V1.5-2026-02-03

Grid-Tied PV Inverter

DNS Series (3.6-6.0kW) G4
User Manual

GOODWE

Copyright Statement

NOTICE

Due to product version upgrades or other reasons, the content of the document will be updated periodically. Unless otherwise agreed, the document content cannot replace the Safety Precautions in the product label. All descriptions in the document are provided for guidance only.

About This Manual

This document primarily introduces the product information of Inverter, Installation wiring, configuration of Commissioning, fault troubleshooting, and maintenance. Before Installation or using this product, please read this manual carefully to understand the product safety information and familiarize yourself with the product's functions and features. The document may be updated periodically; please obtain the latest version and more product information from the official website.

Applicable Model

This document applies to the Inverter of the following model:

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

Applicable Personnel

Only for use by professionals who are familiar with local regulatory standards and electrical systems, have received specialized training, and possess in-depth knowledge of this product.

Symbol Definition

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

DANGER
Indicates a highly potential DANGER, which, if not avoided, will result in death or serious injury.
WARNING
Indicates a moderate potential DANGER, which, if not avoided, could result in death or serious injury.
CAUTION
Indicates a low potential DANGER, which, if not avoided, may result in moderate or minor injury to personnel.
NOTICE
Emphasis and supplementation of content may also provide tips or tricks for optimizing product use, helping you solve a problem or save time.

Table of Contents

1 Safety Precautions

⚠WARNING

Inverter has been strictly designed in accordance with safety regulations and passed all required tests. However, as electrical equipment, relevant safety instructions must be followed before performing any operations. Improper handling may result in serious injury or property damage.

1.1 General Safety

NOTICE

- Due to product version upgrades or other reasons, the content of the document will be updated periodically. Unless otherwise agreed, the document content cannot replace the Safety Precautions in the product label. All descriptions in the document are provided for guidance only.
- Please read this document carefully before Installation the equipment to understand the product and NOTICE precautions.
- All operations of the equipment must be performed by professional and qualified electrical technicians who are thoroughly familiar with the relevant standards and safety regulations of the project location.
- When operating equipment, insulated tools must be used and personal protective equipment must be worn to ensure personal safety. When handling electronic components, anti-static gloves, wrist straps, and clothing should be worn to prevent Protection equipment from being damaged by static electricity.
- Unauthorized disassembly or modification may cause equipment damage, which is not covered under warranty.
- Damage to equipment or personal injury caused by failure to install, use, or configure the device in accordance with this document or the applicable user manual requirements is not covered by the warranty. 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 provided with the package to connect the Inverter DC cable. Using other model DC Connector may lead to serious consequences, and any equipment damage caused by this will beyond the manufacturer's liability.

⚠WARNING

- Ensure the module frame and mounting system are properly grounded.
- After the DC cable connection is completed, ensure the cable connection is secure and free from looseness.
- When measuring PV strings with multimeter, damage caused by reverse connection, over voltage, or over current will result in beyond the manufacturer's liability.
- PV modules connected to the same MPPT must use PV panels with the same model. The voltage difference between different MPPTs should be <160V.
- When the input voltage is between 1000V and 1100V, Inverter will enter the Standby state. When voltage returns to the MPPT Operating Voltage range range (140V to 1000V), Inverter will resume normal operation.
- It is recommended that the sum of the peak Powercurrent of the strings connected to each MPPT does not exceed the Max. Input Current per MPPT of Inverter.
- When connecting multiple PV strings, it is recommended to connect at least one string per MPPT, ensuring no MPPT is left unconnected.
- The photovoltaic modules used in conjunction with Inverter must comply with IEC 61730 Class A standards.

1.3 AC side

⚠WARNING

- Ensure the voltage and Frequency of the on-grid access point comply with Inverteron-grid requirements.
- It is recommended to add breaker or fuses and other Protection devices on the AC side. The specifications of the Protection device should be greater than 1.25 times the Inverter Max. Output Current.
- The Inverter of the PE cable must be securely connected.
- The AC output cable is recommended to use copper cable. If aluminum wire is required, please use copper-aluminum transition terminal for connection.

1.4 Inverter

⚠DANGER

- During the InverterInstallation process, avoid subjecting the bottom wiring terminal to load-bearing, as this may result in terminal damage.
- After InverterInstallation, the labels and warning signs on the enclosure must remain clearly visible. Obstructing, altering, or damaging them is prohibited.
- The warning labels on the Inverter enclosure are as follows:

No.	Symbol	Meaning
1		Potential DANGER exists during equipment operation. Please take proper precautions when operating the equipment.
2		High voltage DANGER. High voltage is present during equipment operation. Ensure the equipment is POWER OFF before performing any operations.
3		The surface of Inverter may reach high temperatures during operation. Do not touch to avoid burns.
4		delayed discharge. After the equipment is power off, please wait for 5 minutes until the device is completely Discharge.
5		Before operating the equipment, please read the product manual carefully.
6		The equipment must not be disposed of as household waste. Please handle the equipment in accordance with local laws and regulations or return it to the manufacturer.
7		grounding point
8		CE marking

1.5 EU Declaration of Conformity

1.5.1 Equipment with Wireless Communication Modules

GoodWe Technologies Co., Ltd. hereby declares that the Equipment with Wireless Communication Modules available for sale in the European market complies with 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 No Equipment with Wireless Communication Modules

GoodWe Technologies Co., Ltd. hereby declares that the non-Equipment with Wireless Communication Modules products sold in the European market comply with 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)

MoreEUDeclaration of Conformity, available from the official website:https://en.goodwe.com.

1.6 personnel requirements

NOTICE

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

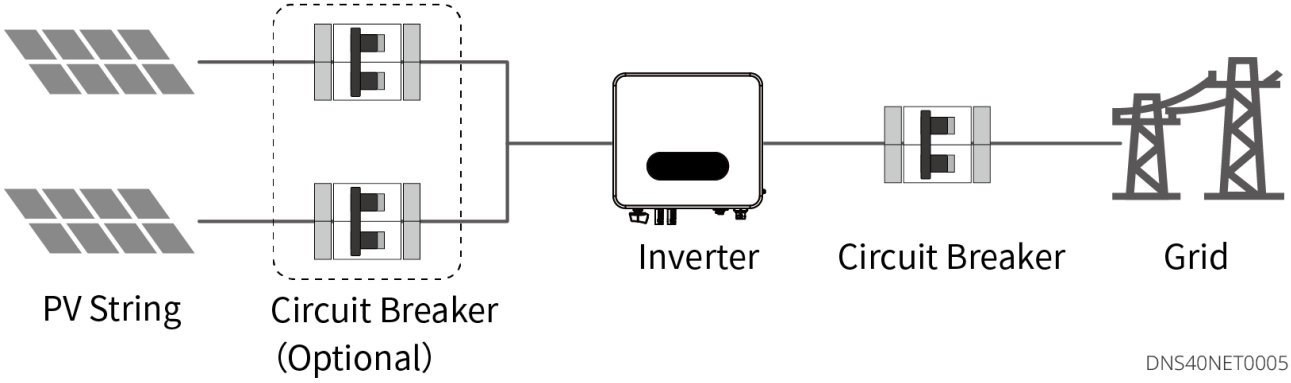
1. Qualified or professional personnel include:
   - Personnel who have mastered the equipment's working principles, system structure, risks and hazards, and have received professional operational training or possess extensive practical experience.
   - Personnel who have received relevant technical and safety training, possess certain operational experience, are aware of the potential DANGER to themselves from specific tasks, and can take protective measures to minimize risks to themselves and others.
   - Qualified electrical technician compliant with local regulations.
   - Hold a degree in Electrical Engineering/Advanced Diploma in Electrical Discipline or equivalent/Professional qualification in the electrical field, with at least 2/3/4 years of experience in testing and regulatory work using electrical equipment safety standards.
2. Personnel involved in special tasks such as electrical work, work at heights, and special equipment operation must hold valid qualification certificates as required by the equipment location.
3. Operation of medium-voltage equipment must be performed by certified high-voltage electricians.
4. Replacement of equipment and components shall only be performed by authorized personnel.

2 Product Introduction

2.1

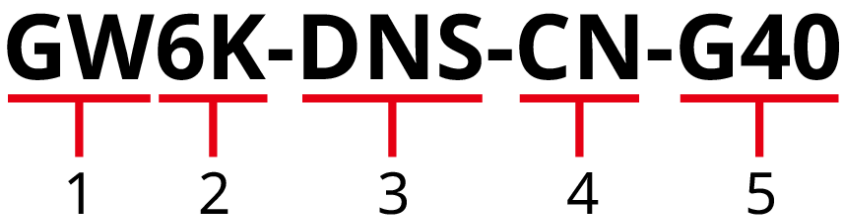
Introduction

DNSThe Inverter series is a single-phase string photovoltaic grid-tied PV inverter, Inverter capable of converting the direct current generated by photovoltaic solar panels into
The AC power required by Utility grid is fed into Utility grid, and the main application scenarios of Inverter are as follows:

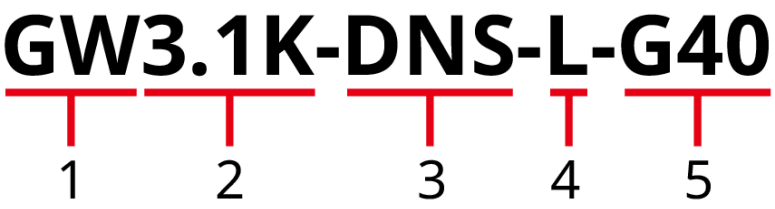


DNS40NET0005

model meaning

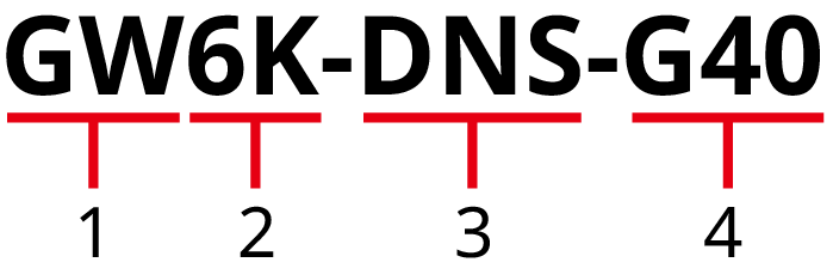


DNS40DSC0001



DNS40DSC0006

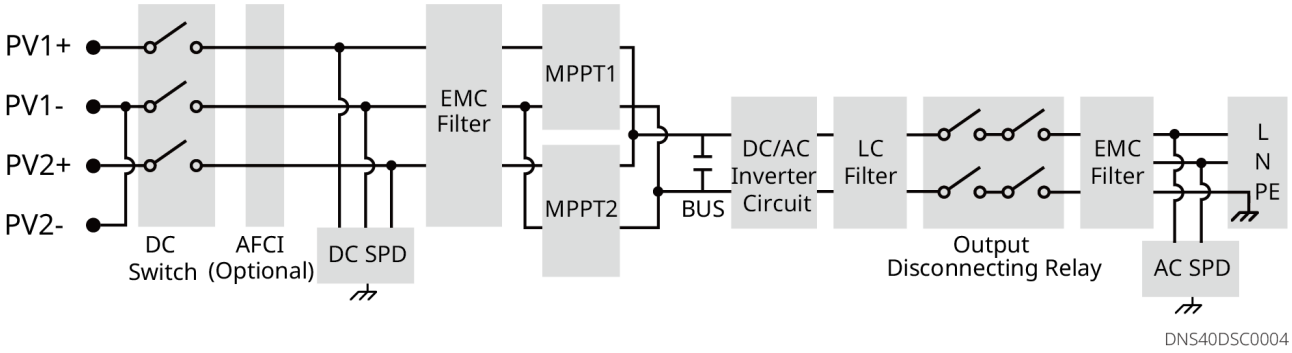
No.	meaning	Instructions
1	Brand code	GW: GoodWe
2	Nominal power	6KNominal power is6kW 5KNominal power is5kW 4.2KNominal power is4.2kW 3.6KNominal power is3.6kW 3.1KNominal power is3.1kW
3	Series code	DNS:DNSseries
4	Special Country Code	EN:Chinese Version
	Product Feature Code	L: Low Voltage
5	Version code	G40: Fourth Generation Product



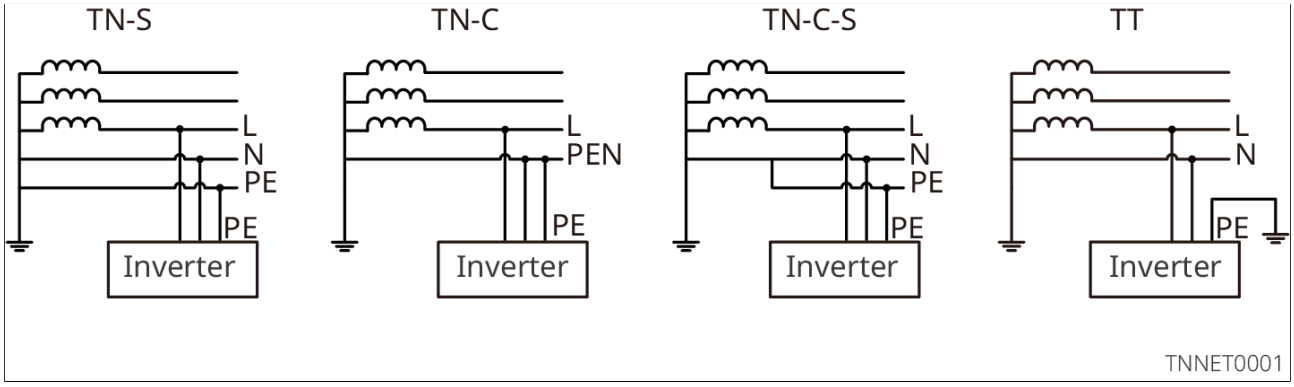
DNS40DSC0005

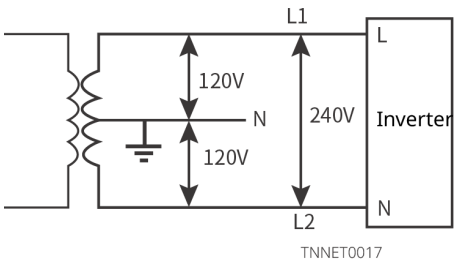
No.	meaning	Description
1	Brand code	GW: GoodWe
2	Nominal power	6KNominal power is6kW 3KNominal power is3kW 3.6KNominal power is3.6kW 4.2KNominal power is4.2kW 5KNominal power is5k
3	Series code	DNS:DNSseries
4	Version code	G40: Fourth Generation Product

2.2 Circuit Block Diagram



2.3 Supported Grid Types





2.4 Features

NOTICE
The specific functional configuration shall be subject to the actual model.

AFCI

The AFCI function is used to detect Inverter DC-side arc fault. When an arc fault occurs, Inverter will automatically perform Protection.

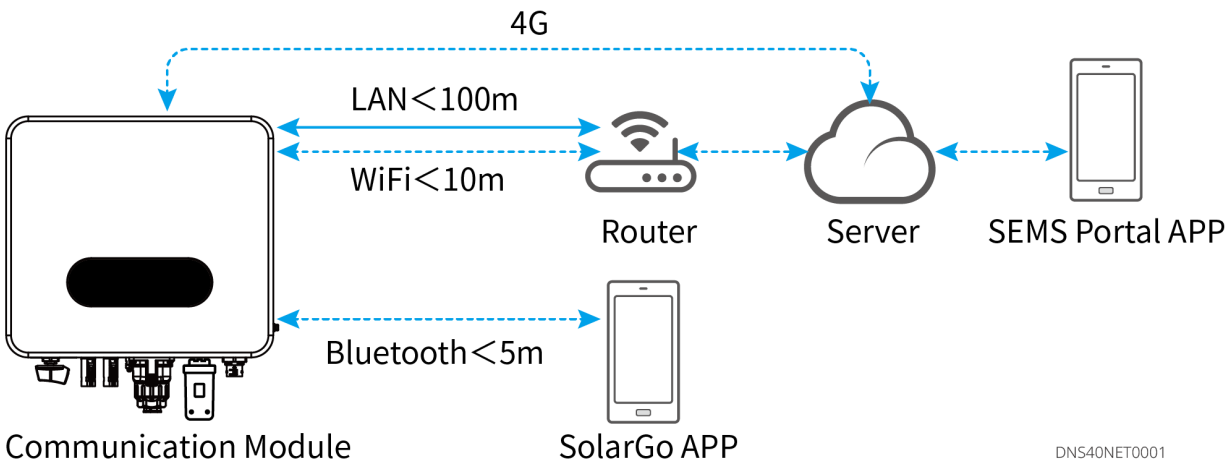
Causes of arc generation:

- Damage or improper connection of DC Connector in the photovoltaic system.
- Incorrect or damaged cable connection.
- Connector and cable aging.

Communication

Inverter supports parameter configuration via Bluetooth proximity; supportsWiFi、LANor4GConnect to the monitoring platform to track the operational status of Inverter and the operational performance of power station.

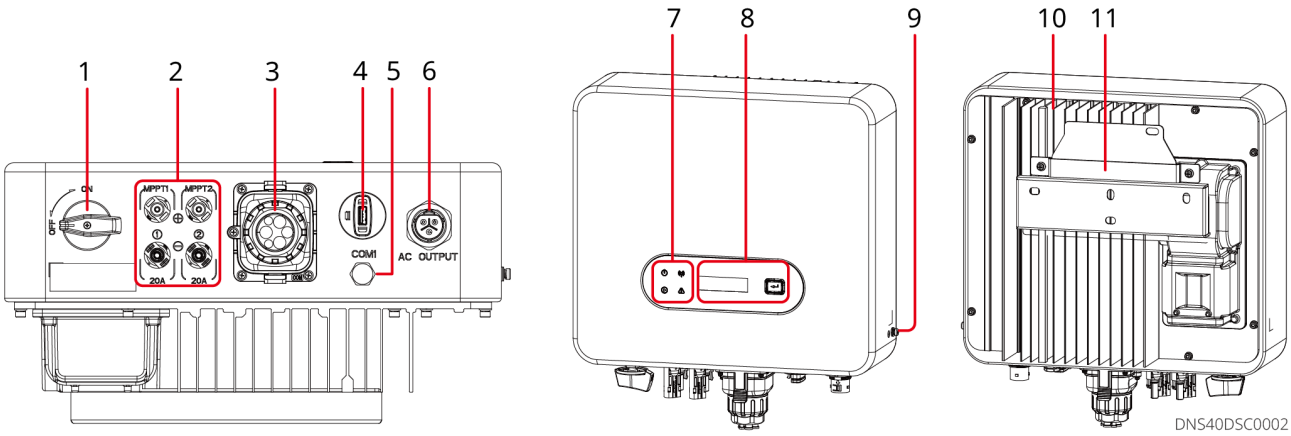
- Bluetooth: CompliantBluetooth 5.1Standard.
- WiFi/LAN2.0(Optional): WirelessIEEE 802.11 b/g/n @2.4 GHzEthernet10M/100Mbps Adaptive; If a third-party monitoring platform is to be used, this platform must supportModbusTCPCommunication protocol.
- 4G(Optional): Supports viaMQTTCommunication protocol connected to a third-party monitoring platform.



2.5 Appearance Description

There are differences in the color and appearance of different modelInverter, subject to actual conditions.

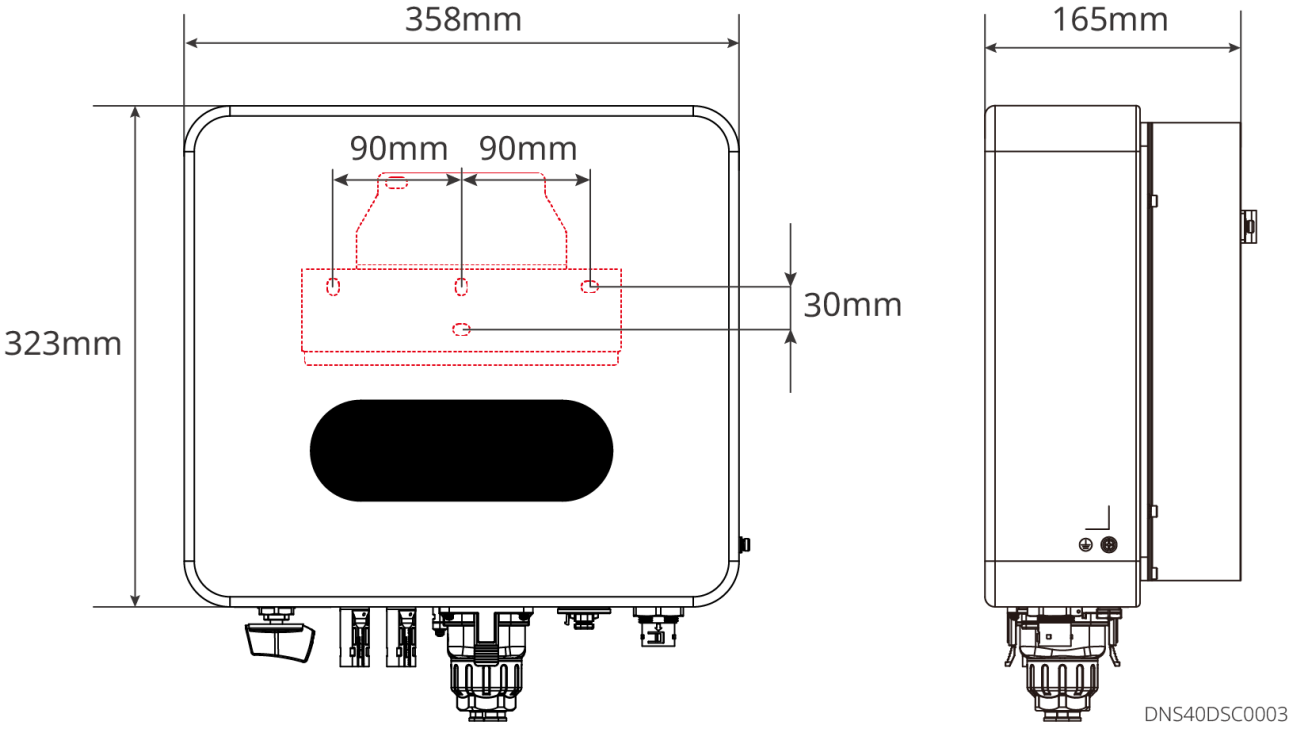
2.5.1 Component Introduction



No.	Component/Silkscreen	Instructions
1	DC switch	Control the connection or disconnection of DC input.
2	PV Input terminal	ConnectablePVDC input cable of PV modules.
3	Communication Port	Can be connected to load control,CT(Optional)、RS485(energy meter)、remote shutdown/Emergency PoweroffDRED(Australia)/RCR(Europe) and others
4	smart dongle port	Connectable communication module, such as4G、WiFi/LANWait for smart dongle, please select the module type according to actual requirements. Support connectionUThe panel supports local upgrade of the Inverter firmware version. Brazilian market can be connectedUSB-RS485Adapter cable.
5	Ventilation valve	-
6	AC output line connection terminal	Connect the AC output cable, connecting Inverter to Utility grid.
7	indicator	Indicates the working status of Inverter.

No.	Component/Silkscreen	Instructions
8	Display Screen and Buttons	• Display screen 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-equipped • The button is used to operate the display screen.
9	Grounding terminal	Connecting the PE cable
10	heat sink	Heat dissipation.
11	Mounting bracket	Wall-mounted

2.5.2 Product Dimensions

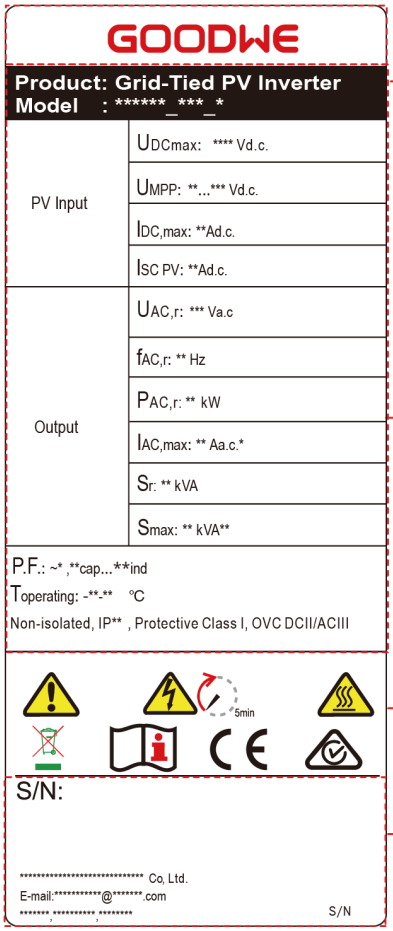


2.5.3 indicator Description

indicator	Status	Instructions
power supply		Long bright: Equipment power on
		Extinguish: Equipment not power on
operation		Long bright: Utility grid normal, on-grid successful
		Extinguished: Not on-grid
		Single slow blinking: Pre-on-grid self-check
		Single fast blinking: About to on-grid
Communication		Long Bright: Wireless monitoring normal
		Single flash: Wireless module reset or reboot
		Double flashing: Base station not connected or Router
		Four flashes: Monitoring Server not connected
		Flicker: RS485 communication normal
		Extinguish: The wireless module is restoring factory settings.
fault		Long Bright: System fault
		Extinguish: None

2.5.4 Nameplate description

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



Goodwe trademark, product type, and product model

Technical parameters

Safety symbols and certification marks

Contact information and serial number

SDT30DSC0014

3 Check and Storage

3.1 Check Before Receiving

Before signing for the product, please carefully inspect the following items:

1. Check the outer packaging for any damage, such as deformation, punctures, cracks, or other signs that may indicate potential harm to the equipment inside the box. If damage is found, do not open the packaging and contact your distributor.
2. Check if the Invertermodel is correct. If it does not match, do not open the package and contact your distributor.
3. Check if the deliverables type and quantity are correct, and inspect for any visible damage. If damaged, please contact your distributor.

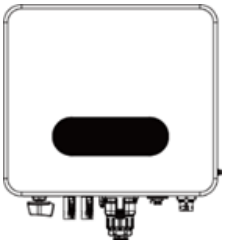
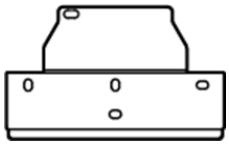
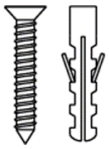
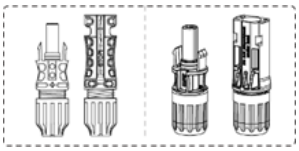
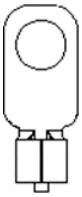
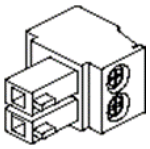
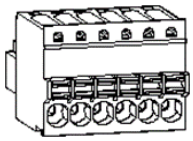
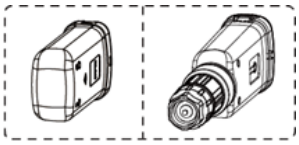
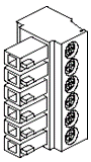
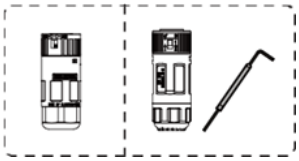
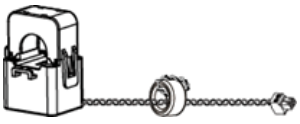
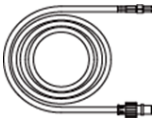
3.2 deliverables

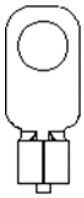
⚠WARNING

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

NOTICE

[1] The types of smart dongle include:WiFi/LAN、4Getc., the actual shipment type depends on the selected Inverter communication method.
[2] The quantity of communication terminal and PIN terminal should match the selected communication method. Please verify based on the communication configuration. Inverter configurations vary and are supplied with the box.2PINcommunication terminalDRED/RCRThe quantity of communication terminal may vary. Please refer to the actual for confirmation.
[3] The protocol converter connecting cable is shipped only in China.
[4] CTAustralia standard-equipped, optional in other regions.
[5] China region x 0Other regions x 1.

component	Description	Component	Instructions
	Inverter x1		mounting plate x1
	Expansion screw x 4		PV combiner box x 2
	GroundingOTterminal x1		2PINcommunication terminalx N[2]
	6PIN 485communication terminal x1		PIN terminal xN[2]
	smart dongle x 1[1]		DRED/RCRcommunication terminal x N[2]
	AC terminal x 1		CT x N[4]
	Protocol converter connection cable (Inverter side) x1[3]		Protocol converter connection cable (protocol converter side)1[3]

component	Description	Component	Instructions
	Product Information x 1		PVUnlocking tool x N[5]
	AC combiner box3	-	-

3.3 Storage

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

1. Ensure the outer packaging box is not dismantle, and the desiccant inside the box is not missing.
2. Ensure the storage environment is clean, with an appropriate temperature range and no condensation.
3. Ensure the Inverter stack height and orientation are positioned according to the label instructions on the packaging box.
4. Ensure there is no risk of tipping after Inverterstack.
5. If the storage time of Inverter exceeds two years or the non-operational period after Installation exceeds six months, it is recommended to undergo inspection and testing by professionals before being put back into use.
6. To ensure the electrical performance of the internal electronic components of the Inverter is optimal, it is recommended to power it on every 6 months during storage. If it has not been powered on for more than 6 months, a professional inspection and testing are advised before putting it into operation.

4 Installation

4.1 Installation Requirements

Installation Environment Requirements

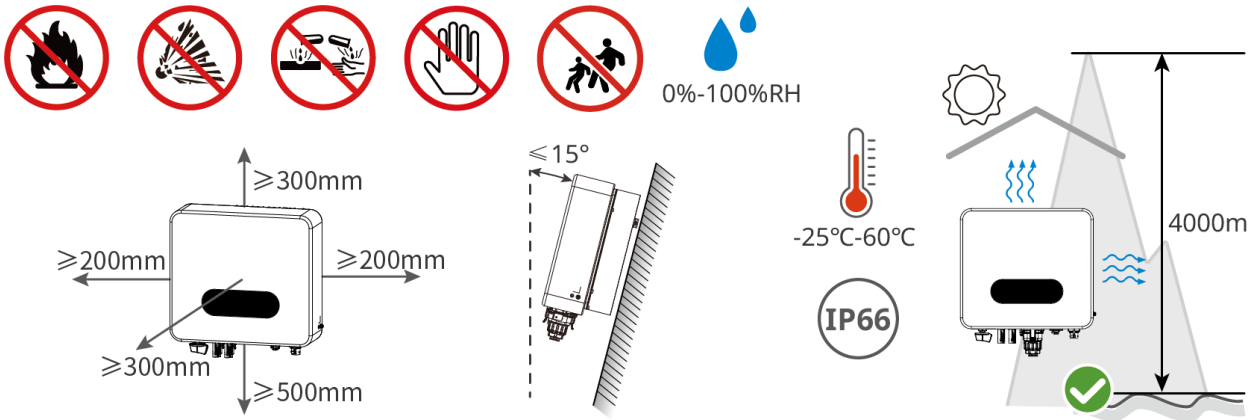
1. The equipment must not be operated in flammable, explosive, or corrosive environments.
2. The carrier is sturdy and reliable, capable of bearing the Weight of Inverter.
3. The Installation space must meet the ventilation and heat dissipation requirements of the equipment as well as the operational space requirements.
4. The equipment Ingress Protection Rating must meet indoor and outdoor Installation and Installation environmental temperature Humidity requirements within the appropriate range.
5. Inverter should be protected from direct sunlight, rain, snow accumulation, and other Installation conditions. It is recommended to install Installation in shaded Installation Location areas, or construct a sunshade if necessary.
6. Installation Location should be kept out of reach of children and avoid Installation in easily accessible locations.
7. The equipment surface may become hot during operation to prevent burns.
8. The height of the equipment Installation should facilitate operation and maintenance, ensuring that the equipment indicator and all labels are easily visible, and the wiring terminal is easy to operate.
9. InverterInstallationAltitude below Max. Operating Altitude 4000m.
10. Inverter will be corroded in salt affected area Installation. salt affected area refers to areas within 1000m from the coast or affected by sea breeze. The extent of sea breeze influence varies depending on meteorological conditions (e.g., typhoons, seasonal winds) or terrain features (such as embankments or 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, follow the requirements below to Installation the equipment:
    - Add ferrite cores with multiple turns on the Inverter DC input or AC output lines, or incorporate low-pass EMI Filter.
    - The distance between Inverter and the wireless electromagnetic interference equipment exceeds 30m.

Installation carrier requirements

- The carrier must not be made of flammable materials and must possess fire-resistant properties.
- Ensure the Installation surface is sturdy and verify that the carrier meets the load-bearing requirements of the equipment.
- During operation, the equipment may generate vibrations. Do not Installation place it on a carrier with poor sound insulation to avoid causing disturbances to residents in living areas due to the Noise Emission emitted during equipment operation.

Installation angle requirement

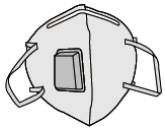
- Recommended InverterInstallation angle: vertical or tilted backward ≤ 15°.
- Do not invert, tilt forward, tilt backward beyond the angle, or horizontally Installation the Inverter.

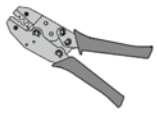
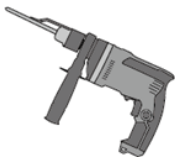
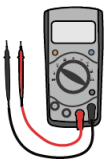
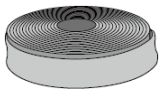
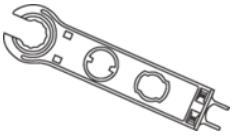
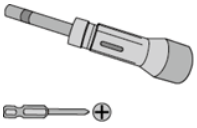


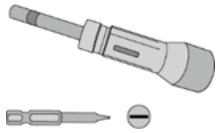
DNS40INT0001

Installation Tool Requirements

When Installation, it is recommended to use the following Installation tools. If necessary, other auxiliary tools can be used on-site.

Tool Type	Instructions	Tool Type	Instructions
	Insulated gloves, protective gloves		Dust mask
	goggle		Safety shoes

Tool Type	Instructions	Tool Type	Instructions
	terminalcrimping tool		diagonal plier
	wire stripper		hammer drill
	Hot Air Gun		Cable tie
	rubber hammer		Marker pen
	wire stripper		Heat shrink tubing
	Vacuum cleaner		Level bar
 or 	DC terminal wrench		torque wrenchM3/M5

Tool Type	Instructions	Tool Type	Instructions
	single-axis	-	-

4.2 Installing the Inverter

4.2.1 Handling Inverter

⚠CAUTION

- During transportation, handling, Installation, and other operations, it is necessary to comply with the laws, regulations, and relevant standards of the country or region where the operations are conducted.
- Before Installation, it is necessary to move the Inverter to the Installation location. To prevent personal injury or equipment damage during the moving process, please NOTICE the following matters:

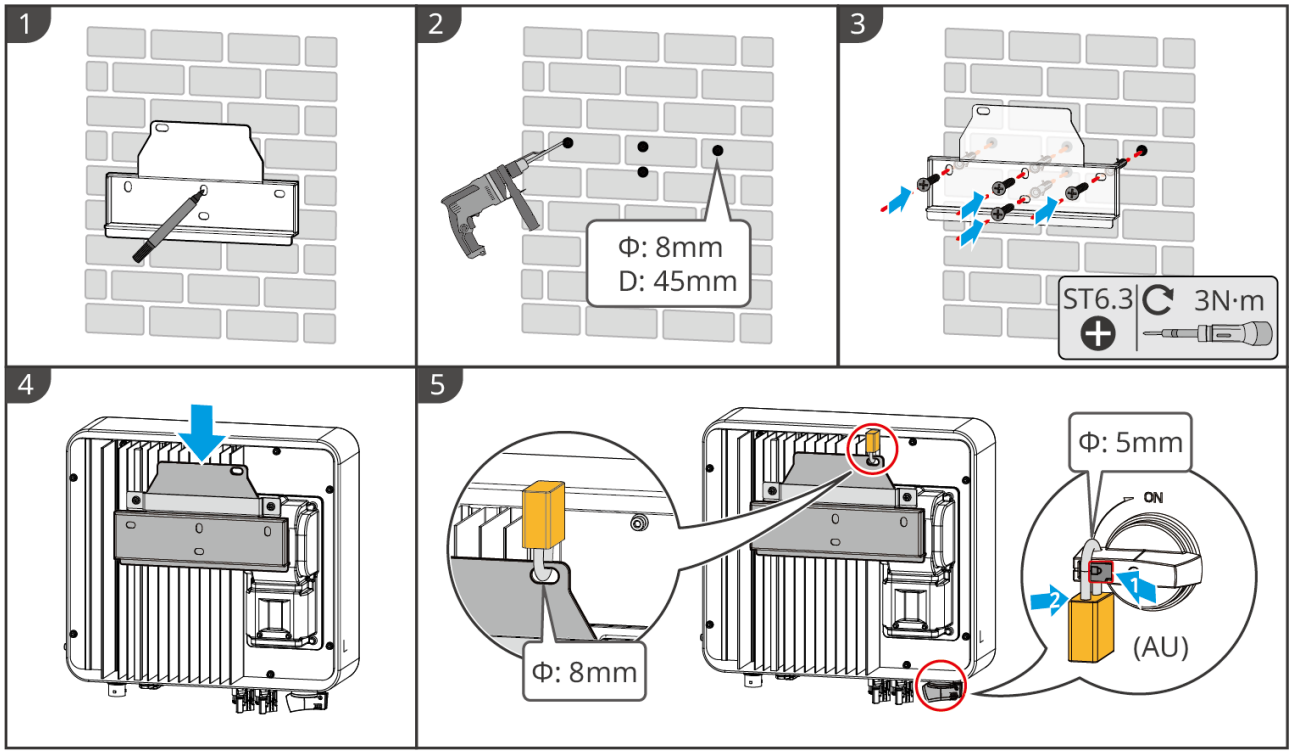
1. Please equip the corresponding personnel for the device Weight to prevent it from exceeding the Weight range that can be manually handled, thereby avoiding injury to personnel.
2. Please wear safety gloves to avoid injury.
3. Please ensure the equipment is kept balanced during transportation to avoid falling.

4.2.2 Installing the Inverter

NOTICE

- When drilling holes, ensure the drilling location avoids water pipes, cables, etc. inside the wall to prevent DANGER.
- When drilling, wear goggle and a dust mask to prevent dust from inhalation entering the respiratory tract or falling into the eyes.
- The DC switch lock is user-provided.(Australia only).
- The anti-theft lock is to be provided by the user. Please select an appropriate anti-theft lock; otherwise, it may result in the inability to Installation.
- Ensure the Inverter Installation is securely fastened to prevent falling and injuring personnel.

1. Place the backsheet horizontally on the wall surface and use a marker pen to mark the drilling positions.
2. Use a drill bit with a diameter of8mmhammer drill is drilled to ensure a hole depth of approximately45mm.
3. Use expansion bolt to secure the backsheet to the wall or mounting bracket.
4. Mount the Inverter onto the backplate, and secure the backplate with the Inverter.
5. Anti-theft lock, aperture is8mmInstallation DC switch lock (Australia only), aperture of5mm.



DNS40INT0003

5 Electrical connection

5.1 Safety Precautions

DANGER

- Before performing electrical connections, disconnect the Inverter's DC switch and AC output switch to ensure the equipment is POWER OFF. Live operation is strictly prohibited, as it may lead to electric shock or other DANGER.
- All operations during the electrical connection process, as well as 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 result in poor connections. When wiring, ensure to leave a certain length of slack in the cable before connecting it to the Inverter terminal port.

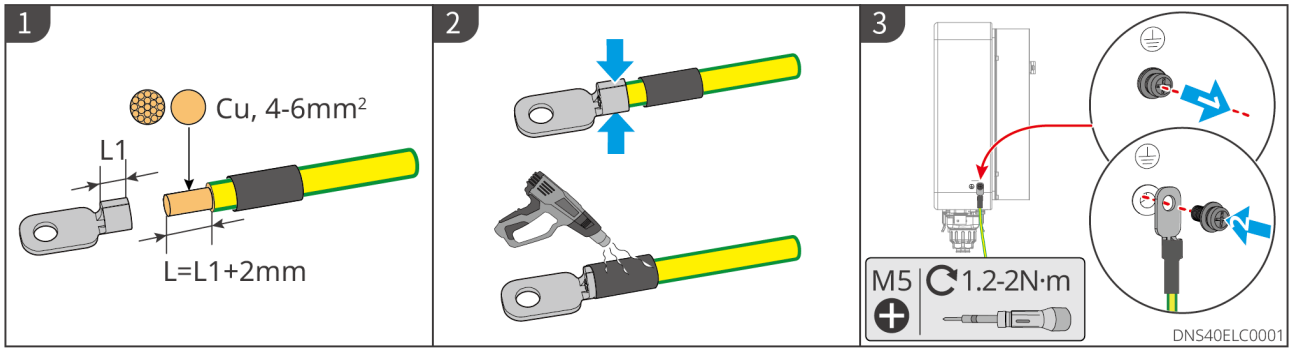
NOTICE

- When performing electrical connections, wear safety shoes, protective gloves, insulated gloves, etc. as required.
- Electrical connection-related operations are permitted only for qualified professionals.
- The cable colors in the diagrams of this document are for reference only. The actual cable specifications must comply with local regulatory requirements.

5.2 Connecting the PE cable

⚠WARNING

- The Protection grounding of the chassis enclosure cannot replace the PE cable of the AC output port. When wiring, ensure that the PE cable at both locations is reliably connected.
- When multiple Inverter are installed, ensure that all Inverter chassis enclosures are connected with Protection Grounding point for equipotential bonding.
- To improve the corrosion resistance of terminal, it is recommended to apply silica gel or paint on the exterior of Grounding terminal after completing the connection of Installation to PE cable.
- Please bring your own PE cable, recommended specifications:
  - Type: Outdoor single core copper wire
  - Cross-sectional area:4-6mm^2



5.3 Connect the AC output cables

⚠WARNING

- It is prohibited to connect any load between the Inverter and the AC Switch directly connected to the Inverter.
- The internally integrated residual current monitoring unit (RCMU) will quickly disconnect from the Utility grid when a leakage current exceeding the permissible value is detected.

NOTICE

- Each Inverter must be equipped with an AC output switch, and multiple Inverter cannot be connected to the same AC Switch simultaneously.
- If the Inverter AC output terminal is not used, please seal it with a waterproof cover terminal, otherwise it will affect the equipment Ingress Protection Rating.

To ensure the safe disconnection of the Inverter and Utility grid in case of abnormal conditions, please connect a AC Switch on the AC side of the Inverter. Select an appropriate AC Switch according to local regulations. The following switch specifications are for reference:

Invertermodel	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 choose whether to Installation according to local laws and regulations.RCDEquipment.
Inverter can be externally connected to anotherAtypesRCD(Leakage current detection device), when the DC component of the leakage current exceeds the limit value, perform (protection action). RecommendedRCDSpecification300mA(According to local regulations).

NOTICE

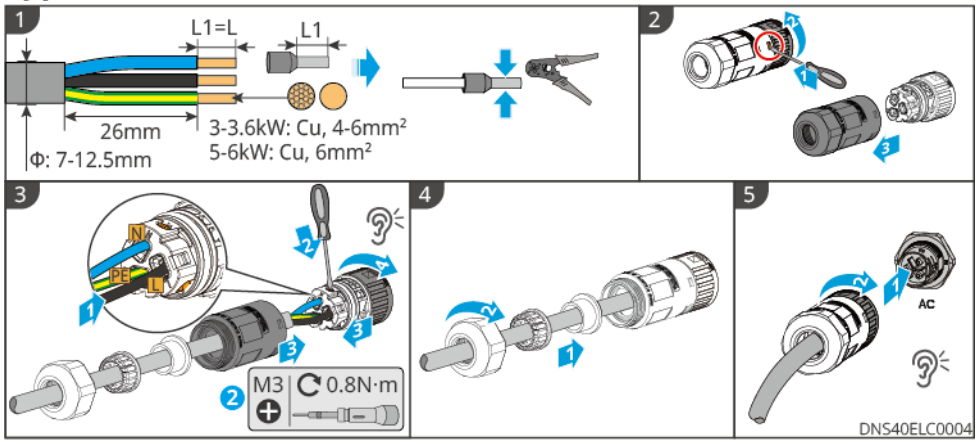
Each Inverter must be equipped with an AC output switch, and multiple Inverter cannot be connected to the same AC Switch simultaneously.

⚠WARNING

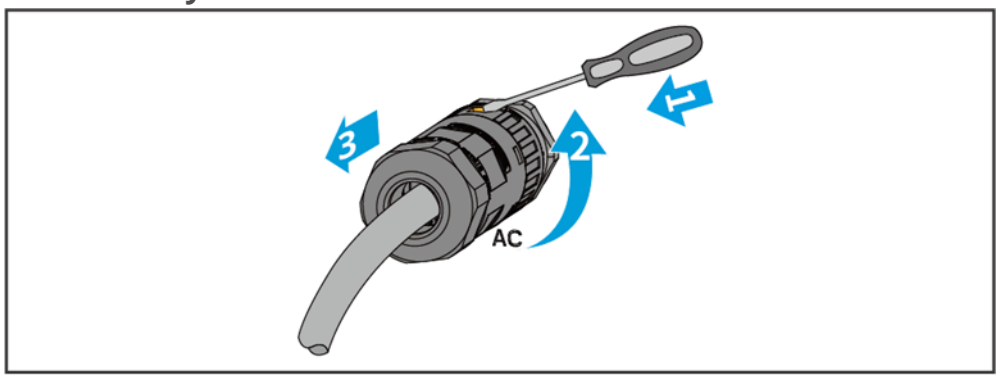
- During wiring, connect the AC output line to the "L”、“N”、“PE"port must be matched exactly. Incorrect cable connection will result in damage to Inverter.
- Please ensure the conductor is fully inserted into the AC terminal terminal hole without any exposure.
- Ensure the cable connections are tight; otherwise, overheating of the terminal terminals during equipment operation may cause damage to the Inverter.

1. Prepare AC output cables.
2. Disassemble the AC terminal.
3. Connect the AC output cable to the AC terminal.
4. Combined AC Connection terminal
5. Connect the AC terminal to the Inverter.

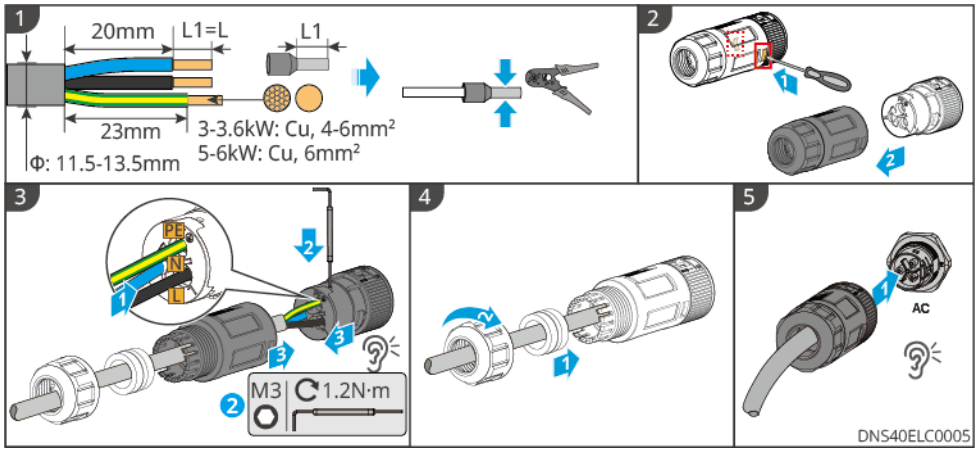
Type I:



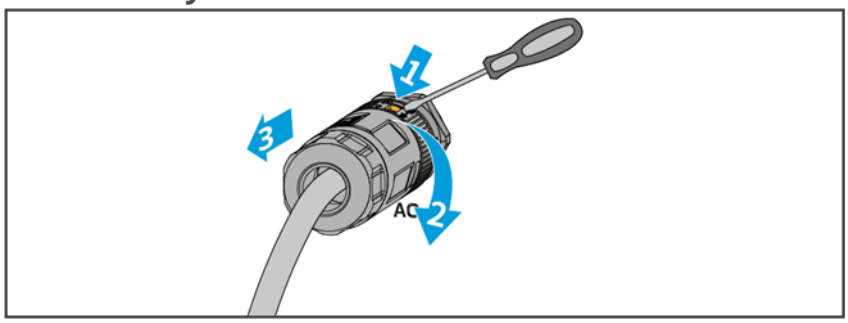
DisassemblyACterminal



Type II:



DisassemblyACterminal



NOTICE

- After completing the wiring connection, please verify the correctness and firmness of the connections, and clean up any construction debris left from maintenance work.
- The AC output wiring terminal must be sealed to ensure the machine's Ingress Protection Rating.

5.4 Connect the DC input cables

⚠DANGER

Before connecting the PV string to the Inverter, please verify the following information. Failure to do so may result in permanent damage to the Inverter, and in severe cases, may cause a fire leading to personal injury or property loss.

1. Please ensure each circuitMPPTThe maximum short-circuit current and Max.Input Voltage are both within the permissible range of Inverter.
2. Please ensurePVThe positive terminal of the string is connected to the Inverter.PV+,PVThe negative terminal of the string is connected to the Inverter.PV-.

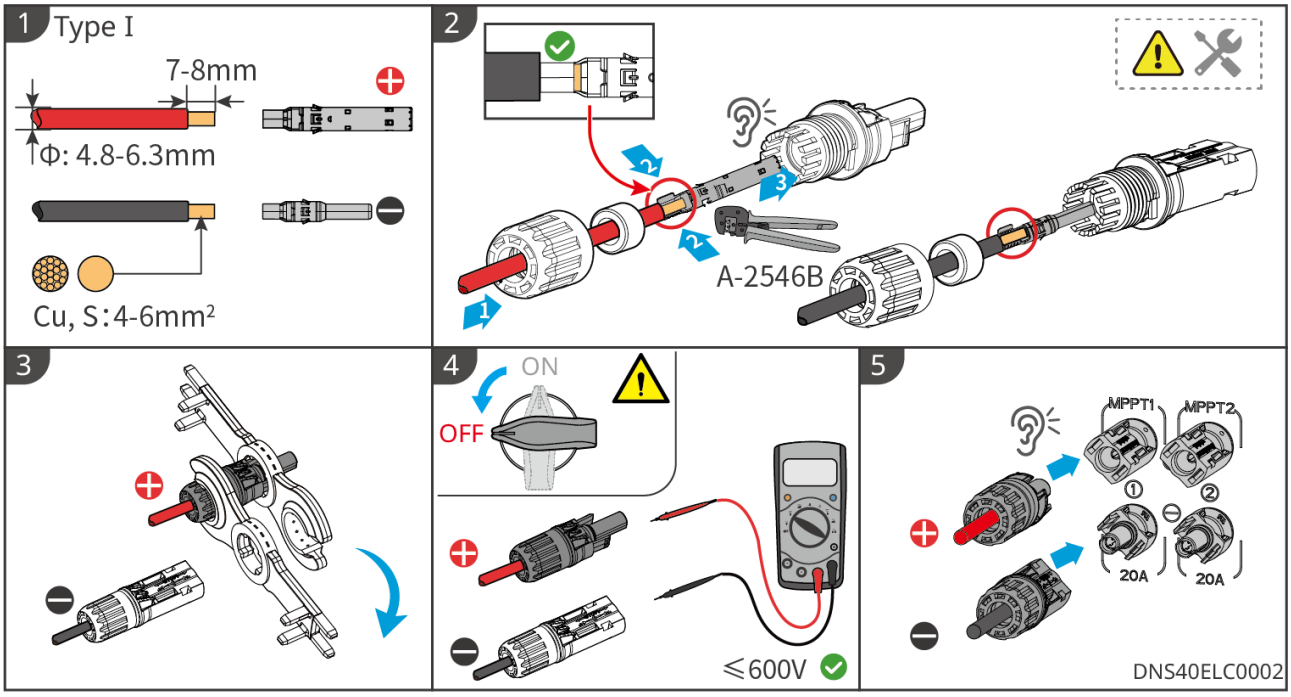
⚠WARNING

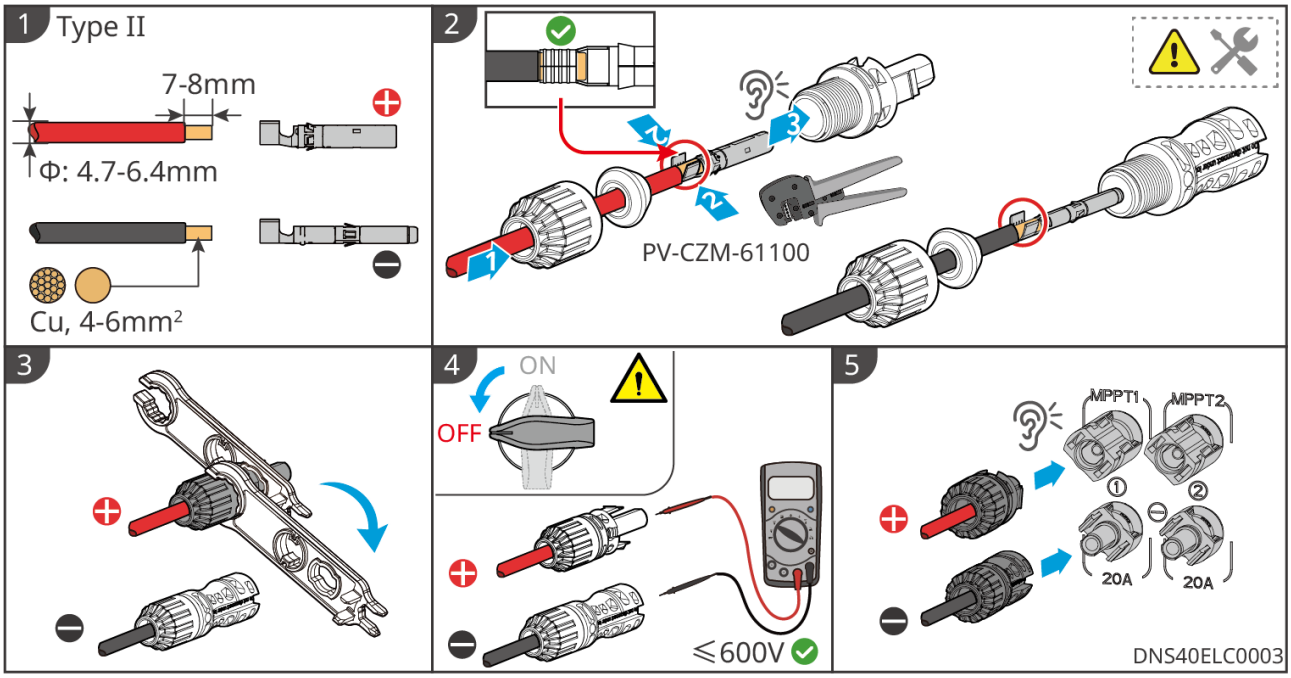
- Different brands or modelPVModules in the same stringMPPTMixed in the middle, or the samePVStrings connected with different azimuth angles or tilt anglesPVThe module may not necessarily damage the Inverter, but it can lead to a decline in system performance.
- Maximum DC input Inverter is600VPlease ensure each circuitMPPTConnected toPVThe open-circuit voltage of the string does not exceed600VWhen the input voltage is560V-600VAt that time, Inverter will enter the Standby state. voltage will be restored toMPPTOperating Voltage range inside40V-560VAt this time, Inverter will return to normal operation status.
- Recommend different pathsMPPTThe voltage difference between voltage does not exceed150V.
- each stringMPPTThe sum of the peak Power current of the connected strings does not exceed the per-channel Inverter.MPPTMax. AC Current From Utility Grid
- Multi-channel access of InverterPVWhen stringing, it is recommended toMPPTMaximization of access quantity.
- PVThe string output does not support grounding.PVBefore connecting the string to the Inverter, ensure thatPVThe the minimum insulation resistance of the string meets the minimum insulation resistance requirement.
- Please prepare your own DC input cable.

NOTICE
If Inverter DC input terminal does not need to be connectedPVString, please use waterproof cover for sealing terminal, otherwise it will affect the equipment Ingress Protection Rating.

Connect the DC input cables

1. Prepare DC cable.
2. crimp DC input terminal, and assemble DC Connector.
3. Locking DC Connector.
4. Detect DC input.
5. Connect the DC Connector to the Inverter DC input terminal.





5.5 Communication connection

NOTICE

- For specific product features and configurations, please refer to the actual Inverter and model in your region.
- Due to product version upgrades or other reasons, the content of the documentation may be updated periodically. The matching relationship between Inverter and IoT products can be referenced as follows:https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Compatibility-list-of-GoodWe-inverters-and-IoT-products-EN.pdf

5.5.1 Introduction to Communication Networking

Power restricted networking solution

NOTICE

- Inverter connects Smart Meter orCTIt enables output Power limitation and load monitoring functions.
- Please pass through.SolarGo AppEnable the "Export power limit" function.

Photovoltaic power station power generation self use. When the electrical equipment cannot consume all the generated power and reverse power flows back Utility grid, the Inverter can monitor the power data at the on-grid end in real-time through Smart Meter and adjust the output Power to prevent excess power from feeding back Utility grid.

WARNING

1. For a single unit in the network, the first Installation does not require attention.CTSampling current direction; later replacement or maintenanceCTWhen, please useSolarGo Appelectric meter on the grid/CT-Auxiliary detection function enables Inverter to readaptCTSampling direction.
2. When multiple units are networked,CTInstallation Location should be close to the on-grid point, with the correct Installation direction.CT"middle"-->"Inverter current points in the direction of Utility grid. If reversed, Inverter will trigger an alarm and the output limiting function cannot be achieved.
3. CTThe aperture must be larger than the outer diameter of the AC power line to ensure the AC power line can pass through.CT.
4. CTNeeds to be crimped ontoLOn the cable, do not clamp ontoNon the cable.
5. Shipped with InverterCTSampling range:90ARatio transformation1000:1Wire length:5m.
6. GM330:

- CTPlease select the current ratio specificationnA/5A.(nA:CTPrimary side input current,nThe range is200-5000,To be selected by the user based on actual requirements.5A:CTSecondary side output current.)
- CTThe recommended selection for accuracy value0.5、0.5s、0.2、0.2sensureCTThe sampling error of current is ≤1%.
- To ensureCTThe accuracy of current monitoringCTThe recommended cable length should not exceed30mThe recommended current-carrying capacity of the cable is6A.

WARNING

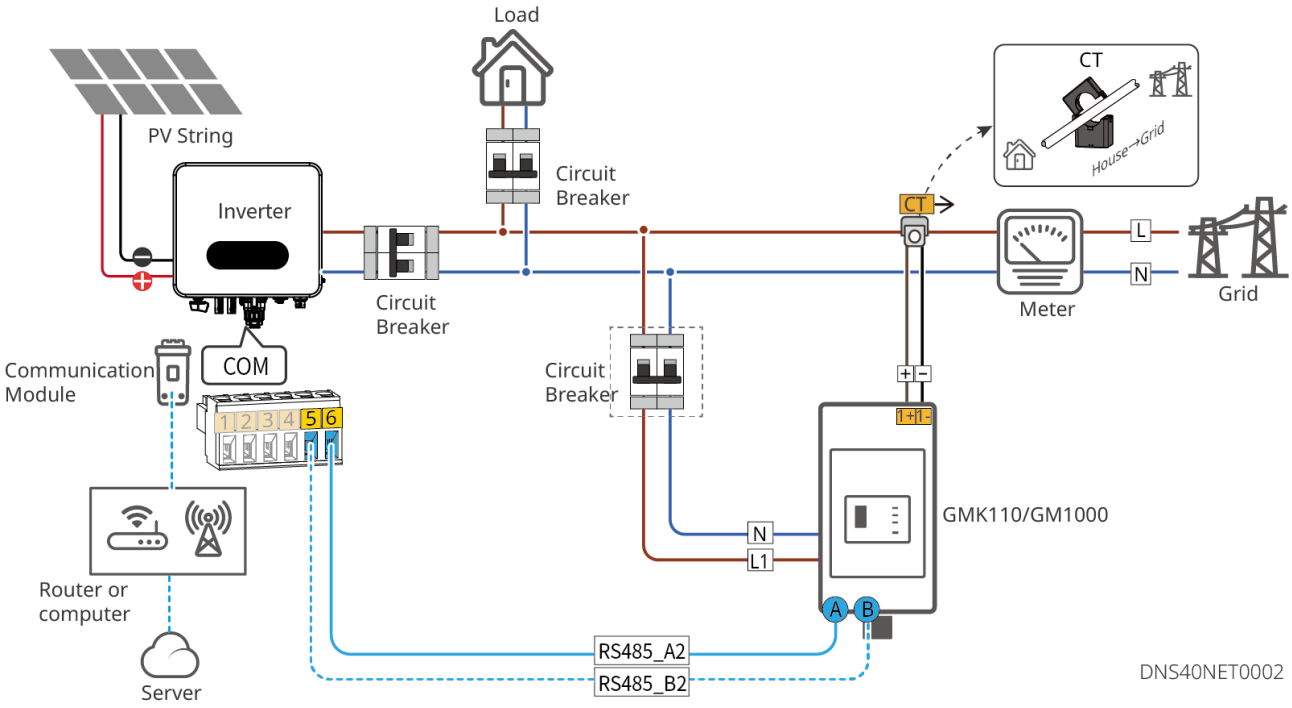
7. Please ensure the meter wiring and phase are correct. The recommended value for the meter input voltage cable cross-sectional area is:1mm²(18AWG).
8. Multi-unit networking Power constraints require matchingEzlink3000For use, please contact after-sales service or authorized dealers for purchase.
9. Inverter supports passing through4G、WiFi/LANsmart dongle Set parameters at the proximal end and connect to a mobile phone orWEBSet device-related parameters on the interface, view device operation information and error messages, and stay updated on system status in real time.
10. When there is only one Inverter in the system, it can be used.4G Kit-CN-G20 、4G Kit-CN-G21、WiFi/LAN Kit-20orWiFi Kit-20smart dongle.
11. When multiple Inverter are connected in parallel in the system, the Master inverter must be Installation.Ezlink3000smart dongle performs networking, and Slave inverter does not require connection to smart dongle.Ezlink3000 Version isV1.6.8and above.
12. After the wiring is completed, pass throughLCDDisplay orSolarGo AppSet relevant parameters to complete the power limit or output Power limit function.

NOTICE

This meter is primarily used for on-grid point Power control. The measured power generation and consumption are for reference only and cannot be used as the basis for electricity billing. The electricity billing must be based on the metering device provided by Utility grid company.

Standalone Power Restricted Networking Solution

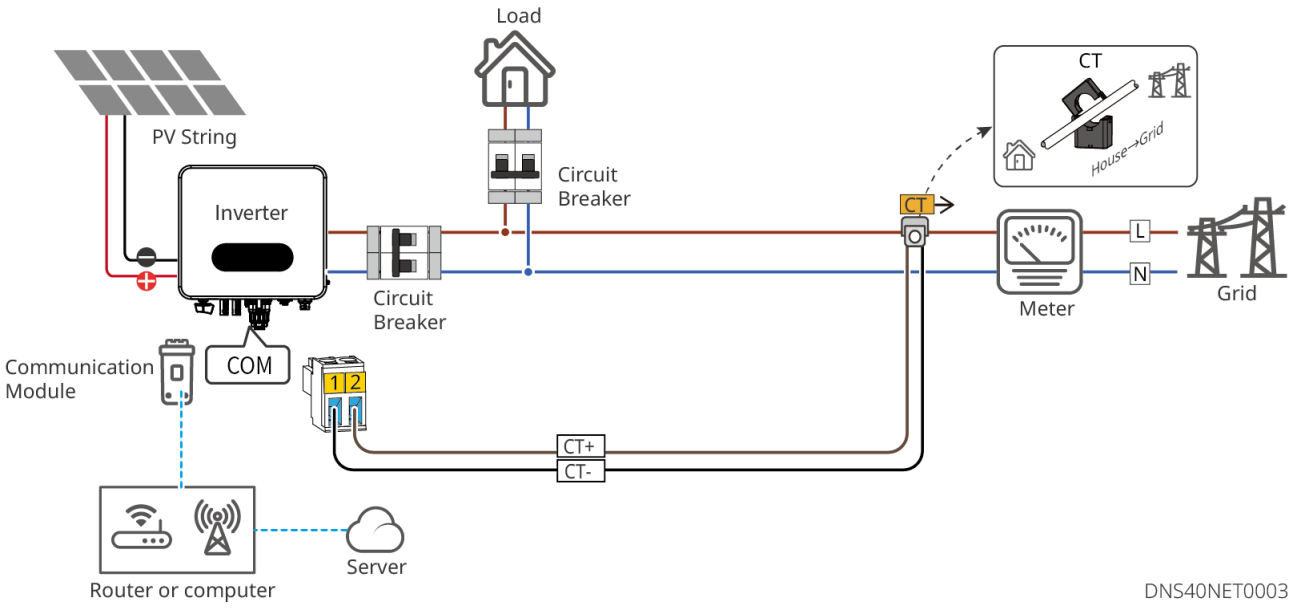
Electricity Meter Solution(GMK110/GM1000)



CT Solution

NOTICE

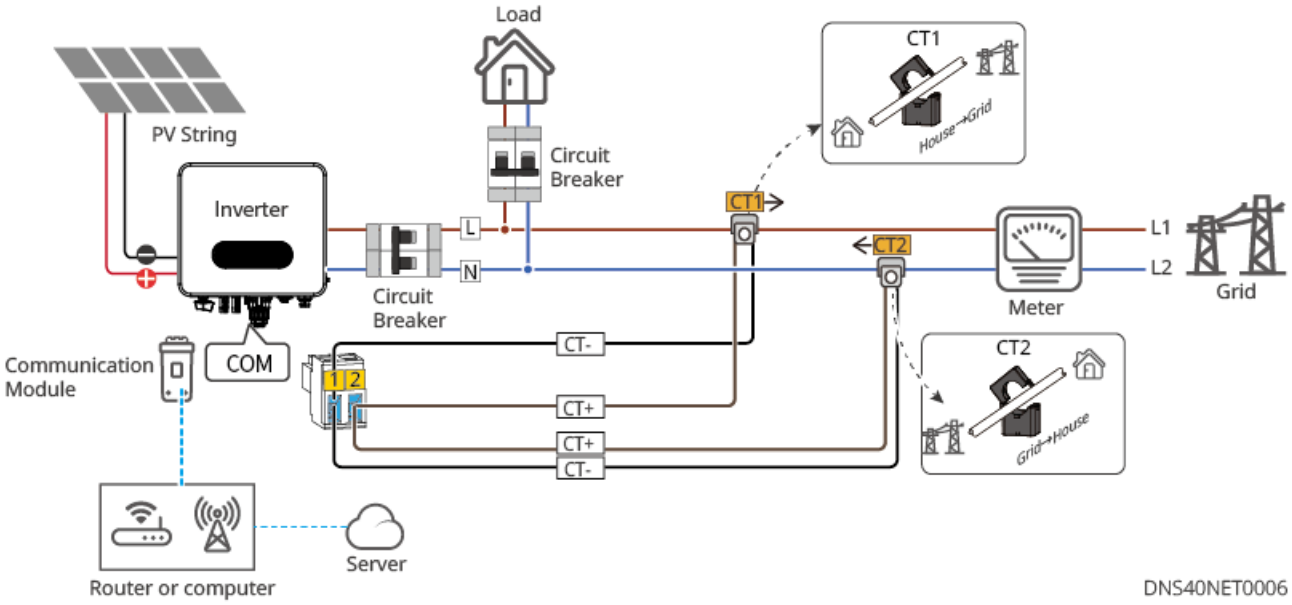
CTs for the Australian region are shipped with Inverter, while optional for other regions..CT ratio:90A/90mA。



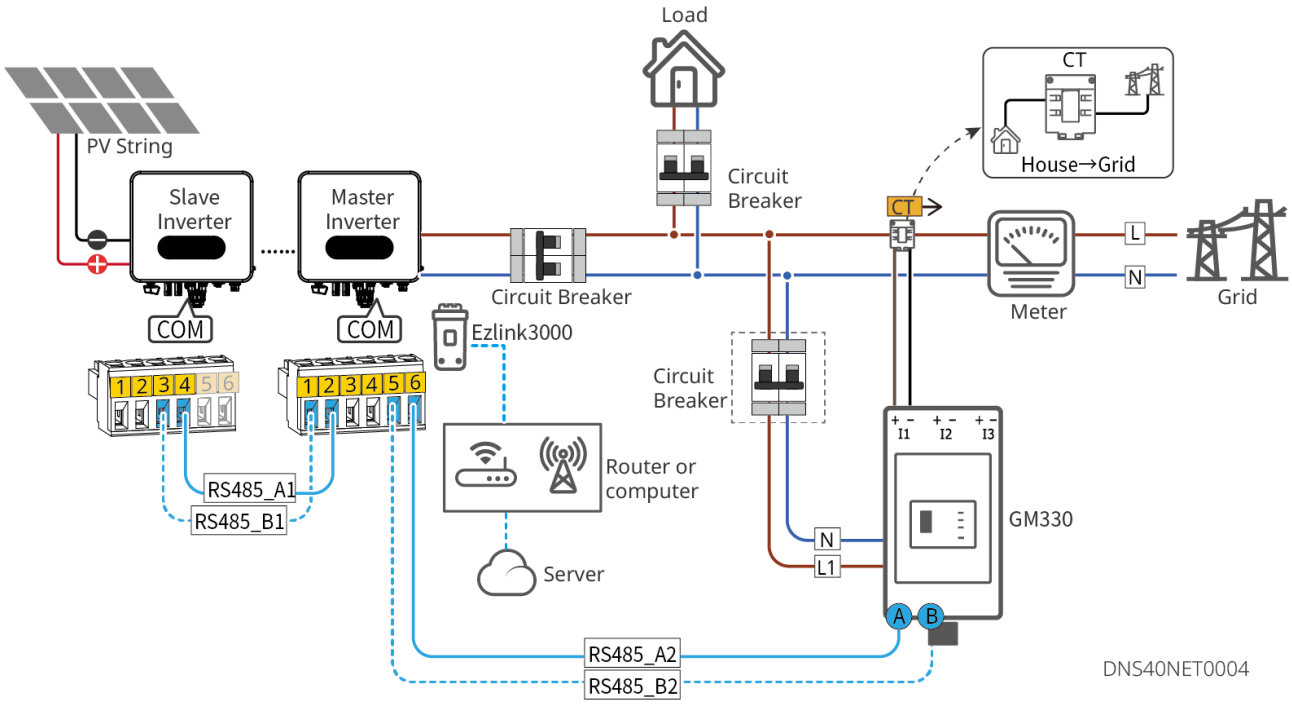
Connection of split-phase Utility gridStand-alone Power restricted networking solution

NOTICE

The user provides or purchases CTs from the manufacturer. CTs.Ratio90A/45mA。

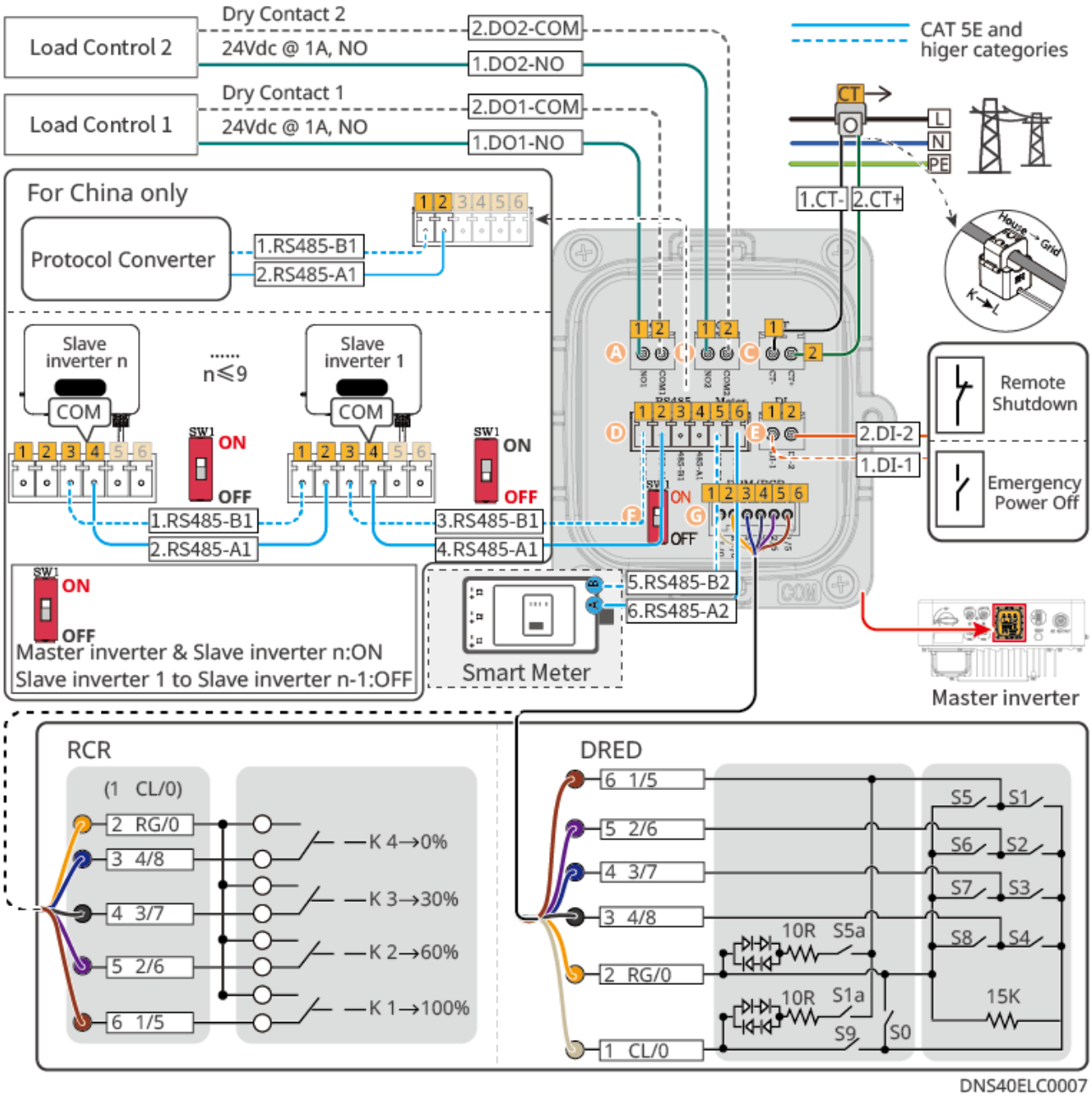


Multi-machine Power constrained networking solution (GM330)+Ezlink3000)



5.5.2

Connecting the Communication Cable

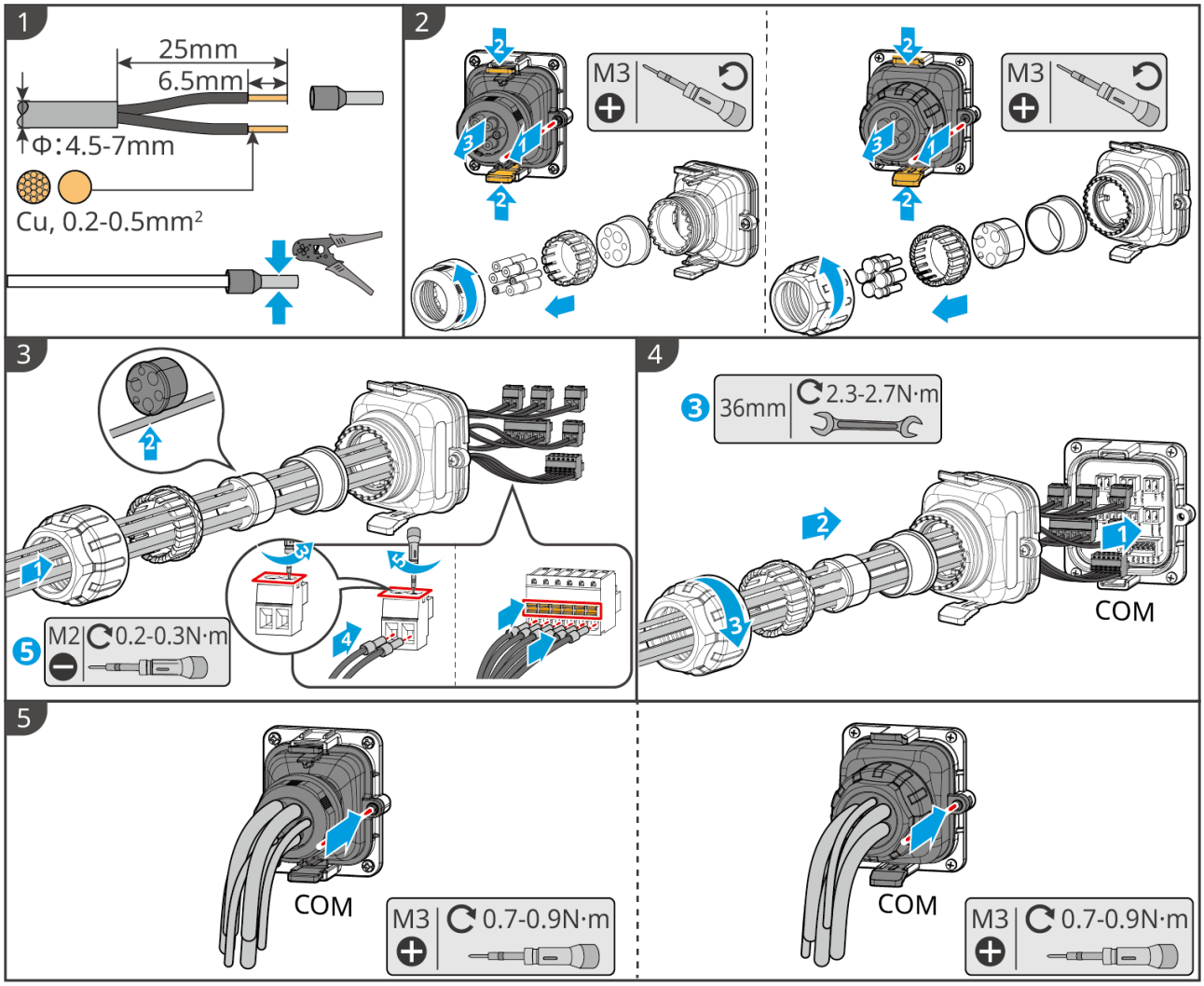

Load Control 2
Dry Contact 2
24Vdc @ 1A, NO
2.DO2-COM
1.DO2-NO
Load Control 1
Dry Contact 1
24Vdc @ 1A, NO
2.DO1-COM
1.DO1-NO
CAT 5E and higer categories
CT
L
N
PE
1.CT-
2.CT+
For China only
Protocol Converter
1.RS485-B1
2.RS485-A1
Slave inverter n
COM
n≤9
Slave inverter 1
COM
SW1
ON
OFF
1.RS485-B1
2.RS485-A1
3.RS485-B1
4.RS485-A1
Master inverter & Slave inverter n:ON
Slave inverter 1 to Slave inverter n-1:OFF
Smart Meter
5.RS485-B2
6.RS485-A2
2.DI-2
1.DI-1
Remote Shutdown
Emergency Power Off
Master inverter
RCR
(1 CL/0)
2 RG/0
3 4/8
4 3/7
5 2/6
6 1/5
K 4→0%
K 3→30%
K 2→60%
K 1→100%
DRED
6 1/5
5 2/6
4 3/7
3 4/8
2 RG/0
1 CL/0
10R
S5a
10R
S1a
S9
S0
S5
S1
S6
S2
S7
S3
S8
S4
15K
DNS40ELC0007

Silkscreen	Function	Description
DO1 DO2	load control (optional)	• Supports connection to dry contact signals to achieve load control and other functions. DO contact rating is 24VDC@1A, NO normally open contact. • Supports SG Ready heat pump access, controlling the heat pump via dry contact signals.
CT	CT connection port (CT)	Used for single-unit output power limitation.
RS485	Parallel communication port or protocol converter communication port (RS485-1)	• Used for communication between multiple inverters in parallel or connecting to a protocol converter (China only). • The inverter uses the same set of RS485 ports for connecting to the protocol converter and for parallel connection. If a protocol converter is connected, the inverter parallel function cannot be used; in inverter parallel connection scenarios, the protocol converter cannot be connected.
Meter	Electric meter connection port (RS485-2)	The inverter, paired with an electric meter, achieves output power limitation function. If matching equipment is needed, contact the inverter manufacturer for purchase.
DI	Remote shutdown or emergency shutdown	After the emergency switch sends a shutdown signal, the inverter's AC side automatically disconnects, stopping grid connection. An external emergency shutdown switch is required.

Silkscreen	Function	Description
DRM/RCR	DRED (Australia) or RCR (Europe) connection port	• DRED (Demand Response Enabling Device): Provides a DRED signal control port, meeting the grid dispatch requirements for DRED in Australia and New Zealand. DRM1-4 functions are reserved, and DRM equipment needs to be prepared by the user. • RCR (Ripple Control Receiver): Provides an RCR signal control port, meeting grid dispatch requirements in regions such as Germany.
SW1	Terminal resistor DIP switch	The inverter is equipped with an RS485 terminal resistor. This terminal resistor DIP switch is enabled by default. “ON” represents enabled, “1” represents disabled. Operation method: Open the outer cover of the communication port, and use an insulated pick to set the terminal resistor DIP switch to “1” (OFF).

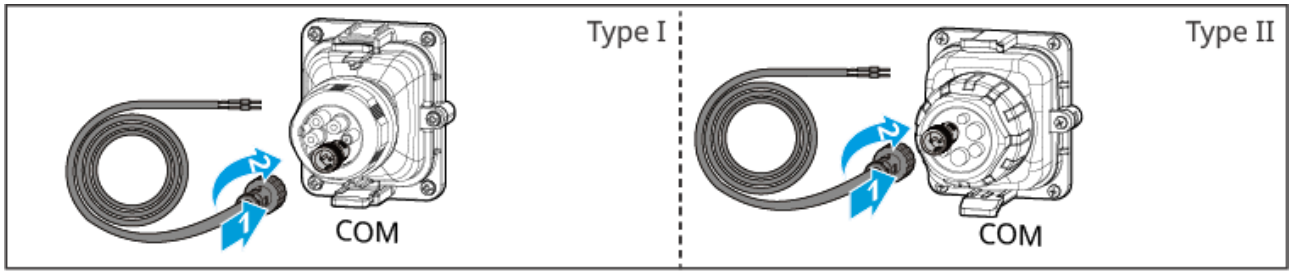
NOTICE

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



DNS40ELC0006

China only



DNS40ELC0008

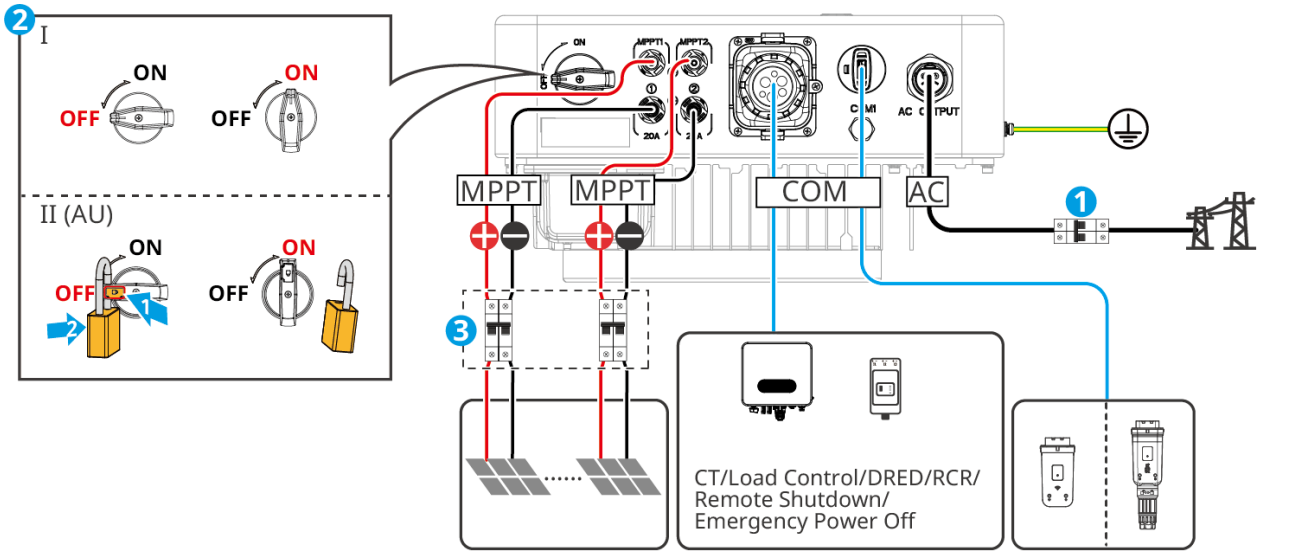
6 Equipment trial operation

6.1 pre-operation inspection

Number	Inspection items
1	InverterInstallation secure, Installation Location easy to operate and maintain, Installation space facilitates ventilation and heat dissipation, Installation environment clean and tidy.
2	PE cable, DC input line, AC output line, and Communication cable are correctly and securely connected.
3	The cable bundling meets the wiring requirements, is reasonably distributed, and free from damage.
4	Unused port has been sealed.
5	The Inverter and Frequency at the on-grid connection point comply with the on-grid requirements.

6.2 Equipment power on

1. Close the AC Switch between Inverter and Utility grid.
2. Close the DC switch between the Inverter and the PV module.
3. Closing the Inverter of the DC switch.



Power On : 1 → 3 → 2

Power Off : 1 → 2 → 3

DNS40PWR0001

7 System Commissioning

7.1 indicator Description

indicator	Status	Instructions
power supply		Long bright: Equipment power on
		Extinguish: Equipment not power on
operation		Long bright: Utility grid normal, on-grid successful
		Extinguished: Not on-grid
		Single slow blinking: Pre-on-grid self-check
		Single fast blinking: About to on-grid
Communication		Long Bright: Wireless monitoring normal
		Single flash: Wireless module reset or reboot
		Double flashing: Base station not connected or Router
		Four flashes: Monitoring Server not connected
		Flicker: RS485 communication normal
		Extinguish: The wireless module is restoring factory settings.
fault		Long Bright: System fault
		Extinguish: None

7.2 Set Inverter parameters via the display screen

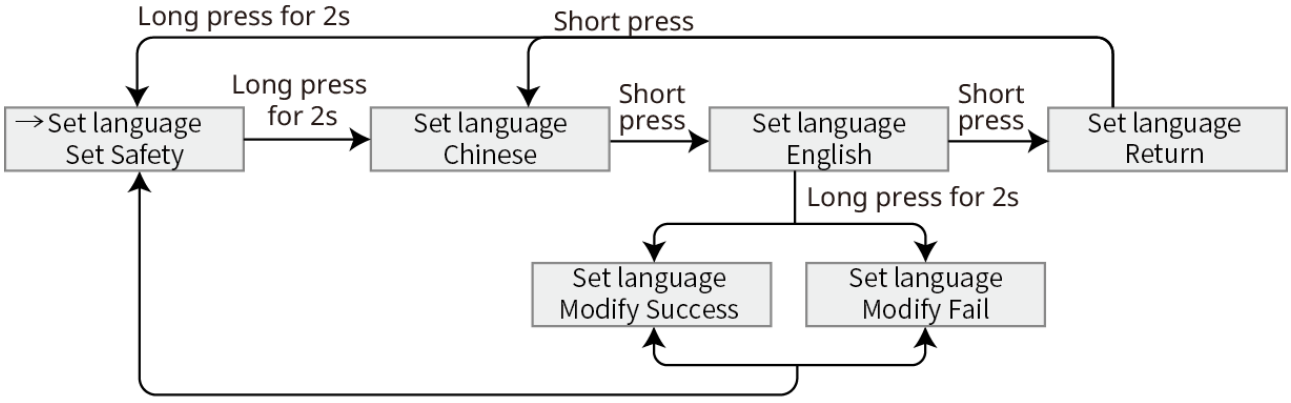
NOTICE

- The interface images in this document correspond to the Inverter firmware version:V1.00.00Communication version:V1.00The interface is for reference only, subject to the actual conditions.
- The parameter names, ranges, and default values may be subject to change or adjustment in the future, and the actual display shall prevail.
- Inverter power parameters must be configured and monitored by professionals to avoid incorrect settings that may affect the Inverter power generation.

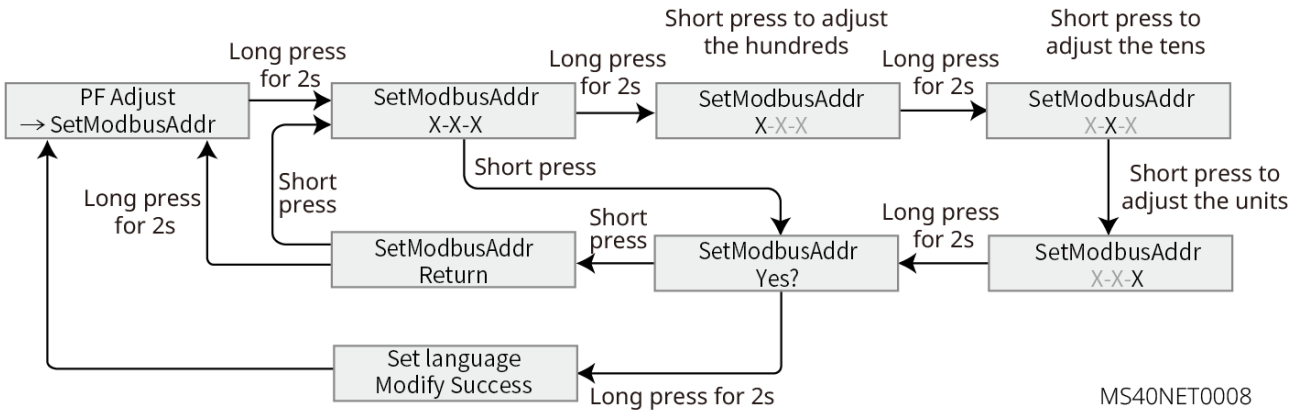
Display Screen Button Instructions

- At any level of the menu, if no button is pressed for a certain period, the LCD screen will dim and the interface will automatically return to the initial screen.
- Short press the display operation button: switch menu interface, adjust parameter values.
- Long press the display operation button: After adjusting the parameter value, long press to confirm the setting successfully; proceed to the next submenu.

Example of button operation:



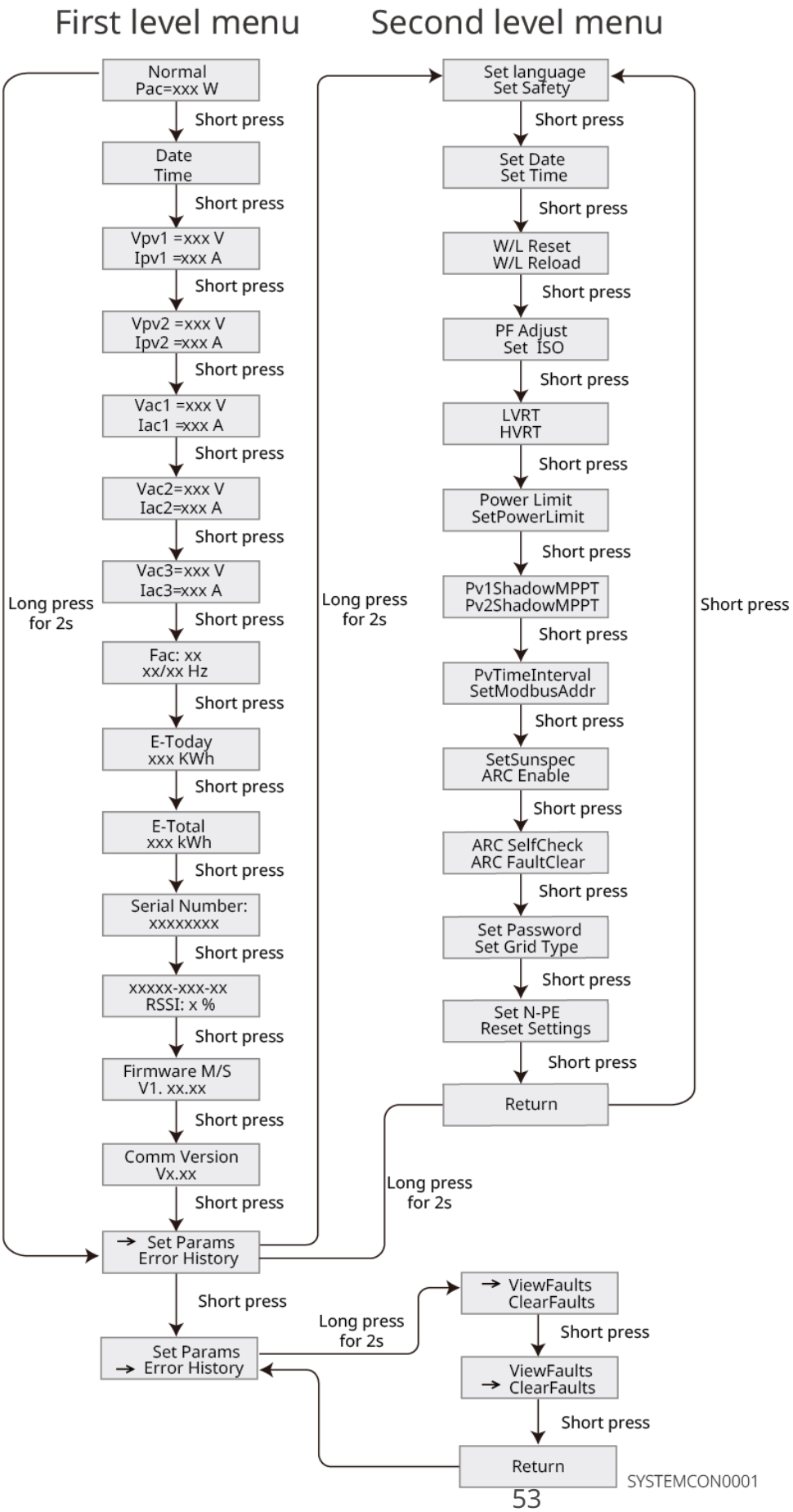
MS40NET0007



MS40NET0008

7.2.1 Introduction to Display Menu

Introduce the display menu structure to facilitate your navigation through various levels of menus, allowing you to view Inverter information and configure relevant Inverter parameters.



7.3 Set Inverter parameters via the App

The SolarGo App is a mobile application software that can communicate with Inverter

7.4 Download SEMS+ APP

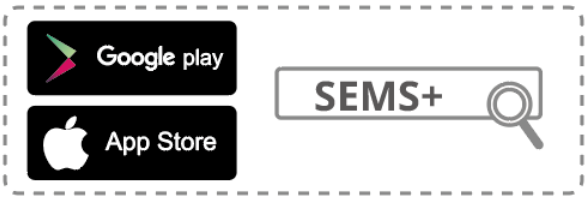
Mobile phone requirements:

- Mobile operating system requirements: Android 6.0 and above, iOS 13.0 and above.
- The phone supports a web browser for Internet connectivity.
- The phone supports WLAN/Bluetooth functionality.

Download method:

Mode 1:

Search for SEMS+ in Google Play (Android) or App Store (iOS) to download and Installation.



Mode 2:

Scan the QR code below to download and Installation.

8 Maintenance

8.1 Inverter power off

⚠DANGER

- When performing operation and maintenance on Inverter, ensure the Inverter is power off. Operating live equipment may cause Inverter damage or result in electric shock DANGER.
- After Inverter POWER OFF, the internal components Discharge require a certain amount of time. Please wait until the equipment is fully Discharge according to the time specified on the label.

Step 1: (Optional) Issue a command to stop on-grid on Inverter.
Step 2: Disconnect the AC Switch between Inverter and Utility grid.
Step 3: Disconnect the DC switch of Inverter.
Step 4: (Optional) Disconnect the switch between Inverter and the PV module.

8.2 dismantle Inverter

⚠WARNING

- Ensure that the Inverter is already POWER OFF.
- When operating Inverter, please wear personal protective equipment.

Step 1: Disconnect all electrical connections of the Inverter, including: DC cables, AC cables, Communication cable, smart dongle, PE cable.
Step 2: Remove the Inverter from the mounting plate.
Step 3: dismantle mounting plate.
Step 4: Properly store the Inverter. If the Inverter will be reused in the future, ensure the storage conditions meet the requirements.

8.3 Scrap Inverter

When Inverter can no longer be used and needs to be scrapped, please dispose of it

in accordance with the electrical waste disposal requirements of the regulations in the country/region where Inverter is located. Inverter must not be treated as household waste.

8.4 Fault Information and Troubleshooting

Please follow the steps below to troubleshoot fault. If the troubleshooting method does not resolve the issue, please contact the after-sales service center.
When contacting the after-sales service center, please collect the following information to facilitate a quick resolution.

1. Product information, such as: serial number, software version, device Installation time, fault occurrence time, fault occurrence Frequency, etc.
2. Equipment Installation environment, such as weather conditions, whether the modules are shaded, presence of shadows, etc. Installation environment recommendations may include providing photos, videos, or other documents to assist in problem analysis.
3. Utility grid condition.

8.4.1 Inverter fault

fault code	fault name	fault cause	Troubleshooting recommendation
F01	Grid disconnected	1. Utility grid power outage. 2. AC line or AC Switch disconnected.	1. The alarm automatically disappears after Grid connected recovery. 2. Check whether the AC line or AC Switch is disconnected.
F02	Utility grid overvoltage Protection	Utility gridvoltage exceeds the permissible range, or the duration of overvoltage surpasses the high voltage ride-through setting.	1. If it occurs occasionally, it may be due to a temporary anomaly in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring

fault code	fault name	fault cause	Troubleshooting recommendation
			manual intervention. 2. If it occurs frequently, check whether Utility gridvoltage is within the allowable range. • If Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If the Utility gridvoltage is within the allowable range, it is necessary to modify the InverterUtility grid overvoltage Protection point after obtaining consent from the local power operator.HVRTEnable or disable the Utility grid overvoltage Protection function. 3. If the issue persists for an extended period, please check whether the AC-side breaker and output cables are properly connected.

fault code	fault name	fault cause	Troubleshooting recommendation
F03	Utility grid Undervoltage Protection	Utility gridvoltage is below the permissible range, or the duration of low voltage exceeds the low voltage ride-through setting value.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. If it occurs frequently, check whether the Utility grid voltage is within the allowable range. • If Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If the Utility gridvoltage is within the allowable range, it is necessary to modify the InverterUtility grid undervoltage Protection point after obtaining consent from the local power operator.LVRTEnable or disable the Utility grid under-voltage Protection function. 3. If the issue persists for an extended period, please check whether the

fault code	fault name	fault cause	Troubleshooting recommendation
			AC-side breaker and output cables are properly connected.
F04	Overvoltage fast Protection	Abnormal detection of Utility grid or voltage, or ultra-high voltage triggers fault.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. If it occurs frequently, check whether Utility gridvoltage is within the allowable range. • If Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If the Utility gridvoltage is within the allowable range, it is necessary to modify the InverterUtility grid undervoltage Protection point after obtaining consent from the local power operator.LVRTEnable or disable the Utility grid undervoltage Protection

fault code	fault name	fault cause	Troubleshooting recommendation
			function. 3. If the issue persists for an extended period, please check whether the AC-side breaker and output cables are properly connected.

fault code	fault name	fault cause	Troubleshooting recommendation
F05	10minOvervoltage Protection	In10minThe sliding average value of Utility gridvoltage within the unit exceeds the safety regulation limits.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. Check if the Utility grid voltage is operating at a high voltage for an extended period. If this occurs frequently, verify whether the Utility grid voltage is within the allowable range. • If Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If Utility gridvoltage is within the allowable range, it is necessary to obtain approval from the local power operator before modifying Utility grid.10minOvervoltage Protection point.

fault code	fault name	fault cause	Troubleshooting recommendation
F06	overfrequency	Utility grid anomaly: Utility grid actual Frequency exceeds local Utility grid standard requirements.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. If it occurs frequently, check whether Utility grid Frequency is within the allowable range. • If the Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If Utility gridFrequency is within the allowable range, it is necessary to modify the Utility grid over-frequency Protection point after obtaining consent from the local power operator.

fault code	fault name	fault cause	Troubleshooting recommendation
F07	Underfrequency	Utility grid anomaly: Utility grid actual Frequency is lower than the local Utility grid standard requirement.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. If it occurs frequently, check whether Utility grid and Frequency are within the allowable range. • If the Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If the Utility gridFrequency is within the allowable range, the Utility grid over-frequency Protection point needs to be modified after obtaining approval from the local power operator.

fault code	fault name	fault cause	Troubleshooting recommendation
F08	frequency shift	Utility grid anomaly: The actual Frequency variation rate does not comply with the local Utility grid standard.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. If it occurs frequently, check whether Utility grid and Frequency are within the allowable range. • If Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If Utility gridFrequency is within the allowable range, please contact your dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F163	Utility grid phase shift Protection	Utility grid anomaly: Utility grid voltage phase variation rate does not comply with local Utility grid standard.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. If it occurs frequently, check whether Utility grid and Frequency are within the allowable range. • If the Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If the Utility grid Frequency is within the allowable range, please contact your dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F09	Islanding	Utility grid has been disconnected, maintaining Utility grid voltage due to load presence. According to safety regulation Protection, on-grid has been stopped.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. If it occurs frequently, check whether Utility grid and Frequency are within the permissible range. • If the Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If Utility gridFrequency is within the permissible range, please contact your dealer or after-sales service center.
F10	LVRT (Low Voltage Ride Through)	Utility grid anomaly: Utility grid voltage duration exceeds the specified high-low transition time.	

fault code	fault name	fault cause	Troubleshooting recommendation
F11	ride-through overvoltage	Utility grid anomaly: Utility grid voltage duration exceeds the specified high-low transition time limit.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. If it occurs frequently, please check whether Utility grid, voltage, and Frequency are within the allowable range and stable. If not, contact the local power operator; if yes, contact your dealer or after-sales service center.
F43	Waveform detection abnormality	Utility grid anomaly: Utility grid voltage detection triggered fault due to abnormality.	
F44	Phase loss	Utility grid anomaly: Utility grid voltage has a single-phase dip.	

fault code	fault name	fault cause	Troubleshooting recommendation
F45	Utility gridvoltage imbalance	Excessive phase difference in Utility grid and voltage.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. If this occurs frequently, please check whether Utility grid, voltage, and Frequency are within the allowable range and stable. If not, contact the local power operator; if yes, contact your dealer or after-sales service center.
F46	Utility grid phase fault	Inverter and Utility grid wiring abnormality: Non-positive sequence wiring	1. Check whether the wiring of Inverter and Utility grid is in positive sequence. After the wiring is corrected (e.g., by swapping any two live wires), fault will automatically disappear. 2. If the fault persists despite correct wiring, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F47	Grid disconnected rapid Protection	Quickly shut down the output upon detecting the Grid disconnected operating condition.	1. After Grid connected is restored, fault automatically disappears.
F48	Utility grid Neutral line loss	Split-phase Utility grid neutral loss	1. The alarm automatically disappears after Grid connected recovery. 2. Check whether the AC line or AC Switch is disconnected.
F160	EMS/Forced off-grid	EMSIssue a forced off-grid command, but the off-grid function is not enabled.	Enable off-grid function
F161	Passive Islanding	-	-
F162	Grid type error	Actual Grid type (two-phase or split-phase) does not match the set safety regulations.	Switch the corresponding safety regulations according to the actual Grid type.

fault code	fault name	fault cause	Troubleshooting recommendation
F12	30mAGfciProtection	During operation, the input-to-ground insulation resistance becomes low.	1. If it occurs occasionally, it may be caused by temporary external line abnormalities. The system will resume normal operation after the fault is cleared, without requiring manual intervention. 2. If the issue occurs frequently or cannot be resolved for an extended period, please check whether the PV String ground impedance is too low.
F13	60mAGfciProtection	During operation, the input-to-ground insulation resistance becomes low.	1. If it occurs occasionally, it may be caused by temporary external line abnormalities. The system will resume normal operation after the fault is cleared without requiring manual intervention. 2. If the issue occurs frequently or cannot be resolved for an extended period, please check whether the PV String ground impedance is too low.

fault code	fault name	fault cause	Troubleshooting recommendation
F14	150mAGfciProtection	During operation, the input-to-ground insulation resistance becomes low.	1. If it occurs occasionally, it may be caused by temporary abnormalities in the external circuit. It will return to normal operation after fault is cleared, without requiring manual intervention. 2. If the issue occurs frequently or cannot be resolved for an extended period, please check whether the PV String ground impedance is too low.
F15	Gfcigradual change Protection	During operation, the input-to-ground insulation resistance becomes low.	1. If it occurs occasionally, it may be caused by temporary external line anomalies. The system will resume normal operation after the fault is cleared, without requiring manual intervention. 2. If the issue occurs frequently or persists for an extended period without recovery, please check whether the PV String ground impedance is too low.

fault code	fault name	fault cause	Troubleshooting recommendation
F16	DCIPrimary Protection	The DC component of the inverter output current exceeds the safety regulations or the default allowable range of the machine.	1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention. 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	DCISecondary Protection	The DC component of the inverter output current exceeds the safety regulations or the default allowable range of the machine.	1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention. 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	Troubleshooting recommendation
F18	insulation resistance low	1. PV String is short-circuited to ground with Protection. 2. The environment of PV StringInstallation is consistently humid, and the line-to-ground insulation is poor. 3. Batteryport line-to-ground insulation resistance is low.	1. Check the impedance between PV String/Battery port and Protection ground. A resistance value greater than 80kΩ is normal. If the measured resistance is less than 80kΩ, locate and rectify the short circuit point. 2. Check if the Inverter of the PE cable is properly connected. 3. If it is confirmed that the impedance is indeed lower than the default value in rainy weather, please reset the "Inverter"insulation resistanceProtection point" via the App. Australian and New Zealand markets Inverter, when insulation resistancefault occurs, can also trigger alarms through the following methods: 1. Inverter is equipped with a buzzer, which will sound continuously for 1 minute when a fault occurs; if the fault is not resolved, the buzzer will sound again every 30

fault code	fault name	fault cause	Troubleshooting recommendation
			minutes. 2. If Inverter is added to the monitoring platform and the alarm notification method is configured, the alarm information can be sent to customers via email.
F19	System Grounding Anomaly	1. The Inverter of PE cable is not connected. 2. When the output of PV String is grounded, the output side of Inverter is not connected to an isolation transformer.	1. Please confirm whether the PE cable of Inverter is not properly connected. 2. In the scenario where the output of PV String is grounded, please confirm whether the output side of Inverter is connected to an isolation transformer.
F49	Live wire to ground short circuit	Output phase line toPELow impedance or short circuit	Detect output phase line toPEImpedance, identify Locations with low impedance and repair them.

fault code	fault name	fault cause	Troubleshooting recommendation
F50	DCVPrimary Protection	Abnormal load fluctuation	1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention. 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	DCVSecondary Protection	Abnormal load fluctuation	1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention. 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	Troubleshooting recommendation
F20	Hardware power limitProtection	Abnormal load fluctuation	1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention. 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 communication link failure	Reference specific subcode reason	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F52	Leakage currentGFCIMultiple fault shutdowns	North American safety regulations require that after multiple fault events, the system must not automatically recover and requires manual intervention or waiting.24hPost-recovery	1. Please check if the PV String ground impedance is too low.
F53	DC arcAFCIMultiple fault shutdowns	North American safety regulations require that after multiple fault, the system must not recover automatically and requires manual intervention or waiting.24hPost-recovery	1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check if the DC side terminal is securely connected.
F54	External communication link failure	Inverter external device communication lost, possibly due to peripheral power supply issues, Communication Protocols mismatch, or unconfigured corresponding peripherals.	Judgment is made based on the actual model and detection enable bits; peripherals not supported by certain models will not be detected.

fault code	fault name	fault cause	Troubleshooting recommendation
F55	Back-upport overload fault	1. Prevent Inverter from continuous overload output.	1. Disconnect some off-grid loads to reduce the Inverter off-grid output Power.
F56	Back-upport overvoltage fault	2. Prevent damage to the load caused by overvoltage in the Inverter output.	1. If it occurs occasionally, it may be caused by load switching and does not require manual intervention. 2. If it occurs frequently, please contact the dealer or after-sales service center.
F107	Synchronization timeout in on-grid fault	Abnormality detected in carrier synchronization on-grid	1Check if the synchronization line connection is normal. 2Check if the master-slave settings are normal. 3Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F57	External connectionBoxfault	Waiting for grid disconnectionBoxExcessive relay switching time	1. InspectionBoxIs it functioning properly; 2. InspectionBoxIs the communication wiring correct;

fault code	fault name	fault cause	Troubleshooting recommendation
-	Generator fault	1. This fault will always be displayed when the generator is not connected. 2. During generator operation, failure to meet generator safety regulations will trigger this fault.	1. When the generator is not connected, ignore this fault; 2. This fault is normal when the generator experiences fault. After the generator recovers, wait for a period of time, and the fault will be automatically cleared. 3. The fault does not affect the normal operation of the off-grid mode. 4. The generator and Utility grid are connected simultaneously and meet safety requirements. Utility grid takes priority for on-grid and will operate in the Utility grid on-grid state.
F22	Generator waveform detection		
F23	Abnormal generator connection		
F24	Generator voltage low		
F25	Generator voltage high		
F26	Generator Frequency low		
F27	Generator Frequency high		
F109	External connectionSTSfault	andSTSAbnormal connection cable	Check the Inverter andSTSIs the wiring sequence of the harness connections one-to-one corresponding in order?
F58	CTMissing fault	CTConnection line disconnected (Japanese safety regulation requirement)	InspectionCTIs the wiring correct.

fault code	fault name	fault cause	Troubleshooting recommendation
F110	power limit fault	1. Fault report and grid disconnection 2. meterUnstable communication 3. Reverse power flow condition occurs	1. Check if there are any other error messages in Inverter. If so, perform targeted troubleshooting. 2. InspectionmeterIs the connection reliable? 3. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.
F111	BypassOverload	-	-
F112	Black start	-	-
F28	Parallel operationIOSelf-check abnormality	Parallel communication line is not securely connected or parallel operation is not functioning.IOChip damage	Check if the parallel communication cable is securely connected, then recheck.IOCheck if the chip is damaged, and if so, replace it.IOChip.
F59	Parallel operationCANCommunication anomaly	The parallel communication cable is not securely connected or some units are offline.	Check whether all machines are power on and ensure the parallel communication cables are securely connected.

fault code	fault name	fault cause	Troubleshooting recommendation
F29	Parallel connection Utility grid reversed polarity	Some machines have the Utility grid line connected in reverse with others.	Reconnect the Utility grid wiring.
F60	Parallel operationBack-upReverse connection	Partial machinesbackupLine reversed with other connections	reconnectionbackupLine.
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	Off-grid output instantaneous overvoltage fault	-	-
F30	AC sensor self-check abnormality	AC sensor sampling anomaly	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F62	AC Sensor fault	HCTSensor abnormality detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F31	Leakage current sensor self-check abnormal	Leakage current sensor sampling anomaly detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F63	Leakage current sensor	Leakage current sensor anomaly detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F32	Relay self-check abnormal	Relay abnormality, reason: 1Relay anomaly (relay short circuit) 2Relay sampling circuit abnormality. 3Abnormal AC side wiring (possible loose connection or short circuit phenomenon)	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F64	Relay	1Relay abnormality (relay short circuit) 2Relay sampling circuit abnormality. 3Abnormal AC side wiring (possible loose connection or short circuit)	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F164	DC arc fault (string)17~32)	1DC side connection terminal loose; 2DC side connection terminal loose contact; 3Core damage and poor contact	1After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero. 2Check if the DC side terminal is securely connected.
F165	DC arc fault (string)33~48)	1DC side connection terminal loose; 2DC side connection terminal loose contact; 3Core damage and poor contact	1After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero. 2Check if the DC side terminal is securely connected.
F33	FlashRead/Write Error	Possible causes: flashContent has changed;flashEnd of life;	1. Upgrade to the latest version of the program 2. Contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F42	DC arc fault (string)1~16)	1DC side connection terminal loose; 2DC side connection terminal loose contact; 3Core damage and poor contact	1After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero. 2Check if the DC-side terminal is securely connected.
F34	DC arc self-test fault	During the arc self-test process, the arc module failed to detect the arc fault.	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F65	AC terminal Over Temperature	AC terminal temperature too high, possible causes: 1InverterInstallation Location not ventilated. 2Ambient temperature is too high. 3Internal fan operation abnormal.	

fault code	fault name	fault cause	Troubleshooting recommendation
F35	Cavity temperature too high	Cavity temperature too high, possible causes: 1InverterInstallation Location not ventilated. 2Ambient temperature is too high. 3Internal fan operation abnormal.	1Check whether the ventilation of InverterInstallation Location is adequate and whether the ambient temperature exceeds the maximum allowable range. 2If there is no ventilation or the ambient temperature is too high, please improve its ventilation and heat dissipation conditions. 3If ventilation and ambient temperature are both normal, please contact the dealer or after-sales service center.
F66	INVModule temperature too high	Inverter module temperature is too high, possible causes: 1Inverter Installation Location is not ventilated. 2Ambient temperature is too high. 3Internal fan operation abnormal.	

fault code	fault name	fault cause	Troubleshooting recommendation
F67	BoostModule temperature too high	BoostModule temperature too high, possible causes: 1InverterInstallation Location not ventilated. 2Ambient temperature is too high. 3Internal fan operation abnormal.	
F68	Output filter capacitor overtemperature	Output filter capacitor temperature is too high, possible causes: 1InverterInstallation Location not ventilated. 2Ambient temperature is too high. 3Internal fan operation abnormal.	

fault code	fault name	fault cause	Troubleshooting recommendation
F114	Relay2	Relay abnormality, reason: 1Relay abnormality (relay short circuit) 2Relay sampling circuit abnormality. 3Abnormal AC side wiring (possible loose connection or short circuit)	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F69	PV IGBT short circuit	Possible causes: 1. IGBTshort circuit 2Abnormal sampling circuit	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F70	PV IGBTopen circuit	1. Software issue causing no wave transmission. 2. Drive circuit abnormality: 3. IGBTOpen circuit	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F71	NTCAbnormall	NTCTemperature sensor abnormality detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F72	Wave transmission anomaly	PWMAbnormal waveform detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F73	CPUInterruption anomaly	CPUAbnormal interruption occurred	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F74	Microelectronics fault	Functional safety detects an anomaly	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F75	PV HCTfault	boostcurrent sensor anomaly	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F76	1. 5VBenchmark anomaly	Reference Circuit	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F77	0. 3VBaseline anomaly	Reference circuit fault	
F78	CPLDVersion identification error	CPLDVersion identification error	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F79	CPLDCommunicatio n fault	CPLDandDSPComm unication content error or timeout	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F80	Model Identification fault	Regarding the model identification error of fault	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, 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 of fault	PIDPrevent hardware anomalies	Contact the dealer or after-sales service center.
F117	DSPVersion identification error	DSPSoftware version identification error	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F36	Busbar overvoltage		Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F81	Upper busbar overvoltage		
F82	Lower busbar overvoltage		
F83	Bus overvoltage (auxiliaryCPU1)		
F84	Upper busbar overvoltage (secondary)CPU1)		

fault code	fault name	fault cause	Troubleshooting recommendation
F85	Lower busbar overvoltage (auxiliaryCPU1)	BUSOvervoltage, possible causes: 1. PVvoltage too high 2InverterBUSSampling anomaly 3The poor isolation effect of the rear-end double-split transformer causes mutual interference between the two Inverter on-grid, resulting in DC overvoltage when one Inverter on-grid.	
F86	Bus Overvoltage (AuxiliaryCPU2)		
F87	Upper busbar overvoltage (auxiliary)CPU2)		
F88	Lower busbar overvoltage (secondary)CPU2)		
F89	Upper busbar overvoltage(CPLD)		
F90	Lower Bus Overvoltage (CPLD)		
F118	MOSContinuous overvoltage	1. Software issue causes the inverter drive to shut down earlier than the flyback drive. 2. Inverter drive circuit abnormality prevents turn-on. 3. PVvoltage too high 4. MosSampling anomaly	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F119	Busbar short circuit	1. Hardware damage	In case of occurrenceBUSAfter a short circuit fault, the Inverter remains in an off-grid state. Please contact the dealer or after-sales service center.
F120	Busbar sampling abnormality	1. BusSampling hardware	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F121	DCSide sampling anomaly	1. Busvoltage sampling hardwarefault 2. Batteryvoltage Sampling Hardware fault 3. Dcrly relay fault	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F37	PVInput overvoltage	PVvoltage input too high, possible causes: Incorrect photovoltaic array configuration, with too many photovoltaic Battery panels connected in series in the string, resulting in the string's open-circuit voltage exceeding the maximum operating voltage of the Inverter.	Check the series configuration of the corresponding PV array string to ensure that the open-circuit voltage of the string does not exceed the maximum working voltage of the Inverter. Once the PV array is correctly configured, the Inverter alarm will automatically disappear.
F38	PVContinuous hardware overcurrent	1. Unreasonable module configuration 2. Hardware damage	Disconnect the AC output side switch and DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F39	PVContinuous software overcurrent	1. Unreasonable module configuration 2. Hardware damage	

fault code	fault name	fault cause	Troubleshooting recommendation
F91	Flying capacitor software overvoltage	Flying capacitor overvoltage, possible causes: 1. PVvoltage too high 2Flying capacitor sampling anomaly	Disconnect the AC output side switch and DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F92	Flying capacitor hardware overvoltage	Flying capacitor overvoltage, possible causes: 1. PVvoltage too high 2Flying capacitor sampling anomaly	
F93	Flying capacitor undervoltage	Flying capacitor undervoltage, possible causes: 1. PVEnergy deficiency; 2Flying capacitor sampling anomaly	
F94	Flying capacitor precharge failure	Flying capacitor precharge failure, possible causes: 1. PVEnergy deficiency; 2Flying capacitor sampling anomaly	

fault code	fault name	fault cause	Troubleshooting recommendation
F95	The flying capacitor cannot be precharged.	1. Unreasonable control loop parameters 2. Hardware damage	
F96	String overcurrent(String1~16)	Possible causes: 1. String Overcurrent 2. String current sensor anomaly	
F97	String overcurrent(String17~32)		
F40	String reverse connection(String1~16)	PVString reverse connection	Check whether the strings are reversed.
F98	String reverse connection(String17~32)	PVString reverse connection	Check if the strings are reverse connected.
F99	String loss(String1~16)	String fuse disconnected (if applicable)	Check if the fuse is blown.

fault code	fault name	fault cause	Troubleshooting recommendation
F100	String loss(String17~32)	String fuse disconnected (if applicable)	Check if the fuse is blown.
F122	PVIncorrect access mode setting	PVThere are three access modes in total, with four channels.MPPTFor example: 1. Parallel mode: that isAAAAMode(homologous mode),PV1-PV4homologous,4RoadPVConnect the same photovoltaic panel 2. Partial Parallel Mode: That isAACCMode,PV1andPV2Homologous connection,PV3andPV4Homologous connection 3. Stand-alone mode: i.e.ABCDMode(non-homologous),PV1、PV2、PV3、PV4Independent connection,4RoadPVEach connected to	InspectionPVIs the access mode correctly set?ABCD、AACC、AAAA), reset in the correct mannerPVConnection mode. 1. Confirm the actual connected circuitsPVIs the connection correct. 2. IfPVCorrectly connected, passedAppor screen check the current settingsPVWhether the "connection mode" corresponds to the actual connection mode. 3. If the currently setPVThe access mode does not match the actual access mode and needs to be adjusted.Appor the screen willPVThe "connection mode" is set to the mode consistent with the actual situation. After the setup is completed,PVandACPower supply disconnection and restart.

fault code	fault name	fault cause	Troubleshooting recommendation
		a photovoltaic panel IfPVThe actual connection mode and equipment configurationPVThis fault will be reported if the access mode does not match.	4. After the setup is completed, if the currentPVThe access mode is consistent with the actual access mode, but this fault is still reported. Please contact the dealer or after-sales service center.
-	String reverse connection(String33~48)	PVString reverse connection	Check if the strings are reverse connected.
-	String loss(String33~48)	String fuse disconnected (if applicable)	Check if the fuse is blown.
-	String overcurrent(String33~48)	Possible causes: 1. String Overcurrent 2. String current sensor anomaly	

fault code	fault name	fault cause	Troubleshooting recommendation
F123	Multi-channel PV phase error	PV input mode setting error	Check whether the PV connection mode is correctly set (ABCD, AACC, AAAA) and reset the PV connection mode in the correct way. 1. Verify that each connected PV string is correctly wired. 2. If the PV is correctly connected, check whether the currently set "PV connection mode" corresponds to the actual connection mode via the App or screen. 3. If the currently set "PV Connection Mode" does not match the actual connection mode, it is necessary to set the "PV Connection Mode" to the mode consistent with the actual situation via the App or screen. After completing the setting, disconnect the PV and AC power supply and restart. 4. After the setup is completed, if the current "PV Connection Mode" matches the actual connection mode but this fault still appears, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F101	Battery1Precharge resistor	Battery1Pre-Charge circuit fault (such as pre-Charge resistor burnout, etc.)	Check if the pre-Charge circuit is functioning properly. Only after Battery power on, verify if the Battery voltage matches the busbar voltage. If they do not match, please contact the dealer or after-sales service center.
F102	Battery1Relay	Battery1The relay fails to operate properly.	After Battery power on, check whether the Battery relay operates and if the closing sound is heard. If it does not function, please contact the dealer or after-sales service center.
F103	Battery1overvoltage at connection point	Battery1The input voltage exceeds the rated range of the machine.	Verify if Batteryvoltage is within the machine's rated range.
F104	Battery2Precharge fault	Battery2Pre-Charge circuit fault (pre-Charge resistance burnout, etc.)	Check whether the pre-Charge circuit is in good condition, and verify that the Battery power on post-Battery voltage matches the busbar voltage. If they do not match, please contact the distributor or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F105	Battery2Relay	Battery2The relay fails to operate properly.	After Battery power on, check whether the Battery relay operates and if a closing sound is heard. If it does not function, please contact the dealer or after-sales service center.
F106	Battery2overvoltage at connection point	Battery2The input voltage exceeds the rated range of the machine.	Verify if Batteryvoltage is within the machine's rated range.
F124	Battery1Reverse connection	Battery1Reverse polarity of positive and negative terminals	Check whether the polarity of Battery and the machine terminals is consistent.
F125	Battery2Reverse connection fault	Battery2Reverse polarity of positive and negative terminals	Check whether the polarity of the Battery and machine terminals is consistent.
F126	Abnormal access of Battery	Abnormal access	Check if the Battery is functioning properly.
-	BMS status bit error	BMS Module fault	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F127	Radiator temperature too high	Battery temperature is too high, possible causes: 1Inverter Installation Location is not ventilated. 2Ambient temperature is too high. 3Internal fan operation abnormal.	
F128	Reference voltage anomaly	Reference circuit fault	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F129	Cavity temperature too low	Cavity temperature is too low, possible causes: 1. The ambient temperature is too low.	
F130	ACsideSPDfault	ACFailure of lateral lightning protection device	ReplacementACSide lightning protection device.
F131	DCsideSPDfault	DCFailure of lateral lightning protection device	ReplacementDCLateral lightning protection device.

fault code	fault name	fault cause	Troubleshooting recommendation
F132	Internal fan abnormality	Internal fan abnormality, possible causes: 1Abnormal fan power supply; 2Mechanical fault(Locked rotor); 3Fan aging and damage.	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.
F133	External fan anomaly	External fan abnormality, possible causes: 1Abnormal fan power supply; 2Mechanical fault(Locked rotor); 3Fan aging and damage.	
F134	PIDDiagnose abnormality	PIDHardware fault orPVvoltage too highPIDSuspend	PVExcessive voltagePIDSuspend WARNING without processing,PIDHardware fault can be turned off.PIDSwitch reclosure clearingPIDfault, replacementPIDdevice

fault code	fault name	fault cause	Troubleshooting recommendation
F135	Trip switch tripping WARNING	Possible causes: Overcurrent orPVReverse connection causes the trip switch to trip.	Please contact the dealer or after-sales service center. The reason for disconnection is due to occurrence.PVShort circuit or reverse connection, need to check for any historical issues.PVShort circuit WARNING or historyPVReverse connection of WARNING. If present, maintenance personnel should inspect the corresponding issue.PVSituation. After confirming there is no fault, the trip switch can be manually closed, and then pass throughAppInterface Clear History fault Operation Clears This WARNING.

fault code	fault name	fault cause	Troubleshooting recommendation
F136	HistoryPV IGBT Short Circuit	Possible causes: Overcurrent caused the trip switch to open.	Please contact the dealer or after-sales service center. Maintenance personnel should follow the historicalPVShort circuit WARNING subcode, check for short circuit occurrenceBoostCheck if there is any fault in the hardware and external string; after confirming no fault, it can pass.AppInterface Clear History fault Operation Clears This WARNING.
F137	historyPVReverse polarity WARNING(String1~16)	Possible causes: occurrencePVReverse connection causes the trip switch to trip.	Contact the dealer or after-sales service center. Maintenance personnel should follow the historicalPVReverse connection WARNING subcode, check whether the corresponding string has a reverse connection, checkPVIs there a voltage difference in the panel configuration? After checking, it can be passed if there is no fault.AppInterface Clear History fault Operation Clears This WARNING.

fault code	fault name	fault cause	Troubleshooting recommendation
F138	HistoryPVReverse connection WARNING(String17~32)	Possible causes: occurrencePVReverse connection causes the trip switch to trip.	Contact the dealer or after-sales service center. Maintenance personnel should follow the historicalPVReverse polarity WARNING subcode, check whether the corresponding string has reverse polarity, inspectPVIs there a voltage difference in the panel configuration? After checking, if there is no fault, it can pass.AppInterface Clear History fault Operation Clears This WARNING.
F139	FlashRead/Write Error	Possible causes: flashContent has changed;flashEnd of life;	1. Upgrade to the latest version of the program. 2. Contact the dealer or after-sales service center.
F140	Meter Communication Abnormal Alarm	This WARNING may only be reported after enabling the power limit function. Possible causes: 1. Meter not connected; 2. The communication line connection between the meter and the Inverter is incorrect.	Check the meter wiring and ensure it is correctly connected. If fault persists after inspection, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F141	PVPanel type identification failed	PVPanel identification hardware anomaly	Contact the dealer or after-sales service center.
F142	String mismatch	PVString mismatch, same circuitMPPTThe configurations of the next two strings are different.	Check the two strings open-circuit voltage and configure the strings with the same open-circuit voltage to the same circuit.MPPTUnder prolonged string mismatch, there are potential safety hazards.
F143	CTNot connected	CTNot connected	InspectionCTWiring.
F144	CTreverse connection	CTreverse connection	InspectionCTWiring.
F145	Ground Wire Missing/PE Loss	Ground wire not connected	Check the ground wire.
F146	String terminal temperature high(String1~8)	37176RegisterPVterminal temperature alarm subcode1Set	-
F147	String terminal temperature high(String9~16)	37177RegisterPVterminal temperature alarm subcode2Set position	-
F148	String terminal temperature high(String17~20)	37178registerPVterminal temperature alarm subcode3Set	-

fault code	fault name	fault cause	Troubleshooting recommendation
F149	HistoryPVReverse connection WARNING(String33~48)	Possible causes: occurrencePVReverse connection causes the trip switch to trip.	Please contact the dealer or after-sales service center; maintenance personnel must follow the history.PVReverse polarity WARNING subcode, check whether the corresponding string has reverse polarity, inspectPVIs there a voltage difference in the panel configuration? After checking, if there is no fault, it can pass.AppInterface Clear History fault Operation Clears This WARNING.
F150	Battery1voltage low	Batteryvoltage is below the set value	-
F151	Battery2voltage low	Batteryvoltage is below the set value	-
F152	Battery power supply voltage low	Non-Charge mode, voltage below shutdown voltage	-
F153	Battery1voltagehigh	-	-
F154	Battery2voltage high	-	-

fault code	fault name	fault cause	Troubleshooting recommendation
F155	Online detection of low insulation resistance	PV String is short-circuited to ground on Protection. 2. The environment of PV StringInstallation is consistently humid, and the line-to-ground insulation is poor.	1. Check the impedance between PV String and Protection to ground. If a short circuit is found, rectify the short circuit point. 2. Check if the Inverter of the PE cable is properly connected. 3. If it is confirmed that the impedance is indeed lower than the default value under rainy or overcast conditions, please reconfigure the "insulation resistanceProtection point."
F156	Microgrid Overload WARNING	Excessive input at the backup end	Occasional occurrences require no action; if this alarm appears frequently, please contact the dealer or after-sales service center.
F157	Manual reset	-	-
F158	Generator phase abnormality	-	-
F159	Reuse port configuration exception	Reuse (Generator) port configured as a microgrid or large load, but actually connected to a generator.	Use the App to change the reuse (generator) port configuration.

fault code	fault name	fault cause	Troubleshooting recommendation
F41	Generator port overload	1. Off-grid side output exceeds the specifications in the technical documentation. 2. Off-grid side short circuit 3. Off-grid terminal voltage is too low 4. When acting as a high-load port, the load exceeds the specifications outlined in the datasheet.	By verifying the data, confirm the output parameters such as voltage, current, and Power on the off-grid side to identify the root cause of the issue.
F108	DSP communication fault	-	-

fault name	fault cause	Troubleshooting recommendation
Parallel Communication Timeout Shutdown	In parallel operation, if the slave unit exceeds400No communication with the host within seconds.	Check whether the parallel communication harness is securely connected and verify that there are no duplicate slave addresses.
One-key shutdown and stop	Check whether the one-touch shutdown function is enabled via the App.	Deactivate one-touch shutdown.

fault name	fault cause	Troubleshooting recommendation
Offline shutdown	-	-
Remote shutdown	-	-
Child Node Communication	Internal communication exception	Restart the machine and observe whether the fault is eliminated.
Diesel generator communication	Abnormal communication link between the control board and the diesel generator	1. Check the link communication harness and observe whether fault is eliminated. 2. Attempt to restart the machine and observe whether the fault is eliminated; 3. If the fault persists after restarting, please contact the after-sales service center.
overvoltage	1. The voltage of a single cell is too high. 2. Abnormal voltage collection line	Record the fault phenomenon, restart the Battery, wait a few minutes, and confirm whether the fault disappears. If the problem persists after restarting, please contact the after-sales service center.
	Battery total pressure too high 2. Abnormal voltage collection line	
Battery Undervoltage Protection	1. Single cell voltage too low 2. Abnormal voltage collection line	
	1. Battery Total pressure too low 2. Abnormal voltage collection line	

fault name	fault cause	Troubleshooting recommendation
overcurrent protection	1. Chargecurrent is too large, Battery current limiting is abnormal: sudden changes in temperature and voltage value 2. Inverter response anomaly	
	Battery dischargecurrent is too large	
Battery Over-temperature Protection	1. Ambient temperature is too high 2. Temperature sensor abnormality	
	1. Ambient temperature too high 2. Temperature sensor abnormality	
Battery low temperature Protection	1. Ambient temperature is too low 2. Temperature sensor abnormality	
	1. Ambient temperature is too low 2. Temperature sensor abnormality	
Pole Over-temperature	Pole temperature too high	
Imbalance	1. Excessive temperature difference in different stages. Battery will impose restrictions on Battery Power, that is, limit the charging Discharge current. Therefore, this issue is generally unlikely to occur. 2. The capacity of the battery cell degrades, leading to excessive internal resistance, which causes significant temperature rise and large temperature differences during current. 3. Poor welding of battery cell tabs, leading to excessive current and rapid temperature rise in the cell. 4. Temperature sampling issue; 5. power cable connection loose	

fault name	fault cause	Troubleshooting recommendation
	1. Inconsistent aging levels of battery cells 2. Issues with the board chips can also lead to excessive voltage differences between battery cells. 3. Imbalance issues in the battery pack can also lead to excessive voltage differences between cells. 4. Wiring harness issues lead to	
	1. Inconsistent aging levels of battery cells 2. Issues with the board chips can also lead to excessive voltage differences between battery cells. 3. Imbalance issues in the battery pack can also lead to excessive voltage differences between cells. 4. Wiring harness issue causing	
Insulation Resistance	Insulation resistance failure	Check if the ground wire is properly connected and restart the Battery. If the issue persists after restarting, please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
Precharge failurefault	Precharge failure	It indicates that during the precharge process, the voltage across the precharge MOS consistently exceeds the specified threshold. After restarting the system, observe whether this fault persists, and check if the wiring is correct and if the precharge MOS is damaged.
Harvesting line	Collection line Battery or disconnect	Check the wiring, restart the Battery. If the issue persists after restarting, please contact the after-sales service center.
	Single voltage collection line poor contact or disconnected	Check the wiring and restart the Battery. If the issue persists after restarting, please contact the after-sales service center.
	Single temperature acquisition line poor contact or disconnected	
	Dual-channel current comparison error is too large, or current acquisition line circuit is abnormal	
	Dual-channel voltage comparison error is too large, or the comparison error between MCU and AFE voltage is too large, or the voltage acquisition line circuit is abnormal.	
	Temperature acquisition circuit loop abnormal or poor contact, disconnected	

fault name	fault cause	Troubleshooting recommendation
	Overvoltage level 5 or overtemperature level 5, fuse the three-terminal fuse	To fuse the three-section fuse, it is necessary to contact the after-sales service center to replace the main control board.
Relay or MOSFET overtemperature	Relay or MOSFET overtemperature	The fault indicates that the MOSFET temperature has exceeded the specified threshold. Power off and let it stand for 2 hours to allow temperature recovery.
Shunt Over-temperature	Shunt Overheating	The fault indicates that the shunt tube temperature has exceeded the specified threshold. Power off and let it stand for 2 hours to allow temperature recovery.
BMS1 Other fault1 (Residential Storage Category)	Relay or MOS open circuit	1. Upgrade the software, power off and let it stand for 5 minutes, then check if fault persists after restarting. 2. If the issue persists, replace the Battery package.

fault name	fault cause	Troubleshooting recommendation
	Relay or MOS short circuit	1. Upgrade the software, power off and let it sit for 5 minutes, then check if fault persists after restarting. 2. If the issue persists, replace the Battery package.
	Communication abnormality between the master cluster and slave cluster, or inconsistency of battery cells between clusters.	1. Check the Battery information and software version of the slave unit, as well as whether the communication line connection with the master unit is normal. 2. Upgrade the software
	Abnormal circuit harness in Battery system, resulting in no loop formation in interlocking signal	Check if Terminal resistorInstallation is correct
	BMS and PCS communication abnormality	1. Verify that the communication line interface definition between Inverter and Battery is correct. 2. Please contact the after-sales service center to check the backend data and verify whether the Inverter and Battery software are correctly matched.

fault name	fault cause	Troubleshooting recommendation
	Abnormal communication harness between BMS master and slave control	Check the wiring and restart the Battery; 2. Upgrade the Battery. If the issue persists after restarting, please contact the after-sales service center.
	Communication loss between main and auxiliary chips	
	Circuit breaker, shunt trip abnormality	1. Let the system remain powered off for 5 minutes, then restart and check if fault persists. 2. Check whether the blind mating and communication pins at the bottom of the PACK and PCU are loose or misaligned.
	MCU self-test failed	Upgrade the software and restart the Battery. If the issue persists after restarting, please contact the after-sales service center.
	1. The software version is too low or the BMS board is damaged. 2. The number of Inverter parallel units is large, and the Battery experiences excessive impact during pre-charging.	1. Upgrade the software and observe whether fault persists. 2. In the case of parallel operation, perform a black start on Battery before starting Inverter.

fault name	fault cause	Troubleshooting recommendation
	Internal fault of MCU	Upgrade the software and restart the Battery. Typically, this issue is caused by a damaged MCU or external component. If the problem persists after restarting, please contact the after-sales service center.
	Master control current exceeds the specified threshold	1. Let the system stand idle for 5 minutes, then restart and check if fault persists. 2. Check if the Inverter is set with an excessively large Power, causing it to exceed the bus load.
	Cell inconsistency in parallel clusters	Confirm whether the cells in the cluster Battery are consistent.
	ClusterBattery reverse polarity of positive and negative terminals	Check if the positive and negative terminals of the string combiner box are reversed.
	Severe over-temperature or over-voltage triggering the fire protection system	Contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
System Air Conditioning	Air conditioning abnormal failure	Try restarting the system. If the fault persists, please contact the after-sales service center.
	Cabinet door not closed	Check if the cabinet door is properly closed.
	Power supply voltage overvoltage	Verify that the power supply voltage value meets the air conditioning input voltage requirements, and proceed with re-power on only after confirmation.
	Power supply shortage	
	No voltage input	
	Unstable power supply	
	Compressor voltage instability	Try restarting the system. If the fault persists, please contact the after-sales service center.
	Sensor poor contact or damaged	
	Abnormal air conditioning fan	
BMS1 Other fault2 (Residential Storage Category)	There is an abnormality in the voltage or current inside the DCDC.	Refer to the specific DCfault content for details.
	DCDC overload or heat sink temperature too high	
	Abnormal cell acquisition or inconsistent aging levels	Please contact the after-sales service center.
	Fan operation not executed properly	Please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
	Output port screw loose or poor contact	1. Battery Shut down, check wiring and output port screw status 2. After confirmation, restart the Battery and observe whether the fault persists. If it does, please contact the after-sales service center.
	Battery has been used for too long or the battery cell is severely damaged.	Please contact the after-sales service center to replace the pack.
	1. The software version is too low or the BMS board is damaged. 2. The number of Inverter parallel units is large, and the impact during pre-charging of Battery is excessive.	1. Upgrade the software and observe whether fault persists. 2. In the case of parallel operation, perform a black start on Battery before starting Inverter.
	Heating film damaged	Please contact the after-sales service center.
	The three-terminal fuse of the heating film is blown, rendering the heating function unusable.	Please contact the after-sales service center.
	Software model, Cell Type, hardware model mismatch	Check whether the software model, serial number (SN), Cell Type, and hardware model are consistent. If they are inconsistent, please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
	Thermal management board communication disconnection	1. Let the system remain powered off for 5 minutes, then restart and check if fault persists. 2. If the fault is not restored, contact after-sales service to replace the pack.
	Thermal management board communication disconnection	1. Let the system remain powered off for 5 minutes, then restart and check if fault persists. 2. If the fault is not restored, contact after-sales service to replace the pack.
	Thermal management board communication disconnection	1. Let the system remain powered off for 5 minutes, then restart and check if fault persists. 2. If the fault is not restored, contact after-sales service to replace the pack.

fault name	fault cause	Troubleshooting recommendation
	pack fan fault signal trigger	1. Let the system remain powered off for 5 minutes, then restart and check if fault persists. 2. If the fault is not restored, contact after-sales service to replace the pack.
DCDC	Output port voltage too high	Check the output portvoltage. If the output portvoltage is normal and the fault still cannot be resolved after restarting Battery, please contact the after-sales service center.
	The DCDC module detected that the Battery voltage exceeded the maximum Charge voltage.	Stop Charge and Discharge until SOC drops below 90% or remains idle for 2 hours. If the issue persists and restarting fault does not resolve it, please contact the after-sales service center.
	Radiator temperature too high	Let the radiator stand for 1 hour until the temperature drops. If the issue persists and restarting the fault does not resolve it, please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
	Battery dischargecurrent is too large	Check if the load exceeds the Battery's Discharge capability. Turn off the load or stop the PCS for 60 seconds. If the issue persists and restarting the fault does not resolve it, please contact the after-sales service center.
	Output port power harness positive and negative poles are reversed with the combiner box Battery or PCS.	Turn off the Battery manual switch, check if the output port wiring is correct, and restart the Battery.
	The output Power relay cannot close.	Check whether the output port wiring is correct and if there is a short circuit. If the issue persists after restarting fault, please contact the after-sales service center.
	Power device temperature too high	Let the Battery stand for 1 hour to allow the temperature of internal Power components to decrease. If the issue persists and restarting the fault does not resolve it, please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
	Relay sticking	Restart fault still exists. Please contact the after-sales service center.
Inter-cluster circulation	1. Cell imbalance 2. First power on undercharge correction	-
BMS1 Other fault3 (Large Storage Category)	Communication exception with Linux module	1. Check if the communication link is functioning properly. 2. Upgrade the software, restart the Battery, and observe whether the fault persists. If it does, please contact the after-sales service center.
	Excessive temperature rise in battery cells	Cell abnormality, contact after-sales service for pack replacement.
	SOC below 10%	Perform Charge on Battery.
	SN writing does not comply with the rules	Check if the SN digits are normal. If abnormal, please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
	1. Battery Intra-cluster daisy chain communication anomaly 2. Inconsistent aging levels of battery cells within Battery clusters	1. Check the contact condition of the single cluster Battery pack. 2. Confirm the usage of each cluster Battery, such as cumulative charge Discharge capacity, cycle count, etc. 3. Please contact the after-sales service center.
	High Humidity inside the pack	-
	Fuse tripped	Contact after-sales service to replace the pack.
	Low battery power	Perform Charge on the Battery.
BMS1 Other fault4 (Large Storage Category)	Circuit Breaker Anomaly	Contact after-sales service to replace the pack.
	External device abnormality	Contact after-sales service to replace the pack.
Contactor fault1	-	-
Contactor fault 2	-	-
Overload Protection (Jinggui)	Continuous overload (exceeding 690 kVA) for 10 seconds	Please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
Overload (Smart Inverter)	Continuous overload (exceeding 690 kVA) for 10 seconds	Please contact the after-sales service center.
Host AC power on communication with the meter is abnormal.	1. The meter may not be connected to the host. 2. The meter communication cable may be loose.	1. Check if the meter is connected to the main unit. 2. Check if the meter communication cable is loose.
Parallel system slave with meter abnormality	The meter is connected to the slave unit.	Set the meter connection machine as the master unit.
Slave ACpower on communication timeout with master for more than 10 minutes	Slave address setting error 2. Slave communication line is loose	1. Check whether the slave address is duplicated. 2. Check if the parallel communication cable is loose.

8.5 Routine Maintenance

⚠DANGER
When performing operation and maintenance on Inverter, ensure the Inverter is power off. Operating live equipment may cause damage to Inverter or result in electric shock DANGER.

Maintenance content	Maintenance method	Maintenance cycle
System cleaning	Check the heat sink and inlet/outlet for any foreign objects or dust.	1 time/half year - 1 time/year

fan	Check if the fan is operating normally, whether there is any abnormal noise, and if the appearance is normal.	Once per year
DC switch	Open and close the DC switch 10 times consecutively to ensure the DC switch function operates normally.	Once per year
Electrical connection	Check for loose electrical connections, damaged cable insulation, or exposed copper conductors.	1 time/half year - 1 time/year
Sealing	Check whether the cable entry hole Sealing of the equipment meets the requirements. If there is a gap that is too large or unsealed, it must be resealed.	Once per year

9 Inverter software version upgrade

Inverter supports passing throughUPanel upgrade software.
UseUBefore upgrading the panel equipment,Please contact the after-sales service center to obtain the software upgrade package and upgrade method.

10 Inverter Parameters

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

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

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

Technical Data	GW3K-DNS-G40	GW3.6K-DNS-G40	GW4.2K-DNS-G40
Operating Temperature Range (℃)	- 25 ~ 60	- 25 ~ 60	- 25 ~ 60
Relative Humidity	0 ~ 100%	0 ~ 100%	0 ~ 100%
Max. Operating Altitude (m)	< 4000	< 4000	< 4000
Cooling Method	Natural Convection		
Display	LCD/WiFi+APP/Bluetooth+APP	LCD/WiFi+APP/Bluetooth+APP	LCD/WiFi+APP/Bluetooth+APP
Communication	RS485, WIFI, LAN, Bluetooth, 4G		
Communication Protocol	Modbus,Sunspec		
Weight (Kg)	9.2	9.2	9.2
Dimension (W×H×Dmm)	358*323*165	358*323*165	358*323*165
Noise Emission (dB)	25	25	25
Topology	Transformerless	Transformerless	Transformerless
Night Power Consumption (W)	< 1	< 1	< 1
Ingress Protection Rating	IP66	IP66	IP66
Anti-corrosion Class	C4	C4	C4
DC Connector	MC4 (4-6mm²)	MC4 (4-6mm²)	MC4 (4-6mm²)
AC Connector	Plug and play connector (Max.6 mm²)		
Environmental Category	4K4H	4K4H	4K4H
Pollution Degree	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III

Technical Data	GW3K-DNS-G40	GW3.6K-DNS-G40	GW4.2K-DNS-G40
Protective class	I	I	I
The Decisive Voltage Class (DVC)	PV: C AC: C Com: A		
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
Output			

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

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

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

Technical Data	GW5K-DNS-G40	GW6K-DNS-G40	GW3.1K-DNS-L-G40
Dimension (W×H×Dmm)	358*323*165	358*323*165	358*323*165
Noise Emission (dB)	25	25	25
Topology	Transformerless	Transformerless	Transformerless
Night Power Consumption (W)	< 1	< 1	< 1
Ingress Protection Rating	IP66	IP66	IP66
Anti-corrosion Class	C4	C4	C4
DC Connector	MC4 (4-6mm²)	MC4 (4-6mm²)	MC4 (4-6mm²)
AC Connector	Plug and play connector (Max.6 mm²)	Plug and play connector (Max.6 mm²)	Plug and play connector (Max.6 mm²)
Environmental Category	4K4H	4K4H	4K4H
Pollution Degree	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III
Protective class	I	I	I
The Decisive Voltage Class (DVC)	PV: C AC: C Com: A		
Country of Manufacture	China	China	China

*1: For the model GW3.6K-DNS-G40 in the UK market, both the nominal output current and the maximum output current are 16A.

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

*3: When the input voltage is between 560 V and 600 V, the inverter will enter standby mode. When the input voltage returns to the MPPT operating voltage range of 40 V to 560 V, the inverter will resume normal operation.

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

11 Explanation of Terms

Over voltage category definition

- **Overvoltage Category I**Equipment connected to circuits with measures to limit transient overvoltage to a relatively low level.
- **Overvoltage Category II**Energy-consuming equipment supplied from fixed electrical installations. Such equipment includes appliances, portable tools, and other household and similar loads. If special requirements for reliability and suitability of such equipment are specified, then voltage Category III is applied.
- **Overvoltage Category III**The equipment in fixed electrical installations must meet special requirements for reliability and suitability. This includes switching devices in fixed electrical installations and industrial equipment permanently connected to fixed electrical installations.
- **Overvoltage category IV**Used in the power supply of distribution devices, including measuring instruments and prefix overcurrent Protection devices, etc.
- **Definition of Wet Location Categories**

Environmental parameters	level		
	3K3	4K2	4K4H
Temperature range	0~+40℃	-33~+40℃	-33~+40℃
Humidity scope	5% to 85%	15% to 100%	4% to 100%

- **Explanation of Environmental Categories:**
  - **Outdoor Type Inverter**The ambient air temperature range is -25 to +60°C, suitable for Pollution Degree3 environments;
  - **Indoor Type II Inverter**The ambient air temperature range is -25 to +40°C, suitable for Pollution Degree3 environments;
  - **Indoor Type I Inverter**The ambient air temperature range is 0 to +40°C, suitable for Pollution Degree2 environments;
- **Pollution Degree category definition**
  - **Pollution Degree1**No pollution or only dry non-conductive pollution;
  - **Pollution Degree2**Generally, there is only non-conductive pollution, but occasional temporary conductive pollution due to condensation must be considered.

- **Pollution Degree3**Conductive contamination, or non-conductive contamination becoming conductive due to condensation;
- **Pollution Degree4**Persistent conductive contamination, such as that caused by conductive dust or rain/snow.

12 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