step 2 Take out the spring-loaded terminal from the housing.



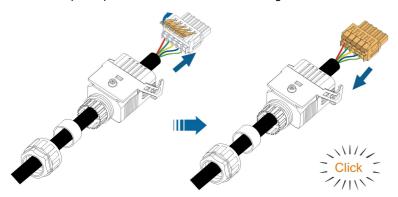
Step 3 Thread the AC cable of appropriate length through the swivel nut, the sealing ring and the housing.



Step 4 Remove 45 mm of the cable jacket and 12 mm–16 mm of the wire insulation.



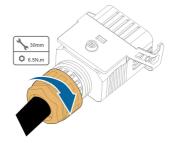
Step 5 Open the clamp on the spring-loaded terminal and insert the wires into the corresponding holes. Close the clamp and push the terminal into the housing until there is an audible click.



NOTICE

Observe the terminal assignment. Do not connect any phase line to the "PE" terminal or PE wire to "N" terminal. Otherwise, unrecoverable damage to the inverter may follow.

Step 6 Ensure that the wires are securely in place by slightly pulling them. Tighten the swivel nut to the housing.



- - End

5.5.3 Installing the AC Connector (< 15 kW)

A DANGER

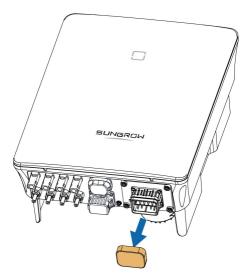
High voltage may be present in inverter!

Ensure all cables are voltage-free before electrical connection.

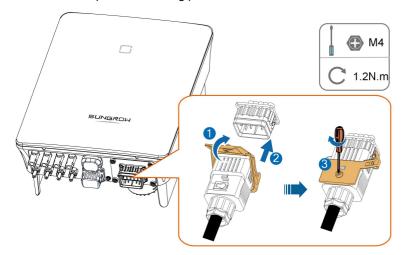
Do not connect the AC circuit breaker until all inverter electrical connections are completed.

Step 1 Disconnect the AC circuit breaker and secure it against reconnection.

Step 2 Remove the waterproof lid from the **AC** terminal.



Step 3 Lift the locking part upwards and insert the AC connector into the **AC** terminal on the bottom side of the inverter. Then press the locking part and secure it with the screw.



Step 4 Connect the PE wire to ground and the phase lines and the "N" line to AC circuit breaker. Then Connect the AC circuit breaker to electric board.

Step 5 Make sure all wires are firmly installed via the right torque tool or dragging the cables slightly.

- - End

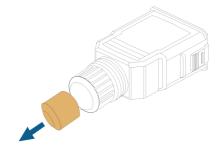
5.5.4 Assembling the AC Connector (≥ 15 kW)

The AC terminal block is on the bottom side of the inverter. AC connection is the three-phase-four-wire grid + PE connection (L1, L2, L3, N, and PE).

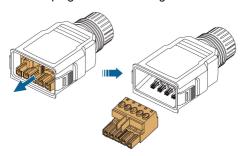
Step 1 Unscrew the swivel nut of the AC connector.



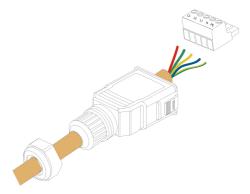
Step 2 (Optional) Remove the inner sealing ring if the cable diameter is 19 mm–25 mm. Otherwise skip this step.



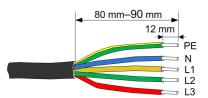
Step 3 Take out the screw-type terminal plug from the housing.



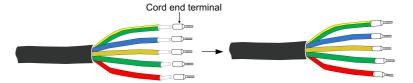
Step 4 Thread the AC cable of appropriate length through the swivel nut and the housing.



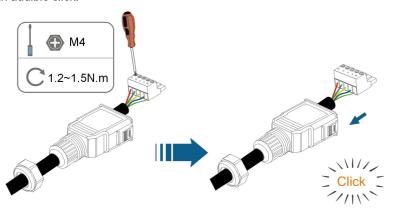
Step 5 Remove 80 mm–90 mm of the cable jacket and 12 mm of the wire insulation.



Step 6 (Optional) When using a multi-core multi-strand copper wire cable, connect the AC wire head to the cord end terminal (hand-tight). In case of single-strand copper wire, skip this step.



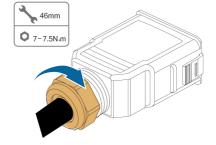
Step 7 Fix all the wires to the screw-type terminal according to the assignment and tighten to a torque of 1.2 N•m–1.5 N•m with a screwdriver. Then push the terminal into the housing until there is an audible click.



NOTICE

Observe the terminal assignment. Do not connect any phase line to the "PE" terminal or PE wire to "N" terminal. Otherwise, unrecoverable damage to the inverter may follow.

Step 8 Ensure that the wires are securely in place by slightly pulling them. Tighten the swivel nut to the housing.



- - End

5.5.5 Installing the AC Connector (≥ 15 kW)

▲ DANGER

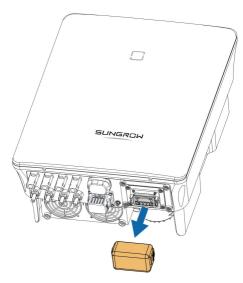
High voltage may be present in inverter!

Ensure all cables are voltage-free before electrical connection.

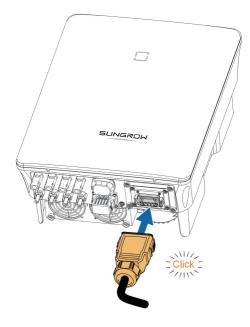
Do not connect the AC circuit breaker until all inverter electrical connections are completed.

Step 1 Disconnect the AC circuit breaker and secure it against reconnection.

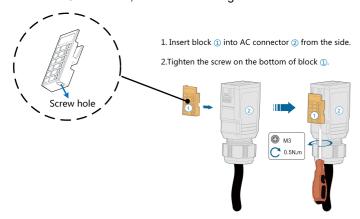
Step 2 Remove the waterproof lid from the AC terminal.



Step 3 Insert the AC connector into the **AC** terminal on the bottom of the inverter until there is an audible sound.



Step 4 (Optional) Secure the AC connector, as shown in the figure below.



Step 5 Connect the PE wire to ground and the phase lines and the "N" line to AC circuit breaker. Then connect the AC circuit breaker to electric board.

Step 6 Make sure all wires are firmly installed via the right torque tool or dragging the cables slightly.

--End

5.6 DC Cable Connection

⚠ DANGER

The PV string will generate lethal high voltage when exposed to sunlight.

· Respect all safety instructions listed in relevant documents about PV strings.

▲ WARNING

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

- Make sure the maximum DC voltage and the maximum short circuit current of any string never exceed inverter permitted values specified in "Technical Data".
- Check the positive and negative polarity of the PV strings, and connect the PV connectors to corresponding terminals only after ensuring polarity correctness.
- During the installation and operation of the inverter, please ensure that the positive or negative electrodes of PV strings do not short-circuit to the ground. Otherwise, an AC or DC short-circuit may occur, resulting in equipment damage. The damage caused by this is not covered by the warranty.
- Electric arc or contactor over-temperature may occur if the DC connectors are not firmly in place, and the loss caused is not covered by the warranty.
- If the DC input cables are reversely connected or the positive and negative terminals of different MPPT are shorted to ground at the same time, while the DC switch is in the "ON" position, do not operate immediately. Otherwise, the inverter may be damaged. Please turn the DC switch to "OFF" and remove the DC connector to adjust the polarity of the strings when the string current is lower than 0.5 A.
- Use the DC connectors supplied with the product for DC cable connection. Using incompatible DC connectors may result in serious consequences, and the device damage is not covered under warranty.
- Inverters do not support full parallel connection of strings (Full parallel connection refers to a connection method in that strings are connected in parallel and then connected to the inverter separately).
- Do not connect one PV string to multiple inverters. Otherwise, the inverters may be damaged.

NOTICE

The following requirements about PV string connection must be met. Otherwise, it may cause irreversible damage to the inverter, which is not covered by the warranty.

- Mixed use of PV modules of different brands or models in one MPPT circuit, or PV modules of different orientation or inclination in a string may not damage inverter, but will cause system bad performance!
- The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. The inverter returns to running state once the voltage returns to the MPPT operating voltage range, namely, 160 V to 1,000 V.

NOTICE

Note the following items when laying cables on site:

 The axial tension on PV connectors must not exceed 80 N. Avoid axial cable stress on the connector for a long time during field wiring.

- Radial stress or torque must not be generated on PV connectors. It may cause the connector waterproof failure and reduce connector reliability.
- Leave at least 50 mm of slack to avoid the external force generated by the cable bending affecting the waterproof performance.
- Refer to the specifications provided by the cable manufacturer for the minimum cable bending radius. If the required bending radius is less than 50 mm, reserve a bending radius of 50 mm. If the required bending radius is greater than 50 mm, reserve the required minimum bending radius during wiring.

In Australia, DC isolator shall be installed between PV modules and inverter. The DC isolator shall comply with local regulation and standard, including AS60947.3:2018.

5.6.1 PV Input Configuration

- The inverters SG3.0RT/SG4.0RT/SG5.0RT/SG6.0RT/SG5.0RT-P2/SG6.0RT-P2 have two PV inputs, SG7.0RT/SG8.0RT/SG10RT/SG12RT/SG7.0RT-P2/SG8.0RT-P2/SG10RT-P2/SG12RT-P2 have three PV inputs and SG15RT/SG17RT/SG20RT/SG15RT-P2/SG17RT-P2/SG20RT-P2 have four PV inputs.
- The inverters have two MPP trackers. Each DC input area can operate independently.
- The PV strings to the same DC input area should have the same type, the same number of PV panels, identical tilt and identical orientation for maximum power.
- The PV strings to two DC input areas may differ from each other, including PV module type, number of PV modules in each string, angle of tilt, and installation orientation.

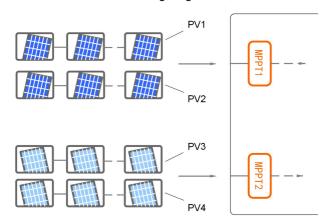


figure 5-3 PV Input Configuration (SG20RT for example)

Prior to connecting the inverter to PV inputs, the specifications in the following table should be met:

Inverter Model	Open-circuit Voltage Limit	Max. current for input connector
All models	1100 V	30 A

The following figure shows the open-circuit voltage limits at different altitudes. Before configuring the PV panels, need to take this derating curve in consideration under high altitude situation.

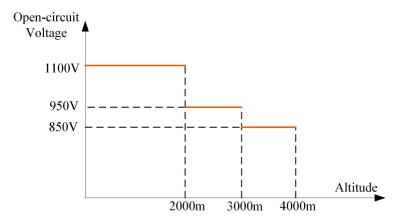


figure 5-4 Open-circuit Voltage Derating Curve

5.6.2 Assembling PV Connectors

▲ DANGER

High voltage may be present in the inverter!

- Ensure all cables are voltage-free before performing electrical operations.
- Do not connect the AC circuit breaker before finishing electrical connection.

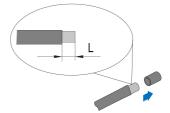
A CAUTION

- Use MC4 DC terminals if the maximum input voltage is no more than 1,000 V.
- Use MC4-Evo2 DC terminals if the maximum input voltage is greater than 1,000
 V. To purchase the MC4-Evo2 DC terminals, contact SUNGROW.
- Select appropriate DC terminals as required above. Otherwise, SUNGROW shall be held no liability for the damage caused.

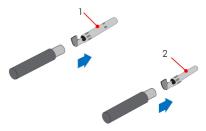


To ensure IP65 protection, use only the supplied connector.

Step 1 Strip 7 mm-8 mm of the insulation from each PV cable.



Step 2 Assemble the cable ends with the crimping pliers.



1: Positive crimp contact

2: Negative crimp contact

Step 3 For some countries such as Australia where the DC protection cover delivered separately need to be installed on site, please firstly lead the PV cables through the waterproof terminal on the DC protection cover before assembling the connector. See the guidance with the DC protection cover for details.

NOTICE

PV cables with connectors cannot go through the waterproof terminal on the DC protection cover. Rework may cause damage to the connectors, which will not be covered by the warranty.

Step 4 Lead the cable through the cable gland, and insert the crimp contact into the insulator until it snaps into place. Gently pull the cable backward to ensure firm connection. Tighten the cable gland and the insulator (torque 2.5 N.m to 3 N.m).

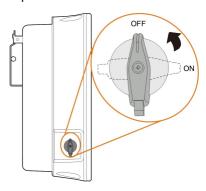


Step 5 Check for polarity correctness.

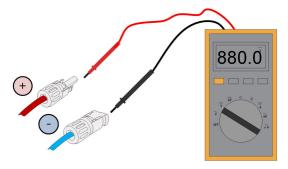
- - End

5.6.3 Installing the PV Connectors

Step 1 Rotate the DC switch to "OFF" position.



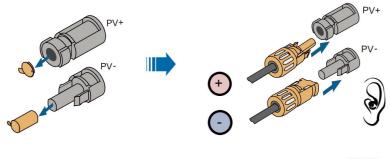
Step 2 Check the cable connection of the PV string for polarity correctness and ensure that the open circuit voltage in any case does not exceed the inverter input limit of 1,100 V.





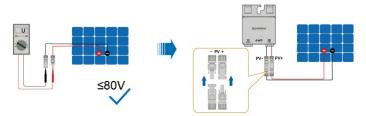
The multimeter must have a DC voltage range of at least 1100 V. If the voltage is a negative value, the DC input polarity is incorrect. Please correct the DC input polarity. If the voltage is greater than 1100V, too many PV modules are configured to the same string. Please remove some PV modules.

Step 3 Connect the PV connectors to corresponding terminals until there is an audible click. Seal the unused PV terminals with the terminal caps.



S005-E046

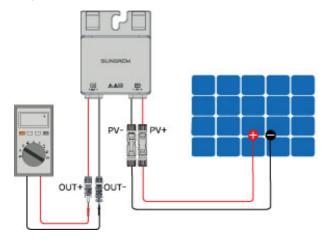
Step 4 Connect the PV+ and PV- of the optimizer to the positive and negative terminals in the junction box of the PV module respectively.



NOTICE

Do not connect the PV module to the OUT+ and OUT- of the optimizer. Otherwise, the optimizer or PV module will be damaged, and the loss is not covered by the warranty.

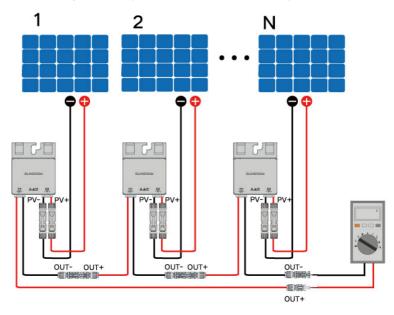
Step 5 Connect the positive probe of a multimeter to OUT- of the optimizer, and the negative probe of the multimeter to OUT+ of the optimizer to check whether the optimizer is faulty. If typical value of output voltage is 1V, no fault occurs to the optimizer.



NOTICE

- 1. Use a multimeter to measure the output voltage of each optimizer after wiring.
- 2. Considering the effect of the accuracy of the multimeter on the actual measurement on site, the optimizer can function normally as long as the output voltage falls in the range of 0.9V 1.1V.
- 3. If the output voltage is less than 0.9 V, check the following items:
- · Check whether the sunlight is sufficient.
- · Check whether the input side of the optimizer is connected to the PV module.
- If the fault is not caused by foregoing reasons and still persists, please replace the optimizer.
- 4. If the output voltage is greater than 1.1 V, the optimizer fails. Please replace the optimizer.
- 5. If no voltage is detected, replace the optimizer or component.

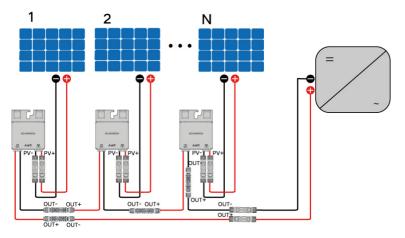
Step 6 When connecting multiple optimizers, connect OUT- of the first optimizer to OUT+ of the second optimizer, and so on. Use a multimeter to measure the optimizer voltage. If typical value of output voltage is 1V*N (N is the number of optimizers), no fault occurs to the system.



NOTICE

Whether connecting OUT+ of the first optimizer to OUT- of the second optimizer or connecting OUT- of the first optimizer to OUT+ of the second optimizer is dependent on the polarity of the extension cable that is connected to the inverter on site.

Step 7 Connect OUT+ of the first optimizer and OUT- of the last optimizer to the PV input terminals of the inverter.



MARNING

If each PV module is equipped with an optimizer, the total power of PV modules in a PV input shall not exceed the maximum input power of a single PV input of the inverter.

NOTICE

- Branch-connector connection on the input side of the inverter is not supported by the optimizer.
- · Please refer to the optimizer user manual for details.



--End

5.7 WiNet-S/WiNet-S2 Connection

SG3.0-20RT uses WiNet-S2 module, and the WiNet-S2 module supports Ethernet communication and WLAN communication. It is not recommended to use both communication methods at the same time.

SG5.0-20RT-P2 is used with optimizer, and uses WiNet-S module. The WiNet-S module supports Ethernet communication and WLAN communication. It supports EasyConnect and can receive and transmit data of optimizers, meters, and chargers.

The WiNet-S/WiNet-S2 communication for Ethernet cannot be used simultaneously with A1 and B1 terminals for RS485 daisy chain.

For details, see the quick guide for the WiNet-S module. Scan the following QR code for the quick guide.



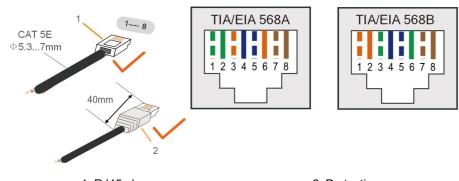
For more information about WiNet-S2, please scan the following QR code to view the quick guide.



5.7.1 Ethernet Communication

The WiNet-S/WiNet-S2 communication for Ethernet cannot be used simultaneously with A1 and B1 terminals for RS485 daisy chain.

Step 1 (Optional) Strip the insulation layer of the communication cable with an Ethernet wire stripper, and lead the corresponding signal cables out. Insert the stripped communication cable into the RJ45 plug in the correct order, and crimp it with a crimper.

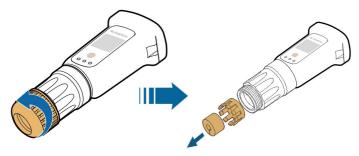


1: RJ45 plug 2: Protective cap

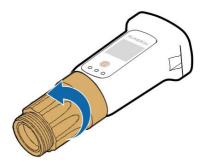


Skip this step if a standard network cable with RJ45 plug is prepared.

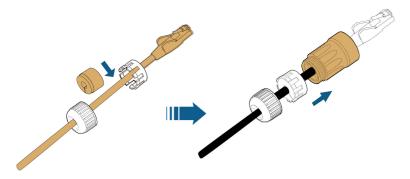
Step 2 Unscrew the swivel nut from the communication module and take out the inner sealing ring.



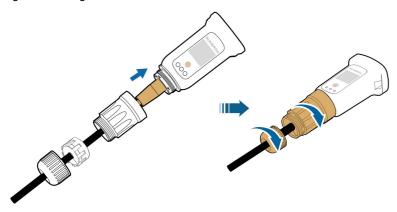
Step 3 Unscrew the housing from the communication module.



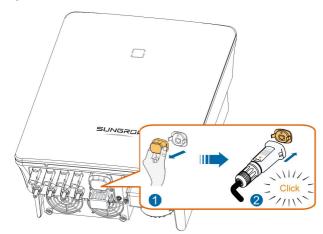
Step 4 Thread the network cable through the swivel nut and gasket. Afterwards, route the cable into the opening of the sealing. Finally, insert the cable through the housing.



Step 5 Insert the RJ45 plug into the front plug connector until there is an audible click and tighten the housing. Install the gasket and fasten the swivel nut.



Step 6 Remove the waterproof lid from the COM1 terminal and install WiNet-S/WiNet-S2.



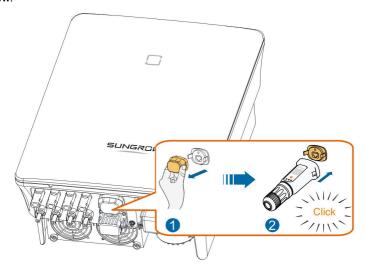
Step 7 Slightly shake it by hand to determine whether it is installed firmly.

- - End

5.7.2 WLAN Communication

Step 1 Remove the waterproof lid from the **COM1** terminal.

Step 2 Install the module. Slightly shake it by hand to determine whether it is installed firmly, as shown below.



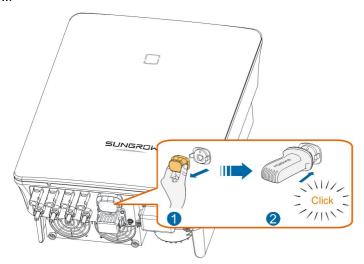
Step 3 Refer to the guide delivered with the module for the set-up.

- - End

5.8 WiFi Connection (for Brazil)

Step 1 Remove the waterproof lid from the COM1 terminal.

Step 2 Install the module. Slightly shake it by hand to determine whether it is installed firmly, as shown below.



Step 3 Refer to the guide delivered with the module for the set-up.

--End

5.9 Meter Connection

In a single inverter scenario, the meter (A2, B2) terminals are designed to connect to the meter for the feed-in power function. The export control functionality has not been tested to AS/ NZS 4777.2:2020.

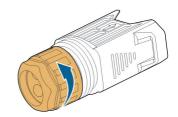
The energy meter is mainly used to detect the direction and magnitude of the current. And the energy meter data may not be used for billing purposes.

NOTICE

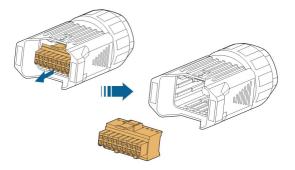
The meter is mainly used to detect the direction and magnitude of the current. And the meter data may not be used for billing purposes.

5.9.1 Assembling the COM Connector

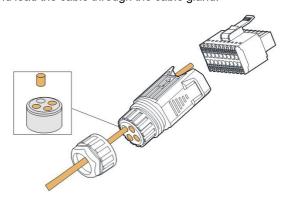
Step 1 Unscrew the swivel nut from the connector.



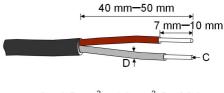
Step 2 Take out the terminal block.



Step 3 Remove the seal and lead the cable through the cable gland.

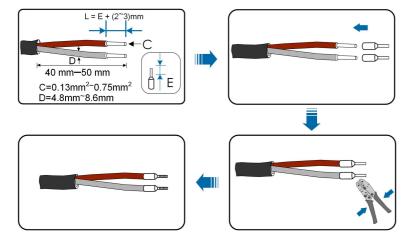


Step 4 Remove the cable jacket and strip the wire insulation.



 $C = 0.5 \text{ mm}^2 - 1.0 \text{ mm}^2$, $D \le 2.8 \text{ mm}$

Step 5 (Optional) When using a multi-core multi-strand wire cable, connect the wire head to the cord end terminal. In case of single-strand copper wire, skip this step.



Step 6 Plug the wires or terminals into the corresponding terminals as shown in the following figure.

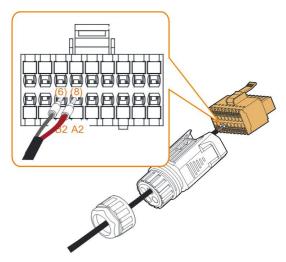
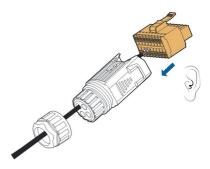
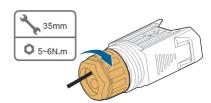


figure 5-5 A2, B2 connection

Step 7 Ensure that the wires are securely in place by slightly pulling them and insert the terminal plug into the housing until there is an audible click.



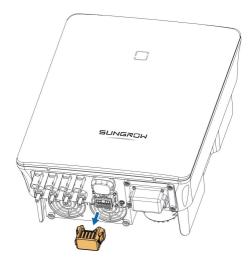
Step 8 Fasten the swivel nut.



- - End

5.9.2 Installing the COM Connector

Step 1 Remove the waterproof lid from the **COM2** connector.



Step 2 Insert the COM connector into **COM2** terminal on the bottom of the inverter until there is an audible click.



- - End

5.10 RS485 Connection

5.10.1 RS485 Communication System

The RS485 (A1, B1) connection can establish the communication between the inverter and an external device, as well as the communication between two inverters in parallel.

In case of multiple inverters, all the inverters can be connected via RS485 cables in daisy chain manner.

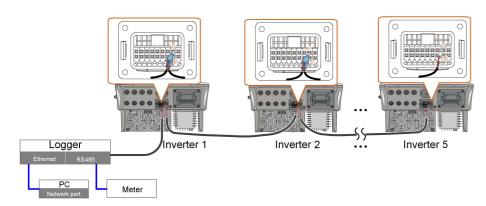


figure 5-6 Multi-inverter Connection

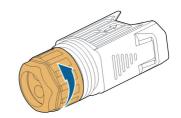
- The maximum number of inverters allowed to be connected in the same point of connection is 5.
- The RS485 communication cable should be shielded twisted pair cables or shielded twisted pair Ethernet cables.



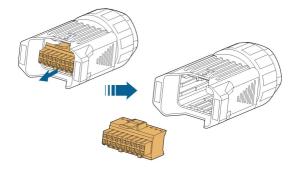
- The RS485 cable between two devices should be not longer than 10 m.
- The RS485 communication cannot be used simultaneously with COM1 port for WiNet-S/WiNet-S2.
- Refer to the manual of Logger for the communication connection to the meter.

5.10.2 Assembling the COM Connector

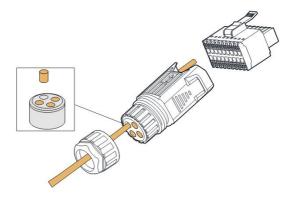
Step 1 Unscrew the swivel nut from the connector.



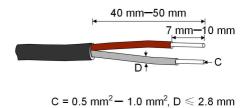
Step 2 Take out the terminal block.



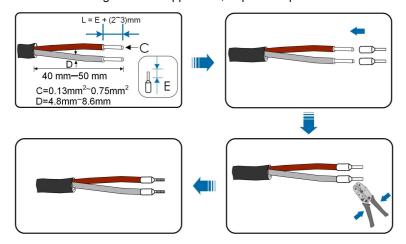
Step 3 Remove the seal and lead the cable through the cable gland.



Step 4 Remove the cable jacket and strip the wire insulation.



Step 5 (Optional) When using a multi-core multi-strand wire cable, connect the wire head to the cord end terminal. In case of single-strand copper wire, skip this step.



Step 6 Plug the wires or terminals into the corresponding terminals as shown in the following figure.

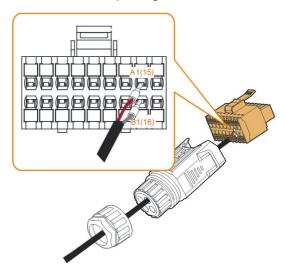
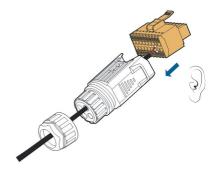


figure 5-7 A1, B1 connection

Step 7 Ensure that the wires are securely in place by slightly pulling them and insert the terminal plug into the housing until there is an audible click.



Step 8 For RS485 daisy chain: Crimp two wires A to a two-wire core end terminal and two wires B to another terminal. Plug the terminals to A1 and B1 respectively.

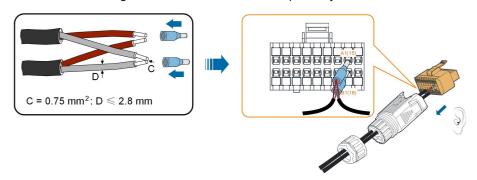
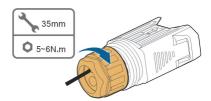


figure 5-8 RS485 daisy chain connection

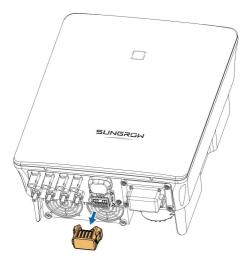
Step 9 Fasten the swivel nut.



--End

5.10.3 Installing the COM Connector

Step 1 Remove the waterproof lid from the **COM2** connector.



Step 2 Insert the COM connector into **COM2** terminal on the bottom of the inverter until there is an audible click.



- - End

5.11 DO Connection

The inverter is equipped with a DO relay for an earth fault alarm. The additional equipment required is a light indicator and/or a buzzer that needs additional power supply.

Once fault occurs, the relay trips and the circuit is connected. The external indicator gets on. The relay remains triggered until the fault is removed.

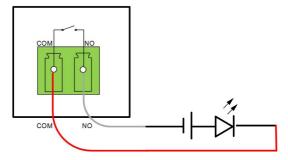


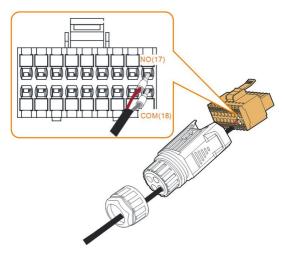
figure 5-9 DO Normal Open Connect

The additional DC power supply should comply with related requirements:

Max. voltage: 30 V

Max. current: 1 A

Refer to section "5.9.1 Assembling the COM Connector" for detailed assembling procedure. Plug the wires to **NO** and **COM** terminals according the labels on the bottom of the inverter.



Refer to section "5.10.3 Installing the COM Connector" to install the connector.

5.12 DRM Connection

In Australia and New Zealand, the inverter supports the demand response modes as specified in the standard AS/NZS 4777.

The following figure shows the wiring between the inverter and the external DRED.

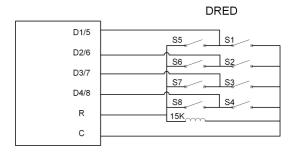
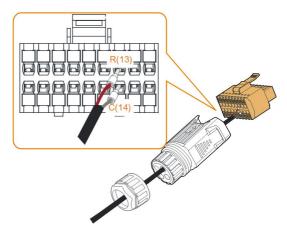


table 5-4 Method of Asserting DRM

Mode	Asserted by Shorting Terminals on Inverter	Switch Operation on External DRED
DRM0	R&C	Close S1 and S5

Refer to section "5.9.1 Assembling the COM Connector" for detailed assembling procedure. Plug the wires to **R** and **C** terminals according the labels on the bottom of the inverter.



Refer to section "5.10.3 Installing the COM Connector" to install the connector.

5.13 DI Connection

The grid company uses a Ripple Control Receiver to convert the grid dispatching signal and send it as a dry contact signal.

The following figure shows the wiring between the inverter and the ripple control receiver.

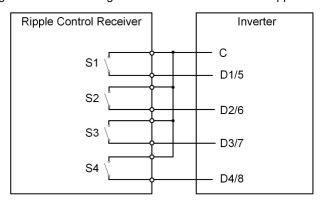
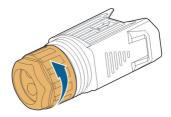


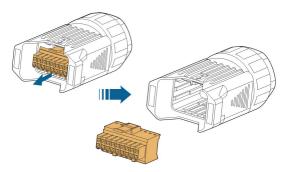
table 5-5 Method of Asserting DI Mode

S- 1	S2	S3	S4	Switch Operation on External RCR	Output power (in % of the Rated AC output power)
0	0	0	0	None	100 % (configurable according to need)
1	0	0	0	Close S1	100 %
0	1	0	0	Close S2	60 %
0	0	1	0	Close S3	30 %
1	1	0	0	Close S1 and S2	0 % (disconnect from grid)

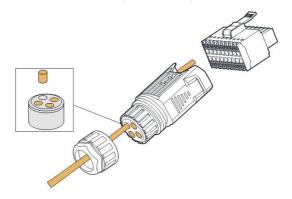
Step 1 Unscrew the swivel nut from the connector.



Step 2 Take out the terminal block.



Step 3 Remove the seal and lead the cable through the cable gland.



Step 4 Remove the cable jacket by 7 mm–10 mm.



Step 5 Plug the wires into the corresponding terminals as shown in the following figure.

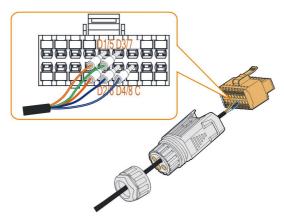
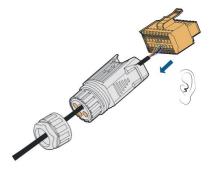
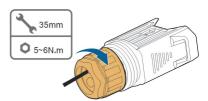


figure 5-10 DI connection

Step 6 Ensure that the wires are securely in place by slightly pulling them and insert the terminal plug into the housing until there is an audible click.



Step 7 Fasten the swivel nut.



Step 8 Refer to section "5.10.3 Installing the COM Connector" to install the connector.

- - End

5.14 NS Protection Connection

NS terminal: NS Protection is used for the German market currently. For plants sized more than 30kVA, inverter NS Protection terminals could be used in daisy chain to external NS Protection Relay to realize emergency stop when the NS Protection Relay changes its dry contact status due to the grid abnormal running status. For detailed assembling procedure for inverters in daisy chain mode refer to section "5.10.2 Assembling the COM Connector".

For SG3.0–20RT, NS Protection(including Passive Valid) can be set. When NS-1 and NS-2 are connected, the inverters will emergently stop; otherwise, the inverters will operate normally.

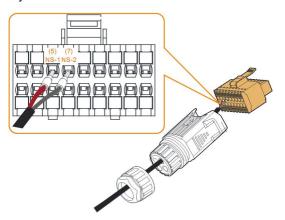
But if NS Protection is enabled on the iSolarCloud, refer to "NS Protection(Passive Valid)", the inverters will operate normally when NS-1 and NS-2 are connected, and the inverters will emergently stop when NS-1 and NS-2 are disconnected. See the table below for details.

table 5-6

	NS-1 and NS-2	Inverter
NS Protection is disabled on	Shorted	Emergency stop
iSolarCloud	Disconnected	Normal operation
NS Protection is enabled on	Shorted	Normal operation
iSolarCloud	Disconnected	Emergency stop

The recommended wire conductor cross-section is 0.5 - 0.75 mm², and the maximum wiring distance of NS protection loop must be less than 100 m.

Refer to section "5.9.1 Assembling the COM Connector" for detailed assembling procedure. Plug the wires to **NS-1** and **NS-2** terminals according the labels on the bottom of the inverter. When terminals **NS-1** and **NS-2** are turned on by the external NS protection relay, the inverter will stop immediately.



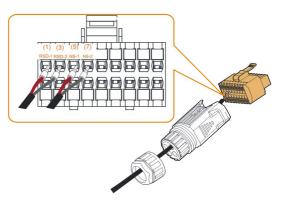
Refer to section "5.10.3 Installing the COM Connector" to install the connector. SG5.0-20RT-P2 can be used with optimizers. NS-1 and NS-2, as well as RSD-1 and RSD-2 can be used for emergency stop. See the table below for details:

table 5-7

	NS-1 and NS- 2	RSD-1 and RSD-2	Whether the system contains optimizers	Inverter
		Shorted	No	Emergency stop
			Yes	The inverter is in the standby status if the DC voltage is greater than 40 V
				The inverter is in the emergency stop status if the DC voltage is lower than 40 V
	Shorted	Disconnected	No	Emergency stop
NS Protection(includ-			Yes	The inverter is in the standby status if the DC voltage is greater than 40 V
ing Passive Valid) is dis- abled on iSolarCloud				The inverter is in the emergency stop status if the DC voltage is lower than 40 V
		Shorted	No	Emergency stop
	Disconnected		standby status if the DC voltage is great than 40 V Yes The inverter is in th emergency stop sta	
				emergency stop sta- tus if the DC voltage
		Disconnected	No	Normal operation
			Yes	Normal operation

	NS-1 and NS- 2	RSD-1 and RSD-2	Whether the system contains optimizers	Inverter
	Shorted	Shorted	No	Normal operation
			Yes	Normal operation
		Disconnected	No	Emergency stop
			Yes	The inverter is in the standby status if the DC voltage is greater than 40 V The inverter is in the emergency stop status if the DC voltage is lower than 40 V
NS Protec-	Disconnected	Shorted	No	Emergency stop
tion(includ- ing Passive Valid) is en- abled on			Yes	The inverter is in the standby status if the DC voltage is greater than 40 V
iSolarCloud				The inverter is in the emergency stop status if the DC voltage is lower than 40 V
		Disconnected	No	Emergency stop
			Yes	The inverter is in the standby status if the DC voltage is greater than 40 V The inverter is in the emergency stop sta-
				tus if the DC voltage is lower than 40 V

Refer to the figure below for short connection between NS-1 and NS-2, RSD-1 and RSD-2.



Refer to section "5.9.1 Assembling the COM Connector"、"5.10.3 Installing the COM Connector" for detailed assembling procedure.

6 Commissioning

6.1 Inspection Before Commissioning

Check the following items before starting the inverter:

- · All equipment has been reliably installed.
- DC switch(es) and AC circuit breaker are in the "OFF" position.
- · The ground cable is properly and reliably connected.
- · The AC cable is properly and reliably connected.
- The DC cable is properly and reliably connected.
- The communication cable is properly and reliably connected.
- The unused terminals are sealed.
- No foreign items, such as tools, are left on the top of the machine or in the junction box (if there is).
- The AC circuit breaker is selected in accordance with the requirements of this manual and local standards.
- All warning signs & labels are intact and legible.

6.2 Powering on the System

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

- **Step 1** Turn on the AC circuit breaker between the inverter and the grid.
- Step 2 Rotate the DC switch of the inverter to "ON" position.
- Step 3 Turn on the external DC switch (if applicable) between the inverter and the PV string.
- **Step 4** If the irradiation and grid conditions meet requirements, the inverter will operate normally. Observe the LED indicator to ensure that the inverter operates normally. Refer to "2.4 Indicator Definition" for details.
- **Step 5** Refer to the quick guide for communication module for its indicator definition.
- **Step 6** Set initial protection parameters via the iSolarCloud App.
 - For WiFi module, please refer to "7.2 Installing App", "7.4.2 Login Procedure" and "7.5 Initial Settings".
 - For WiNet-S/WiNet-S2 module, please refer to sections 6.3 to 6.6.
 - - End



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NOTICE

 Before closing the AC circuit breaker between the inverter and the power grid, use a multimeter that is set to the AC gear to ensure that the AC voltage is within the specified range. Otherwise, the inverter may be damaged.

 If the DC side is powered up while the AC side is not, the inverter indicator may turn red, and the inverter will report a fault named "Grid Power Outage" (the fault information can be viewed on the iSolarCloud App, see "Records" for details). The fault is automatically cleared when the AC circuit breaker between the inverter and the grid is closed.

6.3 App Preparation

- Step 1 Install the iSolarCloud App with latest version. Refer to "7.2 Installing App".
- **Step 2** Register an account. Refer to "7.3 Account Registration". If you have got the account and password from the distributor/installer or SUNGROW, skip this step.
- **Step 3** Download the firmware package to the mobile device in advance. Refer to "Firmware Upadate". This is to avoid download failure due to poor on-site network signal.
 - --End

6.4 Plant Creation

Prerequisites:

- The account and password for logging in to iSolarCloud App have been obtained from the distributor/installer or SUNGROW.
- The communication device is normally connected to the inverter.
- System positioning is enabled and iSolarCloud App is allowed to access location information.

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Step 1 Open the App, tap More in the upper right corner of the interface, and select the correct access address.

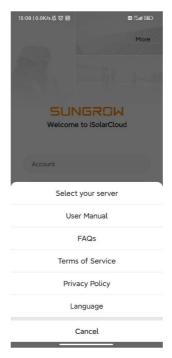


figure 6-1 Select Access Address

Step 2 Enter the account and password on the login interface, and tap LOGIN to log in.

Step 3 Tap $\stackrel{\bigoplus}{}$ in the upper right corner to enter the plant creation interface.



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Step 4 Fill in the content according to actual needs, and the parameters containing * are required. Tap **Next** to enter the next interface.



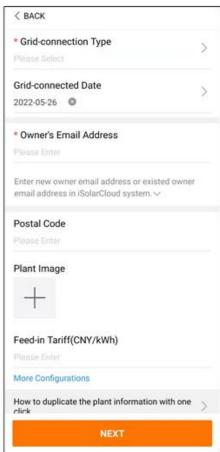


figure 6-2 Plant Creation Settings

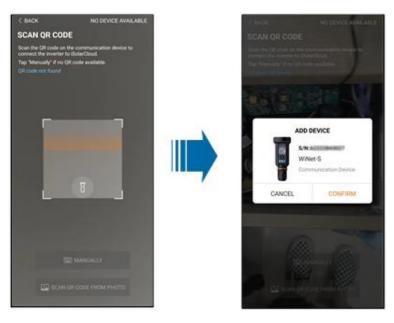
Parameter Name	Description
Plant name	The name of the plant.
Plant type	The type of the plant, which should be set corresponding to the actual plant type.
Installed power	The installed power of the plant.
Country/Region	The country/region where the plant is located.
Time zone	The time zone where the plant is located, which can be filled through automatic positioning and manual input.

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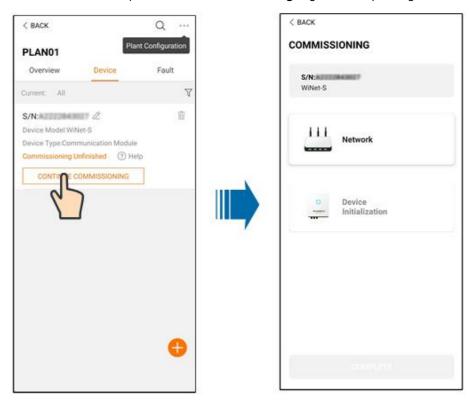
Parameter Name	Description			
	The location of the plant, which can be filled in two ways:			
Plant address	Manually: Manually enter the plant location in the input box.			
Plant address	Automatically: Tap			
Grid-connec-	The way the plant is connected to the grid, including 100% Feed-in,			
tion type	Self-Consumption, Zero Export, and Off-grid.			
Grid-connected date	The time when the plant is connected to the grid.			
Owner's email	Fill in the owner information of the plant, and both registered and un-			
address	registered email addresses are supported.			
Postal code	The postal code of the place where the plant is located.			
Plant image	Take photos of the plant and upload them.			
	The feed-in tariff can be set in two ways:			
	Enter the feed-in tariff directly in the input box.			
Feed-in tariff	 Tap More Configurations, select the tariff unit, enter the feed-in tariff, and tap Confirm. Enable Time-of-Use Tariff if needed. Tap Add Time-of-Use Tariff, add time intervals and price, and tap Confirm. Please note that if Time-of-use Tariff is enabled, the time periods shall cover 24 hours a day, and can not overlap. 			
	Set the consumption tariff as follows:			
Consumption tariff	• Tap More Configurations , select the tariff unit, enter the consumption tariff, and tap Confirm . Enable Time-of-Use Tariff if needed, and refer to the setting methods of the feed-in tariff.			

User Manual 6 Commissioning

Step 5 Bind a device through scanning the QR code on the device, manually inputting the device S/N, or uploading a QR code picture. Tap Confirm after the QR code is identified or the S/N is verified.

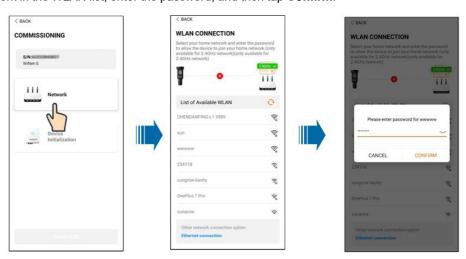


Step 6 After a device is bound, tap Device and Commissioning to go to corresponding interface.



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Step 7 Tap **Network Configuration** to go to the **WLAN connection** interface. Tap the home network in the WLAN list, enter the password, and then tap **Confirm**.



Step 8 Enter the Activate EasyConnect interface, and press the multi-function button on the WiNet-S/WiNet-S2 to enable the Easyconnect mode according to the prompt on the screen. The App automatically enters a waiting processing interface if this mode is enabled, and automatically returns to the commissioning interface after the processing is completed.

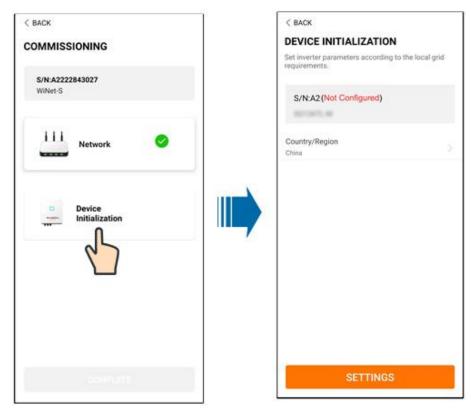


NOTICE

Only the 2.4 GHz working band is supported under the networking mode. If the Easyconnect fails, please refer to other methods in the WiNet-S/WiNet-S2 manual to establish the connection.

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Step 9 Tap **Device Initialization** to go to the **Device initialization** interface. Set the initialization protection parameters as needed and tap **Settings** to return to the commissioning interface.



When the country is set to Australia, additionally set the applicable network service provider and then the grid type.



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The image shown here is for reference only. Refer to the actual interface for the supported network service providers.

table 6-1 Description of Network Service Provider and Grid Type

Network Service Provider	Grid Type
AS/NZS 4777.2:2015	1
AS/NZS 4777.2:2020	/
Australia A	<i>'</i>
AS/NZS 4777.2:2020	/
Australia B	1
AS/NZS 4777.2:2020	/
Australia C	<u>'</u>
ENERGEX & Ergon Energy	• STNW1170: single-phase < 10 kVA & three-phase < 30 kVA
	• STNW1174: 30 kVA < P _n ≤ 1500 kVA
Jemena	• ≤ 10 kVA per phase (or 30 kVA per three phase)
	• ELE GU 0014: 30 kVA-200 kVA
Endeavour Energy	MDI 0043
Ausgrid	NS194
CitiPower & Powercor	• ≤ 5 kVA for single-phase & 30 kVA for three-phase
	 > 30 kVA three-phase
United Energy	UE-ST-2008.1: ≤ 10 kVA for single- phase & 30 kVA for three-phase
	 UE-ST-2008.2: > 30 kVA three-phase
PowerWater	Embedded Generation Notice Photovoltaic Systems:2020
	TS129-2019: < 10 kW for single-phase & 30 kW for three-phase
SA Power Networks	• TS130-2017: > 30 kW & ≤ 200 kW
	• TS131-2018: > 200 kW
Horizon Power	HPC-9DJ-13-0001-2019: ≤ 10kVA for single-phase & 30 kVA for three-phase
. IOILOIT OWO	• HPC-9DJ-13-0002-2019: > 30kVA & ≤1MVA
westernpower	EDM#33612889-2019

User Manual 6 Commissioning

* For compliance with AS/NZS 4777.2:2020, please select from Australia A/B/C. Please contact your electricity grid operator for which region to use.



Please check the country supported by this product at http:// support.sungrow-power.com/.

• Set **Country/Region** to the country/region where the inverter is installed. Otherwise, the inverter may report a fault.

Step 10 After a plant is successfully created, return to the App home page to view the plant information.

- - End

6.5 Optimizer Physical Layout (Optional)

- If PV modules are installed and optimizers are configured, check to ensure that all devices are reliably installed.
- Remove QR code labels from the optimizers and attach them to corresponding square cells on the physical layout.
- Please refer to the optimizer user manual for details of the optimizer physical layout.



7 iSolarCloud App

7.1 Brief Introduction

The iSolarCloud App can establish communication connection to the inverter via the WLAN, providing remote monitoring, data logging and near-end maintenance on the inverter. Users can also view inverter information and set parameters through the App.

* To achieve direct login via WLAN, the wireless communication module developed and manufactured by SUNGROW is required. The iSolarCloud App can also establish communication connection to the inverter via Ethernet connection.



- This manual describes only how to achieve near-end maintenance via WLAN direct connection.
- Screenshots in this manual are based on the V2.1.6 App for Android system, and the actual interfaces may differ.

7.2 Installing App

Method 1

Download and install the App through the following application stores:

- MyApp (Android, mainland China users)
- Google Play (Android, users other than mainland China ones)
- App Store (iOS)

Method 2

Scan the following QR code to download and install the App according to the prompt information.



The App icon appears on the home screen after installation.

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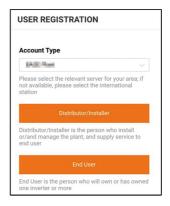


7.3 Account Registration

The account distinguishes two user groups, owners and retailer/installer.

- The owner can view plant information, create plants, set parameters, share plants, etc.
- The retailer/installer can help the owner to create plants, manage, install, or maintain plants, and manage users and organizations.

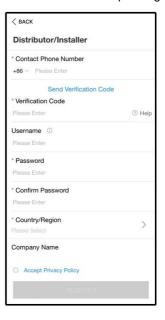
Step 1 Tap REGISTER to enter the registration screen.



Step 2 Select the relevant server for your area.

7 iSolarCloud App User Manual

Step 3 Select Owner or Retailer/Installer to enter the corresponding screen.



Step 4 Fill in the registration information, including email, verification code, password and affirmance and country (region). The retailer/installer has the permission to fill in the company name and the code of upper level retailer/installer.



The code of upper level retailer/installer can be obtained from the upper level retailer/installer. Only when your organization belongs to the upper level retailer/installer organization, can you fill in the corresponding code.

Step 5 Tick Accept Privacy Policy and tap Register to finish the registration operation.

- - End

7.4 Login

7.4.1 Requirements

The following requirements should be met:

- The AC and DC sides or the AC side of the inverter is powered-on.
- The WLAN function of the mobile phone is enabled.
- The mobile phone is within the coverage of the wireless network produced by the communication module.

User Manual 7 iSolarCloud App

7.4.2 Login Procedure

Step 1 (Optional) For the WiNet-S/WiNet-S2 module, press the multi-function button 3 times to enable the WLAN hotspot. No password is required and the valid time is 30 minutes.



figure 7-1 Enabling the WLAN Hotspot

Step 2 Connect the mobile phone to the WLAN network named as "SG-xxxxxxxxxx" (xxxxxxxxxx is the serial number indicated on the side of the communication module).

Step 3 Open the App to enter the login screen. Tap **Local Access** to enter the next screen.

7 iSolarCloud App User Manual

Step 4 Tap **Confirm**, then enter the password and tap **LOGIN**.Or tap **MANUAL CONNECTION** at the bottom of the interface and select **WiNet-S/WiNet-S2**, then enter the password and tap **LOGIN**.

 If the WiFi signal, serial number or inverter related data information cannot be found, unplug and reinsert the Winet-S/WiNet-S2 or press the multi-function button of the Winet-S/WiNet-S2 three times.



• The default account is "user" and the initial password is "pw1111" which should be changed for the consideration of account security. Tap "More" at the lower right corner on home page and choose "Change Password".



figure 7-2 WLAN Local Access

Step 5 If the inverter is not initialized, navigate to the quick setting screen to initialize the protection parameters. For details, please refer to "Initial Settings".

NOTICE

The "Country/Region" must be set to the country where the inverter is installed at. Otherwise, the inverter may report errors.

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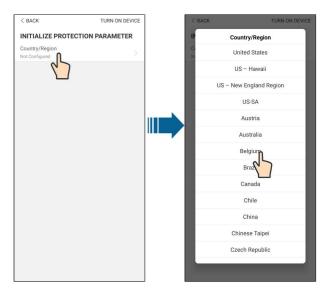


figure 7-3 WLAN Local Access

Step 6 After finishing the settings, tap **TUNR ON DEVICE** at the upper right corner and the device will be initialized. The App will send start instructions and the device will start and operate.

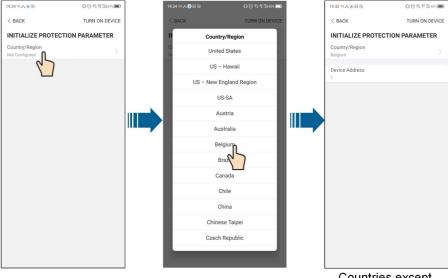
Step 7 After initialization settings, the App will return automatically to the home page.

- - End

7.5 Initial Settings

Tap **Country/Region** and select the country where the inverter is installed. For countries except Australia and Germany, the initialization is completed.

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Countries except
Australia and Germany

The actual initializing procedure may differ due to different countries. Please follow the actual App guidance.



For some countries, you should initialize parameters according to local grid requirements. For details, please refer to the relevant technical documents on http://support.sungrowpower.com/.

7.6 Function Overview

The App provides parameter viewing and setting functions, as shown in the following figure.

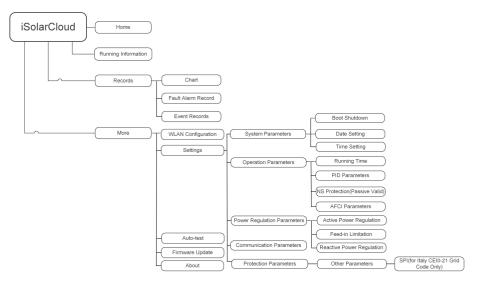


figure 7-4 App Function Tree Map

7.7 Home

Home page of the App is shown in the following figure.



figure 7-5 Home

table 7-1 Home Page Description

No.	Name	Description	
1	Inverter state	Present operation state of the inverter	
		Shows the PV power generation power, feed-in power, etc.	
2	Energy flow	The line with an arrow indicates energy flow between con-	
	chart	nected devices, and the arrow pointing indicates energy flow	
		direction.	

No.	Name	Description	
2	Real-time	Shows the present output power of the inverter	
3	power	Shows the present output power of the inverter.	
4	Nominal power	Shows the installed power of the inverter.	
5	Today yield	Shows today power generation of the inverter	
6	Total yield	Shows accumulative power generation of the inverter	
7	Navigation bar Includes menus of "Home", "Run Infomation", "Re		
	ivavigation bai	and "More".	

If the inverter runs abnormally, the fault icon \triangle will appear on the upper left corner of the screen. Users can tap the icon to view detailed fault information and corrective measures.

7.8 Run Information

Tap **Run Information** on the navigation bar to enter the screen showing running information, slide the screen upwards to view all detailed information.

table 7-2 Description of Run Information

Item	Description		
PV information	Shows voltage and current of every PV string.		
lucca atau	Shows basic information such as running state, on-grid running time,		
Inverter information	negative voltage to grid, bus voltage, internal air temperature, inver-		
information	ter efficiency, etc.		
Input	Shows total DC power, voltage and current of MPPT1 and MPPT2.		
	Shows daily/monthly/annual/total yield, total active/reactive/appa-		
Output	rent power, total power factor, grid frequency, phase voltage and		
	current.		
Grid information	Shows daily/total feed-in energy, daily/total purchased energy.		

7.9 Records

Tap **Records** on the navigation bar to enter the screen showing event records, as shown in the following figure.



figure 7-6 Records

Chart

Tap **Chart** to enter the screen showing daily power generation, as shown in the following figure.



figure 7-7 Chart

The App displays power generation records in a variety of forms, including daily power generation graph, monthly power generation histogram, annual power generation histogram and total power generation histogram.

table 7-3 Description of Power Curve

Item	Description
Daily	Daily curve that indicates the real-time power.
Month	Monthly curve that indicates daily yield and equivalent hours in a month.
Year	Annual curve that indicates monthly yield and equivalent hours in a year.
Total	A curve that indicates annual yield and equivalent hours since installation.

Fault Alarm Record

Tap Fault Alarm Record to enter the screen, as shown in the following figure.

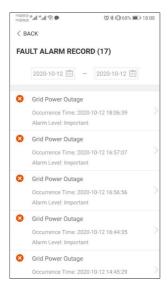


figure 7-8 Fault Alarm Record



Click in to select a time segment and view corresponding records.

Select one of the records in the list and click the record, to view the detailed fault info as shown in following figure.



figure 7-9 Detailed Fault Alarm Information

Event Record

Tap **Event Record** to enter the screen, as shown in the following figure.

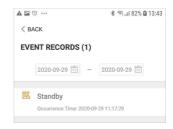


figure 7-10 Event Record



Click to select a time segment and view corresponding records.

7.10 More

Tap **More** on the navigation bar to enter the corresponding screen, as shown in the following figure.

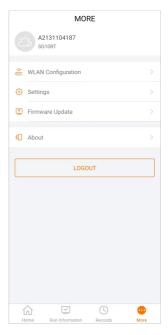


figure 7-11 More

In addition to viewing the WLAN configuration and App software version, the **More** screen supports the following operations:

- Set parameters including inverter system parameters, operation parameters, power regulation parameters and communication parameters.
- Upgrade inverter firmware.

7.10.1 System Parameters

Tap "Settings→System Parameters" to enter the corresponding interface, as shown in the following figure.



figure 7-12 System Parameters

Boot/Shutdown

Tap **Boot/Shutdown** to send the boot/shutdown instruction to the inverter.

For Australia and New Zealand, when the DRM state is DRM0, the "Boot" option will be prohibited.

Date Setting/Time Setting

The correct system time is very important. Wrong system time will directly affect the data logging and power generation value. The clock is in 24-hour format.

Software Version

Version information of the current firmware.

7.10.2 Operation Parameters

Running Time

Tap "Settings→Operation Parameters→Running Time" to enter the corresponding screen, on which you can set the "Connecting Time" and "Reconnecting Time".



figure 7-13 Running Time

PID Parameters

Tap "Settings→Operation Parameters→PID Parameters" to enter the corresponding screen, on which you can set "PID Parameters".

^{*} The image shown here is for reference only.

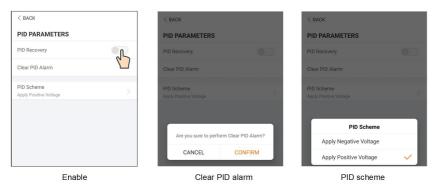


figure 7-14 PID Setting

table 7-4 PID Parameter Description

Parameter Description	
PID Recovery	Set enabling/disabling of the PID night recovery function. PID night
	recovery functions between 22:00 pm and 5:00 am by default.
	If ISO impedance abnormality or PID function exception is de-
Clear PID alarm	tected during running of the PID function, the inverter reports a
Clear PID alariii	PID false alarm and reminds the user to take corresponding meas-
	ures. After processing, clear the alarm via this parameter.
PID Scheme	Apply negative or positive voltage.



- For the selection of negative or positive voltage, please consult the supplier of PV panels.
- After the PID night recovery function is enabled, the fault indicator on the inverter front panel turns green.

NS Protection(Passive Valid)

Tap "Settings→Operation Parameters→Regular Parameters" to enter the corresponding screen, on which you can set the "NS Protection(Passive Valid)". When the NS Protection (Passive Valid) button is set to green, the Passive Valid mode is turned on. When the NS Protection(Passive Valid) button is set to gray, the Active Valid mode is turned on.



figure 7-15 NS Protection(Passive Valid)

AFCI Parameters(Optional)

Tap "Settings→Operation Parameters→AFCI Parameters" to enter the corresponding screen, on which you can set "AFCI Parameters".



figure 7-16 AFCI Setting

7.10.3 Power Regulation Parameters

Active Power Regulation

Tap "Settings→Power Regulation Parameters→Active Power Regulation" to enter the screen, as shown in the following figure.

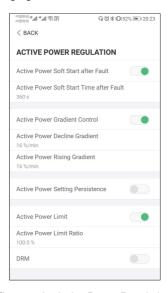


figure 7-17 Active Power Regulation

table 7-5 Description of Active Power Regulation Parameters

Parameter	Description	Range	
Active Power Soft Start	Switch for activating/deactivating the function	010#	
after Fault	of active power soft start after a fault occurs	On/Off	
Active Power Soft Start	The soft start time required for raising active	4 - 4000 -	
Time after Fault	power from 0 to rated value after a fault occurs	1 s–1200 s	
Active Power Gradient	Set whether to enable active power gradient	010#	
Control	control	On/Off	
Active Power Decline	Decline gradient of inverter active power per	_	
Gradient	minute	1%/min-	
Active Power Rising	Rising gradient of inverter active power per	6000 %/min	
Gradient	minute		

Parameter	Description	Range	
Active Power Setting	Switch for activating/deactivating the function	e function On/Off	
Persistence	of active power setting persistence		
Active Power Limit	Switch for limiting active power	On/Off	
Active Power Limit	The ratio of active power limit to rated power in	0.0 %-	
Ratio	percentage	110.0 %	
DRM	Switch for activating/deactivating the DRM	0/0#	
DUM	function	On/Off	

Feed-in Limitation

Tap "Settings→Power Regulation Parameters→Feed-in Limitation" to enter the screen, as shown in the following figure.

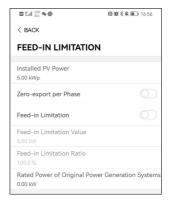


figure 7-18 Feed-in Limitation

table 7-6 Description of Feed-in Limitation Parameters

Parameter	Description	Range
Installed PV Power	DC side power	3.00 kW–
Ilistalled PV Power		20.00 kW
	For a three-phase inverter, the feed-in power	
	of Phase A, Phase B, and Phase C are re-	On/Off
Zero-export per Phase	quired shall be 0. This function has higher pri-	
Zero-export per Friase	ority than Feed-in Limitation. If Zero-export	
	per Phase is enabled, Feed-in Limitation is	
	automatically disabled.	
Feed-in Limitation	It is supported to limit the feed-in power of the	0.7/0#
reeu-iii Liiilitatioii	inverter	On/Off

Parameter	Description	Range
		Rated
		Power of
		Original
		Power Gen-
		eration Sys-
		tems -
Feed-in Limitation	Set Feed-in Limitation in numerical value	(Rated
Value	(unit: kW)	Power of
		Original
		Power Gen-
		eration Sys-
		tems +
		Installed PV
		Power)
		[Rated
		Power of
	Set Feed-in Limitation as a percentage. Feed-	Original
		Power Gen-
		eration Sys-
		tems /
		(Rated
Feed-in Limitation	in Limitation Ratio = Feed-in Value / Inverter	Power of
Ratio	Rated Voltage	Original
	Nated Voltage	Power Gen-
		eration Sys-
		tems +
		Installed PV
		Power)]
		*100%-
		100.00 %
Rated Power of Origi-	Rated power of the existing inverter before in-	0.00 kW—
nal Power Generation	stalling the inverter	300.00 kW
Systems		500.00 KVV

Reactive Power Regulation

Tap "Settings→Power Regulation Parameters→Reactive Power Regulation" to enter the screen, as shown in the following figure.



figure 7-19 Reactive Power Regulation

table 7-7 Description of Reactive Power Regulation Parameters

Parameter	Description	Range
Reactive Power Set-	Switch for activating/deactivating the function	010#
ting Persistence	of reactive power setting persistence	On/Off
Reactive Power Regu-	Off/PF/Qt/Q(P)/Q(U)	Off/PF/Qt/Q
lation Mode		(P)/Q(U)
Reactive Response	Switch for activating/deactivating the function of reactive response	On/Off
Reactive Response Time	Time for reactive response	0.1 s-600 s

"Off" Mode

The reactive power regulation function is disabled. The PF is fixed at +1.000.

"PF" Mode

The power factor (PF) is fixed and the reactive power is regulated by the parameter PF. The PF ranges from 0.8 leading to 0.8 lagging. This mode can be enabled only with a bus voltage of not less than 800V.

- Leading: The inverter supplies reactive power to the grid.
- · Lagging: The inverter absorbs reactive power from the grid.

"Qt" Mode

In the Qt mode, the reactive power can be regulated by the parameter Q-Var limits (in %). The system rated reactive power is fixed, the system injects reactive power according to the delivered reactive power ratio. The "Reactive Power Ratio" is set through the App.

The setting range of the reactive power ratio is from -100 % to 100 %, corresponding to the ranges of inductive and capacitive reactive power regulation respectively.

"Q(P)" Mode

The PF of the inverter output varies in response to the output power of the inverter.

table 7-8 "Q(P)" Mode Parameters Explanation

Parameter	Explanation	Range
Q(P) Curve	Select corresponding curve according to local regulations	A, B, C*
QP_P1	Output power at point P1 on the Q(P) mode curve (in %)	0 %–100.0 %
QP_P2	Output power at point P2 on the Q(P) mode curve (in %)	20.0 %–100.0 %
QP_P3	Output power at point P3 on the Q(P) mode curve (in %)	20.0 %–100.0 %
QP_K1	Power factor at point P1 on the Q(P) mode curve	Curve A/C: 0.800
QP_K2	Power factor at point P2 on the Q(P) mode curve	to 1.000
QP_K3	Power factor at point P3 on the Q(P) mode curve	Curve B: -0.600 to 0.600
QP_ EnterVoltage	Voltage for Q(P) function activation (in %)	100.0 %–110.0 %
QP_ ExitVoltage	Voltage for Q(P) function deactivation (in %)	90.0 %–100.0 %
QP_ ExitPower	Power for Q(P) function deactivation (in %)	1.0 %—100.0 %
QP_ EnableMode	Unconditional activation/deactivation of Q(P) function	Yes, No

^{*} Curve C is reserved and consistent with Curve A currently.

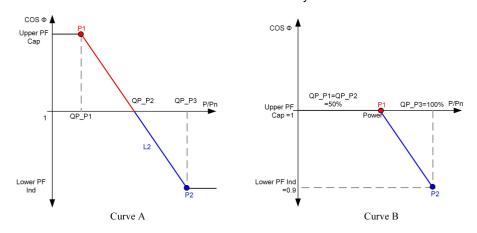


figure 7-20 Reactive Power Regulation Curve in Q(P) Mode

"Q(U)" Mode

The reactive power output of the inverter varies in response to the grid voltage.

table 7-9 "Q(U)" Mode Parameter Explanation

Parameter	Explanation	Range
Q(U) curve	Select corresponding curve according to local regulations	A, B, C*
Hysteresis Ratio	Voltage hysteresis ratio on the Q(U) mode curve	0.0 %–5.0 %
QU_V1	Grid voltage limit at point P1 on the Q(U) mode curve (in %)	80.0 %-100.0 %
QU_V2	Grid voltage limit at point P2 on the Q(U) mode curve (in %)	80.0 %–100.0 %
QU_V3	Grid voltage limit at point P3 on the Q(U) mode curve (in %)	100.0 %–120.0 %
QU_V4	Grid voltage limit at point P4 on the Q(U) mode curve (in %)	100.0 %–120.0 %
QU_Q1	Value of Q/Sn at point P1 on the Q(U) mode curve (in %)	-60.0 % to 0.0 %
QU_Q2	Value of Q/Sn at point P2 on the Q(U) mode curve (in %)	-60.0 % to 60.0 %
QU_Q3	Value of Q/Sn at point P3 on the Q(U) mode curve (in %)	-60.0 % to 60 %
QU_Q4	Value of Q/Sn at point P4 on the Q(U) mode curve (in %)	0.0 % to 60.0 %
QU_ EnterPower	Active power for Q(U) function activation (in %)	20.0 %–100.0 %
QU_ ExitPower	Active power for Q(U) function deactivation (in %)	1.0 %–20.0 %
QU_ EnableMode	Unconditional activation/deactivation of Q(U) function	Yes, No, Yes (Limited by PF)
QU_Limited PF Value	Preset PF value	0–1.00

^{*} Curve C is reserved and consistent with Curve A currently.

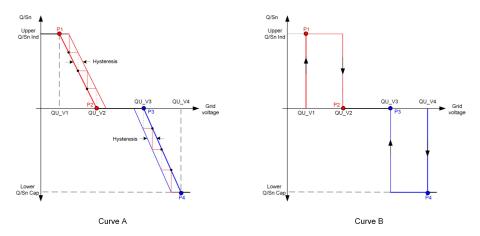


figure 7-21 Reactive Power Regulation Curve in Q(U) Curve

7.10.4 Communication Parameters

Tap "**Settings**→**Communication Parameters**" to enter the corresponding screen, as shown in the following figure. The device address ranges from 1 to 246.



figure 7-22 Communication Parameters

7.10.5 Firmware Update

To avoid download failure due to poor on-site network signal, it is recommended to download the firmware package to the mobile device in advance.

- Step 1 Enable the "Mobile data" of the mobile device.
- **Step 2** Open the App, enter the account and password on the login screen. Tap **Login** to enter the home screen.
- Step 3 Tap "More→Firmware Download" to enter corresponding screen on which you can view the device list.
- Step 4 Select the device model before downloading the firmware. Tap the device name in the device list to enter the firmware upgrade package detail interface, and tap $\frac{1}{2}$ behind the firmware upgrade package to download it.



Step 5 Return to the **Firmware Download** screen, tap $\frac{\checkmark}{}$ in the upper right corner of the screen to view the downloaded firmware upgrade package.

- Step 6 Login the App via local access mode. Refer to "7.4 Login".
- Step 7 Tap More on the App home screen and then tap Firmware Update.
- **Step 8** Tap the upgrade package file, a prompt box will pop up asking you to upgrade the firmware with the file, tap **CONFIRM** to perform the firmware upgrade.



Step 9 Wait for the file to be uploaded. When the upgrade is finished, the interface will inform you of the upgrade completion. Tap **Complete** to end the upgrade.



--End

7.10.6 Auto-test

Tap "Auto-test" to enter the corresponding screen, as shown in the following figure.



figure 7-23 Auto-test

Launch Auto-test

Tap **Launch Auto-test** carry out an auto-test. Auto-testing will take about 5 minutes. When the auto-test is completed, the auto-test report is displayed, as shown in the figure below. Tap **DOWNLOAD** to download the report.



figure 7-24 Auto-test Result

Clear Auto-test Fault

Tap "Clear Auto-test Fault→CONFIRM" to clear the auto-test fault.

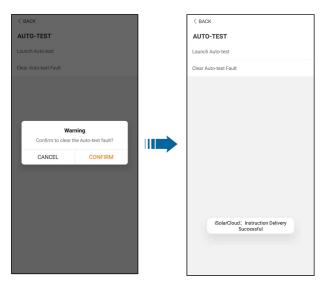


figure 7-25 Clear Auto-test Fault

7.10.7 SPI(for Italy CEI0-21 Grid Code Only)

Contact your distributor to obtain the advanced account and corresponding password before setting the SPI parameters. If the distributor is unable to provide the required information, contact SUNGROW.



Unauthorized personnel are not allowed to log in with this account. Otherwise, SUNGROW shall not be held liable for any damages caused.

Tap "More→Settings→Protection Parameters→Other Parameters" to enter the corresponding screen, on which you can modify the value of "External Signal for Italian Grid", "SPI Local Signal for Italian Grid", "SPI Mode", "Grid Voltage Adaption" and confirm the settings by enabling "External Grid Network Protection".

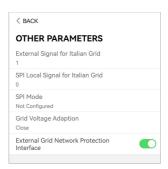


figure 7-26 SPI

8 System Decommissioning

8.1 Disconnecting the Inverter

A CAUTION

Danger of burns!

Even if the inverter is shut down, it may still be hot and cause burns. Wear protective gloves before operating the inverter after it cools down.

For maintenance or other service work, the inverter must be switched off. Proceed as follows to disconnect the inverter. Lethal voltages or damage to the inverter will follow if otherwise.

- Step 1 Disconnect the external AC circuit breaker and prevent it from inadvertent reconnection.
- Step 2 Rotate the DC switch to the "OFF" position for disconnecting all of the PV string inputs.
- **Step 3** Wait about 10 minutes until the capacitors inside the inverter completely discharge.
- Step 4 Ensure that the DC cable is current-free with a current clamp.
 - --End

8.2 Dismantling the Inverter

A CAUTION

Risk of burn injuries and electric shock!

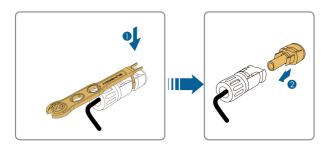
After the inverter is powered off for 10 minutes, measure the voltage and current with professional instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the inverter.

 Before dismantling the inverter, disconnect the inverter from both AC and DC power sources.



- If there are more than two layers of inverter DC terminals, dismantle the outer DC connectors before dismantling the inner ones.
- If the original packing materials are available, put the inverter inside them and then seal them using adhesive tape. If the original packing materials are not available, put the inverter inside a cardboard box suitable for the weight and size of this inverter and seal it properly.

Step 1 Refer to "5 Electrical Connection", for the inverter disconnection of all cables in reverse steps. In particular, when removing the DC connector, use an MC4 wrench to loosen the locking parts and install waterproof plugs.



- Step 2 Refer to "4 Mechanical Mounting", to dismantle the inverter in reverse steps.
- Step 3 If necessary, remove the wall-mounting bracket from the wall.
- **Step 4** If the inverter will be used again in the future, please refer to "3.2 Inverter Storage" for a proper conservation.
 - - End

8.3 Disposal of Inverter

Users take the responsibility for the disposal of the inverter.

▲ WARNING

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

NOTICE

Some parts of the inverter may cause environmental pollution. Please dispose of them in accordance with the disposal regulations for electronic waste applicable at the installation site.

9 Troubleshooting and Maintenance

9.1 Troubleshooting

Once the inverter fails, the fault information is displayed on the App interface. If the inverter is equipped with an LCD screen, the fault information can be viewed on it.

The fault codes and troubleshooting methods of all PV inverters are detailed in the table below, and only some of the faults may occur to the model you purchased. When a fault occurs, you can check the fault information according to the fault code on the mobile app.

Fault Code	Fault Name	Corrective Measures	
	Grid Overvoltage	Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly:	
		Measure the actual grid voltage, and contact the local electric power company for solutions if the grid voltage is higher than the set value.	
2, 3, 14, 15		 Check whether the protection parameters are appropriately set via the App or the LCD. Modify the overvoltage protection values with the consent of the local electric power operator. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists. 	
4, 5	Grid Undervoltage	Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid voltage, and contact the local electric power company for solutions if the grid voltage is lower than the set value. 2. Check whether the protection parameters are appropriately set via the App or the LCD. 3. Check whether the AC cable is firmly in place. 4. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.	

Foult Code	Fault Name	Corrective Messures	
Fault Code	Grid	Corrective Measures	
8	Gria Overfrequency	Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault oc-	
	Overnequency	curs repeatedly:	
9	Grid Underfrequency	1. Measure the actual grid frequency, and contact the local electric power company for solutions if the grid frequency is beyond the set range. 2. Check whether the protection parameters are	
		appropriately set via the App or the LCD.	
		3. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.	
		Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly:	
		1. Check whether the grid supplies power reliably.	
		2. Check whether the AC cable is firmly in place.	
40	Grid Power	3. Check whether the AC cable is connected to	
10	Outage	the correct terminal (whether the live wire and	
		the N wire are correctly in place).	
		Check whether the AC circuit breaker is connected.	
		5. Contact Sungrow Customer Service if the pre-	
		ceding causes are ruled out and the fault persists.	
	Excess Leakage	The fault can be caused by poor sunlight or damp environment, and generally the inverter will be reconnected to the grid after the environment is improved.	
12	Current	2. If the environment is normal, check whether	
		the AC and DC cables are well insulated.	
		3. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.	
		Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly:	
13	Grid Abnormal	Measure the actual grid, and contact the local electric power company for solutions if the grid parameter exceeds the set range.	
		2. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.	



Fault Code	Fault Name	Corrective Measures
rault Code	Fault Name	Generally, the inverter will be reconnected to the
		grid after the grid returns to normal. If the fault oc-
		curs repeatedly:
		Measure the actual grid voltage. If grid phase
		voltages differ greatly, contact the electric power
	Crid Valtage	company for solutions.
17	Grid Voltage Imbalance	If the voltage difference between phases is
	impaiance	within the permissible range of the local power
		company, modify the grid voltage imbalance pa-
		rameter through the App or the LCD.
		Contact Sungrow Customer Service if the pre- ceding causes are ruled out and the fault persists.
		Check whether the corresponding string is of reverse polarity. If so, disconnect the DC switch
		and adjust the polarity when the string current
		drops below 0.5 A.
20 20 200	DV D	Contact Sungrow Customer Service if the pre-
28, 29, 208,	PV Reserve Con- nection Fault	ceding causes are ruled out and the fault persists.
212, 448-479		
		*The code 28 to code 29 are corresponding to
		PV1 to PV2 respectively.
		*The code 448 to code 479 are corresponding to
		string 1 to string 32 respectively.
		Check whether the corresponding string is of
		reverse polarity. If so, disconnect the DC switch
		and adjust the polarity when the string current
		drops below 0.5 A.
532-547, 564-	PV Reverse Con-	2. Contact Sungrow Customer Service if the pre-
579	nection Alarm	ceding causes are ruled out and the alarm
		persists.
		*The code 532 to code 547 are corresponding to
		string 1 to string 16 respectively.
		*The code 564 to code 579 are corresponding to
		string 17 to string 32 respectively.



Fault Code	Fault Name Corrective Measures		
		Check whether the voltage and current of the in-	
		verter is abnormal to determine the cause of the alarm.	
		1. Check whether the corresponding module is	
		sheltered. If so, remove the shelter and ensure module cleanness.	
		2. Check whether the battery board wiring is	
		loose, if so, make it reliably connected.	
548-563, 580- 595	PV Abnormal Alarm	3. Check if the DC fuse is damaged. If so, replace the fuse.	
		Contact Sungrow Customer Service if the preceding causes are ruled out and the alarm persists.	
		*The code 548 to code 563 are corresponding to	
		string 1 to string 16 respectively.	
		*The code 580 to code 595 are corresponding to	
		string 17 to string 32 respectively.	
		Generally, the inverter will resume operation	
	Excessively High Ambient Temperature	when the internal or module temperature returns	
		to normal. If the fault persists:	
		 Check whether the ambient temperature of the inverter is too high; 	
		Check whether the inverter is in a well-ventilated place;	
37		 Check whether the inverter is exposed to di- rect sunlight. Shield it if so; 	
		4. Check whether the fan is running properly. Re-	
		place the fan if not;	
		5. Contact Sungrow Power Customer Service if	
		the fault is due to other causes and the fault	
		persists.	
	Excessively Low	Stop and disconnect the inverter. Restart the in-	
43	Ambient	verter when the ambient temperature rises within	
	Temperature	the operation temperature range.	



Fault Code	Fault Name	Corrective Measures	
39		Wait for the inverter to return to normal. If the fault occurs repeatedly:	
	Low System Insulation Resistance	1. Check whether the ISO resistance protection value is excessively high via the app or the LCD, and ensure that it complies with the local regulations.	
		2. Check the resistance to ground of the string and DC cable. Take corrective measures in case of short circuit or damaged insulation layer.3. If the cable is normal and the fault occurs on rainy days, check it again when the weather turns fine.	
		4. If there are batteries, check whether battery cables are damaged and whether terminals are loose or in poor contact. If so, replace the damaged cable and secure terminals to ensure a reliable connection.	
		5. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.	
		Check whether the AC cable is correctly connected.	
106	Grounding Cable Fault	2. Check whether the insulation between the ground cable and the live wire is normal.	
		Contact Sungrow Customer Service if the pre- ceding causes are ruled out and the fault persists.	
	Electric Arc Fault	1. Disconnect the DC power supply, and check whether any DC cable is damaged, the connection terminal or fuse is loose or there is a weak contact. If so, replace the damaged cable, fasten the terminal or fuse, and replace the burnt component.	
88		2. After performing step 1, reconnect the DC power supply, and clear the electric arc fault via the App or the LCD, after that the inverter will return to normal.	
		3. Contact Sungrow Customer Service if the fault persists.	

Fault Code	Fault Name	Corrective Measures
		Check if the meter is wrongly connected.
	Reverse Connec-	2. Check if the input and output wiring of the me-
84	tion Alarm of the	ter is reversed.
	Meter/CT	3. If the existing system is enabled, please check
		if the rated power setting of the existing inverter
		is correct.
		Check whether the communication cable and the terminals are abnormal. If so, correct them to
		ensure reliable connection.
	Meter Communi-	2. Reconnect the communication cable of the
514	cation Abnormal	meter.
	Alarm	3. Contact Sungrow Customer Service if the pre-
		ceding causes are ruled out and the alarm
		persists.
		1. Check whether the output port is connected to
323	Grid Confrontation	actual grid. Disconnect it from the grid if so.
323	Ond Confrontation	2. Contact Sungrow Customer Service if the pre-
		ceding causes are ruled out and the fault persists.
		1. Check whether the communication cable and
		the terminals are abnormal. If so, correct them to
	Inverter Parallel	ensure reliable connection.
75	Communication Alarm	2. Reconnect the communication cable of the
		meter.
		3. Contact Sungrow Customer Service if the pre-
		ceding causes are ruled out and the alarm
		persists.



Fault Code	Fault Name	Corrective Measures	
7, 11, 16, 19–			
25, 30–34, 36,			
38, 40–42, 44–			
50, 52–58, 60–			
69, 85, 87, 92,		Wait for the inverter to return to normal.	
93, 100–105,		Disconnect the AC and DC switches, and dis-	
107–114, 116–		connect the battery side switches if there are bat-	
124, 200–211,	System Fault	teries. Close the AC and DC switches in turn 15	
248–255, 300–	System Fault		
322, 324–328,		minutes later and restart the system.	
401–412, 600–		Contact Sungrow Customer Service if the pre-	
603, 605, 608,		ceding causes are ruled out and the fault persists.	
612, 616, 620,			
622-624, 800,			
802, 804, 807,			
1096–1118			
59, 70–74, 76–		1. The inverter can continue running.	
83, 89, 216–		2. Check whether the related wiring and terminal	
218, 220–233,		are abnormal, check whether there are any for-	
432–434, 500–	System Alarm	eign materials or other environmental abnormal-	
513, 515–518,	Cystem / llam	ities, and take corresponding corrective	
635–638, 900,		measures when necessary.	
901, 910, 911,		3. If the fault persists, please contact Sungrow	
996		Power Customer Service.	
		1. Check whether the corresponding string is of	
		reverse polarity. If so, disconnect the DC switch	
		and adjust the polarity when the string current	
004.005	MPPT Reverse	drops below 0.5 A.	
264-283	Connection	2. Contact Sungrow Customer Service if the pre-	
		ceding causes are ruled out and the fault persists.	
		*The code 264 to code 279 are corresponding to	
		string 1 to string 20 respectively.	



Fault Code	Fault Name Corrective Measures		
		1. The inverter can continue running.	
		2. Check whether the related wiring and termi-	
		nals are abnormal, check whether there are any	
332-363	Boost Capacitor	foreign materials or other environmental abnor-	
332-303	Overvoltage Alarm	malities, and take corresponding corrective	
		measures when necessary.	
		If the fault persists, please contact Sungrow	
		Power Customer Service.	
		1. Disconnect the AC and DC switches, and dis-	
		connect the battery side switches if there are bat-	
364-395	Boost Capacitor	teries. Close the AC and DC switches in turn 15	
304-393	Overvoltage Fault	minutes later and restart the system.	
		2. If the fault persists, please contact Sungrow	
		Power Customer Service.	
		1. Check whether the number of PV modules of	
		the corresponding string is less than other strings.	
		If so, disconnect the DC switch and adjust the PV	
		module configuration when the string current	
		drops below 0.5 A.	
1548-1579	String Current	2. Check whether the PV module is shaded;	
1340-1379	Reflux	3. Disconnect the DC switch to check whether	
		the open circuit voltage is normal when the string	
		current drops below 0.5 A. If so, check the wiring	
		and configuration of the PV module,	
		4. Check whether the orientation of the PV mod-	
		ule is abnormal.	



Fault Code	Fault Name	Corrective Measures	
1600 - 1615, 1632 - 1655	PV Grounding Fault	 When the fault occurs, it is forbidden to directly disconnect the DC switch and unplug PV terminals when the direct current is greater than 0.5 A; Wait until the direct current of the inverter falls below 0.5 A, then disconnect the DC switch and unplug the faulty strings; Do not reinsert the faulty strings before the grounding fault is cleared; If the fault is not caused by the foregoing reasons and still exists, contact Sungrow Customer Service. 	
1616	System Hardware Fault	 It is prohibited to disconnect the DC switch when the DC current is greater than 0.5 A when the fault occurs. Disconnect the DC switch only when the inverter DC side current drops below 0.5 A. It is prohibited to power up the inverter again. Please contact Sungrow Customer Service. 	

Once a fault occurs to the optimizer, the fault information is displayed on the App.

Fault	Fault	Possible	Corrective Method
Code	Name	Cause	Corrective Method
4	Input overvolt- age	The PV voltage is higher than the set pro- tection value	Check whether the open-circuit voltage of the PV module connected to the optimizer exceeds the maximum input voltage allowed by the optimizer.
512	Hardware fault	A hardware fault occurs to the optimizer	Please contact Sungrow Customer Service.
1024	Update failed	The opti- mizer soft- ware fails to upgrade	 The software upgrade may take more than 20 minutes for a large-scale system with a great number of optimizers. Please check the light condition, and perform the software upgrade under good light conditions. If the fault persists, please contact Sungrow Customer Service.



- If there is a string current backfeed fault, first check whether the optimizer is
 offline.
- Contact the dealer if the measures listed in the "Troubleshooting Method" column have been taken but the problem persists. Contact SUNGROW if the dealer fails to solve the problem.

9.2 Maintenance

9.2.1 Maintenance Notices

The DC switch can be secured with a lock in the OFF position or a certain angle beyond the OFF position.(For countries "AU" and "NZ")

▲ DANGER

Risk of inverter damage or personal injury due to incorrect service!

- Be sure to use special insulation tools when perform high-voltage operations.
- Before any service work, first disconnect the grid-side AC circuit breaker and check the inverter status. If the inverter indicator is off, please wait until night to disconnect the DC switch. If the inverter indicator is on, directly disconnect the DC switch.
- After the inverter is powered off for 10 minutes, measure the voltage and current with professional instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the inverter
- Even if the inverter is shut down, it may still be hot and cause burns. Wear protective gloves before operating the inverter after it cools down.
- When maintaining the product, it is strictly prohibited to open the product if
 there is an odor or smoke or if the product appearance is abnormal. If there is
 no odor, smoke, or obvious abnormal appearance, repair or restart the inverter
 according to the alarm corrective measures. Avoid standing directly in front of
 the inverter during maintenance.

A CAUTION

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



NOTICE

Restart the inverter only after removing the fault that impairs safety performance. As the inverter contains no component parts that can be maintained, never open the enclosure, or replace any internal components.

To avoid the risk of electric shock, do not perform any other maintenance operations beyond those described in this manual. If necessary, contact your distributor first. If the problem persists, contact SUNGROW. Otherwise, the losses caused is not covered by the warranty.

NOTICE

Touching the PCB or other static sensitive components may cause damage to the device.

- · Do not touch the circuit board unnecessarily.
- Observe the regulations to protect against electrostatic and wear an anti-static wrist strap.

9.2.2 Quick Shutdown

The PV system can perform a quick shutdown, reducing the output voltage of strings to below 30 V within 20 s.

Triggering methods of quick shutdown:

- Method 1: Turn off the AC circuit breaker between the inverter and the grid.
- Method 2: Connect RSD-1 and RSD-2 in COM2 port to trigger quick shutdown. Disconnect RSD-1 and RSD-2 to exit the quick shutdown mode.

NOTICE

- The quick shutdown is not supported if optimizers are configured for some PV modules.
- · Please check regularly whether the quick shutdown function is normal.

9.2.3 Routine Maintenance

Item	Method	Period
	Check the temperature and dust of the	Six months to a year
Device clean	device. Clean the device enclosure if	(depending on the dust con-
	necessary.	tents in air)
	Check whether all cable are firmly con-	
Electrical	nected in place.	6 months after commissioning
connection	Check whether there is damage to the	and then once or twice a year
Connection	cables, especially the surface in con-	and their office of twice a year
	tact with metal.	
	Visual check for any damage or de- formation of the microinverter.	Every 6 months
General status of the system	Check any abnormal noise during the operation.	
	Check each operation parameter.	
	Be sure that nothing covers the heat sink of the device.	

9.2.4 Fan Maintenance

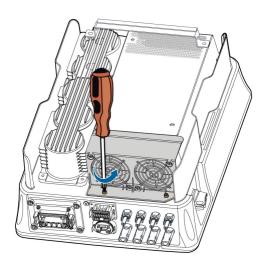
If the inverter has an external fan, when the fan fails to work normally, the inverter cannot be effectively cooled, which will affect the efficiency of the inverter or cause derated operation. Therefore, keep the fan clean and replace the damaged fan in time.

▲ WARNING

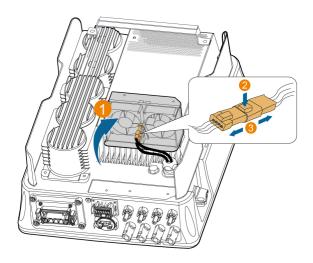
- Power off the inverter and disconnect it from all power supplies before maintaining fans.
- After the inverter is powered off for 10 minutes, measure the voltage and current with professional instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the inverter.
- · Fan maintenance must be performed by professionals.
- Step 1 Refer to "8.1 Disconnecting the Inverter" to stop the inverter.
- **Step 2** Refer to "5 Electrical Connection" and disconnect all the cable connections in reverse steps.
- Step 3 Refer to "4 Mechanical Mounting" and dismantle the inverter in reverse steps.



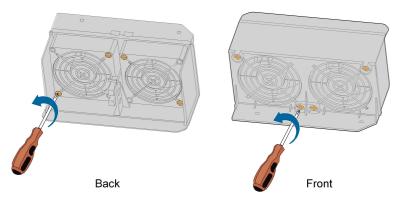
Step 4 Unscrew the screws on the fan bracket.



Step 5 Lift the fan bracket upwards, press down the protrusion on the fan power plug connector and pull it outwards, and remove the fan bracket.



Step 6 Unscrew the screws on the dust covers and remove the dust covers.



Step 7 Use a soft brush or vacuum cleaner to clean the fan. If you need to replace the fan, use a screwdriver to unscrew the screw at the fan bracket and remove the fan.

Step 8 Install the dust covers and then the fan bracket to the inverter. Restart the inverter.

- - End



10 Appendix

10.1 Technical Data

Input (DC) Recommended max. PV	Parameter	SG3.0RT	SG4.0RT	
input power Max. PV input voltage (3) Min. PV input voltage / Start-up input voltage Rated PV input voltage MPPT operating voltage range (4) MPP voltage range for rated power No. of independent MPP inputs No. of PV strings per MPPT Max. PV input current Max. PV input current Max. DC short-circuit current Max. current for DC connector Output (AC) Rated AC output power Max. AC output apparent power Max. AC output current 5.1A 6.8A Rated AC voltage 3/N/PE, 220 V/380 V 3/N/PE, 240 V/415 V AC voltage range 180 V-276 V/311 V-478 V Rated grid frequency SO Hz / 60 Hz Grid frequency ange	Input (DC)			
Max. PV input voltage (3) 1100 V (1) Min. PV input voltage / Start-up input voltage 180V / 180V Rated PV input voltage 600 V MPPT operating voltage range (4) 160 V-1000 V(2) MPP voltage range for rated power 160V-850V(5) No. of independent MPP inputs 2 No. of PV strings per MPPT 1 / 1 Max. PV input current 25 A (12.5 A / 12.5 A) Max. DC short-circuit current 32 A (16 A / 16 A) current Max. current for DC connector 30A Output (AC) 30A Rated AC output power 300 W 4000 W Max. AC output apparent power 3300VA 4400VA Max. AC output current 5.1A 6.8A Rated AC voltage 3 / N / PE, 220 V / 380 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz -65 Hz	Recommended max. PV	1.5 kWn	6.0 kWp	
Min. PV input voltage / Start-up input voltage Rated PV input voltage Rated power MPP voltage range for Rated power No. of independent MPP Inputs No. of PV strings per RATED RATE RATE RATE RATE RATE RATE RATE RATE	input power	4.5 KVVP	0.0 κννβ	
Start-up input voltage Rated PV input voltage 600 V	Max. PV input voltage(3)		1100 V (1)	
Start-up input voltage 600 V MPPT operating voltage range ⁽⁴⁾ 160 V-1000 V ⁽²⁾ MPP voltage range for rated power 160V-850V ⁽⁵⁾ No. of independent MPP inputs 2 No. of PV strings per MPPT 1/1 Max. PV input current 25 A (12.5 A / 12.5 A) Max. DC short-circuit 32 A (16 A / 16 A) current 30A Max. current for DC connector 30A Output (AC) 30A Rated AC output power 3000 W 4000 W Max. AC output apparent power 3300VA 4400VA Max. AC output current 5.1A 6.8A Rated AC voltage 3/N/PE, 220 V/380 V AC voltage range 180 V-276 V/311 V-478 V AC voltage range 180 V-276 V/311 V-478 V Rated grid frequency 50 Hz/60 Hz Grid frequency range 45 Hz-55 Hz/55 Hz-65 Hz	Min. PV input voltage /		180V / 180V	
MPPT operating voltage range for rated power No. of independent MPP inputs No. of PV strings per MPPT Max. PV input current Max. DC short-circuit current Max. current for DC connector Output (AC) Rated AC output power Max. AC output current Max. AC output current 5.1A 6.8A 3 / N / PE, 220 V / 380 V AC voltage range 180 V-1000 V(2) 160 V-1000 V(2) 160 V-300V 160 V-850V(5) 170 V-850V(5) 180 V-850V(5) 180 V-976 V / 311 V-478 V	Start-up input voltage		100 / 100 /	
## Tange Tan	Rated PV input voltage		600 V	
range ⁽⁴⁾ MPP voltage range for rated power No. of independent MPP inputs No. of PV strings per MPPT Max. PV input current Max. DC short-circuit current Max. current for DC connector Output (AC) Rated AC output power Max. AC output apparent power Max. AC output current 5.1A 6.8A Rated AC voltage 3/N/PE, 220 V/380 V Rated AC voltage 3/N/PE, 240 V/415 V AC voltage range 160V-850V(5) 2 1/1 1/1 1/1 1/1 1/1 1/1 1/1	MPPT operating voltage	11	60 V 1000 V(2)	
No. of independent MPP 1	range ⁽⁴⁾	11	30 V=1000 V(2)	
No. of independent MPP 1	MPP voltage range for		160\/-850\/(5)	
No. of PV strings per	rated power			
No. of PV strings per	No. of independent MPP		2	
MPPT 1/1 Max. PV input current 25 A (12.5 A / 12.5 A) Max. DC short-circuit current 32 A (16 A / 16 A) Current 30A Max. current for DC connector 30A Output (AC) Ac output (AC) Rated AC output power 3000 W 4000 W Max. AC output apparent power 3300VA 4400VA Max. AC output current 5.1A 6.8A AC voltage 3 / N / PE, 220 V / 380 V AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz - 55 Hz / 55 Hz - 65 Hz	inputs			
MPPT Max. PV input current 25 A (12.5 A / 12.5 A) Max. DC short-circuit 32 A (16 A / 16 A) current 30A Max. current for DC 30A connector 30A Output (AC) Rated AC output power 3000 W 4000 W Max. AC output apparent power 3300VA 4400VA Max. AC output current 5.1A 6.8A 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V AC voltage 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz - 55 Hz / 55 Hz - 65 Hz	No. of PV strings per		1/1	
Max. DC short-circuit current 32 A (16 A / 16 A) Max. current for DC connector 30A Output (AC) 3000 W Rated AC output power 3000 W Max. AC output apparent power 3300VA Max. AC output current 5.1A 6.8A 3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz - 55 Hz / 55 Hz - 65 Hz	MPPT			
Current Max. current for DC connector Output (AC) Rated AC output power Max. AC output apparent power Max. AC output current 5.1A 6.8A 3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range	Max. PV input current	25 A (12.5 A / 12.5 A)		
current Max. current for DC connector 30A Output (AC) Rated AC output power 3000 W 4000 W Max. AC output apparent power 3300VA 4400VA Max. AC output current 5.1A 6.8A Rated AC voltage 3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz	Max. DC short-circuit	32 A (16 A / 16 A)		
Connector Output (AC) Rated AC output power 3000 W 4000 W Max. AC output apparent power 3300VA 4400VA Max. AC output current 5.1A 6.8A AC voltage 3 / N / PE, 220 V / 380 V AC voltage 3 / N / PE, 230 V / 400 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz		52(10.11, 10.11)		
Output (AC) Rated AC output power 3000 W 4000 W Max. AC output apparent power 3300VA 4400VA Max. AC output current 5.1A 6.8A Rated AC voltage 3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz		30A		
Rated AC output power 3000 W 4000 W Max. AC output apparent power 3300VA 4400VA Max. AC output current 5.1A 6.8A Rated AC voltage 3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz				
Max. AC output apparent power 3300VA 4400VA Max. AC output current 5.1A 6.8A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz				
3300VA 4400VA Max. AC output current 5.1A 6.8A 3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz	Rated AC output power	3000 W	4000 W	
power Max. AC output current 5.1A 6.8A 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz	Max. AC output apparent	3300VA	4400VA	
3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz	power			
Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz	Max. AC output current	5.1A	6.8A	
3 / N / PE, 240 V / 415 V AC voltage range				
AC voltage range 180 V-276 V / 311 V-478 V Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz-55 Hz / 55 Hz-65 Hz	Rated AC voltage			
Rated grid frequency 50 Hz / 60 Hz Grid frequency range 45 Hz–55 Hz / 55 Hz–65 Hz	40 "			
Grid frequency range 45 Hz–55 Hz / 55 Hz–65 Hz		180 V-276 V / 311 V-478 V		
		50 Hz / 60 Hz		
Harmonic (THD) < 5 % (at rated power)				
	Harmonic (THD)	< 5 % (at rated power)		

User Manual 10 Appendix

Parameter	SG3.0RT	SG4.0RT	
Power factor at Rated			
power / Adjustable power	> 0.99 / 0.8 leading - 0.8 lagging		
factor			
Feed-in phases / connec-		2 / 2 DE	
tion phases		3 / 3-PE	
Efficiency			
Max. efficiency	98.20 %		
European efficiency	96.50 %	97.00 %	
Protection & Function			
Grid monitoring	Yes		
DC reverse connection			
protection	Yes		
AC short-circuit protection	Yes		
Leakage current	Voc		
protection	Yes		
Surge Protection	DC Type II / AC Type II		
Ground fault monitoring	Yes		
DC switch	Yes		
PV String current	Yes		
monitoring			
Arc fault circuit interrupter	Yes		
(AFCI)			
PID recovery function	Yes		
Protective Class	I		
Overvoltage Category	DC II/AC III		
Active Anti-Islanding	Frequency Shift		
Method			
General Data	270 1/400 1/405		
Dimensions (W x H x D)	370 mm x 480 mm x 195 mm		
Weight	18 kg		
Mounting method	Wall-mounting bracket		
Topology	Transformerless		
Degree of protection	IP65		
Night power consumption	< 6W		
Corrosion	C5 -25°C to +60°C		
Operating ambient tem-			
perature range			

10 Appendix User Manual

Parameter	SG3.0RT	SG4.0RT
Allowable relative humid-		
ity range (non-		0–100 %
condensing)		
Cooling method		Natural cooling
Max. operating altitude		4000 m
Display		LED
Communication	WL	AN / Ethernet / RS485 / DI / DO
DC connection type		MC4 (Max. 6 mm ²)
AC connection type		Plug and play
Grid Compliance	IEC / EN 61000-	6-1/2/3/4, IEC / EN62109-1/2 , IEC 61727 ,
	IEC 6211	6, IEC 61683, EN50530, EN50549-1
Grid Support	LVRT, HVRT,act	ive & reactive power control and power ramp
		rate control

- (1) The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. If the maximum DC voltage in the system can exceed 1,000 V, the MC4 connectors included in the scope of delivery must not be used. In this case MC4-Evo2 connectors must be used.
- (2) Please note the min. voltage without MPP tracker derating is 303V (+5%) for SG10/15/20RT and 236V(+5%) for SG5.0/7.0/8.0RT @AC230V 12.5A.
- (3) Input voltage exceeding the MPPT operating voltage range triggers inverter protection.
- (4) Please refer to the user manual for the full load MPPT voltage range.
- (5) Not applicable to the MENA region. For details on the MENA region, please refer to the TI document and contact Sungrow for more information.

Parameter	SG5.0RT	SG6.0RT	
Input (DC)			
Recommended max. PV in-	7.5 kWp	9.0 kWp	
put power			
Max. PV input voltage(3)	1100 V ⁽¹⁾		
Min. PV input voltage /	180 V / 180 V		
Start-up input voltage			
Rated input voltage	600 V		
MPPT operating voltage	160 V–1000 V ⁽²⁾		
range ⁽⁴⁾			
MPP voltage range for	260V-850V ⁽⁵⁾	320V - 850V ⁽⁵⁾	
rated power	200 V-030 V (*)		
No. of independent MPP	2		
inputs			
No. of of PV strings per	1/1		
MPPT			

Parameter	SG5.0RT	SG6.0RT	
	32 A (16 A / 16 A) for "AU", 25 A (12.5 A / 12.5 A) for		
Max. PV input current	others		
Max. DC short-circuit	40 A (20 A / 20 A) for "AU", 32 A (16 A / 16 A) for others		
current	1077 (2077) 2077) 101 710 ;	0271(10717 1071) 101 0111010	
Max. current for DC	30) A	
connector		-	
Output (AC)			
Rated AC power	5000 W	6000 W	
Max. AC output apparent	5000 VA for "AU", "BE",	6000 VA for "AU", "BE",	
power	"DE", 5500 VA for others	"DE", 6600 VA for others	
Rated AC output apparent	5000 VA for "AU", "BE",	6000 VA for "AU", "BE",	
power	"DE", 5500 VA for others	"DE", 6600 VA for others	
Max. AC output current	7.6 A for "AU", 8.3 A for	7.6 A for "AU", 8.3 A for	
	others	others	
Rated AC output current(at	7.2 A	8.7 A	
230V)	0.444.77		
D / 140 #	,	220 V / 380 V	
Rated AC voltage		230 V / 400 V 240 V / 415 V	
A C waltana nana		/ 311 V–478 V	
AC voltage range		/ 60 Hz	
Rated grid frequency		/ 55 Hz–65 Hz	
Grid frequency range		ated power)	
Harmonic (THD)	< 5 % (at 16	ated power)	
Power factor at nominal	> 0.99 / 0.8 leading – 0.8 lagging		
power / Adjustable power	> 0.99 / 0.8 lead	ling – 0.8 lagging	
factor			
Feed-in phases / connec-	3/3	3–PE	
tion phases			
Efficiency			
Max. efficiency	98.40 %		
European efficiency	97.4	97.40 %	
Protection & Function			
Grid monitoring	Yes		
DC reverse connection			
protection	Yes		
AC short-circuit protection	Yes		
Leakage current protection	Υ	Yes	
Surge Protection	DC Type II / AC Type II		
Ground fault monitoring	Yes		

Parameter	SG5.0RT SG6.0RT	
DC switch	Yes	
PV String current	Yes	
monitoring		
Arc fault circuit interrupter	antion al	
(AFCI)	optional	
PID recovery function	Yes	
Protective Class	I	
Overvoltage Category	DC II/AC III	
Active Anti-Islanding	Frequency Shift	
Method	Trequency Office	
General Data		
Dimensions (W x H x D)	370 mm x 480 mm x 195 mm	
Weight	18 kg	
Mounting method	Wall-mounting bracket	
Topology	Transformerless	
Degree of protection	IP65	
Night power consumption	<6W	
Corrosion	C5	
Operating ambient temper-	-25°C to +60°C(AU: Derating when the temperature ex-	
ature range	ceeds 40°C)	
Allowable relative humidity	0–100 %	
range (non-condensing)	0-100 /6	
Cooling method	Natural cooling	
Max. operating altitude	4000 m	
Display	LED	
Communication	WLAN / Ethernet / RS485 / DI / DO	
DC connection type	MC4 (Max. 6 mm ²)	
AC connection type	Plug and play	
	IEC / EN 61000-6-1/2/3/4, IEC 61000-3-2/3/11/12, IEC /	
Grid Compliance	EN62109-1/2, IEC 61727, IEC 62116, IEC 61683, IEC	
	60068-2-1/2/14/30/64/27,IEC TS 62910 , EN50530, AS/	
	NZS 4777.2:2020, VDE-AR-N-4105, DIN VDE0126-1-1/A1	
	EN50549-1, DEWA, VFR 2019, UTE C15-712-1, PSE NC	
	RfG, UNE 206006/7 IN, MEA/PEA, G98, UNE	
	217002:2020, NTS V2 TypeA	
	IEC 62109-1/2, AS/NZS 4777.2:2020	

Parameter	SG5.0RT	SG6.0RT	
Grid Support	LVRT, HVRT,active & reactive power control and power		
	ramp rate control		
Country of manufacture	China		
(AU)			

- (1) The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. If the maximum DC voltage in the system can exceed 1,000 V, the MC4 connectors included in the scope of delivery must not be used. In this case MC4-Evo2 connectors must be used.
- (2) Please note the min. voltage without MPP tracker derating is 303V (+5%) for SG10/15/20RT and 236V(+5%) for SG5.0/7.0/8.0RT @AC230V 12.5A.
- (3) Input voltage exceeding the MPPT operating voltage range triggers inverter protection.
- (4) Please refer to the user manual for the full load MPPT voltage range.
- (5) Not applicable to the MENA region. For details on the MENA region, please refer to the TI document and contact Sungrow for more information.

Parameter	SG7.0RT	SG8.0RT	
Input (DC)			
Recommended max. PV in-	10 5 k/Mp	12 kWn	
put power	10.5 kWp	12 kWp	
Max. PV input voltage(3)	11	00 V (1)	
Min. PV input voltage /	400	V / 400 V	
Start-up input voltage	180	V / 180 V	
Rated input voltage	(600 V	
MPPT operating voltage	400 \	/-1000 V ⁽²⁾	
range ⁽⁴⁾	160 V	7—1000 V(2)	
MPP voltage range for	260V-850V ⁽⁵⁾	310V - 850V ⁽⁵⁾	
rated power	2007-0007(0)	3100 - 0300(9)	
No. of independent MPP	•		
inputs		2	
No. of PV strings per MPPT		2/1	
Max. PV input current	48 A (32 A / 16 A) for "A	AU", 37.5 A (25 A / 12.5 A) for	
Max. Pv Input current	(others	
Max. DC short-circuit	60 A (40 A / 20 A) for "AU	J", 48 A (32 A / 16 A) for others	
current		, , , , , , , , , , , , , , , , , , , ,	
Max. current for DC		30 A	
connector	JU A		
Output (AC)			
Nominal AC power (@ 230	6999 W for "AU", 7000 W	8000 W	
V, 50 Hz)	for others		

Parameter	SG7.0RT	SG8.0RT	
	6999 VA for "AU", 7000 VA		
Max. AC output power	for "BE", "DE", 7700 VA for	8000 VA for "AU", "BE",	
	others	"DE", 8800 VA for others	
Poted AC quitaut apparent	6999 VA for "AU", 7000 VA	8000 VA for "AU", "BE",	
Rated AC output apparent	for "BE", "DE", 7700 VA for	"DE", 8800 VA for others	
power	others	DL , 0000 VA for others	
Max. AC output current	10.6 A for "AU", 11.7 A for	12.2 A for "AU", 13.3 A for	
- <u> </u>	others	others	
Rated AC output current(at	10.1 A	11.6 A	
230V)	2/11/25		
-	·	20 V / 380 V	
Rated AC voltage	,	30 V / 400 V	
AC voltage reserve	•	40 V / 415 V / 311 V–478 V	
AC voltage range			
Rated grid frequency		/ 60 Hz	
Grid frequency range		/ 55 Hz–65 Hz	
Harmonic (THD)	< 3 % (at ra	ated power)	
Power factor at Rated			
power / Adjustable power	> 0.99 / 0.8 lead	ing – 0.8 lagging	
factor			
Feed-in phases / connec-	3 / 3–PE		
tion phases			
Efficiency			
Max. efficiency	98.40 %	98.50 %	
European efficiency	97.70 %	97.80 %	
Protection & Function			
Grid monitoring	Ye	es	
DC reverse connection	V	es	
protection	10	2 5	
AC short-circuit protection	Yes		
Leakage current protection	Ye	es	
Surge Protection	DC Type II / AC Type II		
Ground fault monitoring	Yes		
DC switch	optional ⁽³⁾		
PV String current	Yes		
monitoring			
Arc fault circuit interrupter	4:	anal	
(AFCI)	optional		
PID recovery function	Yes		

Parameter	SG7.0RT SG8.0RT	
Protective Class	I	
Overvoltage Category	DC II/AC III	
Active Anti-Islanding	Frequency Shift	
Method		
General Data		
Dimensions (W x H x D)	370 mm x 480 mm x 195 mm	
Weight	18 kg	
Mounting method	Wall-mounting bracket	
Topology	Transformerless	
Degree of protection	IP65	
Night power consumption	<6W	
Corrosion	C5	
Operating ambient temper-	-25°C to +60°C(AU: Derating when the temperature ex-	
ature range	ceeds 40°C)	
Allowable relative humidity	0.400.0/	
range (non-condensing)	0–100 %	
Cooling method	Natural cooling	
Max. operating altitude	4000 m	
Max. operating altitude	4000 m (> 2000 m derating)	
Display	LED	
Communication	WLAN / Ethernet / RS485 / DI / DO	
DC connection type	MC4 (Max. 6 mm ²)	
AC connection type	Plug and play	
	IEC / EN 61000-6-1/2/3/4, IEC 61000-3-2/3/11/12, IEC /	
	EN62109-1/2, IEC 61727, IEC 62116, IEC 61683, IEC	
	60068-2-1/2/14/30/64/27,IEC TS 62910, EN50530, AS/	
Grid Compliance	NZS 4777.2:2020, VDE-AR-N-4105, DIN VDE0126-1-1/A1,	
	EN50549-1, DEWA, VFR 2019, UTE C15-712-1, PSE NC	
	RfG, UNE 206006/7 IN, MEA/PEA, G98, UNE	
	217002:2020, NTS V2 TypeA	
Compliance(AU)	IEC 62109-1/2, AS/NZS 4777.2:2020	
Grid Support	LVRT, HVRT,active & reactive power control and power	
	ramp rate control	
Country of manufacture	China	
(AU)		

(1) The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. If the maximum DC voltage in the system can exceed 1,000 V, the MC4 connectors included in the scope of delivery must not be used. In this case MC4-Evo2 connectors must be used.

(2) Please note the min. voltage without MPP tracker derating is 303V (+5%) for SG10/15/20RT and 236V(+5%) for SG5.0/7.0/8.0RT @AC230V 12.5A.

- (3) Input voltage exceeding the MPPT operating voltage range triggers inverter protection.
- (4) Please refer to the user manual for the full load MPPT voltage range.
- (5) Not applicable to the MENA region. For details on the MENA region, please refer to the TI document and contact Sungrow for more information.

Parameter	SG10RT	SG12RT	
Input (DC)			
Recommended max. PV in-	15.0 kWp	18.0 kWp	
put power	13.0 KVVP	10.0 κννρ	
Max. PV input voltage(3)	1100	V (1)	
Min. PV input voltage /	400 \ / /	400.1/	
Start-up input voltage	180 V /	180 V	
Rated input voltage	600) V	
MPPT operating voltage	160 V–1	000 V(2)	
range ⁽⁴⁾			
MPP voltage range for	320 V - 850 V(5)	400 V – 850 V ⁽⁵⁾	
rated power			
No. of independent MPP	2)	
inputs	2	1	
No. of PV strings per MPPT	2/	1	
Max. PV input current	48 A (32 A / 16 A) for "AU" , 37.5 A (25 A / 12.5 A) for others		
Max. DC short-circuit			
current	60 A (40 A / 20 A) for "AU",	48 A (32 A / 16 A) for others	
Max. current for DC	30	۸	
connector	30	Α	
Output (AC)			
Rated AC power	9999 W for "AU",10000 W	12000 W	
	for others		
Max. AC output apparent	10000 VA "BE", "DE",9999	12000 VA for "AU", "BE",	
power	VA for "AU",11000 VA for	"DE", 13200 VA for others	
	others 10000 VA for "BE", "DE",		
Rated AC output apparent power	9999 VA for "AU", 11000 VA	12000 VA for "AU", "BE",	
	for others	"DE", 13200 VA for others	
Mary AO autout aussa (15.2 A for "AU", 16 A for	18.2 A for "AU", 20.0 A for	
Max. AC output current	"JO", 16.7 A for others	others	
Rated AC output current(at 230V)	14.5 A	17.4 A	

Parameter	SG10RT SG12RT	
	3 / N / PE, 220 V / 380 V	
Rated AC voltage	3 / N / PE, 230 V / 400 V	
	3 / N / PE, 240 V / 415 V	
AC voltage range	180 V-276 V / 311 V-478 V	
Rated grid frequency	50 Hz / 60 Hz	
Grid frequency range	45 Hz–55 Hz / 55 Hz–65 Hz	
Harmonic (THD)	< 3 % (at rated power)	
Power factor at Rated		
power / Adjustable power	> 0.99 / 0.8 leading–0.8 lagging	
factor		
Feed-in phases / Connec-	3/3–PE	
tion phases	3/3-FE	
Efficiency		
Max. efficiency	98.50 %	
European efficiency	97.90 %	
Protection & Function		
Grid monitoring	Yes	
DC reverse connection		
protection	Yes	
AC short circuit protection	Yes	
Leakage current protection	Yes	
Surge Protection	DC Type II / AC Type II	
Ground fault monitoring	Yes	
DC switch	Yes	
PV String current	Yes	
monitoring		
Arc fault circuit interrupter	oution al	
(AFCI)	optional	
PID recovery function	Yes	
Protective Class	1	
Overvoltage Category	DC II/AC III	
Active Anti-Islanding	Frequency Shift	
Method		
General Data	070	
Dimensions (W x H x D)	370 mm x 480 mm x 195 mm	
Weight	18 kg	
Mounting method	Wall-mounting bracket	
Topology	Transformerless	

Parameter	SG10RT SG12RT	
Degree of protection	IP65	
Night power consumption	<6W	
Corrosion	C5	
Operating ambient temper-	-25°C to +60°C(AU: Derating when the temperature ex-	
ature range	ceeds 40°C)	
Allowable relative humidity	0–100 %	
range (non-condensing)	0-100 /6	
Cooling method	Natural cooling	
Max. operating altitude	4000 m	
Cooling method	Natural cooling	
Display	LED	
Communication	WLAN / Ethernet / RS485 / DI / DO	
DC connection type	MC4 (Max. 6 mm²)	
AC connection type	Plug and play	
	IEC / EN 61000-6-1/2/3/4, IEC 61000-3-2/3/11/12, IEC /	
	EN62109-1/2, IEC 61727, IEC 62116, IEC 61683, IEC	
	60068-2-1/2/14/30/64/27,IEC TS 62910 , EN50530, AS/	
Grid Compliance	NZS 4777.2:2020, VDE-AR-N-4105, DIN VDE0126-1-1/A1,	
	EN50549-1, DEWA, VFR 2019, UTE C15-712-1, PSE NC	
	RfG, UNE 206006/7 IN, MEA/PEA, G98, UNE	
	217002:2020, NTS V2 TypeA	
Compliance(AU)	IEC 62109-1/2, AS/NZS 4777.2:2020	
Grid Support	LVRT, HVRT,active & reactive power control and power	
	ramp rate control	
Country of manufacture	China	

- (1) The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. If the maximum DC voltage in the system can exceed 1,000 V, the MC4 connectors included in the scope of delivery must not be used. In this case MC4-Evo2 connectors must be used.
- (2) Please note the min. voltage without MPP tracker derating is 303V (+5%) for SG10/15/20RT and 236V(+5%) for SG5.0/7.0/8.0RT @AC230V 12.5A.
- (3) Input voltage exceeding the MPPT operating voltage range triggers inverter protection.
- (4) Please refer to the user manual for the full load MPPT voltage range.
- (5) Not applicable to the MENA region. For details on the MENA region, please refer to the TI document and contact Sungrow for more information.

Name	Parameter	SG15RT	SG17RT	SG20RT
Max. PV input voltage Start-up input volta	Input (DC)			
Max. PV input voltage Start-up input voltage Start-up input voltage Start-up input voltage Start-up input voltage Rated input voltage Start-up input voltage	Recommended max. PV in-	22.5 k\\/n	25.5 kWn	30.0 kWp
Min. PV input voltage / Start-up input voltage Rated input voltage Family Rated input voltage Rated AC output current Ra	put power	22.3 KVVP	25.5 KVVP	30.0 KVVP
Start-up input voltage 180 V / 180 V Rated input voltage 600 V MPPT operating voltage range(4) 160 V – 1000 V(2) MPP voltage range for rated power 380V – 850V(6) 365V – 850V(6) 430V – 850V(6) No. of independent MPP inputs 2 2 No. of PV strings per MPPT 2 / 2 4 (25 A / 25 A) for others Max. PV input current 64 A (32 A / 32 A) for "AU", 50 A (25 A / 25 A) for others 30 A Max. DC short-circuit current 80 A (40 A / 40 A) for "AU", 64 A (32 A / 32 A) for others 30 A Max. AC current for DC connector 30 A 20000 W Output (AC) 15000 W for "AU", "BE", "DE", "AU"	Max. PV input voltage(3)	1100 V (1)		
Start-up input voltage 600 V MPPT operating voltage range(4) 160 V-1000 V(2) MPP voltage range for rated power 380V – 850V(6) 365V – 850V(6) 430V – 850V(6) No. of independent MPP inputs 2 / 2 More of PV strings per MPPT 2 / 2 Max. PV input current 64 A (32 A / 32 A) for "AU", 50 A (25 A / 25 A) for others Max. PV input current 80 A (40 A / 40 A) for "AU", 50 A (25 A / 32 A) for others Max. DC short-circuit current 80 A (40 A / 40 A) for "AU", 64 A (32 A / 32 A) for others Max. AC power 15000 W 17000 W 20000 W Max. AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for "AU", 25 A for others 18700 VA for "AU", 30.3 A for "AU", 25 A for others Max. AC output current (at 22.7 A for "AU", 25 A for others 22.7 A for "AU", 25.8 A for "AU", 30.3 A for "AU", 25.8 A for "AU", 30.3 A for "AU"	Min. PV input voltage /		400 \ / / 400 \ /	
MPPT operating voltage range(4) MPP voltage range for rated power No. of independent MPP inputs No. of PV strings per MPPT Max. PV input current Max. DC short-circuit current Max. DC short-circuit Current Max. Current for DC Connector Output (AC) Rated AC power Max. AC output apparent power Rated AC output apparent power Max. AC output current(at 22.7 A for "AU", 25.8 A for "AU", 30.3 A for "AU", 31.9 A for others others others others Max. AC output current(at 21.7 A 24.6 A 29 A 3/N/PE, 220 V / 380 V Rated AC voltage 3/N/PE, 230 V / 400 V 3/N/PE, 240 V / 415 V AC voltage range	Start-up input voltage		180 V / 180 V	
MPP voltage range for rated power 380V - 850V(6) 365V - 850V(6) 430V - 850V(6) 1430V - 850V(Rated input voltage		600 V	
MPP voltage range for rated power 380V – 850V(6) 365V – 850V(6) 430V – 850V(6) No. of independent MPP inputs 2 No. of PV strings per MPPT 2 / 2 Max. PV input current 64 A (32 A / 32 A) for "AU", 50 A (25 A / 25 A) for others Max. DC short-circuit current 80 A (40 A / 40 A) for "AU", 64 A (32 A / 32 A) for others Max. DC short-circuit current for DC connector 30 A Connector 30 A Max. AC power 15000 W 17000 W 20000 W Max. AC output apparent power 15000 VA for "AU", "BE", "DE", "AU", "BE", "DE", "AU", "BE", "DE", "AU", "BE", "DE", "BE", "D	MPPT operating voltage		160 V-1000 V(2)	
No. of independent MPP inputs 2 2	range ⁽⁴⁾			
No. of independent MPP inputs	MPP voltage range for	290\/ 950\/(6)	2651/ 9501/(6)	4201/ 9501/(6)
No. of PV strings per MPPT	rated power	3600 - 6300(*)	303 V = 630 V (*)	4300 - 63000
No. of PV strings per MPPT	No. of independent MPP		2	
Max. PV input current 64 A (32 A / 32 A) for "AU", 50 A (25 A / 25 A) for others Max. DC short-circuit current 80 A (40 A / 40 A) for "AU", 64 A (32 A / 32 A) for others Max. current for DC connector 30 A Output (AC) Rated AC power 15000 W 17000 W 20000 W Max. AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", "AU", "BE", "DE", 18700 VA for others 22000 VA for others Rated AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for "AU", "BE", "DE", 16500 VA for others 17000 VA for 20000 VA for others 20000 VA for Others Max. AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others 18700 VA for 20000 VA for Others 20000 VA for Others Max. AC output current 22.7 A for "AU", 25.8 A for "AU", 25.8 A for "AU", 30.3 A for "AU", 25.8 A for others 31.9 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V	inputs		2	
Max. DC short-circuit current 80 A (40 A / 40 A) for "AU", 64 A (32 A / 32 A) for others Max. current for DC connector 30 A Output (AC) Rated AC power 15000 W 17000 W 20000 W Max. AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16500 VA for "AU", "BE", "DE", 16500 VA for others 15000 VA for "AU", "BE", "DE", 16500 VA for "AU", "BE", "DE", "DE", 16500 VA for others 17000 VA for "AU", "BE", "DE", "AU", "BE", "DE", "DE", 18700 VA for others 20000 VA for "AU", "BE", "DE", 18700 VA for others 3180 V - 26 A for "AU", 25 A for others 31.9 A for others Max. AC output current (at 230V) 22.7 A for "AU", 25 A for others 24.6 A 29 A Rated AC output current(at 230V) 23 / N / PE, 220 V / 380 V 29 A AC voltage range 3 / N / PE, 240 V / 415 V	No. of PV strings per MPPT		2/2	
Max. current for DC 30 A	Max. PV input current	64 A (32 A / 32 A)	for "AU" , 50 A (25 A	/ 25 A) for others
current Max. current for DC connector 30 A Output (AC) Rated AC power 15000 W 17000 W 20000 WA for Wall (AU), "BE", "DE", 16500 WA for "AU", "BE", "DE", 16500 WA for others power 15000 VA for "AU", "BE", "DE", 16500 WA for others 17000 VA for "AU", "BE", "DE", 18700 VA for wall", 18700 VA for wall", 18700 VA for others 20000 VA for wall", 18700 VA for w	Max. DC short-circuit	90 A (40 A / 40 A)	for "All" 64 A (22 A	/22 A) for others
Connector Output (AC) Rated AC power 15000 W 17000 W 20000 W Max. AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16500 others "AU", "BE", "DE", 16500 others 18700 VA for 20000 VA for others Rated AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16500 others "AU", "BE", "DE", 18700 VA for others 20000 VA for "AU", "BE", "DE", 18700 VA for others 22000 VA for others 22000 VA for others 318700 VA for others 22000 VA for others	current	60 A (40 A / 40 A)	101 AU , 64 A (32 A	/ 32 A) for others
Connector Output (AC) Rated AC power 15000 W 17000 W 20000 W Max. AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 18700 VA for others 22000 VA for others Rated AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", "DE", "AU", "BE", "DE", 18700 VA for others "AU", "BE", "DE", "DE", 18700 VA for others 22000 VA for others Max. AC output current 22.7 A for "AU", 25.8 A for "AU", 25.8 A for "AU", 30.3 A for "AU", 30.3 A for "AU", 25.8 A for others 31.9 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A 29 A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V – 276 V / 311 V – 478 V	Max. current for DC		30 Δ	
Rated AC power 15000 W 17000 W 20000 W Max. AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others 18700 VA for 22000 VA for "AU", 18700 VA for 22000 VA for others 18700 VA for 22000 VA for 22000 VA for 22000 VA for others Rated AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for 000 VA	connector		30 A	
Max. AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16500 thers "AU", "BE", "DE", 18700 VA for 22000 VA for others Rated AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others 17000 VA for 20000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16500 thers "AU", "BE", "DE", 18700 VA for 22000 VA for 0thers Max. AC output current 22.7 A for "AU", 25.8 A for "AU", 30.3 A for "AU", 25.8 A for others 30.3 A for "AU", 30.3 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V – 276 V / 311 V – 478 V	Output (AC)			
Max. AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16700 VA for others "AU", "BE", "DE", 18700 VA for others 22000 VA for others Rated AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others 17000 VA for "AU", "BE", "DE", 18700 VA for others "AU", "BE", "DE", 18700 VA for others "AU", "BE", "DE", 18700 VA for others 22000 VA for others Max. AC output current 22.7 A for "AU", 25.8 A for "AU", 25.8 A for "AU", 30.3 A for "AU", 25.8 A for others 31.9 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V -478 V	Rated AC power	15000 W	17000 W	20000 W
Max. AC output apparent power "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16500 others "AU", "BE", "DE", 22000 VA for others Rated AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others 17000 VA for "AU", "BE", "DE", "AU", "BE", "DE", 18700 VA for others "AU", "BE", "DE", 18700 VA for others 22000 VA for "AU", 25.8 A for "AU", 30.3 A for "AU", 30.3 A for "AU", 25.8 A for others Max. AC output current 22.7 A for "AU", 25.8 A for others 31.9 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V AC voltage range 180 V – 276 V / 311 V – 478 V		15000 VA for "AU".		
Power VA for others 18700 VA for 22000 VA for others others Others others 15000 VA for "AU", "BE", "DE", 16500 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 1650" TAU", 18700 VA for others 22000 VA for 22000 VA for others Max. AC output current 22.7 A for "AU", 25.8 A for "AU", 25.8 A for others 30.3 A for "AU", 30.3 A for "AU", 31.9 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A SAMARIA DE ACTION DE	Max. AC output apparent	"BE", "DE", 16500		
Rated AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16500 18700 VA for others "AU", "BE", "DE", 16500 18700 VA for others 22000 VA for 22000 VA for others Max. AC output current 22.7 A for "AU", 25.8 A for "AU", 25.8 A for "AU", 30.3 A for "AU", 25 A for others 31.9 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V – 276 V / 311 V – 478 V	power		18700 VA for	22000 VA for
Rated AC output apparent power 15000 VA for "AU", "BE", "DE", 16500 VA for others "AU", "BE", "DE", 16500 others "AU", "BE", "DE", 18700 VA for 22000 VA for others Max. AC output current 22.7 A for "AU", 25.8 A for "AU", 25.8 A for others 30.3 A for "AU", 30.3 A for "AU", 31.9 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V				
BE", "DE", 16500 18700 VA for 22000 VA for others others others	Detect AC evitavit engagement	15000 VA for "AU",		
VA for others others others Max. AC output current 22.7 A for "AU", 25.8 A for "AU", 30.3 A for "AU", 31.9 A for others Rated AC output current(at 230V) 24.6 A 29 A Rated AC voltage 3/N/PE, 220 V / 380 V 3/N/PE, 230 V / 400 V 3/N/PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V		"BE", "DE", 16500		
Max. AC output current 22.7 A for "AU", 25.8 A for "AU", 30.3 A for "AU", 25 A for others 28.3 A for others 31.9 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A 3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V / 37 N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V	power	VA for others		
Max. AC output current 25 A for others 28.3 A for others 31.9 A for others Rated AC output current(at 230V) 21.7 A 24.6 A 29 A Rated AC voltage 3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V		22.7 A for "AU".		
Rated AC output current(at 21.7 A 24.6 A 29 A 3/ N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage 180 V – 276 V / 311 V – 478 V	Max. AC output current		•	•
230V) Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V – 276 V / 311 V – 478 V	Rated AC output current(at			
Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V-276 V / 311 V-478 V	230V)		24.6 A	29 A
3 / N / PE, 240 V / 415 V AC voltage range 180 V–276 V / 311 V–478 V		3 / N / PE, 220 V / 380 V		
AC voltage range 180 V-276 V / 311 V-478 V	Rated AC voltage			
To the total desired				
Rated grid frequency 50 Hz / 60 Hz	AC voltage range			
	Rated grid frequency	50 Hz / 60 Hz		

Parameter	SG15RT SG17RT SG20RT			
Grid frequency range	45 Hz–55 Hz / 55 Hz–65 Hz			
Harmonic (THD)	<3 % (at rated power)			
Power factor at Rated				
power / Adjustable power	> 0.99 / 0.8 leading-0.8 lagging			
factor				
Feed-in phases / Connec-	2 / 2 PE			
tion phases	3 / 3-PE			
Efficiency				
Max. efficiency	98.50 %			
European efficiency	98.10 %			
Protection & Function				
Grid monitoring	Yes			
DC reverse connection	Yes			
protection				
AC short-circuit protection	Yes			
Leakage current protection	Yes			
Surge Protection	DC Type II / AC Type II			
Ground fault monitoring	Yes			
DC switch	Yes			
PV String current	Yes			
monitoring				
Arc fault circuit interrupter				
(AFCI)	optional			
PID recovery function	Yes			
Protective Class	I.			
Overvoltage Category	DC II/AC III			
Active Anti-Islanding				
Method	Frequency Shift			
General Data				
Dimensions (W x H x D)	370 mm x 480 mm x 195 mm			
Mounting method	Wall-mounting bracket			
Weight	21 kg			
Topology	Transformerless			
Degree of protection	IP65			
Night power consumption	<6W			
Corrosion	C5			
Operating ambient temper-	-25°C to +60°C(AU: Derating when the temperature ex-			
ature range	ceeds 40°C)			

Parameter	SG15RT	SG17RT	SG20RT		
Allowable relative humidity	0–100 %				
range (non-condensing)	0-100 %				
Cooling method		Smart forced air c	ooling		
Max. operating altitude		4000 m			
Display		LED			
Communication	W	LAN / Ethernet / RS48	85 / DI / DO		
DC connection type		MC4 (Max. 6 m	m ²)		
AC connection type		Plug and play	У		
	IEC / EN 610	000-6-1/2/3/4, IEC 610	000-3-2/3/11/12, IEC /		
	EN62109-1/	/2, IEC 61727, IEC 62	2116, IEC 61683, IEC		
	60068-2-1/2/14/30/64/27,IEC TS 62910 , EN50530, AS/				
Grid Compliance	NZS 4777.2:2020, VDE-AR-N-4105, DIN VDE0126-1-1/A1,				
	EN50549-1, DEWA, VFR 2019, UTE C15-712-1, PSE NC				
	RfG, UNE 206006/7 IN, MEA/PEA, G98, UNE				
	/2 TypeA				
	IEC / EN 610	000-6-1/2/3/4, IEC 610	000-3-2/3/11/12, IEC /		
	EN62109-1/2, IEC 61727, IEC 62116, IEC 61683, IEC				
	60068-2-1/2/14/30/64/27,IEC TS 62910 , EN50530, AS/				
Compliance(AU)	NZS 4777.2:2020, VDE-AR-N-4105, DIN VDE0126-1-1/A1,				
	EN50549-1, DEWA, VFR 2019, UTE C15-712-1, PSE NC				
	RfG, NTS 2.0, UNE 206006/7 IN, UNE 217002, MEA/PEA,				
	G98				
Grid Support	LVRT, HVRT,active & reactive power control and power				
	ramp rate control				
Country of manufacture		China			

- (1) The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. If the maximum DC voltage in the system can exceed 1,000 V, the MC4 connectors included in the scope of delivery must not be used. In this case MC4-Evo2 connectors must be used.
- (2) Please note the min. voltage without MPP tracker derating is 303V (+5%) for SG10/15/20RT and 236V(+5%) for SG5.0/7.0/8.0RT @AC230V 12.5A.
- (4) Input voltage exceeding the MPPT operating voltage range triggers inverter protection.
- (5) Please refer to the user manual for the full load MPPT voltage range.
- (6) Not applicable to the MENA region. For details on the MENA region, please refer to the TI document and contact Sungrow for more information.

Parameter	SG5.0RT-P2	SG6.0RT-P2	
Input (DC)			
Recommended max. PV in-	7.5 kWp ⁽¹⁾	9.0 kWp ⁽²⁾	
put power	7.0 KVVp()	3.0 KVVP(/	

Parameter	SG5.0RT-P2	SG6.0RT-P2
Max. PV input voltage(5)	1100 V ⁽³⁾	
Min. PV input voltage /	180 V / 180 V for "AU", 160 V / 180 V for others	
Start-up input voltage	100 17 100 1 101 710 ,	100 7 100 7 101 011013
Rated input voltage	60	0 V
MPPT operating voltage	160 V–1	1000 V ⁽⁴⁾
range ⁽⁶⁾		
MPP voltage range for	260V-850V ⁽⁸⁾	320V - 850V(8)
rated power		
No. of independent MPP	2	2
trackers		
No. of of PV strings per	1.	/ 1
MPPT	32 Δ (16	A / 16 A)
Max. PV input current	02 A (10	
Max. DC short-circuit	40 A (20	A / 20 A)
Current (AC)		
Output (AC)	5000 W	6000 W
Rated AC output power	5000 W 5000 VA for "AU", "BE",	6000 W 6000 VA for "AU", "BE",
Max. AC output apparent	"DE", 5500 VA for others	"DE", 6600 VA for others
power	·	
Rated AC output apparent	5000 VA for "AU", "BE",	6000 VA for "AU", "BE",
power	"DE", 5500 VA for others	"DE", 6600 VA for others
Max. AC output current	7.6 A for "AU", 8.3 A for others	10 A
Rated AC output current(at	7.2 A	
230V)(AU)		1
/(- /	3 / N / PE, 2	20 V / 380 V
Rated AC voltage	3 / N / PE, 2	30 V / 400 V
	3 / N / PE, 2	40 V / 415 V
AC voltage range	180 V – 276 V / 311 V - 478 \	/ for "AU", 175 V–276 V / 304
		for others
Rated grid frequency / Grid	•	Hz–55 Hz)
frequency range	60 Hz / (55 Hz–65 Hz)	
Harmonic (THD)	< 3 % (at rated power)	
Power factor at nominal		
power / Adjustable power	> 0.99 / 0.8 leading – 0.8 lagging	
factor		
Feed-in phases / connec-	3 / 3-PE	
tion phases	-	
Efficiency		

Parameter	SG5.0RT-P2	SG6.0RT-P2	
Max. efficiency	98.30 %	98.30 %	
European efficiency	97.20 %	97.40 %	
Protection & Function			
Grid monitoring		Yes	
DC reverse connection			
protection		Yes	
AC short-circuit protection		Yes	
Leakage current protection		Yes	
Surge Protection	DC Ty	ype II / AC Type II	
DC switch		Yes	
Arc fault circuit interrupter			
(AFCI)		Yes	
PID recovery function		Yes	
Optimizer compatbility ⁽⁷⁾		Optional	
Protective Class		1	
Overvoltage Category		DC II/AC III	
Active Anti-Islanding	Er	raguanay Shift	
Method	ГІ	requency Shift	
General Data			
Dimensions (W x H x D)	370 mm	370 mm x 480 mm x 195 mm	
Weight	18 kg		
Mounting method	Wall-	mounting bracket	
Topology	Tra	ansformerless	
Degree of protection	IP65		
Night power consumption	1 W		
(IN)			
Corrosion(AU)		C5	
Operating ambient temper-	-25°C to +60°C(AU: D	erating when the temperature ex-	
ature range		ceeds 40°C)	
Allowable relative humidity		0.1009/	
range (non-condensing)		0–100 %	
Max. operating altitude	4000 m		
Cooling method	Natural cooling		
Display	LED		
Communication	WLAN / Ethernet / RS485 / DI / DO		
DC connection type	MC4 (Max. 6 mm²)/ MC4 Compatible Connector(Max. 6 mm²)		
AC connection type	Plug and play		

Parameter	SG5.0RT-P2	SG6.0RT-P2	
	IEC / EN 61000-6-1/2/	3/4, IEC 61000-3-2/3/11/12, IEC /	
	EN62109-1/2, IEC 61	EN62109-1/2, IEC 61727, IEC 62116, IEC 61683, IEC	
	60068-2-1/2/14/30/64/	27,IEC TS 62910 , EN50530, AS/	
Grid Compliance	NZS 4777.2:2020, VDE	-AR-N-4105, DIN VDE0126-1-1/A1,	
	EN50549-1, DEWA, VF	R 2019, UTE C15-712-1, PSE NC	
	RfG, NTS 2.0, UNE 206	6006/7 IN, UNE 217002, MEA/PEA,	
		G98	
Grid Compliance(AU)	IEC 62109-1/2, AS/NZS 4777.2: 2020		
	PORTARIA Nº 140, DE	21 DE MARÇO DE 2022, EC/EN	
	62109-1/-2, IEC/EN 61	000-6-1/-2/-3/-4 EMC, IEC 61727,	
Grid Compliance(IN)	IEC 62116, IEC 61683	, EN 50530, IEC 60068-1/-2/-14/-	
	27/-30/-64, IEC 61000-3-2:2006 IEC/ EN - 61000-3-12,		
	IEC 60529 IP		
Country of manufacture	China		

- (1) The max. output power per MPPT is 5.5kW.
- (2) The max. output power per MPPT is 6.6kW.
- (3) The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. If the maximum DC voltage in the system can exceed 1,000 V, the MC4 connectors included in the scope of delivery must not be used. In this case MC4-Evo2 connectors must be used.
- (4) Please note the min. voltage without MPP tracker derating is 303V (+5%) for SG10/15/20RT-P2 and 236V(+5%) for SG5.0/7.0/8.0RT-P2 @AC230V 12.5A.
- (5) Input voltage exceeding the MPPT operating voltage range triggers inverter protection.
- (6) Please refer to the user manual for the full load MPPT voltage range.
- (7) For optimizer compatbility, please consult Sungrow before placing an order.
- (8) Not applicable to the MENA region. For details on the MENA region, please refer to the TI document and contact Sungrow for more information.

Parameter	SG7.0RT-P2	SG8.0RT-P2	
Input (DC)			
Recommended max. PV in-	10.5 kWp ⁽¹⁾	12 kWp ⁽²⁾	
put power	10.5 κννρι	12 ΚΨΡ	
Max. PV input voltage ⁽⁵⁾	11	100 V (3)	
Min. PV input voltage /	190 \/ / 190 \/ for "ALI" 160 \/ / 190 \/ for others		
Start-up input voltage	180 V / 180 V for "AU", 160 V / 180 V for others		
Rated input voltage	600 V		
MPPT operating voltage	160 V-1000 V ⁽⁴⁾		
range ⁽⁶⁾	100 V-1000 V		
MPP voltage range for	260V-850V ⁽⁸⁾	310V - 850V(8)	
rated power	200 V-030 V	310V - 830V(8)	

Max. AC output current others others Rated AC output current(at 230V)(AU) 10.1 A 11.6 A 3 / N / PE, 220 V / 380 V A / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V for "AU", 175 V - 276 V / 304 V - 478 V for others Rated grid frequency / Grid frequency / Grid frequency range 50 Hz / (45 Hz - 55 Hz) Harmonic (THD) < 3 % (at rated power) Power factor at nominal power / Adjustable power factor > 0.99 / 0.8 leading - 0.8 lagging factor 3 / 3 - PE Efficiency Max. efficiency 98.30 % European efficiency 97.60 % 97.70 % Protection & Function Grid monitoring Yes DC reverse connection Yes	Parameter	SG7.0RT-P2 SG8.0RT-P2		
Trackers No. of PV strings per MPPT 2 / 1	No. of independent MPP			
Max. PV input current 48 A (32 A / 16 A) Max. DC short-circuit current 60 A (40 A / 20 A) Output (AC) Rated AC output power power 6999 W for "AU", 7000 W for others 8000 W Max. AC output apparent power 6999 W for "AU", 7000 VA for others "DE", 8800 VA for others Rated AC output apparent power 6999 VA for "AU", 7000 VA for others 8000 VA for "AU", "BE", "DE", 7700 VA for others Max. AC output current power 6999 VA for "AU", 11.7 A for others 12.2 A for "AU", 13.3 A for others Max. AC output current power 10.6 A for "AU", 11.7 A for others 12.2 A for "AU", 13.3 A for others Rated AC output current(at 230V)(AU) 11.6 A 11.6 A Rated AC voltage 3 / N / PE, 220 V / 380 V 11.6 A Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V for "AU", 175 V - 276 V / 304 V - 478 V for others Rated grid frequency / Grid frequency range 60 Hz / (45 Hz - 55 Hz) Harmonic (THD) < 3 % (at rated power)	trackers	2		
Max. DC short-circuit current 60 A (40 A / 20 A) Output (AC) Rated AC output power 6999 W for "AU", 7000 W for others 8000 W Max. AC output apparent power 6999 VA for "AU", 7000 VA for others 8000 VA for "AU", "BE", "DE", 8800 VA for others Rated AC output apparent power 6999 VA for "AU", 7000 VA for others 8000 VA for "AU", "BE", "DE", 8800 VA for others Max. AC output current power 6999 VA for "AU", 7000 VA for others 10.6 A for "AU", 11.7 A for others 12.2 A for "AU", 13.3 A for others Max. AC output current power 10.6 A for "AU", 11.7 A for others 12.2 A for "AU", 13.3 A for others Rated AC output current(at 230V)(AU) 3 / N / PE, 220 V / 380 V 11.6 A Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V for "AU", 175 V - 276 V / 304 V - 478 V for others Rated grid frequency / Grid frequency range 60 Hz / (45 Hz - 65 Hz) Harmonic (THD) < 3 % (at rated power)	No. of PV strings per MPPT	21	<i>'</i> 1	
Current Output (AC) Rated AC output power 6999 W for "AU", 7000 W for others 8000 W Max. AC output apparent power 6999 VA for "AU", 7000 VA for others 8000 VA for "AU", "BE", "DE", 8800 VA for others Rated AC output apparent power 6999 VA for "AU", 7000 VA for others 8000 VA for "AU", "BE", "DE", 8800 VA for others Max. AC output current for "BE", "DE", 7700 VA for others "DE", 8800 VA for others Max. AC output current 10.6 A for "AU", 11.7 A for others 12.2 A for "AU", 13.3 A for others Rated AC output current(at 230V)(AU) 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V AC voltage range 180 V - 276 V / 311 V - 478 V for "AU", 175 V - 276 V / 304 V - 478 V for others Rated grid frequency / Grid frequency / Grid frequency range 50 Hz / (45 Hz - 55 Hz) Harmonic (THD) < 3 % (at rated power)	Max. PV input current	48 A (32	A / 16 A)	
Cutrent Output (AC) Rated AC output power 6999 W for "AU", 7000 W for others 8000 W Max. AC output apparent power 6999 W for "AU", 7000 VA for "DE", 7700 VA for others 8000 VA for "AU", "BE", "DE", 7700 VA for others Rated AC output apparent power 6999 VA for "AU", 7000 VA for others 8000 VA for "AU", "BE", "DE", 7700 VA for others Max. AC output current power 10.6 A for "AU", 11.7 A for others 12.2 A for "AU", 13.3 A for others Max. AC output current(at 230V)(AU) 10.1 A 11.6 A Rated AC voltage 3 / N / PE, 220 V / 380 V AC voltage range 180 V – 276 V / 311 V - 478 V for "AU", 175 V – 276 V / 304 V – 478 V for others Rated grid frequency / Grid frequency / Grid frequency range 50 Hz / (45 Hz – 55 Hz) Harmonic (THD) < 3 % (at rated power)	Max. DC short-circuit	60 A (40	Δ / 20 Δ)	
Rated AC output power 6999 W for "AU", 7000 W for others 8000 W Max. AC output apparent power 6999 VA for "AU", 7000 VA for "BE", "DE", 7700 VA for others 8000 VA for "AU", "BE", "DE", 8800 VA for others Rated AC output apparent power 6999 VA for "AU", 7000 VA for "DE", 8800 VA for others others 8000 VA for "AU", "BE", "DE", 7700 VA for "DE", 8800 VA for others others Max. AC output current 10.6 A for "AU", 11.7 A for others 12.2 A for "AU", 13.3 A for others others Rated AC output current(at 230V)(AU) 3 / N / PE, 220 V / 380 V Rated AC voltage 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V – 276 V / 311 V - 478 V for "AU", 175 V – 276 V / 302 V – 478 V for others Rated grid frequency / Grid frequency range 50 Hz / (45 Hz – 55 Hz) frequency range 60 Hz / (55 Hz – 65 Hz) Harmonic (THD) < 3 % (at rated power)	current	04) A 00	A / 20 A)	
Max. AC output apparent power 6999 VA for "AU", 7000 VA for "BE", "DE", 7700 VA for others 8000 VA for "AU", "BE", "BE", "DE", 7700 VA for others 8000 VA for "AU", "BE", "BE", "DE", 7700 VA for others 8000 VA for "AU", "BE", "DE", 7700 VA for others 8000 VA for "AU", "BE", "DE", 7700 VA for others 700 VA for "AU", 11.7 A for others 700 VA for "AU", 13.3 A for others 700 VA for "AU", 13.3 A for others 700 VA for o	Output (AC)			
Max. AC output apparent power 6999 VA for "AU", 7000 VA 6099 VA for "AU", 7000 VA 6099 VA for "BE", "DE", 7700 VA for others 6999 VA for "AU", 7000 VA 8000 VA for "AU", "BE", 7000 VA 6090 VA for "AU", "BE", 7000 VA 8000 VA for "AU", "BE", 7000 VA 6090 VA for "AU", "BE", 7000 VA	Rated AC output power	6999 W for "AU", 7000 W	8000 W	
Max. AC output apparent power for "BE", "DE", 7700 VA for others 8000 VA for "AU", "BE", "DE", 8800 VA for others Rated AC output apparent power 6999 VA for "AU", 7000 VA for "DE", 8800 VA for others others Max. AC output current 10.6 A for "AU", 11.7 A for others others Max. AC output current(at 230V)(AU) 10.1 A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V for "AU", 175 V - 276 V / 304 V - 478 V for others Rated grid frequency / Grid frequency range 50 Hz / (45 Hz - 55 Hz) Harmonic (THD) < 3 % (at rated power)				
Steel AC output apparent power Steel AC output current Steel AC outpu	Max. AC output apparent		8000 VA for "AU", "BE",	
Rated AC output apparent power 6999 VA for "AU", 7000 VA 8000 VA for "AU", "BE", power for "BE", "DE", 7700 VA for others Tothers			"DE", 8800 VA for others	
Description	Detect AO entrot consent		8000 VA for "ALI" "RE"	
others Max. AC output current 10.6 A for "AU", 11.7 A for others 12.2 A for "AU", 13.3 A for others Rated AC output current(at 230V)(AU) 10.1 A 11.6 A Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V AC voltage range 180 V - 276 V / 311 V - 478 V for "AU", 175 V - 276 V / 304 V - 478 V for others Rated grid frequency / Grid frequency / Grid frequency range 50 Hz / (45 Hz - 55 Hz) Harmonic (THD) < 3 % (at rated power)				
Max. AC output current 10.6 A for "AU", 11.7 A for others 12.2 A for "AU", 13.3 A for others Rated AC output current(at 230V)(AU) 10.1 A 11.6 A Rated AC voltage 3 / N / PE, 220 V / 380 V AC voltage range 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V for "AU", 175 V - 276 V / 304 V - 478 V for others Rated grid frequency / Grid frequency range 50 Hz / (45 Hz - 55 Hz) Harmonic (THD) < 3 % (at rated power)	power		DE, 0000 VA IOI OTICIS	
Rated AC output current(at 230V)(AU)		0	12.2 A for "AU", 13.3 A for	
230V)(AU) Rated AC voltage 3 / N / PE, 220 V / 380 V 3 / N / PE, 230 V / 400 V 3 / N / PE, 240 V / 415 V AC voltage range 180 V - 276 V / 311 V - 478 V for "AU", 175 V - 276 V / 304 V - 478 V for others Rated grid frequency / Grid frequency range 60 Hz / (45 Hz - 55 Hz) Harmonic (THD) Power factor at nominal power / Adjustable power factor Feed-in phases / AC connection Efficiency Max. efficiency 98.30 % 98.30 % European efficiency 97.60 % 97.70 % Protection & Function Grid monitoring Yes DC reverse connection Yes	Max. AC output current	others	others	
3 / N / PE, 220 V / 380 V	Rated AC output current(at	10.1 A	11 G A	
Rated AC voltage	230V)(AU)		11.0 A	
3 / N / PE, 240 V / 415 V AC voltage range		•		
AC voltage range 180 V - 276 V / 311 V - 478 V for "AU", 175 V-276 V / 302 V-478 V for others Rated grid frequency / Grid frequency range 60 Hz / (45 Hz-55 Hz) Harmonic (THD) Power factor at nominal power / Adjustable power factor Feed-in phases / AC connection Efficiency Max. efficiency 98.30 % 98.30 % Protection & Function Grid monitoring Yes 180 V - 276 V / 311 V - 478 V for "AU", 175 V-276 V / 302 V / 402 V / 302 V / 478 V for "AU", 175 V-276 V / 302 V / 302 V / 478 V for "AU", 175 V-276 V / 302 V / 302 V / 478 V for "AU", 175 V-276 V / 302 V / 302 V / 478 V for "AU", 175 V-276 V / 302 V / 302 V / 478 V for "AU", 175 V-276 V / 302 V / 302 V / 478 V for "AU", 175 V-276 V / 302	Rated AC voltage			
V-478 V for others	A 0 . II	·		
Rated grid frequency / Grid frequency range 60 Hz / (45 Hz–55 Hz) Harmonic (THD) Power factor at nominal power / Adjustable power factor Feed-in phases / AC connection Efficiency Max. efficiency Max. efficiency Protection & Function Grid monitoring Yes 50 Hz / (45 Hz–55 Hz) 50 Hz / (45 Hz–55 Hz) 50 Hz / (45 Hz–55 Hz) 60 Hz / (55 Hz–65 Hz) 61 Hz / (55 Hz–65 Hz) 62 J / 3 / 3 – PE 63 J / 3 – PE 75 J / 3 – PE 76 J / 3 / 3 – PE 77 J / 3 / 3 – PE 78 J / 3 – PE 78 J / 3 – PE 79 J / 3 / 3 – PE	AC voitage range			
frequency range 60 Hz / (55 Hz–65 Hz) Harmonic (THD) 43 % (at rated power) Power factor at nominal power / Adjustable power > 0.99 / 0.8 leading – 0.8 lagging factor Feed-in phases / AC a / 3 / 3–PE connection Efficiency Max. efficiency 98.30 % 98.30 % European efficiency 97.60 % 97.70 % Protection & Function Grid monitoring Yes DC reverse connection Yes	Rated grid frequency / Grid			
Harmonic (THD) < 3 % (at rated power) Power factor at nominal power / Adjustable power > 0.99 / 0.8 leading – 0.8 lagging factor Feed-in phases / AC		•	•	
Power factor at nominal power / Adjustable power > 0.99 / 0.8 leading - 0.8 lagging factor Feed-in phases / AC 3 / 3 - PE Connection Efficiency 98.30 % 98.30 % European efficiency 97.60 % 97.70 % Protection & Function Grid monitoring Yes DC reverse connection Yes		<u> </u>		
power / Adjustable power factor Feed-in phases / AC connection Efficiency Max. efficiency 98.30 % European efficiency 97.60 % Protection & Function Grid monitoring Yes > 0.99 / 0.8 leading – 0.8 lagging 3 / 3–PE 98.30 % 98.30 % 98.30 % 97.70 % Protection & Function Yes		- (1 /	
factor Feed-in phases / AC connection Efficiency Max. efficiency 98.30 % 98.30 % European efficiency 97.60 % 97.70 % Protection & Function Grid monitoring Yes DC reverse connection Yes		> 0.99 / 0.8 leadi	ing – 0.8 lagging	
connection Efficiency Max. efficiency 98.30 % 98.30 % European efficiency 97.60 % 97.70 % Protection & Function Grid monitoring Yes DC reverse connection Yes				
Connection Efficiency Max. efficiency 98.30 % 98.30 % European efficiency 97.60 % 97.70 % Protection & Function Grid monitoring Yes DC reverse connection Yes	Feed-in phases / AC			
Max. efficiency 98.30 % 98.30 % European efficiency 97.60 % 97.70 % Protection & Function Grid monitoring Yes DC reverse connection Yes	connection	3 / 3-PE		
European efficiency 97.60 % 97.70 % Protection & Function Grid monitoring Yes DC reverse connection Yes	Efficiency			
Protection & Function Grid monitoring Yes DC reverse connection Yes	Max. efficiency	98.30 %	98.30 %	
Grid monitoring Yes DC reverse connection Yes	European efficiency	97.60 %	97.70 %	
DC reverse connection Yes				
Yes	Grid monitoring	Yes		
protection	DC reverse connection	-		
F	protection	Yes		
AC short-circuit protection Yes	AC short-circuit protection	Yes		

Parameter	SG7.0RT-P2 SG8.0RT-P2	
Leakage current protection	Yes	
Surge protection	DC Type II, AC Type II	
DC switch	Yes	
Arc fault circuit interrupter	.,	
(AFCI)	Yes	
PID recovery function	Yes	
Optimizer compatbility(7)	Optional	
Protective Class	I	
Overvoltage Category	DC II/AC III	
Active Anti-Islanding	Frequency Shift	
Method	Trequency offit	
General Data		
Dimensions (W x H x D)	370 mm x 480 mm x 195 mm	
Weight	18 kg	
Mounting method	Wall-mounting bracket	
Topology	Transformerless	
Degree of protection	IP65	
Night power consumption	1 W	
(IN)		
Corrosion(AU)	C5	
Operating ambient temper-	-25°C to +60°C(AU: Derating when the temperature ex-	
ature range	ceeds 40°C)	
Allowable relative humidity	0–100 %	
range (non-condensing)	0-100 %	
Cooling method	Natural cooling	
Max. operating altitude	4000 m	
Display	LED	
Communication	WLAN / Ethernet / RS485 / DI / DO	
DC connection type	MC4 (Max. 6 mm²)/ MC4 Compatible Connector(Max. 6	
	mm²)	
AC connection type	Plug and play	
	IEC / EN 61000-6-1/2/3/4, IEC 61000-3-2/3/11/12, IEC /	
	EN62109-1/2, IEC 61727, IEC 62116, IEC 61683, IEC	
	60068-2-1/2/14/30/64/27,IEC TS 62910 , EN50530, AS/	
Grid Compliance	NZS 4777.2:2020, VDE-AR-N-4105, DIN VDE0126-1-1/A1	
·	EN50549-1, DEWA, VFR 2019, UTE C15-712-1, PSE NC	
	RfG, NTS 2.0, UNE 206006/7 IN, UNE 217002, MEA/PEA,	
	G98	
Grid Compliance(AU)	IEC 62109-1/2, AS/NZS 4777.2: 2020	

Parameter	SG7.0RT-P2	SG8.0RT-P2
	PORTARIA Nº 140, [DE 21 DE MARÇO DE 2022, EC/EN
	62109-1/-2, IEC/EN	61000-6-1/-2/-3/-4 EMC, IEC 61727,
Grid Compliance(IN)	IEC 62116, IEC 61683, EN 50530, IEC 60068-1/-2/-14/-	
	27/-30/-64, IEC 610	00-3-2:2006 IEC/ EN - 61000-3-12,
		IEC 60529 IP
Country of manufacture		China

- (1) The max. output power per MPPT is 7.7kW.
- (2) The max. output power per MPPT is 8.8kW.
- (3) The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. If the maximum DC voltage in the system can exceed 1,000 V, the MC4 connectors included in the scope of delivery must not be used. In this case MC4-Evo2 connectors must be used.
- (4) Please note the min. voltage without MPP tracker derating is 303V (+5%) for SG10/15/20RT-P2 and 236V(+5%) for SG5.0/7.0/8.0RT-P2 @AC230V 12.5A.
- (5) Input voltage exceeding the MPPT operating voltage range triggers inverter protection.
- (6) Please refer to the user manual for the full load MPPT voltage range.
- (7) For optimizer compatbility, please consult Sungrow before placing an order.
- (8) Not applicable to the MENA region. For details on the MENA region, please refer to the TI document and contact Sungrow for more information.

Parameter	SG10RT-P2	SG12RT-P2
Input (DC)		
Recommended max. PV in-	15.0 kWp ⁽¹⁾	18.0 kWp ⁽²⁾
put power	13.0 κννρώ	10.0 κννρ
Max. PV input voltage(5)	11	00 V (3)
Min. PV input voltage /	190 \/ / 190 \/ for "AL	J", 160 V / 180 V for others
Start-up input voltage	100 V / 100 V 101 AC	7, 100 V / 100 V 101 Ottlets
Rated input voltage		600 V
MPPT operating voltage	160 V–1000 V ⁽⁴⁾	
range ⁽⁶⁾		
MPP voltage range for	320V-850V ⁽⁸⁾	400V - 850V ⁽⁸⁾
rated power	020 V-000 V (-)	-100 V = 000 V (+)
No. of independent MPP		2
trackers		
No. of PV strings per MPPT	2/1	
Max. PV input current	48 A (32 A / 16 A)	
Max. DC short-circuit	60 A (40 A / 20 A)	
current		
Output (AC)		

Parameter	SG10RT-P2	SG12RT-P2	
Rated AC output power	9999 W for "AU", 10000 W		
	for others	12000 W	
Max. AC output apparent	10000 VA for "BE",	12000 VA for "AU", "BE",	
power	"DE",9999 VA for	"DE", 13200 VA for others	
	"AU",11000 VA for others	,	
Rated AC output apparent	10000 VA for "BE", "DE",	12000 VA for "AU", "BE",	
power	9999 VA for "AU", 11000 VA	"DE", 13200 VA for others	
•	for others 15.2 A for "AU", 16 A for		
Max. AC output current	"JO" , 16.7 A for others	20.0 A	
Rated AC output current(at	14.5 A		
230V)(AU)		1	
/	3 / N / PE, 2	20 V / 380 V	
Rated AC voltage	•	30 V / 400 V	
J	,	40 V / 415 V	
AC voltage range	180 V – 276 V / 311 V - 478 V	/ for "AU", 175 V–276 V / 304	
	V–478 V	for others	
Rated grid frequency / Grid	50 Hz / (45	Hz-55 Hz)	
frequency range	60 Hz / (55	Hz-65 Hz)	
Harmonic (THD)	< 3 % (at rated power)		
Power factor at nominal	> 0.99 / 0.8 leading–0.8 lagging		
power / Adjustable power			
factor			
Feed-in phases / AC	3/3-PE		
connection	373	L	
Efficiency			
Max. efficiency	98.30 %	98.30 %	
European efficiency	97.80 %	97.90 %	
Protection & Function			
Grid monitoring	Yes		
DC reverse connection			
protection	Ye	es	
AC short circuit protection	Yes		
Leakage current protection	Yes		
Surge protection	DC Type II / AC Type II		
DC switch	Yes		
Arc fault circuit interrupter	100		
(AFCI)	Yes		
	Yes		
PID recovery function	ies		

Parameter	SG10RT-P2 SG12RT-P2	
Optimizer compatbility ⁽⁷⁾	Optional	
Protective Class		
Overvoltage Category	DC II/AC III	
Active Anti-Islanding	Frequency Shift	
Method	Troquonoy Office	
General Data		
Dimensions (W x H x D)	370 mm x 480 mm x 195 mm	
Weight	18 kg	
Mounting method	Wall-mounting bracket	
Topology	Transformerless	
Degree of protection	IP65	
Operating ambient temper-	-25°C to +60°C(AU: Derating when the temperature ex-	
ature range	ceeds 40°C)	
Allowable relative humidity	0. 100 %	
range (non-condensing)	0–100 %	
Cooling method	Natural cooling	
Max. operating altitude	4000 m	
Display	LED	
Communication	WLAN / Ethernet / RS485 / DI / DO	
DC connection type	MC4 (Max. 6 mm²)/ MC4 Compatible Connector(Max. 6	
	mm²)	
AC connection type	Plug and play	
	IEC / EN 61000-6-1/2/3/4, IEC 61000-3-2/3/11/12, IEC /	
	EN62109-1/2, IEC 61727, IEC 62116, IEC 61683, IEC	
	60068-2-1/2/14/30/64/27,IEC TS 62910 , EN50530, AS/	
Grid Compliance	NZS 4777.2:2020, VDE-AR-N-4105, DIN VDE0126-1-1/A1,	
	EN50549-1, DEWA, VFR 2019, UTE C15-712-1, PSE NC	
	RfG, NTS 2.0, UNE 206006/7 IN, UNE 217002, MEA/PEA,	
	G98	
Grid Compliance(AU)	IEC 62109-1/2, AS/NZS 4777.2: 2020	
	PORTARIA Nº 140, DE 21 DE MARÇO DE 2022, EC/EN	
	62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4 EMC, IEC 61727,	
Grid Compliance(IN)	IEC 62116, IEC 61683, EN 50530, IEC 60068-1/-2/-14/-	
	27/-30/-64, IEC 61000-3-2:2006 IEC/ EN - 61000-3-12,	
	IEC 60529 IP	
Country of manufacture	China	

⁽¹⁾The max. output power per MPPT is 11kW.

⁽²⁾The max. output power per MPPT is 13.2kW.

(3) The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. If the maximum DC voltage in the system can exceed 1,000 V, the MC4 connectors included in the scope of delivery must not be used. In this case MC4-Evo2 connectors must be used.

- (4) Please note the min. voltage without MPP tracker derating is 303V (+5%) for SG10/15/20RT-P2 and 236V(+5%) for SG5.0/7.0/8.0RT-P2 @AC230V 12.5A.
- (5) Input voltage exceeding the MPPT operating voltage range triggers inverter protection.
- (6) Please refer to the user manual for the full load MPPT voltage range.
- (7) For optimizer compatbility, please consult Sungrow before placing an order.
- (8) Not applicable to the MENA region. For details on the MENA region, please refer to the TI document and contact Sungrow for more information.

Parameter	SG15RT-P2	SG17RT-P2	SG20RT-P2
Input (DC)			
Recommended max. PV in-	22.5 kWp ⁽¹⁾	25.5 kWp ⁽¹⁾	30.0 kWp ⁽¹⁾
put power	22.5 KWp. 7	23.3 KWp. 7	30.0 KVVp()
Max. PV input voltage(5)		1100 V (2)	_
Min. PV input voltage /	190 \/ / 190 \/	for "AU", 160 V / 180) V for others
Start-up input voltage	100 V / 100 V	101 AU , 100 V / 100	y viol others
Rated input voltage		600 V	
MPPT operating voltage		160 V–1000 V ⁽³⁾	_
range ⁽⁶⁾		100 V=1000 V(9)	
MPP voltage range for	380V-850V ⁽⁸⁾	365V-850V ⁽⁸⁾	430V-850V ⁽⁸⁾
rated power			1001 0001
No. of independent MPP	2		
trackers		-	
No. of PV strings per MPPT	2/2	2/	2(4)
Max. PV input current		64 A (32 A / 32 A)	
Max. DC short-circuit	80 A (40 A / 40 A)		
current			
Output (AC)			
Rated AC output power	15000 W	17000 W	20000 W
	15000 VA for "AU",	17000 VA for	20000 VA for
Max. AC output apparent	"BE", "DE", 16500	"AU", "BE", "DE",	"AU", "BE", "DE",
power	VA for others	18700 VA for	22000 VA for
	Without others	others	others
	10000 VA for "BE",		
Rated AC output apparent	"DE", 9999 VA for	12000 VA for "AU",	"BE", "DE", 13200
power	"AU", 11000 VA	VA for others	
	for others		

Parameter	SG15RT-P2	SG17RT-P2	SG20RT-P2	
May AC output current	22.7 A for "AU",	,	30.3 A for "AU",	
Max. AC output current	25 A for others	28.3 A	31.9 A for others	
Rated AC output current(at	21.7 A	/	29 A	
230V)(AU)		,	29 A	
	3 / N / PE, 220 V / 380 V			
Rated AC voltage	3 / N / PE, 230 V / 400 V			
	3 / N / PE, 240 V / 415 V			
AC voltage range	175 V-276 V / 304 V-478 V			
Rated grid frequency / Grid	50 Hz / (45 Hz–55 Hz)			
frequency range	60 Hz / (55 Hz–65 Hz)			
Harmonic (THD)	< 3 % (at nominal power)			
Power factor at nominal				
power / Adjustable power	> 0.99 / 0.8 leading–0.8 lagging			
factor		3 35 3		
Feed-in phases / AC	3/3			
connection				
Efficiency				
Max. efficiency	98.30 %			
European efficiency		97.90 %		
Protection & Function				
Grid monitoring	Yes			
DC reverse connection		Yes		
protection				
AC short-circuit protection		Yes		
Leakage current protection	Yes			
Surge protection	DC Type II / AC Type II			
DC switch		Yes		
Arc fault circuit interrupter		.,		
(AFCI)		Yes		
PID recovery function	Yes			
Optimizer compatbility ⁽⁷⁾	Optional			
Protective Class	1			
Overvoltage Category		DC II/AC III		
Active Anti-Islanding	Frequency Shift			
Method		. requestion ethic		
General Data				
Dimensions (W x H x D)	370	370 mm x 480 mm x 195 mm		
Weight	22 kg			
Mounting method	Wall-mounting bracket			

Parameter	SG15RT-P2	SG17RT-P2	SG20RT-P2	
Topology		Transformerless		
Degree of protection		IP65		
Operating ambient temper-	-25°C to +60°C(AU: Derating when the temperature ex-			
ature range	ceeds 40°C)			
Allowable relative humidity	0.400.07			
range (non-condensing)	0–100 %			
Cooling method	Smart forced air cooling			
Max. operating altitude	4000 m			
Display	LED			
Communication	WLAN / Ethernet / RS485 / DI / DO			
DC connection type	MC4 (Max. 6 mm²)			
AC connection type	Plug and play			
Grid Compliance	IEC / EN 61000-6-1/2/3/4, IEC 61000-3-2/3/11/12, IEC /			
	EN62109-1/2, IEC 61727, IEC 62116, IEC 61683, IEC			
	60068-2-1/2/14/30/64/27,IEC TS 62910 , EN50530, AS/			
	NZS 4777.2:2020, VDE-AR-N-4105, DIN VDE0126-1-1/A1,			
	EN50549-1, DEWA, VFR 2019, UTE C15-712-1, PSE NC			
	RfG, NTS 2.0, UNE 206006/7 IN, UNE 217002, MEA/PEA,			
	G98			
Grid Compliance(AU)	IEC 62	2109-1/2, AS/NZS 477	7.2: 2020	
Grid Compliance(IN)	PORTARIA Nº 140, DE 21 DE MARÇO DE 2022, EC/EN			
	62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4 EMC, IEC 61727,			
	IEC 62116, IEC 61683, EN 50530, IEC 60068-1/-2/-14/-			
	27/-30/-64, IEC 61000-3-2:2006 IEC/ EN - 61000-3-12,			
	IEC 60529 IP			
Country of manufacture		China		

- (1)The max. output power per MPPT is 15.5kW.
- (2) The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. If the maximum DC voltage in the system can exceed 1,000 V, the MC4 connectors included in the scope of delivery must not be used. In this case MC4-Evo2 connectors must be used.
- (3) Please note the min. voltage without MPP tracker derating is 303V (+5%) for SG10/15/20RT-P2 and 236V(+5%) for SG5.0/7.0/8.0RT-P2 @AC230V 12.5A.
- (4) The maximum power for a single MPPT is 15.5kW.
- (5) Input voltage exceeding the MPPT operating voltage range triggers inverter protection.
- (6) Please refer to the user manual for the full load MPPT voltage range.
- (7) For optimizer compatbility, please consult Sungrow before placing an order.
- (8) Not applicable to the MENA region. For details on the MENA region, please refer to the TI document and contact Sungrow for more information.

10.2 Quality Assurance

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

Evidence

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

Conditions

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

Exclusion of Liability

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

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

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



Product data such as product dimensions are subject to change without prior notice. The latest documentation from SUNGROW should take precedence in case of any deviation.

10.3 Contact Information

In case of questions about this product, please contact us.

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

- · Model of the device
- Serial number of the device

- Fault code/name
- Brief description of the problem

For detailed contact information, please visit: https://en.SUNGROWpower.com/contactUS

