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Grid-Tied PV Inverter

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

GOODWE

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NOTE

The document content will be updated irregularly due to product version upgrades or other reasons.

Unless otherwise agreed, the document content shall not replace the safety precautions in the product labels. All descriptions in the document are for guidance only.

Preface

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

Applicable Products

This document applies to the following models of inverters:

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

Applicable Personnel

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

Symbol Definitions

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

 DANGER
Indicates a high potential hazard that, if not avoided, will result in death or serious injury.
 WARNING
Indicates a moderate potential hazard that, if not avoided, could result in death or serious injury.
 CAUTION
Indicates a low potential hazard that, if not avoided, could result in moderate or minor injury.
NOTE
It is an emphasis and supplement to the content, and may also provide tips or tricks for optimizing product use, helping you solve a certain problem or save your time.

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1 Safety Precautions

WARNING

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

1.1 General Safety

NOTE

- The document content will be updated irregularly due to product version upgrades or other reasons. Unless otherwise agreed, the document content shall not replace the safety precautions in the product labels. All descriptions in the document are for guidance only.
- Please read this document carefully before installing the equipment to understand the product and precautions.
- All operations on the equipment must be performed by professional, qualified electrical technicians who are familiar with the relevant standards and safety specifications of the project location.
- When operating the equipment, use insulated tools and wear personal protective equipment to ensure personal safety. When contacting electronic devices, wear anti-static gloves, anti-static wristbands, anti-static 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 installing, using, or configuring the equipment in violation of the requirements of this document or the corresponding user manual is not within the liability scope of the equipment manufacturer. For more product warranty information, please visit the official website: <https://www.goodwe.com/warrantyrelated.html>.

1.2 DC Side

DANGER

- Please use the DC Connector supplied with the package to connect the DC cables of the inverter. Using other models of DC Connector may lead to serious consequences, and the resulting equipment damage is not within the responsibility scope of the equipment manufacturer.
- Devices supporting PV string access: The PV input has low impulse current resistance. It is strictly prohibited to directly power on via the PV port using a DC voltage source. If powering from the PV port is required, please follow the steps below. If the device is damaged due to non-compliant operation, it is considered human-induced damage and not covered by product maintenance.
 1. First, limit the output current of the DC voltage source within the Max. Current from Grid allowed by the PV port
 2. Then close the DC Switch of the inverter
 3. Finally, slowly increase the output voltage of the DC source from zero to the target value at a rate of $\leq 50\text{V/s}$

WARNING

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

1.3 AC Side

WARNING

- Ensure the voltage and frequency of the grid connection point comply with the inverter's grid connection specifications.
- It is recommended to add Protection devices such as circuit breakers or fuses on the AC side of the inverter. The specifications of the Protection devices must be greater than 1.25 times the Max. Current to Grid of the inverter.
- The Protection grounding wire of the inverter must be connected firmly.
- 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, avoid placing weight on the bottom terminal blocks, otherwise it may cause damage to the terminals.
- After inverter installation, the labels and warning signs on the enclosure must be clearly visible; blocking, altering, or damaging them is prohibited.
- The warning labels on the inverter enclosure are as follows:

Serial Number	Symbol	Meaning
1		There is potential danger during equipment operation. Please take necessary precautions when operating the equipment.
2		High voltage danger. High voltage exists when the device is operating. Ensure the device is powered off before performing any operations on it.

Serial Number	Symbol	Meaning
3		The inverter surface has high temperature. Do not touch the device during operation, otherwise it may cause burns.
4		Delay discharge. After the device is powered off, wait for 5 minutes until the device is fully discharged.
5		Before operating the device, please read the product manual in detail.
6		The device shall not be disposed of as household waste. Please dispose of the device in accordance with local laws and regulations, or return it to the device manufacturer.
7		Protection grounding connection point.
8		CE Certification mark.

1.5 EU Declaration of Conformity

1.5.1 Device with Wireless Communication Function

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

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

1.5.2 Device Without Wireless Communication Function

GoodWe Technology Co., Ltd. hereby declares that the equipment without wireless communication functionality that can be sold in the European market meets 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

NOTE

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

1. Professional or qualified personnel include:

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

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

3. Medium-voltage equipment operation must be performed by a licensed high-voltage electrician.

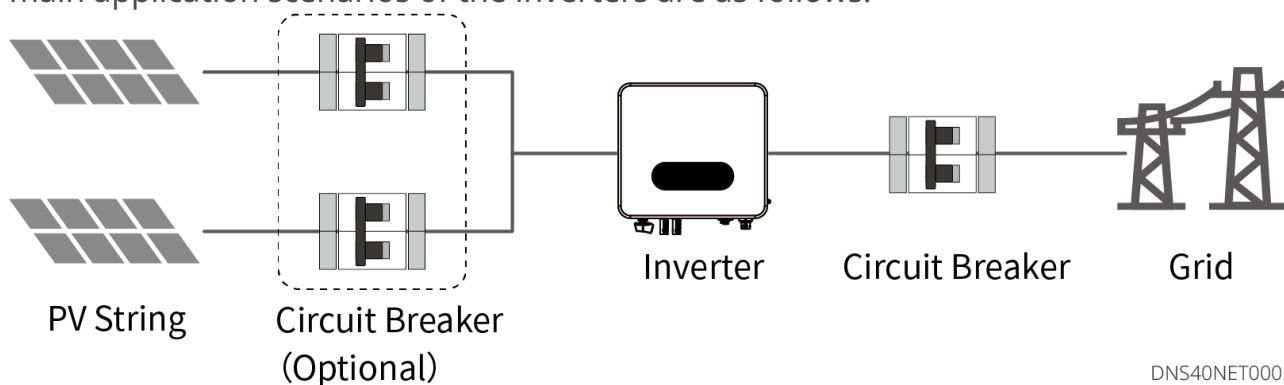
4. Equipment and component replacement is only allowed to be performed by authorized personnel.

2 Product Introduction

2.1

Introduction

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



Model Meaning

GW6K-DNS-CN-G40

1 2 3 4 5

DNS40DSC0001

GW3.1K-DNS-L-G40

1 2 3 4 5

DNS40DSC0006

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

GW6K-DNS-G40

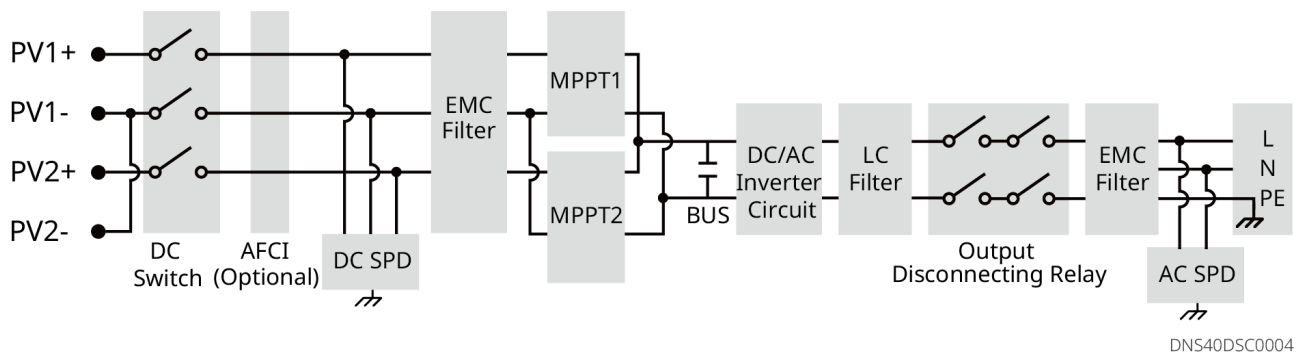
1 2 3 4

DNS40DSC0005

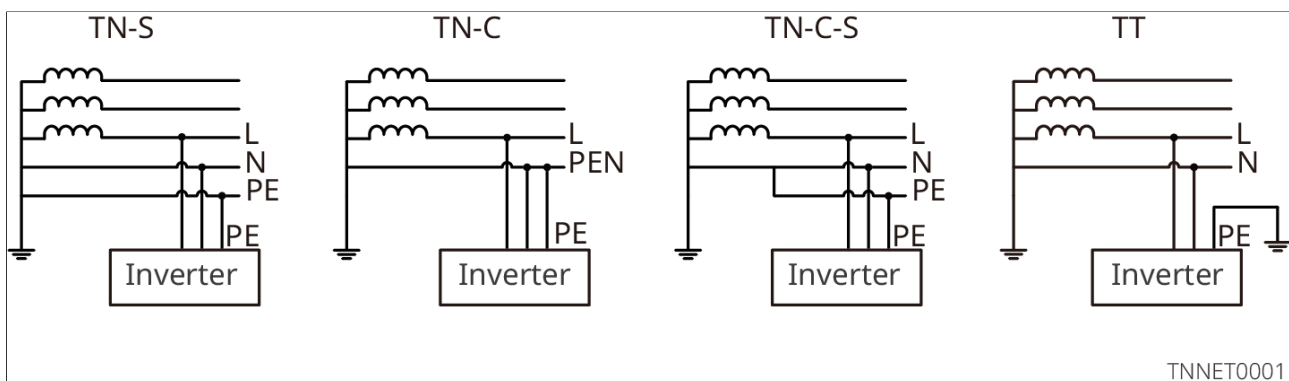
Serial Number	Meaning	Description
1	Brand Code	GW: GoodWe
2	Rated Power	6K: Rated Power is6kW 3K: Rated Power is3kW 3.6K: Rated Power is3.6kW 4.2K: Rated Power is4.2kW 5K: Rated Power is5k

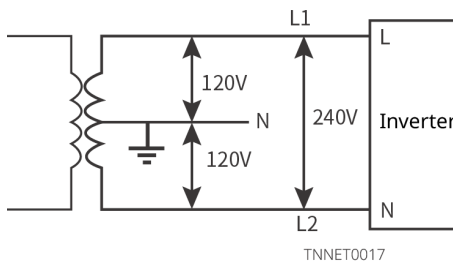
Serial Number	Meaning	Description
3	Series Name	DNS:DNSSeries
4	Version Code	G40: 4th Generation Product

2.2 Circuit Block Diagram



2.3 Supported Grid Types





2.4 Functional Features

NOTE

Specific functional configurations are subject to the actual model.

AFCI

The AFCI function is used to detect Arc Fault on the DC side of the inverter. When an Arc Fault occurs, the inverter will automatically perform Protection.

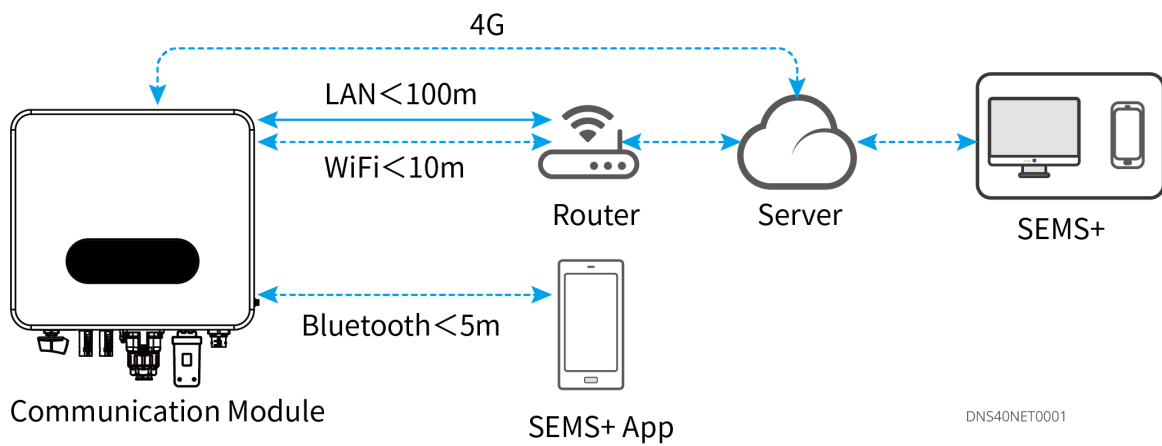
Causes of Arc Generation:

- DC Connector in the photovoltaic system is damaged or improperly connected.
- Cable connection errors or damage.
- Connectors and cables are aging.

Communication

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

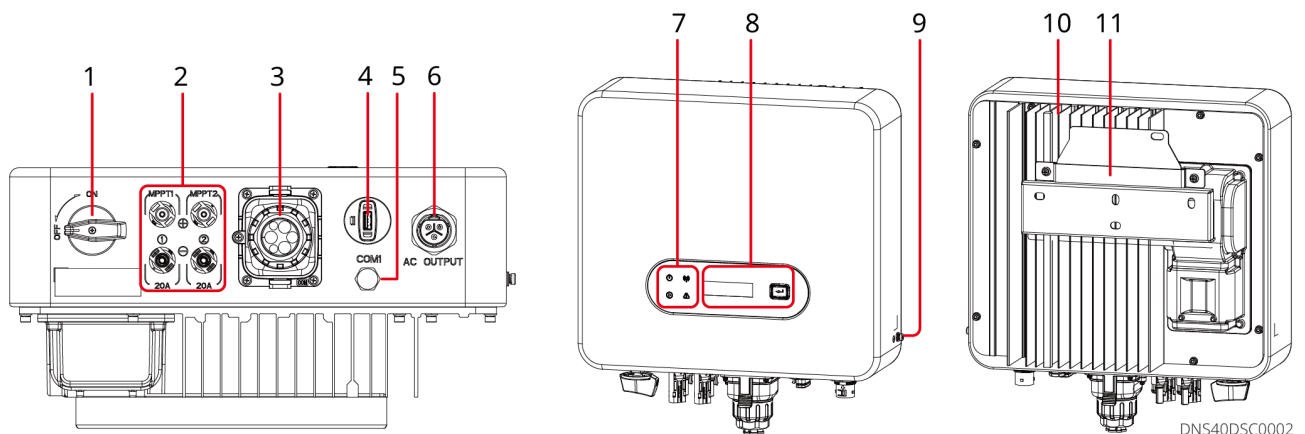
- Bluetooth: meets Bluetooth 5.1 standard.
- WiFi/LAN 2.0 (optional): wireless IEEE 802.11 b/g/n @ 2.4 GHz; Ethernet 10M/100Mbps adaptive; if a third-party monitoring platform is to be used, this platform must support Modbus TCP communication protocol.
- 4G (optional): supports connecting via MQTT communication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



2.5 Appearance Description

Different Models of Inverters Have Differences in Color and Appearance, Subject to Actual Conditions.

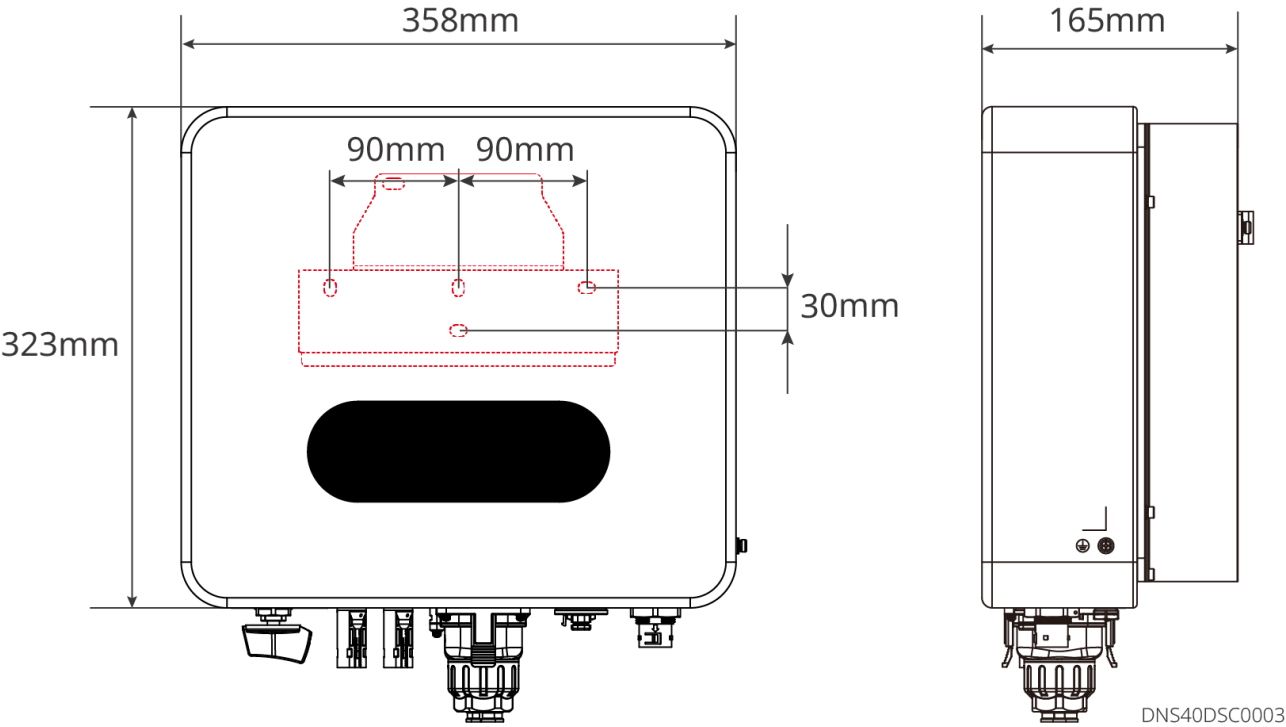
2.5.1 Component Introduction



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

Serial Number	Components/Silkscreen	Description
10	Heat sink	Inverter cooling.
11	Mounting bracket	Mount the inverter.

2.5.2 Product Dimensions



2.5.3 Indicator Light Description

Indicator Light	Status	Description
		Steady on: Device powered on

 Power supply		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 Reconfiguration
		Double Flash: Not Connected to Base Station or Router
		Four Flashes: Not Connected to Monitoring Server
		Flash: RS485 Communication Normal
		Off: Wireless Module Restoring Factory Settings
 Failure		Steady On: System Fault
		Off: No Fault

2.5.4 Nameplate Description

Nameplate is for reference only; subject to actual product.

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

Goodwe trademark, product type, and product model

Technical parameters

Safety symbols and certification marks

Contact information and serial number

SDT30DSC0014

3 Equipment Inspection and Storage

3.1 Equipment Inspection

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

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 not, do not open the package and contact your dealer.
3. Check if the type and quantity of deliverables are correct, and if the appearance is damaged. If there is damage, please contact your dealer.

3.2 Deliverables

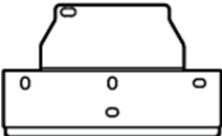
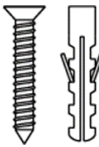
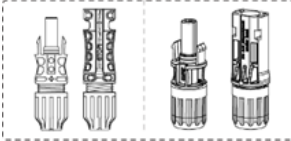
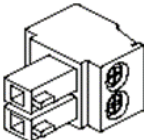
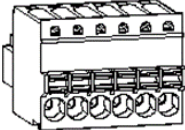
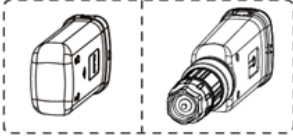
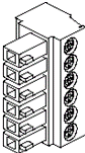
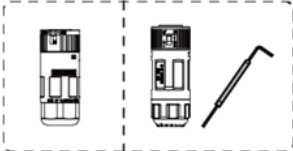


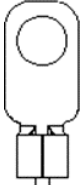
WARNING

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

NOTE

- 1 Communication module types include:WiFi/LAN,4G, etc. The actual shipped type depends on the selected inverter communication method.
- 2 The number of communication terminals and tubular terminals matches the selected communication method; please confirm according to the communication configuration. Inverterconfiguration varies, the number of2PINcommunication terminals,DRED/RCRcommunication terminals differs, please refer to the actual product.
- 3 The protocol converter connection cable is only shipped to China.
- 4 CTis standard in Australia, optional in other regions.
- 5 In China x 0; other regions x 1.

Components	Description	Components	Description
	Inverter x1		Wall Mounting Bracket x1
	Expansion Screws x 4		PV Terminals x 2
	Grounding OT Terminal x 1		2-PIN Communication Terminal x N[2]
	6-PIN 485 Communication Terminal x 1		Tubular Terminal x N[2]
	Communication Module x 1[1]		DRED/RCR Communication Terminal x N[2]
	AC Terminal x 1		CT x N[4]

Components	Description	Components	Description
	Protocol Converter Connection Cable (Inverter Side) x 1[3]		Protocol Converter Connection Cable (Protocol Converter Side) x 1[3]
	Product Documentation x 1		PVUnlocking Tool x N[5]
	AC Tubular Terminal x 3	-	-

3.3 Equipment Storage

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

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

4 Installation

4.1 Installation Requirements

Installation Environment Requirements

1. The equipment must not be installed in environments that are flammable, explosive, or corrosive.
2. The mounting carrier is sturdy and reliable, and can bear the weight of the inverter.
3. The installation space shall meet the requirements for equipment ventilation, heat dissipation, and operation space.
4. The Ingress Protection Rating of the equipment meets indoor and outdoor installation requirements, and the temperature and humidity of the installation environment must be within suitable ranges.
5. The inverter should avoid installation environments such as direct sunlight, rain, and snow. It is recommended to install it in a sheltered location; if necessary, a sunshade can be built.
6. The installation location should be out of reach of children and avoid being installed in easily accessible positions.
7. The surface of the equipment may be hot during operation; please avoid burns.
8. The installation height of the equipment shall be convenient for operation and maintenance, ensuring that the equipment indicators and all labels are easy to view, and the terminals are easy to operate.
9. The installation altitude of the inverter shall be lower than the Max. Operating Altitude of 4000m.
10. Inverters installed in salt-fog areas will be corroded. Salt-fog areas refer to regions within 1000m from the coast or areas affected by sea breeze. Areas affected by sea breeze vary depending on meteorological conditions (e.g., typhoons, monsoons) or terrain (such as dikes, hills).
11. Keep away from strong magnetic fields to avoid electromagnetic interference. If there are radio stations or wireless communication devices below 30MHz near the installation location, install the equipment in accordance with the following requirements:
 - Add a multi-turn ferrite core to the inverter's DC input line or AC output line, or add a low-pass EMI filter.
 - The distance between the inverter and wireless electromagnetic interference

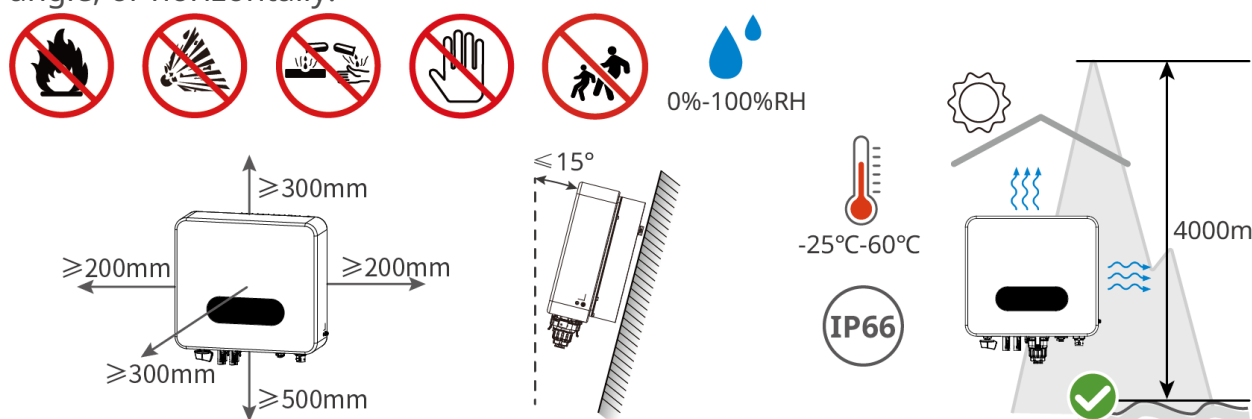
equipment shall exceed 30m.

Mounting Carrier Requirements

- The mounting carrier shall not be made of flammable materials and must have fire resistance.
- Please ensure that the installation surface is sturdy, and confirm that the carrier meets the load-bearing requirements of the equipment.
- The equipment will vibrate during operation. Do not install it on a carrier with poor sound insulation, so as to avoid the Noise Emission generated by the equipment during operation causing disturbance to residents in living areas.

Installation Angle Requirements

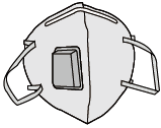
- Recommended Installation Angle for inverter: Vertical or backward tilt $\leq 15^\circ$.
- Do not install the inverter upside down, forward tilted, backward tilted beyond the angle, or horizontally.

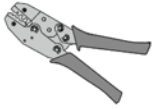
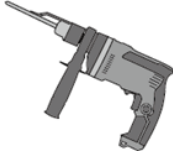
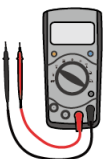
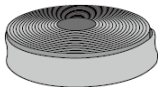


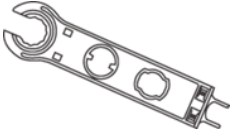
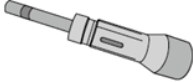
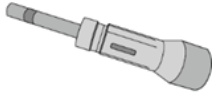
DNS40INT0001

Installation Tool Requirements

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

Tool Types	Description	Tool Types	Description
	Insulating gloves, protective gloves		dust mask

Tool Types	Description	Tool Types	Description
	safety goggles		safety shoes
	Terminal Crimping Pliers		Diagonal Cutting Pliers
	Wire Strippers		Impact Drill
	heat gun		Cable Tie
	rubber mallet		marker pen
	Wire Strippers		heat-shrink tubing
	vacuum cleaner		Spirit Level

Tool Types	Description	Tool Types	Description
 or 	DC Connection Wrench	 	Torque Wrench M3/M5
 	flat-head screwdriver	-	-

4.2 Inverter Installation

4.2.1 Inverter Handling

⚠ CAUTION

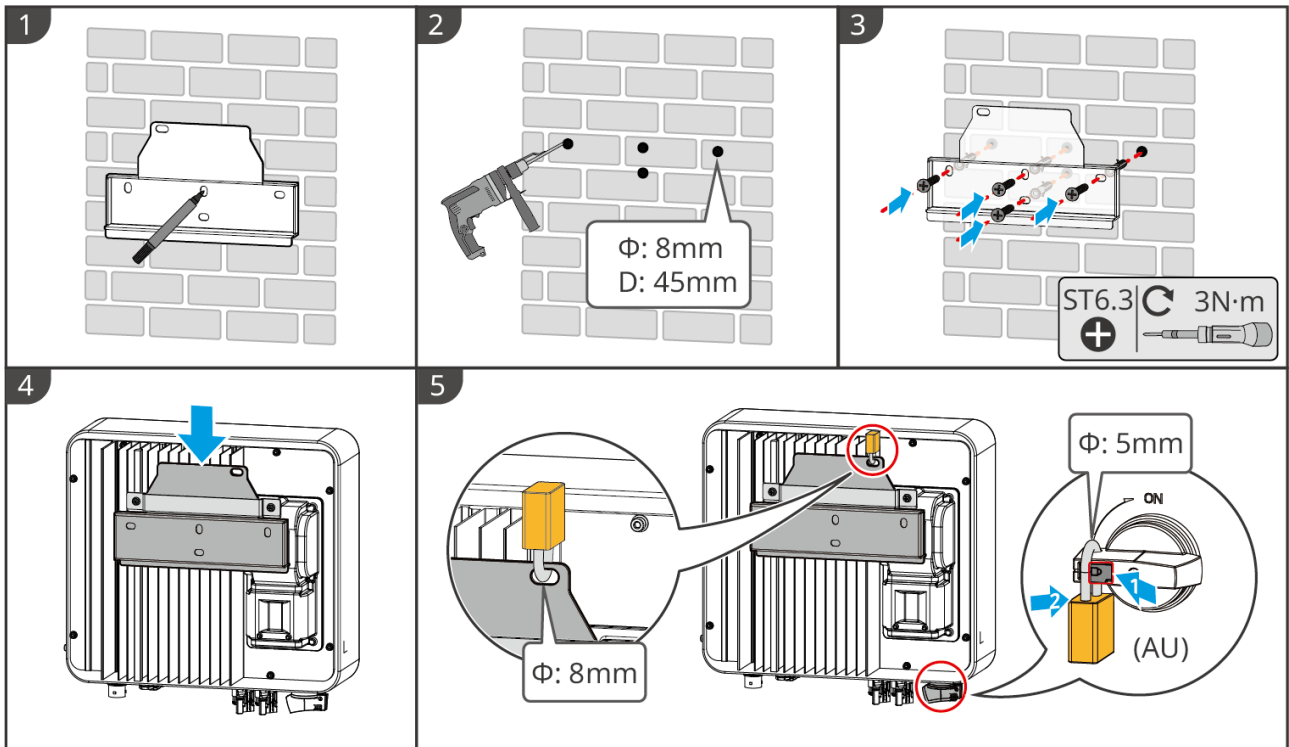
- When performing operations such as transportation, transfer, installation, etc., compliance with the laws, regulations, and relevant standards of the country and region shall be met.
- Before installation, the inverter needs to be transported to the installation site. During transportation, to avoid personal injury or equipment damage, please note the following points:
 1. Please assign corresponding personnel based on the weight of the equipment to avoid the equipment exceeding the weight range that can be manually handled, causing injury to personnel.
 2. Please wear safety gloves to avoid injury.
 3. Please ensure the equipment remains balanced during handling to avoid falling.

4.2.2 Inverter Installation

NOTE

- When drilling, ensure the drilling position avoids water pipes, cables, etc., inside the wall to avoid danger.
- When drilling, please wear safety goggles and a dust mask to avoid dust being inhaled into the respiratory tract or falling into the eyes.
- DC Switch lock is user-supplied(Australia only).
- Anti-theft lock is user-supplied. Please select an appropriate anti-theft lock; otherwise, installation may fail.
- Ensure the inverter is installed securely to prevent it from falling and injuring personnel.

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



DNS40INT0003

5 Electrical Connection

5.1 Safety Precautions

DANGER

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

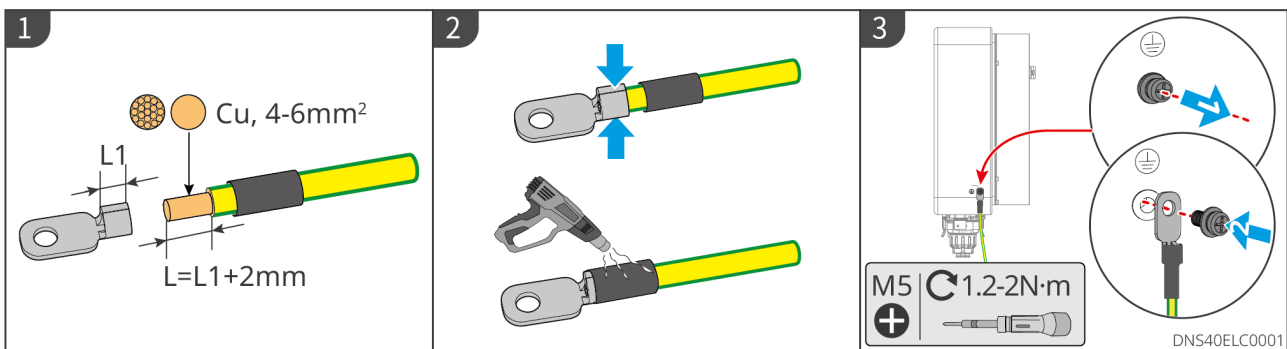
NOTE

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

5.2 Connect Protection Ground Wire

WARNING

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



5.3 Connect AC Output Lines

WARNING

- It is forbidden to connect loads between the inverter and the AC Switch directly connected to the inverter.
- The inverter integrates a Residual Current Monitoring Unit (RCMU) internally. When the inverter detects a leakage current exceeding the allowable value, it will quickly disconnect from the grid.

NOTE

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

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

Inverter model	AC Switch Specifications
GW3.6K-DNS-CN-G40	25A
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 refer to local laws and regulations to decide whether to install RCD device. The inverter can connect an additional external unit of RCD (Residual Current Monitoring device), when the DC component of leakage current exceeds the limit, provide Protection. Recommended RCD specification 300mA (in accordance with local regulations).

NOTE

Each inverter must be equipped with one AC output switch; multiple inverters cannot be connected to one AC Switch simultaneously.

 WARNING

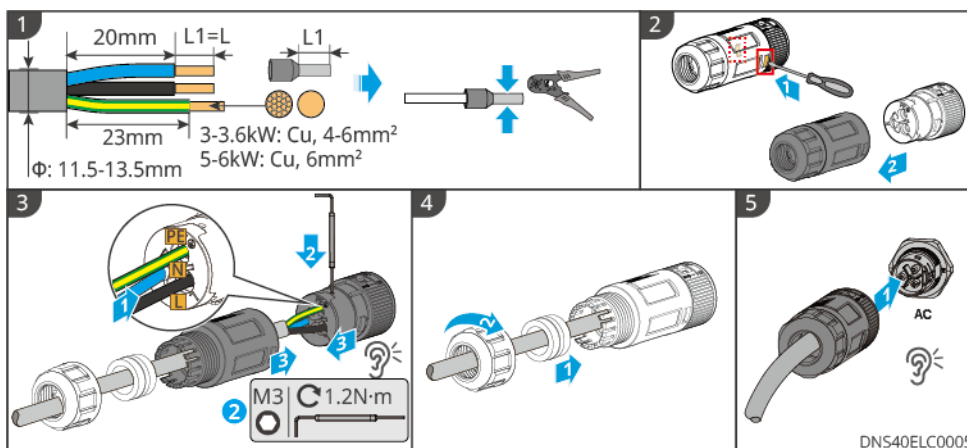
1. Cable preparation: $L=L1$, $L1$, 26mm , $\phi: 7-12.5\text{mm}$. Conductors: 3-3.6kW: Cu, 4-6mm²; 5-6kW: Cu, 6mm².

2. Inserting conductors into the terminal block and securing them with a screwdriver.

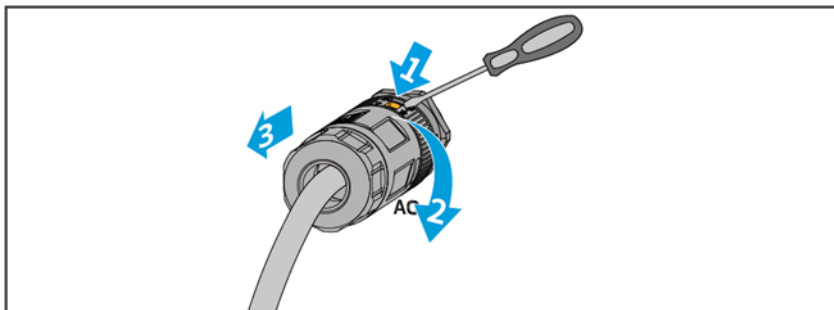
3. Tightening the terminal block screws to 0.8 N·m. Torque specification: $M3 \text{ } \odot 0.8\text{N}\cdot\text{m}$.

4. Connecting the AC supply to the terminal block.

5. Final assembly and connection to the AC supply.



Disassemble AC terminals



NOTE

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

5.4 Connect DC Input Lines

 DANGER

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

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

 WARNING

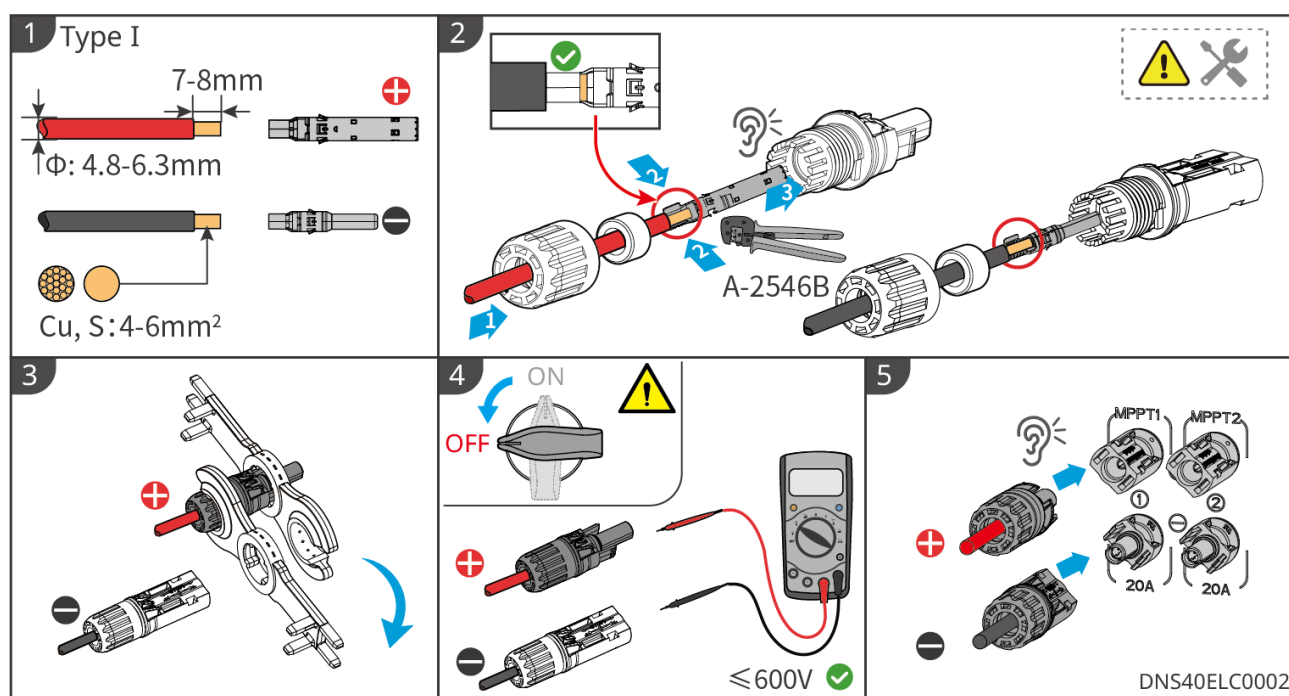
- Mixing PV modules of different brands or models in the same MPPT channel, or connecting PV modules with different azimuth angles or tilt angles in the same PV string, will not necessarily damage the inverter, but will lead to a decrease in system performance.
- The maximum DC input voltage of the inverter is 600V. Please ensure that the open-circuit voltage of the MPPT connected PV string does not exceed 600V. When the input voltage is in the 560V-600V range, the inverter will enter standby mode. When the voltage returns to the MPPT Voltage Range 40V-560V, the inverter will resume normal operation.
- It is recommended that the voltage difference between different MPPT channels does not exceed 150V.
- The sum of the peak power currents of the strings connected to each MPPT channel shall not exceed the inverter's MPPT Max. MPPT Current per channel.
- When connecting multiple PV strings to the inverter, it is recommended to maximize the number of MPPT connections.
- PV string outputs do not support grounding. Before connecting the PV string to the inverter, ensure that PV minimum insulation resistance to ground of the string meets the minimum insulation impedance requirement.
- Please prepare your own DC input cable.

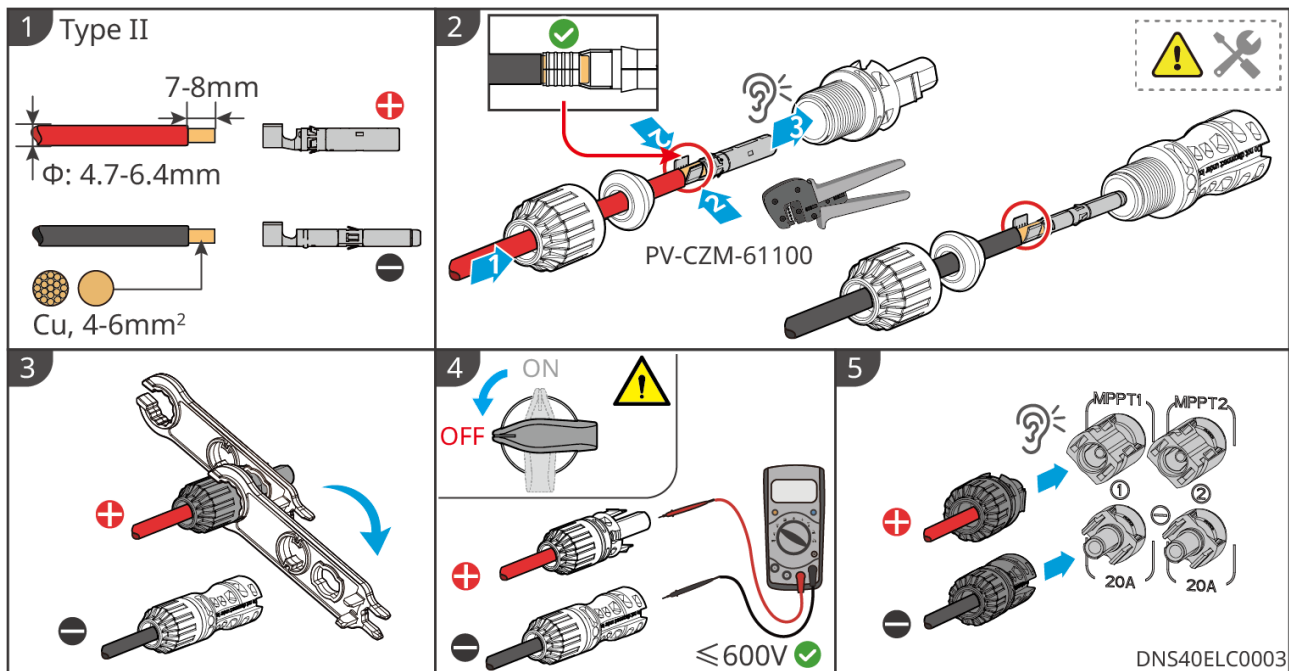
NOTE

If the DC input terminals of the inverter do not need to connect to PV strings, use a waterproof cover to seal the terminals; otherwise, it will affect the device's Ingress Protection Rating.

Connect DC Input Lines

1. Prepare DC cables.
2. Crimp the DC input terminals and assemble the DC Connector.
3. Tighten the DC Connector.
4. Measure the DC input voltage.
5. Connect the DC Connector to the DC terminals of the inverter.





5.5 Communication Connection

NOTE

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

5.5.1 Communication Networking Introduction

Power Limitation Networking Scheme

NOTE

- The inverter connects to a smart meter or CT, enabling output power limitation and load monitoring functions.
- Please use the App to enable the "Grid-connected Power Limitation" function.

The photovoltaic power station's energy generation is for self-consumption. If the electrical equipment cannot consume all the power, when reverse power flows into the grid, the inverter can monitor the grid-connected end's power data in real time via the smart meter, adjust the output power, and prevent surplus power from feeding into the grid.



WARNING

1. When networking with a single unit, First-time Installation, no need to pay attention to CT current sampling direction; later replacement or maintenance of CT, please use the auxiliary detection function on the electricity meter/CT to make the inverter re-adapt to CT current sampling direction.
2. When networking with multiple units, CT should be installed near the point of common coupling, correct installation direction, CT, the "-->" in CT refers to the direction from the inverter current to the grid. If reversed, the inverter will trigger an alarm and cannot implement the output limiting function.
3. CT's aperture must be larger than the outer diameter of the AC power line to ensure the AC power line can pass through CT.
4. CT must be clamped on L cable, do not clamp on N cable.
5. The CT shipped with the inverter CT sampling range: 90A; transformation ratio: 1000:1; cable length: 5m.
6. GM330:
 - CT, select the current transformation ratio specification $nA/5A$. (nA : CT primary side input current, n ranges from 200-5000, which is selected by the user according to actual needs. 5A: CT secondary side output current.)
 - CT, it is recommended to select accuracy values 0.5, 0.5s, 0.2, 0.2s, to ensure CT current sampling error $\leq 1\%$.
 - To ensure CT current detection accuracy, CT cable length is recommended not to exceed 30m, and the cable's current carrying capacity is recommended to be 6A.
7. Please ensure the electricity meter wiring and phase sequence are correct. The



WARNING

recommended cross-sectional area of the electricity meter's input voltage cable is:1mm²(18AWG)

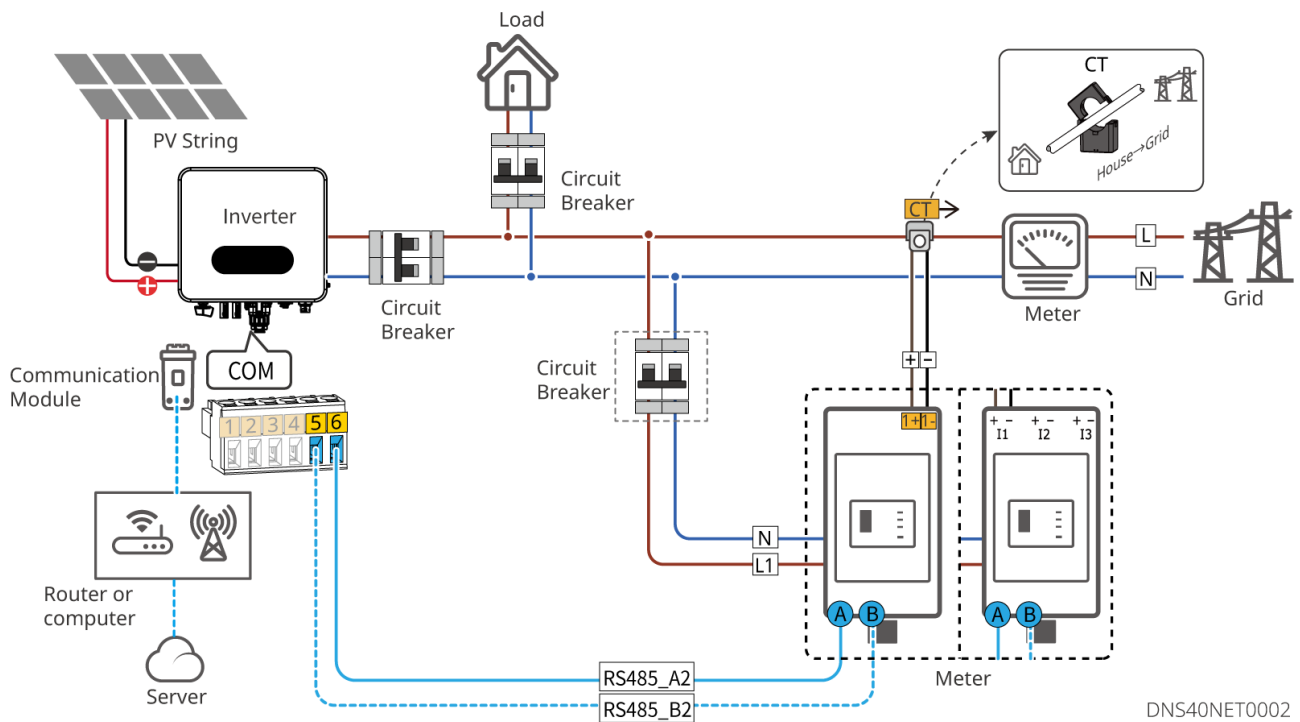
8. Multi-unit networking power limiting needs to match Ezlink3000, if needed, please contact after-sales or a distributor to purchase.
9. The inverter supports setting parameters locally via 4G, WiFi/LAN communication modules, connecting to a mobile phone or WEB interface to set device-related parameters, view device operation information and error information, and timely understand the system status.
10. When there is only one inverter in the system, you can use 4G Kit-CN-G20 ,4G Kit-CN-G21,WiFi/LAN Kit-20 or WiFi Kit-20 smart communication stick.
11. When the system includes multiple inverters for Parallel Networking, the master inverter needs to install Ezlink3000 smart communication stick for networking, and the slave inverter does not need to connect to the smart communication stick. Ezlink3000 version is V1.6.8 or higher.
12. After wiring is completed, use LCD display or App to set relevant parameters to complete Power Limit or output power limiting function.

NOTE

This electricity meter is mainly used for Point of Common Coupling Power Control, the measured Energy Generation and electricity consumption are only for reference, and cannot be used as the basis for electricity fee measurement; electricity fee measurement shall be based on the metering meter of the grid company.

Single-unit Power Limiting Networking Scheme

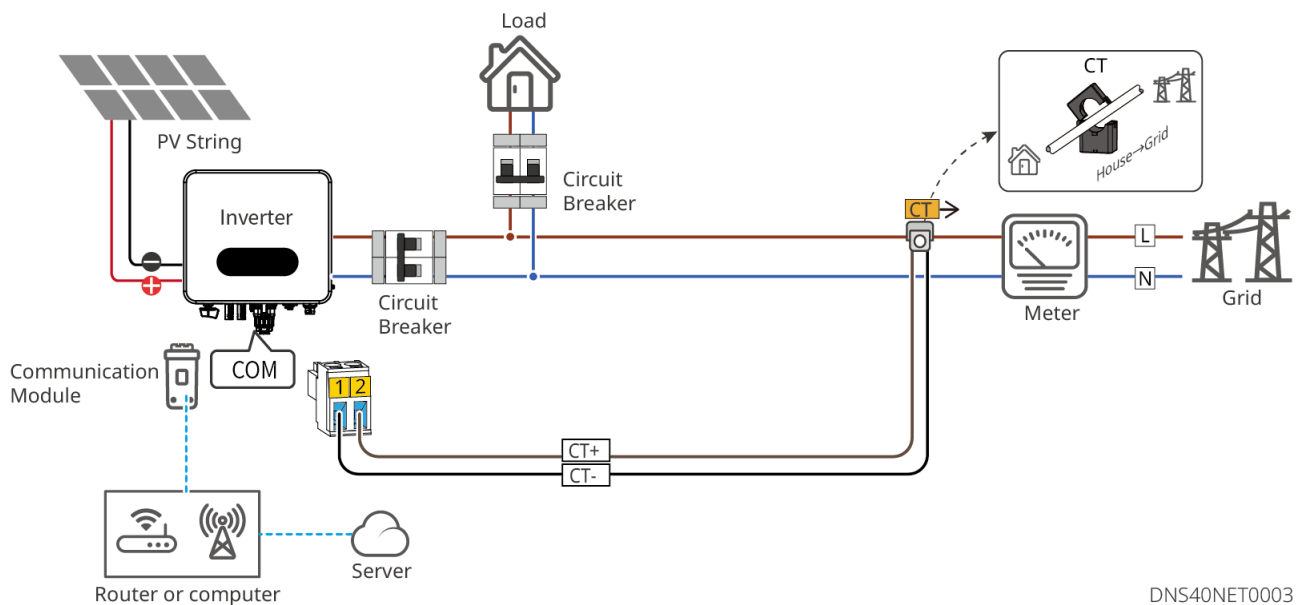
Electricity Meter Scheme(GMK110/GM1000/GM330/GMK330)



CT Scheme

NOTE

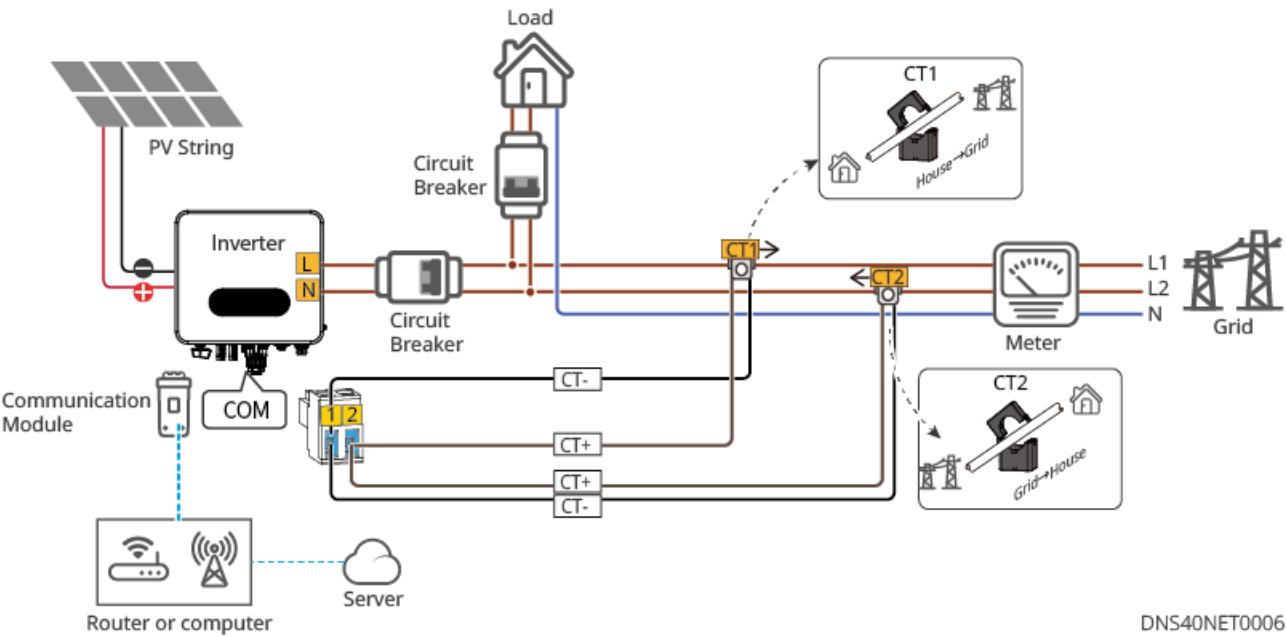
In Australia, CT is shipped with the inverter; in other regions, it is optional. CT transformation ratio: 90A/90mA.



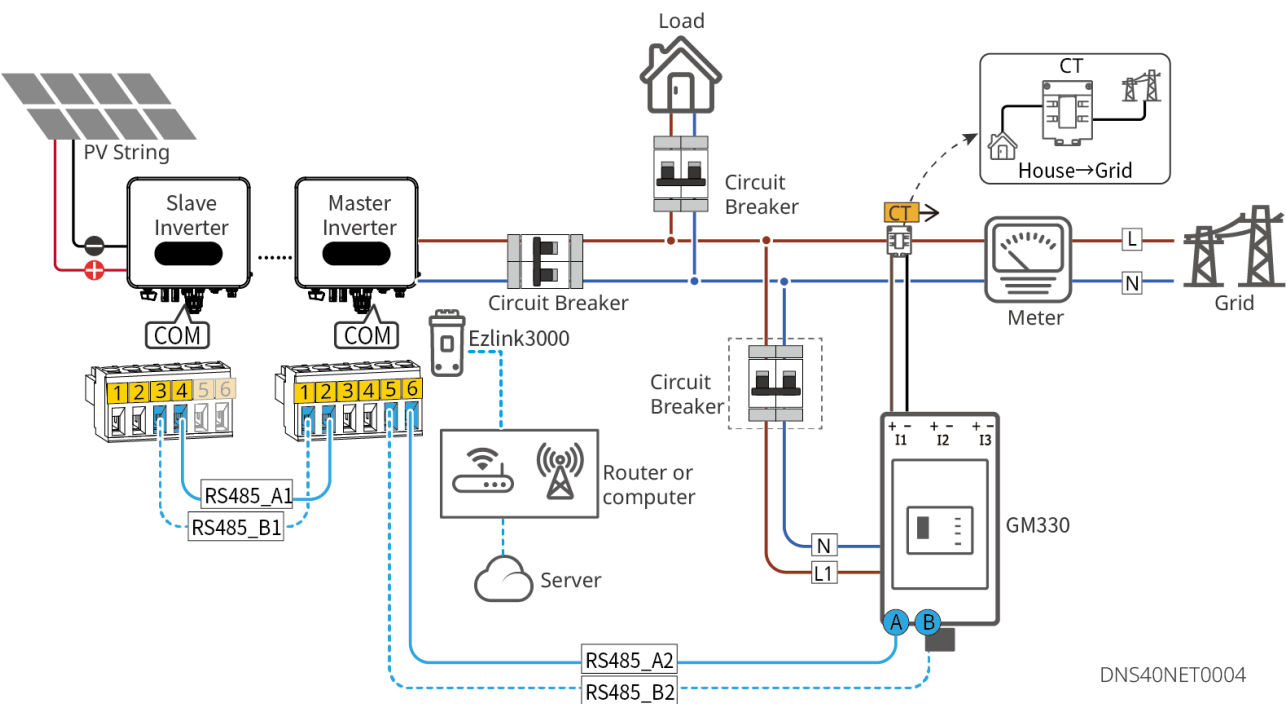
When connecting to a split-phase gridSingle-unit Power Limiting Networking Scheme

NOTE

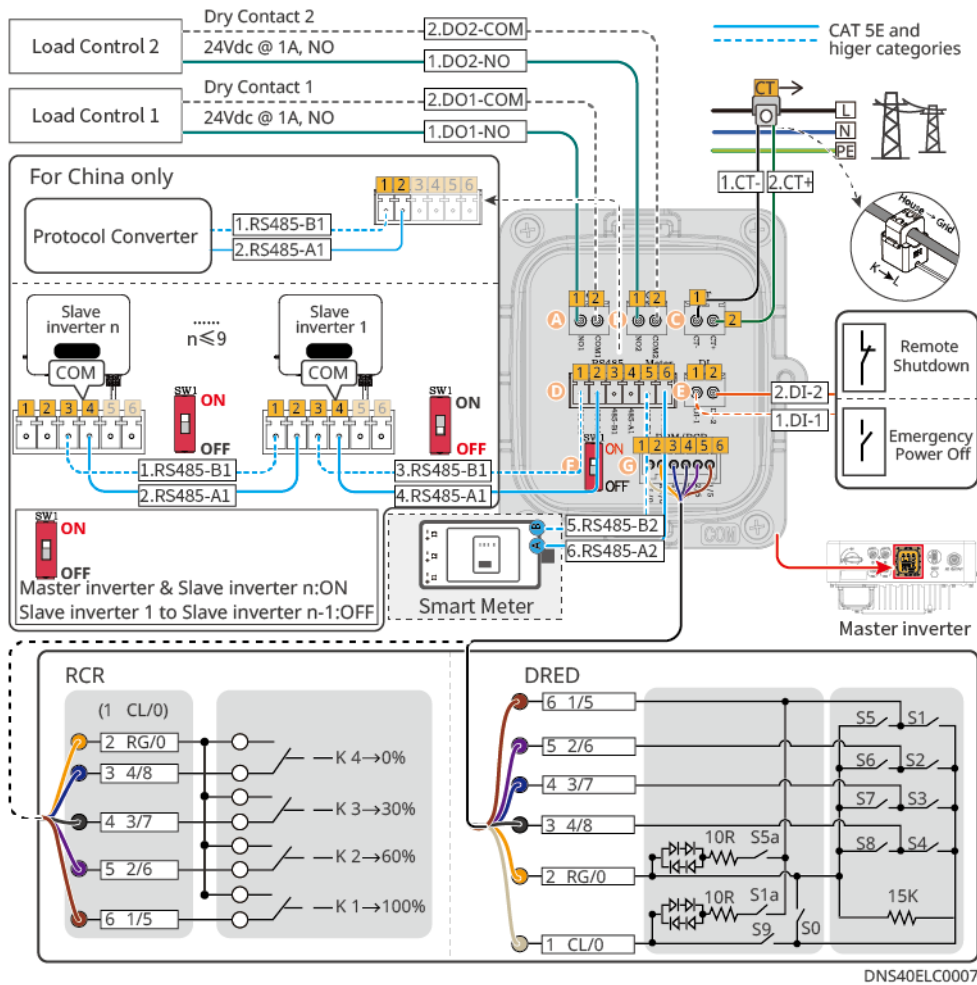
The user prepares or purchases CT from the manufacturer. CT transformation ratio: 90A/45mA.



Multi-unit Power Limiting Networking Scheme (GM330/GMK330+Ezlink3000)



5.5.2 Connect Communication Lines



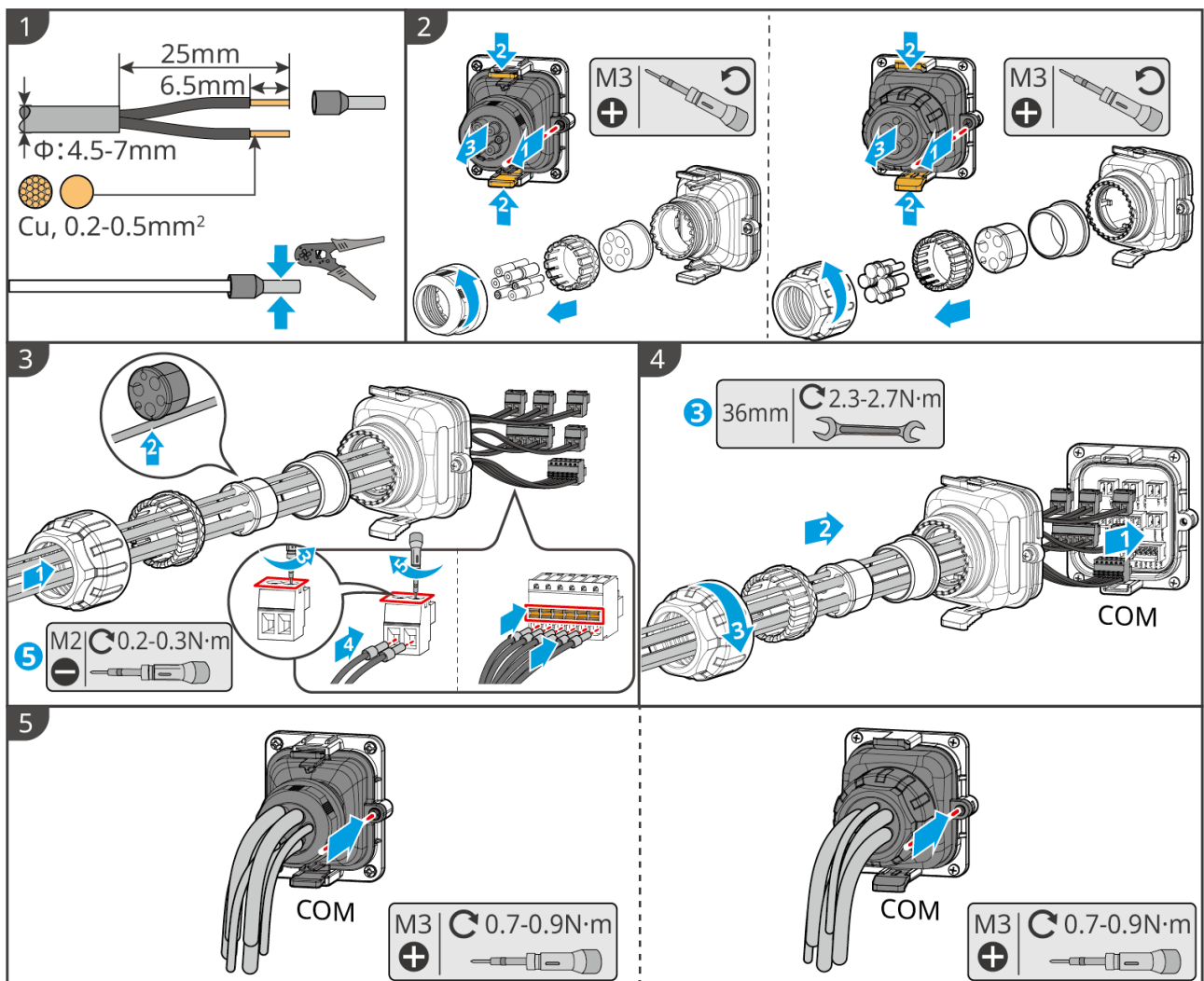
Silkscreen	Function	Description
DO1 DO2	Load Control (Optional)	- Supports connection to dry contact signals to implement functions such as load control. DO contact capacity is 24VDC@1A, NO normally open contact. - Supports SG Ready heat pump access, and controls the heat pump via dry contact signals.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

Silkscreen	Function	Description
RS485	Parallel connection 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 port for connecting to the protocol converter and parallel connection. If you need to connect to a protocol converter, the inverter parallel connection function cannot be used; in the scenario of inverter parallel connection, the protocol converter cannot be connected.
Meter	Meter connection port (RS485-2)	The inverter works with a meter to realize the output power limitation function. If supporting equipment is needed, please contact the inverter manufacturer to purchase.
DI	Remote Shutdown or Emergency Shutdown	After the emergency switch sends a shutdown signal, the AC side of the inverter will automatically disconnect and stop grid connection. An external emergency shutdown switch is required.
DRM/RCR	DRED(Australia) or RCR(Europe) connection port	- DRED (Demand Response Enabling Device): provides DRED signal control port, meeting DRED grid dispatching requirements of Australia and New Zealand. DRED grid dispatching requirements. DRM1-4 function reserved, DRM device needs to be prepared by the user. - RCR (Ripple Control Receiver): provides RCR signal control port, meeting grid dispatching requirements of regions such as Germany.

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

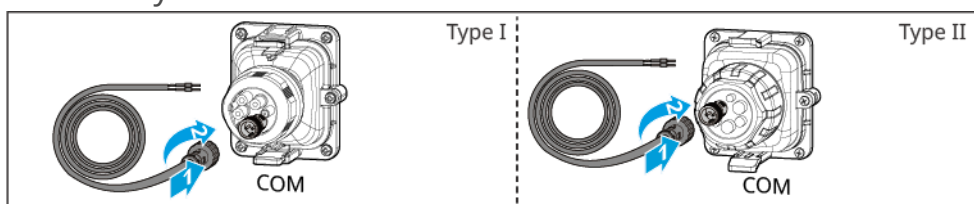
NOTE

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



DNS40ELC0006

China Only



DNS40ELC0008

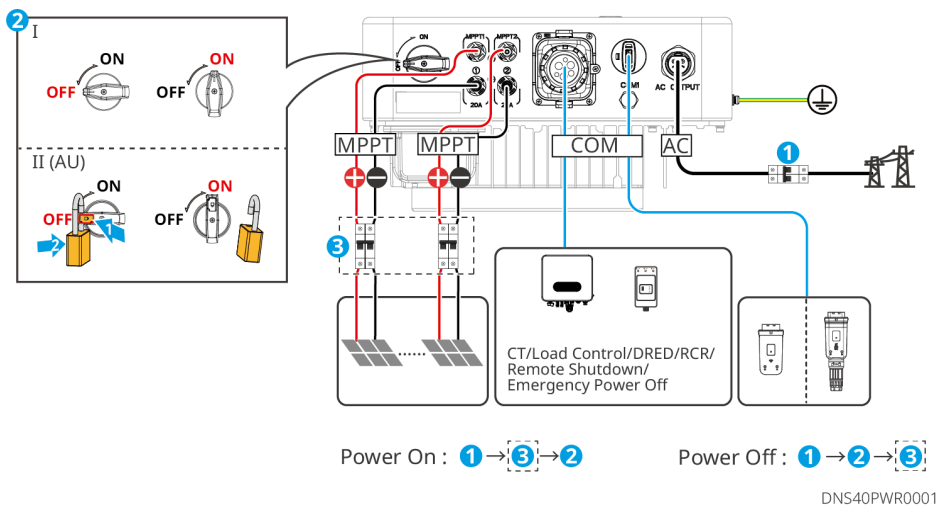
6 Equipment Trial Operation

6.1 Pre-Power-on System Check

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

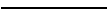
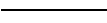
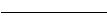
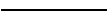
6.2 Power on the Device

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.



7 System Commissioning and Testing

7.1 Indicator Light Description

Indicator Light	Status	Description
 Power supply		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
 Communi- cation		Steady On: Wireless Monitoring Normal
		Single Flash: Wireless Module Reset or Reconfiguration
		Double Flash: Not Connected to Base Station or Router
		Four Flashes: Not Connected to Monitoring Server
		Flash: RS485 Communication Normal
		Off: Wireless Module Restoring Factory Settings
 Failure		Steady On: System Fault
		Off: No Fault

7.2 Set Inverter Parameters via Display Screen

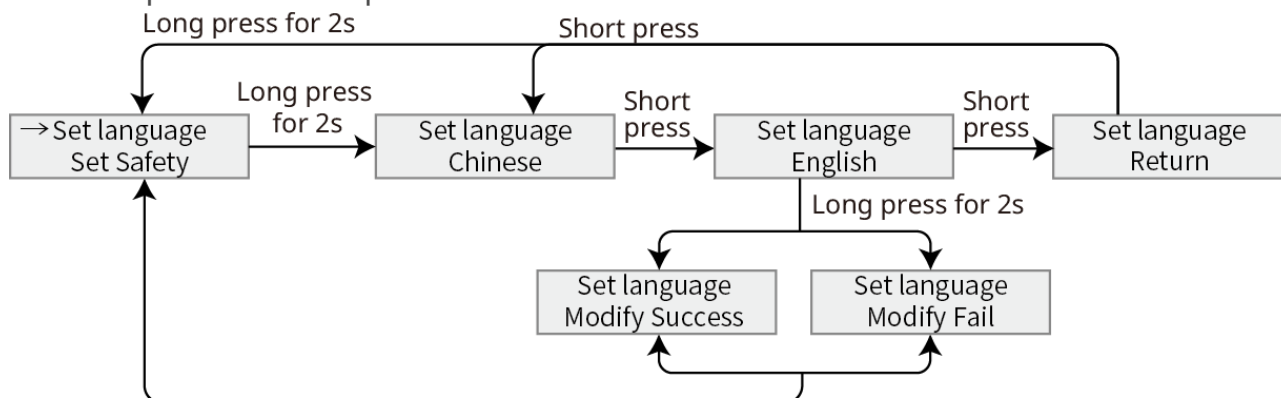
NOTE

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

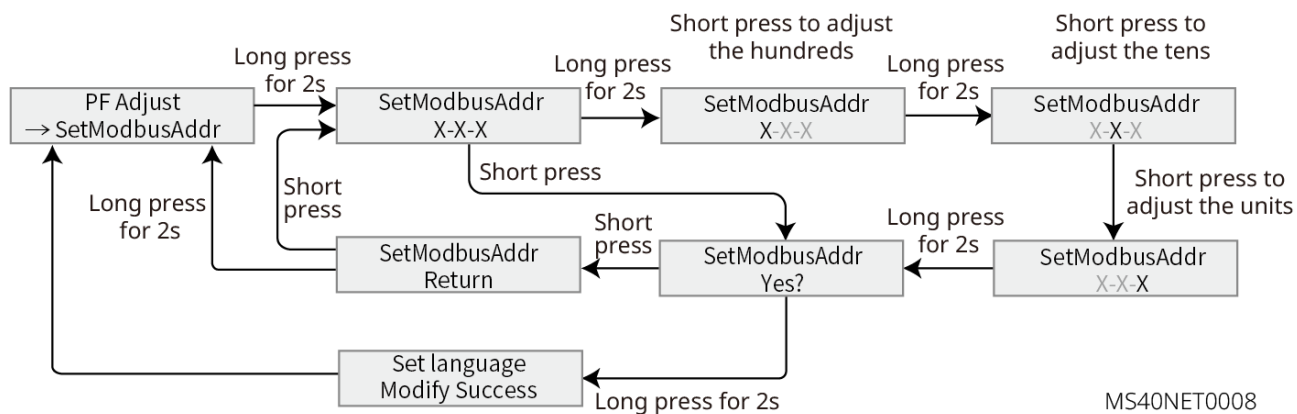
Display Button Instructions

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

Button Operation Examples:



MS40NET0007

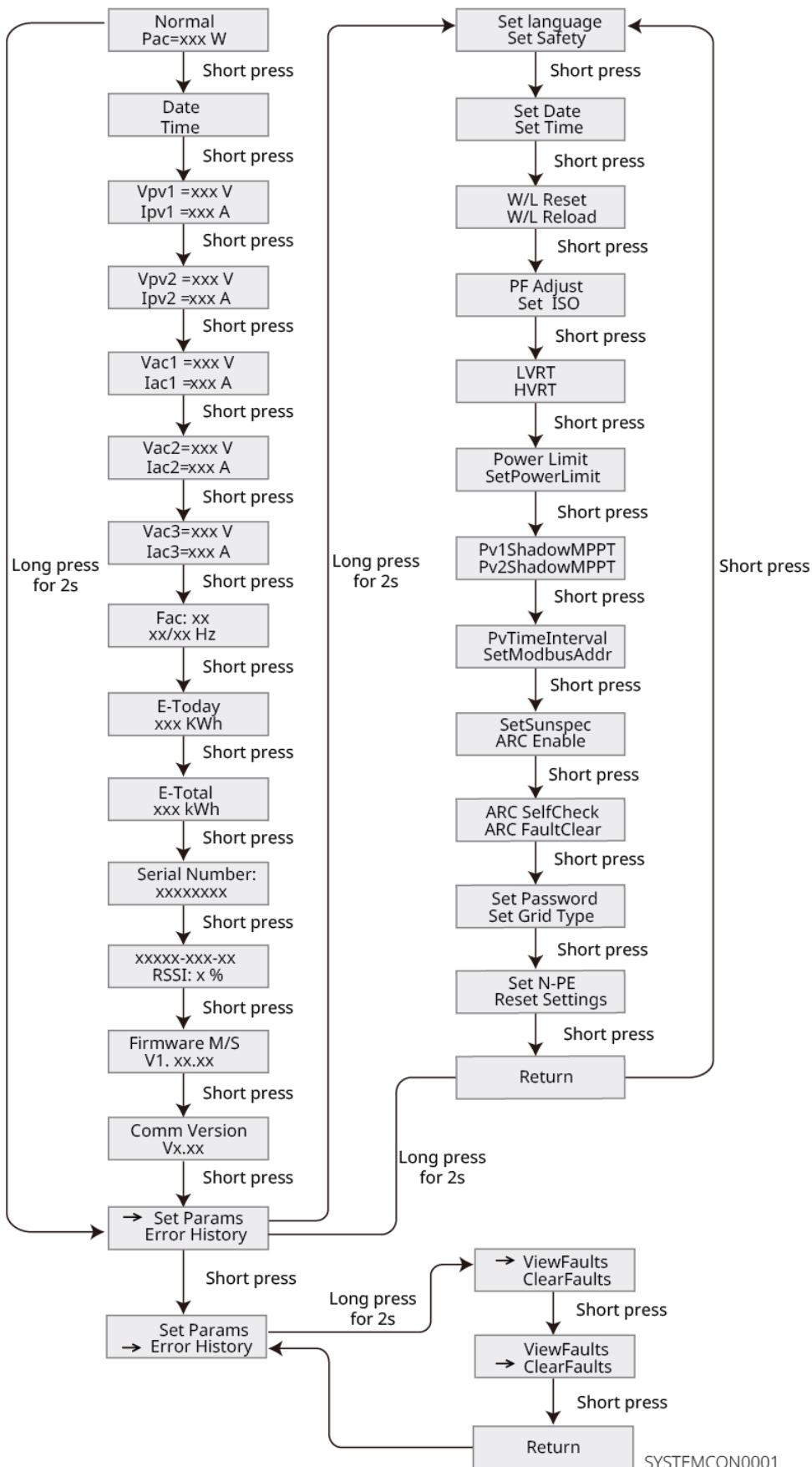


7.2.1 Introduction to the Display Menu

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

First level menu

Second level menu



8 System Commissioning and Power Station Monitoring

8.1 Use SEMS+ App for Device Commissioning and Power Station Monitoring

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

- Remotely monitor the operation status of the power station and set the operation parameters of the power station and devices.
- Connect to devices locally, view the operation status of devices and set device parameters.

Download and install SEMS+ App

Mobile Phone Requirements:

- Mobile phone operating system requirements: Android 7.0 and above, iOS 15.1 and above.
- The mobile phone supports web browsers and can connect to the Internet.
- This phone supports WLAN/Bluetooth functions.

Download method:

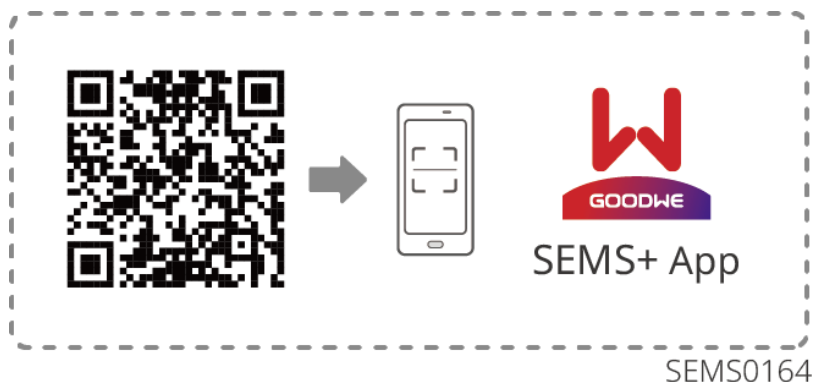
Method 1:

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



Method 2:

Scan the QR code below to download and install.



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



SEMS+ App User Manual

8.2 Use SEMS+ WEB for Device Commissioning and Power Station Monitoring

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

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

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



SEMS+ WEB User Manual

9 System Maintenance

9.1 Power off the Inverter

DANGER

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

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

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

Step 3: Disconnect the DC Switch of the inverter.

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

9.2 Remove the Inverter

WARNING

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

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

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 reused later, ensure the storage conditions meet the requirements.

9.3 Scrap the Inverter

When the inverter can no longer be used and needs to be scrapped, dispose of it in

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

9.4 Fault Information and Handling Methods

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

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

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

9.4.1 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 automatically disappear after grid power supply is restored. 2. Check whether the AC line or AC Switch is disconnected.

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

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

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

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

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

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

fault code	Fault Name	Fault cause	Fault handling suggestions
F163	Grid Phase Instability	Grid abnormality: The rate of change of grid voltage phase does not comply with local grid standards.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, please check if the grid frequency is within the allowable range. • If the grid frequency exceeds the allowable range, please contact the local power utility. • If the grid frequency is within the allowable range, please contact your dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F09	Anti-islanding Protection	The grid has been disconnected; the grid voltage is maintained due to the presence of loads, and grid connection is stopped in accordance with safety protection requirements.	1. If it occurs accidentally, it may be a short-term grid abnormality. The inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, please check if the grid frequency is within the allowable range. • If the grid frequency exceeds the allowable range, please contact the local power utility. • If the grid frequency is within the allowable range, please contact your dealer or after-sales service center.
F10	Voltage Ride-Through Undervoltage Fault	Grid anomaly: The duration of Grid Voltage Abnormal exceeds the time specified for low-voltage and high-voltage ride-through.	

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

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

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

fault code	Fault Name	Fault cause	Fault handling suggestions
F12	30mA GFCIProtection	The input-to-ground insulation impedance decreases during inverter operation.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line; it will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot recover for a long time, please check whether the impedance of the PV string to ground is too low.
F13	60mA GFCIProtection	The input-to-ground insulation impedance decreases during inverter operation.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line; it will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot recover for a long time, please check whether the impedance of the PV string to ground is too low.

fault code	Fault Name	Fault cause	Fault handling suggestions
F14	150mA GFCIProtection	The input-to-ground insulation impedance decreases during inverter operation.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line; it will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot recover for a long time, please check whether the impedance of the PV string to ground is too low.
F15	GFCISlow Change Protection	The input-to-ground insulation impedance decreases during inverter operation.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line; it will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot recover for a long time, please check whether the impedance of the PV string to ground is too low.

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

fault code	Fault Name	Fault cause	Fault handling suggestions
F18	Low Insulation Resistance	1. PV string short-circuited to Protection Ground. 2. The environment where the PV string is installed is relatively humid for a long time, and the line has poor insulation to ground. 3. Low Insulation Resistance of the battery port line to ground.	1. Check the impedance of the PV string/battery port to Protection Ground; if the resistance is greater than 80kΩ, it is normal. If the checked resistance is less than 80kΩ, please locate the short circuit point and rectify it. 2. Check whether the inverter's Protection Ground wire is correctly connected. 3. If it is confirmed that the impedance is indeed lower than the default value in rainy and cloudy environments, 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 triggered in the following ways: 1. The inverter is equipped with a buzzer, which sounds continuously for 1 minute when a fault occurs; if the fault is not

fault code	Fault Name	Fault cause	Fault handling suggestions
			resolved, the buzzer will sound again every 30 minutes. 2. If the inverter is added to the monitoring platform and the alarm notification method is set, the alarm information can be sent to the customer via email.
F19	Grounding Abnormal	1. The inverter's Protection Ground wire is Not Connected. 2. When the output of the PV string is grounded, the inverter's output side is not connected to an isolation transformer.	1. Please confirm whether the inverter's Protection Ground wire is Not Connected normally. 2. If the output of the PV string is grounded, please confirm whether the inverter's output side is connected to an isolation transformer.
F49	L-PE Short Circuit	output phase line toPElow impedance or short circuit	detect the output phase line toPEimpedance and identify the location with low impedance and repair it.

fault code	Fault Name	Fault cause	Fault handling suggestions
F50	DCVProtection Level1	Load Abnormal Fluctuation	1. If the abnormality is caused by an external fault, the inverter will automatically return to normal operation after the fault disappears, and no manual intervention is required. 2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.
F51	DCVProtection Level2	Load Abnormal Fluctuation	1. If the abnormality is caused by an external fault, the inverter will automatically return to normal operation after the fault disappears, and no manual intervention is required. 2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.

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

fault code	Fault Name	Fault cause	Fault handling suggestions
F53	DC Arc Failure (AFCI) multiple fault shutdowns	North American safety standards require that after multiple faults, it cannot automatically recover; manual operation or waiting for 24h to recover	1. After the machine is reconnected to the grid, check whether the voltage and current of each channel are abnormally reduced to zero; 2. Check whether the DC side terminals are firmly connected.
F54	External communication link disconnection	Loss of external device communication of the inverter, which may be caused by issues with peripheral power supply, mismatched Communication Protocols, or failure to configure corresponding peripherals, etc.	Judge based on the actual model and detection enable bit; peripherals not supported by some models will not be detected.
F55	Back-up Output Overload	1. Prevent the inverter from continuous Overload output.	1. Turn off part of the off-grid loads to reduce the off-grid output power of the inverter.

fault code	Fault Name	Fault cause	Fault handling suggestions
F56	Back-upOutput Overvoltage	2. Prevent load damage caused by inverter output overvoltage.	1. If it occurs accidentally, it may be caused by load switching, no manual intervention is required. 2. If it occurs frequently, please contact the distributor or after-sales service center.
F107	On-grid PWM Sync Failure	Abnormality occurs during carrier synchronization grid connection.	1. Check if the synchronization line connection is normal 2. Check if the master-slave settings are normal; 3. Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F57	ExternalBoxFailure	When Switch On-Grid to Off-Grid, waiting forBoxto switch the relay is too long	1. CheckBoxis working normally; 2. CheckBoxcommunication wiring is correct;
-	Generator Failure		

fault code	Fault Name	Fault cause	Fault handling suggestions
F22	Generator waveform detection fault	1. This fault will be continuously displayed when Not Connected to the generator 2. When the generator is operating, this fault will be triggered if the generator does not meet the safety regulations	1. Ignore this fault when the generator is not connected; 2. It is normal for this fault to occur when the generator has a fault. After the generator recovers, wait for a period of time, and the fault will be automatically cleared; 3. This fault will not affect the normal operation of the off-grid mode; 4. When both the generator and the grid are connected and meet the safety regulations, the grid will prioritize grid connection, and the system will operate in the grid-connected state.
F23	Abnormal generator connection		
F24	Low generator voltage		
F25	High generator voltage		
F26	Low generator frequency		
F27	High generator frequency		
F109	External External STS Failure Failure	Inverter and External STS Failure connection cable is abnormal	Check if the wire harness connection sequence between the inverter and External STS Failure corresponds one by one in order.
F58	CT Loss	CT connection line is disconnected (per Japanese safety standards)	Check CT wiring is correct.

fault code	Fault Name	Fault cause	Fault handling suggestions
F110	Export Limit Protection	1. Inverter fault: off-grid 2. Metercommunication is unstable 3. Reverse power flow condition occurs	1. Check if there are any other error messages on the inverter. If yes, perform targeted handling. 2. Check meter connection reliability 3. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.
F111	BypassOver Load	-	-
F112	Black Start Failure	-	-
F28	parallel operationIOself-check abnormal	Parallel operation communication line not securely connected or parallel operationIOchip damaged	Check if the parallel communication cable is securely connected, then checkIOchip is damaged, if yes, replaceIOchip.
F59	parallel operationCANComm Abnormal	The parallel communication line is not securely connected, or some machines are offline	Check if all units are powered on, and the parallel communication cable is securely connected.
F29	Paralell Grid Line Reversed	Some units have grid lines reversed with others	Reconnect the grid cable.

fault code	Fault Name	Fault cause	Fault handling suggestions
F60	parallel operationBack-upLine Reversed	Some machines'backuplines are reversed with others	Reconnectbackupline.
F61	Inverter Soft Start Failure	Inverter Soft Start Failure during off-grid cold start	Check whether 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 DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F62	AC HCT Failure	HCTsensor is abnormal	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F31	GFCI HCT Check Abnormal	Leakage current sensor has sampling abnormality	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F63	GFCI HCT Failure	GFCI HCT sensor is abnormal	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F32	Relay Check Abnormal	Relay abnormality, cause: 1. Relay abnormality (relay short circuit) 2. Relay sampling circuit abnormality. 3. AC side wiring abnormality (possible loose connection or short circuit)	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F64	Relay Failure	1. Relay abnormality (relay short circuit) 2. Relay sampling circuit abnormality. 3. AC side wiring abnormality (possible loose connection or short circuit)	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F164	DC Arcing Failure (String17~32)	1. DC side connection terminal loose; 2. DC side connection terminal poor contact; 3. DC cable core damaged and poor contact	1. After the machine re-connects to the grid, check whether the voltage and current of each channel abnormally decrease to zero; 2. Check whether the DC side terminals are firmly connected.
F165	DC Arcing Failure (String33~48)	1. DC side connection terminal loose; 2. DC side connection terminal poor contact; 3. DC cable core damaged and poor contact	1. After the machine re-connects to the grid, check whether the voltage and current of each channel abnormally decrease to zero; 2. Check whether the DC side terminals are firmly connected.
F33	FlashFlash R/W Abnormal	Possible causes: flashcontent changed;flashlifeti me exhausted;	1. Upgrade to the latest version of the program 2. Contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F42	DC Arcing Failure (String1~16)	1. DC side connection terminal loose; 2. DC side connection terminal poor contact; 3. DC cable core damaged and poor contact	1. After the machine re-connects to the grid, check whether the voltage and current of each channel abnormally decrease to zero; 2. Check whether the DC side terminals are firmly connected.
F34	AFCI Check Failure	During the arc self-check process, the arc module did not detect the Arc Failure	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F65	AC Terminal Overtemperature	AC Terminal Overtemperature, possible reasons: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operation abnormality.	

fault code	Fault Name	Fault cause	Fault handling suggestions
F35	Cabinet Overtemperature	Cabinet Overtemperature, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operation abnormality.	1. Check whether the ventilation of the inverter installation location is good, and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If it is not ventilated or Ambient Overtemperature, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.
F66	INVModule Overtemperature	Inverter Module Overtemperature, possible reasons: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operation abnormality.	
F67	BoostModule Overtemperature	BoostModule Overtemperature, possible reasons: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operation abnormality.	

fault code	Fault Name	Fault cause	Fault handling suggestions
F68	AC Capacitor Overtemperature	Output Filter Capacitor Overtemperature, possible reasons: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operation abnormality.	
F114	Relay Failure2	Relay abnormality, cause: 1. Relay abnormality (relay short circuit) 2. Relay sampling circuit abnormality. 3. AC side wiring abnormality (possible loose connection or short circuit)	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F69	PV IGBT Short Circuit Fault	Possible causes: 1. IGBT short circuit 2. inverter sampling circuit abnormality	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F70	PV IGBTOpen Circuit	1. software issue leading to no pulse output: 2. drive circuit abnormality: 3. IGBTOpen Circuit	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F71	NTCAbnormal	NTCTemperature Sensor Abnormal	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F72	PWM Abnormal	PWMHas Abnormal Waveform	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F73	CPUInterrupt Abnormal	CPUInterrupt Abnormal Occurred	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F74	Microelectronic Fault	Function Safety Detected Abnormality	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F75	PV HCT Failure	Boost Current Sensor Abnormal	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F76	1.5V reference abnormality	Reference Circuit Fault	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F77	0.3V reference abnormality	Reference Circuit Fault	
F78	CPLD Version Error	CPLD Version Error	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F79	CPLDComm Failure	CPLDandDSPComm unication Content Error or Timeout	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F80	Model Identification Fault	Fault related to Model Recognition Error	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F115	SVGPrecharge Failure	SVGPrecharge hardware failure	Contact the dealer or after-sales service center.
F116	NightSVG PIDPrevention Failure	PIDAnti-PID hardware abnormality	Contact the dealer or after-sales service center.
F117	DSPVersion Error	DSPSoftware version identification error	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F36	Bus Overvoltage		

fault code	Fault Name	Fault cause	Fault handling suggestions
F81	P-Bus Overvoltage	BUSOvervoltage, possible causes: 1. PVovervoltage; 2. InverterBUSvoltage sampling abnormality; 3. Inverter rear-end split transformer has poor isolation effect, leading to mutual influence when two inverters are grid-connected, and one inverter reports DC overvoltage;	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F82	N-Bus Overvoltage		
F83	Bus Overvoltage (AuxiliaryCPU1)		
F84	P-Bus Overvoltage (AuxiliaryCPU1)		
F85	N-Bus Overvoltage (AuxiliaryCPU1)		
F86	Bus Overvoltage (AuxiliaryCPU2)		
F87	P-Bus Overvoltage (AuxiliaryCPU2)		
F88	N-Bus Overvoltage (AuxiliaryCPU2)		
F89	P-Bus Overvoltage(CPLD)		
F90	N-Bus Overvoltage (CPLD)		

fault code	Fault Name	Fault cause	Fault handling suggestions
F118	MOSContinuous Overvoltage	1. Software issue causes turning off the inverter drive earlier than turning off the flyback drive; 2. Inverter drive circuit abnormality leads to failure to turn on; 3. PVovervoltage; 4. Mosvoltage sampling abnormality;	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F119	Bus short circuit fault	1. Hardware Damage	If BUS short circuit fault occurs and the inverter remains in off-grid state, please contact the dealer or after-sales service center.
F120	Bus sampling abnormality	1. BusVoltage Sampling Hardware Fault	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F121	DCSample Abnormal	1. Bus Voltage Sampling Hardware Fault 2. Battery Voltage Sampling Hardware Fault 3. Dcrly Relay Failure	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F37	PVInput Overvoltage	PVinput overvoltage, possible causes: Incorrect PV array configuration, the number of PV panels connected in series in a string is too large, resulting in the open-circuit voltage of the string being higher than the maximum operating voltage of the inverter	Check the series configuration of the corresponding PV array string, ensure that the open-circuit voltage of the string is not higher than the maximum operating voltage of the inverter. After the PV array is correctly configured, the inverter alarm will automatically disappear.
F38	PVContinuous Hardware Overcurrent	1. Unreasonable Component Configuration 2. Hardware Damage	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F39	PVContinuous Software Overcurrent	1. Unreasonable Component Configuration 2. Hardware Damage	
F91	FlyCap Software Overvoltage	FlyCap Overvoltage, possible causes: 1. PVovervoltage; 2. Inverter Flying Capacitor Voltage Sampling Abnormality;	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F92	FlyCap Hardware Overvoltage	FlyCap Overvoltage, possible causes: 1. PVovervoltage; 2. Inverter Flying Capacitor Voltage Sampling Abnormality;	
F93	FlyCap Undervoltage	FlyCap Undervoltage, possible causes: 1. PVInsufficient Energy; 2. Inverter Flying Capacitor Voltage Sampling Abnormality;	

fault code	Fault Name	Fault cause	Fault handling suggestions
F94	FlyCap Precharge Failure	FlyCap Precharge Failure, possible causes: 1. PVInsufficient Energy; 2. Inverter Flying Capacitor Voltage Sampling Abnormality;	
F95	FlyCap Precharge Abnormal	1. Unreasonable Control Loop Parameters 2. Hardware Damage	
F96	PV String Overcurrent(String1~16)	Possible causes: 1. String Overcurrent; 2. String Current Sensor Abnormality	
F97	PV String Overcurrent(String17~32)		
F40	PV String Reversed(String1~16)(String1~16)	PVPV String Reversed(String1~16)	Check whether the string is reversely connected.

fault code	Fault Name	Fault cause	Fault handling suggestions
F98	PV String Reversed(String1~16)(String17~32)	PVPV String Reversed(String1~16)	Check whether the string is reversely connected.
F99	PV String Loss(String1~16)	String fuse disconnected (if applicable)	Check whether the fuse is disconnected.
F100	PV String Loss(String17~32)	String fuse disconnected (if applicable)	Check whether the fuse is disconnected.

fault code	Fault Name	Fault cause	Fault handling suggestions
F122	PVPV Input Mode Error	PVAccess Mode has three modes, taking four-channelMPPTas an example: 1. Parallel Mode:AAAAMode(Homologous Mode),PV1-PV4are homologous,4channelsPVare connected to the same photovoltaic panel 2. Partial Parallel Mode:AACCMODE,PV1andPV2are connected homologously,PV3 andPV4are connected homologously 3. Independent Mode:ABCDMode(Non-homologous),PV1,PV2,PV3,PV4are connected independently,4channelsPVare each connected to one photovoltaic panel IfPVactual Access	CheckPVAccess ModeABCD,AACC,AAAA), re-setPVAccess Mode 1. Confirm whether each actual connectedPVis correctly connected. 2. IfPVis correctly connected, check viaAppor screen whether the currently set "PVAccess Mode" corresponds to the actual Access Mode 3. If the currently set "PVAccess Mode" does not match the actual Access Mode, it is necessary to setAppor screen to set the "PVAccess Mode" to the mode consistent with the actual situation. After setting, disconnectPVandACpower supply and restart 4. After setting, if the current "PVAccess Mode" is consistent with the actual Access Mode, but this fault is still reported, please contact the dealer or after-sales service center

fault code	Fault Name	Fault cause	Fault handling suggestions
		Mode does not match the device-setPVAccess Mode, this fault will be reported	
-	PV String Reversed(String1~16)(String33~48)	PVPV String Reversed(String1~16)	Check whether the string is reversely connected.
-	PV String Loss(String33~48)	String fuse disconnected (if applicable)	Check whether the fuse is disconnected.
-	PV String Overcurrent(String33~48)	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 whether the PV Access Mode is set correctly (ABCD, AACC, AAAA), re-set the PV Access Mode 1. Confirm whether each actual connected PV is correctly connected 2. If the PV is correctly connected, check via the App or screen whether the currently set "PV Access Mode" corresponds to the actual Access Mode 3. If the currently set "PV Access Mode" does not match the actual Access Mode, set the "PV Access Mode" to the mode consistent with the actual situation via the App or screen. After setting, disconnect the PV and AC power supply and restart 4. After setting, if the current "PV Access Mode" is consistent with the actual Access Mode but this fault is still reported, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F101	BAT1 Precharge Failure1BAT1 Precharge Failure	BAT1 Precharge Failure1precharge circuit fault (precharge resistor burned out, etc.)	Check if the precharge circuit is in good condition. Only after the battery is powered on, check if the Battery Voltage and bus voltage are consistent. If not, please contact the dealer or after-sales service center.
F102	BAT1 Precharge Failure1Relay Failure	BAT1 Precharge Failure1relay cannot operate normally	After the battery is powered on, check if the battery relay is working, and if you hear the closing sound. If it does not operate, please contact the dealer or after-sales service center.
F103	BAT1 Precharge Failure1BAT1 Overvoltage	BAT1 Precharge Failure1access voltage exceeds the machine's rated range	Confirm if the Battery Voltage is within the machine's rated range.
F104	BAT1 Precharge Failure2BAT1 Precharge Failure	BAT1 Precharge Failure2precharge circuit fault (precharge resistor burned out, etc.)	Check if the precharge circuit is in good condition. Only after the battery is powered on, check if the Battery Voltage and bus voltage are consistent. If not, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F105	BAT1 Precharge Failure2Relay Failure	BAT1 Precharge Failure2relay cannot operate normally	After the battery is powered on, check if the battery relay is working, and if you hear the closing sound. If it does not operate, please contact the dealer or after-sales service center.
F106	BAT1 Precharge Failure2BAT1 Overvoltage	BAT1 Precharge Failure2access voltage exceeds the machine's rated range	Confirm if the Battery Voltage is within the machine's rated range.
F124	BAT1 Precharge Failure1BAT1 Reversed	BAT1 Precharge Failure1Positive and Negative Poles Reversed	Check whether the positive and negative terminals of the battery and the device's wiring are consistent.
F125	BAT1 Precharge Failure2BAT1 Reversed	BAT1 Precharge Failure2Positive and Negative Poles Reversed	Check whether the positive and negative terminals of the battery and the device's wiring are consistent.
F126	Abnormal Battery Connection	Abnormal Battery Connection	Check whether the battery is working normally.
-	BMS Status Bit Error	BMS Module Fault	Disconnect the AC output side switch and DC input side switch, close the AC output side switch and DC input side switch after 5 minutes. If the fault still exists, please contact the dealer or after-sales service center.

fault code	Fault Name	Fault cause	Fault handling suggestions
F127	BAT Overtemperature	Battery Overtemperature, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan operation abnormality.	
F128	Ref Voltage Abnormal	Reference Circuit Fault	Disconnect the AC output side switch and DC input side switch, 5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F129	Cabinet Under Temperature	Cabinet Under Temperature, possible reasons: 1. Ambient temperature is too low.	
F130	ACSideSPDFailure	ACSide Lightning Protection Device Failure	ReplaceACSide Lightning Protection Device.
F131	DCSideSPDFailure	DCSide Lightning Protection Device Failure	ReplaceDCSide Lightning Protection Device.

fault code	Fault Name	Fault cause	Fault handling suggestions
F132	Internal Fan Abnormal	Internal Fan Abnormal, possible causes: 1. Abnormal fan power supply; 2. Mechanical fault(stall); 3. Fan aging and damage.	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F133	External Fan Abnormal	External Fan Abnormal, possible causes: 1. Abnormal fan power supply; 2. Mechanical fault(stall); 3. Fan aging and damage.	
F134	PIDAbnormal	PIDhardware fault orPVovervoltagePIDsuspend	PVcaused by overvoltagePIDsuspension warning does not require handling,PIDhardware faults can be cleared by turning thePIDswitch off and on to clearPIDfaults, replacePIDdevice

fault code	Fault Name	Fault cause	Fault handling suggestions
F135	Trip-Switch Trip Warning	Possible causes: Overcurrent or PVreverse connection causing the trip switch to trip	Please contact the dealer or after-sales service center. The trip reason is PVshort circuit or reverse connection; check if there are historical PVshort circuit warnings or historical PVreverse connection warnings; if present, maintenance personnel need to check the corresponding PVsituation. After confirming no faults, manually close the trip switch, and through Appinterface's clear historical faults operation to clear this warning.
F136	Historical PV IGBT short circuit warning	Possible causes: Overcurrent causing the trip switch to trip	Please contact the dealer or after-sales service center. Maintenance personnel shall refer to the historical PVshort circuit warning sub-code, check the Boosthardware and external string for faults; after confirming no faults, through Appinterface's clear historical faults operation to clear this warning.

fault code	Fault Name	Fault cause	Fault handling suggestions
F137	HistoricalPVreverse connection warning(String1~16)	Possible causes: Occurrence ofPVreverse connection causing the trip switch to trip	Contact the dealer or after-sales service center. Maintenance personnel shall refer to the historicalPVreverse connection warning sub-code, check if the corresponding string has reverse connection, checkPVpanel configuration for voltage difference; after confirming no faults, throughAppinterface's clear historical faults operation to clear this warning.
F138	HistoricalPVreverse connection warning(String17~32)	Possible causes: Occurrence ofPVreverse connection causing the trip switch to trip	Contact the dealer or after-sales service center. Maintenance personnel shall refer to the historicalPVreverse connection warning sub-code, check if the corresponding string has reverse connection, checkPVpanel configuration for voltage difference; after confirming no faults, throughAppinterface's clear historical faults operation to clear this warning.

fault code	Fault Name	Fault cause	Fault handling suggestions
F139	FlashR/W Error	Possible causes: flashcontent changed;flashlifetime exhausted;	1. Upgrade to the latest firmware. 2. Contact the dealer or after-sales service center.
F140	Meter Comm Loss	After enabling the Power Limit function, this warning may be reported. Possible causes: 1. Meter not connected; 2. Incorrect wiring of the communication line connecting the electricity meter and the inverter.	Check the electricity meter wiring, ensure correct connection to the meter. If the fault persists after inspection, please contact the dealer or after-sales service center.
F141	PVPV Type Identification Failure	PVPanel Identification Hardware Abnormal	Contact the dealer or after-sales service center.
F142	PV String Mismatch	PVPV String Mismatch, on the sameMPPTchannel, the open-circuit voltage of the two strings is configured differently	Check the open-circuit voltage of the two strings, configure the strings with the same open-circuit voltage to the sameMPPTchannel. Long-term PV String Mismatch poses a safety hazard.
F143	CTNot Connected	CTNot Connected	CheckCTwiring.

fault code	Fault Name	Fault cause	Fault handling suggestions
F144	CTCT Reversed	CTCT Reversed	CheckCTwiring.
F145	PE Loss/PE Loss	PE Not Connected	Check PE.
F146	PV String Terminal Overtemperature(String1~8)	37176RegisterPVTerminal Temperature Alarm Subcode1is set	-
F147	PV String Terminal Overtemperature(String9~16)	37177RegisterPVTerminal Temperature Alarm Subcode2is set	-
F148	PV String Terminal Overtemperature(String17~20)	37178RegisterPVTerminal Temperature Alarm Subcode3is set	-
F149	HistoricalPVreverse connection warning(String33~48)	Possible causes: Occurrence ofPVreverse connection causing the trip switch to trip	Please contact the dealer or after-sales service center; maintenance personnel shall refer to the historicalPVreverse connection warning sub-code, check if the corresponding string has reverse connection, checkPVpanel configuration for voltage difference; after confirming no faults, throughAppinterface's clear historical faults operation to clear this warning.

fault code	Fault Name	Fault cause	Fault handling suggestions
F150	BAT1 Precharge Failure1Voltage Low	Battery Voltage is lower than the set value	-
F151	BAT1 Precharge Failure2Voltage Low	Battery Voltage is lower than the set value	-
F152	Low Voltage of Battery Power	Battery is in non-charging mode, voltage is lower than the shutdown voltage	-
F153	BAT1 Voltage High	-	-
F154	BAT2 Voltage High	-	-
F155	Online Low Insulation Resistance	1. The PV string is short-circuited to Protection Ground. 2. The environment where the PV string is installed has been humid for a long time, and the line has poor insulation to ground.	1. Check the impedance of the PV string to Protection Ground; if a short circuit occurs, please rectify the short circuit point. 2. Check whether the inverter's Protection Ground wire is correctly connected. 3. If it is confirmed that the impedance is indeed lower than the default value in rainy and cloudy environments, please re-set the "insulation impedance protection point".

fault code	Fault Name	Fault cause	Fault handling suggestions
F156	Micro-grid Overload Warning	backup side input current is too high	Occasional occurrence requires no action; if this alarm appears frequently, please contact the dealer or after-sales service center.
F157	Manual Reset	-	-
F158	Generator Phase Sequence Abnormal	-	-
F159	Multiplexed Port Configuration Abnormal	Reused (generator) port is configured as microgrid or large load, but a generator is actually connected	Use the App to modify the configuration of the reused (generator) port

fault code	Fault Name	Fault cause	Fault handling suggestions
F41	Generator Port Overload	1. Off-grid side output exceeds the requirements specified in the datasheet 2. Off-grid side short circuit 3. Off-grid side voltage is too low 4. When acting as a large load port, the large load exceeds the requirements specified in the datasheet	Confirm the data such as off-grid side output voltage, current, power, etc. through data, and confirm the cause of the problem.
F108	DSP Communication Failure	-	-

Fault Name	Fault cause	Fault handling suggestions
Parallel Comm Timeout Shutdown	In parallel operation, if the slave unit does not communicate with the master unit for more than 400 seconds	Check whether the parallel communication harness is connected reliably, and check whether the slave address is duplicated.
One-click shutdown and stop	Check via the App whether the one-click shutdown function is enabled	Disable the one-click shutdown.

Fault Name	Fault cause	Fault handling suggestions
Offline shutdown	-	-
Remote shutdown	-	-
Child Node Communication Failure	Internal Comm Abnormal	Restart the device and check if the fault is eliminated
DG Communication Failure	Communication link abnormality between control board and DG	1. Check the link communication harness, and check if the fault is eliminated; 2. Try restarting the device, and check if the fault is eliminated; 3. If the fault cannot be eliminated after restarting, contact the after-sales service center.
Battery Over Voltage	1. Single cell overvoltage 2. Voltage acquisition line abnormality	Record the fault phenomenon, restart the battery, wait for a few minutes, confirm if the fault disappears; if the problem still exists after restarting, please contact the after-sales service center.
	1. Battery total overvoltage 2. Voltage acquisition line abnormality	
Battery Undervoltage	1. Single cell undervoltage 2. Voltage acquisition line abnormality	
	1. Battery total undervoltage 2. Voltage acquisition line abnormality	

Fault Name	Fault cause	Fault handling suggestions
Battery Overcurrent	1. Excessive Charging Current, battery current limiting abnormality: sudden changes in temperature and voltage values 2. Inverter response abnormality	
	Battery discharging current overlimit	
Battery Overtemperature	1. Ambient Overtemperature 2. Temperature sensor abnormality	
	1. Ambient Overtemperature 2. Temperature sensor abnormality	
Battery Undertemperature	1. Ambient undertemperature 2. Temperature sensor abnormality	
	1. Ambient undertemperature 2. Temperature sensor abnormality	
Battery Terminal Overtemperature	Pole overtemperature	

Fault Name	Fault cause	Fault handling suggestions
Battery Imbalance	1. In different stages of excessive temperature difference, the battery will limit its power, i.e., limit the charge and discharge current. So this problem generally rarely occurs. 2. Cell capacity depletion leads to excessive internal resistance, and when Overcurrent occurs, the temperature rise is large, so the temperature difference is large. 3. Poor welding of cell tabs leads to Overcurrent and rapid temperature rise of the cell. 4. Temperature sampling problem; 5. Loose power line connection	
	1. Inconsistent cell aging degree 2. Slave board chip issues can also lead to excessive cell voltage difference; 3. Slave board balancing issues can also lead to excessive cell voltage difference 4. Caused by harness issues	
	1. Inconsistent cell aging degree 2. Slave board chip issues can also lead to excessive cell voltage difference; 3. Slave board balancing issues can also lead to excessive cell voltage difference 4. Caused by harness issues	
Insulation Resistance	Insulation Resistance damage	Check if the ground wire is properly connected, restart the battery; if the problem still exists after restarting, please contact the after-sales service center.

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

Fault Name	Fault cause	Fault handling suggestions
	Overvoltage level 5 or overtemperature level 5, blow the three-terminal fuse	Blow the three-section fuse, need to contact the after-sales service center to replace the main control board.
Relay or MOS Overtemperature	Relay or MOS Overtemperature	This fault indicates that the MOSFET temperature exceeds the specified threshold. Power off and leave it stationary for 2 hours until the temperature recovers.
Shunt Overtemperature	Shunt Overtemperature	This fault indicates that the shunt temperature exceeds the specified threshold. Power off and leave it stationary for 2 hours until the temperature recovers.
BMS1 Other Fault 1 (Residential Energy Storage)	Relay or MOSFET open circuit	1. Upgrade the software, power off and leave stationary for 5 minutes, then restart and check if the fault persists; 2. If it persists, replace the battery pack

Fault Name	Fault cause	Fault handling suggestions
	Relay or MOSFET short circuit	1. Upgrade the software, power off and leave stationary for 5 minutes, then restart and check if the fault persists; 2. If it persists, replace the battery pack
	Main cluster and slave cluster communication abnormality, or cell inconsistency between clusters	1. Check the battery information and software version of the slave unit, and whether the communication line connection with the master unit is normal 2. Upgrade the software
	Battery system loop harness abnormality, resulting in the interlock signal not forming a loop	Check if the terminal resistor is installed correctly
	BMS and PCS communication abnormality	1. Confirm whether the communication line interface definition between the battery and the inverter is correct; 2. Please contact the after-sales service center, check the background data, and observe whether the inverter and battery software are matched correctly.

Fault Name	Fault cause	Fault handling suggestions
	BMS master control and slave control communication harness abnormality	1. Check the wiring, restart the battery;
	Communication loss between main negative chips	2. Upgrade the battery, if the problem still exists after restarting, please contact the after-sales service center.
	Circuit breaker and shunt trip abnormality	1. Power off and leave stationary for 5 minutes, then restart and check if the fault persists; 2. Observe the blind insertion at the bottom of PACK and PCU, whether the communication pins are loose or skewed;
	MCU self-check failure	Upgrade the software, restart the battery, if the problem still exists after restarting, please contact the after-sales service center.
	1. Software version is too low or BMS board is damaged 2. The number of parallel inverters is large, resulting in excessive battery inrush during pre-charging	1. Upgrade the software and observe whether the fault persists 2. If it is a parallel operation case, perform a black start of the battery before starting the inverter

Fault Name	Fault cause	Fault handling suggestions
	MCU internal fault	Upgrade the software, restart the battery. Generally, this is caused by detection of MCU or external device damage. If the problem still exists after restarting, please contact the after-sales service center.
	Total control current exceeds the specified threshold	1. Power off and leave stationary for 5 minutes, then restart and check if the fault persists; 2. Check if the inverter is set to excessive power, causing it to exceed the bus load;
	Parallel cluster battery cells are inconsistent	Confirm whether the cells of the parallel cluster battery are consistent
	Parallel cluster battery has reversed positive and negative terminals	Check if the positive and negative terminals of the parallel cluster battery are reversed
	Serious over-temperature, over-voltage, etc. trigger the fire protection system	Contact the after-sales service center.

Fault Name	Fault cause	Fault handling suggestions
Air Conditioner Failure	Air conditioner abnormal failure	Try restarting the system; if the fault is not resolved, please contact the after-sales service center.
	Cabinet door not closed	Check if the cabinet door is properly closed
	Supply voltage is too high	Confirm whether the supply voltage value meets the air conditioner input voltage requirements, and re-power on after confirmation.
	Insufficient supply voltage	
	No voltage input	
	Unstable supply voltage	
	Compressor voltage is unstable	Try restarting the system; if the fault is not resolved, please contact the after-sales service center.
	Sensor poor contact or damaged	
	Air conditioner fan abnormality	
BMS1 other fault 2 (household energy storage type)	Abnormal voltage or current exists inside the DCDC	Refer to the details of the specific DC Failure.
	DCDC Overload or radiator over-temperature, etc.	
	Cell acquisition abnormality or inconsistent aging degree	Please contact the after-sales service center.
	Fan operation not executed normally	Please contact the after-sales service center.

Fault Name	Fault cause	Fault handling suggestions
	Output port screw loose or poor contact	1. Shut down the battery, check the wiring and output port screw condition 2. After confirmation, restart the battery, observe whether the fault persists; if it does, please contact the after-sales service center.
	Battery has been used for too long or cells are severely damaged	Please contact the after-sales service center to replace the pack.
	1. Software version is too low or BMS board is damaged 2. Large number of parallel inverters, excessive inrush current during battery pre-charging	1. Upgrade the software and observe whether the fault persists. 2. If it is a parallel operation case, perform a black start of the battery before starting the inverter.
	Heating film damaged	Please contact the after-sales service center.
	The three-terminal fuse of the heating film is disconnected, so the heating function cannot be used	Please contact the after-sales service center.
	Software model, cell type, and hardware model do not match	Check whether the software model, SN number, cell type, and hardware model are consistent; if not, please contact the after-sales service center.

Fault Name	Fault cause	Fault handling suggestions
	Thermal management board communication disconnection	1. Power off and leave stationary for 5 minutes, then restart and check if the fault persists; 2. If the fault is not resolved, contact after-sales to replace the pack.
	Thermal management board communication disconnection	1. Power off and leave stationary for 5 minutes, then restart and check if the fault persists; 2. If the fault is not resolved, contact after-sales to replace the pack.
	Thermal management board communication disconnection	1. Power off and leave stationary for 5 minutes, then restart and check if the fault persists; 2. If the fault is not resolved, contact after-sales to replace the pack.

Fault Name	Fault cause	Fault handling suggestions
	Pack fan fault signal triggered	1. Power off and leave stationary for 5 minutes, then restart and check if the fault persists; 2. If the fault is not resolved, contact after-sales to replace the pack.
DC Failure	Output port overvoltage	Check the output port voltage; if the output port voltage is normal and the fault still does not resolve automatically after restarting the battery, please contact the after-sales service center.
	The DC-DC module detects that the Battery Voltage exceeds the maximum charging voltage	Stop charging, discharge to below 90% SOC or let it stand for 2 hours; if invalid and the fault still exists after restarting, please contact the after-sales service center.
	Radiator over-temperature	Let the battery stand for 1 hour until the radiator temperature drops; if invalid and the fault still exists after restarting, please contact the after-sales service center.

Fault Name	Fault cause	Fault handling suggestions
	Battery discharging current overlimit	Check whether the load exceeds the battery's discharge capability, turn off the load or stop the PCS for 60 seconds; if invalid and the fault still exists after restarting, please contact the after-sales service center.
	The positive and negative poles of the output port power harness are reversed with the parallel cluster battery or PCS	Turn off the battery manual switch, check whether the output port wiring is correct, and restart the battery.
	Output power relay fails to close	Check whether the output port wiring is correct and whether there is a short circuit; if invalid and the fault still exists after restarting, please contact the after-sales service center.
	Power device over-temperature	Let the battery stand for 1 hour until the internal power device temperature drops; if invalid and the fault still exists after restarting, please contact the after-sales service center.

Fault Name	Fault cause	Fault handling suggestions
	Relay adhesion	If the fault still exists after restarting, please contact the after-sales service center.
Battery Rack Circulating Current Failure	1. Cell imbalance 2. First power-on incomplete full charge calibration	-
BMS1 Other Fault 3 (Large Energy Storage Type)	Abnormal communication with Linux module	1. Check if the communication link is normal 2. Upgrade the software, restart the battery and observe if the fault persists; if it does, contact the after-sales service center.
	Cell temperature rise is too fast	Abnormal cell, contact after-sales to replace the pack.
	SOC is below 10%	Charge the battery.
	SN writing does not comply with the rules	Check if the number of SN digits is normal; if abnormal, contact the after-sales service center.

Fault Name	Fault cause	Fault handling suggestions
	1. Abnormal daisy chain communication within the battery cluster 2. Inconsistent aging degree of cells between battery clusters	1. Check the contact condition of the single cluster battery pack 2. Confirm the usage status of each cluster battery, such as cumulative charge/discharge capacity, cycle times, etc. 3. Please contact the after-sales service center.
	High humidity inside the pack	-
	Fuse disconnected	Contact after-sales to replace the pack.
	Low battery level	Charge the battery.
BMS1 Other Fault 4 (Large Energy Storage Type)	Abnormal air switch	Contact after-sales to replace the pack.
	External device abnormal	Contact after-sales to replace the pack.
Contactactor Failure 1	-	-
Contactactor Failure 2	-	-
Overload Protection (Ksic)	Continuous Overload (Exceeding 690KVA) 10s	Please contact the after-sales service center.

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

9.5 Periodic Maintenance



DANGER

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

Maintenance content	Maintenance method	Maintenance cycle
System cleaning	Check if there are any foreign objects or dust on the heat sink and air inlets/outlets.	1 time every half year - 1 time every year
Fan	Check if the fan operates normally, if there are any abnormal noises, and if its appearance is normal.	Once a year

DC Switch	Continuously turn the DC Switch on and off 10 times to ensure its normal function.	Once a year
Electrical Connection	Check if the electrical connections are loose, if the cables are damaged in appearance, and if there is exposed copper.	1 time every half year - 1 time every year
Sealing performance	Check if the sealing performance of the equipment's cable entry holes meets the requirements; if there is excessive gap or unblocked holes, re-seal them.	Once a year

10 Inverter Software Version Upgrade

The inverter supports setting parameters locally viaUdisk.

UseUdisk to upgrade the device before,please contact the after-sales service center to obtain the software upgrade package and upgrade method.

11 Inverter Parameters

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

*5: AFD: Active Frequency Drift with Positive Feedback

12 Terminology Explanation

Overvoltage Category Explanation

- **Overvoltage Category I** : Equipment connected to a circuit with measures to limit transient overvoltage to a fairly low level.
- **Overvoltage Category II** : Energy-consuming equipment supplied by fixed distribution equipment. Such equipment includes appliances, portable tools, and other household and similar loads; if there are special requirements for the reliability and applicability of such equipment, Voltage Category III is adopted.
- **Overvoltage Category III**: Equipment in fixed distribution equipment, whose reliability and applicability must meet special requirements. Includes switching devices in fixed distribution equipment and industrial equipment permanently connected to fixed distribution equipment.
- **Overvoltage Category IV**: Equipment used in the power supply of distribution equipment, including measuring instruments and prefix overcurrent protection equipment, etc.
- **Explanation of Wet Location Categories**

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

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

considered;

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

13 Obtain Relevant Product Manuals

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