

GOODWE



User Manual

Hybrid Inverter

ET Series

15-30kW

V1.6-2024-03-20

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Notice

The information in this user manual is subject to change due to product updates or other reasons. This manual cannot replace the product safety labels unless otherwise specified. All descriptions here are for guidance only.

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1 About This Manual

This manual describes the product information, installation, electrical connection, commissioning, troubleshooting, and maintenance. Read through this manual before installing and operating the product. All the installers and users have to be familiar with the product features, functions, and safety precautions. This manual is subject to update without notice. For more product details and latest documents, visit <https://en.goodwe.com>.

1.1 Applicable Model

This manual applies to the listed inverters below:




| Model | Nominal Output Power | Nominal Output Voltage |
|------------|----------------------|------------------------|
| GW15K-ET | 15000W | 380/400V, 3L/N/PE |
| GW20K-ET | 20000W | |
| GW25K-ET | 25000W | |
| GW29.9K-ET | 29900W | |
| GW30K-ET | 30000W | |

1.2 Target Audience

This manual applies to trained and knowledgeable technical professionals. The technical personnel has to be familiar with the product, local standards, and electric systems.

1.3 Symbol Definition

Different levels of warning messages in this manual are defined as follows:

| |
|--|
|  DANGER |
| Indicates a high-level hazard that, if not avoided, will result in death or serious injury. |
|  WARNING |
| Indicates a medium-level hazard that, if not avoided, could result in death or serious injury. |
|  CAUTION |
| Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury. |
| NOTICE |
| Highlights key information and supplements the texts. Or some skills and methods to solve product-related problems to save time. |

2 Safety Precaution

Please strictly follow these safety instructions in the user manual during the operation.

WARNING

The inverters are designed and tested to strictly comply with related safety rules. Read and follow all the safety instructions and cautions before any operations. Improper operation might cause personal injury or property damage as the inverters are electrical equipment.

2.1 General Safety

NOTICE

- The information in this user manual is subject to change due to product updates or other reasons. This manual cannot replace the product safety labels unless otherwise specified. All descriptions here are for guidance only.
- Before installations, read through the user manual to learn about the product and the precautions.
- All operations should be performed by trained and knowledgeable technicians who are familiar with local standards and safety regulations.
- Use insulating tools and wear personal protective equipment when operating the equipment to ensure personal safety. Wear anti-static gloves, clothes, and wrist strips when touching electronic devices to protect the inverter from damage.
- Strictly follow the installation, operation, and configuration instructions in this manual. The manufacturer shall not be liable for equipment damage or personal injury if you do not follow the instructions. For more warranty details, please visit <https://en.goodwe.com/warranty>.

2.2 PV String Safety

DANGER

Connect the DC cables of the inverter to the included DC terminals. Severe damage might happen if other types of DC terminals are used, which are beyond the manufacturer's liability.

WARNING

- Ensure the component frames and the bracket system are securely grounded.
- Ensure the DC cables are connected tightly, securely and correctly.
- Measure the DC cables with a multimeter to avoid reverse polarity connection. Also, the voltage should be under the permissible range.
- Do not connect one PV string to more than one inverter at the same time. Otherwise, it may damage the inverter.
- The PV modules used with the inverter must have an IEC61730 class A rating.









2.3 Inverter Safety

 **WARNING**

- The voltage and frequency at the connecting point should meet the on-grid requirements.
- Additional protective devices like circuit breakers or fuses are recommended on the AC side. Specification of the protective device should be at least 1.25 times the maximum AC output current.
- Make sure that all the groundings are tightly connected. When there are multiple inverters, make sure that all the grounding points on the enclosures are equipotential bonding.
- The alarm can be cleared automatically if the inverter triggers a fault for less than 5 times within 24 hours. The inverter will shutdown for protection after the 5th electric arc fault alarm. The inverter can operate normally after the fault is solved.
- BACK-UP is not recommended if the PV system is not configured with batteries. Otherwise, this may cause system power failure.

 **DANGER**

- All labels and warning marks should be visible after the installation. Do not cover, scrawl, or damage any label on the equipment.
- Warning labels on the inverter are as follows:

| | | | |
|---|--|---|--|
|  | DANGER High voltage hazard. Disconnect all incoming power and turn off the product before working on it. |  | Delayed discharge. Wait 5 minutes after power off until the components are completely discharged. |
|  | Read through the user manual before any operations. |  | Potential risks exist. Wear proper PPE before any operations. |
|  | High-temperature hazard. Do not touch the product under operation to avoid being burnt. |  | Grounding point. |
|  | CE certification mark |  | Do not dispose of the inverter as household waste. Discard the product in compliance with local laws and regulations, or send it back to the manufacturer. |

2.4 Battery Safety



WARNING

- The battery used with the inverter shall be approved by the inverter manufacturer. The approved battery list can be obtained through the official website.
- Before installations, read through the corresponding battery's user manual to learn about the product and the precautions. Strictly follow its requirements.
- If the battery discharged completely, please charge it in strict accordance with the corresponding model's user manual.
- Factors such as: temperature, humidity, weather conditions, etc. may limit the battery's current and affect its load.
- Contact after-sale service immediately if the battery is not able to be started. Otherwise, the battery might be damaged permanently.
- Use the multimeter to measure the DC cable to avoid reverse polarity connection. Also, the voltage should be under the permissible range.
- Do not connect one battery pack to more than one inverter at the same time. Otherwise, it may cause damage to the inverter.

2.5 Personnel Requirements

NOTICE

- Personnel who install or maintain the equipment must be strictly trained, learn about safety precautions and correct operations.
- Only qualified professionals or trained personnel are allowed to install, operate, maintain, and replace the equipment or parts.

2.6 EU Declaration of Conformity

GoodWe Technologies Co., Ltd. hereby declares that the inverter with wireless communication modules sold in the European market meets the requirements of the following directives:

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

GoodWe Technologies Co., Ltd. hereby declares that the inverter without wireless communication modules sold in the European market meets the requirements of the following directives:

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

You can download the EU Declaration of Conformity on <https://en.goodwe.com>.

3 Product Introduction

3.1 Product Overview

Intended usage

Inverters control and optimize the power in PV systems through an integrated energy management system. The power generated in the PV system can be used, stored in the battery, output to the utility grid, etc.

Model

This manual applies to the listed inverters below:

- GW15K-ET
- GW20K-ET
- GW25K-ET
- GW29.9K-ET
- GW30K-ET

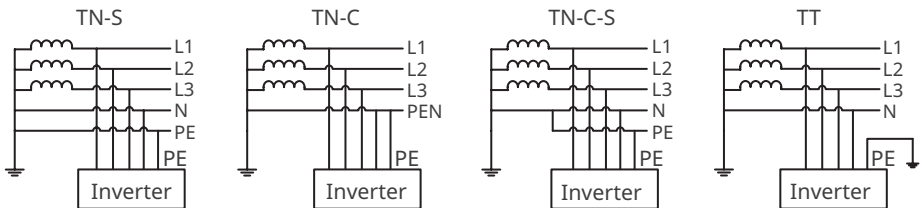
Model description

GW15K-ET

1 2 3

| No. | Referring to | Explanation |
|-----|--------------|---|
| 1 | Brand Code | GW: GoodWe |
| 2 | Rated Power | 15K: the rated power is 15000W. |
| 3 | Series Code | ET: ET series three-phase hybrid inverter |

Supported Grid Types

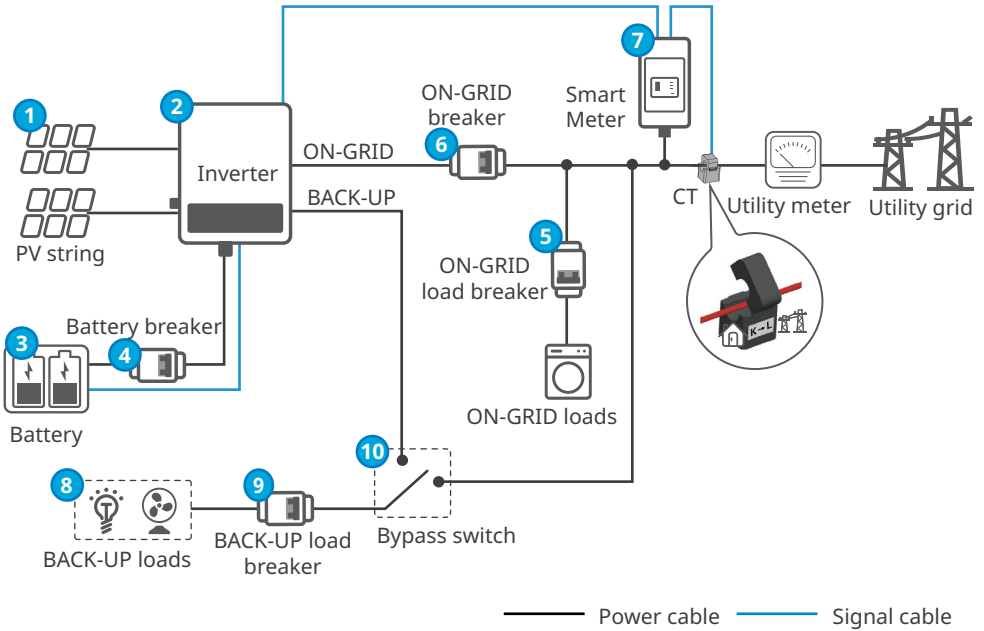


3.2 Application Scenarios



- The PV system is not suitable to connect equipment that relies on a stable power supply, such as medical equipment to sustain life. Ensure that no personal injury is occurred when the system is disconnected.
- Avoid loads with high start-up current like high-power water pumps in the PV system. Otherwise, the off-grid output may fail due to excessive instantaneous power.
- BACK-UP is not recommended if the PV system is not configured with batteries. Otherwise, this may cause system power failure.
- Do not connect auto-coupling or isolation transformers to the BACK-UP port. Otherwise, the inverter may be damaged and the system power may fail.
- Factors such as: temperature, humidity, weather conditions, etc. may limit the battery's current and affect its load.
- When single overload protection occurs, the inverter can restart automatically; however, the restarting time will be extended if it happens several times. For a faster restarting, try it via APP .
- When the grid is disconnected, the off-grid function of the inverter will be closed automatically if the load capacity exceeds the inverter's rated power. To enable it, turn off the large loads and ensure the load power is less than the rated power of the inverter.
- Nomral household loads can be supported when the inverter is in back-up mode. Accepted loads as below:
 - Inductive loads: 1.5P non-inverter air conditioner can be connected to the inverter. If two or more non-inverter air conditioners are connected, the back-up mode may be unstable.
 - Capacitive load: total power ≤ 0.66 times of the inverter's rated output power.
 - Loads with neutral wires are allowed when connecting three phase loads to the BACK-UP port. Do not connect loads without neutral wire to the BACK-UP port. Otherwise, the loads cannot work properly or even be damaged.

Single Inverter



| No. | Parts | Description |
|-----|----------------------|---|
| 1 | PV string | The PV string consists PV panels series connected. |
| 2 | Inverter | Supports ET 15 -30kW series inverters. |
| 3 | Battery | The battery used with the inverter shall be approved by the inverter manufacturer. The approved battery list can be obtained through the official website. |
| 4 | Battery breaker | Recommended specifications: nominal current \geq 63A, nominal voltage \geq 1000V. |
| 5 | ON-GRID load breaker | Depend on the actual using load. |
| 6 | ON-GRID breaker | Self-prepared breaker. Recommended specifications: <ul style="list-style-type: none"> GW15K-ET: nominal current\geq32A, nominal voltage\geq400V GW20K-ET: nominal current\geq40A, nominal voltage\geq400V GW25K-ET: nominal current\geq50A, nominal voltage\geq400V GW29.9K/30K-ET: nominal current\geq63A, nominal voltage\geq400V |
| 7 | Smart meter | The smart meter is delivered with the inverter or purchased from the inverter manufacturer. Recommended model: GM3000. |

| No. | Parts | Description |
|-----|----------------------|---|
| 8 | BACK-UP loads | <ul style="list-style-type: none"> • Connecting BACK-UP loads, such as loads requiring 24-hour power supply or other important loads. • Connecting unbalanced loads. L1, L2, L3 of the inverter respectively connected to loads with different power. • Loads with neutral wires are allowed when connecting three phase loads to the BACK-UP port. Do not connect loads without neutral wire to the BACK-UP port. Otherwise, the loads cannot work properly or even be damaged. • Do not connect auto-coupling or isolation transformers. |
| 9 | BACK-UP load breaker | <p>Self-prepared breaker. Recommended specifications:</p> <ul style="list-style-type: none"> • GW15K-ET: nominal current\geq32A, nominal voltage\geq400V • GW20K-ET: nominal current\geq40A, nominal voltage\geq400V • GW25K-ET: nominal current\geq50A, nominal voltage\geq400V • GW29.9K/30K-ET: nominal current\geq63A, nominal voltage\geq400V |
| 10 | Bypass switch | <p>To ensure the BACK-UP load is powered by the grid during the inverter maintenance, install a bypass switch by yourself. Recommended specifications:</p> <ul style="list-style-type: none"> • GW15K-ET: nominal current\geq32A, nominal voltage\geq400V • GW20K-ET: nominal current\geq40A, nominal voltage\geq400V • GW25K-ET: nominal current\geq50A, nominal voltage\geq400V • GW29.9K/30K-ET: nominal current\geq63A, nominal voltage\geq400V |

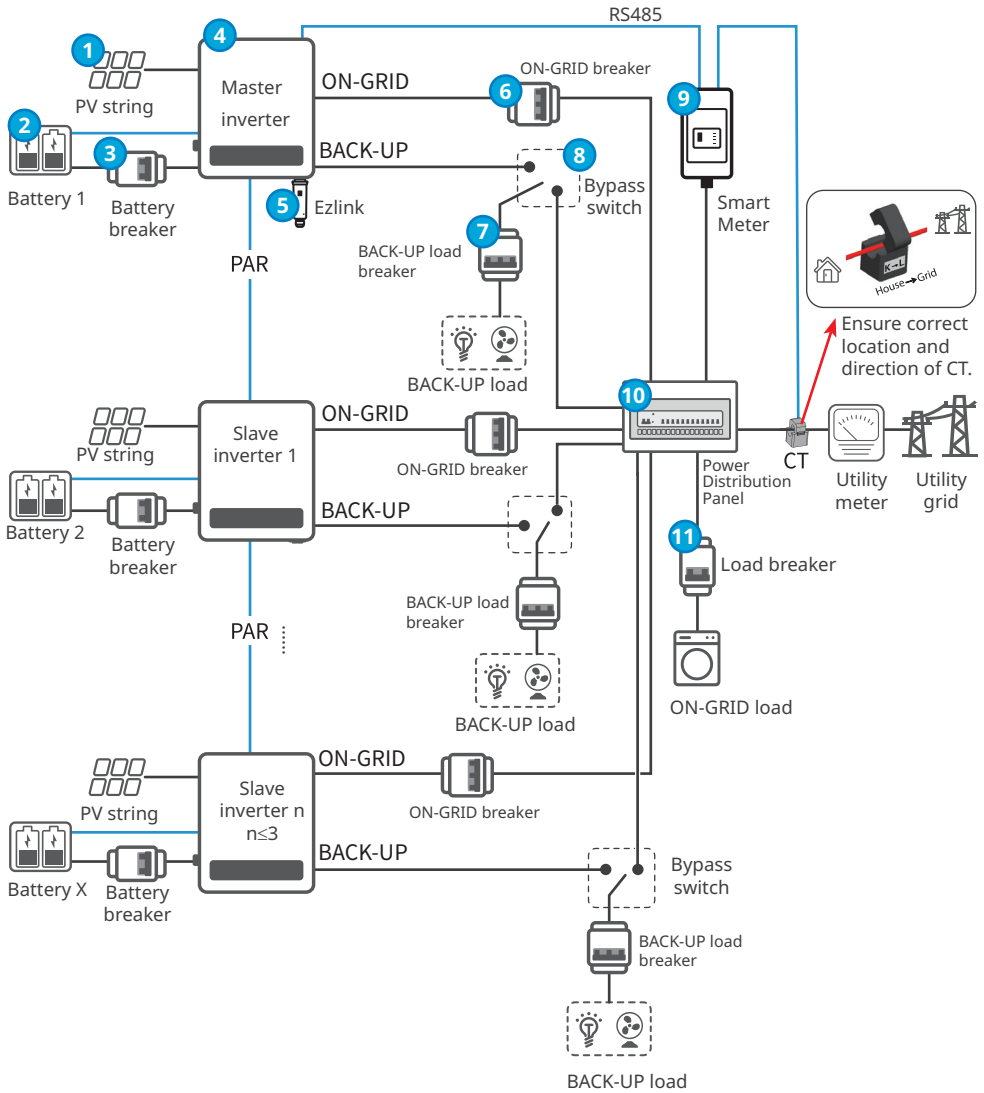
Parallel System

WARNING

- Off-grid parallel system is not supported. Do not parallel connect the back-up ports of the inverters in the system.
- The parallel communication cable should meet the following requirements when installing the system:
 - Use CAT5E, CAT6 or CAT7 sheilded Ethernet cable when the length of the cable is less than or equal to 5m.
 - Use CAT7 sheilded Ethernet cable when the length of the cable is more than 5m but less than or equal to 10m.
 - Do not use a cable longer than 10m, otherwise the communication may be abnormal.
- Ensure that the material, cross-sectional area, and length of the conductors of the AC cables between the master and slave inverters for both on-grid and back-up ports, as well as the DC cables between the battery and the inverter, are the same.
- In parallel scenarios, only the smart dongle Ezlink is supported for parallel networking. Only one Ezlink is required in one parallel system. The inverter connecting to Ezlink and smart meter is considered as the master inverter, while all the others are slave inverters.
- In parallel scenarios, do not connect any communication module to the slave inverters. Otherwise, the system cannot communicate properly.

NOTICE

- In the parallel system, the inverter EMS communication port does not support access to third-party EMS monitoring devices.
- If you need to use a parallel system, please first check the inverter firmware version through the SolarGo app to ensure that :
 - software version of SolarGo is above 5.3.0.
 - the firmware versions of all inverters are consistent, and the DSP version is above 07 and the ARM version is above 08.
 - firmware version of EzLink is above 04.
- If the firmware version does not meet the requirements, please contact GoodWe to upgrade the software version.



| No. | Parts | Description |
|-----|-----------------|--|
| 1 | PV string | The PV string consists PV panels series connected. |
| 2 | Battery | <ul style="list-style-type: none"> • Select the battery based on the approved battery list matched with the inverter. • Batteries of the same brand, model, and capacity are preferred in a parallel system. If necessary, batteries of the different brand, model, and capacity are also supported. • Do not connect a single battery to multiple inverters. Otherwise, the inverters may be damaged. Connect the battery to the master inverter when a single battery is applied. • All the batteries in the parallel system are SOC balanced when the system is working on-grid. |
| 3 | Battery breaker | Select the breaker in compliance with local laws and regulations. 2P DC breakers of the following specifications are recommended: nominal current \geq 63A, and nominal voltage \geq 1000V. |
| 4 | Inverter | <ul style="list-style-type: none"> • Supports ET series (15-30kW) inverters. Inverters of the same model are preferred in one parallel system. If necessary, inverters of the different models are also supported. • When the inverter models are different in the parallel system, the one with the highest power should be set as the master inverter. • At most 4 inverters can be connected in the parallel system. The power limit of the system shall meet the requirements of local laws and regulations. • The parallel system cannot work properly once the master inverter is abnormal. When any slave inverter is abnormal, the system, except for the abnormal inverter, still works properly. |
| 5 | Ezlink | <ul style="list-style-type: none"> • In parallel scenarios, only the smart dongle Ezlink is supported for parallel networking. • Only one Ezlink is required in one parallel system. The inverter connecting to Ezlink and smart meter is considered as the master inverter, while all the others are slave inverters. The master inverter sends commands to slave inverters. The system communication may be abnormal if other inverters install with the Ezlink. |
| 6 | ON-GRID breaker | <p>An external AC breaker needs to be installed on the AC side of the inverter. The AC breakers should be prepared by customers. Recommended specifications:</p> <ul style="list-style-type: none"> • GW15K-ET: nominal current \geq32A, nominal voltage \geq400V • GW20K-ET: nominal current \geq 40A, nominal voltage \geq 400V • GW25K-ET: nominal current \geq50A, nominal voltage \geq400V • GW29.9K-ET, GW30K-ET: nominal current \geq 63A, nominal voltage \geq 400V |

| No. | Parts | Description |
|-----|--------------------------|--|
| 7 | BACK-UP load breaker | <p>The AC breakers should be prepared by customers. Recommended specifications:</p> <ul style="list-style-type: none"> • GW15K-ET: nominal current $\geq 32\text{A}$, nominal voltage $\geq 400\text{V}$ • GW20K-ET: nominal current $\geq 40\text{A}$, nominal voltage $\geq 400\text{V}$ • GW25K-ET: nominal current $\geq 50\text{A}$, nominal voltage $\geq 400\text{V}$ • GW29.9K-ET, GW30K-ET: nominal current $\geq 63\text{A}$, nominal voltage $\geq 400\text{V}$ |
| 8 | Bypass switch | <p>To keep the back-up loads working when the inverter is powered off for maintenance, bypass switches are recommended. Recommended specifications:</p> <ul style="list-style-type: none"> • GW15K-ET: nominal current $\geq 32\text{A}$, nominal voltage $\geq 400\text{V}$ • GW20K-ET: nominal current $\geq 40\text{A}$, nominal voltage $\geq 400\text{V}$ • GW25K-ET: nominal current $\geq 50\text{A}$, nominal voltage $\geq 400\text{V}$ • GW29.9K-ET, GW30K-ET: nominal current $\geq 63\text{A}$, nominal voltage $\geq 400\text{V}$ |
| 9 | Smart meter | <ul style="list-style-type: none"> • Prepare the GM330 smart meter for parallel system separately. • Check whether the included CT meets requirements based on actual needs. If not, refer to the manual of the smart meter and prepare a qualified CT. • Only one smart meter is required in one parallel system. The inverter connecting to Ezlink and smart meter is considered as the master inverter, while all the others are slave inverters. The system communication may be abnormal if other inverters install with a smart meter. |
| 10 | Power distribution panel | <ul style="list-style-type: none"> • A distribution board should be prepared by the customer. • Nominal current of the distribution board $\geq 2 \times N \times I_{\max}$ (N refers the quantity of the inverters in the system; I_{\max} refers to the maximum output current of the inverter). |
| 11 | Load breaker | Depends on the actual loads. |

3.3 Working Mode

3.3.1 System Working Mode

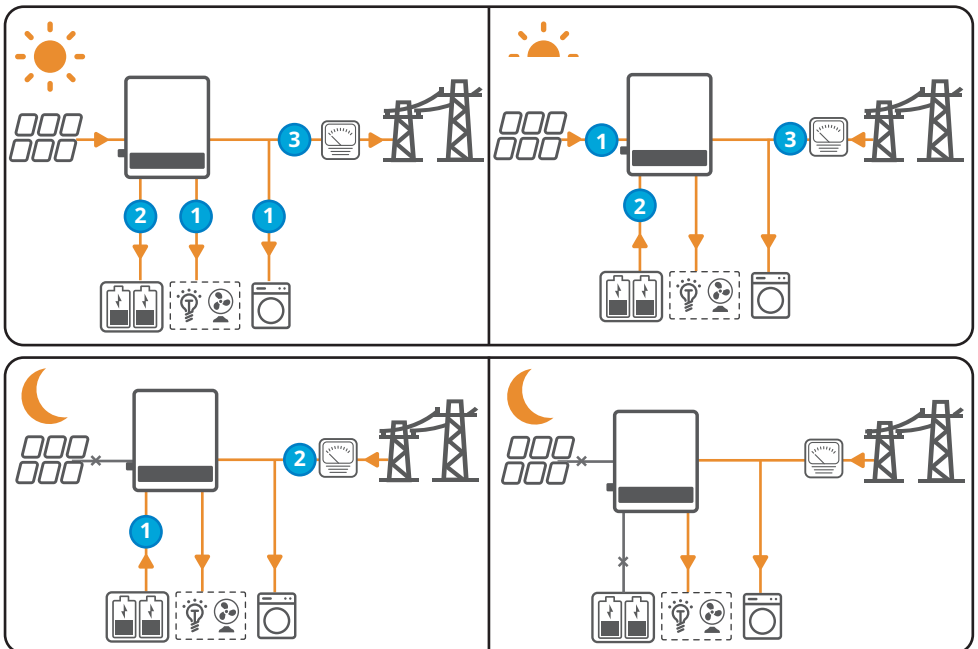
Self Consumption Mode

NOTICE

- For solar power, consider self consumption mode in priority: the excess power charges the battery in day time; the battery supplies power to the load when there is no solar power generated at night. This will improve the self consumption rate and saves electricity costs.
- It is suitable for areas with high electricity prices and little or no solar power generation subsidies.

- Day time:
 - When the power generated in the PV system is sufficient, it will supply the loads in priority. The excess power will charge the batteries first, then the remaining power will be sold to the power grid.
 - When the power generated in the PV system is insufficient, the battery will supply the loads in priority. If the battery power is insufficient, the load will be powered by the power grid.
- Night:

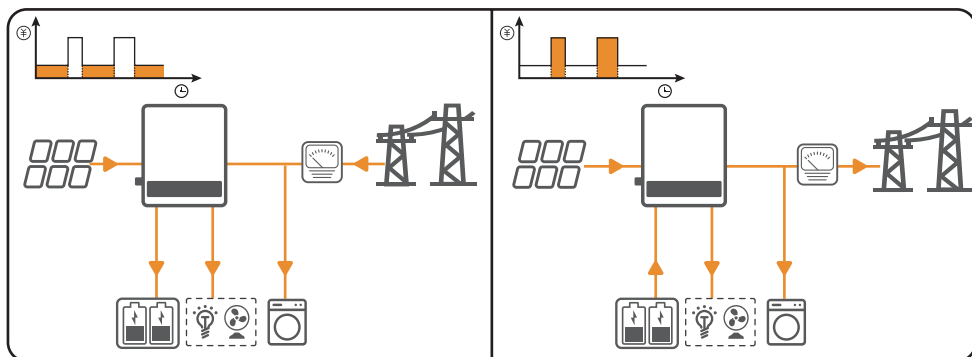
If the battery power is sufficient, the load will be powered by the battery. If the battery power is not enough, the load will be powered by the power grid.



Economic Mode

NOTICE

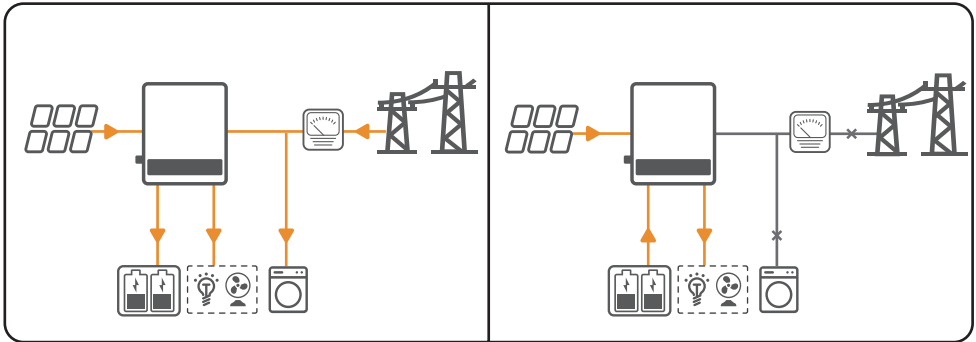
- Economic mode can only be selected if local laws and regulations are met, such as whether to allow the power grid to charge the battery and whether to allow the battery to be discharged and sold to the power grid. If not, do not select this mode.
 - It is recommended to use economic mode in scenarios when the peak-valley electricity price varies a lot.
- When the electricity price is at its peak, the battery will power the load first, and the remaining power can be sold to power grid.
 - When the electricity price is at its valley, set the time for power grid to charge the battery.



BACK-UP Mode

NOTICE

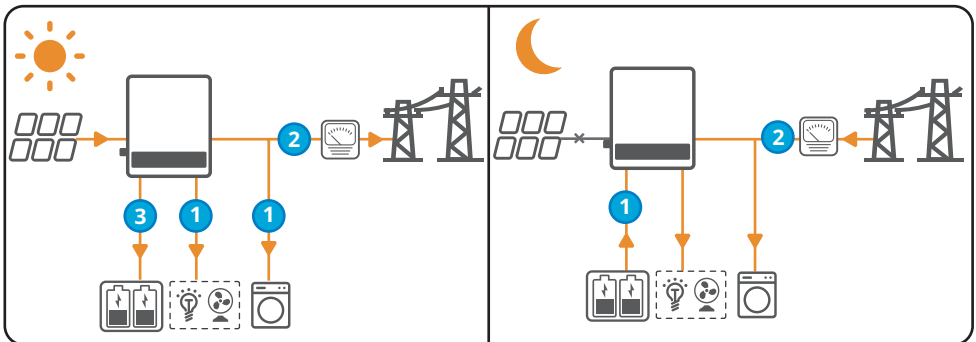
- The BACK-UP mode can set different battery SOC values during grid connection and off grid. When the power grid loses power, the inverter switches to off grid mode, and the battery can discharge to supply power to the load to ensure that the Back-UP load does not lose power; When the power grid is restored, the inverter switches to grid connected mode. If the battery's SOC is lower than the set SOC, the battery can be charged by power grid.
 - The purchase of electricity from the power grid to charge the battery must comply with local laws and regulations.
 - Recommended for use in areas with unstable power grids.
- When the SOC of the battery is lower than the set value, using solar power generation and purchasing electricity from the power grid to load and charge the battery.
 - When the power grid is cut off, if the PV power generation cannot meet the load usage, the battery discharge will supplement this part of power to ensure that the BACK-UP end load does not cut off.



Delayed Charging Mode

NOTICE

- Delayed charging mode can prevent the battery from quickly filling up and wasting energy when the PV energy exceeds the limit power value.
 - It applies to regions with grid connected power output limitations.
- Daytime: After solar power generation prioritizes meeting the load usage, when the excess PV power is less than the limit power value, priority will be given to selling the electricity to the power grid; When the excess PV energy exceeds the limit output power, use the power exceeding the limit output power to charge the battery to prevent power waste.
 - Night: If the battery power is sufficient, the load will be powered by the battery. If the battery power is not enough, the load will be powered by the grid.

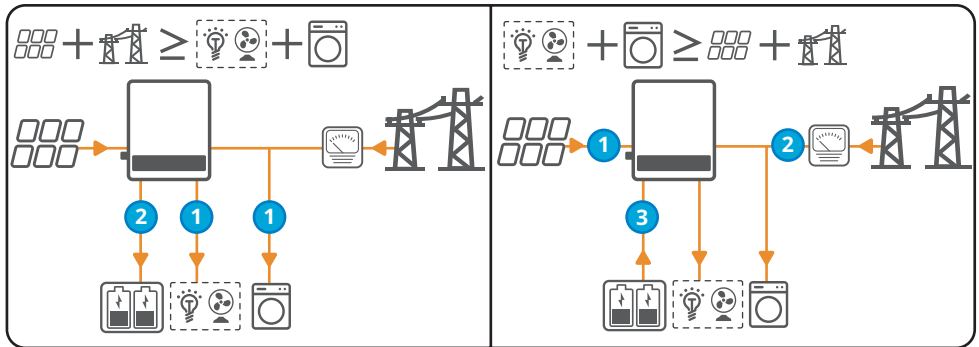


Peak Shaving mode

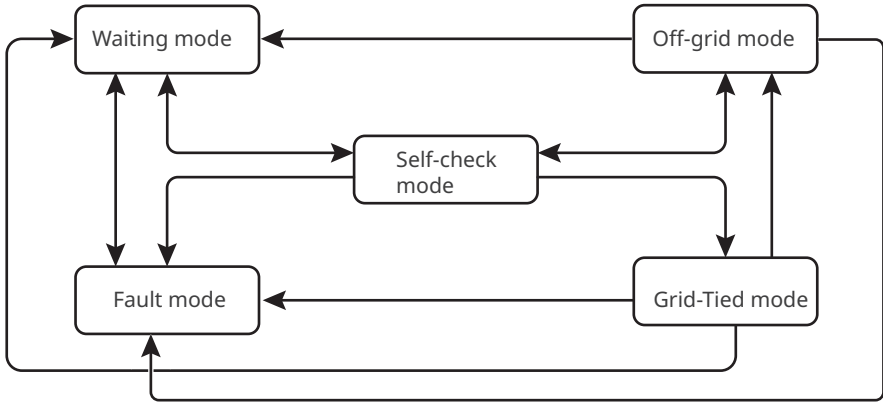
NOTICE

Peak Shaving mode is mainly applicable to industrial and commercial scenarios. When the total power consumption of the load exceeds the power consumption quota in a short period of time, battery discharge can be used to reduce the power exceeding the quota.

- When the sum of PV power generation and the power purchased from the grid exceeds the power used by the load, the excess power can charge the battery.
- When the power used by the load exceeds the sum of PV power generation and the power purchased from the grid, the battery discharges to supplement the excess power.



3.3.2 Inverter Operation Mode



| No. | Parts | Description |
|-----|-----------------|--|
| 1 | Waiting mode | Waiting stage after the inverter is powered on or clearing the alarms. <ul style="list-style-type: none"> When the conditions are met, it enters self-check mode. If there is a fault, the inverter enters fault mode. |
| 2 | Self-check mode | Before the inverter starts up, it continuously performs self-check, initialization, etc. <ul style="list-style-type: none"> When the conditions are met, it enters the grid-tied mode, and the inverter starts on grid connection. If the grid is not detected or the grid fails during checking, and the back-up function is enabled, it enters the off-grid mode; if the back-up is disabled, it enters waiting mode. If the self-check fails, and faults are detected, it enters fault mode. If the self-check fails, and alarms are detected, it enters fault mode. |
| 3 | Grid-Tied mode | The inverter is grid-tied successfully. <ul style="list-style-type: none"> If a fault is detected and back-up function is disabled, it enters fault mode. If an alarm is detected and the back-up function is disabled, it enters waiting mode. If the back-up function is enabled, and a fault/alarm that will not influence the back up function is detected, it enters off-grid mode. If the back-up function is enabled, and a fault that will influence the back up function is detected, it enters fault mode. If the back-up function is enabled, and an alarm that will influence the back up function is detected, it enters waiting mode. |
| 4 | Off-grid mode | When the grid power fails, the inverter switches to the off-grid mode and continues to supply power to the load via BACK-UP port. <ul style="list-style-type: none"> If a fault is detected, it enters the fault mode. If an alarm is detected or the back-up function is disabled, it enters waiting mode. If the conditions meet grid-tied requirements and the back-up function is enabled, it enters self-check mode. |
| 5 | Fault mode | If a fault is detected, the inverter enters the fault mode. When the fault is cleared, it enters waiting mode. |

3.4 Features

Power derating

For a safe operation, the inverter will automatically reduce the output power when the operating environment is not ideal.

The following are the factors that may occur power derating. Please try to avoid them during usage.

- Unfavorable environmental conditions, e.g., direct sunlight, high temperature, etc.
- Inverter's output power percentage has been set.
- Over-frequency derating.
- Higher input voltage value.
- Higher input current value.

AFCI

Reasons to occur electric arcs.

- Damaged connectors in the PV or battery system.
- Wrong connected or broken cables.
- Aging connectors and cables.

Methods to detect electric arcs

- The inverter has an integrated AFCI function satisfies IEC63027.
- When the inverter detects an electric arc, users can find the time of the fault and the detailed phenomenon through the app.
- The inverter will shutdown for protection until the AFCI alarms are cleared. After clearing the alarms, the inverter can automatically reconnect to the grid.
 - Automatic reconnection: The alarm can be cleared automatically in 5 minutes if the inverter triggers a fault for less than 5 times within 24 hours.
 - Manual reconnection: The inverter will shutdown for protection after the 5th electric arc fault within 24 hours. The inverter cannot work normally until the fault is solved. Please refer to the SolarGo App User Manual for detailed operations.

| Model | Label | Description |
|------------|------------------|--|
| GW15K-ET | F-I-AFPE-1-2/2-2 | F: Full coverage I: Integrated AFPE: Detection and interruption capability provided 1: 1 monitored string per input port 2/2: 2/2 input ports per channel 2: 2 monitored channels |
| GW20K-ET | | |
| GW25K-ET | F-I-AFPE-1-2/4-2 | F: Full coverage I: Integrated AFPE: Detection and interruption capability provided 1: 1 monitored string per input port 2/4: 2/4 input ports per channel 2: 2 monitored channels |
| GW29.9K-ET | | |
| GW30K-ET | | |

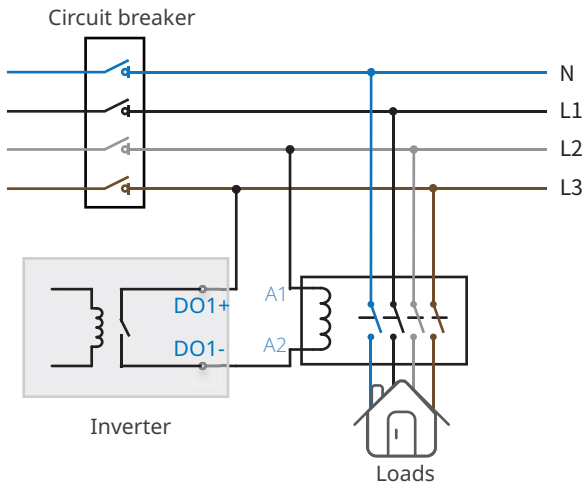
Load Control

The inverter reserves a dry contact controlling port, which supports connecting additional contactors to enable/disable the loads, such as household loads, heat pumps, etc.

The load control methods are as follows:

- Time control: set the time to enable/disable the loads, and the loads will be turned on or off automatically within the setting time period.
- Switch control: when the control mode is ON, the loads will be enabled; when it is OFF, the loads will be disabled.
- BACK-UP load control: the inverter has an integrated relay controlling port, which can control the loads off or on. In off-grid mode, the loads connected to the relay port can be turned off if the overload at BACK-UP is detected or the battery SOC value is lower than the battery off-grid protection setting.

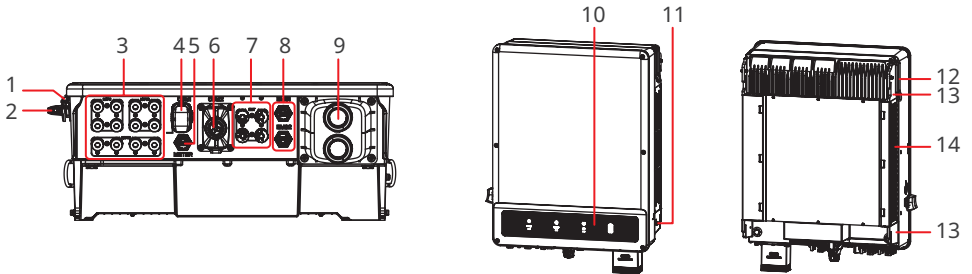
For more detailed instructions, please refer to the SolarGo User Manual.



SolarGo
User Manual

3.5 Appearance

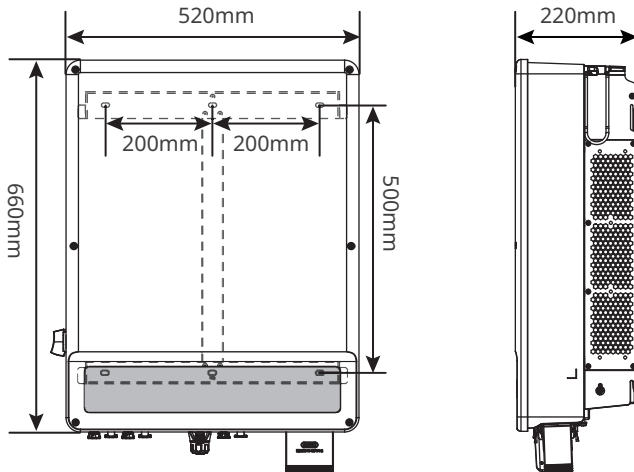
3.5.1 Parts



- | | | |
|---------------------------------------|-----------------------------|---|
| 1. DC switch lock hole ^[1] | 2. DC switch | 3. PV input terminal (PV+/-) |
| 4. Communication module port (COM) | 5. METER communication port | 6. Communication port (COM2) |
| 7. Battery input terminal (BAT+/-) | 8. BMS communication port | 9. AC output terminal (On-Grid and Back-Up) |
| 10. Indicators | 11. PE terminal | 12. Handle |
| 13. Mounting plate | 14. Heat Sink | |


















[1]: Only for Australia.

3.5.2 Dimension








3.5.3 Indicators

Inverter SOC indicator

| Indicator | Status | Description |
|--|---|---|
|  SYSTEM |  | The inverter is powered on and in standby mode. |
| |  | The inverter is starting and in self-check mode. |
| |  | The inverter is in normal operation under grid-tied or off-grid modes. |
| |  | BACK- UP output overload |
| |  | A fault has occurred. |
| |  | The inverter is powered off. |
|  BACK-UP |  | The grid is abnormal, and the power supply to the BACK-UP port of the inverter is normal. |
| |  | The grid is normal, and the power supply to the BACK-UP port of the inverter is normal. |
| |  | The BACK-UP port has no power supply. |
|  COM |  | The monitoring module of the inverter is resetting. |
| |  | The inverter fails to connect with the communication Termination. |
| |  | Communication fault between the communication Termination and Server. |
| |  | The monitoring of the inverter operates well. |
| |  | The monitoring module of the inverter has not been started yet. |


Battery SOC indicator

| Indicator | Description |
|---|-----------------------|
|  | $75% < SOC \leq 100%$ |
|  | $50% < SOC \leq 75%$ |
|  | $25% < SOC \leq 50%$ |
|  | $0% < SOC \leq 25%$ |
|  | No battery connected. |

Indicator light blinking during battery discharging: for example, when the battery SOC is between 25% and 50%, the light at the 50% position blinks.

3.5.4 Nameplate

The nameplate is for reference only.

| GOODWE | |
|---|----------------------------|
| Product: Hybrid Inverter | |
| Model: *** | |
| PV Input | UDC max: ***Vd.c. |
| | UMPP: ***Vd.c. |
| | Idc,max: ***Ad.c. |
| | ISC PV: ***Ad.c. |
| Battery | Ubatt: ***Vd.c, Li-Ion |
| | Ibatt,max(C/D): ***Ad.c |
| On-grid | UAC: ***Va.c. |
| | fAC: ***Hz |
| | PAC: ***kW |
| | IAC,max(to grid): ***Aa.c. |
| | Sr(to grid): ***kVA |
| | Smax(to grid): ***kVA |
| | IAC(from grid): ***Aa.c. |
| | Sr(from grid): ***kVA |
| Smax(from grid): ***kVA | |
| Back-up | UAC,r: ***Va.c. |
| | fAC,r: ***Hz |
| | IAC,max: ***Aa.c. |
| | Sr: ***kVA |
| | Smax: ***kVA |
| P.F.: -1,0.8cap...0.8ind, T _{Operating} : -35~60°C Non-isolated, IP66, Protective Class I, OVC DCII/ACIII | |
|  | |
| S/N: | |
| Good We Technologies Co., Ltd. E-mail: service@goodwe.com No.90 Zijin Rd., New District, Suzhou, 215011, China S/N | |

GW trademark, product type, and product model

Technical parameters

Safety symbols and certification marks

Contact information and serial number

4 Check and Storage

4.1 Check Before Receiving

Check the following items before receiving the product.

1. Check the outer packing box for damage, such as holes, cracks, deformation, and other signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
2. Check the inverter model. If the inverter model is not what you requested, do not unpack the product and contact the supplier.
3. Check the deliverables for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damage is found.

4.2 Deliverables

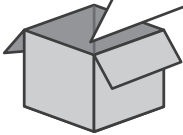
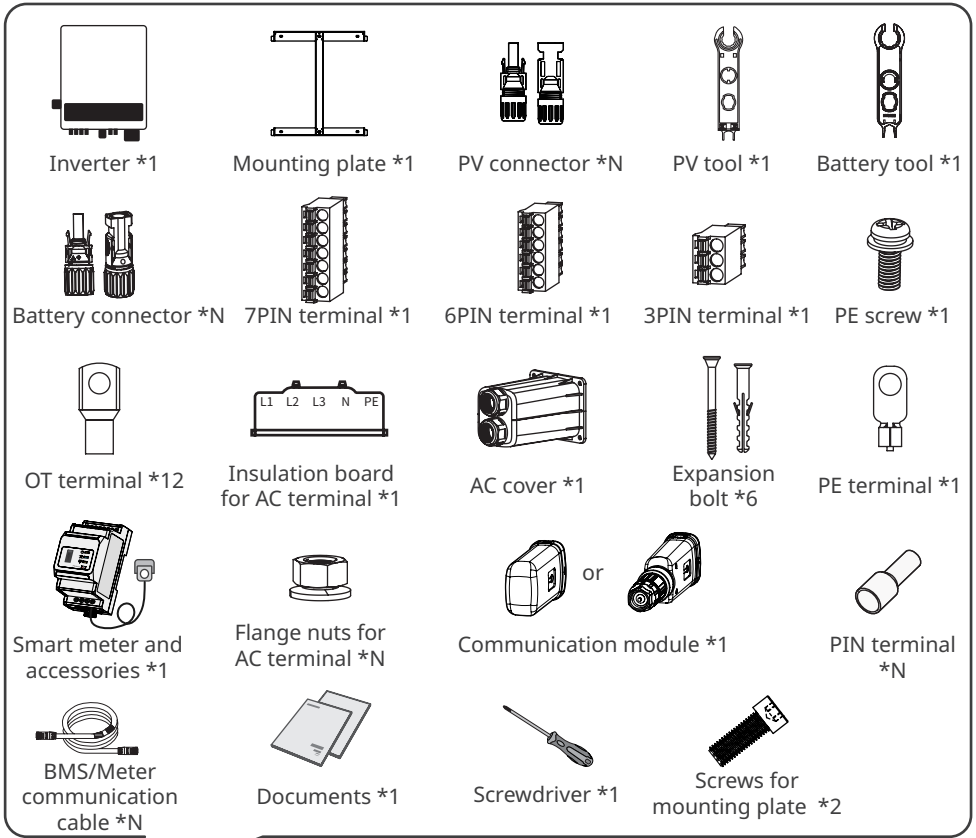


WARNING

Connect the DC cables with the included terminals. The manufacturer shall not be liable for the damage if other terminals are used.

NOTICE

- The number of pin terminals, PV connectors, and battery connectors are various depending on different inverters. The actual accessories may differ.
- PV connector: GW15K/20K-ET: 4 x PV+/PV-; GW25K/29.9K/30K-ET: 6 x PV+/PV-.
- Battery connector: GW15K/20K-ET: 1 x BAT+/BAT-; GW25K/29.9K/30K-ET: 2 x BAT+/BAT-.
- BMS communication cable: GW15K/20K-ET: 1; GW25K/29.9K/30K-ET: 2; Meter communication cable GW15K/20K-ET: 2; GW25K/29.9K/30K-ET: 3.



4.3 Storage

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements:

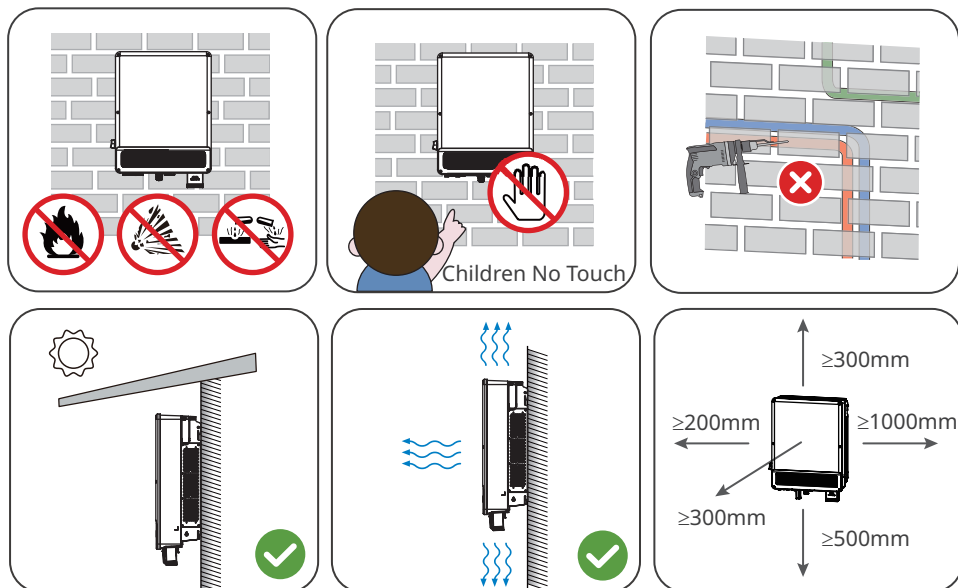
1. Do not unpack the outer package or throw the desiccant away.
2. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and no condensation.
3. The height and direction of the stacking inverters should follow the instructions on the packing box.
4. The inverters must be stacked with caution to prevent them from falling.
5. If the inverter has been long term stored, it should be checked by professionals before being put into use.

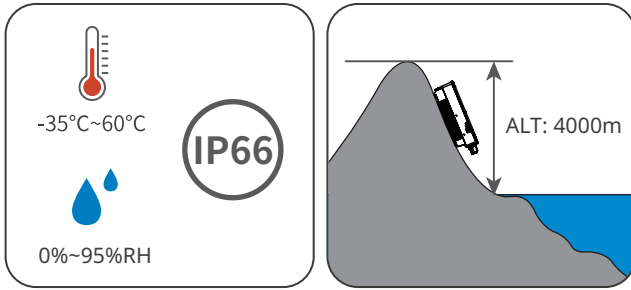
5 Installation

5.1 Installation Requirements

Installation Environment Requirements

1. Do not install the equipment in a place near flammable, explosive, or corrosive materials.
2. Do not install the equipment in a place that is easy to touch, especially within children's reach. High temperature exists when the equipment is working. Do not touch the surface to avoid burning.
3. Avoid the water pipes and cables buried in the wall when drilling holes.
4. Install the equipment in a sheltered place to avoid direct sunlight, rain, and snow. Build a sunshade if it is needed.
5. The place to install the equipment shall be well-ventilated for heat radiation and large enough for operations.
6. The equipment with a high ingress protection rating can be installed indoors or outdoors. The temperature and humidity at the installation site should be within the appropriate range.
7. Install the equipment at a height that is convenient for operation and maintenance, electrical connections, and checking indicators and labels.
8. The altitude to install the inverter shall be lower than the maximum working altitude 4000m.
9. Install the equipment away from electromagnetic interference. If there are radio stations or wireless communication equipment below 30 MHz near the installation location, please install the equipment as follows:
 - Add a multi-turn winding ferrite core at the DC input line or AC output line of the inverter, or add a low-pass EMI filter.
 - The distance between the inverter and the wireless EMI equipment is more than 30m.



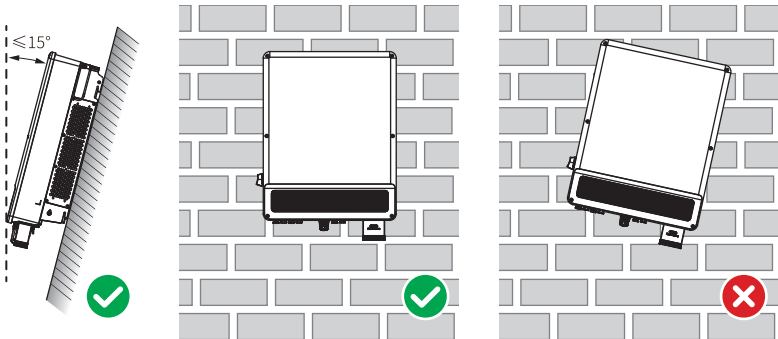


Mounting Support Requirements

- The mounting support shall be nonflammable and fireproof.
- Install the equipment on a surface that is solid enough to bear the inverter weight.
- Do not install the product on the support with poor sound insulation to avoid the noise generated by the working product, which may annoy the residents nearby.




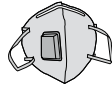
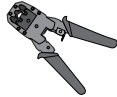


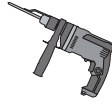




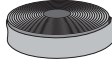

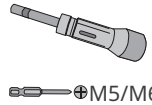



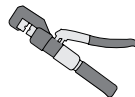
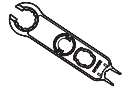
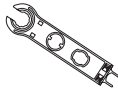

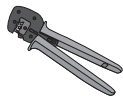
Installation Angle Requirements

- Install the inverter vertically or at a maximum back tilt of 15 degrees.
- Do not install the inverter upside down, forward tilt, backward tilt, or horizontally.



Installation Tool Requirements

The following tools are recommended when installing the equipment. Use other auxiliary tools on site if necessary.

| | | | | |
|---|---|---|--|---|
|  |  |  |  |  |
| Goggles | Safety shoes | Safety gloves | Dust mask | RJ45 crimping tool |
|  |  |  |  |  |
| Diagonal pliers | Wire stripper | Hammer drill | Heat gun | Vacuum cleaner |
|  |  |  |  |  |
| Marker | Level | Heat shrink tube | Rubber hammer | Torque wrench |
|  |  |  |  |  |
| Multimeter | Cable tie | Adjustable wrench | Hydraulic pliers | Battery connector tool |
|  |  |  | | |
| PV connector tool | Socket wrench | PV connector crimping tool | | |

5.2 Inverter Installation

5.2.1 Moving the Inverter

CAUTION

- Operations such as transportation, turnover, installation and so on must meet the requirements of the laws and regulations of the country or region where it is located.
- Move the inverter to the site before installation. Follow the instructions below to avoid personal injury or equipment damage.
 1. Consider the weight of the equipment before moving it. Assign enough personnel to move the equipment to avoid personal injury.
 2. Wear safety gloves to avoid personal injury.
 3. Keep balance to avoid falling down when moving the equipment.

5.2.2 Installing the Inverter

NOTICE

- Avoid the water pipes and cables buried in the wall when drilling holes.
- Wear goggles and a dust mask to prevent the dust from being inhaled or contacting eyes when drilling holes.
- Make sure the inverter is firmly installed in case of falling down.
- The DC switch lock of appropriate size should be prepared by customers. The diameter of the lock hole is 5mm. The lock might not be able to install if the size is inappropriate.

Step 1: Put the plate on the wall horizontally and mark positions for drilling holes.

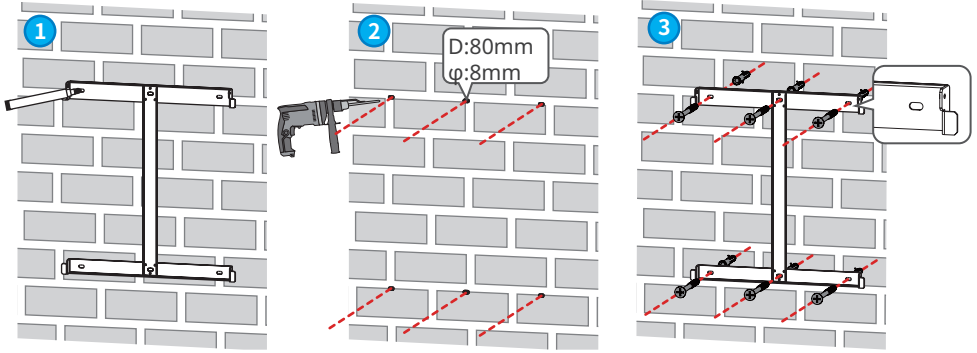
Step 2: Drill holes to a depth of 80mm using the hammer drill. The diameter of the drill bit should be 8mm.

Step 3: Use the expansion bolts to fix the inverter on the wall.

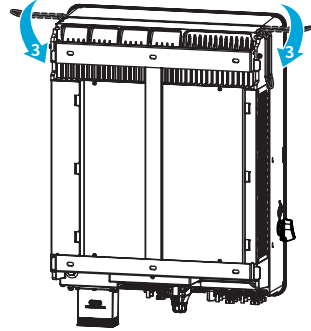
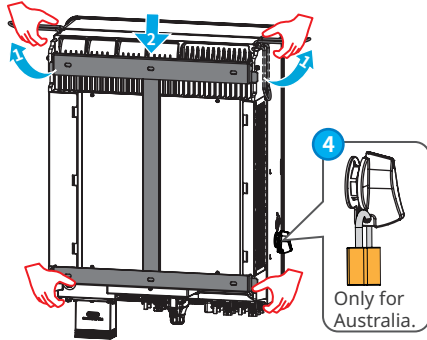
Step 4: (Optional) Secure the DC switch with the DC switch lock, ensuring that the DC switch is "OFF" during installation.

Step 5: Install the inverter on the mounting plate. For models with handles, please lift the inverter using the handles. For models without handles, please lift the inverter directly.

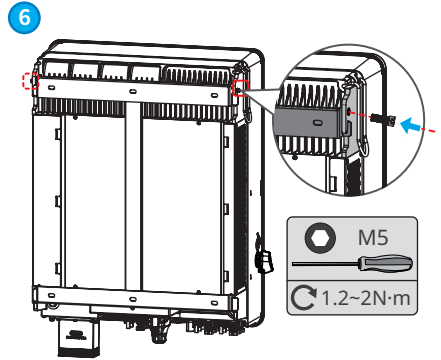
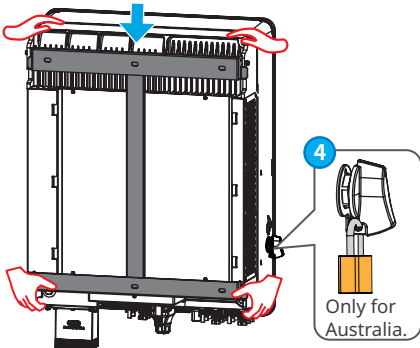
Step 6: Tighten the nuts to secure the mounting plate and the inverter.



5 With handles



5 Without handles



6 Electrical Connection

6.1 System Wiring Diagram

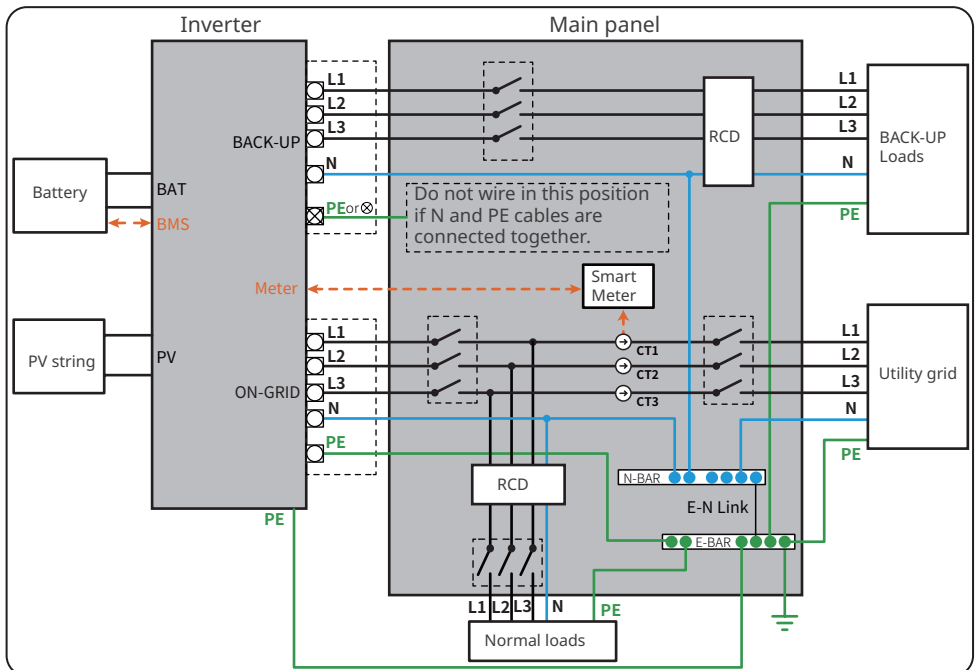
NOTICE

- N and PE wiring via ON-GRID and BACK-UP ports of the inverter are different based on the regulation requirements of different regions. Refer to the specific requirements of local regulations.
- There are built-in relays inside of the inverter's ON-GRID and BACK-UP AC ports. When the inverter is in the off-grid mode, the built-in ON-GRID relay is open; while when the inverter is in grid-tied mode, it is closed.
- When the inverter is powered on, the BACK-UP AC port is charged. Power off the inverter first if maintenance is required for the loads connected with BACK-UP ports. Otherwise, it may cause electric shock.

N and PE cables are connected together in the Main Panel for wiring.

NOTICE

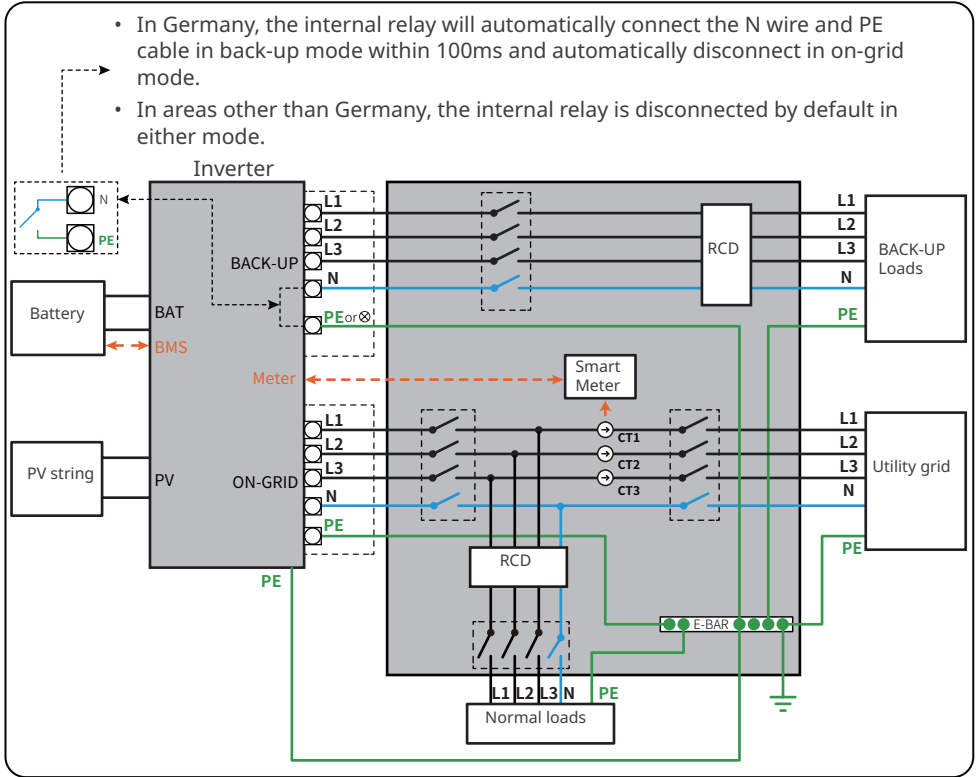
- To maintain neutral integrity, the neutral cable of ON-GRID side and BACK-UP side must be connected together, otherwise BACK-UP function will not work.
- The following diagram is applicable to areas in Australia, New Zealand, etc.



N and PE cables are separately wired in the Main Panel.

NOTICE

- Ensure that the grounding of BACK-UP is correctly and tightened. Otherwise, the BACK-UP function may be abnormal in case of grid failure.
- The following diagram is applicable to areas except Australia, New Zealand.



6.2 Safety Precaution

DANGER

- Perform electrical connections in compliance with local laws and regulations. Including operations, cables, and component specifications.
- Disconnect the DC switch and the AC output switch of the inverter to power off the inverter before any electrical connections. Do not work with power on. Otherwise, an electric shock may occur.
- Tie the same type cables together, and place them separately from cables of different types. Do not place the cables entangled or crossed.
- If the cable bears too much tension, the connection may be poor. Reserve a certain length of the cable before connecting it to the inverter cable port.
- When crimping the terminals, ensure that the conductor part of the cable is in full contact with the terminals. Do not crimp the cable jacket with the terminal. Otherwise the inverter may not operate, or its terminal block getting damaged due to heating and other phenomenon because of unreliable connection after operation.

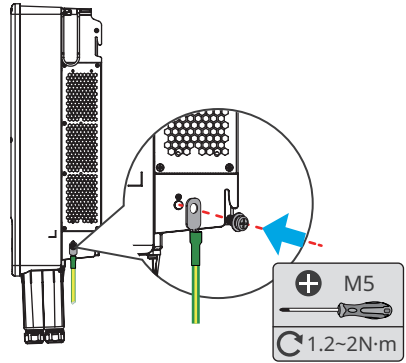
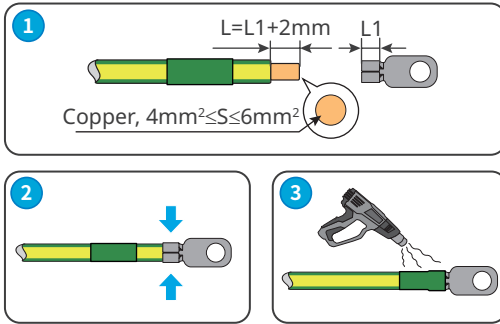
NOTICE

- Wear personal protective equipment like safety shoes, safety gloves, and insulating gloves during electrical connections.
- All electrical connections should be performed by qualified professionals.
- Cable colors in this document are for reference only. The cable specifications shall meet local laws and regulations.

6.3 Connecting the PE cable

WARNING

- The PE cable connected to the enclosure of the inverter cannot replace the PE cable connected to the AC output port. Make sure that both of the two PE cables are securely connected.
- Make sure that all the grounding points on the enclosures are equipotentially connected when there are multiple inverters.
- To improve the corrosion resistance of the terminal, you are recommended to apply silica gel or paint on the ground terminal after installing the PE cable.
- The PE cable should be prepared by the customer. Recommended specifications:
 - Type: single-core outdoor copper cable
 - Conductor cross-sectional area: 4-6mm²



6.4 Connecting the DC Input Cable(PV)

! DANGER

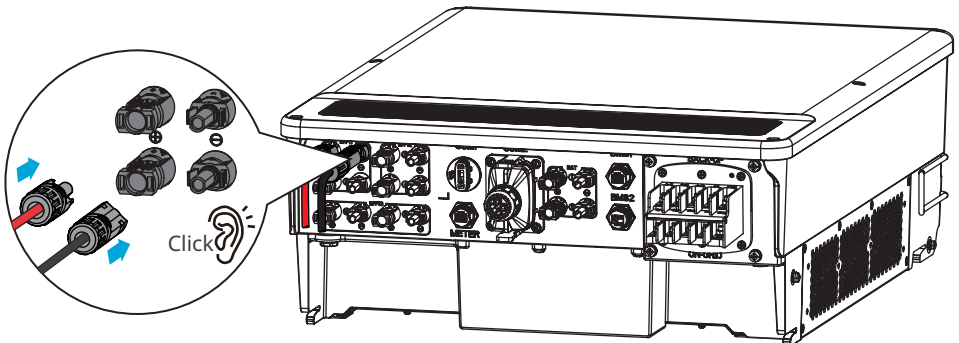
- Do not connect one PV string to more than one inverter at the same time. Otherwise, it may cause damage to the inverter.
- Confirm the following information before connecting the PV string to the inverter. Otherwise, the inverter may be damaged permanently or even cause fire and cause personal and property losses.
 - Make sure that the max short circuit current and the max input voltage per MPPT are within the permissible range.
 - Make sure that the positive pole of the PV string connects to the PV+ of the inverter. And the negative pole of the PV string connects to the PV- of the inverter.

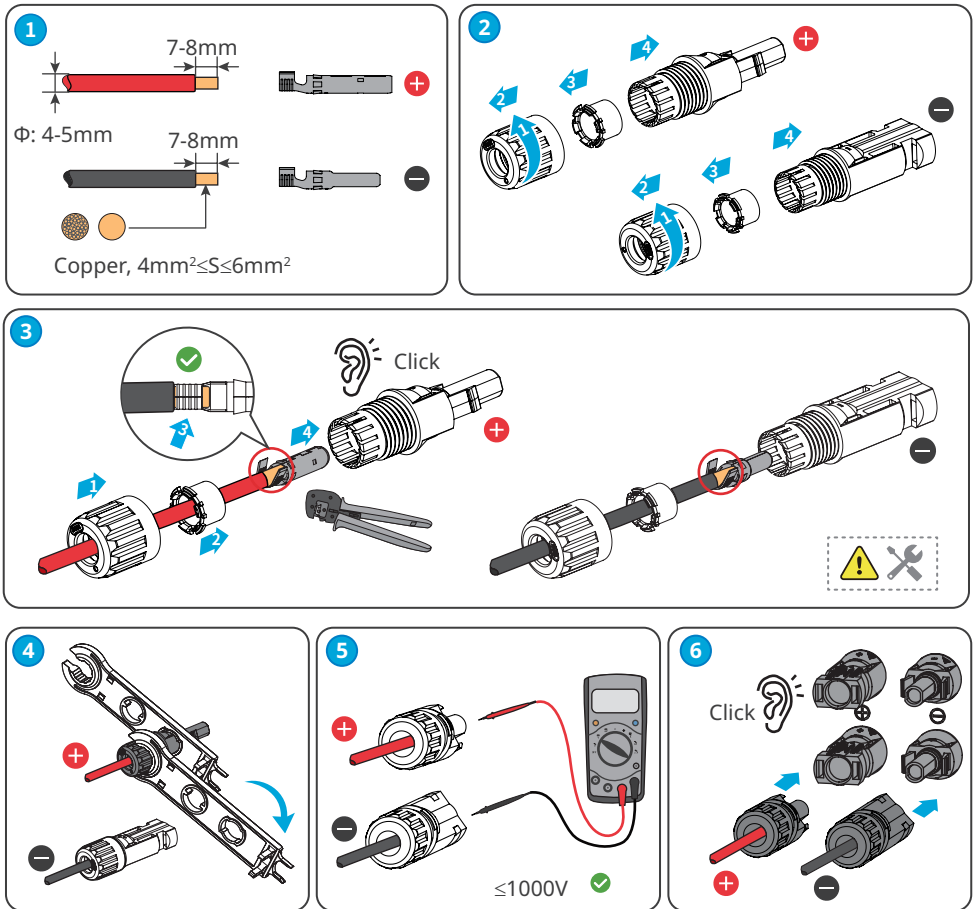
! WARNING

The PV strings cannot be grounded. Ensure the minimum insulation resistance of the PV string to the ground meets the minimum insulation resistance requirements before connecting the PV string to the inverter ($R = \text{maximum input voltage} / 30\text{mA}$).

NOTICE

The two input strings per MPPT should be of the same type, the same number of modules, the same tilt and angle to ensure the best efficiency.





6.5 Connecting the Battery Cable

DANGER

- The battery used with the inverter shall be approved by the inverter manufacturer. The approved battery list can be obtained through the official website.
- A short circuit in the battery may cause personal injury. The instantaneous high current caused by a short circuit can release a large amount of energy and may cause a fire.
- Before connecting the battery cable, ensure the inverter and the battery, and downstream&upstream switches, are all disconnected.
- It is forbidden to connect and disconnect the battery cables when the inverter is running. Otherwise it may cause electric shock.
- Do not connect one battery pack to more than one inverter at the same time. Otherwise, it may cause damage to the inverter.
- It is forbidden to connect loads between the inverter and batteries.
- When connecting battery cables, use insulated tools to prevent accidental electric shock or short circuit to the batteries.
- Ensure that the open circuit voltage of the battery is within the permissible range of the inverter.
- Install a DC breaker between the inverter and the battery.

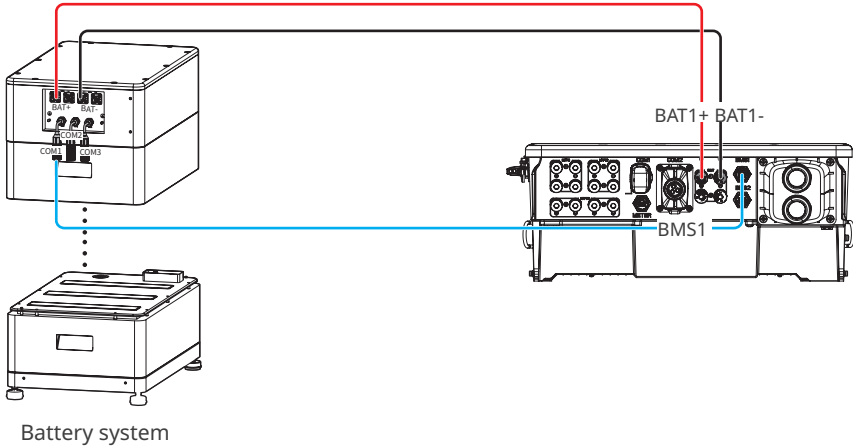
WARNING

- Connect the battery cables to the corresponding terminals such BAT+, BAT- and grounding ports correctly. Otherwise it will cause damage to the inverter.
- Ensure that the whole cable cores are inserted into the terminal holes. No part of the cable core can be exposed.
- Ensure that the cables are connected securely. Otherwise it will cause damage to the inverter due to overheat during its operation.

NOTICE

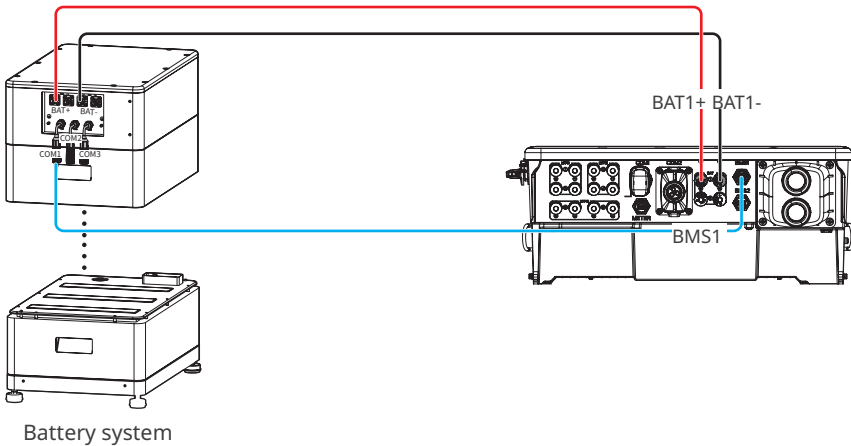
- Delayed charge cannot be set to 100% if the PV is oversizing.
- Connecting the BMS communication cable for battery communication when connecting the inverter to the battery. For more detailed instructions, refer to **6.7.3 Connecting the BMS or Meter Communication Cable**.
- The batteries and inverters should be connected in different ways when the inverter models differ or the number of batteries differ, as explained below:

GW15K-ET or GW20K-ET can be connected to only one battery system. The battery cable must be connected to the BAT1+/- ports, as shown below.

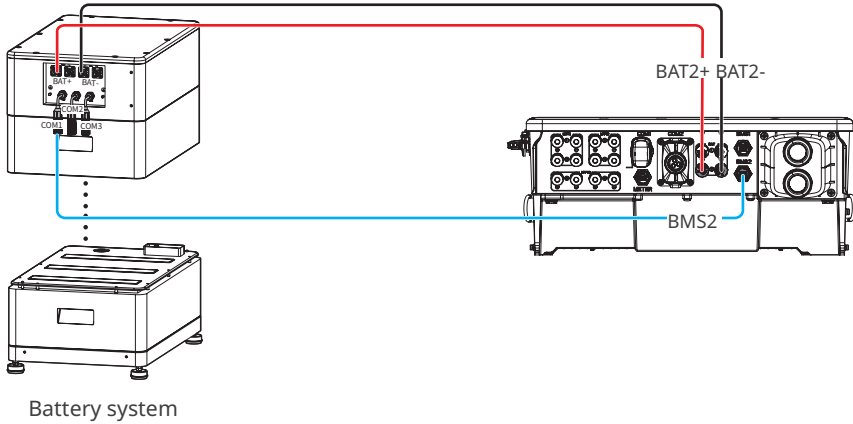


GW25K-ET, GW29.9K-ET, and GW30K-ET can be connected to one or two battery systems, as shown below.

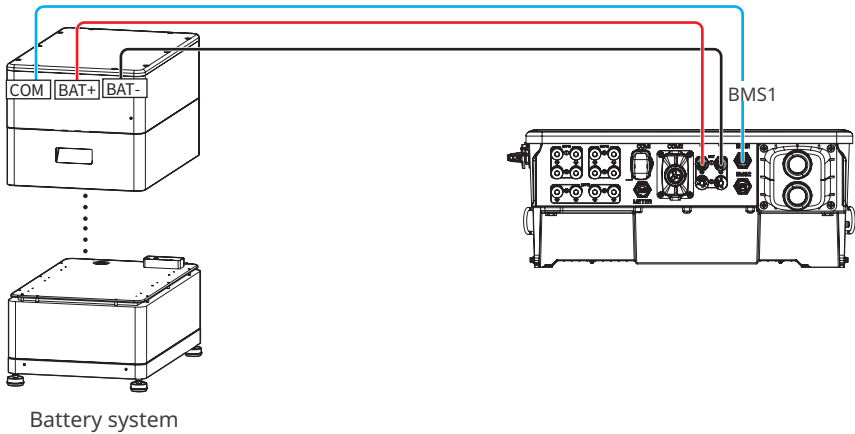
When connecting a single battery system to BAT1+/- ports of the inverter, the BMS communication cable should be connected to the BMS1 port as below



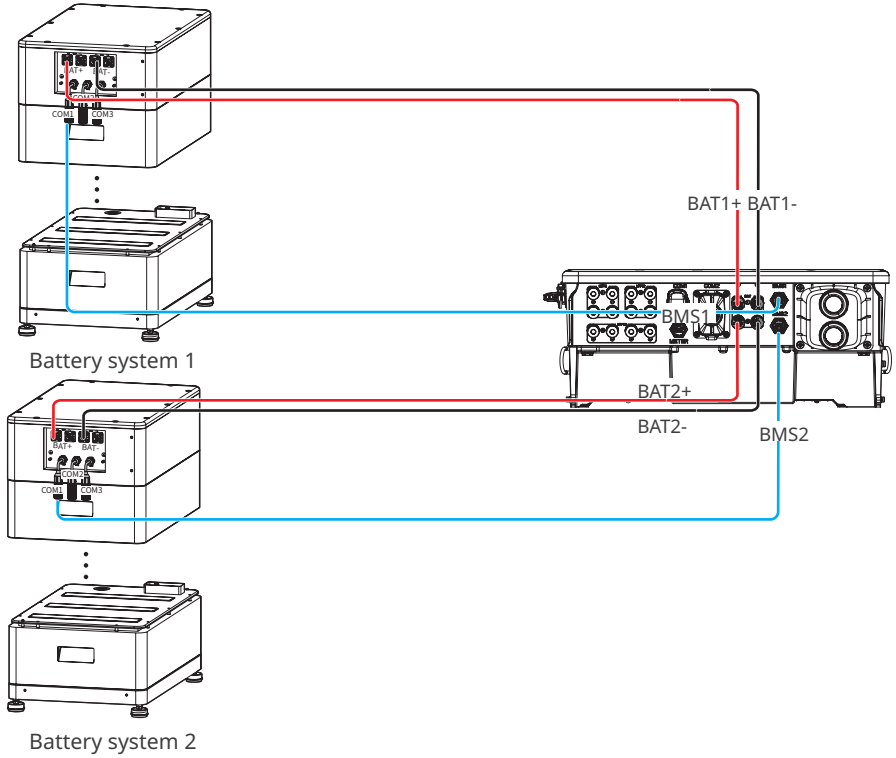
When connecting a single battery system to BAT2+/- ports of the inverter, the BMS communication cable should be connected to the BMS2 port as below.

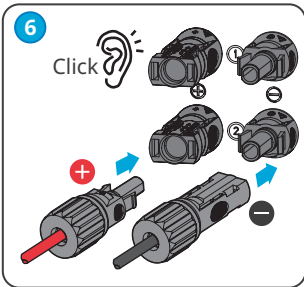
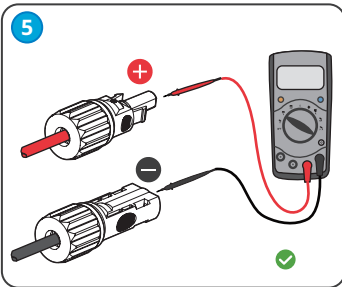
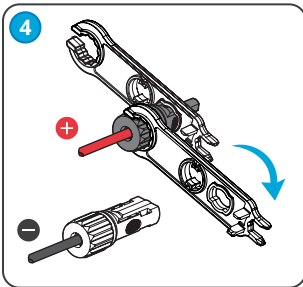
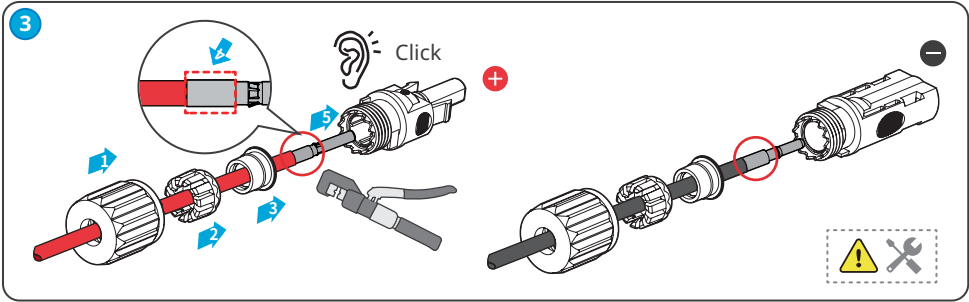
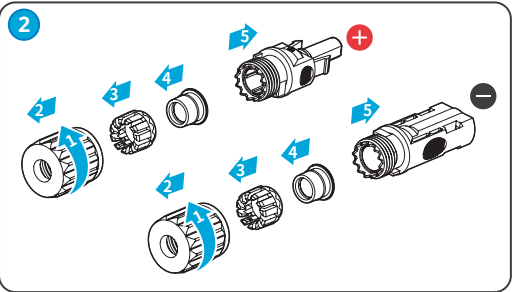
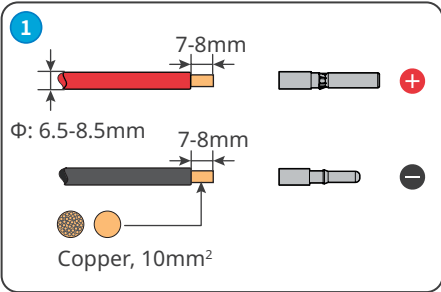
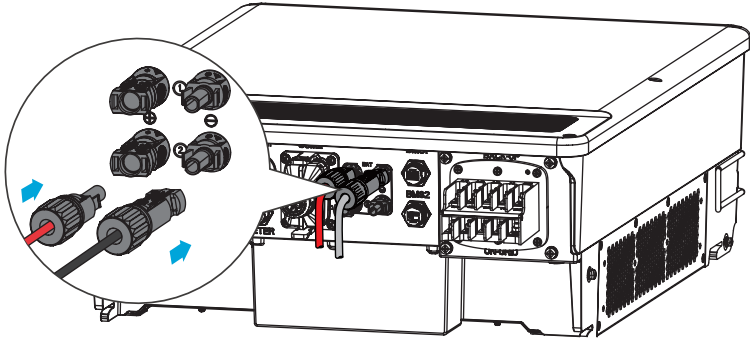


When the nominal charge and discharge current of the single battery system is higher than 50A, the single battery system can be connected to BAT1+/- and BAT2+/- ports of the inverter. The BMS communication cable should be connected to the BMS1 port as below.



When connecting two single battery systems to BAT2+/- ports of the inverter, the BMS communication cable should be connected to the BMS1 or BMS2 port respectively as below.





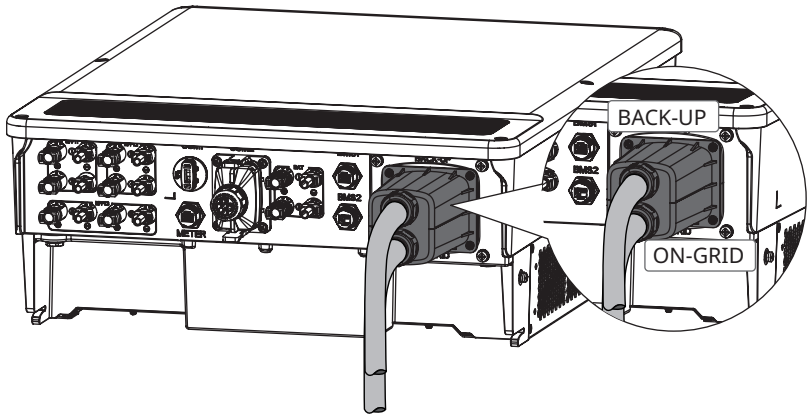
6.6 Connecting the AC Cable

WARNING

- Do not connect loads between the inverter and the AC switch directly connected to the inverter.
- The residual current monitoring unit (RCMU) is integrated into the inverter to avoid the residual current exceeds the limit.
- The type A RCD can be connected to the inverter for protection according to the local laws and regulations. Recommended specifications: ON-GRID RCD: 300mA; BACK-UP RCD: 30mA.
- When the inverter is powered on, the BACK-UP AC port is charged. Power off the inverter first if maintenance is required for the loads connected with BACK-UP ports. Otherwise, it may cause electric shock.

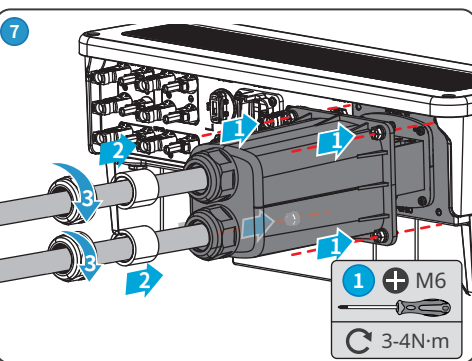
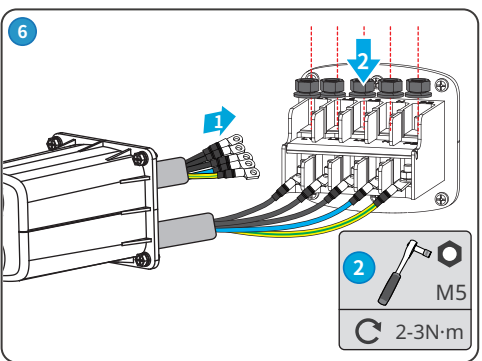
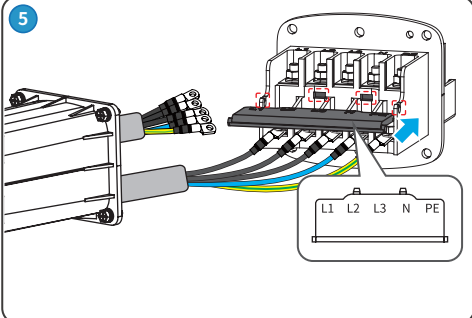
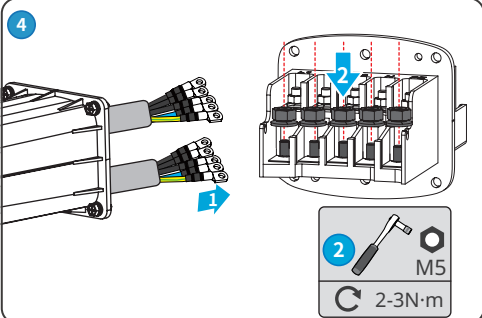
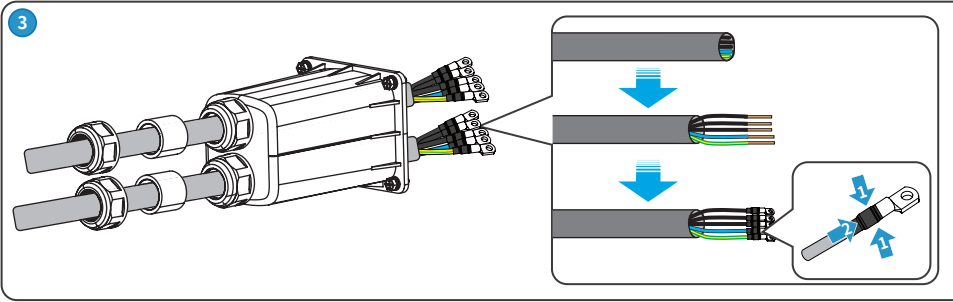
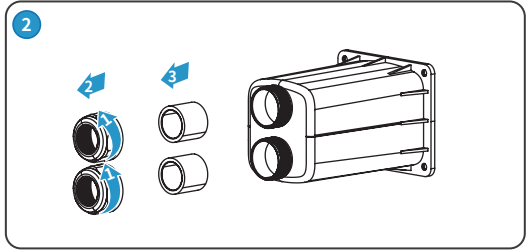
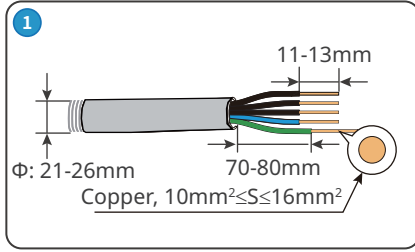
NOTICE

- Install one AC output circuit breaker for each inverter. Multiple inverters cannot share one AC circuit breaker.
- An AC circuit breaker shall be installed on the AC side to make sure that the inverter can safely disconnect the grid when an exception happens. Select the appropriate AC circuit breaker in compliance with local laws and regulations.



WARNING

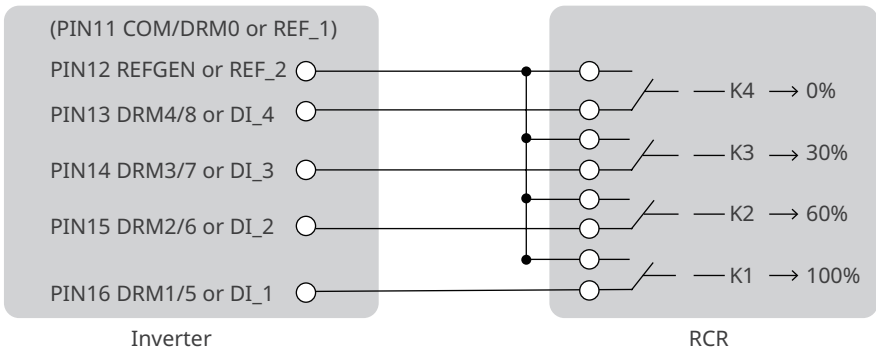
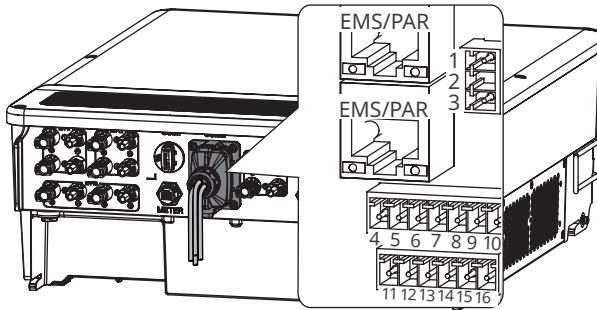
- Connect the AC cables to the corresponding terminals such as "L1", "L2", "L3", "N", and PE correctly. Otherwise it will cause damage to the inverter.
- Ensure that the whole cable cores are inserted into the terminal holes. No part of the cable core can be exposed.
- Ensure that the insulation board is inserted into the AC terminal tightly.
- Ensure that the cables are connected securely. Otherwise it will cause damage to the inverter due to overheat during its operation.



6.7 Communication Connection

NOTICE

- Make sure that the communication device is connected to the right COM port. Route the communication cable far away from any interference source or power cable to prevent the signal from being influenced.
- Enable the DRED, RCR or remote shutdown function via SolarGo App after cable connections.
- If the inverter is not connected to the DRED device or remote shutdown device, do not enable these functions in the SolarGo App, otherwise the inverter cannot be connected to the grid for operation.
- To realize functions such as load control, remote shutdown, DRED/RCR, the communication cable have to be connected to the master inverter. Otherwise, the functions cannot work properly.

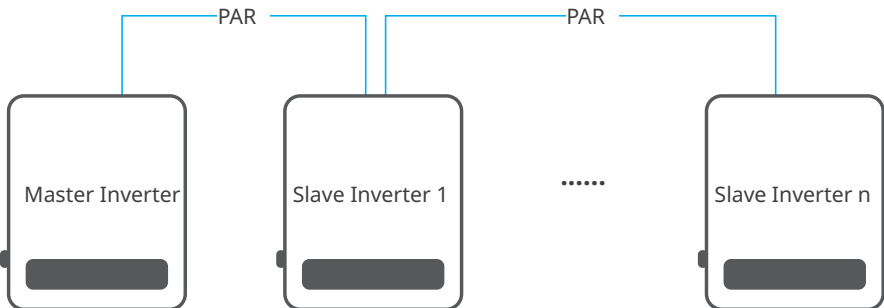


| No. | Port Definition | Function | Description |
|-----|-----------------|--------------|---|
| 1 | DO1+ | Dry contact | Optionnal function. The inverter reserves a dry contact controlling port, which supports connecting additional contactors to enable/disable the load. For high voltage AC230V. PIN2 is reserved for safety regulations. |
| 2 | NC | Reserved PIN | |
| 3 | DO1- | Dry contact | |

| | | | |
|----|-------------------|---|---|
| 4 | GND | Power supply | Optionnal function. Supplies power for external devices. |
| 5 | 12V_S | | |
| 6 | RSD_12V | Controls the RSD modules externally. | Reserved. Connects to RSD_12V and 12V_S to control the RSD module rapidly. |
| 7 | GND | Remote shutdown/ NS Protection | Optionnal function. Controls the equipment on/off remotely. |
| 8 | Remote shutdown | | |
| 9 | DO2+ | Dry contact | Optionnal function. The inverter reserves a dry contact controlling port, which supports connecting additional contactors to enable/disable the load. |
| 10 | DO2- | | |
| 11 | COM/DRM0 or REF_1 | DRED or RCR | Optionnal function. <ul style="list-style-type: none"> DRED (Demand Response Enabling Device): the inverter satisfies the Australian DERD certification and offers DRED signal controlling ports. RCR (Ripple Control Receiver): In Germany and some other European regions, grid companies use Ripple Control Receiver to convert grid dispatching signals into dry contact mode for transferring. And the power station receives grid dispatching signals through dry contact communication mode. |
| 12 | REFGEN or REF_2 | | |
| 13 | DRM4/8 or DI_4 | | |
| 14 | DRM3/7 or DI_3 | | |
| 15 | DRM2/6 or DI_2 | | |
| 16 | DRM1/5 or DI_1 | | |
| 17 | EMS/PAR | EMS communication or parallel connection port | <ul style="list-style-type: none"> Optionnal function. EMS communication port: connects with the third party device. The third party device is not supported in a parallel system. Optionnal function. PAR communication port: serves as the communication port for the inverter parallelizing. |

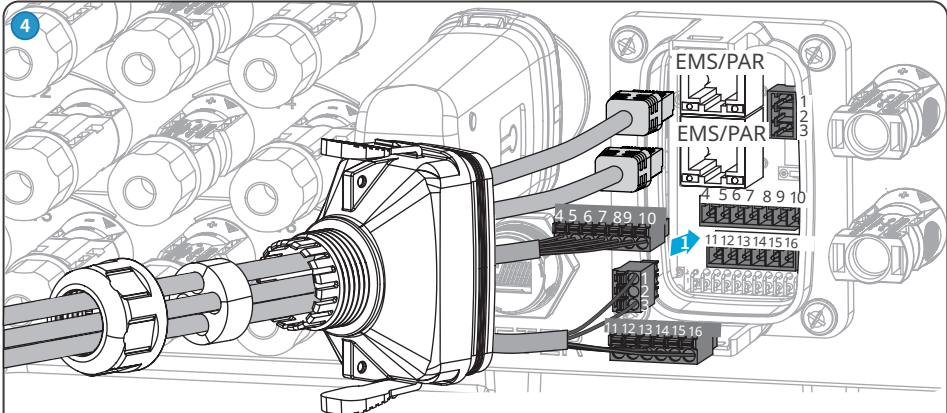
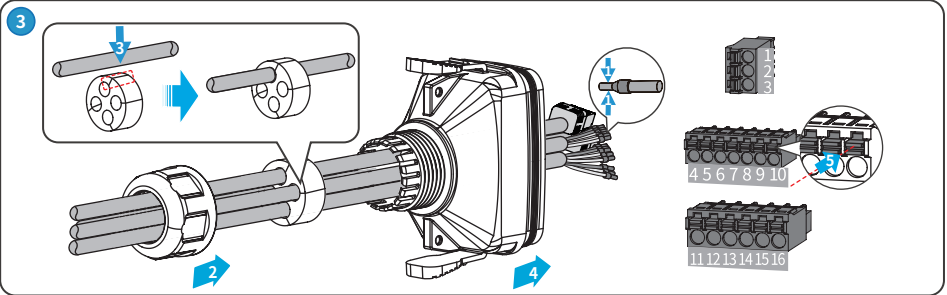
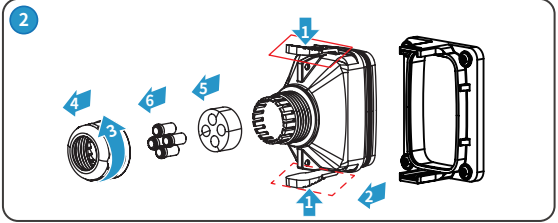
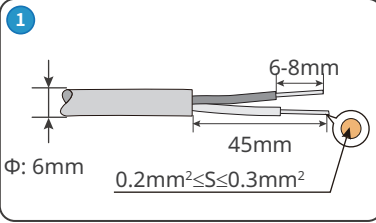
6.7.1 Connecting the Communication Cable

Inverter parallel system networking



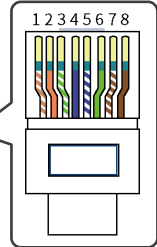
NOTICE

- To ensure waterproof protection, do not remove the waterproof seal of the unused ports.
- RJ45 connector with the following definition can be connected:



| | |
|--|--|
| Dry Contact 1: DO1- 2: NC 3: DO1+ 9: DO2- 10: DO2+ | DRED/RCR: 11: COM/DRM0 or REF_1 12: REFGEN or REF_2 13: DRM 4/8 or DI_4 14: DRM 3/7 or DI_3 15: DRM 2/6 or DI_2 16: DRM 1/5 or DI_1 |
| Power Supply 4: GND 5: 12V_S | Remote Shutdown 7: GND 8: Remote Shutdown |
| RSD Control 5: 12V_S 6: RSD_12V | |

| PIN | Color | EMS/PAR | Definition |
|-----|------------------|-----------|----------------------|
| 1 | Orange and White | EMS_485_A | EMS485 communication |
| 2 | Orange | EMS_485_B | |
| 3 | Green and White | NC | - |
| 4 | Blue | GND | signal ground wire |
| 5 | Blue and White | CAN_L | CAN bus |
| 6 | Green | CAN_H | |
| 7 | Brown and White | SYN_BUS1 | Parallel syn signal |
| 8 | Brown | SYN_BUS2 | |



6.7.2 Connecting the BMS or Meter Communication Cable



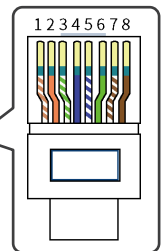
WARNING

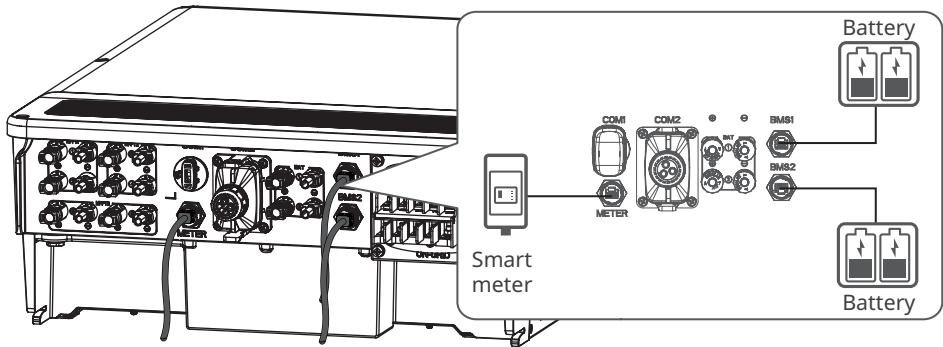
- For GW15K-ET and GW20K-ET, please connect the cable to BMS1 port to realize BMS communication. Otherwise, BMS communication may fail.
- For GW25K-ET, GW29.9K-ET, and GW30K-ET, please connect the cable to BMS1 port to realize BMS communication when single battery system is connected. Otherwise, BMS communication may fail. For more details, refer to **6.5 Connecting the Battery Cable**.

NOTICE

- The smart meter and CT have been preset parameters before delivered with the inverter. Do not modify the relevant parameters.
- The BMS communication cable and meter communication cable are delivered with the inverter, with default length of 3m and 10m respectively.
- Each inverter needs to be connected to one smart meter independently. Do not connect one smart meter to multiple inverters. Contact the manufacturer or supplier to purchase additional smart meter(s) if you need.
- Ensure that CT connects with the corresponding phase line: CT1 is connected to L1; CT2 is connected to L2; and CT3 is connected to L3. And ensure that the CT is connected in the right direction. Please refer to the smart meter user manual for detailed operations.
- Use the included BMS communication cable to realize communication between the inverter and the battery. Otherwise, the communication may fail. If more communication cables are needed, please prepare network cables and RJ connectors by yourself to make the cable. Only crimp PIN4 and PIN5 of the connector when making the cable, otherwise the communication may fail.

| PIN | Color | Smart Meter | BMS1 | BMS2 |
|-----|------------------|-------------|-------|-------|
| 1 | Orange and White | NC | NC | NC |
| 2 | Orange | NC | NC | NC |
| 3 | Green and White | NC | NC | NC |
| 4 | Blue | NC | CANH1 | CANH2 |
| 5 | Blue and White | NC | CANL1 | CANL2 |
| 6 | Green | NC | NC | NC |
| 7 | Brown and White | 485_B1 | NC | NC |
| 8 | Brown | 485_A1 | NC | NC |

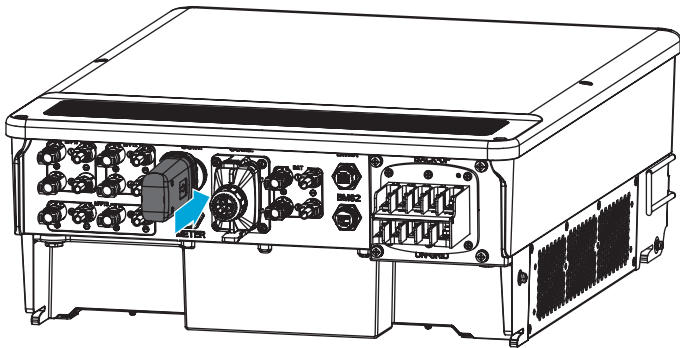




6.7.3 Installing the Communication Module (Optional)

NOTICE

- Plug a communication module into the inverter to establish a connection between the inverter and the smartphone or web pages. The communication module can be a Bluetooth module, WiFi module, LAN module, or 4G module. Set inverter parameters, check running information and fault information, and observe system status in time via the smartphone or web pages.
- Refer to the delivered communication module user manual to get more introduction to the module. For more detailed information, visit www.goodwe.com.



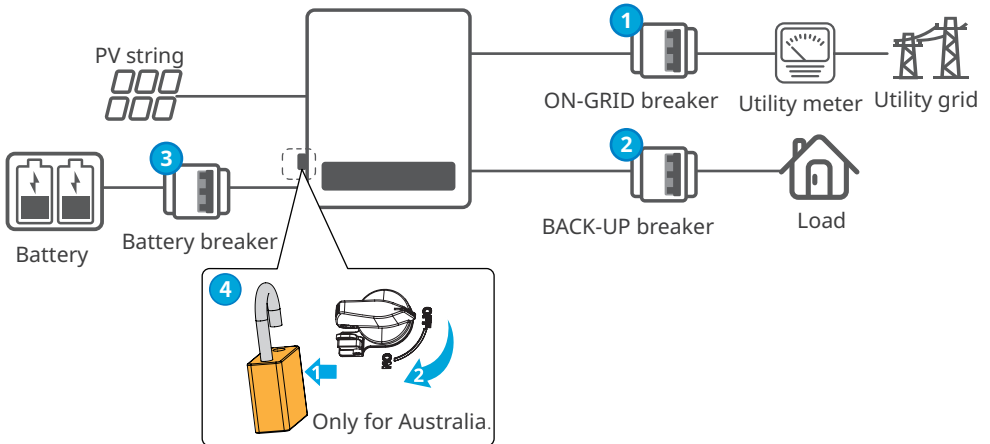
7 Equipment Commissioning

7.1 Check Before Power ON

| No. | Check Item |
|-----|---|
| 1 | The product is firmly installed at a clean place that is well-ventilated and easy-to operate. |
| 2 | The PE, DC input, AC output, and communication cables are connected correctly and securely. |
| 3 | Cable ties are intact, routed properly and evenly. |
| 4 | Unused cable holes are fitted using the waterproof nuts. |
| 5 | The electrical conduit holes are sealed. |
| 6 | The voltage and frequency at the connection point meet the inverter grid connection requirements. |

7.2 Power On

Single Inverter



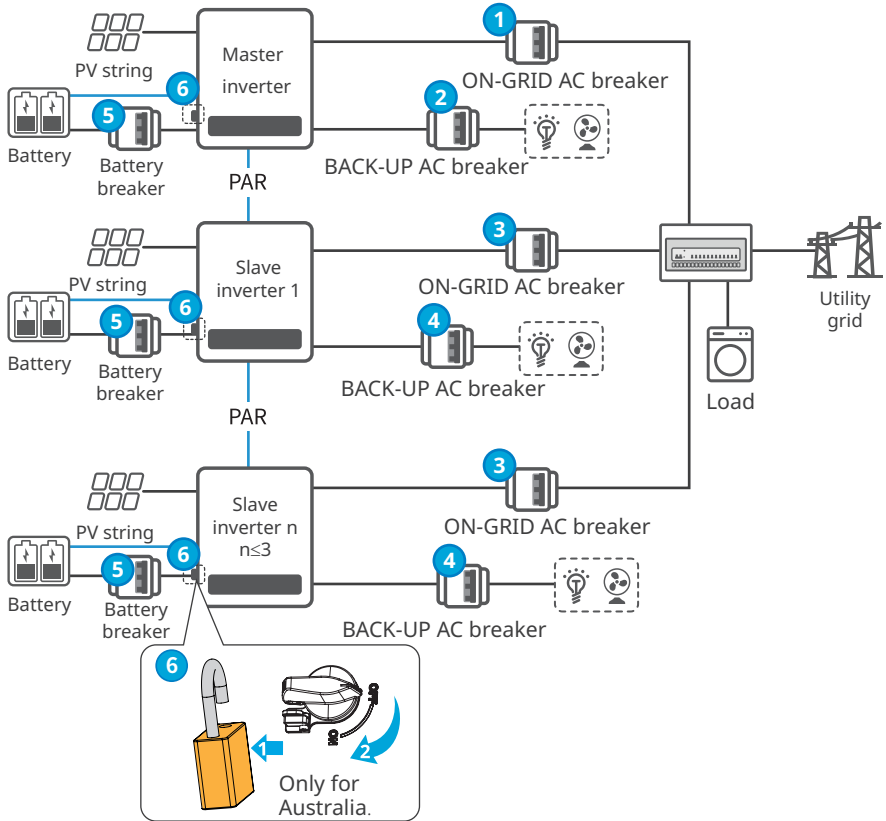
Turn on: ① → ② → ③ → ④

Parallel System



WARNING


















When power on the parallel system, make sure that all the AC breakers of the slave inverters are powered on within one minute after powering on the AC breaker of the master inverter.








Turn on: ① → ② → ③ → ④ → ⑤ → ⑥

8 System Commissioning

8.1 Indicators and Buttons

| Indicator | Status | Description |
|--|---|---|
|  SYSTEM |  | The inverter is powered on and in standby mode. |
| |  | The inverter is starting and in self-check mode. |
| |  | The inverter is in normal operation under grid-tied or off-grid modes. |
| |  | BACK- UP output overload |
| |  | A fault has occurred. |
| |  | The inverter is powered off. |
|  BACK-UP |  | The grid is abnormal, and the power supply to the BACK-UP port of the inverter is normal. |
| |  | The grid is normal, and the power supply to the BACK-UP port of the inverter is normal. |
| |  | The BACK-UP port has no power supply. |
|  COM |  | The monitoring module of the inverter is resetting. |
| |  | The inverter fails to connect with the communication Termination. |
| |  | Communication fault between the communication Termination and Server. |
| |  | The monitoring of the inverter operates well. |
| |  | The monitoring module of the inverter has not been started yet. |

Battery SOC indicator

| Indicator | Description |
|---|-------------------------|
|  | $75\% < SOC \leq 100\%$ |
|  | $50\% < SOC \leq 75\%$ |
|  | $25\% < SOC \leq 50\%$ |
|  | $0\% < SOC \leq 25\%$ |
|  | No battery connected. |

Indicator light blinking during battery discharging: for example, when the battery SOC is between 25% and 50%, the light at the 50% position blinks.

8.2 Setting Inverter Parameters via SolarGo App

NOTICE

Please set the inverter parameters first via SolarGo app to ensure its normal operation.

SolarGo App is one smart phone application used to communicate with the inverter via bluetooth, WiFi, 4G or GPRS modules. Commonly used functions:

1. Check the operating data, software version, alarms, etc.
2. Set grid parameters, communication parameters, safety countries, power limitation, etc.
3. Equipment maintenance.
4. Upgrade software version.

For more details, refer to SolarGo User Manual. Scan the QR code or visit https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SolarGo_User%20Manual-EN.pdf to get the user manual.



SolarGo App



SolarGo User Manual

8.2.1 Setting Parameters of Single Inverter

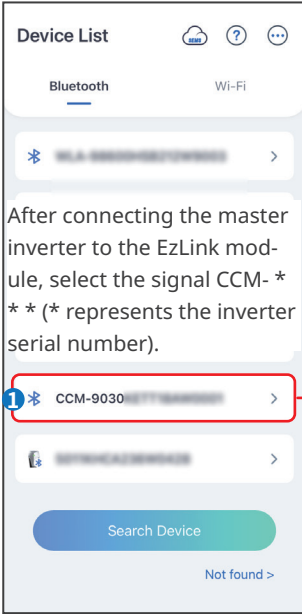
When setting parameters for a single inverter, please refer to the SolarGo App User Manual.

8.2.2 Setting Parameters of Parallel System

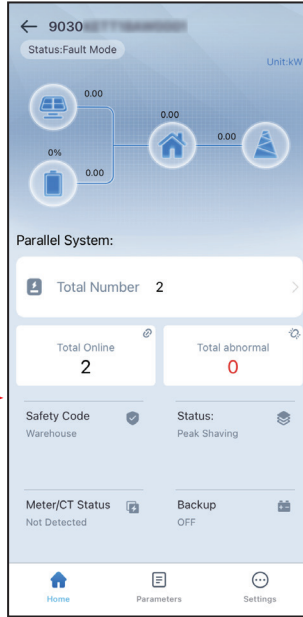
NOTICE

- When setting the parameters of the parallel system, all inverters need to be connected to the SolarGo app respectively to complete the single configuration.
- When setting the parallel system parameters, please ensure that the working mode of each inverter is consistent.
- When setting parameters for a single inverter, please refer to the SolarGo App User Manual. The following only introduces the relevant guidance steps for quick setup in parallel system.

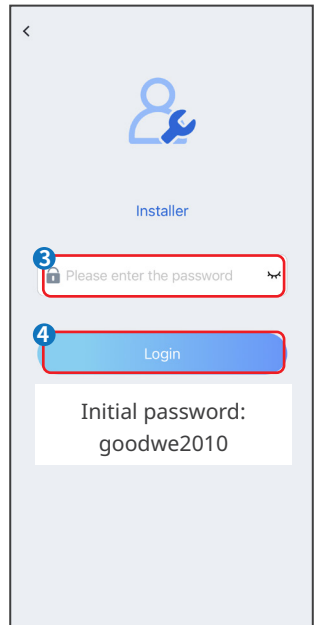
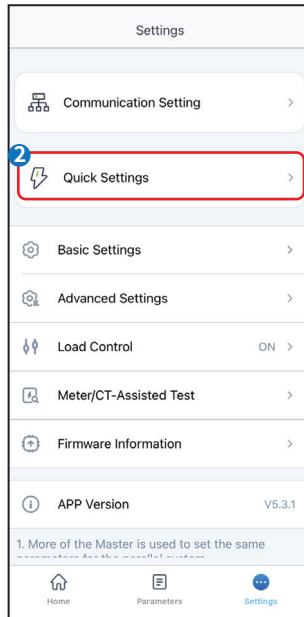
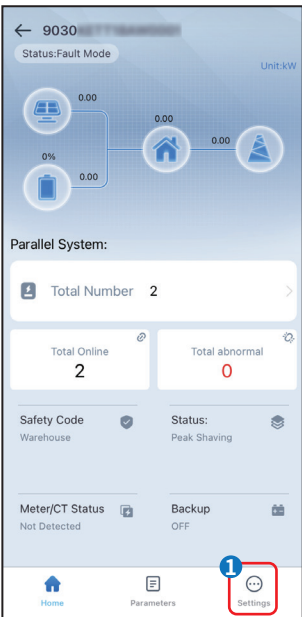
Step1: Login parallel system



After connecting the master inverter to the EzLink module, select the signal CCM- * * * (* represents the inverter serial number).



Step2: Set and adjust the parameters of parallel system according to the interface prompts and actual application scenarios.



Safety Code Export

5 **Safety Code** Warehouse?

Select the national safety regulations based on the actual situation.

| | |
|----------------------|--------|
| UV Stage1 Trip Value | 170.0V |
| UV Stage1 Trip Time | 0.16s |
| OV Stage2 Trip Value | 270.0V |
| OV Stage2 Trip Time | 0.16s |
| UV Stage2 Trip Value | 170.0V |
| UV Stage2 Trip Time | 0.16s |
| OV Stage3 Trip Value | 0.0V |

6 **PREV** **Next**

Quantity Settings

Number Of Inverters 7 **2** Tower ✓

The number of inverters in parallel system can be automatically identified. If there is an error in the quantity, it can be manually corrected.

8 **PREV** **Next**

BAT Connect Mode

9 **Stand-alone Connect** ✓

Parallel Connect ○

Only BAT1 Connect ○

Only BAT2 Connect ○

No Battery ○

Select the battery connection mode based on the actual situation.

10 **PREV** **Next**

Select Battery Model

BAT1 BAT2

Selected Battery
Manufacturer:--
Series:--
Model:--

11 **GoodWe** ▼

BYD ▼

GE+ ▼

Beta test ▼

Select the actual battery model connected to the system.

If there is no available battery model, please open the mobile network and restart the app to obtain one.

12 **PREV** **Next**

Select the appropriate working mode based on the actual situation.

13 **Self-use Mode** Settings

Peakshaving Settings

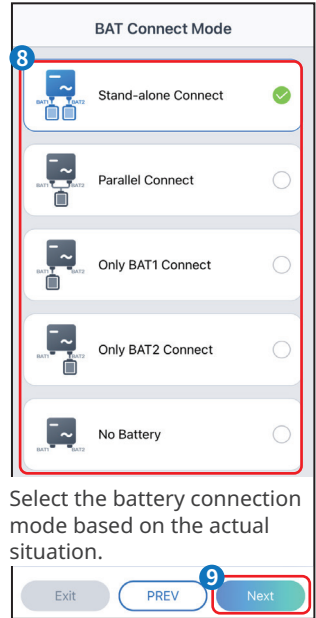
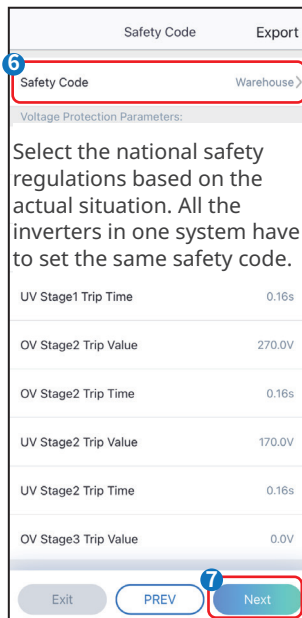
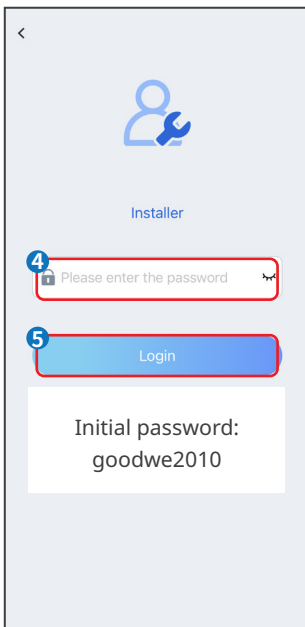
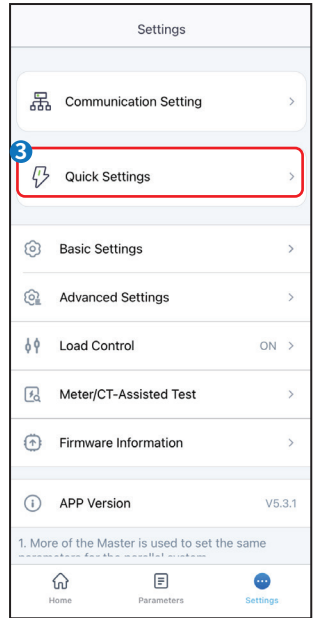
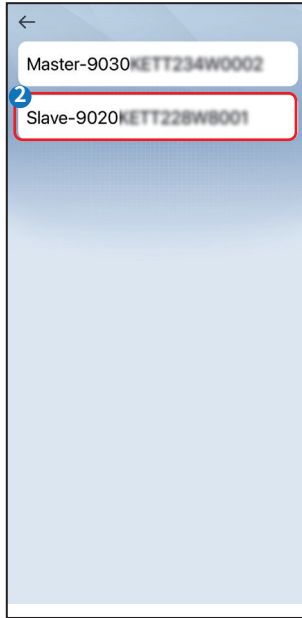
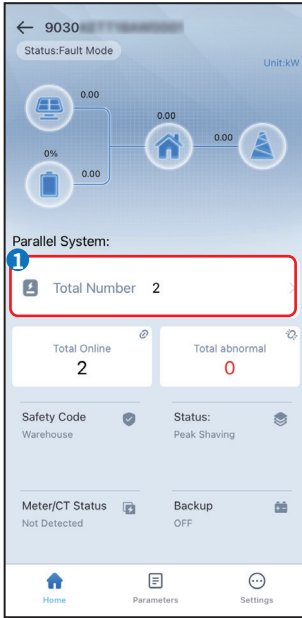
14 **PREV** **Next**

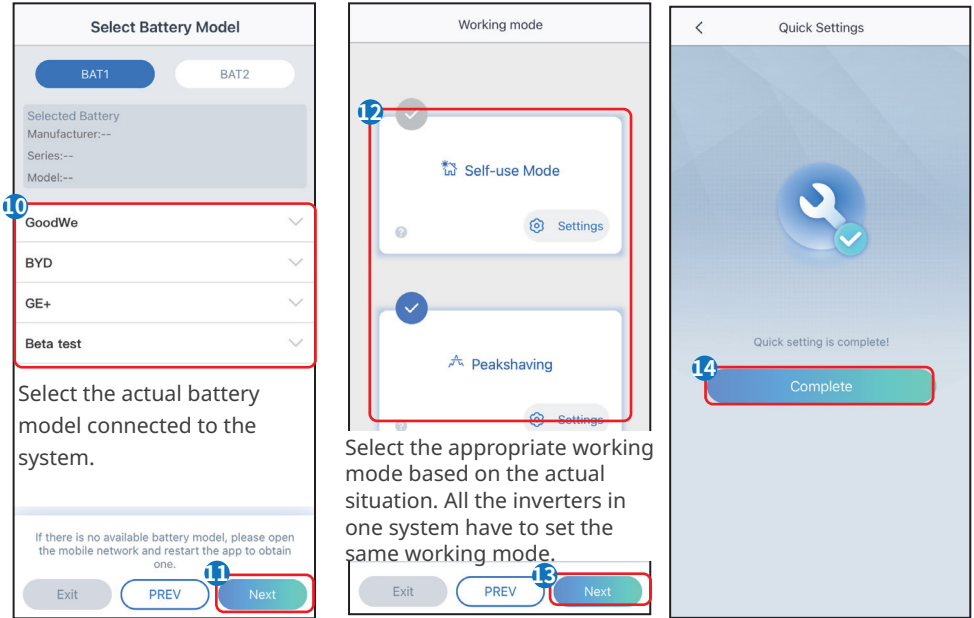
Quick Settings

Quick setting is complete!

15 **Complete**

Step3: In parallel system, if the battery models connected to a single inverter are different, they can be set separately.





Select the appropriate working mode based on the actual situation. All the inverters in one system have to set the same working mode.

8.3 Monitoring via SEMS Portal

SEMS Portal is a monitoring platform used to communicate with the inverter via WiFi, LAN, 4G, or GPRS. Commonly used functions:

- 1. Manage the organization or User information;
- 2. Add and monitor the power plant information;
- 3. Equipment maintenance.

For more details, refer to SEMS Portal User Manual. Scan the QR code or visit https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SEMS%20Portal%20APP_User%20Manual-EN.pdf to get the user manual.



SEMS Portal App



SEMS Portal app User Manual

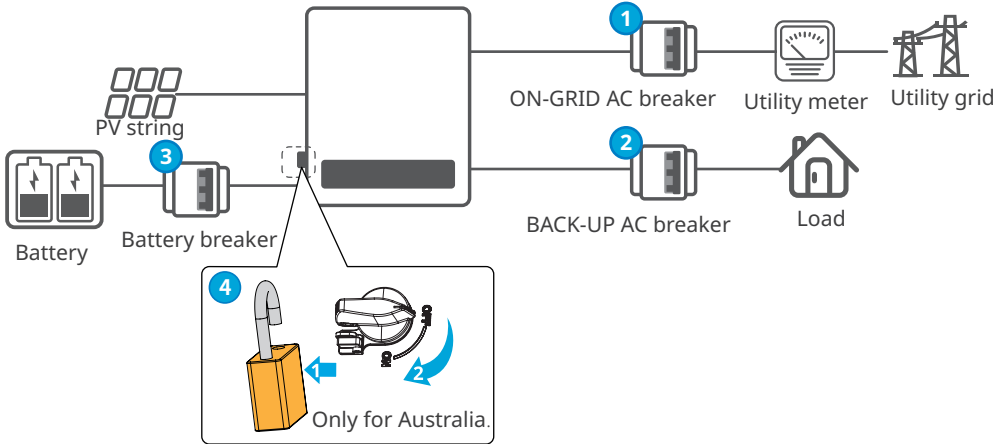
9 Maintenance

9.1 Power OFF the Inverter



- Power off the inverter before operations and maintenance. Otherwise, the inverter may be damaged or electric shocks may occur.
- Delayed discharge. Wait until the components are discharged after power off.

Single Inverter



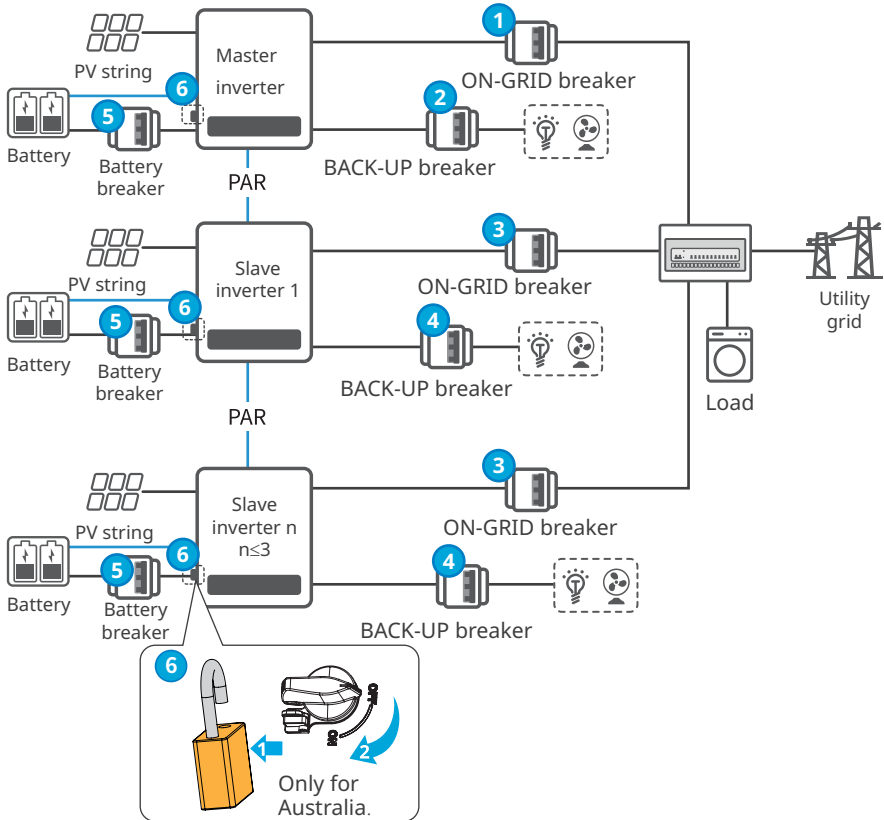
Turn off: ① → ② → ③ → ④

Parallel System



WARNING

When powering off the parallel system, please power off the slave inverters first, and then power off the master inverter.



Turn on: 3 → 4 → 1 → 2 → 5 → 6

9.2 Removing the Inverter



- Make sure that the inverter is powered off.
- Wear proper PPE before any operations.

Step 1: Disconnect all the cables, including DC cables, AC cables, communication cables, the communication module, and PE cables.

Step 2: Remove the inverter from the mounting plate.

Step 3: Remove the mounting plate.

Step 4: Store the inverter properly. If the inverter needs to be used later, ensure that the storage conditions meet the requirements.

9.3 Disposing of the Inverter

If the inverter cannot work anymore, dispose of it according to the local disposal requirements for electrical equipment waste. The inverter cannot be disposed of together with household waste.

9.4 Troubleshooting

Perform troubleshooting according to the following methods. Contact the after-sales service if these methods do not work.

Collect the information below before contacting the after-sales service, so that the problems can be solved quickly.

1. Inverter information like serial number, software version, installation date, fault time, fault frequency, etc.
2. Installation environment, including weather conditions, whether the PV modules are sheltered or shadowed, etc. It is recommended to provide some photos and videos to assist in analyzing the problem.
3. Utility grid situation.

Single Inverter

| No. | Fault | Cause | Solutions |
|-----|------------------|--|--|
| 1 | Utility Loss | <ol style="list-style-type: none"> 1. Utility grid power fails. 2. The AC cable is disconnected, or the AC breaker is off. | <ol style="list-style-type: none"> 1. The alarm is automatically cleared after the grid power supply is restored. 2. Check whether the AC cable is connected and the AC breaker is on. |
| 2 | Grid Overvoltage | <p>The grid voltage exceeds the permissible range, or the duration of high voltage exceeds the requirement of HVRT.</p> | <ol style="list-style-type: none"> 1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid voltage is within the permissible range. <ul style="list-style-type: none"> • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the overvoltage protection threshold, HVRT or disable the overvoltage protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. 3. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists. |

| No. | Fault | Cause | Solutions |
|-----|------------------------|---|--|
| 3 | Grid Rapid Overvoltage | The grid voltage is abnormal or ultra-high. | <ol style="list-style-type: none"> 1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid voltage is within the allowed range. <ul style="list-style-type: none"> • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the grid overvoltage rapid protection threshold after obtaining the consent of the local power company if the grid voltage is within the permissible range. |
| 4 | Grid Undervoltage | The grid voltage is lower than the permissible range, or the duration of low voltage exceeds the requirement of LVRT. | <ol style="list-style-type: none"> 1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid voltage is within the permissible range. <ul style="list-style-type: none"> • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the undervoltage protection threshold, LVRT or disable the undervoltage protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. 3. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists. |

| No. | Fault | Cause | Solutions |
|-----|------------------------|---|---|
| 5 | Grid 10min Overvoltage | The moving average of grid voltage in 10min exceeds the range of safety requirements. | <ol style="list-style-type: none"> 1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid voltage is within the allowed range. <ul style="list-style-type: none"> • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the grid overvoltage rapid protection threshold after obtaining the consent of the local power company if the grid voltage is within the permissible range. |
| 6 | Grid Overfrequency | Utility grid exception. The actual grid frequency exceeds the requirement of the local grid standard. | <ol style="list-style-type: none"> 1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. <ul style="list-style-type: none"> • Contact the local power company if the grid frequency exceeds the permissible range. • Modify the overfrequency protection threshold or disable the overfrequency protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. |

| No. | Fault | Cause | Solutions |
|-----|----------------------------|--|--|
| 7 | Grid Underfrequency | Utility grid exception. The actual grid frequency is lower than the requirement of the local grid standard. | <ol style="list-style-type: none"> 1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. <ul style="list-style-type: none"> • Contact the local power company if the grid frequency exceeds the permissible range. • Modify the underfrequency protection threshold or disable the underfrequency protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. Or close "Grid Underfrequency" function. |
| 8 | Grid Frequency Instability | Utility grid exception. The actual grid frequency change rate does not meet the requirement of the local grid standard. | <ol style="list-style-type: none"> 1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. <ul style="list-style-type: none"> • Contact the local power company if the grid frequency exceeds the permissible range. • Contact the dealer or the after-sales service if the grid frequency is within the permissible range. |
| 9 | Anti-islanding | The utility grid is disconnected. The utility grid is disconnected according to the safety regulations, but the grid voltage is maintained due to the loads. | <ol style="list-style-type: none"> 1. Check whether the utility grid is disconnected. 2. Contact the dealer or the after-sales service. |

| No. | Fault | Cause | Solutions |
|-----|------------------------------|---|---|
| 10 | LVRT Undervoltage | Utility grid exception. The duration of the utility grid exception exceeds the set time of LVRT. | <ol style="list-style-type: none"> 1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. If not, contact the local power company. If yes, contact the dealer or the after-sales service. |
| 11 | HVRT Overvoltage | Utility grid exception. The duration of utility grid exception exceeds the set time of HVRT. | |
| 12 | Abnormal GFCI 30mA | The input insulation impedance becomes low when the inverter is working. | <ol style="list-style-type: none"> 1. If the problem occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists. |
| 13 | Abnormal GFCI 60mA | | |
| 14 | Abnormal GFCI 150mA | | |
| 15 | Abnormal GFCI | | |
| 16 | Large DC of AC current L1 | The DC component of the output current exceeds the safety range or default range. | <ol style="list-style-type: none"> 1. If the problem is caused by an external fault like a utility grid exception or frequency exception, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service. |
| 17 | Large DC of AC current L2 | | |
| 18 | Low Insulation Res. | <ol style="list-style-type: none"> 1. The PV string is short-circuited to PE. 2. The PV system is in a moist environment and the cable is not well insulated to the ground. | <ol style="list-style-type: none"> 1. Check whether the resistance of the PV string to PE exceeds 50kΩ. If no, check the short circuit point. 2. Check whether the PE cable is connected correctly. 3. If the resistance is lower on rainy days, please reset the ISO. |

| No. | Fault | Cause | Solutions |
|-----|----------------------------|--|---|
| 19 | Anti Reverse power Failure | Abnormal fluctuation of load | <ol style="list-style-type: none"> 1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service. |
| 20 | Internal Comm Loss | <ol style="list-style-type: none"> 1. Frame format error 2. Parity checking error 3. Can bus offline 4. Hardware CRC error 5. Send (receive) control bit is receive (send). 6. Transmit to the unit that is not allowed. | <p>Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists.</p> |
| 21 | AC HCT Check abnormal | The sampling of the AC HCT is abnormal. | <p>Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists.</p> |
| 22 | GFCI HCT Check abnormal | The sampling of the GFCI HCT is abnormal. | <p>Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists.</p> |
| 23 | Relay Check abnormal | <ol style="list-style-type: none"> 1. The relay is abnormal or short-circuited. 2. The control circuit is abnormal. 3. The AC cable connection is abnormal, like a virtual connection or short circuit. | <p>Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists.</p> |

| No. | Fault | Cause | Solutions |
|-----|------------------------|--|--|
| 24 | Flash Fault | The internal Flash storage is abnormal. | Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists. |
| 26 | DC Arc Fault | <ol style="list-style-type: none"> 1. The DC terminal is not firmly connected. 2. The DC cable is broken. | Read the Quick Installation Guide and check whether the cables are connected properly. |
| 27 | AFCI Self-test Fault | AFCI detection is abnormal. | Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists. |
| 28 | Cavity Overtemperature | <ol style="list-style-type: none"> 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature exceeds 60°C. 3. A fault occurs in the internal fan of the inverter. | <ol style="list-style-type: none"> 1. Check the ventilation and the ambient temperature at the installation point. 2. If the ventilation is poor or the ambient temperature is too high, improve the ventilation and heat dissipation. 3. Contact the dealer or after-sales service if both the ventilation and the ambient temperature are normal. |
| 29 | BUS Overvoltage | <ol style="list-style-type: none"> 1. The PV voltage is too high. 2. The sampling of the inverter BUS voltage is abnormal. | Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists. |
| 30 | PV Input Overvoltage | The PV array configuration is not correct. Too many PV panels are connected in series in the PV string. | Check the serial connection of the PV array. Make sure that the open circuit voltage of the PV string is not higher than the maximum operating voltage of the inverter. |

| No. | Fault | Cause | Solutions |
|-----|------------------------------------|---|--|
| 31 | PV Continuous Hardware Overcurrent | <ol style="list-style-type: none"> The PV configuration is not proper. The hardware is damaged. | Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists. |
| 32 | PV Continuous Software Overcurrent | <ol style="list-style-type: none"> The PV configuration is not proper. The hardware is damaged. | Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists. |
| 33 | String1 PV String Reversed | The PV string is connected reversely. | Check whether the PV1 and PV2 strings are connected reversely. |
| 34 | String2 PV String Reversed | | |

Parallel System

| No. | Fault | Cause | Solutions |
|-----|---|--|---|
| 1 | Abnormal parallel CAN communication | The parallel communication cable connection is abnormal, or an inverter in the parallel system is offline. | Check whether all the inverters are powered on and whether the parallel communication cables are firmly connected. |
| 2 | Communication indicator of the inverter and Ezlink indicator in error | Ezlink connection failed | <ol style="list-style-type: none"> Check whether the WiFi signal is normal. If it is not, check whether the router works well. Check whether Ezlink obtains IP successfully via APP. Execute the following if IP is not obtained: <ol style="list-style-type: none"> Reset the communication parameters via APP. Check whether the server connection is correct. Log in to the_website_mqtt.goodwe-power.com in PC, check the analyzed IP address and obtain the connected server information. |

| No. | Fault | Cause | Solutions |
|-----|--|--|---|
| 3 | Unable to log in to the parallel system interface in APP | Parallel networking failed | <ol style="list-style-type: none"> 1. Incorrect communication cable connection or unreliable cable connection cause communication failure. 2. Connect the smart meter and Ezlink module to the same master inverter to ensure the success rate of networking. 3. Check whether the inverter communication indicator is normal. If it is not, please check the individual inverter according to its own troubleshooting method. 4. If the above methods cannot solve the problem, please try to restart the inverter and get networking again. |
| 4 | Parallel IO check fail | Communication of parallel inverters in error | <ol style="list-style-type: none"> 1. Check whether the parallel communication cable is connected correctly and firmly. 2. If the communication cable connection is normal, it may be an internal communication failure. Please contact the dealer or After Sale Service. |
| 5 | Device offline displayed on APP | Communication failure or equipment failure | <ol style="list-style-type: none"> 1. Check whether the quantity of parallel machines in the system is the same with the actual connected ones. 2. If it is, get the SN of the corresponding offline inverter from the equipment list, and troubleshoot the corresponding inverter according to its user manual. 3. Check whether the communication connection of the equipment is normal, with no loose, aging or wrong connection, etc. |

9.5 Routine Maintenance



WARNING

- Make sure that the inverter is powered off.
- Wear proper PPE before any operations.

| Maintaining Item | Maintaining Method | Maintaining Period |
|-----------------------|---|--------------------|
| System Clean | Check the heat sink, air intake, and air outlet for foreign matter or dust. | Once 6-12 months |
| DC Switch | Turn the DC switch on and off ten consecutive times to make sure that it is working properly. | Once a year |
| Electrical Connection | Check whether the cables are securely connected. Check whether the cables are broken or whether there is any exposed copper core. | Once 6-12 months |
| Sealing | Check whether all the terminals and ports are properly sealed. Reseal the cable hole if it is not sealed or too big. | Once a year |
| THDi Test | For Australia requirements, in the THDi test, there should add Zref between inverter and mains. L: $0.24 \Omega + j0.15 \Omega$; N: $0.16 \Omega + j0.10 \Omega$ L: $0.15 \Omega + j0.15 \Omega$; N: $0.1 \Omega + j0.1 \Omega$ | As needed. |

10 Technical Parameters

| Technical Data | GW15K-ET | GW20K-ET | GW25K-ET | GW29.9K-ET | GW30K-ET |
|---|----------|----------|----------|------------|----------|
| Battery Input Data | | | | | |
| Battery Type | Li-Ion | Li-Ion | Li-Ion | Li-Ion | Li-Ion |
| Nominal Battery Voltage (V) | 500 | 500 | 500 | 500 | 500 |
| Battery voltage range (V) | 200~800 | 200~800 | 200~800 | 200~800 | 200~800 |
| Start-up Voltage (V) | 180 | 180 | 180 | 180 | 180 |
| Number of Battery Input | 1 | 1 | 2 | 2 | 2 |
| Max. Continuous Charging Current (A) | 50 | 50 | 50×2 | 50×2 | 50×2 |
| Max. Continuous Discharging Current (A) | 50 | 50 | 50×2 | 50×2 | 50×2 |
| Max Charge Power (W) | 15,000 | 20,000 | 25,000 | 30,000 | 30,000 |
| Max Discharge Power (W) | 15,000 | 20,000 | 25,000 | 30,000 | 30,000 |
| PV String Input Data | | | | | |
| Max. Input Power (W) ^{*1} | 22,500 | 30,000 | 37,500 | 45,000 | 45,000 |
| Max. Input Voltage (V) ^{*2} | 1000 | 1000 | 1000 | 1000 | 1000 |
| MPPT Operating Voltage Range (V) | 200~850 | 200~850 | 200~850 | 200~850 | 200~850 |
| MPPT Voltage Range at Nominal Power (V) ^{*3} | 400~850 | 400~850 | 450~850 | 450~850 | 450~850 |
| Start-up Voltage (V) | 200 | 200 | 200 | 200 | 200 |
| Nominal Input Voltage (V) | 620 | 620 | 620 | 620 | 620 |
| Max. Input Current per MPPT (A) | 30 | 30 | 30 | 30 | 30 |
| Max. Short Circuit Current per MPPT (A) | 38 | 38 | 38 | 38 | 38 |
| Number of MPPT | 2 | 2 | 3 | 3 | 3 |
| Number of Strings per MPPT | 2/2 | 2/2 | 2/2/2 | 2/2/2 | 2/2/2 |
| AC Output Data (On-grid) | | | | | |
| Nominal Output Power (W) | 15,000 | 20,000 | 25,000 | 29,900 | 30,000 |
| Max. Output Power (W) | 15,000 | 20,000 | 25,000 | 29,900 | 30,000 |
| Nominal Output Power at 40 °C(W) ^{*14} | 15,000 | 20,000 | 25,000 | 29,900 | 30,000 |

| Technical Data | GW15K-ET | GW20K-ET | GW25K-ET | GW29.9K-ET | GW30K-ET |
|---|--|------------------|------------------|------------------|------------------|
| Max. Output Power at 40 °C (W) ^{*14} | 15,000 | 20,000 | 25,000 | 29,900 | 30,000 |
| Nominal Apparent Power Output to Utility Grid (VA) | 15,000 | 20,000 | 25,000 | 29,900 | 30,000 |
| Max. Apparent Power Output to Utility Grid (VA) ^{*3 *15} | 16,500 | 22,000 | 27,500 | 29,900 | 33,000 |
| Nominal Apparent Power from Utility Grid(VA) | 15,000 | 20,000 | 25,000 | 30,000 | 30,000 |
| Max. Apparent Power from Utility Grid (VA) ^{*12} | 15,000 | 20,000 | 25,000 | 30,000 | 30,000 |
| Nominal Output Voltage (V) | 380/400, 3L/N/PE | 380/400, 3L/N/PE | 380/400, 3L/N/PE | 380/400, 3L/N/PE | 380/400, 3L/N/PE |
| Output Voltage Range (V) ^{*4} | 0~300 | 0~300 | 0~300 | 0~300 | 0~300 |
| Nominal AC Grid Frequency (Hz) | 50/60 | 50/60 | 50/60 | 50/60 | 50/60 |
| AC Grid Frequency Range (Hz) | 45~65 | 45~65 | 45~65 | 45~65 | 45~65 |
| Max. AC Current Output to Utility Grid (A) ^{*11} | 23.9 | 31.9 | 39.9 | 43.3 | 47.8 |
| Max. AC Current From Utility Grid (A) ^{*13} | 21.7 | 29.0 | 36.2 | 43.3 | 43.5 |
| Nominal AC Current From Utility Grid (A) | 21.7 | 29.0 | 36.2 | 43.3 | 43.5 |
| Max. Output Fault Current (Peak and Duration) (A) | 241.5A @126ms | 241.5A @126ms | 241.5A @126ms | 241.5A @126ms | 241.5A @126ms |
| Inrush Current (Peak and Duration) (A) | 264A @53us | 264A @53us | 264A @53us | 264A @53us | 264A @53us |
| Nominal Output Current (A) ^{*5} | 21.7 | 29.0 | 36.2 | 43.3 | 43.5 |
| Power Factor | ~1 (Adjustable from 0.8 leading~0.8 lagging) | | | | |
| Max. Total Harmonic Distortion | <3% | <3% | <3% | <3% | <3% |
| Maximum Output Overcurrent Protection (A) | 94 | 94 | 94 | 94 | 94 |
| AC Output Data (Back-up) | | | | | |
| Back-up Nominal Apparent Power (VA) | 15,000 | 20,000 | 25,000 | 29,900 | 30,000 |

| Technical Data | GW15K-ET | GW20K-ET | GW25K-ET | GW29.9K-ET | GW30K-ET |
|--|--|--|----------------------------|----------------------------|----------------------------|
| Max. Output Apparent Power Without Grid (VA) ^{*6} | 15,000 (18,000 @60s, 24,000 @3s) | 20,000 (24,000 @60s, 32,000 @3s) | 25,000 (30,000 @60s) | 30,000 (36,000 @60s) | 30,000 (36,000 @60s) |
| Max. Output Apparent Power with Grid (VA) | 15,000 | 20,000 | 25,000 | 29,900 | 30,000 |
| Nominal Output Current (A) | 22.7 | 30.3 | 37.9 | 45.5 | 45.5 |
| Max. Output Current (A) | 22.7 (27.3 @60s, 36.4 @3s) | 30.3 (36.4 @60s, 48.5 @3s) | 37.9 (45.5 @60s) | 45.5 (54.5 @60s) | 45.5 (54.5 @60s) |
| Max. Output Fault Current (Peak and Duration) (A) | 94 | 94 | 94 | 94 | 94 |
| Inrush Current (Peak and Duration) (A) | 264 @53us | 264 @53us | 264 @53us | 264 @53us | 264 @53us |
| Maximum Output Overcurrent Protection (A) | 94 | 94 | 94 | 94 | 94 |
| Nominal Output Voltage (V) | 380/400 | 380/400 | 380/400 | 380/400 | 380/400 |
| Nominal Output Frequency (Hz) | 50/60 | 50/60 | 50/60 | 50/60 | 50/60 |
| Output THDv (@Linear Load) | <3% | <3% | <3% | <3% | <3% |
| Efficiency | | | | | |
| Max. Efficiency | 98.0% | 98.0% | 98.0% | 98.0% | 98.0% |
| European Efficiency | 97.5% | 97.5% | 97.5% | 97.5% | 97.5% |
| Max. Battery to AC Efficiency | 97.5% | 97.5% | 97.5% | 97.5% | 97.5% |
| MPPT Efficiency | 99.9% | 99.9% | 99.9% | 99.9% | 99.9% |
| Protection | | | | | |
| PV String Current Monitoring | Integrated | Integrated | Integrated | Integrated | Integrated |
| PV Insulation Resistance Detection | Integrated | Integrated | Integrated | Integrated | Integrated |
| Residual Current Monitoring | Integrated | Integrated | Integrated | Integrated | Integrated |
| PV Reverse Polarity Protection | Integrated | Integrated | Integrated | Integrated | Integrated |
| Battery Reverse Polarity Protection | Integrated | Integrated | Integrated | Integrated | Integrated |
| Anti-islanding Protection | Integrated | Integrated | Integrated | Integrated | Integrated |


| Technical Data | GW15K-ET | GW20K-ET | GW25K-ET | GW29.9K-ET | GW30K-ET |
|----------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| AC Overcurrent Protection | Integrated | Integrated | Integrated | Integrated | Integrated |
| AC Short Circuit Protection | Integrated | Integrated | Integrated | Integrated | Integrated |
| AC Overvoltage Protection | Integrated | Integrated | Integrated | Integrated | Integrated |
| DC Switch*7 | Integrated | Integrated | Integrated | Integrated | Integrated |
| DC Surge Protection | Type II | Type II | Type II | Type II | Type II |
| AC Surge Protection | Type III | Type III | Type III | Type III | Type III |
| AFCI | Optional | Optional | Optional | Optional | Optional |
| Rapid Shutdown | Optional | Optional | Optional | Optional | Optional |
| Remote Shutdown | Integrated | Integrated | Integrated | Integrated | Integrated |
| General Data | | | | | |
| Operating Temperature Range (°C) | -35~+60 | -35~+60 | -35~+60 | -35~+60 | -35~+60 |
| Relative Humidity | 0-95% | 0-95% | 0-95% | 0-95% | 0-95% |
| Max. Operating Altitude (m) | 4000 | 4000 | 4000 | 4000 | 4000 |
| Cooling Method | Smart Fan Cooling | Smart Fan Cooling | Smart Fan Cooling | Smart Fan Cooling | Smart Fan Cooling |
| Display | LED, WLAN + APP | LED, WLAN + APP | LED, WLAN + APP | LED, WLAN + APP | LED, WLAN + APP |
| Communication with BMS | RS485 / CAN | RS485 / CAN | RS485 / CAN | RS485 / CAN | RS485 / CAN |
| Communication with Meter | RS485 | RS485 | RS485 | RS485 | RS485 |
| Communication with Portal | WiFi / 4G | WiFi / 4G | WiFi / 4G | WiFi / 4G | WiFi / 4G |
| Weight (kg) | 48 | 48 | 54 | 54 | 54 |
| Dimension W×H×D (mm) | 520×660×220 | | | | |
| Noise Emission (dB) | <45 | <45 | <45 | <60 | <60 |
| Topology | Non-isolated | Non-isolated | Non-isolated | Non-isolated | Non-isolated |
| Self-consumption at Night (W)*8 | <15 | <15 | <15 | <15 | <15 |
| Ingress Protection Rating | IP66 | IP66 | IP66 | IP66 | IP66 |
| DC Connector | MC4 | MC4 | MC4 | MC4 | MC4 |
| AC Connector | OT | OT | OT | OT | OT |
| Environmental Category | 4K4H | 4K4H | 4K4H | 4K4H | 4K4H |


| Technical Data | GW15K-ET | GW20K-ET | GW25K-ET | GW29.9K-ET | GW30K-ET |
|--|--|--|--|--|--|
| Pollution Degree | III | III | III | III | III |
| Overvoltage Category | DC II / AC III | DC II / AC III | DC II / AC III | DC II / AC III | DC II / AC III |
| Protective Class | I | I | I | I | I |
| Storage Temperature (°C) | -45~+85 | -45~+85 | -45~+85 | -45~+85 | -45~+85 |
| The Decisive Voltage Class (DVC) | Battery: C PV: C AC: C Com: A | Battery: C PV: C AC: C Com: A | Battery: C PV: C AC: C Com: A | Battery: C PV: C AC: C Com: A | Battery: C PV: C AC: C Com: A |
| Mounting Method | Wall Mounted | | | | |
| Active Anti-islanding Method | AFDPF + AQDPF *9 | | | | |
| Type of Electrical Supply System | Three phase Grid | Three phase Grid | Three phase Grid | Three phase Grid | Three phase Grid |
| Country of Manufacture | China | China | China | China | China |
| Certification*10 | | | | | |
| Grid Standards | VDE-AR-N 4105, EN50549-1 | | | | |
| Safety Regulation | IEC62109-1&2 | | | | |
| EMC | EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4 | | | | |
| <p>*1: In Australia, for most of the PV module, the max.Input power can achieve 2*Pn, Such as the max.input power of GW15K-ET can achieve 30000W. Besides, Max. Input Power, not continuous for 1.5*normal power.</p> <p>*2: For 1000V system, Maximum operating voltage is 950V.</p> <p>*3: According to the local grid regulation.</p> <p>*4: Output Voltage Range: phase voltage.</p> <p>*5: For 380V grid, the Nominal Output Current is 22.7A for GW15K-ET, 30.3A for GW20K-ET, 37.9A for GW25K-ET, 45.3A GW29.9K-ET, and 45.5A for GW30K-ET.</p> <p>*6: Can be reached only if PV and battery power is enough.</p> <p>*7: DC Switch: GHX6-55P (for Australia).</p> <p>*8: No Back-up Output.</p> <p>*9: AFDPF: Active Frequency Drift with Positive Feedback, AQDPF: Active Q Drift with Positive Feedback.</p> <p>*10: Not all certifications & standards listed, check the official website for details.</p> <p>*11: For 380V grid, the Max. AC Current Output to Utility Grid is 25A for GW15K-ET, 33.3A for GW20K-ET, 41.7A for GW25K-ET, 49.8A for GW29.9K-ET, 50A for GW30K-ET.</p> <p>*12: When the load is connected to the inverter's backup port, the Max. Apparent Power from Utility Grid can reach to 22.5K for GW15K-ET, 30K for GW20k-ET, 33K for GW25K-ET, 33K for GW29.9K-ET,and 33K for GW30K-ET respectively.</p> <p>*13: When the load is connected to the inverter's backup port, the Max. AC Current From Utility Grid can reach to 34A for GW15K-ET, 45A for GW20k-ET, 50A for GW25K-ET, 50A for GW29.9K-ET,and 50A for GW30K-ET respectively.</p> <p>*14: Nominal Output Power at 40 °C(W) and Max. Output Power at 40 °C (W) are only for Brazil.</p> <p>*15: For Austria, Max. Output Power (W) is 15K for GW15K-ET, 20K for GW20K-ET, 25K for GW25K-ET, 29.9K GW29.9K-ET, and 30K for GW30K-ET.</p> | | | | | |




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