

V1.8-2026-09-15

Grid-Tied PV Inverter

**DNS Series (3.6-6.0kW) G4
User Manual**

GOODWE

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ATTENTION

Due to product version upgrades or other reasons, the document content will be updated periodically. Unless otherwise specified, the document content does not replace the safety precautions in the product labels. All descriptions in the document are for guidance only.

Foreword

This document mainly introduces the product information, installation wiring, configuration commissioning, troubleshooting and maintenance content of the inverter. Please read this manual carefully before installing and using this product, understand the product safety information and be familiar with the product's functions and features. The document may be updated irregularly, please obtain the latest version of the materials and more product information from the official website.

Applicable Products

This document applies to the following models of inverters:

Model	Rated output power	Rated output voltage
GW3.6K-DNS-CN-G40	3.6kW	220V, L/N/PE
GW4.2K-DNS-CN-G40	4.2kW	
GW5K-DNS-CN-G40	5kW	
GW6K-DNS-CN-G40	6kW	
GW3K-DNS-G40	3kW	220V/230V/240V, L/N/PE
GW3.6K-DNS-G40	3.6kW	
GW4.2K-DNS-G40	4.2kW	
GW5K-DNS-G40	5kW	
GW6K-DNS-G40	6kW	
GW3.1K-DNS-L-G40	3.1kW	127V, L/N/PE

Applicable Personnel

Only applicable to professionals who are familiar with local regulations and standards, electrical systems, have received professional training, and are well-versed in the relevant knowledge of this product.

Symbol Definitions

To better use this manual, the following symbols are used in the manual to highlight relevant important information, please read the symbols and descriptions carefully.

 DANGER
Indicates a high potential hazard that, if not avoided, will result in death or serious injury.
 WARNING
Indicates a moderate potential hazard that, if not avoided, could result in death or serious injury.
 CAUTION
Indicates a low-level potential hazard that, if not avoided, may result in minor or moderate injury.
ATTENTION
Emphasis and supplements to the content may also provide tips or tricks for optimized product use, helping you solve a problem or save time.

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1 Safety Precautions

WARNING

The inverter has been strictly designed and tested in accordance with safety regulations, but as an electrical device, relevant safety instructions must be followed before any operation on the device; improper operation may result in serious injury or property damage.

1.1 General Safety

ATTENTION

- Due to product version upgrades or other reasons, the document content will be updated periodically. Unless otherwise specified, the document content does not replace the safety precautions in the product labels. All descriptions in the document are for guidance only.
- Please read this document carefully before installing the device to understand the product and precautions.
- All operations on the device must be performed by professional, qualified electrical technicians who are familiar with the relevant standards and safety codes of the project location.
- When operating the device, use insulated tools and wear personal protective equipment to ensure personal safety. When touching electronic devices, wear anti-static gloves, anti-static wristbands, anti-static clothing, etc., to protect the device from electrostatic damage.
- Unauthorized disassembly or modification may cause device damage, which is not covered by the warranty.
- Unauthorized disassembly or modification may cause device damage, which is not covered by the warranty. For more product warranty information, please obtain it through the official website: <https://www.goodwe.com/warrantyrelated.html>.

1.2 DC Side

DANGER

- Please use the DC Connector supplied with the package to connect the inverter DC cables. Using other models of DC Connectors may lead to serious consequences, and the resulting device damage is not within the responsibility scope of the device manufacturer.
- Supports devices connected to PV strings. The PV input terminals have low withstand capability for surge current. It is strictly prohibited to directly power on via the PV port using a DC voltage source. If powering on via the PV port is required, please follow the steps below. Damage to the unit caused by non-compliant operation is considered human-induced damage and is not covered under product warranty.
 1. First, limit the output current of the DC voltage source within the Max. Current from Grid allowed by the PV port.
 2. Then close the DC Switch of the inverter.
 3. Finally, slowly increase the output voltage of the DC source from zero to the target value at a rate of $\leq 50\text{V/s}$.

WARNING

- Ensure that the module frame and bracket system are well grounded.
- After the DC cable connection is completed, ensure that the cable connections are tight and not loose.
- When measuring PV strings with a multimeter, damage caused by reverse connection, Overvoltage, and Overcurrent is not within the responsibility scope of the device manufacturer.
- Photovoltaic modules connected to the same MPPT must use the same model of photovoltaic panels. The voltage difference between different MPPTs must be $<160\text{V}$.
- When the input voltage is in the range of $1000\text{V}\sim 1100\text{V}$, the inverter will enter standby mode. When the voltage returns to the MPPT operating Voltage Range ($140\text{V}\sim 1000\text{V}$), the inverter will resume normal operation.
- It is recommended that the sum of the peak power currents of the strings connected to each MPPT does not exceed the Max. MPPT Current of each MPPT of the inverter.
- When the inverter is connected to multiple PV strings, it is recommended that at least one string is connected to each MPPT, and no MPPT is left unconnected.
- Photovoltaic modules used in conjunction with the inverter must comply with IEC 61730 Class A standard.

1.3 AC Side

WARNING

- Ensure that the voltage and frequency of the grid connection point comply with the inverter grid connection specifications.
- It is recommended to add protection devices such as circuit breakers or fuses on the AC side of the inverter. The specifications of the protection devices must be greater than 1.25 times the Max. Current to Grid of the inverter.
- The Protection ground wire of the inverter must be firmly connected.
- It is recommended to use copper-core cables for AC output lines. If aluminum wires need to be used, please use copper-aluminum transition terminals for wiring.

1.4 Inverter

DANGER

- During inverter installation, avoid placing load on the bottom terminals, otherwise the terminals will be damaged.
- After inverter installation, the labels and warning signs on the enclosure must be clearly visible; they must not be blocked, altered, or damaged.
- The warning labels on the inverter enclosure are as follows:

Serial Number	Symbol	Meaning
1		Potential danger exists when the device is operating. Please take protective measures when operating the device.
2		High voltage danger. High voltage exists when the device is operating; ensure the device is powered off before operating it.

Serial Number	Symbol	Meaning
3		The inverter surface is hot; do not touch it when the device is operating, otherwise burns may occur.
4		Delay discharge. After the device is powered off, wait 5 minutes for it to fully discharge.
5		Before operating the device, please read the product manual carefully.
6		Do not dispose of the device as household waste; dispose of it in accordance with local laws and regulations, or return it to the device manufacturer.
7		Protection grounding connection point.
8		CE Certification Mark.

1.5 EU Declaration of Conformity

1.5.1 Devices with Wireless Communication Function

GoodWe Technology Co., Ltd. hereby declares that devices with wireless communication function that can be sold in the European market meet the requirements of the following directives:

- Radio Equipment Directive 2014/53/EU (RED)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

1.5.2 Devices Without Wireless Communication Function

GoodWe Technology Co., Ltd. hereby declares that devices without wireless communication function that can be sold in the European market meet the

requirements of the following directives:

- Electromagnetic compatibility Directive 2014/30/EU (EMC)
- Electrical Apparatus Low Voltage Directive 2014/35/EU (LVD)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

More EU Declarations of Conformity can be obtained from the official website: <https://en.goodwe.com>.

1.6 Personnel Requirements

ATTENTION

To ensure the safety, compliance, and efficiency of the entire process of equipment transportation, installation, wiring, operation, and maintenance, all work must be performed by professional personnel or qualified personnel.

1. Professional personnel or qualified personnel include:

- Personnel who have mastered knowledge related to equipment working principles, system structure, risks and hazards, and have received professional operation training or possess rich practical experience.
- Personnel who have received relevant technical and safety training, possess certain operational experience, can recognize the potential hazards of specific operations to themselves, and can take protective measures to minimize risks to themselves and others.
- Qualified electrical technicians who meet the regulatory requirements of the country/region where they are located.
- Possess a degree in electrical engineering, an advanced diploma in electrical engineering or equivalent qualification, or hold a professional practice qualification in the electrical field, and have at least 2/3/4 years of experience in testing and supervision work using electrical equipment safety standards.

2. Personnel involved in special tasks such as electrical work, high-altitude work, and special equipment operation must hold valid qualification certificates as required by the location of the equipment.

3. Operation of medium-voltage equipment must be performed by licensed high-voltage electricians.

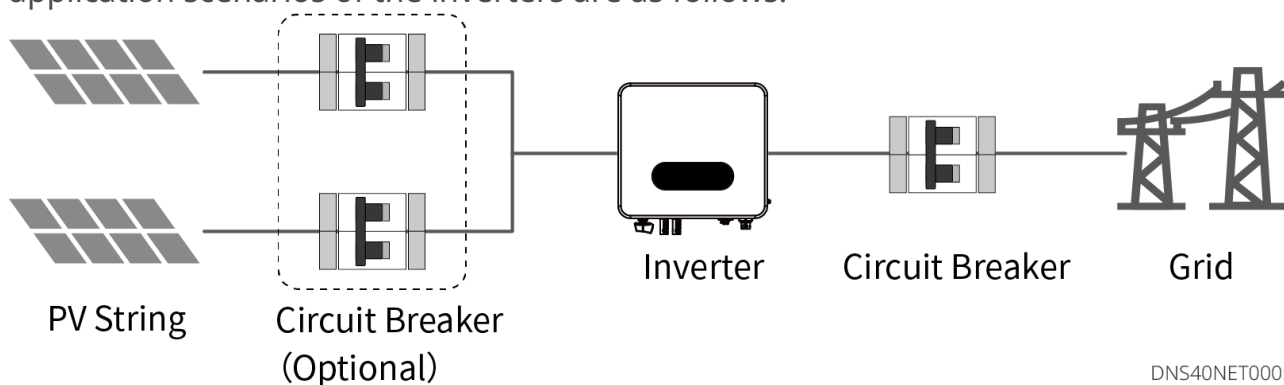
4. Replacement of equipment and components is only permitted to be performed by authorized personnel.

2 Product Introduction

2.1

Introduction

DNS G4series inverters are single-phase string photovoltaic grid-tie inverters. The inverters can convert direct current generated by photovoltaic solar panels into alternating current that meets grid requirements and feed it into the grid. The main application scenarios of the inverters are as follows:



Model Meaning

GW6K-DNS-CN-G40

1 2 3 4 5

DNS40DSC0001

GW3.1K-DNS-L-G40

1 2 3 4 5

DNS40DSC0006

Serial Number	Meaning	Description
1	Brand Code	GW: GoodWe
2	Rated Power	6K: Rated Power is6kW 5K: Rated Power is5kW 4.2K: Rated Power is4.2kW 3.6K: Rated Power is3.6kW 3.1K: Rated Power is3.1kW
3	Series Name	DNS: DNSSeries
4	Special Country Code	CN: China Version
	Product Feature Code	L: Low Voltage
5	Version Code	G40: 4th Generation Product

GW6K-DNS-G40

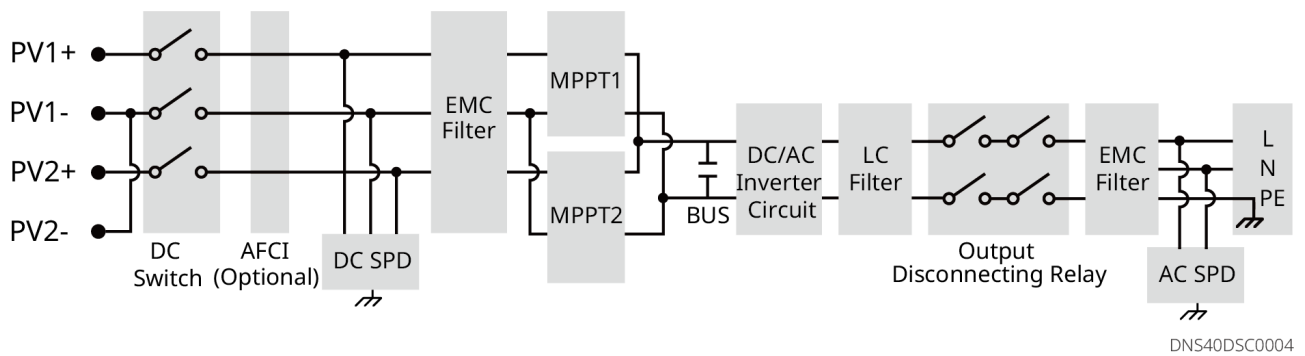
1 2 3 4

DNS40DSC0005

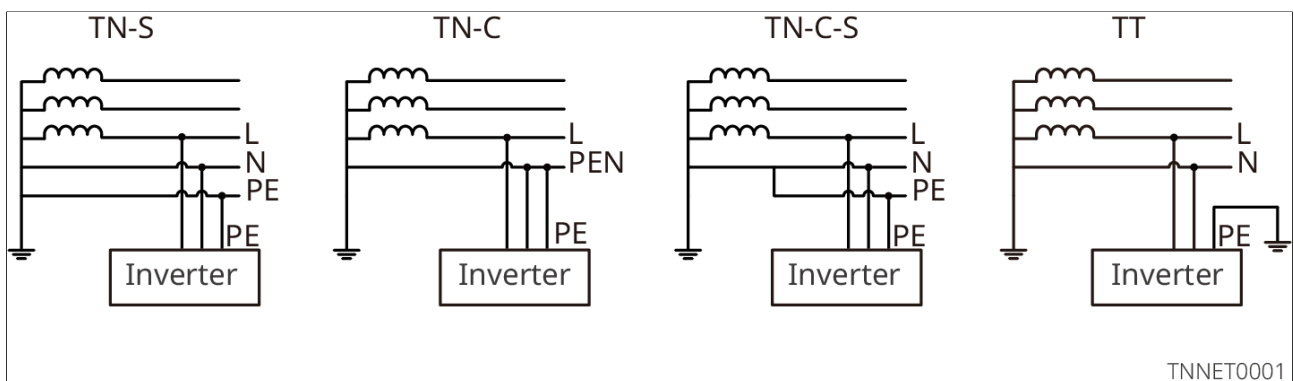
Serial Number	Meaning	Description
1	Brand Code	GW: GoodWe
2	Rated Power	6K: Rated Power is6kW 3K: Rated Power is3kW 3.6K: Rated Power is3.6kW 4.2K: Rated Power is4.2kW 5K: Rated Power is5k

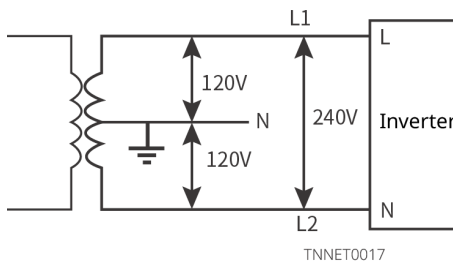
Serial Number	Meaning	Description
3	Series Name	DNS: DNSSeries
4	Version Code	G40: 4th Generation Product

2.2 Circuit Block Diagram



2.3 Supported Grid Types





2.4 Functional Features

ATTENTION

Specific functional configurations are subject to the actual model.

AFCI

The AFCI function is used to detect arc faults on the DC side of the inverter; when an arc fault occurs, the inverter will automatically provide protection.

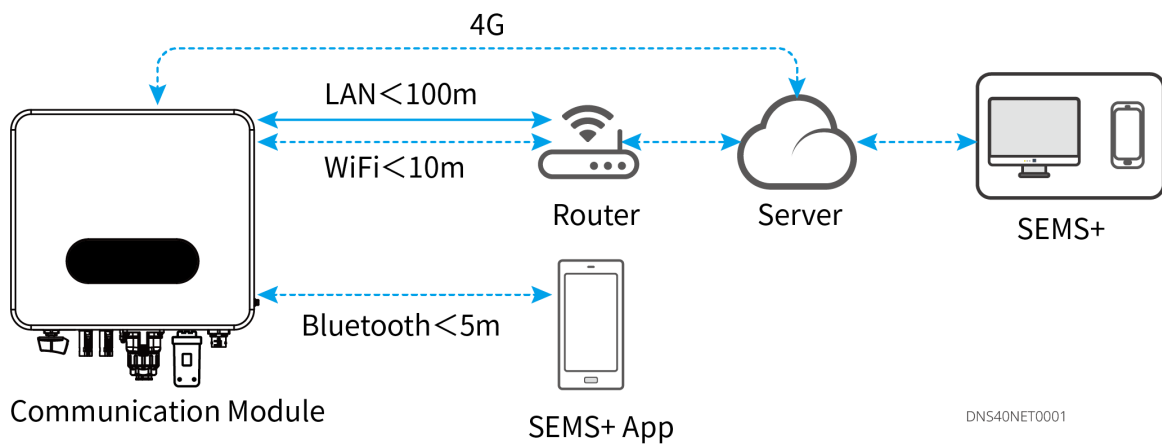
Causes of arc generation:

- DC connectors in the photovoltaic system are damaged or improperly connected.
- Cable connection errors or damage.
- Aging of connectors and cables.

Communication

The inverter supports parameter setting via Bluetooth (local); it supports connecting to the monitoring platform via WiFi、LAN or 4G to monitor the inverter's operating status, power station operation, etc.

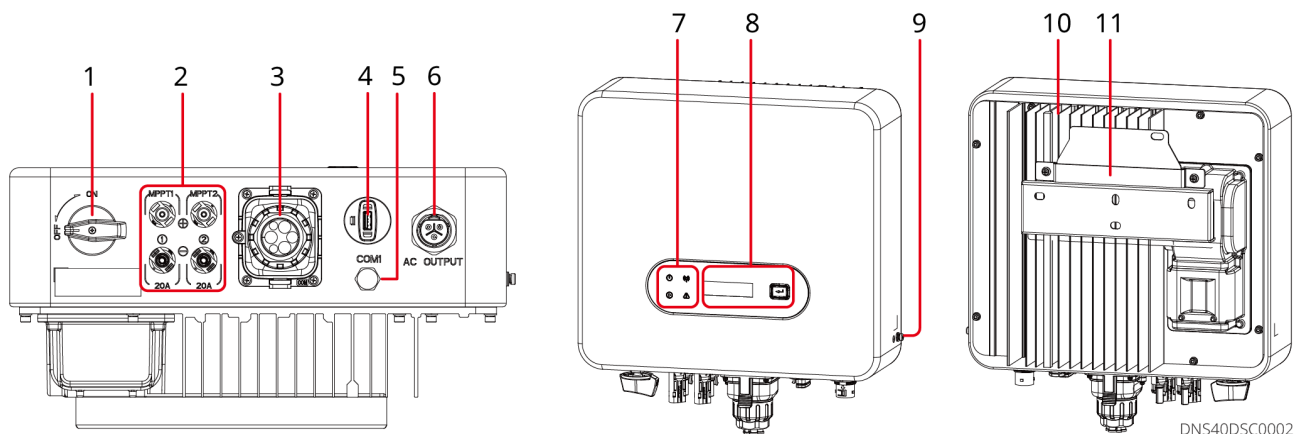
- Bluetooth: Meets the Bluetooth 5.1 standard.
- WiFi/LAN 2.0 (Optional): Wireless IEEE 802.11 b/g/n @2.4 GHz; Ethernet 10M/100Mbps adaptive; if a third-party monitoring platform is to be used, this platform must support the Modbus TCP communication protocol.
- 4G (Optional): Supports connecting to third-party monitoring platforms via the MQTT communication protocol.



2.5 Appearance Description

The Color and Appearance of Different Inverter Models May Vary; Please Refer to the Actual Product for Details.

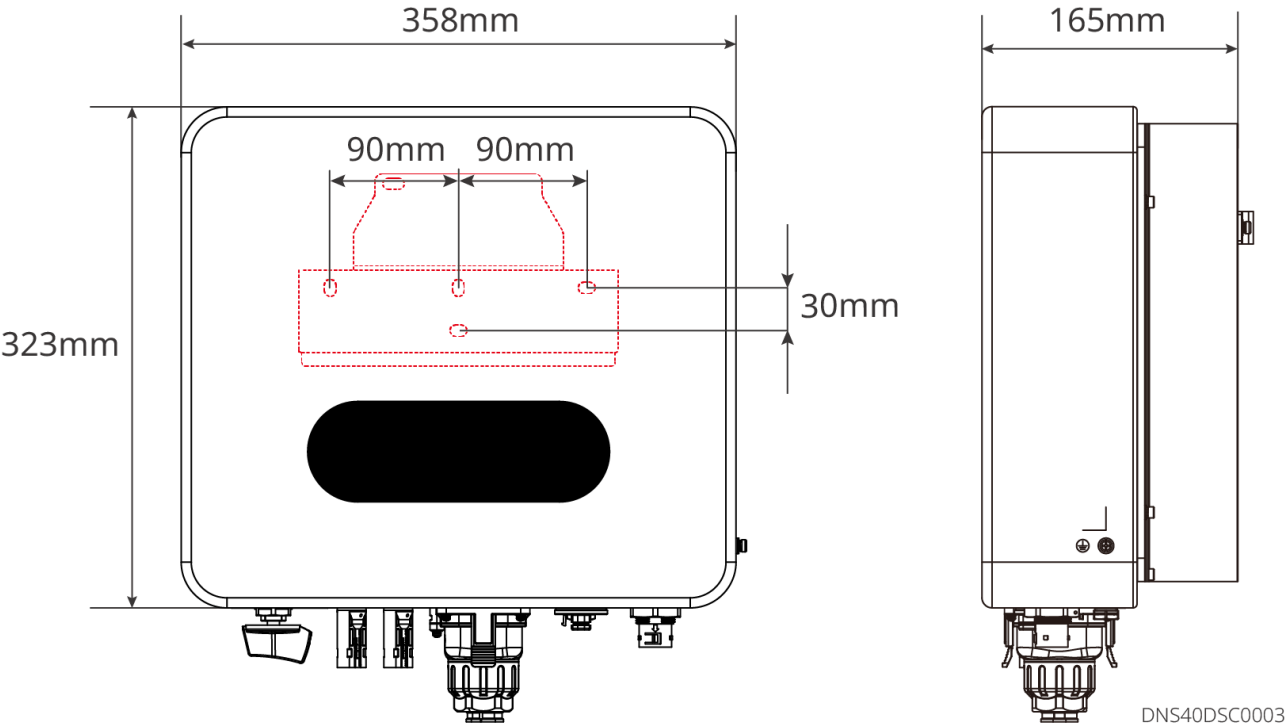
2.5.1 Component Introduction



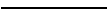
Serial Number	Components/Silkscreen	Description
1	DC Switch	Controls the connection or disconnection of DC input.
2	PV Input Terminal	Can connect PV module DC input line.
3	Communication Port	can connect load control, CT(optional) 、RS485(electricity meter), Remote Shutdown/Emergency Power Off, DRED(Australia)/RCR(Europe) and other communication lines.
4	Communication Module Port	Can connect communication modules, such as 4G、WiFi/LAN and other communication modules, please select the module type according to actual needs. Supports connection to Udisk, enabling Local Upgrade of the inverter software version. For the Brazilian market, can connect USB-RS485 adapter cable.
5	Vent Valve	-
6	AC Output Wire Terminal	Can connect AC output wires to link the inverter to the grid.
7	Indicator Light	Indicates the operating status of the inverter.
8	Display and Buttons	- Use the display to view inverter-related data. GW3.6K-DNS-CN-G40、GW4.2K-DNS-CN-G40、GW5K-DNS-CN-G40、GW6K-DNS-CN-G40: Optional. GW3K-DNS-G40、GW3.6K-DNS-G40、GW4.2K-DNS-G40、GW5K-DNS-G40、GW6K-DNS-G40、GW3.1K-DNS-L-G40: Standard. - Buttons are used to operate the display.
9	Protection Ground Terminal	Connect the Protection Ground wire.

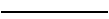
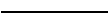
Serial Number	Components/Silkscreen	Description
10	Heat Sink	Inverter heat dissipation.
11	Mounting Bracket	Mount the inverter.

2.5.2 Product Dimensions



2.5.3 Indicator Light Description

Indicator Light	Status	Description
 Power		Steady On: Device Powered On
		Off: Device Not Powered On

 Operation		Steady On: Grid Normal, Grid-connected Successfully
		Off: Not Grid-connected
		Single Slow Flash: Pre-grid-connected Self-check
		Single Fast Flash: About to Grid-connect
 Communi cation		Steady On: Wireless Monitoring Normal
		Single Flash: Wireless Module Reset or Reconfiguration
		Double Flash: Not Connected to Base Station or Router
		Four Flashes: Not Connected to Monitoring Server
		Flash: RS485 Communication Normal
		Off: Wireless Module Restoring Factory Settings
 Failure		Steady On: System Fault
		Off: No Fault

2.5.4 Nameplate Description

Nameplate is for reference only; subject to actual product.

GOODWE	
Product: Grid-Tied PV Inverter	
Model : ***** _ ** _ *	
PV Input	UDCmax: **** Vd.c.
	UMPP: **...*** Vd.c.
	IDC,max: **Ad.c.
	ISC PV: **Ad.c.
Output	UAC,r: *** Va.c
	fAC,r: ** Hz
	PAC,r: ** kW
	IAC,max: ** Aa.c.*
	Sr: ** kVA
	Smax: ** kVA**
P.F.: ~* ,**cap...**ind Toperating: -**-** °C Non-isolated, IP** , Protective Class I, OVC DCII/ACIII	
	
S/N:	
***** Co, Ltd. E-mail:*****@*****.com ***** S/N	

Goodwe trademark, product type, and product model

Technical parameters

Safety symbols and certification marks

Contact information and serial number

SDT30DSC0014

3 Equipment Inspection and Storage

3.1 Equipment Inspection

Before signing for the product, please carefully check the following:

1. Check if the outer packaging is damaged, such as deformation, holes, cracks, or other signs that may cause damage to the equipment inside the package. If damaged, do not open the package and contact your dealer.
2. Check if the inverter model is correct. If not, do not open the package and contact your dealer.
3. Check if the type and quantity of the delivered items are correct, and if the appearance is damaged. If damaged, contact your dealer.

3.2 Deliverables

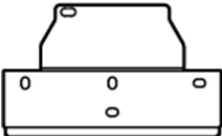
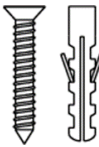
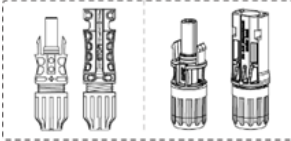
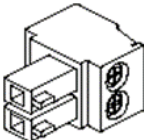
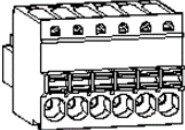
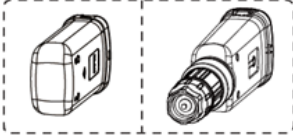
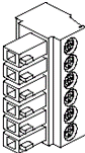
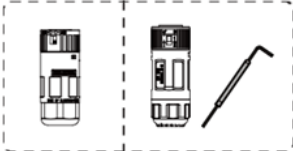


WARNING

For electrical connections, please use the terminal blocks shipped with the package. Equipment damage caused by using incompatible connectors is not covered by the warranty.

ATTENTION

- [1] Communication module types include: WiFi/LAN、4G etc. The actual shipped type depends on the selected inverter communication method.
- [2] The number of communication terminals and tubular terminals matches the selected communication method; please confirm according to the communication configuration. Inverter configuration 2PIN communication terminals, DRED/RCR communication terminals have different quantities, please refer to the actual situation.
- [3] The connection cable for the protocol converter is only shipped to China.
- [4] CT Standard in Australia, optional in other regions.
- [5] China region x 0; other regions x 1。

Components	Description	Components	Description
	Inverter x1		Back mounting plate x1
	Expansion screw x 4		PV terminal x 2
	Grounding terminal x 1		2PIN communication terminal x N[2]
	6PIN 485 communication terminal x 1		Tubular terminal x N[2]
	Communication module x 1[1]		DRED/RCR communication terminal x N[2]
	AC terminal x 1		CT x N[4]
	Protocol converter connection cable (inverter side) x 1[3]		Protocol converter connection cable (protocol converter side) x 1[3]

Components	Description	Components	Description
	Product documentation x 1		PVunlocking tool x N[5]
	AC tubular terminal x 3	-	-

3.3 Equipment Storage

If the device is not put into use immediately, please store it according to the following requirements:

1. Ensure that the outer packaging box is not removed and the desiccant inside the box is not lost.
2. Ensure the storage environment is clean, with appropriate temperature and humidity ranges, and no condensation.
3. Ensure the stacking height and direction of the inverter are placed in accordance with the requirements indicated on the label of the packaging box.
4. Ensure there is no risk of the inverter toppling after stacking.
5. If the storage time of the inverter exceeds two years or the non-operating time after installation exceeds six months, it is recommended to have it inspected and tested by professionals before putting it into use.
6. To ensure the good electrical performance of the internal electronic components of the inverter, it is recommended to power it on once every 6 months during storage. If it has not been powered on for more than 6 months, it is recommended to have it inspected and tested by professionals before putting it into use.

4 Installation

4.1 Installation Requirements

Installation environment requirements

1. The equipment must not be installed in environments that are flammable, explosive, or corrosive, etc.
2. The installation carrier shall be sturdy and reliable, capable of bearing the inverter's Weight
3. The installation space shall meet the equipment's ventilation and heat dissipation requirements, as well as operation space requirements
4. The equipment's Ingress Protection Rating shall meet the requirements for indoor and outdoor installation, and the ambient temperature and humidity of the installation environment shall be within suitable ranges
5. It is recommended to install the equipment in a sheltered location, avoiding environments such as direct sunlight, rain, and snow accumulation. If full shelter is not possible due to site conditions, it shall be ensured that environmental conditions such as temperature and humidity are always within the allowable range specified in the equipment's datasheet, and necessary protective measures shall be taken
6. Adverse environmental conditions such as direct sunlight and high temperature may cause the inverter's output power derating. When selecting the installation location, full consideration shall be given to heat dissipation conditions, and direct sunlight on the equipment body shall be avoided
7. The installation and storage location of the equipment shall avoid areas where cold air blows directly, such as air conditioning outlets. Excessive local temperature difference may cause condensation inside the equipment, which may further lead to equipment damage
8. The installation location shall be kept out of reach of children, and shall not be installed in easily accessible positions
9. The equipment surface may be hot during operation; take precautions to prevent burns
10. The installation height of the equipment shall be convenient for operation and maintenance, ensuring that the equipment indicators and all labels are easily visible, and the terminals are easy to operate
11. The inverter shall be installed at an altitude lower than the Max. Operating Altitude of 4000m

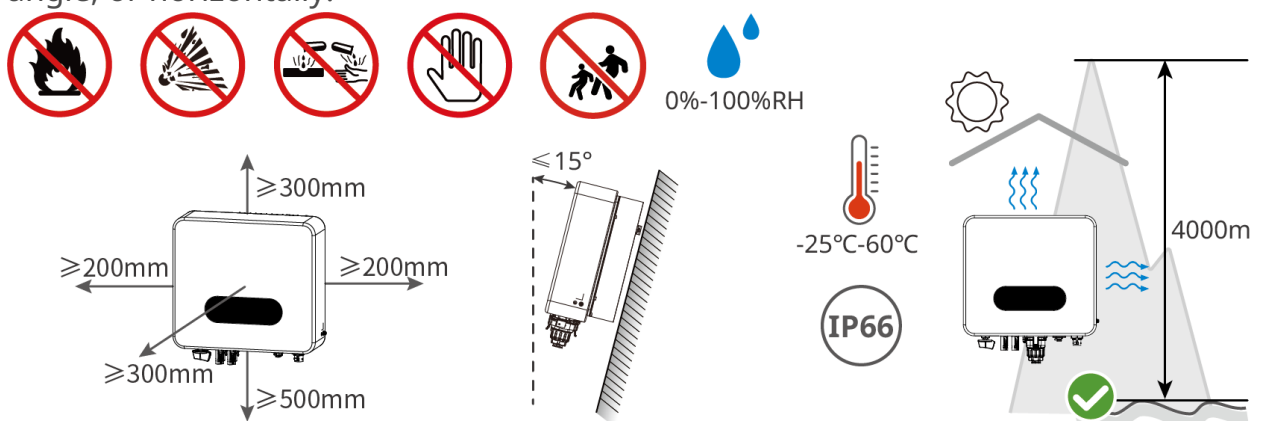
12. The inverter will be corroded if installed in salt-fog areas. Salt-fog areas refer to regions within 1000m from the coast or affected by sea breeze. The areas affected by sea breeze vary depending on meteorological conditions (e.g., typhoons, monsoons) or terrain (with dikes, hills)
13. Keep away from strong magnetic field environments to avoid electromagnetic interference. If there are radio stations or wireless communication devices below 30MHz near the installation location, install the device in accordance with the following requirements:
 - Add a ferrite core with multiple turns on the inverter's DC input line or AC output line, or add a low-pass EMI filter.
 - The distance between the inverter and wireless electromagnetic interference equipment exceeds 30m.

Installation Carrier Requirements

- The installation carrier must not be flammable material and must have fire resistance performance.
- Please ensure the installation surface is sturdy, and confirm that the carrier meets the equipment's load-bearing requirements.
- The equipment will vibrate during operation. Do not install it on a carrier with poor sound insulation, so as to avoid the Noise Emission from the equipment disturbing residents in the living area.

Installation Angle Requirements

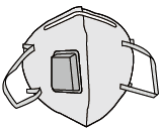
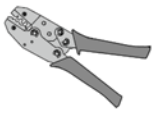
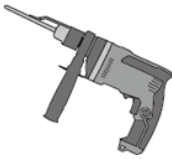
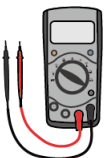
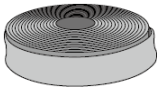
- Recommended inverter installation angle: vertical or backward tilt $\leq 15^\circ$.
- Do not install the inverter upside down, forward tilted, backward tilted beyond the angle, or horizontally.

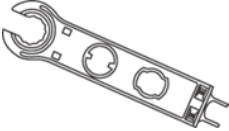
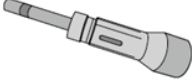
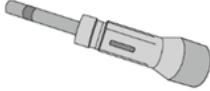


DNS40INT0001

Installation Tool Requirements

During installation, it is recommended to use the following installation tools. If necessary, other auxiliary tools can be used on site.

Tool Types	Description	Tool Types	Description
	Insulated gloves, protective gloves		Dust mask
	Goggles		Safety shoes
	Terminal crimping pliers		Diagonal cutting pliers
	Wire strippers		Hammer drill
	Hot air gun		Cable ties
	Rubber mallet		Marker pen
	Wire strippers		Heat shrinkable sleeve

Tool Types	Description	Tool Types	Description
	Vacuum cleaner		Spirit level
 or 	DC wiring wrench	 	Torque wrenchM3/M5
 	flat-head screwdriver	-	-

4.2 Inverter Installation

4.2.1 Inverter Handling

⚠ CAUTION

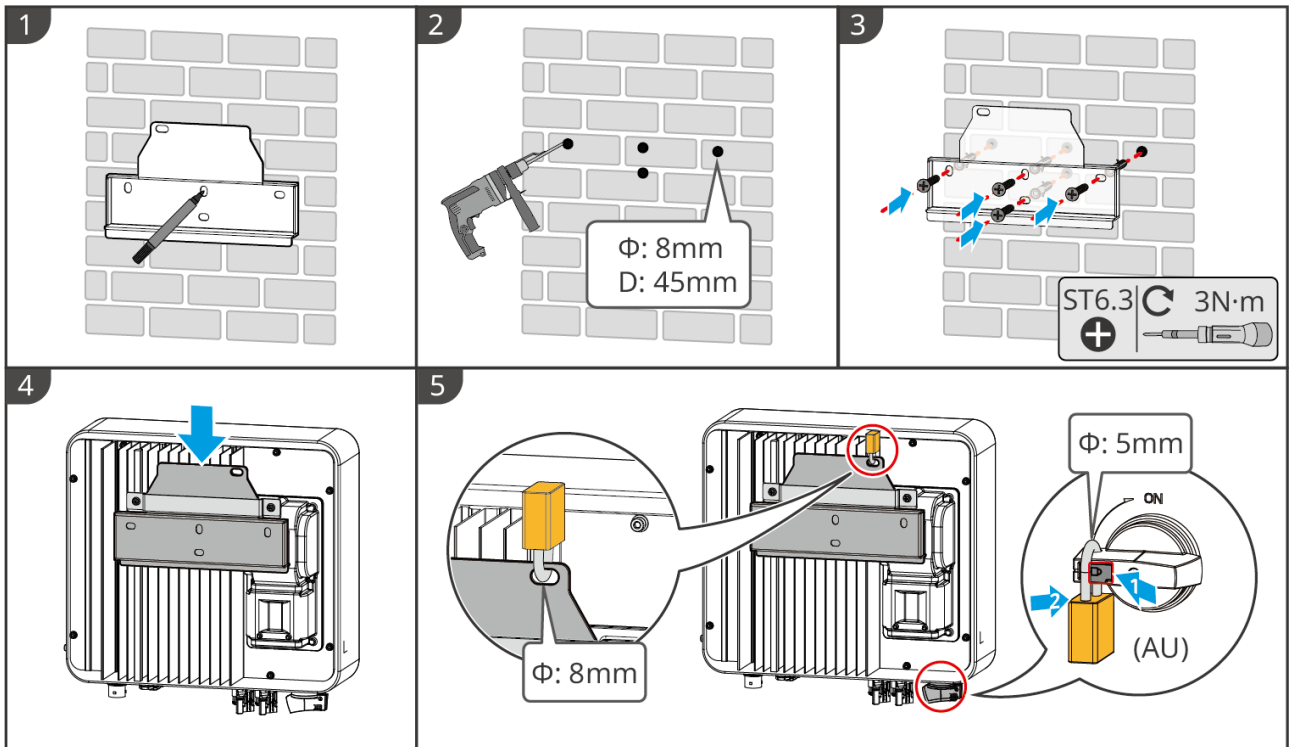
- When performing operations such as transportation, handling, installation, etc., compliance with the laws, regulations, and relevant standards of the country and region where the operations are conducted shall be ensured.
- Before installation, the inverter needs to be carried to the installation site. To avoid personal injury or equipment damage during handling, please note the following:
 1. Please assign appropriate personnel based on the equipment Weight to avoid the equipment exceeding the weight range that can be manually carried, which may cause injury.
 2. Please wear safety gloves to avoid injury.
 3. Please ensure the equipment remains balanced during handling to avoid falling.

4.2.2 Inverter Installation

ATTENTION

- When drilling, ensure the drilling position avoids water pipes, cables, etc., inside the wall to prevent hazards.
- When drilling, please wear goggles and a dust mask to prevent dust from entering the respiratory tract or eyes.
- DC Switch lock is user-supplied(Australia only) 。
- Anti-theft lock is user-supplied. Please select an appropriate anti-theft lock; otherwise, installation may not be possible.
- Ensure the inverter is installed securely to prevent falling and causing injury.

1. Place the back plate horizontally on the wall, and use a marker to mark the drilling positions.
2. Use a hammer drill with a drill bit diameter of 8mm to drill holes, ensuring the hole depth is approximately 45mm。
3. Use expansion screws to fix the back plate to the wall or bracket.
4. Hang the inverter on the back plate, and secure the back plate and the inverter.
5. Install the anti-theft lock with a hole diameter of 8mm. Install the DC Switch lock (Australia only) with a hole diameter of 5mm。



DNS40INT0003

5 Electrical Connection

5.1 Safety Precautions

DANGER

- Before performing electrical connection, please disconnect the DC Switch and AC output switch of the inverter to ensure the equipment is powered off. Live operation is strictly prohibited, otherwise hazards such as electric shock may occur.
- All operations during electrical connection, and the specifications of cables and components used must comply with local laws and regulations.
- If the cable is subjected to excessive tension, it may lead to poor wiring. When connecting, please reserve a certain length of the cable before connecting it to the inverter's terminal.

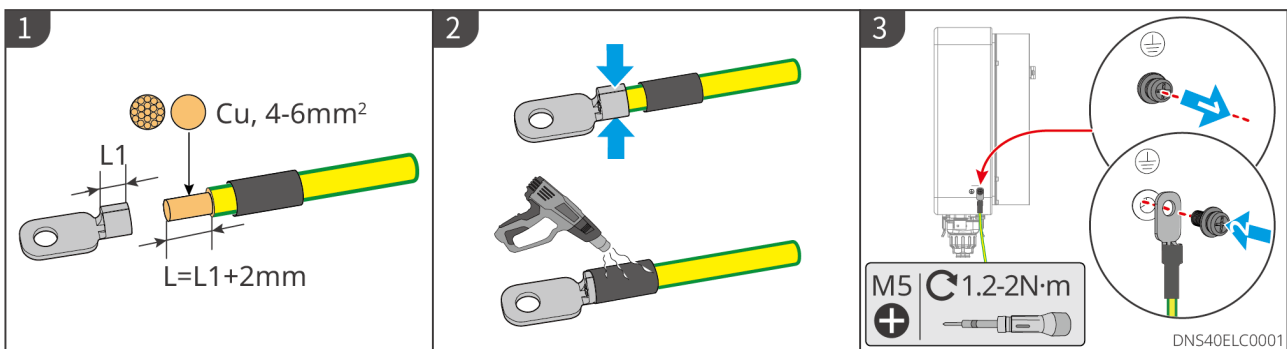
ATTENTION

- When performing electrical connection, please wear personal protective equipment such as safety shoes, protective gloves, and insulating gloves as required.
- Only professional personnel are allowed to perform operations related to electrical connection.
- The cable colors in this document are for reference only. The specific cable specifications must comply with local regulatory requirements.

5.2 Connect Protection Ground Wire

WARNING

- The Protection Ground of the chassis enclosure cannot replace the Protection Ground Wire of the AC output port. When wiring, ensure the Protection Ground Wires at both locations are reliably connected.
- For multiple inverters, ensure the Protection Ground points of all inverter chassis enclosures are equipotentially connected.
- To improve the corrosion resistance of the terminals, it is recommended to apply silicone or paint on the outside of the grounding terminal for Protection after the Protection Ground Wire connection and installation are completed.
- Please prepare your own Protection ground wire, recommended specification:
 - Type: Outdoor single-core copper wire
 - Conductor cross-sectional area: 4-6mm²



5.3 Connect AC Output Wire

WARNING

- Do not connect loads between the inverter and the AC Switch directly connected to the inverter.
- The inverter has an integrated Residual Current Monitoring Unit (RCMU). When the inverter detects a leakage current exceeding the allowable value, it will quickly disconnect from the grid.

Recommended specifications for RCD	Note
Select according to local laws and regulations • Type A • ON-GRID side^{*1}: 300mA	Self-provided
*1: The inverter has a built-in general-purpose current-sensing Residual Current Monitoring Unit. Once a leakage current exceeding the limit is detected, the inverter will immediately disconnect from the utility grid. However, if local regulations mandate the installation of an external Residual Current Protective Device (RCD), it is recommended to select a Type A RCD with an operating residual current of no less than 300 mA (for Apparent Power less than 30 kVA, 300 mA is recommended; for Apparent Power greater than 30 kVA, it is recommended to select according to 10 mA/kVA). You may also select an RCD that meets the required residual operating current in accordance with local regulations. For example, in Chile, local regulations require the installation of an RCD with a residual operating current of no more than 30 mA between inverters of 5 kVA and below and the grid. However, it should be noted that due to PV panels, RCDs with smaller residual operating currents are more prone to nuisance tripping in harsh environments such as rainy weather.	

ATTENTION
• Each inverter must be equipped with an AC output switch; multiple inverters cannot be connected to one AC Switch at the same time. • If the inverter's AC output terminals are not in use, please seal the terminals with a waterproof cover; otherwise, it will affect the device's Ingress Protection Rating.

To ensure the inverter can safely disconnect from the grid in case of an abnormal situation, please install an AC Switch on the AC side of the inverter. Select the appropriate AC Switch according to local regulations. The following switch specifications are for reference:

Inverter model	AC Switch specifications
GW3.6K-DNS-CN-G40	25A

Inverter model	AC Switch specifications
GW4.2K-DNS-CN-G40	32A
GW5K-DNS-CN-G40	32A
GW6K-DNS-CN-G40	40A
GW3K-DNS-G40	25A
GW3.6K-DNS-G40	25A
GW4.2K-DNS-G40	32A
GW5K-DNS-G40	32A
GW6K-DNS-G40	40A
GW3.1K-DNS-L-G40	32A

ATTENTION

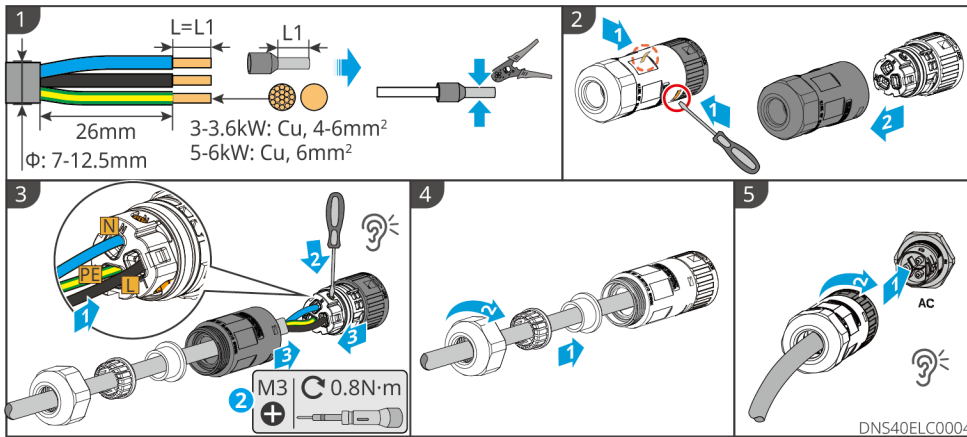
Each inverter must be equipped with an AC output switch; multiple inverters cannot be connected to one AC Switch at the same time.

WARNING

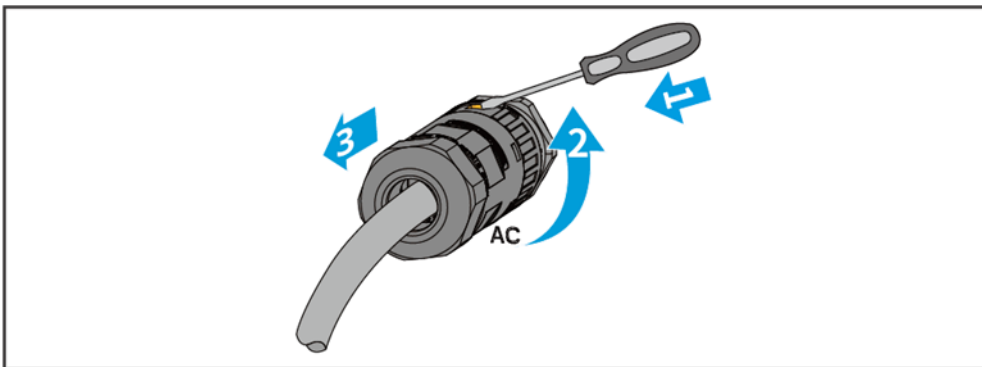
- When connecting AC cables, be sure to use tubular terminals for crimping.
- When wiring, the AC output lines must be fully matched with the "L"、"N"、"PE" terminals of the AC terminals. If the cables are connected incorrectly, it will cause damage to the inverter.
- Please ensure that the wire core is fully inserted into the AC terminal's wiring hole with no exposed parts.
- Ensure the cables are connected tightly; otherwise, the terminals may overheat during device operation, causing damage to the inverter.

1. Prepare the AC output cables.
2. Disassemble the AC terminals.
3. Connect the AC output cables to the AC terminals.
4. Combine the AC connection terminals
5. Connect the AC terminals to the inverter.

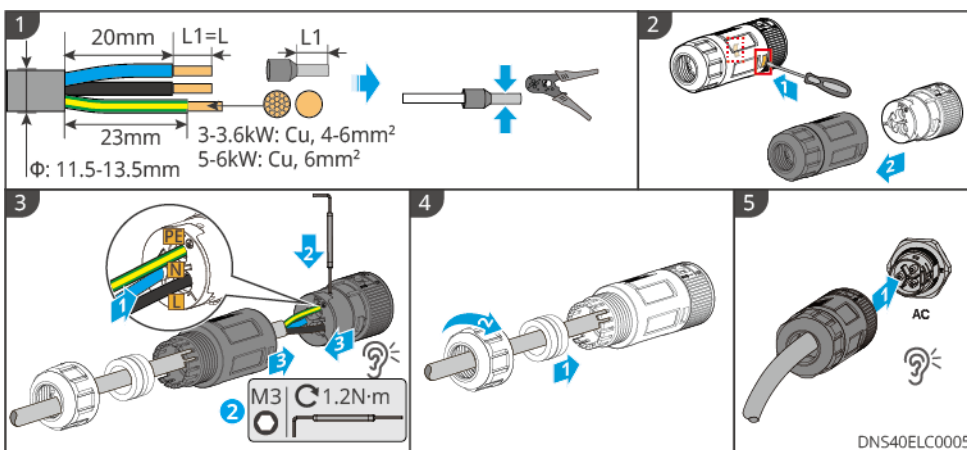
Type 1:



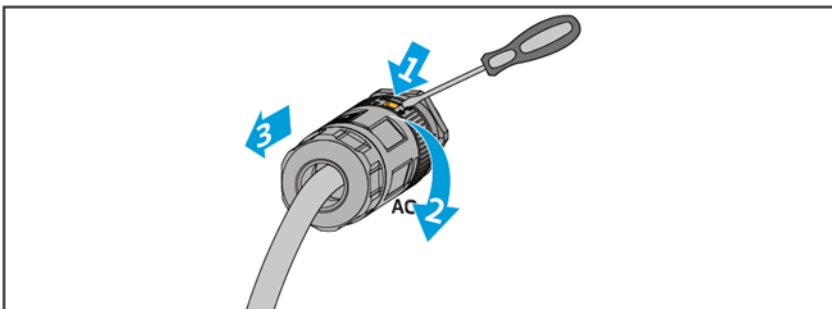
Disassemble AC terminals



Type 2:



Disassemble AC terminals



ATTENTION

- After completing the wiring, check the correctness and firmness of the wiring, and clean up the construction residues.
- The AC output terminals must be sealed to ensure the device's Ingress Protection Rating.

5.4 Connect DC Input Wire

DANGER

Before connecting PV strings to the inverter, confirm the following information; otherwise, it may cause permanent damage to the inverter, and in severe cases, may lead to fires resulting in personal injury and property loss.

1. Please ensure that for each MPPT Max. MPPT Short Circuit Current and Max. Input Voltage are within the allowable range of the inverter.
2. Please ensure that the positive pole of the PV string is connected to the PV+, PV string's negative pole is connected to the PV-.

WARNING

- Mixing PV modules of different brands or models in the samePVstringMPPTchannel, or connecting PV modules with different azimuth angles or tilt angles in the samePVstringPVmodules, will not necessarily damage the inverter, but will lead to a reduction in system performance.
- The maximum DC input voltage of the inverter is600V. Please ensure that the open-circuit voltage of theMPPTconnectedPVstring does not exceed600V. When the input voltage is in the560V-600V, the inverter will enter standby mode. When the voltage returns to theMPPTworking voltage range40V-560V, the inverter will resume normal operation.
- It is recommended that the voltage difference between differentMPPTchannels does not exceed150V。
- The sum of the peak power currents of the strings connected to eachMPPTchannel shall not exceed the Max. MPPT Current of eachMPPTchannel of the inverter.
- When connecting multiplePVstrings to the inverter, it is recommended to maximize the number ofMPPTconnections.
- PVstring outputs do not support grounding. Before connecting thePVstring to the inverter, ensure that the minimum insulation resistance to ground of thePVstring meets the minimum insulation impedance requirement.
- Please prepare DC input wires by yourself.

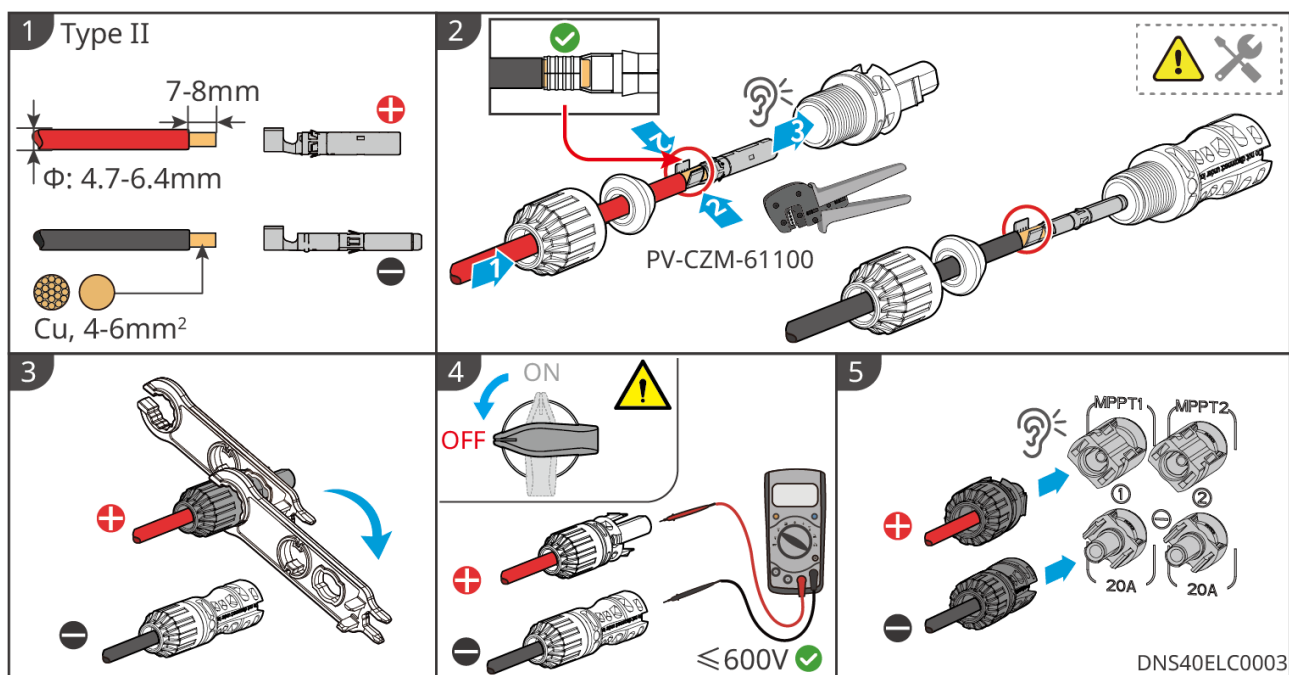
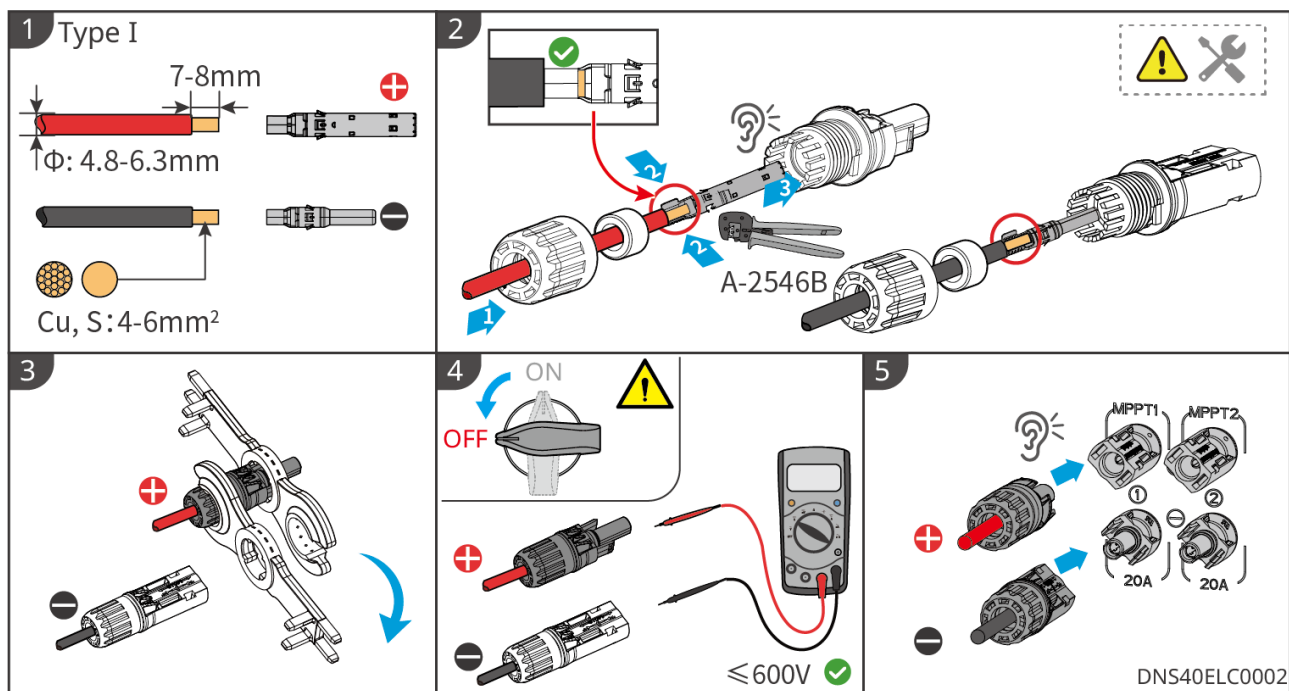
ATTENTION

If the DC input terminals of the inverter do not need to be connected toPVstrings, use waterproof caps to seal the terminals; otherwise, it will affect the Ingress Protection Rating of the equipment.

Connect DC Input Wire

1. Prepare DC cables.
2. Crimp the DC input terminals and assemble the DC Connector.
3. Tighten the DC Connector.
4. Measure the DC input voltage.

5. Connect the DC Connector to the DC terminals of the inverter.



5.5 Communication Connection

ATTENTION

- The specific functional configuration of the product shall be subject to the actual model of the inverter in the actual region.
- Due to product version upgrades or other reasons, the document content will be updated irregularly. For the compatibility between inverters and IoT products, please refer to:
https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Compatibility-list-of-GoodWe-inverters-and-IoT-products-EN.pdf

5.5.1 Communication Networking Introduction

Power Limit Networking Solution

ATTENTION

- When the inverter is connected to a smart meter or CT, it can realize the functions of output power limit and load monitoring.
- Please enable the "Grid-connected Power Limit" function via the App to complete the setting.

For a photovoltaic power station, the Energy Generation is for Self-consumption. If the electrical equipment cannot consume all the power, and power is fed back to the grid (reverse power flow), the inverter can monitor the grid-side power data in real time via the smart meter, adjust the output power, and prevent surplus power from being fed into the grid.



WARNING

1. When networking a single unit, First-time Installation does not require attention to sampling current direction; during later replacement or maintenance, please use the electricity meter on it/CT-auxiliary detection function to allow the inverter to re-adapt sampling current direction.
2. When networking with multiple units, the installation position of CT should be close to the grid connection point, and the installation direction should be correct. In CT, the "-->" indicates the direction of the inverter current flowing to



WARNING

the grid. If it is reversed, the inverter will trigger an alarm and cannot realize the output limit function.

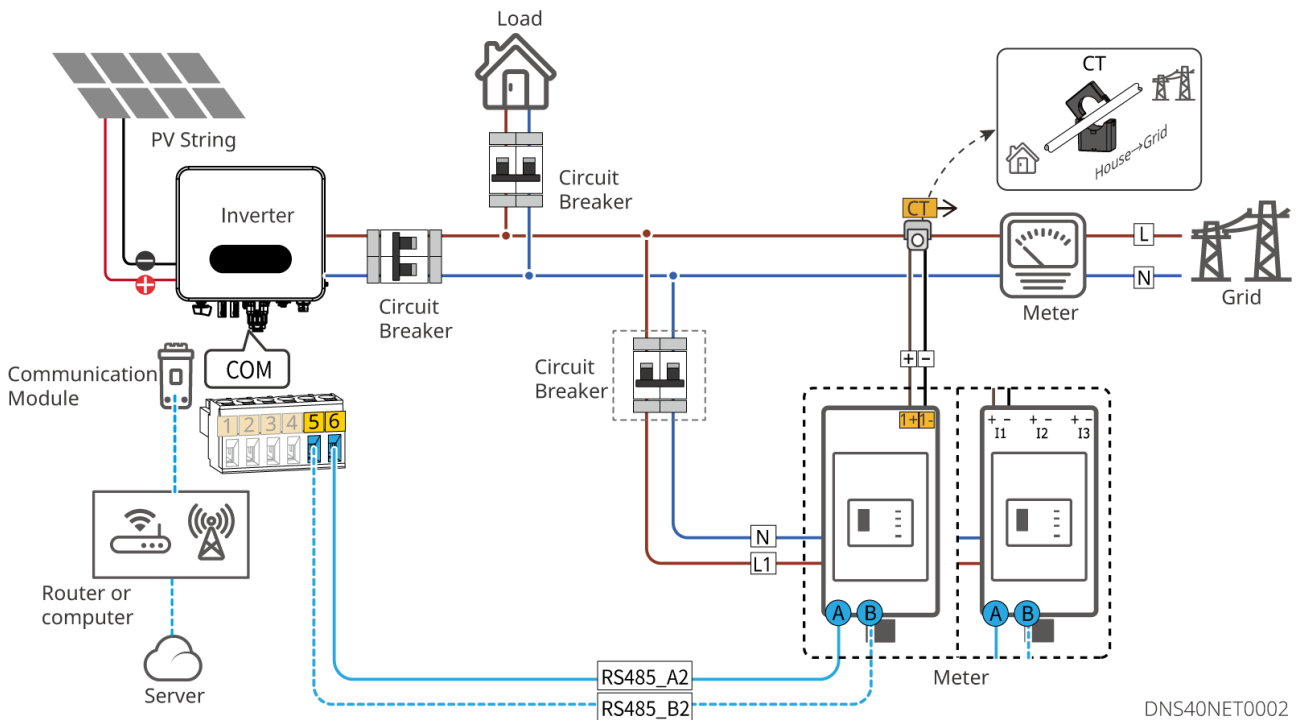
3. CTthe aperture must be larger than the outer diameter of the AC power line to ensure the AC power line can pass throughCT。
4. CTshould be clamped onLcable, do not clamp onNcable.
5. TheCTsampling range shipped with the inverter:90A; transformation ratio:1000:1; cable length:5m。
6. GM330:
 - CTplease select the current transformation ratio specificationnA/5A。 (nA: CTprimary side input current,nthe range is200-5000,shall be selected by the user according to actual needs.5A: CTsecondary side output current.)
 - CTit is recommended to select the accuracy value0.5、 0.5s、 0.2、 0.2s,EnsureCTcurrent sampling error $\leq 1\%$ 。
 - To ensure the current detection accuracy ofCT, the cable length ofCTis recommended not to exceed30m, and the cable's current carrying capacity is recommended to be6A。
7. Please ensure that the meter wiring and phase sequence are correct. The recommended cross-sectional area of the meter's input voltage cable is:1mm²(18AWG) 。
8. Power limit for multi-unit networking needs to matchEzlink3000. If you need to use it, please contact after-sales service or the distributor to purchase.
9. The inverter supports setting parameters locally via4G、 WiFi/LANcommunication modules, connecting to a mobile phone orWEBinterface to set device-related parameters, view device operation information and error information, and timely understand the system status.
10. When there is only one inverter in the system, you can use the4G Kit-CN-G20 、 4G Kit-CN-G21 、 WiFi/LAN Kit-20orWiFi Kit-20smart communication stick.
11. When the system includes multiple inverters for Parallel Networking, the main inverter needs to install theEzlink3000smart communication stick for networking, and the slave inverter does not need to connect to the smart communication stick.Ezlink3000 version isV1.6.8or above.
12. After wiring is completed, set relevant parameters via theLCDdisplay orAppto complete the Power Limit or output power limit function.

ATTENTION

This type of meter is mainly used for Power Control at the grid connection point. The measured Energy Generation and power consumption can only be used as a reference, and cannot be used as the basis for electricity metering. Electricity metering shall be based on the metering meter of the power grid company.

Single-unit Power Limit Networking Solution

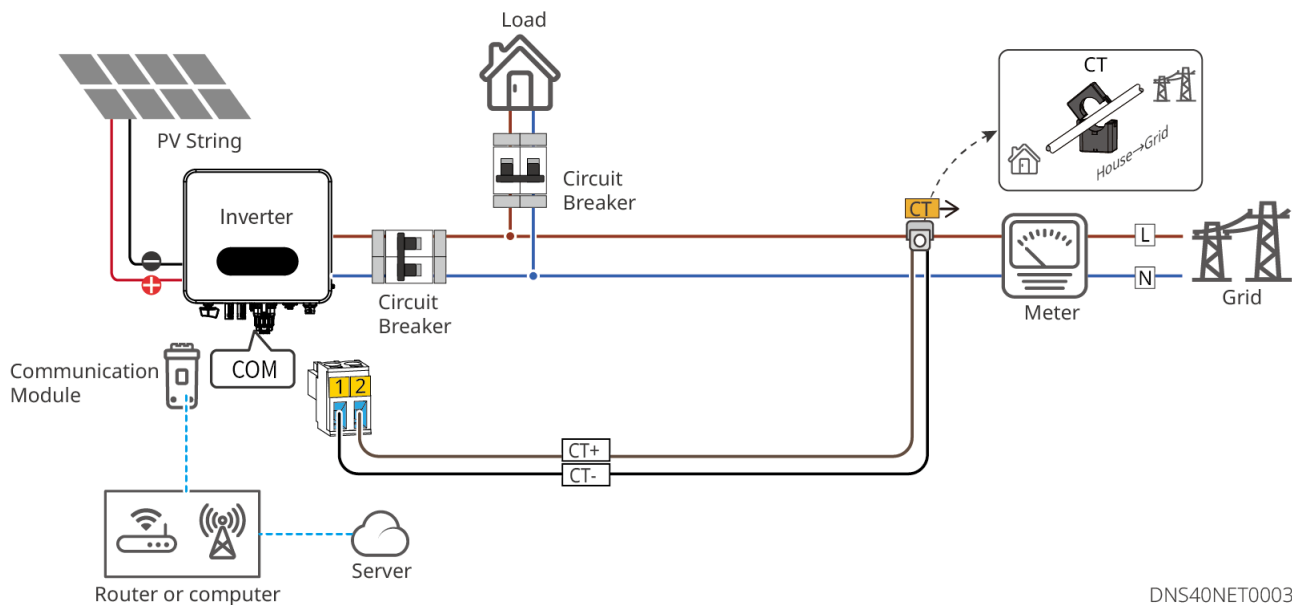
Meter Solution(GMK110/GM1000/GM330/GMK330)



CT Solution

ATTENTION

In Australia, CT is shipped with the inverter, and it is optional in other regions. CT ratio: 90A/90mA.

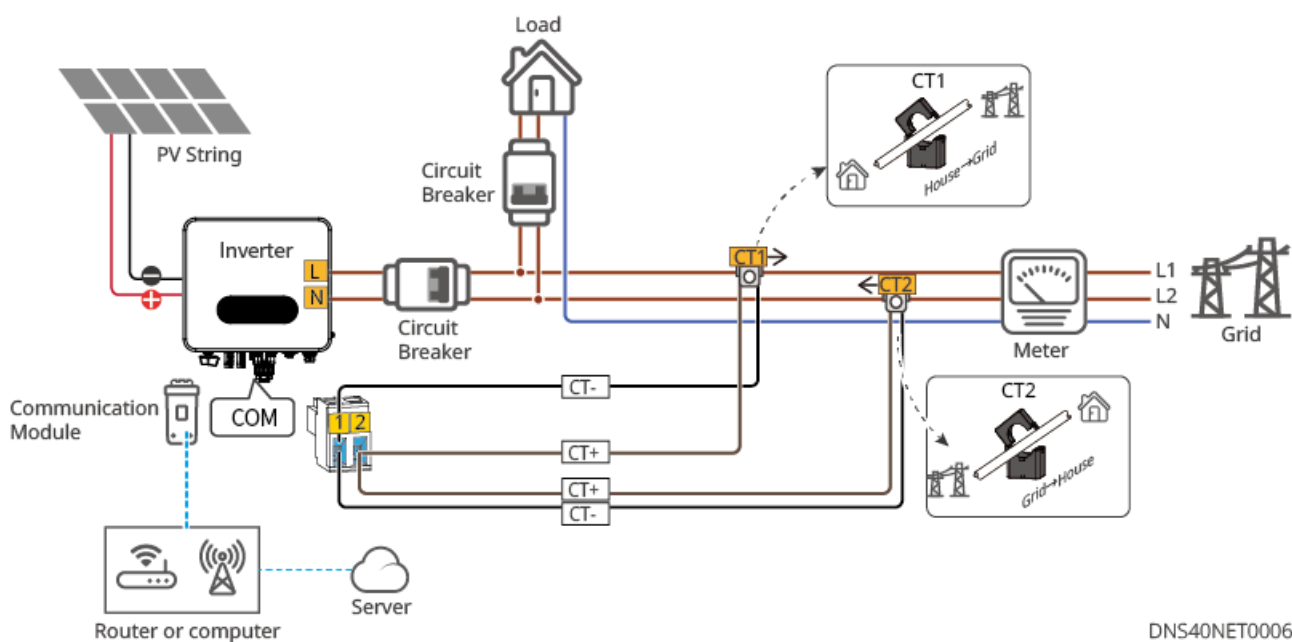


DNS40NET0003

When connecting to a split-phase gridSingle-unit Power Limit Networking Solution

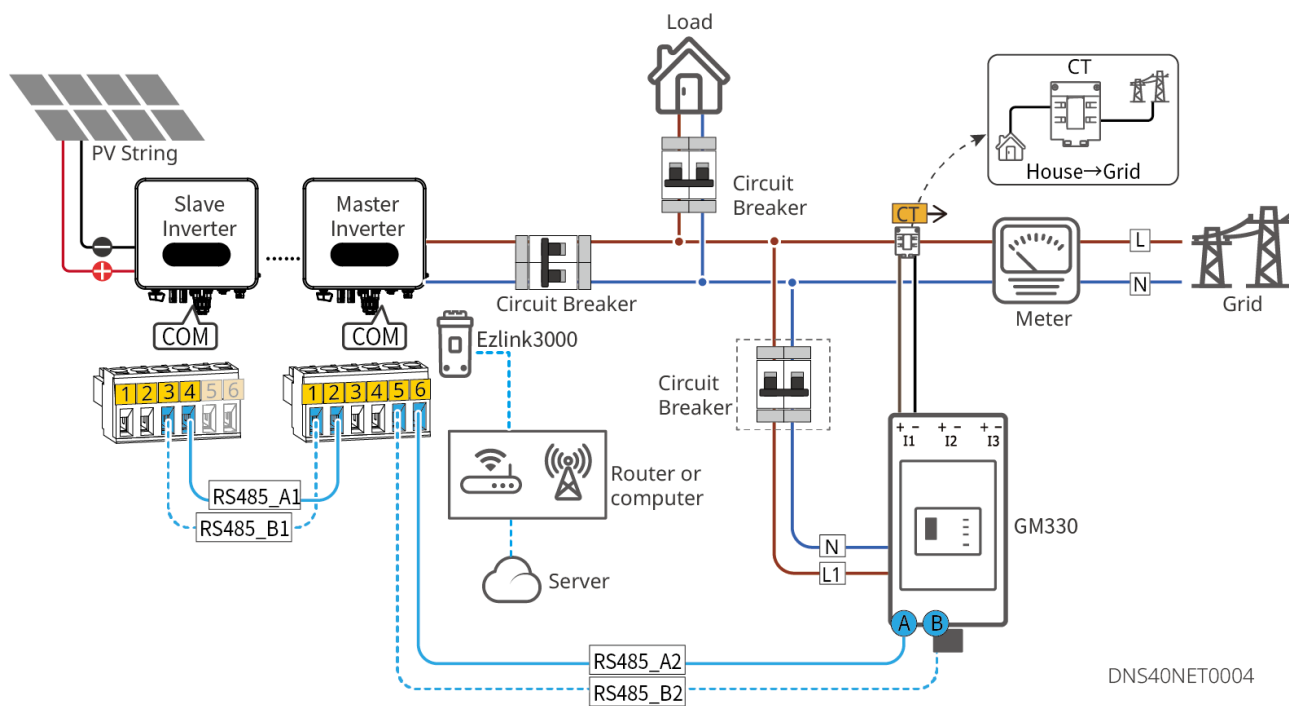
ATTENTION

Users shall provide their own CT or purchase CT from the manufacturer.
CT ratio: 90A/45mA.

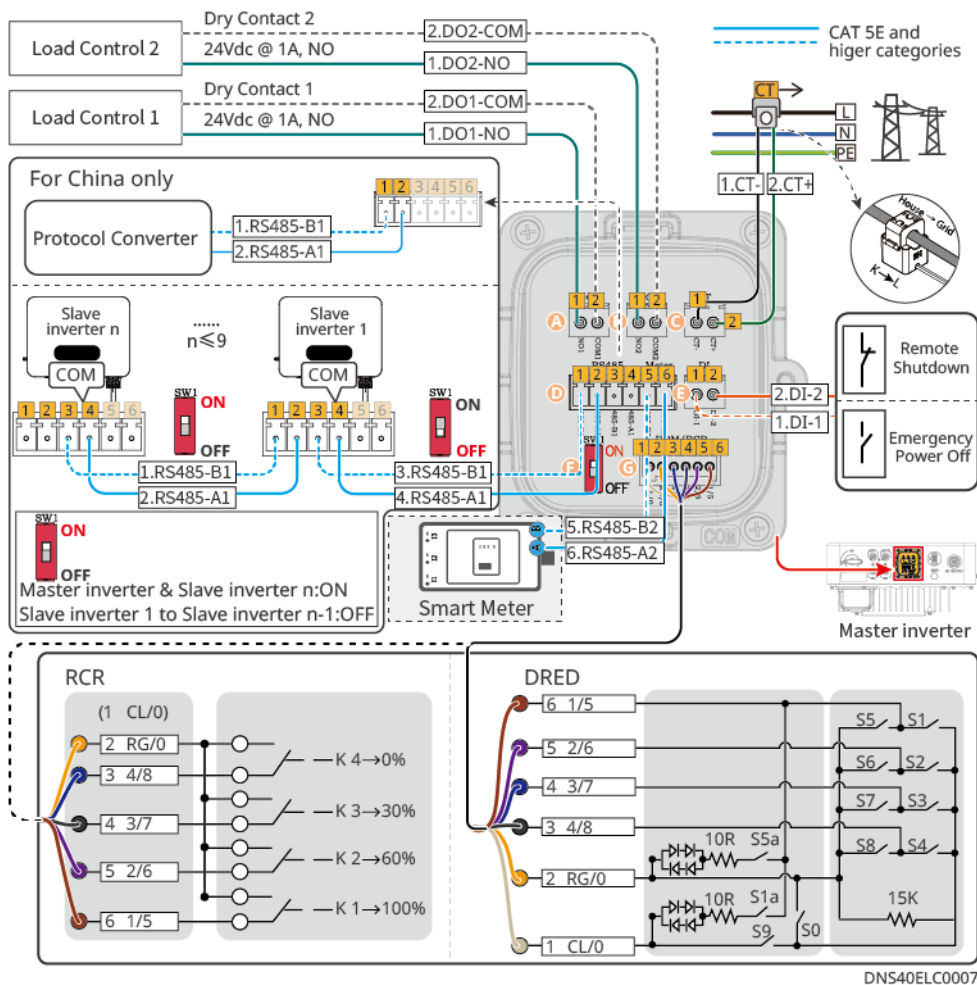


DNS40NET0006

Multi-unit power-limited networking scheme (GM330/GMK330+Ezlink3000)



5.5.2 Connect Communication Cables



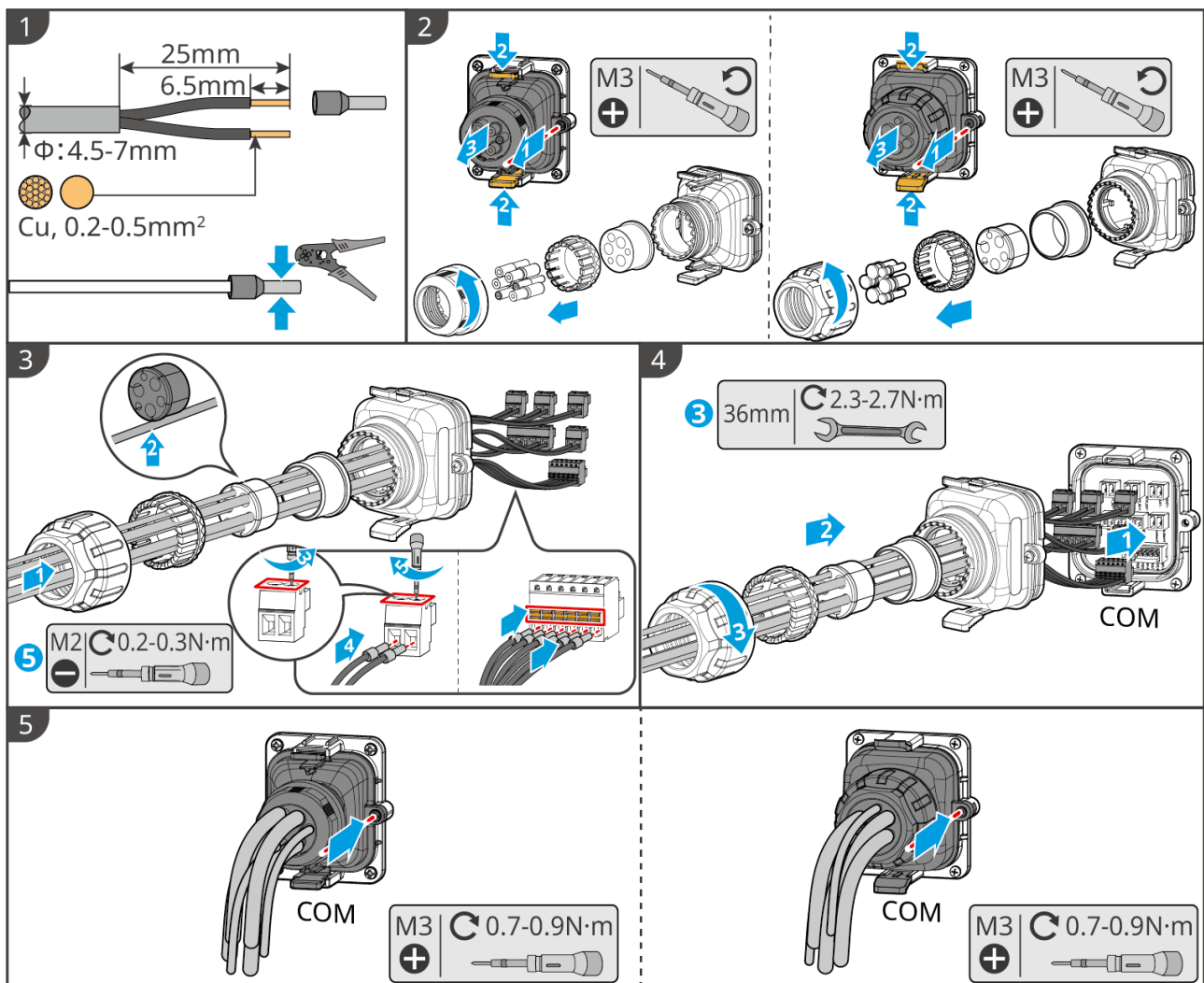
Silkscreen	Function	Description
DO1 DO2	Load control (optional)	- Supports connection of dry contact signals to realize functions such as load control. DO contact capacity is 24VDC@1A, NO normally open contact. - Supports SG Ready heat pump access, and controls the heat pump via dry contact signals.
CT	CT connection port (CT)	Used for single-unit output power limiting.

Silkscreen	Function	Description
RS485	Parallel communication port or protocol converter communication port (RS485-1)	- Used for parallel connection of multiple inverters or communication with protocol converter (China only). - The same set of RS485 ports are used for connecting the inverter to the protocol converter and for parallel connection. If a protocol converter is connected, the inverter parallel connection function cannot be used; in inverter parallel connection scenarios, a protocol converter cannot be connected.
Meter	Meter connection port (RS485-2)	Inverters paired with meters enable the output power limitation function. If supporting equipment is needed, contact the inverter manufacturer for purchase.
DI	Remote Shutdown or Emergency Power Off	After the emergency switch sends the shutdown signal, the AC side of the inverter automatically disconnects and stops grid connection. An external Emergency Power Off switch is required.
DRM/RCR	DRED(Australia) or RCR(Europe) connection port	- DRED (Demand Response Enabling Device) : provides DRED signal control ports, meeting Australia and New Zealand DRED grid dispatching requirements. DRM1-4 function reserved, DRM equipment is user-supplied. - RCR (Ripple Control Receiver) : provides RCR signal control ports, meeting the grid dispatching requirements of regions such as Germany.

Silkscreen	Function	Description
SW1	Terminal resistance DIP switch	The inverter is equipped with RS485 terminal resistance, and the default setting of this terminal resistance DIP switch is ON. "ON" represents ON, and "1" represents OFF. Operation method: Open the outer cover of the communication port, and use an insulating tab to set the terminal resistance DIP switch to "1" (OFF).

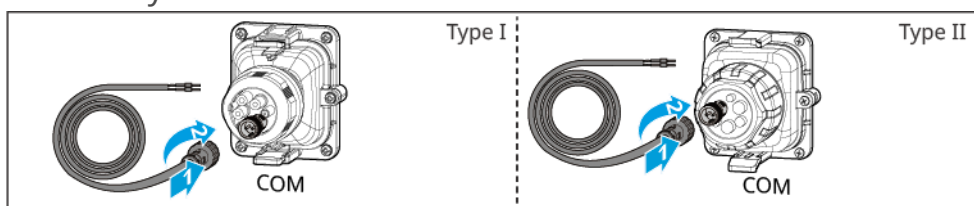
ATTENTION

- When connecting communication cables, please ensure that the wiring port definitions fully match the device. The cable routing path should avoid interference sources, power cables, etc., so as not to affect signal reception.
- Connecting Remote Shutdown/Emergency Power Off (India), CT, and load control communication cables, please use 2PIN communication terminals.
- Connecting RS485 (meter) 、 DRED/RCR communication cables, please use 6PIN communication terminals.
- If you need to use DRED、RCR or Remote Shutdown function, after wiring is completed, please enable this function in App .
- If the inverter is Not Connected DRED、RCR or Remote Shutdown devices, do not enable this function in s App , otherwise the inverter cannot operate in grid-connected mode.
- More detailed information about the communication module can be obtained from the official website.
- USB-RS485 adapter cable, only used for models in Brazil. If needed, contact after-sales service.
- Communication cable type requirements: RS485 communication cables shall meet local standards for outdoor shielded twisted pair.



DNS40ELC0006

China only



DNS40ELC0008

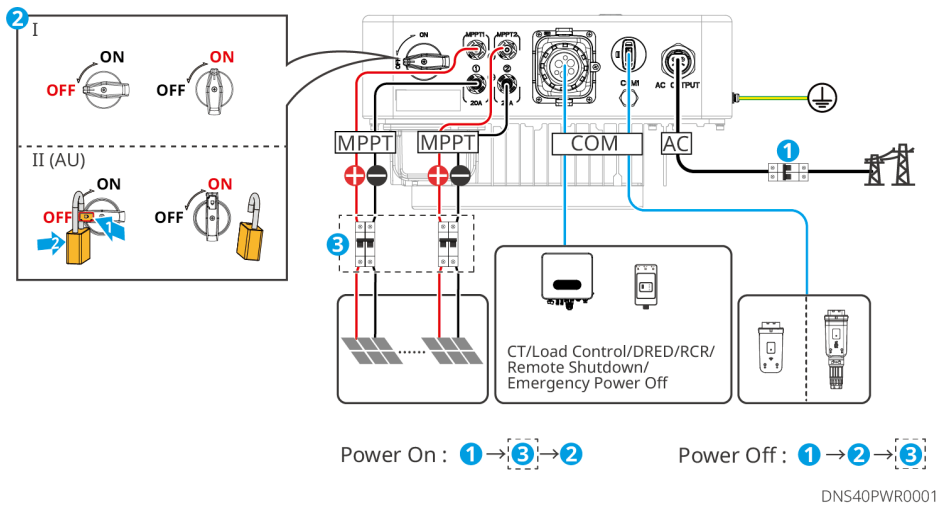
6 Equipment Trial Operation

6.1 Pre-Power-up Inspection of the System

Serial Number	Inspection Items
1	The equipment is installed firmly, the installation location is convenient for operation and maintenance, the installation space is convenient for ventilation and heat dissipation, and the installation environment is clean and tidy.
2	Protection ground wire, DC wire, AC wire, and communication wire are connected correctly and firmly.
3	Cable binding meets routing requirements, is reasonably distributed, and has no damage.
4	For unused cable entry holes and ports, be sure to use the terminals supplied with the accessories for reliable connection, and they have been sealed.
5	Ensure that the used cable entry holes have been sealed.
6	The voltage and frequency at the grid connection point of the inverter meet the grid connection requirements.

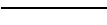
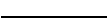
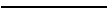
6.2 Device Power-On

1. Close the AC Switch between the inverter and the grid.
2. Close the DC Switch between the inverter and the PV modules.
3. Close the DC Switch of the inverter.



7 System Commissioning

7.1 Indicator Light Description

Indicator Light	Status	Description
 Power		Steady On: Device Powered On
		Off: Device Not Powered On
 Operation		Steady On: Grid Normal, Grid-connected Successfully
		Off: Not Grid-connected
		Single Slow Flash: Pre-grid-connected Self-check
		Single Fast Flash: About to Grid-connect
 Communi- cation		Steady On: Wireless Monitoring Normal
		Single Flash: Wireless Module Reset or Reconfiguration
		Double Flash: Not Connected to Base Station or Router
		Four Flashes: Not Connected to Monitoring Server
		Flash: RS485 Communication Normal
		Off: Wireless Module Restoring Factory Settings
 Failure		Steady On: System Fault
		Off: No Fault

7.2 Set Inverter Parameters via Display Screen

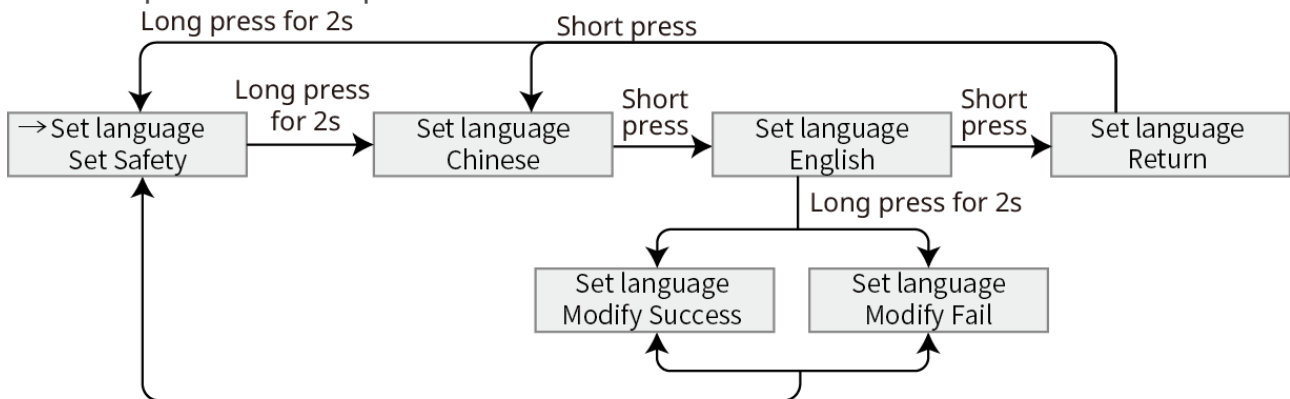
ATTENTION

- The interface images in this document correspond to the inverter firmware version:V1.00.00; communication version:V1.00. The interface is for reference only, subject to actual conditions.
- Parameter names, ranges, and default values may be changed or adjusted later, subject to actual display.
- Inverter power parameters must be set and monitored by professionals to avoid incorrect settings affecting the inverter's energy generation.

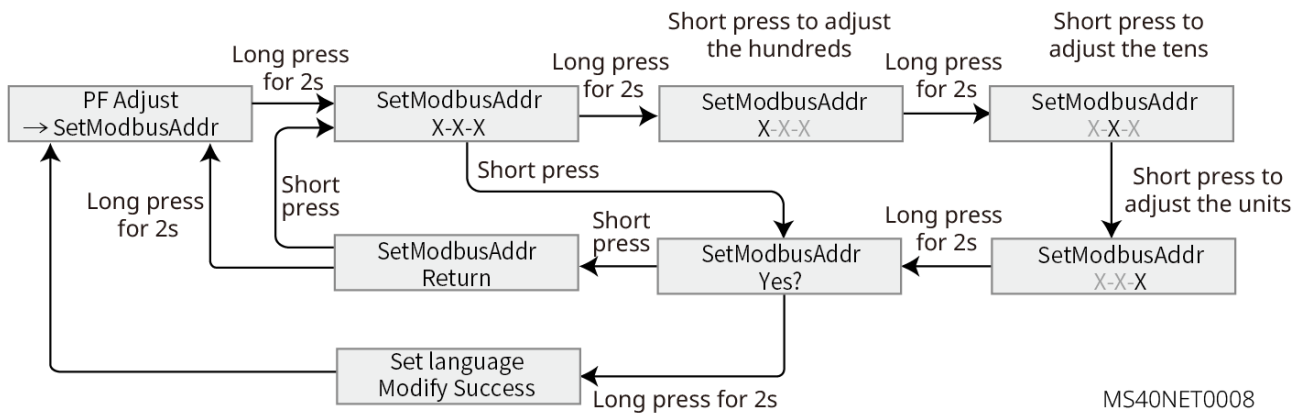
Display Button Instructions

- In all levels of menus, if the button operation is stopped for more than a certain time, the LCD display will dim, and the interface will automatically jump to the initial interface.
- Short press the display operation button: switch menu interfaces, adjust parameter values.
- Long press the display operation button: after parameter value adjustment is completed, long press to confirm parameter setting; enter the next level submenu.

Button Operation Examples:



MS40NET0007

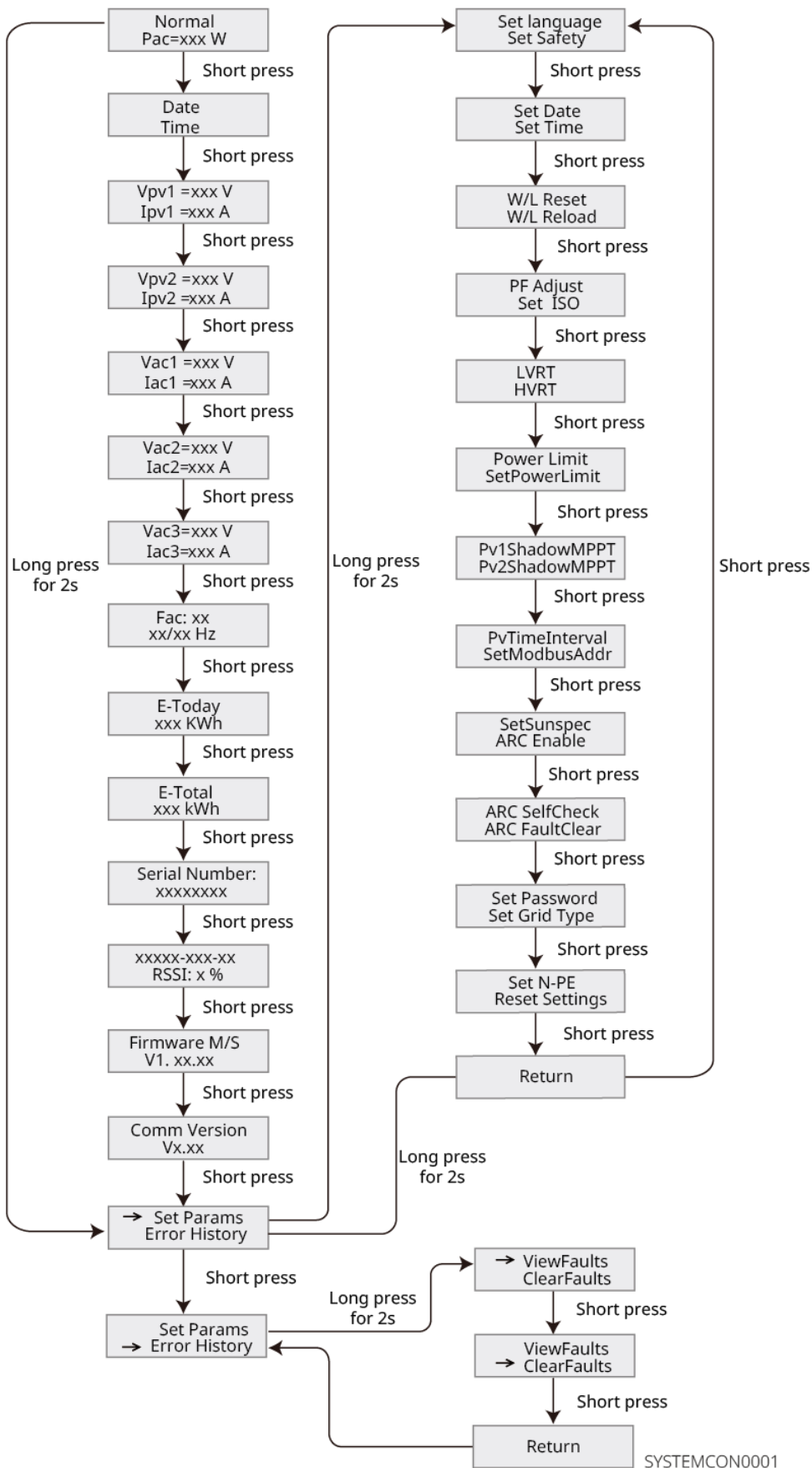


7.2.1 Display Menu Introduction

Introduce the display menu structure to help you enter all levels of menus, view inverter information, and set related inverter parameters.

First level menu

Second level menu



8 System Commissioning and Power Station Monitoring

8.1 Perform Device Commissioning and Power Station Monitoring via SEMS+ App

SEMS+ App is a software used for remote power station monitoring or near-end device commissioning. It supports installers or owners:

- Monitor the power station operation status remotely, and set the operation parameters of the power station and devices.
- Connect to devices near-end, view device operation status and set device parameters.

Download and install SEMS+ App

Mobile device requirements:

- Mobile operating system requirements: Android 7.0 and above, iOS 15.1 and above.
- Mobile device supports web browser and connects to Internet.
- Mobile device supports WLAN/Bluetooth function.

Download methods:

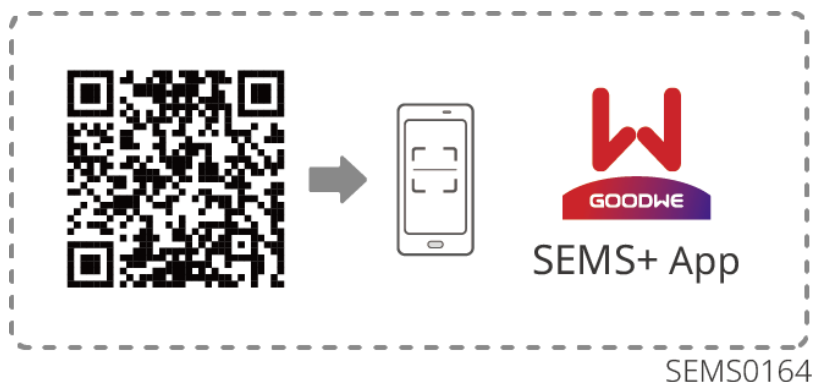
Method 1:

Search for SEMS+ in Google Play, App Store, Huawei, Honor, Xiaomi, OPPO, vivo app stores, then download and install.



Method 2:

Scan the QR code below to download and install.



For detailed functions, please refer to [SEMS+ App User Manual](#). The user manual can be obtained from the official website or by scanning the QR code below.



《SEMS+ App User Manual》

8.2 Perform Device Commissioning and Power Station Monitoring via SEMS+ WEB

SEMS+ WEB is a monitoring platform that can communicate via WiFi or LAN. Below are common functions of SEMS+ WEB:

1. Manage organization or user information, etc.
2. Add and monitor power station information, etc.
3. Maintain devices.

For detailed functions, please refer to [《SEMS+ WEB User Manual》](#)。



《SEMS+ WEB User Manual》

9 System Maintenance

9.1 Inverter Power-Off

DANGER

- When performing operation and maintenance on the inverter, please power off the inverter. Operating the equipment while it is energized may cause damage to the inverter or electric shock hazard.
- After the inverter is powered off, it takes some time for the internal components to discharge. Please wait until the device is fully discharged according to the time requirements on the label.

Step 1: (Optional) Issue a grid stop command to the inverter.

Step 2: Disconnect the AC Switch between the inverter and the grid.

Step 3: Disconnect the DC Switch of the inverter.

Step 4: (Optional) Disconnect the switch between the inverter and the PV modules.

9.2 Remove the Inverter

WARNING

- Ensure the inverter is powered off.
- When operating the inverter, please wear personal protective equipment.

Step 1: Disconnect all electrical connections of the inverter, including: DC cables, AC cables, communication cables, communication modules, Protection ground.

Step 2: Remove the inverter from the wall mount bracket.

Step 3: Remove the wall mount bracket.

Step 4: Store the inverter properly. If the inverter needs to be put into use later, ensure the storage conditions meet the requirements.

9.3 Scrap the Inverter

If the inverter cannot be used continuously and needs to be scrapped, dispose of it in

accordance with the electrical waste disposal requirements of the regulations of the country/region where the inverter is located. Do not treat the inverter as household waste.

9.4 Fault Information and Handling Methods

Please perform fault troubleshooting according to the following methods. If the troubleshooting methods cannot assist you, please contact the after-sales service center.

When contacting the after-sales service center, please collect the following information to facilitate quick problem resolution.

1. Product information, such as: serial number, software version, equipment installation time, fault occurrence time, fault occurrence frequency, etc.
2. Equipment installation environment, such as: weather conditions, whether the components are blocked or shaded, etc. It is recommended to provide photos, videos, and other files to assist in problem analysis.
3. Grid Conditions.

9.4.1 Inverter Faults

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F01	Grid Power Outage	1. Grid Power Outage. 2. AC line or AC Switch is disconnected.	1. The alarm will automatically disappear after grid power supply is restored. 2. Check whether the AC line or AC Switch is disconnected.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F02	Grid Overvoltage Protection	Grid voltage is higher than the allowable range, or the Duration of overvoltage exceeds the set value for High Voltage Ride Through.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If it occurs frequently, please check whether the grid voltage is within the allowable range • If the grid voltage exceeds the allowable range, please contact the local power utility. • If the grid voltage is within the allowable range, after obtaining the consent of the local power utility, modify the inverter's Grid Overvoltage Protection point, HVRT or disable the Grid Overvoltage Protection function. 3. If it cannot be recovered for a long time, please check whether the AC side circuit breaker and output cable are connected properly.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F03	Grid Undervoltage Protection	Grid voltage is lower than the allowable range, or the Duration of undervoltage exceeds the set value for Low Voltage Ride Through.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If it occurs frequently, please check whether the grid voltage is within the allowable range • If the grid voltage exceeds the allowable range, please contact the local power utility. • If the grid voltage is within the allowable range, after obtaining the consent of the local power utility, modify the inverter's Grid Undervoltage Protection point, LVRT or disable the Grid Undervoltage Protection function. 3. If it cannot be recovered for a long time, please check whether the AC side circuit breaker and output cable are connected properly.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F04	Grid Rapid Overvoltage Protection	Grid voltage detection is abnormal, or a fault is triggered by overvoltage.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If it occurs frequently, please check whether the grid voltage is within the allowable range • If the grid voltage exceeds the allowable range, please contact the local power utility. • If the grid voltage is within the allowable range, after obtaining the consent of the local power utility, modify the inverter's Grid Undervoltage Protection point, LVRT or disable the Grid Undervoltage Protection function. 3. If it cannot be recovered for a long time, please check whether the AC side circuit breaker and output cable are connected properly.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F05	10minGrid 10min Overvoltage	During the 10min period, the moving average of grid voltage exceeds the range specified by safety standards.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. Check whether the grid voltage is operating at a higher voltage for a long time. If it occurs frequently, please check whether the grid voltage is within the allowable range. • If the grid voltage exceeds the allowable range, please contact the local power utility. • If the grid voltage is within the allowable range, after obtaining the consent of the local power utility, modify the grid 10minGrid 10min Overvoltage point.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F06	Grid Overfrequency	Grid abnormality: The actual grid frequency is higher than the standard requirement of the local grid.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If it occurs frequently, please check whether the grid frequency is within the allowable range • If the grid frequency exceeds the allowable range, please contact the local power utility. • If the grid frequency is within the allowable range, after obtaining the consent of the local power utility, modify the Grid Overfrequency point.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F07	Grid Underfrequency	Grid Abnormality: The actual grid frequency is lower than the local grid standard requirement.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If it occurs frequently, please check whether the grid frequency is within the allowable range • If the grid frequency exceeds the allowable range, please contact the local power utility. • If the grid frequency is within the allowable range, after obtaining the consent of the local power utility, modify the Grid Overfrequency point.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F08	Grid Frequency Instability	Grid Abnormality: The actual grid frequency change rate does not meet the local grid standard.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, please check whether the grid frequency is within the allowable range. • If the grid frequency exceeds the allowable range, please contact the local power utility. • If the grid frequency is within the allowable range, please contact your dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F163	Grid Phase Instability	Grid Abnormality: The grid voltage phase change rate does not meet the local grid standard.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, please check whether the grid frequency is within the allowable range. • If the grid frequency exceeds the allowable range, please contact the local power utility. • If the grid frequency is within the allowable range, please contact your dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F09	Anti-islanding Protection	Grid has been disconnected, maintaining grid voltage due to the presence of loads, stopping grid connection in accordance with safety protection requirements	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, please check whether the grid frequency is within the allowable range. • If the grid frequency exceeds the allowable range, please contact the local power utility. • If the grid frequency is within the allowable range, please contact your dealer or after-sales service center.
F10	Voltage Ride-Through Under-voltage Fault	Grid Abnormality: The duration of Grid Voltage Abnormal exceeds the time specified by high/low voltage ride-through.	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F11	HVRT Overvoltage	Grid Abnormality: The duration of Grid Voltage Abnormal exceeds the time specified by high/low voltage ride-through.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, please check whether the grid voltage and frequency are within the allowable range and stable. If not, please contact the local power operator; if yes, please contact your dealer or after-sales service center.
F43	Grid Waveform Abnormal	Grid Abnormality: Grid voltage detection abnormality triggers a fault.	
F44	Grid Phase Loss	Grid Abnormality: The grid voltage has a single-phase drop.	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F45	Grid Voltage Imbalance	Grid phase voltage difference is too large.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, please check whether the grid voltage and frequency are within the allowable range and stable. If not, please contact the local power operator; if yes, please contact your dealer or after-sales service center.
F46	Grid Phase Sequence Failure	Inverter and grid wiring abnormality: The wiring is non-positive sequence	1. Check whether the inverter and grid wiring are in positive sequence; if the wiring is normal (e.g., swap any two live wires), the fault will disappear automatically. 2. If the wiring is correct but the fault still exists, please contact your dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F47	Grid Rapid Shutdown Protection	Rapidly shut down the output after detecting the Grid Power Outage condition	1. The fault will disappear automatically after grid power supply is restored.
F48	Grid Neutral Wire Loss	Split-phase grid Grid Neutral Wire Loss	1. The alarm will automatically disappear after grid power supply is restored. 2. Check whether the AC line or AC Switch is disconnected.
F160	EMS/Forced Off-grid	EMS Issues forced off-grid, but the off-grid function is not enabled	Enable the off-grid function
F161	Passive Anti-islanding Protection	-	-
F162	Grid Type Fault	The actual Type of Electrical Supply System (split-phase or two-phase) does not match the set safety standard	Switch the corresponding safety standard according to the actual Type of Electrical Supply System.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F12	30mAGfciProtection	During inverter operation, the input-to-ground insulation resistance becomes low.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line; it will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot be recovered for a long time, please check whether the insulation resistance of the PV array to ground is too low.
F13	60mAGfciProtection	During inverter operation, the input-to-ground insulation resistance becomes low.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line; it will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot be recovered for a long time, please check whether the insulation resistance of the PV array to ground is too low.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F14	150mAGfciProtection	During inverter operation, the input-to-ground insulation resistance becomes low.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line; it will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot be recovered for a long time, please check whether the insulation resistance of the PV array to ground is too low.
F15	GfciSlow-change Protection	During inverter operation, the input-to-ground insulation resistance becomes low.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line; it will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot be recovered for a long time, please check whether the insulation resistance of the PV array to ground is too low.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F16	DCIDCI Protection Level1	The DC component of the inverter output current exceeds the safety standard or the machine's default allowable range.	1. If the abnormality is caused by an external fault, the inverter will automatically return to normal operation after the fault disappears, and no manual intervention is required. 2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.
F17	DCIDCI Protection Level2	The DC component of the inverter output current exceeds the safety standard or the machine's default allowable range.	1. If the abnormality is caused by an external fault, the inverter will automatically return to normal operation after the fault disappears, and no manual intervention is required. 2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F18	Low Insulation Resistance	1. The PV array is short-circuited to the Protection ground. 2. The environment where the PV array is installed is relatively humid for a long time, and the line insulation to ground is poor. 3. Low Insulation Resistance of the battery port line to ground	1. Check the impedance of the PV array/battery port to the Protection ground; if the resistance is greater than 80kΩ, it is normal. If the checked resistance is less than 80kΩ, please locate the short circuit point and rectify it. 2. Check whether the inverter's Protection ground wire is correctly connected. 3. If it is confirmed that the impedance is indeed lower than the default value in rainy and cloudy weather, please reset the inverter's "Insulation Resistance Protection Point" via the App. For inverters in the Australia and New Zealand markets, when an insulation resistance fault occurs, alarms can also be generated in the following ways: 1. The inverter is equipped with a buzzer, which sounds continuously for 1 minute when a fault occurs; if the fault is not

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
			resolved, the buzzer will sound again every 30 minutes. 2. If the inverter is added to the monitoring platform, after setting the alarm notification method, the alarm information can be sent to the customer via email.
F19	Grounding Abnormal	1. The inverter's Protection ground wire is Not Connected. 2. When the output of the PV array is grounded, the inverter's output side is not connected to an isolation transformer.	1. Please confirm whether the inverter's Protection ground wire is Not Connected correctly. 2. In the scenario where the output of the PV array is grounded, please confirm whether the inverter's output side is connected to an isolation transformer.
F49	L-PE Short Circuit	Output phase line toPElow impedance or short circuit	Detect the impedance of the output phase line toPE, find the location of low impedance and repair it.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F50	DCVDCI Protection Level1	Abnormal load fluctuation	1. If the abnormality is caused by an external fault, the inverter will automatically return to normal operation after the fault disappears, and no manual intervention is required. 2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.
F51	DCVDCI Protection Level2	Abnormal load fluctuation	1. If the abnormality is caused by an external fault, the inverter will automatically return to normal operation after the fault disappears, and no manual intervention is required. 2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F20	Hardware Export Limit Protection	Abnormal load fluctuation	1. If the abnormality is caused by an external fault, the inverter will automatically return to normal operation after the fault disappears, and no manual intervention is required. 2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.
F21	Internal Comm Loss	Refer to the specific sub-code cause	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F52	Leakage current (GFCI) multiple fault shutdowns	North American safety regulations require that it cannot automatically recover after multiple faults; it needs to be manual or wait 24h to recover	1. Please check if the ground impedance of the PV string is too low.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F53	DC Arc Failure (AFCI) multiple fault shutdowns	North American safety regulations require that it cannot automatically recover after multiple faults; it needs to be manual or wait 24h to recover	1. After the machine is reconnected to the grid, check whether the voltage and current of each channel are abnormally reduced to zero; 2. Check if the DC side terminals are firmly connected.
F54	External Comm Loss	The inverter's external device communication is lost, which may be due to external device power supply issues, Communication Protocols mismatch, or no corresponding external device configured, etc.	Judge based on the actual model and detection enable bit; external devices not supported by some models will not be detected.
F55	Back-up Back-up Output Overload	1. Prevent the inverter from continuous overload output.	1. Turn off part of the off-grid loads to reduce the inverter's off-grid output power.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F56	Back-up Back-up Output Overvoltage	2. Prevent load damage caused by inverter output overvoltage.	1. If it occurs accidentally, it may be caused by load switching, no manual intervention is required. 2. If it occurs frequently, please contact the dealer or after-sales service center.
F107	On-grid PWM Sync Failure	Abnormality in carrier synchronization during grid connection	1. Check if the synchronization line connection is normal 2. Check if the master-slave settings are normal; 3. Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F57	External Box Failure	Switch On-Grid to Off-Grid when waiting Box switching relay takes too long	1. Check Box is working properly; 2. Check Box communication wiring is correct;
-	Generator Failure		

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F22	Generator waveform detection fault	1. This fault will always be displayed when the generator is Not Connected 2. When the generator is operating, this fault will be triggered if the generator does not meet safety standards	1. Ignore this fault when the generator is not connected; 2. It is normal for this fault to appear when the generator has a fault. After the generator recovers, wait for a period of time, and the fault will be automatically cleared; 3. This fault will not affect the normal operation of the off-grid mode; 4. When both the generator and the grid are connected and meet safety standards, the grid will prioritize grid connection, and the system will operate in the grid-connected state.
F23	Abnormal generator connection		
F24	Generator undervoltage		
F25	Generator overvoltage		
F26	Generator underfrequency		
F27	Generator overfrequency		
F109	External BoxSTSFailure	The connection cable between the inverter andSTSis abnormal	Check if the wiring harness connection sequence between the inverter andSTScorresponds one by one.
F58	CTCT Loss	CTconnection line is disconnected (per Japanese safety standards)	CheckCTwiring is correct.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F110	Export Limit Protection	1. Inverter error, off-grid 2. metercommunication is unstable 3. Reverse power flow condition occurs	1. Check if there are other error messages on the inverter. If any, perform targeted handling. 2. Check meter connection is reliable 3. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.
F111	BypassOverload	-	-
F112	Black Start Failure	-	-
F28	Parallel OperationIO Self-Check Abnormality	Parallel communication line not securely connected or parallelIO chip damaged	Check if the parallel communication line is securely connected, then check IO chip for damage; if yes, replace IO chip
F59	Parallel OperationCAN Communication Abnormal	Parallel communication line not securely connected or some units are offline	Check if all units are powered on and the parallel communication line is securely connected.
F29	Parallel Grid Line Reversed	Grid lines of some units are reversed with others	Reconnect the grid lines.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F60	Parallel Operation Back-up Line Reversed	Some units' backup lines are reversed with others	Reconnect backup lines
F61	Inverter Soft Start Failure	Inverter Soft Start Failure during off-grid cold start	Check if the inverter module of the unit is damaged.
F113	Offgrid AC Ins Volt High	-	-
F30	AC HCT check Abnormal	AC HCT has sampling abnormality	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F62	AC HCT Failure	HCT sensor has abnormality	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F31	GFCI HCT Check Abnormal	GFCI HCT has sampling abnormality	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F63	GFCI HCT Failure	GFCI HCT has abnormality	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F32	Relay Check Abnormal	Relay Abnormality, Cause: 1. Relay Abnormality (Relay Short Circuit) 2. Relay Sampling Circuit Abnormality. 3. AC Side Wiring Abnormality (Possible Loose Connection or Short Circuit)	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F64	Relay Failure	1. Relay Abnormality (Relay Short Circuit) 2. Relay Sampling Circuit Abnormality. 3. AC Side Wiring Abnormality (Possible Loose Connection or Short Circuit)	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F164	DC Arcing Failure (String17~32)	1. DC Side Connection Terminal Loosening; 2. DC Side Connection Terminal Loose Connection; 3. DC Cable Core Damaged and Loose Connection	1. After the device re-connects to the grid, check whether each channel's voltage and current abnormally decrease to zero; 2. Check whether the DC side terminals are firmly connected.
F165	DC Arcing Failure (String33~48)	1. DC Side Connection Terminal Loosening; 2. DC Side Connection Terminal Loose Connection; 3. DC Cable Core Damaged and Loose Connection	1. After the device re-connects to the grid, check whether each channel's voltage and current abnormally decrease to zero; 2. Check whether the DC side terminals are firmly connected.
F33	FlashFlash R/W Abnormal	Possible Causes: flashcontent changed;flashlifeti me exhausted;	1. Upgrade to the latest version of the program 2. Contact the distributor or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F42	DC Arcing Failure (String1~16)	1. DC Side Connection Terminal Loosening; 2. DC Side Connection Terminal Loose Connection; 3. DC Cable Core Damaged and Loose Connection	1. After the device re-connects to the grid, check whether each channel's voltage and current abnormally decrease to zero; 2. Check whether the DC side terminals are firmly connected.
F34	AFCI Check Failure	During the arc self-test process, the arc module did not detect the arc failure	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F65	AC Terminal Overtemperature	AC Terminal Overtemperature, Possible Causes: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operates abnormally.	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F35	Cabinet Overtemperature	Cabinet Overtemperature, Possible Causes: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operates abnormally.	1. Check whether the ventilation at the inverter installation location is good, and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If there is poor ventilation or Ambient Overtemperature, improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the distributor or after-sales service center.
F66	INVModule Overtemperature	Inverter Module Overtemperature, possible reasons: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operates abnormally.	
F67	BoostModule Overtemperature	BoostModule Overtemperature, possible reasons: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operates abnormally.	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F68	AC Capacitor Overtemperature	AC Capacitor Overtemperature, possible reasons: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operates abnormally.	
F114	Relay Failure2	Relay Abnormality, Cause: 1. Relay Abnormality (Relay Short Circuit) 2. Relay Sampling Circuit Abnormality. 3. AC Side Wiring Abnormality (Possible Loose Connection or Short Circuit)	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F69	PV IGBT Short Circuit Fault	Possible Causes: 1. IGBT Short Circuit 2. Inverter Sampling Circuit Abnormal	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F70	PV IGBTOpen Circuit	1. Software issue causing no PWM output: 2. Drive Circuit Abnormal: 3. IGBTOpen Circuit	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F71	NTCAbnormal	NTCTemperature sensor abnormality	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F72	PWM Abnormal	PWMhas abnormal waveform	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F73	CPUCPU Interrupt Abnormal	CPUinterrupt abnormality	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F74	Microelectronic Fault	Function Safety detected abnormality	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F75	PV HCTFailure	boostCurrent Sensor Abnormal	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F76	1. 5VReference Abnormal	Reference Circuit Fault	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F77	0. 3VReference Abnormal	Reference Circuit Fault	
F78	CPLDCPLD Version Error	CPLDCPLD Version Error	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F79	CPLDCPLD Comm Failure	CPLDandDSPcommunication content error or timeout	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F80	Model Recognition Fault	Fault related to Model Recognition Error	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F115	SVGPrecharge Disabled	SVGPrecharge Hardware Failure	Contact the distributor or after-sales service center.
F116	SVG ModeSVG PIDPrevention Failure	PIDHardware Abnormality	Contact the distributor or after-sales service center.
F117	DSPCPLD Version Error	DSPSoftware Version Error	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F36	Bus Overvoltage		

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F81	P-Bus Overvoltage	BUSOvervoltage, possible causes: 1. PVovervoltage; 2. InverterBUSvoltage sampling abnormality; 3. The isolation effect of the split transformer at the rear of the inverter is poor, causing mutual influence when two inverters are grid-connected, and one inverter reports DC overvoltage when grid-connected;	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F82	N-Bus Overvoltage		
F83	Bus Overvoltage (slaveCPU1)		
F84	P-Bus Overvoltage (slaveCPU1)		
F85	N-Bus Overvoltage (slaveCPU1)		
F86	Bus Overvoltage (slaveCPU2)		
F87	P-Bus Overvoltage (slaveCPU2)		
F88	N-Bus Overvoltage (slaveCPU2)		
F89	P-Bus Overvoltage(CPLD)		
F90	N-Bus Overvoltage (CPLD)		

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F118	MOSMOS Continuous Overvoltage	1. Software issue causes the inverter drive to turn off earlier than the flyback drive; 2. Abnormal inverter drive circuit leads to failure to turn on; 3. PVovervoltage; 4. Mosvoltage sampling abnormality;	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F119	Bus Short Circuit Fault	1. Hardware Damage	In case ofBUSshort circuit fault, if the inverter remains in off-grid state, please contact the dealer or after-sales service center.
F120	Bus Sampling Abnormal	1. BusVoltage Sampling Hardware Fault	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F121	DCDC Sample Abnormal	1. Bus Voltage Sampling Hardware Fault 2. Battery Voltage Sampling Hardware Fault 3. Dcrly Relay Failure	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F37	PVPV Input Overvoltage	PVInput Voltage is too high, possible causes: PV array configuration error, the number of PV panels connected in series in the string is too many, resulting in the open-circuit voltage of the string being higher than the maximum operating voltage of the inverter	Check the series configuration of the corresponding PV array string, ensure that the open-circuit voltage of the string is not higher than the maximum operating voltage of the inverter. After the PV array is correctly configured, the inverter alarm will automatically disappear.
F38	PVPV Continuous Hardware Overcurrent	1. Component Configuration is Unreasonable 2. Hardware Damage	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F39	PVPV Continuous Software Overcurrent	1. Component Configuration is Unreasonable 2. Hardware Damage	
F91	FlyCap Software Overvoltage	FlyCap Overvoltage, possible causes: 1. PVovervoltage; 2. Inverter FlyCap Voltage Sampling Abnormal;	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F92	FlyCap Hardware Overvoltage	FlyCap Overvoltage, possible causes: 1. PVovervoltage; 2. Inverter FlyCap Voltage Sampling Abnormal;	
F93	FlyCap Undervoltage	FlyCap Undervoltage, possible causes: 1. PVEnergy Insufficient; 2. Inverter FlyCap Voltage Sampling Abnormal;	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F94	FlyCap Precharge Failure	FlyCap Precharge Failure, possible causes: 1. PVEnergy Insufficient; 2. Inverter FlyCap Voltage Sampling Abnormal;	
F95	FlyCap Precharge Abnormal	1. Control Loop Parameters are Unreasonable 2. Hardware Damage	
F96	PV String Overcurrent(String1~16)	Possible Causes: 1. String Overcurrent; 2. String Current Sensor Abnormal	
F97	PV String Overcurrent(String17~32)		
F40	PV String Reversed(String1~16)	PVPV String Reversed	Check if the PV string is reversed.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F98	PV String Reversed(String17~32)	PVPV String Reversed	Check if the PV string is reversed.
F99	PV String Loss(String1~16)	PV string fuse blown (if applicable)	Check if the fuse is blown.
F100	PV String Loss(String17~32)	PV string fuse blown (if applicable)	Check if the fuse is blown.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F122	PVPV Input Mode Error	PVAccess Mode has three modes, taking four-channelMPPTas an example: 1. Parallel mode: i.e.,AAAAmode(homologous mode) , PV1-PV4are homologous,4channelsPVconnect to the same photovoltaic panel 2. Partial parallel mode: namelyAACCmode, PV1andPV2homologous connection,PV3andPV4homologous connection 3. Independent mode: i.e.,ABCDmode(non-homologous) , PV1、PV2、PV3、PV4are connected independently,4channelsPVeach connect to one photovoltaic panel	CheckPVAccess Mode is set correctly (ABCD、AACC、AAAA), and re-setPVAccess Mode according to the correct method. 1. Confirm whether each actual connectedPVis correctly connected. 2. IfPVis correctly connected, check viaAppor screen whether the currently set 'PVAccess Mode' corresponds to the actual Access Mode. 3. If the currently set 'PVAccess Mode' does not match the actual Access Mode, set viaAppor screen 'PVAccess Mode' to a mode consistent with the actual situation. After setting, disconnectPVandACpower supply and restart. 4. After setting, if the current 'PVAccess Mode' is consistent with the actual Access Mode but this fault is still reported, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
		IfPVactual Access Mode does not match the device-setPVAccess Mode, this fault will be reported	
-	PV String Reversed(String33~48)	PVPV String Reversed	Check if the PV string is reversed.
-	PV String Loss(String33~48)	PV string fuse blown (if applicable)	Check if the fuse is blown.
-	PV String Overcurrent(String33~48)	Possible Causes: 1. String Overcurrent; 2. String Current Sensor Abnormal	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F123	Multi-channel PV Phase Error	PV Input Mode Setting Error	Check if the PV Access Mode is set correctly (ABCD, AACC, AAAA), and re-set the PV Access Mode according to the correct method. 1. Confirm whether each actual connected PV channel is correctly connected 2. If the PV is correctly connected, check via App or screen whether the currently set 'PV Access Mode' corresponds to the actual Access Mode 3. If the currently set 'PV Access Mode' does not match the actual Access Mode, set the 'PV Access Mode' to a mode consistent with the actual situation via App or screen. After setting, disconnect the PV and AC power supply and restart 4. After setting, if the current 'PV Access Mode' is consistent with the actual Access Mode but this fault is still reported, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F101	BAT1Precharge Failure	BAT1Precharge Circuit Fault (e.g., precharge resistor burned out)	Check if the pre-charge circuit is in good condition. After the battery is powered on only, check if the Battery Voltage and DC bus voltage are consistent. If not, please contact the dealer or after-sales service center.
F102	BAT1Relay Failure	BAT1Relay cannot operate normally	After the battery is powered on, check if the battery relay is working and if the closing sound is heard. If it does not operate, please contact the dealer or after-sales service center.
F103	BAT1BAT1 Overvoltage	BAT1Input voltage exceeds the rated range of the device	Confirm whether the Battery Voltage is within the rated range of the device.
F104	BAT2Precharge Failure	BAT2Precharge Circuit Fault (e.g., precharge resistor burned out)	Check if the pre-charge circuit is in good condition. After the battery is powered on only, check if the Battery Voltage and DC bus voltage are consistent. If not, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F105	BAT2Relay Failure	BAT2Relay cannot operate normally	After the battery is powered on, check if the battery relay is working and if the closing sound is heard. If it does not operate, please contact the dealer or after-sales service center.
F106	BAT2BAT1 Overvoltage	BAT2Input voltage exceeds the rated range of the device	Confirm whether the Battery Voltage is within the rated range of the device.
F124	BAT1BAT1 Reversed	BAT1Reverse connection of positive and negative poles	Check whether the positive and negative terminals of the battery and the device's terminals are consistent.
F125	BAT2BAT1 Reversed	BAT2Reverse connection of positive and negative poles	Check whether the positive and negative terminals of the battery and the device's terminals are consistent.
F126	Abnormal battery input	Abnormal battery input	Check if the battery is working normally.
-	BMS Status Bit Error	BMS module fault	Disconnect the AC output side switch and DC input side switch, close the AC output side switch and DC input side switch after 5 minutes. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F127	BAT Overtemperature	Battery overtemperature, possible causes: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operates abnormally.	
F128	Ref Voltage Abnormal	Reference Circuit Fault	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F129	Cabinet Under Temperature	Cabinet Under Temperature, possible causes: 1. Ambient temperature is too low.	
F130	ACsideSPDFailure	ACside lightning protection device failure	ReplaceACside lightning protection device.
F131	DCsideSPDFailure	DCside lightning protection device failure	ReplaceDCside lightning protection device.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F132	Internal Fan Abnormal	Internal Fan Abnormal, possible causes: 1. Fan power supply abnormal; 2. Mechanical fault(Stall) ; 3. Fan aging and damage.	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F133	External Fan Abnormal	External Fan Abnormal, possible causes: 1. Fan power supply abnormal; 2. Mechanical fault(Stall) ; 3. Fan aging and damage.	
F134	PIDPID Abnormal	PIDhardware fault orPVovervoltagePIDsuspend	PVovervoltage inducedPIDsuspend warning does not need processing,PIDhardware fault can be cleared by turning off thePIDswitch then turning it on again to clear thePIDfault, replace thePIDdevice

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F135	Trip-Switch Trip Warning	Possible Causes: Overcurrent or PVreverse connection causes trip switch to trip	Please contact the dealer or after-sales service center. The trip reason is overcurrent or PVreverse connection, need to check if there are historical PV short circuit warnings or historical PVreverse connection warnings, if present, maintenance personnel need to check the corresponding PV situation. After checking no faults, you can manually close the trip switch, and clear this warning via the App interface's clear historical fault operation.
F136	Historical PV IGBT short circuit warning	Possible Causes: Overcurrent causes trip switch to trip	Please contact the dealer or after-sales service center. Maintenance personnel shall refer to the historical PV short circuit warning sub-code to check if there are faults in the Boost hardware and external string; after checking no faults, you can clear this warning via the App interface's clear historical fault operation.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F137	HistoricalPVreverse connection warning(String1~16)	Possible Causes: Occurrence ofPVreverse connection causes trip switch to trip	Contact the dealer or after-sales service center. Maintenance personnel shall refer to the historicalPVreverse connection warning sub-code to check if the corresponding string has reverse connection, check if there is voltage difference inPVpanel configuration; after checking no faults, you can clear this warning via theAppinterface's clear historical fault operation.
F138	HistoricalPVreverse connection warning(String17~32)	Possible Causes: Occurrence ofPVreverse connection causes trip switch to trip	Contact the dealer or after-sales service center. Maintenance personnel shall refer to the historicalPVreverse connection warning sub-code to check if the corresponding string has reverse connection, check if there is voltage difference inPVpanel configuration; after checking no faults, you can clear this warning via theAppinterface's clear historical fault operation.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F139	FlashFlash R/W Error	Possible Causes: flashcontent changed;flashlifeti me exhausted;	1. Upgrade to the latest version of the program. 2. Contact the distributor or after-sales service center.
F140	Meter Comm Loss	This warning may only be reported after enabling the Power Limit function, possible causes: 1. Meter not connected; 2. Incorrect wiring of communication line connecting meter and inverter.	Check the wiring of the electricity meter, ensure it is correctly connected. If the fault persists after inspection, please contact the dealer or after-sales service center.
F141	PVPV Type Identification Failure	PVHardware Exception in Panel Identification	Contact the distributor or after-sales service center.
F142	PV String Mismatch	PVPV String Mismatch, under the sameMPPTtwo strings have different open-circuit voltage configurations	Check the open-circuit voltages of the two strings, configure strings with the same open-circuit voltage to the sameMPPT; long-term PV String Mismatch poses a safety hazard.
F143	CTNot Connected	CTNot Connected	CheckCTwiring.
F144	CTCT Reversed	CTCT Reversed	CheckCTwiring.
F145	PE Loss/PE Loss	Ground Wire Not Connected	Check the ground wire.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F146	PV String Terminal Overtemperature(String1~8)	37176RegisterPVTerminal Temperature Alarm Subcode1is Set	-
F147	PV String Terminal Overtemperature(String9~16)	37177RegisterPVTerminal Temperature Alarm Subcode2is Set	-
F148	PV String Terminal Overtemperature(String17~20)	37178RegisterPVTerminal Temperature Alarm Subcode3is Set	-
F149	HistoricalPVreverse connection warning(String33~48)	Possible Causes: Occurrence ofPVreverse connection causes trip switch to trip	Please contact the dealer or after-sales service center; maintenance personnel shall refer to the historicalPVreverse connection warning sub-code to check if the corresponding string has reverse connection, check if there is voltage difference inPVpanel configuration; after checking no faults, you can clear this warning via theAppinterface's clear historical fault operation.
F150	BAT1BAT1 Voltage Low	Battery Voltage is lower than the set value	-
F151	BAT2BAT1 Voltage Low	Battery Voltage is lower than the set value	-

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F152	Low Voltage of Battery Power	Battery is in non-charging mode, voltage is lower than the shutdown voltage	-
F153	BAT1 Voltage High	-	-
F154	BAT2 Voltage High	-	-
F155	Online Low Insulation Resistance	1. PV string short-circuited to Protection Ground. 2. The environment where the PV string is installed is long-term humid, and the line has poor insulation to ground.	1. Check the impedance of the PV string to Protection Ground; if a short circuit occurs, rectify the short circuit point. 2. Check whether the inverter's Protection ground wire is correctly connected. 3. If it is confirmed that the impedance is indeed lower than the default value in rainy and cloudy weather, re-set the "Insulation Resistance Protection Point".
F156	Micro-grid Overload Warning	Backup Port Input Current Excessive	Occasional occurrence requires no action; if this alarm appears frequently, please contact the dealer or after-sales service center.
F157	Manual Reset	-	-

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F158	Generator Phase Sequence Abnormal	-	-
F159	Multiplexed Port Configuration Abnormal	The multiplexed (generator) port is configured as micro-grid or large load, but a generator is actually connected	Use the App to change the configuration of the multiplexed (generator) port.
F41	Generator Port Overload	1. Off-grid side output exceeds the requirements specified in the datasheet 2. Off-grid side short circuit 3. Off-grid terminal voltage is too low 4. When acting as a large load port, the large load exceeds the requirements specified in the datasheet	Confirm the cause of the problem by checking data such as off-grid side output voltage, current, power, etc.
F108	DSP Communication Failure	-	-

Fault Name	Fault Cause	Fault Handling Suggestions
Parallel Comm Timeout Shutdown	In parallel operation, if the slave exceeds 400 seconds without communicating with the master	Check if the parallel communication harness is connected reliably, and check if the slave address is duplicated.
One-key shutdown and stop	Check via the App whether the one-key shutdown function is enabled	Turn off the one-key shutdown.
Offline shutdown	-	-
Remote shutdown	-	-
Child Node Communication Failure	Internal Comm Abnormal	Restart the device and observe if the fault is eliminated.
DG Communication Failure	The communication link between the control board and the diesel generator is abnormal	1. Check the link communication harness and observe if the fault is eliminated; 2. Try restarting the device and observe if the fault is eliminated; 3. If the fault cannot be eliminated after restarting, contact the after-sales service center.
Battery Over Voltage	1. Single cell overvoltage 2. Voltage sampling line abnormality	
	1. Total battery overvoltage 2. Voltage sampling line abnormality	

Fault Name	Fault Cause	Fault Handling Suggestions
Battery Undervoltage	1. Single cell undervoltage 2. Voltage sampling line abnormality	Record the fault phenomenon, restart the battery, wait for a few minutes, confirm whether the fault disappears. If the problem still exists after restarting, please contact the after-sales service center.
	1. Total battery undervoltage 2. Voltage sampling line abnormality	
Battery Overcurrent	1. Charging Current overlimit, battery current limiting abnormality: sudden changes in temperature and voltage values 2. Inverter response abnormality	
	Battery discharge current overlimit	
Battery Overtemperature	1. Ambient Overtemperature 2. Temperature sensor abnormality	
	1. Ambient Overtemperature 2. Temperature sensor abnormality	
Battery Undertemperature	1. Ambient undertemperature 2. Temperature sensor abnormality	
	1. Ambient undertemperature 2. Temperature sensor abnormality	
Battery Terminal Overtemperature	Terminal overtemperature	

Fault Name	Fault Cause	Fault Handling Suggestions
Battery Imbalance	1. In cases of excessive temperature difference, the battery will limit its power, i.e., restrict charge/discharge current. Therefore, this problem is generally unlikely to occur. 2. Cell capacity degradation leads to excessive internal resistance; during overcurrent, temperature rise is large, resulting in a large temperature difference. 3. Poor welding of cell tabs causes excessive temperature rise of the cell during overcurrent. 4. Temperature sampling issues; 5. Loose power line connection	
	1. Inconsistent cell aging levels 2. Slave board chip issues can also cause excessive cell voltage difference; 3. Slave board balancing issues can also cause excessive cell voltage difference 4. Wiring harness issues cause	
	1. Inconsistent cell aging levels 2. Slave board chip issues can also cause excessive cell voltage difference; 3. Slave board balancing issues can also cause excessive cell voltage difference 4. Wiring harness issues cause	
Insulation Resistance	Insulation resistance damage	Check if the ground wire is properly connected, restart the battery. If the problem still exists after restarting, please contact the after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
Pre-charging Failure	Pre-charging Failure	Indicates that during the pre-charging process, the voltage across the pre-charging MOS always exceeds the specified threshold. After powering off and restarting, observe whether this fault persists, and check if the wiring is correct and the pre-charging MOS is damaged.
Sampling line fault	Battery sampling line poor contact or disconnection	Check the wiring, restart the battery. If the problem still exists after restarting, please contact the after-sales service center.
	Single cell voltage sampling line poor contact or disconnection	Check the wiring, restart the battery. If the problem still exists after restarting, please contact the after-sales service center.
	Single cell temperature sampling line poor contact or disconnection	
	Excessive dual-channel current comparison error, or current sampling line circuit abnormality	
	Excessive dual-channel voltage comparison error, or excessive voltage comparison error between MCU and AFE, or abnormality in the voltage acquisition line loop	

Fault Name	Fault Cause	Fault Handling Suggestions
	Abnormality in the temperature acquisition line loop, or poor contact/disconnection	
	Overvoltage level 5 or overtemperature level 5, blow the three-terminal fuse	Blow the three-section fuse, need to contact the after-sales service center to replace the main control board
Relay or MOS overtemperature	Relay or MOS overtemperature	This fault indicates that the MOSFET temperature exceeds the specified threshold, power off and stand still for 2 hours to wait for temperature recovery
Shunt overtemperature	Shunt overtemperature	This fault indicates that the shunt temperature exceeds the specified threshold, power off and stand still for 2 hours to wait for temperature recovery
BMS1 Other Fault 1 (Household Energy Storage Type)	Relay or MOS open circuit	1. Upgrade software, power off and stand still for 5 minutes, restart and check if the fault persists; 2. If it persists, replace the battery pack

Fault Name	Fault Cause	Fault Handling Suggestions
	Relay or MOS short circuit	1. Upgrade software, power off and stand still for 5 minutes, restart and check if the fault persists; 2. If it persists, replace the battery pack
	Communication abnormality between main cluster and slave cluster, or inconsistency of battery cells between clusters	1. Check the battery information and software version of the slave unit, and whether the communication line connection with the master unit is normal 2. Upgrade software
	Abnormality in the battery system return line harness, resulting in the interlock signal not forming a loop	Check whether the terminal resistor is installed correctly

Fault Name	Fault Cause	Fault Handling Suggestions
	BMS and PCS communication abnormality	1. Confirm whether the definition of the communication line interface between the inverter and the connected battery is correct; 2. Please contact the after-sales service center, check the background data, and observe whether the software of the inverter and the battery is matched correctly.
	Abnormality in the communication harness between BMS master control and slave control	1. Check the wiring, restart the battery; 2. Upgrade the battery, if the problem still exists after restarting, please contact the after-sales service center.
	Communication loss between main negative chips	
	Air switch and shunt trip abnormality	1. Power off and stand still for 5 minutes, restart and check if the fault persists; 2. Observe the blind insertion of PACK and PCU bottom, whether the communication pins are loose or skewed;

Fault Name	Fault Cause	Fault Handling Suggestions
	MCU self-test failure	Upgrade software, restart the battery, if the problem still exists after restarting, please contact the after-sales service center.
	1. Software version is too low or BMS board is damaged 2. Large number of parallel inverters, excessive inrush current of the battery during pre-charging	1. Upgrade the software and observe if the fault persists 2. If it is a parallel operation case, perform a black start of the battery before starting the inverter
	MCU internal fault	Upgrade the software, restart the battery. Generally, it is detected that the MCU or external device is damaged. If the problem still exists after restarting, please contact the after-sales service center
	Total control current exceeds the specified threshold	1. Let it stand and power off for 5 minutes, then restart and check if the fault persists; 2. Check if the inverter is set with excessive power, which causes exceeding the bus load;

Fault Name	Fault Cause	Fault Handling Suggestions
	Parallel cluster battery cells are inconsistent	Confirm whether the cells of the parallel cluster battery are consistent
	Parallel cluster battery has reversed positive and negative poles	Check whether the positive and negative poles of the parallel cluster battery are reversed
	Severe over-temperature, over-voltage, etc. trigger the fire protection system	Contact the after-sales service center
Air Conditioner Failure	Abnormal failure of the air conditioner	Try restarting the system. If the fault is not resolved, please contact the after-sales service center
	The cabinet door is not closed	Check whether the cabinet door is properly closed
	Supply voltage is too high	Confirm whether the supply voltage value meets the air conditioner's input voltage requirements, and re-power on after confirmation
	Supply voltage is insufficient	
	No voltage input	
	Supply voltage is unstable	
	Compressor voltage is unstable	Try restarting the system. If the fault is not resolved, please contact the after-sales service center
	Sensor has poor contact or is damaged	
	Air conditioner fan is abnormal	

Fault Name	Fault Cause	Fault Handling Suggestions
BMS1 other fault 2 (household energy storage type)	Abnormal voltage or current exists inside the DCDC	See specific DC Failure details
	DCDC Overload or radiator over-temperature, etc.	
	Abnormal cell acquisition or inconsistent aging degree	Please contact the after-sales service center.
	Fan operation not performed normally	Please contact the after-sales service center.
	Output port screw loose or poor contact	1. Power off the battery, check the wiring and output port screw condition 2. After confirmation, restart the battery, observe whether the fault persists; if it does, please contact the after-sales service center.
	Battery has been used for too long or cells are severely damaged	Please contact the after-sales service center to replace the pack.
	1. Software version is too low or BMS board is damaged 2. Large number of inverters in parallel, excessive inrush current during battery pre-charging	1. Upgrade the software, observe whether the fault persists. 2. If it is a parallel operation case, perform a black start of the battery before starting the inverter.
	Heating film damaged	Please contact the after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
	Three-terminal fuse of the heating film is disconnected, so the heating function cannot be used	Please contact the after-sales service center.
	Software model, cell type, and hardware model do not match	Check whether the software model, SN number, cell type, and hardware model are consistent; if not, please contact the after-sales service center.
	Thermal management board communication line disconnected	1. Power off and stand still for 5 minutes, restart and check if the fault persists; 2. If the fault is not recovered, contact after-sales to replace the pack.
	Thermal management board communication line disconnected	1. Power off and stand still for 5 minutes, restart and check if the fault persists; 2. If the fault is not recovered, contact after-sales to replace the pack.

Fault Name	Fault Cause	Fault Handling Suggestions
	Thermal management board communication line disconnected	1. Power off and stand still for 5 minutes, restart and check if the fault persists; 2. If the fault is not recovered, contact after-sales to replace the pack.
	Pack fan fault signal triggered	1. Power off and stand still for 5 minutes, restart and check if the fault persists; 2. If the fault is not recovered, contact after-sales to replace the pack.
DC Failure	Output port voltage is too high	Check the output port voltage; if the output port voltage is normal and the fault still does not resolve automatically after restarting the battery, please contact the after-sales service center.
	DC-DC module detects that Battery Voltage exceeds the maximum charging voltage	Stop charging, discharge to below 90% SOC or stand for 2 hours; if ineffective and the fault persists after restart, please contact the after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
	Radiator temperature is too high	Let the battery stand for 1 hour until the radiator temperature drops; if ineffective and the fault persists after restart, please contact the after-sales service center.
	Battery discharge current overlimit	Check whether the load exceeds the battery's discharge capacity, turn off the load or stop the PCS for 60 seconds; if ineffective and the fault persists after restart, please contact the after-sales service center.
	Positive and negative poles of the output port power harness are reversed with parallel cluster batteries or PCS	Turn off the battery manual switch, check whether the output port wiring is correct, and restart the battery.
	Output power relay cannot close	Check whether the output port wiring is correct and whether there is a short circuit; if ineffective and the fault persists after restart, please contact the after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
	Power device temperature is too high	Let the battery stand for 1 hour until the internal power device temperature drops; if ineffective and the fault persists after restart, please contact the after-sales service center.
	Relay Sticking	If the fault persists after restarting, please contact the after-sales service center.
Battery Rack Circulating Current Failure	1. Cell Imbalance 2. First power-on incomplete charging calibration	-
BMS1 Other Fault 3 (Large Energy Storage Type)	Communication anomaly with Linux module	1. First check if the communication link is normal 2. Upgrade the software, restart the battery and observe if the fault persists; if it does, please contact the after-sales service center.
	Cell temperature rise is too fast	Cell abnormality, contact after-sales to replace the pack.
	SOC below 10%	Charge the battery.

Fault Name	Fault Cause	Fault Handling Suggestions
	SN writing does not comply with the rules	Check if the number of SN digits is normal; if abnormal, please contact the after-sales service center.
	1. Daisy chain communication anomaly within battery cluster 2. Inconsistent aging degree of cells between battery clusters	1. Check the contact condition of single battery pack 2. Confirm the usage status of each battery cluster, such as cumulative charge-discharge capacity, cycle times, etc. 3. Please contact the after-sales service center.
	Humidity inside the pack is too high	-
	Fuse disconnected	Contact after-sales to replace the pack.
	Low battery level	Charge the battery.
BMS1 Other Fault 4 (Large Energy Storage Type)	Circuit breaker anomaly	Contact after-sales to replace the pack.
	External device anomaly	Contact after-sales to replace the pack.
Contactactor Failure 1	-	-
Contactactor Failure 2	-	-

Fault Name	Fault Cause	Fault Handling Suggestions
Overload Protection (Ksic)	Continuous Overload (Exceeding 690KVA) 10s	Please contact the after-sales service center.
Overload Protection (Smart Port	Continuous Overload (Exceeding 690KVA) 10s	Please contact the after-sales service center.
Master AC On Meter Comm Error	1. The meter may not be connected to the host 2. The meter communication cable may be loose	1. Check if the meter is connected to the host 2. Check if the meter communication cable is loose
Parallel Slave Meter Error	Meter connected to slave	The machine connected to the meter is set as master
Slave AC On Timeout with Master	1. Slave address setting error 2. Slave communication line loose	1. Check if slave addresses are duplicated 2. Check if parallel communication line is loose

9.5 Periodic Maintenance



When performing operation and maintenance on the inverter, please power off the inverter. Operating the equipment while it is energized may cause damage to the inverter or electric shock hazard.

Maintenance content.	Maintenance method.	Maintenance cycle.
System cleaning.	Check if there are foreign objects or dust on the heat sinks and air inlets/outlets.	1 time/half year - 1 time/year

Fan.	Check if the fan operates normally, if there is abnormal noise, and if its appearance is normal.	1 time/year
DC Switch	Open and close the DC Switch continuously 10 times to ensure the DC Switch functions normally.	1 time/year
Electrical Connection	Check if the electrical connections are loose, if the cable appearance is damaged, and if there is copper exposure.	1 time/half year - 1 time/year
Sealing performance.	Check if the sealing performance of the device's cable entry hole meets the requirements. If the gap is too large or not sealed, re-seal it.	1 time/year

10 Inverter Software Version Upgrade

The inverter supports setting parameters locally viaUdisk to upgrade software. Before usingUdisk to upgrade the device, please contact the after-sales service center to obtain the software upgrade package and upgrade method.

11 Inverter Parameters

Technical Data	GW3K-DNS-G40	GW3.6K-DNS-G40	GW4.2K-DNS-G40
Input			
Max.Input Power (W) ^{*2}	6000	7200	8400
Max.Input Voltage (V) ^{*3}	600	600	600
MPPT Operating Voltage Range (V) ^{*4}	40-560	40-560	40-560
MPPT Voltage Range at Nominal Power (V)	100-500	120-500	140-500
Start-up Voltage (V)	50	50	50
Nominal Input Voltage (V)	360	360	360
Max. Input Current per MPPT (A)	20	20	20
Max. Short Circuit Current per MPPT (A)	26	26	26
Max.Backfeed Current to The Array (A)	0	0	0
Number of MPPT	2	2	2
Number of Strings per MPPT	1	1	1
Output			
Nominal Output Power (W)	3000	3600	4200
Nominal Output Apparent Power (VA)	3000	3600	4200
Max. AC Active Power (W)	3000	3600	4200

Technical Data	GW3K-DNS-G40	GW3.6K-DNS-G40	GW4.2K-DNS-G40
Max. AC Apparent Power (VA)	3000	3600	4200
Nominal Output Voltage (V)	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE
Output Voltage Range (V)	196~311 (according to local standard)		
Nominal AC Grid Frequency (Hz)	50 / 60	50 / 60	50 / 60
AC Grid Frequency Range (Hz)	45~55 / 55~65		
Max. Output Current (A)	13.7	16.4	19.1
Max. Output Fault Current(peak and duration) (A/us)	42/4	42/4	55/4
Inrush Current(peak and duration) (A/ms)	28.1/12	28.1/12	28.1/12
Nominal Output Current (A)	13.7@220V 13.1@230V 12.5@240V	16.4@220V 15.7@230V 15.0@240V*1	19.1@220V 18.3@230V 17.5@240V
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
Max. Total Harmonic Distortion	<3%	<3%	<3%
Efficiency			
Max. Efficiency	98.1%	98.1%	98.1%
European Efficiency	97.2%	97.2%	97.3%
Protection			

Technical Data	GW3K-DNS-G40	GW3.6K-DNS-G40	GW4.2K-DNS-G40
PV String Current Monitoring	Integrated	Integrated	Integrated
DC Insulation Resistance Detection	Integrated	Integrated	Integrated
Residual Current Monitoring Unit	Integrated	Integrated	Integrated
DC Reverse Polarity Protection	Integrated	Integrated	Integrated
Anti-islanding Protection	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated	Integrated
DC Switch	Integrated (PV II Optional)		
DC Surge Arrester	Type II	Type II	Type II
AC Surge Arrester	Type II	Type II	Type II
DC Arc Fault Circuit Interrupter	Optional	Optional	Optional
Emergency Power Off	Optional	Optional	Optional
Rapid Shutdown	Optional	Optional	Optional
Remote Shutdown	Optional	Optional	Optional
Power Supply at Night	Optional	Optional	Optional
General Data			

Technical Data	GW3K-DNS-G40	GW3.6K-DNS-G40	GW4.2K-DNS-G40
Operating Temperature Range (°C)	- 25 ~ 60	- 25 ~ 60	- 25 ~ 60
Relative Humidity	0 ~ 100%	0 ~ 100%	0 ~ 100%
Max. Operating Altitude (m)	< 4000	< 4000	< 4000
Cooling Method	Natural Convection		
Display	LCD/WiFi+APP/Bluetooth+APP	LCD/WiFi+APP/Bluetooth+APP	LCD/WiFi+APP/Bluetooth+APP
Communication	RS485, WIFI, LAN, Bluetooth, 4G		
Communication Protocol	Modbus,Sunspec		
Weight (Kg)	9.2	9.2	9.2
Dimension (W×H×Dmm)	358*323*165	358*323*165	358*323*165
Noise Emission (dB)	25	25	25
Topology	Transformerless	Transformerless	Transformerless
Night Power Consumption (W)	< 1	< 1	< 1
Ingress Protection Rating	IP66	IP66	IP66
Anti-corrosion Class	C4	C4	C4
DC Connector	MC4 (4-6mm ²)	MC4 (4-6mm ²)	MC4 (4-6mm ²)
AC Connector	Plug and play connector (Max.6 mm ²)		
Environmental Category	4K4H	4K4H	4K4H
Pollution Degree	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III

Technical Data	GW3K-DNS-G40	GW3.6K-DNS-G40	GW4.2K-DNS-G40
Protective class	I	I	I
The Decisive Voltage Class (DVC)	PV: C AC: C Com: A		
Active Anti-islanding Method	SMS(Slip-mode frequency) +AFD*5		
Country of Manufacture	China	China	China

Technical Data	GW5K-DNS-G40	GW6K-DNS-G40	GW3.1K-DNS-L-G40
Input			
Max.Input Power (W)*2	10000	12000	6200
Max.Input Voltage (V)*3	600	600	550
MPPT Operating Voltage Range (V)*4	40-560	40-560	40~480
MPPT Voltage Range at Nominal Power (V)	165-500	195-500	110V~420
Start-up Voltage (V)	50	50	50
Nominal Input Voltage (V)	360	360	230
Max. Input Current per MPPT (A)	20	20	20
Max. Short Circuit Current per MPPT (A)	26	26	26
Max.Backfeed Current to The Array (A)	0	0	0
Number of MPPT	2	2	2
Number of Strings per MPPT	1	1	1

Technical Data	GW5K-DNS-G40	GW6K-DNS-G40	GW3.1K-DNS-L-G40
Output			
Nominal Output Power (W)	5000	6000	3100
Nominal Output Apparent Power (VA)	5000	6000	3100
Max. AC Active Power (W)	5000	6000	3100
Max. AC Apparent Power (VA)	5000	6000	3100
Nominal Power at 40°C (W) (Only for Brazil)	5000	6000	3100
Max Power at 40°C (including AC overload) (W) (Only for Brazil)	5000	6000	3100
Nominal Output Voltage (V)	220/230/240, L/N/PE	220/230/240, L/N/PE	127, L/N/PE
Output Voltage Range (V)	196~311 (according to local standard)		
Nominal AC Grid Frequency (Hz)	50 / 60	50 / 60	60
AC Grid Frequency Range (Hz)	45~55 / 55~65		59.5~60.2
Max. Output Current (A)	22.8	27.3	24.4
Max. Output Fault Current(peak and duration) (A/us)	55/4	66/4	55/4
Inrush Current(peak and duration) (A/ms)	28.1/12	28.1/12	15.6/12

Technical Data	GW5K-DNS-G40	GW6K-DNS-G40	GW3.1K-DNS-L-G40
Nominal Output Current (A)	22.8@220V 21.8@230 20.9@240	27.3@220V 26.1@230V 25.0@240V	24.4
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
Max. Total Harmonic Distortion	<3%	<3%	<3%
Efficiency			
Max. Efficiency	98.1%	98.1%	96.4%
European Efficiency	97.4%	97.4%	95.9%
Protection			
PV String Current Monitoring	Integrated	Integrated	Integrated
DC Insulation Resistance Detection	Integrated	Integrated	Integrated
Residual Current Monitoring Unit	Integrated	Integrated	Integrated
DC Reverse Polarity Protection	Integrated	Integrated	Integrated
Anti-islanding Protection	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated	Integrated
DC Switch	Integrated (PV II Optional)	Integrated (PV II Optional)	Integrated

Technical Data	GW5K-DNS-G40	GW6K-DNS-G40	GW3.1K-DNS-L-G40
DC Surge Arrester	Type II	Type II	Type II
AC Surge Arrester	Type II	Type II	Type II
DC Arc Fault Circuit Interrupter	Optional	Optional	Integrated
Emergency Power Off	Optional	Optional	Optional
Rapid Shutdown	Optional	Optional	Optional
Remote Shutdown	Optional	Optional	Optional
Power Supply at Night	Optional	Optional	Optional
General Data			
Operating Temperature Range (°C)	- 25 ~ 60	- 25 ~ 60	- 25 ~ 60
Relative Humidity	0 ~ 100%	0 ~ 100%	0 ~ 100%
Max. Operating Altitude (m)	< 4000	< 4000	4000
Cooling Method	Natural Convection	Natural Convection	Natural Convection
Display	LCD/WiFi+APP/Bluetooth+APP	LCD/WiFi+APP/Bluetooth+APP	LCD/WiFi+APP/Bluetooth+APP
Communication	RS485, WIFI, LAN, Bluetooth, 4G	RS485, WIFI, LAN, Bluetooth, 4G	RS485, WIFI, LAN, Bluetooth, 4G
Communication Protocol	Modbus,Sunspec	Modbus,Sunspec	Modbus-RTU (SunSpec Compliant)
Weight (Kg)	9.2	9.2	9.2

Technical Data	GW5K-DNS-G40	GW6K-DNS-G40	GW3.1K-DNS-L-G40
Dimension (W×H×Dmm)	358*323*165	358*323*165	358*323*165
Noise Emission (dB)	25	25	25
Topology	Transformerless	Transformerless	Transformerless
Night Power Consumption (W)	< 1	< 1	< 1
Ingress Protection Rating	IP66	IP66	IP66
Anti-corrosion Class	C4	C4	C4
DC Connector	MC4 (4-6mm ²)	MC4 (4-6mm ²)	MC4 (4-6mm ²)
AC Connector	Plug and play connector (Max.6 mm ²)	Plug and play connector (Max.6 mm ²)	Plug and play connector (Max.6 mm ²)
Environmental Category	4K4H	4K4H	4K4H
Pollution Degree	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III
Protective class	I	I	I
Active Anti-islanding Method	SMS(Slip-mode frequency) +AFD* ⁵		
The Decisive Voltage Class (DVC)	PV: C AC: C Com: A		
Country of Manufacture	China	China	China

*1: About GW3.6K-DNS-G40 for the UK market, both nominal output current and max output current are 16A

*2: The actual value depends on the specific input power of PV panel

*3: When the input voltage ranges from 560 V to 600 V, the inverter will enter the standby state. When the input voltage returns to the MPPT operating voltage range

of 40 V to 560 V, the inverter will resume normal operating state.

*4: Please refer to the user manual for the MPPT Voltage Range at Nominal Power.

*5: AFD: Active Frequency Drift with Positive Feedback

12 Terminology Explanation

Explanation of Overvoltage Categories

- **Overvoltage Category I** : Equipment connected to circuits with measures to limit transient overvoltages to a fairly low level.
- **Overvoltage Category II** : Energy-consuming equipment supplied by fixed distribution systems. Such equipment includes appliances, portable tools, and other household and similar loads. If special requirements for the reliability and applicability of such equipment exist, Overvoltage Category III shall be applied.
- **Overvoltage Category III**: Equipment in fixed distribution systems whose reliability and applicability must meet special requirements. Includes switching devices in fixed distribution systems and industrial equipment permanently connected to fixed distribution systems.
- **Overvoltage Category IV**: Equipment used in the power supply of distribution systems, including measuring instruments and upstream overcurrent protection devices, etc.
- **Explanation of Wet Location Categories**

Environmental Parameters	Level		
	3K3	4K2	4K4H
Temperature Range	0~+40°C	-33~+40°C	-33~+40°C
Humidity Range	5% to 85%	15% to 100%	4% to 100%

- **Environmental category explanation:**
 - **Outdoor Inverter**: Ambient air temperature range is -25 to +60°C, suitable for environments with Pollution Degree 3;
 - **Indoor Type II Inverter**: Ambient air temperature range is -25 to +40°C, suitable for environments with Pollution Degree 3;
 - **Indoor Type I Inverter**: Ambient air temperature range is 0 to +40°C, suitable for environments with Pollution Degree 2;
- **Pollution Degree category explanation**
 - **Pollution Degree 1**: No pollution or only dry non-conductive pollution;
 - **Pollution Degree 2**: Under normal circumstances, there is only non-conductive pollution, but the temporary conductive pollution caused by accidental

condensation must be considered;

- **Pollution Degree 3:** There is conductive pollution, or non-conductive pollution becomes conductive due to condensation;
- **Pollution Degree 4:** Persistent conductive pollution, such as pollution caused by conductive dust, rain or snow.

13 Obtain Relevant Product Manuals

Document Name	Official Website Link
EzLink3000Quick Installation Guide	https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_EzLink_Quick%20Installation%20Guide-EN.pdf
4G Kit-CN-G20 & 4G Kit-CN-G21Quick Installation Guide	https://www.goodwe.com/Ftp/Installation-instructions/4G-KIT.pdf
WiFi/LAN Kit-20 & WiFi Kit-20 Quick Installation Guide	https://www.goodwe.com/Ftp/Installation-instructions/WiFi-LAN-Kit-20.pdf
GMK110 & GMK110D Quick Installation Guide	https://www.goodwe.com/Ftp/Installation-instructions/GMK110-110D.pdf
GM1000 & GM3000 & GM1000Quick Installation Guide	https://www.goodwe.com/Ftp/Installation-instructions/Smart-Meter.pdf
GMK330 & GMK360 & GM330 Quick Installation Guide	https://www.goodwe.com/Ftp/Installation-instructions/GMK330-360.pdf