V1.6-2026-04-15

Grid-Tied PV Inverter

DNS Series (3.6-6.0kW) G4
User Manual

GOODWE

Copyright Statement

NOTICE

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

About This Manual

This document primarily introduces the inverter's product information, installation and wiring, configuration and commissioning, troubleshooting, and maintenance. Please read this manual carefully before installing and using this product to understand the product safety information and familiarize yourself with the product's functions and features. The document may be updated periodically; please obtain the latest version and more product information from the official website.

Applicable Model

This document applies to the following models of inverters:

model	Nominal output power	Nominal 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 regulatory standards and electrical systems, have received professional training, and possess thorough knowledge of this product.

Symbol Definition

To better use this manual, the following symbols are used to highlight relevant important information. Please carefully read the symbols and their explanations.

DANGER
Indicates a high potential danger that, if not avoided, will result in death or serious injury.
WARNING
Indicates a moderate potential danger that, if not avoided, could result in death or serious injury.
CAUTION
Indicates a low potential danger that, if not avoided, could result in moderate or minor injury.
NOTICE
Emphasizes and supplements the content, and may also provide tips or tricks for optimizing 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 compliance with safety regulations. However, as an electrical device, relevant safety instructions must be followed before performing any operations on the equipment. Improper handling may lead to serious injury or property damage.

1.1 General Safety

NOTICE

- Due to product version upgrades or other reasons, the document content will be updated periodically. Unless otherwise specified, the document content cannot replace the safety precautions on the product label. All descriptions in the document are for guidance only.
- Please read this document carefully before installing the equipment to understand the product and precautions.
- All operations on the equipment must be performed by professional and qualified electrical technicians who are familiar with the relevant standards and safety regulations in the project location.
- When operating the equipment, use insulated tools and wear personal protective equipment to ensure personal safety. When handling electronic components, wear anti-static gloves, wrist straps, clothing, etc., to protect the equipment from electrostatic damage.
- Unauthorized disassembly or modification may cause equipment damage, which is not covered by the warranty.
- Equipment damage or personal injury caused by failure to install, use, or configure the equipment in accordance with the requirements of this document or the corresponding user manual is beyond the manufacturer's liability. For more product warranty information, please obtain it through the official website: https://en.goodwe.com/warrantyrelated.html.

1.2 DC Side

⚠DANGER

Use the DC connector supplied with the unit to connect the inverter DC cables. Using other models of DC connectors may lead to serious consequences, and any resulting equipment damage is beyond the manufacturer's liability.

⚠WARNING

- Ensure the component frames and mounting system are properly grounded.
- After connecting the DC cables, ensure the connections are tight and secure, with no looseness.
- Use a multimeter to measure the PV string. Damage caused by reverse connection, overvoltage, or overcurrent is beyond the manufacturer's liability.
- Photovoltaic modules connected to the same MPPT must be of the same model. The voltage difference between different MPPTs must be <160V.
- When the input voltage is between 1000V and 1100V, the inverter will enter standby mode. It will resume normal operation when the voltage returns to the MPPT operating voltage range (140V to 1000V).
- It is recommended that the sum of the peak power currents of the strings connected to each MPPT does not exceed the maximum input current of the inverter per MPPT.
- When the inverter is connected to multiple PV strings, it is recommended to connect at least one string per MPPT, with no MPPT left unconnected.
- Photovoltaic modules used with the inverter must comply with IEC 61730 Class A standard.

1.3 AC Side

⚠WARNING

- Ensure that the voltage and frequency at the grid connection point comply with the inverter's grid connection specifications.
- It is recommended to add protective devices such as circuit breakers or fuses on the AC side of the inverter. The specification of the protective device should be greater than 1.25 times the maximum output current of the inverter.
- The protective ground wire of the inverter must be securely connected.
- It is recommended to use copper-core cables for AC output lines. If aluminum wires are to be used, please use copper-aluminum transition terminals for wiring.

1.4 Inverter

DANGER

- During inverter installation, please avoid bearing weight on the bottom wiring terminals, otherwise it will cause terminal damage.
- After inverter installation, the labels and warning signs on the enclosure must be clearly visible, and covering, altering, or damaging them is prohibited.
- The warning labels on the inverter enclosure are as follows:

No.	Symbol	Meaning
1		Potential hazard exists during equipment operation. Take protective measures when operating the equipment.
2		High voltage danger. High voltage is present during equipment operation. Ensure the equipment is powered off before performing any operations.
3		The inverter surface is at high temperature. Do not touch during operation to avoid burns.
4		Delayed discharge. After powering off the equipment, please wait 5 minutes for it to discharge completely.
5		Please read the product manual carefully before operating the equipment.
6		This equipment must not be disposed of as household waste. Dispose of it according to local laws and regulations, or return it to the equipment manufacturer.
7		Grounding point.
8		CE certification mark.

1.5 EU Declaration of Conformity

1.5.1 Equipment with Wireless Communication Modules

GoodWe Technologies Co., Ltd. hereby declares that the Equipment with Wireless

Communication Modules sold in the European market meets the following directive requirements:

- 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 Functionality

GoodWe Technologies Co., Ltd. hereby declares that devices without wireless communication functionality sold in the European market comply with 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

NOTICE

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

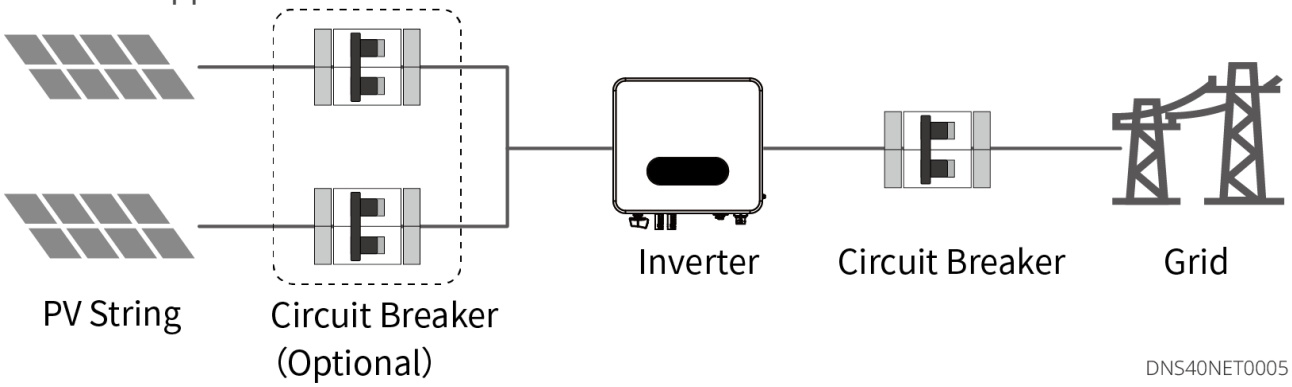
1. Professionals or qualified personnel include:
   - Personnel who have mastered knowledge of equipment working principles, system architecture, risks and hazards, and have received professional operation training or possess extensive practical experience.
   - Personnel who have received relevant technical and safety training, possess certain operational experience, are aware of potential dangers specific tasks may pose 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 the work is performed.
   - Personnel holding a degree in electrical engineering/an advanced diploma in electrical discipline or equivalent/possessing professional qualifications in the electrical field, with at least 2/3/4 years of experience in testing and regulatory work using electrical equipment safety standards.
2. Personnel involved in special tasks such as electrical work, work at heights, or operation of special equipment must hold valid qualification certificates as required by the location of the equipment.
3. Operation of medium-voltage equipment must be performed by certified high-voltage electricians.
4. Replacement of equipment and components is only permitted to be carried out by authorized personnel.

2 Product Introduction

2.1

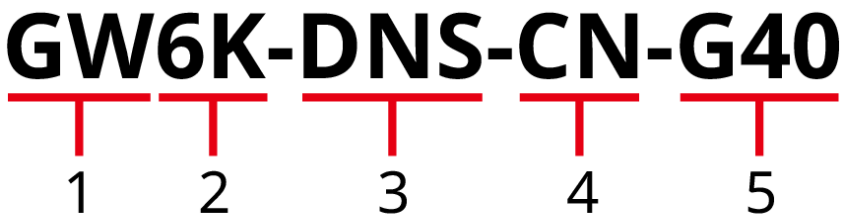
Introduction

DNS G4 series inverters are single-phase string photovoltaic grid-connected inverters. The inverter can convert the direct current generated by photovoltaic solar panels into alternating current that meets grid requirements and feed it into the grid. The main application scenarios for the inverter are as follows:

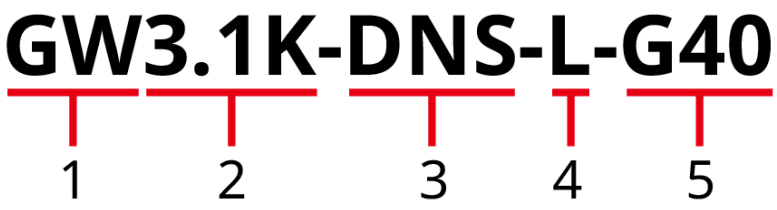


DNS40NET0005

Model Number Meaning

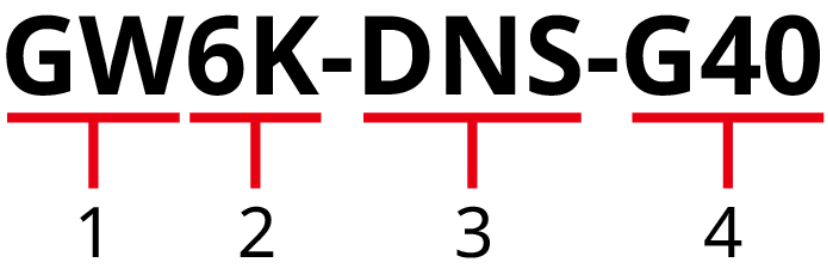


DNS40DSC0001



DNS40DSC0006

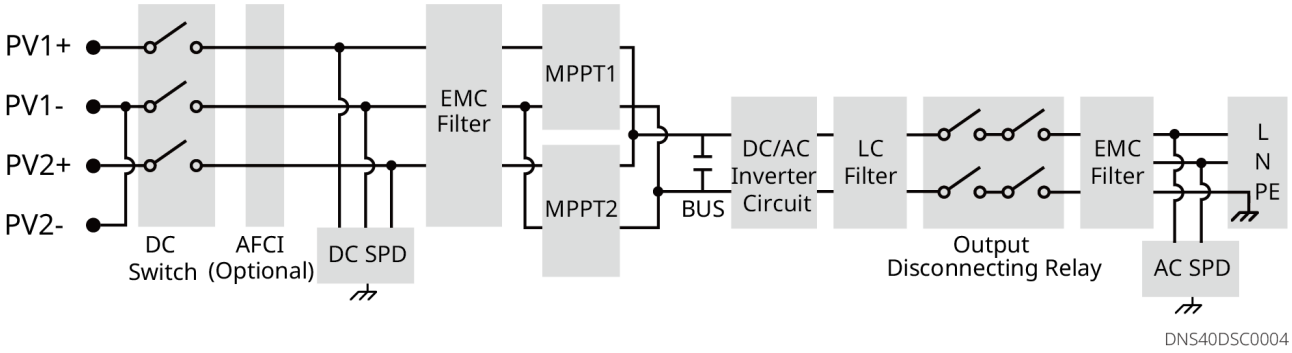
No.	Meaning	Description
1	Brand code	GW: GoodWe
2	Rated Power	6K: rated power is 6kW 5K: rated power is 5kW 4.2K: rated power is 4.2kW 3.6K: rated power is 3.6kW 3.1K: rated power is 3.1kW
3	Series code	DNS: DNS series
4	Special country code	CN: Chinese version
	Product feature code	L: Low voltage
5	Version code	G40: Fourth generation product



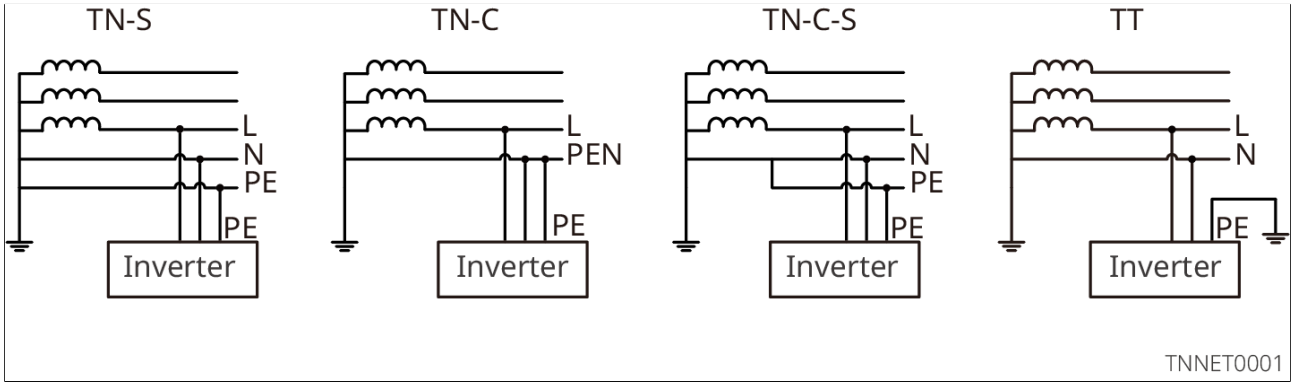
DNS40DSC0005

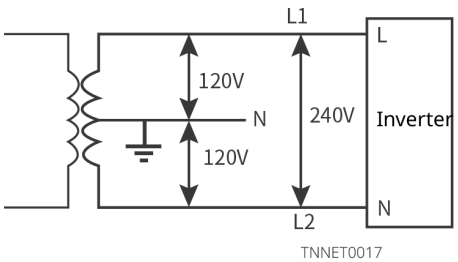
No.	Meaning	Description
1	Brand code	GW: GoodWe
2	Rated Power	6K: Rated Power is 6kW 3K: Rated Power is 3kW 3.6K: Rated Power is 3.6kW 4.2K: Rated Power is 4.2kW 5K: Rated Power is 5k
3	Series code	DNS: DNS series
4	Version code	G40: Fourth generation product

2.2 Circuit Block Diagram



2.3 Supported Grid Types





2.4 Features

NOTICE
Specific feature 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 protect itself.

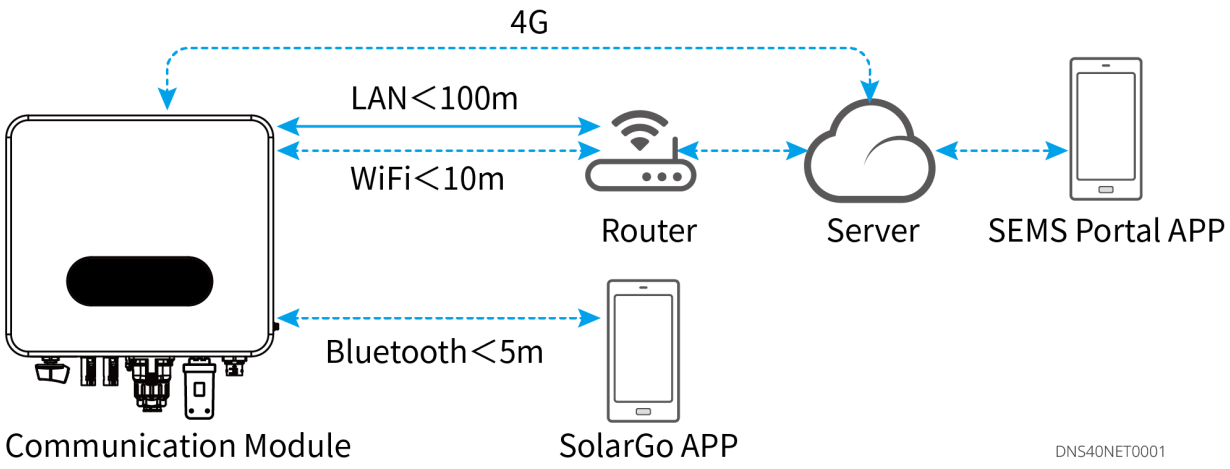
Causes of arc faults:

- DC connectors in the PV system are damaged or improperly connected.
- Cables are incorrectly connected or damaged.
- Connectors or cables are aged.

Communication

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

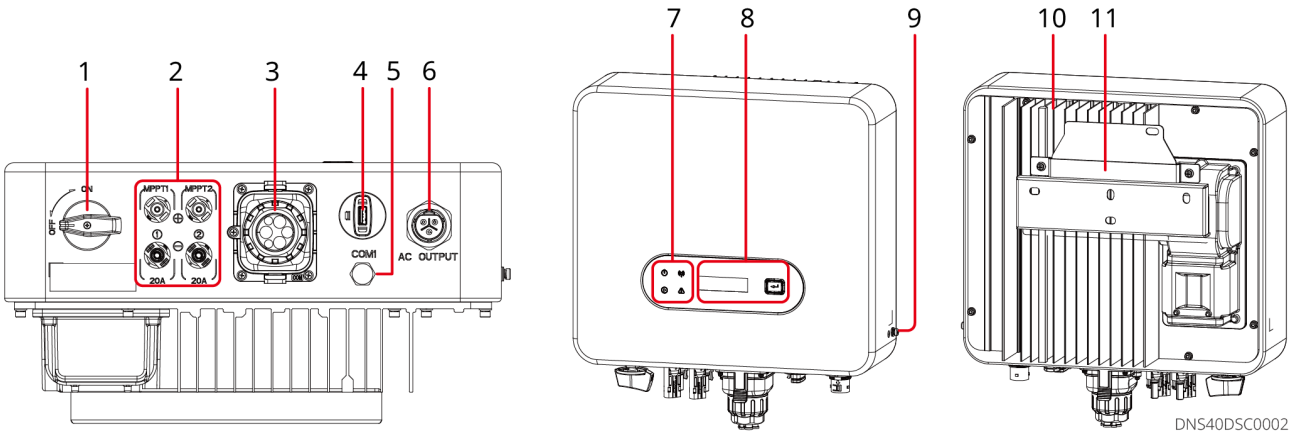
- Bluetooth: Complies with the Bluetooth 5.1 standard.
- WiFi/LAN2.0 (optional): Wireless IEEE 802.11 b/g/n @2.4 GHz; Ethernet 10M/100Mbps auto-adaptive; if using a third-party monitoring platform, this platform must support the ModbusTCP communication protocol.
- 4G (optional): Supports connecting to a third-party monitoring platform 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.

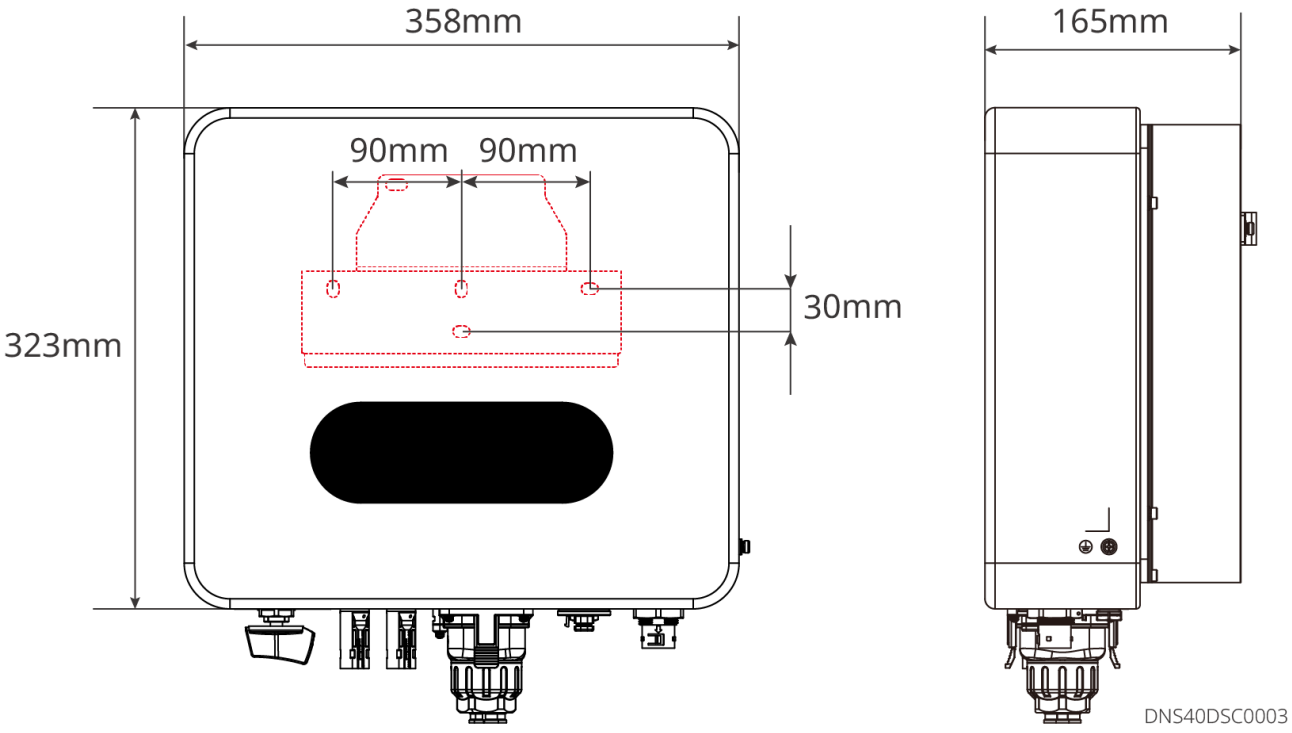
2.5.1 Component Introduction



No.	Component/Silk Screen	Description
1	DC Switch	Controls the connection or disconnection of the DC input.
2	PV input terminals	Can connect the DC input cables from the PV modules.
3	Communication Port	Can connect communication cables for load control, CT (optional), RS485 (energy meter), Remote Shutdown/Emergency Poweroff, DRED (Australia) / RCR (Europe), etc.
4	Communication module port	Can connect communication modules, such as 4G, WiFi/LAN, etc. Please select the module type according to actual requirements. Supports connecting a U disk for local inverter software version upgrades. For the Brazilian market, can connect a USB-RS485 adapter cable.
5	Ventilation valve	-
6	AC output line terminals	Can connect the AC output lines to connect the inverter to the grid.
7	indicator	Indicates the operating status of the inverter.

No.	Component/Silk Screen	Description
8	Display screen and buttons	• The display screen shows 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-equipped. • The buttons are used to operate the display screen.
9	Grounding terminal	Connecting the PE cable.
10	heat sink	Heat dissipation for the inverter.
11	Mounting bracket	Mounting the inverter.

2.5.2 Product Dimensions

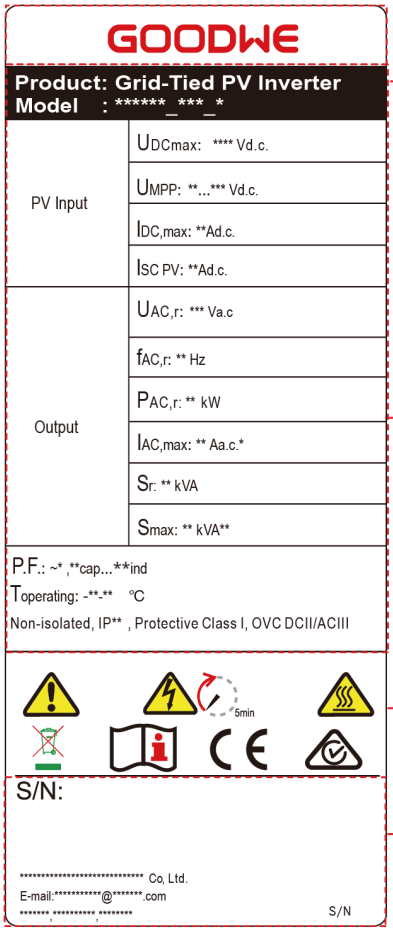


2.5.3 Indicator Light Description

indicator	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: Self-check before grid connection
		Single fast flash: About to grid-connect
communication		Steady on: Wireless monitoring normal
		Single flash: Wireless module reset or reconfigured
		Two flashes: Not connected to base station or router
		Four flashes: Not connected to monitoring server
		Flashing: RS485 communication normal
		Off: Wireless module restoring factory settings
fault		Steady on: System fault
		Off: No fault

2.5.4 Nameplate Description

The nameplate is for reference only; please refer to the actual product.



Goodwe trademark, product type, and product model

Technical parameters

Safety symbols and certification marks

Contact information and serial number

SDT30DSC0014

3 Check and Storage

3.1 Check Before Receiving

Before receiving the product, please check the following items in detail:

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 packaging. If there is damage, do not open the packaging and contact your dealer.
2. Check if the inverter model is correct. If it does not match, do not open the packaging and contact your dealer.
3. Check if the types and quantities of the delivered items are correct, and if the appearance is damaged. If there is damage, contact your dealer.

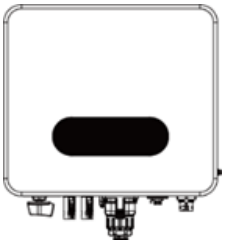
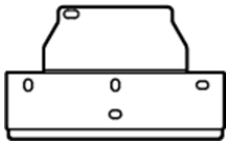
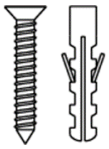
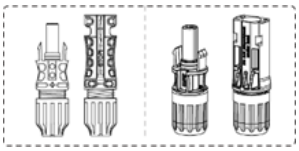
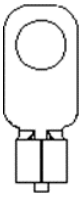
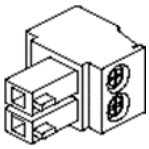
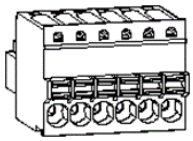
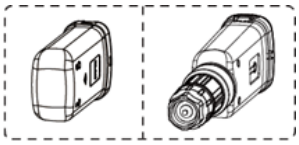
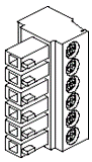
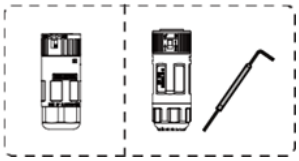
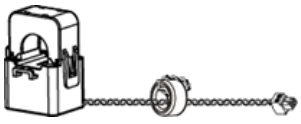
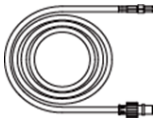
3.2 deliverables

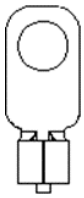
WARNING

When making electrical connections, please use the terminal blocks provided with the shipment. Damage to the equipment caused by using incompatible connectors will not be covered under warranty.

NOTICE

[1] The communication module types include: WiFi/LAN, 4G, etc. The actual shipping type depends on the selected Inverter communication method.
[2] The quantity of communication terminals and tubular terminals matches the selected communication method. Please confirm based on the communication configuration. Depending on the Inverter configuration, the number of 2PIN communication terminals and DRED/RCR communication terminals included in the box varies. Please refer to the actual contents.
[3] The protocol converter connecting cable is only shipped to China.
[4] CT is standard in Australia and optional in other regions.
[5] x 0 for China; x 1 for other regions.

Part	Description	Part	Description
	Inverter x1		mounting plate x1
	Expansion screw x 4		PV terminal x 2
	Grounding OT terminal x 1		2PIN communication terminal x N[2]
	6PIN 485 communication terminal x 1		PIN terminal x N[2]
	smart dongle x 1[1]		DRED/RCR communication terminal x N[2]
	AC terminal x 1		CT x N[4]
	Protocol converter connecting cable (Inverter side) x 1[3]		Protocol converter connecting cable (Protocol converter side) x 1[3]

Part	Description	Part	Description
	Product documentation x 1		PV unlocking tool x N[5]
	AC PIN terminal x 3	-	-

3.3 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 is not lost.
2. Ensure that the storage environment is clean, with appropriate temperature and humidity ranges, and no condensation.
3. Ensure that the inverter stacking height and direction are arranged according to the label instructions on the packaging box.
4. Ensure that there is no risk of tipping after the inverters are stacked.
5. If the storage time of the inverter exceeds two years or the time after installation without operation exceeds 6 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 every 6 months during storage. If it has not been powered on for over 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 device must not be installed in flammable, explosive, corrosive, or similar environments.
2. The installation carrier must be sturdy and reliable, capable of bearing the weight of the inverter.
3. The installation space must meet the ventilation and heat dissipation requirements of the device, as well as the operational space requirements.
4. The device's protection rating is suitable for indoor and outdoor installation, and the installation environment temperature and humidity must be within the appropriate range.
5. The inverter should avoid installation environments with direct sunlight, rain, snow accumulation, etc. It is recommended to install it in a sheltered location, and if necessary, a sunshade can be erected.
6. The installation location must be out of reach of children and avoid being placed in easily accessible positions.
7. During operation, the device surface may become hot to prevent burns.
8. The device installation height should facilitate operation and maintenance, ensuring that device indicators, all labels are easily visible, and terminal connections are easy to operate.
9. The inverter installation altitude should be below the maximum operating altitude of 4000m.
10. Inverters installed in salt damage areas may suffer corrosion. Salt damage areas refer to areas within 1000m from the coast or affected by sea breeze. The areas affected by sea breeze vary depending on meteorological conditions (e.g., typhoons, seasonal winds) or terrain (with embankments, hills).
11. Stay 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, please install the device according to the following requirements:
    - Add ferrite cores with multiple windings at the inverter's DC input lines or AC output lines, or add low-pass EMI filters.
    - The distance between the inverter and wireless electromagnetic interference

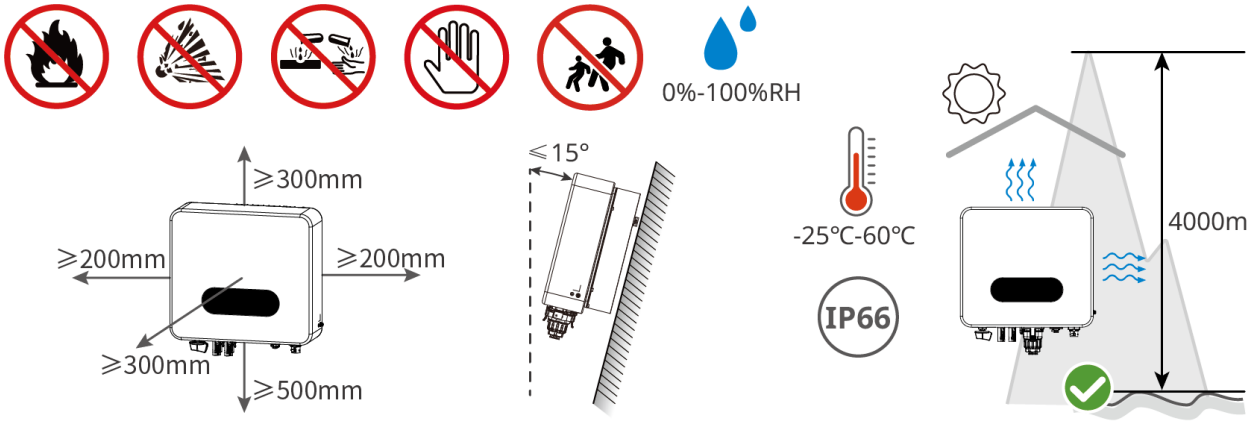
devices should exceed 30m.

Installation Carrier Requirements

- The installation carrier must not be made of flammable materials and must have fire-resistant properties.
- Ensure that the installation surface is sturdy, guaranteeing that the carrier meets the load-bearing requirements of the device.
- During operation, the device may generate vibrations. Do not install it on carriers with poor sound insulation to avoid the noise from the device disturbing residents in living areas.

Installation Angle Requirements

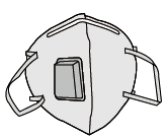
- Recommended inverter installation angle: vertical or tilted back ≤ 15°.
- Do not install the inverter upside down, tilted forward, tilted back beyond the angle, or horizontally.

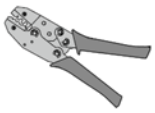
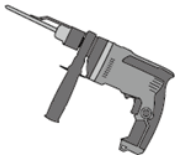
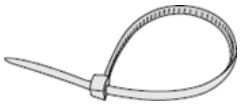
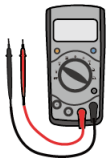
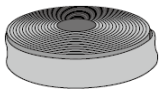


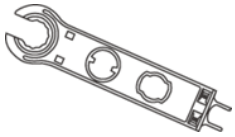
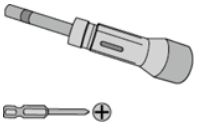
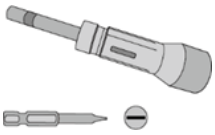
DNS40INT0001

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 Type	Description	Tool Type	Description
	Insulating gloves, protective gloves		Dust mask

Tool Type	Description	Tool Type	Description
	goggle		Safety shoes
	Terminal crimping pliers		diagonal plier
	wire stripper		hammer drill
	Heat gun		Cable tie
	rubber hammer		Marker pen
	wire stripper		Heat shrink tubing
	Vacuum cleaner		Level bar

Tool Type	Description	Tool Type	Description
 or 	DC wiring wrench		torque wrenchM3/M5
	Flathead screwdriver	-	-

4.2 Installing the Inverter

4.2.1 Portable Inverter

⚠CAUTION

- During operations such as transportation, handling, and installation, the laws, regulations, and relevant standard requirements of the country or region must be met.
- Before installation, the inverter needs to be moved to the installation site. To avoid personal injury or equipment damage during the moving process, please note the following:

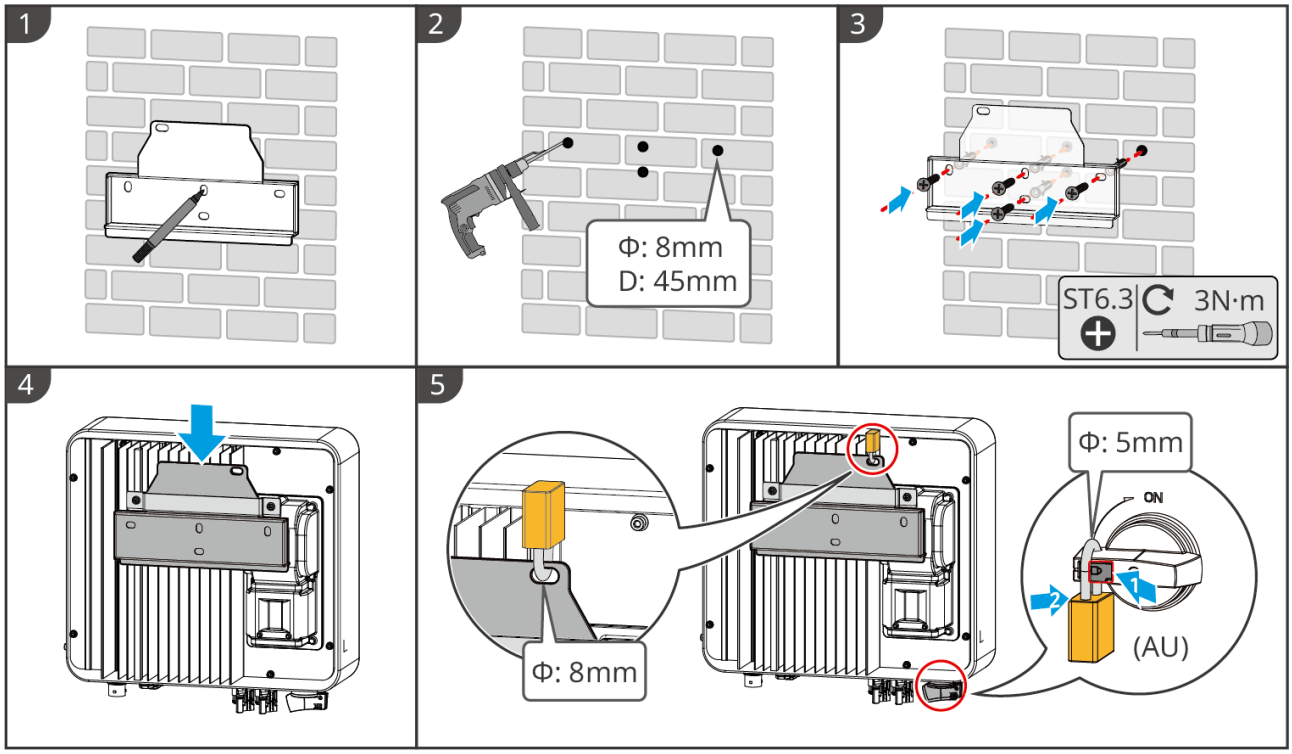
1. Ensure an adequate number of personnel according to the equipment's weight to prevent the equipment from exceeding the human lifting capacity and causing injury.
2. Wear safety gloves to avoid injury.
3. Ensure the equipment remains balanced during handling to prevent it from falling.

4.2.2 Installing the Inverter

NOTICE

- When drilling holes, ensure the drilling location avoids water pipes, cables, etc., inside the wall to prevent danger.
- When drilling holes, please wear safety goggles and a dust mask to avoid inhaling dust into your respiratory tract or getting it in your eyes.
- The DC switch lock is user-supplied (Australia only).
- The anti-theft lock is user-supplied. Please select a suitable anti-theft lock, otherwise installation may not be possible.
- Ensure the inverter is securely installed to prevent it from falling and injuring personnel.

1. Place the backplate horizontally on the wall, and use a marker to mark the drilling positions.
2. Use an impact drill with a drill bit diameter of 8mm to drill holes, ensuring the hole depth is approximately 45mm.
3. Use expansion screws to secure the backplate to the wall or bracket.
4. Mount the inverter onto the backplate, and secure the backplate and inverter.
5. Install the anti-theft lock with an aperture of 8mm. Install the DC switch lock (Australia only) with an aperture of 5mm.



DNS40INT0003

5 Electrical Connection

5.1 Safety Precautions

DANGER

- Before performing electrical connections, disconnect the inverter's DC switch and AC output switch to ensure the device is powered off. It is strictly prohibited to operate with power on, otherwise, electric shock or other DANGER may occur.
- All operations during electrical connections, as well as 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 connections. When wiring, please leave a certain length of cable before connecting it to the inverter's terminal ports.

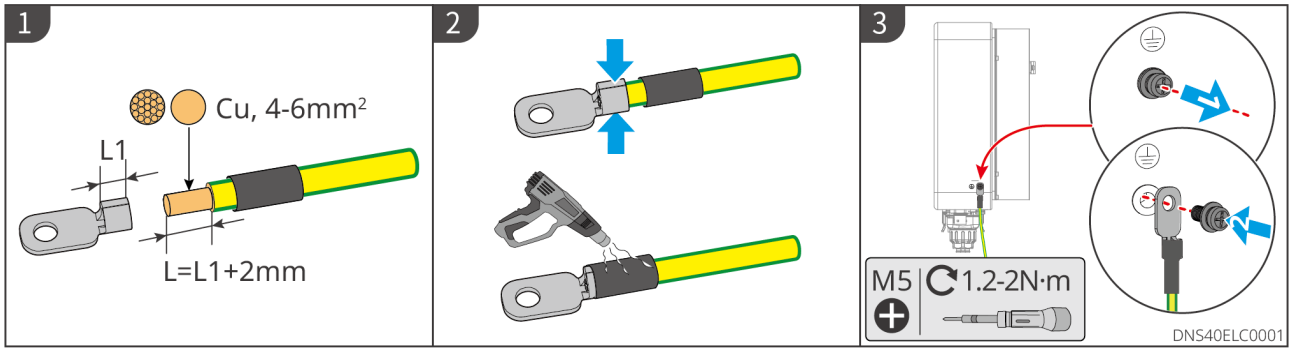
NOTICE

- When performing electrical connections, wear personal protective equipment such as safety shoes, protective gloves, and insulated gloves as required.
- Only qualified professionals are permitted to perform electrical connection operations.
- The cable colors in the diagrams in this document are for reference only. Specific cable specifications must comply with local regulatory requirements.

5.2 Connecting the PE cable

⚠WARNING

- The protective grounding of the chassis cannot replace the protective earth wire of the AC output port. When wiring, ensure the protective earth wires at both locations are reliably connected.
- For multiple inverters, ensure equipotential bonding of the protective grounding points on the chassis of all inverters.
- To improve the corrosion resistance of the terminal, it is recommended to apply silicone or paint to the exterior of the grounding terminal for protection after the protective earth wire connection is installed.
- Please prepare your own protective earth wire. Recommended specifications:
  - Type: Outdoor single-core copper wire
  - Conductor cross-sectional area: 4-6mm^2



5.3 Connecting AC Output Cables

⚠WARNING

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

NOTICE

- Each inverter must be equipped with an AC output switch. Multiple inverters cannot be connected to the same AC switch simultaneously.
- If the inverter AC output terminals are not used, please use waterproof covers to seal the terminals; otherwise, it will affect the equipment protection rating.

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

Inverter Model	AC Switch Specification
GW3.6K-DNS-CN-G40	25A
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

Please choose whether to install an RCD device according to local laws and regulations.
The inverter can be externally connected to a Type A RCD (Residual Current Device) for protection when the DC component of the leakage current exceeds the limit. The recommended RCD specification is 300mA (according to local regulations).

NOTICE

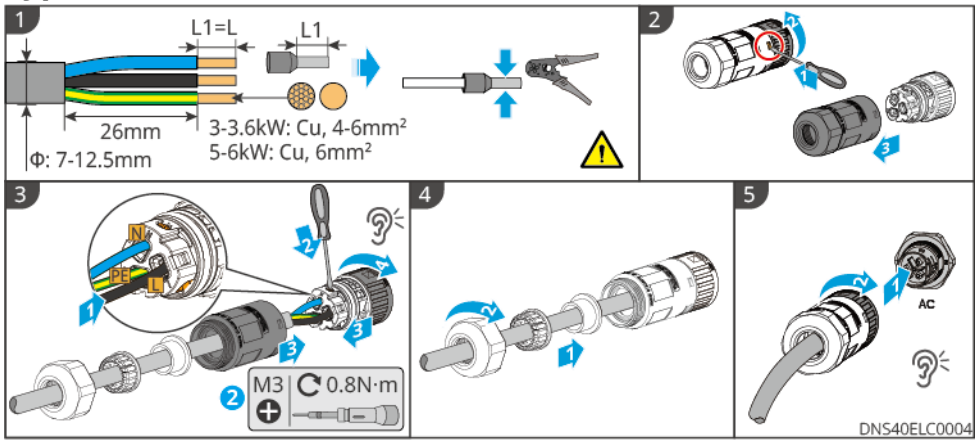
Each inverter needs to be equipped with an AC output switch, and multiple inverters cannot be connected to one AC switch simultaneously.

⚠WARNING

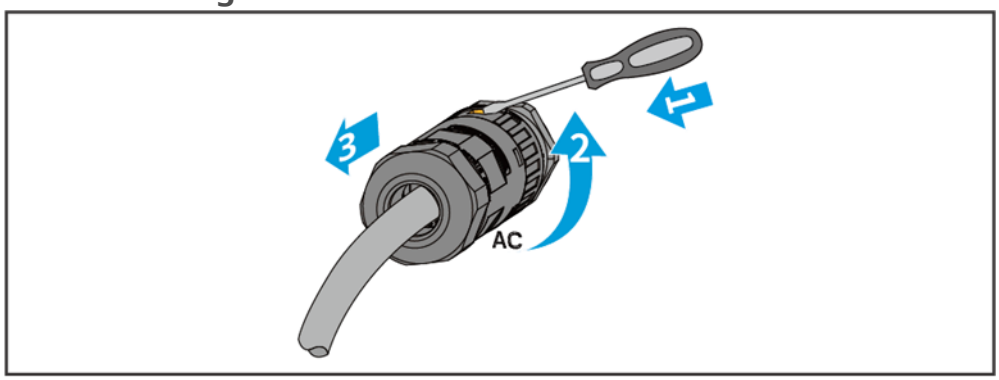
- When connecting AC cables, always use tubular terminals for crimping.
- During wiring, ensure that the AC output wires match the AC terminal's "L", "N", and "PE" ports exactly. If the cables are connected incorrectly, it will cause inverter damage.
- Ensure that the wire cores are fully inserted into the AC terminal wiring holes without any exposure.
- Ensure that the cable connections are tight; otherwise, during equipment operation, it may cause terminal overheating and lead to inverter damage.

1. Prepare the AC output cable.
2. Disassemble the AC terminal.
3. Connect the AC output cable to the AC terminal.
4. Assemble the AC connection terminal.
5. Connect the AC terminal to the inverter.

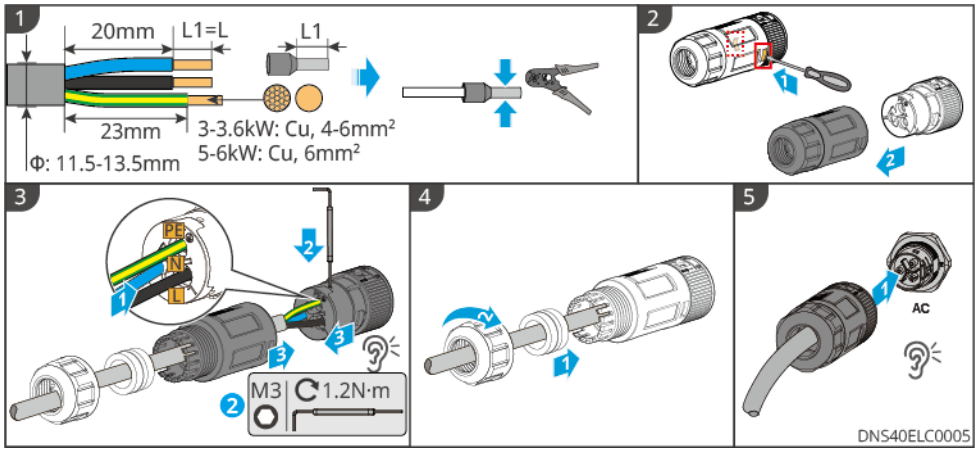
Type one:



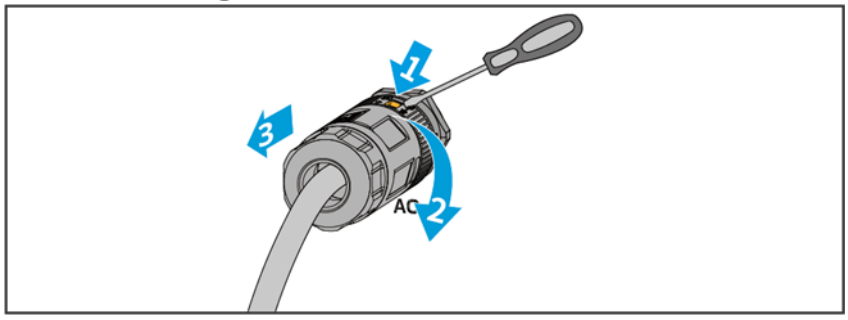
Disassembling the AC terminal



Type two:



Disassembling the AC terminal



NOTICE

- After completing the wiring connection, please check the correctness and firmness of the wiring, and clean up the construction residues.
- The AC output terminals need to be sealed to ensure the protection level of the machine.

5.4 Connecting the DC Input Cable

⚠DANGER

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

1. Ensure the maximum short-circuit current and maximum input voltage for each MPPT circuit are within the allowable range of the inverter.
2. Ensure the positive pole of the PV string is connected to the inverter's PV+, and the negative pole of the PV string is connected to the inverter's PV-.

⚠WARNING

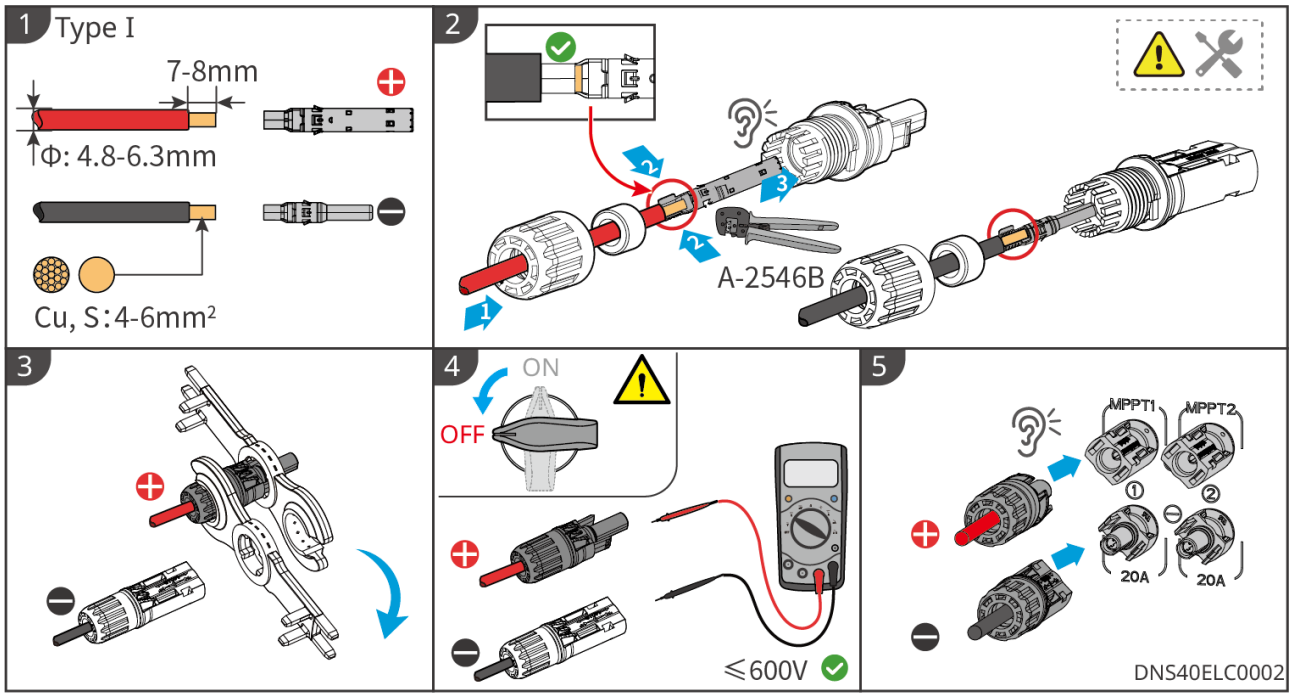
- Mixing PV modules of different brands or models within the same MPPT input, or connecting PV modules with different orientations or tilt angles to the same PV string, will not necessarily damage the inverter but may lead to reduced system performance.
- The maximum DC input voltage of the inverter is 600V. Ensure the open-circuit voltage of the PV string connected to each MPPT input does not exceed 600V. When the input voltage is between 560V-600V, the inverter will enter standby mode. It will resume normal operation when the voltage returns to the MPPT operating voltage range of 40V-560V.
- It is recommended that the voltage difference between different MPPT inputs does not exceed 150V.
- The sum of the peak power currents of the strings connected to each MPPT input must not exceed the inverter's Max. Current from Grid per MPPT input.
- When the inverter is connected to multiple PV strings, it is recommended to maximize the number of MPPT inputs utilized.
- PV string output does not support grounding. Before connecting the PV string to the inverter, ensure the minimum insulation resistance to ground of the PV string meets the minimum insulation impedance requirement.
- Please prepare your own DC input cables.

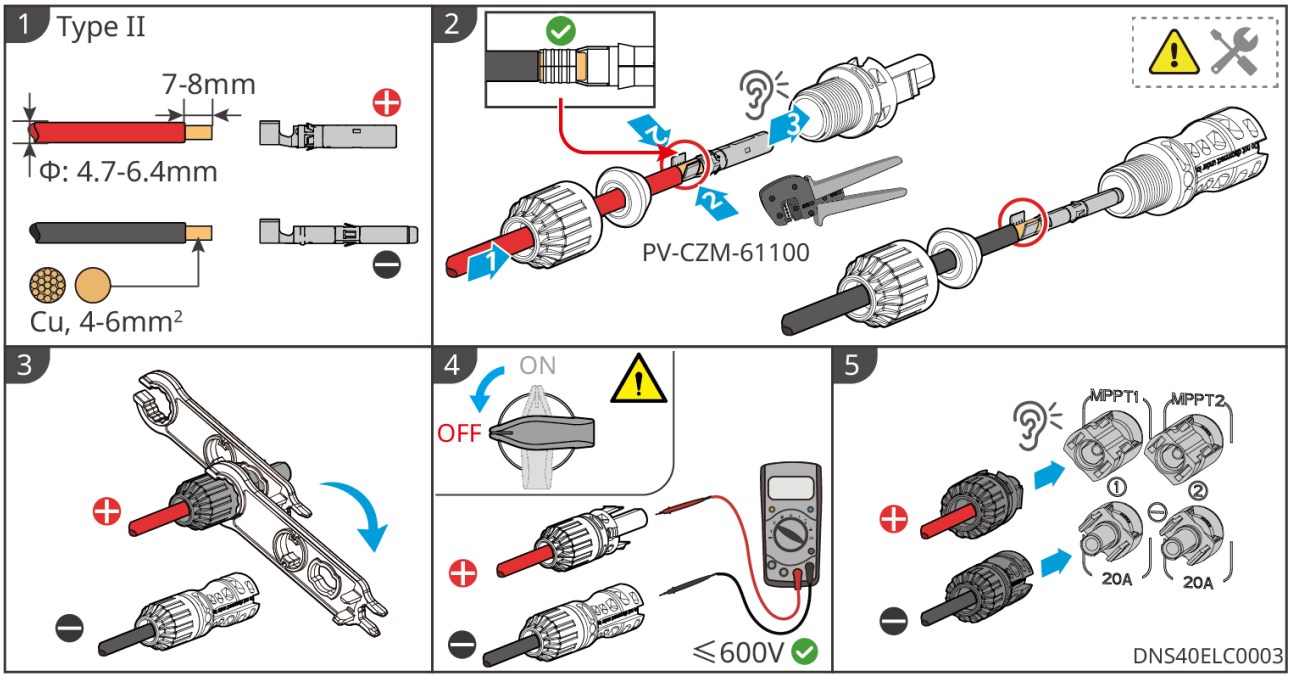
NOTICE

If the inverter DC input terminals do not need to be connected to the PV string, please use waterproof covers to seal the terminals; otherwise, it will affect the equipment protection level.

Connecting the DC Input Cable

1. Prepare the DC cable.
2. Crimp the DC input terminals and assemble the DC connector.
3. Tighten the DC connector.
4. Test the DC input voltage.
5. Connect the DC connector to the inverter DC terminals.





5.5 Communication Connection

NOTICE

- For specific product function configurations, please refer to the actual model of the inverter in your region.
- Due to product version upgrades or other reasons, the document content will be updated periodically. 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 Limitation Networking Solution

NOTICE

- Inverter connected to a smart meter or CT can achieve output power limit and load monitoring functions.
- Please use SolarGo APP to enable the 'Export power limit' function.

The photovoltaic power station generates electricity for self-consumption. When the electrical equipment cannot consume all the generated power and excess power would backfeed into the grid, the inverter can monitor the grid-tie point power data in real-time via a smart meter and adjust its output power to prevent the surplus electricity from feeding into the grid.

WARNING

1. For single-unit networking, during First-time Installation, there is no need to concern about the CT sampling current direction; when replacing or maintaining CT later, please use the meter/CT-auxiliary detection function on the SolarGo APP to allow the inverter to re-adapt to the CT sampling current direction.
2. For multi-unit networking, the CT installation position should be close to the grid connection point, with the correct installation direction. The "-->" in CT indicates the direction of inverter current pointing to the grid. If reversed, the inverter will trigger an alarm and cannot achieve output limitation function.
3. The aperture of the CT must be larger than the outer diameter of the AC power line, ensuring that the AC power line can pass through the CT.
4. The CT must be clamped onto the L cable, and should not be clamped onto the N cable.
5. The CT shipped with the inverter has a sampling range: 90A; transformation ratio: 1000:1; cable length: 5m.
6. GM330:
   - For the current transformation ratio specification of CT, please select nA/5A. (nA: CT primary side input current, where n ranges from 200-5000, selected by the user based on actual needs. 5A: CT secondary side output current.)
   - The accuracy value of CT is recommended to be selected as 0.5, 0.5s, 0.2, 0.2s, ensuring that the current sampling error of CT is ≤1%.
   - To ensure the current detection accuracy of CT, the CT cable length is recommended not to exceed 30m, and the cable's current carrying capacity is recommended to be 6A.

WARNING

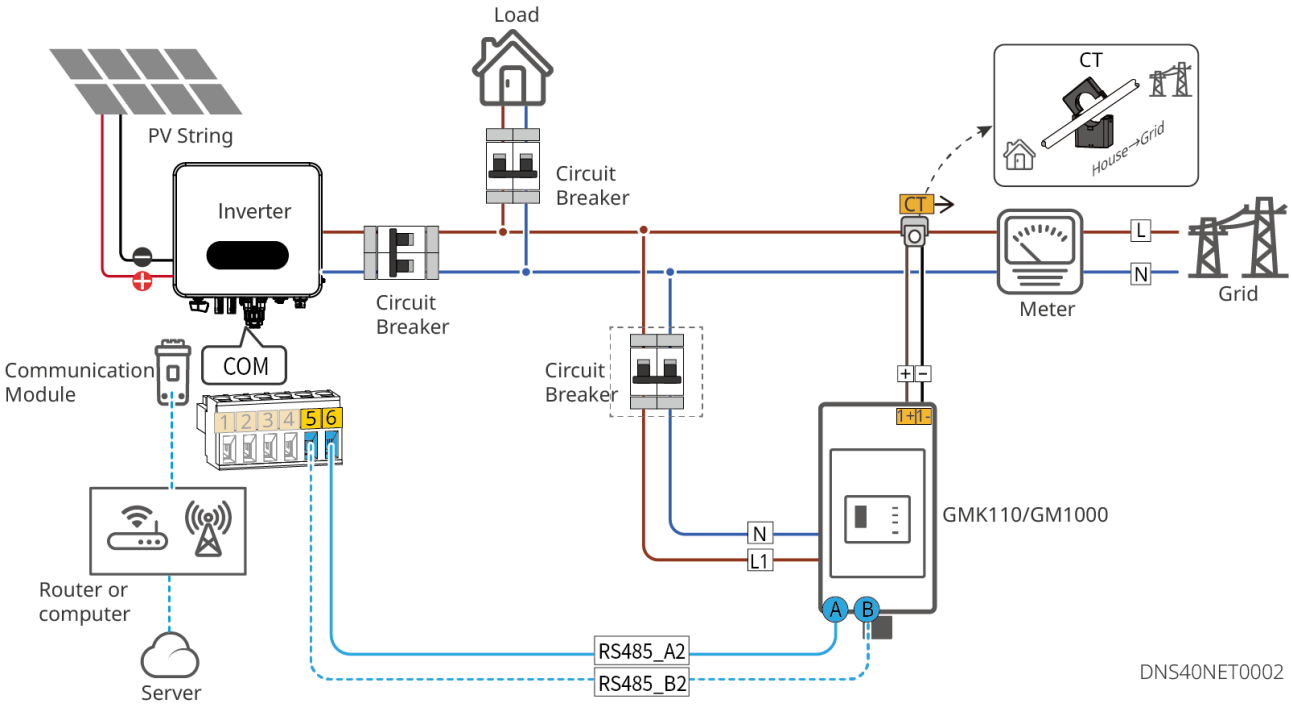
7. Please ensure that the meter wiring and phase sequence are correct. The recommended cross-sectional area for the meter input voltage cable: 1mm² (18AWG).
8. Multi-unit networking power limitation requires matching Ezlink3000. If needed, please contact after-sales or distributors for purchase.
9. The inverter supports setting parameters locally via 4G, WiFi/LAN communication modules, connecting to mobile phones or WEB interfaces to set device-related parameters, view device operation information, error information, and timely understand system status.
10. When there is only one inverter in the system, you can use 4G Kit-CN-G20 , 4G Kit-CN-G21, WiFi/LAN Kit-20, or WiFi Kit-20 smart dongle.
11. When the system includes multiple inverters and unit networking, the main inverter needs to install Ezlink3000 smart dongle for networking, and the slave inverters do not need to connect to a smart dongle. Ezlink3000 version should be V1.6.8 or above.
12. After wiring is completed, set the relevant parameters via the LCD display or SolarGo APP to complete the anti-reverse flow or output power limitation function.

NOTICE

This electricity meter is mainly used for grid connection point power control. The measured power generation and consumption can only be used as a reference and cannot be used as the basis for electricity billing. Electricity billing should be based on the metering electricity meter of the grid company.

Single-Unit Power Limitation Networking Solution

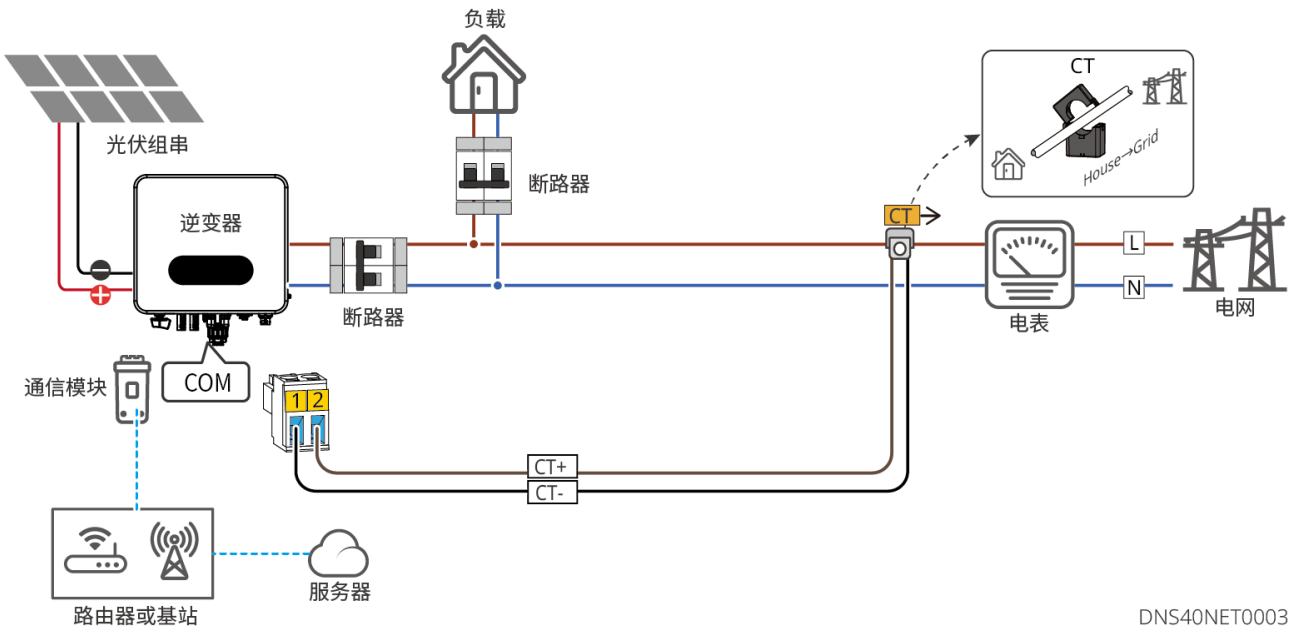
Meter Solution (GMK110/GM1000)



CT Solution

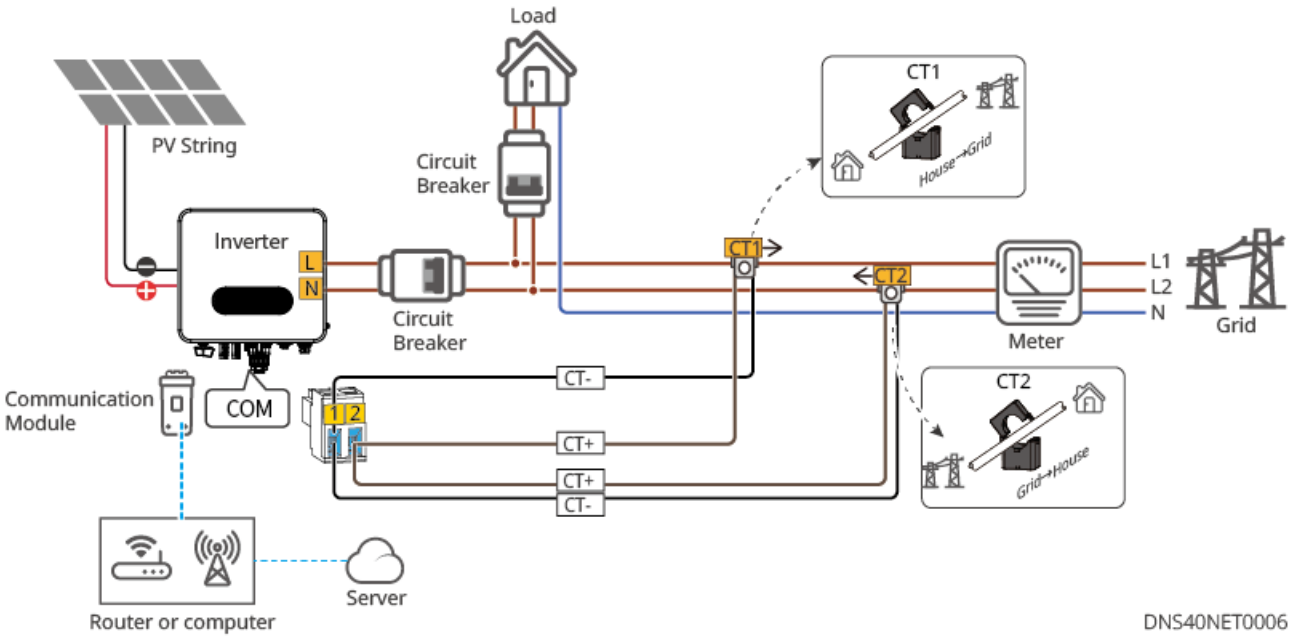
NOTICE

CTs are shipped with inverters for the Australian region and are optional for other regions.CT ratio: 90A/90mA.

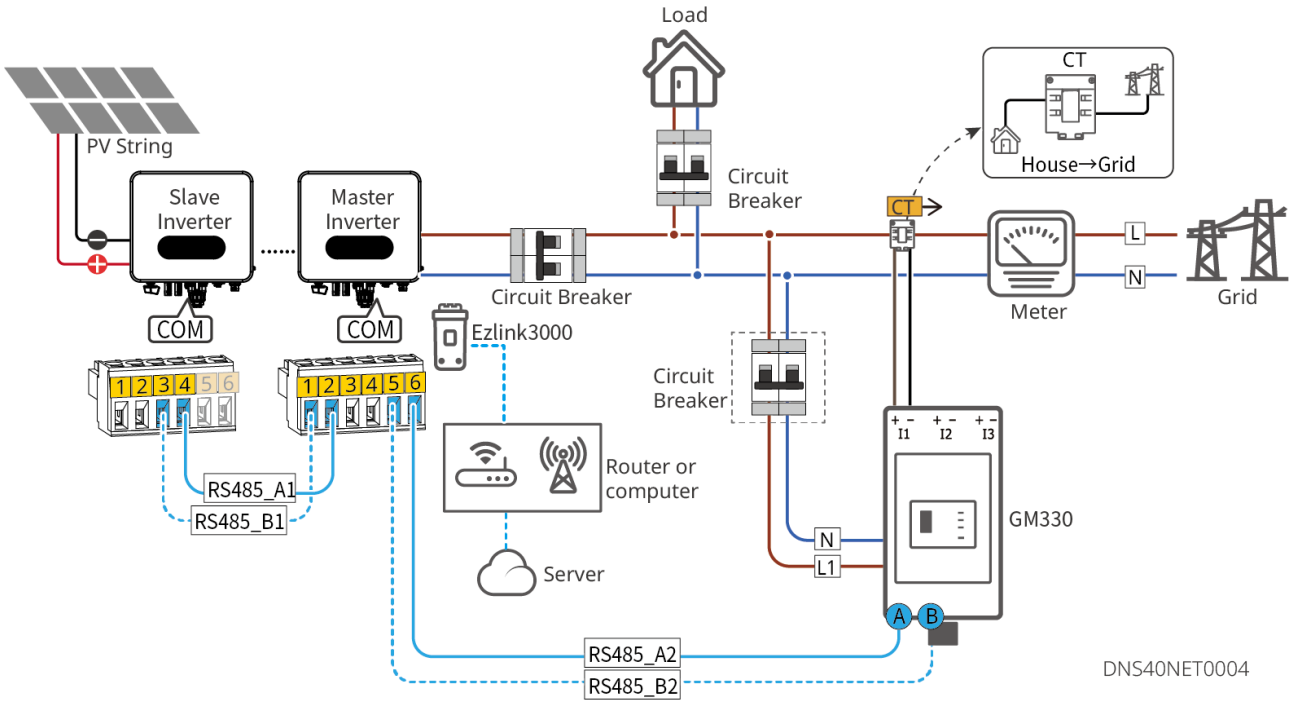


Single-Unit Power Limitation Networking Solution when Connecting to a Split-Phase Grid

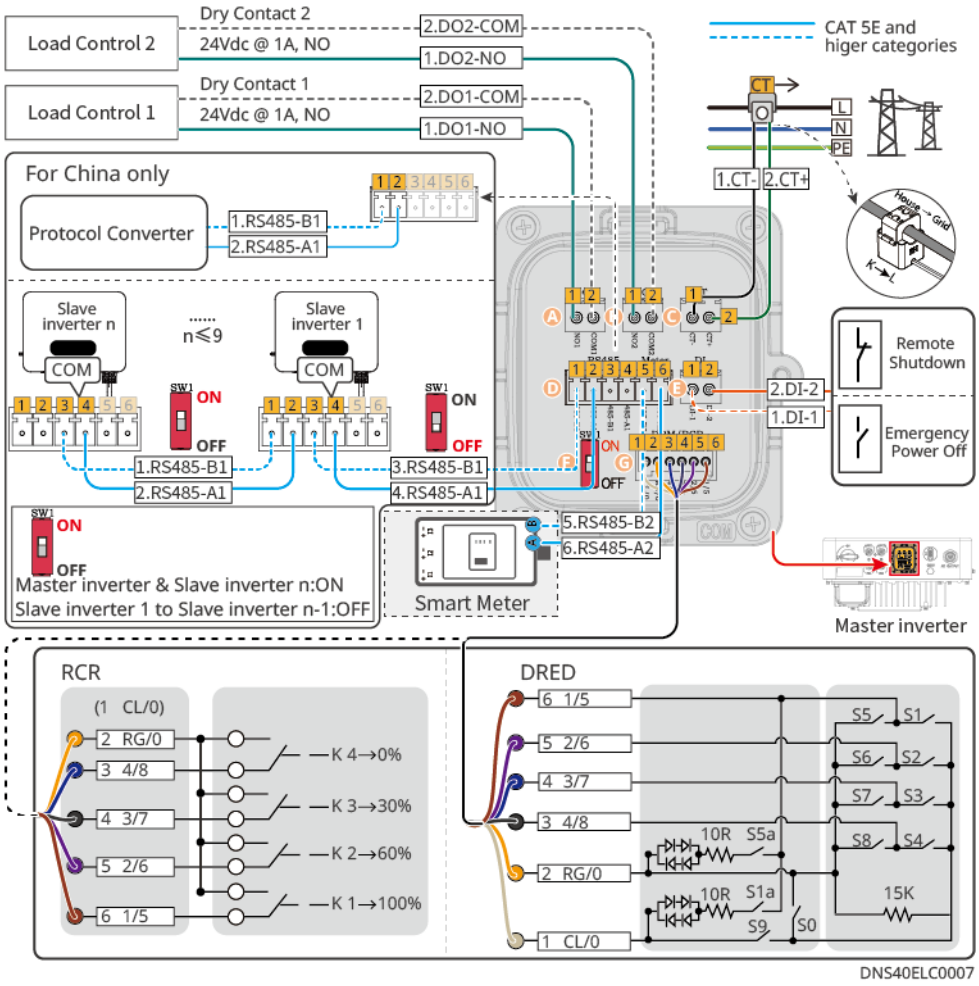
NOTICE
Users prepare their own or purchase CT from the manufacturer. CTtransformation ratio: 90A/45mA.



Multi-Unit Power Limitation Networking Solution (GM330+Ezlink3000)



5.5.2 Connecting Communication Cables



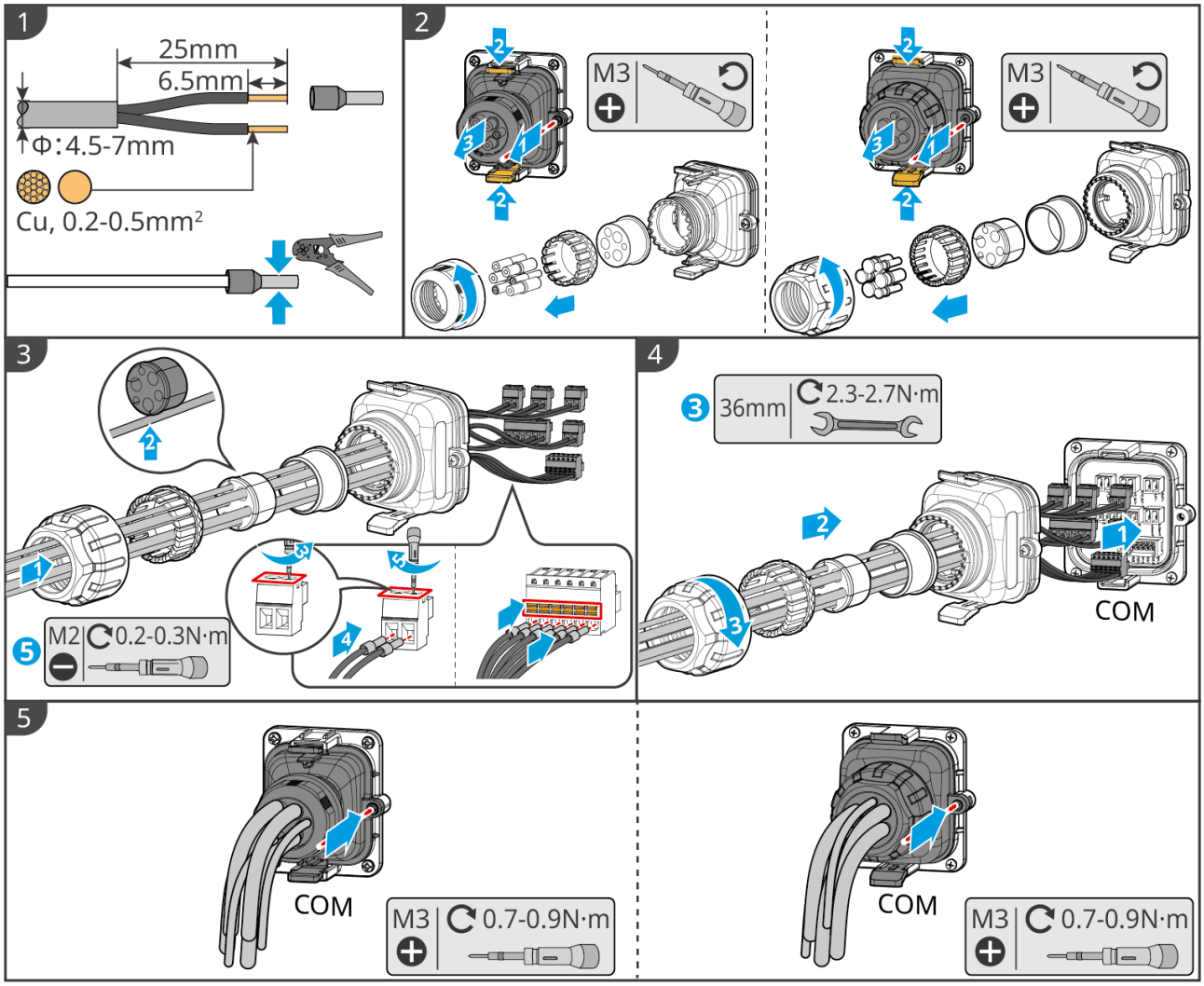
Silkscreen	Function	Description
DO1 DO2	load control (optional)	• Supports connection to dry contact signals to achieve functions such as load control. DO contact capacity is 24VDC@1A, NO normally open contacts. • Supports SG Ready heat pump access, controlling the heat pump via dry contact signals.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

Silkscreen	Function	Description
RS485	Parallel communication port or protocol converter communication port (RS485-1)	• Used for communication between multiple inverters in parallel or connecting to a protocol converter (China only). • The inverter uses the same set of RS485 ports for connecting to a protocol converter and for parallel connection. If a protocol converter is connected, the inverter parallel function cannot be used; in inverter parallel connection scenarios, a protocol converter cannot be connected.
Meter	Meter connection port (RS485-2)	The inverter, paired with a meter, achieves output power limitation function. If supporting equipment is needed, contact the inverter manufacturer for purchase.
DI	Remote shutdown or emergency shutdown	After the emergency switch sends a shutdown signal, the inverter's AC side automatically disconnects, stopping grid connection. An external emergency shutdown switch is required.
DRM/RCR	DRED (Australia) or RCR (Europe) connection port	• DRED (Demand Response Enabling Device): Provides a DRED signal control port to meet the grid dispatch requirements for DRED in Australia and New Zealand. DRM1-4 functions are reserved; DRM equipment needs to be prepared by the user. • RCR (Ripple Control Receiver): Provides an RCR signal control port to meet grid dispatch requirements in regions such as Germany.

Silkscreen	Function	Description
SW1	Terminal resistor DIP switch	The inverter is equipped with an RS485 terminal resistor. This terminal resistor DIP switch is enabled by default. “ON” represents enabled, “1” represents disabled. Operation method: Open the outer cover of the communication port, and use an insulated pick to switch the terminal resistor DIP switch to “1” (OFF).

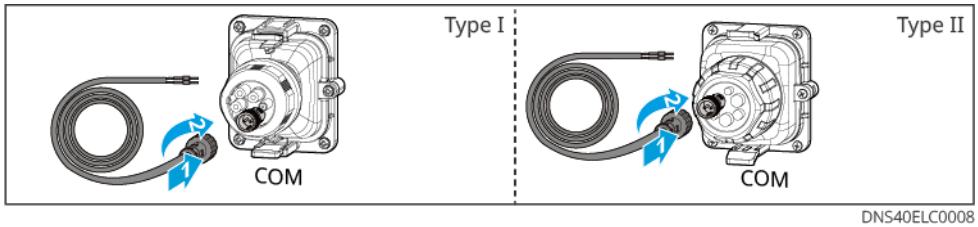
NOTICE

- When connecting communication cables, ensure the port definitions match the equipment exactly. The cable routing path should avoid interference sources, power lines, etc., to prevent affecting signal reception.
- When connecting remote shutdown/Emergency Poweroff (India), CT, or load control communication cables, use a 2PIN communication terminal.
- When connecting R485(meter) or DRED/RCR communication cables, use a 6PIN communication terminal.
- If you need to use the DRED, RCR or remote shutdown function, please enable it in the SolarGo APP after wiring is complete.
- Do not enable the DRED, RCR or remote shutdown function in the SolarGo APP if the inverter is not connected to the corresponding device, otherwise the inverter will not be able to connect to the grid.
- For more detailed information on the communication module, please obtain it from the official website.
- The USB-RS485 adapter cable is for Brazil models only. Please contact after-sales service if needed.
- Communication cable type requirement: RS485 communication cable must be outdoor shielded twisted pair wire meeting local standards.



DNS40ELC0006

China Only



DNS40ELC0008

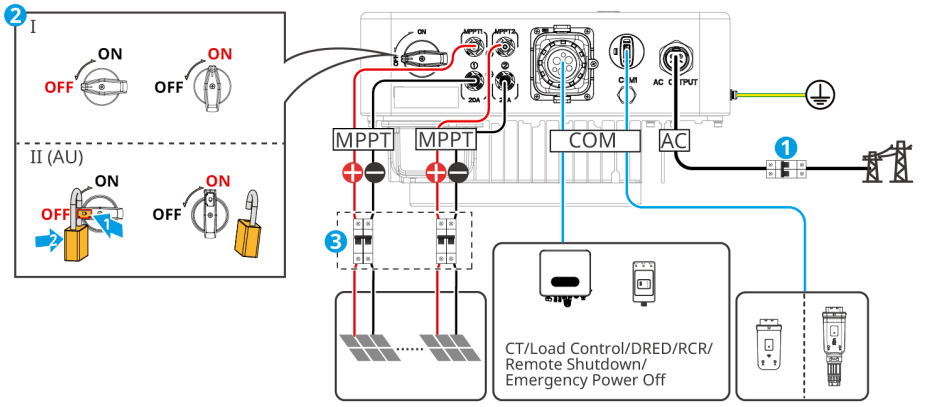
6 Equipment Trial Run

6.1 Check Before Power ON

No.	Inspection Item
1	The equipment is installed securely, the installation location facilitates operation and maintenance, the installation space allows for ventilation and heat dissipation, and the installation environment is clean and tidy.
2	PE cable, DC cable, AC cable, and communication cable are connected correctly and securely.
3	Cable bundling meets wiring requirements, is distributed reasonably, and has no damage.
4	For unused cable holes and ports, be sure to use the terminals provided with the accessories for reliable connection, and they have been sealed.
5	Ensure that the used cable holes have been sealed.
6	The voltage and frequency at the inverter grid connection point meet the grid connection requirements.

6.2 Powering On the Device

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.



Power On : ❶→❸→❷ Power Off : ❶→❷→❸

DNS40PWR0001

7 System Commissioning

7.1 Indicator Light Description

indicator	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: Self-check before grid connection
		Single fast flash: About to grid-connect
communication		Steady on: Wireless monitoring normal
		Single flash: Wireless module reset or reconfigured
		Two flashes: Not connected to base station or router
		Four flashes: Not connected to monitoring server
		Flashing: RS485 communication normal
		Off: Wireless module restoring factory settings
fault		Steady on: System fault
		Off: No fault

7.2 Setting Inverter Parameters via the Display Screen

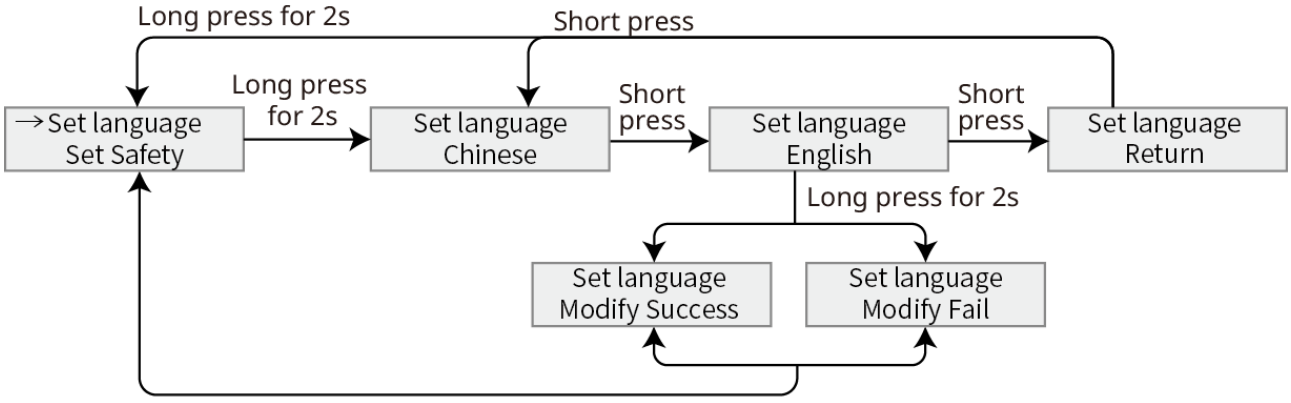
NOTICE

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

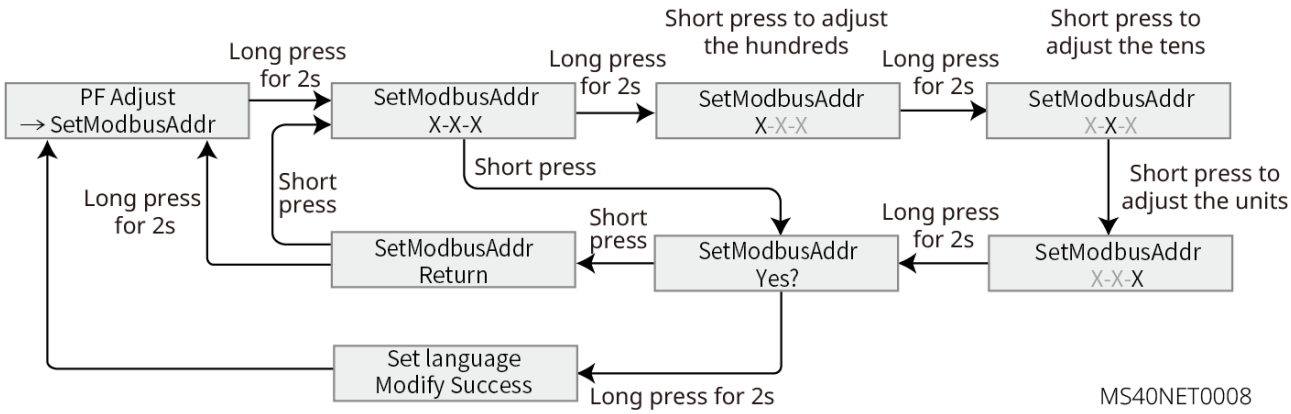
Display Screen Button Instructions

- At each menu level, if no button is operated for a certain period, the LCD screen will dim, and the interface will automatically return to the initial screen.
- Short press the display screen operation button: Switch menu interfaces, adjust parameter values.
- Long press the display screen operation button: After adjusting a parameter value, a long press confirms and saves the setting; Enter the next sub-menu level.

Button Operation Example:



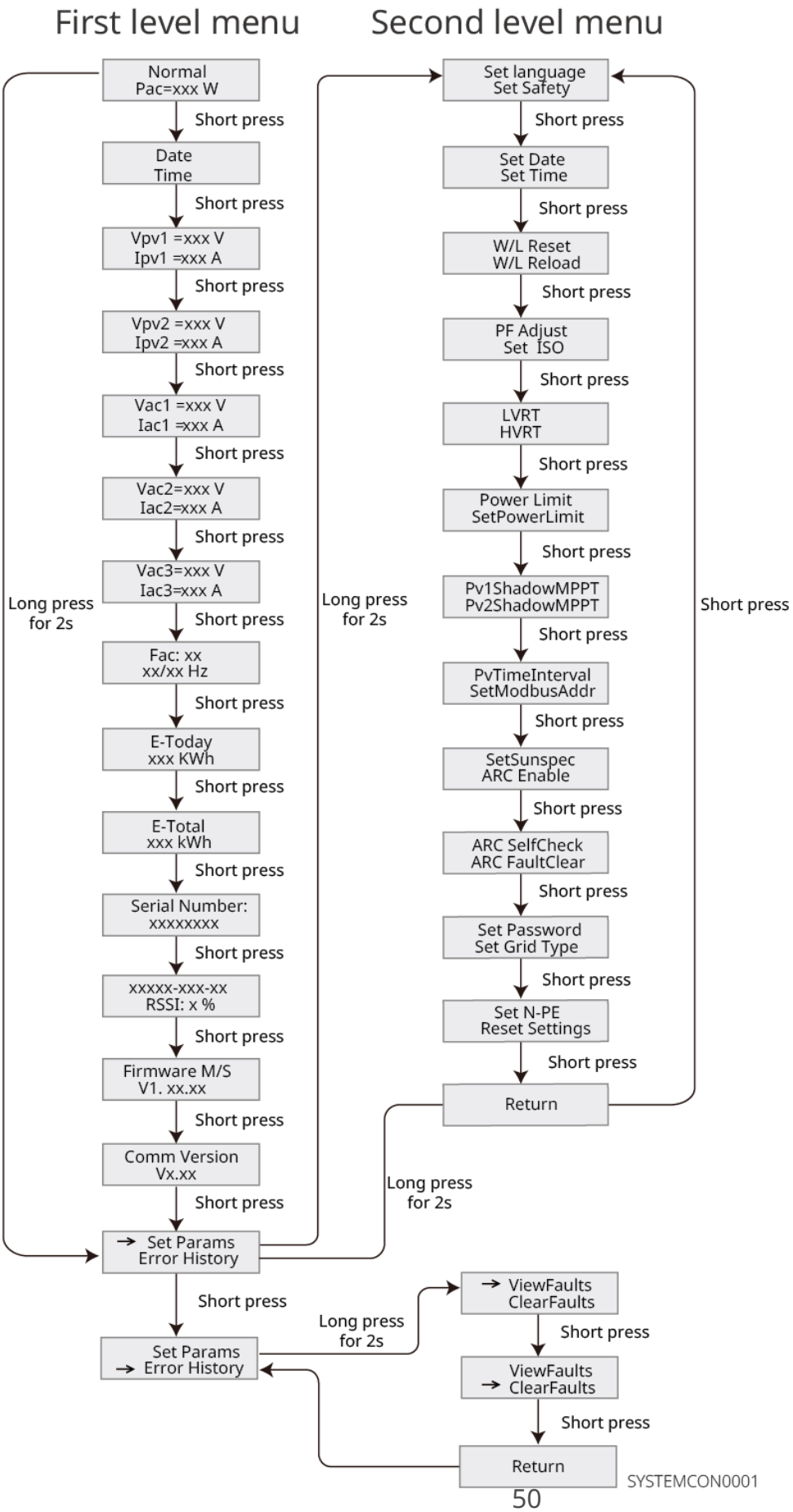
MS40NET0007



MS40NET0008

7.2.1 Display Screen Menu Introduction

This section introduces the display screen menu structure, allowing you to navigate through various menu levels, view inverter information, and set related inverter parameters.



SYSTEMCON0001

7.3 Setting Inverter Parameters via the SolarGo APP

SolarGo APP is a mobile application software that can communicate with inverters via Bluetooth and WiFi. The following are common functions:

1. View the inverter's operating data, software version, alarm information, etc.
2. Set the inverter's grid parameters, communication parameters, etc.
3. Maintain the device.

For detailed functions, please refer to the "SolarGo APP User Manual". The user manual can be obtained from the official website or by scanning the QR code below.

SolarGo App

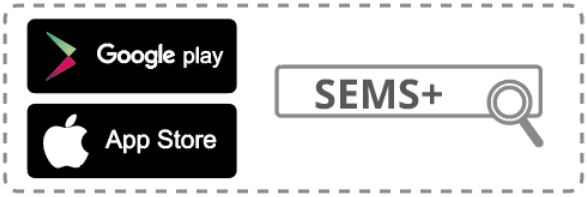
SolarGo App User Manual

7.4 Download SEMS+ APP

Phone Requirements:

- Operating System: Android 6.0 or above, iOS 13.0 or above.
- The phone must support a web browser and have an Internet connection.
- The phone must support WLAN/Bluetooth functionality.

Download Methods:
Method 1:
Search for SEMS+ in Google Play (Android) or the App Store (iOS) to download and install.



Method 2:

Scan the QR code below to download and install.

8 Maintenance

8.1 Inverter Power-off

DANGER

- When operating and maintaining the inverter, please power off the inverter. Operating the equipment while energized may cause inverter damage or electric shock DANGER.
- After the inverter is powered off, internal components require some time to discharge. Please wait until the equipment is completely discharged according to the label time requirements.

Step 1: (Optional) Issue the grid disconnection command to the inverter.
Step 2: Disconnect the AC switch between the inverter and the power grid.
Step 3: Disconnect the DC switch of the inverter.
Step 4: (Optional) Disconnect the switch between the inverter and the PV modules.

8.2 Inverter Removal

WARNING

- Ensure the inverter is powered off.
- Wear personal protective equipment when operating the inverter.

Step 1: Disconnect all electrical connections of the inverter, including: DC cables, AC cables, Communication cable, smart dongle, PE cable.
Step 2: Remove the inverter from the back mounting plate.
Step 3: Remove the back mounting plate.
Step 4: Store the inverter properly. If the inverter will be put into use again later, ensure the storage conditions meet the requirements.

8.3 Scrapped Inverters

When an inverter can no longer be used and needs to be scrapped, please dispose of

it according to the electrical waste disposal requirements of the regulations in the country/region where the inverter is located. The inverter must not be disposed of as household waste.

8.4 Fault Information and Troubleshooting

Please follow the methods below for troubleshooting. If the troubleshooting methods cannot help you, please contact the after-sales service center.
When contacting the after-sales service center, please collect the following information to facilitate a quick resolution.

1. Product information, such as: serial number, software version, device installation time, fault occurrence time, fault frequency, etc.
2. Device installation environment, such as: weather conditions, whether components are obstructed, have shadows, etc. It is recommended to provide photos, videos, and other files to assist in problem analysis.
3. Grid conditions.

8.4.1 Inverter Fault

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 disappear automatically 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 high voltage duration exceeds the HVRT setting.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid voltage is within the allowable range. • If the grid voltage is outside the allowable range, contact the local power operator. • If the grid voltage is within the allowable range, after obtaining approval from the local power operator, modify the inverter's grid overvoltage protection point, HVRT, or disable the grid overvoltage protection function. 3. If it cannot recover for a long time, check whether the AC side circuit breaker and output cables are properly connected.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F03	Grid Undervoltage Protection	Grid voltage is lower than the allowable range, or the low voltage duration exceeds the LVRT setting.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid voltage is within the allowable range. • If the grid voltage is outside the allowable range, contact the local power operator. • If the grid voltage is within the allowable range, after obtaining approval from the local power operator, modify the inverter's grid undervoltage protection point, LVRT, or disable the grid undervoltage protection function. 3. If it cannot recover for a long time, check whether the AC side circuit breaker and output cables are properly connected.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F04	Grid Rapid Overvoltage Protection	Grid voltage detection is abnormal or ultra-high voltage triggers the fault.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid voltage is within the allowable range. • If the grid voltage is outside the allowable range, contact the local power operator. • If the grid voltage is within the allowable range, after obtaining approval from the local power operator, modify the inverter's grid undervoltage protection point, LVRT, or disable the grid undervoltage protection function. 3. If it cannot recover for a long time, check whether the AC side circuit breaker and output cables are properly connected.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F05	10min Overvoltage Protection	The sliding average of grid voltage within 10min exceeds the safety regulation range.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. Check if the grid voltage has been operating at a high voltage for a long time. If it occurs frequently, check whether the grid voltage is within the allowable range. • If the grid voltage is outside the allowable range, contact the local power operator. • If the grid voltage is within the allowable range, after obtaining approval from the local power operator, modify the grid 10min overvoltage protection point.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F06	Grid Overfrequency	Grid anomaly: The actual grid frequency is higher than the local grid standard requirements.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid frequency is within the allowable range. • If the grid frequency is outside the allowable range, contact the local power operator. • If the grid frequency is within the allowable range, after obtaining approval from the local power operator, modify the grid overfrequency protection point.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F07	Grid Underfrequency	Grid anomaly: The actual grid frequency is lower than the local grid standard requirements.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid frequency is within the allowable range. • If the grid frequency is outside the allowable range, contact the local power operator. • If the grid frequency is within the allowable range, after obtaining approval from the local power operator, modify the grid overfrequency protection point.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F08	Grid Frequency Instability	Grid anomaly: The rate of change of the actual grid frequency does not comply with the local grid standard.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid frequency is within the allowable range. • If the grid frequency is outside the allowable range, contact the local power operator. • If the grid frequency is within the allowable range, contact your dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F163	Grid Phase Instability	Grid anomaly: The rate of change of the grid voltage phase does not comply with the local grid standard.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid frequency is within the allowable range. • If the grid frequency is outside the allowable range, contact the local power operator. • If the grid frequency is within the allowable range, contact your dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F09	Anti-islanding Protection	The grid has been disconnected, but grid voltage is maintained due to the presence of loads. Grid connection is stopped according to safety protection requirements.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid frequency is within the allowable range. • If the grid frequency is outside the allowable range, contact the local power operator. • If the grid frequency is within the allowable range, contact your dealer or after-sales service center.
F10	LVRT Undervoltage Fault	Grid anomaly: The duration of abnormal grid voltage exceeds the time specified for LVRT/HVRT.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid voltage and frequency are within the allowable range and stable. If not, contact the local power operator; if yes, contact your dealer or after-sales service center.
F11	HVRT Overvoltage	Grid anomaly: The duration of abnormal grid voltage exceeds the time specified for LVRT/HVRT.	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F43	Grid Waveform Abnormal	Grid anomaly: Grid voltage detection is abnormal, triggering the fault.	1. If it occurs occasionally, it may be a short-term grid anomaly. The inverter will resume normal operation after detecting the grid is normal, requiring no manual intervention. 2. If it occurs frequently, check whether the grid voltage and frequency are within the allowable range and stable. If not, contact the local power operator; if yes, contact your dealer or after-sales service center.
F44	Grid Phase Loss	Grid anomaly: There is a single-phase voltage dip in the grid.	
F45	Grid Voltage Imbalance	The difference between grid phase voltages is too large.	
F46	Grid Phase Sequence Failure	Inverter and grid wiring abnormal: wiring is not in positive sequence	1. Check if the wiring between the inverter and the grid is in positive sequence. The fault will automatically disappear after correct wiring (e.g., swapping any two live wires). 2. If the fault persists despite correct wiring, please contact the dealer or after-sales service center.
F47	Grid Rapid Shutdown Protection	Rapidly shuts down output after detecting grid power outage condition	1. The fault automatically disappears after grid power supply is restored.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F48	Grid Neutral Wire Loss	Split-phase grid neutral wire loss	1. The alarm automatically disappears after grid power supply is restored. 2. Check if the AC line or AC switch is disconnected.
F160	EMS/Forced Off-grid	EMS issued a forced off-grid command, but the off-grid function is not enabled	Enable the off-grid function
F161	Passive Anti-islanding Protection	-	-
F162	Grid Type Fault	The actual grid type (two-phase or split-phase) does not match the set safety standard	Switch to the corresponding safety standard according to the actual grid type.
F12	30mA GFCI Protection	The input-to-ground insulation resistance becomes low during inverter operation.	1. If it occurs occasionally, it may be caused by an occasional external line abnormality. It will return to normal operation after the fault is cleared, requiring no manual intervention. 2. If it occurs frequently or cannot be recovered for a long time, please check if the PV string's impedance to ground is too low.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F13	60mA GFCI Protection	The input-to-ground insulation resistance becomes low during inverter operation.	1. If it occurs occasionally, it may be caused by an occasional external line abnormality. It will return to normal operation after the fault is cleared, requiring no manual intervention. 2. If it occurs frequently or cannot be recovered for a long time, please check if the PV string's impedance to ground is too low.
F14	150mA GFCI Protection	The input-to-ground insulation resistance becomes low during inverter operation.	1. If it occurs occasionally, it may be caused by an occasional external line abnormality. It will return to normal operation after the fault is cleared, requiring no manual intervention. 2. If it occurs frequently or cannot be recovered for a long time, please check if the PV string's impedance to ground is too low.
F15	GFCI Gradual Change Protection	The input-to-ground insulation resistance becomes low during inverter operation.	1. If it occurs occasionally, it may be caused by an occasional external line abnormality. It will return to normal operation after the fault is cleared, requiring no manual intervention. 2. If it occurs frequently or cannot be recovered for a long time, please check if the PV string's impedance to ground is too low.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F16	DCI Level 1 Protection	The DC component of the inverter output current is higher than the safety standard or the machine's default allowable range.	1. If it is caused by an external fault, the inverter will automatically return to normal operation after the fault disappears, requiring no manual intervention. 2. If this alarm occurs frequently, affecting the normal power generation of the power station, please contact the dealer or after-sales service center.
F17	DCI Level 2 Protection	The DC component of the inverter output current is higher than the safety standard or the machine's default allowable range.	1. If it is caused by an external fault, the inverter will automatically return to normal operation after the fault disappears, requiring no manual intervention. 2. If this alarm occurs frequently, affecting 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. PV string short-circuited to protective ground. 2. The PV string is installed in a long-term humid environment with poor line-to-ground insulation. 3. Low insulation resistance of battery port wiring to ground.	1. Check the impedance of the PV string/battery port to protective ground. A value greater than 80kΩ is normal. If the measured value is less than 80kΩ, please locate and rectify the short circuit point. 2. Check if the inverter's protective ground wire is correctly connected. 3. If it is confirmed that the impedance is indeed below the default value in rainy weather, please reset the inverter's "Insulation Resistance Protection Point" via the App. For inverters in the Australian and New Zealand markets, when an insulation resistance fault occurs, alarms can also be issued in the following ways: 1. The inverter is equipped with a buzzer. When a fault occurs, the buzzer sounds continuously for 1 minute; if the fault is not resolved, the buzzer sounds again every 30 minutes. 2. If the inverter is added to the monitoring platform and alarm notification methods are set, alarm information can be sent to

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
			customers via email.
F19	Grounding Abnormal	1. The inverter's protective ground wire is not connected. 2. When the PV string output is grounded, the inverter output side is not connected to an isolation transformer.	1. Please confirm whether the inverter's protective ground wire is not properly connected. 2. In scenarios where the PV string output is grounded, please confirm whether an isolation transformer is connected to the inverter output side.
F49	L-PE Short Circuit	Low impedance or short circuit between output live wire and PE	Measure the impedance between the output live wire and PE, locate the position with low impedance and repair it.
F50	DCV Level 1 Protection	Load Abnormal Fluctuation	1. If the abnormality is caused by an external fault, the inverter will automatically resume normal operation after the fault disappears, requiring no manual intervention. 2. If this alarm occurs frequently, affecting 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
F51	DCV Level 2 Protection	Load Abnormal Fluctuation	1. If the abnormality is caused by an external fault, the inverter will automatically resume normal operation after the fault disappears, requiring no manual intervention. 2. If this alarm occurs frequently, affecting the normal power generation of the power station, please contact the dealer or after-sales service center.
F20	Hardware Export Limit Protection	Load Abnormal Fluctuation	1. If the abnormality is caused by an external fault, the inverter will automatically resume normal operation after the fault disappears, requiring no manual intervention. 2. If this alarm occurs frequently, affecting the normal power generation of the power station, please contact the dealer or after-sales service center.
F21	Internal Comm Loss	Refer to specific subcode reason	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
F52	Leakage Current (GFCI) Multiple Fault Shutdown	North American safety regulations require that after multiple faults, it cannot automatically recover; manual recovery or waiting 24h is needed.	1. Please check if the photovoltaic string's ground impedance is too low.
F53	DC Arc (AFCI) Multiple Fault Shutdown	North American safety regulations require that after multiple faults, it cannot automatically recover; manual recovery or waiting 24h is needed.	1. After the machine reconnects to the grid, check if the voltage and current of each circuit abnormally decrease to zero; 2. Check if the DC side terminals are securely connected.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F54	External Communication Loss	Inverter external device communication loss, which may be due to peripheral power supply issues, communication protocol mismatch, no corresponding peripheral configured, etc.	Judge based on the actual model and detection enable bits; peripherals not supported by some models will not be detected.
F55	Back-up Port Overload Fault	1. Prevent the inverter from continuously outputting overload.	1. Turn off some off-grid loads to reduce the inverter's off-grid output power.
F56	Back-up Port Overvoltage Fault	2. Prevent inverter output overvoltage from damaging loads.	1. If it occurs occasionally, it may be caused by load switching, requiring no manual intervention. 2. If it occurs frequently, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
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 setting is 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 Fault	When switching from grid-connected to off-grid, waiting for the Box to switch relays takes too long.	1. Check if the Box is working properly; 2. Check if the Box communication wiring is correct;
-	Generator Failure		
F22	Generator Waveform Detection Fault		
F23	Generator Abnormal Connection		
F24	Generator Low Voltage		
F25	Generator Voltage High		

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F26	Generator Frequency Low	1. This fault will always be displayed when the generator is not connected. 2. When the generator is operating, if it does not meet generator safety regulations, this fault will be triggered.	1. When the generator is not connected, ignore this fault; 2. When this fault occurs due to generator failure, it is normal. 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 off-grid mode; 4. When both the generator and grid are connected and meet safety regulations, the grid has priority for grid connection, and it will operate in grid-connected state.
F27	Generator Frequency High		
F109	External STS fault	Abnormal wiring between inverter and STS	Check if the wiring sequence of the harness between the inverter and the STS corresponds correctly one by one.
F58	CT Loss fault	CT connection wire disconnected (Japanese safety standard requirement)	Check if the CT wiring is correct.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F110	Export Limit Protection	1. Inverter reports error and disconnects from grid 2. meter communication unstable 3. Reverse power flow condition occurs	1. Check if the inverter has any other error messages. If yes, handle them accordingly. 2. Check if the meter connection is reliable. 3. If this alarm occurs frequently, affecting normal power generation of the plant, please contact the dealer or after-sales service center.
F111	Bypass Overload	-	-
F112	Black Start Failure	-	-
F28	Parallel IO Self-check Abnormal	Parallel communication cable not secured or parallel IO chip damaged	Check if the parallel communication cable is securely connected, then check if the IO chip is damaged. If yes, replace the IO chip.
F59	Parallel CAN Communication Abnormal	Parallel communication cable not secured or some machines are offline	Check if all machines are powered on and if the parallel communication cables are securely connected.
F29	Paralell Grid Line Reversed	Some machines' grid lines are reversed with others	Reconnect the grid lines.

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

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F63	GFCI HCT Failure	GFCI sensor abnormal	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 persists, please contact the distributor or after-sales service center.
F32	Relay Check Abnormal	Relay abnormal, reasons: 1. Relay abnormal (relay short circuit) 2. Relay sampling circuit abnormal. 3. AC side wiring abnormal (possible loose connection or short circuit)	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 persists, please contact the distributor or after-sales service center.
F64	Relay Failure	1. Relay abnormal (relay short circuit) 2. Relay sampling circuit abnormal. 3. AC side wiring abnormal (possible loose connection or short circuit)	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 persists, please contact the distributor or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F164	DC Arcing Failure (String 17~32)	1. DC side connection terminals loose; 2. DC side connection terminals have poor contact; 3. DC cable core damaged leading to poor contact	1. After the machine reconnects to the grid, check if the voltage and current of each circuit abnormally decrease to zero; 2. Check if the DC side terminals are firmly connected.
F165	DC Arcing Failure (String 33~48)	1. DC side connection terminals loose; 2. DC side connection terminals have poor contact; 3. DC cable core damaged leading to poor contact	1. After the machine reconnects to the grid, check if the voltage and current of each circuit abnormally decrease to zero; 2. Check if the DC side terminals are firmly connected.
F33	Flash Read/Write Error	Possible causes: flash content changed; flash lifespan exhausted;	1. Upgrade to the latest program version 2. Contact the distributor or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F42	DC Arcing Failure (String 1~16)	1. DC side connection terminals loose; 2. DC side connection terminals have poor contact; 3. DC cable core damaged leading to poor contact	1. After the machine reconnects to the grid, check if the voltage and current of each circuit abnormally decrease to zero; 2. Check if the DC side terminals are firmly connected.
F34	AFCI Check Failure	The arc fault module did not detect an arc fault during the arc self-check process	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 persists, please contact the distributor or after-sales service center.
F65	AC Terminal Overtemperature	AC terminal temperature too high, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient temperature is too high. 3. Internal fan operation abnormal.	1. Check if the ventilation at the inverter installation location is good and if the ambient temperature exceeds the maximum allowable range. 2. If ventilation is poor or ambient temperature is too high, please 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.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F35	Cabinet Overtemperature	Cabinet temperature too high, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient temperature is too high. 3. Internal fan operation abnormal.	
F66	INV Module Overtemperature	Inverter module temperature too high, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient temperature is too high. 3. Internal fan operation abnormal.	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F67	Boost Module Overtemperature	Boost module temperature too high, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient temperature is too high. 3. Internal fan operation abnormal.	
F68	AC Capacitor Overtemperature	Output filter capacitor temperature too high, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient temperature is too high. 3. Internal fan operation abnormal.	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F114	Relay Failure2	Relay abnormal, reasons: 1. Relay abnormal (relay short circuit) 2. Relay sampling circuit abnormal. 3. AC side wiring abnormal (may have loose connections or short circuit phenomenon)	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on 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 reasons: 1. IGBT short circuit 2. Inverter sampling circuit abnormal	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F70	PV IGBTopen circuit fault	1. Software issue causes PWM not generated: 2. Drive circuit abnormal: 3. IGBT open circuit	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on 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
F71	NTC abnormall	NTC temperature sensor abnormal	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on 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	PWM has abnormal waveform	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on 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	CPU interrupt abnormal	CPU interrupt abnormal	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F74	Microelectronics fault	Functional safety detects abnormal	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on 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
F75	PV HCT fault	boost current sensor abnormal	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on 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. 5V reference abnormal	Reference circuit fault	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on 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. 3V reference abnormal	Reference circuit fault	
F78	CPLD version identification error	CPLD version identification error	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F79	CPLD communication fault	CPLD and DSP communication content error or timeout	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on 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
F80	Model identification fault	Fault regarding model identification error	Turn off the AC output side switch and DC input side switch, after 5 minutes turn on 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	SVG Precharge Disabled	SVG precharge hardware disabled	Contact the dealer or after-sales service center.
F116	Nighttime SVG PID prevention fault	PID prevention hardware abnormal	Contact the dealer or after-sales service center.
F117	DSP Version Identification Error	DSP Software Version Identification Error	Turn off the AC output side switch and DC input side switch, wait for 5 minutes, then turn them back on. If the fault persists, please contact the dealer or after-sales service center.
F36	Bus Overvoltage		Turn off the AC output side switch and DC input side switch, wait for 5 minutes, then turn them back on. If the fault persists, please contact the dealer or after-sales service center.
F81	P-Bus Overvoltage		
F82	N-Bus Overvoltage		
F83	Bus Overvoltage (Secondary CPU1)		
F84	P-Bus Overvoltage (Secondary CPU1)		
F85	N-Bus Overvoltage (Secondary CPU1)		

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F86	Bus Overvoltage (Secondary CPU2)	BUS Overvoltage, possible causes: 1. PV voltage is too high; 2. Inverter BUS voltage sampling abnormality; 3. Poor isolation effect of the dual-split transformer at the inverter's rear end, causing mutual interference when two inverters are grid-connected, resulting in DC overvoltage alarm for one inverter during grid connection;	
F87	P-Bus Overvoltage (Secondary CPU2)		
F88	N-Bus Overvoltage (Secondary CPU2)		
F89	P-Bus Overvoltage (CPLD)		
F90	N-Bus Overvoltage(CPLD)		

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F118	MOS Continuous Overvoltage	1. Software issue causing inverter drive to shut off earlier than flyback drive: 2. Inverter drive circuit abnormality preventing turn-on: 3. PV voltage is too high; 4. Mos voltage sampling abnormality;	Turn off the AC output side switch and DC input side switch, wait for 5 minutes, then turn them back on. If the fault persists, please contact the dealer or after-sales service center.
F119	Bus Short Circuit Fault	1. Hardware damage	If the inverter remains off-grid after a BUS short circuit fault occurs, please contact the dealer or after-sales service center.
F120	Bus Sampling Abnormality	1. Bus voltage sampling hardware fault	Turn off the AC output side switch and DC input side switch, wait for 5 minutes, then turn them back on. If the fault persists, please contact the dealer or after-sales service center.
F121	DC Side Sampling Abnormal	1. Bus voltage sampling hardware fault 2. Battery voltage sampling hardware fault 3. Dcrly relay fault	Disconnect the AC output side switch and DC input side switch, wait for 5 minutes, then close the AC output side switch and DC input side switch. If the fault persists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F37	PV Input Overvoltage	PV input voltage too high, possible causes: Incorrect photovoltaic array configuration, too many solar panels connected in series per string, causing the string's open-circuit voltage to exceed the inverter's maximum operating voltage.	Check the series configuration of the corresponding PV array string to ensure the string's open-circuit voltage does not exceed the inverter's maximum operating voltage. After the PV array is correctly configured, the inverter alarm will automatically disappear.
F38	PV Continuous Hardware Overcurrent	1. Unreasonable module configuration 2. Hardware damage	Disconnect the AC output side switch and DC input side switch, wait for 5 minutes, then close the AC output side switch and DC input side switch. If the fault persists, please contact the dealer or after-sales service center.
F39	PV Continuous Software Overcurrent	1. Unreasonable module configuration 2. Hardware damage	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F91	FlyCap Software Overvoltage	Flyback capacitor overvoltage, possible causes: 1. PV voltage too high; 2. Inverter flyback capacitor voltage sampling abnormal;	Disconnect the AC output side switch and DC input side switch, wait for 5 minutes, then close the AC output side switch and DC input side switch. If the fault persists, please contact the dealer or after-sales service center.
F92	FlyCap Hardware Overvoltage	Flyback capacitor overvoltage, possible causes: 1. PV voltage too high; 2. Inverter flyback capacitor voltage sampling abnormal;	
F93	FlyCap Undervoltage	Flyback capacitor undervoltage, possible causes: 1. PV energy insufficient; 2. Inverter flyback capacitor voltage sampling abnormal;	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F94	FlyCap Precharge Failure	Flyback capacitor precharge failure, possible causes: 1. PV energy insufficient; 2. Inverter flyback capacitor voltage sampling abnormal;	
F95	FlyCap Precharge Abnormal	1. Control loop parameters unreasonable 2. Hardware damage	
F96	String Overcurrent(String 1~16)	Possible causes: 1. String overcurrent; 2. String current sensor abnormal	
F97	String Overcurrent(String 17~32)		
F40	String Reverse Polarity(String 1~16)	PV string reverse polarity	Check if the string is reverse connected.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F98	String Reverse Polarity(String 17~32)	PV string reverse polarity	Check if the string is reverse connected.
F99	String Loss(String 1~16)	String fuse disconnected (if present)	Check if the fuse is disconnected.
F100	String Loss(String 17~32)	String fuse disconnected (if present)	Check if the fuse is disconnected.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F122	PV Access Mode Setting Error	There are three modes for PV Access Mode, taking a four-channel MPPT as an example: 1. Parallel Mode: i.e., AAAA mode (Same-Source Mode), PV1-PV4 are from the same source, all 4 PV channels are connected to the same solar panel. 2. Partial Parallel Mode: i.e., AACC mode, PV1 and PV2 are connected from the same source, PV3 and PV4 are connected from the same source. 3. Independent Mode: i.e., ABCD mode (Different Sources), PV1, PV2, PV3, PV4 are connected	Check if the PV Access Mode is set correctly (ABCD, AACC, AAAA), and reset the PV Access Mode correctly. 1. Confirm that each connected PV channel is correctly wired. 2. If the PV connections are correct, check via the App or screen whether the currently set "PV Access Mode" corresponds to the actual connection mode. 3. If the currently set "PV Access Mode" does not match the actual connection mode, use the App or screen to set the "PV Access Mode" to the mode consistent with the actual situation. After setting, disconnect PV and AC power and restart. 4. After setting, if the current "PV Access Mode" matches the actual connection mode but the fault persists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
		independently, each of the 4 PV channels connects to one solar panel. This fault is reported if the actual PV connection mode does not match the PV Access Mode set on the device.	
-	String Reverse Connection (String 33~48)	PV String Reverse Connection	Check if the string is reversely connected.
-	String Missing (String 33~48)	String Fuse Open (if present)	Check if the fuse is open.
-	String Overcurrent (String 33~48)	Possible causes: 1. String overcurrent; 2. String current sensor abnormality	

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 reset the PV Access Mode correctly. 1. Confirm that each connected PV channel is correctly wired. 2. If the PV connections are correct, check via the App or screen whether the currently set "PV Access Mode" corresponds to the actual connection mode. 3. If the currently set "PV Access Mode" does not match the actual connection mode, use the App or screen to set the "PV Access Mode" to the mode consistent with the actual situation. After setting, disconnect PV and AC power and restart. 4. After setting, if the current "PV Access Mode" matches the actual connection mode but the fault persists, please contact the dealer or after-sales service center.
F101	Battery 1 Precharge Fault	Battery 1 Precharge Circuit Fault (precharge resistor burnt, etc.)	Check if the precharge circuit is in good condition. After only the battery is powered on, check if the battery voltage matches the bus voltage. If not, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F102	Battery 1 Relay Failure	Battery 1 relay cannot operate normally	After battery power-on, check if the battery relay is working and if a closing sound is heard. If it does not operate, please contact the dealer or after-sales service center.
F103	Battery 1 Connection Overvoltage	Battery 1 connection voltage exceeds the machine's rated range	Confirm if the battery voltage is within the machine's rated range.
F104	Battery 2 Precharge Fault	Battery 2 Precharge Circuit Fault (precharge resistor burnt, etc.)	Check if the precharge circuit is in good condition. After only the battery is powered on, check if the battery voltage matches the bus voltage. If not, please contact the dealer or after-sales service center.
F105	Battery 2 Relay Failure	Battery 2 relay cannot operate normally	After battery power-on, check if the battery relay is working and if a closing sound is heard. If it does not operate, please contact the dealer or after-sales service center.
F106	Battery 2 Connection Overvoltage	Battery 2 connection voltage exceeds the machine's rated range	Confirm if the battery voltage is within the machine's rated range.
F124	Battery 1 Reverse Connection Fault	Battery 1 positive and negative terminals are reversed	Check if the polarity of the battery and machine terminals is consistent.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F125	Battery 2 Reverse Connection Fault	Battery 2 positive and negative terminals are reversed	Check if the polarity of the battery and machine terminals is consistent.
F126	Abnormal Battery Connection	Abnormal Battery Connection	Check if the battery is working normally.
-	BMS Status Bit Error	BMS Module Fault	Turn off the AC output side switch and DC input side switch, wait for 5 minutes, then turn on the AC output side switch and DC input side switch. If the fault persists, please contact the dealer or after-sales service center.
F127	BAT Overtemperature	Battery temperature is too high. Possible causes: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operation is abnormal.	
F128	Ref Voltage Abnormal	Reference circuit fault	Turn off the AC output side switch and DC input side switch, wait for 5 minutes, then turn on the AC output side switch and DC input side switch. If the fault persists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F129	Cabinet Under Temperature	Cabinet temperature is too low. Possible causes: 1. Ambient temperature is too low.	
F130	AC side SPD fault	AC side surge protection device failure	Replace the AC side surge protection device.
F131	DC side SPD fault	DC side surge protection device failure	Replace the DC side surge protection device.
F132	Internal fan abnormal	Internal fan abnormal. Possible causes: 1. Abnormal fan power supply; 2. Mechanical fault (stall); 3. Fan aging or damage.	Turn off the AC output side switch and DC input side switch, wait for 5 minutes, then turn on the AC output side switch and DC input side switch. If the fault persists, please contact the dealer or after-sales service center.
F133	External Fan Abnormal	External fan abnormal. Possible causes: 1. Abnormal fan power supply; 2. Mechanical fault (stall); 3. Fan aging or damage.	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F134	PID diagnosis abnormal	PID hardware fault or PV voltage too high causing PID suspension	The PID suspension warning caused by high PV voltage requires no action. For PID hardware fault, you can clear the PID fault by turning the PID switch off and then on. Replace the PID device.
F135	Trip-Switch Trip Warning	Possible causes: Overcurrent occurred or PV reverse connection caused the trip-switch to trip.	Please contact the dealer or after-sales service center. The tripping reason is due to PV short circuit or reverse connection. It is necessary to check if there is a historical PV short circuit warning or a historical PV reverse connection warning. If present, maintenance personnel need to check the corresponding PV condition. After inspection confirms no fault, you can manually close the trip-switch and clear this warning through the App interface's clear historical fault operation.
F136	Historical PV IGBT short circuit warning	Possible causes: Overcurrent occurred causing the trip-switch to trip.	Please contact the dealer or after-sales service center. Maintenance personnel need to check the Boost hardware and external string where the short circuit occurred according to the historical PV short circuit warning subcode for any faults. After inspection confirms no fault, you can clear this warning through the App interface's clear historical fault operation.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F137	Historical PV reverse connection warning (String 1~16)	Possible causes: PV reverse connection occurred causing the trip-switch to trip.	Contact the dealer or after-sales service center. Maintenance personnel need to check if the corresponding string has a reverse connection according to the historical PV reverse connection warning subcode, and check if there is a voltage difference in the PV panel configuration. After inspection confirms no fault, you can clear this warning through the App interface's clear historical fault operation.
F138	Historical PV reverse connection warning (String 17~32)	Possible causes: PV reverse connection occurred causing the trip-switch to trip.	Contact the dealer or after-sales service center. Maintenance personnel need to check if the corresponding string has a reverse connection according to the historical PV reverse connection warning subcode, and check if there is a voltage difference in the PV panel configuration. After inspection confirms no fault, you can clear this warning through the App interface's clear historical fault operation.
F139	Flash read/write error warning	Possible causes: Flash content changed; Flash lifespan exhausted;	1. Upgrade to the latest firmware. 2. Contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F140	Meter Comm Loss	This warning may only be reported after the anti-reverse flow function is enabled. Possible causes: 1. Meter not connected; 2. Incorrect wiring of the communication cable between the meter and the inverter.	Check the meter wiring, connect the meter correctly. If the fault persists after inspection, please contact the dealer or after-sales service center.
F141	PV panel type identification failure	PV panel identification hardware abnormal	Contact the dealer or after-sales service center.
F142	PV String Mismatch	PV String Mismatch; the open-circuit voltage configurations of two strings under the same MPPT are different	Check the open-circuit voltages of the two strings; configure strings with the same open-circuit voltage under the same MPPT. Prolonged PV String Mismatch poses safety risks.
F143	CT not connected	CT not connected	Check CT wiring.
F144	CT reversed connection	CT reversed connection	Check CT wiring.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F145	PE Loss/PE Loss	Ground wire not connected	Check the ground wire.
F146	String terminal temperature high (strings 1~8)	37176 register PV terminal temperature alarm subcode 1 is set	-
F147	String terminal temperature high (strings 9~16)	37177 register PV terminal temperature alarm subcode 2 is set	-
F148	String terminal temperature high (strings 17~20)	37178 register PV terminal temperature alarm subcode 3 is set	-
F149	Historical PV reverse connection warning (strings 33~48)	Possible causes: PV reverse connection occurred, causing the trip switch to open.	Please contact the dealer or after-sales service center; maintenance personnel should check the corresponding strings for reverse connection based on the historical PV reverse connection warning subcode, and check if there is a voltage difference in the PV panel configuration. After inspection and confirming no fault, this warning can be cleared through the App interface by clearing historical faults.
F150	Battery 1 voltage low	Battery voltage below set value	-

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F151	Battery 2 voltage low	Battery voltage below set value	-
F152	Low Voltage of Battery Power	Battery in non-charging mode, voltage below shutdown voltage	-
F153	BAT1 Voltage High	-	-
F154	BAT2 Voltage High	-	-
F155	Online Low Insulation Resistance	1. PV string short-circuited to protective ground. 2. The installation environment of the PV string is humid for a long time, and the line insulation to ground is poor.	1. Check the impedance of the PV string to protective ground. If a short circuit occurs, rectify the short circuit point. 2. Check if the inverter's protective ground wire is correctly connected. 3. If it is confirmed that the impedance is indeed lower than the default value in rainy weather, please reset the 'insulation resistance protection point'.
F156	Micro-grid Overload Warning	Backup end input current too high	Occasional occurrence requires no action; if this alarm occurs 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 for microgrid 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 specifications. 2. Short circuit on the off-grid side. 3. Off-grid terminal voltage is too low. 4. When used as a large load port, the large load exceeds the requirements specified in the specifications.	Confirm the off-grid side output voltage, current, power, and other data to identify the cause of the problem.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F108	DSP Communication Failure	-	-

Fault Name	Fault Cause	Troubleshooting Suggestion
Parallel Comm Timeout Shutdown	In parallel mode, if the slave unit does not communicate with the master unit for more than 400 seconds.	Check if the parallel communication harness is reliably connected. Check if slave addresses are duplicated.
One-Key Shutdown	Check via the App if the one-key shutdown function is enabled.	Disable the one-key shutdown.
Offline Shutdown	-	-
Remote Shutdown	-	-
Child Node Communication Failure	Internal Comm Abnormal	Restart the unit and observe if the fault clears.

Fault Name	Fault Cause	Troubleshooting Suggestion
DG Communication Failure	Abnormal communication link between the control board and the diesel generator.	1. Check the communication harness for the link, observe if the fault clears; 2. Try restarting the unit, observe if the fault clears; 3. If the fault persists after restart, contact the after-sales service center.
Battery Over Voltage	1. Individual cell voltage is too high. 2. Voltage sensing line abnormal.	Record the fault phenomenon, restart the battery, wait a few minutes, confirm if the fault disappears. If the problem persists after restart, contact the after-sales service center.
	1. Battery total voltage is too high. 2. Voltage sensing line abnormal.	
Battery Undervoltage	1. Individual cell voltage is too low. 2. Voltage sensing line abnormal.	
	1. Battery total voltage is too low. 2. Voltage sensing line abnormal.	
Battery Overcurrent	1. Charging current is too high, battery current limiting abnormal: sudden changes in temperature and voltage values. 2. Inverter response abnormal.	
	Battery discharge current is too high.	
Battery Overtemperature	1. Ambient Overtemperature. 2. Temperature sensor abnormal.	
	1. Ambient Overtemperature. 2. Temperature sensor abnormal.	
	1. Ambient temperature is too low. 2. Temperature sensor abnormal.	

Fault Name	Fault Cause	Troubleshooting Suggestion
Battery Undertemperature	1. Ambient temperature is too low. 2. Temperature sensor abnormal.	
Battery Terminal Overtemperature	Terminal temperature is too high.	
Battery Imbalance	1. Excessive temperature difference. At different stages, the battery will limit its power, i.e., limit charge/discharge current. Therefore, this issue is generally difficult to occur. 2. Cell capacity degradation, leading to excessive internal resistance, large temperature rise under overcurrent, resulting in large temperature difference. 3. Poor welding of cell tabs, causing rapid temperature rise of the cell under overcurrent. 4. Temperature sampling issue; 5. Power line connection loose.	
	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. Caused by harness issues.	
	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. Caused by harness issues.	

Fault Name	Fault Cause	Troubleshooting Suggestion
Insulation Resistance	Insulation resistance damaged.	Check if the ground wire is properly connected, restart the battery. If the problem persists after restart, contact the after-sales service center.
Pre-charging Failure	Pre-charging failure.	Indicates that during pre-charging, the voltage across the pre-charge MOS always exceeds the specified threshold. Power off and restart, observe if this fault persists. Check if wiring is correct and if the pre-charge MOS is damaged.
Sensing Line Fault	Battery sensing line poor contact or disconnected.	Check wiring, restart the battery. If the problem persists after restart, contact the after-sales service center.
	Cell voltage sensing line poor contact or disconnected.	Check wiring, restart the battery. If the problem persists after restart, contact the after-sales service center.
	Cell temperature sensing line poor contact or disconnected.	
	Dual-channel current comparison error too large, or current sensing line loop abnormal.	

Fault Name	Fault Cause	Troubleshooting Suggestion
	Dual-channel voltage comparison error too large or MCU vs. AFE voltage comparison error too large, or voltage sensing line loop abnormal.	
	Temperature sensing line loop abnormal or poor contact/disconnected.	
	Overvoltage level 5 or overtemperature level 5, tripped three-terminal fuse.	Tripped three-terminal fuse, need to contact after-sales service center to replace the main control board.
Relay or MOS Overtemperature	Relay or MOS overtemperature.	This fault indicates the MOS tube temperature exceeds the specified threshold. Power off and let it sit for 2h to allow temperature to recover.
Shunt Overtemperature	Shunt overtemperature.	This fault indicates the shunt tube temperature exceeds the specified threshold. Power off and let it sit for 2h to allow temperature to recover.
BMS1 Other Faults 1 (Residential Storage)	Relay or MOS open circuit.	1. Upgrade software, power off and let it sit for 5 minutes, restart and see if the fault persists; 2. If it persists, replace the battery pack.

Fault Name	Fault Cause	Troubleshooting Suggestion
	Relay or MOS short circuit.	1. Upgrade software, power off and let it sit for 5 minutes, restart and see if the fault persists; 2. If it persists, replace the battery pack.
	Communication abnormal between master cluster and slave cluster, or cell inconsistency between clusters.	1. Check slave battery information and software version, and if the communication line connection to the master is normal. 2. Upgrade software.
	Battery system loop harness abnormal, causing interlock signal not forming a loop.	Check if the termination resistor is installed correctly.
	BMS and PCS communication abnormal.	1. Confirm if the communication line interface definition between the inverter and the connected battery is correct; 2. Please contact the after-sales service center, check backend data, observe if the inverter and battery software match correctly.

Fault Name	Fault Cause	Troubleshooting Suggestion
	BMS master controller and slave controller communication harness abnormal.	1. Check wiring, restart the battery; 2. Upgrade the battery, if the problem persists after restart, contact the after-sales service center.
	Communication loss between main negative chips.	
	Circuit breaker, shunt trip abnormal.	1. Power off and let it sit for 5 minutes, restart and see if the fault persists; 2. Observe the blind plugs at the bottom of PACK and PCU, check if communication pins are loose or bent;
	MCU self-test failed.	Upgrade software, restart the battery. If the problem persists after restart, contact the after-sales service center.
	1. Software version too low or BMS board damaged. 2. Large number of inverters in parallel, excessive inrush current during battery pre-charge.	1. Upgrade software, observe if the fault persists. 2. In parallel configuration, perform black start on the battery first, then start the inverters.

Fault Name	Fault Cause	Troubleshooting Suggestion
	MCU internal fault.	Upgrade software, restart the battery. Usually indicates detection of MCU or external component damage. If the problem persists after restart, contact the after-sales service center.
	Total control current exceeds the specified threshold.	1. Power off and let it sit for 5 minutes, restart and see if the fault persists; 2. Check if the inverter power setting is too high, causing it to exceed the bus load;
	Cell inconsistency in parallel battery clusters.	Confirm if the cells in the parallel battery clusters are consistent.
	Reverse polarity connection of parallel battery clusters.	Check if the positive and negative terminals of the parallel battery clusters are reversed.
	Presence of severe overtemperature/overvoltage etc. triggering the fire protection system.	Contact the after-sales service center.
Air Conditioner Failure	Air conditioner abnormal failure.	Try restarting the system. If the fault is not resolved, contact the after-sales service center.

Fault Name	Fault Cause	Troubleshooting Suggestion
	Cabinet door not closed.	Check if the cabinet door is properly closed.
	Supply voltage too high.	Confirm if the supply voltage value meets the air conditioner input voltage requirements. Re-power on after confirmation.
	Insufficient supply voltage.	
	No voltage input.	
	Unstable supply voltage.	
	Compressor voltage unstable.	Try restarting the system. If the fault is not resolved, contact the after-sales service center.
	Sensor poor contact or damaged.	
	Air conditioner fan abnormal.	
BMS1 Other Faults 2 (Residential Storage)	Internal voltage or current abnormal in DCDC.	Refer to specific DC fault content.
	DCDC overload or heat sink temperature too high, etc.	
	Cell sensing abnormal or inconsistent aging levels.	Please contact the after-sales service center.
	Fan action not executed normally.	Please contact the after-sales service center.
	Output terminal screws loose or poor contact.	1. Power off the battery, check wiring and output terminal screw condition. 2. After confirmation, restart the battery, observe if the fault persists. If it persists, contact the after-sales service center.

Fault Name	Fault Cause	Troubleshooting Suggestion
	Battery used for too long or cells severely damaged.	Please contact the after-sales service center to replace the pack.
	1. Software version too low or BMS board damaged. 2. Large number of inverters in parallel, excessive inrush current during battery pre-charge.	1. Upgrade software, observe if the fault persists. 2. In parallel configuration, perform black start on the battery first, then start the inverters.
	Heating film damaged.	Please contact the after-sales service center.
	Heating film three-terminal fuse blown, heating function unavailable.	Please contact the after-sales service center.
	Software model, Cell Type, hardware model mismatch.	Check if the software model, SN, Cell Type, and hardware model are consistent. If not, contact the after-sales service center.
	Thermal management board communication wire break.	1. Power off and let it sit for 5 minutes, restart and see if the fault persists; 2. If the fault does not recover, contact after-sales to replace the pack.

Fault Name	Fault Cause	Troubleshooting Suggestion
	Thermal management board communication wire break.	1. Power off and let it sit for 5 minutes, restart and see if the fault persists; 2. If the fault does not recover, contact after-sales to replace the pack.
	Thermal management board communication wire break.	1. Power off and let it sit for 5 minutes, restart and see if the fault persists; 2. If the fault does not recover, contact after-sales to replace the pack.
	Pack fan fault signal triggered.	1. Power off and let it sit for 5 minutes, restart and see if the fault persists; 2. If the fault does not recover, contact after-sales to replace the pack.

Fault Name	Fault Cause	Troubleshooting Suggestion
DCDC Fault	Output terminal voltage too high.	Check output terminal voltage. If the output terminal voltage is normal and the fault does not clear itself after restarting the battery, contact the after-sales service center.
	DCDC module detects battery voltage exceeding maximum charging voltage.	Stop charging, discharge to below SOC 90% or let it sit for 2h. If ineffective and the fault persists after restart, contact the after-sales service center.
	Heat sink temperature too high.	Let the battery sit for 1h to allow heat sink temperature to drop. If ineffective and the fault persists after restart, contact the after-sales service center.
	Battery discharge current too high.	Check if the load exceeds the battery's discharge capability. Turn off the load or stop PCS operation for 60s. If ineffective and the fault persists after restart, contact the after-sales service center.

Fault Name	Fault Cause	Troubleshooting Suggestion
	Output terminal power harness positive/negative reversed with parallel battery clusters or PCS.	Turn off the battery manual switch, check if output terminal wiring is correct, restart the battery.
	Output power relay cannot close.	Check if output terminal wiring is correct, if there is a short circuit. If ineffective and the fault persists after restart, contact the after-sales service center.
	Power device temperature too high.	Let the battery sit for 1h to allow internal power device temperature to drop. If ineffective and the fault persists after restart, contact the after-sales service center.
	Relay welded/stuck.	If fault persists after restart, contact the after-sales service center.
Battery Rack Circulating Current Failure	1. Cell imbalance. 2. First power-on without full charge calibration.	-

Fault Name	Fault Cause	Troubleshooting Suggestion
BMS1 Other Faults 3 (Large-scale Storage)	Communication abnormal with Linux module.	1. Check if the communication line connection is normal. 2. Upgrade software, restart the battery and observe if the fault persists. If it persists, contact the after-sales service center.
	Cell temperature rise too fast.	Cell abnormal, contact after-sales to replace the pack.
	SOC below 10%.	Charge the battery.
	SN writing does not comply with rules.	Check if the SN digit count is normal. If abnormal, contact the after-sales service center.
	1. Daisy chain communication abnormal within a battery rack. 2. Inconsistent cell aging levels between battery racks.	1. Check pack contact condition within a single battery rack. 2. Confirm usage conditions of each rack, such as cumulative charge/discharge capacity, cycle count, etc. 3. Please contact the after-sales service center.
	Excessive humidity inside the pack.	-
	Fuse blown.	Contact after-sales to replace the pack.

Fault Name	Fault Cause	Troubleshooting Suggestion
	Battery low charge.	Charge the battery.
BMS1 Other Faults 4 (Large-scale Storage)	Circuit breaker abnormal.	Contact after-sales to replace the pack.
	External device abnormal.	Contact after-sales to replace the pack.
Contactor Failure 1	-	-
Contactor Failure 2	-	-
Overload Protection (Ksic)	Sustained overload (exceeding 690KVA) for 10s.	Please contact the after-sales service center.
Overload Protection (Smart Port)	Sustained overload (exceeding 690KVA) for 10s.	Please contact the after-sales service center.
Master AC On Meter Comm Error	1. Possibly the meter is not connected to the master. 2. Possibly the meter communication line is loose.	1. Check if the meter is connected to the master. 2. Check if the meter communication line is loose.
Parallel Slave Meter Error	Meter connected to the slave unit.	Set the machine with the meter connected as the master.
Slave AC On Timeout with Master	1. Slave address setting error. 2. Slave communication line loose.	1. Check if the slave address is duplicated. 2. Check if the parallel communication line is loose.

8.5 Routine Maintenance

⚠DANGER
When performing operation and maintenance on the inverter, please power off the inverter. Operating the equipment with power on may cause inverter damage or electric shock DANGER.

Maintenance Content	Maintenance Method	Maintenance Cycle
System Cleaning	Check if there are any foreign objects or dust on the heat sink and inlet/outlet vents.	Once every six months - once a year
Fan	Check if the fan is operating normally, if there is any abnormal noise, and if the appearance is normal.	Once a year
DC Switch	Continuously turn the DC switch on and off 10 times to ensure the DC switch functions properly.	Once a year
Electrical Connections	Check if the electrical connections are loose, if the cable appearance is damaged, or if there is exposed copper.	Once every six months to once a year
Sealing	Check if the sealing of the equipment's cable entry holes meets requirements. If there are gaps that are too large or not sealed, reseal them.	Once a year

9 Inverter Software Version Upgrade

The inverter supports software upgrade via U disk.
Before using a U disk to upgrade the device, please contact the after-sales service center to obtain the software upgrade package and upgrade method.

10 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 (℃)	- 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 (4-6mm²)	MC4 (4-6mm²)	MC4 (4-6mm²)
AC Connector	Plug and play connector (Max.6 mm²)		
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℃（W）(Only for Brazil)	5000	6000	3100
Max Power at 40℃ (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 (℃)	- 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 (4-6mm²)	MC4 (4-6mm²)	MC4 (4-6mm²)
AC Connector	Plug and play connector (Max.6 mm²)	Plug and play connector (Max.6 mm²)	Plug and play connector (Max.6 mm²)
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: Regarding the GW3.6K-DNS-G40 for the UK market, both the nominal output current and the maximum output current are 16A.

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

*3: When the input voltage ranges from 560 V to 600 V, the inverter will enter standby state. When the input voltage returns to the MPPT operating voltage range of 40 V to 560 V, the inverter will resume normal operation.

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

*5：AFD: Active Frequency Drift with Positive Feedback

11 Explanation of Terms

Overvoltage Category Definitions

- **Overvoltage Category I**: Equipment connected to circuits where measures are taken to limit transient overvoltages to a relatively low level.
- **Overvoltage Category II**: Energy-consuming equipment supplied from a fixed electrical installation. This category includes equipment such as appliances, portable tools, and other household and similar loads. If special requirements for the reliability and suitability of such equipment exist, Overvoltage Category III is applied.
- **Overvoltage Category III**: Equipment in fixed electrical installations where the reliability and suitability of the equipment must meet special requirements. This includes switching devices in fixed electrical installations and industrial equipment permanently connected to fixed electrical installations.
- **Overvoltage Category IV**: Equipment used at the origin of the electrical installation, including items such as meters and primary overcurrent protection devices.
- **Damp Location Category Definitions**

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

- **Environment Category Definitions:**
  - **Outdoor Inverter**: Ambient air temperature range from -25°C to +60°C, suitable for Pollution Degree 3 environments.
  - **Indoor Type II Inverter**: Ambient air temperature range from -25°C to +40°C, suitable for Pollution Degree 3 environments.
  - **Indoor Type I Inverter**: Ambient air temperature range from 0°C to +40°C, suitable for Pollution Degree 2 environments.
- **Pollution Degree Category Definitions**
  - **Pollution Degree 1**: No pollution or only dry, non-conductive pollution occurs.
  - **Pollution Degree 2**: Only non-conductive pollution occurs normally, but

temporary conductivity caused by condensation must be considered.

- **Pollution Degree 3**: Conductive pollution occurs, or dry non-conductive pollution becomes conductive due to condensation.
- **Pollution Degree 4**: Persistent conductive pollution occurs, for example, due to conductive dust, rain, or snow.

12 Related Product Manual Acquisition

Document Name	Official Website Link
EzLink3000 Quick 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-G21 Quick Installation Guide	https://en.goodwe.com/Ftp/Installation-instructions/4G-KIT.pdf
WiFi/LAN Kit-20 & WiFi Kit-20 Quick Installation Guide	https://en.goodwe.com/Ftp/Installation-instructions/WiFi-LAN-Kit-20.pdf
GMK110 & GMK110D Quick Installation Guide	https://en.goodwe.com/Ftp/Installation-instructions/GMK110-110D.pdf
GM1000 & GM3000 & GM1000 Quick Installation Guide	https://en.goodwe.com/Ftp/Installation-instructions/Smart-Meter.pdf
GMK330 & GMK360 & GM330 Quick Installation Guide	https://en.goodwe.com/Ftp/Installation-instructions/GMK330-360.pdf