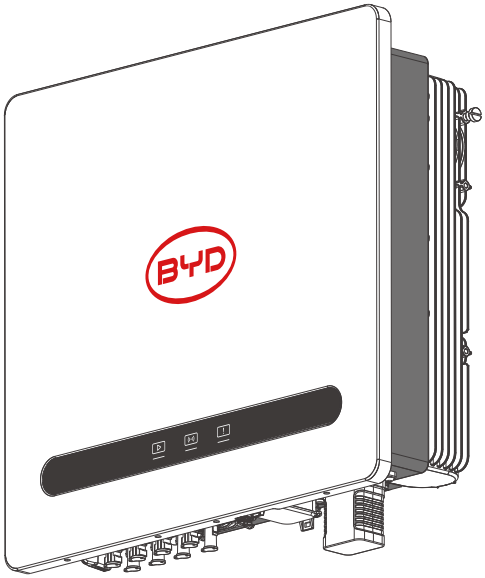
2026-06-05 / V2.2 / EN



Power-Box TH5/6/8/10/12/15K

Three-Phase Hybrid Inverter

User Manual

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Manufacturer

Shanwei BYD Auto Co., Ltd.

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1 Information on this Document

DISCLAIMER

When installing, operating, and maintaining the equipment, read this manual first and follow all safety precautions on the equipment and in the manual. BYD shall not be liable if any of the following situations occur.

- Not operate in the conditions described in this manual.
- Installation and using environments not comply with relevant international, national or regional standards.
- Disassembly, change the product or modify the software code without authorization.
- Not operate according to the safety instructions and precautions on the product and in the manual.
- Damages caused by abnormal natural environment (force majeure, such as earthquakes, fires, windstorms, floods, mudslides, etc.).
- Damages caused by the customer’s transport.
- Damages caused by unqualified storage conditions that do not meet the requirements mentioned in the manual.
- Damages to the hardware or data due to negligence, improper operation, or intentional damage by the customer.
- Damages to the system caused by a third party or the customer, including damages caused by improper transport and installation that do not comply with the requirements of this manual, as well as adjustment, alteration, or removal of identification signs that do not comply with the requirements of this manual.

Reverse engineering, decompiling, disassembling, adapting, implanting or other derivative operations of the equipment’s software are prohibited. Researching the internal implementation of the equipment, obtaining the source code of the equipment’s software and stealing intellectual property in any way are prohibited. Disclosing the results of any performance tests of the equipment’s software is prohibited.

1.1 Applicable Model

This manual applies to the listed inverters below:

Power-Box TH5K

Power-Box TH6K

Power-Box TH8K

Power-Box TH10K

Power-Box TH12K

Power-Box TH15K

1.2 Target Group

This manual is intended for use by professionals who are familiar with local regulations and electrical system operation, and properly trained to have a full picture of this product.

1.3 Content and Structure of this Document

This manual mainly provides information on the inverter product, installation wiring, configuration testing, troubleshooting, and maintenance. Please carefully read this manual before installation and use it to obtain the product’s information on its safety, function and performance. This manual will be revised due to updating of the products. Please obtain the latest product information on the manufacturer's website.

1.4 EU Declaration of Conformity

Devices with wireless communication functions that can be sold on the European market shall meet the following directives:

Radio Equipment Directive 2014/53/EU (RED)

Devices without wireless communication functions that can be sold in the European market shall meet the following directives:

Electromagnetic Compatibility Directive 2014/30/EU (EMC)

Electrical Apparatus Low Voltage Directive 2014/35/EU (LVD)

For more details on the EU declaration of conformity, please go to the official website: www.bydenergy.com.

1.5 Levels of Warning Messages

⚠ 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

Highlight and supplement the texts. Or some skills and methods to solve product-related problems to save time.

2 Safety Precaution

NOTICE

- The inverter has been engineered and tested in accordance with the appropriate safety regulations. Ensure to observe related safety requirements before operating this electrical device, which otherwise may lead to serious injury or property loss.Ensure to carefully read all safety precautions in this manual when operating.

For correct use, this manual adopts the following symbols highlighting related important information, which shall be carefully read and understood.

Icon	Item	Description
	Danger warning	There is a potential hazard after the equipment is in operation. Ensure proper protection when operating.
	Warning mark	HV hazard. There is a high voltage when the inverter is running. Make sure that the inverter gets powered off before operating.
	Anti-scald warning	High temperature on the surface of the inverter. Do not touch the device when it is running, otherwise it may cause burns.
	Delayed discharge mark	Delayed discharge. When the device is powered off, please wait for 10 minutes until the device is fully discharged.
	User manual mark	Please read the product manual carefully before operating the device.
	CE mark	CE certificate.
	EU WEEE mark	The device cannot be treated as household waste. Please dispose of it in accordance with local laws and regulations, or send it back to the manufacturer.
	Grounding point	Protective grounding wire connection point.

2.1 General Safety

For product upgrading or other reasons, the manual may be updated in the future. The manual content cannot replace the safety precautions on product labels unless otherwise stated. All descriptions in the manual are for guidance only.

⚠ WARNING

- Make sure that the module frame and support system are properly grounded.
- Ensure the connected DC cables are properly secured in place.
- Check the positive and negative terminals of the DC cable with multimeter and ensure that they are correctly wired, with the voltage reading within the allowable range.
- It is prohibited to connect a PV string to more than one inverter, which may otherwise lead to inverter breakdown.
- The PV module selected to match the inverter must conform to the requirements of Class A, IEC 61730.

NOTICE

- Carefully read this manual before installation to have a full picture of the product and related precautions.
- All operations must be conducted by professional and qualified electrical staff, who are familiar with local standards and safety regulations.
- Use insulation tools for work with the inverter, plus the appropriate PPEs in place to ensure work safety. Before working with electronic devices, wear static gloves, wrist straps, anti-static clothing, etc. to protect the inverter from electrostatic impact.

2.2 PV String Safety

⚠ DANGER

- Use the DC wiring terminal delivered with the case to connect the DC cables of the inverter. Using other DC wiring terminals may lead to serious consequences, and the resulting property loss is not covered by the warranty.

⚠ WARNING

- Please don’t connect PV array positive(+) or negative(-) to gruund, it could cause serious damage to the inverter.

2.3 Inverter Safety

Make sure the grid-connected access point meets the requirements of the voltage and frequency for the grid connection of the inverter.

⚠ WARNING

- It is recommended to add protective devices such as circuit breakers or fuses on the AC side of the inverter. The protective device shall be specified at 1.25 times the maximum AC output current of the inverter.
- The protective grounding wire of the inverter must be connected firmly. For multiple inverters, ensure that all inverters share the same protective grounding points.
- If the inverter trips for less than 5 times within 24 h, the alarm can be automatically cleared. After the 5th arc fault, the inverter shuts down for protection, and the inverter can work normally only after the fault is cleared.
- The Backup function is not recommended if no battery is configured in the PV system. Otherwise, the resulting system operation risks will not be covered by the warranty.

⚠ DANGER

- After installation, the labels and warning signs on the case must be clearly visible. And it is prohibited to cover, alter or damage them.

2.4 Battery Safety

⚠ WARNING

The battery used with the inverter must be approved by the inverter manufacturer. The list of approved batteries can be obtained from the official website.

- Before installation, please carefully read the battery's user manual to understand the product and precautions, and operate in strict accordance with the requirements of the battery user manual.
- If the battery has been fully discharged, recharge the battery in accordance with its user manual.
- The battery current may be affected by some factors, such as temperature, humidity, weather conditions, etc., which may cause the battery current to be limited and affect the load capacity.
- If the battery fails to work, please contact the after-sale service center as quickly as possible. Otherwise, the battery may be permanently damaged.
- Check the positive and negative terminals of the DC cable with a multimeter and ensure that they are correctly wired, with the voltage reading within the

allowable range.
- It is prohibited to connect a battery pack to multiple inverters, otherwise the inverter may be damaged.

2.5 Personnel Requirements

NOTICE

- The personnel responsible for the installation and maintenance of the device must get strict training to understand all safety precautions and master correct operation methods.
- Only qualified professionals or trained personnel are allowed to install, operate, maintain, and replace equipment or component.

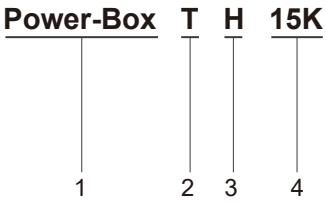
3 Product Introduction

3.1 Product Overview

Function

The inverter may control and optimize energy flow in the PV system through an integrated energy management system. The electricity generated in the PV system can be used by the load, stored in the battery, and transferred to the power grid.

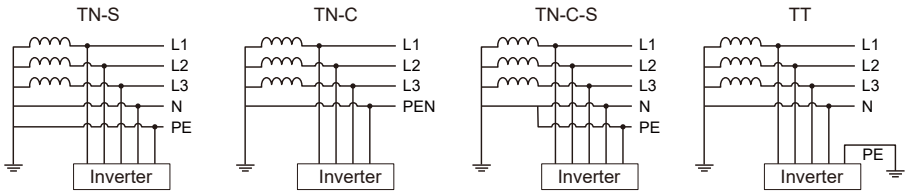
Model identifier



No.	Meaning	Explanation
1	Product name	Power-Box: Hybrid inverter
2	Phase	S: Single phase T: Three phase
3	Battery voltage level	L: Low voltage H: High voltage
4	Rated output power	15K: Rated output power 15 kW

Supported Power Grid Types

The power grids supported by Power-Box TH series are TN-S, TN-C, TN-C-S, TT and IT.



3.2 Working Mode

3.2.1 System Operating Mode

3.2.1.1 Timed Charging and Discharging Mode

Set the timing charge and discharge plan, at most three groups.

Set the timing charging and discharging time.

Set the timing charging and discharging power, and the actual power depends on the minimum value of photovoltaic, model rated power and battery charging and discharging limit.

Set the week.

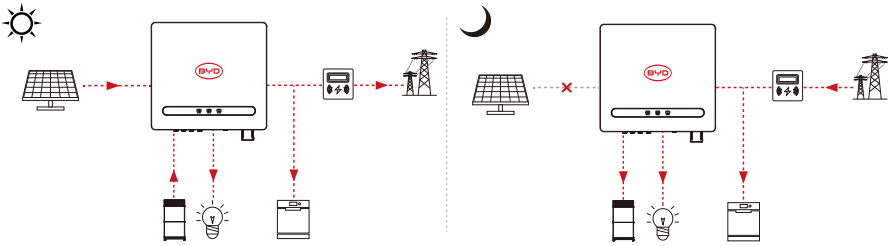
Working condition:

1. If the inverter time is within the timing charging and discharging time set by the user, start charging with the minimum value of photovoltaic, model rated power and battery charging and discharging limit, the maximum SOC of timing charging and discharging cannot be set, and charge to 100% SOC at most.
2. In the set timing charging and discharging period, when the SOC of the battery is less than 5%, discharging is not allowed any more.
3. When the battery SOC is less than 5%, it is forced to charge to 10%.

Furthermore, forced-charging is also controlled by the battery command (forced-charging is prioritized when required by the battery).

When the battery is under abnormal condition, charging or discharging will be stopped.

The inverter, when the grid is cut off, will automatically switch to the off-grid mode.



3.2.1.2 Self-use Mode

Overview:

The self-use function can adjust the power of PV, battery, and power grid based on the meter power. Given the enabled power meter and normal communication, energy flow will be adjusted based on the power of the meter. The inverter, when the grid is cut off, will automatically switch to the off-grid mode.

The default is self-use mode.

A maximum of two groups are planned for the self-use mode.

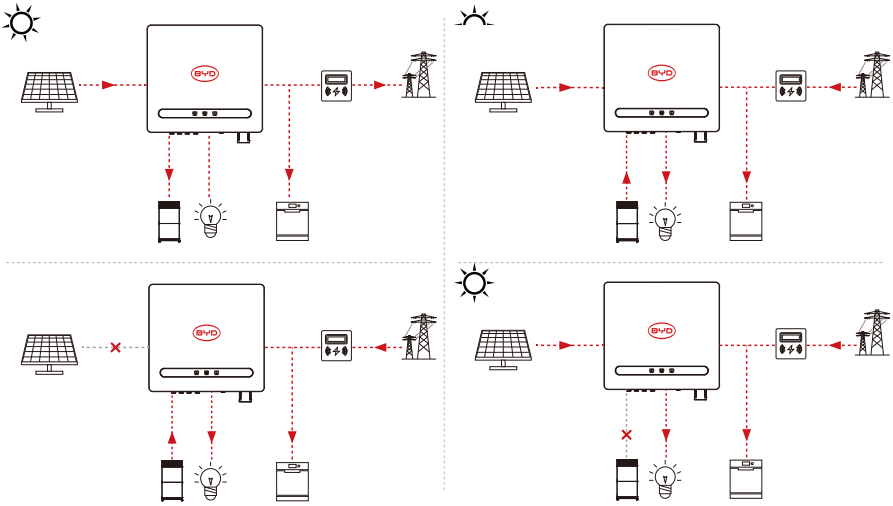
After the power grid is cut off, it automatically enters the off-grid mode.

When the power grid is connected, the energy flow is adjusted according to the power of the electric energy meter.

Priority: load (and EPS) > battery > grid.

Working condition:

1. PV power is sufficient to supply load, battery and grid according to priority.
2. PV power is insufficient but PV + battery power is sufficient, and the load is supplied by PV + battery.
3. The PV + battery power is insufficient, and the load is supplied by the PV + battery + grid.
4. When the battery SOC is less than 5%, the battery is forced to be charged to 10%.



3.2.1.3 Backup Mode

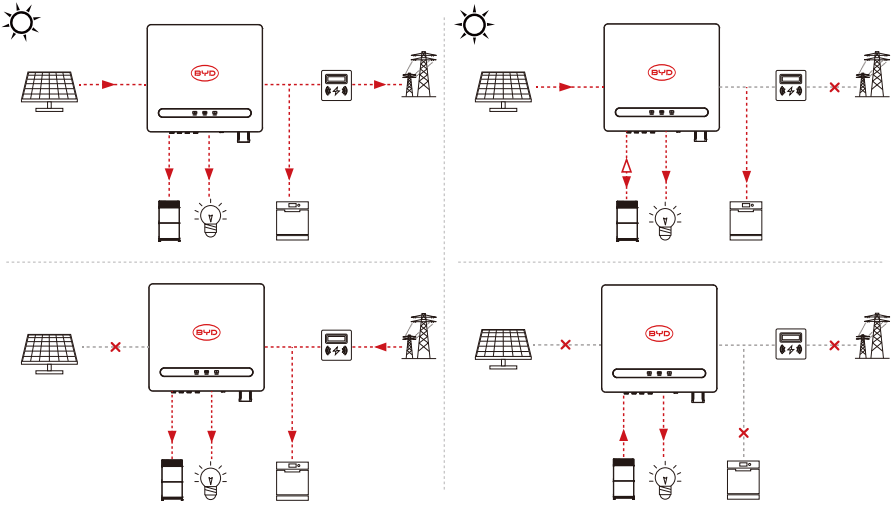
Only when the main power supply is abnormal, the battery is allowed to discharge;

Priority: battery > load (and EPS) > grid.

Working condition:

1. When the power grid is not cut off, the battery, the load and the power grid are supplied according to the priority.
2. When the grid is cut off, keep the current SOC of the battery higher than minimum off-grid SOC.

3. When the SOC is less than minimum grid-connected SOC, charge to the minimum grid-connected SOC hysteresis point (minimum charge state + 2%).
4. When the current SOC of the battery is between 95% and 100%, the priority is to ensure the power supply to the EPS, and the excess energy is fed back to the battery for charging.



3.2.1.4 Forced Off-grid Mode

A pure off-grid system consisting of PV, batteries, and loads is suitable for areas without grids.

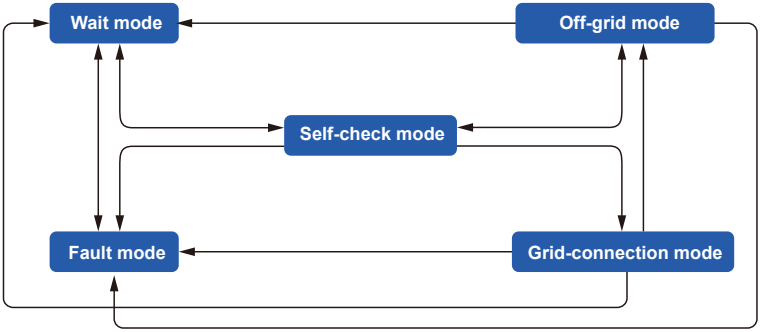
In this mode, the inverter can be forced to disconnect from the grid and runs in the off-grid mode. Under such circumstances, the inverter can neither send power to the grid or take power from the grid.

When the inverter detects no grid-connected power supply, it will enter the same working mode as the forced off-grid mode;

Working condition:

1. When PV > EPS, the excess power charges the battery.
2. When PV < EPS, the insufficient power is provided by the battery.
3. The battery SOC is less than off-grid minimum SOC, and the forced charge is triggered to the off-grid minimum SOC+10%.

3.2.2 Inverter Run Mode



S/N	Parts	Description
1	Wait mode	Wait stage when the machine is powered on. • Enter the self-check mode when conditions are met. • In case of fault, the inverter is switched to the fault mode.
2	Self-check mode	The inverter, before startup, shall continuously perform self-check, initialization, etc. • When conditions are met, enter the grid-connection mode so that the inverter starts grid-connected operation. • If no grid is detected, enter the off-grid mode so that the inverter starts off-grid operation. Given the inverter is lack of off-grid function, enter the wait mode. • If self-check fails, enter the fault mode.
3	Grid-connection mode	The inverter performs the grid-connection operation as usual. • If detection shows grid absence, enter the off-grid working mode. • If fault is detected, enter the fault mode. • If it is detected that the grid condition does not meet the grid-connection requirements, and no off-grid output function is activated, enter the wait mode.
4	Off-grid mode	In case of power failure, the inverter is switched to the off-grid mode from the working mode so as to continuously supply power to the loads. • If fault is detected, enter the fault mode.

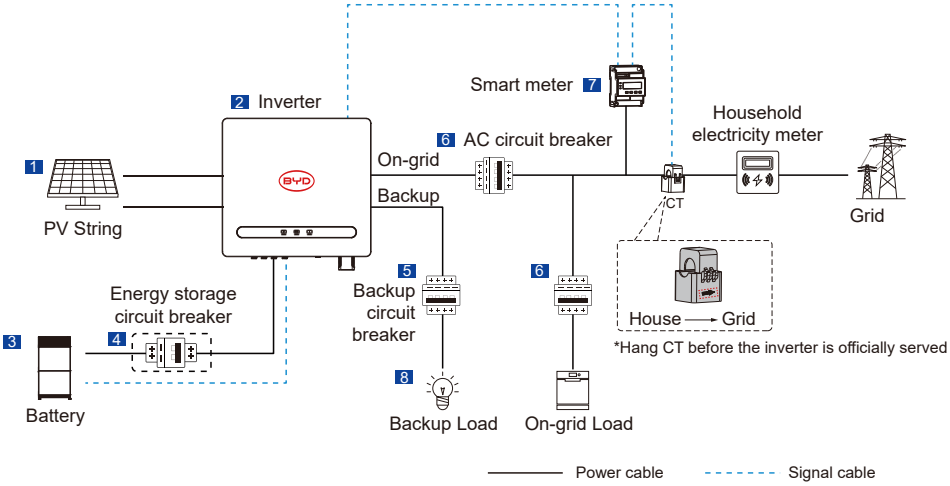
S/N	Parts	Description
		• If it is detected that the grid condition does not meet the grid-connection requirements, and no off-grid output function is activated, enter the wait mode.
5	Fault mode	• If it is detected that the grid conditions meet the grid-connection requirements, and off-grid output function is activated, enter the self-check mode.

NOTE When the inverter is powered on for the first time, there must be a normal AC voltage on the grid side; otherwise, the inverter's relay will not be able to perform self-inspection, resulting in the inverter's inability to start up properly. If you want the inverter to operate, you can choose to enter off-grid mode, which allows the inverter to function independently of the grid. After the inverter has completed its initial power-up self-inspection, you can proceed with mode switching as indicated in the above diagram.

3.3 Application Scenarios

⚠ WARNING

- PV systems are not suitable for connection to devices that rely on a stable power supply, such as life-sustaining medical equipment Please ensure that there is no risk of personal injury despite the system being shut down.
- Please try to avoid using loads with high starting current in the PV systems, such as high-power water pumps, as this may result in off-grid output failure due to excessive instantaneous power.
- No Backup function is not recommended if no battery is used in the PV system. Otherwise, the resulting system operation risks are not covered by the warranty.
- The battery current may be limited by some factors, such as temperature, humidity, weather conditions, etc., thus affecting the load capacity.
- If rapid shutdown module is in the PV system, please ensure that the rapid shutdown module used in the PV string has the same model as the inverter's built-in transmitter. If not, the run-off function may fail.
- When the inverter trips on the overload protection at a time, the inverter can automatically restart. If it occurs repeatedly, it may take more time to restart. The inverter may be shortly restarted by the App whenever required.
- In case of excessive load capacity beyond the rated power of the inverter during grid outage, the inverter’s off-grid function will automatically turn of. To restart, turn of the high-power load to ensure that the load power is less than the rated power of the inverter.
- The inverter at the off-grid mode can be used for household loads, such as: Inductive load / capacitive load: total power ≤ 0.5x rated output power of the inverter.



As shown in the above diagram, a complete hybrid inverter system in Power-Box TH series consists mainly of the solar PV panels, hybrid inverter, battery and power grid.

S/N	Item	Description
1	PV string	PV string consists of PV modules.
2	Inverter	Applicable inverters: Power-Box TH(5-15)K series.
3	Battery	Select the appropriate models based on the matching table of the inverter and battery. The approved list of batteries may be obtained on the website or via the App.
4	Energy storage circuit breaker	Recommended capacity: rated current ≥ 40 A, rated voltage > 600 V.
5	Backup circuit breaker	To be specified in conjunction with the actual load.
6	AC circuit breaker	Recommended specification: Power-Box TH 15K / 12K: rated current ≥ 50 A Power-Box TH 10K / 8K: rated current ≥ 32 A Power-Box TH 6K / 5K: rated current ≥ 25 A
7	Smart meter	To be purchased from the inverter manufacturer, recommended model: AC Smart meter-DTSU666.
8	Backup load	Support connection of standby loads, such as other important loads.

3.4 Function Characteristic

Power derating

For safe operation, the inverter will automatically reduce the output power under the non-optimum condition. The following factors may cause power derating, please try to avoid them during use.

- Unfavorable environmental condition, such as direct exposure to sunshine, high temperature, etc.
- Inverter's output power percentage has been set.
- Load shedding due to over frequency.
- The input voltage is too high or too low.
- The input current is high.

AFCI (By default, this function is closed)

Causes of electric arc:

Inadequate connector connection in the PV system or battery system.

Cable connection is incorrect or damaged.

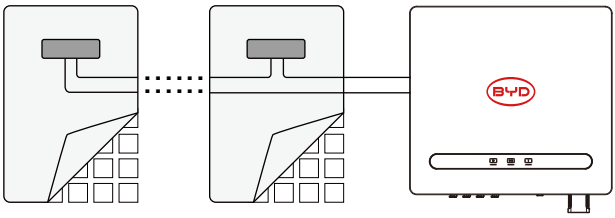
Connector, cable are aging.

Electric arc detection method

- Inverter integrated AFCI function.
- When the inverter detects an electric arc, an indication of the time and phenomenon of the fault can be displayed through the app.
- If the inverter trips less than 5 times within 24 h, the alarm can be automatically cleared. The inverter will be shut down for protection on the 5th arc fault trip. The inverter may not resume operation until the fault is cleared.

RSD (optional)

The inverter is equipped with a built-in signal transmitter that can communicate with an external unit module-level disconnector. In case of the emergency, the transmitter can be disabled by enabling the external emergency switch to shut down the module.

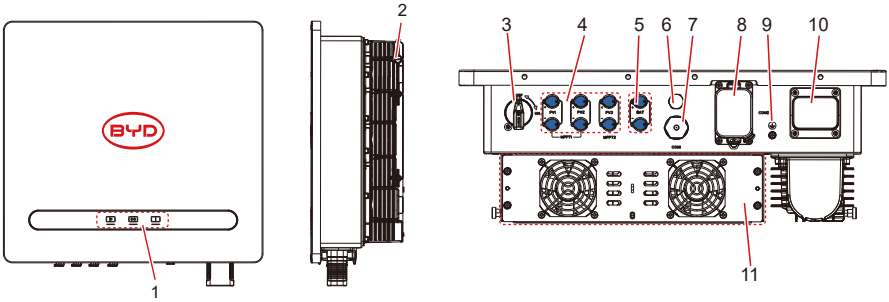


Earth Fault Alarm

The inverter is equipped with the reserved port used for earth fault alarm. In case of earth fault, the LED fault light of the inverter will be on.

3.5 Product Appearance

3.5.1 Introduction of Appearance



Taking the Power-Box TH15K as an example.

Position	Designation
1	Indicator light
2	Hangers
3	DC switch*
4	PV input port
5	Energy storage DC input port (BAT)
6	SRV (Safety Relief Value)
7	Communication module interface (WIFI & Bluetooth)
8	Communication port
9	Protective ground terminal
10	Grid-connected terminal / Off-grid terminal

NOTE DC switch ratings: Ui: 1200 V; Uimp: 8 kV; -40 ℃ to +85 ℃; 4 polarity; DC-PV2, Ue/Ie: 1200 V / 25 A; 1000 V / 32 A; I(make) / Ic(break): 4xIe; Icw: 1.5 KA, 1 s; Icm: 2.0 kA; Suitability for isolation.

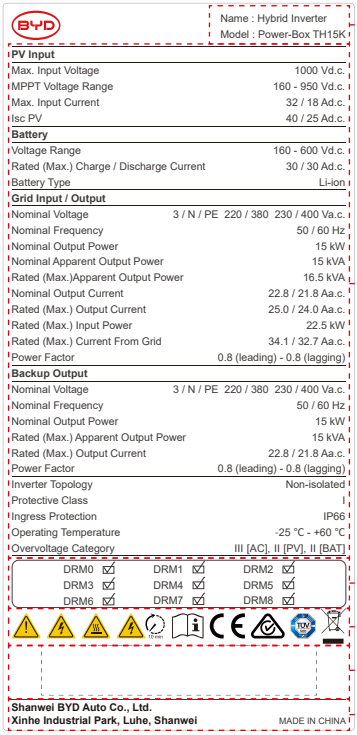
3.5.2 Description of Panel Indicators

Category	Symbol	Status	Item
Operation light			On-grid operation
		0.5s	Standby mode
		1s	Off-grid operation

Category	Symbol	Status	Item
Communication light			Normal communication (battery / meter)
		1s	Abnormal / disconnected communication (battery / meter)
Fault light			Serious fault, need to stop for inspection
Special display		1s	Off-grid and disconnected communication(battery)
		1s	Update

3.5.3 Nameplate and Label

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



S/N	Item	Description
	Danger warning	Inverters are power electronic products with potential risks, especially after power-on, therefore, they must be operated by professionals under safety protection.
	Warning mark	The inverters have high voltage during operation. All operations on the inverter must be performed by well-trained professional electrical technicians.
	Anti-scald warning	When the inverter is running, the surface (especially the radiator) is under high temperature, please do not touch it directly to avoid burns.
	Delayed discharge mark	The inverter can discharge to a safe voltage 10 minutes after it is powered off, only then can the professionals operate it.
	User manual mark	Professionals should refer to the user manual when installing or maintaining the inverter.
	EU WEEE mark	If the user intends to discard this product, it must be sent to an appropriate place for recovery and recycling, which cannot be disposed of as domestic waste.
	CE mark	TThis product complies with CE certification.
	TUV mark	TThis product complies with TUV certification.
	RCM mark	TThis product complies with RCM certification.
	DRM mark	TThis product complies with DRM certification.

4 Inverter Storage

⚠ WARNING

- The inverters must be stored indoors, and the package of the inverters must be intact. It is strictly prohibited to store the inverters without packaging. Otherwise, BYD shall not assume any liability for the damage to the inverters, the shortening in service life or other losses caused by such storage conditions.
- No more than 6 inverters should be stacked together! It is strictly prohibited to store the inverter horizontally or upside down!
- The inverter should be stored in a temperature range of -40 ~ 70 ℃, with the relative humidity of 0~100%(non-condensation).
- Inverters that have been stored for more than one year need to be inspected and tested by professionals before being put into use.

5 Inverter Installation

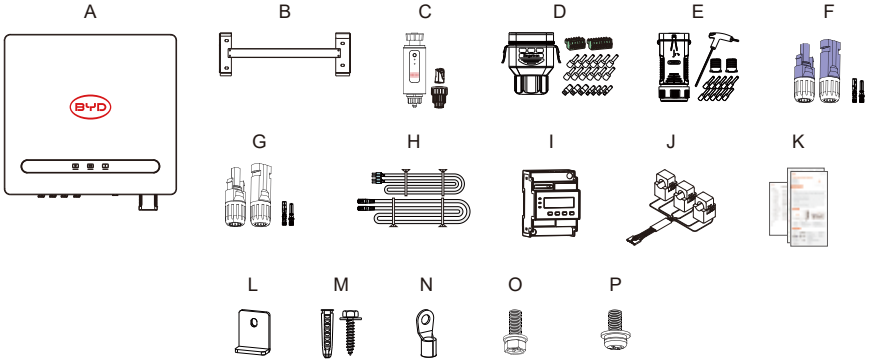
This chapter introduces the installation steps, and other related instructions.

5.1 Inspection before Installation

NOTICE

- The inverter has been fully tested and strictly inspected before delivery, but damage may still occur during transportation.
- Before unpacking the inverter, check the outer packaging for visible damage, such as holes, cracks, or other signs of possible internal damage, and check the inverter model.
- If there is any deformation of the packaging or the inverter model does not match, please do not disassemble it and contact your dealer as soon as possible.
- IMPORTANT: Once the equipment arrives, keep the equipment balance when unpacking and unpack it carefully to avoid scratching.
- After unpacking the inverter, check that the items are intact and free of any visible external damage. If there are any items missing or damaged, please contact your dealer.

Standard Deliverables



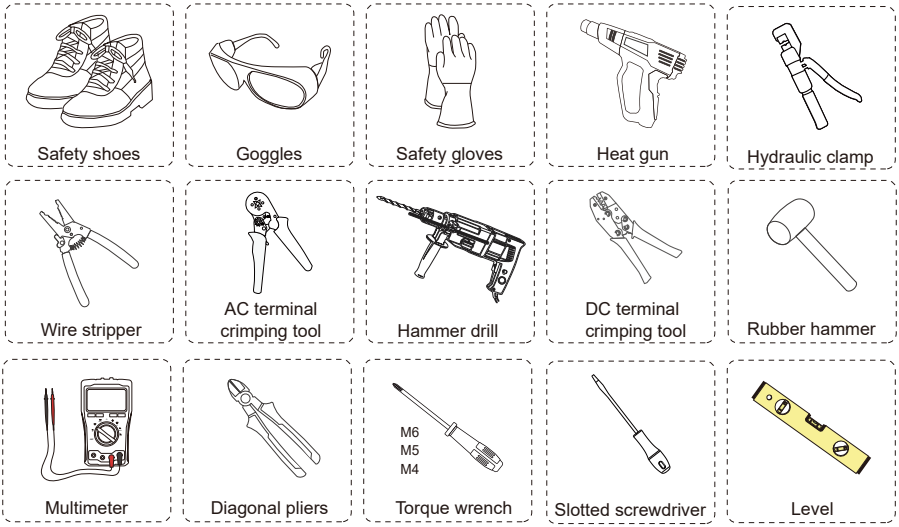
Position	Quantity	Designation
A	1	Inverter
B	1	Mounting bracket
C	1	Smart WiFi/LAN-Modul
D	1	Communication connector
E	1	AC connector

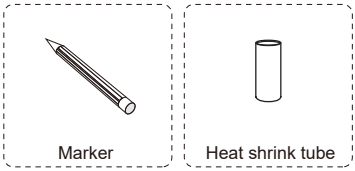
Position	Quantity	Designation
F	1	Battery connector
G	3	PV connector * 2 sets of PV terminals (Power-Box TH5/6/8/10K)
H	1	BMS and Meter communication cables
I	1	Smart Meter
J	1	CT
K	1	Documents
L	2	L-shaped support
M	4	Expansion plug set
N	1	OT terminal
O	4	M5 × 12 screw
P	1	M4 × 8 screw

5.2 Requirements for Inverter Installation

5.2.1 Requirements for Installation Tool

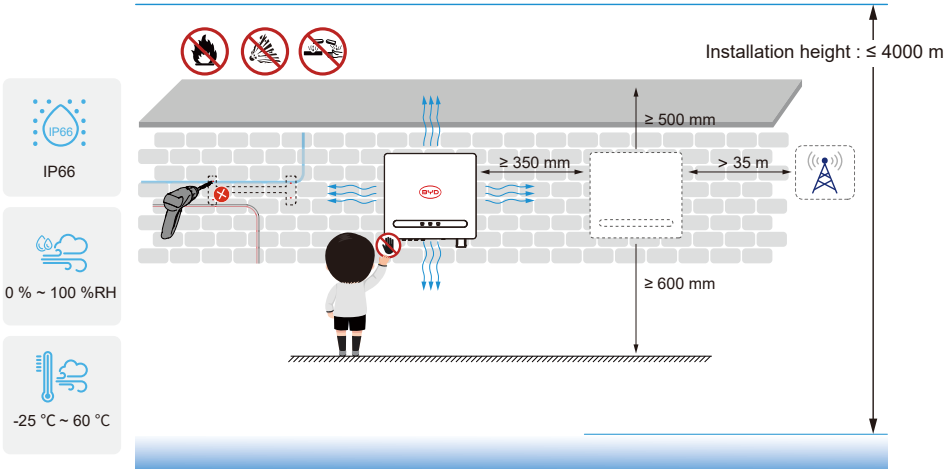
For installation, the following installation tools are recommended. Other auxiliary tools can be used on site if necessary.





5.2.2 Requirements for Installation Environment

1. The equipment cannot be installed in flammable, explosive, corrosive hot source or other alike environments.
2. The installed equipment should be out of reach for children, and should not be in places that are easy to touch. The surface of the equipment may be hot when it is in operation, take caution to avoid burns.
3. Please avoid the water pipes and cables in the wall to avoid danger when drilling holes for installation.
4. The inverter needs to be installed away from sunshine, rain, snow, and other alike environments. It is recommended to install it in a sheltered location. If necessary, a sunshade can be built.
5. The installation space must meet the requirements for ventilation, heat dissipation and operation.
6. The equipment protection level meets the requirements for indoor and outdoor installation, and the temperature and humidity of the installation environment must be within the appropriate range.
7. The installation height of the equipment should be convenient for operation and maintenance. Ensure that the indicators and all labels of the equipment are easy to check, and the terminal blocks are easy to operate.
8. The inverter installation altitude should be less than 4000m (the maximum working altitude).
9. Keep away from strong magnetic field to avoid electromagnetic interference. If there are radio stations or wireless communication equipment below 30 MHz nearby, please install the equipment according to the following requirements:
   - Add a ferrite core with multi-turn windings 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 electromagnetic interference equipment exceeds 35 m.

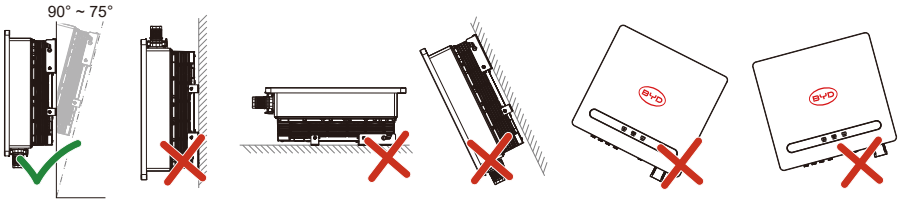


5.2.3 Requirements for Installation Carrier

- The installation carrier must be fire-resistant.
- Please ensure that the installation surface is firm, and the carrier meets the load-bearing requirements of the equipment.
- When the equipment is running, it will vibrate. Please do not install it on a carrier with poor sound insulation, to ensure that the noise generated by the equipment will not trouble other residents in the living area.

5.2.4 Installation Angle Requirements

Recommended inverter installation inclination: vertical or leaning backward ≤ 15°. Do not install the inverter upside down, leave it tilting forward or backward beyond the angle, or install it horizontally.

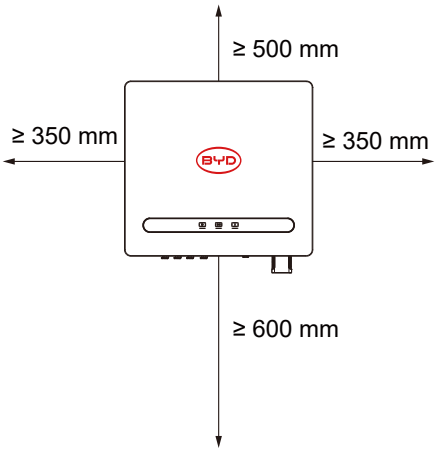


NOTICE

- It is recommended to install the equipment vertically or within a caster angle of 15°. Damages of the inverter due to non-conforming installation will not be covered by the product warranty.
- When installing, make sure that the radiator is free from obstructions to ensure unobstructed air ducts.

5.2.5 Requirements for Installation Space

When installing a single inverter, reserve enough space around it for the installation, maintenance and heat dissipation. The distance between the bottom of the inverter and the ground is recommended to be greater than or equal to 600 mm. The installation space of a single inverter is shown in the figure below.



5.3 Installation of Inverter

5.3.1 Moving Inverter

⚠ WARNING

- Before installation, the inverter needs to be transported to the installation site. To avoid personal injury or equipment damage during the transportation, please pay attention to the following:
- Please arrange personnel according to the weight of the equipment to prevent the equipment from exceeding the weight that the human body can carry and even hurting people.
- Wear safety gloves to avoid injury.
- Please ensure that the equipment is balanced during transportation to avoid falling.

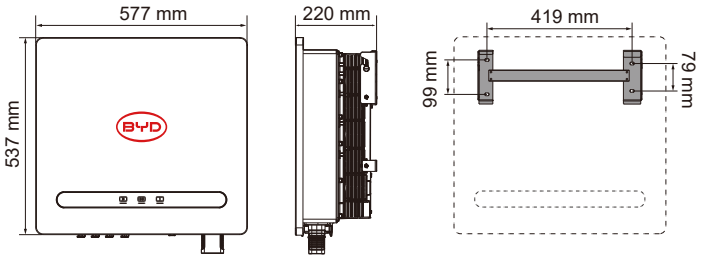
5.3.2 Installing Inverter

NOTICE

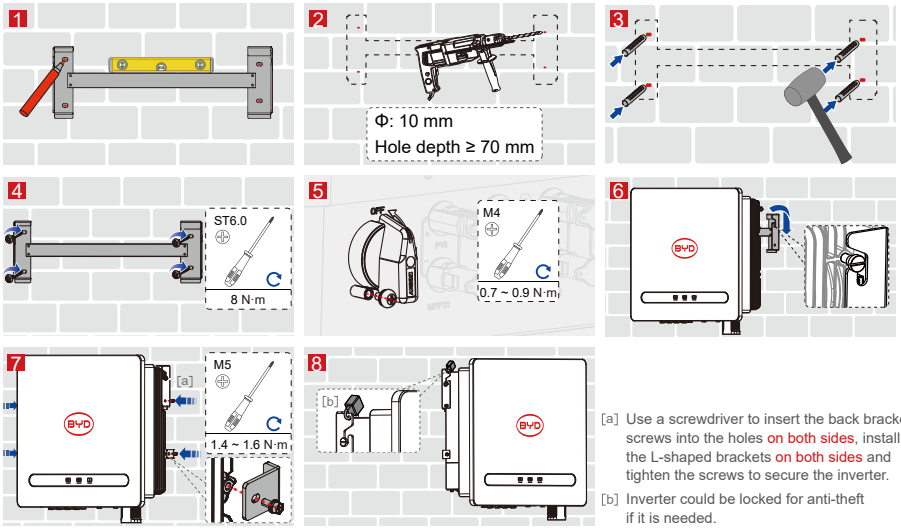
- Please avoid the water pipes, cables, etc. in the wall to prevent danger when drilling holes.
- When drilling holes, please wear goggles and a dust mask to prevent dust from being inhaled or falling into your eyes.
- Please prepare your own DC switch lock.

5.3.2.1 Inverter Installation Dimensional Diagram

Backplate dimensional diagram of the inverter is as follows:



5.3.2.2 Wall Mounting



[a] Use a screwdriver to insert the back bracket screws into the holes on both sides, install the L-shaped brackets on both sides and tighten the screws to secure the inverter.

[b] Inverter could be locked for anti-theft if it is needed.

Procedure:

1. Take out the cardboard from the accessories, use a level to ensure That the cardboard is placed horizontally on the wall, and mark the Drilling positions

with a marking pen.

2. Use a percussion drill with the drill bit diameter of 10mm to drill holes and ensure that the depth of the hole is about 70 mm.
3. Install expansion tubes.
4. Fix the back-plate to the wall with self-tapping screws.
5. Install the DC switch locking screw.
6. Hang the inverter on the back-plate.
7. Install the screws of the back panel and L-shaped brackets.
8. Place gaskets and tighten the expansion screws on the back-plate at the bottom. Install anti-theft locks (if it is needed).

NOTICE

- Pay attention to personal safety when handling.
- The product accessory package contains expansion tubes and self-tapping screws.
- The wall must have enough carrying capacity.
- The DC switch locking screw is delivered with the inverter. According to the requirements of Australian standards, it is used to fix the DC switch (DC SWITCH) to prevent accidental startup (this step needs to be performed for the models used in Australia according to local standards.

6 Electrical Connection

6.1 Electrical Connection Overview

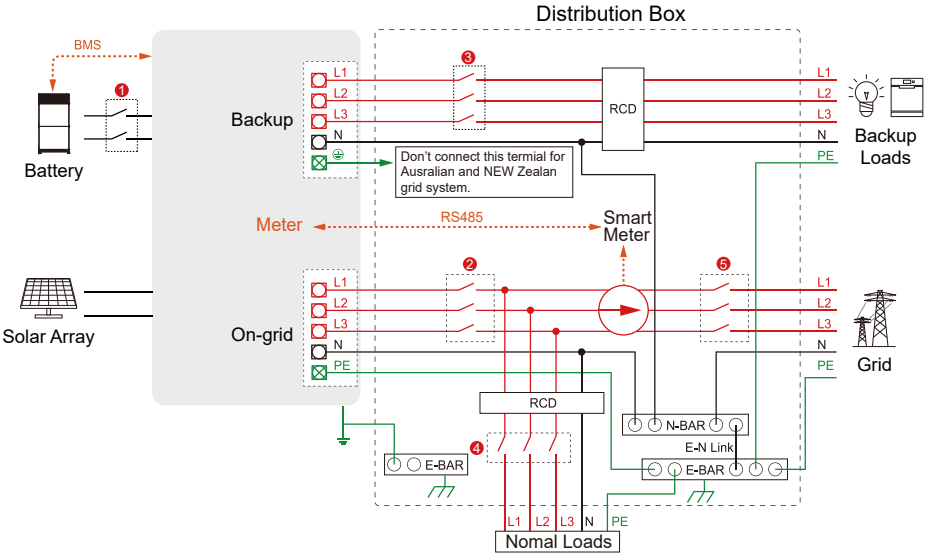
⚠ DANGER

- When PV modules are exposed to light, DC high voltage exists at the PV panel port, which endangers the personal safety of the operator!
- The insulation layer of the power cable must remain intact and free from damage and scratches. Otherwise, it may cause the short circuit and fire!
- Before wiring for the inverter, you must check and confirm that all the connecting cables of the equipment are free from dangerous voltage, and you must set up obvious warning signs at the external power distribution switch of the equipment to prevent others from misoperating the external switches of the equipment and threatening the personal safety of operators!
- Before wiring the inverter, make sure the AC wiring port is disconnected from the grid, and the AC port is under zero voltage.

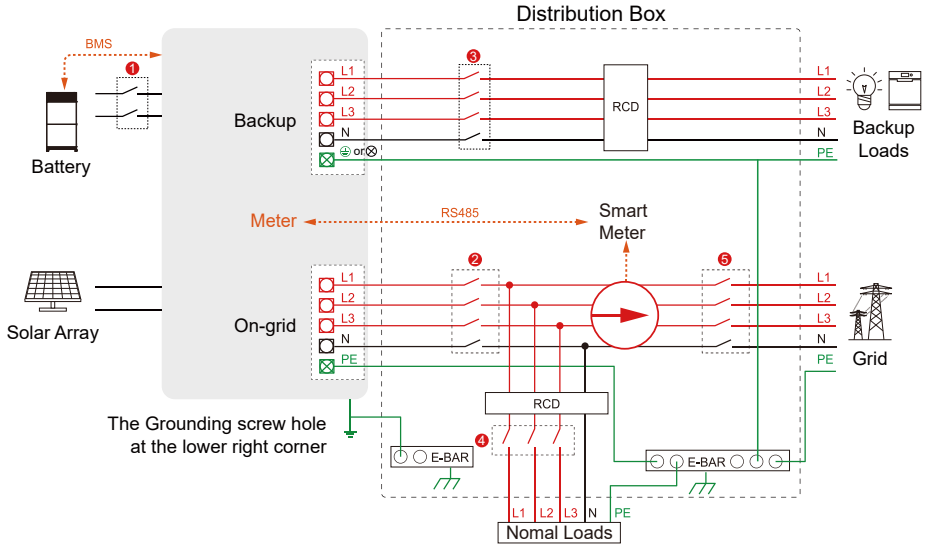
⚠ WARNING

- Strictly follow the label inside the inverter to connect the cables, otherwise the equipment will be damaged.
- The inverter cable connection must be safe and reliable. The cable selection and tightening torque must comply with the requirements in this manual, otherwise it may cause fire and damage to the inverter.
- Operators are not allowed to open the upper cover of the main compartment without permission. If the tamper-evident label is torn of and the inverter is damaged, the damage will not be covered by our warranty.
- When opening the upper cover of the wiring compartment, be careful not to scratch or damage the protective foam on the upper cover, as this may cause water to enter the inverter.
- Please try not to open the inverter wiring compartment in rainy or snowy weather to avoid the risk of water ingress.

This diagram is an example for an application that neutral connects with the PE in a distribution box.



For countries such as Australia, New Zealand, South Africa, etc., please follow local wiring regulations!



This diagram is an example for an application in which neutral is separated from the PE in the distribution box.
For countries such as China, Germany, the Czech Republic, Italy, etc., please follow local wiring regulations!
To ensure that the Power-Box series hybrid inverter is normally disconnected from the grid under abnormal conditions, please select a suitable AC circuit breaker. The recommended specifications are as follows.

Position	Power-Box TH5K/6K/8K/10K
1	≥ 40 A / 600 V DC breaker
2	Power-Box TH15K / TH12K: Rated current ≥ 50 A Power-Box TH10K / TH8K: Rated current ≥ 32 A Power-Box TH6K / TH5K: Rated current ≥ 25 A
3	Power-Box TH15K / TH12K: Rated current ≥ 32 A Power-Box TH10K / TH8K / TH6K / TH5K: Rated current ≥ 25 A
4	Depends on loads
5	Depends on household loads and inverter capacity (Optional)

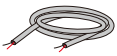
The Power-Box series hybrid inverter integrates a leakage protection circuit. If the leakage current is greater than the protection threshold value required by safety regulations, the inverter will automatically disconnect from the power grid.
If the AC circuit breaker is furnished with leakage current detection function, please select the appropriate device according to the table below.

Position	Leakage Current Trigger Value
Power-Box TH15K	300 mA
Power-Box TH12K	
Power-Box TH10K	
Power-Box TH8K	
Power-Box TH6K	
Power-Box TH5K	

6.2 Recommended Cable Specifications

Power-Box series hybrid inverter external cables include grounding cables, AC cables(on-grid), AC cables(backup), DC input cables, battery input cables, and

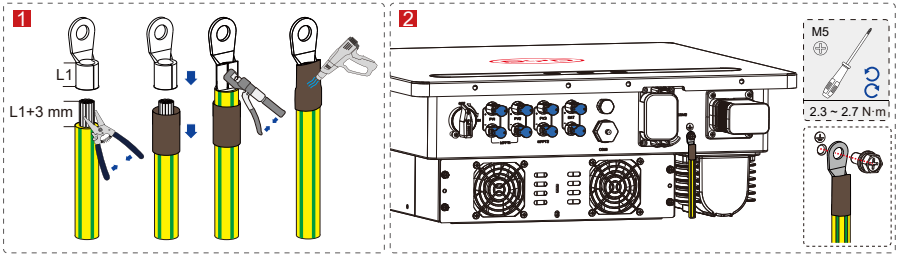
communication cables. Recommended cable specifications are as follows:

Item	Symbol	Description
Grounding Cable		6 mm²
AC Cable(On-grid / Backup)		4 mm² Ø: 14 ~ 16 mm 6 mm² Ø: 18 ~ 22 mm
PV Input Cable		4 ~ 6 mm² Ø: 4 ~ 8 mm
Battery Input Cable		6 mm² Ø: 4 ~ 8 mm
Communication Cable		Cat.5e cable and above Ø: 5 ~ 6.5 mm
		0.2 ~ 0.5 mm² Ø: 4 ~ 5 mm
Heat Shrink Tubing		Ø: 8 ~ 10 mm

6.3 Connection of Grounding Wire

⚠ WARNING

- The inverter must be reliably grounded, otherwise it will cause personal injury or abnormal operation of the inverter!



Procedure:

1. Use a wire stripper to strip a piece of bare copper core from the grounding cable of the corresponding specification, and the length of the bare copper core should be 3mm longer than the wiring end of the OT terminal.
2. Use crimping pliers to crimp the OT terminal to the bare copper core.
3. Put a heat-shrinkable sleeve of suitable size on the wiring end of the OT

terminal, and the length of the heat-shrinkable sleeve (withstanding voltage ≥ 1000 V) is generally recommended to be 1.5--2 times longer than that of the wiring end.

4. Use a heat gun to blow the heat-shrinkable sleeve, making the sleeve wrap the terminal and cable tightly to complete the preparation of cable (the process is shown in the steps in the figure above).
5. Fasten the OT terminal of the grounding cable to the grounding port with an M5 screw, and the tightening torque is 1.4~1.6 N.m (refer to the steps in the figure above for details).

Remarks: After the grounding terminal is fastened, it is recommended to apply silicone or paint the outside of the terminal to improve the anti-corrosion performance of the terminal.

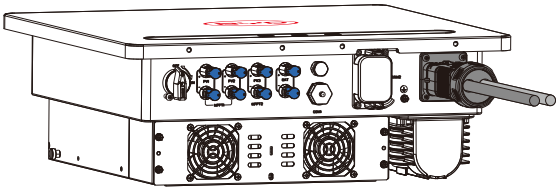
NOTICE

- Users need to prepare cables and heat shrinkable sleeves for the protective grounding cables by themselves.
- The tools users need to use include diagonal pliers, wire strippers, crimping pliers, a heat gun, and a M5 Phillips screwdriver.

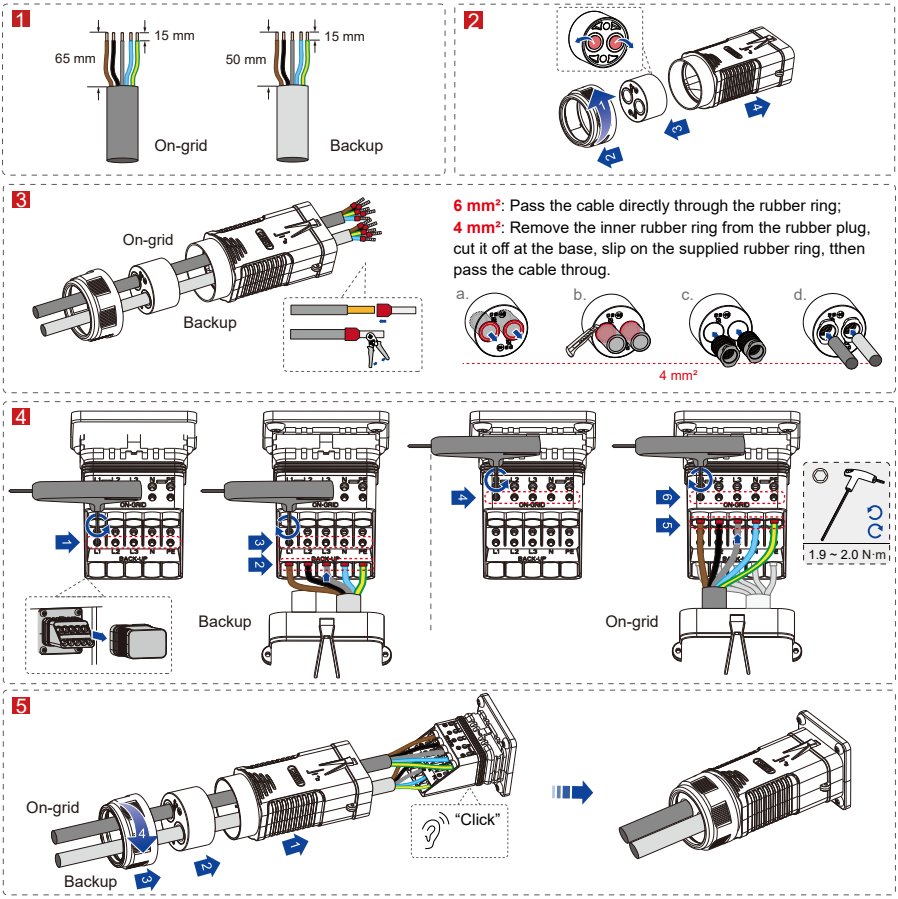
6.4 AC Wiring

⚠ WARNING

- An AC circuit breaker matching the power of the inverter must be connected between the inverter output and the grid, and each inverter corresponds to an independent circuit breaker!
- The on-grid and off-grid cable locks and fixing screws must be tightened, otherwise there is a risk of inverter damage or fire!
- When connecting on-grid and off-grid cables, make sure that the AC circuit breaker is disconnected!
- Inverters and AC circuit breakers are prohibited from connecting to loads!



⚠ Before connecting the cables, disconnect the circuit breaker between the power grid and the inverter.



Procedure:

1. Prepare on-grid cables, and strip the cables as shown in the following figure.
2. Disassemble the on-grid connector, and insert the on-grid cable into the on-grid output terminal.
3. Use a hex wrench to fix the on-grid cable. Connect the AC output terminal and the inverter.

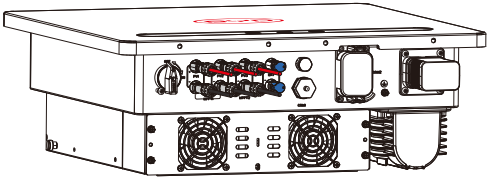
NOTICE

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- The tools users need to use include diagonal pliers, wire strippers, crimping pliers, a heat gun, and a M5 Phillips screwdriver.

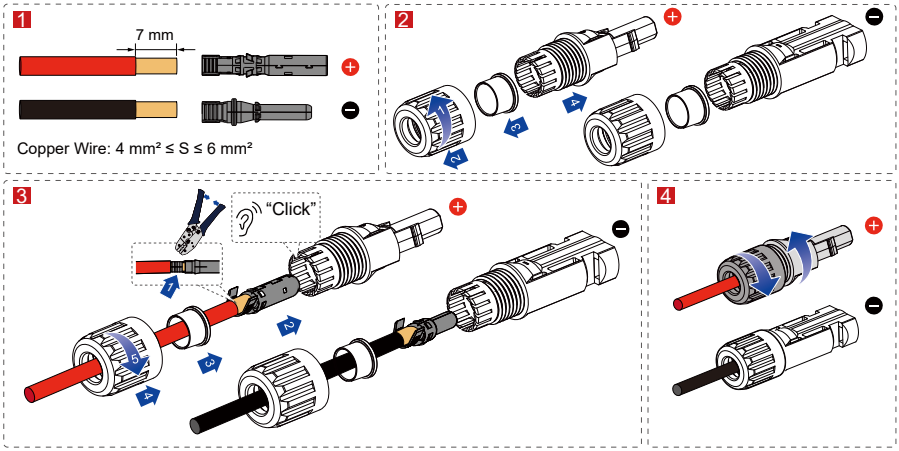
6.5 PV Wiring

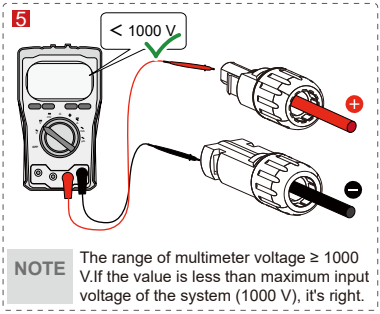
⚠ WARNING

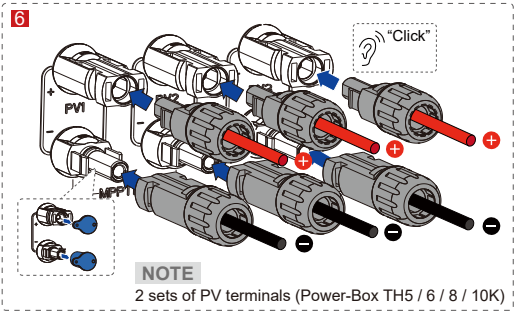
- If PV modules are exposed to light, the photovoltaic panel may endanger the life of the operator with high voltage output!
- Before wiring, make sure that the side of the PV panel is completely covered with an opaque cloth before the operation.
- The DC switch of the inverter must be in the "OFF" position!
- The parameter configuration of the PV string should match the DC input parameters of the inverter.
- If the inverter is directly connected to the grid, the positive and negative poles of the photovoltaic panel cannot be directly grounded.
- If multiple inverters are connected in parallel to the grid through a transformer, the positive and negative poles of the photovoltaic panel cannot be directly grounded.
- **It is forbidden to use DC terminals with specifications, models, and brands other than those provided by us!**
- Before connecting the photovoltaic strings to the inverter, ensure that the photovoltaic strings are well insulated from the ground!
- To increase the power generation capacity of the system, it is recommended that each string be connected with the photovoltaic strings with the same number, specifications, and direction.



⚠ Pay attention to the high voltage from the PV panels.







Procedure:

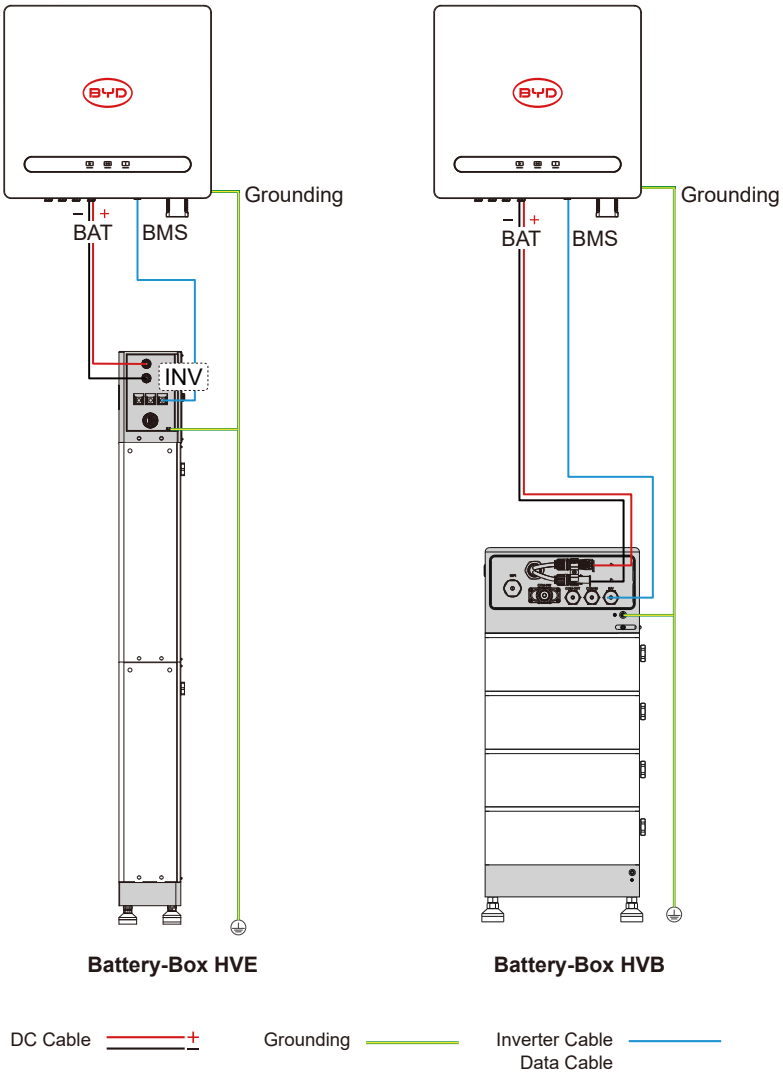
1. Use wire strippers to strip the insulation layer of the positive and negative cables to an appropriate length.
2. Put the insulation layer of the positive and negative cables into the corresponding metal terminals, and crimp them tightly with crimping pliers.
3. Insert the crimped positive and negative cables into the corresponding insulating shells until a "click" sound is heard, indicating that they are in place.
4. Tighten the plastic nuts at the end of the insulating shell of the positive and negative connectors.
5. Use a multimeter to measure the voltage of the positive and negative DC terminals to ensure that the polarity of the battery panel is correct, and the voltage is less than the maximum input voltage that the system can withstand.
6. Remove the protection plugs of the positive and negative poles of the DC input terminal of the inverter.Insert the positive and negative connectors into the positive and negative poles of the DC input terminal of the inverter until a "click" sound is heard, indicating that they have been installed in place.

NOTICE

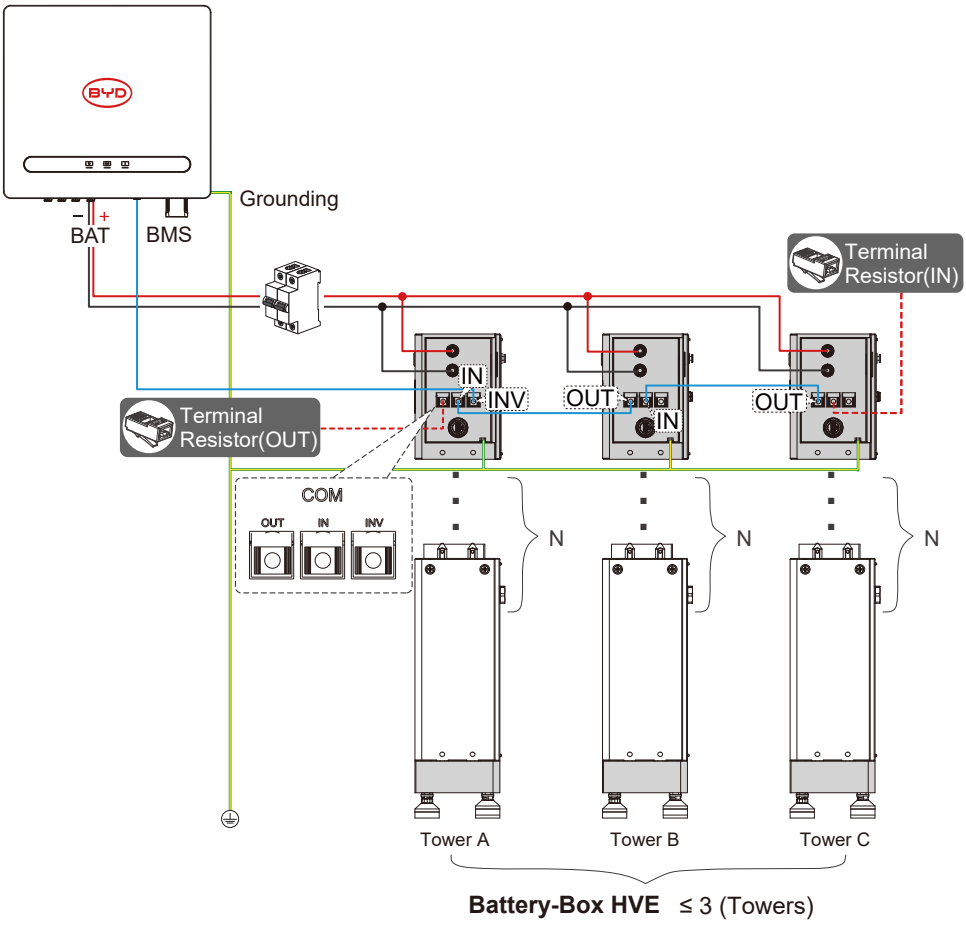
- The DC switch must be in the "OFF" position before wiring!
- Before connecting the photovoltaic strings to the inverter, ensure that the photovoltaic strings are well insulated from the ground.
- The photovoltaic strings connected to the same channel of MPPT must adopt the photovoltaic panels of the same type and number.
- For the positive and negative pole connectors that have been connected, when measuring the voltage with a multimeter, ensure the value is positive to ensure that the polarity is correct; and its value is less than the maximum input voltage of the system (1000 V), to ensure that the number of photovoltaic modules is properly configured.

6.6 Battery Wiring Diagram

6.6.1 With One Battery Tower



6.6.2 With Multiple Battery Towers

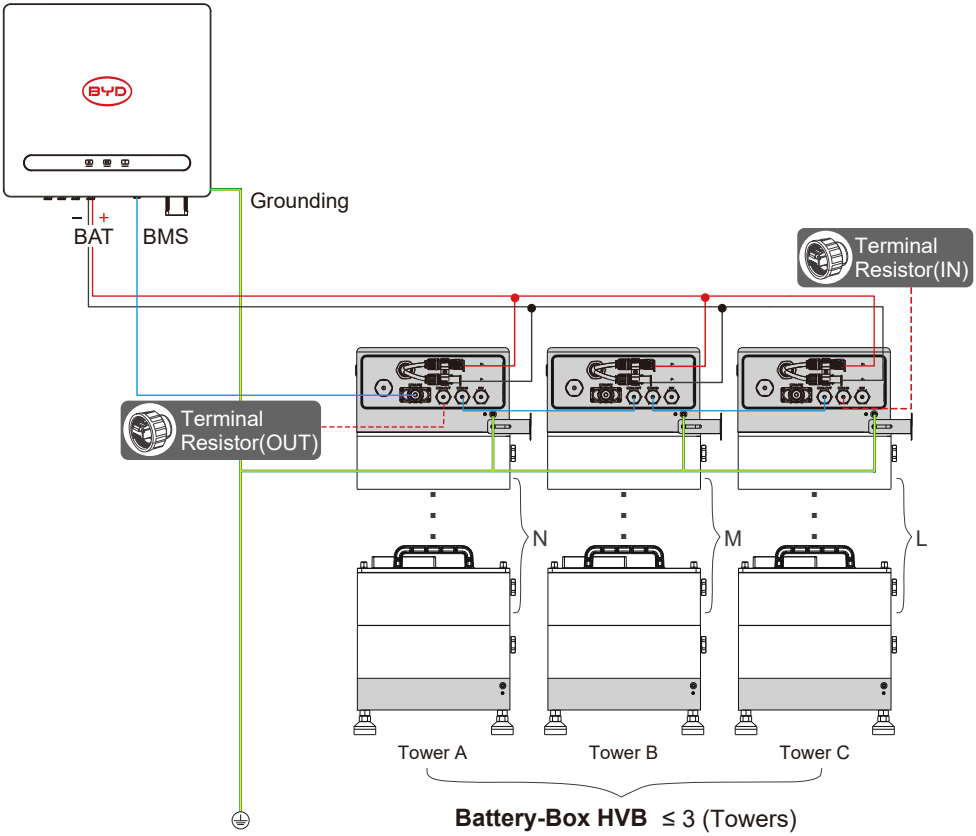


NOTE

Number of Modules:
2 ≤ N ≤ 4 ✓

Product Model:
A = B = C ✓
A ≠ B or A ≠ C or B ≠ C ✗

When N equals 2, it can only be 2 HVE modules 6.4;
When N equals 4, it can be any combination except for the HVE modules 6.4 × 4.



NOTE

Number of Modules:
- 4 ≤ N ≤ 10 ✓
- N = M = L ✓
- N ≠ M or N ≠ L or M ≠ L ✗

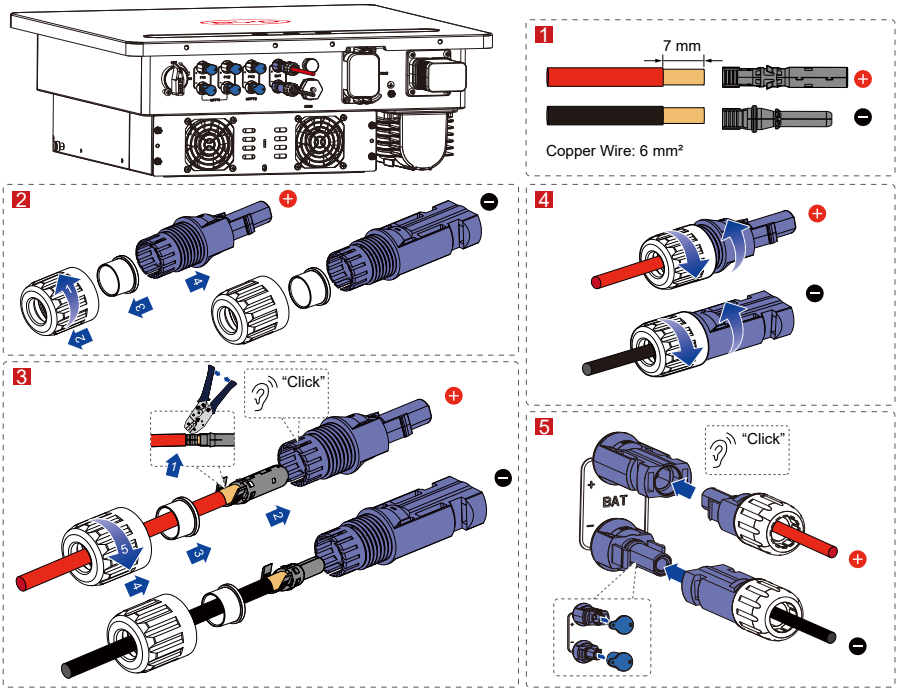
Product Model:
- A = B = C ✓
- A ≠ B or A ≠ C or B ≠ C ✗

DC Cable — Grounding — Inverter Cable / Data Cable

6.7 Battery wiring

The wiring method for the battery connection and DC connections is similar, except for the different colors of the terminals: the battery connector is blue, while the DC connector is black. When the terminal is inserted into the machine, please make sure the insertion is correct.

The steps for the connection of the battery input cable are as follows:



NOTICE

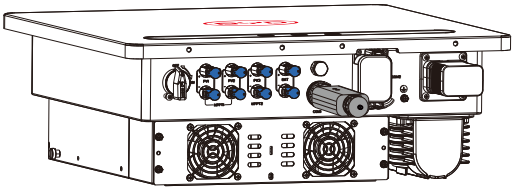
- When wiring, make sure that the polarity of the battery cable is correct, and do not reverse it. If the positive and negative poles of the battery get reversed, there is a risk of damaging the inverter.

6.8 Communication Connection

6.8.1 Install Communication Module

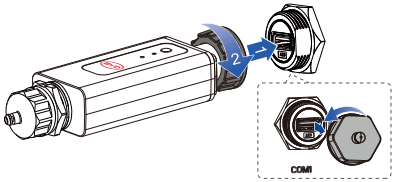
⚠ WARNING

- Please install the communication module in strict accordance with the user manual!

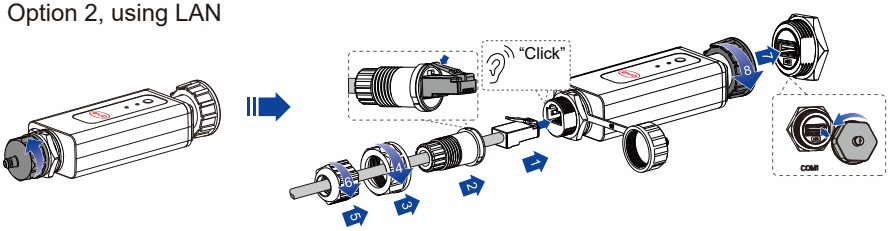


Installation procedure

Option 1, using WLAN

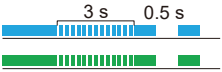


Option 2, using LAN



Indicator Light Status Explanation

Indicator	Frequency	Status	Description
Bluetooth	Blue	0.5 s	Blinking slowly: The Bluetooth is not connected
			Steady on: The Bluetooth connection is successful.
		0.1 s	Blinking quickly: Bluetooth pairing mode.

Indicator	Frequency	Status	Description
Network	Green		Blinking slowly: The Network is not connected.
			Steady on: The Network connection is successful.
Special Display	Blue Green		Steady on → blinking quickly → blinking slowly: Bluetooth and Network restore factory settings

Button Function Description

- Press and hold for more than 10 seconds to restore factory settings.
- After completing the distribution network setup, press and hold for more than 3 seconds to re-enter the distribution network status.
- Single Bluetooth connection mode. Press and hold for more than 3 seconds to reset the Bluetooth.

Procedure:

1. Before installation, please read the manual of the communication module carefully.
2. Unscrew the dust-proof cover of the aviation plug, insert the communication module into the data acquisition stick terminal, and tighten the plastic nut clockwise.

NOTICE

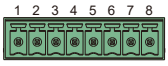
- The installation method of the communication module is illustrated in the above diagram.
- When installing the communication module, the three indicator lights should face outward.
- When installing the communication module, it is forbidden to rotate the WIFI module, which may result in loose terminals on the panel end and cause water to enter the inverter.
- To install the communication module, please tighten the plastic nut clockwise, otherwise there will be a risk of abnormal communication or water ingress.

6.8.2 Install Communication Cable

WARNING

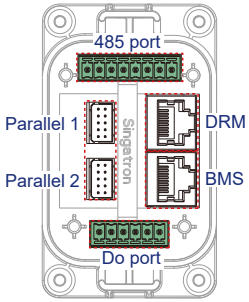
- Please connect the inverter communication cable in strict accordance with the inverter communication port label!

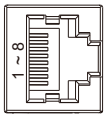
The communication signal is defined as follows:



485 port

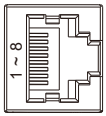
Position	Definition	Function
1	485_A_PARALLEL	For WiFi & Communication moudle
2	485_B_PARALLEL	
3	NC	
4		
5		
6	GND	GND
7	485_A_METER	For Smart Energy Meter
8	485_B_METER	





DRM

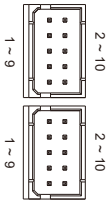
Position	Definition
1	NC
2	
3	COM
4	S1 (60%)
5	S2 (30%)
6	W1 (0%)
7	W2 (Max. 4.2 kW)
8	NC



BMS

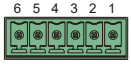
Position	Definition	Function
1	NC	
2		
3		
4	CAN_H_BMS	For Battery
5	CAN_L_BMS	Communication
6	NC	
7		
8		

Parallel 1



Parallel 2

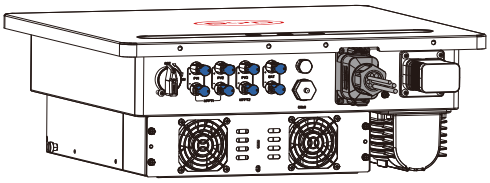
Position	Definition	Function
1	PARALLEL_SELECT_L	Reserved
2	PARALLEL_SELECT_H	Reserved
3	CAN2_H	Reserved
4	SYNC_H	Reserved
5	CAN2_L	Reserved
6	SYNC_L	Reserved
7	ON_OFF_H	Reserved
8	485_A_METER	Reserved
9	ON_OFF_L	Reserved
10	485_B_METER	Reserved

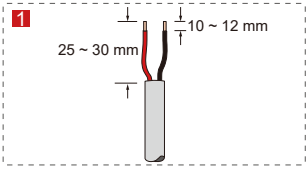


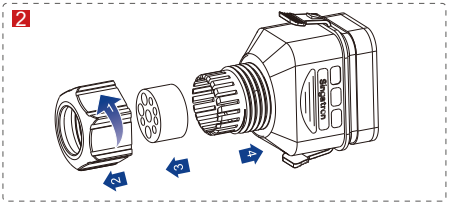
Do port

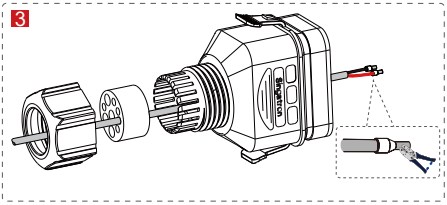
DI/DO	Definition	Function
1	DI_OUT	Reserved
2	GND	Reserved
3	NC	
4	DO_COM	Dry contact
5	NC	
6	DO_NO	Dry contact

The steps to connect the communication cable are as follows:





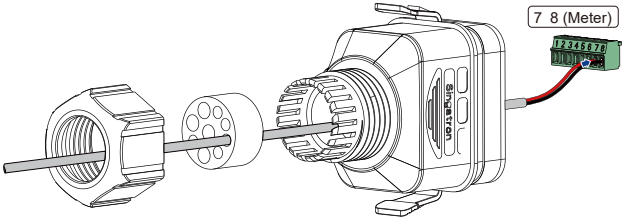




4

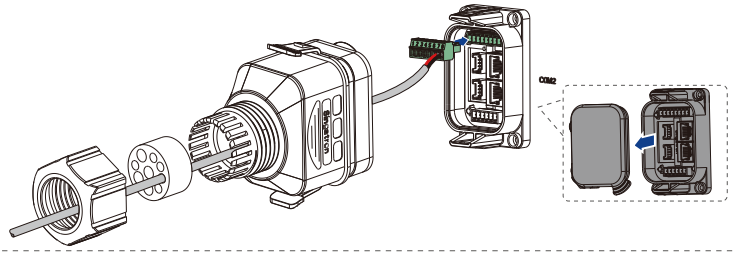
485 port

PIN	Definition
1	485_A_PARALLEL
2	485_B_PARALLEL
3	NC
4	
5	
6	GND
7	485_A_METER
8	485_B_METER



Label	Description
RS_485_PARALLEL	For WiFi communication module
RS_485_Meter	For smart energy meter

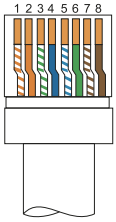
5



6

DRM

PIN	Colour	Definition
1	White and Orange	GNDS
2	Orange	5VS
3	White and Green	COM / DRM0_OUT
4	Blue	DRM 1 / 5_OUT
5	White and Blue	DRM 2 / 6_OUT
6	Green	DRM 3 / 7_OUT
7	White and Brown	DRM 4 / 8_OUT
8	Brown	DRM_COM

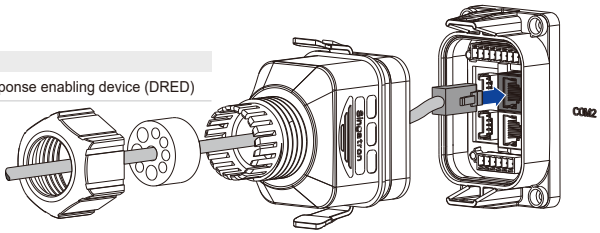


BMS

PIN	Colour	Definition
1	White and Orange	NC
2	Orange	
3	White and Green	
4	Blue	CAN_H_BMS
5	White and Blue	CAN_L_BMS
6	Green	NC
7	White and Brown	
8	Brown	

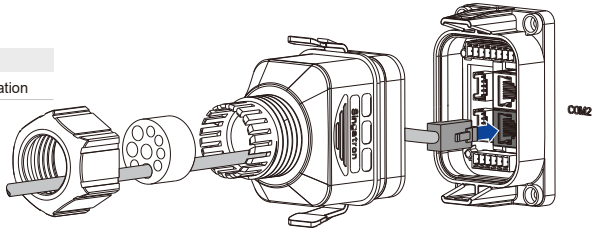
DRM

Label	Description
DI / DRM	“AU” / “NZ”: Demand response enabling device (DRED)

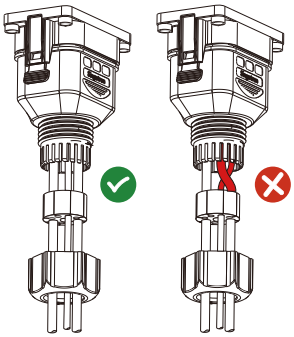


BMS

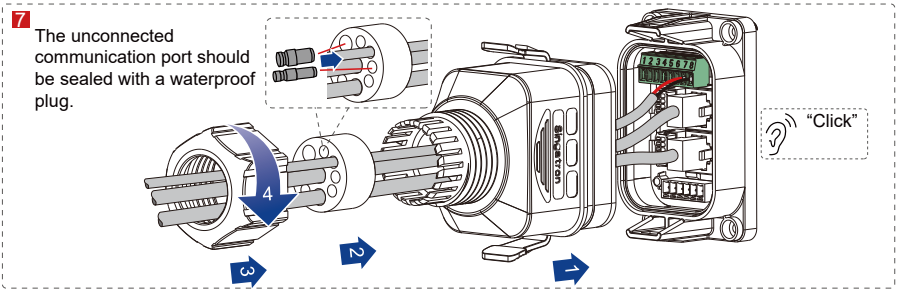
Label	Description
BMS / CAN	For battery communication



Press the cable into the rubber plug (reserved the tncision around the plug, and prss the cable in the bundle directly when installing).



* Cable cannot be entangled.



NOTICE

- Make sure that the protective layer of the communication cable is inside the connector, otherwise it will lower the sealing level at the communication terminal.
- When fixing the communication cables, ensure that the cores are fully inserted into the communication wiring holes without exposure, and fasten with the specified torque.

6.8.3 Smart Meter & CT Connection

WARNING

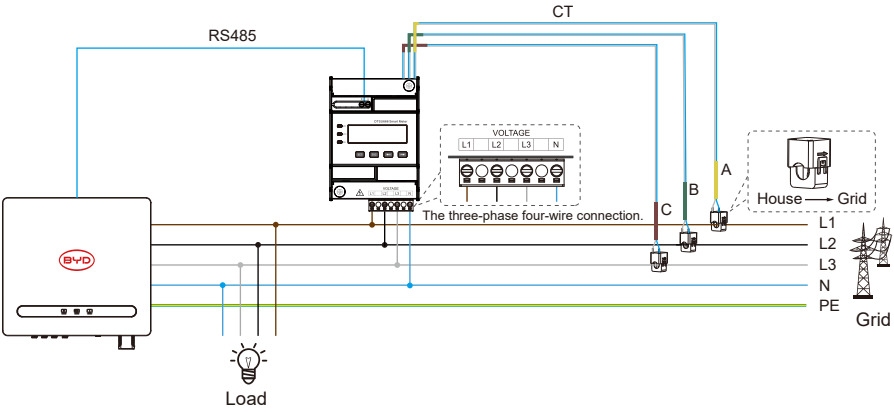
- Make sure AC cable is totally isolated from AC power before connecting Smart Meter & CT.

The Smart Meter with CT in the Power-Box product box is compulsory for the system installation and it is used to detect grid voltage, current direction, and magnitude, as well as to instruct the operation condition of inverter via RS485 communication.

NOTICE

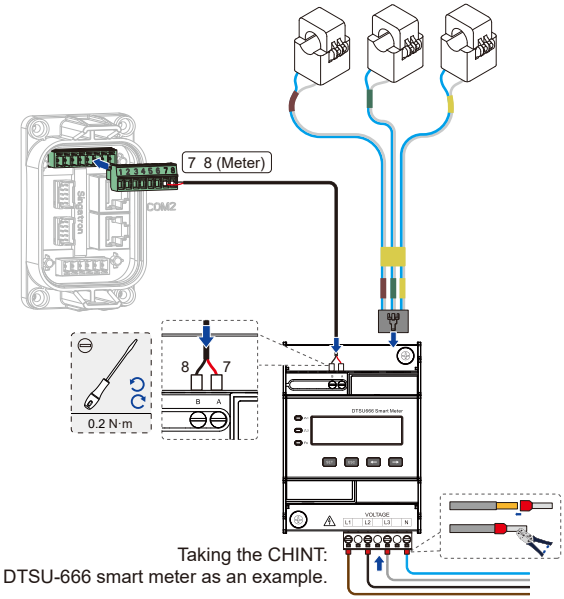
- The Smart Meter and CT is well configured, please do not change any setting on Smart Meter.
- For more detailed instructions, please refer to the user manual included with the smart meter.

Smart Meter & CT Connection Diagram:



NOTICE

- Please use the Smart Meter with CT in the inverter product box.
- CT cable is 3m as default, which could be extended to 5 m at maximum.



Taking the CHINT:
DTSU-666 smart meter as an example.

Taking the CHINT:DTSU-666 smart meter as an example.

Label	Description
L1 / L2 / L3 / N	Connected Gird L1 / L2 / L3 / N
RS485_A / B or RJ45 pin 3 / 6	Connected Inverter RS_485_Meter
CT_A1 / B1 / C1	Connected Gird L1 / L2 / L3 / N (as shown in the figure)

7 Commissioning

7.1 Check before Power on

S/N	Inspection Item	Inspection Result: (Yes √ / No ×)
1	Check whether the DC switch of the inverter is in the "OFF" position.	☐
2	Check whether the inverter installation is firm and reliable.	☐
3	Check whether the connection of the external grounding cable is correct, whether the terminal is tight, whether the grounding is reliable, and ensure that there is no open circuit or short circuit.	☐
4	Check whether the AC output cables are connected correctly, whether the terminals are fastened, and ensure that there is no open circuit or short circuit.	☐
5	Check whether the polarity of the DC input cable is correct, whether the connector insertion is firm, and ensure that there is no open circuit or short.	☐
6	Check whether the connection of the communication cable is correct, whether the terminal is tight, and ensure that there is no open circuit or short circuit.	☐
7	Check whether the plastic nuts on AC side and those at the end of the communication cable lock are tightened.	☐
8	Check whether the unused ports are fitted with dust plugs.	☐
9	Check whether the data acquisition stick module is installed correctly (only for products with optional data acquisition stick.	☐

Special reminder:

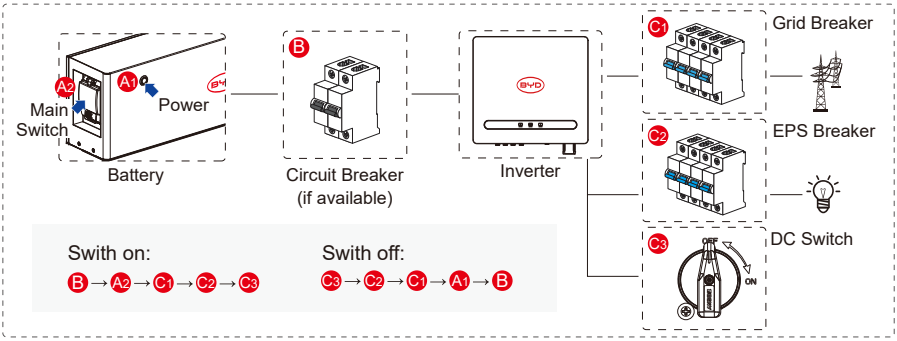
It is recommended that after one week of operation, in an environment with sufficient light, the on-site operation and maintenance personnel use an infrared detector to measure the temperature of the direct connection terminal. If everything is normal, it means that the connection of the DC terminal is reliable.

If everything is normal for the temperature of the direct connection terminal, it means that the connection of the DC terminal is reliable.

7.2 Power on

WARNING

- Multi-point grounding in the matrix is prohibited.



7.3 Setting Inverter Parameters via BYD Energy App

NOTICE

- Do not turn off the power during the firmware upgrade progress. The system will automatically proceed to working mode at the end of firmware upgrade.
- Please set the inverter parameters first via BYD Energy App to ensure its normal operation.

BYD Energy App is one smart phone application used to communicate with the inverter via bluetooth, WiFi modules.

Commonly used functions:

1. Check the operating data, software version, alarms, etc.
2. Set grid parameters, communication parameters, etc.
3. Maintain the equipment.
4. Upgrade the software version of the inverter.

For more details, refer to the BYD Energy App User Manual. Scan the QR code or visit www.bydenergy.com.

* Before proceeding with system configuration, verify that the inverter firmware is updated to the latest version. If not, perform the firmware update first.

iOS Android

8 System Maintenance

This chapter covers shutting down, removing, scrapping, and maintaining of the inverter (including the inverter maintenance cycle and inverter maintenance methods). When servicing the inverter, be sure to read the instructions in this chapter carefully.

8.1 Regular Maintenance of Inverter

DANGER

- The inverter may only be serviced by qualified personnel and must not be operated by unauthorized persons!
- To ensure the safety of maintenance personnel, do not touch any live parts of the inverter when it is running, and it is necessary to always check that the product's earth point is securely connected.
- When the inverter is completely disconnected, dangerous voltages are still present inside the inverter! Please wait for 30 minutes before servicing the inverter!
- Do not connect or disconnect the DC connector while the inverter is operating!
- Please be sure to use qualified spare parts provided by BYD. If the equipment is damaged due to the use of spare parts not provided by us, we take no responsibility.
- Unauthorized or improper disassembly of the inverter may result in damage to the equipment. BYD is not responsible.

Inspection Content	Method	Inspection Cycle
System clearing	Check that there are no foreign objects on the heat sink	Once a year or when an anomaly is detected
Visual inspection	Check to see if the inverter is damaged or deformed in any way	Once a year
Cable connection	Check that the AC and DC cables are securely connected and that there is no damage Check that the earth cable is securely connected	Half a year after first use, and every six months thereafter
Tightness	Check that all terminals and connections are well sealed	Once a year

The periodic inspection and maintenance of the inverter can be used to confirm the status of the inverter in time and improve the reliability of the inverter. The periodic

inspection list is shown in the table above.

8.2 Power-off of Inverter

DANGER

- Always turn of the inverter before operating or servicing it. Operating equipment with the power on may cause damage to the inverter or electric shock.
- When the inverter is switched off, it takes some time for the internal components to discharge Please wait until the equipment has fully discharged in accordance with the time specified on the label.

Procedure :

1. (Optional) Issue a trip command to the inverter.
2. Disconnect the AC switch between the inverter and the grid.
3. Disconnect the DC and battery switches.

8.3 Disassemble Inverter

WARNING

- Make sure the inverter is switched off.
- Wear professional protective equipment when operating the inverter.

Procedure :

1. Disconnect all electrical connections to the inverter, including the DC cable, AC cable, communication wire, communication module, and protective earth cable.
2. The person carrying out the disassembly should hold the handle during the operation, or the disassembly should be carried out by lifting and then removing the inverter from the back plate.
3. Remove the back plate.
4. Store the inverter properly. If the inverter is to be used at a later date, ensure that the storage conditions meet the requirements.

8.4 Scrapping the Inverter

If the inverter can no longer usable and must be scrapped, please dispose of it in accordance with the electrical waste disposal regulations of the country/region in which the inverter is located.

It cannot be treated as household waste.

9 Troubleshooting

WARNING

- Non-professionals cannot deal with inverter alarms or faults!
- When dealing with inverter events, strictly follow the relevant instructions in this manual!

When the inverter is running, if it encounters an abnormal state of the power grid, PV panel, or inverter, it will make an intelligent judgment and display the fault on the display or mobile App. The following table lists the fault alarms, interpretations, and recommended handling procedures.

You can use the following methods to do troubleshooting. If they cannot help you, contact our After-sales Service Center.

Please provide the following information to our After-sales Service Center or contact us on the mobile app so that we can help you more quickly.

Model No. of the inverter: _____

SN of the inverter: _____

System version of the inverter — Version 1: _____

— Version 2: _____

— MCU software version: _____

Fault code: _____

Installation environment of the inverter: _____

Description of fault: _____

Fault Code	Actions	Description
3001	Low Temperature	Wait for ambient temperature to return to specification range, inverter will restart automatically.
3002	MPPT Startup Voltage Out of Range	Verify PV panel series configuration, ensure each string's open-circuit voltage remains below inverter maximum operating voltage, inverter will restart automatically after proper configuration.
3003	Grid Voltage Anomaly	1. Verify inverter AC output voltage meets grid requirements. 2. Confirm AC line phase sequence connection is correct, N-line and PE wiring sequence is proper and secure.

Fault Code	Actions	Description
3004	Grid Frequency Anomaly	1. Verify inverter AC output frequency meets grid requirements. 2. Confirm AC line phase sequence connection is correct, N-line and PE wiring sequence is proper and secure. 3. Assess fault occurrence frequency; if occasional, may be caused by transient grid frequency variations requiring no action.
3005	Grid Power Loss	Generally, inverter will reconnect to grid after grid recovery If recurring: 1. Verify upstream AC switch is closed. 2. Confirm AC line phase sequence connection is correct, N-line and PE wiring sequence is proper and secure.
3006	Phase Sequence Reversal	1. Verify AC line phase sequence connection is correct. 2. If phase sequence detection is unnecessary, enable phase sequence adaptive function.
3007	Ground Fault Current	Wait for inverter recovery; if recurring: 1. PV panel moisture or poor illumination may cause this fault; generally inverter will reconnect after environmental improvement. 2. If environment is normal, check DC and AC cable insulation integrity. 3. If above causes are ruled out and fault persists, contact BYD after-sale Service Center.
3008	Insulation Resistance Fault	Wait for inverter recovery; if recurring: 1. Check string and DC cable ground resistance; if short circuit or cable insulation damage exists, implement corrective measures. 2. If cables are normal and fault occurs during rainy weather (or dewy mornings), reconfirm after weather improvement. 3. If above causes are ruled out and fault persists, contact BYD after-sale service center.
3009	High Output Current DC Component	If frequent occurrence, verify AC line phase sequence connection is correct, N-line and PE wiring sequence is proper and secure.
3010	NPE Voltage Anomaly	Measure N-line to ground voltage to verify if > 50V.
3011	EPS Output Overload	Reduce EPS load power.

Fault Code	Actions	Description
3012	EPS Load Port and Utility Port Cross-Connection	Swap EPS and utility ports.
3013	Load NPE Anomaly	Measure load-side N-line to ground voltage to verify if > 50 V.
3014	EPS_N and Grid N Disconnected	Connect EPS and utility N-lines.
3015	Equipment Anomaly	1. Wait for inverter recovery. 2. Disconnect AC switch and DC switch, wait 15 minutes then sequentially close DC and AC switches to restart inverter; if fault persists, contact BYD after-sale service center.
3016	High Temperature	1. Verify inverter installation environment and spacing meet thermal management requirements. 2. Inspect cooling fan for obstructions and confirm proper operation. 3. Validate ambient operating temperature is within specifications.
3017	Firmware Version Mismatch	Inverter software version incompatibility detected, contact BYD after-sale service center.
3018	Communication Fault	1. Wait for inverter recovery. 2. If fault persists, contact BYD after-sale service center.
3019	Communication Fault	1. Wait for inverter recovery. 2. If fault persists, contact BYD after-sale service center.
3020	Logic Interface Enable	DRM or logic interface configured to shutdown mode. Switch logic interface to normal operating mode.
3021	Device Model Mismatch	Repair required.
3022	DC Bus Overvoltage	1. Restart inverter and verify normal operation. 2. Confirm PV string voltage complies with inverter maximum input voltage specifications.
3023	Arc Fault	1. Inspect DC side for cable damage, loose terminals, poor connections, or component burn marks; replace any compromised cables, terminals, or components.

Fault Code	Actions	Description
		2. Clear fault codes; if recurring, contact BYD after-sale service center.
3024	PV Overvoltage	1. Verify PV string input voltage matches inverter display values. 2. Confirm PV string voltage complies with inverter maximum input voltage specifications.
3025	PV Reverse Polarity	1. Check corresponding string for reverse connection. If confirmed, recommend waiting for reduced solar irradiance when string current drops below 0.5 A before opening DC disconnect and correcting polarity. 2. If fault persists despite verification, contact BYD after-sale service center.
3026	PV Overconfiguration	1. Verify PV string input voltage matches inverter display values. 2. Confirm PV string voltage complies with inverter maximum input voltage specifications.
3027	Critical Temperature Fault	1. Verify inverter installation environment and spacing meet thermal management requirements. 2. Inspect cooling fan for obstructions and confirm proper operation. 3. Validate ambient operating temperature is within specifications. 4. Manually clear fault and restart inverter; if recurring, contact BYD after-sale service center.
3028	Battery Voltage Anomaly	Verify battery operational status.
3029	Parallel Operation Mode Mismatch	Check and align operating mode settings across all devices in parallel system.
3030	Battery Voltage Fault	Verify battery operational status.
3031	EPS Output Voltage Fault	Repair required.
3032	EPS Output Frequency Fault	Repair required.
3033	EPS Overcurrent	Reduce load power consumption.
3034	Relay Malfunction	1. Restart inverter and verify normal operation. 2. Verify proper connection of inverter neutral and ground wiring.

Fault Code	Actions	Description
		3. Contact BYD after-sale Service Center if fault persists.
3035	Internal Fan Failure	Contact BYD after-sale Service Center if fault occurs repeatedly.
3036	External Fan Failure	1. Restart inverter and verify normal operation. 2. Inspect inverter external fan for obstructions and verify normal operation. 3. Contact BYD after-sale service center if fault occurs repeatedly.
3037	Parallel Configuration Error	Verify and synchronize settings across all parallel system devices.
3038	Parallel Communication Fault	Check parallel communication cable connections for stability.
3039	BI Junction Box Communication Fault	Check parallel communication cable connections for stability.
3040	AC Overcurrent	Repair required.
3041	AC Cycle-by-Cycle Current Limiting	Repair required.
3042	Low Voltage Ride Through	Repair required.
3043	PV Ground Voltage High	Repair required.
3044	Islanding	Repair required.
3045	DSP EEPROM Fault	Repair required.
3046	Real-Time Clock Fault	Repair required.
3047	MCU Register Detection Fault	Repair required.
3048	MCU RAM Detection Fault	Repair required.
3049	MCU ROM Detection Fault	Repair required.
3050	DSP FLASH Fault	Repair required.
3051	ARM FLASH Fault	Repair required.
3052	MPPT Overcurrent	Repair required.

Fault Code	Actions	Description
3053	MPPT Overcurrent (Hardware)	Repair required.
3054	Boost1 Cycle-by-Cycle Current Limiting	Repair required.
3055	Boost2 Cycle-by-Cycle Current Limiting	Repair required.
3056	Boost3 Cycle-by-Cycle Current Limiting	Repair required.
3057	AC Cycle-by-Cycle Current Limiting Warning	Repair required.
3058	Inverter PWM Fault	Repair required.
3059	BuckBoost Overcurrent (Hardware)	Repair required.
3060	BuckBoost Overcurrent	Repair required.
3061	Balancing Bridge Overcurrent (Hardware)	Repair required.
3062	DSP Information Read Failure	Repair required.
3063	Failed to read DSP operational data	Repair required.
3064	Battery Data Read Failure	Verify inverter-battery communication.
3065	Meter Data Read Failure	Check meter model, inverter-meter communication, and verify meter communication address is set to 96.
3066	Flash Data Read Failure	Replace ARM board.
3067	EEPROM Data Read Failure	Replace ARM board.
3068	DSP DC Data Read Failure	Repair required.
3069	DSP AC Data Read Failure	Repair required.
3070	DSP Energy Data Read Failure	Repair required.

Fault Code	Actions	Description
3071	DSP Device Address Read Failure	Check ARM-DSP communication.
3072	DSP Data Information Read Failure	Repair required.
3073	DSP Temperature Data Read Failure	Repair required.
3074	DSP MPPT Data Read Failure	Repair required.
3075	DSP Master Data Read Failure	Repair required.
3076	A2 Board Communication Lost	Verify A2 board communication status.
3077	Meter2 Data Read Failure	Check meter model, inverter-meter communication, and verify meter communication address is set to 96.
3078	DSP EPS Data Read Failure	Repair required.
3079	DSP Energy Storage Command Write Fault	Repair required.
3080	ARM Battery Mismatch	Reconfigure battery selection.
3081	Meter Wiring Configuration Conflict	Verify meter wiring connections.
3082	ARM Battery 2 Mismatch	Reconfigure battery 2 selection.
3083	ARM BMS 2 Acquisition Failure	Check battery 2 connections.
3084	ARM-LED Communication Fault	Check LED connections.
3085	ARM-AFCI Communication Fault	Check AFCI connections.
3086	ARM DO1 Configuration Fault	Verify DO settings.
3087	BI-DO Configuration Inconsistency	Verify BI-DO settings.

Fault Code	Actions	Description
3088	Flash Self-Test Fault	Contact BYD after-sale service center.
3089	AFCI Self-Test Fault	Contact BYD after-sale service center.
3090	AFCI Arc Detection	Inspect for arc generation.
3091	Battery 1 Critical Low Voltage Warning	Reduce load power or enable high-power battery 1 charging.
3092	Battery 2 Critical Low Voltage Warning	Reduce load power or enable high-power battery 2 charging.

10 Product Specifications

	TH5K	TH6K	TH8K	TH10K	TH12K	TH15K
Input (PV)						
Max. Input Power	7,500 Wp	9,000 Wp	12,000 Wp	15,000 Wp	18,000 Wp	22,500 Wp
Max. Input Voltage	1,000 V					
Start-up Voltage	180 V					
Rated Voltage	620 V					
MPPT Voltage Range	160 - 950 V					
Max. Current per MPPT	18 A				32 / 18 A	
Max. Short Circuit Current per MPPT	25 A				40 / 25 A	
Number of MPPT Trackers	2				2	
Number of Strings per MPPT	1 / 1				2 / 1	
Battery						
Compatible Battery	Battery-Box HVE & Battery-Box HVB					
Battery Voltage	160 - 600 V					
Max. Charge / Discharge Current	25 / 25 A				30 / 30 A	
Max. Charge / Discharge Power	7,500 / 7,500 W	9,000 / 9,000 W	120,000 / 12,000 W	15,000 / 15,000 W	18,000 / 18,000 W	
AC Input / Output (Grid)						
Nominal Voltage	3 / N / PE; 220 / 380 V; 230 / 400 V					
Nominal Frequency	50 / 60 Hz					
Nominal Output Power	5,000 W	6,000 W	8,000 W	10,000 W	12,000 W	15,000 W
Max. Apparent Output Power	5,500 VA	6,600 VA	8,800 VA	11,000 VA	13,200 VA	16,500 VA
Rated Output Current	7.6 / 7.3 A	9.1 / 8.7 A	12.2 / 11.6 A	15.2 / 14.5 A	18.2 / 17.4 A	22.8 / 21.8 A
Max. Output Current	8.4 / 8.0 A	10.0 / 9.6 A	13.4 / 12.8 A	16.7 / 16.0 A	20.0 / 19.2 A	25.0 / 24.0 A
Rated(Max.) Input Power	7.5 kW	9 kW	12 kW	15 kW	18 kW	22.5 kW
Rated(Max.) Input Current	11.4 / 10.9 A	13.7 / 13.1 A	18.2 / 17.4 A	22.8 / 21.8 A	27.3 / 26.1 A	34.1 / 32.7 A
Power Factor	0.8(leading) - 0.8(lagging)					
THDi	≤ 3%					
AC Output (Backup)						
Nominal Output Power	5,000 W	6,000 W	8,000 W	10,000 W	12,000 W	15,000 W
Peak Output Power	7,500 VA, 60 s	9,000 VA, 60 s	12,000 VA, 60 s	15,000 VA, 60 s	18,000 VA, 60 s	18,000 VA, 60 s
Backup Switch Time	10 ms					
Nominal Voltage	3 / N / PE; 220 / 380 V; 230 / 400 V					
Nominal Frequency	50 / 60 Hz					
THDv	≤ 2%					
Efficiency						
MPPT Efficiency	> 99.9%					
Max. Efficiency	97.80%		98.20%			
EU Efficiency	97.20%		97.50%			
Protection						
Anti Islanding Protection	Yes					
Leakage Current Protection	Yes					
PV Reverse Protection	Yes					
Short Circuit Protection	Yes					
Arc-fault Circuit-interrupter	Yes					
Surge Protection	DC II / AC II					
Battery Reverse Protection	Yes					
General Data						
Operating Temperature Range	-25 - 60 ℃					

	TH5K	TH6K	TH8K	TH10K	TH12K	TH15K
Relative Operating Humidity	0 - 100%					
Operating Altitude	4,000m (> 3,000 m derating)					
Cooling	Natural				Smart fan cooling	
Dimensions (H / W / D)	537 × 577 × 206 mm					
Weight	26 kg				29 kg	
Inverter Topology	Non-isolated					
Display	LED + App					
Communication	WiFi / Ethernet, RS485, CAN					
Ingress Protection	IP66					
Standards Compliance						
Safety / EMC Standard	IEC 62109-1/2, IEC 61000-6, IEC 61000-3, IEC 62116, IEC 61727, IEC 61683, IEC 60068, IEC 62477					
Grid Connection Standard	EN50549-1, VDE4105, C10 / 11, CEI-0-21, TOR Type A, PTPiREE: 2021, AS4777-2, PPDS					

11 Contact Information

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BYD